Program Overview

Completed by drew@mcgregorint.com on 1/13/2022 1:00 PM

Case Id: 31074
Name: McGregor Interests Council Bluffs QOF, LLC -
Address: 11750 Stonegate Cir

Program Overview

Please review the below information.

2022 APPLICATION FOR
URBAN REVITALIZATION
INCENTIVES

APPLICATION DEADLINE

This application, along with all required attachments, must be submitted to the City of Council Bluffs-Community Development Department by **February 1, 2022**.

Applications received after this date may not be processed and/or approved.

Urban Revitalization – Project Approval Process

Owners of property who have made improvements within a designation urban revitalization area must apply to receive tax exemption benefits. If an improvement project extends over several years, an application is required for each calendar year that improvements were completed. The following provides a general outline of the City's application and review procedures

1. Application

Applications for tax abatement must be made to the City by February 1st following completion of the improvements. Failure to submit by the February 1st deadline may result in an automatic denial of benefits. Upon approval, the City is required to submit this approval to the County Assessor by March 1st. *In addition, applications must be submitted in each calendar year that improvements are made.* All applications shall be made on forms prepared by the Community Development Department.

2. Fees

A processing fee shall be submitted with each annual project review application. The fee shall be equal to a base fee of $500.00 plus $15.00 per $100,000 in added valuation. However, the processing fee shall not exceed $1,500.00.

This fee must be submitted by check to Community Development by February 1st. Checks should be made out to Council Bluffs City Clerk.

3.Review Procedure

The following procedure will be utilized in reviewing applications:

- The applicant requests a preliminary conference with the Community Development Department to review and explain the application process. Applications along with all required data are due by February 1st to the Community Development Department.
- Complete the application fully; if any questions are left unanswered or required attachments are not submitted, an explanation must be included.
- Additionally, inaccurate information of a significant nature may disqualify the application from consideration.
- As part of the Community Development Department acceptance procedure additional information or data may be required.

4. The Community Development Department shall review the forms and data for completeness. If there is a deficiency, the Department will notify the applicant within seven (7) days. The application will not be processed until completed.

5. The Department shall review the application according to the following criteria: 1) conformance with the Urban Revitalization Plan; 2) a finding that the site is within a designated area; 3) a finding that the work has been completed within the time required to qualify for abatement in the assessment year; 4) a finding that the application is consistent with Chapter 404 of the Iowa Code; and 5) a finding that the application is consistent with all applicable city codes and ordinances.

6. Upon review of the application, the Community Development Department will prepare a recommendation and schedule the application for City Council consideration.

7. The City Council will by resolution accept or reject the application and improvements as conforming to all City codes and State law.

8. The City Council will then direct the Community Development Department to transmit a copy of the case file to the Pottawattamie County Assessor's Office by March 1st as required by Chapter 404 of the Iowa Code.

A. Applicant Information

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Case Id: 31074
Name: McGregor Interests Council Bluffs QOF, LLC -
Address: 11750 Stonegate Cir

A. Applicant Information

Please provide the following information.

APPLICANT INFORMATION

A.1. Name of Business
McGregor Interests Council Bluffs QOF, LLC

A.2. Mailing Address of Business
11750 Stonegate Cir OMAHA, NE 68164

A.3. Phone Number
(402) 334-2123

A.4. Status
P.O. (Property Owner)

CONTACT INFORMATION

A.5. First Name
Drew

A.6. Last Name
Strohmeyer

A.7. Title and Company name of Contact Person
Vice President of McGregor Interests, Inc. Manager

A.8. Phone Number
(402) 334-2123

A.9. Email Address
drew@mcgregorint.com

PROPERTY INFORMATION

A.10. Name of company who will be occupying the building
LockBox Storage

A.11. Address/Location of property
706 Veterans Memorial Hwy Council Bluffs, IA 51501

A.12. Legal description
Section 12-74-44 EXC W250' N660' NE SW

A.13. Parcel Number (can be found at PottCo.org)
744412351011

A.14. Present zoning district (call 712-890-5350 if unsure)
I-2 General Industrial

B. Project Information

Completed by drew@mcgregorint.com on 1/13/2022 3:28 PM

Case Id: 31074
Name: McGregor Interests Council Bluffs QOF, LLC -
Address: 11750 Stonegate Cir

B. Project Information

Please provide the following information.

B.1. Present assessed valuation of property: (can be found at PottCo.org)

Total
$1,992,100.00

Land
$763,500.00

Dwelling
$1,228,600.00

Other Building
$0.00

B.2. Project narrative
Develop a 6 acre former Camper/Trailer park into an 87,000 sq/ft class A convenient Self-Storage Facility.

B.3. Total project investment (cumulative)
4986754.75

B.4. Total project investment (previous calendar year only)
1533418.25

B.5. Construction start date
07/17/2020

B.6. Construction completion date
09/17/2021

B.7. Exemption schedule
Partial exemption for ten years

B.8. Will any persons, including families, business concerns or others be displaced as a result of the improvements made for this project?
Yes

If yes, please explain:

The Tomes RV/Trailer Park was closed and demolished from the site.

C. Cost Report

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Case Id: 31074
Name: McGregor Interests Council Bluffs QOF, LLC -
Address: 11750 Stonegate Cir

C. Cost Report

Please provide the following information.

C.1. Type of building or improvement and use
Self-Storage Buildings and Business Office

C.2. Basic building or improvement construction
Type 11-B Construction

C.3. Estimate the percentage of completion as of January 1, 2022
100.00 %

C.4. Builder's Cost Breakdown

ACTIVITIES	AMOUNT
EXCAVATING AND GRADING	$26,685.70
CONCRETE (foundation/walks/ drive)	$108,538.00
FRAMING MATERIAL	$888,905.00
FRAMING LABOR	$0.00
ROOFING	$0.00
GLASS	$0.00
HEATING AND AIR CONDITIONING	$40,261.00
PLUMBING	$6,651.00
ELECTRICAL	$75,826.00
INSULATION	$21,420.00
DRY WALL	$90,499.00
CARPENTER (labor/lumber/hardware)	$25,195.00
PAINTING AND DECORATING	$12,666.55
FLOORING	$9,478.00
LANDSCAPING	$101,301.00
ARCHITECT	$0.00
SURVEY	$419.25
BUILDING PERMITS	$0.00
INSURANCE	$0.00
CONSTRUCTION LOAN FEE AND INTEREST	$0.00
OVERHEAD AND PROFIT	$125,314.50
MISCELLANEOUS	$258.25
FIXTURES AND EQUIPMENT	$0.00
TOTAL BUILDING COST	$1,533,418.25

C.5. Please re-enter the Total Building Cost from above to verify cost

$1,533,418.25

C.6. Does the above building cost represent cost to date or total project cost when completed?
These are the improvement costs for construction completed in the 2021 calendar year.

C.7. Purchase price of land (if applicable)
$0.00

C.8. Total (Land + Building Cost)
$1,533,418.25

C.9. Total Application Fee:
$725.00

☑ **I, the undersigned, representing ownership on the above property, herewith certify that the above statement of amounts and actual value of said property is true and correct, and represents total cost and investment by all parties involved.**

Signature
Drew Strohmeyer
Electronically signed by drew@mcgregorint.com on 1/13/2022 4:02 PM

Official Use Only

$15.33

$15.00

D. Required Documents

Completed by drew@mcgregorint.com on 1/14/2022 1:39 PM

Case Id: 31074
Name: McGregor Interests Council Bluffs QOF, LLC -
Address: 11750 Stonegate Cir

Please upload the required documentation.

Please provide the following information.

Documentation

☑ **Blueprints *Required**

19-035-01_LockBox Manawa_PermitDwgs.pdf

☑ **Plot Plan *Required**

19-035-01_LockBox Manawa_PermitDwgs.pdf

☑ **Copy of building permit *Required**

706 vets .pdf

☑ **Copy of Certificate of Occupancy (Only Required upon completion of project)**

2021-12-01 Temporary Certificate of Occupancy.pdf

☐ **Detailed List of Fixtures and Equipment**

***No files uploaded*

Submit

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Case Id: 31074
Name: McGregor Interests Council Bluffs QOF, LLC -
Address: 11750 Stonegate Cir

Submit the Application

Please review and attest to the following:

Total Application Fee:
$725.00

Please submit your application fee to:

City of Council Bluffs, Community Development
209 Pearl St
Council Bluffs, Iowa 51503.
Checks should be made out to Council Bluffs City Clerk.

This application, along with all required attachments and fees, must be submitted by February 1. Applications received after this date may not be processed and/or approved.

WAIVER TO ENTER PROPERTY

☑ **The applicant hereby authorizes the Community Development Department, the Assessor's Office and/or their representatives to enter the property described above for the purpose of verifying all claims and data related to the application. (Note: Failure to sign the authorization may prevent the processing of the application.)**

CERTIFICATIONS

☑ **I certify that all information, representations, or statements provided to the City of Council Bluffs, in connection with this application, are true and correct in all material respects.**

Title
Vice President of McGregor Interests, Inc., Manager

Date
01/14/2022

Authorized Signature
Drew Strohmeyer
Electronically signed by drew@mcgregorint.com on 1/14/2022 1:40 PM

Neighborly Software

City of Council Bluffs, IA

Permits and Inspection Division
209 Pearl Street
Council Bluffs, IA 51503
(712)890-5276

Application #: 2001470

Permit Type	Project Address
OTHER NONRESIDENTIAL STRUCTURE	706 VETERANS MEMORIAL HWY

Contractor Information

SCHUMAN, MATT
13316 B ST
OMAHA, NE 68144

Phone: 402-330-8544

Legal Description

SECTION 12-74-44 EXCW250' N660' NE SW ANDW16.5' S20' N OF HWYSE SW

Owner Information	Tenant Information
MCGREGOR INTERESTS CO BLUFFS QOF LLC 11750 STONEGATE CIR OMAHA, NE 68164	

Architect Information	Engineer Information
KELLY, PAUL J	

Work Description

CLIMATE CONTROLLED STORAGE FACILITY 89,028 SQ FT

Building Statistics

Occupancy Group:	S-1	Construction Type:	IIB
Finished Sq Ft:		Unfinished Sq Ft:	89,028
Accessory Sq Ft:		Total Sq Ft:	
Parking:		Occupant Load:	
Zoning Code:	I-2	Building Valuation:	$7,723,178.00
Fire Sprinkler:			

Permit Information

Applied Date:	07/10/2020	Permit Number:	2002728
Issue Date:	09/14/2020	Report Code:	328
		Total Fees:	$37,689.19

All work shall conform with the City of Council Bluffs construction codes as adopted and amended. Separate permits are required for building, electrical, mechanical, plumbing, right-of-way, sign and utility. A final inspection must be made by the City prior to the occupancy of any new structure. Please call at least 24 hours in advance for your inspections.

This permit becomes null & void if work or construction authorized is not commenced with 180 days, or if construction or work is suspended or abandoned for a period of 180 days at any time after work is commenced. All provisions of law and ordinances governing this type of work will be complied with whether specified herein or not. The granting of permit does not presume to give authoritory to violate or cancel the provisions of any other state or local law regulating construction or the performance of construction.

City of Council Bluffs

Building Division

TEMPORARY CERTIFICATE OF OCCUPANCY

706 VETERANS MEMORIAL HWY

Pursuant to the requirements of the 2015 International Building Code and the various ordinances of the City of Council Bluffs as adopted, this certifies that at the time of issuance this structure was in compliance regulating building construction and use for the work that permit #2001470 was completed for.

Owner: MCGREGOR INTERESTS CO BLUFFS QOF LLC

11750 STONEGATE CIR
OMAHA NE 68164

Contractor: SCHUMAN, MATT PRAIRIE CONSTRUCTION

13316 B ST
OMAHA NE 68144

Description of Work: CLIMATE CONTROLLED STORAGE FACILITY 89,028 SQ FT

Parcel: 744412351011

Occupancy: S-1 STORAGE MODERATE HAZARD

Maximum Occupant Load: 0

Fire Sprinkler: NO

Type of Construction: IIB NON COMBUSTIBLE NON RATED

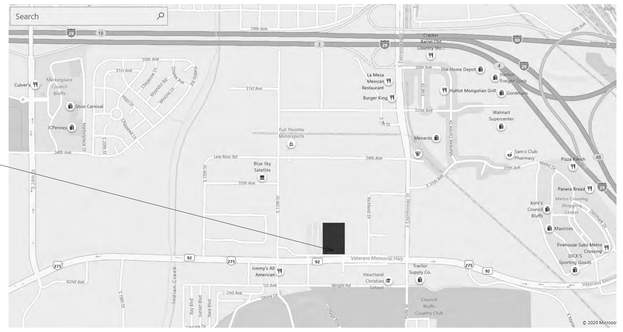
This TEMPORARY CERTIFICATE OF OCCUPANCY is hereby issued under the direction and authority of the Building Official for the City of Council Bluffs, Iowa on this date of 12/1/2021.

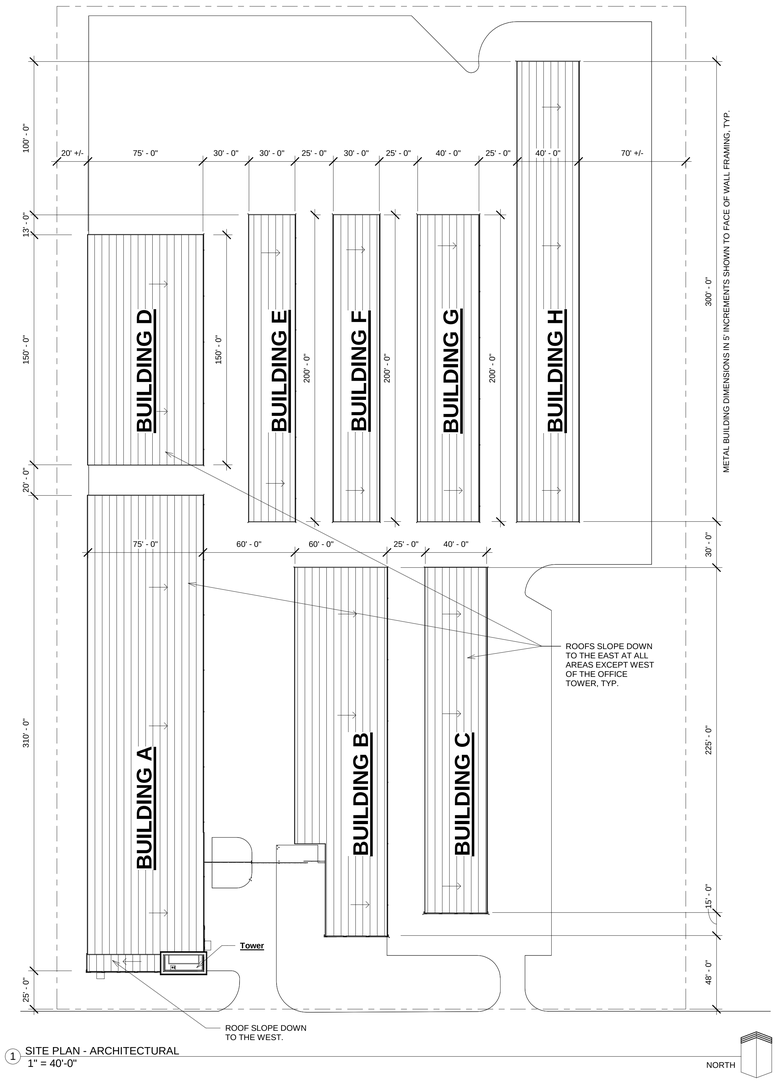
B Garnett FOR STEVE CARMICHAEL

Steve Carmichael
Chief Building Official

GENERAL CONSTRUCTION NOTES:

1. ALL WORK SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE CODES, ORDINANCES AND ACCEPTED INDUSTRY STANDARDS.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS AND ESTABLISHING THE COMPATIBILITY OF ALL NEW WORK WITH THE EXISTING CONDITIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING AND PAYING FOR ALL PERMITS, LICENSES, ETC... AS REQUIRED BY REGULATING AUTHORITIES HAVING JURISDICTION.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION AND CONTINUOUS MAINTENANCE OF ALL WORK FROM DAMAGE AND SHALL PROTECT THE OWNER'S PROPERTY FROM DAMAGE OR LOSS BY DUST, DIRT, WATER, THEFT, FIRE OR ANY OTHER PHYSICAL DAMAGE IN CONNECTION WITH THE CONTRACT WORK.
5. CONTRACTOR SHALL COORDINATE LOCATION OF ALL UTILITIES WITH EQUIPMENT TO BE INSTALLED BY OTHERS WITH THE ENGINEERS' DRAWINGS.
6. CONTRACTOR SHALL PROVIDE WRITTEN NOTICE OF ANY CHANGES THAT INVOLVE ADDITIONAL COST AND/OR TIME TO THE ARCHITECT AND OWNER WITHIN FIVE DAYS OF ITS DISCOVERY AND BEFORE PROCEEDING WITH WORK. THIS SHALL BE SUBMITTED IN A IN THE FORM OF A UNIT COST AND DETAILED LUMP SUM BREAKDOWN. COST EVENTS WITHOUT AN ACCOMPANYING BREAKDOWN SHALL NO BE CONSIDERED FOR REVIEW AND APPROVAL.
7. DIMENSIONS ARE TO FACE OF FINISHED WALLS, TYPICAL, UNLESS NOTED OTHERWISE.
8. DOOR, WINDOW, AND STOREFRONT OPENING DIMENSIONS IN PLAN ARE NOMINAL. REFER TO SCHEDULES FOR FOR ACTUAL FRAME DIMENSIONS.
9. DOOR FRAMES SHALL BE LOCATED 4" MINIMUM FROM CORNERS UNLESS NOTED OTHERWISE.
10. CONTRACTOR SHALL SUBMIT PRODUCT DATA FOR APPROVAL FOR ALL MATERIALS USED IN THE PROJECT.
11. PROVIDE SOLID BLOCKING BEHIND ALL WALL MOUNTED EQUIPMENT, DOOR STOPS, ETC... AS REQUIRED FOR THEIR INSTALLATION.
12. PROVIDE MISCELLANEOUS FRAMING, SUPPORTS, KICKERS, ETC... AS REQUIRED AT ALL STUD WALL CONSTRUCTION, IN ACCORDANCE WITH INDUSTRY STANDARDS.
13. ANY FIELD WELDING SHALL BE PERFORMED BY WELDERS CERTIFIED TO WELD IN THE REQUIRED POSITIONS.
14. ALL STEEL FOR EXTERIOR USE SHALL BE GALVANIZED.
15. HAND AND GUARD RAILS SHALL BE FABRICATED FROM MINIMUM SCHEDULE 40 PIPE. JOINTS SHALL BE WELDED AND GROUND SMOOTH, TYPICAL. WHERE ALUMINUM RAILS ARE USED, PROVIDE MATERIAL PER ASTM B429 WITH CONNECTION PLATES PER ASTM B209, ALLOY 6061-T6.
16. WOOD FRAMING AND BLOCKING LUMBER SHALL BE S4S, 19 PERCENT MAXIMUM MOISTURE CONTENT IN ACCORDANCE WITH THE WWPA OR SPIB. PROVIDE PRESERVATIVE TREATED MATERIAL AT ANY LOCATION IN CONTACT WITH GRADE.
17. INTERIOR NON-LOAD BEARING METAL STUD AND DRYWALL PARTITIONS SHALL BE MINIMUM 25 GAUGE 3 5/8" METAL STUDS AND 5/8" TYPE-X GWB UNLESS SPECIFICALLY NOTED OTHERWISE. INSTALL PER USG GYPSUM DRYWALL CONSTRUCTION HANDBOOK.





1 SITE PLAN - ARCHITECTURAL
1" = 40'-0"

NORTH

BUILDING AREA CALCULATIONS:

All buildings are Type II-B Construction, per the IBC.

BUILDING A: 23,578 sf Total (Includes exterior overhangs at doors and 328 sf non-occupied tower floor (above office).
Separated into 4 fire areas by 3 Hour Walls as follows:
South Conditioned Storage Area: 9,700 sf first floor (Includes 500 sf Accessory Office Area) + 328 sf non-occupied tower floor (above office).
North Conditioned Storage Area: 5,150 sf
South RV Storage Area: 3,850 sf
North RV Storage Area: 4,550 sf

BUILDING B: 13,200 sf
Separated into 3 fire areas by 3 Hour Walls.

BUILDING C: 9,000 sf

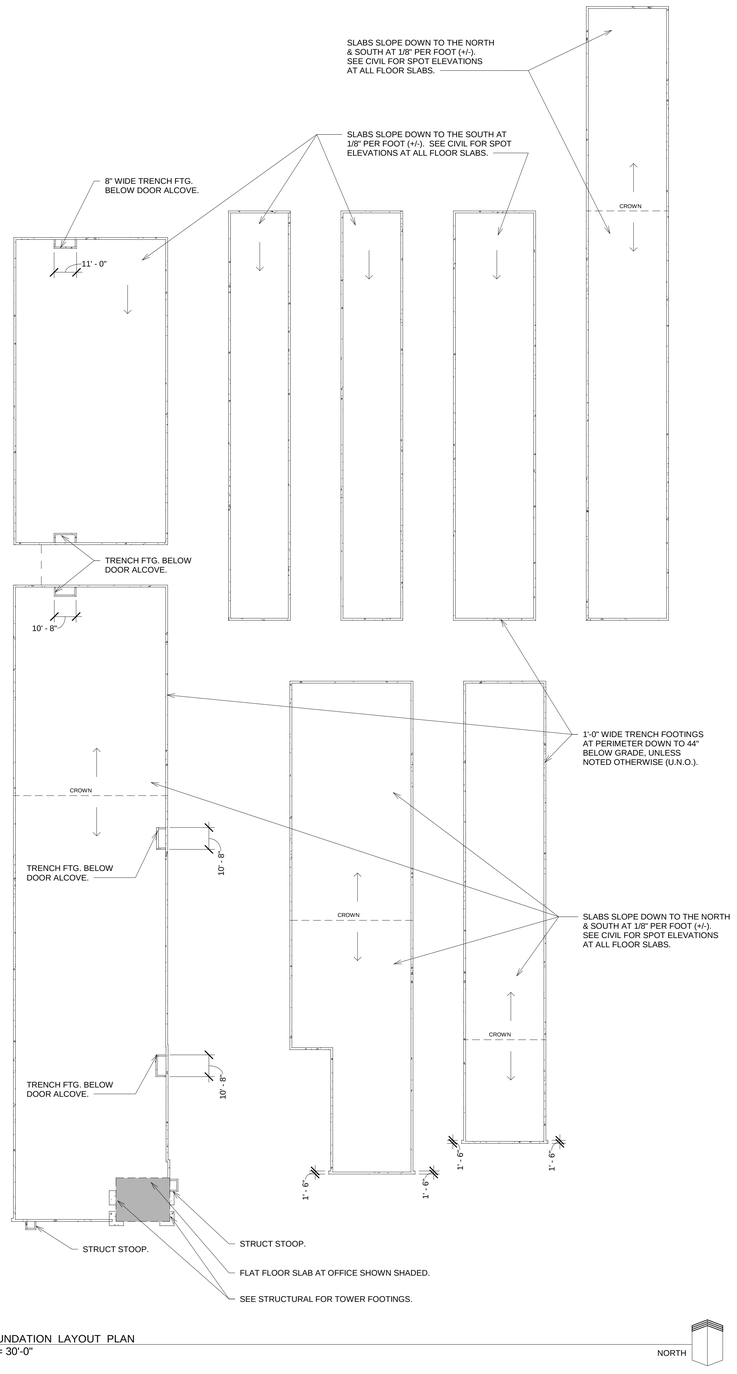
BUILDING D: 11,250 sf

BUILDING E: 6,000 sf

BUILDING F: 6,000 sf

BUILDING G: 8,000 sf

BUILDING H: 12,000 sf



2 FOUNDATION LAYOUT PLAN
1" = 30'-0"

NORTH

SHEET INDEX:

0-0 COVER SHEET, CODE REVIEW NOTES AND GENERAL NOTES

1 TOPOGRAPHIC SURVEY
2 SITE REMOVAL PLAN
3 SITE PAVING AND LAYOUT PLAN
4 SITE GRADING PLAN
5 SITE UTILITY PLAN
6 NOTES AND DETAILS
7 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
8 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
9 POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (PCSMP)
10 POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (PCSMP)
11 LANDSCAPE PLAN

A1-1 STORAGE UNIT PLANS
A1-2 OFFICE PLANS AND DETAILS
A2-1 EXTERIOR ELEVATIONS
A2-2 EXTERIOR ELEVATIONS
A2-3 EXTERIOR ELEVATIONS
A3-1 SECTIONS & DETAILS
A4-1 CEILING PLANS

S1-1 STRUCTURAL PLANS
S2-1 ELEVATIONS AND SECTIONS
S3-1 GENERAL STRUCTURAL NOTES

M0-0 SYMBOLS & ABBREVIATIONS
P1-1 PLUMBING PLANS
M1-1 HVAC PLANS
M2-1 MECHANICAL DETAILS & SCHEDULES
M3-1 MECHANICAL SPECIFICATIONS (1 OF 2)
M3-2 MECHANICAL SPECIFICATIONS (2 OF 2)

E-1 SITE PLAN - ELECTRICAL
E-2 BUILDINGS A, B, & C ELECTRICAL
E-3 BUILDINGS D, E, F, G, & H ELECTRICAL

PERMIT REVIEW CHECKLIST:

PROJECT DESCRIPTION: NEW SELF STORAGE FACILITY
OWNER: McGregor Interests
ADDRESS: 11750 Stonegate Circle, Omaha, NE 68164
PHONE: (402) 334-2123
E:MAIL: geoff@mcgregorint.com
CONTACT: Paul J. Kelly, AIA
ADDRESS: 440 North 61st Street, Omaha, NE 68132
PHONE: (402)320-4131
E:MAIL: pjkarchitect@gmail.com

PROJECT ADDRESS: 706 Veteran's Memorial Highway, Council Bluffs, Iowa 51501
USE: Self Storage Facility
CONSTRUCTION: Type II-B at Storage Areas.
SQ. FOOTAGES: See Code Site Plan
OCCUPANCIES: S-1 (Storage) at all buildings and B (Office) accessory occupancy at Building A. Multiple buildings on a single project site
OCCUPANCY SEPARATION: Accessory Occupancy Office at Building A requires no separation.
AREA SEPARATION: 3 Hour Separation Walls provided at Buildings A and B to subdivide into fire areas less than 5,000 sf at Commercial Vehicle Storage areas.
ALLOWABLE AREA: 17,500 (per Table 506.2) Base Allowable Area if Non-Sprinkled
Building A: Subdivided by 3 hour fire walls. Max individual area is 9,980 sf.
Buildings B through H: 17,500 sf > Square Footage of each building.
ACCESSIBILITY: All building areas will have grade level entrances.
FIRE SPRINKLERS: Non-Sprinkled Buildings, typical.
EMERG. LIGHTING: Provided per NEC
NO. EXITS REQUIRED: 2 exits required if occupant load exceeds 29.
Building A South: Storage Area (S-1) - 9,200 sf / 300 sf per Occupant = 31
Office (B) at 500 sf / 100 sf per Occupant = 5
Building A North: Storage Area (S-1) - 4,550 sf / 300 sf per Occupant = 15
Building D: Storage Area (S-1) - 7,500 sf / 300 sf per Occupant = 25
NO. EXITS PROVIDED: Building A South: 3 exits provided (2 req'd, 1 add'l due to travel distances)
Building A North: 2 exits provided (1 req'd, 1 add'l due to travel distances)
Building D: 2 exits provided (1 req'd, 1 add'l due to travel distances)
All other buildings have exterior access only to each storage bay.
PLUMBING FIXT. REQ.: Single Unisex restroom provided at Office for Staff/Client Use during business hours.
GOVERNING CODES: City of Council Bluffs is the AHJ.
2015 International Building Code
2015 Uniform Plumbing Code with State of Iowa Amendments
2015 International Mechanical Code with State of Iowa Amendments
2015 International Fire Code
2012 International Energy Conservation Code
2015 NFPA 101 Life Safety Code
2017 National Electric Code
2015 International Fuel Gas Code

COMCheck: Attached, dated May 5, 2020 for envelope, HVAC and Lighting at Building A only.
Exterior Lighting Certificate for Building A encompasses the entire site area and all exterior wall mounted light fixtures.
Building B Interior Lighting certificate attached for Interior Lit Units at the west side.
Building B Interior Lighting certificate attached for the Interior Hallway.
HISTORIC DESIGNATION: None
BUSINESS OPERATION: Leased Self Storage
HAZARDOUS MATERIAL: N/A
LEGAL DESCRIPTION: SECTION 12-74-44 EXC W250' N660' NE SW
PIN: 744412351011

ACCESSIBLE STORAGE UNITS: Are required for 5% of the first 200, and then 2% of total over 200 units.
513 leasable units = 10 + (.02 x 313) = 10+6 = 16 Accessible Units Required
Note: 5 units are utilized for HVAC equipment and Owner storage.
There are 14 different unit types, so one of each type shall be provided where indicated on the plans, plus one additional 10x10 and 10x20 Enclosed Units.
ADA Unit doors must be easily opened and closed within accessibility limits and provided with a rope or automatic closer to close doors for wheelchair use.

ENVELOPE INSULATION REQUIREMENTS: **(per 2015 IECC)**

BUILDING A: 14,470 sf of Conditioned Area.
ROOF: Metal Building Roof: R-19 + R-11 Liner System with R-5 Thermal Blocks.
WALLS: Metal Building Walls: R-13 + R-13 Continuous Insulation.
SLABS: Unheated: R-10 for 24 inches below grade.
DOORS: Glass Entry Doors: Alum. Storefront with 1" clear Low-E glass, U-0.77 Max
Swing Doors: U-0.37 Max
Overhead: U-4.75 Max
WINDOWS: Fixed Aluminum Storefront, thermally broken, with 1" clear Low-E glass, U-0.38 Max

BUILDINGS B, C, D, E, F, G and H: Non-conditioned buildings with Non-Insulated Walls & Floors and 3" thick R-10 Roof Insulation



No.	Description	Date

COVER SHEET

REVISIONS

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51501

Paul J. Kelly Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

0-0

Project No. 19-035-01
Date 5 May 2020

Print on 30" x 42" format for proper scale.

5/6/2020 9:49:57 PM

3501 SOUTH 11TH STREET
PART OF THE W1/2 OF THE SW1/4 OF
SECTION 12-T74N-R44W
OWNER: OMAHA STANDARDS, INC

FENCE IS 0.3' SOUTH AND 0.1'
WEST OF PROPERTY CORNER

3/4" PINCH TOP

S88°06'15"E 410.00'(S) 409.77'(M)

NORTHEAST CORNER OF
THE SW1/4 OF THE SW1/4 OF
SECTION OF 12-T74N-R44W
(POINT OF BEGINNING)
(ALUMINUM CAP LS 10569

FENCE IS 4.4' ↓
AND 2.2' EAST
PROPERTY CO

SEPTIC MANHOLE
RIM EL. = 975.90'
FL = 967.10'

GRAVEL

CONCRETE

LOTS 25-27, COUNTRY CLUB ACRES
OWNER: MCMULLEN LAND PARTNERSHIP, LLP

322.3'

808 VETERANS MEMORIAL HIGHWAY
PART OF THE NE1/4 OF THE SW1/4 OF THE SW1/4 OF SECTION 12-T74N-R44W
OWNER: MEMORIALC2 TRUST

N02°15'53"E 655.00'(S) 655.68'(M)

GRAVEL

GRAVEL

GRAVEL

127.9'

S02°11'03"W 656.01'(S) 653.72'(M)

METAL
SCAFFOLDING

CONCRETE

LOTS 28-30, COUNTRY CLUB ACRES
OWNER: SORENSEN, RICK & LISA

UNKNOWN MANHOLE
RIM EL. = 973.44'
FL = 966.44'
(NO LID)
(FULL OF WATER)

UNKNOWN MANHOLE
RIM EL. = 975.10'
FL = 968.62'
(WATER MANHOLE COVER)
(FULL OF WATER)

SANITARY SEWER MANHOLE
RIM EL. = 975.38'
FL 6" VCP (N) = 971.14'
FL 8" VCP (S) = 970.84'

706 VETERANS MEMORIAL HIGHWAY
PART OF THE NE1/4 OF THE SW1/4 OF THE
SW1/4 OF SECTION 12-T74N-R44W
OWNER: TOMES INC

GRAVEL

FENCE IS 3.0' EAST
OF PROPERTY LINE

89.2'

161.7'

ITEM 08
31.00' INGRESS AND
EGRESS EASEMENT
BOOK 1235, PAGE 47

METAL POSTS

PART OF LOT 31,
COUNTRY CLUB ACRES
OWNER: VALLEY VIEW
HOLDING, LLC

ASPHALT

83.5'

58.5'

ASPHALT

95.6'

WOOD WALL
WITH SIGN

32.5'

SOUTHEAST CORNER OF
THE SW1/4 OF THE SW1/4 OF
SECTION OF 12-T74N-R44W
(1" OPEN TOP)

FENCE IS 2.0' EAST
OF PROPERTY LINE

5/8" REBAR WITH
CAP LS 17646

N88°22'35"W 412.02(S) 410.71'(M)

GRATE INLET
GRATE EL. = 973.74'
FL 12" RCP (E) = 970.89'

45.00'

CURB INLET MANHOLE
RIM EL. = 974.50'
FL 12" RCP (W) OFFSET
FL 12" RCP (S) = 970.25'
FL = 971.05'

FRONTAGE ROAD

SANITARY SEWER MANHOLE
RIM EL. = 974.94'
FL 18" (W) = 967.54'
FL 18" (E) = 967.54'

CURB INLET MANHOLE
RIM EL. = 974.60'
FL = 970.15'
(PIPES NOT VISIBLE)

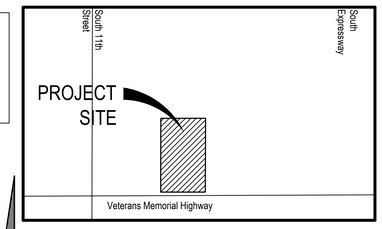
ITEM 09
45' TEMPORARY
CONSTRUCTION EASEMENT

STORM SEWER MANHOLE

STORM SEWER MANHOLE
RIM EL. = 975.15'
FL 18" RCP (E) = 968.85'
FL 18" RCP (W) = 968.75'
FL 18" RCP (S) = 968.55'

CURB INLET MANHOLE
RIM EL. = 974.39'
FL 4" PVC (N) = 971.79'
FL = 970.49'

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VICINITY MAP

30 0 30
1 inch = 30 ft.

HATCH LEGEND

ITEM 08
INGRESS AND EGRESS EASEMENT
BOOK 1235, PAGE 47

ITEM 09
TEMPORARY CONSTRUCTION EASEMENT
BOOK 1381, PAGE 331

LEGEND

NOTE: FOR REFERENCE ONLY, ITEMS DEPICTED IN LEGEND MAY NOT APPEAR ON PLANS.

	SECTION CORNER	(W)	WATER MANHOLE
●	PROPERTY CORNER FOUND (AS NOTED)		MANHOLE
○	PROPERTY CORNER SET (5/8" REBAR)	CO	RV CLEANOUT
(S)	SURVEY DISTANCE - FREDRICKSON LS 17108 DATED NOVEMBER 11, 2005		BOLLARD
			2" PVC VERTICAL PIPE
(M)	MEASURED DISTANCE		SPIGOT
	BUILDING		SIGN
P	POWER RISER	— X — X —	FENCE LINE
	POWER POLE	— G — G —	GAS LINE
	GUY WIRE	—UGW—UGW—	WATER LINE
	LIGHT POLE	– OHP – OHP –	POWER LINE (OVERHEAD)
E	POLE WITH POWER BOX	—SS—SS—	SANITARY SEWER LINE
V	VAULT	—ST—ST—	STORM SEWER LINE
	FIRE HYDRANT	—UFO—UFO—	FIBER OPTICS LINE
	UTILITY VALVE (WATER)		

BENCHMARK:

BENCHMARK #1: TAIL OF ARROW, TOP FLANGE OF A FIRE HYDRANT, FIRST FIRE HYDRANT EAST OF LAKESHORE COURT ON THE NORTH SIDE OF FRONTAGE ROAD FOR VETERANS MEMORIAL HIGHWAY. BOOK 3968, PAGE 54.
ELEV: 976.30' NAVD 88

BENCHMARK #1: TAIL OF ARROW, TOP FLANGE OF A FIRE HYDRANT, FIRST FIRE HYDRANT EAST OF 9TH STREET ON THE NORTH SIDE OF FRONTAGE ROAD FOR VETERANS MEMORIAL HIGHWAY. BOOK 3968, PAGE 54.
ELEV: 976.59

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TOPOGRAPHIC SURVEY

PERMIT SET

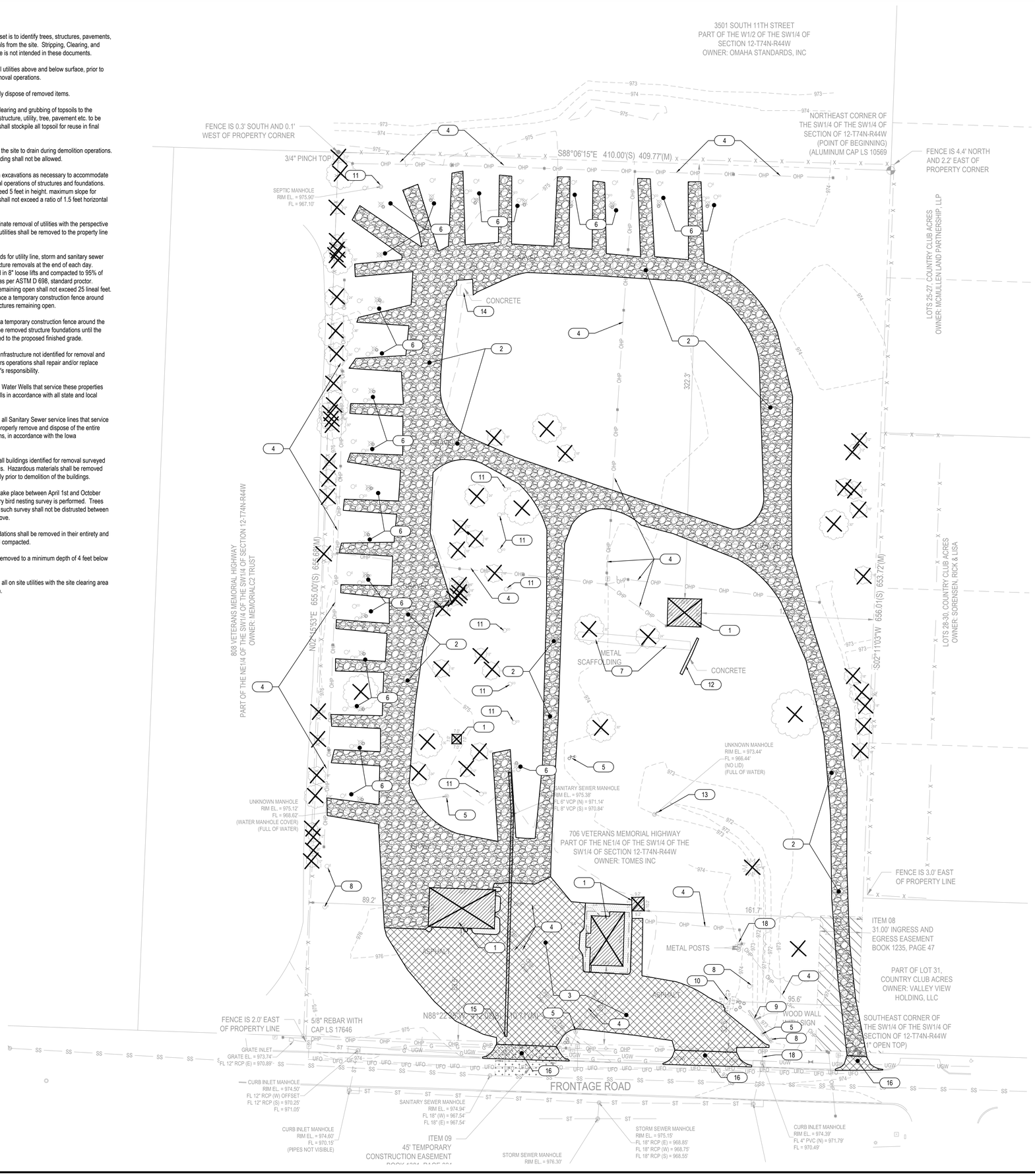
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	Description	Date
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Proj. No:	P2019.310.003
Date:	5/4/2020
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Sheet:	1 of 1

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NOTE:

1. The intent of this plan set is to identify trees, structures, pavements, and utilities for removals from the site. Stripping, Clearing, and Grubbing the entire site is not intended in these documents.
2. Contractor shall flag all utilities above and below surface, prior to commencement of removal operations.
3. Contractor shall lawfully dispose of removed items.
4. Contractor shall limit clearing and grubbing of topsoils to the immediate location of structure, utility, tree, pavement etc. to be removed. Contractor shall stockpile all topsoil for reuse in final grading operations.
5. Contractor shall grade the site to drain during demolition operations. standing water, or ponding shall not be allowed.
6. Contractor shall bench excavations as necessary to accommodate demolition and removal operations of structures and foundations. Benches shall not exceed 5 feet in height. maximum slope for benched excavations shall not exceed a ratio of 1.5 feet horizontal to 1.0 foot vertical.
7. Contractor shall coordinate removal of utilities with the perspective company/contact. All utilities shall be removed to the property line and properly capped.
8. Backfill of trenches/voids for utility line, storm and sanitary sewer pipes and related structure removals at the end of each day. Backfill shall be placed in 8" loose lifts and compacted to 95% of maximum dry density as per ASTM D 698, standard proctor. Excavated trenching remaining open shall not exceed 25 lineal feet. the contractor shall place a temporary construction fence around any excavation or structures remaining open.
9. Contractor shall place a temporary construction fence around the open excavations of the removed structure foundations until the void has been backfilled to the proposed finished grade.
10. Pavements and other infrastructure not identified for removal and damaged by contractors operations shall repair and/or replace damages at contractor's responsibility.
11. Contractor shall locate Water Wells that service these properties and decommission wells in accordance with all state and local specifications.
12. Contractor shall locate all Sanitary Sewer service lines that service these properties and properly remove and dispose of the entire Sanitary Sewer systems, in accordance with the Iowa Administrative Code.
13. Contractor shall have all buildings identified for removal surveyed for hazardous materials. Hazardous materials shall be removed and disposed of lawfully prior to demolition of the buildings.
14. No tree removal shall take place between April 1st and October 15th, unless a migratory bird nesting survey is performed. Trees identified with nests in such survey shall not be distrusted between the dates identified above.
15. Fence posts and foundations shall be removed in their entirety and properly backfilled and compacted.
16. Tree stumps shall be removed to a minimum depth of 4 feet below existing grade.
17. Contractor shall locate all on site utilities with the site clearing area prior to any excavation.



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1 inch = 30 ft.

LEGEND

- Remove Building and Foundation
- Remove P.C.C. Sidewalk
- Remove Pavement
- Remove Rock and Gravel Surfacing
- Remove and Dispose of Tree and Stump

NO	REMOVAL NOTES
1	Remove and dispose of existing building
2	Remove and salvage existing gravel pavement. Stockpile on Site.
3	Remove and dispose of existing asphalt pavement
4	Remove and dispose of existing power line and power poles. Coordinate removal with Mid American Energy
5	Remove and dispose of all existing Yard Hydrant and all associated distribution pipe and fittings. Water distribution network should be completely removed back to the Property Line.
6	Each campsite should have all utilities completely removed back to the distribution network(Water, Power, and Sewer), .
7	All stored items and storage racks shall be removed and properly disposed of. Removal all foundations.
8	Remove and dispose of all existing Electrical Box and all associated distribution conduit and misc equipment. Distribution network should be completely removed back to the main electrical supply.
9	Remove and properly dispose of wood wall, sign and foundation.
10	Remove and properly dispose of unknown shed and associated bollards, and foundations.
11	Unknown Sanitary, remove cleanouts and associated pipes.
12	Remove concrete sidewalk
13	Remove unknown manhole and all associated piping.
14	Remove concrete pad
15	Remove all sanitary sewer pipe and structures north (upstream) of this location. A new Manhole will be constructed on the end of the existing pipe. See utility plan for manhole details.
16	Remove Concrete Driveway
17	Remove and dispose of PCV Storm Drain pipe connecting to inlet in frontage road.
18	Remove and dispose of metal structure and foundations.

Utility Listings Council Bluffs

Black Hill Energy - Natural Gas
1414 W. Broadway P.O.Box 68
Council Bluffs, IA. 51502
Chris Dewey
P: 712-325-3022
M: 402-669-1821
F: 712-325-3042

Mid American Energy
3003 S. 11th Street
Council Bluffs IA. 51501
Tim Theobald
P: 712-366-5668
M: 402-677-0420
F: 712-366-5687
trtheobald@midamerican.com
David Fitch
P: 712-366-5669
M: 402-699-3887
DLFitch@midamerican.com

Century Link (Qwest) Communications (LOCAL)
7404 N. 78th Street Bldg A
Omaha, NE. 68122
Jay Cooley
P: 402-572-5851
M: 402-221-1069
F: 402-572-6424
Jay.coolley@qwest.com
Ed Krieger
P: 402-572-5856
M: 402-708-3269
Edward.krieger@centurylink.com

Council Bluffs Water Works
2000 N. 25th Street
Council Bluffs IA. 51501
Bill Wiggins
P: 712-328-1006-Ex 1024
Brian Cady
P: 712-328-1006 ext 1039
M: 712-326-4910
bcady@CBWaterWorks.com

COX Communications
401 N 117th Street Suite 101
Omaha, NE. 68154
David Kloch
P: 402-934-0550
M: 402-510-2330
david.kloch@cox.com
Chris Myre
P: 402-934-0371
M: 402-510-0567
Chris.myre@cox.net

City Sanitary Sewers
1001 10th Avenue
Council Bluffs IA 51503
Jeremy Noel
P: 712-328-4641

City Traffic Signals
Andy Wicks
1001 10th Avenue
Council Bluffs IA 51503
P: 712-328-4645

PROFESSIONAL CIVIL ENGINEER — PAUL J. GONZALES No. 19589 — I OWA

I hereby certify that this engineering document was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.
Paul J Gonzales 5/4/2020
Paul J Gonzales Date
My license renewal date is December 31, 2020
Pages or sheets covered by this seal: Sheets 2 thru 10

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COUNCIL BLUFFS, IOWA

SITE REMOVAL PLAN

PERMIT SET

Revisions			
	Description	Date	Description
1			

Proj No: P2019.310.003
Date: 5/4/2020
Designed By: PJG
Drawn By: BJW
Scale: AS SHOWN
Sheet: 2 of 11

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PAVEMENT CONSTRUCTION GENERAL NOTES

1. Pavement subgrade shall be prepared and compacted in accordance with the 2020 Iowa Statewide Urban Design and Specifications (SUDAS) standards and amended by the City of Council Bluffs Public Works Special Provisions and Specifications

2. Concrete mix for pavement slab and sidewalks shall be class "C" or class "M" air-entrained concrete made from Type 1 Portland Cement in accordance with the Iowa DOT I.M. 529. Air entraining admixture shall comply with Iowa DOT Section 4103..

3. All integral curbs shall be type "A," in accordance with SUDAS Standard Detail unless otherwise shown on plans.

4. Water-reducing admixture shall be added to all hand-placed and finished concrete.

5. Paving widths shall be as shown on plans. All dimensions shown are back of curb to back of curb, unless otherwise noted on plans.

6. A diamond edge saw blade shall be used for cutting all required contraction and longitudinal pavement joints.

7. The CONTRACTOR shall construct, with the INSPECTORS assurance of conformity, ADA compliant curb ramps at all intersection returns where new sidewalk is constructed, as well as where existing sidewalk has been removed. All ADA compliant curb ramps shall conform to the SUDAS Detail.

8. Within 30 minutes the concrete pavement shall be cured using a white pigmented liquid membrane-forming curing compound that has been approved by the State of Iowa DOT. Apply liquid membrane-forming curing compound at the concentration and application rate recommended by the manufacturer. Minimum rate of application shall be 15 sq yds per gallon, if a mechanical power sprayer is usd, and 7.5 sq yds per gallon if a hand-powered sprayer is used.

9. Exterior Concrete Pavement: Subgrade Preparation includes the adjustment of the subgrade under all areas to be surfaced including driveways, intersections, and the area 24 inches beyond the longitudinal edges of the pavement or the backs of curbs for proper placing of the pavement slab. The Contractor shall scarify and re-compact the subgrade to a depth of one foot. The top 12" of subgrade shall be compacted to 90% of maximum dry density as determined in accordance with the most current edition of ASTM D1557 (Modified Method) with moisture limits of -3% to +4% optimum.

10. The contractor shall provide a pavement jointing plan to the Engineer a minimum of 72 hours prior to placement of concrete in paved areas. The pavement jointing plan shall meet the requirements identified in the geotechnical investigation and report for this project.

11. Contraction joints shall be cut to a minimum of ¼ of the slab thickness (1/5 of the thickness for early entry saw method). Joints shall be cut as soon as practical after the concrete has set sufficiently to support foot traffic, and must be cut before any shrinkage cracks form. Joints shall be spaced no more than 24 times the thickness of the slab or 12 feet maximum. Panels shall be kept as square as possible, with the length to width ratio limited to 125 percent. Dowel bars shall be used for load transfer across construction joints, and should be considered for contraction joints subjected to heavy truck traffic. Joints shall be carefully planned and laid out to meet inlets, drainage structures, reentrant corners, and radiuses. Joints should be perpendicular to edges and radiuses, and should not form angles less than 45 degrees or over 225 degrees. Isolation joints should be provided around any structures.

12. All joints shall be sealed to reduce moisture infiltration and to reduce the accumulation of non-compressible materials. Joint sealing should be considered as a two part process, sealing of the exposed sawcut face of the concrete and sealing of the joint itself. Following sawcutting and cleaning the joints with compressed air, a penetrating concrete sealer (Silane, Silicate, or Siliconate based) should be spray applied to the joint extending outwards a minimum of 8 inches either side of the sawcut. Following the spray applied sealer, a hot pour joint sealer can be used to fill the sawcut. Use of backer rods is not recommended.

13. Exterior Sidewalks: The upper 6 inches of the subgrade should be compacted to a minimum of 95 percent of the maximum dry density at a moisture content between -3 and +4 percent of optimum (ASTM D698, Standard Proctor). Subgrade preparation should extend laterally 6 inches beyond the edge of the sidewalk.

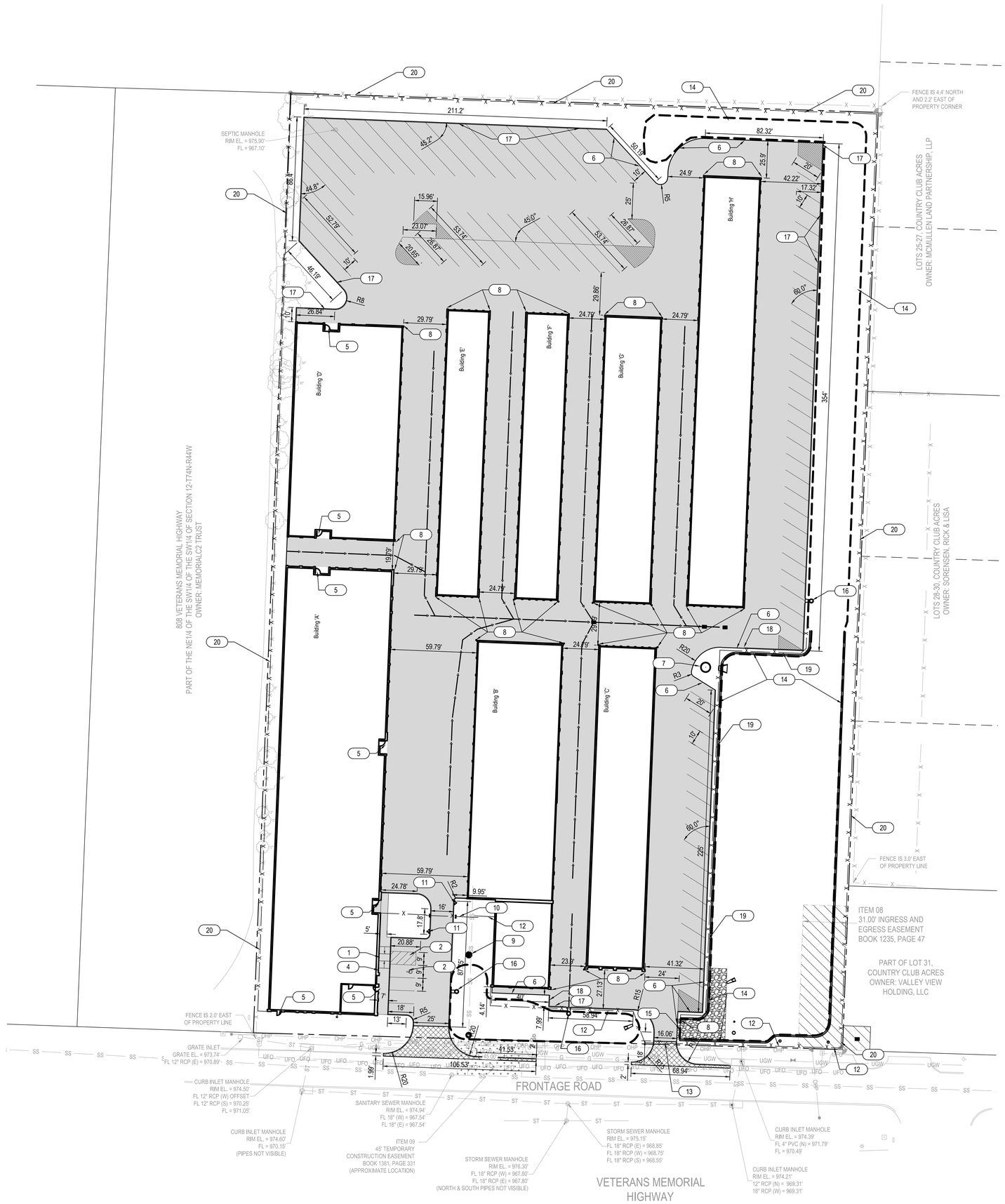
14. 7-foot width sidewalk shall be jointed in 7'x6' panels. 5-foot width sidewalk shall be jointed in 5'x5' panels.

15. All intersections shall be warped as directed by the Engineer in the field to ensure positive drainage.

16. Thickened Edges per Iowa SUDAS Standard Detail are required at locations where proposed paving ties into existing paving. Doweled joints will be required as directed by the Engineer.

17. All pavement removals shall be sawcut. Pavement removed for utility connections shall be removed and replaced in complete panels. Pavement removal limits may be adjusted in the field to match existing joints.

18. The longitudinal slope on sidewalks shall not exceed 4.8%. The cross slope on sidewalks shall not exceed 2.0%.



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1 inch = 30 ft.

LEGEND

- 6" P.C.C.
- 6" Temporary Pavement
- 9" P.C.C.
- 4" PCC Sidewalk
- Gravel Surfacing
- Inverted Crown

BUILD NOTES - LAYOUT

1. Handicap ramp. See detail on sheet 5
2. Painted Parking Striping, 4" Wide, Color: White, TYP.
3. Painted Handicap Symbol, TYP. See Detail on Sheet 5.
4. Handicap Sign mounted on building.
5. Structural Stoop - See Architectural / Structural Plan for Details
6. No Curb
7. Utility Infrastructure. See Sheet 4.
8. Construct Bollard. See Detail on this Sheet. Offset 1 Foot from building face to center of pipe bollard.
9. Monument Sign, coordinate with owner and sign company.
10. 16' black press point cantilever gate .
11. Gate control. Coordinate with owner. Construct bollards to protect controls.
12. Fencing, Install 94" tall Black Pressed Curved Top/Extended Bottom Three Rail Panel. GANVCCUR39490.
13. 16' black press point cantilever gate .
14. See Detail on sheet 5. Owner and Architect shall select make, model, and color of retaining wall block. Block vendor shall provide engineering design and calculations for retailing wall. Design shall be provided by a qualified professional engineer, licensed in the State of Iowa.
15. 12' Swinging gate, contractor to submit shop drawings to Engineer and owner for review and approval.
16. Rain Guardian Turret. See detail on sheet 10.
17. Full Curb Section
18. Transition from no curb to full curb in 3'
19. 42" tall galvanized chain-link-fence at top of retaining wall. Place fence 2.0' behind back of curb. See retaining wall detail on sheet 6.
20. Side and rear lot fencing shall be 94" in height, constructed from wood, masonry and/or vinyl with inserts and at least 50 percent opaque. Contractor shall coordinate with Owner and Architect on select make, model and color of fencing.

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SITE PAVING AND LAYOUT PLAN

PERMIT SET

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	No.	Date	Description

Proj No.:	P2019.310.003
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GENERAL GRADING NOTES

1. The General Contractor and/or sub-contractor shall have complete responsibility for damage caused by blowing dust from his construction activities.

2. Topsoil and non-woody vegetation shall be stripped to a depth of 4" to 6" in areas to be graded. A Geotechnical Engineer representative shall observe stripping operations to ensure all unsuitable materials have been removed.

3. Topsoil generated from stripping operations shall be stockpiled in an approved location and re-spread on areas finish graded to receive topsoil.

4. Rubble and waste materials from site clearing and demolition shall be removed from the site and lawfully disposed, salvaged, or recycled. Where fence posts are removed, their concrete bases shall be excavated and completely removed. Waste materials shall not be buried on site.

5. OSHA's Construction Standards for Excavations require that the Contractor's excavation activities follow certain worker safety procedures. Excavations over 4 feet deep shall be sloped back, shored, or shielded. The maximum allowable slope for an unbraced excavation in these soils is 1H:1V and 1.5H:1V respectively, although other provisions and restrictions apply. The Contractor is solely responsible for site/excavation safety and compliance with OSHA regulations.

6. All structural fill and backfill soils shall be low plasticity, cohesive soil that are free of organic material or debris. Structural fill/backfill materials shall have a Liquid Limit less than 45 and a Plasticity Index less than 20. Excavated site soils will generally be suitable for use as structural fill.

7. Fill Compaction Requirements:
   Shallow Foundations -
   Areas to receive fill shall be scarified to a minimum depth of 6". Fill shall be placed in lifts not to exceed 8" in loose thickness. Structural Fill shall be compacted to a minimum of 95% of the maximum dry density ASTM D-698 (Standard Proctor) at a moisture content between -3 and +4% of optimum. The Geotechnical Engineer shall observe and test bearing soils exposed in all foundation excavations.
   All Other Locations
   Areas to receive fill shall be scarified to a minimum depth of 6". Fill shall be placed in lifts not to exceed 8" in loose thickness. Structural Fill shall Be compacted to a minimum of 95% of the maximum dry density // (ASTM D-698, Standard Proctor) at a moisture content between -3 and +4% of optimum.

8. PCC Pavements: Prepare subgrade as per notes and specifications identified on the Site Layout and Paving Plan Sheet.

9. PCC Sidewalks: Prepare subgrade as per notes and specifications identified on the Site Layout and Paving Plan Sheet.

10. Backfill soils around foundations, basement walls and retaining walls shall be compacted to a minimum of 95% of the maximum dry density (ASTM D-698, Standard Proctor) at a moisture content between -3% and +4% of optimum. Fill shall be placed in loose lifts appropriate to the equipment and methods used for compaction. Granular backfill shall not be used around foundation elements.

11. Backfill soils in utility trenches shall be compacted to a minimum of 95% of the maximum dry density as per ASTM D698 (Standard Proctor) at a moisture content between -1% and +3% of optimum. Fill shall be placed in loose lifts appropriate to the equipment and methods used for compaction. Granular backfill shall not be used in exterior trenches. A "trench plug" shall be constructed to a distance 5 feet from face of building exteriors. The plug material shall consist of a clay compacted at a water content at or above the soil's optimum water content. The clay fill should be placed to completely surround the utility line and compacted as described above.

12. Imported fill material, if required, shall be free of organic matter and debris, and shall be a clean, inorganic silt or lean clay with a Liquid Limit less than 45 and a Plasticity Index less than 20. Imported material shall not contain any foreign material or debris with a dimension greater than 3".

13. Any excess material shall be disposed of at an off-site at a location determined by the Contractor.

14. Unless otherwise noted, all spot elevations shown are Top of Slab, Finished Floor (FF) or Finished Grade (G).

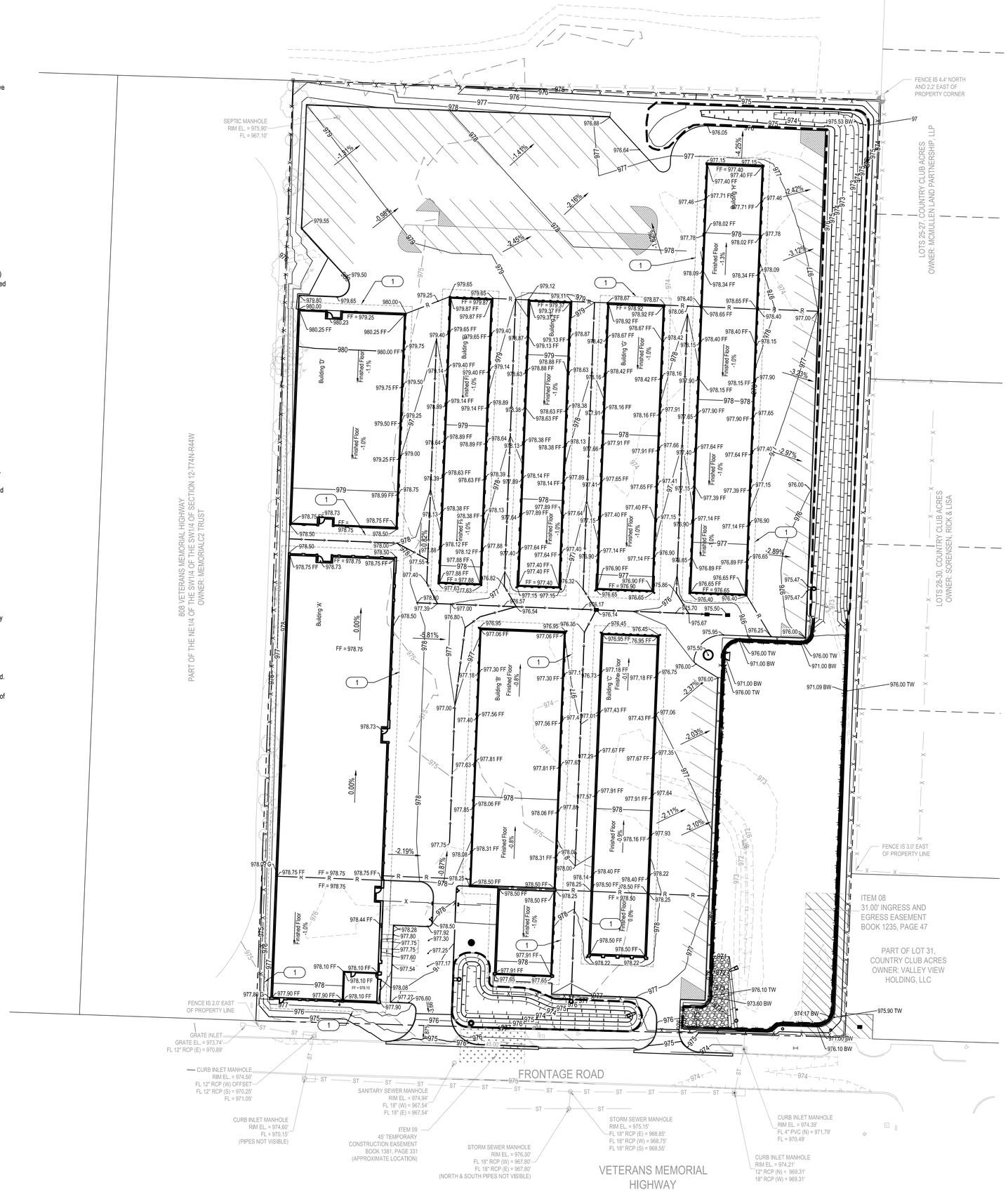
15. The subgrade of the floor slab shall be reworked and compacted as structural fill prior to concrete placement. The upper 6 inches of base soils shall be compacted to a minimum of 95% of the maximum dry density as per ASTM D698 (Standard Proctor) at a moisture content between -3% and +4% of optimum.

16. If unstable soils are encountered in the bottom of shallow foundations or subgrade areas, the Contractor shall implement over-excavation and backfill practices with a more suitable material. The Contractor shall contact the Geotechnical Engineer to identify limits and depths of over-excavation.

17. Exposed project site soils shall be stabilized as shown in the Storm Water Pollution Prevention Plan and Landscaping Plan.

18. The Recommendations of the Geotechnical Report, "1706 Veterans Memorial Highway." prepared by Thiele Geotech, (Thiele Project Number 19676.00), shall control in all instances where site preparations, subgrade preparation, backfill and compaction are concerned.

19. Groundwater may be encountered when constructing footings and utilities. Dewatering may be necessary. Dewatering may constist of the use of sumps and pumps withing the excavations to remove groundwater. A dewatering contractor should be consulted if a more extensive system of dewatering is deemed necessary by the Geotechnical Engineer. Note that dewatering can result in soil settlement. This may impact nearby structures, foundations, utilities, and pavements. Consultation with the dewatering contractor is recommended to determine drawdown depths and expected area of influence. Sensitive structures should be protected and shall be the responsibility of the contractor.



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LEGEND

- TW=XX / BW=XX — Top of Wall Elevation / Bottom of Wall Elevation
- R — Ridge Line
- Inverted Crown Line
- 1120 — Existing Contours
- 1170 — Proposed Contours
- 1220.00 — Proposed Spot Elevation (Unless otherwise noted, all spot elevations shown are Top of Slab or Finished Grade (G).)
- Limits of 1' Excavation and Structural Backfill for Buildings

GRADING REFERENCE NOTES

1 Over Excavation and Structural Backfill extends 5' beyond building limits. Refer to Getotechnical Exploration Report.

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SITE GRADING PLAN

PERMIT SET

No.	Revisions	Date	Description
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Proj No:	P2019.310.003
Date:	5/4/2020
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GENERAL WATER NOTES:

1. This work shall be in accordance with the Council Bluffs Water Works' (hereinafter referred to as District) "water rules and regulations," the special and technical provisions, and these plans for the referenced project.
2. Water mains and service lines shall have a minimum cover of five feet and shall be installed in accordance with the water rules and regulations.
3. The horizontal distance between the sewer and water lines shall be 10 feet min. and the vertical distance shall be two feet min. The sanitary sewer pipe material shall be ductile iron pipe 10 feet each side of the water main when the vertical distance is less than 2 feet.
4. Contractor shall maintain all valves at connection points in the fully closed position until chlorination testing and approval of proposed water lines are complete, except that said valves may be opened to fill lines for use in the chlorination process.
5. Type "K" copper water service of the sizes and quantities shown, shall be constructed to all buildings shown of this development in accordance with the specifications and details shown on the plans. The contractor shall record tap and valve locations of each water service installed and provide such records to the owner upon completion of construction.
6. Contractor shall field verify all potential utility line crossing conflicts. Contractor shall notify engineer of conflicts and adjust horizontal and vertical alignments of proposed utilities only at the direction of the engineer.
7. Remove and replace full pavement panels where necessary to construct new water main tap of main and for fire hydrant construction.

GENERAL NOTE FOR SANITARY AND STORM SEWER CONSTRUCTION

1. Sanitary Sewer Service Materials: The following storm drain pipe materials may be used. PVC (SDR 26 or Schedule 40), or Vitrified Clay Pipe (VCP).
2. Storm Drain Pipe Materials. The following storm drain pipe materials may be used:
3. Reinforced Concrete Pipe (RCP), conforming to ASTM C76 (Class III unless otherwise indicated). Materials and installation shall conform to City of Omaha Standard Specifications. RCP pipe shall by manufactured by an American Concrete Pipe Association QCast Certified Plant. All RCP pipe shall have a QCast stamp.
4. PVC pipe with smooth interior and corrugated exterior, such as Contech A-2000, or equal. Pipe and fittings shall conform to ASTM F949. Installation shall conform to ASTM D 2321. Gasketed joints shall be used, and shall show no leakage when tested in accordance with ASTM D 3212. All joints shall be water-tight.
5. PVC pipe, SDR 35, in accordance with ASTM D 3034. Installation shall conform to ASTM D 2321. Gasketed joints shall be used, and shall show no leakage when tested in accordance with ASTM D 3212. All joints shall be water-tight.
6. High Density Polyethylene (HDPE) pipe, with smooth interior and corrugated exterior, such as ADS N-12, Hancor HI-Q, or equal. Pipe and fittings shall conform to AASHTO M-252 and M-294. Installation shall conform to ASTM D 2321. Joints shall be made with split couplings, corrugated to engage the pipe corrugations, and shall engage a minimum of 2 corrugations on each side of the pipe joint. A neoprene gasket, per the manufacturer's recommendations, shall be used for all joints to ensure a soil-tight connection. Class IV soils shall not be used for bedding or backfill of N-12 pipe.
7. Curb inlets and grate inlets (types and materials) shall be as identified in the "Construct Storm Drain Structure" table.
8. Any referenced Iowa Sudas Standard Plates are further identified in the General Notes for Construction.

CONSTRUCT STORM SEWER PIPE

ID	START STRUCTURE	END STRUCTURE	Dia.	Length	Slope	Remarks
11	12	11	18"	31.12	3.79%	RCP, Class III. Also see Note "ST2"
12	13	12	18"	20.54	2.00%	RCP, Class III
13	14	13	12"	7.78	0.00%	
14	16	15	30"	9.01	1.11%	
15	17	16	30"	28.28	0.35%	
16	19	17	30"	77.21	0.58%	
17	18	17	18"	14.37	0.35%	
19	23	22	12"	72.21	4.15%	
20	24	12	12"	30.46	0.38%	RCP, Class III
21	25	24	12"	33.58	0.37%	
22	26	25	12"	20.28	0.59%	

CONSTRUCT SANITARY SEWER MANHOLE

NO.	DESCRIPTION
1	Sanitary Sewer Manhole Iowa SUDAS Standard Plan SW-301 Rim = 976.24 FL (6" In) = 962.29
2	Sanitary Sewer Cleanout See Mechanical / Plumbing for continuation Rim = 977.37 FL (6" Out) = 964.08

CONSTRUCT STORM SEWER PIPE

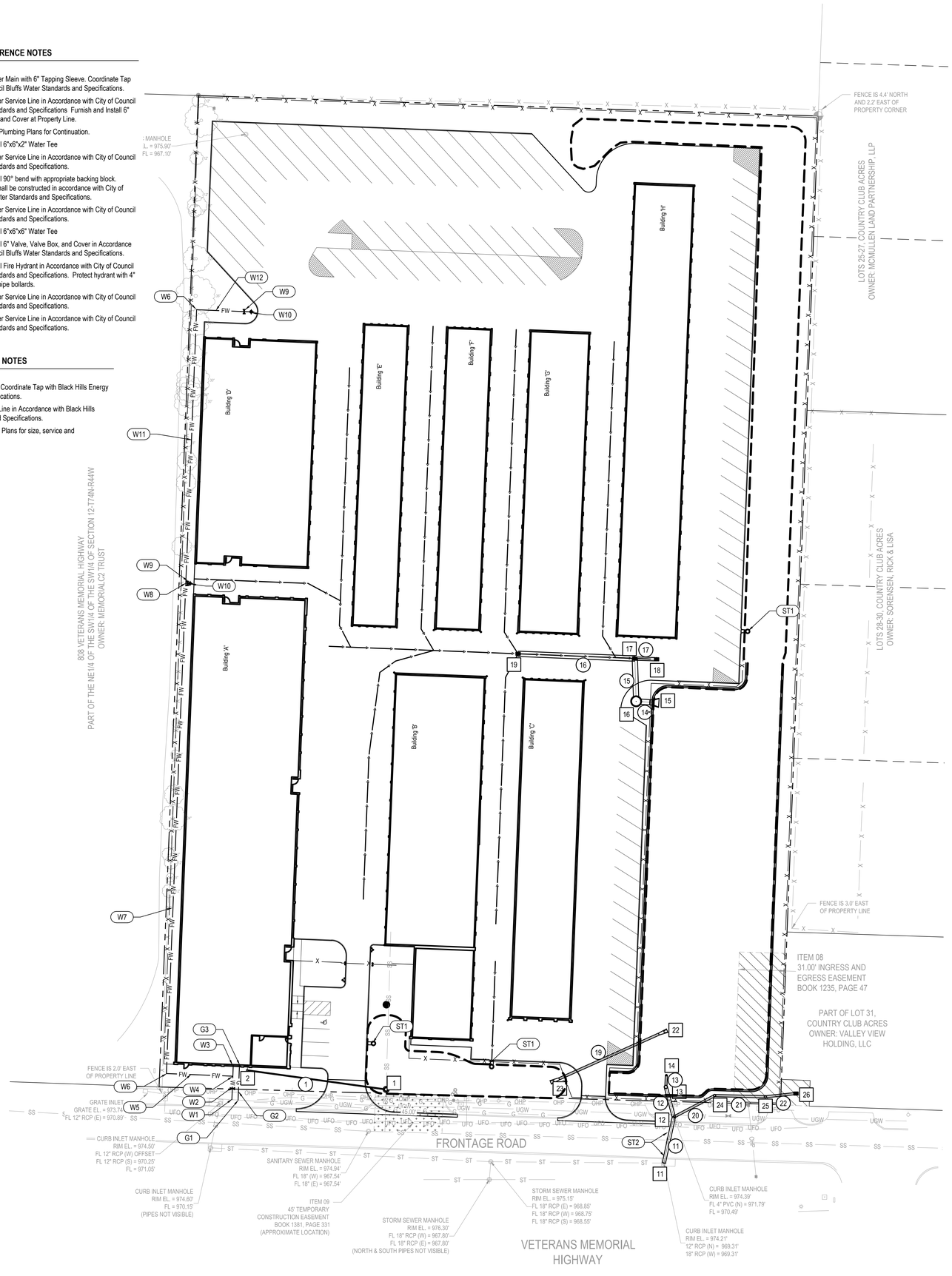
ID	START STRUCTURE	END STRUCTURE	Dia.	Length	Slope	Remarks
1	2	1	6"	92.67	1.93%	

W WATER REFERENCE NOTES

- W 1 Tap Existing Water Main with 6" Tapping Sleeve. Coordinate Tap with City of Council Bluffs Water Standards and Specifications.
- W 2 Construct 6" Water Service Line in Accordance with City of Council Bluffs Water Standards and Specifications Furnish and Install 6" Valve, Valve Box and Cover at Property Line.
- W 3 See Mechanical/ Plumbing Plans for Continuation.
- W 4 Furnish and Install 6"x6"x2" Water Tee
- W 5 Construct 6" Water Service Line in Accordance with City of Council Bluffs Water Standards and Specifications.
- W 6 Furnish and Install 90° bend with appropriate backing block. Backing Blocks shall be constructed in accordance with City of Council Bluffs Water Standards and Specifications.
- W 7 Construct 6" Water Service Line in Accordance with City of Council Bluffs Water Standards and Specifications.
- W 8 Furnish and Install 6"x6"x6" Water Tee
- W 9 Furnish and Install 6" Valve, Valve Box, and Cover in Accordance with City of Council Bluffs Water Standards and Specifications.
- W 10 Furnish and Install Fire Hydrant in Accordance with City of Council Bluffs Water Standards and Specifications. Protect hydrant with 4" Ø concrete filled pipe bollards.
- W 11 Construct 6" Water Service Line in Accordance with City of Council Bluffs Water Standards and Specifications.
- W 12 Construct 6" Water Service Line in Accordance with City of Council Bluffs Water Standards and Specifications.

G WATER REFERENCE NOTES

- G 1 Tap Existing Gas Main X". Coordinate Tap with Black Hills Energy Gas Standards and Specifications.
- G 2 Construct X" Gas Service Line in Accordance with Black Hills Energy Gas Standards and Specifications.
- G 3 See Mechanical/ Plumbing Plans for size, service and continuation.



N

30 0 30
1 inch = 30 ft.

LEGEND

- Storm Sewer Pipe Network
- Sanitary Sewer Pipe Network
- PCSMP Basin Limits
- W W W — Water Service Line
- G G G — Gas Service Line

ST STORM DRAIN REFERENCE NOTES

- ST1 Rainguardian Turret. See Detail on sheet 10.
- ST2 Construct Pipe 11 in two phases, roadway shall not be closed to vehicular traffic.

CONSTRUCT STORM SEWER STRUCTURE

NO.	DESCRIPTION
11	Existing Storm Drain Inlet FL (18" Out) = 969.31 Rim = 974.29 FL (18" In) = 969.31
12	Existing Storm Drain Inlet Rim = 974.38 FL (18" In) = 970.59 FL (18" Out) = 970.49 FL (12" In) = 970.99
13	Nyloplast Riser Structure See Detail on sheet 10 Rim = 972.85 FL (18" Out) = 971.00 FL (12" In) = 971.00
14	Nyloplast Riser Structure See Detail on sheet 10 Rim = 972.23 FL (12" Out) = 971.00
15	30" Flared End Section Rim = 972.92 FL (30" In) = 971.00
16	Area Inlet, Iowa SUDAS Standard Plan SW-511 or SW-512 Rim = 975.50 FL (30" Out) = 971.10 FL (30" In) = 971.20
17	24" Nyloplast Heavy Duty Drain Basin With 2'x3' Heavy Duty Grate Rim = 975.90 FL (30" In) = 971.40 FL (30" Out) = 971.30 FL (18" In) = 971.40
18	24" Nyloplast Heavy Duty Drain Basin With 2'x3' Heavy Duty Grate Rim = 975.50 FL (18" Out) = 971.45
19	24" Nyloplast Heavy Duty Drain Basin With 2'x3' Heavy Duty Grate Rim = 976.35 FL (30" Out) = 971.85
22	12" Flared End Section Rim = 972.29 FL (12" In) = 971.00
23	12" Flared End Section Rim = 975.29 FL (12" Out) = 974.00
24	18" Nyloplast Drain Basin, With Solid Cover Rim = 975.50 FL (12" In) = 971.11 FL (12" Out) = 971.11
25	18" Nyloplast Drain Basin, With Solid Cover Rim = 975.11 FL (12" In) = 971.23 FL (12" Out) = 971.23
26	24" Nyloplast Drain Basin, With Solid Cover With 2'x3' HD Grate Rim = 974.31 FL (12" Out) = 971.35

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LOCKBOX STORAGE
706 VETERANS MEMORIAL HIGHWAY
COUNCIL BLUFFS, IOWA

SITE UTILITY PLAN

PERMIT SET

Revisions		
	Date	Description
1		

Proj No: P2019.310.003
Date: 5/4/2020
Designed By: PJG
Drawn By: BJW
Scale: AS SHOWN
Sheet: 5 of 11

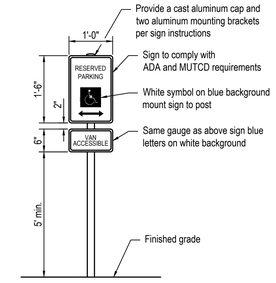
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GENERAL SITE CONSTRUCTION NOTES

1. The Iowa statewide Urban Design Specifications (SUDAS) for public works construction, 2020 edition and any current revisions or amendments thereto and the special provisions for this project shall apply and the contractor shall perform in accord therewith.
2. The contractor shall check with the owner for city approval of the project before starting work.
3. Inspection during construction will be paid for by the owner.
4. The Portland cement concrete mix design for the pavement slab shall comply with Iowa DOT Class C or Class M mix meeting the requirements of materials I.M. 529. Type ip cement is not permitted for use. Air entertaining admixutre shall comply with Iowa DOT Section 4103.
5. The contractor shall be charged for replacing construction stakes and lot pins which are destroyed by his operations.
6. Utility facilities shown are from locates or records provided by others, and shall be considered approximate. Other utilities may exist (either in service or abandoned) and their location may not be presently known or identified on the plans. The engineer makes no guarantee that the utilities shown comprise all utilities in the area, either in service or abandoned. The engineer further does not warrant that the utilities shown are in the exact location indicated.
7. The contractor shall notify the Iowa One-Call system at 1-800-292-8989 to identify the location of all underground utility facilities within the construction area. The contractor shall determine the exact location of all public and private utility facilities located within the construction area to avoid damage in accordance with Section 480.4, Code of Iowa. Damage to utilities due to the contractor's actions shall be repaired or replaced without cost to the owner or engineer.
8. Where existing utility facilities are shown in the plans or encountered within the construction area, the contractor shall notify the utility company prior to beginning construction activities. The contractor shall be responsible for notifying utilities and conducting work near utility facilities required by Section 480.4, Code of Iowa.
9. The contractor shall cooperate with utility companies in their adjustment operations so that these operations may progress, the duplication of adjustment work may be reduced, and that services rendered by those parties will not be interrupted.
10. The contractor shall review all utilities shown in the plans and coordinate with all utility companies necessary to schedule work for all known and potential conflicts. The contractor shall be aware that utility services are not routinely located or shown on the plans, however, may be a conflict with the work performed. Delays, inconvenience, or damage claimed by the contractor due to any interference of utilities shown in the plans or services shall not be considered a circumstance for additional time or compensation.
11. Non-colored concrete pavement shall be cured using a white pigmented liquid membrane-forming curing compound that has been approved by the State of Iowa Department of Transportation. The minimum rate of application shall be 15 sq. yd. per gal. if a mechanical-powered sprayer is used and 7.5 sq. yd. per gal.if a hand powered sprayer is used. Curing compound shall be applied no later than 30 minutes after finishing.
12. Water reducing admixtures shall be added to all hand-placed and finished concrete.
13. Erosion control improvements shall be constructed on this site, including inlet protection, silt fencing, and a construction entrance. The contractor shall be responsible for prompt reconstruction of any erosion control improvements disturbed by his operations. All disturbed erosion control improvements shall be fully reconstructed at the end of each working day prior to leaving the site. Separate payment will not be made for reconstruction of any erosion control improvements and this work shall be considered subsidiary to those items for which payment is made. Positive drainage in all work areas shall be maintained in the condition the construction site was in prior to contractor's arrival.
14. The standard plates of the Iowa State-wide Urban Design and specifications as modified by the City of Council Bluffs shall govern.
15. Abandoned utilities that are shown on the plans and encountered during trench excavation shall be incidental to the project and will not be paid for separately unless indicated otherwise on the plans.
16. Prior to beginning work on the following items, the contractor shall submit to the engineer for review, plans for by-pass pumping, trench shoring, jacking and boring, dewatering, traffic control, and provide shoring or support details for water mains and other major utility lines that must remain in service.
17. The contractor shall keep sanitary sewer and storm sewer lines and structures clean and free of debris that is a result of construction operations. Any cleaning and removal of debris that enters as a result of construction operations shall be completed at the expense of the contractor.
18. The contractor shall make access available to adjacent properties in case of emergencies. The contractor shall notify the City Engineer (712- 328-4634), 24 hours prior to closing and/or opening any roads to traffic. The contractor shall adequately barricade closed roads during construction to insure public safety and protect new pavement from damage. All traffic control shall be in compliance with "Manual on Uniform Traffic Control Devices" U.S. Department of Transportation, latest edition.
19. A qualified superintendent who is acceptable to the Owner shall be maintained on the project at all times. The superintendent shall have full authority to act on behalf of the contractor. All directions given to the superintendent shall be considered given to the contractor.

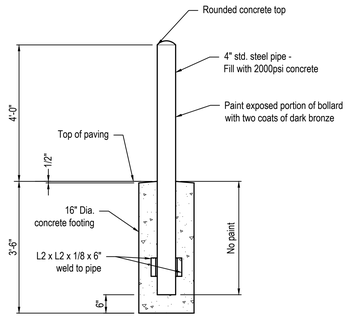
GENERAL SITE CONSTRUCTION NOTES

20. All removed asphalt pavement shall be crushed/recycled as shown in the site removals sheets.
21. Removal of existing city sign(s) as necessary shall be incidental to the project unless specified otherwise. All sign(s) shall be removed without damage to the sign(s). Any damage to sign(s) shall be the responsibility of the contractor. The contractor will be required to replace in kind and/or compensate the city for damaged sign(s). Sign(s) shall be delivered when removed to the City Traffic Department at 1001 10th Avenue. Signs shall not be stored on project site.
22. All solid waste, and excess excavation from the removal or installation of pavement, storm, and sanitary sewer systems, shall be removed and disposed of by the contractor in compliance with all applicable federal, state, and local requirements. All removed items, other than crushed concrete and asphalt from the demolition operations, shall be disposed of by the contractor off site and shall not be incorporated into the work.
23. Prior to the commencement of removals, the contractor shall provide the engineer documentation of their certified disposal site(s) for all items to be removed from the project.
24. Existing trees not indicated for removal shall be protected from damage during construction. Trimming of trees with trunks located outside of the right of way shall not be completed without authorization from the owner. When trimming is required on any tree, the contractor shall obtain approval from the owner and use saws to remove roots and branches from trees that are to remain. No removal of roots or branches shall be by heavy equipment that results in tears. All removals shall leave a smooth cut face.
25. The contractor shall maintain pedestrian pathways open and passable during construction.
26. The contractor shall be responsible for the collection and transportation of garbage, yard waste, recyclables, and return of containers from in front of individual properties to the ends of the project limits for pickup; and the coordination of the pickup location(s) with the garbage collector.
27. The contractor shall confine all operations, including equipment and material storage, within the construction row and/or easements of the project. If the contractor is granted permission to store materials or equipment on adjacent private property the contractor shall provide the engineer with written proof of permission from the landowner.
28. The contractor shall maintain the project limits. By commencing the work in a given area, the contractor assumes the responsibility for ongoing required maintenance such as mowing and weed control within the project limits.
29. The engineer will set the requested construction stakes upon 48-hour advanced notification by the contractor. The contractor shall be responsible for the preservation of stakes and marks. The owner will furnish the staking through the engineer one time only. All other construction staking shall be furnished by the contractor. Restaking, including associated trip charges, shall be paid by the contractor to the owner who will reimburse engineer. The owner may deduct amounts for restaking from payments due to the contractor.
30. Streets shall not be opened to traffic until all street pavement has reached required strength, all joints have been sealed, and all driveways and sidewalks have been constructed unless indicated otherwise on the plans or approved by the engineer.
31. The contractor will be responsible for payments associated with all retesting resulting from failure of initial compaction tests. Retesting, including associated trip charges, shall be paid by the contractor to the owner who will reimburse engineer. The owner may deduct amounts for retesting from payments due to the contractor.
32. The contractor shall control construction debris, hazardous waste spills, and concrete truck washout area(s). The contractor shall clean-up and dispose of all waste properly off-site at an approved disposal facility. No construction material wastes or unused materials shall be buried, dumped, burned, or discharged within the project limits.
33. The contractor shall take steps to control soil erosion and fugitive dust during construction. If necessary, hay bales, check dams, sediment traps or additional silt fence (not indicated on the plans) shall be used to retain silt and prevent silt from entering the storm drainage system. It shall be the responsibility of the contractor to conduct operations in accordance with the pollution prevention plan and administer it throughout the project duration.
34. The contractor shall construct the necessary erosion control and runoff detention structures included in the plans and per the storm water pollution prevention plans (SWPPP) prior to any grading on the project in order to prevent silt transport and soil tracking outside of the project limits. The contractor shall maintain and water haul roads to control fugitive dust.
35. All concrete trucks shall return to the plant to wash out unless the contractor provides a concrete wash out area as described in the plans or as approved by the engineer. The contractor is responsible for the removal and clean-up of the wash out location.
36. The owner may charge the contractor actual damages for failure of the contractor to comply with any part of the contract, including incidental project requirements, for which the owner incurs costs to remedy. The owner may charge up to the actual cost incurred by the owner for such damages. The owner may deduct amounts for damages from payments due to the contractor.
37. Testing services shall be paid for by the owner. Testing shall include moisture-density tests, compaction tests and periodic observations. The contractor shall be responsible for the cost of any test that does not meet specification requirements. At project closeout, the cost of failing tests shall be deducted from the contract amount by change order.
38. Temporary construction fence shall be orange in color and a minimum of 4 feet in height. Install as per manufacturer's recommendations.



HANDICAP PARKING SIGN

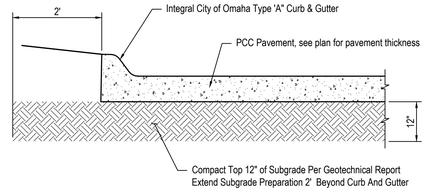
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Shop apply one coat of red oxide primer to pipe.

BOLLARD DETAIL

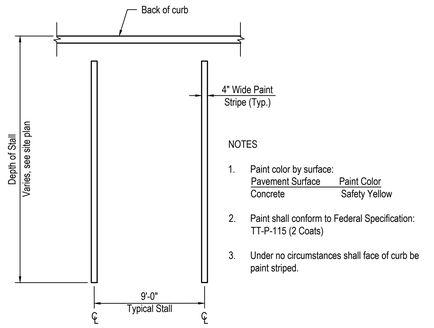
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PORTLAND CEMENT PAVEMENT

WITH INTEGRAL CURB AND GUTTER

NOT TO SCALE



NOTES

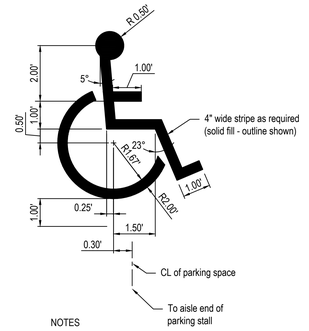
1. Paint color by surface:

Pavement Surface	Paint Color
Concrete	Safety Yellow

2. Paint shall conform to Federal Specification: TT-P-115 (2 Coats)
3. Under no circumstances shall face of curb be paint striped.

PARKING STALL PAINT STRIPING

NOT TO SCALE



NOTES

1. Paint color by surface:

Pavement Surface	Paint Color
Concrete	Yellow
Bituminous	White

2. Paint shall conform to Federal Specification: TT-P-115 (2 Coats)

HANDICAP PARKING LOT STENCIL DETAIL

NOT TO SCALE

Utility Listings Council Bluffs

Black Hill Energy - Natural Gas
1414 W. Broadway P.O.Box 68
Council Bluffs, IA. 51502
Chris Dewey
P: 712-325-3022
M: 402-669-1821
F: 712-325-3042

Mid American Energy
3003 S. 11th Street
Council Bluffs IA. 51501
Tim Theobald
P: 712-366-5668
M: 402-677-0420
F: 712-366-5687
trtheobald@midamerican.com
David Fitch
P: 712-366-5669
M: 402-699-3887
DLFitch@midamerican.com

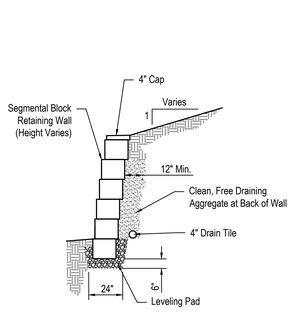
Council Bluffs Water Works
2000 N. 25th Street
Council Bluffs IA. 51501
Bill Wiggins
P: 712-328-1006-Ex 1024
Brian Cady
P: 712-328-1006 ext 1039
M: 712-326-4910
bcady@CBWaterWorks.com

COX Communications
401 N 117th Street Suite 101
Omaha, NE. 68154
David Kloch
P: 402-934-0550
M: 402-510-2330
david.kloch@cox.com
Chris Myre
P: 402-934-0371
M: 402-510-0567
Chris.myre@cox.net

Century Link (Qwest) Communications (LOCAL)
7404 N. 78th Street Bldg A
Omaha, NE. 68122
Jay Cooley
P: 402-572-5851
M: 402-221-1069
F: 402-572-6424
Jay.coolley@qwest.com
Ed Krieger
P: 402-572-5856
M: 402-708-3269
Edward.krieger@centurylink.com

City Sanitary Sewers
1001 10th Avenue
Council Bluffs IA 51503
Jeremy Noel712-328-4641

City Traffic Signals
Andy Wicks
1001 10th Avenue
Council Bluffs IA 51503
P: 712-328-4645

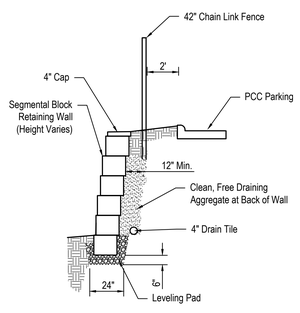


Segmental Block Wall Shall be specified by Owner and Architect

SEGMENTAL BLOCK RETAINING WALL*

NOT TO SCALE

*Vendor shall provide engineering design service for segmental block retaining wall.

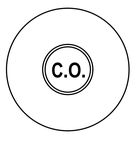


Segmental Block Wall Shall be specified by Owner and Architect

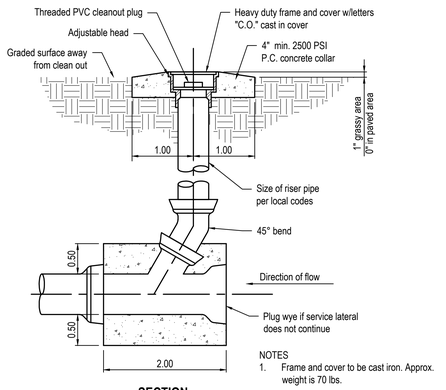
SEGMENTAL BLOCK RETAINING WALL*

NOT TO SCALE

*Vendor shall provide engineering design service for segmental block retaining wall.



PLAN



SECTION

NOTES

1. Frame and cover to be cast iron. Approx. weight is 70 lbs.
2. Cover to have the letters "C.O." cast on top
3. Concrete rest block shall be 2.0' long x o.d. of pipe + 6" on each side.

SEWER CLEANOUT DETAIL

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LOCKBOX STORAGE
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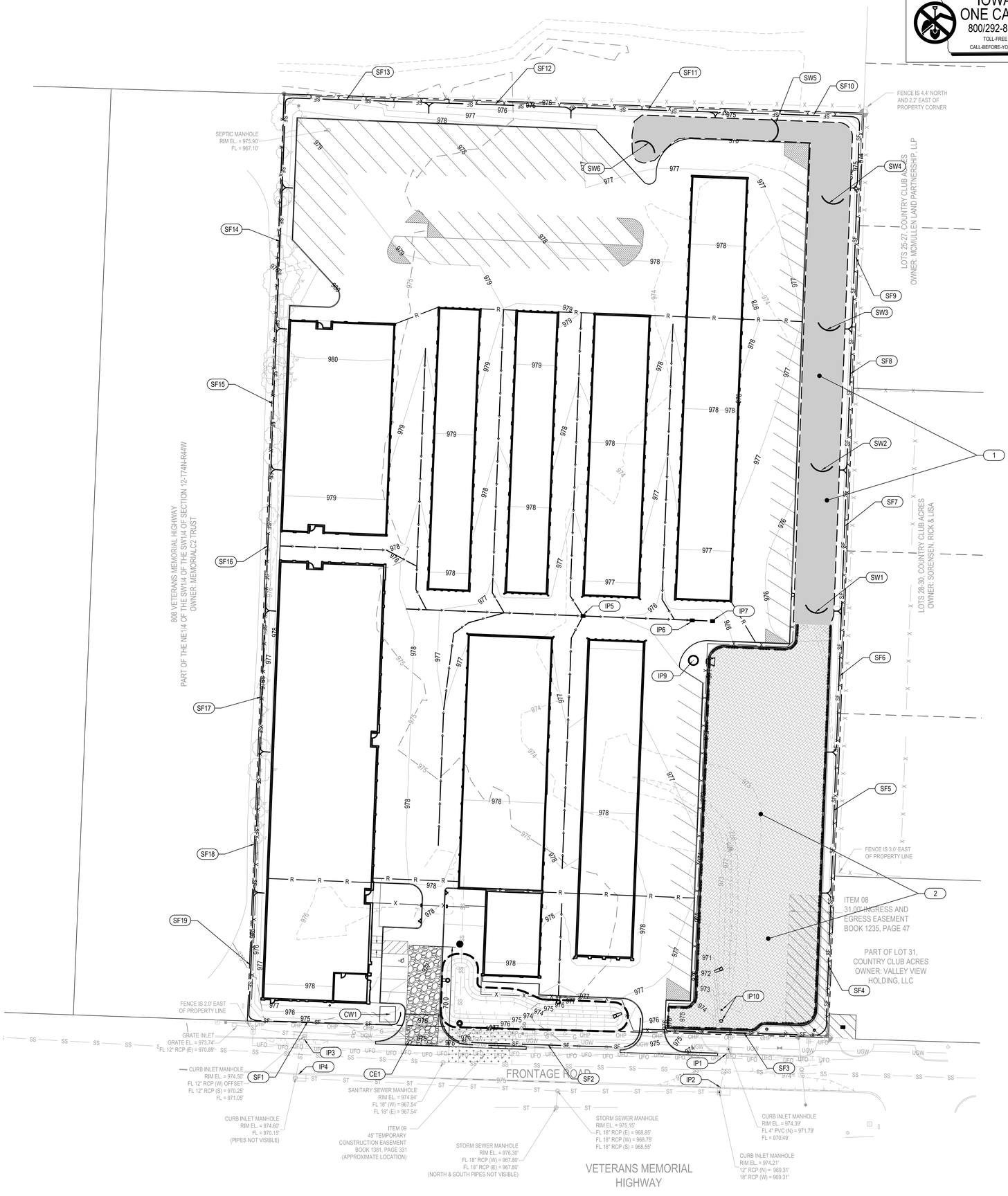
NOTES AND DETAILS

PERMIT SET

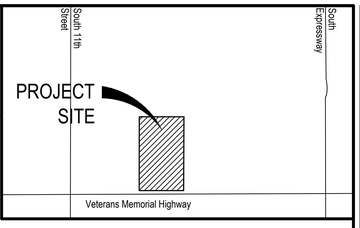
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No.	Date	Description

Proj No:	P2019.310.003
Date:	5/4/2020
Designed By:	PJS
Drawn By:	BJW
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Sheet:	6 of 11

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VICINITY MAP

N

30 0 30
1 inch = 30 ft.

LEGEND

- Inverted Crown
- SF — Silt Fence
- 1120 — Existing Contours
- 1170 — Proposed Contours
- Temporary Sediment Trap Perimeter
- Diversion Berm
- RECB P300 (See Below)
- RECB S75 (See Below)
- Construction Entrance
- 9" DIA. Straw Wattle Filter

NO SEDIMENT & EROSION CONTROL REFERENCE NOTES

CW1	Furnish and Install Concrete Washout Area. Use Outpak Washout or Engineer Approved Equal. See Detail on Sheet 7. Temporary BMP
CE1	Construction Entrance, Iowa SUDAS Standard Plan 9040.120. Temporary BMP
SF1 - S14	Install Silt Fence in 100' Sections (max. length) with J-Hook Ends, Iowa SUDAS Standard Plan 9040.119
IP1 - IP10	Inlet Protection. Temporary BMP
SW1 - SW6	Straw Wattle, Iowa Sudas Standard Plan 9040.105. Temporary BMP
	Refer to Sediment and Erosion Control Notes on sheet 8 of 11

Note:
Contractor shall construct temporary sediment traps (Iowa SUDAS standard plan 9040.118), as temporary Best Management Practice, or phase construction to limit site disturbance to less than 3 acres at any one time. Phased site shall be stabilized prior to disturbance or next phase of construction.

X PERMANENT STABILIZATION REFERENCE NOTES

1	Line swale with RECB North American Green P300. Install per Manufacturer's recommendations.
2	Line basin with RECB North American Green P300. Install per Manufacturer's recommendations. See "Extend Dry Detention Basin" detail on sheet 10 for seeding information.

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LOCKBOX STORAGE
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COUNCIL BLUFFS, IOWA

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

PERMIT SET

Revisions		
	Date	Description
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Proj No: P2019.310.003
Date: 5/4/2020
Designed By: PJG
Drawn By: BJW
Scale: AS SHOWN
Sheet: 7 of 11

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SEDIMENT AND EROSION CONTROL NOTES

1. All project procedures and materials shall conform to the following Iowa DNR publication and any additions thereto: Iowa Construction Site Erosion Control Manual. The aforementioned publications can be found at http://www.iowadnr.gov/portals/idnr/uploads/water/stormwater/constructionenviromentsl.pdf.
2. The notes, special provisions, maintenance plans and schedule and construction activities and scheduling identified on the following sheets shall apply to the entire site, Area "A", Area "B", and Area"C"
3. All OPERATORS/CONTRACTORS must locate all existing utilities prior to the start of work (One Call 1-800-292-8989).
4. Barricades shall conform to the "Manual on Uniform Traffic Control Devices".
5. All OPERATORS/CONTRACTORS shall be responsible to comply with OSHA regulations.
6. All OPERATORS/CONTRACTORS must confirm with the APPLICANT that any and all applicable governmental approvals have been received prior to the start of work.
7. The APPLICANT, INSPECTOR must comply with all government regulators in regards to the construction activities so as to minimize the potential for erosion.
8. All OPERATORS/CONTRACTORS must comply with the APPLICANT, INSPECTOR, and all government regulators in regards to the construction activities so as to minimize the potential for erosion and pollution.
9. Each OPERATOR/CONTRACTOR must monitor Silt Fencing, within their areas of responsibility, and install additional silt fencing if necessary and as directed by the INSPECTOR.
10. Each OPERATOR/CONTRACTOR shall periodically remove accumulated sediment from Temporary Sediment Traps, Temporary Sediment Basins, behind Silt Fences, and all other erosion control measures that store sediment, within their areas of responsibility, if necessary and as directed by the INSPECTOR.
11. OPERATOR/CONTRACTOR must build stabilized Construction Entrances, within their areas of as defined within the Sediment and Erosion Control Plan. OPERATOR/CONTRACTOR must monitor all stabilized Construction Entrances and maintain the entrances as needed and directed by the INSPECTOR. OPERATORS/CONTRACTORS shall not use any other access to the site or allow others to use alternate access points.
12. Each OPERATOR/CONTRACTOR must perform preventative maintenance on each Best Management Practice (BMP), within their areas of responsibility, to ensure proper function. The INSPECTOR must ensure preventative maintenance is being performed.
13. All BMP's shall be kept in working order. Each OPERATOR/CONTRACTOR must repair all damages caused by pollutant discharge and construction activities, within their areas of responsibility, at or before the end of each working day and as directed by the INSPECTOR.
14. BMP's may not be removed without INSPECTOR and applicable government approval.
15. Each OPERATOR/CONTRACTOR shall be responsible for adhering to all BMP's, within their areas of responsibility.
16. In the event of a release of oil or hazardous substance, all OPERATORS/CONTRACTORS shall comply with the requirements of the Iowa DNR for notification, containment, investigation, remedial action and disposal.
17. The APPLICANT, INSPECTOR, and CONTRACTORS/OPERATORS must ensure Temporary Diversion Dike and Temporary Fill Diversion are constructed as shown within the Sediment and Erosion Control Plan and as necessary to properly control pollutant discharge. Temporary Diversion Dike and Temporary Fill Diversion shall be installed at the end of each working day, prior to all rain events, and as directed by the INSPECTOR.
18. The APPLICANT, INSPECTOR, and/or OPERATORS/CONTRACTORS shall allow all government regulators access to the site for inspections at any time, at the implementing agency's discretion.
19. The APPLICANT, INSPECTOR, and CONTRACTORS/OPERATORS must initiate stabilization measures, such as Temporary Seeding, Permanent Seeding, and/or Mulching, as soon as possible in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site have temporarily or permanently ceased.
20. For dust control, the APPLICANT, INSPECTOR, and CONTRACTORS/OPERATORS must use any of the following measures or a combination if necessary: establishing Temporary Seeding, Permanent Seeding, and/or Mulch in areas subject to little or no construction traffic; irrigating stripped areas and/or haul roads; reducing vehicular speed on haul roads; and as directed by the INSPECTOR.
21. The APPLICANT, INSPECTOR, and CONTRACTORS/OPERATORS must ensure sediment that has been accidentally transported onto public streets is removed as needed, at the end of each working day, and prior to all rain events. Sediment shall be shoveled and/or swept from the street and disposed of in a manner that prevents stormwater contamination.
22. The APPLICANT, INSPECTOR, and CONTRACTORS/OPERATORS must keep the work site clean and orderly while handling materials and waste in a manner that eliminates the potential for pollutant runoff. The principle of a clean site shall apply to sanitary waste management, solid waste management, material delivery and storage, street cleaning/sweeping and to vehicle and equipment fueling.

SPECIAL PROVISION NO. 2 POLLUTION PREVENTION PLAN

All contractors/subcontractors shall conduct their operations in a manner that minimizes erosion and prevents sediments from leaving the highway right-of-way. The prime contractor shall be responsible for compliance and implementation of the Pollution Prevention Plan (PPP) for their entire contract. This responsibility shall be further shared with subcontractors whose work is a source of potential pollution as defined in this PPP.

1. SITE DESCRIPTION

This Pollution Prevention Plan (PPP) is for the construction of ***"Lockbox Storage, 706 Vetrans Memorial Highway***."

This PPP covers approximately 6.0 acres with an estimated 6.0 acres being disturbed. The portion of the PPP covered by this contract has 6.0 acres disturbed.

The PPP is located in an area of Engineered Fill. The estimated average NRCS runoff curve number for this PPP after completion will be 85.

Refer to the project plans for locations of typical slopes, ditch grades, and major structural and non-structural controls. A copy of this plan will be on file at the project engineer's office. Runoff from this work will flow into the Indian Creek storm drain system.

POTENTIAL SOURCES OF POLLUTION:
Site sources of pollution generated as a result of this work relate to silts and sediment which may be transported as a result of a storm event. However, this PPP provides conveyance for other (non-project related) operations. These other operations have storm water runoff, the regulation of which is beyond the control of this PPP. Potentially this runoff can contain various pollutants related to site-specific land uses. Examples are:

Commercial and Industrial Activities:
Runoff from commercial and industrial land use may contain constituents associated with the specific operation. Such operations are subject to potential leaks and spills which could be commingled with run-off from the facility. Pollutants associated with commercial and industrial activities are not readily available since they are typically proprietary.

2. CONTROLS

At locations where runoff can move offsite, silt fence shall be placed along the perimeter of the areas to be disturbed prior to beginning grading, excavation or clearing and grubbing operations. Vegetation in areas not needed for construction shall be preserved. As areas reach their final grade, additional silt fences, silt basins, intercepting ditches, sod flumes, letdowns, bridge end drains, and earth dikes shall be installed as specified in the plans and/or as required by the project engineer. This will include using silt fence as ditch checks and to protect intakes. Temporary stabilizing seeding shall be completed as the disturbed areas are constructed. If construction activity is not planned to occur in a disturbed area for at least 21 days, the area shall be stabilized by temporary seeding or mulching within 14 days. Other stabilizing methods shall be used outside the seeding time period.

This work shall be done in accordance with Section 9040 of the SUDAS Standard Specifications.

As the work progresses, additional erosion control items may be required as determined by the engineer after field investigation. These may be items such as *none known* and other appropriate measures shall be installed by contractor, as directed by the engineer. The contractor will complete the construction with the establishment of permanent perennial vegetation of all disturbed areas.

3. OTHER CONTROLS

Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.

APPROVED STATE OR LOCAL PLANS:
During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state, and local regulations in effect at the time.

4. MAINTENANCE

The contractor is required to maintain all temporary erosion control measures in proper working order, including cleaning, repairing, or replacing them throughout the contract period. Cleaning of silt control devices shall begin when the features have lost 50% of their capacity.

5. INSPECTIONS

Inspections shall be made jointly by the contractor and the contracting authority every seven calendar days and after each rain event that is one half inch or greater. The contractor shall immediately begin corrective action on all deficiencies found. The findings of this inspection shall be recorded in the project diary. This PPP may be revised based on the findings of the inspection. The contractor shall implement all revisions. All corrective actions shall be completed within 3 calendar days of the inspection.

6. NON-STORM DISCHARGES

This includes subsurface drains (i.e., longitudinal and standard subdrains), slope drains and bridge end drains. The velocity of the discharge from these features may be controlled by the use of patio blocks, Class A stone or erosion stone.

MAINTENANCE SCHEDULE:

THE FOLLOWING MAINTENANCE SCHEDULE HAS BEEN PROVIDED. THE INSPECTOR SHALL PERFORM THE INSPECTIONS. THE OPERATOR/CONTRACTOR SHALL PERFORM ALL NEEDED MAINTENANCE. FURTHERMORE, ALL EROSION CONTROL FEATURES REQUIRING MAINTENANCE MAY NOT BE LISTED BELOW. THE OPERATOR/CONTRACTOR AND INSPECTOR SHALL PERFORM THEIR RESPECTIVE DUTIES ON ALL BMP'S THAT ARE NOT LISTED BELOW AS WELL.

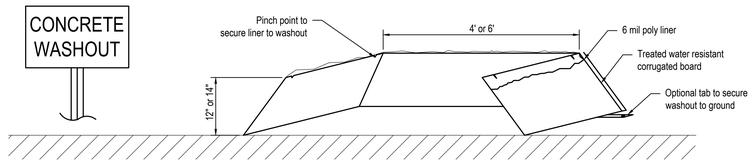
1. CONSTRUCTION ENTRANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR THE WASHING AND REWORKING OF EXISTING STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS SHAL BE REMOVED IMMEDIATELY. THE USE OF WATER TRUCKS TO REMOVE MATERIALS DROPPED, WASHED, OR TRACKED ONTO ROADWAYS WILL NOT BE PERMITTED UNDER ANY CIRCUMSTANCES.
2. STRAW BALE BARRIER - THE MAINTENANCE MEASURES ARE AS FOLLOWS: (2.1) STRAW BALE BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL; (2.2) CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED BALES, END RUNS AND UNDERCUTTING BENEATH BALES; (2.3) NECESSARY REPAIRS TO BARRIERS OR REPLACEMENT OF BALES SHALL BE ACCOMPLISHED PROMPTLY; (2.4) SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH RAINFALL OR WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER; AND (2.5) ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE STRAW BALE BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
3. SILT FENCE - THE MAINTENANCE MEASURES ARE AS FOLLOWS; (3.1) SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL, ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY; (3.2) CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED SILT FENCE RESULTING FROM END RUNS AND UNDERCUTTING; (3.3) SHOULD THE FABRIC ON A SILT FENCE DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY; (3.4) SEDIMENT DEPOSITS SHALL BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER; AND (3.5) ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
4. STORM DRAIN INLET PROTECTION - THE MAINTENANCE MEASURES ARE AS FOLLOWS; (4.1) STRUCTURES SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NECESSARY AND (4.2) STRUCTURES SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
5. TEMPORARY DIVERSION DIKE - THE MEASURE SHALL BE INSPECTED AFTER EVERY STORM AND REPAIRS MADE TO THE DIKE, FLOW CHANNEL, OUTLET OR SEDIMENT TRAPPING FACILITY, AS NECESSARY. ONCE EVERY TWO WEEKS, WHETHER A STORM EVENT HAS OCCURRED OR NOT, THE MEASURE SHALL BE INSPECTED AND REPAIRS MADE IF NEEDED. DAMAGES CAUSED BY CONSTRUCTION TRAFFIC OR OTHER ACTIVITY SHALL BE REPAIRED BEFORE THE END OF EACH WORKING DAY.
6. TEMPORARY FILL DIVERSION - SINCE THE PRACTICE IS TEMPORARY AND UNDER MOST SITUATIONS WILL BE COVERED THE NEXT WORKING DAY. THE MAINTENANCE REQUIRED SHOULD BE LOW. IF THE PRACTICE IS TO REMAIN IN USE FOR MORE THAN ONE DAY, AN INSPECTION SHALL BE MADE AT THE END OF EACH WORK DAY AND REPAIRS MADE TO THE MEASURE IF NEEDED. THE OPERATOR/CONTRACTOR SHOULD AVOID THE PLACEMENT OF ANY MATERIAL OVER THE STRUCTURE WHILE IT IS IN USE. CONSTRUCTION TRAFFIC SHOULD NOT BE PERMITTED TO CROSS THE DIVERSION.
7. TEMPORARY SEDIMENT TRAP - THE MAINTENANCE MEASURES ARE AS FOLLOWS: (7.1) SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF THE DESIGN VOLUME OF THE WET STORAGE, SEDIMENT REMOVAL FROM THE BASIN SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE AND CAUSE SEDIMENTATION PROBLEMS; (7.2) FILTER STONE SHALL BE REGULARLY CHECKED TO ENSURE THAT FILTRATION PERFORMANCE IS MAINTAINED, STONE CHOKED WITH SEDIMENT SHALL BE REMOVED AND CLEANED OR REPLACED; AND (7.3) THE STRUCTURE SHOULD BE CHECKED REGULARLY TO ENSURE THAT IT IS STRUCTURALLY SOUND AND HAS NOT BEEN DAMAGED BY EROSION OR CONSTRUCTION EQUIPMENT, THE HEIGHT OF THE STONE OUTLET SHOULD BE CHECKED TO ENSURE THAT ITS CENTER IS AT LEAST 1 FOOT BELOW THE TOP OF THE EMBANKMENT.
8. TEMPORARY SEDIMENT BASIN - THE BASIN EMBANKMENT SHOULD BE CHECKED REGULARLY TO ENSURE THAT IT IS STRUCTURALLY SOUND AND HAS NOT BEEN DAMAGED BY EROSION OR CONSTRUCTION EQUIPMENT. THE EMERGENCY SPILLWAY SHOULD BE CHECKED REGULARLY TO ENSURE THAT ITS LINING IS WELL ESTABLISHED AND EROSION-RESISTENT. THE BASIN SHOULD BE CHECKED AFTER EACH RUNOFF PRODUCING RAINFALL FOR SEDIMENT CLEANOUT AND TRASH REMOVAL. WHEN THE SEDIMENT REACHES THE CLEANOUT LEVEL, IT SHALL BE REMOVED AND PROPERLY DISPOSED OF.
9. TEMPORARY SEEDING - AREAS WHICH FAIL TO ESTABLISH VEGETATIVE COVER ADEQUATE TO PREVENT RILL EROSION WILL BE RE-SEEDED AS SOON AS SUCH AREAS ARE IDENTIFIED. CONTROL WEEDS BY MOWING.
10. PERMANENT SEEDING - PERFORM PERMANENT SEEDING OPERATIONS ON ALL DISTURBED AREAS. PERMANENT SEED MIX SHALL BE 'CLASS R' (UNITED SEEDS CITY/COUNTY/NRD MIXTURE). APPLICATION RATE SHALL BE A MINIMUM OF 100 LBS PER ACRE. OVERSEEDING RATE SHALL BE A MINIMUM OF 50 LBS PER ACRE. SEEDING DATES: MARCH 1-JUNE 30, AUGUST 10-SEPTEMBER 30. SEEDING SHALL BE PERFORMED AS PER 2013 EDITION OF IOWA SUDAS STANDARD SPECIFICATIONS: DIVISION 9 - SITE WORK AND LANDSCAPING AS REVISED PER THE CITY OF COUNCIL BLUFFS SUPPLEMENTAL SPECIFICATIONS (DECEMBER 2012) .
11. MULCHING - ALL MULCHES AND SOIL COVERINGS SHOULD BE INSPECTED PERIODICALLY (PARTICULARLY AFTER RAINSTORMS) TO CHECK FOR EROSION. WHERE EROSION IS OBSERVED IN MULCHED AREAS, ADDITIONAL MULCH SHOULD BE APPLIED. NETS AND MATS SHOULD BE INSPECTED AFTER RAINSTORMS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, REINSTALL NETTING OR MATTING AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE OR DITCH. INSPECTIONS SHOULD TAKE PLACE UNTIL GRASSES ARE FIRMLY ESTABLISHED. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE; REPAIR AS NEEDED.
12. SOIL STABILIZATION BLANKETS & MATTING - ALL SOIL STABILIZATION BLANKETS AND MATTING SHOULD BE INSPECTED PERIODICALLY FOLLOWING INSTALLATION, PARTICULARLY AFTER RAINSTORMS TO CHECK FOR EROSION AND UNDERMINING. ANY DISLOCATION OR FAILURE SHOULD BE REPAIRED IMMEDIATELY. IF WASHOUTS OR BREAKAGE OCCURS, REINSTALL THE MATERIAL AFTER REPAIRING DAMAGE TO THE SLOPE OR DITCH. CONTINUE TO MONITOR THESE AREAS UNTIL WHICH TIME THEY BECOME PERMANENTLY STABILIZED; AT THAT TIME AN ANNUAL INSPECTION SHOULD BE ADEQUATE.
13. STREET CLEANING/SWEEPING - THE MAINTENANCE MEASURES ARE AS FOLLOWS; (13.1) EVALUATE ACCESS POINTS DAILY FOR SEDIMENT TRACKING; (13.2) WHEN TRACKED OR SPILLED SEDIMENT IS FOUND ON PAVED SURFACES, IT WILL BE REMOVED DAILY, DURING TIMES OF HEAVY TRACK-OUT SUCH AS DURING RAINS, CLEANING MAY BE DONE SEVERAL TIMES THROUGHOUT THE DAY; (13.3) UNKNOWN SPILLS OR OBJECTS WILL NOT BE MIXED WITH THE SEDIMENT; AND (13.4) IF SEDIMENT IS MIXED WITH OTHER POLLUTANTS, IT WILL BE DISPOSED OF PROPERLY AT AN AUTHORIZED LANDFILL.

CONSTRUCTION ACTIVITIES & SCHEDULING

ACTIVITY	SCHEDULE
INSTALL ALL BMP'S NEEDED AND ASSOCIATED WITH THE GRADING PHASE SUCH AS STABILIZED CONSTRUCTION ENTRANCES, SILT BASINS, RISER PIPES, OUTLET PIPES, SILT TRAPS, SILT FENCE, DIVERSIONS, TERRACES, ETC…	PRIOR TO ANY STRIPPING OF EXISTING VEGETATION OR GRADING.
PROCEED WITH STRIPPING OF EXISTING VEGETATION AND GRADING IN ACCORDANCE WITH THE GRADING PLAN, WHILE DISTURBING NO MORE THAN IS NECESSARY.	AFTER INSTALLING ALL BMP'S NEEDED AND ASSOCIATED WITH THE *GRADING PHASE. FURTHERMORE, INSPECTOR APPROVAL MUST BE OBTAINED BEFORE THE START OF ANY STRIPPING OF EXISTING VEGETATION OR GRADING.
PROCEED WITH INFRASTRUCTURE INSTALLATION.	INFRASTRUCTURE INSTALLATION MUST OCCUR PRIOR TO ANY LOT DEVELOPMENT.
IMPLEMENT THE INSTALLATION OF TEMPORARY SEEDING, PERMANENT SEEDING, AND/OR MULCHING.	STABILIZATION MEASURES MUST BE INITIATED AS SOON AS POSSIBLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMNENTLY CEASED.
PROCEED WITH REMOVAL OF BMP'S.	BMP'S MAY NOT BE REMOVED UNTIL EACH IMPACTED DRAINAGE BASIN HAS BEEN FULLY DEVELOPED. FULL DEVELOPMENT SHALL MEAN INSTALLATION OF PAVEMENT, BUILDINGS, AND UTILITIES, LANDSCAPING, AND FULLY ESTABLISHED PERMANENT SEEDING. FURTHERMORE, INSPECTOR APPROVAL MUST BE OBTAINED BEFORE THE REMOVAL OF ANY BMP'S.

*BUILDING PHASE SITE MAP INCLUDED IN GRADING PHASE SITE MAP.

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NOTES:

1. The concrete washout area shall be installed prior to any concrete placement on this project. Install washout area on a level surface. Use Outpak Disposable Concrete Washout or approved equal conforming to Section 9.6.8 of the Omaha Regional Stormwater Design Manual.
2. Signs shall be placed as necessary to clearly indicate the location of the concrete washout.
3. The concrete washout area will be replaced as necessary to maintain capacity for waste concrete and other liquid waste.
4. Washout residue shall be removed from the site and disposed of at an approved waste site.
5. Do not mix excess amounts of fresh concrete or cement on-site.
6. Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
7. Do not dump excess concrete in non-designated dumping areas.
8. Locate washout area at least 50' (15 meters) from storm drains, open ditches, or waterbodies.
9. Wash out wastes into the Outpack Washout as shown where the concrete can set, be broken up, and then disposed of properly.

CONCRETE WASHOUT
NOT TO SCALE

E & A CONSULTING GROUP, INC.
Engineering • Planning • Environmental & Field Services
10909 Mill Valley Road, Suite 100 Omaha, NE 68154
Phone: 402.895.4700 Fax: 402.895.3599
www.eacg.com

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Engineering Answers

LOCKBOX STORAGE
706 VETRANS MEMORIAL HIGHWAY
COUNCIL BLUFFS, IOWA

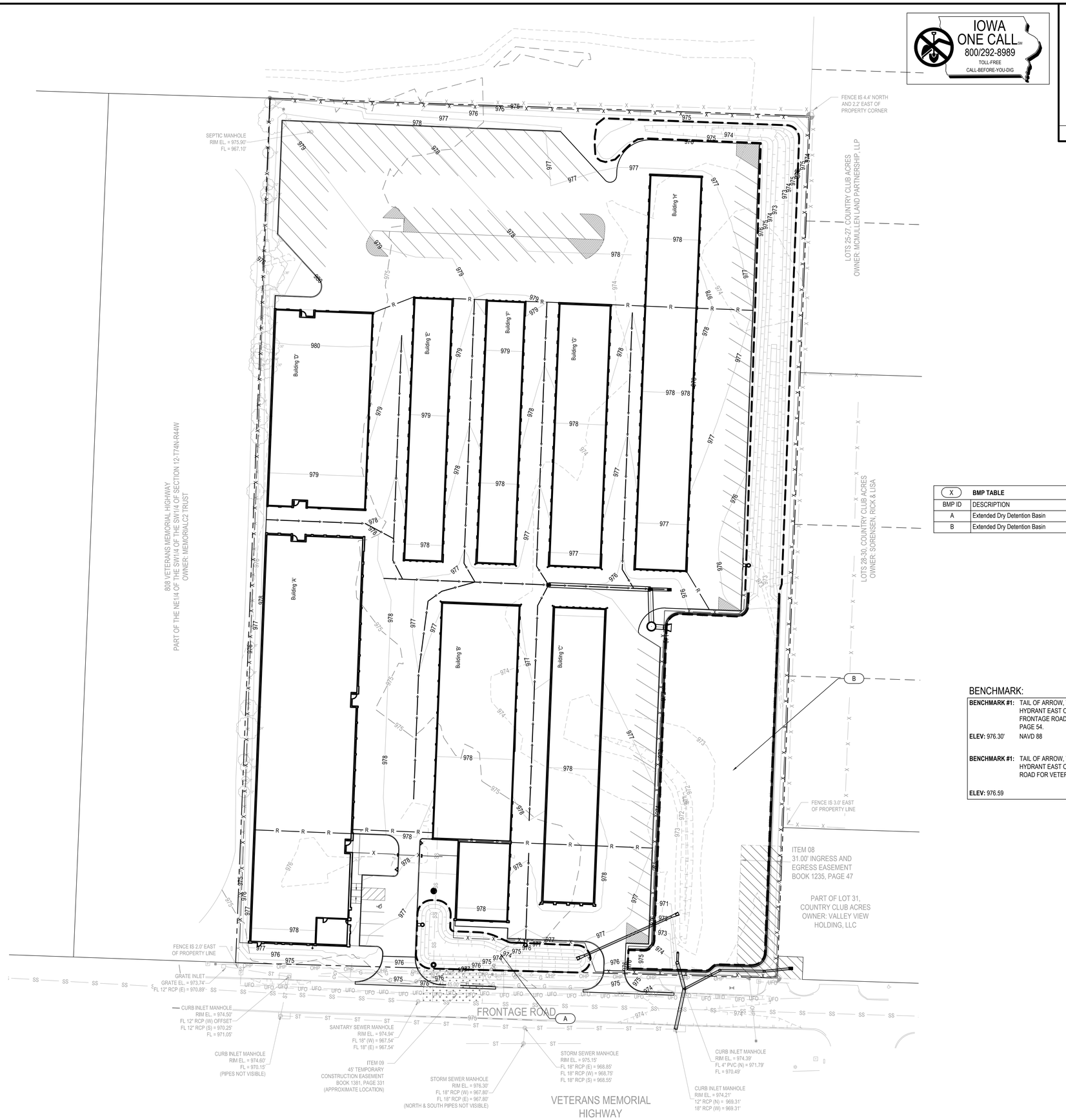
STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

PERMIT SET

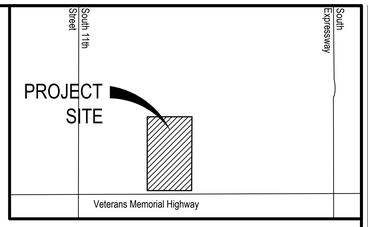
Revisions		
No.	Date	Description

Proj No: P2019.310.000
Date: 5/4/2020
Designed By: PJG
Drawn By: BJW
Scale: AS SHOWN
Sheet: 8 of 11

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VICINITY MAP

30 0 30
1 inch = 30 ft.

X	BMP TABLE	
BMP ID	DESCRIPTION	LOCATION
A	Extended Dry Detention Basin	41.220082°, -95.856659°
B	Extended Dry Detention Basin	41.220150°, -95.855931°

BENCHMARK:

BENCHMARK #1:	TAIL OF ARROW, TOP FLANGE OF A FIRE HYDRANT, FIRST FIRE HYDRANT EAST OF LAKESHORE COURT ON THE NORTH SIDE OF FRONTAGE ROAD FOR VETERANS MEMORIAL HIGHWAY. BOOK 3968, PAGE 54.
ELEV: 976.30'	NAVD 88
BENCHMARK #1:	TAIL OF ARROW, TOP FLANGE OF A FIRE HYDRANT, FIRST FIRE HYDRANT EAST OF 9TH STREET ON THE NORTH SIDE OF FRONTAGE ROAD FOR VETERANS MEMORIAL HIGHWAY. BOOK 3968, PAGE 54.
ELEV: 976.59	

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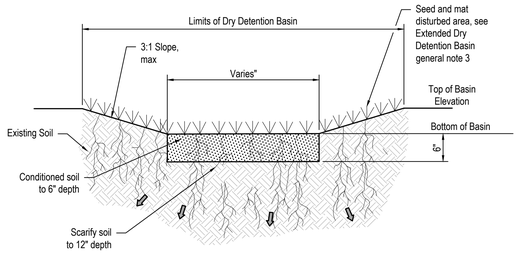
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

PERMIT SET

Revisions			
	Date	Description	
1	Date	Description	

Proj No:	P2019.310.003
Date:	5/4/2020
Designed By:	PJS
Drawn By:	BJW
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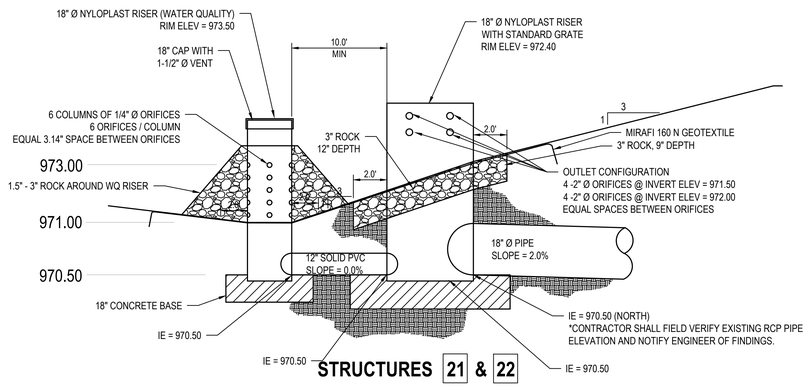


DRY DETENTION BASIN DETAIL

NOT TO SCALE

EXTENDED DRY DETENTION BASIN GENERAL NOTES

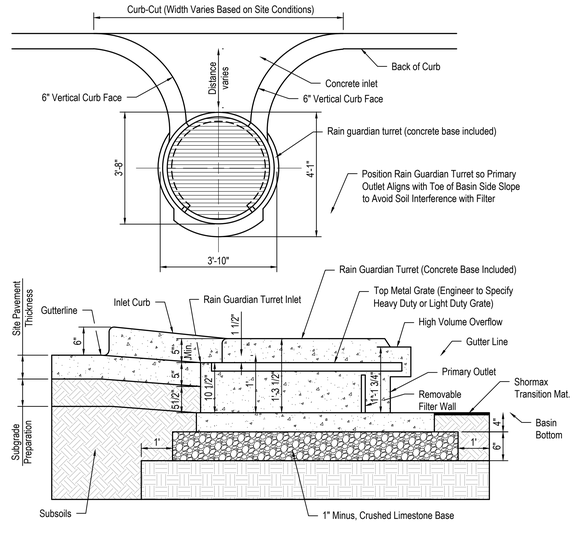
1. Scarify bottom and sides of basin and over excavated area to a depth of 6" prior to placement of amended soils.
2. Contractor shall work to minimize compaction by limiting construction traffic and equipment size within the limits of the basin.
3. Bottom of basin seed mixture shall be United Rain Garden Mixture from United Seeds, Inc. Planting method and seeding rate shall be .25 to .50 lbs. per 1,000 sq. ft. Seeding dates: March - June, dormant seeding dates: December - March. Seed to be covered w/ matting, North American Green S75, or approved equal, installed per manufacture's recommendation.
4. Conditioned soil: incorporate 1" - 2" of Oma-Gro compost in upper 6" of the basin bottom by means of a tiller.
5. Contractor to protect from overland silt and runoff during and after construction until fully stabilized (80% vegetative cover). (Subsidiary)



STRUCTURES 21 & 22

EXTENDED DRY DETENTION BASIN OUTLET DETAIL

NOT TO SCALE



RAIN GARDEN TURRET DETAIL

NOT TO SCALE

SPECIFICATIONS:

1. Steel reinforced, cold joint secured monolithic concrete structure (1,030 lbs). Concrete shall have a minimum compressive strength of 4,000 PSI at 28 days. Concrete Air Entrained (4% to 8% by volume). Manufactured and designed to ASTM C858.
2. Three-point pick using recessed lifting pockets with a standard hook.
3. Two-piece light-duty galvanized grate (34.5 lbs/piece) for 541 lb concentrated load or 309 lb/sq ft uniform load.
4. Two-piece heavy-duty galvanized grate (77.5 lbs/piece) for 2,456 lb concentrated load or 1,404 lb/sq ft uniform load.

INSTALLATION NOTES:

1. Install the crushed limestone (compacted to 95% standard proctor). The distance from the back of the curb may vary based on site conditions, but considerations should include slope of the inlet and basin side slopes adjacent to the rain guardian turret. position rain guardian turret so primary outlet aligns with toe of basin side slope to avoid soil interference with removable filter wall. Excavate 1'-10" below the gutter line elevation (i.e. the bioretention overflow elevation) to accommodate the 1' ponding depth, 6" crushed limestone, and 4" rain guardian turret base (included). Therefore, the top of the crushed limestone compacted base is precisely 1' 4" below the gutter line elevation. The top of the concrete base and 1-1/2" below the gutter line elevation to accommodate a sloped inlet from the gutter to the rain guardian turret.
2. Set rain guardian turret on the prepared class 5 base.
3. Install framing for inlet between rain guardian turret and back of curb. Top elevations of the framing should match the top of the curb on the street side and the top of the rain guardian turret on the bioretention side.
4. Install expansion/contraction joint material or a sheet of poly to serve as a bond break between rain guardian turret concrete inlet before pouring inlet.
5. Side curbs of the poured inlet must have an insurmountable profile to prevent water flow from overtopping the downstream side of the inlet.
6. Removable filter wall should be installed with filter fabric facing the rain guardian turret inlet.
7. Install Shoremax Transition Mat. North American Green, 3'x5'. Cut mat to match PCC base.

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Engineering Answers

LOCKBOX STORAGE
706 VETRANS MEMORIAL HIGHWAY
COUNCIL BLUFFS, IOWA

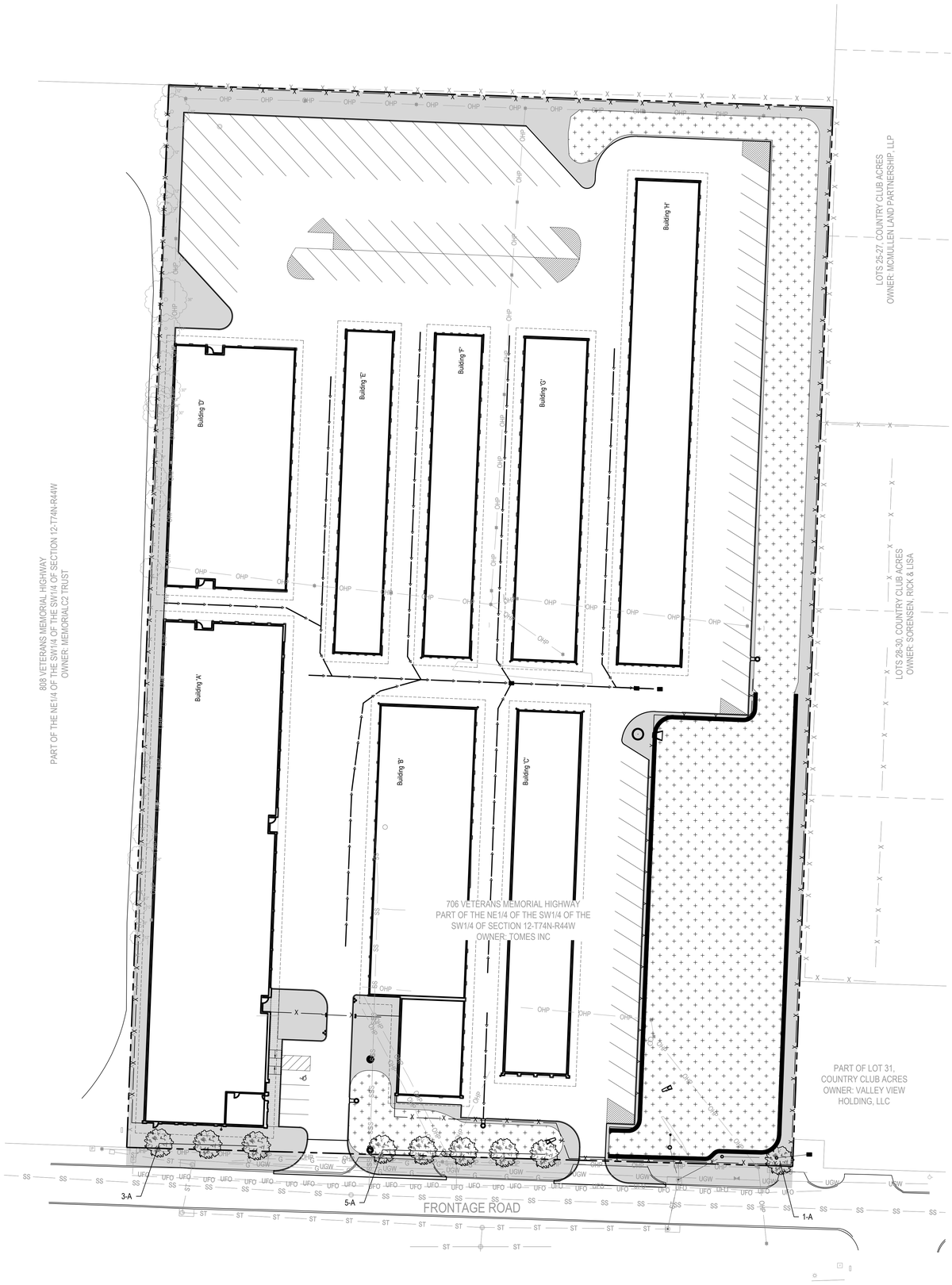
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

PERMIT SET

Revisions				
		Description		Description
	Date		Date	

Proj No:	P2019.310.003
Date:	5/4/2020
Designed By:	PJG
Drawn By:	BJW
Scale:	AS SHOWN
Sheet:	15 of 11

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30 0 30

1 inch = 30 ft.

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PLANT SCHEDULE

SYM	QTY	BOTANICAL NAME	COMMON NAME	SIZE	TYPE
A	9	Acer freemanii 'Armstrong'	Armstrong Maple	2.5"	B&B

TREE NOTES:

1. Landscape contractor must coordinate with all utilities and general contractor to field verify all utility locations that may conflict with all proposed tree planting locations on the project site.

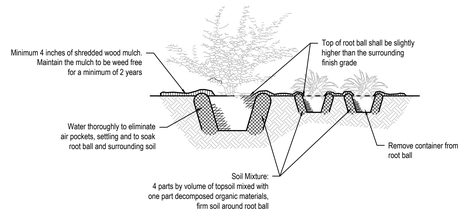
LEGEND:

- Areas to be installed with sod & irrigation.

- PCSMP. See Sheets 9 & 10 for Details.

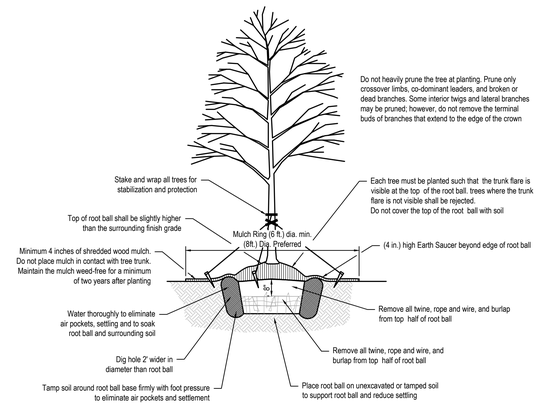
LANDSCAPING REGULATIONS

A medium height/size growing tree shall be planted within the streetyard every 40 feet on center
Required = 9 trees Provided = 9 trees



SHRUB & PERENNIAL PLANTING DETAIL

NOT TO SCALE



TREE PLANTING DETAIL - B & B TREE

NOT TO SCALE

LANDSCAPE NOTES:

1. Locate and verify the location of all underground utilities prior to the start of any construction. Care should be taken not to disturb any existing utilities during construction. Any damage to utilities or other improvements caused by the Contractor will be repaired at no cost to the Owner.
2. All plant material shall be of good quality and sizes shall meet required size specifications.
3. All plants are to be watered in immediately after planting and then watered once a week for a period of two months from time of planting.
4. All plant material shall be guaranteed to be in a live and healthy growing condition for two full growing seasons (trees) and one full growing season (perennials & shrubs) after final project acceptance or shall be replaced free of charge with the same grade and species including labor.
5. Verify all dimensions and conditions prior to starting construction. The location of plant material is critical and shall be installed as indicated on plans. Field adjustments may be necessary based on field conditions (i.e., root ball and drop inlet conflict). All adjustments must be approved by the landscape architect.
6. The Landscape Contractor shall remove all construction debris and materials injurious to plant growth from planting pits and beds prior to backfilling with planting mix. All planting areas shall be free of weeds and debris prior to any work.
7. Provide locally available shredded hardwood mulch on all trees and in all planting beds to a 3-4 inch minimum depth unless otherwise noted. Mulch ring to extend 1'-0" minimum beyond planting pit. Minor site grading to be included if needed.
8. All trees are to be staked for a period of not less than one year from time of planting.
9. Contractor to coordinate work with other amenities contractors.

IRRIGATION NOTES:

1. Irrigation bid to include meter pit and city utility fees.
2. Irrigate all sodded areas.
3. Irrigation controller to be mounted in a steel utility box with hasp for pad lock.
4. Irrigation system to be guaranteed for 1 year. Written guarantee to be supplied prior to final payment.
5. Irrigation contractor responsible to winterize system one time.
6. Contractor to coordinate work with other amenities contractors.

SODDING NOTES:

1. The contractor shall notify the architect at least forty-eight hours in advance of the time he intends to begin sodding and shall not proceed with such work until permission to do so have been granted. No frozen sod shall be placed. No sodding shall be done on frozen earth.
2. Care shall be exercised at all times to retain the native soil on the roots of the sod during the process of transplanting. Dumping from vehicles will not be permitted. The sod shall be planted within eighteen (18) hours from the time it is harvested unless it is tightly rolled or stored roots-to-roots in a satisfactory manner. All sod in stacks shall be kept moist and shall be protected from exposure to the sun and from freezing. No storage longer than three (3) days will be permitted. Sod which becomes dried out or does not meet the specifications will be rejected.
3. There shall be a minimum of six inches, after tamping, of topsoil under all sod. Excavations or trenching shall be made to a sufficient depth below the finished grade of the sod to accommodate the depth of topsoil as specified and the thickness of sod as specified. Fertilizer shall be applied at a rate to provide 100 pounds of nitrogen per acre unless fertilizer has been applied under another item in this contract to the topsoil in the sod bed. Fertilizer applied under this item shall be incorporated with the topsoil to a depth of at least two inches before the sod is laid, unless otherwise specified or approved. Incorporation shall be accomplished by disking, harrowing, drilling, raking or other approved means.
4. The soil on which the sod is laid shall be reasonably moist and shall be watered, if so directed. The sod shall be laid smoothly, edge to edge, and all openings shall be plugged with sod. Immediately after the sod is laid, it shall be pressed firmly into contact with the sod bed by tamping, rolling, or by other approved methods so as to eliminate all air pockets, provide true and even surfaces, insure knitting and protect all exposed sod edges but without displacement of the sod or deformation of the surface of the sodded areas and watered at the rate of five gallons per square yard of sodded area unless otherwise directed.
5. The contractor shall take care of the sodded areas until all work on the entire contract has been completed, and sod has been mowed twice and then accepted. Such care shall consist of providing protection against traffic by approved warning signs or barricades and the mowing of grass to the height of two inches when the growth attains a maximum height of four inches.
6. Sod shall also be watered. When the sod is watered, sufficient water shall be applied to wet the sod at least two inches deep in the sod bed. Watering shall be done in a manner which will not cause erosion or other damage to the finished surfaces. Any surfaces which become gullied or otherwise damaged shall be repaired to reestablish the grade and conditions of the soil prior to sodding and shall then be re-fertilized and re-sodded as specified under this item.
7. In drainage-ways or slopes, the sod shall be laid with their longest dimensions parallel to the contours. Such sodding shall begin at the base of slopes or grades and the sodding progress in continuous parallel rows working upward. Vertical joints between such sodding shall be staggered. All sod shall be laid to the grades specified and the grades formed with special care at the junction of drainage-ways.
8. Sod shall be held in place by stakes in all drainage-ways, on all slopes steeper than 4:1 and elsewhere where specified or as directed. Pegging shall be done immediately after tamping. At least one stake shall be driven through each sod to be staked, and the stakes shall not be more than two feet apart. Stakes shall have their flat sides against the slope and be driven flush. Stakes for pegging sod shall be of wood, approximately one inch by two inches and of sufficient length to penetrate the sod, the topsoil and to a minimum depth of two inches of subsoil.
9. The contractor shall keep all sodded areas thoroughly watered for a period of thirty (30) calendar days after the initial laying and as often as required thereafter until sod has been fully established (two mowings) and accepted by the engineer and owner. Contractor to use temporary irrigation for the watering of the sod. Contractor to supply all necessary hoses, fittings and sprinklers for all watering needs.
10. All sod must be fully established (two mowings) and growing at the time of inspection and acceptance.

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LOCKBOX STORAGE
706 VETERANS MEMORIAL HIGHWAY
COUNCIL BLUFFS, IOWA

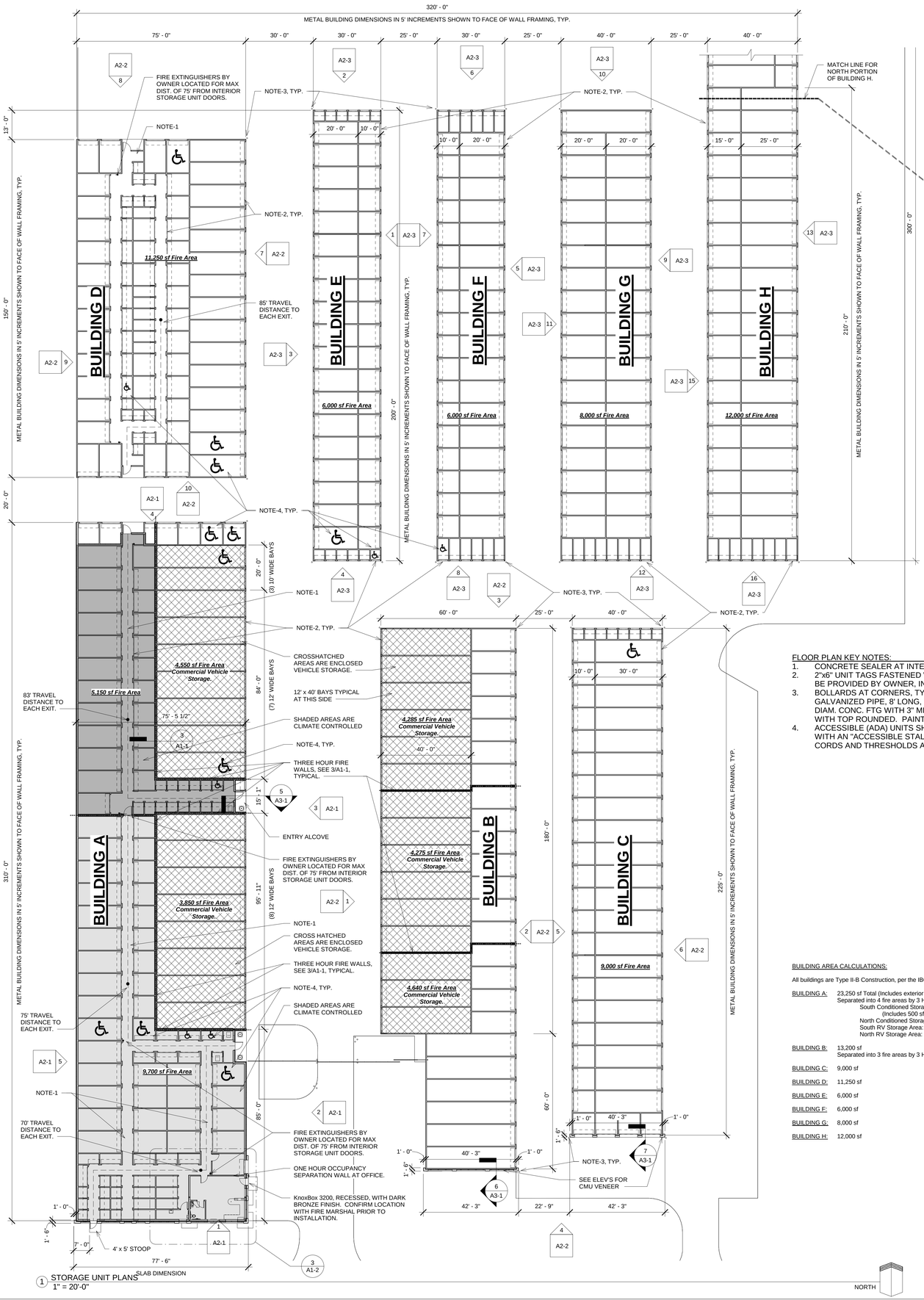
LANDSCAPE PLAN

PERMIT SET

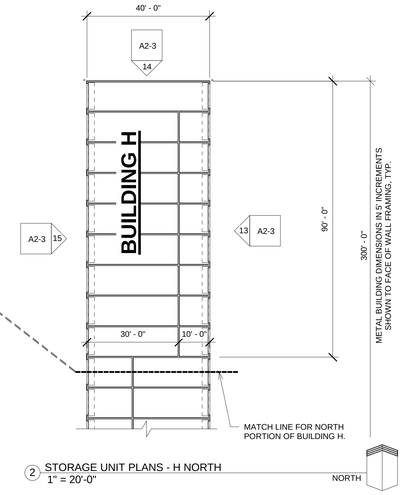
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Drawn By: BJW
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Sheet: 11 of 11

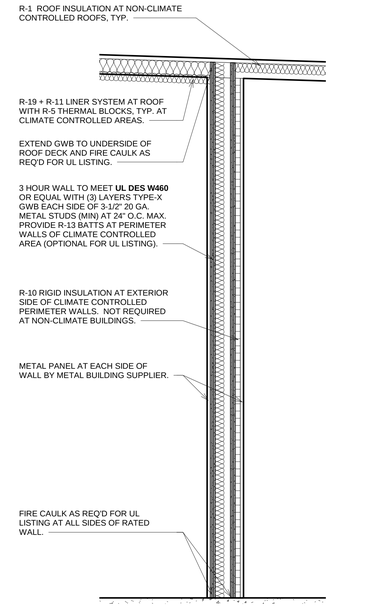
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1 STORAGE UNIT PLANS
1" = 20'-0"



2 STORAGE UNIT PLANS - H NORTH
1" = 20'-0"



3 3 HOUR WALL
1/2" = 1'-0"

FLOOR PLAN KEY NOTES:

1. CONCRETE SEALER AT INTERIOR HALLWAYS, TYP.
2. 2"x6" UNIT TAGS FASTENED WITH (2) 1/8" ALUMINUM RIVETS TO BE PROVIDED BY OWNER, INSTALLED BY CONTRACTOR.
3. BOLLARDS AT CORNERS, TYP. SHALL BE 6" DIAM. SCH. 40 GALVANIZED PIPE, 8' LONG, SET 4'-0" INTO GROUND WITH 18" DIAM. CONC. FTG WITH 3" MIN. COVER. FILL WITH CONCRETE WITH TOP ROUNDED. PAINT "SAFETY YELLOW". TYP.
4. ACCESSIBLE (ADA) UNITS SHALL BE PROVIDED AT UNITS LABELED WITH AN "ACCESSIBLE STALL" SYMBOL AND SHALL HAVE PULL CORDS AND THRESHOLDS AS REQUIRED, TYP.

BUILDING AREA CALCULATIONS:

All buildings are Type II-B Construction, per the IBC.

BUILDING A: 23,250 sf Total (Includes exterior overhangs at doors)
Separated into 4 fire areas by 3 Hour Walls as follows:
South Conditioned Storage Area: 9,700 sf
(Includes 500 sf Accessory Office Area)
North Conditioned Storage Area: 5,150 sf
South RV Storage Area: 3,850 sf
North RV Storage Area: 4,550 sf

BUILDING B: 13,200 sf
Separated into 3 fire areas by 3 Hour Walls.

BUILDING C: 9,000 sf

BUILDING D: 11,250 sf

BUILDING E: 6,000 sf

BUILDING F: 6,000 sf

BUILDING G: 8,000 sf

BUILDING H: 12,000 sf

LockBox Manawa

UNIT MIX AT EACH NEW BUILDING

	Unit Size	BLDG A	BLDG B	BLDG C	BLDG D	BLDG E	BLDG F	BLDG G	BLDG H
Enclosed	5x5	1		8	14	12			
Enclosed	5x10	1			8		12	8	8
Enclosed	10x5				8				
Enclosed	10x10	6		25	17	19	18		8
Enclosed	10x15				20				20
Enclosed	10x20		18			19	18	36	
Enclosed	10x25				15				20
Enclosed	10x30			21					8
Enclosed	10x40	2	6					1	1
Enclosed	12x40	15	15						
Climate Controlled	5x5	28	*Includes (3) Furnace Closets*						
Climate Controlled	5x10	8							
Climate Controlled	5x15	1	*Includes (1) Owner's Storage Room with 3'x7" Swing Door*						
Climate Controlled	10x5	11							
Climate Controlled	10x10	21							
Climate Controlled	10x15	14	Includes (1) Owner's Garage w/ 3'x7" Interior Swing Door & 6'x8' OH Door.						
Climate Controlled	10x20	26							

Note: Quantities are noted for general reference only. Metal Building Supplier shall provde all materials as shown on the project drawings. Doors at the Office Tower are not included on this chart.

UNIT DOORS

Unit Quantity	Unit Size	Door Size
35	5x5	4x7
37	5x10	4x7
8	10x5	8x7
93	10x10	8x7
40	10x15	8x7
91	10x20	8x7
35	10x25	8x7
29	10x30	8x7
10	10x40	8x7
30	12x40	11x14
28	5x5	4x7
8	5x10	4x7
1	5x15	4x7
11	10x5	8x7
21	10x10	8x7
14	10x15	8x7
26	10x20	8x7
518	**Total Units**	

OVERHEAD COILING DOORS		
Size	**Quantity**	**TYPE**
4x7	109	A
8x7	380	B
11x14	30	C

NOTE: AT THE OWNER'S GARAGE ADJACENT TO THE OFFICE AND THE (4) OVERHEAD DOORS AT THE SOUTH SIDE OF BUILDING C, PROVIDE 7'-4" TALL DOORS TO MATCH THE MASONRY COURSING HEIGHT.

LICENSED PROFESSIONAL ARCHITECT
PAUL J. KELLY
6736
IOWA
5 May 2020

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STORAGE UNIT PLANS

REVISIONS

No.	Description	Date

LockBox Storage Manawa

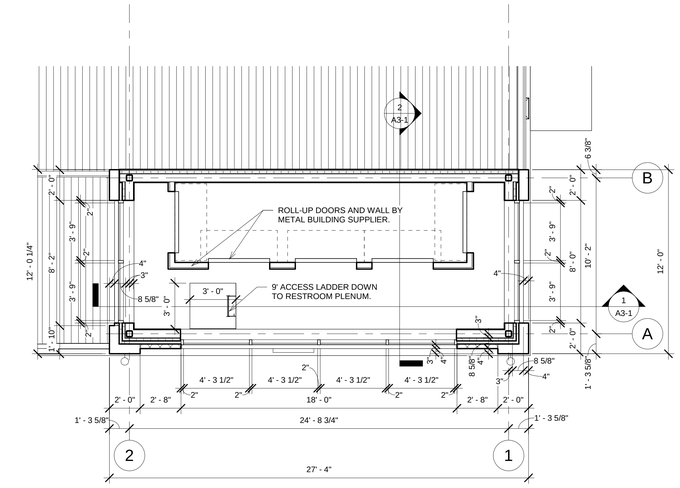
McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51501

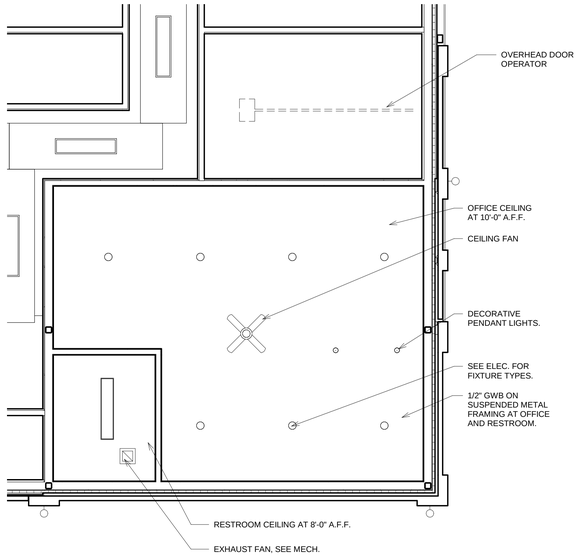
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Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

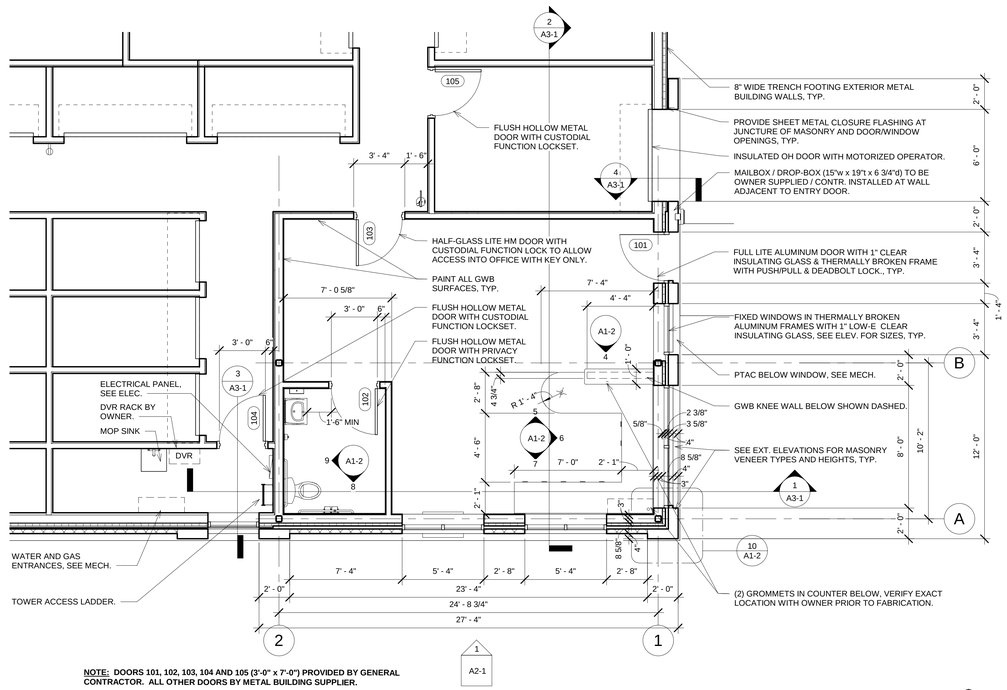
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Project No. 19-035-01
Date 5 May 2020

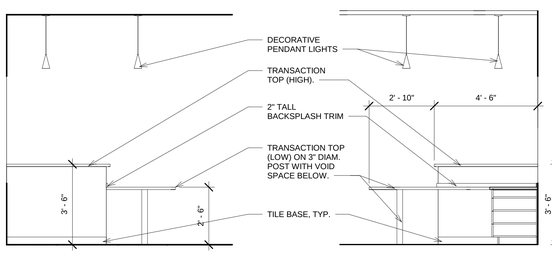
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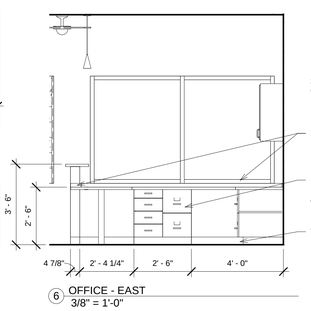


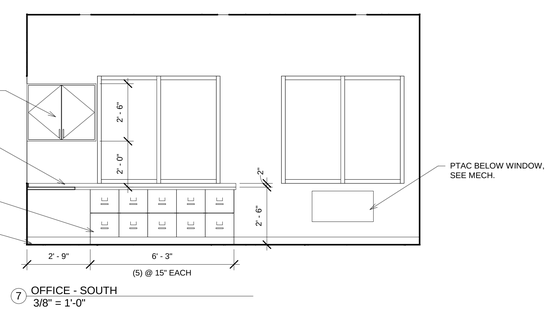


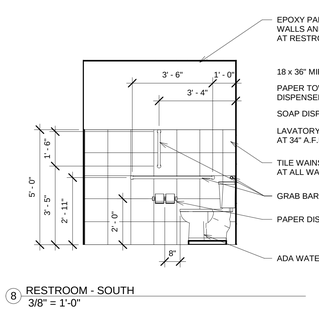


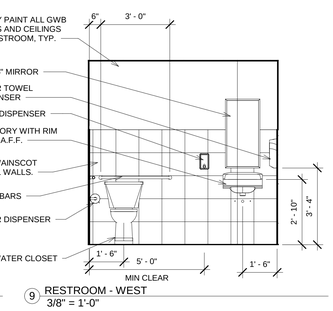
NOTE: DOORS 101, 102, 103, 104 AND 105 (3'-0" x 7'-0") PROVIDED BY GENERAL CONTRACTOR. ALL OTHER DOORS BY METAL BUILDING SUPPLIER.

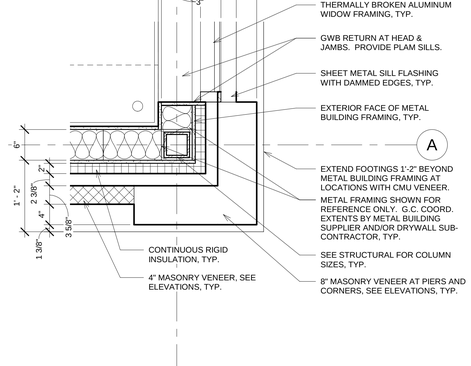












INTERIOR FINISH NOTES:

"Owner" listed below shall be McGregor Interests.

Storage Units:

1. Provide Concrete Floor Sealer at all interior hallways of the storage buildings.
2. Interior Signage: Contractor shall install Owner provided unit tags centered above each door with (2) 1/8" aluminum rivets.

Office:

1. Flooring shall be Ceramic Tile to be selected by Owner. Contractor hall include a line item cost for tile material and include all costs for installation, grout and incidentals for a complete installation in their bid.
2. Wall Base shall be Ceramic Tile to match floor.
3. Wall paint shall be SW-7507 Stone Lion typical, except as follows:
   a. Office north wall shall be SW 6615 Peppery.
   b. Office west wall (merchandise wall) shall be SW 6375 Honeycomb.
4. Ceiling paint shall be SW-7007 Bright White.
5. Cabinet Plastic Laminate shall be Wilsonart 4880-38, Carbon Mesh at all exposed sides.
6. Countertop Granite shall be Grade A slabs to be selected by Owner.

LICENSED PROFESSIONAL ARCHITECT
PAUL J. KELLY
6736
IOWA
5 May 2020

OFFICE PLANS AND DETAILS

No.	Description	Date

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51501

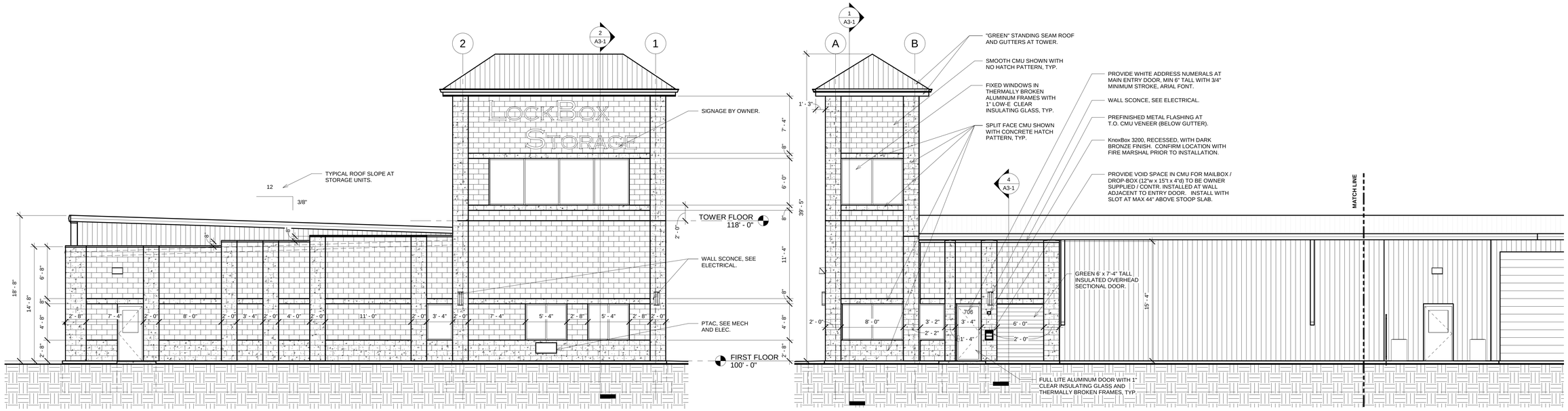
Paul J. Kelly Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

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Project No. 19-035-01
Date 5 May 2020

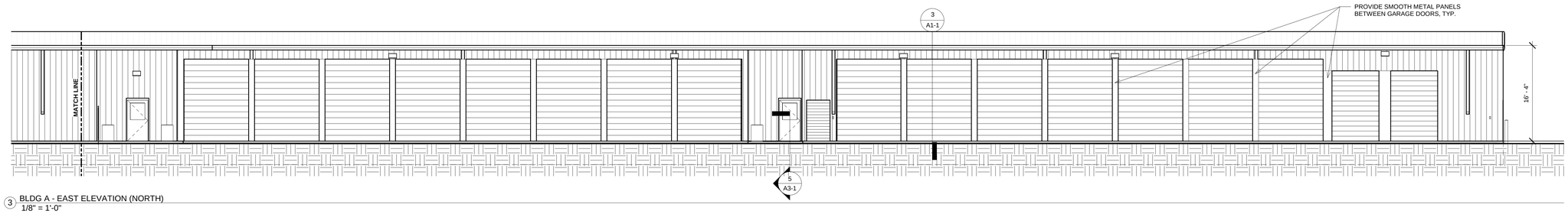
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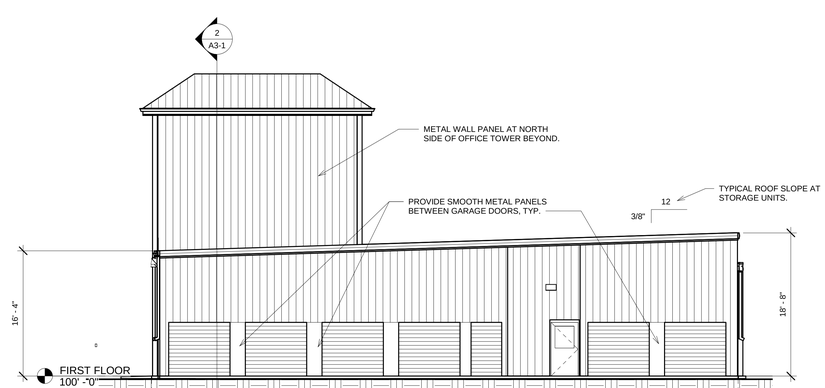


1 BLDG A - SOUTH ELEVATION
3/16" = 1'-0"

2 BLDG A - EAST ELEVATION (SOUTH)
3/16" = 1'-0"



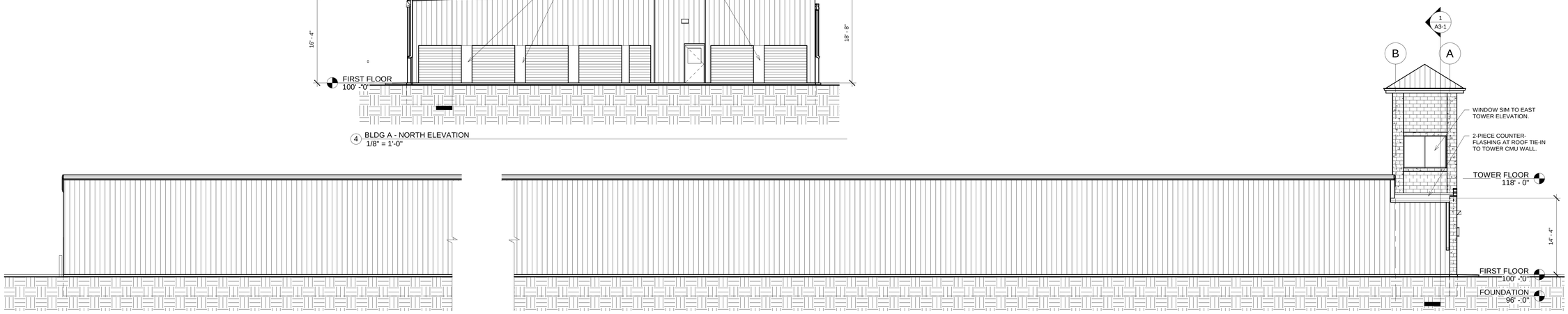
3 BLDG A - EAST ELEVATION (NORTH)
1/8" = 1'-0"



4 BLDG A - NORTH ELEVATION
1/8" = 1'-0"

EXTERIOR COLOR SCHEDULE:

1. Split face CMU shall be painted to match Avid Taupe metal panel color, typical.
2. Smooth CMU shall be painted to match Avid Taupe metal panel color, typical.
3. Mortar color at all CMU shall be standard gray mortar.
4. Metal siding shall be Avid "Light Stone".
5. Color at the office tower roof, fascias, eave, gutters & downspouts shall be Avid "Forest Green" color.
6. All low-slope metal roofs shall be galvalume with trim, gutters & downspouts to be Avid "Taupe" color.
7. Exterior Roll-Up doors shall be Avid "Forest Green".
8. Swing Doors shall be Avid "Taupe" color.



5 BLDG A - WEST ELEVATION
1/8" = 1'-0"

LICENSED PROFESSIONAL ARCHITECT
PAUL J. KELLY
6736
IOWA
5 May 2020

EXTERIOR ELEVATIONS

No.	Description	Date
	REVISIONS	

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51501

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440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

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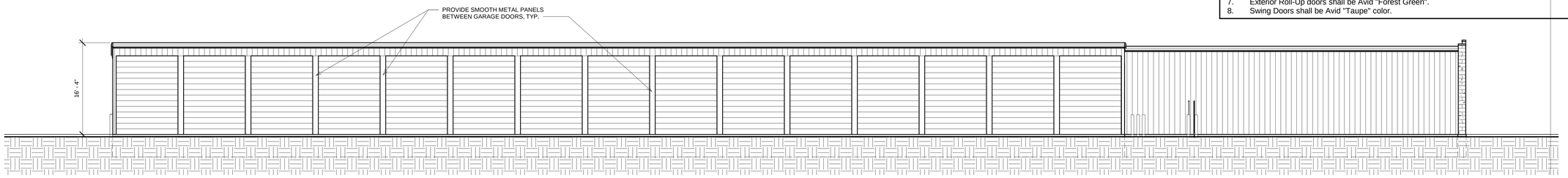
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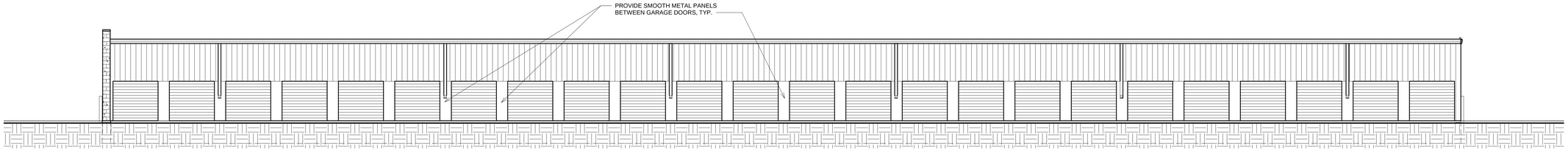
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EXTERIOR COLOR SCHEDULE:

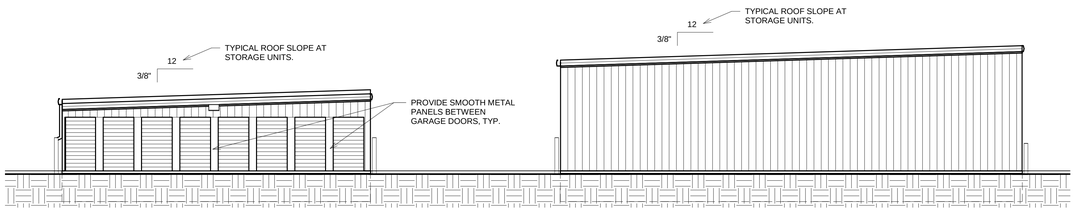
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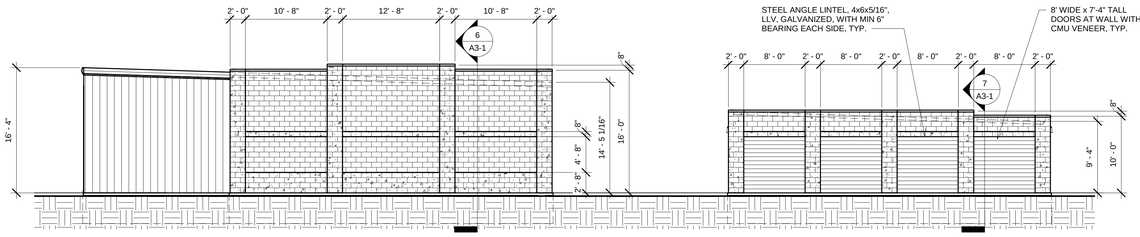
1 BLDG B - WEST ELEVATION
1/8" = 1'-0"



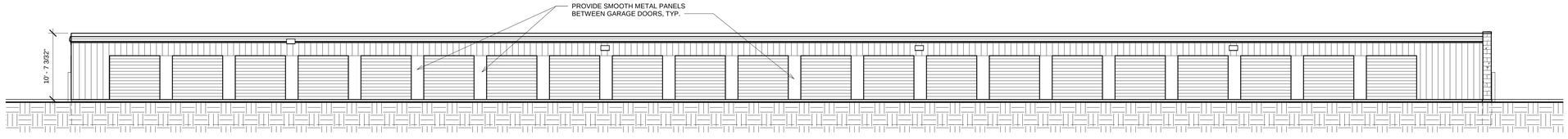
2 BLDG B - EAST ELEVATION
1/8" = 1'-0"



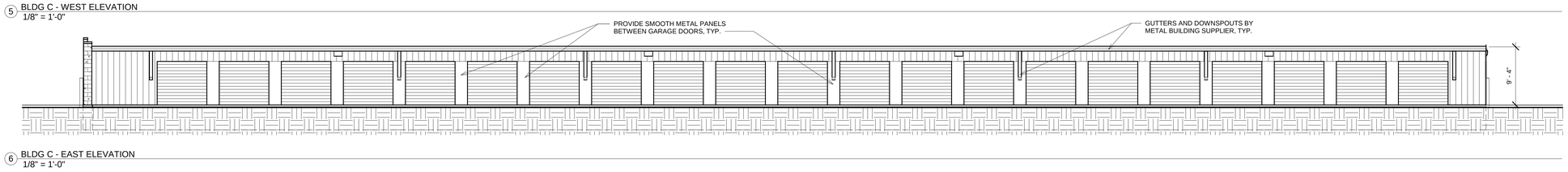
3 BLDGS B & C - NORTH ELEVATION
1/8" = 1'-0"



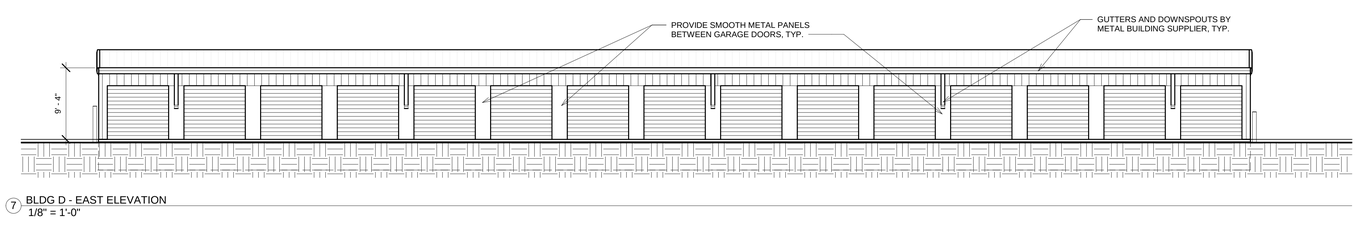
4 BLDGS B & C - SOUTH ELEVATION
1/8" = 1'-0"



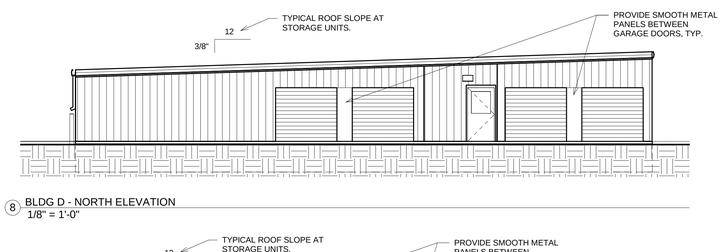
5 BLDG C - WEST ELEVATION
1/8" = 1'-0"



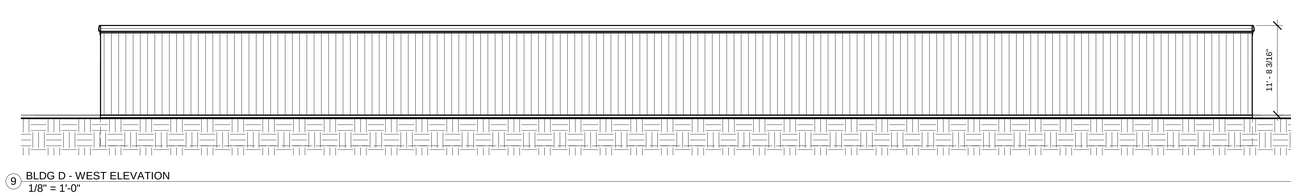
6 BLDG C - EAST ELEVATION
1/8" = 1'-0"



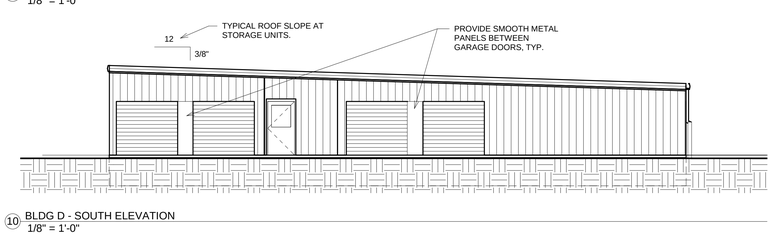
7 BLDG D - EAST ELEVATION
1/8" = 1'-0"



8 BLDG D - NORTH ELEVATION
1/8" = 1'-0"



9 BLDG D - WEST ELEVATION
1/8" = 1'-0"



10 BLDG D - SOUTH ELEVATION
1/8" = 1'-0"

LICENSED PROFESSIONAL ARCHITECT
PAUL J. KELLY
6736
IOWA
5 May 2020

EXTERIOR ELEVATIONS

REVISIONS

No.	Description	Date

LockBox Storage Manawa

McGregor Interests

706 Veteran's Memorial Highway, Council Bluffs, IA 51501

Paul J. Kelly Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

A2-2

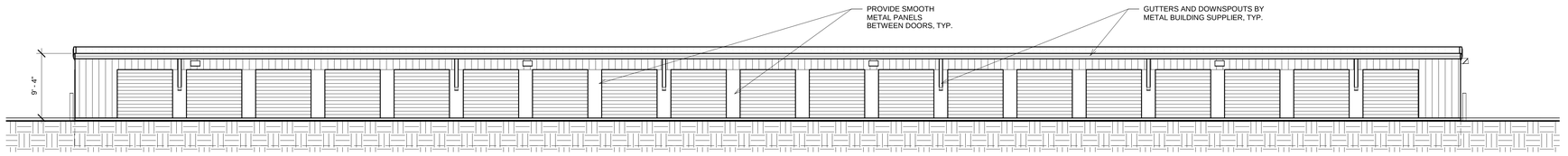
Project No. 19-035-01
Date 5 May 2020

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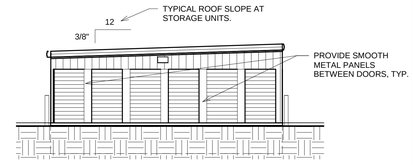
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EXTERIOR COLOR SCHEDULE:

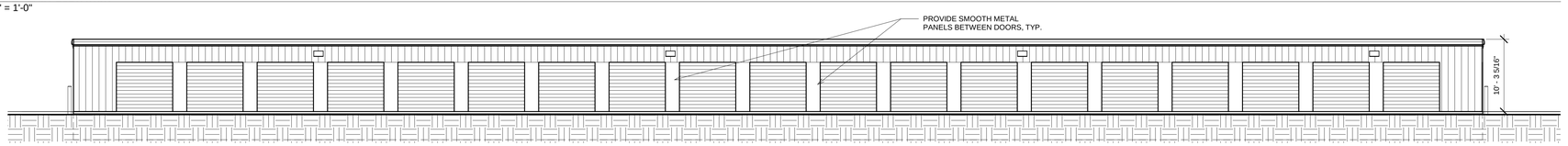
1. Split face CMU shall be painted to match Avid Taupe metal panel color, typical.
2. Smooth CMU shall be painted to match Avid Taupe metal panel color, typical.
3. Mortar color at all CMU shall be standard gray mortar.
4. Metal siding shall be Avid "Light Stone".
5. Color at the office tower roof, fascias, eave, gutters & downspouts shall be Avid "Forest Green" color.
6. All low-slope metal roofs shall be galvalume with trim, gutters & downspouts to be Avid "Taupe" color.
7. Exterior Roll-Up doors shall be Avid "Forest Green".
8. Swing Doors shall be Avid "Taupe" color.



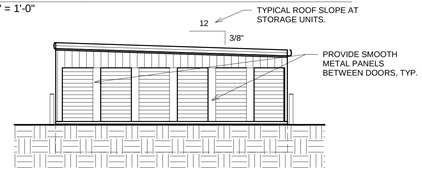
1 BLDG E - EAST ELEVATION
1/8" = 1'-0"



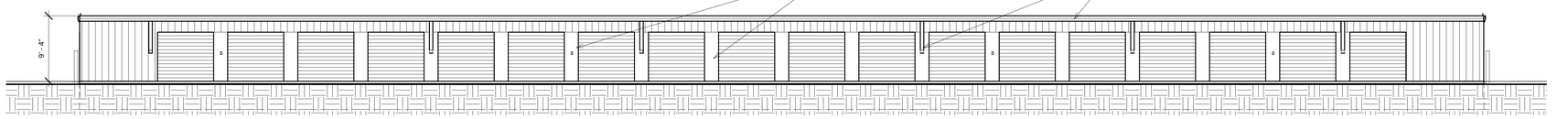
2 BLDG E - NORTH ELEVATION
1/8" = 1'-0"



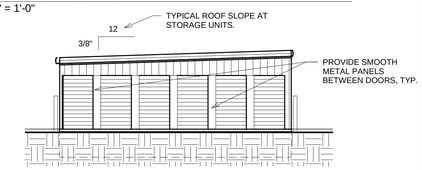
3 BLDG E - WEST ELEVATION
1/8" = 1'-0"



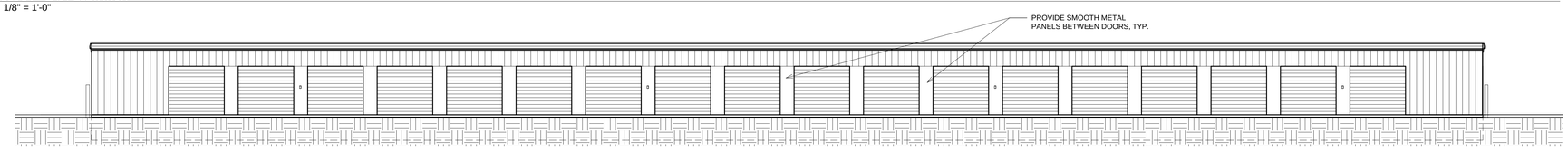
4 BLDG E - SOUTH ELEVATION
1/8" = 1'-0"



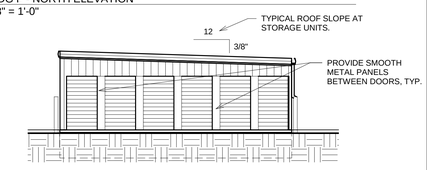
5 BLDG F - EAST ELEVATION
1/8" = 1'-0"



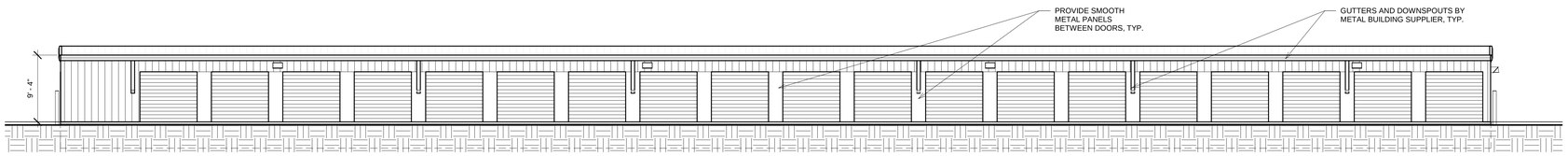
6 BLDG F - NORTH ELEVATION
1/8" = 1'-0"



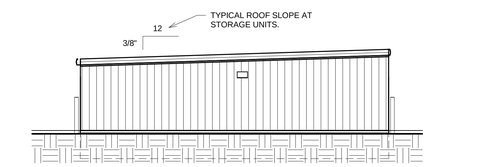
7 BLDG F - WEST ELEVATION
1/8" = 1'-0"



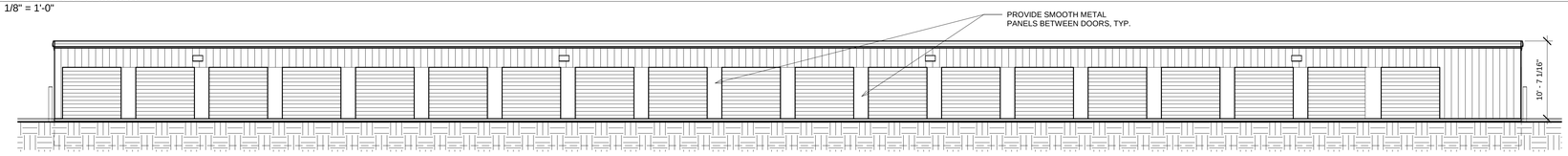
8 BLDG F - SOUTH ELEVATION
1/8" = 1'-0"



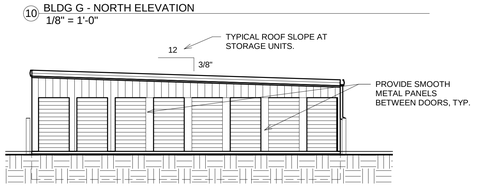
9 BLDG G - EAST ELEVATION
1/8" = 1'-0"



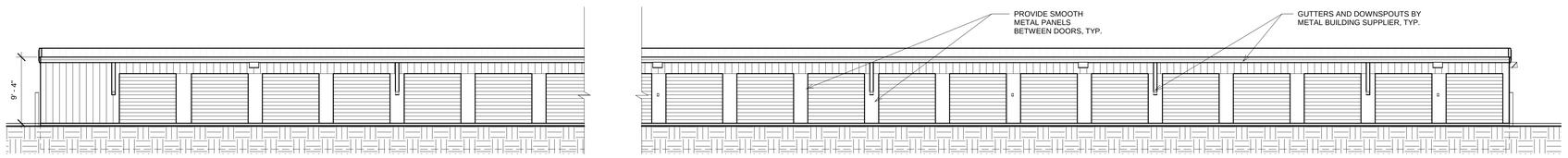
10 BLDG G - NORTH ELEVATION
1/8" = 1'-0"



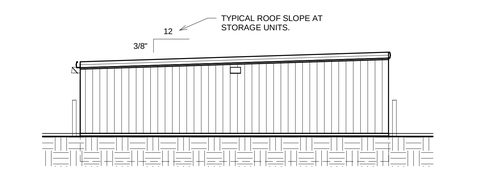
11 BLDG G - WEST ELEVATION
1/8" = 1'-0"



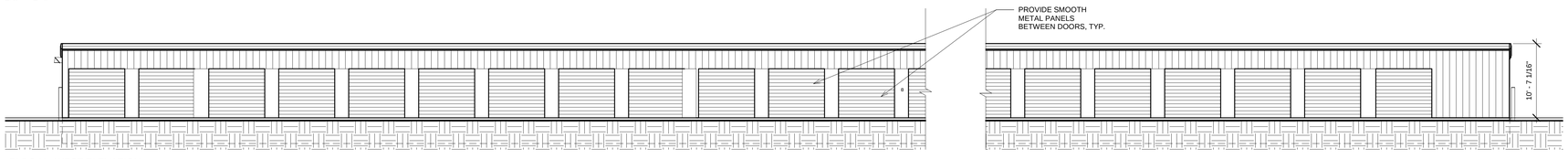
12 BLDG G - SOUTH ELEVATION
1/8" = 1'-0"



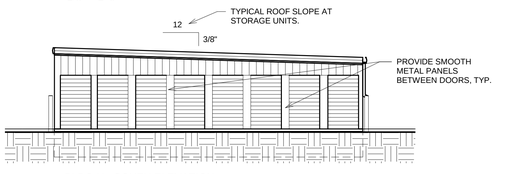
13 BLDG H - EAST ELEVATION
1/8" = 1'-0"



14 BLDG H - NORTH ELEVATION
1/8" = 1'-0"



15 BLDG H - WEST ELEVATION
1/8" = 1'-0"



16 BLDG H - SOUTH ELEVATION
1/8" = 1'-0"

LICENSED PROFESSIONAL ARCHITECT
PAUL J. KELLY
6736
IOWA
5 May 2020

EXTERIOR ELEVATIONS

No.	Description	Date
	REVISIONS	

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51501

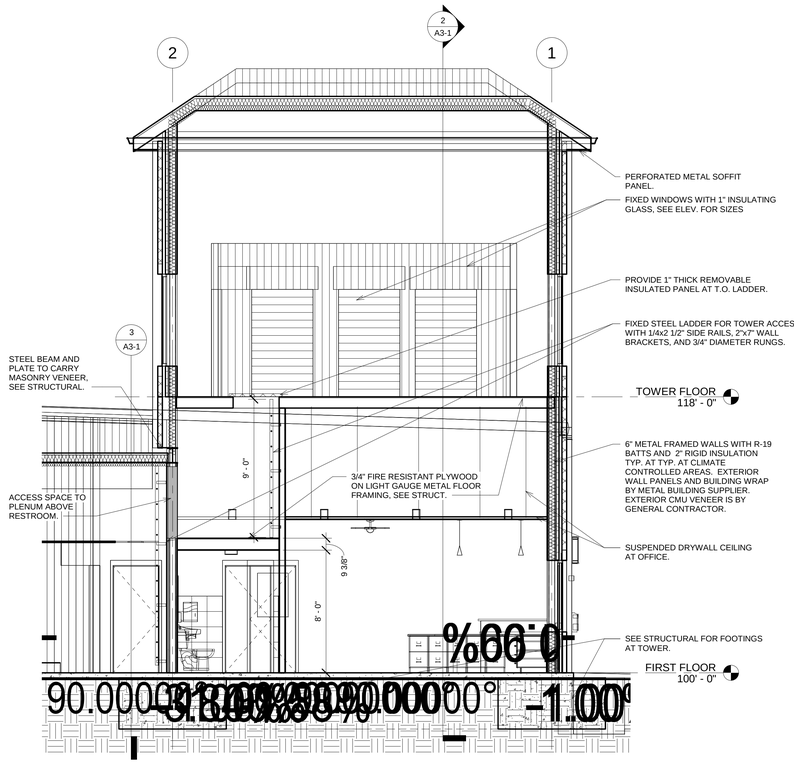
Paul J. Kelly Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

A2-3

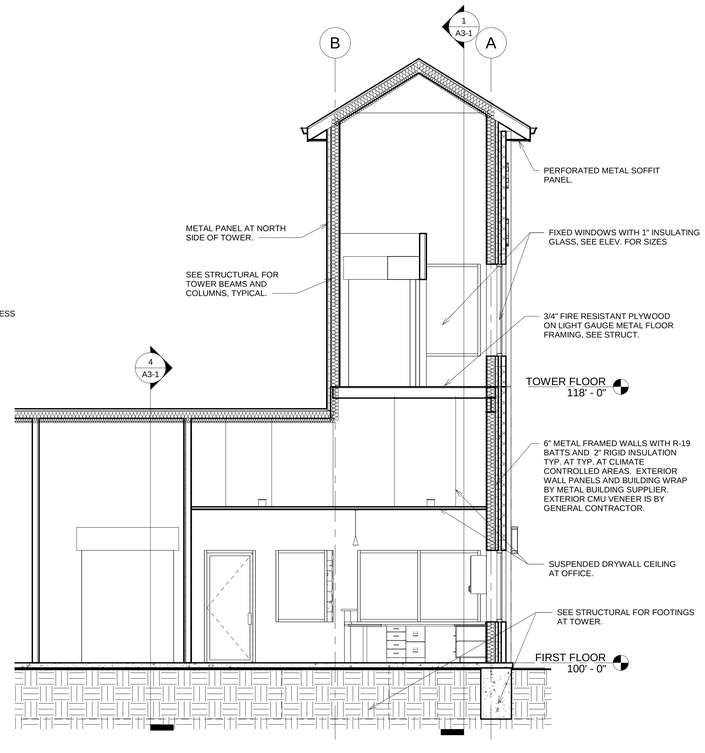
Project No. 19-035.01
Date 5 May 2020

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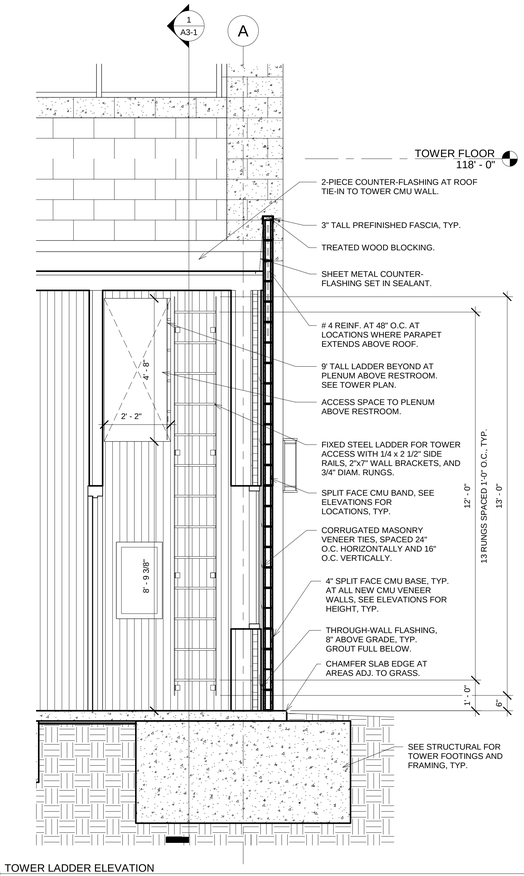
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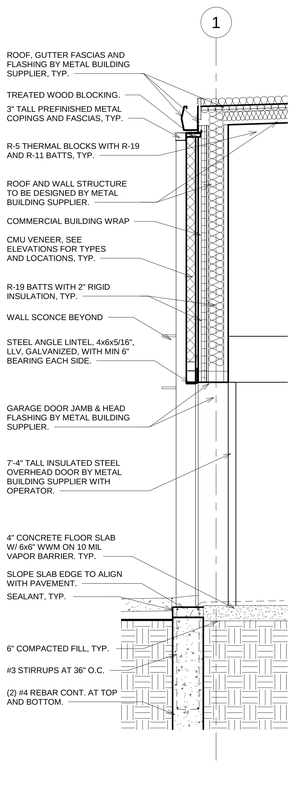
1 OFFICE SECTION - VIEW NORTH
1/4" = 1'-0"



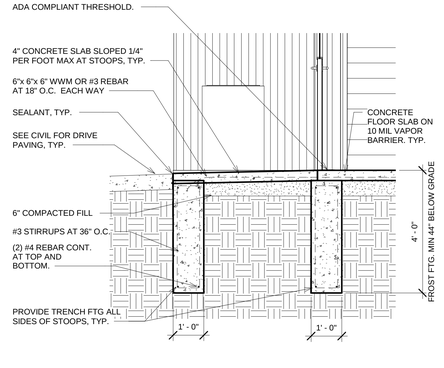
2 OFFICE SECTION - VIEW EAST
1/4" = 1'-0"



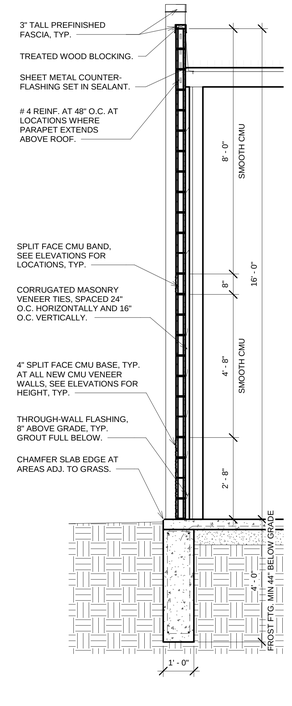
3 TOWER LADDER ELEVATION
1/2" = 1'-0"



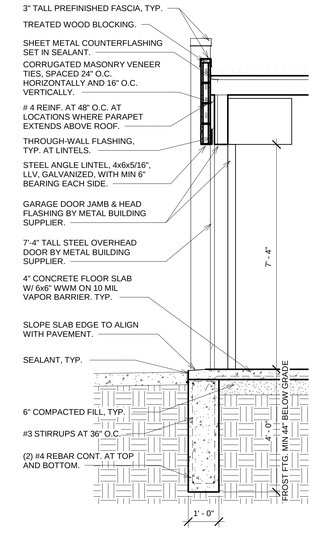
4 WALL SECTION - GARAGE
1/2" = 1'-0"



5 ENTRY ALCOVE STOOP
1/2" = 1'-0"



6 BUILDING B - SOUTH WALL
1/2" = 1'-0"



7 BUILDING C - SOUTH WALL
1/2" = 1'-0"

PAUL J. KELLY
6736
IOWA
5 May 2020

SECTIONS & DETAILS

REVISIONS

No.	Description	Date

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51501

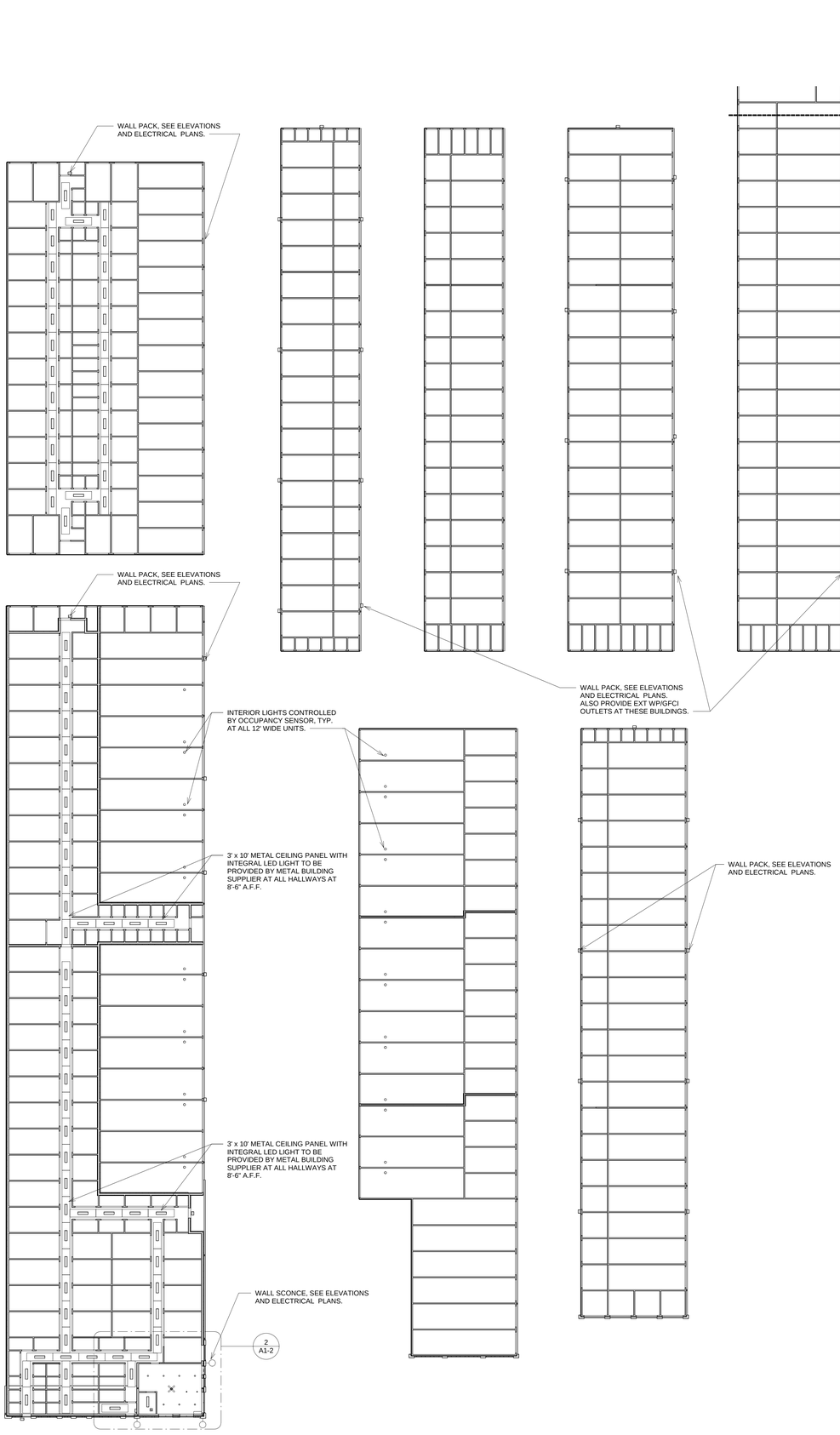
Paul J. Kelly Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

A3-1

Project No. 19-035-01
Date 5 May 2020

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3 CEILING PLAN - STORAGE UNITS
1" = 20'-0"

NORTH

4 CEILING PLAN - STORAGE UNIT H NORTH
1" = 20'-0"

NORTH

LICENSED PROFESSIONAL ARCHITECT
PAUL J. KELLY
6736
IOWA
5 May 2020

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CEILING PLANS

REVISIONS

No.	Description	Date

LockBox Storage Manawa

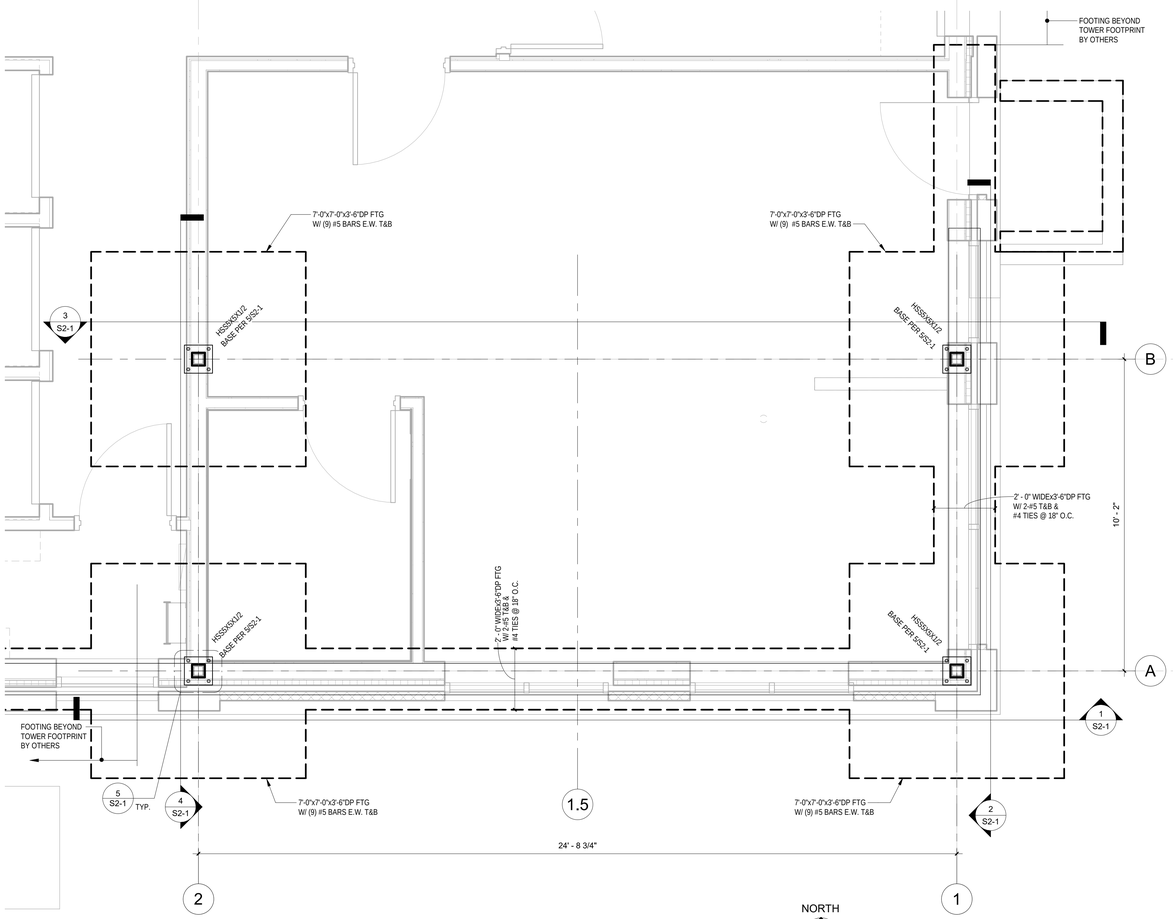
McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51501

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440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

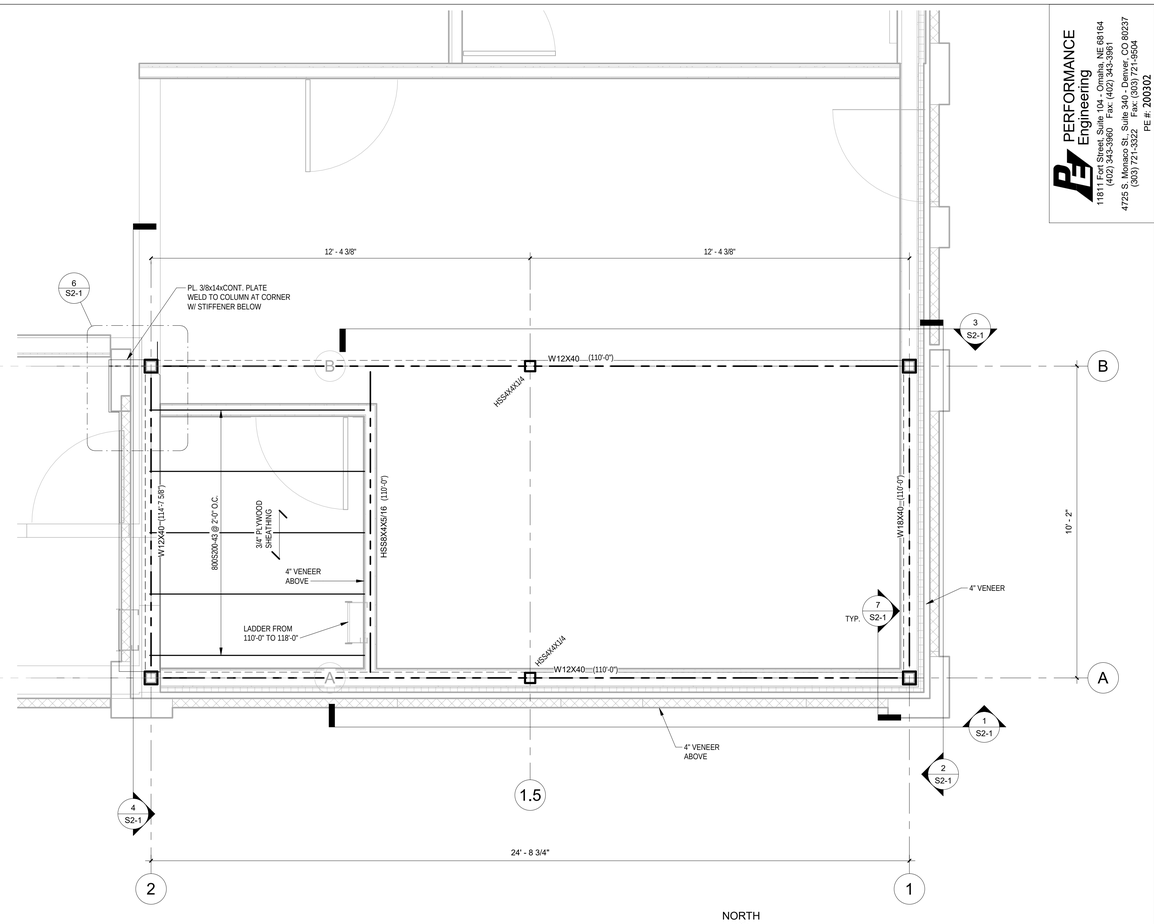
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Date 5 May 2020

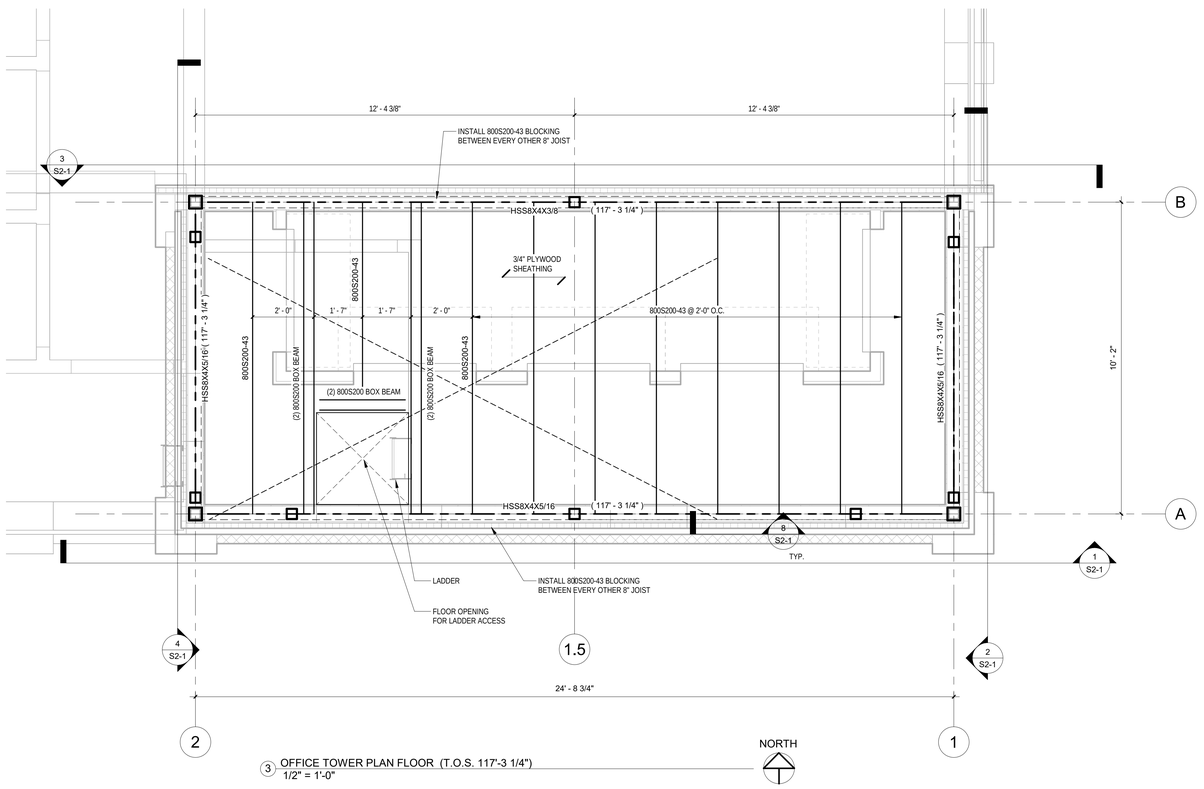
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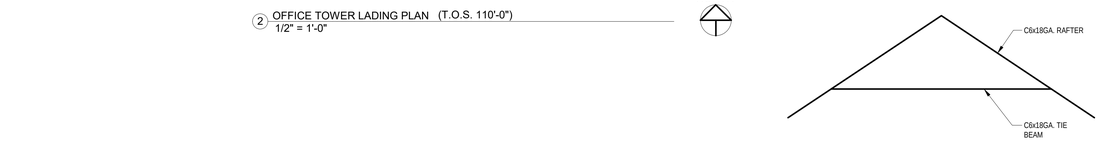
1 FOUNDATION PLAN
1/2" = 1'-0"



2 OFFICE TOWER LADING PLAN (T.O.S. 110'-0")
1/2" = 1'-0"



3 OFFICE TOWER PLAN FLOOR (T.O.S. 117'-3 1/4")
1/2" = 1'-0"



4A "A" FRAME
1/2" = 1'-0"

4 OFFICE TOWER ROOF FRAMING PLAN
1/2" = 1'-0"

PERFORMANCE Engineering
11811 Fort Street, Suite 104 - Omaha, NE 68164
(402) 343-3980 Fax: (402) 343-3961
4725 S. Monaco St., Suite 340 - Denver, CO 80237
(303) 721-3322 Fax: (303) 721-9504
PE #: 200302

IOWA MARTIN J. MEDEMAN 11236 PROFESSIONAL ENGINEER

Structural Plans

REVISIONS

No.	Description	Date

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

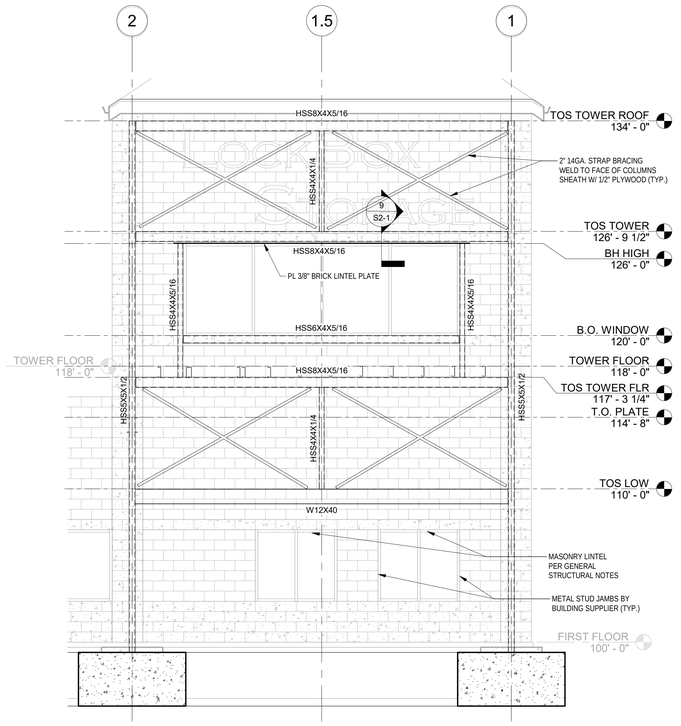
Paul J. Kelly
Architecture
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pjkarchitecture.com

S1-1

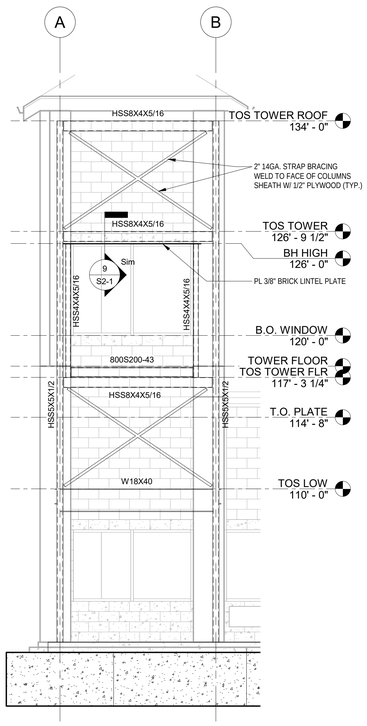
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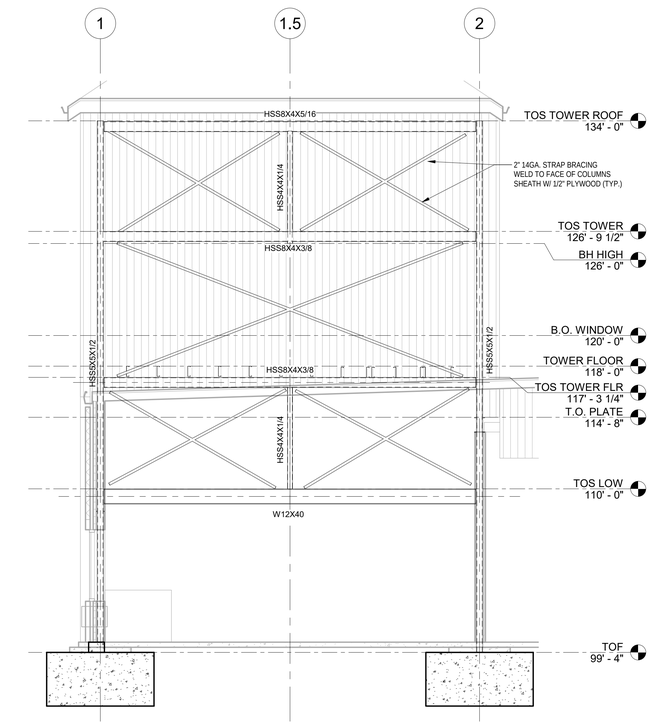
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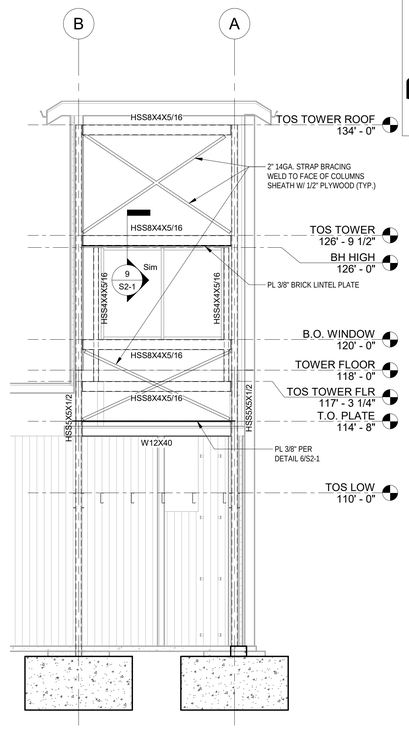
1 OFFICE TOWER SOUTH ELEVATION
1/4" = 1'-0"



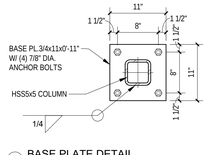
2 OFFICE TOWER EAST ELEVATION
1/4" = 1'-0"



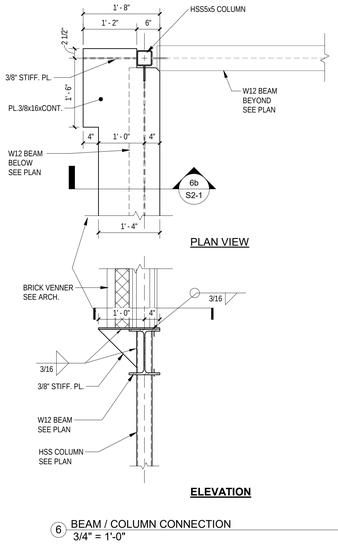
3 OFFICE TOWER NORTH ELEVATON
1/4" = 1'-0"



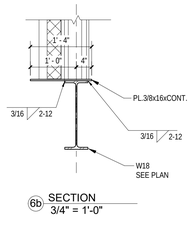
4 OFFICE TOWER WEST ELEVATION
1/4" = 1'-0"



5 BASE PLATE DETAIL
1" = 1'-0"



6 BEAM / COLUMN CONNECTION
3/4" = 1'-0"



6b SECTION
3/4" = 1'-0"

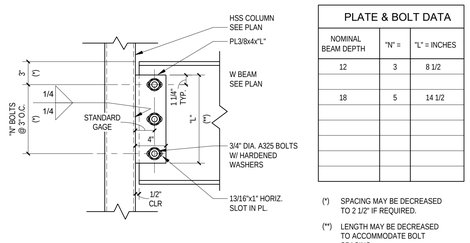
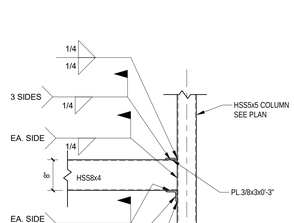


PLATE & BOLT DATA		
NOMINAL BEAM DEPTH	"N" =	"L" = INCHES
12	3	8 1/2
18	5	14 1/2

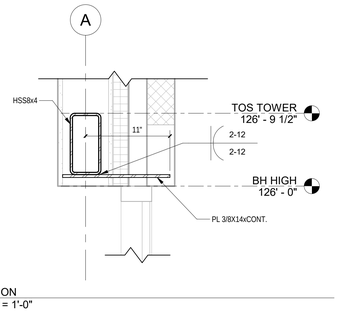
(*) SPACING MAY BE DECREASED TO 2 1/2" IF REQUIRED.

(**) LENGTH MAY BE DECREASED TO ACCOMMODATE BOLT SPACING.

7 BEAM TO COLUMN CONNECTION
1 1/2" = 1'-0"



8 BEAM / COLUMN CONNECTION
3/4" = 1'-0"



9 SECTION
1 1/2" = 1'-0"

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IOWA
MARTIN J. WEDEMAN
11236
PROFESSIONAL ENGINEER

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Elevations and Sections

REVISIONS		
No.	Description	Date

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

Paul J. Kelly Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

S2-1

Project No. 19-035-01
Date 12 March 2020

Print on 30" x 42" format for proper scale.

GENERAL STRUCTURAL NOTES:

A. DESIGN DATA:

DESIGN CODE: IBC 2015

CONCRETE 28 DAY STRENGTH: F'C = 4,000 PSI

STRUCTURAL STEEL ASTM A992
(BEAMS & COLUMNS)

STRUCTURAL TUBES ASTM A1085 (50ksi)

MISCELLANEOUS ROLLED SECTIONS ASTM A36
AND PLATES (ANGLES, CHANNELS,
PLATES, ETC.)

HIGH STRENGTH BOLTS ASTM A325

PLAIN BOLTS AND ANCHORS ASTM F1554 GR. 36

REINFORCING STEEL ASTM A615 FY = 60,000 PSI

WELDED WIRE FABRIC ASTM A185

ALLOWABLE SOIL BEARING CAPACITY 1000 PSF

DESIGN LOADS

GRAVITY LOADS:

ROOFS DL = 25 PSF
LL BASED ON GROUND SNOW LOAD OF 30 PSF
(Ce =1.0, Ct =1.0, AND I=1.0)**

**INCREASE LIVE LOAD FOR SNOW DRIFTING AS REQUIRED IN CONFORMANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS ANSI/ASCE 7-05.

WIND LOADING CRITERIA (2015 IBC)
BASE WIND SPEED (3 SECOND GUST) 'V' = 115 MPH
BUILDING CATEGORY II
IMPORTANCE FACTOR 'Iw' = 1.0
EXPOSURE CATEGORY B

B. FOUNDATION WORK:

1. THE GEOTECHNICAL REPORT PREPARED BY THIELE GEOTECH, PROJ. #119676.00 DATED JANUARY 16, 2020 IS AVAILABLE AND SHALL BE REVIEWED BY THE CONTRACTOR. ALL RECOMMENDATIONS IN GEOTECHNICAL REPORT SHALL BE FOLLOWED FOR SITE PREPARATION, EXPANSIVE SOIL CONSIDERATIONS, EXCAVATIONS, AND FILL COMPACTIONS, INCLUDING OVEREXCAVATION AND PLACEMENT OF COMPACTED STRUCTURAL FILL. FOUNDATION CONSTRUCTED SHALL BE DELAYED PER RECOMENDATIONS IN GEOTECH REPORT TO ALLOW TIME FOR SETTLEMENT OF FILL. DE-WATERING OF GROUND WATER SHALL BE EXPECTED AND COMPLETED PER GEOTECHNICAL ENGINEER.

2. SUBSOILS SUPPORTING OR IN DIRECT CONTACT WITH FOOTINGS, SLABS ON GRADE, OR OTHER FOUNDATION ELEMENTS SHALL BE PROTECTED AGAINST FREEZING CONDITIONS THAT COULD CAUSE MOVEMENT OR OTHER DETRIMENTAL EFFECT TO THE STRUCTURE AS A WHOLE OR TO ANY OF ITS COMPONENT PARTS.

3. WHEN WORKING NEAR EXISTING AND/OR NEW CONSTRUCTION, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO UNDERMINE, DISTURB, DAMAGE OR, IN ANY WAY, CAUSE UNDESIRABLE MOVEMENT, CRACKING, AND/OR SETTLEMENT OF THE ADJACENT CONSTRUCTION.

4. ALL SLABS ON GRADE SHALL BEAR ON UNDISTURBED VIRGIN SOIL OR PROPERLY COMPACTED BACKFILL/GRANULAR FILL. ANY UNACCEPTABLE UNDISTURBED VIRGIN SOIL OR BACKFILL/GRANULAR FILL, AS DETERMINED BY THE OWNER'S GEOTECHNICAL ENGINEER, SHALL BE REMOVED AND REPLACED AS REQUIRED BY THE GEOTECHNICAL ENGINEER.

5. CONTRACTOR SHALL COORDINATE FOOTING ELEVATIONS WITH FINAL GRADING PLAN TO PROVIDE A MINIMUM OF 42" OF GRADE ABOVE THE BOTTOM OF ALL FOOTINGS FOR FROST PROTECTION.

C. CONCRETE:

1. FOR REINFORCEMENT DEVELOPMENT LENGTH AND SPLICE LENGTH SEE TYPICAL REINFORCEMENT TABLE ON THIS SHEET.

2. PROVIDE CORNER BARS IN WALLS AND FOOTINGS THE SAME SIZE AND NUMBER AS THE CONTINUOUS REINFORCING.

3. REINFORCING IN FOOTINGS SHALL BE ACCURATELY PLACED BEFORE PLACING CONCRETE. DO NOT FLOAT REINFORCING INTO FOOTINGS

4. CONCRETE SHALL BE REGULAR WEIGHT (144 PCF) WITH TYPE I CEMENT, POTABLE WATER, AND AGGREGATES CONFORMING TO REQUIREMENTS OF ASTM C33, UNLESS NOTED OTHERWISE. CONCRETE SHALL CONFORM TO ACI 301-10.

5. ALL REINFORCING STEEL SHALL BE DEFORMED NEW BILLETS BARS (A615, GRADE 60), BENT COLD, AND DETAILED, FABRICATED, AND HELD IN PLACE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" (ACI 315 LATEST EDITION) EXCEPT AS OTHERWISE DETAILED OR SPECIFIED.

6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT, UNLESS NOTED OTHERWISE:
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
CONCRETE EXPOSED TO EARTH OR WEATHER: 2"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: SLABS AND WALLS 1"

D. MASONRY:

1. FURNISH AND CONSTRUCT MASONRY IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS FOR MASONRY CONSTRUCTION (ACI 530.1-02/ASCE 6-02/TMS 602-02.

2. LAY MASONRY UNITS IN RUNNING BOND.

3. MAXIMUM GROUT LIFT WITHOUT CLEANOUTS SHALL BE 4' 0" IN BLOCK WALLS AND 8' GROUTED TWO WYTHE WALLS.

4. 8" WALLS PROVIDE CONTINUOUS FULL HEIGHT VERTICAL REINFORCING IN CENTER OF GROUT AT CENTER OF WALL. TYPICAL REINFORCING SHALL BE 1 #5 AT 4' 0" ON CENTER AND 1 #5 AT CORNERS, INTERSECTIONS, WALL ENDS, DOOR AND WINDOW JAMBS, AND SIDE OF EXPANSION OR CONTROL JOINTS UNLESS NOTED OTHERWISE.

5. GROUT CELLS FULL AT ALL EXPANSION ANCHOR LOCATIONS.

6. PROVIDE LADDER TYPE #9 JOINT REINFORCING AT 16" ON CENTER VERTICAL SPACING IN ALL CONCRETE MASONRY AND UNLESS NOTED OTHERWISE.

7. SPLICE MASONRY WALL REINFORCING 48 BAR DIAMETERS.

8. SPLICE PLACE BOND BEAM REINFORCING AT MASONRY CONTROL/EXPANSION JOINTS AS SHOWN ON MASONRY JOINT DETAIL ON THIS SHEET.

9. PROVIDE CONTINUOUS BOND BEAMS AT ALL BEAM BEARING ELEVATIONS AND AT THE TOP OF ALL WALLS.

10. PROVIDE CONTINUOUS WIRE LATH GROUT BARRIERS BELOW BOND BEAMS.

11. PROVIDE LINTELS OVER ALL OPENINGS AND RECESSES IN MASONRY WALLS. EXTERIOR LINTELS SHALL BE GALVANIZED, UNLESS NOTED OTHERWISE.

12. FOR ALL OPENINGS NOT OTHERWISE DETAILED OR SCHEDULED, MINIMUM LINTELS SHALL BE FOR EACH 4 INCH OF MASONRY WIDTH 1 L 3 1/2 X 3 1/2 X 1/4 FOR SPANS UP TO 4' 0", 1 L 4 X 3 1/2 X 1/4 FOR SPANS UP TO 6' 0" AND 1 L 5 X 3 1/2 X 5/16 FOR SPANS UP TO 8' 0". FOR SPANS LESS THAN 2' 0" PROVIDE A 5/16" PLATE.

13. ALL LINTELS SHALL HAVE A MINIMUM BEARING OF 8 INCHES EACH END.

E. STEEL:

1. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC SPECIFICATIONS AND OSHA REGULATION 29 CFR PART 1926.

2. SHOP PAINT STRUCTURAL STEEL WITH FABRICATOR'S STANDARD LEAD- AND CHROMATE-FREE, NONASPHALTIC, RUST-INHIBITING PRIMER, UNLESS NOTED OTHERWISE. ALL EXTERIOR EXPOSED STEEL SHALL BE GALVANIZED.

3. COMPLY WITH AMERICAN WELDING SOCIETY STANDARDS. ALL WELDERS SHALL HAVE VALID CERTIFICATES AND HAVE CURRENT EXPERIENCE IN TYPE OF WELD CALLED FOR.

4. WELDING ELECTRODES SHALL BE E70 FOR ALL STEEL, UNLESS NOTED OTHERWISE.

5. BOLTED CONNECTIONS SHALL BE SUPPLIED AND INSTALLED PER THE REQUIREMENTS OF RCSC'S "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS." SHOP AND FIELD BOLTED CONNECTIONS SHALL BE BEARING CONNECTIONS, UNLESS NOTED OTHERWISE.

6. ANCHOR RODS FOR COLUMN BASE PLATES SHALL BE SECURED IN PLACE WITH A TEMPLATE AND SECURELY TIED TO REINFORCING BARS BEFORE PLACING OF CONCRETE.

7. ANCHOR ROD HOLES IN BASE PLATES MAY BE OVERSIZED PER TABLE 14-2 OF THE 3RD ED. OF THE LRFD MANUAL. IF OVERSIZED HOLES ARE USED, WASHER PLATES SHALL BE PROVIDED AS SPECIFIED AND FIELD WELDED TO THE BASE PLATES.

F. LIGHT GAUGE METAL:

1. LIGHT GAUGE METAL FRAMING SHALL BE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITION OF "THE NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS" AND "THE COLD FORMED STEEL FRAMING DESIGN GUIDE" OF THE AMERICAN IRON AND STEEL INSTITUTE.

2. PROVIDE TRACKS, BLOCKING, LINTELS, CLIP ANGLES, STRAP BRACING, SHOES, REINFORCEMENTS, FASTENERS, AND ACCESSORIES TO PROVIDE A COMPLETE METAL FRAME SYSTEM.

3. ISOLATE PARTITIONS FROM STRUCTURAL ELEMENTS WITH SLIP OR CUSHION-TYPE JOINTS BETWEEN STEEL FRAMING AND STRUCTURE AS RECOMMENDED BY STEEL FRAMING MANUFACTURER TO PREVENT TRANSFER OF STRUCTURAL LOADS OR MOVEMENTS TO PARTITIONS.

4. INSTALL HORIZONTAL BRIDGING IN WALL SYSTEM AS REQUIRED BY METAL STUD SUPPLIER. MINIMUM BRIDGING SPACING SHALL BE 4'-0" O.C. (VERTICAL DISTANCE) UNTIL PERMANENT INTERIOR WALL SHEATHING IS INSTALLED.

5. FASTEN GYPBOARD AND PLYWOOD WITH 1/4 INCH TEK SCREWS AT 6 INCH AT ALL SUPPORTS AND EDGES.

6. BEARING STUDS MUST BE FABRICATED WITH FULL STUD END SEATED AGAINST TRACK WEB. DO NOT USE STUD THAT HAS BEEN CUT.

7. PROVIDE DOUBLE METAL STUD AROUND ALL OPENINGS IN STUD WALL SYSTEM AT JAMBS, HEADS, AND SILLS. WELD AT ALL INTERSECTIONS

G. INSPECTIONS:

1. IN ACCORDANCE WITH 2015 IBC SECTION 1704, AS NOTED BELOW, TESTING AND INSPECTION SHALL BE BY AN INDEPENDENT TESTING/INSPECTION FIRM UNDER THE SUPERVISION OF A LICENSED ENGINEER EMPLOYED BY THAT FIRM. THIS ENGINEER SHALL BE DEEMED THE DESIGNATED ENGINEER OF RECORD FOR SPECIAL INSPECTIONS PERFORMED BY HIS FIRM OR HIS CONSULTANTS. INSPECTORS SHALL BE ICBO CERTIFIED AND APPROVED BY THE BUILDING OFFICIAL.

2. THE DESIGNATED ENGINEER OF RECORD FOR SPECIAL INSPECTIONS SHALL BE RESPONSIBLE FOR DEFINING THE ACTIVITIES OF THE INSPECTORS, FOR CERTIFYING THE QUALIFICATIONS OF THE INSPECTORS WITH THE BUILDING OFFICIAL AND TO ATTEND THE PRE-CONSTRUCTION MEETING TO DEFINE THEIR SCOPE OF SERVICES AND THE TESTING OR TEST PROCEDURES THAT ARE REQUIRED AS OUTLINED IN THE INTERNATIONAL BUILDING CODE.

3. SPECIAL INSPECTION IS TO BE PROVIDED IN ADDITION THE INSPECTIONS CONDUCTED BY THE LOCAL DEPARTMENT OF BUILDING SAFETY AND SHALL NOT BE CONSTRUED TO RELIEVE THE OWNER OR HIS AUTHORIZED AGENT FROM REQUESTING THE PERIODIC AND CALLED INSPECTIONS REQUIRED BY SECTION 104.4 OF THE INTERNATIONAL BUILDING CODE.

4. SPECIAL INSPECTIONS REQUIRED INCLUDE, BUT MAY NOT BE LIMITED TO, THE FOLLOWING:

a. CONCRETE PER TABLE 1705.3 AND SECTION 1705.3 WITH ALL APPLICABLE EXCEPTIONS.

b. ANCHOR BOLTS INSTALLED IN CONCRETE: PER TABLE 1705.3.

c. REINFORCING PER TABLE 1705.3 AND EXCEPTION FOR CONCRETE REQUIRING SPECIAL INSPECTION.

d. WELDING: PER SECTION AISC 360 AND IBC TABLE 1705.2.2.

H. OTHER:

1. VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES.

2. VERIFY IN FIELD ALL EXISTING CONDITIONS SHOWN ON DRAWINGS.

3. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR MECHANICAL, ELECTRICAL, AND PLUMBING WITH APPROPRIATE TRADES. PROVIDE ALL TEMPORARY BRACING, SHORING, GUYING, OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION.

4. ANY ENGINEERING DESIGN PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW SHALL BEAR THE STAMP (AND SIGNATURE) OF AN ENGINEER REGISTERED IN IOWA.

TYPICAL REINFORCING NOTES:

1. REINFORCING BAR DEVELOPMENT AND LAP SPLICE LENGTH SHALL BE AS SHOWN IN THIS TABLES UNLESS OTHERWISE NOTED ON THE DRAWINGS.

2. THE LENGTHS SHOWN IN THE TABLES ARE BASED ON THE FOLLOWING CONCRETE COVERAGE AND REINFORCING CENTER TO CENTER (C-C) SPACING:
BEAMS OR COLUMNS:
COVER (EQUAL OR MORE) 1.0dd (BAR DIAMETER)
CENTER TO CENTER SPACING (EQUAL OR MORE) 2.0dd.
ALL OTHERS:
COVER (EQUAL OR MORE) 1.0dd
CENTER TO CENTER SPACING (EQUAL OR MORE) 3.0dd.

3. TOP BARS ARE DEFINED AS HORIZONTAL REINFORCEMENT SUCH THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE DEVELOPMENT LENGTH OR SPLICE.

4. DEVELOPMENT AND SPLICE LENGTH SHOWN SHALL NOT APPLY IF ANY OF THE FOLLOWING CONDITIONS OCCUR:
A) f'c < 4,000 PSI
B) fy > 60,000 PSI
C) THE COVER OR C-C BAR SPACING IS NOT AS LISTED ABOVE
D) THE REINFORCING STEEL IS EPOXY COATED
E) LIGHT WEIGHT CONCRETE IS USED.

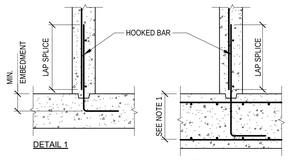
5. CENTER TO CENTER SPACING (S) IS DEFINED AS BELOW:



DEVELOPMENT LENGTH NOTES:

1. WHERE DRAWINGS ARE DETAILED SIMILAR TO DETAIL 2, EXTEND THE EMBEDMENT LENGTH SUCH THAT THE HOOKED BAR CONTACTS THE LAYER OF MAIN REINFORCING SHOWN.

2. EMBEDMENT LENGTHS IN CHART ARE TYPICAL EXCEPT AS NOTED IN DETAIL 2, OR AS INDICATED ON DRAWINGS.



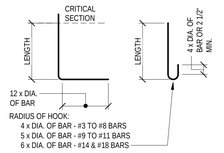
DETAIL 1 DETAIL 2

REINFORCING DEVELOPMENT AND SPLICES
f'c = 4,000 PSI

BAR SIZE	DEVELOPMENT LENGTH		SPLICE LENGTH	
	OTHER	TOP	OTHER	TOP
#3	1'-3"	1'-7"	1'-7"	2'-0"
#4	1'-7"	2'-1"	2'-1"	2'-8"
#5	2'-0"	2'-7"	2'-7"	3'-4"
#6	2'-5"	3'-1"	3'-1"	4'-0"
#7	3'-6"	4'-6"	4'-6"	5'-10"
#8	4'-0"	5'-2"	5'-2"	6'-8"
#9	4'-6"	5'-10"	5'-10"	7'-7"
#10	5'-1"	6'-7"	6'-7"	8'-6"
#11	5'-7"	7'-3"	7'-3"	9'-5"

HOOKED BAR DEVELOPMENT LENGTHS
f'c = 4,000 PSI

BAR SIZE	LENGTH OR MINIMUM EMBEDMENT
#3	7"
#4	10"
#5	1'-0"
#6	1'-3"
#7	1'-5"
#8	1'-7"
#9	1'-10"
#10	2'-0"
#11	2'-3"



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IOWA MARTIN J. MEDEMAN 11236 LICENSED PROFESSIONAL ENGINEER

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General Structural Notes

No.	Description	Date
	REVISIONS	

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

Paul J. Kelly
Architecture
440 North 61st Street
Omaha, Nebraska 68132
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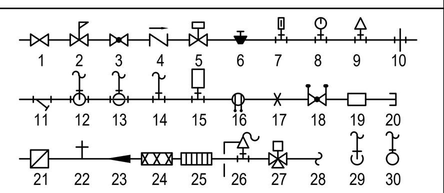
S3-1

Project No. 19-035-01
Date 12 March 2020

Print on 30" x 42" format for proper scale.

SYMBOL	ABBREV.	DESCRIPTION
—— – ——	CW	COLD WATER
—— – – ——	HW	HOT WATER
—— – – – ——	RHW	RECIRCULATED HOT WATER
—— A ——	A	AIR
—— AV ——	AV	ACID VENT
—— AW ——	AW	ACID WASTE
—— CD ——	CD	CONDENSATE
—— CHR ——	CHR	CHILLED WATER RETURN
—— CHS ——	CHS	CHILLED WATER SUPPLY
—— CWR ——	CWR	CONDENSER WATER RETURN
—— CWS ——	CWS	CONDENSER WATER SUPPLY
—— DI ——	DI	DEIONIZED WATER
—— DS ——	DS	DOWNSPOUT (RAINWATER)
—— DWR ——	DWR	DUAL WATER RETURN
—— DWS ——	DWS	DUAL WATER SUPPLY
—— FOR ——	FOR	FUEL OIL RETURN
—— FOS ——	FOS	FUEL OIL SUPPLY
—— FOV ——	FOV	FUEL OIL VENT
—— FSPR ——	FSPR	FIRE SPRINKLER
—— G ——	G	NATURAL GAS LINE (FIRM)
—— GI ——	GI	GREASE INTERCEPTOR
—— HG ——	HG	HOT GAS
—— HPR ——	HPR	HIGH PRESSURE STEAM RETURN
—— HPS ——	HPS	HIGH PRESSURE STEAM SUPPLY
—— HWR ——	HWR	HEATING WATER RETURN
—— HWS ——	HWS	HEATING WATER SUPPLY
—— IG ——	IG	NATURAL GAS LINE (INTERRUPTIBLE)
—— LPG ——	LPG	LIQUIFIED PETROLEUM GAS
—— LPR ——	LPR	LOW PRESSURE STEAM RETURN
—— LPS ——	LPS	LOW PRESSURE STEAM SUPPLY
—— LSPR ——	LSPR	LAWN SPRINKLER
—— MPR ——	MPR	MEDIUM PRESSURE STEAM RETURN
—— MPS ——	MPS	MEDIUM PRESSURE STEAM SUPPLY
—— NP· ——	NPCW	NON POTABLE COLD WATER
—— NP·· ——	NPHW	NON POTABLE HOT WATER
—— NP··· ——	NPRHW	NON POTABLE RECIRCULATED HOT WATER
—— O ——	O	OXYGEN
—— ORD ——	ORD	OVERFLOW DRAIN
—— RL ——	RL	REFRIGERANT LIQUID
—— RS ——	RS	REFRIGERANT SUCTION
—— S· ——	SCW	SOFT COLD WATER
—— S·· ——	SHW	SOFT HOT WATER
—— S··· ——	SRHW	SOFT RECIRCULATED HOT WATER
—— SD ——	SD	STORM DRAIN
—— TW ——	TW	TEMPERED WATER
—— V ——	V	VENT
—— VAC ——	VAC	VACUUM
—— W ——	W	WASTE ABOVE GRADE
—— –W– ——	W	WASTE BELOW FLOOR
—— W ——	W	WASTE BELOW GRADE

SYMBOL & DESCRIPTION



1. SHUT-OFF VALVE
2. PRESSURE REDUCING VALVE
3. BALANCE VALVE
4. CHECK VALVE
5. CONTROL VALVE
6. GAS COCK
7. THERMOMETER
8. PRESSURE GAUGE
9. MANUAL AIR VENT
10. UNION
11. STRAINER W/DRAIN VALVE
12. TOP CONNECTION TEE W/ELBOW
13. BOTTOM CONNECTION TEE W/ELBOW
14. SIDE CONNECTION TEE
15. SHOCK ABSORBER
16. FLOW METER FITTING
17. PIPE ANCHOR
18. BALANCE VALVE W/FLOW METER FITTING
19. FLOW CONTROL VALVE
20. PIPE CAP, PLUG OR CLEANOUT
21. FLOAT AND THERMOSTATIC TRAP
22. PRESSURE AND TEMPERATURE TEST PORT
23. FLOW DIRECTION ARROW
24. EXPANSION JOINT
25. FLEX CONNECTOR
26. PRESSURE AND TEMPERATURE RELIEF VALVE
27. THREE WAY CONTROL VALVE
28. CONTINUATION SYMBOL
29. PIPE DOWN
30. PIPE UP

ABBREV.	DESCRIPTION
	SPLASH BLOCK
	CONNECTION TO EXISTING
	POINT OF DISCONNECT
CO	CLEANOUT
WH	WALL HYDRANT
FD	FLOOR DRAIN
FS	FLOOR SINK
HB	HOSE BIBB
WCO	WALL CLEANOUT
FCO	FLOOR CLEANOUT
DCO	DOUBLE CLEANOUT
TD	TRENCH DRAIN
RD	ROOF DRAIN

SYMBOL	DESCRIPTION
	SUPPLY/OUTSIDE AIR DUCT UP (S/A OR O/A)
	SUPPLY/OUTSIDE AIR ROOF/FLOOR PENETRATION
	SUPPLY/OUTSIDE AIR DUCT DOWN (S/A OR O/A)
	RETURN AIR DUCT UP (R/A)
	RETURN AIR ROOF/FLOOR PENETRATION
	RETURN AIR DUCT DOWN (R/A)
	EXHAUST AIR DUCT UP (E/A)
	EXHAUST AIR ROOF/FLOOR PENETRATION
	EXHAUST AIR DUCT DOWN (E/A)
	ROUND DUCT SECTION UP
	ROUND DUCT ROOF/FLOOR PENETRATION
	ROUND DUCT SECTION DOWN
1/2	1. WIDTH DIMENSION 2. DEPTH DIMENSION
R	DUCT RISE IN DIRECTION
D	DUCT DROP IN DIRECTION
1 2 3	1. WIDTH DIMENSION 2. WIDTH DIMENSION 3. DEPTH DIMENSION
R W	TYPICAL DUCT TURN R EQUAL TO W (MINIMUM)
	TYPICAL DUCT TURN WITH TURN VANES
1. 2. 1/2 A	1. CONICAL TAKE-OFF 2. BRANCH DUCT INTO SIDE OF MAIN DUCT
	TYPICAL SQUARE TO ROUND TRANSITION
	FLEXIBLE DUCT CONNECTION (CANVAS)
M F S 1. 2. 3.	1. MOTORIZED DAMPER 2. FIRE DAMPER 3. SMOKE DAMPER
B P F S 1. 2. 3.	1. BACKDRAFT DAMPER 2. STATIC PRESSURE SENSOR 3. FIRE/SMOKE DAMPER
1. 2 3.	1. REHEAT COIL 2. SPLITTER DAMPER 3. MANUAL VOLUME DAMPER
X"Ø D-X XXX CFM	SUPPLY AIR DIFFUSER TAG
X"/X" G-X XXX CFM	RETURN GRILLE TAG
T	THERMOSTAT
T	THERMOSTAT W/LOCKING COVER
TN	NIGHT THERMOSTAT
TA	RECESSED STAT (ASPIRATING)
H	HUMIDISTAT
S	OCCUPIED-UNOCCUP. SWITCH
X	KEYED NOTES
X	KEYED DEMOLITION NOTES
X	REVISION NOTE NUMBER
X	PHOTO TAG
XX X	EQUIPMENT TAG

ABBREVIATIONS

AF	AIRFOIL
AC-X	AIR COMPRESSOR
A/C	AIR CONDITIONING
ACCU-X	AIR COOLED CONDENSING UNIT
AHU-X	AIR HANDLING UNIT
AIR PD	AIR PRESSURE DROP
AS-X	AIR SEPARATOR
ATU	AIR TERMINAL UNIT
AMB	AMBIENT
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS
AMP	AMPERE
ANG	ANGLE
A	AREA
AD-X	AIR DOOR
APPROX	APPROXIMATE
AUX	AUXILIARY
ATM	ATMOSPHERE
AVG	AVERAGE
BI	BACKWARD INCLINED
BIBC	BACKWARD INCLINED BACKWARD CURVED
BOD	BOTTOM OF DUCT
BOJ	BOTTOM OF JOIST
B-X	BOILER
BHP	BREAK HORSE POWER
BTU	BRITISH THERMAL UNIT
BLDG	BUILDING
CUH-X	CABINET UNIT HEATER
CLG	CEILING
C TO C	CENTER TO CENTER
CL	CENTER LINE
CENT	CENTRIFUGAL
CF-X	CHEMICAL FEED SYSTEM
CHR	CHILLED WATER RETURN
CHS	CHILLED WATER SUPPLY
CH-X	CHILLER
CPVC	CHLORINATED POLYVINYL CHLORIDE
CLR	CLEAR
CO	CLEANOUT
CMPR	COMPRESSOR
CRAC-X	COMPUTER ROOM AIR CONDITIONER
CP-X	CONDENSATE PUMP
CDU	CONDENSER UNIT
CU-X	CONDENSING UNIT
CUHP-X	CONDENSING UNIT HEAT PUMP
CV	CONSTANT VOLUME / CONTROL VALVE
CCC-X	CLOSED CIRCUIT COOLER (FLUID COOLER
CC-X	COOLING COIL
CT-X	COOLING TOWER
CU FT	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CU IN	CUBIC INCH
DEG	DEGREE
DP	DEPTH / DEEP
DIA	DIAMETER
D-X	DIFFUSER
DX	DIRECT EXPANSION
DISC	DISCONNECT
DWG	DRAWING
DB	DRY BULB (Temperature)
DDVAV	DUAL DUCT VARIABLE AIR VOLUME

DC-X	DUST COLLECTOR
DWDI	DOUBLE WHEEL DOUBLE INLET
ERAD-X	ELECTRIC BASEBOARD RADIATOR
EFT-X	ELECTRIC FIN TUBE
ERH-X	ELECTRIC RADIANT HEATER
EUH-X	ELECTRIC UNIT HEATER
EL/ELEV	ELEVATION
ERV-X	ENERGY RECOVERY VENTILATOR
EAT	ENTERING AIR TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EQUIP	EQUIPMENT
ECU-X	EVAPORATIVE CONDENSING UNIT
EVAP	EVAPORATOR
EXH	EXHAUST
EA	EXHAUST AIR
EF-X	EXHAUST FAN
EH-X	EXHAUST HOOD
EXIST	EXISTING
ET-X	EXPANSION TANK
ESP	EXTERNAL STATIC PRESSURE
°F	DEGREE FAHRENHEIT
FCU-X	FAN COIL UNIT
FPB-X	FAN POWERED BOX
FT	FEET
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT-X	FIN TUBE
FF-X	FINAL FILTER
FLT-X	FLASH TANK
FLR	FLOOR
FC-X	FAN COIL
FC	FORWARD CURVED
FA	FREE AREA / FIRE ALARM
FOT-X	FUEL OIL TANK
FLA	FULL LOAD AMPS
F-X	FURNACE
GAL	GALLONS
GPM	GALLONS PER MINUTE
GALV	GALVANIZED
G	GAS
GPR-X	GAS PRESSURE REGULATOR
GA	GAUGE
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GH-X	GRAVITY HOOD
G-X	GRILLE
HZ	HERTZ
HD	HEAD
HE-X	HEAT EXCHANGER
HP-X	HEAT PUMP
HPWR	HEAT PUMP WATER RETURN
HPWS	HEAT PUMP WATER SUPPLY
HTR	HEATER
HTG	HEATING
HC-X	HEATING COIL
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HGT	HEIGHT
HDPE	HIGH DENSITY POLYETHYLENE
HP	HORSE POWER
HR	HOUR

H-X	HUMIDIFIER
HF-X	HYDRONIC FILTER
ID	INSIDE DIAMETER
IH-X	INTAKE HOOD
ISP	INTERNAL STATIC PRESSURE
KW	KILOWATT
KWH	KILOWATT HOUR
KES	KITCHEN EQUIPMENT SUPPLIER
KEF-X	KITCHEN EXHAUST FAN
KH-X	KITCHEN HOOD
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
LG	LENGTH
LTG	LIGHTING
LD-X	LINEAR DIFFUSER
LF	LINEAR FEET
LP	LIQUID PROPANE
LRA	LOCKED ROTOR AMPS
L-X	LOUVER
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
LBS	POUNDS
MBH	1000 BTU'S
MFR	MANUFACTURER
MAX	MAXIMUM
MCA	MAXIMUM CIRCUIT AMPACITY
MA	MAKE-UP AIR
MAU-X	MAKE-UP AIR UNIT
MECH	MECHANICAL
MC	MECHANICAL CONTRACTOR
MPC	MEDIUM PRESSURE CONDENSATE
MPS	MEDIUM PRESSURE STEAM
MIN	MINIMUM
MISC	MISCELLANEOUS
MV-X	MIXING VALVE
MTD	MOUNTED
MTG	MOUNTING
NOM	NOMINAL
NC	NORMALLY CLOSED / NOISE CRITERIA
NO	NORMALLY OPEN / NUMBER
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NA	NEUTRAL AIR
OA	OUTSIDE AIR
OC	ON CENTER
ORD	OVERFLOW STORM DRAIN PIPING
ORD	OVERFLOW ROOF DRAIN
PTAC-X	PACKAGED TERMINAL A/C
PTHP-X	PACKAGED TERMINAL HEAT PUMP
PPM	PARTS PER MILLION
PERP	PERPENDICULAR
PH	PHASE
PLBG	PLUMBING
PC	PLUMBING CONTRACTOR
PHVAC	PLUMBING, HEATING, VENTILATION AND AIR CONDITIONING
PVC	POLYVINYL CHLORIDE
PDU-X	POOL DEHUMIDIFICATION UNIT
PIV	POST INDICATOR VALVE

PWR	POWER
PF-X	PRE FILTER
PHC-X	PREHEAT COIL
PD	PRESSURE DROP
P-X	PLUMBING FIXTURE
PRV-X	PRESSURE REDUCING VALVE
P-X	PUMP
PROP	PROPELLER
RECIRC	RECIRCULATE
R-X	REGISTER
RHC-X	REHEAT COIL
RLFA	RELIEF AIR
RV-X	RELIEF VALVE
REQ'D	REQUIRED
RA	RETURN AIR
RD	ROOF DRAIN
RF-X	RETURN FAN
RPM	REVOLUTIONS PER MINUTE
RH	RELATIVE HUMIDITY
RTU-X	ROOFTOP UNIT
RM	ROOM
SCHED	SCHEDULE
SEN	SENSOR
SIM	SIMILAR
SWSI	SINGLE WHEEL SINGLE INLET
SA-X	SOUND ATTENUATOR
SD	STORM DRAIN PIPING
SPEC(S)	SPECIFICATIONS
SQ	SQUARE
STD	STANDARD
SUCT	SUCTION
SP	STATIC PRESSURE
SA	SUPPLY AIR
SF-X	SUPPLY FAN
TEMP	TEMPERATURE
TD	TEMPERATURE DIFFERENCE
TU-X	TERMINAL UNIT
TUR	TERMINAL UNIT REHEAT
T-STAT	THERMOSTAT
TK	THICK
TONS	12000 BTU
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
UH-X	UNIT HEATER
UV-X	UNIT VENTILATOR
UNO	UNLESS NOTED OTHERWISE
VAR	VARIABLE
VAV	VARIABLE AIR VOLUME
VFD-X	VARIABLE FREQUENCY DRIVE
VERT	VERTICAL
V	VOLT
VOL	VOLUME
WG	WATER GAUGE
WPD	WATER PRESSURE DROP
W	WATT / WIDTH
WT	WEIGHT
WB	WET BULB TEMPERATURE
YD	YARD

DRAWING INDEX

PLUMBING
P1-1 PLUMBING PLANS
MECHANICAL
M0-0 SYMBOLS & ABBREVIATIONS
M1-1 HVAC PLANS
M2-1 MECHANICAL SCHEDULES & DETAILS
M3-1 MECHANICAL SPECIFICATIONS
M3-2 MECHANICAL SPECIFICATIONS

CODE REQUIREMENTS

2015 INTERNATIONAL MECHANICAL CODE
2015 UNIFORM PLUMBING CODE
2012 INTERNATIONAL ENERGY CONSERVATION CODE
2015 INTERNATIONAL BUILDING CODE
2015 INTERNATIONAL FUEL GAS CODE

NOTICE

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GENERAL NOTES:

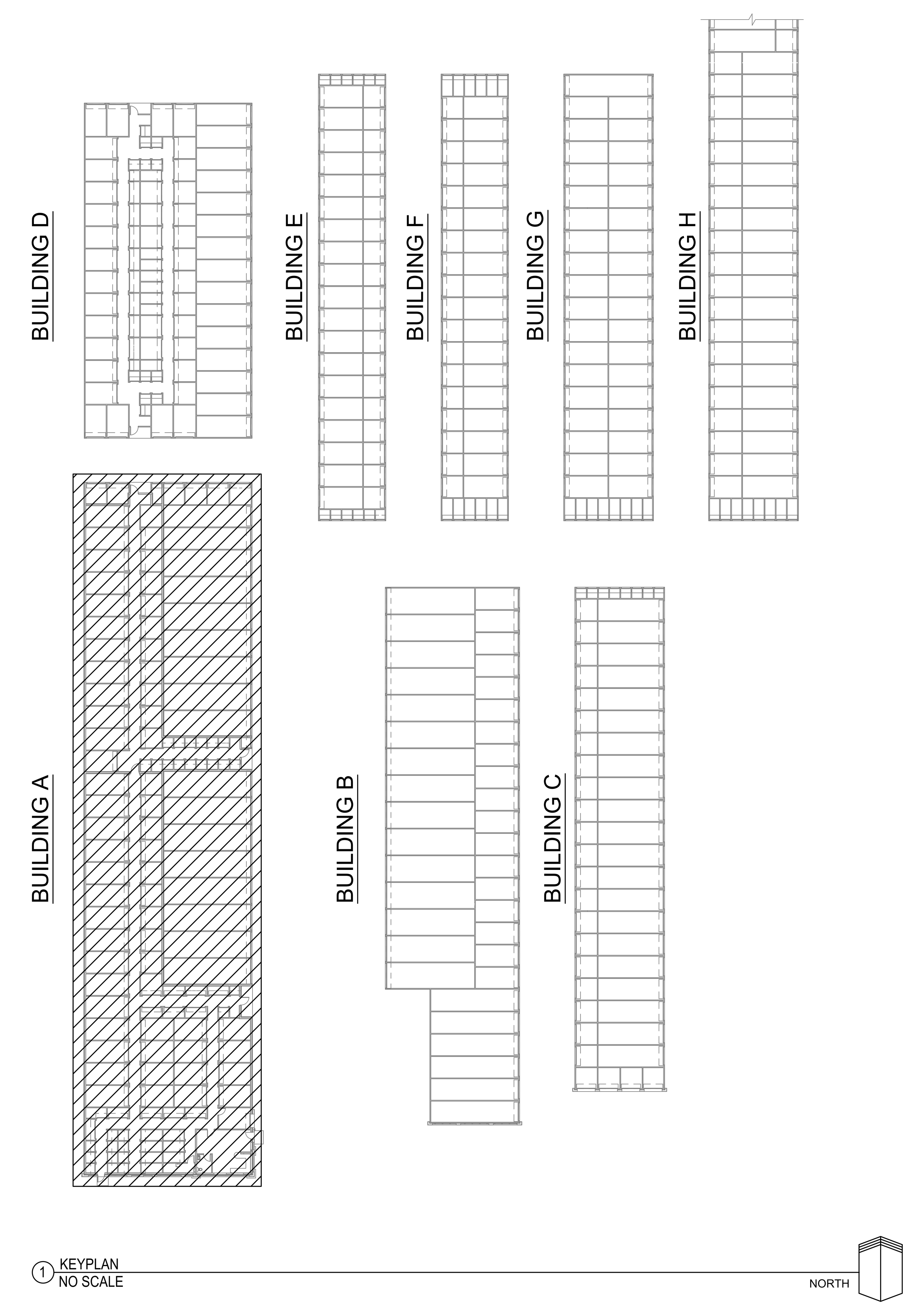
1. PIPING, DUCTWORK, AND EQUIPMENT SHOWN HALFTONE IS EXISTING TO REMAIN. PIPING, DUCTWORK AND EQUIPMENT SHOWN FULL-TONE IS NEW.
2. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ANY CUTTING AND PATCHING NEEDED FOR MECHANICAL INSTALLATION. PATCHING MUST MATCH EXISTING.
3. ACCESS PANELS ARE REQUIRED FOR ALL VALVES, TRAPS, DAMPERS, CONTROLS, ETC., IN HARD SURFACE CEILINGS. ACCESS PANELS SHALL BE FURNISHED BY MC AND INSTALLED BY THE MC. COORDINATE EXACT LOCATIONS WITH ARCHITECT.
4. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
5. CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC AND PIPING) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
6. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
7. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, PLUMBING, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC.,SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
8. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.
9. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH STRAIGHT SECTION OF PIPE OR DUCT UPSTREAM AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
10. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). TESTING, ADJUSTING, AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE AABC STANDARDS.
11. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
12. REINFORCEMENT, DETAILING, AND PLACEMENT OF CONCRETE SHALL CONFORM TO ASTM 315 AND ACI 318. CONCRETE SHALL CONFORM TO ASTM C94. CONCRETE WORK SHALL CONFORM TO ACI 318, PART ENTITLED "CONSTRUCTION REQUIREMENTS." COMPRESSIVE STRENGTH IN 28 DAYS SHALL BE 3,000 PSI. TOTAL AIR CONTENT OF EXTERIOR CONCRETE SHALL BE BETWEEN 5 AND 7 PERCENT OF VOLUME. SLUMP SHALL BE BETWEEN 3 AND 4 INCHES. CONCRETE SHALL BE CURED FOR 7 DAYS AFTER PLACEMENT.
13. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S DRAWINGS COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
14. ALL CONTROL WIRE AND CONDUIT SHALL BE INSTALLED IN A NEAT AND ORDERLY FASHION AND SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND DIVISION 16 OR 23 OF THE SPECIFICATION.
15. CONCRETE HOUSEKEEPING PADS TO SUIT MECHANICAL EQUIPMENT SHALL BE SIZED AND INSTALLED BY THE MC. MINIMUM CONCRETE PAD THICKNESS SHALL BE 4". PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 4" ON EACH SIDE. IT SHALL BE THE RESPONSIBILITY OF THE MC TO COORDINATE SIZE AND LOCATION OF CONCRETE HOUSEKEEPING PADS.
16. WHEN MECHANICAL WORK (HVAC, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MC'S RESPONSIBLY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MC, WHOSE DECISION SHALL BE FINAL.
17. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
18. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MC.
19. ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED, AND REQUIRED TO PROVIDE A VIBRATION FREE INSTALLATION.
20. ALL DUCTWORK, PIPING AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.
21. MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM METAL DECK.
22. ALL ROOF MOUNTED EQUIPMENT CURBS FOR EQUIPMENT PROVIDED BY THE MC SHALL BE FURNISHED BY THE MC AND INSTALLED BY THE MC.
23. LOCATIONS AND SIZES OF ALL FLOOR, ROOF, AND WALL OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
24. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
25. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.
26. ALL WORK SHALL COMPLY WITH ALL CURRNET LOCAL CODES, INCLUDING INTERNATIONAL BUILDING CODE, UNIFORM AND INTERNATIONAL MECHANICAL CODE, AND NFPA.

GENERAL HVAC NOTES :

1. DO NOT RUN DUCTWORK ABOVE ELECTRICAL PANELS OR IN CODE REQUIRED CLEARANCE SPACES. COORDINATE ALL ROUTING WORK WITH ALL TRADES.
2. CONTRACTOR SHALL COORDINATE LOCATION OF DUCTWORK IN CEILING SPACE WITH ALL TRADES PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK.
3. FOR GENERAL DUCTWORK CONSTRUCTION, SEE DETAILS IN DRAWING SET.
4. DUCTWORK SHALL NOT BE FABRICATED UNTIL ALL COORDINATION CONFLICTS HAVE BEEN RESOLVED.
5. CAP ENDS OF ALL INSTALLED DUCTWORK DURING CONSTRUCTION TO MINIMIZE DIRT, DEBRIS, AND FOREIGN OBJECTS FROM ENTERING THE DUCT SYSTEM.
6. BRANCH DUCT SIZES ARE THE SAME AS DIFFUSER NECK SIZE, UNLESS NOTED OTHERWISE.
7. ALL DUCTWORK SHALL CLEAR DOORS AND WINDOWS.
8. ALL DUCTWORK DIMENSIONS, AS SHOWN ON THE DRAWINGS, ARE INTERNAL CLEAR DIMENSIONS AND DUCT SIZE SHALL BE INCREASED TO COMPENSATE FOR DUCT LINING THICKNESS.
9. PROVIDE ALL 90° SQUARE ELBOWS WITH DOUBLE RADIUS TURNING VANES UNLESS OTHERWISE INDICATED.
10. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO HEAT PUMPS, FANS, AND OTHER EQUIPMENT WHICH REQUIRES VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.
11. UNLESS OTHERWISE NOTED, ALL DUCTWORK IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE, WITH SPACE FOR INSULATION IF REQUIRED.
12. OFFSETS IN DUCTS, INCLUDING DIVIDED DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
13. PROVIDE ACCESS DOORS IN DUCTWORK TO PROVIDE ACCESS FOR ALL SMOKE DETECTORS, FIRE DAMPERS, SMOKE DAMPERS, VOLUME DAMPERS, HUMIDIFIERS, COILS, AND OTHER ITEMS LOCATED IN THE DUCTWORK WHICH REQUIRE SERVICE AND/OR INSPECTION.
14. PROVIDE ACCESS DOORS IN DUCTWORK FOR OPERATION, ADJUSTMENT, AND MAINTENANCE OF ALL FANS, VALVES, AND MECHANICAL EQUIPMENT.
15. SEE SPECIFICATIONS FOR DUCTWORK GAUGES, BRACING, HANGERS, AND OTHER REQUIREMENTS.
16. PROVIDE A VOLUME DAMPER IN ALL BRANCH TAKEOFFS CONNECTING TO DIFFUSERS OR REGISTERS EXCEPT IN AREAS WITH RIGID CEILINGS. IN THOSE AREAS, DIFFUSERS OR REGISTERS SHALL HAVE INTEGRAL VOLUME DAMPERS.
17. LOCATE ALL MECHANICAL EQUIPMENT (HEAT PUMPS, MAKE-UP AIR UNITS, ETC.) FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS AND VALVES, AS REQUIRED BY MANUFACTURER'S INSTALLATION AND OPERATION REQUIREMENTS AND/OR BY CODE.
18. CERTAIN ITEMS SUCH AS RISES AND DROPS IN DUCTWORK, ACCESS DOORS, VOLUME DAMPERS, ETC., ARE INDICATED ON THE CONTRACT DOCUMENT DRAWINGS FOR CLARITY FOR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENT FOR THESE ITEMS.
19. COORDINATE DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING, AND OTHER CEILING ITEMS AND MAKE MINOR DUCT MODIFICATIONS TO SUIT.
20. IN CORRIDORS WHERE CEILING DEVICES AND AIR DIFFUSERS ARE INDICATED BETWEEN THE SAME LIGHT FIXTURES, INSTALL BOTH DEVICES AT THE QUARTER POINTS BETWEEN THE SAME FIXTURE.
21. UNLESS OTHERWISE SHOWN, LOCATE ALL ROOM SENSORS AT 4'-0" (CENTERLINE) A.F.F. NOTIFY THE ENGINEER OF ANY ROOMS WHERE THE ABOVE LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.
22. SMOKE DETECTORS SHALL BE FURNISHED AND WIRED BY THE EC. THE MC SHALL BE RESPONSIBLE FOR MOUNTING THE SMOKE DETECTOR IN DUCTWORK AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS.
23. MC TO INSTALL STATIC, RADIATION FIRE DAMPERS IN FIRE-RATED STRUCTURAL PENETRATIONS AS DIRECTED. EC TO INSTALL N.O. SWITCH INTERLOCKED WITH THE BLOWER MOTOR ON THE ASSOCIATED HVAC EQUIPMENT. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS AND ALL CODE REQUIREMENTS.

GENERAL PLUMBING NOTES:

1. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO CONSTRUCT A COMPLETE OPERATIONAL PLUMBING SYSTEM FOR THE ENTIRE PROJECT AS SHOWN ON THESE DRAWINGS, INCLUDING ALL NECESSARY FEES AND PERMITS.
2. THE ENTIRE INSTALLATION SHALL CONFORM TO THE MOST RECENTLY ADOPTED REQUIREMENTS OF THE INTERNATIONAL MECHANICAL CODE, IPC, AND ALL OTHER APPLICABLE CITY, COUNTY AND STATE CODES AND REGULATIONS IN EFFECT AT THE DATE OF THE BID.
3. PRIOR TO FABRICATION AND INSTALLATION THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL PLUMBING PIPING, DUCTWORK, AND EQUIPMENT WITH PLUMBING PIPING, PLUMBING EQUIPMENT, ALL DUCTWORK, AND ALL OTHER TRADES INCLUDING BUT NOT LIMITED TO THE MECHANICAL CONTRACTOR, ELECTRICAL CONTRACTOR, GENERAL CONTRACTOR AND ANY CONTRACTOR HIRED DIRECTLY BY THE OWNER WHERE CONFLICTS MAY OCCUR, THEY SHALL BE RESOLVED PRIOR TO INSTALLATION.
4. THE DRAWINGS SHOW THE GENERAL DESIGN ARRANGEMENTS AND THE EXTENT OF THE SYSTEM. IT SHALL BE THE WORK OF THE CONTRACTOR TO MAKE SUCH SLIGHT ALTERATIONS AS MAY BE NECESSARY TO MAKE THE SYSTEM COMPLETE AND OPERATIONAL IN ACCORDANCE WITH THE DESIGN INTENT. MAJOR DEVIATIONS, SUCH AS CHANGES IN COMPONENT SIZES, WEIGHTS, QUANTITIES OR MATERIAL, REQUIRE PRIOR APPROVAL BY THE CONSULTING ENGINEER.
5. ALL PLUMBING INFORMATION IS NOT SHOWN ON THE PLUMBING DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENTS INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS.
6. THE WORKING DRAWINGS ARE DIAGRAMMATIC. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL LOCATIONS FOR PLUMBING EQUIPMENT AND PIPING SHALL BE CHECKED AND COORDINATED WITH THE ARCHITECTURAL, MECHANICAL, STRUCTURAL AND ELECTRICAL DRAWINGS.
7. EXACT ROUTING OF WASTE, GAS AND WATER SERVICE IS DEPENDENT ON LOCAL SITE CONDITIONS AND MODIFICATIONS IN EQUIPMENT CONNECTIONS. EXACT LOCATION OF EQUIPMENT MAY VARY DEPENDING ON LOCAL CODE, HEALTH DEPARTMENT AND CITY REQUIREMENTS.
8. DETAILS: THE CONTRACTOR IS RESPONSIBLE TO REVIEW AND USE WHERE APPROPRIATE ALL OF THE PLUMBING DETAILS SHOWN ON THE DRAWINGS. DETAILS MAY OR MAY NOT BE CALLED OUT ON THE DRAWINGS WITH SYMBOLS OR KEYED NOTES. ANY CHANGES RESULTING FROM FAILURE TO INSTALL THE PLUMBING SYSTEM WITHOUT USING THE INCLUDED DETAILS IS THE RESPONSIBILITY OF THE CONTRACTOR.
9. THE DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND SHALL BE INTERPRETED AS AN INTEGRAL UNIT WITH THE ITEMS SHOWN ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGH SHOWN AND CALLED OUT IN BOTH.
10. THE STRUCTURE SHOWN ON ALL DETAILS MAY OR MAY NOT PERTAIN TO A PORTION OR ANY PORTION OF THE BUILDING. COORDINATE MOUNTING REQUIREMENTS WITH ARCHITECTURAL DRAWINGS AND STRUCTURAL DRAWINGS.
11. ANY PART OF THIS INSTALLATION THAT FAILS, IS UNFIT, OR BECOMES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
12. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL FITTINGS, TRANSITIONS, VALVES AND OTHER DEVICES AND ACCESSORIES REQUIRED FOR A COMPLETE, WORKABLE INSTALLATION.
13. THE CONTRACTOR IS RESPONSIBLE FOR PLUMBING EQUIPMENT CHECK-IN SAFEKEEPING AND DAMAGE.
14. INVERTS SHOWN ON PLUMBING DRAWINGS MAY BE REFERENCED FROM THE FINISHED FLOOR ELEVATION.
15. CONTRACTOR TO VERIFY INVERT ELEVATIONS, ROUTING AND PIPE SIZES OF ALL EXISTING PIPING TO BE CONNECTED PRIOR TO CONSTRUCTION. COORDINATE ALL INVERTS WITH CIVIL DRAWINGS PRIOR TO INSTALLATION.
16. CONTRACTOR TO COMPLY WITH THE LATEST PLUMBING CODE WHEN SIZING TRAP ARMS ON COMBINATION WASTE AND VENT SYSTEMS. THE DRAWINGS INDICATE THE WASTE LINE SIZE AND THE SIZE OF THE TRAP REQUIRED.
17. PROVIDE CLEANOUTS IN ACCORDANCE WITH THE REQUIREMENTS OF APPLICABLE CODES. FLOOR CLEANOUTS SHALL BE LOCATED OUT OF TRAFFIC AREAS.
18. LOCATE ALL PLUMBING VENTS AT LEAST 3 FEET ABOVE OR 10 FEET AWAY FROM ALL OUTSIDE AIR INTAKES INTO THE BUILDING.
19. SEE "PLUMBING FIXTURE SCHEDULE" FOR FIXTURE MAKE AND TYPE, AND SIZE OF INDIVIDUAL WASTE, VENT AND DOMESTIC WATER PIPING TO FIXTURES.
20. ALL PLUMBING EQUIPMENT SHALL BE LISTED AND LABELED BY AN APPROVED TESTING AGENCY.
21. ALL PIPING SHALL BE SECURED BY DOUBLE NUTTING AT THE HANGER ROD ATTACHMENT TO THE AND AT THE PIPE HANGER.
22. PROVIDE WATER HAMMER ARRESTORS (SHOCK ABSORBERS) AT ALL PIPE LOCATIONS WHERE VALVE CLOSURES (SUCH AS FLUSH VALVES) MAY CAUSE WATER HAMMER OR RESULT IN EXCESSIVE PIPE VIBRATION OR MOVEMENT.
23. UPON COMPLETION OF THE WORK, REMOVE ALL SURPLUS MATERIALS AND RUBBISH. MAKE ALL REQUIRED PATCHING AND REPAIRS OF OTHER TRADES' WORK DAMAGED BY THIS CONTRACTOR, AND LEAVE THE PREMISES IN A CLEAN AND ORDERLY CONDITION.
24. THE CONTRACTOR SHALL OPERATE THE SYSTEM AND DEMONSTRATE ALL ASPECTS TO THE ENGINEER AND/OR OWNER, TO PROVE IT'S OPERATIONAL.
25. THE CONTRACTOR SHALL GUARANTEE THE PLUMBING SYSTEM FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
26. INSTALL 4" AND LARGER SANITARY PIPING AT 1/8" PER FOOT SLOPE, SMALLER SIZES AT 1/4" PER FOOT.
27. DO NOT INSTALL HW AND CW SUPPLY PIPING IN ATTIC SPACE OR SPACES SUBJECT TO FREEZING.
28. DO NOT RUN PIPING ABOVE ELECTRICAL PANELS. PROVIDE 4' - 0" DEEP X 6' -6" HIGH CLEAR ACCESS SPACE IN FRONT OF PANELS. DO NOT RUN PIPING IN ELECTRICAL ROOMS.
29. PROVIDE 2" MINIMUM WASTE PIPING BELOW GRADE.
30. COORDINATE EXACT LOCATION OF FIXTURES AND DRAINS WITH ARCHITECTURAL DRAWINGS.
31. PROVIDE 4" MINIMUM VENT THRU ROOF. INCREASE VENT LINE SIZE 12" BELOW BUILDING INSULATION.
32. INSTALL GAS PIPING PER LATEST EDITION OF INTERNATIONAL FUEL GAS CODE.
33. TEMPERED HOT WATER NOT EXCEEDING 110 DEGREES FAHRENHEIT TO BE SUPPLIED TO ALL PUBLIC LAVATORIES.
34. STACK TEST IS REQUIRED ON ALL ROUGH AND UNDERGROUND PLUMBING.
35. 25LB AIR TEST IS REQUIRED ON ANY NEW GAS PIPING AT TIME OF ROUGH INSPECTION. TEST TO LAST FOR 24 HOURS WITH NO PRESSURE DROP.
36. 75LB AIR TEST OR WATER PRESSURE IS REQUIRED ON PIPING AT TIME OF ROUGH INSPECTION.



1 KEYPLAN
NO SCALE

LICENSED PROFESSIONAL ENGINEER
RICKY D. HIATT
15003
IOWA

SYMBOLS & ABBREVIATIONS

REVISIONS		
No.	Description	Date

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

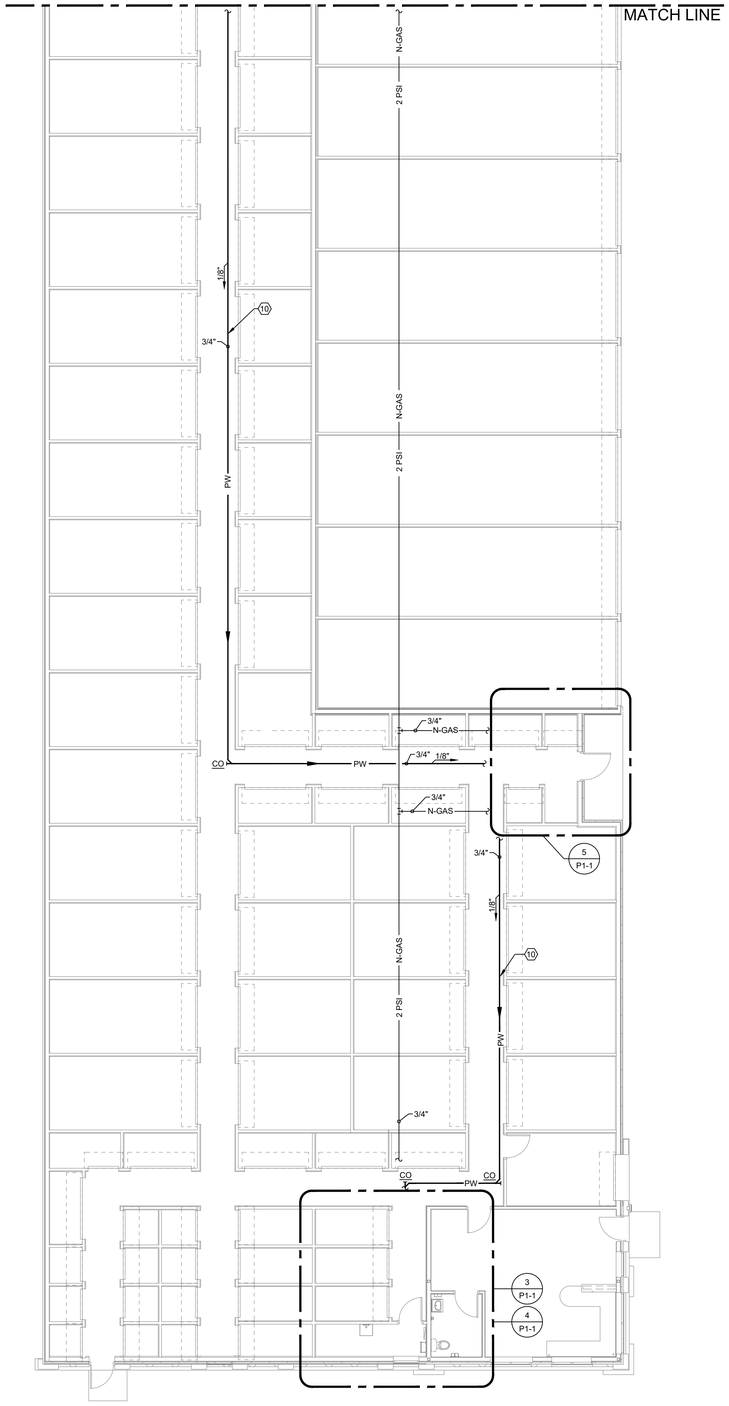
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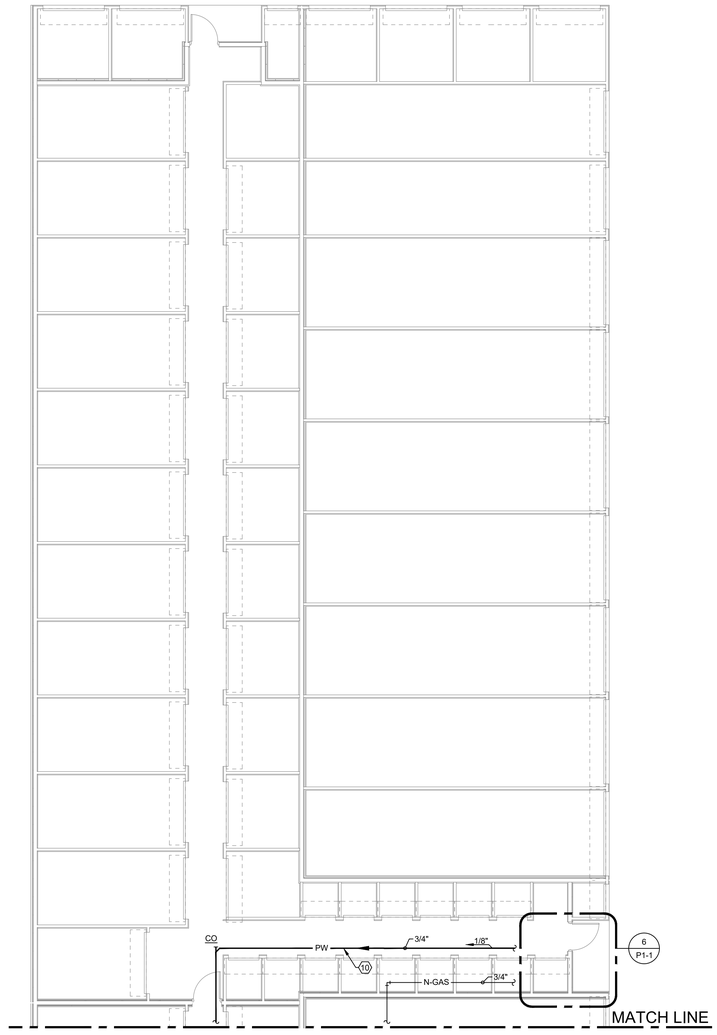
Project No. 197-20-02
Date 4 May 2020

RDH ENGINEERING, INC.
Mechanical, Electrical, & Energy Engineers

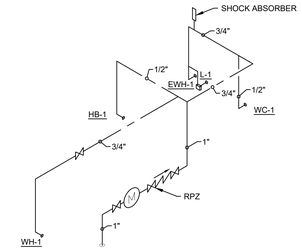
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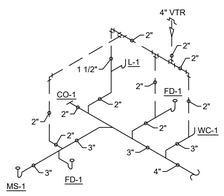
1 PLUMBING PLAN
1/8" = 1'-0"
NORTH



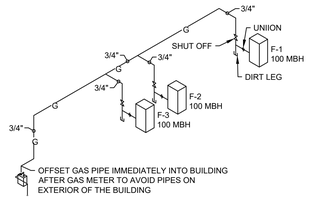
2 PLUMBING PLAN
1/8" = 1'-0"
NORTH



8 DOMESTIC WATER DIAGRAM
NO SCALE



9 WASTE AND VENT DIAGRAM
NO SCALE



10 GAS RISER DIAGRAM
NO SCALE

PLUMBING FIXTURES:

LAVATORY (L-1) (ADA):
KOHLER "KINGSTON" K-2005 VITREOUS CHINA, WALL HUNG, LAVATORY SIZE 20"X18"

TRIM: WATTS P1070 LAVSAFE THERMOSTATIC, CST BRASS FAUCET WITH CHROME LEVER HANDLE AND PERFORATED STRAINER DRAIN,. TRAP TO BE CAST BRASS WITH CLEANOUT.

COMPLETE WITH CHROME PLATED ANGLE STOPS, BRAIDED STAINLESS STEEL FLEXIBLE CONNECTORS, 17 GAUGE CHROME PLATED BRASS P-TRAP, OFFSET GRID ASSEMBLY, AND ESCUTCHEONS FOR WASTE AND WATER WALL PENETRATIONS.

PROVIDE HANDI LAV-GAURD INSULATION KIT TRUEBRO #102 OR APPROVED EQUAL.

WALL HYDRANT (WH-1):
3/4" LOOSE TEE KEY FREEZELESS WALL HYDRANT WITH INTEGRAL VACUUM BREAKER-BACKFLOW PREVENTER, 3/4" HOSE THREAD OUTLET, POLISHED BRASS FINISH ON BRASS CASTING AND WALL CLAMP. LOOSE TEE KEY TO BE FURNISHED WITH EACH HYDRANT. WOODFORD MODEL 65 OR APPROVED EQUAL.

FLOOR DRAIN (FD-1):
ZURN Z415BZ-NL CAST IRON BODY ASSEMBLY TYPE B WITH STRAINER, NICKEL BRONZE, LEVELING STRAINER.

WATER CLOSET (WC-1) (ADA):
KOHLER "HIGHLAND" K-3979-0 VITREOUS CHINA, SIPHON JET, ELONGATED BOWL, COMFORT HEIGHT TANK STYLE WATER CLOSET ADA COMPLIANT WITH "CLASS FIVE" FLUSHING AND OLSONITE OR EQUAL NO. 10CC WHITE OPEN FRONT SEAT WITH CHECK HINGE. VERIFY LEFT OR RIGHT HAND TRIP LEVER REQUIREMENTS.

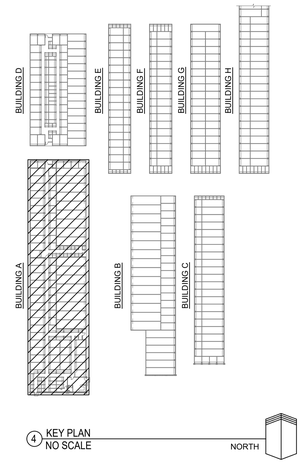
CLEAN OUT (CO-1):
JOSAM 55000, COATED CAST IRON FLOOR CLEAN OUT, SATIN FINISH NIKALOY TOP.

MOP SINK (MS-1):
MUSTEE MODEL 63M, FLOOR MOUNTED, STRUCTURAL FIBERGLASS BASIN, CAST IRON 3" DRAIN WITH STAINLESS STEEL STRAINER. SIZE: 24"x24"x10" DEEP. PROVIDE WITH HOSE AND HOSE HOLDER MODEL NUMBER 65.700 AND MOP HANGER MODEL NUMBER 65.600.

HOSE BIBB (HB-1)
WOODFORD MODEL 101 ANTI-SIPHON WALL FAUCET. ASSE STANDARD 1019-TYPE C APPROVED. UPC/IAMPMO LISTED. ANTI-SIPHON WITH INTEGRAL CHECK AND ATMOSPHERIC VENT. MAX PRESSURE 125 PSI. MAX TEMPERATURE 120°F. 3/4" HOSE CONNECTION.

KEYED PLUMBING NOTES: (X)

1. UP TO 4" VENT THROUGH ROOF.
2. 1/2" CW DN TO EWH-1. CONNECT EWH-1 TO L-1 HW VALVE.
3. 1/2" CW DN TO L-1.
4. 3/4" PUMPED CONDENSATE WASTE DOWN TO MS-1. TERMINATE 1" ABOVE FLOOD PLAIN.
5. UP TO 2" VENT.
6. SEE CIVIL FOR CONTINUATION.
7. 1" DOMESTIC WATER ENTRANCE UP THROUGH FLOOR PENETRATION.
8. PROVIDE BACKFLOW PREVENTOR. SEE WATER SERVICE ENTRY DETAIL ON M2-1.
9. 1/2" CW DN TO HB-1.
10. MOUNT PW AS HIGH AS POSSIBLE.
11. ROUTE CONDENSATE WASTE FROM FURNACE DOWN TO CONDENSATE PUMP. SEE PUMPED WASTE CONNECTED IN SERIES DETAIL. MOUNT CONDENSATE PUMP ON WALL.
12. TRAP SEAL PRIMER TO BE LOCATED WHERE IT CAN BE EASILY ACCESSED FOR MAINTENANCE.
13. ROUTE 3/8" SEAMLESS COPPER PIPING FROM TRAP SEAL PRIMER UNDER FLOOR TO FLOOR DRAIN.



4 KEY PLAN
NO SCALE
NORTH

PUMPS

MARK	SERVES	GPH (@15')	RESERVOIR SIZE (GAL)	MAX PUMP HEAD (FT)	MOTOR DATA				BASIS OF DESIGN	NOTES
					AMPS	HP	V	PH		
CP-1	F-1	25	0.5	20	1	1/30	115	1	LITTLE GIANT VCMA-20UL	1, 2, 3
CP-2	F-1, F-2	25	0.5	20	1	1/30	115	1	LITTLE GIANT VCMA-20UL	1, 2, 3
CP-3	F-1, F-2, F-3	25	0.5	20	1	1/30	115	1	LITTLE GIANT VCMA-20UL	1, 2, 3

NOTES:
1. PROVIDE WITH 6' CORD AND PLUG.
2. PROVIDE WITH (3) 1/1/8" DIA INLETS.
3. PROVIDE WITH OVERFLOW PROTECTION WITH AUTOMATIC EQUIPMENT SHUTDOWN.

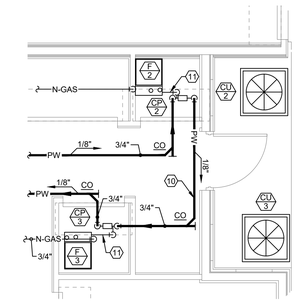
ELECTRIC WATER HEATER

MARK	SERVES	RECOVERY (GPH)	EWT (°F)	LWT (°F)	ELECTRICAL DATA				BASIS OF DESIGN	NOTES
					KW	V	PH	STAGES		
EWH-1	RESTROOM	0.9	50	90	3	120	1	1	RHEEM RTE 3	1

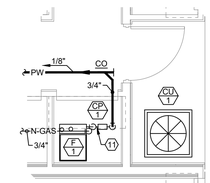
NOTES:
1. PROVIDE DEDICATED 30 AMP BREAKER.

FIXTURE SCHEDULE

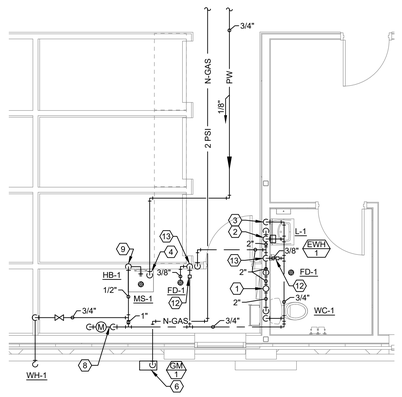
MARK	WASTE	VENT	CW	HW	NOTES
L-1	2"	1 1/2"	1/2"	1/2"	
WH-1	-	-	3/4"	-	
FD-1	2"	2"	1/2"	-	
WC-1	3"	2"	3/4"	-	
CO-1	2"	-	-	-	
MS-1	3"	1 1/2"	-	-	
HB-1	-	-	1/2"	-	



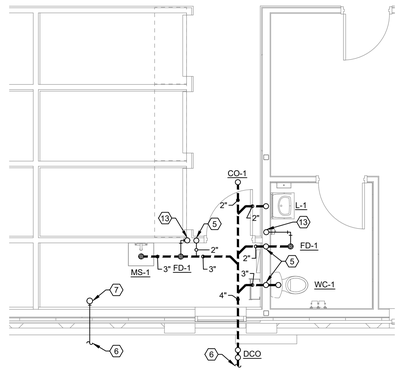
5 ENLARGED PLUMBING PLAN - ROOM A
1/4" = 1'-0"
NORTH



6 ENLARGED PLUMBING PLAN - ROOM B
1/4" = 1'-0"
NORTH



3 ENLARGED PLUMBING PLAN
1/4" = 1'-0"
NORTH



4 ENLARGED UNDERGROUND PLUMBING PLAN
1/4" = 1'-0"
NORTH

RDH ENGINEERING, INC.
Mechanical, Electrical, & Energy Engineers

STATE OF IOWA
PROFESSIONAL ENGINEER
RICKY D. HATH
15003
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2021
PAGES OR SHEETS COVERED BY THIS SEAL:
ALL MECHANICAL SHEETS

PLUMBING PLANS

No.	Description	Date
	REVISIONS	

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

Paul J. Kelly
Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

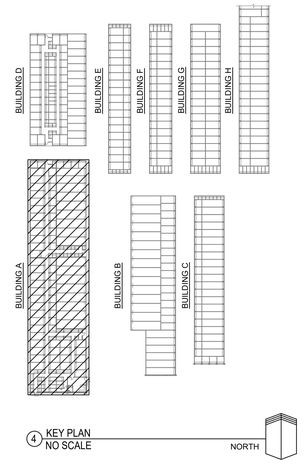
P1-1

Project No. 197.20-02
Date 4 May 2020

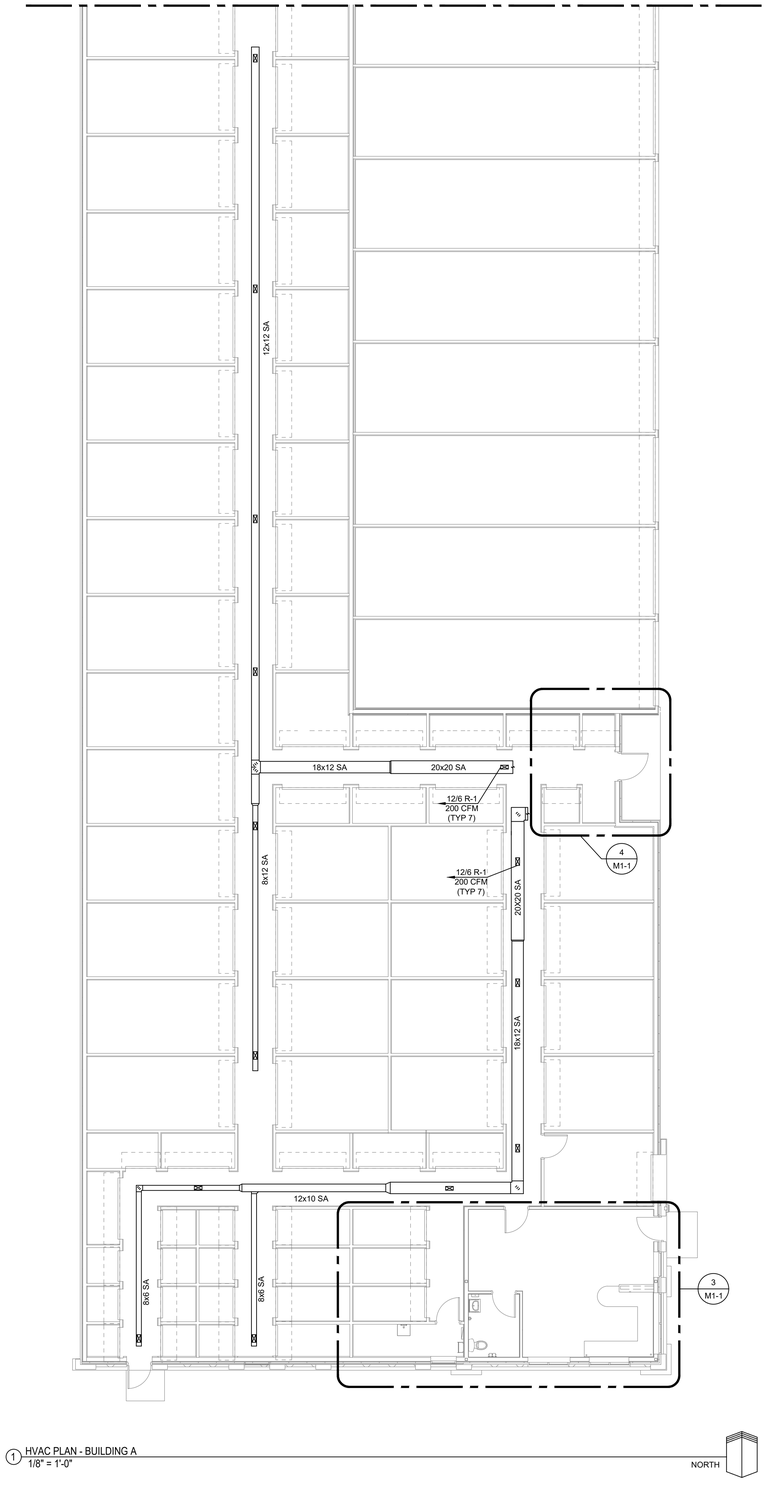
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KEYED MECHANICAL NOTES: (X)

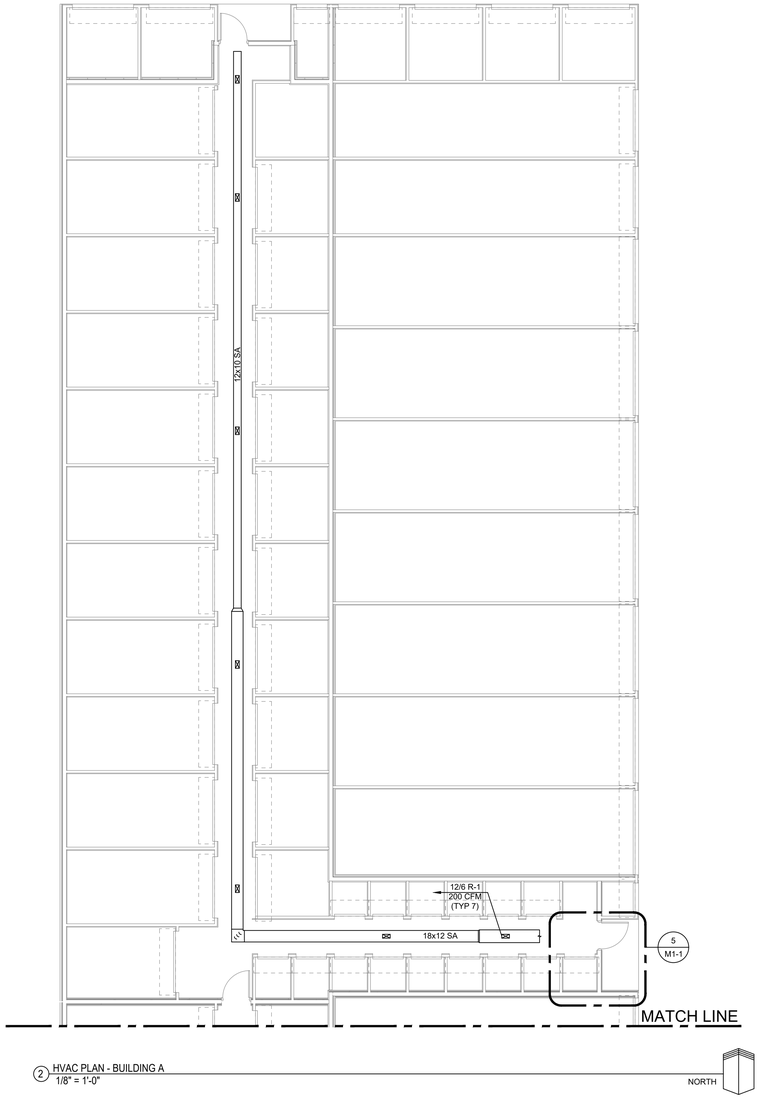
1. MOUNT PTAC-1 BELOW WINDOW THROUGH WALL SLEEVE.
2. MOUNT BOTTOM OF ELECTRIC UNIT HEATER AT 24" A.F.F.
3. TERMINATE RESTROOM EXHAUST THROUGH A WALL CAP SIMILAR TO NUTONE 641 VENT FITTING. PAINT WALL CAP TO MATCH EXTERIOR FINISH.
4. WRAP EXHAUST AIR DUCT WITH 2" FOIL-FACED FIBERGLASS INSULATION.
5. ROUTE COMBUSTION AIR AND FLUE EXHAUST AIR UP TO CONCENTRIC VENT TERMINATION THROUGH ROOF. SIZE PER MANUFACTURER'S RECOMMENDATIONS. SEE CONCENTRIC VENT THROUGH ROOF DETAIL. SHEET M2-1.
6. ROUTE RL/RS LINE TO INDOOR COIL AS REQUIRED. SIZE LINES PER MANUFACTURER'S RECOMMENDATIONS. VERIFY INSULATION IS NOT DAMAGED UPON COMPLETION.
7. TERMINATE FRESH AIR INTAKE THROUGH A WALL CAP SIMILAR TO NUTONE 641 FA VENT FITTING. COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL. PAINT WALL CAP TO MATCH EXTERIOR FINISH. ROUTE OUTSIDE AIR DUCTWORK AS HIGH AS POSSIBLE. INSULATE OUTDOOR AIR DUCTWORK WITH 2" FOIL-FACED FIBERGLASS INSULATION. PROVIDE WITH VOLUME DAMPER. BALANCE OA FOR FURNACE TO 50 CFM. LOW VOLTAGE MOTORIZED DAMPER. INTERLOCK DAMPER WITH ASSOCIATED FURNACE. WHEN FAN IS ENERGIZED, THE DAMPER SHALL OPEN. WHEN FAN IS DE-ENERGIZED, THE DAMPER SHALL CLOSE
8. MOUNT BOTTOM OF RETURN GRILLE 10' AFF.
9. MOUNT BOTTOM OF SA AT 10' AFF.
10. MOUNT BOTTOM OF OA AT 12' AFF.



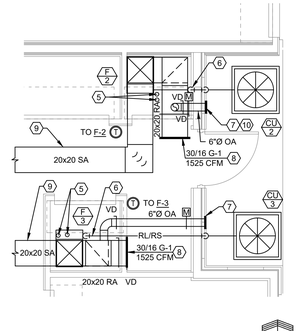
4 KEY PLAN
NO SCALE
NORTH



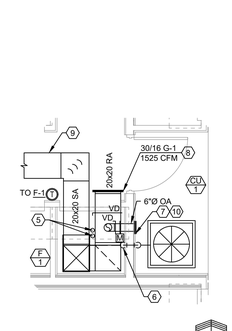
1 HVAC PLAN - BUILDING A
1/8" = 1'-0"
NORTH



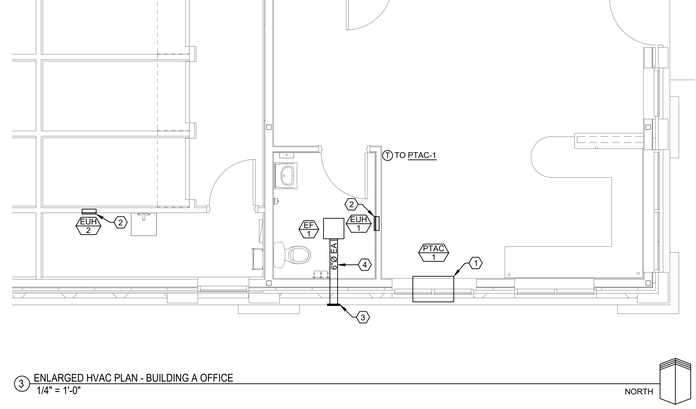
2 HVAC PLAN - BUILDING A
1/8" = 1'-0"
NORTH



4 ENLARGED HVAC PLAN - ROOM A
1/4" = 1'-0"
NORTH



5 ENLARGED HVAC PLAN - ROOM B
1/4" = 1'-0"
NORTH



3 ENLARGED HVAC PLAN - BUILDING A OFFICE
1/4" = 1'-0"
NORTH

RDH ENGINEERING, INC.
Mechanical, Electrical, & Energy Engineers

HVAC PLANS

No.	Description	Date
	REVISIONS	

LockBox Storage Manawa

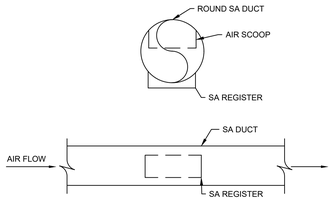
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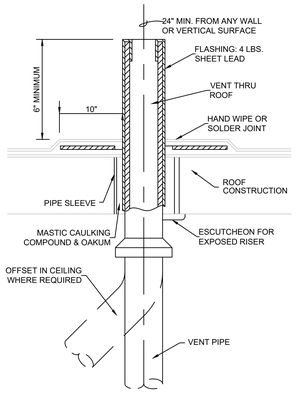
M1-1

Project No. 197.30-02
Date 4 May 2020

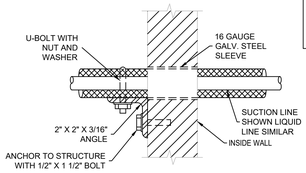
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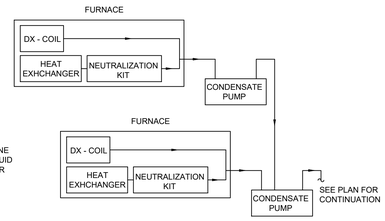
1 M2-1 SUPPLY AIR REGISTER TAKE-OFF DETAIL
SCALE: NONE



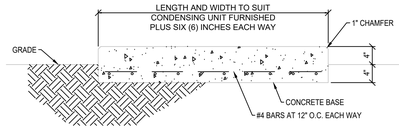
7 M2-1 VENT TRHOUGH ROOF DETAIL
SCALE: NONE



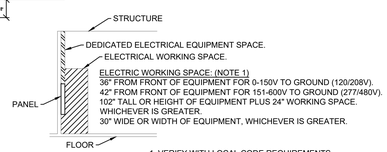
12 M2-1 REFRIGERANT PIPE WALL ANCHOR DETAIL
SCALE: NONE



17 M2-1 PUMPED WASTE CONNECTED IN SERIES DETAIL
SCALE: NONE

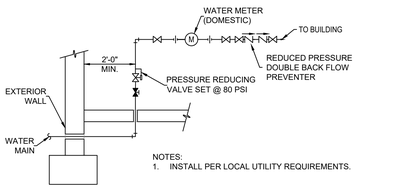


13 M2-1 EQUIPMENT BASE DETAIL
SCALE: NONE



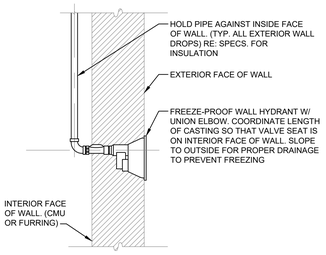
1. VERIFY WITH LOCAL CODE REQUIREMENTS, SPECIFICATIONS, AND NATIONAL ELECTRICAL CODE.

18 M2-1 ELECTRICAL WORKING SPACE DETAIL
SCALE: NONE

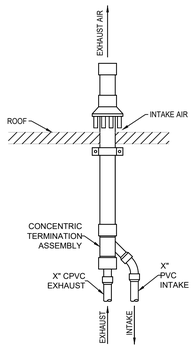


NOTES:
1. INSTALL PER LOCAL UTILITY REQUIREMENTS.

2 M2-1 WATER SERVICE ENTRY DETAIL
SCALE: NONE

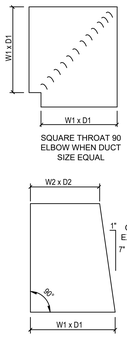


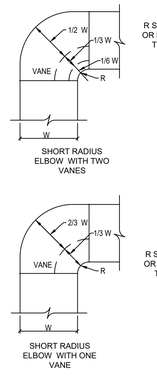
8 M2-1 WALL HYDRANT DETAIL
SCALE: NONE



NOTE: SIZE EXHAUST AND INTAKE AS PER MANUFACTURES RECOMMENDATIONS FOR TOTAL EQUIVALENT LENGTH

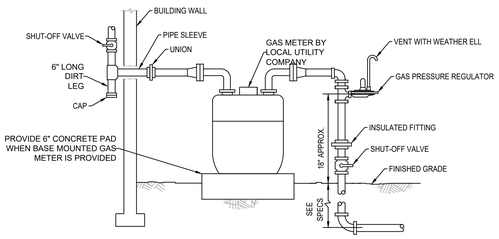
14 M2-1 CONCENTRIC VENT THROUGH ROOF DETAIL
SCALE: NONE



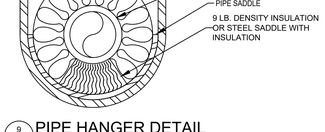


R SHALL EQUAL OR BE GREATER THAN 1/6 W.

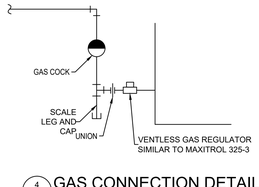
R SHALL EQUAL OR BE GREATER THAN 1/3 W



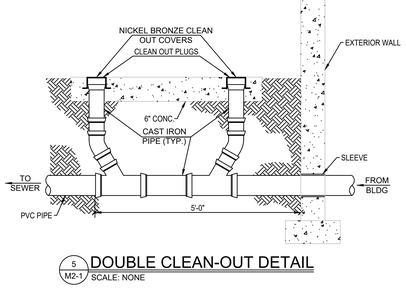
3 M2-1 GAS METER AND ENTRY DETAIL
SCALE: NONE



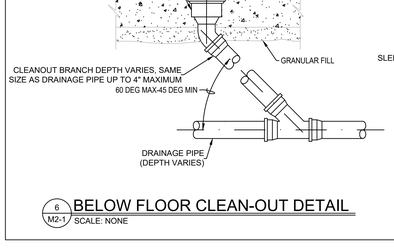
9 M2-1 PIPE HANGER DETAIL
SCALE: NONE



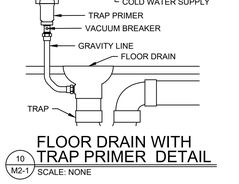
4 M2-1 GAS CONNECTION DETAIL
SCALE: NONE



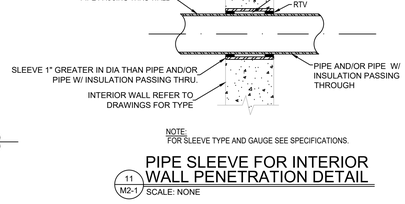
5 M2-1 DOUBLE CLEAN-OUT DETAIL
SCALE: NONE



6 M2-1 BELOW FLOOR CLEAN-OUT DETAIL
SCALE: NONE

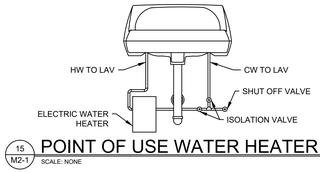


10 M2-1 FLOOR DRAIN WITH TRAP PRIMER DETAIL
SCALE: NONE

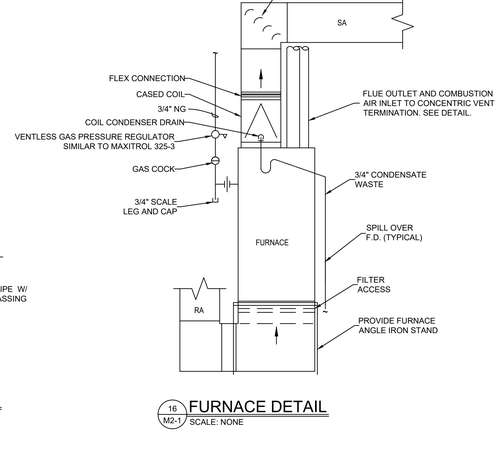


NOTE:
FOR SLEEVE TYPE AND GAUGE SEE SPECIFICATIONS.

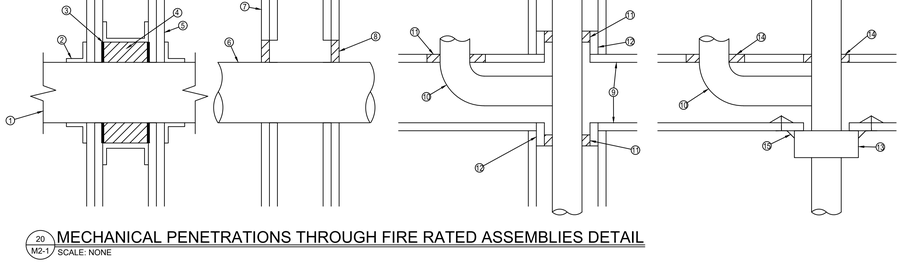
11 M2-1 PIPE SLEEVE FOR INTERIOR WALL PENETRATION DETAIL
SCALE: NONE



15 M2-1 POINT OF USE WATER HEATER DETAIL
SCALE: NONE



16 M2-1 FURNACE DETAIL
SCALE: NONE



20 M2-1 MECHANICAL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES DETAIL
SCALE: NONE

1. STEEL DUCT MAX 100" X 100" INSTALLED IN FRAMED OPENING.
2. STEEL MINIMUM #16 GAUGE GALVANIZED STEEL ANGLES SIZED TO LAP STEEL DUCT A MINIMUM 1" AND WALL A MINIMUM OF 2". ANGLES ATTACHED TO TO STEEL DUCT ON BOTH SIDES OF WALL WITH MINIMUM #10 STEEL SHEET METAL SCREWS SPACED A MAX OF 1" FROM EACH END OF STEEL DUCT AND SPACED A MAXIMUM OF 6" ON CENTER.
3. 3M FB-3000 WT MINIMUM OF 5/8" THICKNESS APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL.
4. MINIMUM 4-7/8" THICKNESS OF MINIMUM 4PCF MINERAL WOOD BATT INSULATION FIRMLY PACKED IN TO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM BOTH SURFACES OF WALL TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
5. RATED WALL ASSEMBLY.
6. 2" MAX SDR 9 CROSSLINK POLYETHYLENE TUBING.
7. RATED WALL ASSEMBLY.
8. 3M FB-3000 WT MINIMUM OF 5/8" THICKNESS APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. AN ADDITIONAL 1/2" BEAD OF FILL MATERIAL APPLIED AT THE TUBING / GYPSUM BOARD INTERFACE AT POINT OF CONTACT LOCATION ON BOTH SURFACES OF WALL ASSEMBLY.
9. RATED ASSEMBLY.
10. MAXIMUM 3" PVC PIPING.
11. 3M FB-3000 WT MINIMUM OF 3/4" THICKNESS APPLIED WITHIN ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR SOLE PLATE AND FLUSH WITH BOTTOM SURFACE OF OF TOP PLATE. 3M FB-3000 WT MINIMUM OF 3/4" THICKNESS APPLIED AROUND PERIMETER OF BRANCH PIPING FLUSH WITH TOP SURFACE OF FLOOR. 3M FB-3000 WT MINIMUM OF 1/2" THICKNESS APPLIED AT THE PIPE/FLOOR INTERFACE AND THE PIPE/PLATE INTERFACE.
12. NOMINAL 2 BY 4 OR 2 BY 6 LUMBER PLATES. DIAMETER OR OPENING OR LENGTH OF NOTCH OUT IN PLATE TO BE 1/2" TO 1" LARGER THAN OUTSIDE PIPE DIAMETER.
13. NOMINAL 1/8" THICK INTUMESCENT MATERIAL SUPPLIED IN 2" WIDE STRIPS. WRAP STRIP TIGHTLY AROUND NONMETALLIC PIPE WITH CONTINUOUS LAYERS AND BUTTED TIGHTLY AGAINST THE BOTTOM SURFACE OF THE THE GYPSUM WALLBOARD CEILING OR TOP PLATE. THE MINIMUM NUMBER OF STRIPS IS DEPENDENT UPON THE NOMINAL SIZE OF THE PIPE.
14. 3M FB-3000 WT MINIMUM OF 3/4" THICKNESS APPLIED WITHIN ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR. 3M FB-3000 WT MINIMUM OF 1/2" THICKNESS APPLIED AT THE PIPE/FLOOR INTERFACE AND THE PIPE/PLATE OR WALLBOARD INTERFACE AND AT THE SEAMS OF THE WALLBOARD PLATE.
15. NOMINAL 2" DEEP COLLAR WITH 1-1/4" WIDE BY 2" LONG ANCHOR TABS AND MINIMUM 3/4" LONG TABS TO RETAIN WRAP STRIP LAYERS.

GAS FIRED FURNACE

MARK	COIL DATA			OUTDOOR AIR (CFM)	FAN DATA		MOTOR DATA					GAS HEAT DATA			BASIS OF DESIGN	WEIGHT (LBS)	NOTES
	TOT CAP (MBH)	SENS CAP (MBH)	EAT DB / WB (°F)		CFM	ESP (IN WG)	HP	VOLT	PH	AMP	MOP	INPUT (MBH)	OUTPUT (MBH)	AFUE			
F-1	47.8	36.9	80/67	50	1575	0.50	1	120	1	13.3	15	100	97	97%	TRANE S9X2C100U5PSBA	220	1, 2, 3, 4, 5
F-2	47.8	36.9	80/67	50	1575	0.50	1	120	1	13.3	15	100	97	97%	TRANE S9X2C100U5PSBA	220	1, 2, 3, 4, 5
F-3	47.8	36.9	80/67	50	1575	0.50	1	120	1	13.3	15	100	97	97%	TRANE S9X2C100U5PSBA	220	1, 2, 3, 4, 5

NOTES:
1. VENT SHALL BE SIZED PER MANUFACTURERS RECOMMENDATIONS.
2. PROVIDE WITH VENT TERMINATION KIT.
3. SINGLE STAGE HEAT.
4. PROVIDE WITH 7-DAY PROGRAMMABLE THERMOSTAT.
5. PROVIDE WITH NEUTRALIZATION KIT NEUTRA-SAFE CN2-220V. INSTALL PER MANUFACTURERS RECOMMENDATIONS.

PACKAGED AIR CONDITIONING UNIT

MARK	COOLING CAPACITY		HEATING CAPACITY		SUPPLY FAN DATA		PERFORMANCE		ELECTRICAL DATA				BASIS OF DESIGN	NOTES
	TOTAL (MBH)	POWER (W)	TOTAL (MBH)	POWER (W)	CFM	ESP	COP	EER	HEATING AMPS	VOLT	PH	COOLING AMPS		
PTAC-1	14.2	1365	13.9	4089	400	Ø	3.1	10.4	19.7	230	1	6.7	FRIEDRICH PDH15K5SG	1, 2, 3, 4, 5

NOTES:
1. BASED ON AMBIENT AIR TEMPERATURE OF 95°.
2. PROVIDE WITH WALL SLEEVE AND 6'-0" POWER CORD.
3. PROVIDE WITH REMOTE THERMOSTAT SIMILAR TO RT6.
4. PROVIDE 75 CFM OF OUTSIDE AIR.
5. PROVIDE WITH CONDENSATE PAN WITH SECONDARY OVERFLOW SWITCH.

CONDENSING UNIT

MARK	SERVES	TOTAL CAP. (MBH)	SENS CAP. (MBH)	COMPRESSOR DATA				COND DATA			ELECTRICAL DATA					WEIGHT (LBS)	BASIS OF DESIGN	NOTES
				NO.	SEER	RLA (EACH)	REFER TYPE	FAN NO.	FAN FLA	AMB TEMP	V	PH	MOCP	MCA				
CU-1	F-1	49.6	38.1	1	14	14	R-410	1	0.6	95	208/230	3	30	18		212	TRANE 4TTA4048A300A	1, 2, 3
CU-2	F-2	49.6	38.1	1	14	14	R-410	1	0.6	95	208/230	3	30	18		212	TRANE 4TTA4048A300A	1, 2, 3
CU-3	F-3	49.6	38.1	1	14	14	R-410	1	0.6	95	208/230	3	30	18		212	TRANE 4TTA4048A300A	1, 2, 3

NOTES:
1. REFRIGERANT PIPE QUANTITIES AND SIZE TO BE PER MANUFACTURER'S PIPING SCHEMATIC.
2. USE ONLY HACR CIRCUIT BREAKERS.
3. PROVIDE WITH CONDENSING UNIT PAD.

EXHAUST FANS

MARK	LOCATION	FAN DATA										BASIS OF DESIGN	NOTES
		WHEEL TYPE	FAN TYPE	CFM	ESP (IN WG)	FAN RPM	DRIVE TYPE	W	FLA	V	PH		
EF-1	RESTROOM	FC	EXHAUST	75	0.21	700	DIRECT	20	0.65	115	1	GREENHECK SP-B90	1, 2, 3

NOTES:
1. PROVIDE WITH PLUG TYPE DISCONNECT
2. PROVIDE WITH INTEGRAL BACKDRAFT DAMPER.
3. INTERLOCK FAN WITH LIGHT SWITCH/MOTION SENSOR.

COIL - DX

MARK	SERVES	CFM	P.D.	EAT		NU. OF CIRCUITS	REFR TYPE	TOTAL CAPACITY (MBH)	SENS CAPACITY (MBH)	BASIS OF DESIGN	NOTES
				DB (°F)	WB (°F)						
CC-1	F-1	1575	0.50	80	67	1	R-410	47.8	36.9	TRANE 4TXCC007DS3	1, 2, 3, 4
CC-2	F-2	1575	0.50	80	67	1	R-410	47.8	36.9	TRANE 4TXCC007DS3	1, 2, 3, 4
CC-3	F-3	1575	0.50	80	67	1	R-410	47.8	36.9	TRANE 4TXCC007DS3	1, 2, 3, 4

NOTES:
1. SUCTION LINE TEMPERATURE = 40°F.
2. PROVIDE WITH CONDENSATE PAN WITH SECONDARY OVERFLOW SWITCH.
3. CASED COIL.
4. ALUMINUM COIL.

DIFFUSER, REGISTERS, AND GRILLES

MARK	MAX STATIC PD (IN W.G.)	MAX NC	DAMPER (Y/N)	FRAME TYPE	FINISH	BASIS OF DESIGN	NOTES
R-1	0.1	20	Y	SURFACE	WHITE	KRUEGER 585	1, 2, 3
G-1	0.1	30	N	SURFACE	WHITE	KRUEGER S80	1, 2

NOTES:
1. SEE PLANS FOR NECK SIZES.
2. PRICE, TITUS, ARE APPROVED MANUFACTURERS.
3. PROVIDE WITH VOLUME CONTROL.

ELECTRIC UNIT HEATER

MARK	LOCATION	CFM	ELECTRICAL DATA				BASIS OF DESIGN	NOTES
			KW	V	PH	AMPS		
EUH-1	RESTOOM	65	2	240	1	8.4	QMARK CWH1202DSF	1, 2, 3
EUH-2	UTILITY	65	2	240	1	8.4	QMARK CWH1202DSF	1, 2, 3

NOTES:
1. PROVIDE WITH MOUNTING HARDWARE AND INTEGRATED THERMOSTAT.
2. PROVIDE WITH DISCONNECT SWITCH.
3. PROVIDE SEMI-RECESSED MOUNTING FRAME MODEL #CWHS1.

RICKY D. HATH
15003
IOWA

MECHANICAL DETAILS & SCHEDULES

No.	Description	Date
	REVISIONS	

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

Paul J. Kelly
Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

M2-1

Project No. 19720-02
Date 4 May 2020

RDH ENGINEERING, INC.
Mechanical, Electrical, & Energy Engineers

Print on 30" x 42" format for proper scale.

MECHANICAL SPECIFICATIONS INDEX

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SECTION 15050 - BASIC MECHANICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
1. Piping materials and installation instructions common to most piping systems.
2. Dielectric fittings.
3. Mechanical demolition.
4. Equipment installation requirements common to equipment sections.
5. Supports and anchorages.

1.2 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.
E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.3 SUBMITTALS

A. Welding certificates.

1.4 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."
B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. Electrical Characteristics for Mechanical Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

PART 2 - PRODUCTS

2.1 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 15 piping Sections for pipe, tube, and fitting materials and joining methods.
B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.2 JOINING MATERIALS

A. Refer to individual Division 15 piping Sections for special joining materials not listed below.
B. Pipe-Flange Gasket Materials: ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
D. Brazing Filler Metals: AWS A5.8, BCuP Series or BAg1, unless otherwise indicated.
E. Welding Filler Metals: Comply with AWS D10.12.

2.3 DIELECTRIC FITTINGS

A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.
B. Insulating Material: Suitable for system fluid, pressure, and temperature.
C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.
D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.
E. Dielectric Couplings: Galvanized-steel coupling with inert and non-corrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.
F. Dielectric Nipples: Electroplated steel nipple with inert and non-corrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.

PART 3 - EXECUTION

3.1 MECHANICAL DEMOLITION

A. Refer to Division 1 Sections "Cutting and Patching" and "Selective Demolition" for general demolition requirements and procedures.
B. Disconnect, demolish, and remove mechanical systems, equipment, and components indicated to be removed.
1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
3. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 15 Sections specifying piping systems.
B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
D. Install piping to permit valve servicing.
E. Install piping at indicated slopes.
F. Install piping free of sags and bends.
G. Install fittings for changes in direction and branch connections.
H. Install piping to allow application of insulation.
I. Select system components with pressure rating equal to or greater than system operating pressure.
J. Verify final equipment locations for roughing-in.
K. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.3 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 15 Sections specifying piping systems.
B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.4 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:
1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.
B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
C. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
D. Install equipment to allow right of way for piping installed at required slope.

3.6 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment.
B. Field Welding: Comply with AWS D1.1.

END OF SECTION 15050

SECTION 15075 - MECHANICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following mechanical identification materials and their installation:
1. Equipment nameplates.
2. Pipe markers.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 QUALITY ASSURANCE

A. ASME Compliance: Comply with ASME A13.1, "Scheme for the Identification of Piping Systems," for letter size, length of color field, colors, and viewing angles of identification devices for piping.

PART 2 - PRODUCTS

2.1 EQUIPMENT IDENTIFICATION DEVICES

A. Equipment Nameplates: Metal, with data engraved or stamped, for permanent attachment on equipment.
1. Data:
a. Manufacturer, product name, model number, and serial number.
b. Capacity, operating and power characteristics, and essential data.
c. Labels of tested compliances.
2. Location: Accessible and visible.
3. Fasteners: As required to mount on equipment.

2.2 PIPING IDENTIFICATION DEVICES

B. Manufactured Pipe Markers, General: Preprinted, color-coded, with lettering indicating service, and showing direction of flow.
1. Colors: Comply with ASME A13.1, unless otherwise indicated.
2. Lettering: Use piping system terms indicated and abbreviate only as necessary for each application length.
3. Pipes with OD, Including Insulation, Less Than 6 Inches: Full-band pipe markers extending 360 degrees around pipe at each location.

B. Self-Adhesive Pipe Markers: Plastic with pressure-sensitive, permanent-type, self-adhesive back.ts:
C. Plastic Tape: Continuously printed, vinyl tape at least 3 mils thick with pressure-sensitive, permanent-type, self-adhesive back.
1. Width for Markers on Pipes with OD, Including Insulation, Less Than 6 Inches: 3/4 inch minimum.

PART 3 - EXECUTION

3.1 APPLICATIONS, GENERAL

A. Products specified are for applications referenced in other Division 15 Sections. If more than single-type material, device, or label is specified for listed applications, selection is Installer's option.

3.2 EQUIPMENT IDENTIFICATION

A. Install and permanently fasten equipment nameplates on each major item of mechanical equipment that does not have nameplate or has nameplate that is damaged or located where not easily visible. Locate nameplates where accessible and visible. Include nameplates for the following general categories of equipment:
1. Pumps.
2. Heat exchangers.

B. Install access panel markers with screws on equipment access panels.

3.3 PIPING IDENTIFICATION

A. Install manufactured pipe markers indicating service on each piping system. Install with flow indication arrows showing direction of flow.
1. Pipes with OD, Including Insulation, Less Than 6 Inches: Pretensioned pipe markers. Use size to ensure a tight fit.
2. Pipes with OD, Including Insulation, Less Than 6 Inches: Self-adhesive pipe markers. Use color-coded, self-adhesive plastic tape, 1-1/2 inches wide, lapped at least 1-1/2 inches at both ends of pipe marker, and covering full circumference of pipe.

B. Locate pipe markers and color bands where piping is exposed in machine rooms; accessible maintenance spaces such as shafts locations as follows:
1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations through walls, floors, ceilings, and non-accessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced markers.

3.4 ADJUSTING AND CLEANING

A. Relocate mechanical identification materials and devices that have become visually blocked by other work.
B. Clean faces of mechanical identification devices.

END OF SECTION 15075

SECTION 15081 - DUCT INSULATION

PART 1 - PRODUCTS

1.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Mineral-Fiber Insulation:
a. CertainTeed Manson.
b. Knauf FiberGlass GmbH.
c. Owens-Corning Fiberglas Corp.

1.2 INSULATION MATERIALS

A. Mineral-Fiber Board Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type 1B, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.
B. Mineral-Fiber Blanket Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.
C. Field-Applied Jackets: ASTM C 921, Type I, unless otherwise indicated.
1. Foil and Paper Jacket: Laminated, glass-fiber-reinforced, flame-retardant kraft paper and aluminum foil.
2. PVC Jacket: High-impact, ultraviolet-resistant PVC, 20 mils thick, roll stock ready for shop or field cutting and forming.
D. Accessories and Attachments:
1. Glass cloth and Tape: Comply with MIL-C-20079H, Type I for cloth and Type II for tape. Woven glass-fiber fabrics, plain weave, presized a minimum of 8 oz./sq. yd.
2. Bands: Aluminum 3/4 inch wide.
3. Wire: 0.080-inch, nickel-copper alloy; 0.0625-inch, soft-annealed, stainless steel; or 0.062-inch, soft-annealed, galvanized steel.
4. Weld-Attached anchor Pins and Washers: Copper-coated steel pin for capacitor-discharge welding and galvanized speed washer. Pin length sufficient for insulation thickness indicated.
5. Adhesive-Attached Anchor Pins and Speed Washers: Galvanized Steel plate, pin and washer manufactured for attachment to duct and plenum with adhesive. Pinlength sufficient for insulation thickness indicated.

PART 2 - EXECUTION
2.1 DUCT AND PLENUM APPLICATION SCHEDULE

A. Service: Concealed rectangular & round, supply-air, and exposed exhaust air ducts.
1. Material: Mineral-fiber blanket.
2. Thickness: 2 inch.
3. Number of Layers: One
4. Field-Applied Jacket: Foil and paper.
5. Vapor Retarder Required: Yes.

END OF SECTION 15081

SECTION 15083 - PIPE INSULATION

1.1 PIPE INSULATION MATERIALS

1. Mineral-Fiber Insulation: Glass fibers bonded with a thermosetting resin complying with the following: Preformed Pipe Insulation; Comply with ASTM C 547, Type I, with factory-applied, all-purpose, vapor-retarder jacket.
2. Blanket Insulation: Comply with ASTM C 553, Type II, without facing.
3. Fire-Resistant Adhesive: Comply with MIL-A-3316C Class 1, Grade A for bonding glass cloth and tape to unfaced glass-fiber insulation, for sealing edges of glass-fiber insulation, and for bonding lagging cloth to unfaced glass-fiber insulation.
4. Vapor-Retarder Mastics: Fire- and water-resistant, vapor-retarder mastic for indoor applications. Comply with MIL-C-19565C, Type II.
5. Mineral-Fiber Insulating Cements: Comply with ASTM C 195.
6. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 339/C 449M.
E. Flexible Elastomeric Thermal Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.

1.2 PIPE INSULATION APPLICATION SCHEDULE

A. Service: Domestic cold water.

1. Operating Temperature: 35 to 60 deg. F.
2. Insulation Material: Mineral fiber preformed pipe.
3. Insulation Thickness: 1/2".

B. Service: Refrigerant suction and hot-gas pipe.

1. Operating Temperature: 35 to 50 deg. F.
2. Insulation Material: Flexible elastomeric.
3. Insulation Thickness: 1-1/2".

END OF SECTION 15083

SECTION 15140 - DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 SUMMARY
A. Section Includes:
1. Under-building slab and aboveground domestic water pipes, tubes, fittings, and specialties inside the building.
2. Water meters furnished by utility company for installation by Contractor.

1.2 SUBMITTALS
A. Product Data: For each type of product indicated.
1. Product Data for Credit EQ 4.1: For solvent cements and adhesive primers, including printed statement of VOC content.

1.3 QUALITY ASSURANCE
A. Piping materials shall bear label, stamp, or other markings of specified testing agency.
B. Comply with NSF 61 for potable domestic water piping and components.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS
A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 COPPER TUBE AND FITTINGS
A. Hard Copper Tube: ASTM B 88, Type L (ASTM B 88M, Type B) and ASTM B 88, Type M (ASTM B 88M, Type C) water tube, drawn temper.
1. Cast-Copper Solder-Joint Fittings: ASME B16.18, pressure fittings.
2. Wrought-Copper Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.
3. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

2.3 CPVC PIPING
A. CPVC Tubing System: ASTM D 2846/D 2846M, SDR 11, tube and socket fittings.

2.4 PVC PIPE AND FITTINGS
A. PVC Pipe: ASTM D 1785, Schedule 40 and Schedule 80.
1. PVC Socket Fittings: ASTM D 2466 for Schedule 40 and ASTM D 2467 for Schedule 80.

2.5 PIPING JOINING MATERIALS
A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free, unless otherwise indicated; full-face or ring type unless otherwise indicated.
B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.
C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
D. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.
E. Solvent Cements for Joining CPVC Piping and Tubing: ASTM F 493.
1. Use CPVC solvent cement that has a VOC content of 490 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Use adhesive primer that has a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
F. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
1. Use PVC solvent cement that has a VOC content of 510 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Use adhesive primer that has a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
G. Plastic, Pipe-Flange Gaskets, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.

2.6 TRANSITION FITTINGS
A. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
B. Sleeve-Type Transition Coupling: AWWA C219.
C. Plastic-to-Metal Transition Fittings:
1. Description: CPVC or PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert and one solvent-cement-socket or threaded end.
D. Plastic-to-Metal Transition Unions:
1. Description: CPVC or PVC four-part union. Include brass or stainless-steel threaded end, solvent-cement-joint plastic end, rubber O-ring, and union nut.

PART 3 - EXECUTION
3.1 PIPING INSTALLATION

A. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."
B. Install shutoff valve immediately upstream of each dielectric fitting.
C. Install water-pressure-reducing valves downstream from shutoff valves.
D. Install domestic water piping level with 0.25 percent slope downward toward drain and plumb.
E. Install piping to permit valve servicing.
F. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than system pressure rating used in applications below unless otherwise indicated.
G. Install piping free of sags and bends.
H. Install fittings for changes in direction and branch connections.
I. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.
J. Install sleeves for piping penetrations of walls, ceilings, and floors.
K. Install sleeve seals for piping penetrations of concrete walls and slabs.
Install escutcheons for piping penetrations of walls, ceilings, and floors.

3.2 JOINT CONSTRUCTION
A. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
B. Soldered Joints: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."
C. Pressure-Sealed Joints: Join copper tube and pressure-seal fittings with tools recommended by fitting manufacturer.
D. Copper-Tubing, Push-on Joints: Clean end of tube. Measure insertion depth with manufacturer's depth gage. Join copper tube and push-on-joint fittings by inserting tube to measured depth.
E. Flanged Joints: Select appropriate asbestos-free, nonmetallic gasket material in size, type, and thickness suitable for domestic water service. Join flanges with gasket and bolts according to ASME B31.9.
F. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements. Apply primer.
2. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
3. PVC Piping: Join according to ASTM D 2855.
G. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

3.3 VALVE INSTALLATION
A. Install shutoff valve close to water main on each branch and riser serving plumbing fixtures or equipment, on each water supply to equipment, and on each water supply to plumbing fixtures that do not have supply stops. Use ball or gate valves for piping NPS 2 and smaller.
B. Install drain valves for equipment at base of each water riser, at low points in horizontal piping, and where required to drain water piping.
1. Hose-End Drain Valves: At low points in water mains, risers, and branches.
2. Stop-and-Waste Drain Valves: Instead of hose-end drain valves where indicated.

3.4 HANGER AND SUPPORT INSTALLATION
A. Support vertical piping and tubing at base and at each floor.
B. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 3/4 and Smaller: 60 inches with 3/8-inch rod.
2. NPS 1 and NPS 1-1/4: 72 inches with 3/8-inch rod.
3. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.
C. Install supports for vertical copper tubing every 10 feet.
D. Install vinyl-coated hangers for CPVC piping with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 1 and Smaller: 36 inches with 3/8-inch rod.
2. NPS 1-1/4 to NPS 2: 48 inches with 3/8-inch rod.
E. Install supports for vertical CPVC piping every 60 inches for NPS 1 and smaller, and every 72 inches for NPS 1-1/4 and larger.
F. Install vinyl-coated hangers for PVC piping with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 2 and Smaller: 48 inches with 3/8-inch rod.
I. Install supports for vertical PVC piping every 48 inches.
J. Support piping and tubing not listed in this article according to MSS SP-69 and manufacturer's written instructions.

3.5 FIELD QUALITY CONTROL
A. Perform tests and inspections.
B. Piping Inspections:
1. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
2. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
a. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
b. Final Inspection: Arrange final inspection for authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
3. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
C. Piping Tests:
1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
3. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
4. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
5. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.

3.6 CLEANING
A. Clean and disinfect potable domestic water piping as follows:
1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652.
B. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.7 PIPING SCHEDULE
A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.
C. Aboveground domestic water piping, NPS 2 and smaller, shall be one of the following:

1. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B) ASTM B 88, Type M (ASTM B 88M, Type C); cast- or wrought- copper solder-joint fittings; and brazed soldered joints.
2. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B) or ASTM B 88, Type M (ASTM B 88M, Type C); copper pressure-seal-joint fittings; and pressure-sealed joints.
3. CPVC Tubing System: CPVC tube; CPVC socket fittings; and solvent-cemented joints. **If approved by Authority Having Jurisdiction**
D. Aboveground domestic water piping, NPS 2-1/2 to NPS 4 , shall be one of the following:
1. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B) ASTM B 88, Type M (ASTM B 88M, Type C); cast- or wrought- copper solder-joint fittings; and brazed soldered joints.
2. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B); copper pressure-seal-joint fittings; and pressure-sealed joints.
3. Galvanized-steel pipe and nipples; galvanized, gray-iron threaded fittings; and threaded joints.
4. Galvanized-steel pipe; grooved-joint, galvanized-steel-pipe appurtenances; and grooved joints.
5. PVC, Schedule 40 pipe; PVC, Schedule 40 socket fittings; and solvent-cemented joints. **If approved by Authority Having Jurisdiction**

3.8 VALVE SCHEDULE
E. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
1. Shutoff Duty: Use ball or gate valves for piping NPS 2 and smaller.
2. Throttling Duty: Use ball or globe valves for piping NPS 2 and smaller.
3. Hot-Water Circulation Piping, Balancing Duty: Memory-stop balancing valves.
4. Drain Duty: Hose-end drain valves.
B. Use check valves to maintain correct direction of domestic water flow to and from equipment.
C. Iron grooved-end valves may be used with grooved-end piping.
D. CPVC and PVC valves matching piping materials may be used. **If approved by Authority Having Jurisdiction**

END OF SECTION 15140

SECTION 15150 - SANITARY WASTE AND VENT PIPING

1.1 PIPING MATERIALS

A. Hub-and-Spigot Cast-Iron Pipe and Fittings: ASTM A 74, Service and Extra-Heavy classes.
1. Gaskets: ASTM C 564, rubber.

B. Hubless Cast-Iron Pipe and Fittings: ASTM A 888 or CISPI 301.
1. Couplings: ASTM C 1277 assembly of metal housing, corrosion-resistant fasteners, and ASTM C 564 rubber sleeve with integral, center pipe stop.
a. Heavy-Duty, Type 304, Stainless-Steel Couplings: ASTM A 666, Type 304, stainless-steel shield; stainless-steel bands; and sleeve.
1) NPS 1 1/2 to NPS 4: 3-inch wide shield with 6 bands.
2) NPS 5 to NPS 10: 4-inch wide shield with 4 bands.
b. Heavy-Duty, FMG-Approved Couplings: ASTM A 666, Type 304, stainless-steel housing; stainless-steel bands; and sleeve.
1) NPS 1 1/2 to NPS 4: 3-inch wide housing with 2 bands.
2) NPS 5 to NPS 10: 4-inch wide housing with 2 bands.
c. Heavy-Duty, Cast-Iron Couplings: ASTM A 38, 2-piece, cast-iron housing; stainless-steel bolts and nuts; and sleeve.
d. Heavy-Duty, Type 301 Stainless-Steel Couplings: ASTM A 666, Type 301, stainless-steel shield; stainless-steel bands; and sleeve.
1) NPS 1 1/2 to NPS 4: 3-inch wide shield with 4 bands.
2) NPS 5 to NPS 10: 4-inch wide shield with 6 bands.
e. Compact, Stainless-Steel Couplings: CISPI 310 with ASTM A 167, Type 301, or ASTM A 666, Type 301, stainless-steel corrugated shield; stainles-steel bands; and sleeve.
1) NPS 1 1/2 to NPS 4: 2 1/8-inch wide shield with 2 bands.
2) NPS 5 to NPS 6: 3-inch wide shield with 4 bands.
3) NPS 8 to NPS 10: 4-inch wide shield with 4 bands.
NPS 12 to NPS 15: 5 1/2-inch wide shield with 6 bands.

C. Copper DWV Tube: ASTM B 306, drainage tube, drawn temper.
1. Copper Drainage Fittings: ASME B16.23. cast copper or ASME B16.29, wrought copper, solder-joint fittings.

D. PVC Pipe: ASTM D 2665, solid-wall drain, waste, and vent. (If Approved by Local Codes and Authority having jurisdiction).
1. PVC Socket Fittings: ASTM D 2665, socket type, made to ASTM D 3311, drain, waste, and vent patterns.

F. Aboveground, Soil, Waste, and Vent Piping: Use any of the following piping materials for each size range:

NOTE:
Paint all vent pipes above roof to match color of roof panel material.

1. NPS 1 1/4 and NPS 1 1/2: Use NPS 1 1/2 and one of the following:
a. Couplings: Heavy-duty, Type 302 304, stainless steel.
b. Couplings: Heavy-duty, FMG approved cast iron.
c. Couplings: Compact, stainless steel.
2. NPS 1 1/4 and NPS 1 1/2 Steel pipe; cat-iron, threaded drainage fittings, and threaded joints.
3. NPS 2 to NPS 4 Service class, cast-iron soil piping; gaskets; and gasketed joints.
4. NPS 2 to NPS 4 Hubless, cast-iron soil piping and one of the following:
a. Couplings: Heavy-duty, Type 301, stainless steel.
b. Couplings: Heavy-duty, FMG approved cast iron.
c. Couplings: Compact, stainless steel
5. NPS 2 to NPS 4 Steel pipe; cast-iron, threaded drainage fittings, and threaded joints.
6. NPS 2 to NPS 4 Stainless-steel piping; gaskets, and gasketed joints.

G. Underground, Soil, Waste, and Vent Piping: Use the following piping materials for each size range:
1. NPS 1 1/2-tubless, cast-iron soil piping and one of the following:
a. Couplings: Heavy-duty, Type 301, stainless steel.
b. Couplings: Heavy-duty, cast iron.
c. Couplings: Compact, stainless steel.
2. NPS 2 to NPS 4 Service class, cast-iron soil piping; gaskets, and gasketed joints.
3. NPS 2 to 4 Extra-Heavy class, cast-iron soil piping; gaskets, and gasketed joints.
4. NPS 2 to NPS 4 Hubless, cast-iron soil piping and one of the following:
5. NPS 5 and NPS 6 Service class, cast-iron soil piping; gaskets, and gasketed joints.
6. NPS 5 and NPS 6: Extra-Heavy class, cast-iron soil piping; gaskets; and gasketed joints.
7. NPS 5 and NPS 6: Hubless, cast-iron soil piping and one of the following:
8. NPS 2 to NPS 4: Hubless, PVC soil piping and fittings if approved by Authority Having Jurisdiction.
9. NPS 5 to NPS 8: Hubless, PVC soil piping and fittings if approved by Authority Having Jurisdiction.

END OF SECTION 15150

SECTION 15194 - FUEL GAS PIPING

1.1 PIPING MATERIALS

A. Corrugated Stainless-steel Tubing Systems: Comply with AGA LC 1 and include the following:
1. Tubing: Corrugated stainless steel with plastic jacket or coating.
2. Fittings: Copper alloy with ends made to fit corrugated tubing. Include ends with threads according to ASME B1.20.1 if connection to threaded pipe or fittings is required.
3. Striker Plates: Steel, designed to protect tubing from penetrations.
B. Steel Pipe: ASTM A 53; Type E or S; Grade B; Schedule 40; black.
1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern, with threaded ends according to ASME B1.20.1.
2. Unions: ASME B16.39, Class 150, standard pattern, with threaded ends according to ASME B1.20.1.
3. Cast-Iron Flanges and Flanged Fittings: ASME B16.1, Class 125.
4. Steel Welding Fittings: ASME B16.9, wrought steel or ASME B16.11, forged steel.
5. Steel Threaded Fittings: ASME B16.11, forged steel with threaded ends, according to ASME B1.20.1.
6. Joint Compound and Tape: Suitable for natural gas.
7. Steel Flanges and Flanged Fittings: ASME B16.5.
8. Gasket Material: Thickness, material, and type suitable for natural gas.

1.2 VALVES

A. Valves, NPS 2 and smaller: Threaded ends according to ASME B1.20.1 for pipe threads.
B. Valves, NPS 2 1/2 and Larger: Flanged ends according to ASME B16.5 for steel flanges and according to ASME B16.24 for copper and copper-alloy flanges.
C. Appliance Connector Valves: ANSI Z21.15 and IAS listed.
D. Gas Stops: Bronze body with AGA stamp, plug type with bronze plug and flat or square head, bail type with chrome-plated brass ball and lever handle, or butterfly valve with stainless-steel disc and fluorocarbon elastomer seal and lever handle; 2-psig minimum pressure rating.
E. Gas Valves, NPS 2 and Smaller: ASME B16.33 and IAS listed bronze body and 125-psig pressure rating.
F. Plug Valves, NPS 2 1/2 and Larger: ASME B16.38 and MSS SP-78 cast-iron, lubricated plug valves, with 125-psig pressure rating.
G. Exterior steel gas piping shall be protected from corrosion per IFGC 403.8.

1.3 PIPING APPLICATIONS

A. Use flanges, unions, transition, and special fittings in applications below, unless otherwise indicated.
1. NPS 1/2 and Smaller: NPS 3/4 steel pipe, malleable-iron threaded fittings and threaded joints.
2. NPS 1/2 and Smaller: Corrugated, stainless-steel tubing system and threaded joints.
3. NPS 3/4 and NPS 1: Steel pipe, malleable-iron threaded fittings, and threaded joints.
4. NPS 3/4 and NPS 1: Corrugated, stainless-steel tubing system and threaded joints.
5. NPS 1 1/4 to NPS 4: Steel pipe, malleable-iron threaded fittings, and threaded joints.
6. NPS 1 1/4 to NPS 4: Steel pipe, steel welding fittings, and welded joints.
7. Larger Than NPS 4: Steel pipe, steel welding fittings, and welded joints.

1.4 VALVE APPLICATIONS

A. Appliance Shutoff Valves for Pressure 0.5 psig or Less: Appliance connector valve or gas stop.
B. Appliance Shutoff Valves for Pressure 0.5 to 2 psig: Gas stop or gas valve.
C. Piping Line Valves, NPS 2 and Smaller: Gas valve.
D. Piping Line Valves, NPS 2 1/2 and Larger: Plug valve or general-duty valve.
E. Valves at Service Meter, NPS 2 and Smaller: Gas valve.
F. Valves at Service Meter, NPS 2 1/2 and Larger: Plug valve.

END OF SECTION 15194
SECTION 15530 - GAS-FIRED FURNACES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
1. **Gas-fired, condensing** furnaces and accessories complete with controls.
2. Air filters.
3. Refrigeration components.

1.2 SUBMITTALS

A. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories for each of the following:
1. Furnace.
2. Thermostat.
3. Refrigeration components.

B. Operation and maintenance data.
C. Warranty, one year.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2004, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
C. ASHRAE/IESNA 90.1-2004 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6 - "Heating, Ventilating, and Air-Conditioning."
Comply with NFPA 70.

1.4 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace the following components of furnaces that fail in materials or workmanship within specified warranty period:
1. Warranty Period, Commencing on Date of Substantial Completion:
a. Furnace Heat Exchanger: 10 years.
b. Integrated Ignition and Blower Control Circuit Board: Five years.
c. Draft-Inducer Motor: Five years.
d. Refrigeration Compressors: 10 years.
e. Evaporator and Condenser Coils: Five years.

PART 2 - PRODUCTS

2.1 GAS-FIRED FURNACES, CONDENSING

A. Basis-of-Design Product: Subject to compliance with requirements, provide or equal.
B. General Requirements for Gas-Fired, Condensing Furnaces: Factory assembled, piped, wired, and tested; complying with ANSI Z21.47/CSA 2.3, "Gas-Fired Central Furnaces," and with NFPA 54.
C. Cabinet: Steel, Galvanized steel.
1. Cabinet interior around heat exchanger shall be factory-installed insulation.
2. Lift-out panels shall expose burners and all other items requiring access for maintenance.
3. Factory paint external cabinets in manufacturer's standard color.
4. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.

F. Type of Gas: Natural.
G. Heat Exchanger:
1. Primary: Aluminized steel.
2. Condensate Drain Piping: Copper or CPVC, as approved by local authority and manufacture, extended full sized to riser made from same material or condensate pump as shown on design drawings.

H. Burner:
1. Gas Valve: 100 percent safety main gas valve, main shutoff valve, pressure regulator, safety pilot with electronic flame sensor, limit control, transformer, and combination ignition/fan timer control board.
2. Ignition: Electric pilot ignition, with hot-surface igniter or electric spark ignition.

I. Gas-Burner Safety Controls:
1. Electronic Flame Sensor: Prevents gas valve from opening until pilot flame is proven; stops gas flow on ignition failure.
2. Flame Rollout Switch: Installed on burner box; prevents burner operation.
3. Limit Control: Fixed stop at maximum permissible setting; de-energizes burner on excessive bonnet temperature; automatic reset.

J. Combustion-Air Inducer: Centrifugal fan with thermally protected motor and sleeve bearings prepurges heat exchanger and vents combustion products; pressure switch prevents furnace operation if combustion-air inlet or flue outlet is blocked.
K. Furnace Controls: Solid-state board integrates ignition, heat, cooling, and fan speeds; adjustable fan-on and fan-off timing; terminals for connection to accessories; diagnostic light with viewport.
L. Accessories:
1. Combination Combustion-Air Intake and Vent: CPVC plastic fitting to combine combustion-air inlet and vent through roof as approved by manufacturer & AHJ.
2. CPVC Plastic Vent Materials:
a. CPVC Plastic Pipe: Schedule 40, complying with ASTM D 1785.
b. CPVC Plastic Fittings: Schedule 40, complying with ASTM D 2466, socket type.
CPVC Solvent Cement: ASTM D 2564.

2.2 THERMOSTATS

A. Solid-State Thermostat: Wall-mounting, programmable, microprocessor-based unit with automatic switching from heating to cooling, preferential rate control, seven-day programmability with minimum of four temperature presets per day, and battery backup protection against power failure for program settings.
B. Control Wiring: Unshielded twisted-pair cabling.
1. No. 24 AWG, 100 ohm, four pair.

C. Controls shall comply with requirements in ASHRAE/IESNA 90.1-2004, "Controls."

2.3 AIR FILTERS

A. Disposable Filters: 1-inch- thick fiberglass media in sheet metal frame.

2.4 REFRIGERATION COMPONENTS

A. General Refrigeration Component Requirements:
1. Refrigeration compressor, coils, and specialties shall be designed to operate with CFC-free refrigerants.
2. Energy Efficiency: Equal to or greater than prescribed by ASHRAE/IESNA 90.1-2004, "Energy Standard for Buildings except Low-Rise Residential Buildings."

B. Refrigerant Coil: Copper tubes mechanically expanded into aluminum fins. Comply with ARI 210/240, "Unitary Air-Conditioning and Air-Source Heat Pump Equipment." Match size with furnace. Include condensate drain pan with accessible drain outlet.
1. Refrigerant Coil Enclosure: Steel, matching furnace and evaporator coil, with access panel and flanges for integral mounting at or on furnace cabinet and galvanized sheet metal drain pan coated with black asphaltic base paint.
2. Condensate Drain Piping: Copper or CPVC, as approved by local authority and manufacture, extended full sized to riser made from same material or condensate pump as shown on design drawings.
C. Refrigerant Line Kits:
1. Refrigerant Line Kits: Annealed-copper suction and liquid lines factory cleaned, dried, pressurized with nitrogen, sealed, and with suction line insulated. Provide in standard lengths for installation without joints, except at equipment connections.
2. Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I, 1 inch thick.

D. Air-Cooled, Compressor-Condenser Unit:
1. Casing: Steel, finished with baked enamel, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
2. Compressor: Hermetically sealed reciprocating or scroll type.
a. Crankcase heater.
b. Vibration isolation mounts for compressor.
c. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
d. Two-speed compressor motors shall have manual-reset high-pressure switch and automatic-reset low-pressure switch.
e. Refrigerant Charge: R-22.
3. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with liquid subcooler.
4. Fan: Aluminum-propeller type, directly connected to motor.
5. Motor: Permanently lubricated, with integral thermal-overload protection.
6. Low Ambient Kit: Permits operation down to 45 deg F.
7. Mounting Base: Polyethylene.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install gas-fired furnaces and associated fuel and vent features and systems according to NFPA 54.
B. Base-Mounted Units: Secure units to substrate. Provide optional bottom closure base if required by installation conditions.
C. Controls: Install thermostats at mounting height of 50 inches above floor.
D. Wiring Method: Install control wiring in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Conceal control wiring except in unfinished spaces.
E. Install ground-mounted, compressor-condenser components on 4-inch- thick, reinforced concrete base; 4 inches larger on each side than unit. Concrete, reinforcement, and formwork are specified in Division 3 Section "Cast-in-Place Concrete." Coordinate anchor installation with concrete base.

LICENSED PROFESSIONAL ENGINEER
RICKY D. HIATT
15003
IOWA

MECHANICAL SPECIFICATIONS

REVISIONS

No.	Description	Date

LockBox Storage Manawa
McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

Paul J. Kelly
Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

M3-1

Project No. 197-20-02
Date 4 May 2020

RDH ENGINEERING, INC.
Mechanical, Electrical, & Energy Engineers

Print on 30" x 42" format for proper scale.

3.2 CONNECTIONS

A. Gas piping installation requirements are specified in Division 15 Section "Fuel Gas Piping." Drawings indicate general arrangement of piping, fittings, and specialties. Connect gas piping with union or flange and appliance connector valve.

B. Install piping adjacent to equipment to allow service and maintenance.

C. Vent and Outside-Air Connection, Condensing, Gas-Fired Furnaces: Connect plastic piping vent material to furnace connections and extend outdoors. Terminate vent outdoors with a cap and in an arrangement that will protect against entry of birds, insects, and dirt.

1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
2. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
3. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
   a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
   b. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
   c. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
4. Slope pipe vent back to outside terminal.

D. Connect ducts to furnace with flexible connector. Comply with requirements in Division 15 Section "Duct Accessories."

E. Connect refrigerant tubing kits to refrigerant coil in furnace and to air-cooled, compressor-condenser unit.

1. Flared Joints: Use ASME B16.26 fitting and flared ends, following procedures in CDA's "Copper Tube Handbook."
2. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
3. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

F. Comply with requirements in Division 15 Section "Refrigerant Piping" for installation and joint construction of refrigerant piping.

G. Complete installation and startup checks and start units according to manufacturer's written instructions.

H. Verify proper operation of capacity control device.

I. Adjust airflow and initial temperature and humidity set points.

J. Set controls, burner, and other adjustments for optimum heating performance and efficiency. Adjust heat-distribution features, including shutters, dampers, and relays, to provide optimum heating performance and system efficiency.

K. After completing installation, clean furnaces internally according to manufacturer's written instructions.

L. Install new filters in each furnace within 14 days after Substantial Completion.

3.3 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. Perform electrical test and visual and mechanical inspection.
2. Leak Test: After installation, charge systems with refrigerant and oil and test for leaks. Repair leaks, replace lost refrigerant and oil, and retest until no leaks exist.
3. Operational Test: After electrical circuitry has been energized, start units to confirm proper operation, product capability, and compliance with requirements.
4. Verify that fan wheel is rotating in the correct direction and is not vibrating or binding.
5. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Verify that vibration isolation and flexible connections properly dampen vibration transmission to structure.

END OF SECTION 15530

SECTION 15767- ELECTRIC UNIT HEATER

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes electric unit heaters.

1.2 SUBMITTALS

A. Product Data: Include specialties and accessories for each unit type and configuration indicated.

B. Shop Drawings:

1. Plans, elevations, sections, and details.
2. Details of anchorages and attachments to structure and to supported equipment.
3. Wiring Diagrams: Power, signal, and control wiring.
4. Equipment schedules to include rated capacities, furnished specialties, and accessories.

C. Field quality-control test reports.

D. Operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Qmark.
2. Carrier Corp.
3. McQuay International.

2.2 UNIT HEATERS

A. Description: An assembly including casing, coil, fan, and motor in horizontal discharge configuration with horizontal, adjustable louvers in blow-through configuration.

2.3 MATERIALS

A. Casing: Heavy gauge die-formed steel housing, with removable panels.

B. Cabinet Finish: Bonderize, phosphatize, and flow-coat with baked-on primer and manufacturer's standard paint applied to factory-assembled and -tested propeller unit heater before shipping.

2.4 ELECTRIC-RESISTANCE HEATING ELEMENTS

A. Aluminum -finned copper clad steel sheath heating element.

1. Circuit Protection: One-time fuses in terminal box for overcurrent protection and limit controls for overtemperature protection of heaters.
2. Wiring Terminations: Match conductor materials and sizes indicated.
3. Automatic reset linear capillary thermal cut-out.

2.5 FAN

A. Propeller with aluminum blades directly connected to motor.

2.6 FAN MOTORS

A. Motors, 1/2 HP and Smaller: Completely enclosed multispeed motor with integral thermal-overload protection.

B. Motors, 3/4 HP and Larger: Totally enclosed with permanently lubricated ball bearings.

2.7 ACCESSORIES

A. Horizontal Configuration: Louver fin diffuser.

2.8 SOURCE QUALITY CONTROL

A. Test propeller unit heater coils according to ASHRAE 33.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install propeller unit heaters to comply with NFPA 90A.

B. Wall mount unit heater using manufacturer's universal wall bracket

C. Thermostat shall be unit mounted.

3.2 CONNECTIONS

A. Unless otherwise indicated, install shutoff valve and union or flange on each connection.

B. Install piping adjacent to machine to allow service and maintenance.

3.3 FIELD QUALITY CONTROL

A. Testing: Perform the following field quality-control testing and report results in writing;

1. After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
2. Operate electric heating elements through each stage to verify proper operation and electrical connections.
3. Test and adjust controls and safeties.

B. Repair or replace malfunctioning units. Retest as specified above after repairs or replacements are made.

END OF SECTION 15767



MECHANICAL SPECIFICATIONS

REVISIONS

No.	Description	Date

LockBox Storage Manawa

McGregor Interests

706 Veteran's Memorial Highway, Council Bluffs, IA 51502

Paul J. Kelly Architecture
440 North 61st Street
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M3-2

Project No. 197-20-02
Date 4 May 2020

RDH ENGINEERING, INC.
Mechanical, Electrical, & Energy Engineers

Print on 30" x 42" format for proper scale.

ELECTRICAL SYMBOLS AND ABBREVIATIONS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
(1)	FLUORESCENT LIGHT: NUMBER = TYPE		HOME RUN: NO. OF ARROWS = NO. OF CIRCUITS NO. OF HATCHES = NO. OF WIRES UNHATCHED = 2 WIRES
(2)	FLUORESCENT LIGHT STRIP: NUMBER = TYPE		BRANCH CIRCUIT CONCEALED
(3)	WALL LIGHT: NUMBER = TYPE		BRANCH CIRCUIT IN FLOOR
(4)	CEILING LIGHT: NUMBER = TYPE		BRANCH CIRCUIT EXPOSED
(5)	EXIT LIGHT: NUMBER = TYPE		CIRCUIT UP
	SINGLE RECEPTACLE		CIRCUIT DOWN
	DUPLEX RECEPTACLE	TV	TELEVISION RACEWAY 3/4" MINIMUM
	FLOOR RECEPTACLE	T	TELEPHONE RACEWAY 3/4" MINIMUM
	RANGE RECEPTACLE	FA	FIRE ALARM CIRCUIT
	20A. 250V. RECEPTACLE	S	SOUND SYSTEM CIRCUIT
	30A. 250V. RECEPTACLE	C	CLOCK SYSTEM CIRCUIT
	SPECIAL RECEPTACLE	N	NURSE CALL CIRCUIT
	SPLIT DUPLEX RECEPTACLE	NL	NIGHT LIGHT CIRCUIT
	JUNCTION BOX		LIGHTING PANEL
	JUNCTION BOX FLOOR		TELEPHONE PANEL
	JUNCTION BOX WALL		POWER PANEL
	CLOCK HANGER OUTLET	WP	INDICATES WEATHERPROOF
	TELEVISION OUTLET	CF	INDICATES CARPET FLANGE
	TELEPHONE OUTLET ◁ COMBO DATA/COMM.	F	INDICATES FLOOR MOUNTED
	COMPUTER OUTLET	P	INDICATES PILOT LIGHT
S	SINGLE POLE SWITCH	K	KEY OPERATED
S_2	DOUBLE POLE SWITCH	AL	ALUMINUM
S_3	3-WAY SWITCH	CU	COPPER
S_4	4-WAY SWITCH	GFI	GROUND FAULT INTERRUPTION
S_{DM}	DIMMER SWITCH	CKT	CIRCUIT
S_{FC}	SSU BOX COVER FUSETRON SWITCH	C	CONDUIT
S_{PC}	SPDT CENTER OFF SWITCH	A.F.F.	ABOVE FINISHED FLOOR
S_{PL}	PILOT LIGHT SWITCH	EWC	ELECTRIC WATER COOLER
S_{TE}	SWITCH WITH THERMAL ELEMENT	AWG	AMERICAN WIRE GAUGE
	PUSHBUTTON SWITCH	UG	UNDERGROUND
	BATTERY EMERGENCY LIGHT	PC	PHOTOCELL
	REMOTE LAMP HEAD		SAFETY DISCONNECT–FUSED ◻F UNFUSED
	SOLENOID VALVE		MAGNETIC STARTER
P	PRESSURE SWITCH		COMBINATION STARTER–DISCONNECT
T	THERMOSTAT		FAN CUT–OFF RELAY
A	AQUASTAT		MOTOR CONTROL PUSHBUTTON
T	DRY TRANSFORMER		MOTOR–HORSEPOWER AS INDICATED
	BUZZER		FLOAT SWITCH
	CHIME		ALTERNATOR
CB	BELL	PE	PNEUMATIC–ELECTRIC SWITCH
CB	FIRE ALARM–BELL		DAMPER SWITCH
F	FIRE ALARM–MANUAL STATION		CEILING SPEAKER
HF	FIRE ALARM–HORN MAY BE COMBINATION		WALL SPEAKER
F	FIRE ALARM–STROBE		FLOOR MICROPHONE
D	FIRE ALARM–HEAT DETECTOR		WALL MICROPHONE
D_I	FIRE ALARM–IONIZATION DETECTOR	N	NURSE CALL STATION
D_S	FIRE ALARM–SMOKE DETECTOR	C	CORRIDOR DOME LIGHT
FA	FIRE ALARM–CONTROL PANEL	Z	ZONE LIGHT
	SPRINKLER FLOW SWITCH	OS	OCCUPANCY SENSOR
DR	ELECTRO–MAGNETIC DOOR RELEASE		

ELECTRICAL SPECIFICATIONS 26 00 00

26 01 00

1. The general conditions and supplemental general conditions as set forth elsewhere in this specification shall apply to this Electrical.

2. All work shall be in accordance with applicable State and Local Codes.

3. Where the drawings indicate fixtures and equipment which are to be furnished and installed by others and which require connections to the electrical systems the Electrical Contractor shall furnish and install all rough-ins; all necessary conduit, wire, junction boxes, switches, wiring devices, and fittings, and shall make final connections to the fixtures and equipment. Rough-in locations shall be determined from the equipment itself or from the equipment manufacturer's shop drawings.

4. Shop drawings and/or descriptive literature shall be submitted in accordance with these specifications for all major items of material.

5. The work shall include furnishing, installing and connecting all circuits, materials, and electrical equipment specified herein, or shown or noted on the drawings, for the Electrical Systems.

26 05 33

6. All wiring shall be installed in metal raceways. No raceway smaller than 1/2" shall be used. All rigid conduit and electrical metallic tubing shall be hot-dipped galvanized mild steel and shall bear the Underwriter's label and the manufacturer's label or stamp. All conduit may be rigid or EMT at the Contractor's option.
All connections to motors and other vibrating equipment shall be flexible metal conduit or sealtight as necessary.

7. All metallic conduits, supports, cabinets and equipment shall be grounded.

8. All conductors shall be copper. No wire shall be smaller than No. 12 AWG, except that wiring for signal and pilot control circuits may be No. 14 AWG.

9. Furnish and install outlet boxes and raceway fittings as described below or approved equal. Numbers indicated are Steel City.
Lighting Boxes -No. H54561 Series
Switch, Receptacles
and Junction Boxes -No. 52151 Series
Couplings -Series TK-111
Connectors -Series TC-111

26 06 20

10. Furnish and install wiring devices as indicated by symbols on the drawings. Devices shall be Bryant or approved equal.
Single Pole No. 4901-GRY
Double Pole No. 4902-GRY
Three-Way No. 4903-GRY
Four-way No. 4904-GRY
Switches shall Be mounted at +48" above finished floor.
Duplex Receptacles No. 5362-GRY
Furnish and install wall plates for all wiring devices. Plates on flush devices shall be satin finish, stainless steel. Where devices are installed on exposed fittings or boxes, the plates shall be galvanized steel and of a type

26 50 20

11. Furnish and install new fixtures and lamps as shown in the lighting fixture schedule. The Electrical Contractor shall furnish and install all necessary supports and hangers for all lighting fixtures.

26 24 16

12. New lighting panels shall be furnished and installed as shown. Panels shall be Square 'D' type 'NQ' or equal with bolt-on breakers.

13. Cutting, fitting, patching, repairing and finishing of carpentry work, metal work, or concrete work, etc., which may be required for this work shall be done by this Contractor at his expense and shall be done by craftsmen skilled in their respective trades. Where cutting is required, it shall be done in such a manner as not to weaken walls, partitions or floors; and holes required to be cut must be drilled without breaking out around the holes. The fire-resistant rating of walls, partitions, ceilings, and floors shall be maintained by sealing or caulking around penetration with approved fire resistant material or by the use of U.L. approved manufactured devices for this purpose. Poke through wiring will not be allowed.

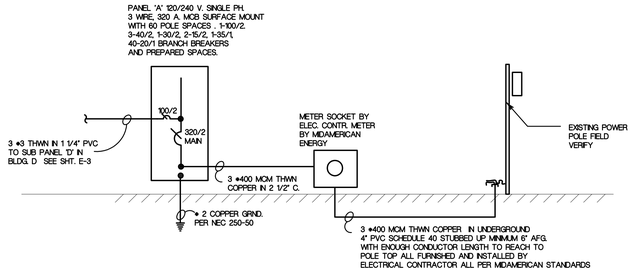
14. Arrange the work so that electrical power is available to the site at all times, except for short periods of interruption necessary for the performance of new work. Connections shall not be interrupted without the owner's approval as to time and duration. Connections to existing facilities shall not be disconnected until new or temporary connections are installed.

15. All branch circuit conduits shall have a separate green ground wire.

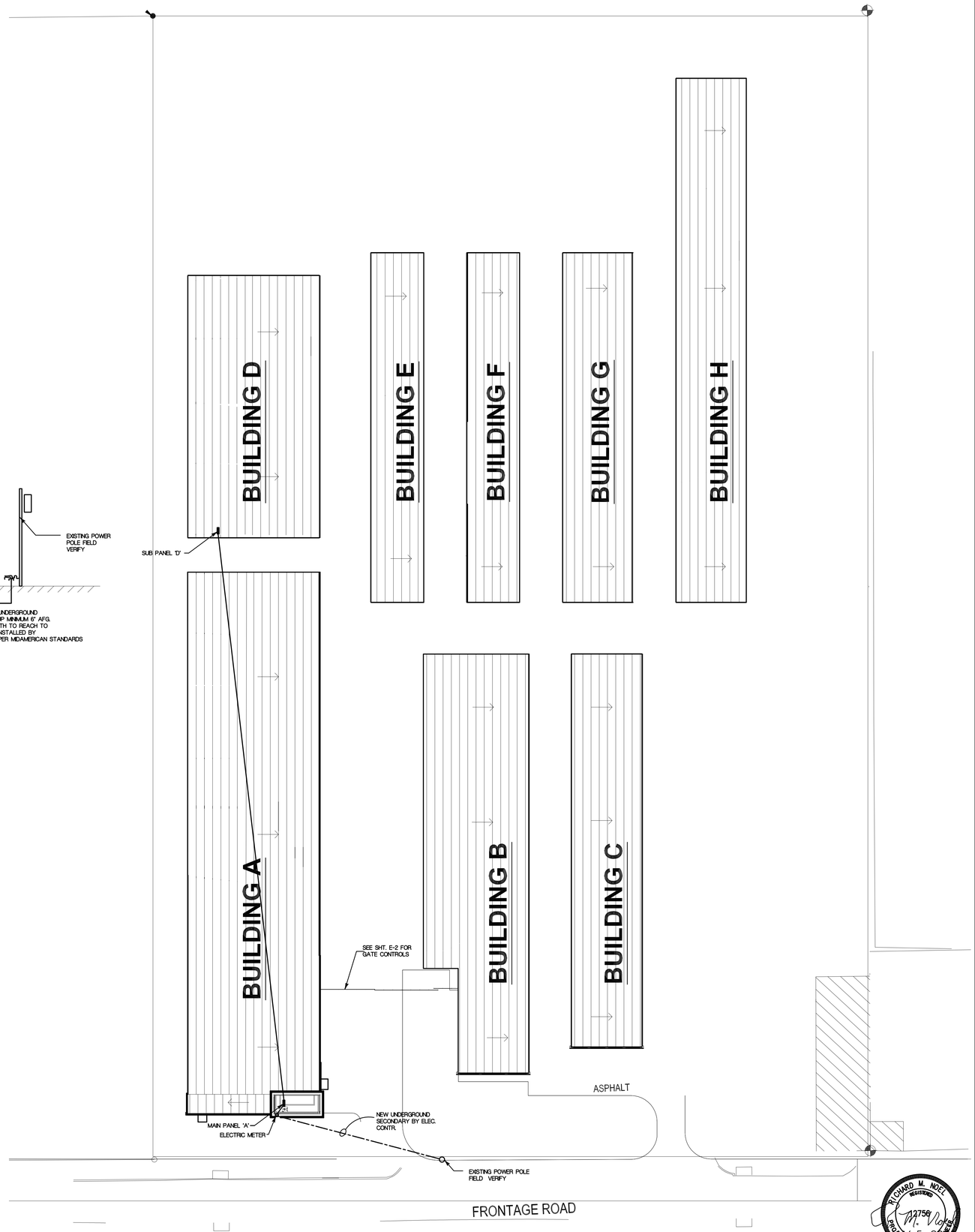
16. All multi-wire branch circuits shall be per NEC Art. 210.4 with 2 pole branch breakers to disconnect all ungrounded conductors.

17. All manufactured panelboards shall have interrupting rating permanently labeled.

18. The Electrical Contractor shall provide field labeling and dating , which shall indicate the arc fault available at each panel.



ELECTRICAL SERVICE DIAGRAM



SITE PLAN – ELECTRICAL
SCALE: N.T.S.

VETERANS MEMORIAL HIGHWAY

REVISIONS

No.	Description	Date

LockBox Storage Manawa

McGregor Interests

706 Veteran's Memorial Highway, Council Bluffs, IA 51502

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RICHARD M. NOEL REGISTERED 12759 PROFESSIONAL ENGINEER

E-1

Project No.
Date 4 MAY 2020

1 of 3

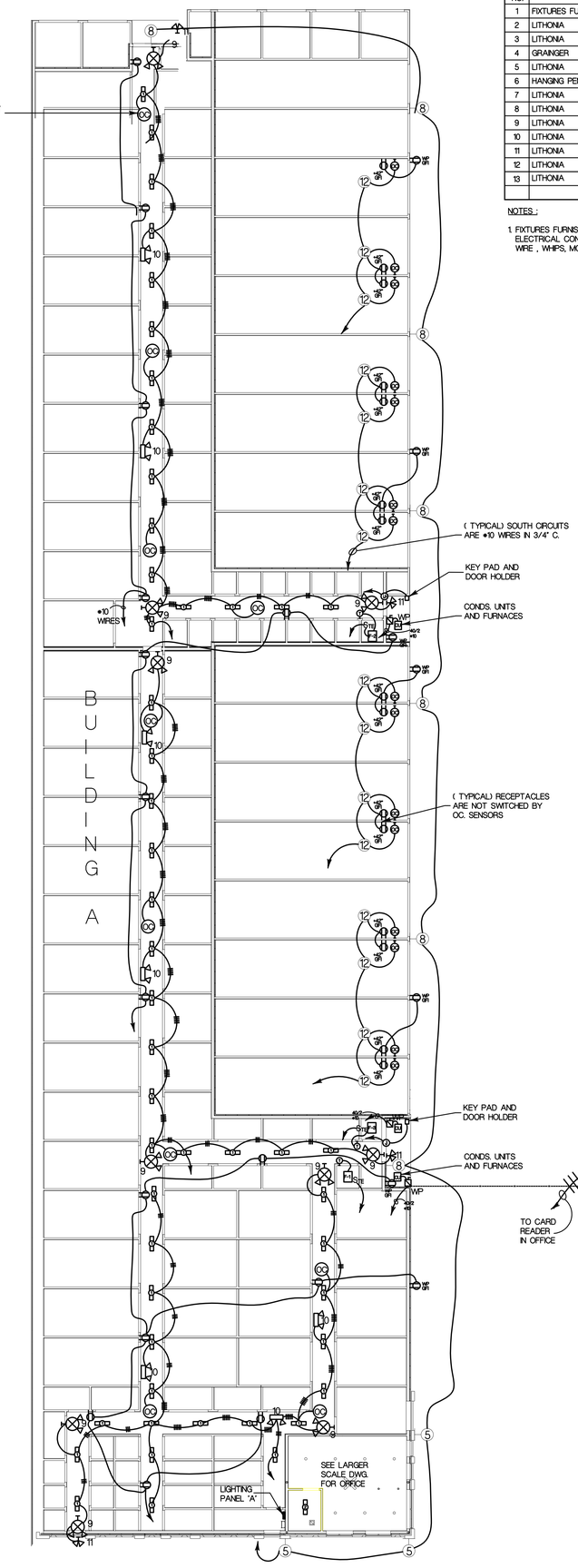
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LIGHTING FIXTURE SCHEDULE

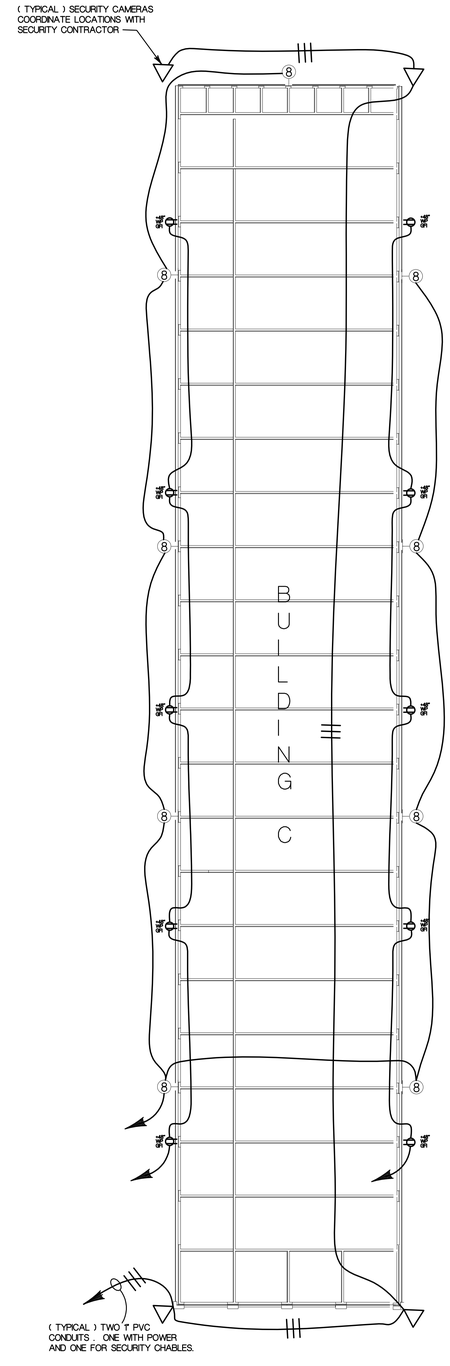
FIXT. NO.	MANUFACTURER	CATALOG NUMBER	LAMPS NUMBER AND SIZE	MOUNTING CLG.	WALL	REC.	PEND.	REMARKS
1	FIXTURES FURNISHED AND MOUNTED BY THE BUILDING SUPPLIER					X		SEE NOTE • 1
2	LITHONIA	LBL4 LP835	4 K LUMENS LED	X				
3	LITHONIA	DOM6 LED 900L-120-DO6AZ	900 LUMENS LED			X		IN-CONTACT RATED-AIR TITE
4	GRAINGER	6NP15/6NP27	4-60 W.	X				CEILING FAN WITH LIGHT KIT
5	LITHONIA	VGR2C 40LED-120-DWHG-LP1	40 LED		X			DAMP LOCATION
6	HANGING PENDANT LIGHT FURNISHED BY OWNER, INSTALLED BY ELEC. CONTR.							
7	LITHONIA	WL4-25L-D24-LP840-N100-NESPDT7-EL14L 2.5 K LED		X				WITH OCCUPANCY SENSOR
8	LITHONIA	OLW31-M2	3967 LUMENS LED		X			FULL SHIELD & PHOTO-CELL
9	LITHONIA	LHQMLED-3-R-HO	INCLUDED	X	X			BATTERY EXIT/EMERGENCY
10	LITHONIA	ELM1254/H1212-SD	INCLUDED		X			BATTERY EMERGENCY
11	LITHONIA	ELATNX/H1206	INCLUDED		X			REMOTE EMERGENCY
12	LITHONIA	VR2-7TT-120-LP1	1-CF7TT-35	X				COLD WEATHER LAMP
13	LITHONIA	5GI-MB-LED-L5R	600 LUMENS LED			X		DAMP LOCATION

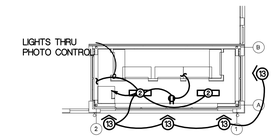
NOTES :

1. FIXTURES FURNISHED AND MOUNTED BY THE BUILDING SUPPLIER . ELECTRICAL CONTRACTOR SHALL FURNISH & INSTALL WIRE , WHIPS, MOTION SENSORS, AND THE CIRCUITING SHOWN .

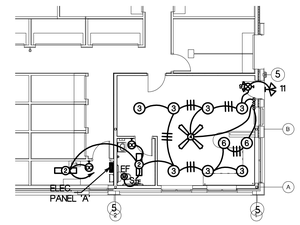


BUILDINGS A,B,&C. ELECTRICAL
SCALE N.T.S.

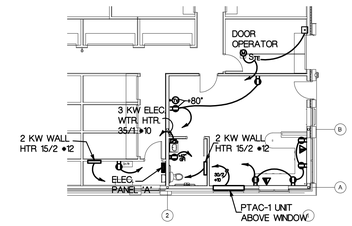




TOWER ELECTRICAL
SCALE N.T.S.



OFFICE DETAIL—LIGHTING
SCALE N.T.S.



OFFICE DETAIL—POWER
SCALE N.T.S.

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PROJECT # 20-02
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REVISIONS

No.	Description	Date

LockBox Storage Manawa

McGregor Interests

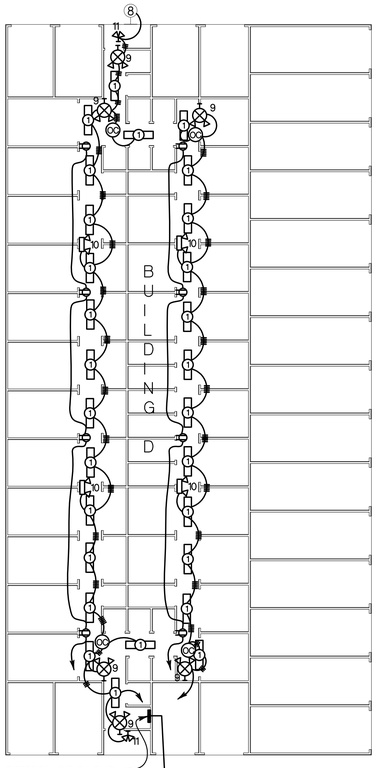
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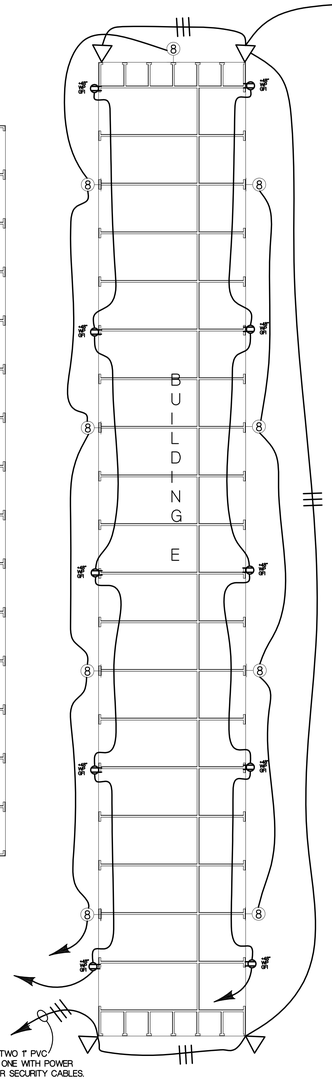
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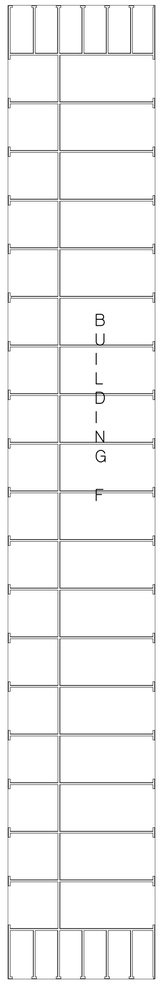
E-2

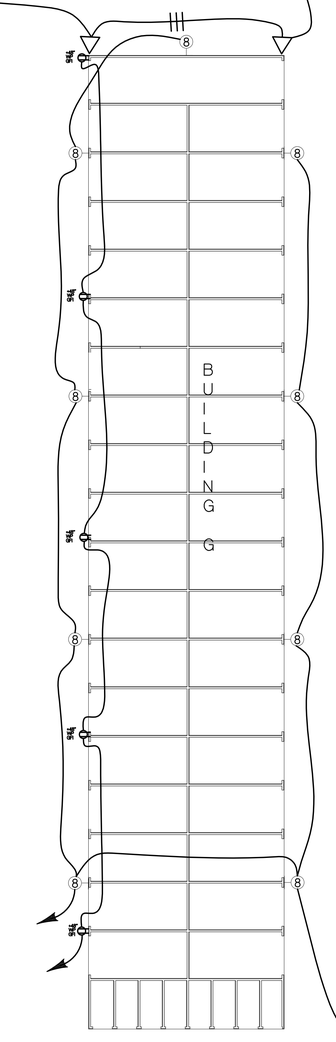
Project No. 19-035-01
Date 4 May 2020

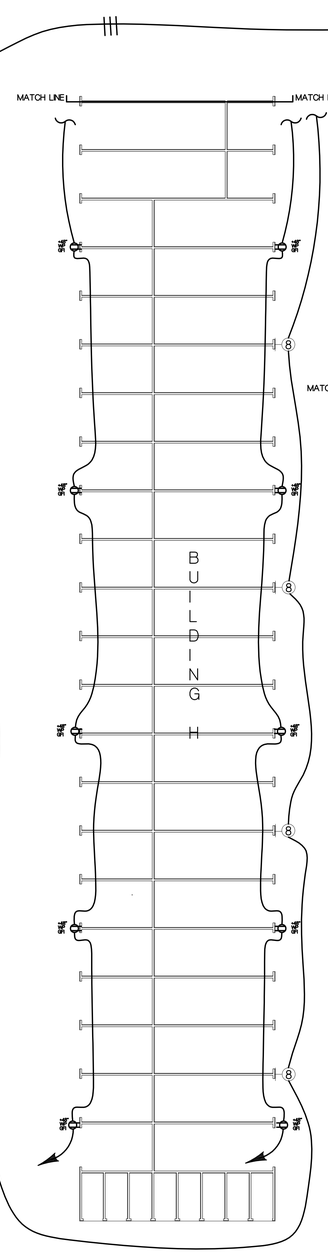
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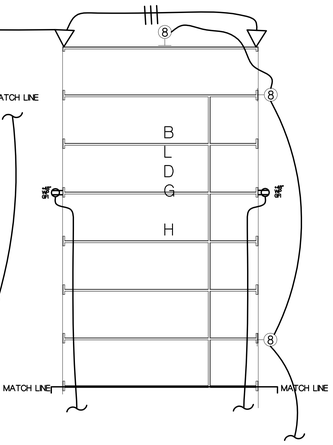












N

BUILDINGS D,E,F,G,&H. ELECTRICAL

SCALE: N.T.S.

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E-3

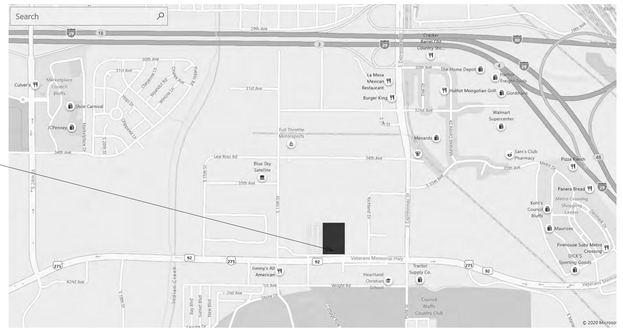
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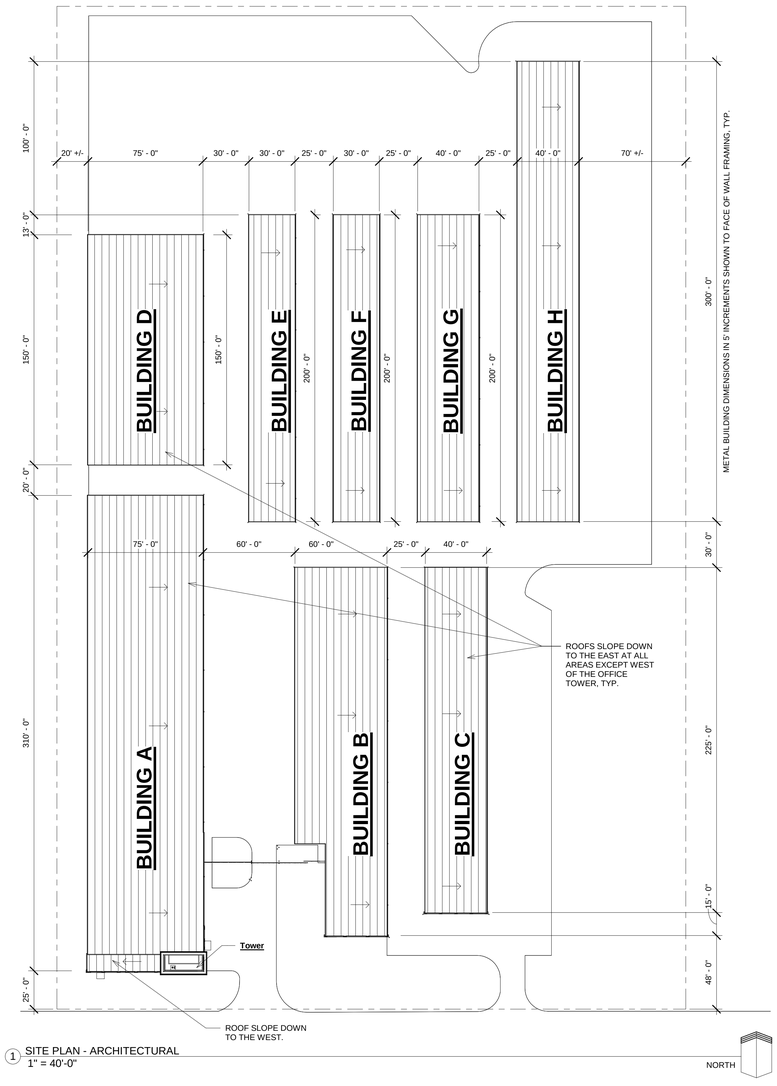
3 of 3

Prints on 30" x 42" formats for proper scale.

GENERAL CONSTRUCTION NOTES:

1. ALL WORK SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE CODES, ORDINANCES AND ACCEPTED INDUSTRY STANDARDS.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS AND ESTABLISHING THE COMPATIBILITY OF ALL NEW WORK WITH THE EXISTING CONDITIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING AND PAYING FOR ALL PERMITS, LICENSES, ETC... AS REQUIRED BY REGULATING AUTHORITIES HAVING JURISDICTION.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION AND CONTINUOUS MAINTENANCE OF ALL WORK FROM DAMAGE AND SHALL PROTECT THE OWNER'S PROPERTY FROM DAMAGE OR LOSS BY DUST, DIRT, WATER, THEFT, FIRE OR ANY OTHER PHYSICAL DAMAGE IN CONNECTION WITH THE CONTRACT WORK.
5. CONTRACTOR SHALL COORDINATE LOCATION OF ALL UTILITIES WITH EQUIPMENT TO BE INSTALLED BY OTHERS WITH THE ENGINEERS' DRAWINGS.
6. CONTRACTOR SHALL PROVIDE WRITTEN NOTICE OF ANY CHANGES THAT INVOLVE ADDITIONAL COST AND/OR TIME TO THE ARCHITECT AND OWNER WITHIN FIVE DAYS OF ITS DISCOVERY AND BEFORE PROCEEDING WITH WORK. THIS SHALL BE SUBMITTED IN A IN THE FORM OF A UNIT COST AND DETAILED LUMP SUM BREAKDOWN. COST EVENTS WITHOUT AN ACCOMPANYING BREAKDOWN SHALL NO BE CONSIDERED FOR REVIEW AND APPROVAL.
7. DIMENSIONS ARE TO FACE OF FINISHED WALLS, TYPICAL, UNLESS NOTED OTHERWISE.
8. DOOR, WINDOW, AND STOREFRONT OPENING DIMENSIONS IN PLAN ARE NOMINAL. REFER TO SCHEDULES FOR FOR ACTUAL FRAME DIMENSIONS.
9. DOOR FRAMES SHALL BE LOCATED 4" MINIMUM FROM CORNERS UNLESS NOTED OTHERWISE.
10. CONTRACTOR SHALL SUBMIT PRODUCT DATA FOR APPROVAL FOR ALL MATERIALS USED IN THE PROJECT.
11. PROVIDE SOLID BLOCKING BEHIND ALL WALL MOUNTED EQUIPMENT, DOOR STOPS, ETC... AS REQUIRED FOR THEIR INSTALLATION.
12. PROVIDE MISCELLANEOUS FRAMING, SUPPORTS, KICKERS, ETC... AS REQUIRED AT ALL STUD WALL CONSTRUCTION, IN ACCORDANCE WITH INDUSTRY STANDARDS.
13. ANY FIELD WELDING SHALL BE PERFORMED BY WELDERS CERTIFIED TO WELD IN THE REQUIRED POSITIONS.
14. ALL STEEL FOR EXTERIOR USE SHALL BE GALVANIZED.
15. HAND AND GUARD RAILS SHALL BE FABRICATED FROM MINIMUM SCHEDULE 40 PIPE. JOINTS SHALL BE WELDED AND GROUND SMOOTH, TYPICAL. WHERE ALUMINUM RAILS ARE USED, PROVIDE MATERIAL PER ASTM B429 WITH CONNECTION PLATES PER ASTM B209, ALLOY 6061-T6.
16. WOOD FRAMING AND BLOCKING LUMBER SHALL BE S4S, 19 PERCENT MAXIMUM MOISTURE CONTENT IN ACCORDANCE WITH THE WWPA OR SPIB. PROVIDE PRESERVATIVE TREATED MATERIAL AT ANY LOCATION IN CONTACT WITH GRADE.
17. INTERIOR NON-LOAD BEARING METAL STUD AND DRYWALL PARTITIONS SHALL BE MINIMUM 25 GAUGE 3 5/8" METAL STUDS AND 5/8" TYPE-X GWB UNLESS SPECIFICALLY NOTED OTHERWISE. INSTALL PER USG GYPSUM DRYWALL CONSTRUCTION HANDBOOK.





1 SITE PLAN - ARCHITECTURAL
1" = 40'-0"

NORTH

BUILDING AREA CALCULATIONS:

All buildings are Type II-B Construction, per the IBC.

BUILDING A: 23,578 sf Total (Includes exterior overhangs at doors and 328 sf non-occupied tower floor (above office).
Separated into 4 fire areas by 3 Hour Walls as follows:
South Conditioned Storage Area: 9,700 sf first floor (Includes 500 sf Accessory Office Area) + 328 sf non-occupied tower floor (above office).
North Conditioned Storage Area: 5,150 sf
South RV Storage Area: 3,850 sf
North RV Storage Area: 4,550 sf

BUILDING B: 13,200 sf
Separated into 3 fire areas by 3 Hour Walls.

BUILDING C: 9,000 sf

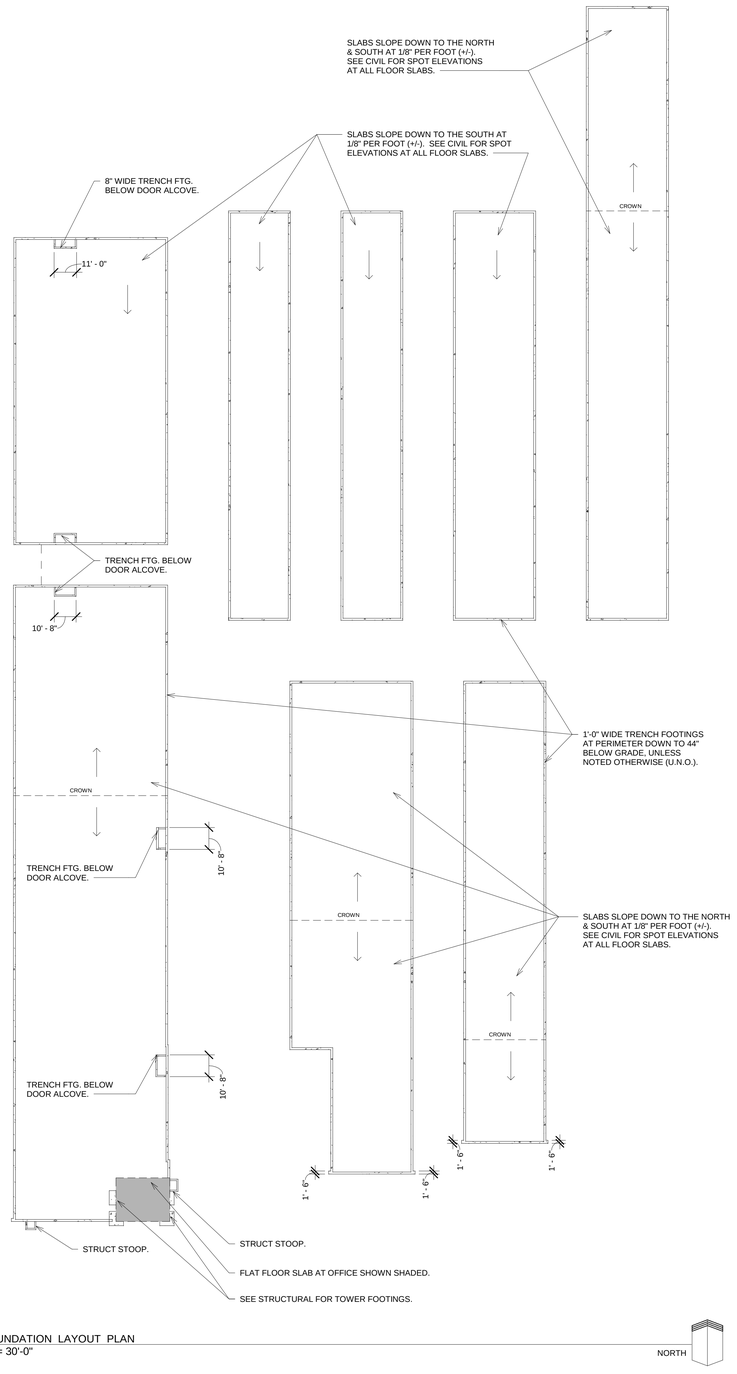
BUILDING D: 11,250 sf

BUILDING E: 6,000 sf

BUILDING F: 6,000 sf

BUILDING G: 8,000 sf

BUILDING H: 12,000 sf



2 FOUNDATION LAYOUT PLAN
1" = 30'-0"

NORTH

SHEET INDEX:

0-0 COVER SHEET, CODE REVIEW NOTES AND GENERAL NOTES

1 TOPOGRAPHIC SURVEY
2 SITE REMOVAL PLAN
3 SITE PAVING AND LAYOUT PLAN
4 SITE GRADING PLAN
5 SITE UTILITY PLAN
6 NOTES AND DETAILS
7 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
8 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
9 POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (PCSMP)
10 POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (PCSMP)
11 LANDSCAPE PLAN

A1-1 STORAGE UNIT PLANS
A1-2 OFFICE PLANS AND DETAILS
A2-1 EXTERIOR ELEVATIONS
A2-2 EXTERIOR ELEVATIONS
A2-3 EXTERIOR ELEVATIONS
A3-1 SECTIONS & DETAILS
A4-1 CEILING PLANS

S1-1 STRUCTURAL PLANS
S2-1 ELEVATIONS AND SECTIONS
S3-1 GENERAL STRUCTURAL NOTES

M0-0 SYMBOLS & ABBREVIATIONS
P1-1 PLUMBING PLANS
M1-1 HVAC PLANS
M2-1 MECHANICAL DETAILS & SCHEDULES
M3-1 MECHANICAL SPECIFICATIONS (1 OF 2)
M3-2 MECHANICAL SPECIFICATIONS (2 OF 2)

E-1 SITE PLAN - ELECTRICAL
E-2 BUILDINGS A, B, & C ELECTRICAL
E-3 BUILDINGS D, E, F, G, & H ELECTRICAL

PERMIT REVIEW CHECKLIST:

PROJECT DESCRIPTION: NEW SELF STORAGE FACILITY
OWNER: McGregor Interests
ADDRESS: 11750 Stonegate Circle, Omaha, NE 68164
PHONE: (402) 334-2123
E:MAIL: geoff@mcgregorint.com
CONTACT: Paul J. Kelly, AIA
ADDRESS: 440 North 61st Street, Omaha, NE 68132
PHONE: (402)320-4131
E:MAIL: pjkarchitect@gmail.com

PROJECT ADDRESS: 706 Veteran's Memorial Highway, Council Bluffs, Iowa 51501
USE: Self Storage Facility
CONSTRUCTION: Type II-B at Storage Areas.
SQ. FOOTAGES: See Code Site Plan
OCCUPANCIES: S-1 (Storage) at all buildings and B (Office) accessory occupancy at Building A. Multiple buildings on a single project site
OCCUPANCY SEPARATION: Accessory Occupancy Office at Building A requires no separation.
AREA SEPARATION: 3 Hour Separation Walls provided at Buildings A and B to subdivide into fire areas less than 5,000 sf at Commercial Vehicle Storage areas.
ALLOWABLE AREA: 17,500 (per Table 506.2) Base Allowable Area if Non-Sprinkled
Building A: Subdivided by 3 hour fire walls. Max individual area is 9,980 sf.
Buildings B through H: 17,500 sf > Square Footage of each building.
ACCESSIBILITY: All building areas will have grade level entrances.
FIRE SPRINKLERS: Non-Sprinkled Buildings, typical.
EMERG. LIGHTING: Provided per NEC
NO. EXITS REQUIRED: 2 exits required if occupant load exceeds 29.
Building A South: Storage Area (S-1) - 9,200 sf / 300 sf per Occupant = 31
Office (B) at 500 sf / 100 sf per Occupant = 5
Building A North: Storage Area (S-1) - 4,550 sf / 300 sf per Occupant = 15
Building D: Storage Area (S-1) - 7,500 sf / 300 sf per Occupant = 25
NO. EXITS PROVIDED: Building A South: 3 exits provided (2 req'd, 1 add'l due to travel distances)
Building A North: 2 exits provided (1 req'd, 1 add'l due to travel distances)
Building D: 2 exits provided (1 req'd, 1 add'l due to travel distances)
All other buildings have exterior access only to each storage bay.
PLUMBING FIXT. REQ.: Single Unisex restroom provided at Office for Staff/Client Use during business hours.
GOVERNING CODES: City of Council Bluffs is the AHJ.
2015 International Building Code
2015 Uniform Plumbing Code with State of Iowa Amendments
2015 International Mechanical Code with State of Iowa Amendments
2015 International Fire Code
2012 International Energy Conservation Code
2015 NFPA 101 Life Safety Code
2017 National Electric Code
2015 International Fuel Gas Code

COMCheck: Attached, dated May 5, 2020 for envelope, HVAC and Lighting at Building A only.
Exterior Lighting Certificate for Building A encompasses the entire site area and all exterior wall mounted light fixtures.
Building B Interior Lighting certificate attached for Interior Lit Units at the west side.
Building B Interior Lighting certificate attached for the Interior Hallway.
HISTORIC DESIGNATION: None
BUSINESS OPERATION: Leased Self Storage
HAZARDOUS MATERIAL: N/A
LEGAL DESCRIPTION: SECTION 12-74-44 EXC W250' N660' NE SW
PIN: 744412351011

ACCESSIBLE STORAGE UNITS: Are required for 5% of the first 200, and then 2% of total over 200 units.
513 leasable units = 10 + (.02 x 313) = 10+6 = 16 Accessible Units Required
Note: 5 units are utilized for HVAC equipment and Owner storage.
There are 14 different unit types, so one of each type shall be provided where indicated on the plans, plus one additional 10x10 and 10x20 Enclosed Units.
ADA Unit doors must be easily opened and closed within accessibility limits and provided with a rope or automatic closer to close doors for wheelchair use.

ENVELOPE INSULATION REQUIREMENTS: **(per 2015 IECC)**

BUILDING A: 14,470 sf of Conditioned Area.
ROOF: Metal Building Roof: R-19 + R-11 Liner System with R-5 Thermal Blocks.
WALLS: Metal Building Walls: R-13 + R-13 Continuous Insulation.
SLABS: Unheated: R-10 for 24 inches below grade.
DOORS: Glass Entry Doors: Alum. Storefront with 1" clear Low-E glass, U-0.77 Max
Swing Doors: U-0.37 Max
Overhead: U-4.75 Max
WINDOWS: Fixed Aluminum Storefront, thermally broken, with 1" clear Low-E glass, U-0.38 Max

BUILDINGS B, C, D, E, F, G and H: Non-conditioned buildings with Non-Insulated Walls & Floors and 3" thick R-10 Roof Insulation



No.	Description	Date

COVER SHEET

REVISIONS

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51501

Paul J. Kelly Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

0-0

Project No. 19-035-01
Date 5 May 2020

Print on 30" x 42" format for proper scale.

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3501 SOUTH 11TH STREET
PART OF THE W1/2 OF THE SW1/4 OF
SECTION 12-T74N-R44W
OWNER: OMAHA STANDARDS, INC

FENCE IS 0.3' SOUTH AND 0.1'
WEST OF PROPERTY CORNER

3/4" PINCH TOP

S88°06'15"E 410.00'(S) 409.77'(M)

NORTHEAST CORNER OF
THE SW1/4 OF THE SW1/4 OF
SECTION OF 12-T74N-R44W
(POINT OF BEGINNING)
(ALUMINUM CAP LS 10569

FENCE IS 4.4' ↓
AND 2.2' EAST
PROPERTY CO

SEPTIC MANHOLE
RIM EL. = 975.90'
FL = 967.10'

GRAVEL

CONCRETE

LOTS 25-27, COUNTRY CLUB ACRES
OWNER: MCMULLEN LAND PARTNERSHIP, LLP

322.3'

808 VETERANS MEMORIAL HIGHWAY
PART OF THE NE1/4 OF THE SW1/4 OF THE SW1/4 OF SECTION 12-T74N-R44W
OWNER: MEMORIALC2 TRUST

N02°15'53"E 655.00'(S) 655.68'(M)

GRAVEL

GRAVEL

GRAVEL

127.9'

S02°11'03"W 656.01'(S) 653.72'(M)

METAL
SCAFFOLDING

CONCRETE

LOTS 28-30, COUNTRY CLUB ACRES
OWNER: SORENSEN, RICK & LISA

UNKNOWN MANHOLE
RIM EL. = 973.44'
FL = 966.44'
(NO LID)
(FULL OF WATER)

UNKNOWN MANHOLE
RIM EL. = 975.10'
FL = 968.62'
(WATER MANHOLE COVER)
(FULL OF WATER)

SANITARY SEWER MANHOLE
RIM EL. = 975.38'
FL 6" VCP (N) = 971.14'
FL 8" VCP (S) = 970.84'

706 VETERANS MEMORIAL HIGHWAY
PART OF THE NE1/4 OF THE SW1/4 OF THE
SW1/4 OF SECTION 12-T74N-R44W
OWNER: TOMES INC

GRAVEL

FENCE IS 3.0' EAST
OF PROPERTY LINE

89.2'

161.7'

ITEM 08
31.00' INGRESS AND
EGRESS EASEMENT
BOOK 1235, PAGE 47

METAL POSTS

PART OF LOT 31,
COUNTRY CLUB ACRES
OWNER: VALLEY VIEW
HOLDING, LLC

ASPHALT

83.5'

58.5'

ASPHALT

95.6'

WOOD WALL
WITH SIGN

32.5'

SOUTHEAST CORNER OF
THE SW1/4 OF THE SW1/4 OF
SECTION OF 12-T74N-R44W
(1" OPEN TOP)

FENCE IS 2.0' EAST
OF PROPERTY LINE

5/8" REBAR WITH
CAP LS 17646

N88°22'35"W 412.02(S) 410.71'(M)

GRATE INLET
GRATE EL. = 973.74'
FL 12" RCP (E) = 970.89'

45.00'

CURB INLET MANHOLE
RIM EL. = 974.50'
FL 12" RCP (W) OFFSET
FL 12" RCP (S) = 970.25'
FL = 971.05'

FRONTAGE ROAD

SANITARY SEWER MANHOLE
RIM EL. = 974.94'
FL 18" (W) = 967.54'
FL 18" (E) = 967.54'

CURB INLET MANHOLE
RIM EL. = 974.60'
FL = 970.15'
(PIPES NOT VISIBLE)

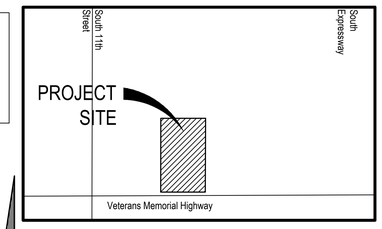
ITEM 09
45' TEMPORARY
CONSTRUCTION EASEMENT

STORM SEWER MANHOLE

STORM SEWER MANHOLE
RIM EL. = 975.15'
FL 18" RCP (E) = 968.85'
FL 18" RCP (W) = 968.75'
FL 18" RCP (S) = 968.55'

CURB INLET MANHOLE
RIM EL. = 974.39'
FL 4" PVC (N) = 971.79'
FL = 970.49'

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VICINITY MAP

30 0 30
1 inch = 30 ft.

HATCH LEGEND

ITEM 08
INGRESS AND EGRESS EASEMENT
BOOK 1235, PAGE 47

ITEM 09
TEMPORARY CONSTRUCTION EASEMENT
BOOK 1381, PAGE 331

LEGEND

NOTE: FOR REFERENCE ONLY, ITEMS DEPICTED IN LEGEND MAY NOT APPEAR ON PLANS.

	SECTION CORNER	(W)	WATER MANHOLE
●	PROPERTY CORNER FOUND (AS NOTED)		MANHOLE
○	PROPERTY CORNER SET (5/8" REBAR)	CO	RV CLEANOUT
(S)	SURVEY DISTANCE - FREDRICKSON LS 17108 DATED NOVEMBER 11, 2005		BOLLARD
			2" PVC VERTICAL PIPE
(M)	MEASURED DISTANCE		SPIGOT
	BUILDING		SIGN
P	POWER RISER	— X — X —	FENCE LINE
	POWER POLE	— G — G —	GAS LINE
	GUY WIRE	—UGW—UGW—	WATER LINE
	LIGHT POLE	– OHP – OHP –	POWER LINE (OVERHEAD)
E	POLE WITH POWER BOX	—SS—SS—	SANITARY SEWER LINE
V	VAULT	—ST—ST—	STORM SEWER LINE
	FIRE HYDRANT	—UFO—UFO—	FIBER OPTICS LINE
	UTILITY VALVE (WATER)		

BENCHMARK:

BENCHMARK #1: TAIL OF ARROW, TOP FLANGE OF A FIRE HYDRANT, FIRST FIRE HYDRANT EAST OF LAKESHORE COURT ON THE NORTH SIDE OF FRONTAGE ROAD FOR VETERANS MEMORIAL HIGHWAY. BOOK 3968, PAGE 54.
ELEV: 976.30' NAVD 88

BENCHMARK #1: TAIL OF ARROW, TOP FLANGE OF A FIRE HYDRANT, FIRST FIRE HYDRANT EAST OF 9TH STREET ON THE NORTH SIDE OF FRONTAGE ROAD FOR VETERANS MEMORIAL HIGHWAY. BOOK 3968, PAGE 54.
ELEV: 976.59

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LOCKBOX STORAGE
706 VETERANS MEMORIAL HIGHWAY
COUNCIL BLUFFS, IOWA

TOPOGRAPHIC SURVEY

PERMIT SET

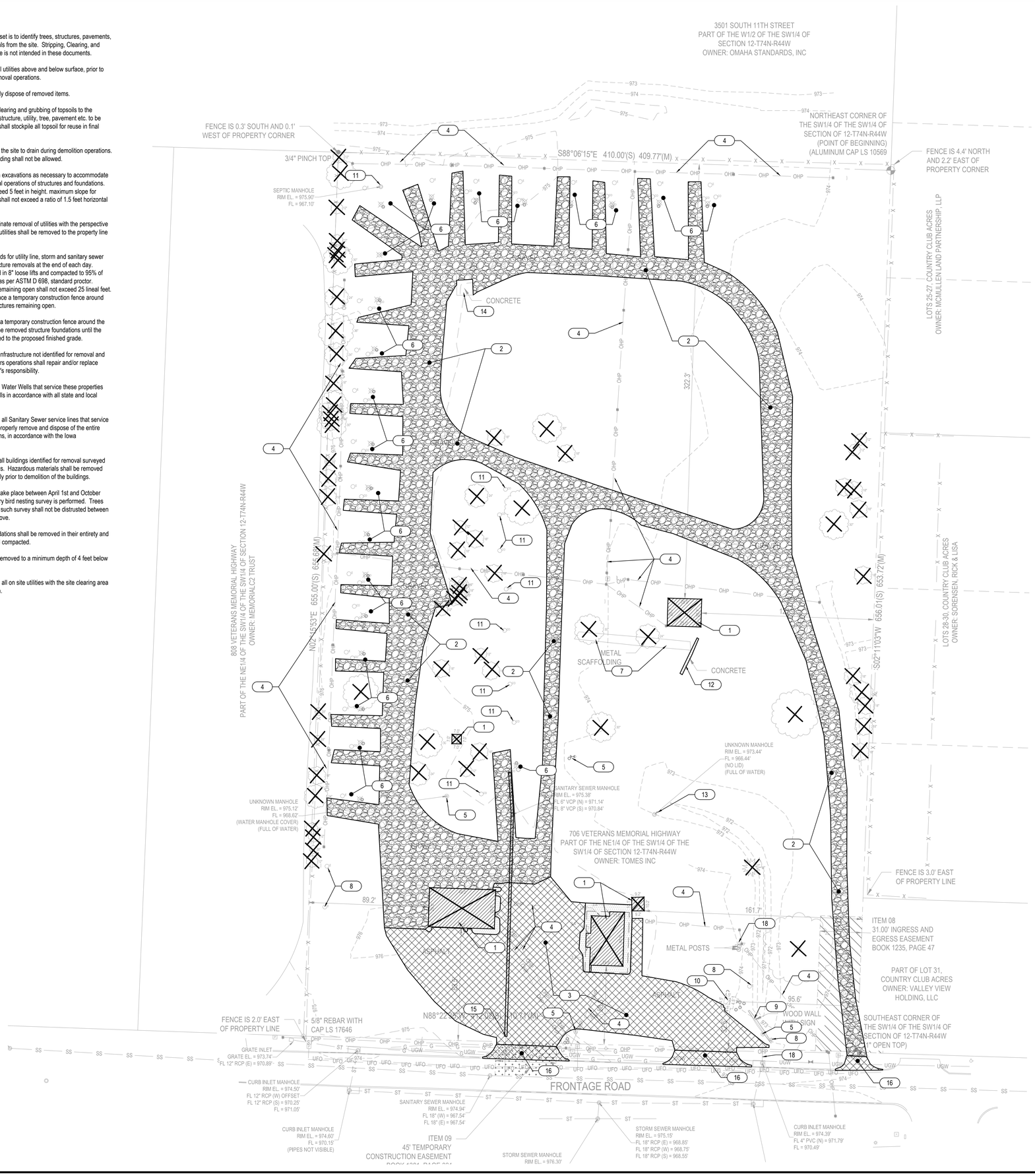
Revisions		
	Description	Date
1		

Proj. No:	P2019.310.003
Date:	5/4/2020
Designed By:	PJS
Drawn By:	BJW
Scale:	AS SHOWN
Sheet:	1 of 1

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NOTE:

1. The intent of this plan set is to identify trees, structures, pavements, and utilities for removals from the site. Stripping, Clearing, and Grubbing the entire site is not intended in these documents.
2. Contractor shall flag all utilities above and below surface, prior to commencement of removal operations.
3. Contractor shall lawfully dispose of removed items.
4. Contractor shall limit clearing and grubbing of topsoils to the immediate location of structure, utility, tree, pavement etc. to be removed. Contractor shall stockpile all topsoil for reuse in final grading operations.
5. Contractor shall grade the site to drain during demolition operations. standing water, or ponding shall not be allowed.
6. Contractor shall bench excavations as necessary to accommodate demolition and removal operations of structures and foundations. Benches shall not exceed 5 feet in height. maximum slope for benched excavations shall not exceed a ratio of 1.5 feet horizontal to 1.0 foot vertical.
7. Contractor shall coordinate removal of utilities with the perspective company/contact. All utilities shall be removed to the property line and properly capped.
8. Backfill of trenches/voids for utility line, storm and sanitary sewer pipes and related structure removals at the end of each day. Backfill shall be placed in 8" loose lifts and compacted to 95% of maximum dry density as per ASTM D 698, standard proctor. Excavated trenching remaining open shall not exceed 25 lineal feet. the contractor shall place a temporary construction fence around any excavation or structures remaining open.
9. Contractor shall place a temporary construction fence around the open excavations of the removed structure foundations until the void has been backfilled to the proposed finished grade.
10. Pavements and other infrastructure not identified for removal and damaged by contractors operations shall repair and/or replace damages at contractor's responsibility.
11. Contractor shall locate Water Wells that service these properties and decommission wells in accordance with all state and local specifications.
12. Contractor shall locate all Sanitary Sewer service lines that service these properties and properly remove and dispose of the entire Sanitary Sewer systems, in accordance with the Iowa Administrative Code.
13. Contractor shall have all buildings identified for removal surveyed for hazardous materials. Hazardous materials shall be removed and disposed of lawfully prior to demolition of the buildings.
14. No tree removal shall take place between April 1st and October 15th, unless a migratory bird nesting survey is performed. Trees identified with nests in such survey shall not be distrusted between the dates identified above.
15. Fence posts and foundations shall be removed in their entirety and properly backfilled and compacted.
16. Tree stumps shall be removed to a minimum depth of 4 feet below existing grade.
17. Contractor shall locate all on site utilities with the site clearing area prior to any excavation.



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30 0 30
1 inch = 30 ft.

LEGEND

- Remove Building and Foundation
- Remove P.C.C. Sidewalk
- Remove Pavement
- Remove Rock and Gravel Surfacing
- Remove and Dispose of Tree and Stump

NO	REMOVAL NOTES
1	Remove and dispose of existing building
2	Remove and salvage existing gravel pavement. Stockpile on Site.
3	Remove and dispose of existing asphalt pavement
4	Remove and dispose of existing power line and power poles. Coordinate removal with Mid American Energy
5	Remove and dispose of all existing Yard Hydrant and all associated distribution pipe and fittings. Water distribution network should be completely removed back to the Property Line.
6	Each campsite should have all utilities completely removed back to the distribution network(Water, Power, and Sewer), .
7	All stored items and storage racks shall be removed and properly disposed of. Removal all foundations.
8	Remove and dispose of all existing Electrical Box and all associated distribution conduit and misc equipment. Distribution network should be completely removed back to the main electrical supply.
9	Remove and properly dispose of wood wall, sign and foundation.
10	Remove and properly dispose of unknown shed and associated bollards, and foundations.
11	Unknown Sanitary, remove cleanouts and associated pipes.
12	Remove concrete sidewalk
13	Remove unknown manhole and all associated piping.
14	Remove concrete pad
15	Remove all sanitary sewer pipe and structures north (upstream) of this location. A new Manhole will be constructed on the end of the existing pipe. See utility plan for manhole details.
16	Remove Concrete Driveway
17	Remove and dispose of PCV Storm Drain pipe connecting to inlet in frontage road.
18	Remove and dispose of metal structure and foundations.

Utility Listings Council Bluffs

Black Hill Energy - Natural Gas
1414 W. Broadway P.O.Box 68
Council Bluffs, IA. 51502
Chris Dewey
P: 712-325-3022
M: 402-669-1821
F: 712-325-3042

Mid American Energy
3003 S. 11th Street
Council Bluffs IA. 51501
Tim Theobald
P: 712-366-5668
M: 402-677-0420
F: 712-366-5687
trtheobald@midamerican.com
David Fitch
P: 712-366-5669
M: 402-699-3887
DLFitch@midamerican.com

Century Link (Qwest) Communications (LOCAL)
7404 N. 78th Street Bldg A
Omaha, NE. 68122
Jay Cooley
P: 402-572-5851
M: 402-221-1069
F: 402-572-6424
Jay.coolley@qwest.com
Ed Krieger
P: 402-572-5856
M: 402-708-3269
Edward.krieger@centurylink.com

Council Bluffs Water Works
2000 N. 25th Street
Council Bluffs IA. 51501
Bill Wiggins
P: 712-328-1006-Ex 1024
Brian Cady
P: 712-328-1006 ext 1039
M: 712-326-4910
bcady@CBWaterWorks.com

COX Communications
401 N 117th Street Suite 101
Omaha, NE. 68154
David Kloch
P: 402-934-0550
M: 402-510-2330
david.kloch@cox.com
Chris Myre
P: 402-934-0371
M: 402-510-0567
Chris.myre@cox.net

City Sanitary Sewers
1001 10th Avenue
Council Bluffs IA 51503
Jeremy Noel
P: 712-328-4641

City Traffic Signals
Andy Wicks
1001 10th Avenue
Council Bluffs IA 51503
P: 712-328-4645

PROFESSIONAL CIVIL ENGINEER — PAUL J. GONZALES No. 19589 — I OWA

I hereby certify that this engineering document was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.
Paul J Gonzales 5/4/2020
Paul J Gonzales Date
My license renewal date is December 31, 2020
Pages or sheets covered by this seal: Sheets 2 thru 10

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LOCKBOX STORAGE
706 VETRANS MEMORIAL HIGHWAY
COUNCIL BLUFFS, IOWA

SITE REMOVAL PLAN

PERMIT SET

Revisions			
	Description	Date	Description
1			

Proj No: P2019.310.003
Date: 5/4/2020
Designed By: PJG
Drawn By: BJW
Scale: AS SHOWN
Sheet: 2 of 11

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5/5/2020 9:22 AM
Brad Williams

PAVEMENT CONSTRUCTION GENERAL NOTES

1. Pavement subgrade shall be prepared and compacted in accordance with the 2020 Iowa Statewide Urban Design and Specifications (SUDAS) standards and amended by the City of Council Bluffs Public Works Special Provisions and Specifications

2. Concrete mix for pavement slab and sidewalks shall be class "C" or class "M" air-entrained concrete made from Type 1 Portland Cement in accordance with the Iowa DOT I.M. 529. Air entraining admixture shall comply with Iowa DOT Section 4103..

3. All integral curbs shall be type "A," in accordance with SUDAS Standard Detail unless otherwise shown on plans.

4. Water-reducing admixture shall be added to all hand-placed and finished concrete.

5. Paving widths shall be as shown on plans. All dimensions shown are back of curb to back of curb, unless otherwise noted on plans.

6. A diamond edge saw blade shall be used for cutting all required contraction and longitudinal pavement joints.

7. The CONTRACTOR shall construct, with the INSPECTORS assurance of conformity, ADA compliant curb ramps at all intersection returns where new sidewalk is constructed, as well as where existing sidewalk has been removed. All ADA compliant curb ramps shall conform to the SUDAS Detail.

8. Within 30 minutes the concrete pavement shall be cured using a white pigmented liquid membrane-forming curing compound that has been approved by the State of Iowa DOT. Apply liquid membrane-forming curing compound at the concentration and application rate recommended by the manufacturer. Minimum rate of application shall be 15 sq yds per gallon, if a mechanical power sprayer is usd, and 7.5 sq yds per gallon if a hand-powered sprayer is used.

9. Exterior Concrete Pavement: Subgrade Preparation includes the adjustment of the subgrade under all areas to be surfaced including driveways, intersections, and the area 24 inches beyond the longitudinal edges of the pavement or the backs of curbs for proper placing of the pavement slab. The Contractor shall scarify and re-compact the subgrade to a depth of one foot. The top 12" of subgrade shall be compacted to 90% of maximum dry density as determined in accordance with the most current edition of ASTM D1557 (Modified Method) with moisture limits of -3% to +4% optimum.

10. The contractor shall provide a pavement jointing plan to the Engineer a minimum of 72 hours prior to placement of concrete in paved areas. The pavement jointing plan shall meet the requirements identified in the geotechnical investigation and report for this project.

11. Contraction joints shall be cut to a minimum of ¼ of the slab thickness (1/5 of the thickness for early entry saw method). Joints shall be cut as soon as practical after the concrete has set sufficiently to support foot traffic, and must be cut before any shrinkage cracks form. Joints shall be spaced no more than 24 times the thickness of the slab or 12 feet maximum. Panels shall be kept as square as possible, with the length to width ratio limited to 125 percent. Dowel bars shall be used for load transfer across construction joints, and should be considered for contraction joints subjected to heavy truck traffic. Joints shall be carefully planned and laid out to meet inlets, drainage structures, reentrant corners, and radiuses. Joints should be perpendicular to edges and radiuses, and should not form angles less than 45 degrees or over 225 degrees. Isolation joints should be provided around any structures.

12. All joints shall be sealed to reduce moisture infiltration and to reduce the accumulation of non-compressible materials. Joint sealing should be considered as a two part process, sealing of the exposed sawcut face of the concrete and sealing of the joint itself. Following sawcutting and cleaning the joints with compressed air, a penetrating concrete sealer (Silane, Silicate, or Siliconate based) should be spray applied to the joint extending outwards a minimum of 8 inches either side of the sawcut. Following the spray applied sealer, a hot pour joint sealer can be used to fill the sawcut. Use of backer rods is not recommended.

13. Exterior Sidewalks: The upper 6 inches of the subgrade should be compacted to a minimum of 95 percent of the maximum dry density at a moisture content between -3 and +4 percent of optimum (ASTM D698, Standard Proctor). Subgrade preparation should extend laterally 6 inches beyond the edge of the sidewalk.

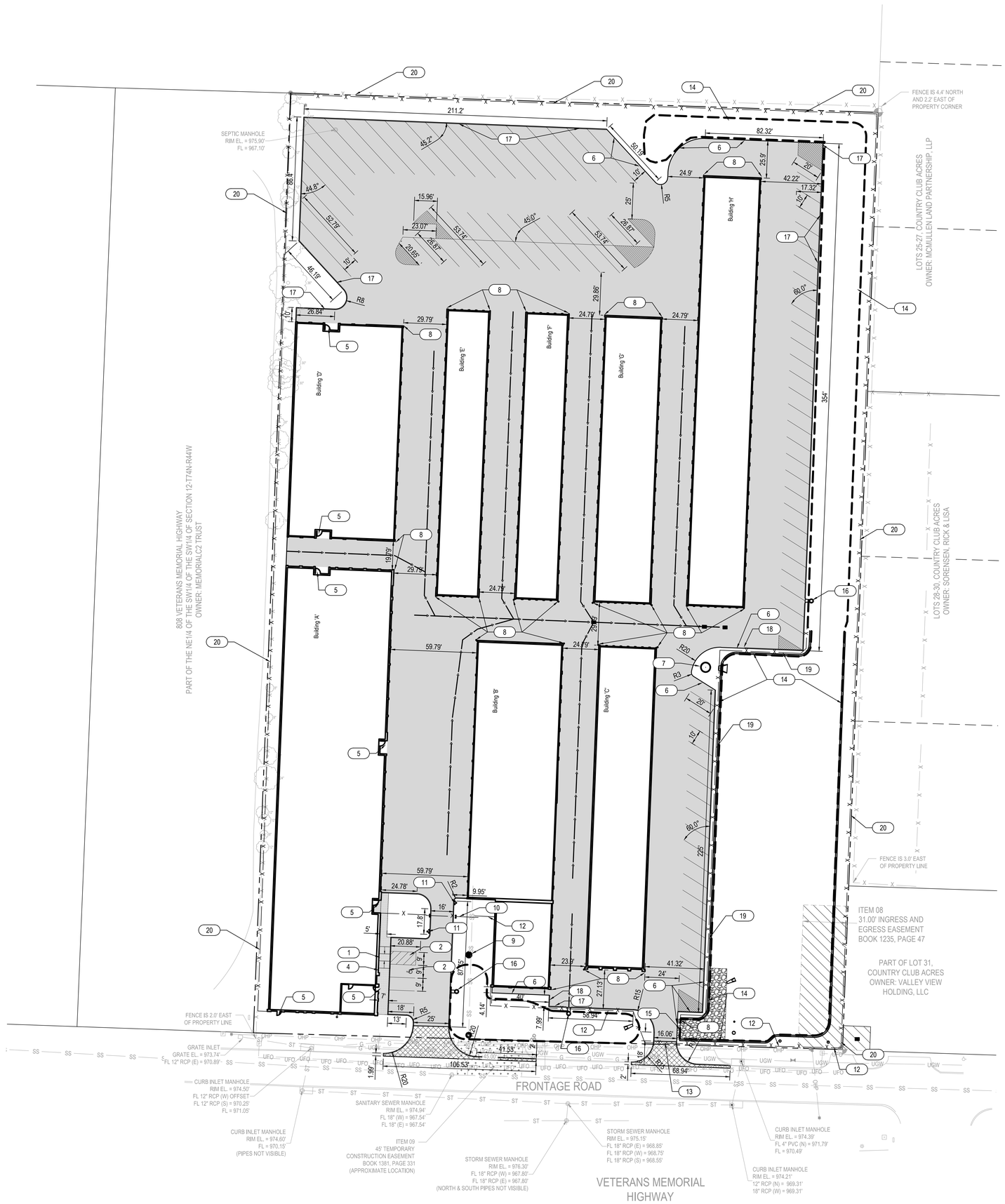
14. 7-foot width sidewalk shall be jointed in 7'x6' panels. 5-foot width sidewalk shall be jointed in 5'x5' panels.

15. All intersections shall be warped as directed by the Engineer in the field to ensure positive drainage.

16. Thickened Edges per Iowa SUDAS Standard Detail are required at locations where proposed paving ties into existing paving. Doweled joints will be required as directed by the Engineer.

17. All pavement removals shall be sawcut. Pavement removed for utility connections shall be removed and replaced in complete panels. Pavement removal limits may be adjusted in the field to match existing joints.

18. The longitudinal slope on sidewalks shall not exceed 4.8%. The cross slope on sidewalks shall not exceed 2.0%.



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N

30 0 30
1 inch = 30 ft.

LEGEND

- 6" P.C.C.
- 6" Temporary Pavement
- 9" P.C.C.
- 4" PCC Sidewalk
- Gravel Surfacing
- Inverted Crown

BUILD NOTES - LAYOUT

1. Handicap ramp. See detail on sheet 5
2. Painted Parking Striping, 4" Wide, Color: White, TYP.
3. Painted Handicap Symbol, TYP. See Detail on Sheet 5.
4. Handicap Sign mounted on building.
5. Structural Stoop - See Architectural / Structural Plan for Details
6. No Curb
7. Utility Infrastructure. See Sheet 4.
8. Construct Bollard. See Detail on this Sheet. Offset 1 Foot from building face to center of pipe bollard.
9. Monument Sign, coordinate with owner and sign company.
10. 16' black press point cantilever gate .
11. Gate control. Coordinate with owner. Construct bollards to protect controls.
12. Fencing, Install 94" tall Black Pressed Curved Top/Extended Bottom Three Rail Panel. GANVCCUR39490.
13. 16' black press point cantilever gate .
14. See Detail on sheet 5. Owner and Architect shall select make, model, and color of retaining wall block. Block vendor shall provide engineering design and calculations for retailing wall. Design shall be provided by a qualified professional engineer, licensed in the State of Iowa.
15. 12' Swinging gate, contractor to submit shop drawings to Engineer and owner for review and approval.
16. Rain Guardian Turret. See detail on sheet 10.
17. Full Curb Section
18. Transition from no curb to full curb in 3'
19. 42" tall galvanized chain-link-fence at top of retaining wall. Place fence 2.0' behind back of curb. See retaining wall detail on sheet 6.
20. Side and rear lot fencing shall be 94" in height, constructed from wood, masonry and/or vinyl with inserts and at least 50 percent opaque. Contractor shall coordinate with Owner and Architect on select make, model and color of fencing.

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Engineering Answers

LOCKBOX STORAGE
706 VETRANS MEMORIAL HIGHWAY
COUNCIL BLUFFS, IOWA

SITE PAVING AND LAYOUT PLAN

PERMIT SET

Revisions			
	No.	Date	Description

Proj No.:	P2019.310.003
Date:	5/4/2020
Designed By:	PJG
Drawn By:	BJW
Scale:	AS SHOWN
Sheet:	3 of 11

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5/5/2020 9:22 AM
Brad Williams

GENERAL GRADING NOTES

1. The General Contractor and/or sub-contractor shall have complete responsibility for damage caused by blowing dust from his construction activities.

2. Topsoil and non-woody vegetation shall be stripped to a depth of 4" to 6" in areas to be graded. A Geotechnical Engineer representative shall observe stripping operations to ensure all unsuitable materials have been removed.

3. Topsoil generated from stripping operations shall be stockpiled in an approved location and re-spread on areas finish graded to receive topsoil.

4. Rubble and waste materials from site clearing and demolition shall be removed from the site and lawfully disposed, salvaged, or recycled. Where fence posts are removed, their concrete bases shall be excavated and completely removed. Waste materials shall not be buried on site.

5. OSHA's Construction Standards for Excavations require that the Contractor's excavation activities follow certain worker safety procedures. Excavations over 4 feet deep shall be sloped back, shored, or shielded. The maximum allowable slope for an unbraced excavation in these soils is 1H:1V and 1.5H:1V respectively, although other provisions and restrictions apply. The Contractor is solely responsible for site/excavation safety and compliance with OSHA regulations.

6. All structural fill and backfill soils shall be low plasticity, cohesive soil that are free of organic material or debris. Structural fill/backfill materials shall have a Liquid Limit less than 45 and a Plasticity Index less than 20. Excavated site soils will generally be suitable for use as structural fill.

7. Fill Compaction Requirements:
   Shallow Foundations -
   Areas to receive fill shall be scarified to a minimum depth of 6". Fill shall be placed in lifts not to exceed 8" in loose thickness. Structural Fill shall be compacted to a minimum of 95% of the maximum dry density ASTM D-698 (Standard Proctor) at a moisture content between -3 and +4% of optimum. The Geotechnical Engineer shall observe and test bearing soils exposed in all foundation excavations.
   All Other Locations
   Areas to receive fill shall be scarified to a minimum depth of 6". Fill shall be placed in lifts not to exceed 8" in loose thickness. Structural Fill shall Be compacted to a minimum of 95% of the maximum dry density // (ASTM D-698, Standard Proctor) at a moisture content between -3 and +4% of optimum.

8. PCC Pavements: Prepare subgrade as per notes and specifications identified on the Site Layout and Paving Plan Sheet.

9. PCC Sidewalks: Prepare subgrade as per notes and specifications identified on the Site Layout and Paving Plan Sheet.

10. Backfill soils around foundations, basement walls and retaining walls shall be compacted to a minimum of 95% of the maximum dry density (ASTM D-698, Standard Proctor) at a moisture content between -3% and +4% of optimum. Fill shall be placed in loose lifts appropriate to the equipment and methods used for compaction. Granular backfill shall not be used around foundation elements.

11. Backfill soils in utility trenches shall be compacted to a minimum of 95% of the maximum dry density as per ASTM D698 (Standard Proctor) at a moisture content between -1% and +3% of optimum. Fill shall be placed in loose lifts appropriate to the equipment and methods used for compaction. Granular backfill shall not be used in exterior trenches. A "trench plug" shall be constructed to a distance 5 feet from face of building exteriors. The plug material shall consist of a clay compacted at a water content at or above the soil's optimum water content. The clay fill should be placed to completely surround the utility line and compacted as described above.

12. Imported fill material, if required, shall be free of organic matter and debris, and shall be a clean, inorganic silt or lean clay with a Liquid Limit less than 45 and a Plasticity Index less than 20. Imported material shall not contain any foreign material or debris with a dimension greater than 3".

13. Any excess material shall be disposed of at an off-site at a location determined by the Contractor.

14. Unless otherwise noted, all spot elevations shown are Top of Slab, Finished Floor (FF) or Finished Grade (G).

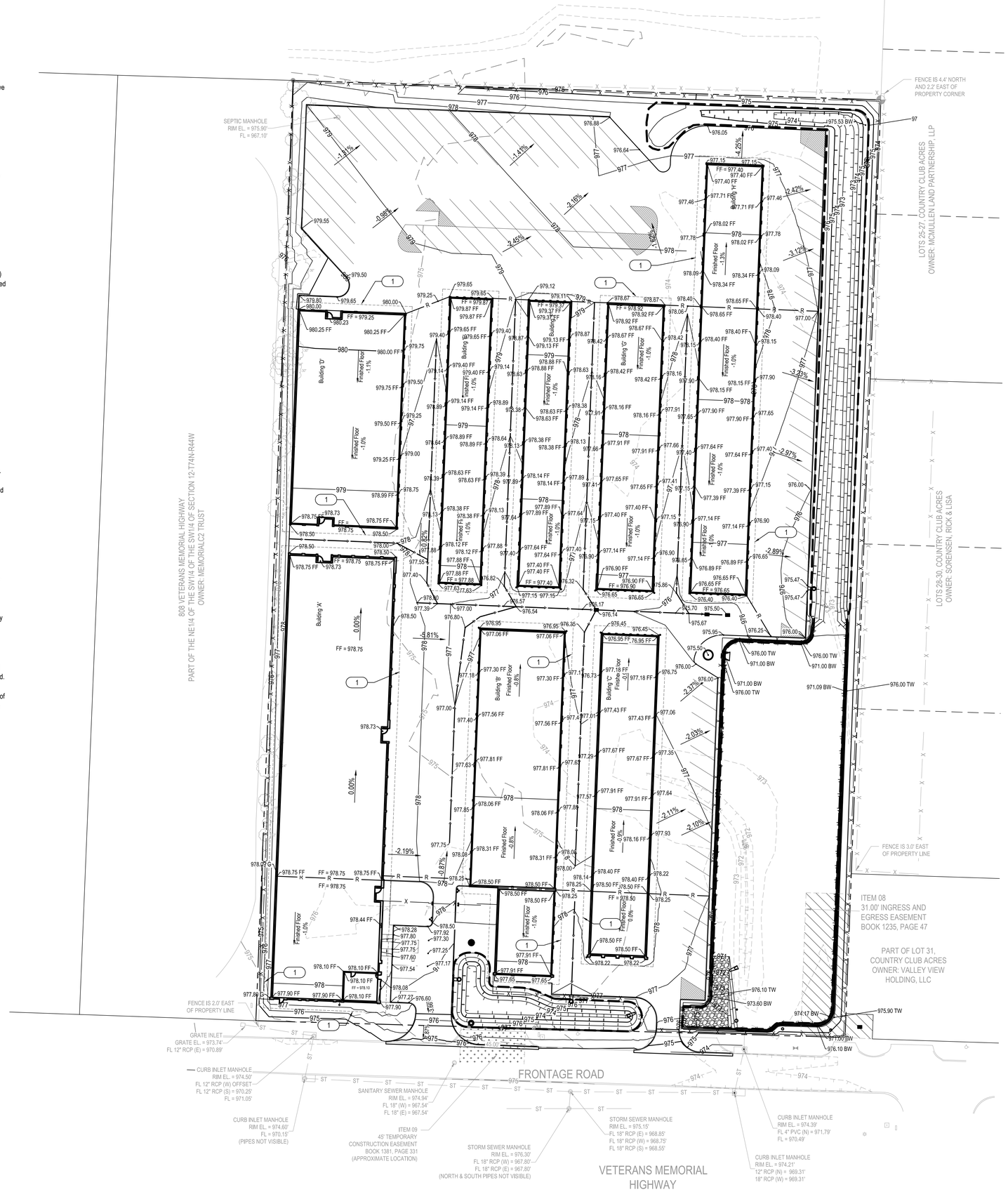
15. The subgrade of the floor slab shall be reworked and compacted as structural fill prior to concrete placement. The upper 6 inches of base soils shall be compacted to a minimum of 95% of the maximum dry density as per ASTM D698 (Standard Proctor) at a moisture content between -3% and +4% of optimum.

16. If unstable soils are encountered in the bottom of shallow foundations or subgrade areas, the Contractor shall implement over-excavation and backfill practices with a more suitable material. The Contractor shall contact the Geotechnical Engineer to identify limits and depths of over-excavation.

17. Exposed project site soils shall be stabilized as shown in the Storm Water Pollution Prevention Plan and Landscaping Plan.

18. The Recommendations of the Geotechnical Report, "1706 Veterans Memorial Highway." prepared by Thiele Geotech, (Thiele Project Number 19676.00), shall control in all instances where site preparations, subgrade preparation, backfill and compaction are concerned.

19. Groundwater may be encountered when constructing footings and utilities. Dewatering may be necessary. Dewatering may constist of the use of sumps and pumps withing the excavations to remove groundwater. A dewatering contractor should be consulted if a more extensive system of dewatering is deemed necessary by the Geotechnical Engineer. Note that dewatering can result in soil settlement. This may impact nearby structures, foundations, utilities, and pavements. Consultation with the dewatering contractor is recommended to determine drawdown depths and expected area of influence. Sensitive structures should be protected and shall be the responsibility of the contractor.



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30 0 30
1 inch = 30 ft.

LEGEND

- TW=XX / BW=XX — Top of Wall Elevation / Bottom of Wall Elevation
- R — Ridge Line
- Inverted Crown Line
- 1120 — Existing Contours
- 1170 — Proposed Contours
- 1220.00 — Proposed Spot Elevation (Unless otherwise noted, all spot elevations shown are Top of Slab or Finished Grade (G).)
- Limits of 1' Excavation and Structural Backfill for Buildings

GRADING REFERENCE NOTES

1 Over Excavation and Structural Backfill extends 5' beyond building limits. Refer to Getotechnical Exploration Report.

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LOCKBOX STORAGE
706 VETRANS MEMORIAL HIGHWAY
COUNCIL BLUFFS, IOWA

SITE GRADING PLAN

PERMIT SET

No.	Revisions	Date	Description
1			

Proj No:	P2019.310.003
Date:	5/4/2020
Designed By:	PAS
Drawn By:	BJW
Scale:	AS SHOWN
Sheet:	4 of 11

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Brad Williams

GENERAL WATER NOTES:

1. This work shall be in accordance with the Council Bluffs Water Works' (hereinafter referred to as District) "water rules and regulations," the special and technical provisions, and these plans for the referenced project.
2. Water mains and service lines shall have a minimum cover of five feet and shall be installed in accordance with the water rules and regulations.
3. The horizontal distance between the sewer and water lines shall be 10 feet min. and the vertical distance shall be two feet min. The sanitary sewer pipe material shall be ductile iron pipe 10 feet each side of the water main when the vertical distance is less than 2 feet.
4. Contractor shall maintain all valves at connection points in the fully closed position until chlorination testing and approval of proposed water lines are complete, except that said valves may be opened to fill lines for use in the chlorination process.
5. Type "K" copper water service of the sizes and quantities shown, shall be constructed to all buildings shown of this development in accordance with the specifications and details shown on the plans. The contractor shall record tap and valve locations of each water service installed and provide such records to the owner upon completion of construction.
6. Contractor shall field verify all potential utility line crossing conflicts. Contractor shall notify engineer of conflicts and adjust horizontal and vertical alignments of proposed utilities only at the direction of the engineer.
7. Remove and replace full pavement panels where necessary to construct new water main tap of main and for fire hydrant construction.

GENERAL NOTE FOR SANITARY AND STORM SEWER CONSTRUCTION

1. Sanitary Sewer Service Materials: The following storm drain pipe materials may be used. PVC (SDR 26 or Schedule 40), or Vitrified Clay Pipe (VCP).
2. Storm Drain Pipe Materials. The following storm drain pipe materials may be used:
3. Reinforced Concrete Pipe (RCP), conforming to ASTM C76 (Class III unless otherwise indicated). Materials and installation shall conform to City of Omaha Standard Specifications. RCP pipe shall by manufactured by an American Concrete Pipe Association QCast Certified Plant. All RCP pipe shall have a QCast stamp.
4. PVC pipe with smooth interior and corrugated exterior, such as Contech A-2000, or equal. Pipe and fittings shall conform to ASTM F949. Installation shall conform to ASTM D 2321. Gasketed joints shall be used, and shall show no leakage when tested in accordance with ASTM D 3212. All joints shall be water-tight.
5. PVC pipe, SDR 35, in accordance with ASTM D 3034. Installation shall conform to ASTM D 2321. Gasketed joints shall be used, and shall show no leakage when tested in accordance with ASTM D 3212. All joints shall be water-tight.
6. High Density Polyethylene (HDPE) pipe, with smooth interior and corrugated exterior, such as ADS N-12, Hancor HI-Q, or equal. Pipe and fittings shall conform to AASHTO M-252 and M-294. Installation shall conform to ASTM D 2321. Joints shall be made with split couplings, corrugated to engage the pipe corrugations, and shall engage a minimum of 2 corrugations on each side of the pipe joint. A neoprene gasket, per the manufacturer's recommendations, shall be used for all joints to ensure a soil-tight connection. Class IV soils shall not be used for bedding or backfill of N-12 pipe.
7. Curb inlets and grate inlets (types and materials) shall be as identified in the "Construct Storm Drain Structure" table.
8. Any referenced Iowa Sudas Standard Plates are further identified in the General Notes for Construction.

CONSTRUCT STORM SEWER PIPE

ID	START STRUCTURE	END STRUCTURE	Dia.	Length	Slope	Remarks
11	12	11	18"	31.12	3.79%	RCP, Class III. Also see Note "ST2"
12	13	12	18"	20.54	2.00%	RCP, Class III
13	14	13	12"	7.78	0.00%	
14	16	15	30"	9.01	1.11%	
15	17	16	30"	28.28	0.35%	
16	19	17	30"	77.21	0.58%	
17	18	17	18"	14.37	0.35%	
19	23	22	12"	72.21	4.15%	
20	24	12	12"	30.46	0.38%	RCP, Class III
21	25	24	12"	33.58	0.37%	
22	26	25	12"	20.28	0.59%	

CONSTRUCT SANITARY SEWER MANHOLE

NO.	DESCRIPTION
1	Sanitary Sewer Manhole Iowa SUDAS Standard Plan SW-301 Rim = 976.24 FL (6" In) = 962.29
2	Sanitary Sewer Cleanout See Mechanical / Plumbing for continuation Rim = 977.37 FL (6" Out) = 964.08

CONSTRUCT STORM SEWER PIPE

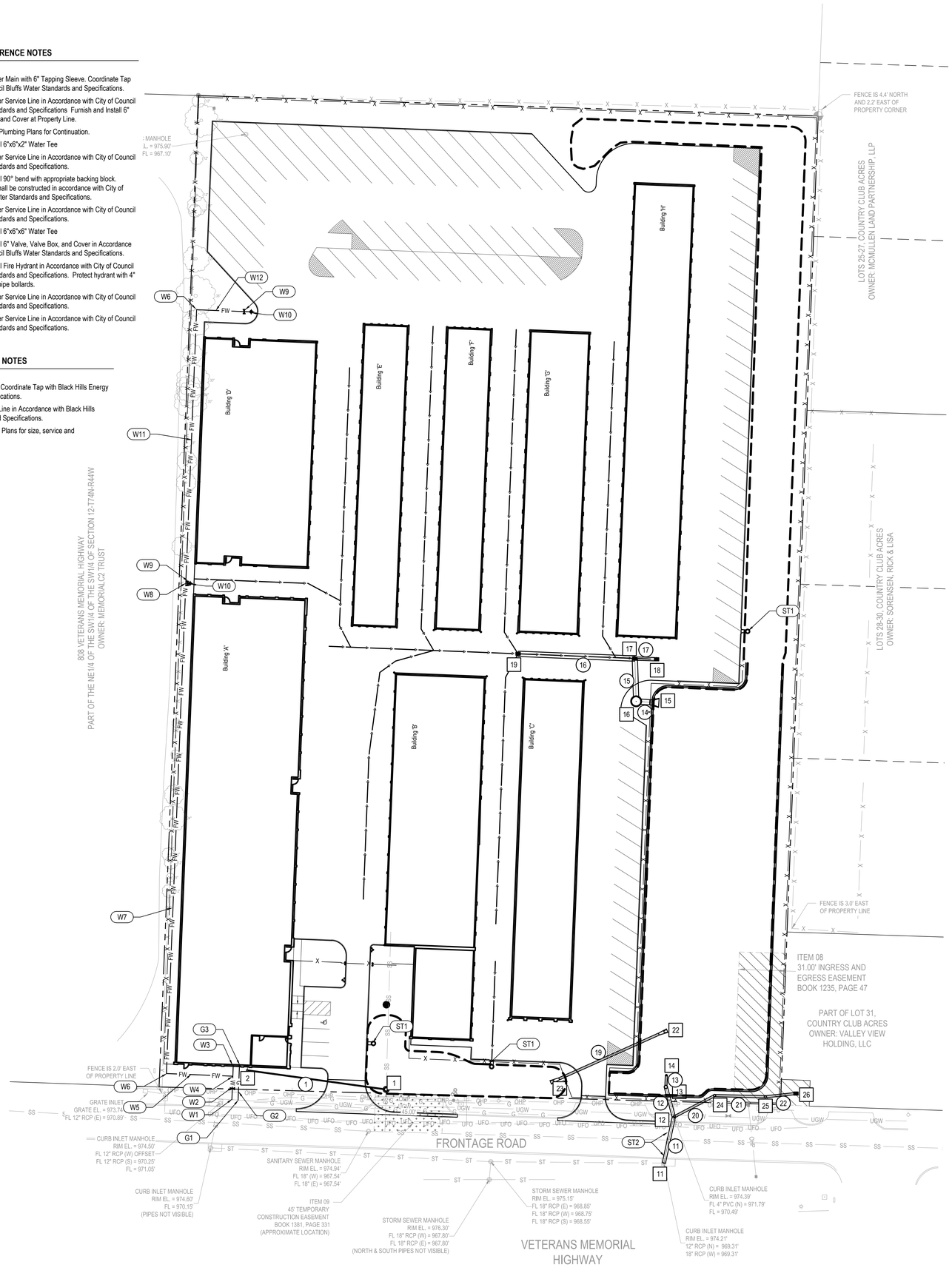
ID	START STRUCTURE	END STRUCTURE	Dia.	Length	Slope	Remarks
1	2	1	6"	92.67	1.93%	

W WATER REFERENCE NOTES

- W 1 Tap Existing Water Main with 6" Tapping Sleeve. Coordinate Tap with City of Council Bluffs Water Standards and Specifications.
- W 2 Construct 6" Water Service Line in Accordance with City of Council Bluffs Water Standards and Specifications Furnish and Install 6" Valve, Valve Box and Cover at Property Line.
- W 3 See Mechanical/ Plumbing Plans for Continuation.
- W 4 Furnish and Install 6"x6"x2" Water Tee
- W 5 Construct 6" Water Service Line in Accordance with City of Council Bluffs Water Standards and Specifications.
- W 6 Furnish and Install 90° bend with appropriate backing block. Backing Blocks shall be constructed in accordance with City of Council Bluffs Water Standards and Specifications.
- W 7 Construct 6" Water Service Line in Accordance with City of Council Bluffs Water Standards and Specifications.
- W 8 Furnish and Install 6"x6"x6" Water Tee
- W 9 Furnish and Install 6" Valve, Valve Box, and Cover in Accordance with City of Council Bluffs Water Standards and Specifications.
- W 10 Furnish and Install Fire Hydrant in Accordance with City of Council Bluffs Water Standards and Specifications. Protect hydrant with 4" Ø concrete filled pipe bollards.
- W 11 Construct 6" Water Service Line in Accordance with City of Council Bluffs Water Standards and Specifications.
- W 12 Construct 6" Water Service Line in Accordance with City of Council Bluffs Water Standards and Specifications.

G WATER REFERENCE NOTES

- G 1 Tap Existing Gas Main X". Coordinate Tap with Black Hills Energy Gas Standards and Specifications.
- G 2 Construct X" Gas Service Line in Accordance with Black Hills Energy Gas Standards and Specifications.
- G 3 See Mechanical/ Plumbing Plans for size, service and continuation.



N

30 0 30
1 inch = 30 ft.

LEGEND

- Storm Sewer Pipe Network
- Sanitary Sewer Pipe Network
- PCSMP Basin Limits
- W W W — Water Service Line
- G G G — Gas Service Line

ST STORM DRAIN REFERENCE NOTES

- ST1 Rainguardian Turret. See Detail on sheet 10.
- ST2 Construct Pipe 11 in two phases, roadway shall not be closed to vehicular traffic.

CONSTRUCT STORM SEWER STRUCTURE

NO.	DESCRIPTION
11	Existing Storm Drain Inlet FL (18" Out) = 969.31 Rim = 974.29 FL (18" In) = 969.31
12	Existing Storm Drain Inlet Rim = 974.38 FL (18" In) = 970.59 FL (18" Out) = 970.49 FL (12" In) = 970.99
13	Nyloplast Riser Structure See Detail on sheet 10 Rim = 972.85 FL (18" Out) = 971.00 FL (12" In) = 971.00
14	Nyloplast Riser Structure See Detail on sheet 10 Rim = 972.23 FL (12" Out) = 971.00
15	30" Flared End Section Rim = 972.92 FL (30" In) = 971.00
16	Area Inlet, Iowa SUDAS Standard Plan SW-511 or SW-512 Rim = 975.50 FL (30" Out) = 971.10 FL (30" In) = 971.20
17	24" Nyloplast Heavy Duty Drain Basin With 2'x3' Heavy Duty Grate Rim = 975.90 FL (30" In) = 971.40 FL (30" Out) = 971.30 FL (18" In) = 971.40
18	24" Nyloplast Heavy Duty Drain Basin With 2'x3' Heavy Duty Grate Rim = 975.50 FL (18" Out) = 971.45
19	24" Nyloplast Heavy Duty Drain Basin With 2'x3' Heavy Duty Grate Rim = 976.35 FL (30" Out) = 971.85
22	12" Flared End Section Rim = 972.29 FL (12" In) = 971.00
23	12" Flared End Section Rim = 975.29 FL (12" Out) = 974.00
24	18" Nyloplast Drain Basin, With Solid Cover Rim = 975.50 FL (12" In) = 971.11 FL (12" Out) = 971.11
25	18" Nyloplast Drain Basin, With Solid Cover Rim = 975.11 FL (12" In) = 971.23 FL (12" Out) = 971.23
26	24" Nyloplast Drain Basin, With Solid Cover With 2'x3' HD Grate Rim = 974.31 FL (12" Out) = 971.35

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LOCKBOX STORAGE
706 VETERANS MEMORIAL HIGHWAY
COUNCIL BLUFFS, IOWA

SITE UTILITY PLAN

PERMIT SET

Revisions		
	Date	Description
1		

Proj No: P2019.310.003
Date: 5/4/2020
Designed By: PJG
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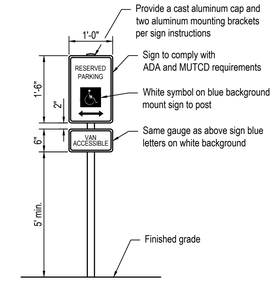
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GENERAL SITE CONSTRUCTION NOTES

1. The Iowa statewide Urban Design Specifications (SUDAS) for public works construction, 2020 edition and any current revisions or amendments thereto and the special provisions for this project shall apply and the contractor shall perform in accord therewith.
2. The contractor shall check with the owner for city approval of the project before starting work.
3. Inspection during construction will be paid for by the owner.
4. The Portland cement concrete mix design for the pavement slab shall comply with Iowa DOT Class C or Class M mix meeting the requirements of materials I.M. 529. Type ip cement is not permitted for use. Air entertaining admixutre shall comply with Iowa DOT Section 4103.
5. The contractor shall be charged for replacing construction stakes and lot pins which are destroyed by his operations.
6. Utility facilities shown are from locates or records provided by others, and shall be considered approximate. Other utilities may exist (either in service or abandoned) and their location may not be presently known or identified on the plans. The engineer makes no guarantee that the utilities shown comprise all utilities in the area, either in service or abandoned. The engineer further does not warrant that the utilities shown are in the exact location indicated.
7. The contractor shall notify the Iowa One-Call system at 1-800-292-8989 to identify the location of all underground utility facilities within the construction area. The contractor shall determine the exact location of all public and private utility facilities located within the construction area to avoid damage in accordance with Section 480.4, Code of Iowa. Damage to utilities due to the contractor's actions shall be repaired or replaced without cost to the owner or engineer.
8. Where existing utility facilities are shown in the plans or encountered within the construction area, the contractor shall notify the utility company prior to beginning construction activities. The contractor shall be responsible for notifying utilities and conducting work near utility facilities required by Section 480.4, Code of Iowa.
9. The contractor shall cooperate with utility companies in their adjustment operations so that these operations may progress, the duplication of adjustment work may be reduced, and that services rendered by those parties will not be interrupted.
10. The contractor shall review all utilities shown in the plans and coordinate with all utility companies necessary to schedule work for all known and potential conflicts. The contractor shall be aware that utility services are not routinely located or shown on the plans, however, may be a conflict with the work performed. Delays, inconvenience, or damage claimed by the contractor due to any interference of utilities shown in the plans or services shall not be considered a circumstance for additional time or compensation.
11. Non-colored concrete pavement shall be cured using a white pigmented liquid membrane-forming curing compound that has been approved by the State of Iowa Department of Transportation. The minimum rate of application shall be 15 sq. yd. per gal. if a mechanical-powered sprayer is used and 7.5 sq. yd. per gal.if a hand powered sprayer is used. Curing compound shall be applied no later than 30 minutes after finishing.
12. Water reducing admixtures shall be added to all hand-placed and finished concrete.
13. Erosion control improvements shall be constructed on this site, including inlet protection, silt fencing, and a construction entrance. The contractor shall be responsible for prompt reconstruction of any erosion control improvements disturbed by his operations. All disturbed erosion control improvements shall be fully reconstructed at the end of each working day prior to leaving the site. Separate payment will not be made for reconstruction of any erosion control improvements and this work shall be considered subsidiary to those items for which payment is made. Positive drainage in all work areas shall be maintained in the condition the construction site was in prior to contractor's arrival.
14. The standard plates of the Iowa State-wide Urban Design and specifications as modified by the City of Council Bluffs shall govern.
15. Abandoned utilities that are shown on the plans and encountered during trench excavation shall be incidental to the project and will not be paid for separately unless indicated otherwise on the plans.
16. Prior to beginning work on the following items, the contractor shall submit to the engineer for review, plans for by-pass pumping, trench shoring, jacking and boring, dewatering, traffic control, and provide shoring or support details for water mains and other major utility lines that must remain in service.
17. The contractor shall keep sanitary sewer and storm sewer lines and structures clean and free of debris that is a result of construction operations. Any cleaning and removal of debris that enters as a result of construction operations shall be completed at the expense of the contractor.
18. The contractor shall make access available to adjacent properties in case of emergencies. The contractor shall notify the City Engineer (712- 328-4634), 24 hours prior to closing and/or opening any roads to traffic. The contractor shall adequately barricade closed roads during construction to insure public safety and protect new pavement from damage. All traffic control shall be in compliance with "Manual on Uniform Traffic Control Devices" U.S. Department of Transportation, latest edition.
19. A qualified superintendent who is acceptable to the Owner shall be maintained on the project at all times. The superintendent shall have full authority to act on behalf of the contractor. All directions given to the superintendent shall be considered given to the contractor.

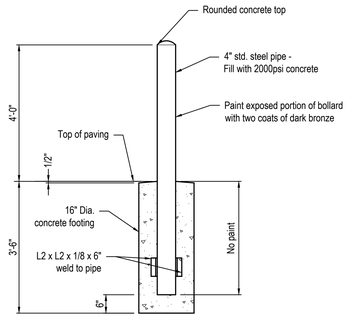
GENERAL SITE CONSTRUCTION NOTES

20. All removed asphalt pavement shall be crushed/recycled as shown in the site removals sheets.
21. Removal of existing city sign(s) as necessary shall be incidental to the project unless specified otherwise. All sign(s) shall be removed without damage to the sign(s). Any damage to sign(s) shall be the responsibility of the contractor. The contractor will be required to replace in kind and/or compensate the city for damaged sign(s). Sign(s) shall be delivered when removed to the City Traffic Department at 1001 10th Avenue. Signs shall not be stored on project site.
22. All solid waste, and excess excavation from the removal or installation of pavement, storm, and sanitary sewer systems, shall be removed and disposed of by the contractor in compliance with all applicable federal, state, and local requirements. All removed items, other than crushed concrete and asphalt from the demolition operations, shall be disposed of by the contractor off site and shall not be incorporated into the work.
23. Prior to the commencement of removals, the contractor shall provide the engineer documentation of their certified disposal site(s) for all items to be removed from the project.
24. Existing trees not indicated for removal shall be protected from damage during construction. Trimming of trees with trunks located outside of the right of way shall not be completed without authorization from the owner. When trimming is required on any tree, the contractor shall obtain approval from the owner and use saws to remove roots and branches from trees that are to remain. No removal of roots or branches shall be by heavy equipment that results in tears. All removals shall leave a smooth cut face.
25. The contractor shall maintain pedestrian pathways open and passable during construction.
26. The contractor shall be responsible for the collection and transportation of garbage, yard waste, recyclables, and return of containers from in front of individual properties to the ends of the project limits for pickup; and the coordination of the pickup location(s) with the garbage collector.
27. The contractor shall confine all operations, including equipment and material storage, within the construction row and/or easements of the project. If the contractor is granted permission to store materials or equipment on adjacent private property the contractor shall provide the engineer with written proof of permission from the landowner.
28. The contractor shall maintain the project limits. By commencing the work in a given area, the contractor assumes the responsibility for ongoing required maintenance such as mowing and weed control within the project limits.
29. The engineer will set the requested construction stakes upon 48-hour advanced notification by the contractor. The contractor shall be responsible for the preservation of stakes and marks. The owner will furnish the staking through the engineer one time only. All other construction staking shall be furnished by the contractor. Restaking, including associated trip charges, shall be paid by the contractor to the owner who will reimburse engineer. The owner may deduct amounts for restaking from payments due to the contractor.
30. Streets shall not be opened to traffic until all street pavement has reached required strength, all joints have been sealed, and all driveways and sidewalks have been constructed unless indicated otherwise on the plans or approved by the engineer.
31. The contractor will be responsible for payments associated with all retesting resulting from failure of initial compaction tests. Retesting, including associated trip charges, shall be paid by the contractor to the owner who will reimburse engineer. The owner may deduct amounts for retesting from payments due to the contractor.
32. The contractor shall control construction debris, hazardous waste spills, and concrete truck washout area(s). The contractor shall clean-up and dispose of all waste properly off-site at an approved disposal facility. No construction material wastes or unused materials shall be buried, dumped, burned, or discharged within the project limits.
33. The contractor shall take steps to control soil erosion and fugitive dust during construction. If necessary, hay bales, check dams, sediment traps or additional silt fence (not indicated on the plans) shall be used to retain silt and prevent silt from entering the storm drainage system. It shall be the responsibility of the contractor to conduct operations in accordance with the pollution prevention plan and administer it throughout the project duration.
34. The contractor shall construct the necessary erosion control and runoff detention structures included in the plans and per the storm water pollution prevention plans (SWPPP) prior to any grading on the project in order to prevent silt transport and soil tracking outside of the project limits. The contractor shall maintain and water haul roads to control fugitive dust.
35. All concrete trucks shall return to the plant to wash out unless the contractor provides a concrete wash out area as described in the plans or as approved by the engineer. The contractor is responsible for the removal and clean-up of the wash out location.
36. The owner may charge the contractor actual damages for failure of the contractor to comply with any part of the contract, including incidental project requirements, for which the owner incurs costs to remedy. The owner may charge up to the actual cost incurred by the owner for such damages. The owner may deduct amounts for damages from payments due to the contractor.
37. Testing services shall be paid for by the owner. Testing shall include moisture-density tests, compaction tests and periodic observations. The contractor shall be responsible for the cost of any test that does not meet specification requirements. At project closeout, the cost of failing tests shall be deducted from the contract amount by change order.
38. Temporary construction fence shall be orange in color and a minimum of 4 feet in height. Install as per manufacturer's recommendations.



HANDICAP PARKING SIGN

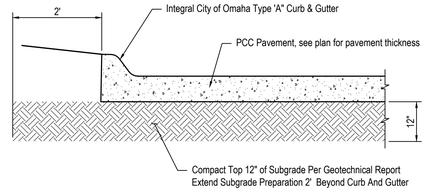
NOT TO SCALE



Shop apply one coat of red oxide primer to pipe.

BOLLARD DETAIL

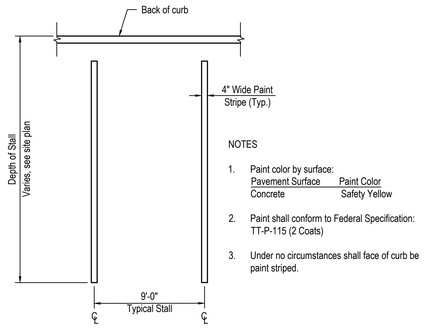
NOT TO SCALE



PORTLAND CEMENT PAVEMENT

WITH INTEGRAL CURB AND GUTTER

NOT TO SCALE



NOTES

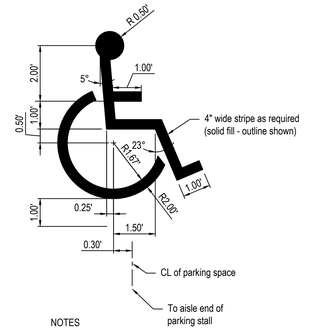
1. Paint color by surface:

Pavement Surface	Paint Color
Concrete	Safety Yellow

2. Paint shall conform to Federal Specification: TT-P-115 (2 Coats)
3. Under no circumstances shall face of curb be paint striped.

PARKING STALL PAINT STRIPING

NOT TO SCALE



NOTES

1. Paint color by surface:

Pavement Surface	Paint Color
Concrete	Yellow
Bituminous	White

2. Paint shall conform to Federal Specification: TT-P-115 (2 Coats)

HANDICAP PARKING LOT STENCIL DETAIL

NOT TO SCALE

Utility Listings Council Bluffs

Black Hill Energy - Natural Gas
1414 W. Broadway P.O.Box 68
Council Bluffs, IA. 51502
Chris Dewey
P: 712-325-3022
M: 402-669-1821
F: 712-325-3042

Mid American Energy
3003 S. 11th Street
Council Bluffs IA. 51501
Tim Theobald
P: 712-366-5668
M: 402-677-0420
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David Fitch
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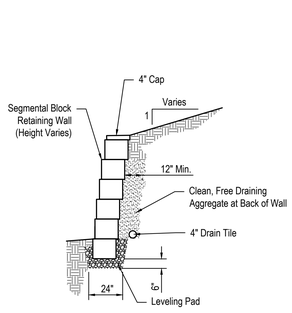
Council Bluffs Water Works
2000 N. 25th Street
Council Bluffs IA. 51501
Bill Wiggins
P: 712-328-1006-Ex 1024
Brian Cady
P: 712-328-1006 ext 1039
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bcady@CBWaterWorks.com

COX Communications
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david.kloch@cox.com
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Chris.myre@cox.net

Century Link (Qwest) Communications (LOCAL)
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Omaha, NE. 68122
Jay Cooley
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M: 402-221-1069
F: 402-572-6424
Jay.coolley@qwest.com
Ed Krieger
P: 402-572-5856
M: 402-708-3269
Edward.krieger@centurylink.com

City Sanitary Sewers
1001 10th Avenue
Council Bluffs IA 51503
Jeremy Noel712-328-4641

City Traffic Signals
Andy Wicks
1001 10th Avenue
Council Bluffs IA 51503
P: 712-328-4645

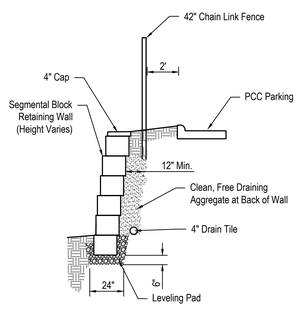


Segmental Block Wall Shall be specified by Owner and Architect

SEGMENTAL BLOCK RETAINING WALL*

NOT TO SCALE

*Vendor shall provide engineering design service for segmental block retaining wall.

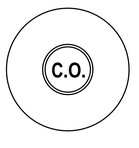


Segmental Block Wall Shall be specified by Owner and Architect

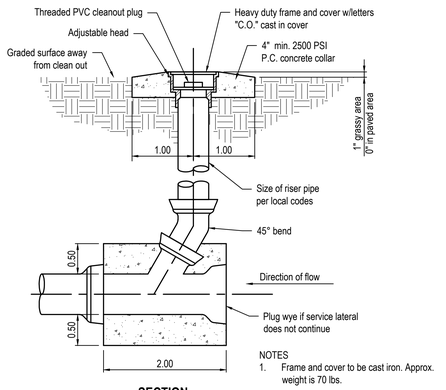
SEGMENTAL BLOCK RETAINING WALL*

NOT TO SCALE

*Vendor shall provide engineering design service for segmental block retaining wall.



PLAN



SECTION

NOTES

1. Frame and cover to be cast iron. Approx. weight is 70 lbs.
2. Cover to have the letters "C.O." cast on top
3. Concrete rest block shall be 2.0' long x o.d. of pipe + 6" on each side.

SEWER CLEANOUT DETAIL

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LOCKBOX STORAGE
706 VETRANS MEMORIAL HIGHWAY
COUNCIL BLUFFS, IOWA

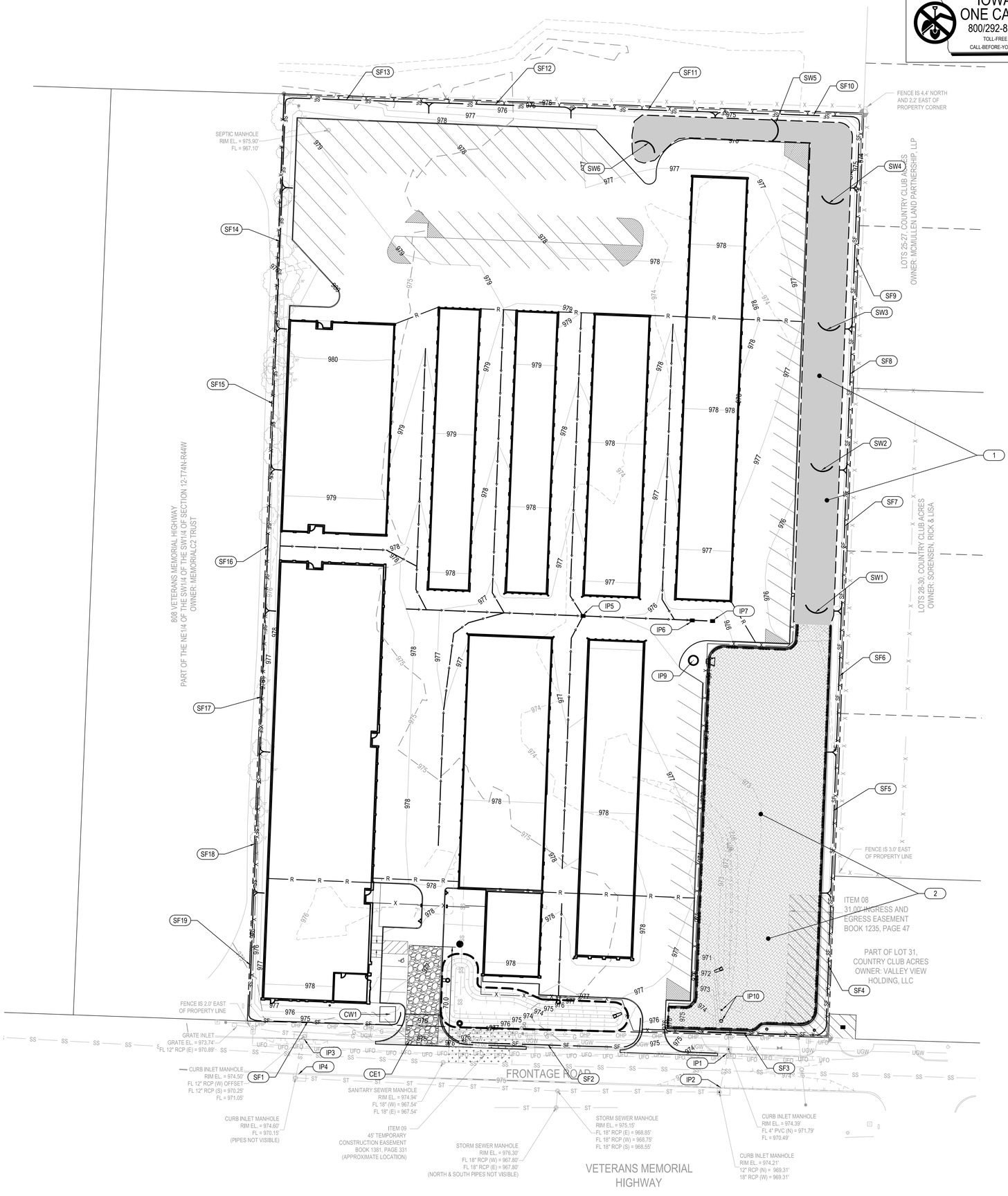
NOTES AND DETAILS

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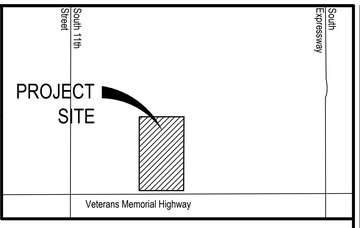
Revisions		
No.	Date	Description

Proj No:	P2019.310.003
Date:	5/4/2020
Designed By:	PJS
Drawn By:	BJW
Scale:	AS SHOWN
Sheet:	6 of 11

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VICINITY MAP

N

30 0 30
1 inch = 30 ft.

LEGEND

- Inverted Crown
- SF — Silt Fence
- 1120 — Existing Contours
- 1170 — Proposed Contours
- Temporary Sediment Trap Perimeter
- Diversion Berm
- RECB P300 (See Below)
- RECB S75 (See Below)
- Construction Entrance
- 9" DIA. Straw Wattle Filter

NO SEDIMENT & EROSION CONTROL REFERENCE NOTES

CW1	Furnish and Install Concrete Washout Area. Use Outpak Washout or Engineer Approved Equal. See Detail on Sheet 7. Temporary BMP
CE1	Construction Entrance, Iowa SUDAS Standard Plan 9040.120. Temporary BMP
SF1 - S14	Install Silt Fence in 100' Sections (max. length) with J-Hook Ends, Iowa SUDAS Standard Plan 9040.119
IP1 - IP10	Inlet Protection. Temporary BMP
SW1 - SW6	Straw Wattle, Iowa Sudas Standard Plan 9040.105. Temporary BMP
	Refer to Sediment and Erosion Control Notes on sheet 8 of 11

Note:
Contractor shall construct temporary sediment traps (Iowa SUDAS standard plan 9040.118), as temporary Best Management Practice, or phase construction to limit site disturbance to less than 3 acres at any one time. Phased site shall be stabilized prior to disturbance or next phase of construction.

X PERMANENT STABILIZATION REFERENCE NOTES

1	Line swale with RECB North American Green P300. Install per Manufacturer's recommendations.
2	Line basin with RECB North American Green P300. Install per Manufacturer's recommendations. See "Extend Dry Detention Basin" detail on sheet 10 for seeding information.

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LOCKBOX STORAGE
706 VETRANS MEMORIAL HIGHWAY
COUNCIL BLUFFS, IOWA

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

PERMIT SET

Revisions		
	Date	Description
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Proj No: P2019.310.003
Date: 5/4/2020
Designed By: PJG
Drawn By: BJW
Scale: AS SHOWN
Sheet: 7 of 11

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SEDIMENT AND EROSION CONTROL NOTES

1. All project procedures and materials shall conform to the following Iowa DNR publication and any additions thereto: Iowa Construction Site Erosion Control Manual. The aforementioned publications can be found at http://www.iowadnr.gov/portals/idnr/uploads/water/stormwater/constructionenviromentsl.pdf.
2. The notes, special provisions, maintenance plans and schedule and construction activities and scheduling identified on the following sheets shall apply to the entire site, Area "A", Area "B", and Area"C"
3. All OPERATORS/CONTRACTORS must locate all existing utilities prior to the start of work (One Call 1-800-292-8989).
4. Barricades shall conform to the "Manual on Uniform Traffic Control Devices".
5. All OPERATORS/CONTRACTORS shall be responsible to comply with OSHA regulations.
6. All OPERATORS/CONTRACTORS must confirm with the APPLICANT that any and all applicable governmental approvals have been received prior to the start of work.
7. The APPLICANT, INSPECTOR must comply with all government regulators in regards to the construction activities so as to minimize the potential for erosion.
8. All OPERATORS/CONTRACTORS must comply with the APPLICANT, INSPECTOR, and all government regulators in regards to the construction activities so as to minimize the potential for erosion and pollution.
9. Each OPERATOR/CONTRACTOR must monitor Silt Fencing, within their areas of responsibility, and install additional silt fencing if necessary and as directed by the INSPECTOR.
10. Each OPERATOR/CONTRACTOR shall periodically remove accumulated sediment from Temporary Sediment Traps, Temporary Sediment Basins, behind Silt Fences, and all other erosion control measures that store sediment, within their areas of responsibility, if necessary and as directed by the INSPECTOR.
11. OPERATOR/CONTRACTOR must build stabilized Construction Entrances, within their areas of as defined within the Sediment and Erosion Control Plan. OPERATOR/CONTRACTOR must monitor all stabilized Construction Entrances and maintain the entrances as needed and directed by the INSPECTOR. OPERATORS/CONTRACTORS shall not use any other access to the site or allow others to use alternate access points.
12. Each OPERATOR/CONTRACTOR must perform preventative maintenance on each Best Management Practice (BMP), within their areas of responsibility, to ensure proper function. The INSPECTOR must ensure preventative maintenance is being performed.
13. All BMP's shall be kept in working order. Each OPERATOR/CONTRACTOR must repair all damages caused by pollutant discharge and construction activities, within their areas of responsibility, at or before the end of each working day and as directed by the INSPECTOR.
14. BMP's may not be removed without INSPECTOR and applicable government approval.
15. Each OPERATOR/CONTRACTOR shall be responsible for adhering to all BMP's, within their areas of responsibility.
16. In the event of a release of oil or hazardous substance, all OPERATORS/CONTRACTORS shall comply with the requirements of the Iowa DNR for notification, containment, investigation, remedial action and disposal.
17. The APPLICANT, INSPECTOR, and CONTRACTORS/OPERATORS must ensure Temporary Diversion Dike and Temporary Fill Diversion are constructed as shown within the Sediment and Erosion Control Plan and as necessary to properly control pollutant discharge. Temporary Diversion Dike and Temporary Fill Diversion shall be installed at the end of each working day, prior to all rain events, and as directed by the INSPECTOR.
18. The APPLICANT, INSPECTOR, and/or OPERATORS/CONTRACTORS shall allow all government regulators access to the site for inspections at any time, at the implementing agency's discretion.
19. The APPLICANT, INSPECTOR, and CONTRACTORS/OPERATORS must initiate stabilization measures, such as Temporary Seeding, Permanent Seeding, and/or Mulching, as soon as possible in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site have temporarily or permanently ceased.
20. For dust control, the APPLICANT, INSPECTOR, and CONTRACTORS/OPERATORS must use any of the following measures or a combination if necessary: establishing Temporary Seeding, Permanent Seeding, and/or Mulch in areas subject to little or no construction traffic; irrigating stripped areas and/or haul roads; reducing vehicular speed on haul roads; and as directed by the INSPECTOR.
21. The APPLICANT, INSPECTOR, and CONTRACTORS/OPERATORS must ensure sediment that has been accidentally transported onto public streets is removed as needed, at the end of each working day, and prior to all rain events. Sediment shall be shoveled and/or swept from the street and disposed of in a manner that prevents stormwater contamination.
22. The APPLICANT, INSPECTOR, and CONTRACTORS/OPERATORS must keep the work site clean and orderly while handling materials and waste in a manner that eliminates the potential for pollutant runoff. The principle of a clean site shall apply to sanitary waste management, solid waste management, material delivery and storage, street cleaning/sweeping and to vehicle and equipment fueling.

SPECIAL PROVISION NO. 2 POLLUTION PREVENTION PLAN

All contractors/subcontractors shall conduct their operations in a manner that minimizes erosion and prevents sediments from leaving the highway right-of-way. The prime contractor shall be responsible for compliance and implementation of the Pollution Prevention Plan (PPP) for their entire contract. This responsibility shall be further shared with subcontractors whose work is a source of potential pollution as defined in this PPP.

1. SITE DESCRIPTION

This Pollution Prevention Plan (PPP) is for the construction of ***"Lockbox Storage, 706 Vetrans Memorial Highway***."

This PPP covers approximately 6.0 acres with an estimated 6.0 acres being disturbed. The portion of the PPP covered by this contract has 6.0 acres disturbed.

The PPP is located in an area of Engineered Fill. The estimated average NRCS runoff curve number for this PPP after completion will be 85.

Refer to the project plans for locations of typical slopes, ditch grades, and major structural and non-structural controls. A copy of this plan will be on file at the project engineer's office. Runoff from this work will flow into the Indian Creek storm drain system.

POTENTIAL SOURCES OF POLLUTION:
Site sources of pollution generated as a result of this work relate to silts and sediment which may be transported as a result of a storm event. However, this PPP provides conveyance for other (non-project related) operations. These other operations have storm water runoff, the regulation of which is beyond the control of this PPP. Potentially this runoff can contain various pollutants related to site-specific land uses. Examples are:

Commercial and Industrial Activities:
Runoff from commercial and industrial land use may contain constituents associated with the specific operation. Such operations are subject to potential leaks and spills which could be commingled with run-off from the facility. Pollutants associated with commercial and industrial activities are not readily available since they are typically proprietary.

2. CONTROLS

At locations where runoff can move offsite, silt fence shall be placed along the perimeter of the areas to be disturbed prior to beginning grading, excavation or clearing and grubbing operations. Vegetation in areas not needed for construction shall be preserved. As areas reach their final grade, additional silt fences, silt basins, intercepting ditches, sod flumes, letdowns, bridge end drains, and earth dikes shall be installed as specified in the plans and/or as required by the project engineer. This will include using silt fence as ditch checks and to protect intakes. Temporary stabilizing seeding shall be completed as the disturbed areas are constructed. If construction activity is not planned to occur in a disturbed area for at least 21 days, the area shall be stabilized by temporary seeding or mulching within 14 days. Other stabilizing methods shall be used outside the seeding time period.

This work shall be done in accordance with Section 9040 of the SUDAS Standard Specifications.

As the work progresses, additional erosion control items may be required as determined by the engineer after field investigation. These may be items such as *none known* and other appropriate measures shall be installed by contractor, as directed by the engineer. The contractor will complete the construction with the establishment of permanent perennial vegetation of all disturbed areas.

3. OTHER CONTROLS

Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.

APPROVED STATE OR LOCAL PLANS:
During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state, and local regulations in effect at the time.

4. MAINTENANCE

The contractor is required to maintain all temporary erosion control measures in proper working order, including cleaning, repairing, or replacing them throughout the contract period. Cleaning of silt control devices shall begin when the features have lost 50% of their capacity.

5. INSPECTIONS

Inspections shall be made jointly by the contractor and the contracting authority every seven calendar days and after each rain event that is one half inch or greater. The contractor shall immediately begin corrective action on all deficiencies found. The findings of this inspection shall be recorded in the project diary. This PPP may be revised based on the findings of the inspection. The contractor shall implement all revisions. All corrective actions shall be completed within 3 calendar days of the inspection.

6. NON-STORM DISCHARGES

This includes subsurface drains (i.e., longitudinal and standard subdrains), slope drains and bridge end drains. The velocity of the discharge from these features may be controlled by the use of patio blocks, Class A stone or erosion stone.

MAINTENANCE SCHEDULE:

THE FOLLOWING MAINTENANCE SCHEDULE HAS BEEN PROVIDED. THE INSPECTOR SHALL PERFORM THE INSPECTIONS. THE OPERATOR/CONTRACTOR SHALL PERFORM ALL NEEDED MAINTENANCE. FURTHERMORE, ALL EROSION CONTROL FEATURES REQUIRING MAINTENANCE MAY NOT BE LISTED BELOW. THE OPERATOR/CONTRACTOR AND INSPECTOR SHALL PERFORM THEIR RESPECTIVE DUTIES ON ALL BMP'S THAT ARE NOT LISTED BELOW AS WELL.

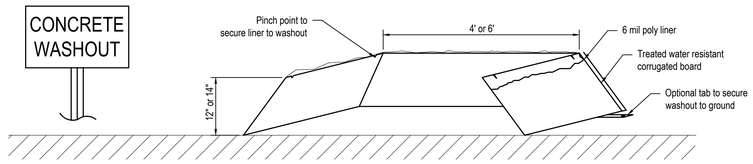
1. CONSTRUCTION ENTRANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR THE WASHING AND REWORKING OF EXISTING STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS SHAL BE REMOVED IMMEDIATELY. THE USE OF WATER TRUCKS TO REMOVE MATERIALS DROPPED, WASHED, OR TRACKED ONTO ROADWAYS WILL NOT BE PERMITTED UNDER ANY CIRCUMSTANCES.
2. STRAW BALE BARRIER - THE MAINTENANCE MEASURES ARE AS FOLLOWS: (2.1) STRAW BALE BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL; (2.2) CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED BALES, END RUNS AND UNDERCUTTING BENEATH BALES; (2.3) NECESSARY REPAIRS TO BARRIERS OR REPLACEMENT OF BALES SHALL BE ACCOMPLISHED PROMPTLY; (2.4) SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH RAINFALL OR WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER; AND (2.5) ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE STRAW BALE BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
3. SILT FENCE - THE MAINTENANCE MEASURES ARE AS FOLLOWS; (3.1) SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL, ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY; (3.2) CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED SILT FENCE RESULTING FROM END RUNS AND UNDERCUTTING; (3.3) SHOULD THE FABRIC ON A SILT FENCE DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY; (3.4) SEDIMENT DEPOSITS SHALL BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER; AND (3.5) ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
4. STORM DRAIN INLET PROTECTION - THE MAINTENANCE MEASURES ARE AS FOLLOWS; (4.1) STRUCTURES SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NECESSARY AND (4.2) STRUCTURES SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
5. TEMPORARY DIVERSION DIKE - THE MEASURE SHALL BE INSPECTED AFTER EVERY STORM AND REPAIRS MADE TO THE DIKE, FLOW CHANNEL, OUTLET OR SEDIMENT TRAPPING FACILITY, AS NECESSARY. ONCE EVERY TWO WEEKS, WHETHER A STORM EVENT HAS OCCURRED OR NOT, THE MEASURE SHALL BE INSPECTED AND REPAIRS MADE IF NEEDED. DAMAGES CAUSED BY CONSTRUCTION TRAFFIC OR OTHER ACTIVITY SHALL BE REPAIRED BEFORE THE END OF EACH WORKING DAY.
6. TEMPORARY FILL DIVERSION - SINCE THE PRACTICE IS TEMPORARY AND UNDER MOST SITUATIONS WILL BE COVERED THE NEXT WORKING DAY. THE MAINTENANCE REQUIRED SHOULD BE LOW. IF THE PRACTICE IS TO REMAIN IN USE FOR MORE THAN ONE DAY, AN INSPECTION SHALL BE MADE AT THE END OF EACH WORK DAY AND REPAIRS MADE TO THE MEASURE IF NEEDED. THE OPERATOR/CONTRACTOR SHOULD AVOID THE PLACEMENT OF ANY MATERIAL OVER THE STRUCTURE WHILE IT IS IN USE. CONSTRUCTION TRAFFIC SHOULD NOT BE PERMITTED TO CROSS THE DIVERSION.
7. TEMPORARY SEDIMENT TRAP - THE MAINTENANCE MEASURES ARE AS FOLLOWS: (7.1) SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF THE DESIGN VOLUME OF THE WET STORAGE, SEDIMENT REMOVAL FROM THE BASIN SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE AND CAUSE SEDIMENTATION PROBLEMS; (7.2) FILTER STONE SHALL BE REGULARLY CHECKED TO ENSURE THAT FILTRATION PERFORMANCE IS MAINTAINED, STONE CHOKED WITH SEDIMENT SHALL BE REMOVED AND CLEANED OR REPLACED; AND (7.3) THE STRUCTURE SHOULD BE CHECKED REGULARLY TO ENSURE THAT IT IS STRUCTURALLY SOUND AND HAS NOT BEEN DAMAGED BY EROSION OR CONSTRUCTION EQUIPMENT, THE HEIGHT OF THE STONE OUTLET SHOULD BE CHECKED TO ENSURE THAT ITS CENTER IS AT LEAST 1 FOOT BELOW THE TOP OF THE EMBANKMENT.
8. TEMPORARY SEDIMENT BASIN - THE BASIN EMBANKMENT SHOULD BE CHECKED REGULARLY TO ENSURE THAT IT IS STRUCTURALLY SOUND AND HAS NOT BEEN DAMAGED BY EROSION OR CONSTRUCTION EQUIPMENT. THE EMERGENCY SPILLWAY SHOULD BE CHECKED REGULARLY TO ENSURE THAT ITS LINING IS WELL ESTABLISHED AND EROSION-RESISTENT. THE BASIN SHOULD BE CHECKED AFTER EACH RUNOFF PRODUCING RAINFALL FOR SEDIMENT CLEANOUT AND TRASH REMOVAL. WHEN THE SEDIMENT REACHES THE CLEANOUT LEVEL, IT SHALL BE REMOVED AND PROPERLY DISPOSED OF.
9. TEMPORARY SEEDING - AREAS WHICH FAIL TO ESTABLISH VEGETATIVE COVER ADEQUATE TO PREVENT RILL EROSION WILL BE RE-SEEDED AS SOON AS SUCH AREAS ARE IDENTIFIED. CONTROL WEEDS BY MOWING.
10. PERMANENT SEEDING - PERFORM PERMANENT SEEDING OPERATIONS ON ALL DISTURBED AREAS. PERMANENT SEED MIX SHALL BE 'CLASS R' (UNITED SEEDS CITY/COUNTY/NRD MIXTURE). APPLICATION RATE SHALL BE A MINIMUM OF 100 LBS PER ACRE. OVERSEEDING RATE SHALL BE A MINIMUM OF 50 LBS PER ACRE. SEEDING DATES: MARCH 1-JUNE 30, AUGUST 10-SEPTEMBER 30. SEEDING SHALL BE PERFORMED AS PER 2013 EDITION OF IOWA SUDAS STANDARD SPECIFICATIONS: DIVISION 9 - SITE WORK AND LANDSCAPING AS REVISED PER THE CITY OF COUNCIL BLUFFS SUPPLEMENTAL SPECIFICATIONS (DECEMBER 2012) .
11. MULCHING - ALL MULCHES AND SOIL COVERINGS SHOULD BE INSPECTED PERIODICALLY (PARTICULARLY AFTER RAINSTORMS) TO CHECK FOR EROSION. WHERE EROSION IS OBSERVED IN MULCHED AREAS, ADDITIONAL MULCH SHOULD BE APPLIED. NETS AND MATS SHOULD BE INSPECTED AFTER RAINSTORMS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, REINSTALL NETTING OR MATTING AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE OR DITCH. INSPECTIONS SHOULD TAKE PLACE UNTIL GRASSES ARE FIRMLY ESTABLISHED. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE; REPAIR AS NEEDED.
12. SOIL STABILIZATION BLANKETS & MATTING - ALL SOIL STABILIZATION BLANKETS AND MATTING SHOULD BE INSPECTED PERIODICALLY FOLLOWING INSTALLATION, PARTICULARLY AFTER RAINSTORMS TO CHECK FOR EROSION AND UNDERMINING. ANY DISLOCATION OR FAILURE SHOULD BE REPAIRED IMMEDIATELY. IF WASHOUTS OR BREAKAGE OCCURS, REINSTALL THE MATERIAL AFTER REPAIRING DAMAGE TO THE SLOPE OR DITCH. CONTINUE TO MONITOR THESE AREAS UNTIL WHICH TIME THEY BECOME PERMANENTLY STABILIZED; AT THAT TIME AN ANNUAL INSPECTION SHOULD BE ADEQUATE.
13. STREET CLEANING/SWEEPING - THE MAINTENANCE MEASURES ARE AS FOLLOWS; (13.1) EVALUATE ACCESS POINTS DAILY FOR SEDIMENT TRACKING; (13.2) WHEN TRACKED OR SPILLED SEDIMENT IS FOUND ON PAVED SURFACES, IT WILL BE REMOVED DAILY, DURING TIMES OF HEAVY TRACK-OUT SUCH AS DURING RAINS, CLEANING MAY BE DONE SEVERAL TIMES THROUGHOUT THE DAY; (13.3) UNKNOWN SPILLS OR OBJECTS WILL NOT BE MIXED WITH THE SEDIMENT; AND (13.4) IF SEDIMENT IS MIXED WITH OTHER POLLUTANTS, IT WILL BE DISPOSED OF PROPERLY AT AN AUTHORIZED LANDFILL.

CONSTRUCTION ACTIVITIES & SCHEDULING

ACTIVITY	SCHEDULE
INSTALL ALL BMP'S NEEDED AND ASSOCIATED WITH THE GRADING PHASE SUCH AS STABILIZED CONSTRUCTION ENTRANCES, SILT BASINS, RISER PIPES, OUTLET PIPES, SILT TRAPS, SILT FENCE, DIVERSIONS, TERRACES, ETC…	PRIOR TO ANY STRIPPING OF EXISTING VEGETATION OR GRADING.
PROCEED WITH STRIPPING OF EXISTING VEGETATION AND GRADING IN ACCORDANCE WITH THE GRADING PLAN, WHILE DISTURBING NO MORE THAN IS NECESSARY.	AFTER INSTALLING ALL BMP'S NEEDED AND ASSOCIATED WITH THE *GRADING PHASE. FURTHERMORE, INSPECTOR APPROVAL MUST BE OBTAINED BEFORE THE START OF ANY STRIPPING OF EXISTING VEGETATION OR GRADING.
PROCEED WITH INFRASTRUCTURE INSTALLATION.	INFRASTRUCTURE INSTALLATION MUST OCCUR PRIOR TO ANY LOT DEVELOPMENT.
IMPLEMENT THE INSTALLATION OF TEMPORARY SEEDING, PERMANENT SEEDING, AND/OR MULCHING.	STABILIZATION MEASURES MUST BE INITIATED AS SOON AS POSSIBLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMNENTLY CEASED.
PROCEED WITH REMOVAL OF BMP'S.	BMP'S MAY NOT BE REMOVED UNTIL EACH IMPACTED DRAINAGE BASIN HAS BEEN FULLY DEVELOPED. FULL DEVELOPMENT SHALL MEAN INSTALLATION OF PAVEMENT, BUILDINGS, AND UTILITIES, LANDSCAPING, AND FULLY ESTABLISHED PERMANENT SEEDING. FURTHERMORE, INSPECTOR APPROVAL MUST BE OBTAINED BEFORE THE REMOVAL OF ANY BMP'S.

*BUILDING PHASE SITE MAP INCLUDED IN GRADING PHASE SITE MAP.

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NOTES:

1. The concrete washout area shall be installed prior to any concrete placement on this project. Install washout area on a level surface. Use Outpak Disposable Concrete Washout or approved equal conforming to Section 9.6.8 of the Omaha Regional Stormwater Design Manual.
2. Signs shall be placed as necessary to clearly indicate the location of the concrete washout.
3. The concrete washout area will be replaced as necessary to maintain capacity for waste concrete and other liquid waste.
4. Washout residue shall be removed from the site and disposed of at an approved waste site.
5. Do not mix excess amounts of fresh concrete or cement on-site.
6. Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
7. Do not dump excess concrete in non-designated dumping areas.
8. Locate washout area at least 50' (15 meters) from storm drains, open ditches, or waterbodies.
9. Wash out wastes into the Outpack Washout as shown where the concrete can set, be broken up, and then disposed of properly.

CONCRETE WASHOUT
NOT TO SCALE

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LOCKBOX STORAGE
706 VETRANS MEMORIAL HIGHWAY
COUNCIL BLUFFS, IOWA

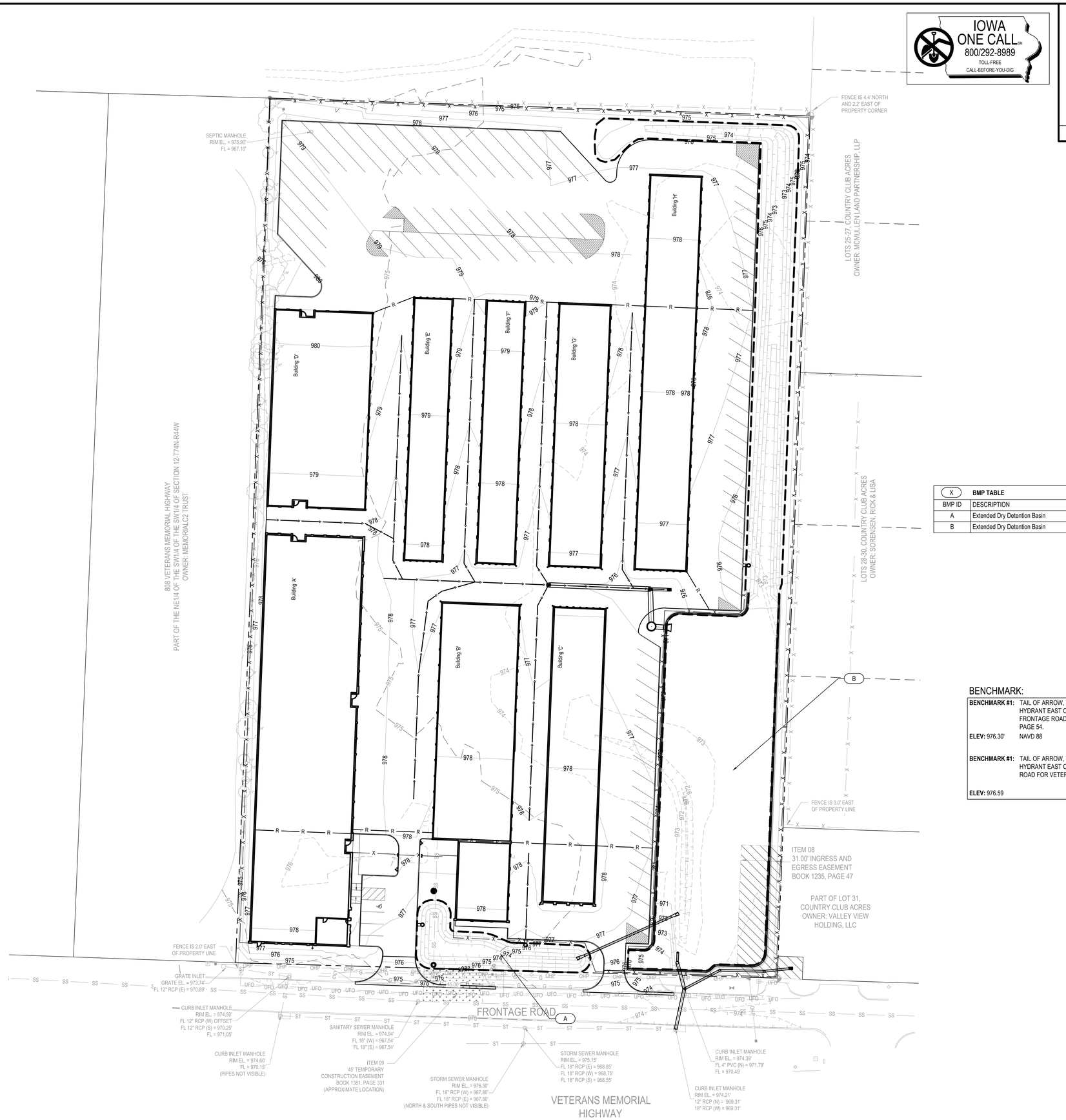
STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

PERMIT SET

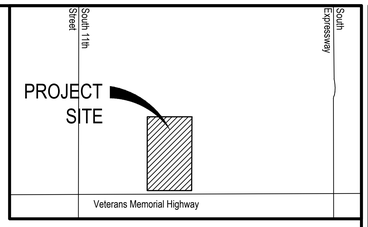
Revisions		
No.	Date	Description

Proj No: P2019.310.000
Date: 5/4/2020
Designed By: PJG
Drawn By: BJW
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Sheet: 8 of 11

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VICINITY MAP

30 0 30
1 inch = 30 ft.

X	BMP TABLE	
BMP ID	DESCRIPTION	LOCATION
A	Extended Dry Detention Basin	41.220082°, -95.856659°
B	Extended Dry Detention Basin	41.220150°, -95.855931°

BENCHMARK:

BENCHMARK #1:	TAIL OF ARROW, TOP FLANGE OF A FIRE HYDRANT, FIRST FIRE HYDRANT EAST OF LAKESHORE COURT ON THE NORTH SIDE OF FRONTAGE ROAD FOR VETERANS MEMORIAL HIGHWAY. BOOK 3968, PAGE 54.
ELEV: 976.30'	NAVD 88
BENCHMARK #1:	TAIL OF ARROW, TOP FLANGE OF A FIRE HYDRANT, FIRST FIRE HYDRANT EAST OF 9TH STREET ON THE NORTH SIDE OF FRONTAGE ROAD FOR VETERANS MEMORIAL HIGHWAY. BOOK 3968, PAGE 54.
ELEV: 976.59	

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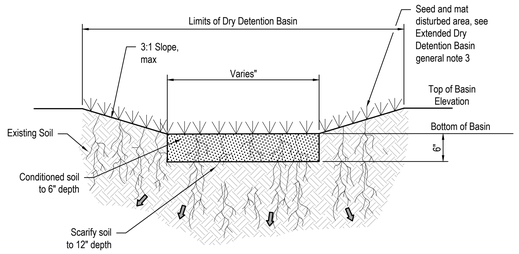
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

PERMIT SET

Revisions			
	Date	Description	
1	Date	Description	

Proj No:	P2019.310.003
Date:	5/4/2020
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Drawn By:	BJW
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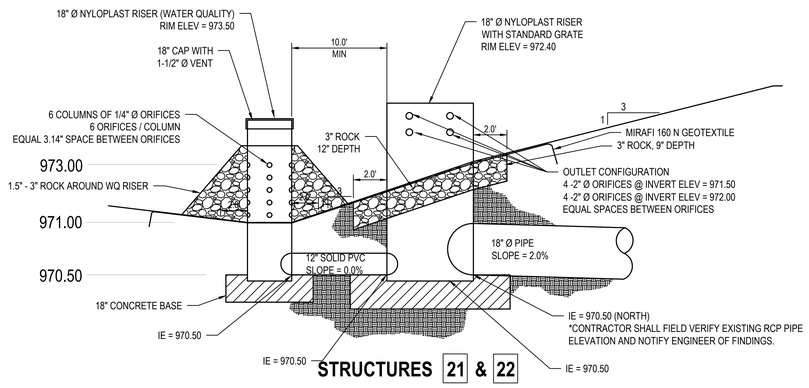


DRY DETENTION BASIN DETAIL

NOT TO SCALE

EXTENDED DRY DETENTION BASIN GENERAL NOTES

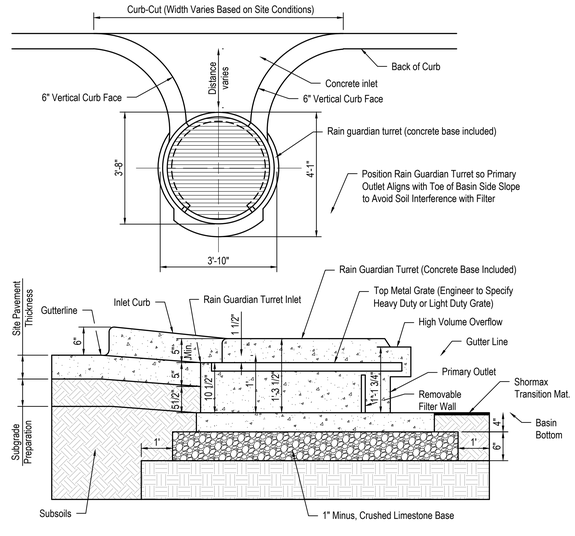
1. Scarify bottom and sides of basin and over excavated area to a depth of 6" prior to placement of amended soils.
2. Contractor shall work to minimize compaction by limiting construction traffic and equipment size within the limits of the basin.
3. Bottom of basin seed mixture shall be United Rain Garden Mixture from United Seeds, Inc. Planting method and seeding rate shall be .25 to .50 lbs. per 1,000 sq. ft. Seeding dates: March - June, dormant seeding dates: December - March. Seed to be covered w/ matting, North American Green S75, or approved equal, installed per manufacture's recommendation.
4. Conditioned soil: incorporate 1" - 2" of Oma-Gro compost in upper 6" of the basin bottom by means of a tiller.
5. Contractor to protect from overland silt and runoff during and after construction until fully stabilized (80% vegetative cover). (Subsidiary)



STRUCTURES 21 & 22

EXTENDED DRY DETENTION BASIN OUTLET DETAIL

NOT TO SCALE



RAIN GARDEN TURRET DETAIL

NOT TO SCALE

SPECIFICATIONS:

1. Steel reinforced, cold joint secured monolithic concrete structure (1,030 lbs). Concrete shall have a minimum compressive strength of 4,000 PSI at 28 days. Concrete Air Entrained (4% to 8% by volume). Manufactured and designed to ASTM C858.
2. Three-point pick using recessed lifting pockets with a standard hook.
3. Two-piece light-duty galvanized grate (34.5 lbs/piece) for 541 lb concentrated load or 309 lb/sq ft uniform load.
4. Two-piece heavy-duty galvanized grate (77.5 lbs/piece) for 2,456 lb concentrated load or 1,404 lb/sq ft uniform load.

INSTALLATION NOTES:

1. Install the crushed limestone (compacted to 95% standard proctor). The distance from the back of the curb may vary based on site conditions, but considerations should include slope of the inlet and basin side slopes adjacent to the rain guardian turret. position rain guardian turret so primary outlet aligns with toe of basin side slope to avoid soil interference with removable filter wall. Excavate 1'-10" below the gutter line elevation (i.e. the bioretention overflow elevation) to accommodate the 1' ponding depth, 6" crushed limestone, and 4" rain guardian turret base (included). Therefore, the top of the crushed limestone compacted base is precisely 1' 4" below the gutter line elevation. The top of the concrete base and 1-1/2" below the gutter line elevation to accommodate a sloped inlet from the gutter to the rain guardian turret.
2. Set rain guardian turret on the prepared class 5 base.
3. Install framing for inlet between rain guardian turret and back of curb. Top elevations of the framing should match the top of the curb on the street side and the top of the rain guardian turret on the bioretention side.
4. Install expansion/contraction joint material or a sheet of poly to serve as a bond break between rain guardian turret concrete inlet before pouring inlet.
5. Side curbs of the poured inlet must have an insurmountable profile to prevent water flow from overtopping the downstream side of the inlet.
6. Removable filter wall should be installed with filter fabric facing the rain guardian turret inlet.
7. Install Shoremax Transition Mat. North American Green, 3'x5'. Cut mat to match PCC base.

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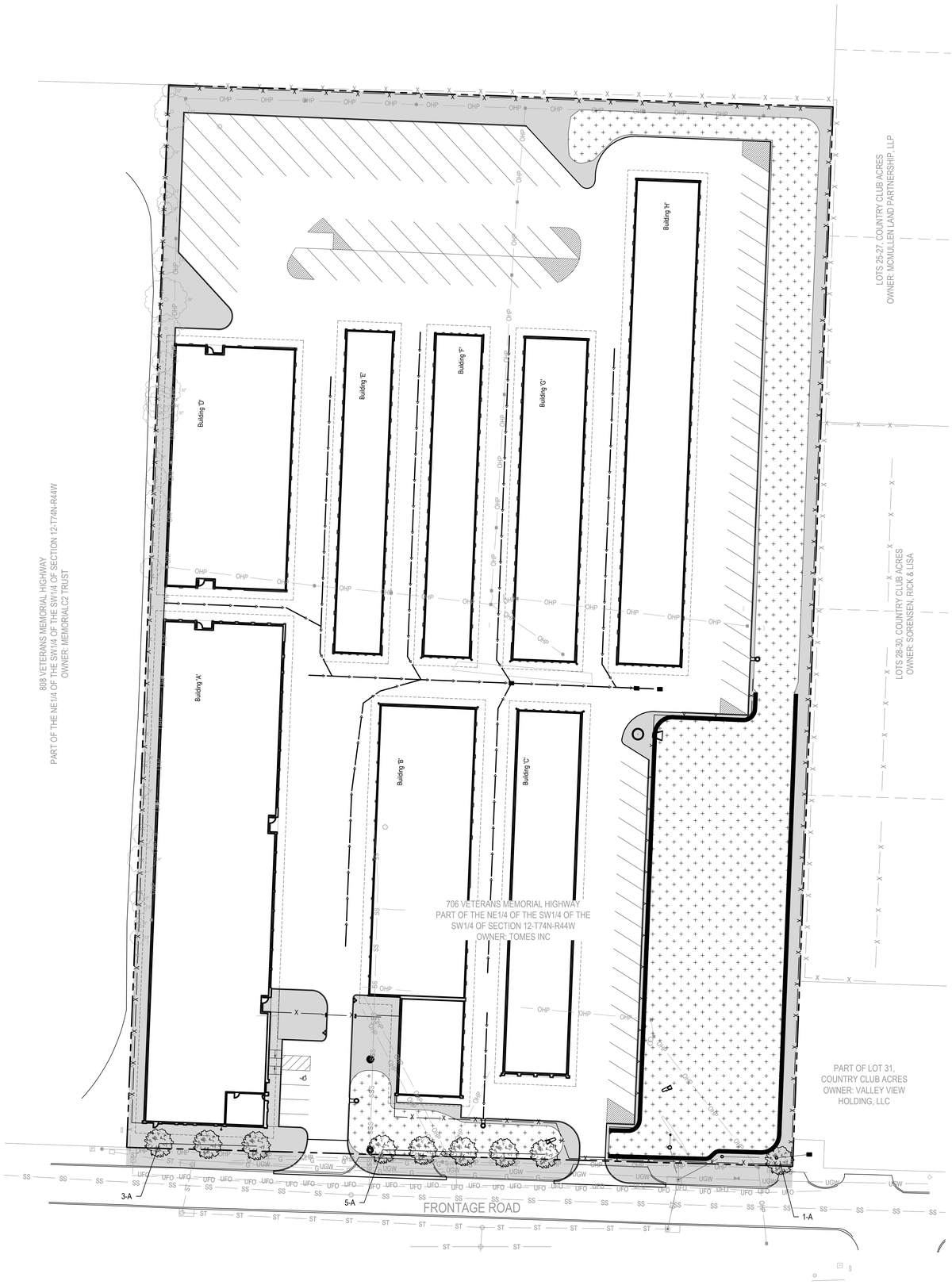
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

PERMIT SET

Revisions				
		Description		Description
	Date		Date	

Proj No:	P2019.310.003
Date:	5/4/2020
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30 0 30

1 inch = 30 ft.

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PLANT SCHEDULE

SYM	QTY	BOTANICAL NAME	COMMON NAME	SIZE	TYPE
A	9	Acer freemanii 'Armstrong'	Armstrong Maple	2.5"	B&B

TREE NOTES:

1. Landscape contractor must coordinate with all utilities and general contractor to field verify all utility locations that may conflict with all proposed tree planting locations on the project site.

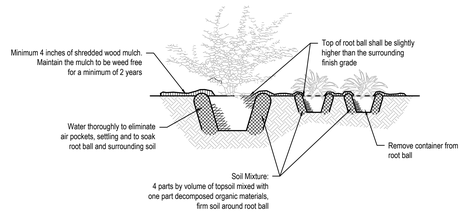
LEGEND:

- Areas to be installed with sod & irrigation.

- PCSMP. See Sheets 9 & 10 for Details.

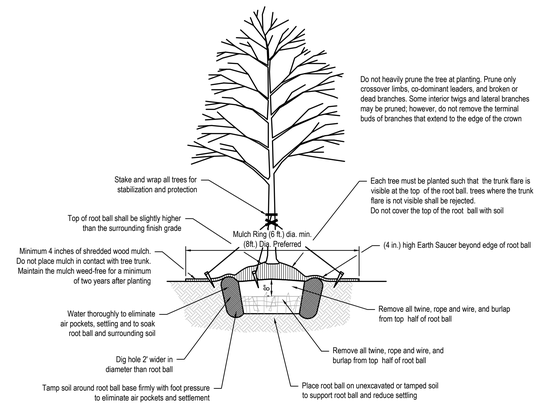
LANDSCAPING REGULATIONS

A medium height/size growing tree shall be planted within the streetyard every 40 feet on center
Required = 9 trees Provided = 9 trees



SHRUB & PERENNIAL PLANTING DETAIL

NOT TO SCALE



TREE PLANTING DETAIL - B & B TREE

NOT TO SCALE

LANDSCAPE NOTES:

1. Locate and verify the location of all underground utilities prior to the start of any construction. Care should be taken not to disturb any existing utilities during construction. Any damage to utilities or other improvements caused by the Contractor will be repaired at no cost to the Owner.
2. All plant material shall be of good quality and sizes shall meet required size specifications.
3. All plants are to be watered in immediately after planting and then watered once a week for a period of two months from time of planting.
4. All plant material shall be guaranteed to be in a live and healthy growing condition for two full growing seasons (trees) and one full growing season (perennials & shrubs) after final project acceptance or shall be replaced free of charge with the same grade and species including labor.
5. Verify all dimensions and conditions prior to starting construction. The location of plant material is critical and shall be installed as indicated on plans. Field adjustments may be necessary based on field conditions (i.e., root ball and drop inlet conflict). All adjustments must be approved by the landscape architect.
6. The Landscape Contractor shall remove all construction debris and materials injurious to plant growth from planting pits and beds prior to backfilling with planting mix. All planting areas shall be free of weeds and debris prior to any work.
7. Provide locally available shredded hardwood mulch on all trees and in all planting beds to a 3-4 inch minimum depth unless otherwise noted. Mulch ring to extend 1'-0" minimum beyond planting pit. Minor site grading to be included if needed.
8. All trees are to be staked for a period of not less than one year from time of planting.
9. Contractor to coordinate work with other amenities contractors.

IRRIGATION NOTES:

1. Irrigation bid to include meter pit and city utility fees.
2. Irrigate all sodded areas.
3. Irrigation controller to be mounted in a steel utility box with hasp for pad lock.
4. Irrigation system to be guaranteed for 1 year. Written guarantee to be supplied prior to final payment.
5. Irrigation contractor responsible to winterize system one time.
6. Contractor to coordinate work with other amenities contractors.

SODDING NOTES:

1. The contractor shall notify the architect at least forty-eight hours in advance of the time he intends to begin sodding and shall not proceed with such work until permission to do so have been granted. No frozen sod shall be placed. No sodding shall be done on frozen earth.
2. Care shall be exercised at all times to retain the native soil on the roots of the sod during the process of transplanting. Dumping from vehicles will not be permitted. The sod shall be planted within eighteen (18) hours from the time it is harvested unless it is tightly rolled or stored roots-to-roots in a satisfactory manner. All sod in stacks shall be kept moist and shall be protected from exposure to the sun and from freezing. No storage longer than three (3) days will be permitted. Sod which becomes dried out or does not meet the specifications will be rejected.
3. There shall be a minimum of six inches, after tamping, of topsoil under all sod. Excavations or trenching shall be made to a sufficient depth below the finished grade of the sod to accommodate the depth of topsoil as specified and the thickness of sod as specified. Fertilizer shall be applied at a rate to provide 100 pounds of nitrogen per acre unless fertilizer has been applied under another item in this contract to the topsoil in the sod bed. Fertilizer applied under this item shall be incorporated with the topsoil to a depth of at least two inches before the sod is laid, unless otherwise specified or approved. Incorporation shall be accomplished by disking, harrowing, drilling, raking or other approved means.
4. The soil on which the sod is laid shall be reasonably moist and shall be watered, if so directed. The sod shall be laid smoothly, edge to edge, and all openings shall be plugged with sod. Immediately after the sod is laid, it shall be pressed firmly into contact with the sod bed by tamping, rolling, or by other approved methods so as to eliminate all air pockets, provide true and even surfaces, insure knitting and protect all exposed sod edges but without displacement of the sod or deformation of the surface of the sodded areas and watered at the rate of five gallons per square yard of sodded area unless otherwise directed.
5. The contractor shall take care of the sodded areas until all work on the entire contract has been completed, and sod has been mowed twice and then accepted. Such care shall consist of providing protection against traffic by approved warning signs or barricades and the mowing of grass to the height of two inches when the growth attains a maximum height of four inches.
6. Sod shall also be watered. When the sod is watered, sufficient water shall be applied to wet the sod at least two inches deep in the sod bed. Watering shall be done in a manner which will not cause erosion or other damage to the finished surfaces. Any surfaces which become gullied or otherwise damaged shall be repaired to reestablish the grade and conditions of the soil prior to sodding and shall then be re-fertilized and re-sodded as specified under this item.
7. In drainage-ways or slopes, the sod shall be laid with their longest dimensions parallel to the contours. Such sodding shall begin at the base of slopes or grades and the sodding progress in continuous parallel rows working upward. Vertical joints between such sodding shall be staggered. All sod shall be laid to the grades specified and the grades formed with special care at the junction of drainage-ways.
8. Sod shall be held in place by stakes in all drainage-ways, on all slopes steeper than 4:1 and elsewhere where specified or as directed. Pegging shall be done immediately after tamping. At least one stake shall be driven through each sod to be staked, and the stakes shall not be more than two feet apart. Stakes shall have their flat sides against the slope and be driven flush. Stakes for pegging sod shall be of wood, approximately one inch by two inches and of sufficient length to penetrate the sod, the topsoil and to a minimum depth of two inches of subsoil.
9. The contractor shall keep all sodded areas thoroughly watered for a period of thirty (30) calendar days after the initial laying and as often as required thereafter until sod has been fully established (two mowings) and accepted by the engineer and owner. Contractor to use temporary irrigation for the watering of the sod. Contractor to supply all necessary hoses, fittings and sprinklers for all watering needs.
10. All sod must be fully established (two mowings) and growing at the time of inspection and acceptance.

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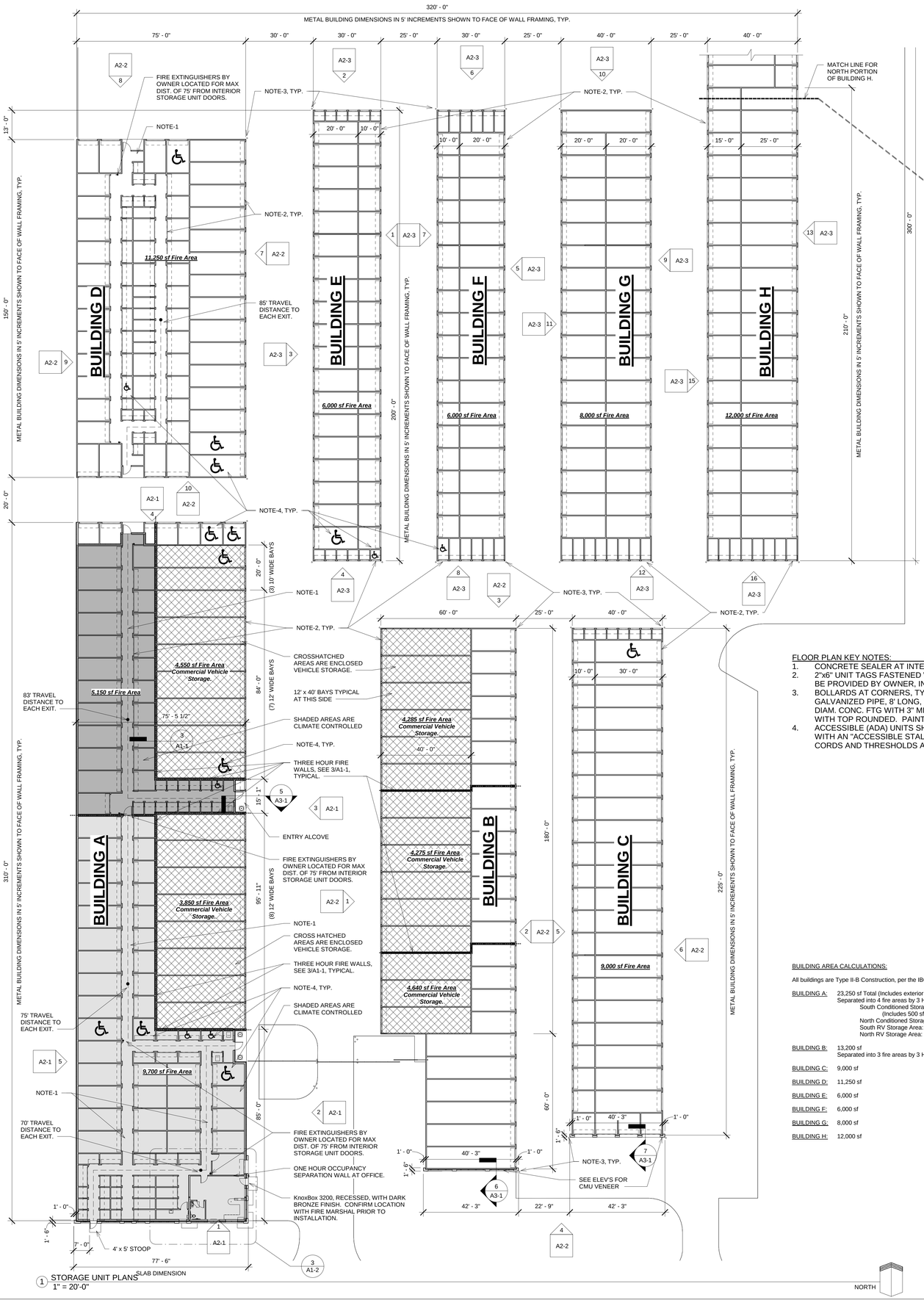
LANDSCAPE PLAN

PERMIT SET

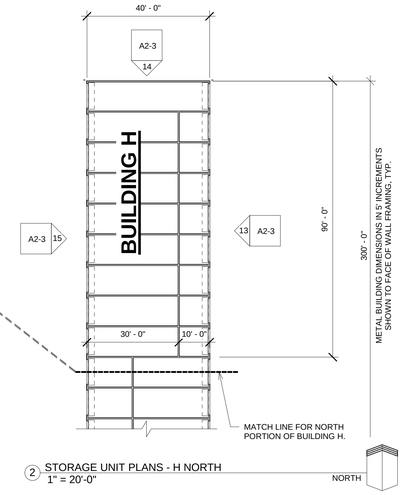
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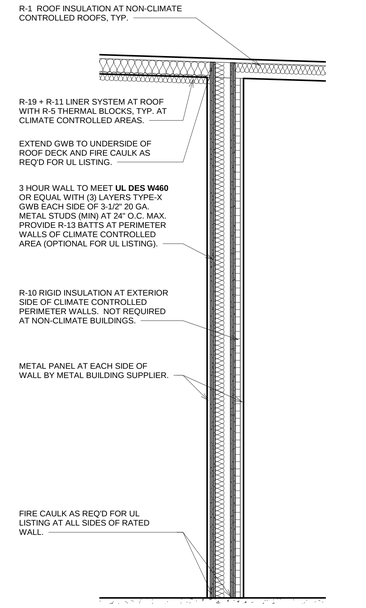
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1 STORAGE UNIT PLANS
1" = 20'-0"



2 STORAGE UNIT PLANS - H NORTH
1" = 20'-0"



3 3 HOUR WALL
1/2" = 1'-0"

FLOOR PLAN KEY NOTES:

1. CONCRETE SEALER AT INTERIOR HALLWAYS, TYP.
2. 2"x6" UNIT TAGS FASTENED WITH (2) 1/8" ALUMINUM RIVETS TO BE PROVIDED BY OWNER, INSTALLED BY CONTRACTOR.
3. BOLLARDS AT CORNERS, TYP. SHALL BE 6" DIAM. SCH. 40 GALVANIZED PIPE, 8' LONG, SET 4'-0" INTO GROUND WITH 18" DIAM. CONC. FTG WITH 3" MIN. COVER. FILL WITH CONCRETE WITH TOP ROUNDED. PAINT "SAFETY YELLOW". TYP.
4. ACCESSIBLE (ADA) UNITS SHALL BE PROVIDED AT UNITS LABELED WITH AN "ACCESSIBLE STALL" SYMBOL AND SHALL HAVE PULL CORDS AND THRESHOLDS AS REQUIRED, TYP.

BUILDING AREA CALCULATIONS:

All buildings are Type II-B Construction, per the IBC.

BUILDING A: 23,250 sf Total (Includes exterior overhangs at doors)
Separated into 4 fire areas by 3 Hour Walls as follows:
South Conditioned Storage Area: 9,700 sf
(Includes 500 sf Accessory Office Area)
North Conditioned Storage Area: 5,150 sf
South RV Storage Area: 3,850 sf
North RV Storage Area: 4,550 sf

BUILDING B: 13,200 sf
Separated into 3 fire areas by 3 Hour Walls.

BUILDING C: 9,000 sf

BUILDING D: 11,250 sf

BUILDING E: 6,000 sf

BUILDING F: 6,000 sf

BUILDING G: 8,000 sf

BUILDING H: 12,000 sf

LockBox Manawa

UNIT MIX AT EACH NEW BUILDING

	Unit Size	BLDG A	BLDG B	BLDG C	BLDG D	BLDG E	BLDG F	BLDG G	BLDG H
Enclosed	5x5	1		8	14	12			
Enclosed	5x10	1			8		12	8	8
Enclosed	10x5				8				
Enclosed	10x10	6		25	17	19	18		8
Enclosed	10x15				20				20
Enclosed	10x20		18			19	18	36	
Enclosed	10x25				15				20
Enclosed	10x30			21					8
Enclosed	10x40	2	6					1	1
Enclosed	12x40	15	15						
Climate Controlled	5x5	28	*Includes (3) Furnace Closets*						
Climate Controlled	5x10	8							
Climate Controlled	5x15	1	*Includes (1) Owner's Storage Room with 3'x7" Swing Door*						
Climate Controlled	10x5	11							
Climate Controlled	10x10	21							
Climate Controlled	10x15	14	Includes (1) Owner's Garage w/ 3'x7" Interior Swing Door & 6'x8' OH Door.						
Climate Controlled	10x20	26							

Note: Quantities are noted for general reference only. Metal Building Supplier shall provde all materials as shown on the project drawings. Doors at the Office Tower are not included on this chart.

UNIT DOORS

Unit Quantity	Unit Size	Door Size
35	5x5	4x7
37	5x10	4x7
8	10x5	8x7
93	10x10	8x7
40	10x15	8x7
91	10x20	8x7
35	10x25	8x7
29	10x30	8x7
10	10x40	8x7
30	12x40	11x14
28	5x5	4x7
8	5x10	4x7
1	5x15	4x7
11	10x5	8x7
21	10x10	8x7
14	10x15	8x7
26	10x20	8x7
518	**Total Units**	

OVERHEAD COILING DOORS		
Size	**Quantity**	**TYPE**
4x7	109	A
8x7	380	B
11x14	30	C

NOTE: AT THE OWNER'S GARAGE ADJACENT TO THE OFFICE AND THE (4) OVERHEAD DOORS AT THE SOUTH SIDE OF BUILDING C, PROVIDE 7'-4" TALL DOORS TO MATCH THE MASONRY COURSING HEIGHT.

LICENSED PROFESSIONAL ARCHITECT
PAUL J. KELLY
6736
IOWA
5 May 2020

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STORAGE UNIT PLANS

REVISIONS

No.	Description	Date

LockBox Storage Manawa

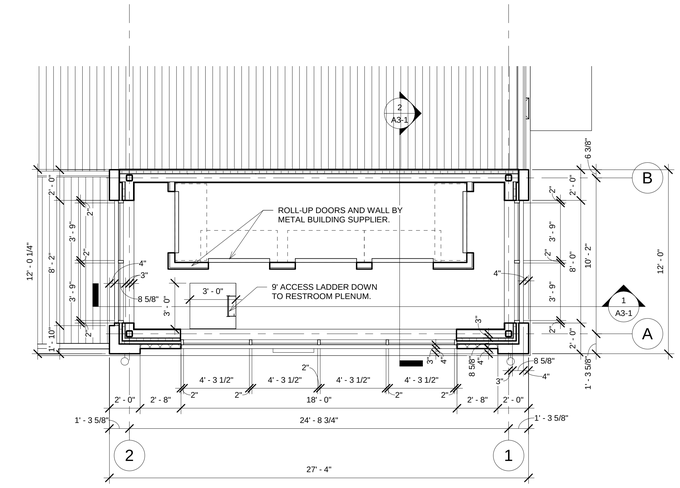
McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51501

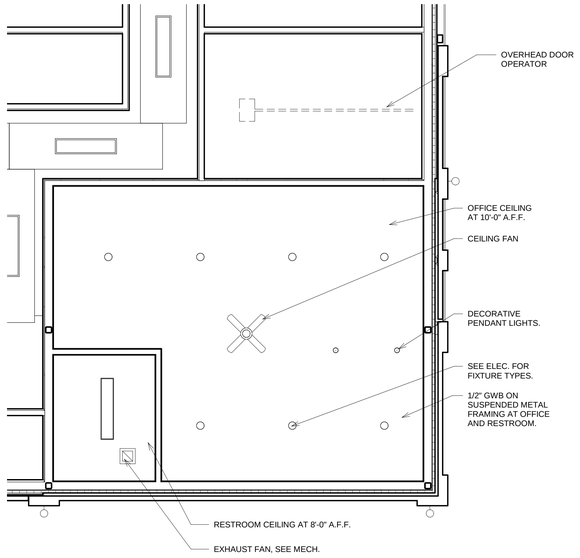
Paul J. Kelly
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440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

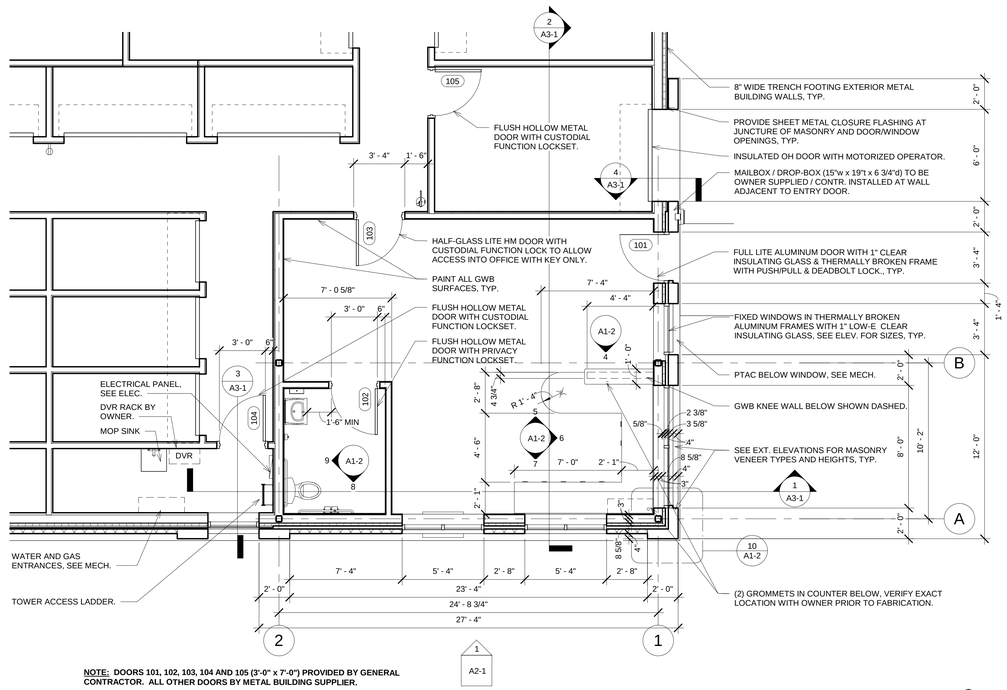
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Date 5 May 2020

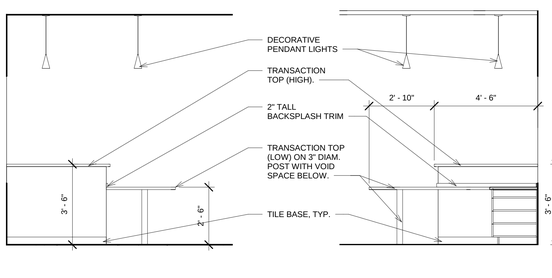
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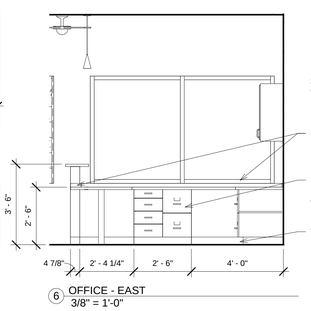


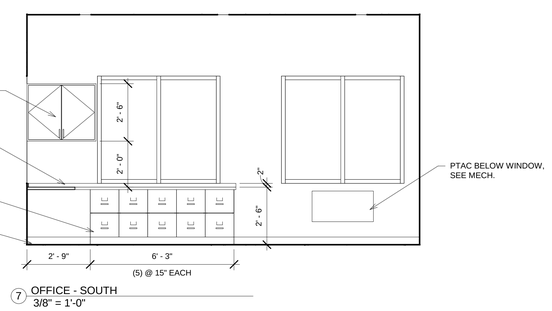


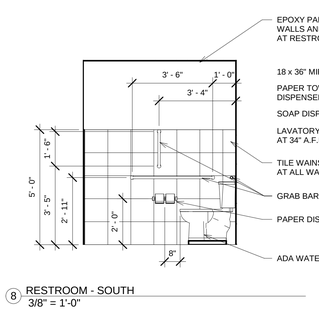


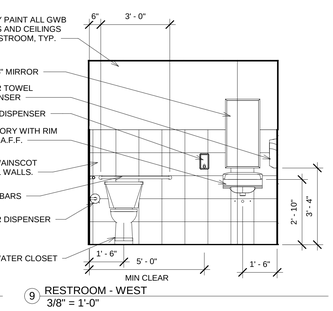
NOTE: DOORS 101, 102, 103, 104 AND 105 (3'-0" x 7'-0") PROVIDED BY GENERAL CONTRACTOR. ALL OTHER DOORS BY METAL BUILDING SUPPLIER.

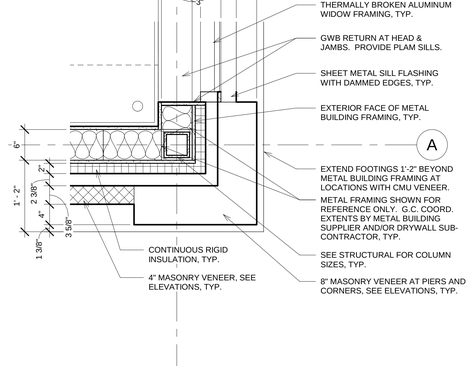












INTERIOR FINISH NOTES:

"Owner" listed below shall be McGregor Interests.

Storage Units:

1. Provide Concrete Floor Sealer at all interior hallways of the storage buildings.
2. Interior Signage: Contractor shall install Owner provided unit tags centered above each door with (2) 1/8" aluminum rivets.

Office:

1. Flooring shall be Ceramic Tile to be selected by Owner. Contractor hall include a line item cost for tile material and include all costs for installation, grout and incidentals for a complete installation in their bid.
2. Wall Base shall be Ceramic Tile to match floor.
3. Wall paint shall be SW-7507 Stone Lion typical, except as follows:
   a. Office north wall shall be SW 6615 Peppery.
   b. Office west wall (merchandise wall) shall be SW 6375 Honeycomb.
4. Ceiling paint shall be SW-7007 Bright White.
5. Cabinet Plastic Laminate shall be Wilsonart 4880-38, Carbon Mesh at all exposed sides.
6. Countertop Granite shall be Grade A slabs to be selected by Owner.

LICENSED PROFESSIONAL ARCHITECT
PAUL J. KELLY
6736
IOWA
5 May 2020

OFFICE PLANS AND DETAILS

No.	Description	Date

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51501

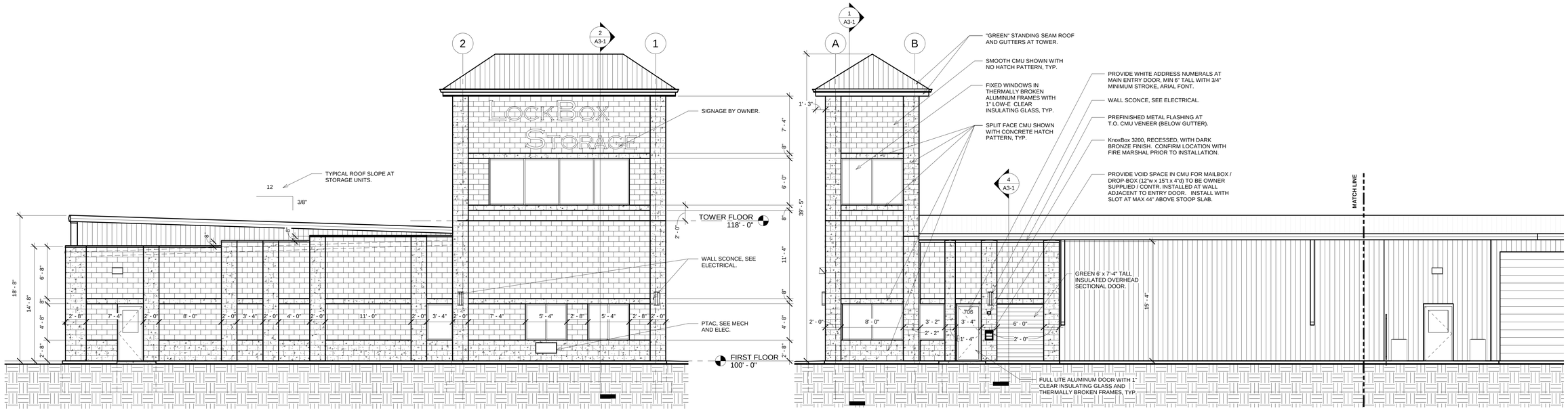
Paul J. Kelly Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

A1-2

Project No. 19-035-01
Date 5 May 2020

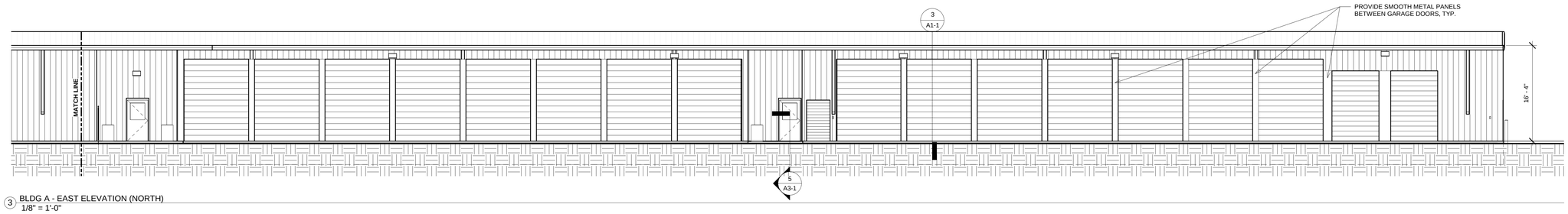
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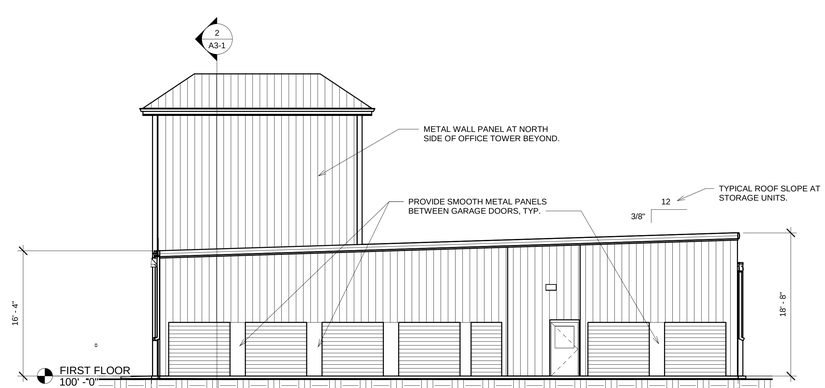


1 BLDG A - SOUTH ELEVATION
3/16" = 1'-0"

2 BLDG A - EAST ELEVATION (SOUTH)
3/16" = 1'-0"



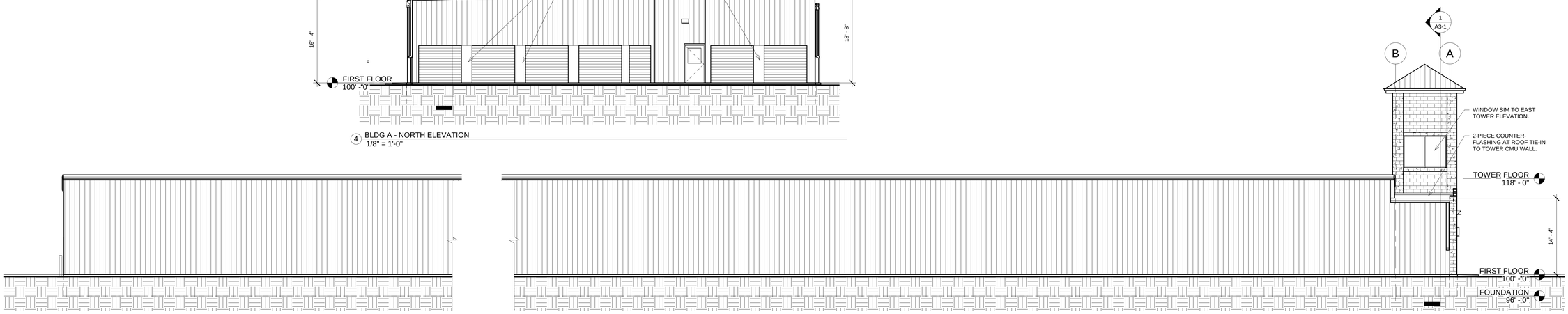
3 BLDG A - EAST ELEVATION (NORTH)
1/8" = 1'-0"



4 BLDG A - NORTH ELEVATION
1/8" = 1'-0"

EXTERIOR COLOR SCHEDULE:

1. Split face CMU shall be painted to match Avid Taupe metal panel color, typical.
2. Smooth CMU shall be painted to match Avid Taupe metal panel color, typical.
3. Mortar color at all CMU shall be standard gray mortar.
4. Metal siding shall be Avid "Light Stone".
5. Color at the office tower roof, fascias, eave, gutters & downspouts shall be Avid "Forest Green" color.
6. All low-slope metal roofs shall be galvalume with trim, gutters & downspouts to be Avid "Taupe" color.
7. Exterior Roll-Up doors shall be Avid "Forest Green".
8. Swing Doors shall be Avid "Taupe" color.



5 BLDG A - WEST ELEVATION
1/8" = 1'-0"

LICENSED PROFESSIONAL ARCHITECT
PAUL J. KELLY
6736
IOWA
5 May 2020

EXTERIOR ELEVATIONS

No.	Description	Date
	REVISIONS	

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51501

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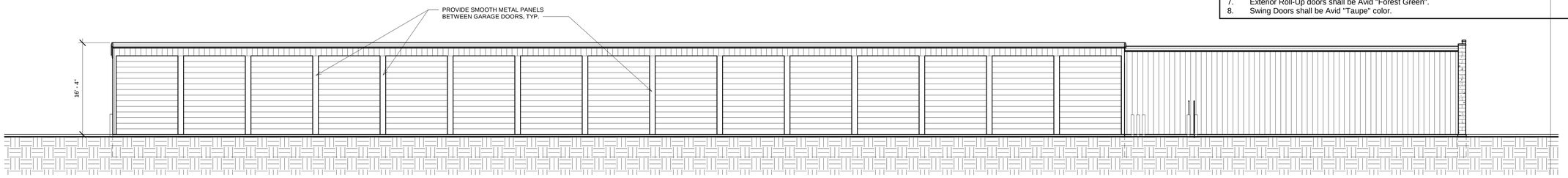
Project No. 19-035-01
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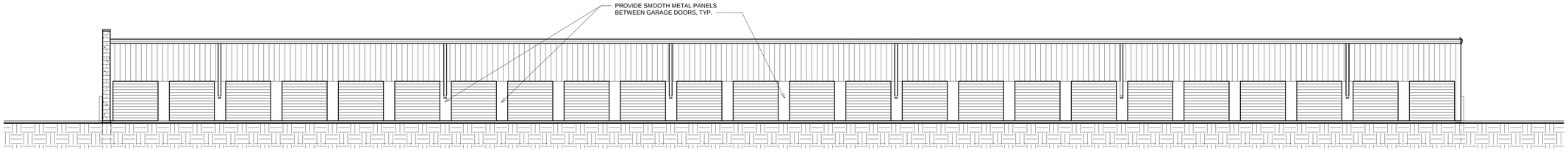
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EXTERIOR COLOR SCHEDULE:

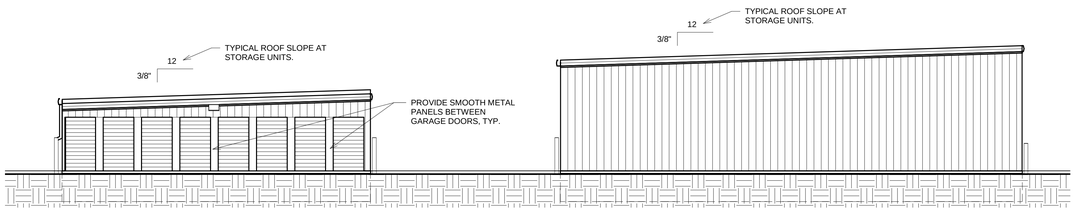
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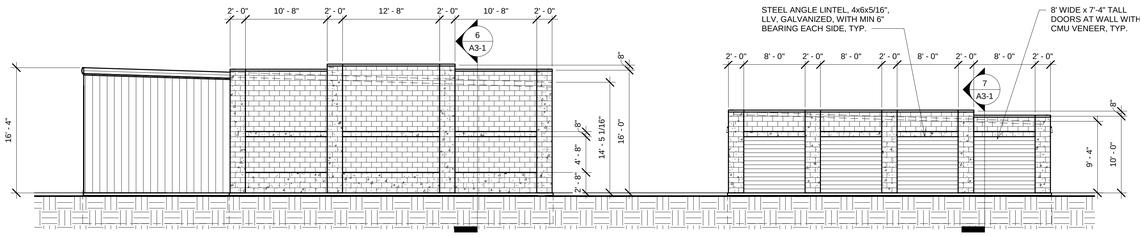
1 BLDG B - WEST ELEVATION
1/8" = 1'-0"



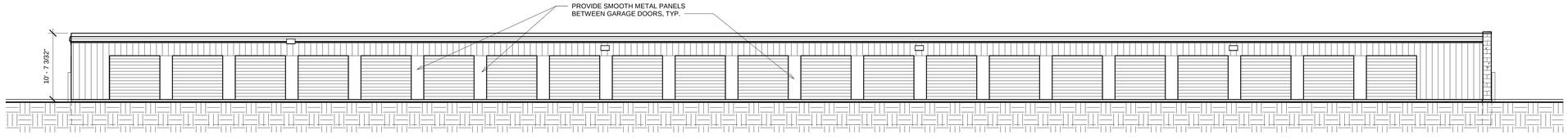
2 BLDG B - EAST ELEVATION
1/8" = 1'-0"



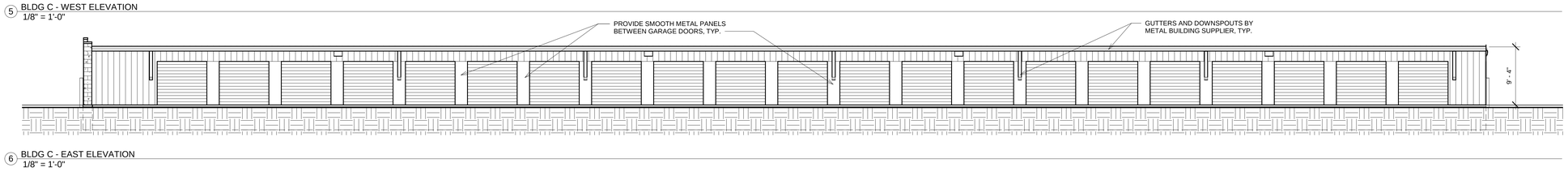
3 BLDGS B & C - NORTH ELEVATION
1/8" = 1'-0"



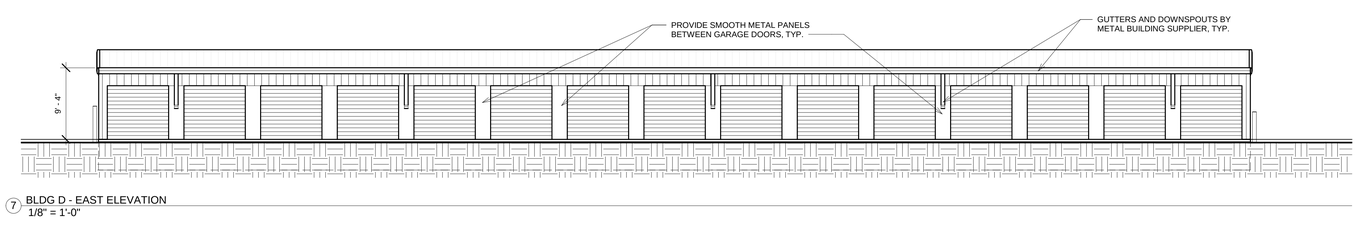
4 BLDGS B & C - SOUTH ELEVATION
1/8" = 1'-0"



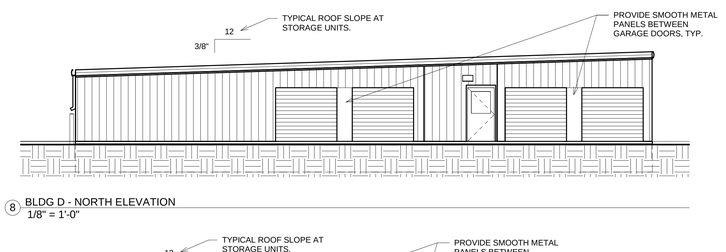
5 BLDG C - WEST ELEVATION
1/8" = 1'-0"



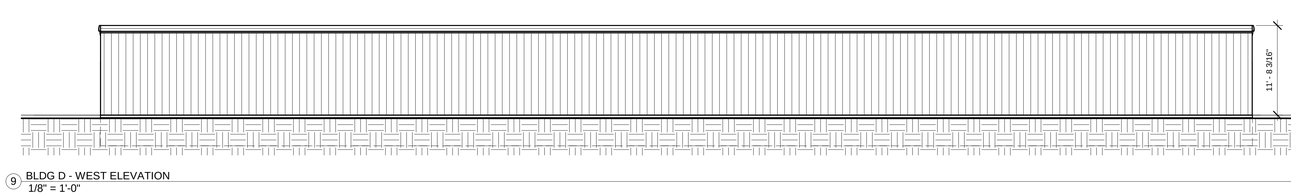
6 BLDG C - EAST ELEVATION
1/8" = 1'-0"



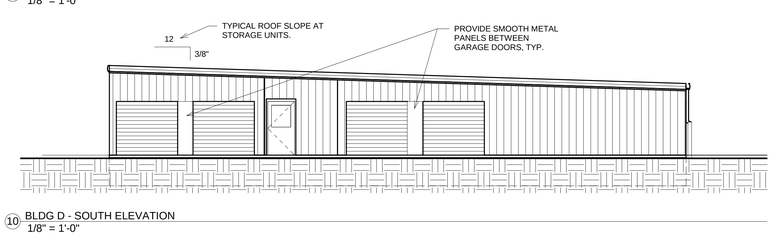
7 BLDG D - EAST ELEVATION
1/8" = 1'-0"



8 BLDG D - NORTH ELEVATION
1/8" = 1'-0"



9 BLDG D - WEST ELEVATION
1/8" = 1'-0"



10 BLDG D - SOUTH ELEVATION
1/8" = 1'-0"

LICENSED PROFESSIONAL ARCHITECT
PAUL J. KELLY
6736
IOWA
5 May 2020

EXTERIOR ELEVATIONS

REVISIONS

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LockBox Storage Manawa

McGregor Interests

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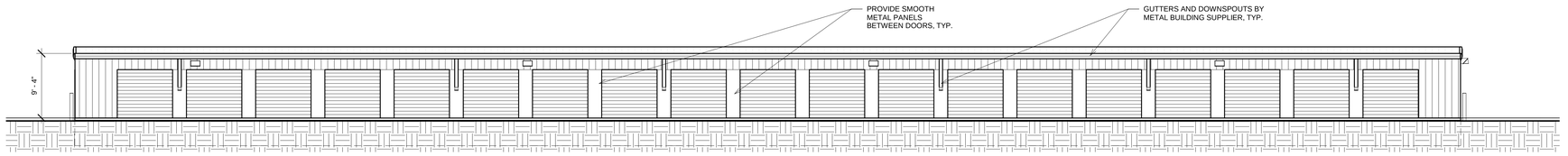
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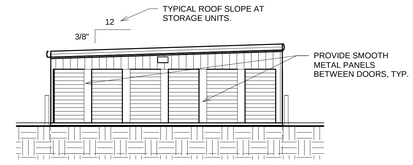
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EXTERIOR COLOR SCHEDULE:

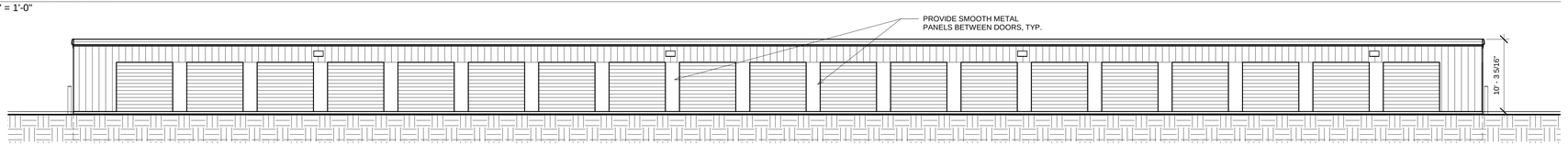
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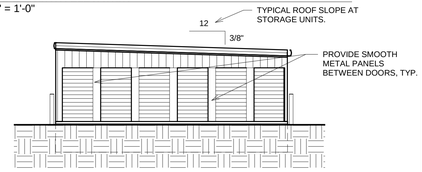
1 BLDG E - EAST ELEVATION
1/8" = 1'-0"



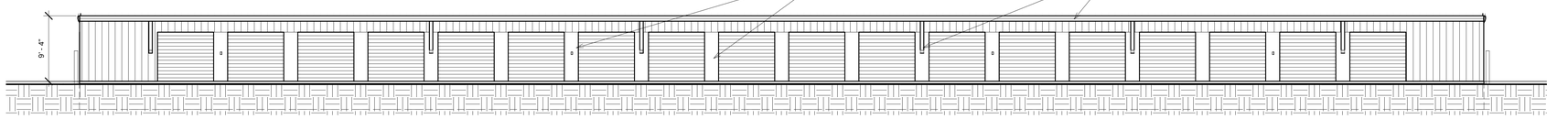
2 BLDG E - NORTH ELEVATION
1/8" = 1'-0"



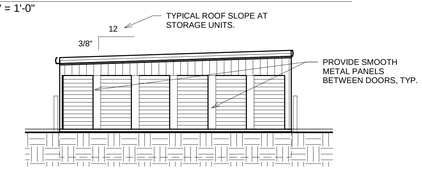
3 BLDG E - WEST ELEVATION
1/8" = 1'-0"



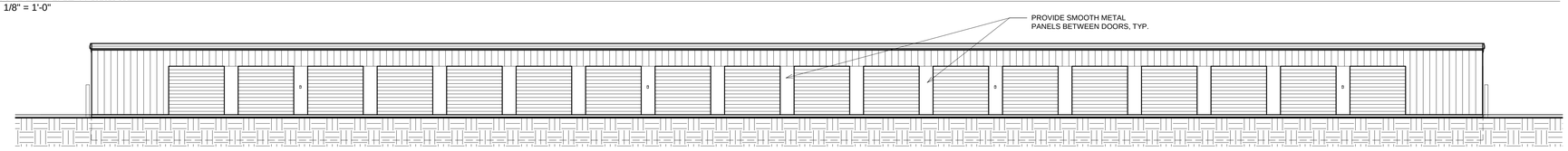
4 BLDG E - SOUTH ELEVATION
1/8" = 1'-0"



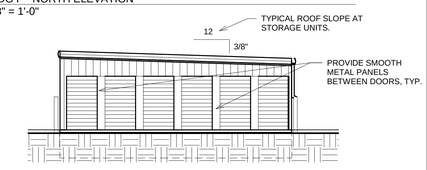
5 BLDG F - EAST ELEVATION
1/8" = 1'-0"



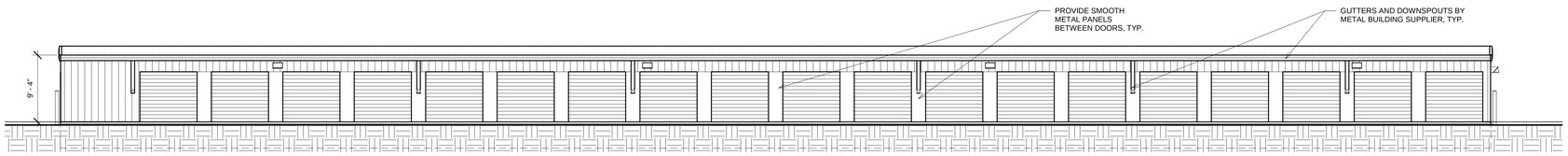
6 BLDG F - NORTH ELEVATION
1/8" = 1'-0"



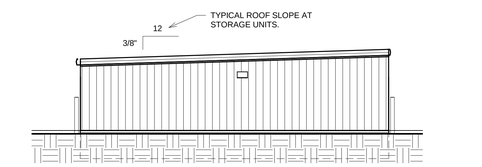
7 BLDG F - WEST ELEVATION
1/8" = 1'-0"



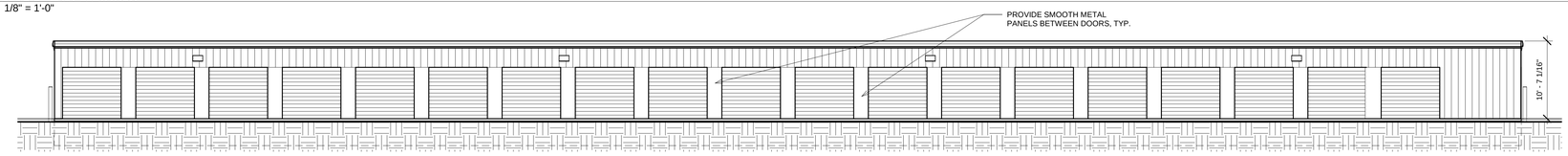
8 BLDG F - SOUTH ELEVATION
1/8" = 1'-0"



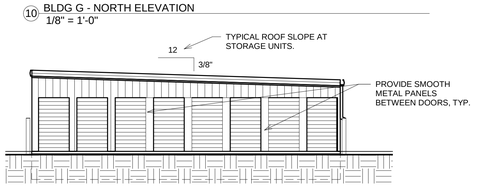
9 BLDG G - EAST ELEVATION
1/8" = 1'-0"



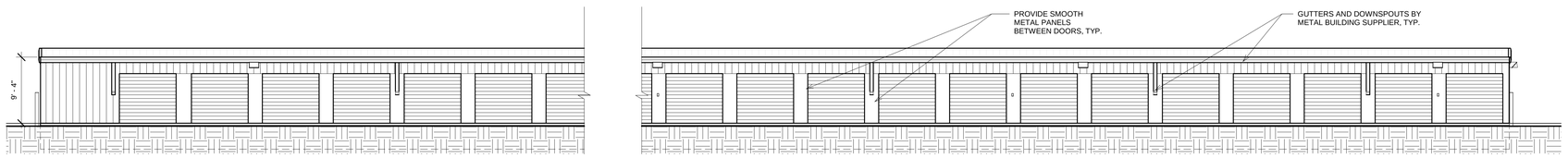
10 BLDG G - NORTH ELEVATION
1/8" = 1'-0"



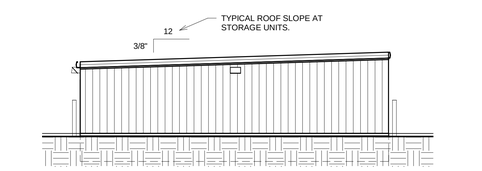
11 BLDG G - WEST ELEVATION
1/8" = 1'-0"



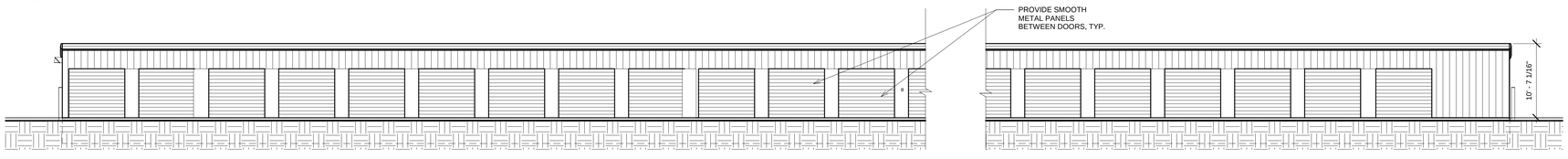
12 BLDG G - SOUTH ELEVATION
1/8" = 1'-0"



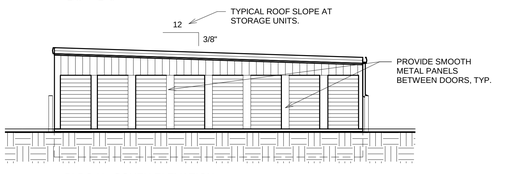
13 BLDG H - EAST ELEVATION
1/8" = 1'-0"



14 BLDG H - NORTH ELEVATION
1/8" = 1'-0"



15 BLDG H - WEST ELEVATION
1/8" = 1'-0"



16 BLDG H - SOUTH ELEVATION
1/8" = 1'-0"

LICENSED PROFESSIONAL ARCHITECT
PAUL J. KELLY
6736
IOWA
5 May 2020

EXTERIOR ELEVATIONS

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LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51501

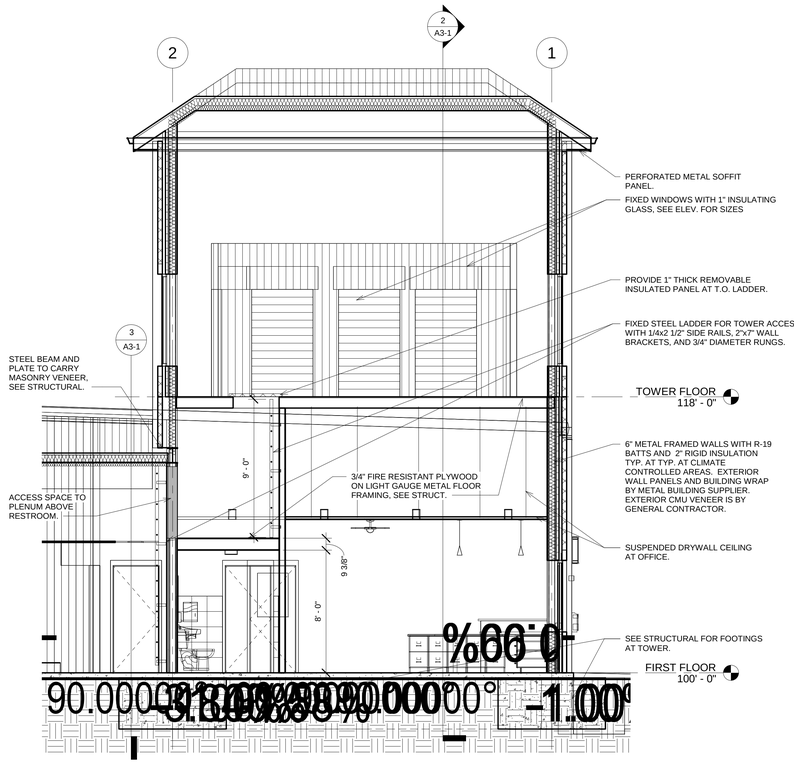
Paul J. Kelly Architecture
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A2-3

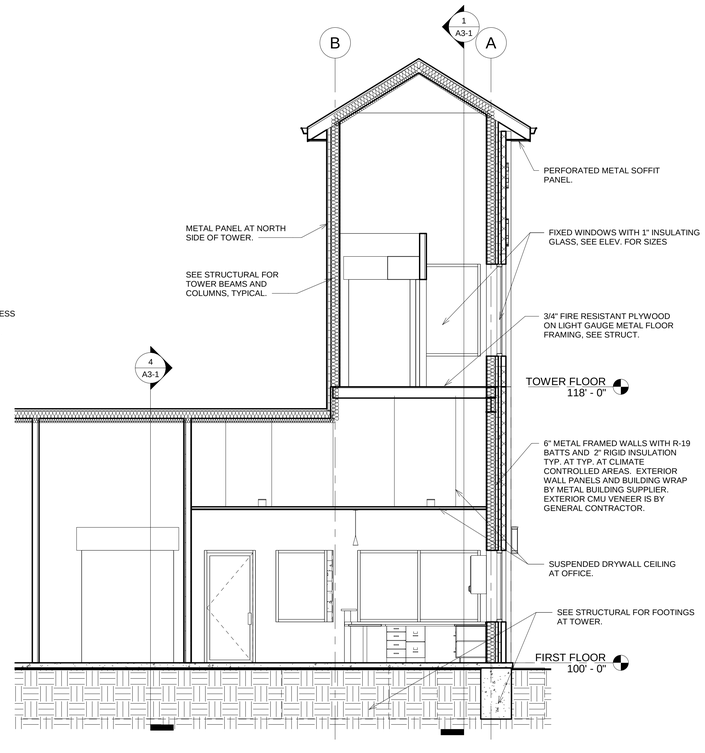
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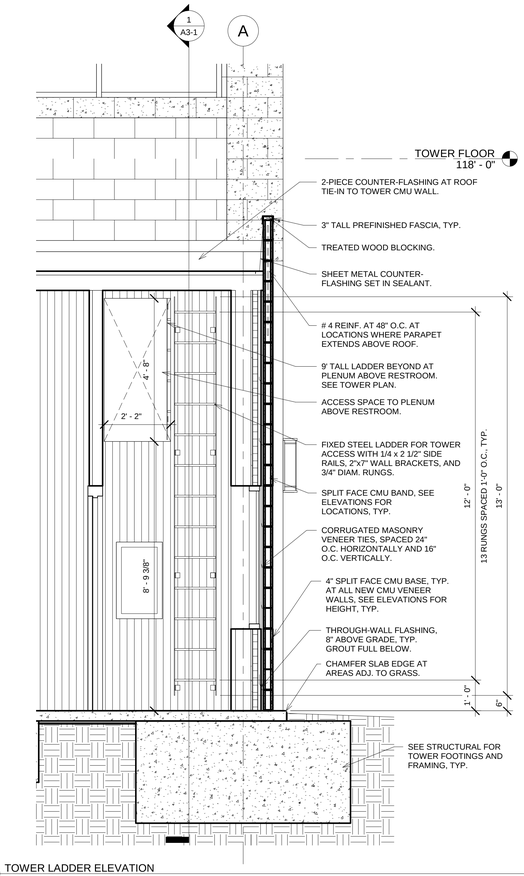
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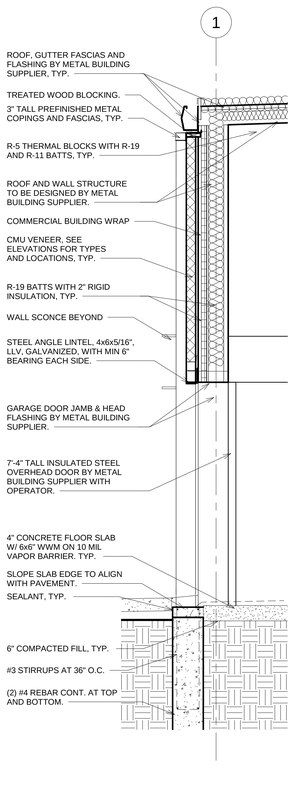
1 OFFICE SECTION - VIEW NORTH
1/4" = 1'-0"



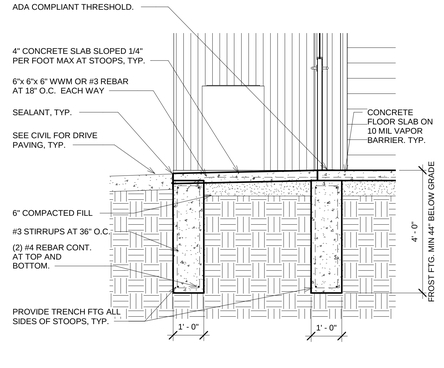
2 OFFICE SECTION - VIEW EAST
1/4" = 1'-0"



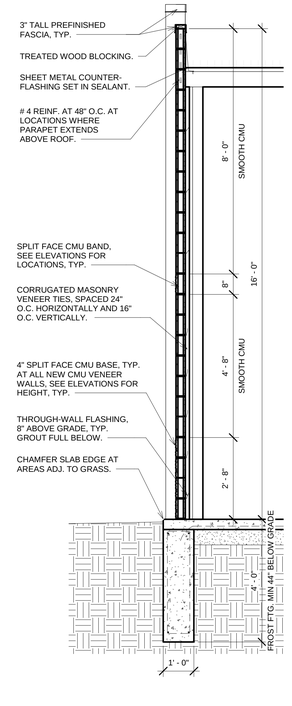
3 TOWER LADDER ELEVATION
1/2" = 1'-0"



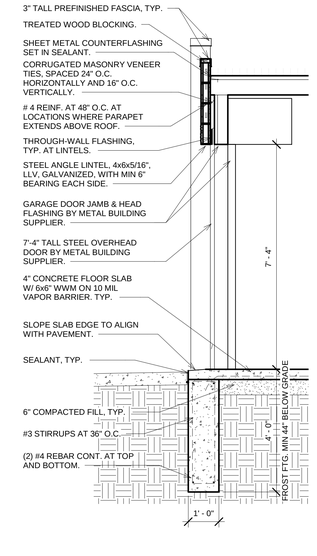
4 WALL SECTION - GARAGE
1/2" = 1'-0"



5 ENTRY ALCOVE STOOP
1/2" = 1'-0"



6 BUILDING B - SOUTH WALL
1/2" = 1'-0"



7 BUILDING C - SOUTH WALL
1/2" = 1'-0"

PAUL J. KELLY
6736
IOWA
5 May 2020

SECTIONS & DETAILS

REVISIONS

No.	Description	Date

LockBox Storage Manawa

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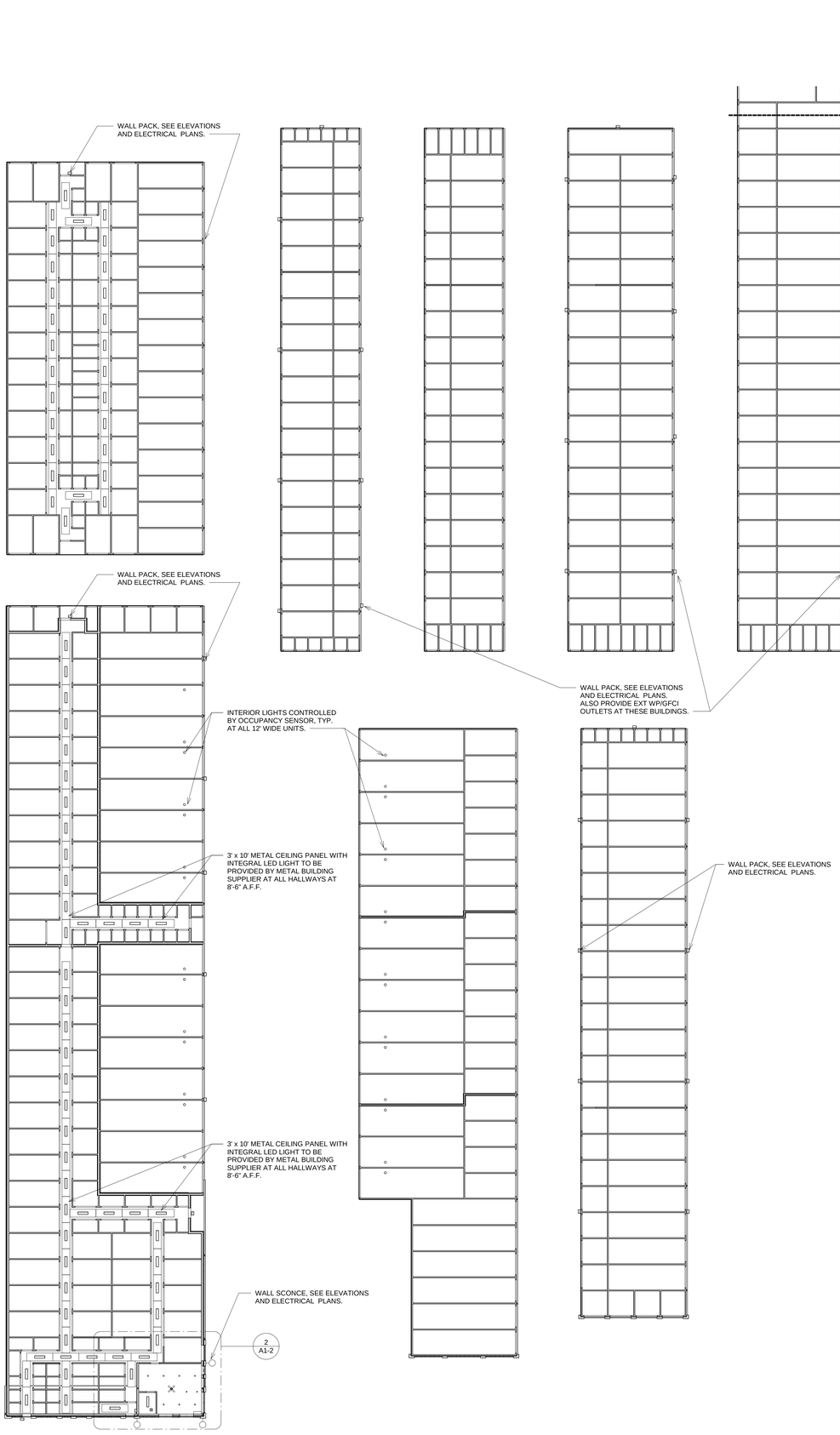
Paul J. Kelly Architecture
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pjkarchitecture.com

A3-1

Project No. 19-035-01
Date 5 May 2020

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3 CEILING PLAN - STORAGE UNITS
1" = 20'-0"

NORTH

4 CEILING PLAN - STORAGE UNIT H NORTH
1" = 20'-0"

NORTH

LICENSED PROFESSIONAL ARCHITECT
PAUL J. KELLY
6736
IOWA
5 May 2020

5/6/2020 9:37:16 PM

CEILING PLANS

REVISIONS

No.	Description	Date

LockBox Storage Manawa

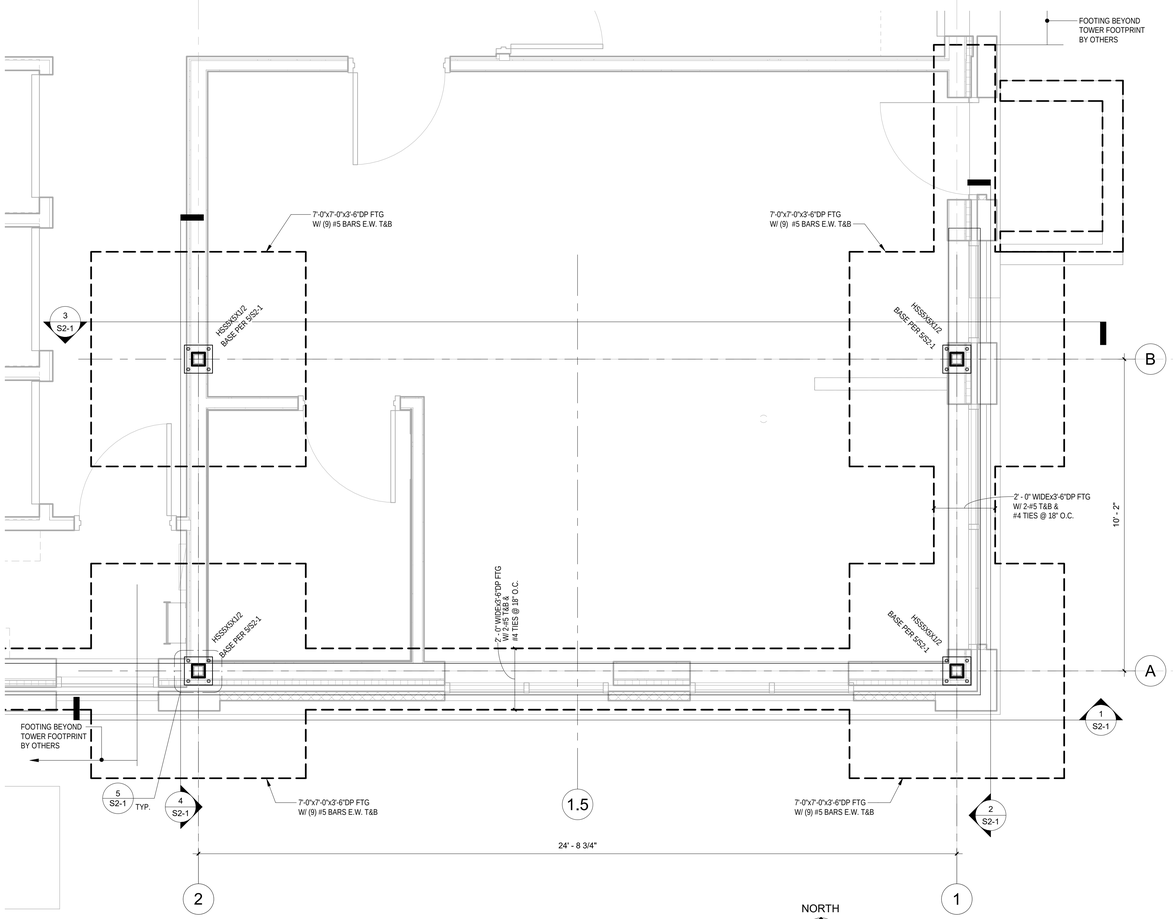
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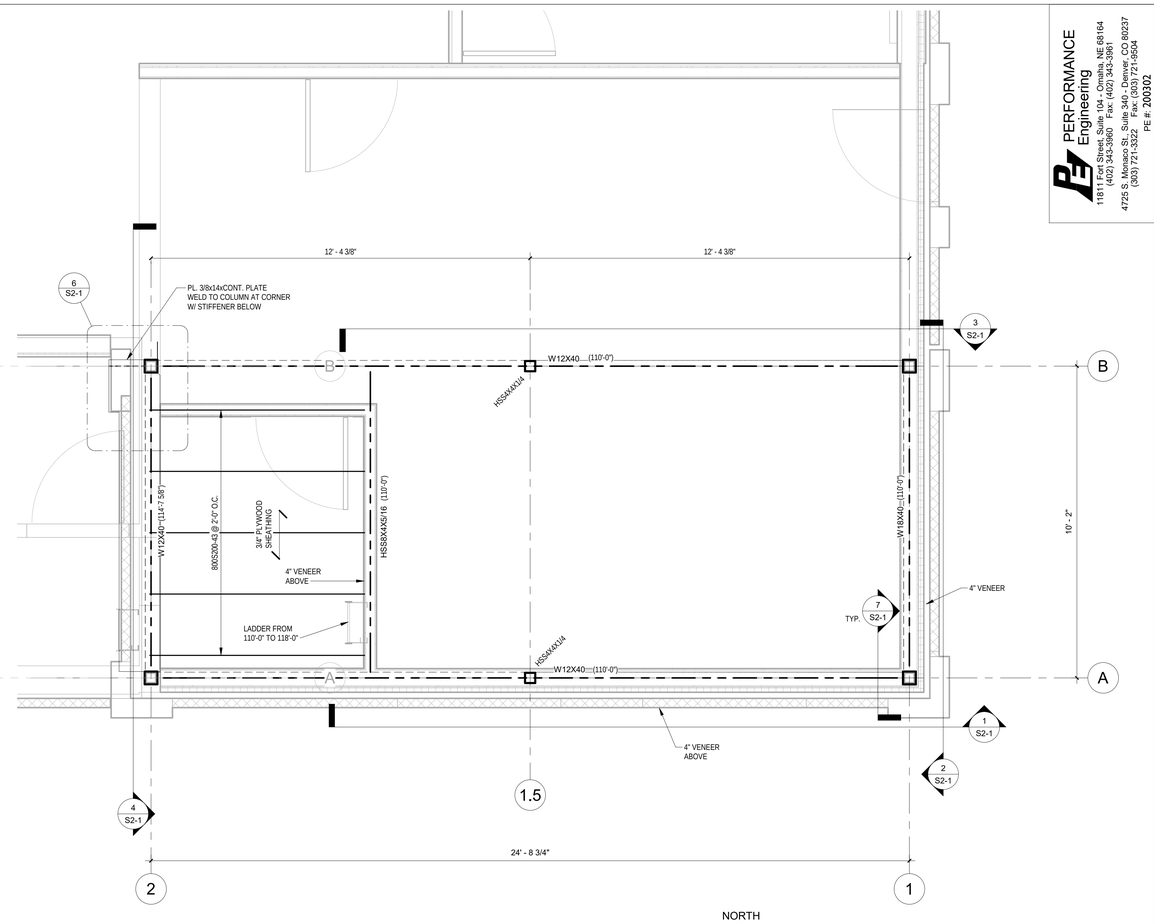
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Project No. 19-035-01
Date 5 May 2020

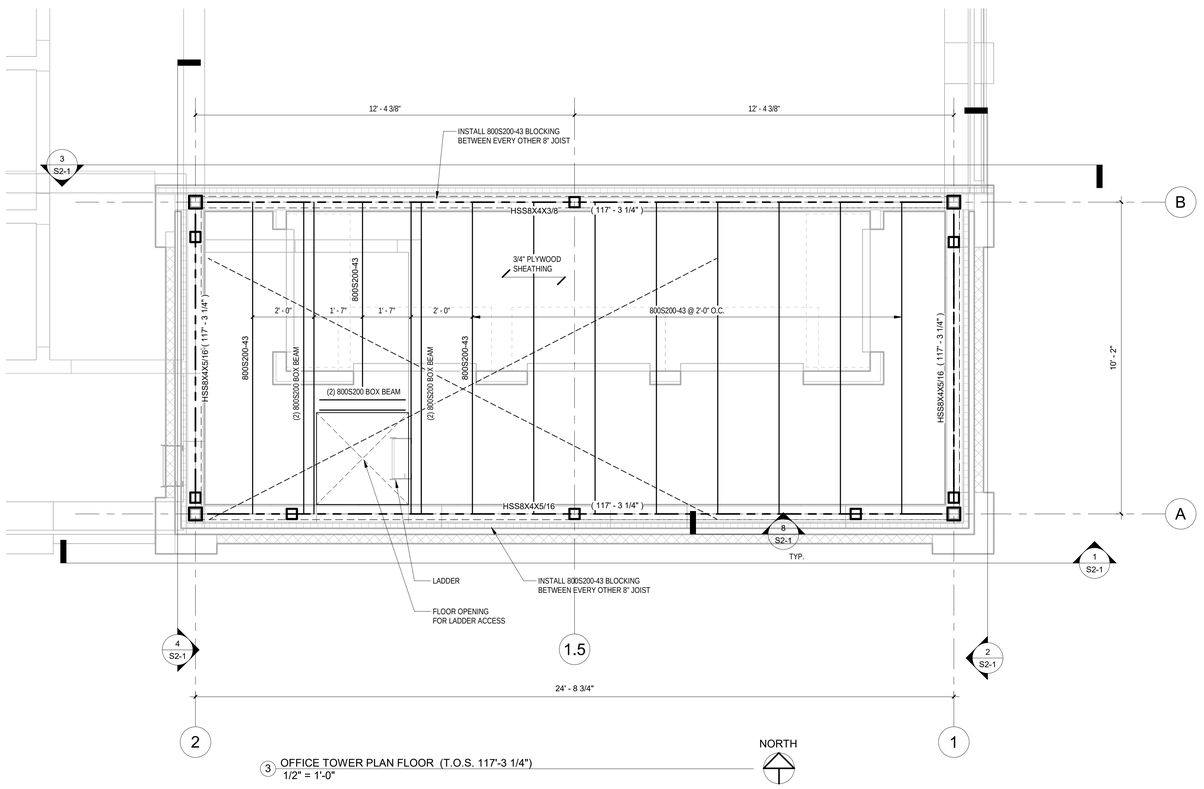
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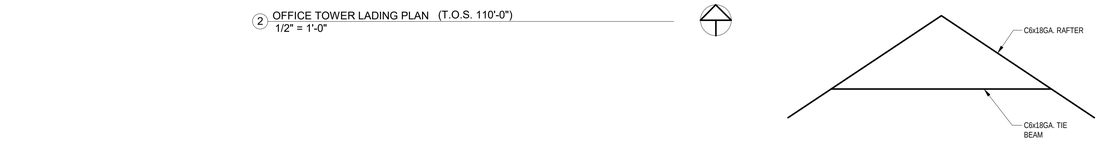
1 FOUNDATION PLAN
1/2" = 1'-0"



2 OFFICE TOWER LADING PLAN (T.O.S. 110'-0")
1/2" = 1'-0"



3 OFFICE TOWER PLAN FLOOR (T.O.S. 117'-3 1/4")
1/2" = 1'-0"



4A "A" FRAME
1/2" = 1'-0"

4 OFFICE TOWER ROOF FRAMING PLAN
1/2" = 1'-0"

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PE #: 200302

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Structural Plans

REVISIONS

No.	Description	Date

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

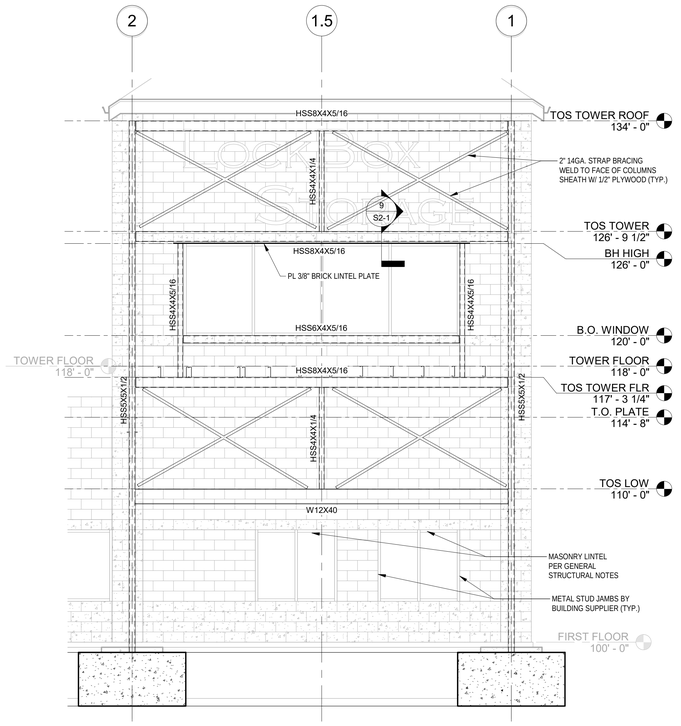
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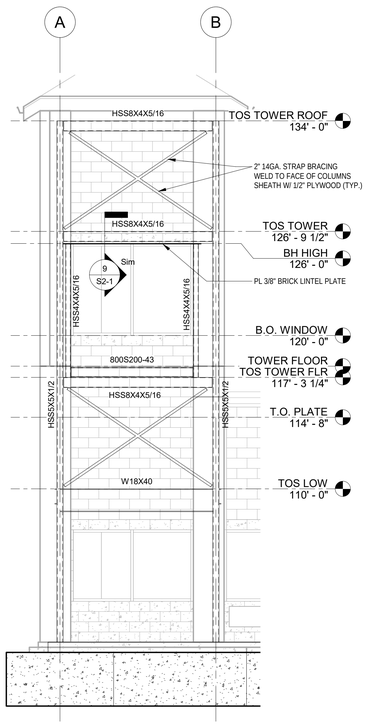
Project No. 19-035-01
Date 12 March 2020

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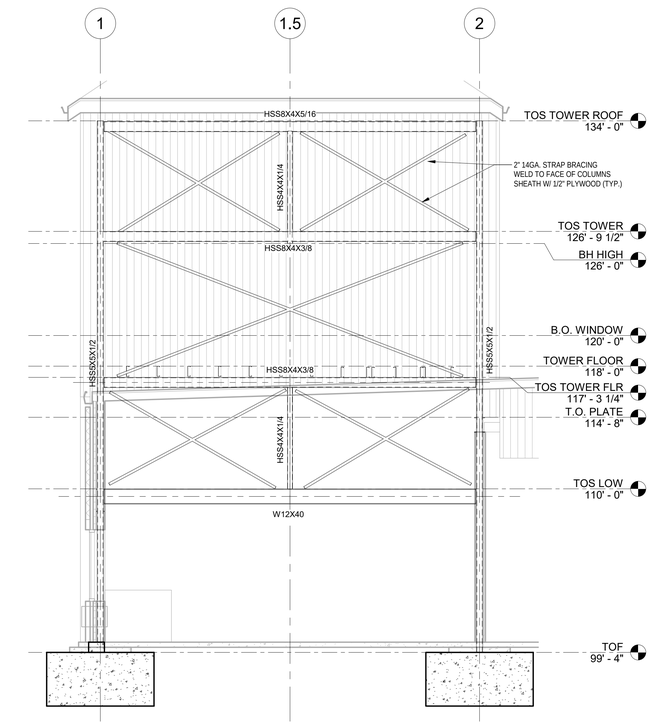
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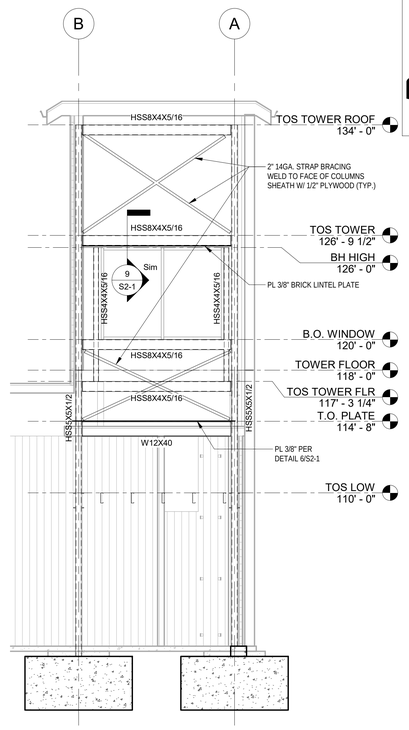
1 OFFICE TOWER SOUTH ELEVATION
1/4" = 1'-0"



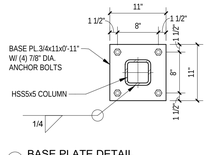
2 OFFICE TOWER EAST ELEVATION
1/4" = 1'-0"



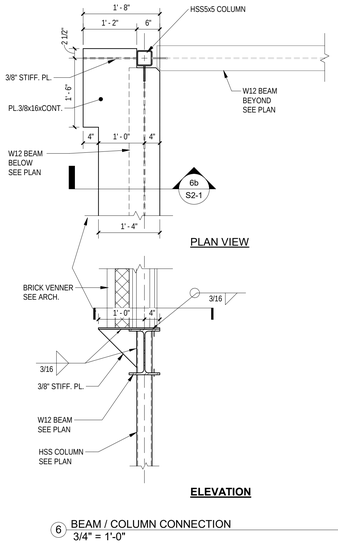
3 OFFICE TOWER NORTH ELEVATON
1/4" = 1'-0"



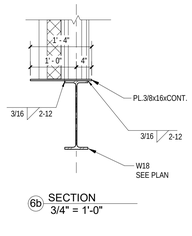
4 OFFICE TOWER WEST ELEVATION
1/4" = 1'-0"



5 BASE PLATE DETAIL
1" = 1'-0"



6 BEAM / COLUMN CONNECTION
3/4" = 1'-0"



6b SECTION
3/4" = 1'-0"

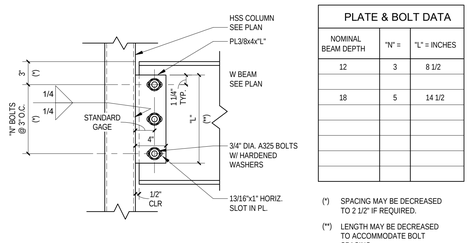
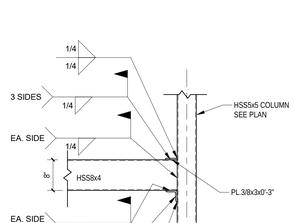


PLATE & BOLT DATA		
NOMINAL BEAM DEPTH	"N" =	"L" = INCHES
12	3	8 1/2
18	5	14 1/2

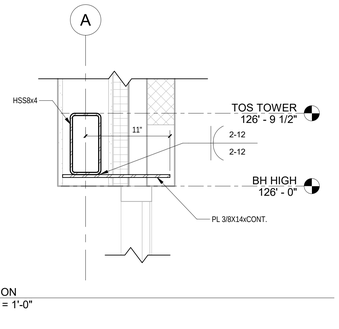
(*) SPACING MAY BE DECREASED TO 2 1/2" IF REQUIRED.

(**) LENGTH MAY BE DECREASED TO ACCOMMODATE BOLT SPACING.

7 BEAM TO COLUMN CONNECTION
1 1/2" = 1'-0"



8 BEAM / COLUMN CONNECTION
3/4" = 1'-0"



9 SECTION
1 1/2" = 1'-0"

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MARTIN J. WEDEMAN
11236
PROFESSIONAL ENGINEER

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Elevations and Sections

REVISIONS		
No.	Description	Date

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

Paul J. Kelly Architecture
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S2-1

Project No. 19-035-01
Date 12 March 2020

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GENERAL STRUCTURAL NOTES:

A. DESIGN DATA:

DESIGN CODE: IBC 2015

CONCRETE 28 DAY STRENGTH: F'C = 4,000 PSI

STRUCTURAL STEEL ASTM A992
(BEAMS & COLUMNS)

STRUCTURAL TUBES ASTM A1085 (50ksi)

MISCELLANEOUS ROLLED SECTIONS ASTM A36
AND PLATES (ANGLES, CHANNELS,
PLATES, ETC.)

HIGH STRENGTH BOLTS ASTM A325

PLAIN BOLTS AND ANCHORS ASTM F1554 GR. 36

REINFORCING STEEL ASTM A615 FY = 60,000 PSI

WELDED WIRE FABRIC ASTM A185

ALLOWABLE SOIL BEARING CAPACITY 1000 PSF

DESIGN LOADS

GRAVITY LOADS:

ROOFS DL = 25 PSF
LL BASED ON GROUND SNOW LOAD OF 30 PSF
(Ce =1.0, Ct =1.0, AND I=1.0)**

**INCREASE LIVE LOAD FOR SNOW DRIFTING AS REQUIRED IN CONFORMANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS ANSI/ASCE 7-05.

WIND LOADING CRITERIA (2015 IBC)
BASE WIND SPEED (3 SECOND GUST) 'V' = 115 MPH
BUILDING CATEGORY II
IMPORTANCE FACTOR 'Iw' = 1.0
EXPOSURE CATEGORY B

B. FOUNDATION WORK:

1. THE GEOTECHNICAL REPORT PREPARED BY THIELE GEOTECH, PROJ. #119676.00 DATED JANUARY 16, 2020 IS AVAILABLE AND SHALL BE REVIEWED BY THE CONTRACTOR. ALL RECOMMENDATIONS IN GEOTECHNICAL REPORT SHALL BE FOLLOWED FOR SITE PREPARATION, EXPANSIVE SOIL CONSIDERATIONS, EXCAVATIONS, AND FILL COMPACTIONS, INCLUDING OVEREXCAVATION AND PLACEMENT OF COMPACTED STRUCTURAL FILL. FOUNDATION CONSTRUCTED SHALL BE DELAYED PER RECOMENDATIONS IN GEOTECH REPORT TO ALLOW TIME FOR SETTLEMENT OF FILL. DE-WATERING OF GROUND WATER SHALL BE EXPECTED AND COMPLETED PER GEOTECHNICAL ENGINEER.

2. SUBSOILS SUPPORTING OR IN DIRECT CONTACT WITH FOOTINGS, SLABS ON GRADE, OR OTHER FOUNDATION ELEMENTS SHALL BE PROTECTED AGAINST FREEZING CONDITIONS THAT COULD CAUSE MOVEMENT OR OTHER DETRIMENTAL EFFECT TO THE STRUCTURE AS A WHOLE OR TO ANY OF ITS COMPONENT PARTS.

3. WHEN WORKING NEAR EXISTING AND/OR NEW CONSTRUCTION, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO UNDERMINE, DISTURB, DAMAGE OR, IN ANY WAY, CAUSE UNDESIRABLE MOVEMENT, CRACKING, AND/OR SETTLEMENT OF THE ADJACENT CONSTRUCTION.

4. ALL SLABS ON GRADE SHALL BEAR ON UNDISTURBED VIRGIN SOIL OR PROPERLY COMPACTED BACKFILL/GRANULAR FILL. ANY UNACCEPTABLE UNDISTURBED VIRGIN SOIL OR BACKFILL/GRANULAR FILL, AS DETERMINED BY THE OWNER'S GEOTECHNICAL ENGINEER, SHALL BE REMOVED AND REPLACED AS REQUIRED BY THE GEOTECHNICAL ENGINEER.

5. CONTRACTOR SHALL COORDINATE FOOTING ELEVATIONS WITH FINAL GRADING PLAN TO PROVIDE A MINIMUM OF 42" OF GRADE ABOVE THE BOTTOM OF ALL FOOTINGS FOR FROST PROTECTION.

C. CONCRETE:

1. FOR REINFORCEMENT DEVELOPMENT LENGTH AND SPLICE LENGTH SEE TYPICAL REINFORCEMENT TABLE ON THIS SHEET.

2. PROVIDE CORNER BARS IN WALLS AND FOOTINGS THE SAME SIZE AND NUMBER AS THE CONTINUOUS REINFORCING.

3. REINFORCING IN FOOTINGS SHALL BE ACCURATELY PLACED BEFORE PLACING CONCRETE. DO NOT FLOAT REINFORCING INTO FOOTINGS

4. CONCRETE SHALL BE REGULAR WEIGHT (144 PCF) WITH TYPE I CEMENT, POTABLE WATER, AND AGGREGATES CONFORMING TO REQUIREMENTS OF ASTM C33, UNLESS NOTED OTHERWISE. CONCRETE SHALL CONFORM TO ACI 301-10.

5. ALL REINFORCING STEEL SHALL BE DEFORMED NEW BILLETS BARS (A615, GRADE 60), BENT COLD, AND DETAILED, FABRICATED, AND HELD IN PLACE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" (ACI 315 LATEST EDITION) EXCEPT AS OTHERWISE DETAILED OR SPECIFIED.

6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT, UNLESS NOTED OTHERWISE:
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
CONCRETE EXPOSED TO EARTH OR WEATHER: 2"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: SLABS AND WALLS 1"

D. MASONRY:

1. FURNISH AND CONSTRUCT MASONRY IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS FOR MASONRY CONSTRUCTION (ACI 530.1-02/ASCE 6-02/TMS 602-02.

2. LAY MASONRY UNITS IN RUNNING BOND.

3. MAXIMUM GROUT LIFT WITHOUT CLEANOUTS SHALL BE 4' 0" IN BLOCK WALLS AND 8' GROUTED TWO WYTHE WALLS.

4. 8" WALLS PROVIDE CONTINUOUS FULL HEIGHT VERTICAL REINFORCING IN CENTER OF GROUT AT CENTER OF WALL. TYPICAL REINFORCING SHALL BE 1 #5 AT 4' 0" ON CENTER AND 1 #5 AT CORNERS, INTERSECTIONS, WALL ENDS, DOOR AND WINDOW JAMBS, AND SIDE OF EXPANSION OR CONTROL JOINTS UNLESS NOTED OTHERWISE.

5. GROUT CELLS FULL AT ALL EXPANSION ANCHOR LOCATIONS.

6. PROVIDE LADDER TYPE #9 JOINT REINFORCING AT 16" ON CENTER VERTICAL SPACING IN ALL CONCRETE MASONRY AND UNLESS NOTED OTHERWISE.

7. SPLICE MASONRY WALL REINFORCING 48 BAR DIAMETERS.

8. SPLICE PLACE BOND BEAM REINFORCING AT MASONRY CONTROL/EXPANSION JOINTS AS SHOWN ON MASONRY JOINT DETAIL ON THIS SHEET.

9. PROVIDE CONTINUOUS BOND BEAMS AT ALL BEAM BEARING ELEVATIONS AND AT THE TOP OF ALL WALLS.

10. PROVIDE CONTINUOUS WIRE LATH GROUT BARRIERS BELOW BOND BEAMS.

11. PROVIDE LINTELS OVER ALL OPENINGS AND RECESSES IN MASONRY WALLS. EXTERIOR LINTELS SHALL BE GALVANIZED, UNLESS NOTED OTHERWISE.

12. FOR ALL OPENINGS NOT OTHERWISE DETAILED OR SCHEDULED, MINIMUM LINTELS SHALL BE FOR EACH 4 INCH OF MASONRY WIDTH 1 L 3 1/2 X 3 1/2 X 1/4 FOR SPANS UP TO 4' 0", 1 L 4 X 3 1/2 X 1/4 FOR SPANS UP TO 6' 0" AND 1 L 5 X 3 1/2 X 5/16 FOR SPANS UP TO 8' 0". FOR SPANS LESS THAN 2' 0" PROVIDE A 5/16" PLATE.

13. ALL LINTELS SHALL HAVE A MINIMUM BEARING OF 8 INCHES EACH END.

E. STEEL:

1. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC SPECIFICATIONS AND OSHA REGULATION 29 CFR PART 1926.

2. SHOP PAINT STRUCTURAL STEEL WITH FABRICATOR'S STANDARD LEAD- AND CHROMATE-FREE, NONASPHALTIC, RUST-INHIBITING PRIMER, UNLESS NOTED OTHERWISE. ALL EXTERIOR EXPOSED STEEL SHALL BE GALVANIZED.

3. COMPLY WITH AMERICAN WELDING SOCIETY STANDARDS. ALL WELDERS SHALL HAVE VALID CERTIFICATES AND HAVE CURRENT EXPERIENCE IN TYPE OF WELD CALLED FOR.

4. WELDING ELECTRODES SHALL BE E70 FOR ALL STEEL, UNLESS NOTED OTHERWISE.

5. BOLTED CONNECTIONS SHALL BE SUPPLIED AND INSTALLED PER THE REQUIREMENTS OF RCSC'S "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS." SHOP AND FIELD BOLTED CONNECTIONS SHALL BE BEARING CONNECTIONS, UNLESS NOTED OTHERWISE.

6. ANCHOR RODS FOR COLUMN BASE PLATES SHALL BE SECURED IN PLACE WITH A TEMPLATE AND SECURELY TIED TO REINFORCING BARS BEFORE PLACING OF CONCRETE.

7. ANCHOR ROD HOLES IN BASE PLATES MAY BE OVERSIZED PER TABLE 14-2 OF THE 3RD ED. OF THE LRFD MANUAL. IF OVERSIZED HOLES ARE USED, WASHER PLATES SHALL BE PROVIDED AS SPECIFIED AND FIELD WELDED TO THE BASE PLATES.

F. LIGHT GAUGE METAL:

1. LIGHT GAUGE METAL FRAMING SHALL BE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITION OF "THE NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS" AND "THE COLD FORMED STEEL FRAMING DESIGN GUIDE" OF THE AMERICAN IRON AND STEEL INSTITUTE.

2. PROVIDE TRACKS, BLOCKING, LINTELS, CLIP ANGLES, STRAP BRACING, SHOES, REINFORCEMENTS, FASTENERS, AND ACCESSORIES TO PROVIDE A COMPLETE METAL FRAME SYSTEM.

3. ISOLATE PARTITIONS FROM STRUCTURAL ELEMENTS WITH SLIP OR CUSHION-TYPE JOINTS BETWEEN STEEL FRAMING AND STRUCTURE AS RECOMMENDED BY STEEL FRAMING MANUFACTURER TO PREVENT TRANSFER OF STRUCTURAL LOADS OR MOVEMENTS TO PARTITIONS.

4. INSTALL HORIZONTAL BRIDGING IN WALL SYSTEM AS REQUIRED BY METAL STUD SUPPLIER. MINIMUM BRIDGING SPACING SHALL BE 4'-0" O.C. (VERTICAL DISTANCE) UNTIL PERMANENT INTERIOR WALL SHEATHING IS INSTALLED.

5. FASTEN GYPBOARD AND PLYWOOD WITH 1/4 INCH TEK SCREWS AT 6 INCH AT ALL SUPPORTS AND EDGES.

6. BEARING STUDS MUST BE FABRICATED WITH FULL STUD END SEATED AGAINST TRACK WEB. DO NOT USE STUD THAT HAS BEEN CUT.

7. PROVIDE DOUBLE METAL STUD AROUND ALL OPENINGS IN STUD WALL SYSTEM AT JAMBS, HEADS, AND SILLS. WELD AT ALL INTERSECTIONS

G. INSPECTIONS:

1. IN ACCORDANCE WITH 2015 IBC SECTION 1704, AS NOTED BELOW, TESTING AND INSPECTION SHALL BE BY AN INDEPENDENT TESTING/INSPECTION FIRM UNDER THE SUPERVISION OF A LICENSED ENGINEER EMPLOYED BY THAT FIRM. THIS ENGINEER SHALL BE DEEMED THE DESIGNATED ENGINEER OF RECORD FOR SPECIAL INSPECTIONS PERFORMED BY HIS FIRM OR HIS CONSULTANTS. INSPECTORS SHALL BE ICBO CERTIFIED AND APPROVED BY THE BUILDING OFFICIAL.

2. THE DESIGNATED ENGINEER OF RECORD FOR SPECIAL INSPECTIONS SHALL BE RESPONSIBLE FOR DEFINING THE ACTIVITIES OF THE INSPECTORS, FOR CERTIFYING THE QUALIFICATIONS OF THE INSPECTORS WITH THE BUILDING OFFICIAL AND TO ATTEND THE PRE-CONSTRUCTION MEETING TO DEFINE THEIR SCOPE OF SERVICES AND THE TESTING OR TEST PROCEDURES THAT ARE REQUIRED AS OUTLINED IN THE INTERNATIONAL BUILDING CODE.

3. SPECIAL INSPECTION IS TO BE PROVIDED IN ADDITION THE INSPECTIONS CONDUCTED BY THE LOCAL DEPARTMENT OF BUILDING SAFETY AND SHALL NOT BE CONSTRUED TO RELIEVE THE OWNER OR HIS AUTHORIZED AGENT FROM REQUESTING THE PERIODIC AND CALLED INSPECTIONS REQUIRED BY SECTION 104.4 OF THE INTERNATIONAL BUILDING CODE.

4. SPECIAL INSPECTIONS REQUIRED INCLUDE, BUT MAY NOT BE LIMITED TO, THE FOLLOWING:

a. CONCRETE PER TABLE 1705.3 AND SECTION 1705.3 WITH ALL APPLICABLE EXCEPTIONS.

b. ANCHOR BOLTS INSTALLED IN CONCRETE: PER TABLE 1705.3.

c. REINFORCING PER TABLE 1705.3 AND EXCEPTION FOR CONCRETE REQUIRING SPECIAL INSPECTION.

d. WELDING: PER SECTION AISC 360 AND IBC TABLE 1705.2.2.

H. OTHER:

1. VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES.

2. VERIFY IN FIELD ALL EXISTING CONDITIONS SHOWN ON DRAWINGS.

3. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR MECHANICAL, ELECTRICAL, AND PLUMBING WITH APPROPRIATE TRADES. PROVIDE ALL TEMPORARY BRACING, SHORING, GUYING, OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION.

4. ANY ENGINEERING DESIGN PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW SHALL BEAR THE STAMP (AND SIGNATURE) OF AN ENGINEER REGISTERED IN IOWA.

TYPICAL REINFORCING NOTES:

1. REINFORCING BAR DEVELOPMENT AND LAP SPLICE LENGTH SHALL BE AS SHOWN IN THIS TABLES UNLESS OTHERWISE NOTED ON THE DRAWINGS.

2. THE LENGTHS SHOWN IN THE TABLES ARE BASED ON THE FOLLOWING CONCRETE COVERAGE AND REINFORCING CENTER TO CENTER (C-C) SPACING:
BEAMS OR COLUMNS:
COVER (EQUAL OR MORE) 1.0dd (BAR DIAMETER)
CENTER TO CENTER SPACING (EQUAL OR MORE) 2.0dd.
ALL OTHERS:
COVER (EQUAL OR MORE) 1.0dd
CENTER TO CENTER SPACING (EQUAL OR MORE) 3.0dd.

3. TOP BARS ARE DEFINED AS HORIZONTAL REINFORCEMENT SUCH THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE DEVELOPMENT LENGTH OR SPLICE.

4. DEVELOPMENT AND SPLICE LENGTH SHOWN SHALL NOT APPLY IF ANY OF THE FOLLOWING CONDITIONS OCCUR:
A) f'c < 4,000 PSI
B) fy > 60,000 PSI
C) THE COVER OR C-C BAR SPACING IS NOT AS LISTED ABOVE
D) THE REINFORCING STEEL IS EPOXY COATED
E) LIGHT WEIGHT CONCRETE IS USED.

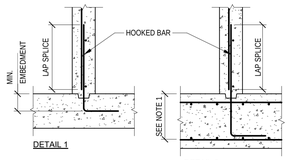
5. CENTER TO CENTER SPACING (S) IS DEFINED AS BELOW:



DEVELOPMENT LENGTH NOTES:

1. WHERE DRAWINGS ARE DETAILED SIMILAR TO DETAIL 2, EXTEND THE EMBEDMENT LENGTH SUCH THAT THE HOOKED BAR CONTACTS THE LAYER OF MAIN REINFORCING SHOWN.

2. EMBEDMENT LENGTHS IN CHART ARE TYPICAL EXCEPT AS NOTED IN DETAIL 2, OR AS INDICATED ON DRAWINGS.



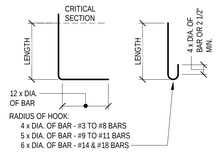
DETAIL 1 DETAIL 2

REINFORCING DEVELOPMENT AND SPLICES
f'c = 4,000 PSI

BAR SIZE	DEVELOPMENT LENGTH		SPLICE LENGTH	
	OTHER	TOP	OTHER	TOP
#3	1'-3"	1'-7"	1'-7"	2'-0"
#4	1'-7"	2'-1"	2'-1"	2'-8"
#5	2'-0"	2'-7"	2'-7"	3'-4"
#6	2'-5"	3'-1"	3'-1"	4'-0"
#7	3'-6"	4'-6"	4'-6"	5'-10"
#8	4'-0"	5'-2"	5'-2"	6'-8"
#9	4'-6"	5'-10"	5'-10"	7'-7"
#10	5'-1"	6'-7"	6'-7"	8'-6"
#11	5'-7"	7'-3"	7'-3"	9'-5"

HOOKED BAR DEVELOPMENT LENGTHS
f'c = 4,000 PSI

BAR SIZE	LENGTH OR MINIMUM EMBEDMENT
#3	7"
#4	10"
#5	1'-0"
#6	1'-3"
#7	1'-5"
#8	1'-7"
#9	1'-10"
#10	2'-0"
#11	2'-3"



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PE #: 20030

IOWA MARTIN J. MEDEMAN 11236 LICENSED PROFESSIONAL ENGINEER

5/6/2020 2:09:22 PM

General Structural Notes

No.	Description	Date
	REVISIONS	

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

Paul J. Kelly
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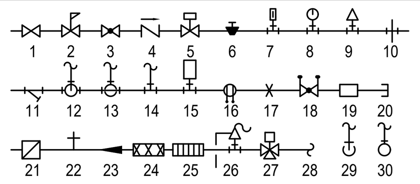
S3-1

Project No. 19-035-01
Date 12 March 2020

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SYMBOL	ABBREV.	DESCRIPTION
—— — ——	CW	COLD WATER
—— — — —	HW	HOT WATER
— — — — —	RHW	RECIRCULATED HOT WATER
—— A ——	A	AIR
—— AV ——	AV	ACID VENT
—— AW ——	AW	ACID WASTE
—— CD ——	CD	CONDENSATE
—— CHR ——	CHR	CHILLED WATER RETURN
—— CHS ——	CHS	CHILLED WATER SUPPLY
—— CWR ——	CWR	CONDENSER WATER RETURN
—— CWS ——	CWS	CONDENSER WATER SUPPLY
—— DI ——	DI	DEIONIZED WATER
—— DS ——	DS	DOWNSPOUT (RAINWATER)
—— DWR ——	DWR	DUAL WATER RETURN
—— DWS ——	DWS	DUAL WATER SUPPLY
—— FOR ——	FOR	FUEL OIL RETURN
—— FOS ——	FOS	FUEL OIL SUPPLY
—— FOV ——	FOV	FUEL OIL VENT
— FSPR —	FSPR	FIRE SPRINKLER
—— G ——	G	NATURAL GAS LINE (FIRM)
—— GI ——	GI	GREASE INTERCEPTOR
—— HG ——	HG	HOT GAS
—— HPR ——	HPR	HIGH PRESSURE STEAM RETURN
—— HPS ——	HPS	HIGH PRESSURE STEAM SUPPLY
—— HWR ——	HWR	HEATING WATER RETURN
—— HWS ——	HWS	HEATING WATER SUPPLY
—— IG ——	IG	NATURAL GAS LINE (INTERRUPTIBLE)
—— LPG ——	LPG	LIQUIFIED PETROLEUM GAS
—— LPR ——	LPR	LOW PRESSURE STEAM RETURN
—— LPS ——	LPS	LOW PRESSURE STEAM SUPPLY
— LSPR —	LSPR	LAWN SPRINKLER
—— MPR ——	MPR	MEDIUM PRESSURE STEAM RETURN
—— MPS ——	MPS	MEDIUM PRESSURE STEAM SUPPLY
—— NP· ——	NPCW	NON POTABLE COLD WATER
—— NP·· ——	NPHW	NON POTABLE HOT WATER
— NP··· —	NPRHW	NON POTABLE RECIRCULATED HOT WATER
—— O ——	O	OXYGEN
—— ORD ——	ORD	OVERFLOW DRAIN
—— RL ——	RL	REFRIGERANT LIQUID
—— RS ——	RS	REFRIGERANT SUCTION
—— S· ——	SCW	SOFT COLD WATER
—— S·· ——	SHW	SOFT HOT WATER
— S··· —	SRHW	SOFT RECIRCULATED HOT WATER
—— SD ——	SD	STORM DRAIN
—— TW ——	TW	TEMPERED WATER
—— V ——	V	VENT
—— VAC ——	VAC	VACUUM
—— W ——	W	WASTE ABOVE GRADE
— -W- —	W	WASTE BELOW FLOOR
—— W ——	W	WASTE BELOW GRADE

SYMBOL & DESCRIPTION



1. SHUT-OFF VALVE
2. PRESSURE REDUCING VALVE
3. BALANCE VALVE
4. CHECK VALVE
5. CONTROL VALVE
6. GAS COCK
7. THERMOMETER
8. PRESSURE GAUGE
9. MANUAL AIR VENT
10. UNION
11. STRAINER W/DRAIN VALVE
12. TOP CONNECTION TEE W/ELBOW
13. BOTTOM CONNECTION TEE W/ELBOW
14. SIDE CONNECTION TEE
15. SHOCK ABSORBER
16. FLOW METER FITTING
17. PIPE ANCHOR
18. BALANCE VALVE W/FLOW METER FITTING
19. FLOW CONTROL VALVE
20. PIPE CAP, PLUG OR CLEANOUT
21. FLOAT AND THERMOSTATIC TRAP
22. PRESSURE AND TEMPERATURE TEST PORT
23. FLOW DIRECTION ARROW
24. EXPANSION JOINT
25. FLEX CONNECTOR
26. PRESSURE AND TEMPERATURE RELIEF VALVE
27. THREE WAY CONTROL VALVE
28. CONTINUATION SYMBOL
29. PIPE DOWN
30. PIPE UP

ABBREV.	DESCRIPTION
	SPLASH BLOCK
	CONNECTION TO EXISTING
	POINT OF DISCONNECT
CO	CLEANOUT
WH	WALL HYDRANT
FD	FLOOR DRAIN
FS	FLOOR SINK
HB	HOSE BIBB
WCO	WALL CLEANOUT
FCO	FLOOR CLEANOUT
DCO	DOUBLE CLEANOUT
TD	TRENCH DRAIN
RD	ROOF DRAIN

SYMBOL	DESCRIPTION
	SUPPLY/OUTSIDE AIR DUCT UP (S/A OR O/A)
	SUPPLY/OUTSIDE AIR ROOF/FLOOR PENETRATION
	SUPPLY/OUTSIDE AIR DUCT DOWN (S/A OR O/A)
	RETURN AIR DUCT UP (R/A)
	RETURN AIR ROOF/FLOOR PENETRATION
	RETURN AIR DUCT DOWN (R/A)
	EXHAUST AIR DUCT UP (E/A)
	EXHAUST AIR ROOF/FLOOR PENETRATION
	EXHAUST AIR DUCT DOWN (E/A)
	ROUND DUCT SECTION UP
	ROUND DUCT ROOF/FLOOR PENETRATION
	ROUND DUCT SECTION DOWN
1/2	1. WIDTH DIMENSION 2. DEPTH DIMENSION
R	DUCT RISE IN DIRECTION
D	DUCT DROP IN DIRECTION
1 2 3	1. WIDTH DIMENSION 2. WIDTH DIMENSION 3. DEPTH DIMENSION
R W	TYPICAL DUCT TURN R EQUAL TO W (MINIMUM)
	TYPICAL DUCT TURN WITH TURN VANES
1. 2. 1/2 A	1. CONICAL TAKE-OFF 2. BRANCH DUCT INTO SIDE OF MAIN DUCT
	TYPICAL SQUARE TO ROUND TRANSITION
	FLEXIBLE DUCT CONNECTION (CANVAS)
M F S 1. 2. 3.	1. MOTORIZED DAMPER 2. FIRE DAMPER 3. SMOKE DAMPER
B P F S 1. 2. 3.	1. BACKDRAFT DAMPER 2. STATIC PRESSURE SENSOR 3. FIRE/SMOKE DAMPER
1. 2 3.	1. REHEAT COIL 2. SPLITTER DAMPER 3. MANUAL VOLUME DAMPER
X"Ø D-X XXX CFM	SUPPLY AIR DIFFUSER TAG
X"/X" G-X XXX CFM	RETURN GRILLE TAG
T	THERMOSTAT
T	THERMOSTAT W/LOCKING COVER
T N	NIGHT THERMOSTAT
T A	RECESSED STAT (ASPIRATING)
H	HUMIDISTAT
S	OCCUPIED-UNOCCUP. SWITCH
X	KEYED NOTES
X	KEYED DEMOLITION NOTES
X	REVISION NOTE NUMBER
X	PHOTO TAG
XX X	EQUIPMENT TAG

ABBREVIATIONS

AF	AIRFOIL
AC-X	AIR COMPRESSOR
A/C	AIR CONDITIONING
ACCU-X	AIR COOLED CONDENSING UNIT
AHU-X	AIR HANDLING UNIT
AIR PD	AIR PRESSURE DROP
AS-X	AIR SEPARATOR
ATU	AIR TERMINAL UNIT
AMB	AMBIENT
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS
AMP	AMPERE
ANG	ANGLE
A	AREA
AD-X	AIR DOOR
APPROX	APPROXIMATE
AUX	AUXILIARY
ATM	ATMOSPHERE
AVG	AVERAGE
BI	BACKWARD INCLINED
BIBC	BACKWARD INCLINED BACKWARD CURVED
BOD	BOTTOM OF DUCT
BOJ	BOTTOM OF JOIST
B-X	BOILER
BHP	BREAK HORSE POWER
BTU	BRITISH THERMAL UNIT
BLDG	BUILDING
CUH-X	CABINET UNIT HEATER
CLG	CEILING
C TO C	CENTER TO CENTER
CL	CENTER LINE
CENT	CENTRIFUGAL
CF-X	CHEMICAL FEED SYSTEM
CHR	CHILLED WATER RETURN
CHS	CHILLED WATER SUPPLY
CH-X	CHILLER
CPVC	CHLORINATED POLYVINYL CHLORIDE
CLR	CLEAR
CO	CLEANOUT
CMPR	COMPRESSOR
CRAC-X	COMPUTER ROOM AIR CONDITIONER
CP-X	CONDENSATE PUMP
CDU	CONDENSER UNIT
CU-X	CONDENSING UNIT
CUHP-X	CONDENSING UNIT HEAT PUMP
CV	CONSTANT VOLUME / CONTROL VALVE
CCC-X	CLOSED CIRCUIT COOLER (FLUID COOLER
CC-X	COOLING COIL
CT-X	COOLING TOWER
CU FT	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CU IN	CUBIC INCH
DEG	DEGREE
DP	DEPTH / DEEP
DIA	DIAMETER
D-X	DIFFUSER
DX	DIRECT EXPANSION
DISC	DISCONNECT
DWG	DRAWING
DB	DRY BULB (Temperature)
DDVAV	DUAL DUCT VARIABLE AIR VOLUME

DC-X	DUST COLLECTOR
DWDI	DOUBLE WHEEL DOUBLE INLET
ERAD-X	ELECTRIC BASEBOARD RADIATOR
EFT-X	ELECTRIC FIN TUBE
ERH-X	ELECTRIC RADIANT HEATER
EUH-X	ELECTRIC UNIT HEATER
EL/ELEV	ELEVATION
ERV-X	ENERGY RECOVERY VENTILATOR
EAT	ENTERING AIR TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EQUIP	EQUIPMENT
ECU-X	EVAPORATIVE CONDENSING UNIT
EVAP	EVAPORATOR
EXH	EXHAUST
EA	EXHAUST AIR
EF-X	EXHAUST FAN
EH-X	EXHAUST HOOD
EXIST	EXISTING
ET-X	EXPANSION TANK
ESP	EXTERNAL STATIC PRESSURE
°F	DEGREE FAHRENHEIT
FCU-X	FAN COIL UNIT
FPB-X	FAN POWERED BOX
FT	FEET
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT-X	FIN TUBE
FF-X	FINAL FILTER
FLT-X	FLASH TANK
FLR	FLOOR
FC-X	FAN COIL
FC	FORWARD CURVED
FA	FREE AREA / FIRE ALARM
FOT-X	FUEL OIL TANK
FLA	FULL LOAD AMPS
F-X	FURNACE
GAL	GALLONS
GPM	GALLONS PER MINUTE
GALV	GALVANIZED
G	GAS
GPR-X	GAS PRESSURE REGULATOR
GA	GAUGE
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GH-X	GRAVITY HOOD
G-X	GRILLE
HZ	HERTZ
HD	HEAD
HE-X	HEAT EXCHANGER
HP-X	HEAT PUMP
HPWR	HEAT PUMP WATER RETURN
HPWS	HEAT PUMP WATER SUPPLY
HTR	HEATER
HTG	HEATING
HC-X	HEATING COIL
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HGT	HEIGHT
HDPE	HIGH DENSITY POLYETHYLENE
HP	HORSE POWER
HR	HOUR

H-X	HUMIDIFIER
HF-X	HYDRONIC FILTER
ID	INSIDE DIAMETER
IH-X	INTAKE HOOD
ISP	INTERNAL STATIC PRESSURE
KW	KILOWATT
KWH	KILOWATT HOUR
KES	KITCHEN EQUIPMENT SUPPLIER
KEF-X	KITCHEN EXHAUST FAN
KH-X	KITCHEN HOOD
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
LG	LENGTH
LTG	LIGHTING
LD-X	LINEAR DIFFUSER
LF	LINEAR FEET
LP	LIQUID PROPANE
LRA	LOCKED ROTOR AMPS
L-X	LOUVER
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
LBS	POUNDS
MBH	1000 BTU'S
MFR	MANUFACTURER
MAX	MAXIMUM
MCA	MAXIMUM CIRCUIT AMPACITY
MA	MAKE-UP AIR
MAU-X	MAKE-UP AIR UNIT
MECH	MECHANICAL
MC	MECHANICAL CONTRACTOR
MPC	MEDIUM PRESSURE CONDENSATE
MPS	MEDIUM PRESSURE STEAM
MIN	MINIMUM
MISC	MISCELLANEOUS
MV-X	MIXING VALVE
MTD	MOUNTED
MTG	MOUNTING
NOM	NOMINAL
NC	NORMALLY CLOSED / NOISE CRITERIA
NO	NORMALLY OPEN / NUMBER
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NA	NEUTRAL AIR
OA	OUTSIDE AIR
OC	ON CENTER
ORD	OVERFLOW STORM DRAIN PIPING
ORD	OVERFLOW ROOF DRAIN
PTAC-X	PACKAGED TERMINAL A/C
PTHP-X	PACKAGED TERMINAL HEAT PUMP
PPM	PARTS PER MILLION
PERP	PERPENDICULAR
PH	PHASE
PLBG	PLUMBING
PC	PLUMBING CONTRACTOR
PHVAC	PLUMBING, HEATING, VENTILATION AND AIR CONDITIONING
PVC	POLYVINYL CHLORIDE
PDU-X	POOL DEHUMIDIFICATION UNIT
PIV	POST INDICATOR VALVE

PWR	POWER
PF-X	PRE FILTER
PHC-X	PREHEAT COIL
PD	PRESSURE DROP
P-X	PLUMBING FIXTURE
PRV-X	PRESSURE REDUCING VALVE
P-X	PUMP
PROP	PROPELLER
RECIRC	RECIRCULATE
R-X	REGISTER
RHC-X	REHEAT COIL
RLFA	RELIEF AIR
RV-X	RELIEF VALVE
REQ'D	REQUIRED
RA	RETURN AIR
RD	ROOF DRAIN
RF-X	RETURN FAN
RPM	REVOLUTIONS PER MINUTE
RH	RELATIVE HUMIDITY
RTU-X	ROOFTOP UNIT
RM	ROOM
SCHED	SCHEDULE
SEN	SENSOR
SIM	SIMILAR
SWSI	SINGLE WHEEL SINGLE INLET
SA-X	SOUND ATTENUATOR
SD	STORM DRAIN PIPING
SPEC(S)	SPECIFICATIONS
SQ	SQUARE
STD	STANDARD
SUCT	SUCTION
SP	STATIC PRESSURE
SA	SUPPLY AIR
SF-X	SUPPLY FAN
TEMP	TEMPERATURE
TD	TEMPERATURE DIFFERENCE
TU-X	TERMINAL UNIT
TUR	TERMINAL UNIT REHEAT
T-STAT	THERMOSTAT
TK	THICK
TONS	12000 BTU
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
UH-X	UNIT HEATER
UV-X	UNIT VENTILATOR
UNO	UNLESS NOTED OTHERWISE
VAR	VARIABLE
VAV	VARIABLE AIR VOLUME
VFD-X	VARIABLE FREQUENCY DRIVE
VERT	VERTICAL
V	VOLT
VOL	VOLUME
WG	WATER GAUGE
WPD	WATER PRESSURE DROP
W	WATT / WIDTH
WT	WEIGHT
WB	WET BULB TEMPERATURE
YD	YARD

DRAWING INDEX

PLUMBING
P1-1 PLUMBING PLANS
MECHANICAL
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M3-2 MECHANICAL SPECIFICATIONS

CODE REQUIREMENTS

2015 INTERNATIONAL MECHANICAL CODE
2015 UNIFORM PLUMBING CODE
2012 INTERNATIONAL ENERGY CONSERVATION CODE
2015 INTERNATIONAL BUILDING CODE
2015 INTERNATIONAL FUEL GAS CODE

NOTICE

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GENERAL NOTES:

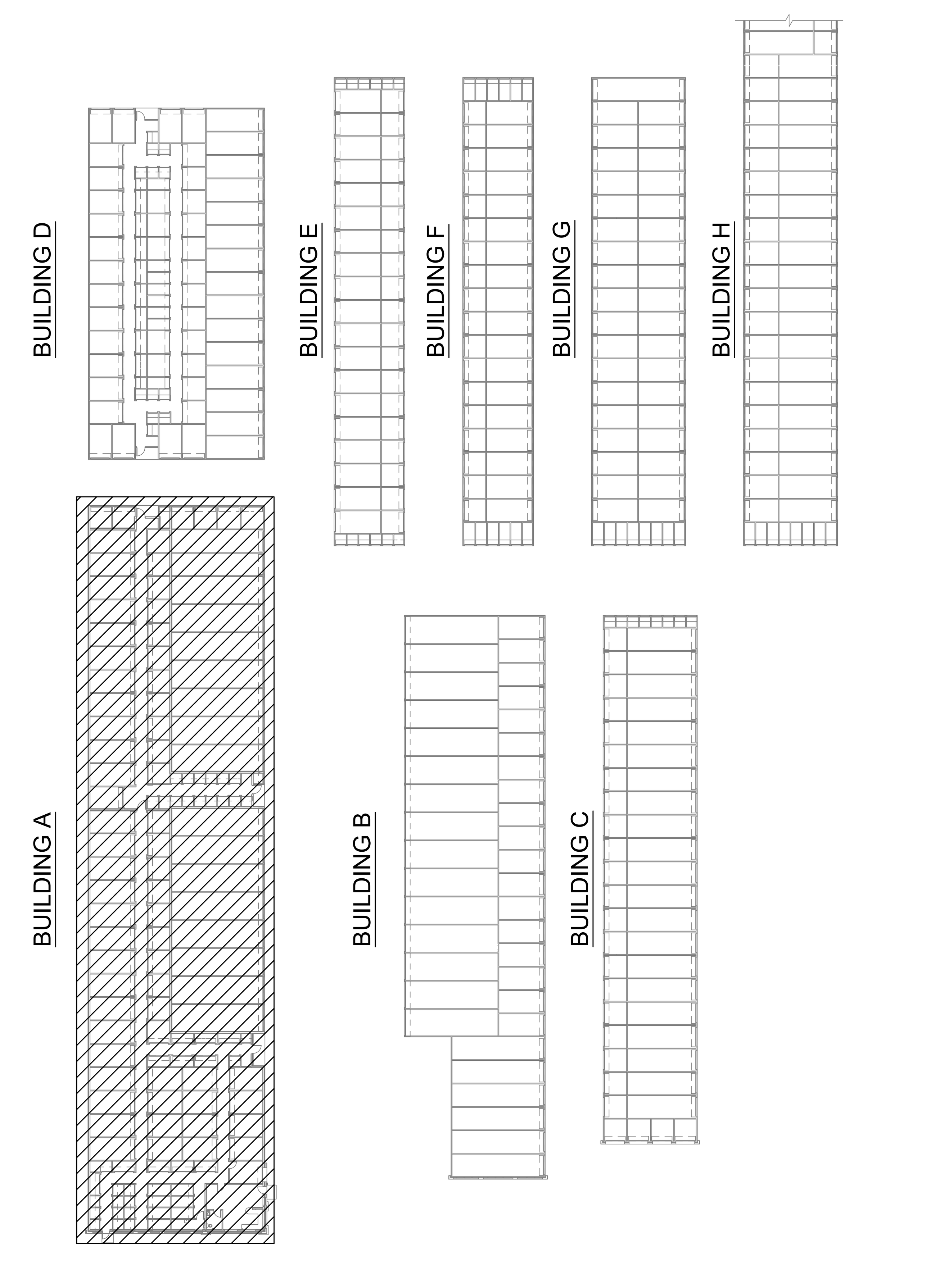
1. PIPING, DUCTWORK, AND EQUIPMENT SHOWN HALFTONE IS EXISTING TO REMAIN. PIPING, DUCTWORK AND EQUIPMENT SHOWN FULL-TONE IS NEW.
2. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ANY CUTTING AND PATCHING NEEDED FOR MECHANICAL INSTALLATION. PATCHING MUST MATCH EXISTING.
3. ACCESS PANELS ARE REQUIRED FOR ALL VALVES, TRAPS, DAMPERS, CONTROLS, ETC., IN HARD SURFACE CEILINGS. ACCESS PANELS SHALL BE FURNISHED BY MC AND INSTALLED BY THE MC. COORDINATE EXACT LOCATIONS WITH ARCHITECT.
4. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
5. CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC AND PIPING) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
6. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
7. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, PLUMBING, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC.,SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
8. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.
9. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH STRAIGHT SECTION OF PIPE OR DUCT UPSTREAM AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
10. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). TESTING, ADJUSTING, AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE AABC STANDARDS.
11. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
12. REINFORCEMENT, DETAILING, AND PLACEMENT OF CONCRETE SHALL CONFORM TO ASTM 315 AND ACI 318. CONCRETE SHALL CONFORM TO ASTM C94. CONCRETE WORK SHALL CONFORM TO ACI 318, PART ENTITLED "CONSTRUCTION REQUIREMENTS." COMPRESSIVE STRENGTH IN 28 DAYS SHALL BE 3,000 PSI. TOTAL AIR CONTENT OF EXTERIOR CONCRETE SHALL BE BETWEEN 5 AND 7 PERCENT OF VOLUME. SLUMP SHALL BE BETWEEN 3 AND 4 INCHES. CONCRETE SHALL BE CURED FOR 7 DAYS AFTER PLACEMENT.
13. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S DRAWINGS COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
14. ALL CONTROL WIRE AND CONDUIT SHALL BE INSTALLED IN A NEAT AND ORDERLY FASHION AND SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND DIVISION 16 OR 23 OF THE SPECIFICATION.
15. CONCRETE HOUSEKEEPING PADS TO SUIT MECHANICAL EQUIPMENT SHALL BE SIZED AND INSTALLED BY THE MC. MINIMUM CONCRETE PAD THICKNESS SHALL BE 4". PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 4" ON EACH SIDE. IT SHALL BE THE RESPONSIBILITY OF THE MC TO COORDINATE SIZE AND LOCATION OF CONCRETE HOUSEKEEPING PADS.
16. WHEN MECHANICAL WORK (HVAC, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MC'S RESPONSIBLY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MC, WHOSE DECISION SHALL BE FINAL.
17. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
18. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MC.
19. ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED, AND REQUIRED TO PROVIDE A VIBRATION FREE INSTALLATION.
20. ALL DUCTWORK, PIPING AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.
21. MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM METAL DECK.
22. ALL ROOF MOUNTED EQUIPMENT CURBS FOR EQUIPMENT PROVIDED BY THE MC SHALL BE FURNISHED BY THE MC AND INSTALLED BY THE MC.
23. LOCATIONS AND SIZES OF ALL FLOOR, ROOF, AND WALL OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
24. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
25. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.
26. ALL WORK SHALL COMPLY WITH ALL CURRNET LOCAL CODES, INCLUDING INTERNATIONAL BUILDING CODE, UNIFORM AND INTERNATIONAL MECHANICAL CODE, AND NFPA.

GENERAL HVAC NOTES :

1. DO NOT RUN DUCTWORK ABOVE ELECTRICAL PANELS OR IN CODE REQUIRED CLEARANCE SPACES. COORDINATE ALL ROUTING WORK WITH ALL TRADES.
2. CONTRACTOR SHALL COORDINATE LOCATION OF DUCTWORK IN CEILING SPACE WITH ALL TRADES PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK.
3. FOR GENERAL DUCTWORK CONSTRUCTION, SEE DETAILS IN DRAWING SET.
4. DUCTWORK SHALL NOT BE FABRICATED UNTIL ALL COORDINATION CONFLICTS HAVE BEEN RESOLVED.
5. CAP ENDS OF ALL INSTALLED DUCTWORK DURING CONSTRUCTION TO MINIMIZE DIRT, DEBRIS, AND FOREIGN OBJECTS FROM ENTERING THE DUCT SYSTEM.
6. BRANCH DUCT SIZES ARE THE SAME AS DIFFUSER NECK SIZE, UNLESS NOTED OTHERWISE.
7. ALL DUCTWORK SHALL CLEAR DOORS AND WINDOWS.
8. ALL DUCTWORK DIMENSIONS, AS SHOWN ON THE DRAWINGS, ARE INTERNAL CLEAR DIMENSIONS AND DUCT SIZE SHALL BE INCREASED TO COMPENSATE FOR DUCT LINING THICKNESS.
9. PROVIDE ALL 90° SQUARE ELBOWS WITH DOUBLE RADIUS TURNING VANES UNLESS OTHERWISE INDICATED.
10. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO HEAT PUMPS, FANS, AND OTHER EQUIPMENT WHICH REQUIRES VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.
11. UNLESS OTHERWISE NOTED, ALL DUCTWORK IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE, WITH SPACE FOR INSULATION IF REQUIRED.
12. OFFSETS IN DUCTS, INCLUDING DIVIDED DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
13. PROVIDE ACCESS DOORS IN DUCTWORK TO PROVIDE ACCESS FOR ALL SMOKE DETECTORS, FIRE DAMPERS, SMOKE DAMPERS, VOLUME DAMPERS, HUMIDIFIERS, COILS, AND OTHER ITEMS LOCATED IN THE DUCTWORK WHICH REQUIRE SERVICE AND/OR INSPECTION.
14. PROVIDE ACCESS DOORS IN DUCTWORK FOR OPERATION, ADJUSTMENT, AND MAINTENANCE OF ALL FANS, VALVES, AND MECHANICAL EQUIPMENT.
15. SEE SPECIFICATIONS FOR DUCTWORK GAUGES, BRACING, HANGERS, AND OTHER REQUIREMENTS.
16. PROVIDE A VOLUME DAMPER IN ALL BRANCH TAKEOFFS CONNECTING TO DIFFUSERS OR REGISTERS EXCEPT IN AREAS WITH RIGID CEILINGS. IN THOSE AREAS, DIFFUSERS OR REGISTERS SHALL HAVE INTEGRAL VOLUME DAMPERS.
17. LOCATE ALL MECHANICAL EQUIPMENT (HEAT PUMPS, MAKE-UP AIR UNITS, ETC.) FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS AND VALVES, AS REQUIRED BY MANUFACTURER'S INSTALLATION AND OPERATION REQUIREMENTS AND/OR BY CODE.
18. CERTAIN ITEMS SUCH AS RISES AND DROPS IN DUCTWORK, ACCESS DOORS, VOLUME DAMPERS, ETC., ARE INDICATED ON THE CONTRACT DOCUMENT DRAWINGS FOR CLARITY FOR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENT FOR THESE ITEMS.
19. COORDINATE DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING, AND OTHER CEILING ITEMS AND MAKE MINOR DUCT MODIFICATIONS TO SUIT.
20. IN CORRIDORS WHERE CEILING DEVICES AND AIR DIFFUSERS ARE INDICATED BETWEEN THE SAME LIGHT FIXTURES, INSTALL BOTH DEVICES AT THE QUARTER POINTS BETWEEN THE SAME FIXTURE.
21. UNLESS OTHERWISE SHOWN, LOCATE ALL ROOM SENSORS AT 4'-0" (CENTERLINE) A.F.F. NOTIFY THE ENGINEER OF ANY ROOMS WHERE THE ABOVE LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.
22. SMOKE DETECTORS SHALL BE FURNISHED AND WIRED BY THE EC. THE MC SHALL BE RESPONSIBLE FOR MOUNTING THE SMOKE DETECTOR IN DUCTWORK AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS.
23. MC TO INSTALL STATIC, RADIATION FIRE DAMPERS IN FIRE-RATED STRUCTURAL PENETRATIONS AS DIRECTED. EC TO INSTALL N.O. SWITCH INTERLOCKED WITH THE BLOWER MOTOR ON THE ASSOCIATED HVAC EQUIPMENT. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS AND ALL CODE REQUIREMENTS.

GENERAL PLUMBING NOTES:

1. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO CONSTRUCT A COMPLETE OPERATIONAL PLUMBING SYSTEM FOR THE ENTIRE PROJECT AS SHOWN ON THESE DRAWINGS, INCLUDING ALL NECESSARY FEES AND PERMITS.
2. THE ENTIRE INSTALLATION SHALL CONFORM TO THE MOST RECENTLY ADOPTED REQUIREMENTS OF THE INTERNATIONAL MECHANICAL CODE, IPC, AND ALL OTHER APPLICABLE CITY, COUNTY AND STATE CODES AND REGULATIONS IN EFFECT AT THE DATE OF THE BID.
3. PRIOR TO FABRICATION AND INSTALLATION THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL PLUMBING PIPING, DUCTWORK, AND EQUIPMENT WITH PLUMBING PIPING, PLUMBING EQUIPMENT, ALL DUCTWORK, AND ALL OTHER TRADES INCLUDING BUT NOT LIMITED TO THE MECHANICAL CONTRACTOR, ELECTRICAL CONTRACTOR, GENERAL CONTRACTOR AND ANY CONTRACTOR HIRED DIRECTLY BY THE OWNER WHERE CONFLICTS MAY OCCUR, THEY SHALL BE RESOLVED PRIOR TO INSTALLATION.
4. THE DRAWINGS SHOW THE GENERAL DESIGN ARRANGEMENTS AND THE EXTENT OF THE SYSTEM. IT SHALL BE THE WORK OF THE CONTRACTOR TO MAKE SUCH SLIGHT ALTERATIONS AS MAY BE NECESSARY TO MAKE THE SYSTEM COMPLETE AND OPERATIONAL IN ACCORDANCE WITH THE DESIGN INTENT. MAJOR DEVIATIONS, SUCH AS CHANGES IN COMPONENT SIZES, WEIGHTS, QUANTITIES OR MATERIAL, REQUIRE PRIOR APPROVAL BY THE CONSULTING ENGINEER.
5. ALL PLUMBING INFORMATION IS NOT SHOWN ON THE PLUMBING DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENTS INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS.
6. THE WORKING DRAWINGS ARE DIAGRAMMATIC. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL LOCATIONS FOR PLUMBING EQUIPMENT AND PIPING SHALL BE CHECKED AND COORDINATED WITH THE ARCHITECTURAL, MECHANICAL, STRUCTURAL AND ELECTRICAL DRAWINGS.
7. EXACT ROUTING OF WASTE, GAS AND WATER SERVICE IS DEPENDENT ON LOCAL SITE CONDITIONS AND MODIFICATIONS IN EQUIPMENT CONNECTIONS. EXACT LOCATION OF EQUIPMENT MAY VARY DEPENDING ON LOCAL CODE, HEALTH DEPARTMENT AND CITY REQUIREMENTS.
8. DETAILS: THE CONTRACTOR IS RESPONSIBLE TO REVIEW AND USE WHERE APPROPRIATE ALL OF THE PLUMBING DETAILS SHOWN ON THE DRAWINGS. DETAILS MAY OR MAY NOT BE CALLED OUT ON THE DRAWINGS WITH SYMBOLS OR KEYED NOTES. ANY CHANGES RESULTING FROM FAILURE TO INSTALL THE PLUMBING SYSTEM WITHOUT USING THE INCLUDED DETAILS IS THE RESPONSIBILITY OF THE CONTRACTOR.
9. THE DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND SHALL BE INTERPRETED AS AN INTEGRAL UNIT WITH THE ITEMS SHOWN ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGH SHOWN AND CALLED OUT IN BOTH.
10. THE STRUCTURE SHOWN ON ALL DETAILS MAY OR MAY NOT PERTAIN TO A PORTION OR ANY PORTION OF THE BUILDING. COORDINATE MOUNTING REQUIREMENTS WITH ARCHITECTURAL DRAWINGS AND STRUCTURAL DRAWINGS.
11. ANY PART OF THIS INSTALLATION THAT FAILS, IS UNFIT, OR BECOMES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
12. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL FITTINGS, TRANSITIONS, VALVES AND OTHER DEVICES AND ACCESSORIES REQUIRED FOR A COMPLETE, WORKABLE INSTALLATION.
13. THE CONTRACTOR IS RESPONSIBLE FOR PLUMBING EQUIPMENT CHECK-IN SAFEKEEPING AND DAMAGE.
14. INVERTS SHOWN ON PLUMBING DRAWINGS MAY BE REFERENCED FROM THE FINISHED FLOOR ELEVATION.
15. CONTRACTOR TO VERIFY INVERT ELEVATIONS, ROUTING AND PIPE SIZES OF ALL EXISTING PIPING TO BE CONNECTED PRIOR TO CONSTRUCTION. COORDINATE ALL INVERTS WITH CIVIL DRAWINGS PRIOR TO INSTALLATION.
16. CONTRACTOR TO COMPLY WITH THE LATEST PLUMBING CODE WHEN SIZING TRAP ARMS ON COMBINATION WASTE AND VENT SYSTEMS. THE DRAWINGS INDICATE THE WASTE LINE SIZE AND THE SIZE OF THE TRAP REQUIRED.
17. PROVIDE CLEANOUTS IN ACCORDANCE WITH THE REQUIREMENTS OF APPLICABLE CODES. FLOOR CLEANOUTS SHALL BE LOCATED OUT OF TRAFFIC AREAS.
18. LOCATE ALL PLUMBING VENTS AT LEAST 3 FEET ABOVE OR 10 FEET AWAY FROM ALL OUTSIDE AIR INTAKES INTO THE BUILDING.
19. SEE "PLUMBING FIXTURE SCHEDULE" FOR FIXTURE MAKE AND TYPE, AND SIZE OF INDIVIDUAL WASTE, VENT AND DOMESTIC WATER PIPING TO FIXTURES.
20. ALL PLUMBING EQUIPMENT SHALL BE LISTED AND LABELED BY AN APPROVED TESTING AGENCY.
21. ALL PIPING SHALL BE SECURED BY DOUBLE NUTTING AT THE HANGER ROD ATTACHMENT TO THE AND AT THE PIPE HANGER.
22. PROVIDE WATER HAMMER ARRESTORS (SHOCK ABSORBERS) AT ALL PIPE LOCATIONS WHERE VALVE CLOSURES (SUCH AS FLUSH VALVES) MAY CAUSE WATER HAMMER OR RESULT IN EXCESSIVE PIPE VIBRATION OR MOVEMENT.
23. UPON COMPLETION OF THE WORK, REMOVE ALL SURPLUS MATERIALS AND RUBBISH. MAKE ALL REQUIRED PATCHING AND REPAIRS OF OTHER TRADES' WORK DAMAGED BY THIS CONTRACTOR, AND LEAVE THE PREMISES IN A CLEAN AND ORDERLY CONDITION.
24. THE CONTRACTOR SHALL OPERATE THE SYSTEM AND DEMONSTRATE ALL ASPECTS TO THE ENGINEER AND/OR OWNER, TO PROVE IT'S OPERATIONAL.
25. THE CONTRACTOR SHALL GUARANTEE THE PLUMBING SYSTEM FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
26. INSTALL 4" AND LARGER SANITARY PIPING AT 1/8" PER FOOT SLOPE, SMALLER SIZES AT 1/4" PER FOOT.
27. DO NOT INSTALL HW AND CW SUPPLY PIPING IN ATTIC SPACE OR SPACES SUBJECT TO FREEZING.
28. DO NOT RUN PIPING ABOVE ELECTRICAL PANELS. PROVIDE 4' - 0" DEEP X 6' -6" HIGH CLEAR ACCESS SPACE IN FRONT OF PANELS. DO NOT RUN PIPING IN ELECTRICAL ROOMS.
29. PROVIDE 2" MINIMUM WASTE PIPING BELOW GRADE.
30. COORDINATE EXACT LOCATION OF FIXTURES AND DRAINS WITH ARCHITECTURAL DRAWINGS.
31. PROVIDE 4" MINIMUM VENT THRU ROOF. INCREASE VENT LINE SIZE 12" BELOW BUILDING INSULATION.
32. INSTALL GAS PIPING PER LATEST EDITION OF INTERNATIONAL FUEL GAS CODE.
33. TEMPERED HOT WATER NOT EXCEEDING 110 DEGREES FAHRENHEIT TO BE SUPPLIED TO ALL PUBLIC LAVATORIES.
34. STACK TEST IS REQUIRED ON ALL ROUGH AND UNDERGROUND PLUMBING.
35. 25LB AIR TEST IS REQUIRED ON ANY NEW GAS PIPING AT TIME OF ROUGH INSPECTION. TEST TO LAST FOR 24 HOURS WITH NO PRESSURE DROP.
36. 75LB AIR TEST OR WATER PRESSURE IS REQUIRED ON PIPING AT TIME OF ROUGH INSPECTION.



1 KEYPLAN
NO SCALE

NORTH

RDH ENGINEERING, INC.
Mechanical, Electrical, & Energy Engineers

LICENSED PROFESSIONAL ENGINEER
RICKY D. HIATT
15003
IOWA

SYMBOLS & ABBREVIATIONS

REVISIONS

No.	Description	Date

LockBox Storage Manawa

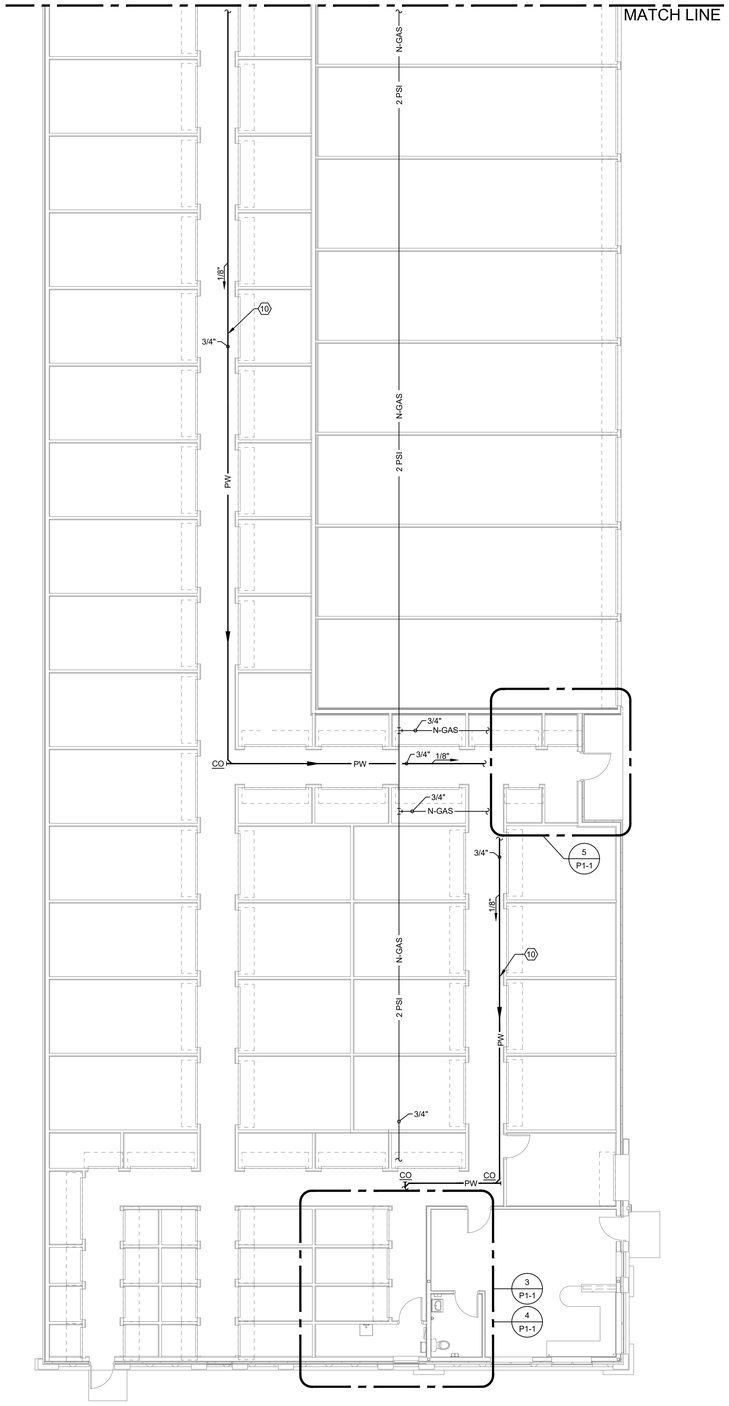
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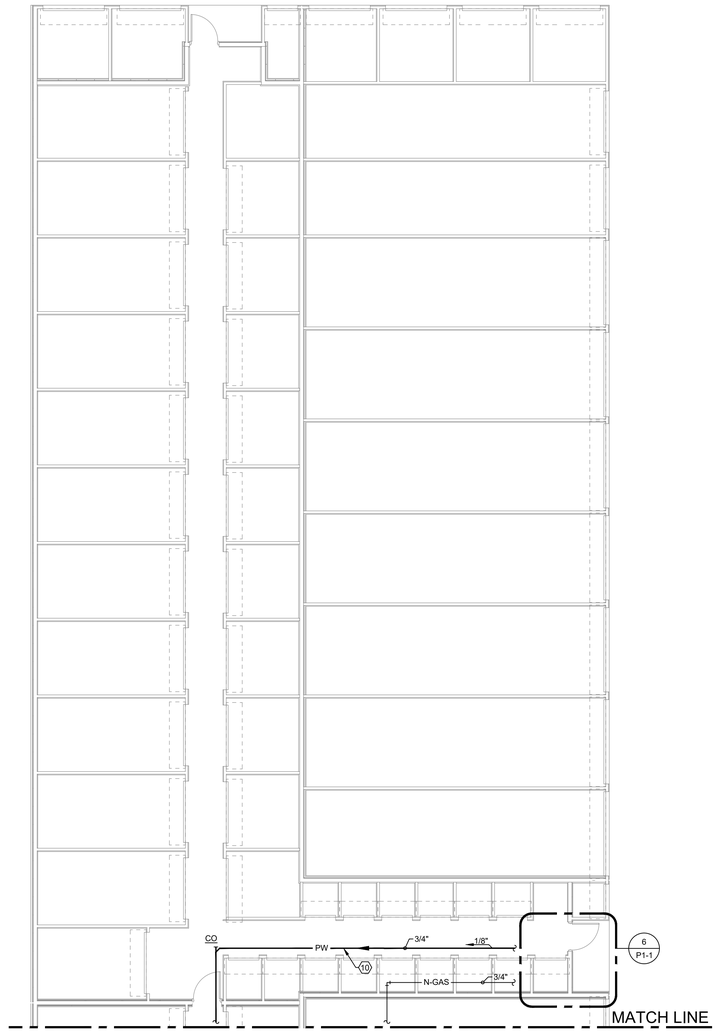
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Project No. 197-20-02
Date 4 May 2020

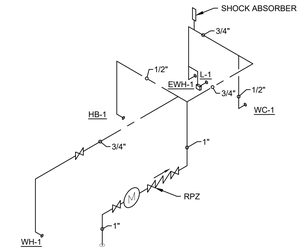
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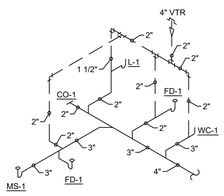
1 PLUMBING PLAN
1/8" = 1'-0"
NORTH



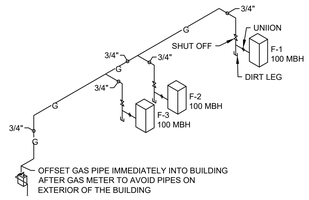
2 PLUMBING PLAN
1/8" = 1'-0"
NORTH



8 DOMESTIC WATER DIAGRAM
NO SCALE



9 WASTE AND VENT DIAGRAM
NO SCALE



10 GAS RISER DIAGRAM
NO SCALE

PLUMBING FIXTURES:

LAVATORY (L-1) (ADA):
KOHLER "KINGSTON" K-2005 VITREOUS CHINA, WALL HUNG, LAVATORY SIZE 20"X18"

TRIM: WATTS P1070 LAVSAFE THERMOSTATIC, CST BRASS FAUCET WITH CHROME LEVER HANDLE AND PERFORATED STRAINER DRAIN,. TRAP TO BE CAST BRASS WITH CLEANOUT.

COMPLETE WITH CHROME PLATED ANGLE STOPS, BRAIDED STAINLESS STEEL FLEXIBLE CONNECTORS, 17 GAUGE CHROME PLATED BRASS P-TRAP, OFFSET GRID ASSEMBLY, AND ESCUTCHEONS FOR WASTE AND WATER WALL PENETRATIONS.

PROVIDE HANDI LAV-GAURD INSULATION KIT TRUEBRO #102 OR APPROVED EQUAL.

WALL HYDRANT (WH-1):
3/4" LOOSE TEE KEY FREEZELESS WALL HYDRANT WITH INTEGRAL VACUUM BREAKER-BACKFLOW PREVENTER, 3/4" HOSE THREAD OUTLET, POLISHED BRASS FINISH ON BRASS CASTING AND WALL CLAMP. LOOSE TEE KEY TO BE FURNISHED WITH EACH HYDRANT. WOODFORD MODEL 65 OR APPROVED EQUAL.

FLOOR DRAIN (FD-1):
ZURN Z415BZ-NL CAST IRON BODY ASSEMBLY TYPE B WITH STRAINER, NICKEL BRONZE, LEVELING STRAINER.

WATER CLOSET (WC-1) (ADA):
KOHLER "HIGHLAND" K-3979-0 VITREOUS CHINA, SIPHON JET, ELONGATED BOWL, COMFORT HEIGHT TANK STYLE WATER CLOSET ADA COMPLIANT WITH "CLASS FIVE" FLUSHING AND OLSONITE OR EQUAL NO. 10CC WHITE OPEN FRONT SEAT WITH CHECK HINGE. VERIFY LEFT OR RIGHT HAND TRIP LEVER REQUIREMENTS.

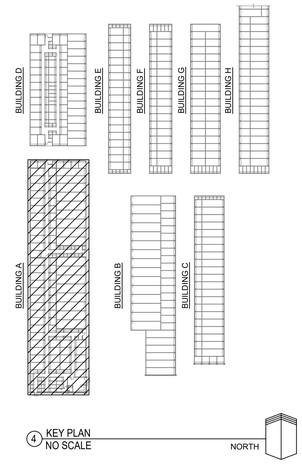
CLEAN OUT (CO-1):
JOSAM 55000, COATED CAST IRON FLOOR CLEAN OUT, SATIN FINISH NIKALOY TOP.

MOP SINK (MS-1):
MUSTEE MODEL 63M, FLOOR MOUNTED, STRUCTURAL FIBERGLASS BASIN, CAST IRON 3" DRAIN WITH STAINLESS STEEL STRAINER. SIZE: 24"x24"x10" DEEP. PROVIDE WITH HOSE AND HOSE HOLDER MODEL NUMBER 65.700 AND MOP HANGER MODEL NUMBER 65.600.

HOSE BIBB (HB-1)
WOODFORD MODEL 101 ANTI-SIPHON WALL FAUCET. ASSE STANDARD 1019-TYPE C APPROVED. UPC/IAMPMO LISTED. ANTI-SIPHON WITH INTEGRAL CHECK AND ATMOSPHERIC VENT. MAX PRESSURE 125 PSI. MAX TEMPERATURE 120°F. 3/4" HOSE CONNECTION.

KEYED PLUMBING NOTES: (X)

1. UP TO 4" VENT THROUGH ROOF.
2. 1/2" CW DN TO EWH-1. CONNECT EWH-1 TO L-1 HW VALVE.
3. 1/2" CW DN TO L-1.
4. 3/4" PUMPED CONDENSATE WASTE DOWN TO MS-1. TERMINATE 1" ABOVE FLOOD PLAIN.
5. UP TO 2" VENT.
6. SEE CIVIL FOR CONTINUATION.
7. 1" DOMESTIC WATER ENTRANCE UP THROUGH FLOOR PENETRATION.
8. PROVIDE BACKFLOW PREVENTOR. SEE WATER SERVICE ENTRY DETAIL ON M2-1.
9. 1/2" CW DN TO HB-1.
10. MOUNT PW AS HIGH AS POSSIBLE.
11. ROUTE CONDENSATE WASTE FROM FURNACE DOWN TO CONDENSATE PUMP. SEE PUMPED WASTE CONNECTED IN SERIES DETAIL. MOUNT CONDENSATE PUMP ON WALL.
12. TRAP SEAL PRIMER TO BE LOCATED WHERE IT CAN BE EASILY ACCESSED FOR MAINTENANCE.
13. ROUTE 3/8" SEAMLESS COPPER PIPING FROM TRAP SEAL PRIMER UNDER FLOOR TO FLOOR DRAIN.



4 KEY PLAN
NO SCALE
NORTH

PUMPS

MARK	SERVES	GPH (@15')	RESERVOIR SIZE (GAL)	MAX PUMP HEAD (FT)	MOTOR DATA				BASIS OF DESIGN	NOTES
					AMPS	HP	V	PH		
CP-1	F-1	25	0.5	20	1	1/30	115	1	LITTLE GIANT VCMA-20UL	1, 2, 3
CP-2	F-1, F-2	25	0.5	20	1	1/30	115	1	LITTLE GIANT VCMA-20UL	1, 2, 3
CP-3	F-1, F-2, F-3	25	0.5	20	1	1/30	115	1	LITTLE GIANT VCMA-20UL	1, 2, 3

NOTES:
1. PROVIDE WITH 6' CORD AND PLUG.
2. PROVIDE WITH (3) 1/1/8" DIA INLETS.
3. PROVIDE WITH OVERFLOW PROTECTION WITH AUTOMATIC EQUIPMENT SHUTDOWN.

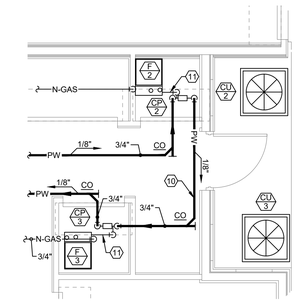
ELECTRIC WATER HEATER

MARK	SERVES	RECOVERY (GPH)	EWT (°F)	LWT (°F)	ELECTRICAL DATA				BASIS OF DESIGN	NOTES
					KW	V	PH	STAGES		
EWH-1	RESTROOM	0.9	50	90	3	120	1	1	RHEEM RTE 3	1

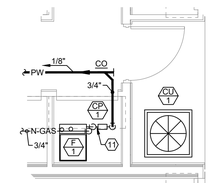
NOTES:
1. PROVIDE DEDICATED 30 AMP BREAKER.

FIXTURE SCHEDULE

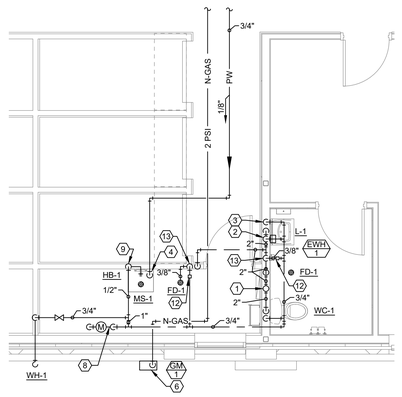
MARK	WASTE	VENT	CW	HW	NOTES
L-1	2"	1 1/2"	1/2"	1/2"	
WH-1	-	-	3/4"	-	
FD-1	2"	2"	1/2"	-	
WC-1	3"	2"	3/4"	-	
CO-1	2"	-	-	-	
MS-1	3"	1 1/2"	-	-	
HB-1	-	-	1/2"	-	



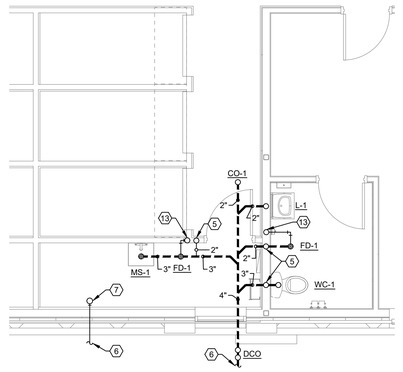
5 ENLARGED PLUMBING PLAN - ROOM A
1/4" = 1'-0"
NORTH



6 ENLARGED PLUMBING PLAN - ROOM B
1/4" = 1'-0"
NORTH



3 ENLARGED PLUMBING PLAN
1/4" = 1'-0"
NORTH



4 ENLARGED UNDERGROUND PLUMBING PLAN
1/4" = 1'-0"
NORTH

RDH ENGINEERING, INC.
Mechanical, Electrical, & Energy Engineers

STATE OF IOWA
PROFESSIONAL ENGINEER
RICKY D. HATH
15003
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2021
PAGES OR SHEETS COVERED BY THIS SEAL:
ALL MECHANICAL SHEETS

PLUMBING PLANS

No.	Description	Date
	REVISIONS	

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

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pjkarchitecture.com

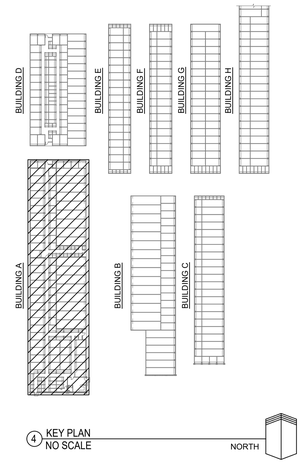
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Project No. 197.20-02
Date 4 May 2020

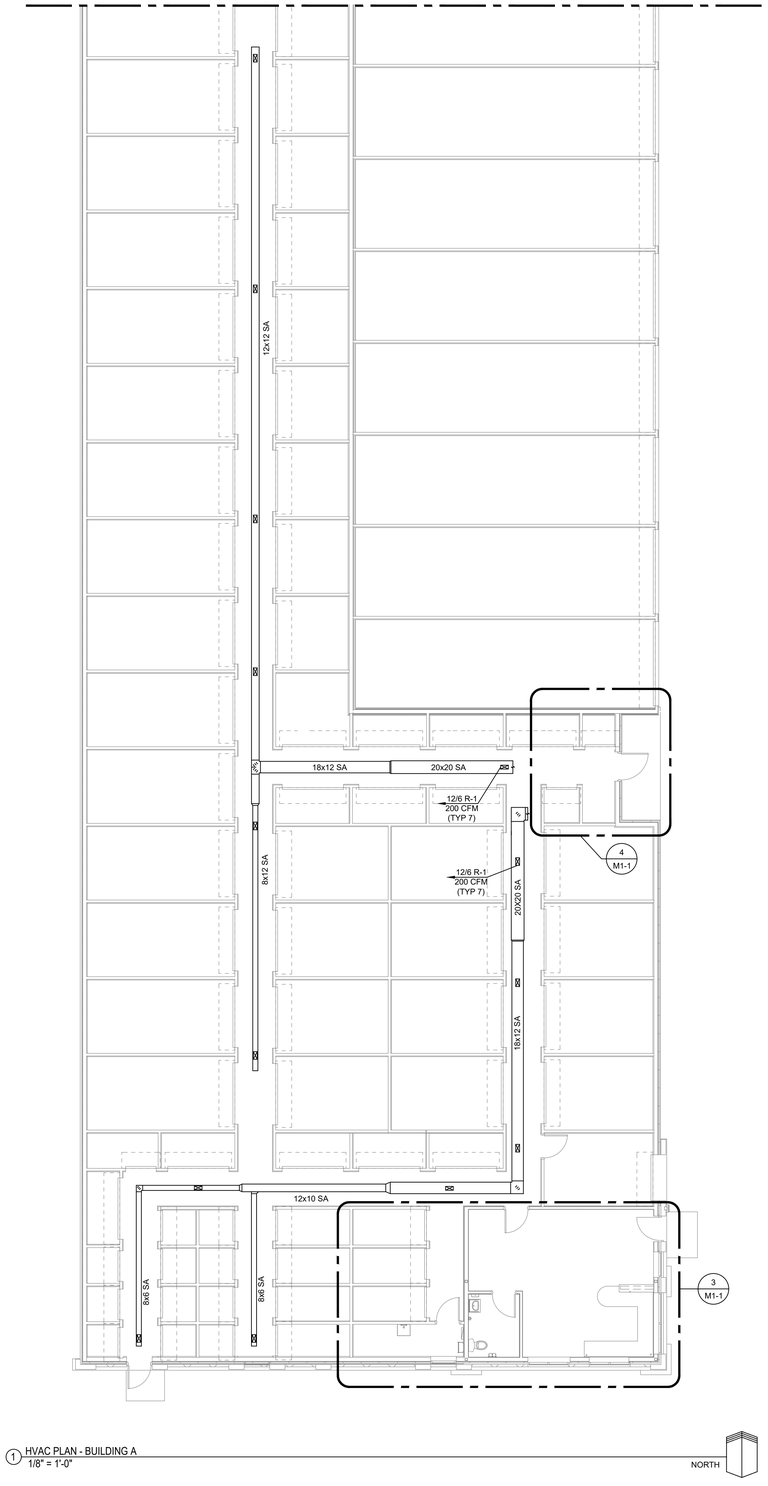
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KEYED MECHANICAL NOTES: (X)

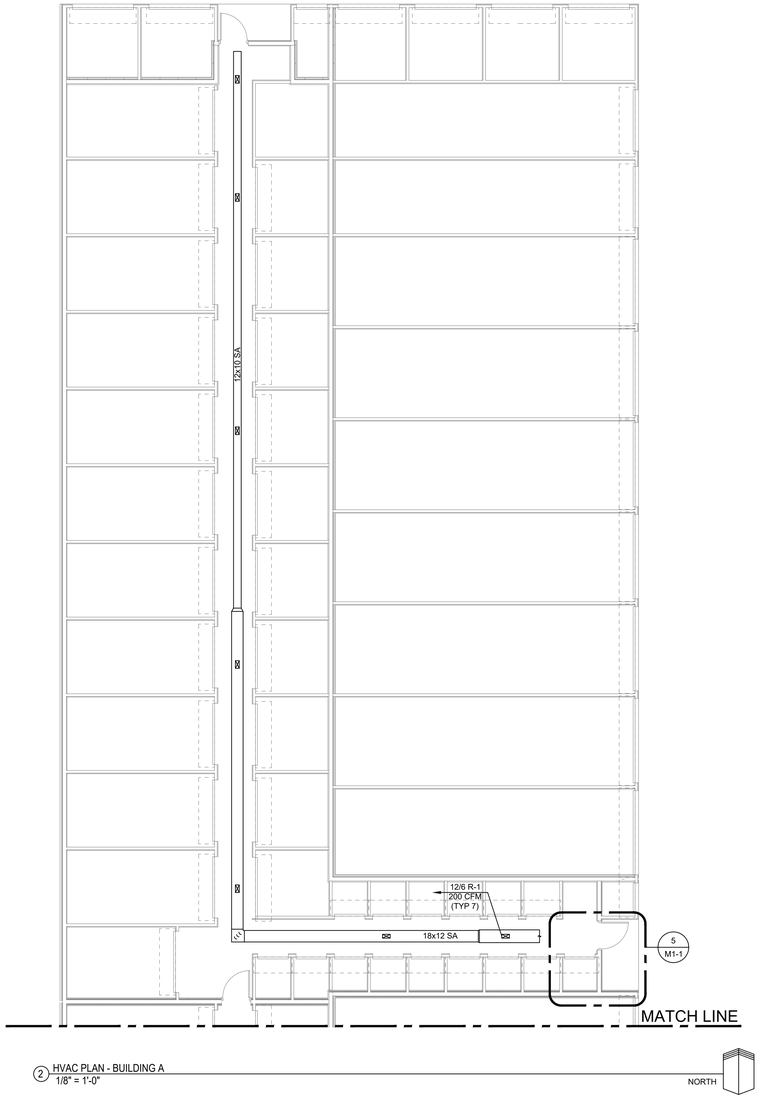
1. MOUNT PTAC-1 BELOW WINDOW THROUGH WALL SLEEVE.
2. MOUNT BOTTOM OF ELECTRIC UNIT HEATER AT 24" A.F.F.
3. TERMINATE RESTROOM EXHAUST THROUGH A WALL CAP SIMILAR TO NUTONE 641 VENT FITTING. PAINT WALL CAP TO MATCH EXTERIOR FINISH.
4. WRAP EXHAUST AIR DUCT WITH 2" FOIL-FACED FIBERGLASS INSULATION.
5. ROUTE COMBUSTION AIR AND FLUE EXHAUST AIR UP TO CONCENTRIC VENT TERMINATION THROUGH ROOF. SIZE PER MANUFACTURER'S RECOMMENDATIONS. SEE CONCENTRIC VENT THROUGH ROOF DETAIL. SHEET M2-1.
6. ROUTE RL/RS LINE TO INDOOR COIL AS REQUIRED. SIZE LINES PER MANUFACTURER'S RECOMMENDATIONS. VERIFY INSULATION IS NOT DAMAGED UPON COMPLETION.
7. TERMINATE FRESH AIR INTAKE THROUGH A WALL CAP SIMILAR TO NUTONE 641 FA VENT FITTING. COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL. PAINT WALL CAP TO MATCH EXTERIOR FINISH. ROUTE OUTSIDE AIR DUCTWORK AS HIGH AS POSSIBLE. INSULATE OUTDOOR AIR DUCTWORK WITH 2" FOIL-FACED FIBERGLASS INSULATION. PROVIDE WITH VOLUME DAMPER. BALANCE OA FOR FURNACE TO 50 CFM. LOW VOLTAGE MOTORIZED DAMPER. INTERLOCK DAMPER WITH ASSOCIATED FURNACE. WHEN FAN IS ENERGIZED, THE DAMPER SHALL OPEN. WHEN FAN IS DE-ENERGIZED, THE DAMPER SHALL CLOSE
8. MOUNT BOTTOM OF RETURN GRILLE 10' AFF.
9. MOUNT BOTTOM OF SA AT 10' AFF.
10. MOUNT BOTTOM OF OA AT 12' AFF.



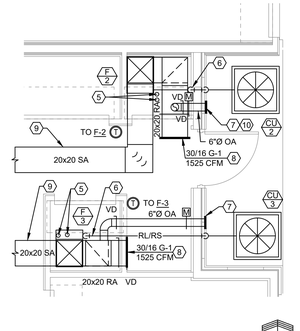
4 KEY PLAN
NO SCALE
NORTH



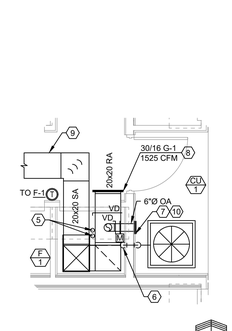
1 HVAC PLAN - BUILDING A
1/8" = 1'-0"
NORTH



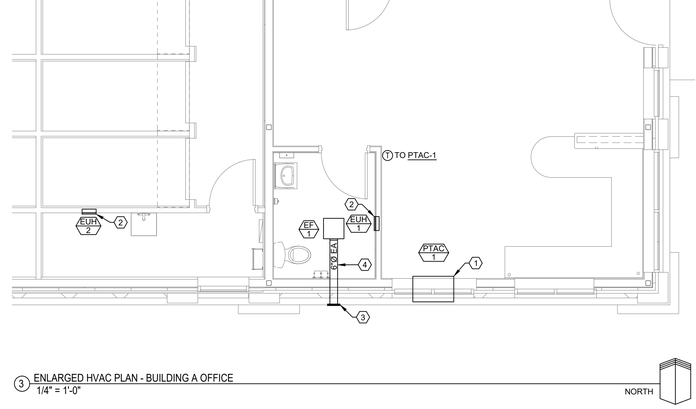
2 HVAC PLAN - BUILDING A
1/8" = 1'-0"
NORTH



4 ENLARGED HVAC PLAN - ROOM A
1/4" = 1'-0"
NORTH



5 ENLARGED HVAC PLAN - ROOM B
1/4" = 1'-0"
NORTH



3 ENLARGED HVAC PLAN - BUILDING A OFFICE
1/4" = 1'-0"
NORTH

RDH ENGINEERING, INC.
Mechanical, Electrical, & Energy Engineers

HVAC PLANS

No.	Description	Date
	REVISIONS	

LockBox Storage Manawa

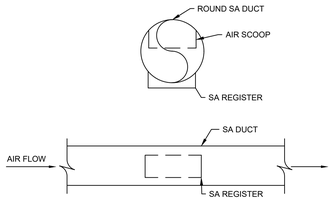
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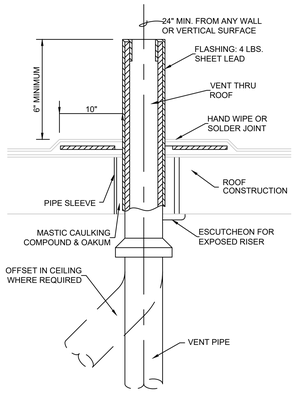
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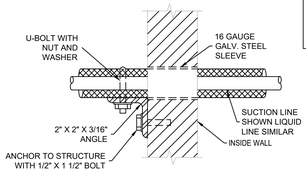
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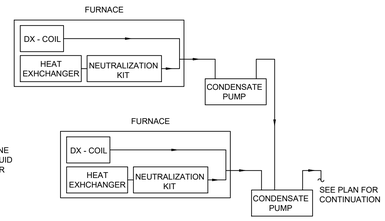
1 M2-1 SUPPLY AIR REGISTER TAKE-OFF DETAIL
SCALE: NONE



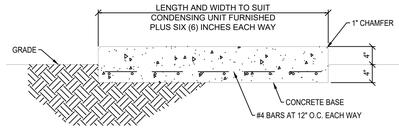
7 M2-1 VENT TRHOUGH ROOF DETAIL
SCALE: NONE



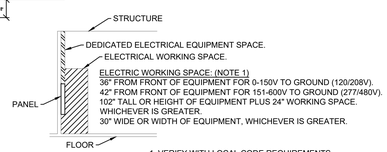
12 M2-1 REFRIGERANT PIPE WALL ANCHOR DETAIL
SCALE: NONE



17 M2-1 PUMPED WASTE CONNECTED IN SERIES DETAIL
SCALE: NONE

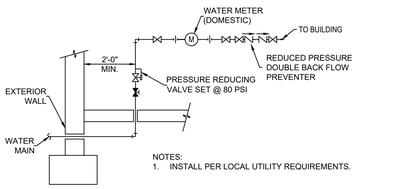


13 M2-1 EQUIPMENT BASE DETAIL
SCALE: NONE



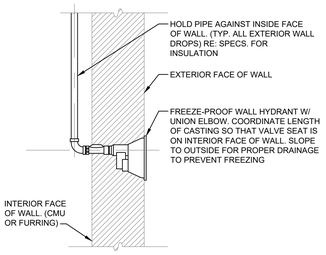
1. VERIFY WITH LOCAL CODE REQUIREMENTS, SPECIFICATIONS, AND NATIONAL ELECTRICAL CODE.

18 M2-1 ELECTRICAL WORKING SPACE DETAIL
SCALE: NONE

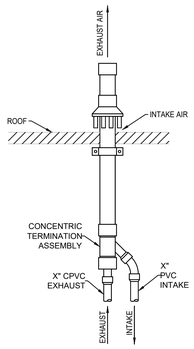


NOTES:
1. INSTALL PER LOCAL UTILITY REQUIREMENTS.

2 M2-1 WATER SERVICE ENTRY DETAIL
SCALE: NONE

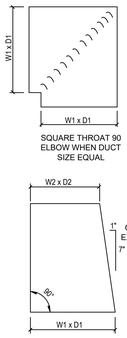


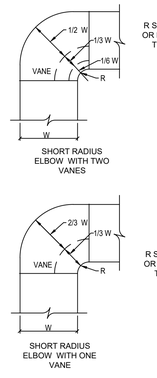
8 M2-1 WALL HYDRANT DETAIL
SCALE: NONE



NOTE: SIZE EXHAUST AND INTAKE AS PER MANUFACTURES RECOMMENDATIONS FOR TOTAL EQUIVALENT LENGTH

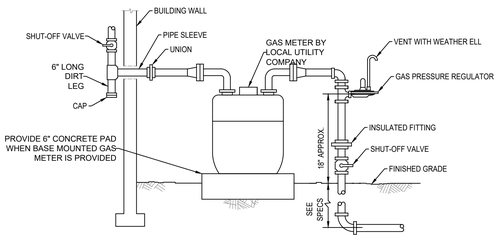
14 M2-1 CONCENTRIC VENT THROUGH ROOF DETAIL
SCALE: NONE



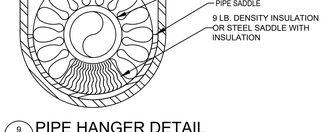


R SHALL EQUAL OR BE GREATER THAN 1/6 W.

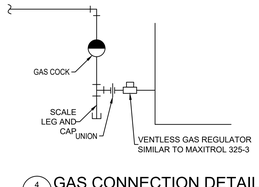
R SHALL EQUAL OR BE GREATER THAN 1/3 W



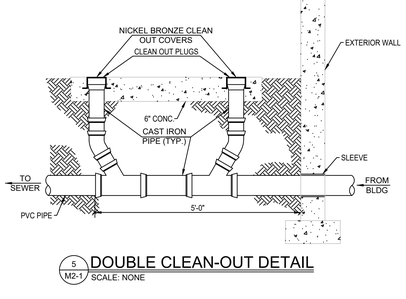
3 M2-1 GAS METER AND ENTRY DETAIL
SCALE: NONE



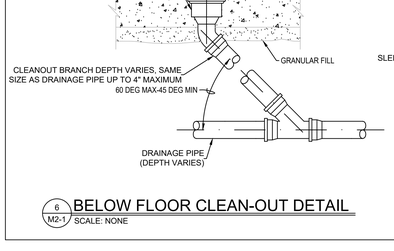
9 M2-1 PIPE HANGER DETAIL
SCALE: NONE



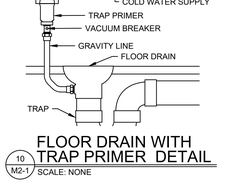
4 M2-1 GAS CONNECTION DETAIL
SCALE: NONE



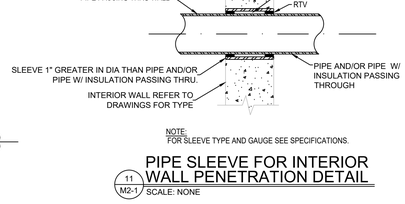
5 M2-1 DOUBLE CLEAN-OUT DETAIL
SCALE: NONE



6 M2-1 BELOW FLOOR CLEAN-OUT DETAIL
SCALE: NONE

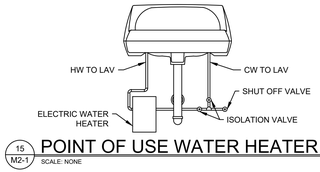


10 M2-1 FLOOR DRAIN WITH TRAP PRIMER DETAIL
SCALE: NONE

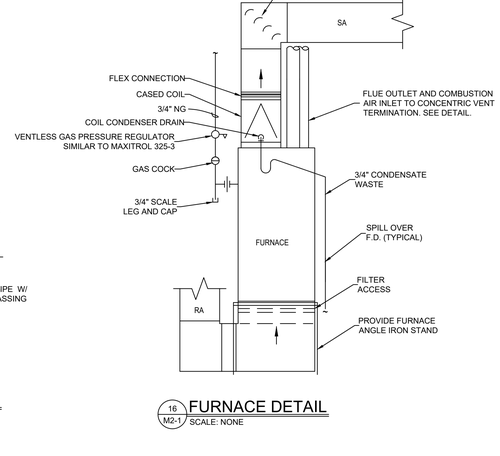


NOTE:
FOR SLEEVE TYPE AND GAUGE SEE SPECIFICATIONS.

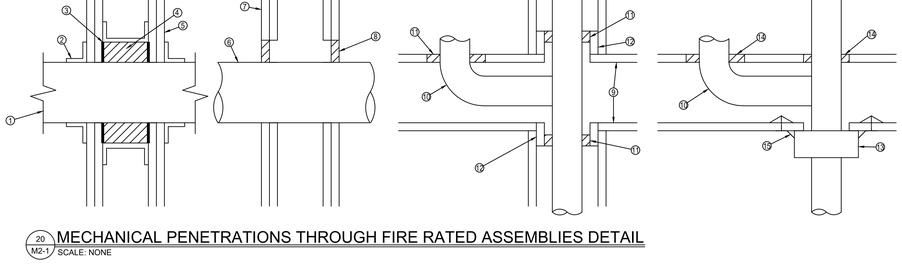
11 M2-1 PIPE SLEEVE FOR INTERIOR WALL PENETRATION DETAIL
SCALE: NONE



15 M2-1 POINT OF USE WATER HEATER DETAIL
SCALE: NONE



16 M2-1 FURNACE DETAIL
SCALE: NONE



20 M2-1 MECHANICAL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES DETAIL
SCALE: NONE

1. STEEL DUCT MAX 100" X 100" INSTALLED IN FRAMED OPENING.
2. STEEL MINIMUM #16 GAUGE GALVANIZED STEEL ANGLES SIZED TO LAP STEEL DUCT A MINIMUM 1" AND WALL A MINIMUM OF 2". ANGLES ATTACHED TO TO STEEL DUCT ON BOTH SIDES OF WALL WITH MINIMUM #10 STEEL SHEET METAL SCREWS SPACED A MAX OF 1" FROM EACH END OF STEEL DUCT AND SPACED A MAXIMUM OF 6" ON CENTER.
3. 3M FB-3000 WT MINIMUM OF 5/8" THICKNESS APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL.
4. MINIMUM 4-7/8" THICKNESS OF MINIMUM 4PCF MINERAL WOOD BATT INSULATION FIRMLY PACKED IN TO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM BOTH SURFACES OF WALL TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
5. RATED WALL ASSEMBLY.
6. 2" MAX SDR 9 CROSSLINK POLYETHYLENE TUBING.
7. RATED WALL ASSEMBLY.
8. 3M FB-3000 WT MINIMUM OF 5/8" THICKNESS APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. AN ADDITIONAL 1/2" BEAD OF FILL MATERIAL APPLIED AT THE TUBING / GYPSUM BOARD INTERFACE AT POINT OF CONTACT LOCATION ON BOTH SURFACES OF WALL ASSEMBLY.
9. RATED ASSEMBLY.
10. MAXIMUM 3" PVC PIPING.
11. 3M FB-3000 WT MINIMUM OF 3/4" THICKNESS APPLIED WITHIN ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR SOLE PLATE AND FLUSH WITH BOTTOM SURFACE OF OF TOP PLATE. 3M FB-3000 WT MINIMUM OF 3/4" THICKNESS APPLIED AROUND PERIMETER OF BRANCH PIPING FLUSH WITH TOP SURFACE OF FLOOR. 3M FB-3000 WT MINIMUM OF 1/2" THICKNESS APPLIED AT THE PIPE/FLOOR INTERFACE AND THE PIPE/PLATE INTERFACE.
12. NOMINAL 2 BY 4 OR 2 BY 6 LUMBER PLATES. DIAMETER OR OPENING OR LENGTH OF NOTCH OUT IN PLATE TO BE 1/2" TO 1" LARGER THAN OUTSIDE PIPE DIAMETER.
13. NOMINAL 1/8" THICK INTUMESCENT MATERIAL SUPPLIED IN 2" WIDE STRIPS. WRAP STRIP TIGHTLY AROUND NONMETALLIC PIPE WITH CONTINUOUS LAYERS AND BUTTED TIGHTLY AGAINST THE BOTTOM SURFACE OF THE THE GYPSUM WALLBOARD CEILING OR TOP PLATE. THE MINIMUM NUMBER OF STRIPS IS DEPENDENT UPON THE NOMINAL SIZE OF THE PIPE.
14. 3M FB-3000 WT MINIMUM OF 3/4" THICKNESS APPLIED WITHIN ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR. 3M FB-3000 WT MINIMUM OF 1/2" THICKNESS APPLIED AT THE PIPE/FLOOR INTERFACE AND THE PIPE/PLATE OR WALLBOARD INTERFACE AND AT THE SEAMS OF THE WALLBOARD PLATE.
15. NOMINAL 2" DEEP COLLAR WITH 1-1/4" WIDE BY 2" LONG ANCHOR TABS AND MINIMUM 3/4" LONG TABS TO RETAIN WRAP STRIP LAYERS.

GAS FIRED FURNACE

MARK	COIL DATA			OUTDOOR AIR (CFM)	FAN DATA		MOTOR DATA					GAS HEAT DATA			BASIS OF DESIGN	WEIGHT (LBS)	NOTES
	TOT CAP (MBH)	SENS CAP (MBH)	EAT DB / WB (°F)		CFM	ESP (IN WG)	HP	VOLT	PH	AMP	MOP	INPUT (MBH)	OUTPUT (MBH)	AFUE			
F-1	47.8	36.9	80/67	50	1575	0.50	1	120	1	13.3	15	100	97	97%	TRANE S9X2C100U5PSBA	220	1, 2, 3, 4, 5
F-2	47.8	36.9	80/67	50	1575	0.50	1	120	1	13.3	15	100	97	97%	TRANE S9X2C100U5PSBA	220	1, 2, 3, 4, 5
F-3	47.8	36.9	80/67	50	1575	0.50	1	120	1	13.3	15	100	97	97%	TRANE S9X2C100U5PSBA	220	1, 2, 3, 4, 5

NOTES:
1. VENT SHALL BE SIZED PER MANUFACTURERS RECOMMENDATIONS.
2. PROVIDE WITH VENT TERMINATION KIT.
3. SINGLE STAGE HEAT.
4. PROVIDE WITH 7-DAY PROGRAMMABLE THERMOSTAT.
5. PROVIDE WITH NEUTRALIZATION KIT NEUTRA-SAFE CN2-220V. INSTALL PER MANUFACTURERS RECOMMENDATIONS.

PACKAGED AIR CONDITIONING UNIT

MARK	COOLING CAPACITY		HEATING CAPACITY		SUPPLY FAN DATA		PERFORMANCE		ELECTRICAL DATA				BASIS OF DESIGN	NOTES
	TOTAL (MBH)	POWER (W)	TOTAL (MBH)	POWER (W)	CFM	ESP	COP	EER	HEATING AMPS	VOLT	PH	COOLING AMPS		
PTAC-1	14.2	1365	13.9	4089	400	Ø	3.1	10.4	19.7	230	1	6.7	FRIEDRICH PDH15K5SG	1, 2, 3, 4, 5

NOTES:
1. BASED ON AMBIENT AIR TEMPERATURE OF 95°.
2. PROVIDE WITH WALL SLEEVE AND 6'-0" POWER CORD.
3. PROVIDE WITH REMOTE THERMOSTAT SIMILAR TO RT6.
4. PROVIDE 75 CFM OF OUTSIDE AIR.
5. PROVIDE WITH CONDENSATE PAN WITH SECONDARY OVERFLOW SWITCH.

CONDENSING UNIT

MARK	SERVES	TOTAL CAP. (MBH)	SENS CAP. (MBH)	COMPRESSOR DATA				COND DATA			ELECTRICAL DATA					WEIGHT (LBS)	BASIS OF DESIGN	NOTES
				NO.	SEER	RLA (EACH)	REFER TYPE	FAN NO.	FAN FLA	AMB TEMP	V	PH	MOCP	MCA				
CU-1	F-1	49.6	38.1	1	14	14	R-410	1	0.6	95	208/230	3	30	18		212	TRANE 4TTA4048A300A	1, 2, 3
CU-2	F-2	49.6	38.1	1	14	14	R-410	1	0.6	95	208/230	3	30	18		212	TRANE 4TTA4048A300A	1, 2, 3
CU-3	F-3	49.6	38.1	1	14	14	R-410	1	0.6	95	208/230	3	30	18		212	TRANE 4TTA4048A300A	1, 2, 3

NOTES:
1. REFRIGERANT PIPE QUANTITIES AND SIZE TO BE PER MANUFACTURER'S PIPING SCHEMATIC.
2. USE ONLY HACR CIRCUIT BREAKERS.
3. PROVIDE WITH CONDENSING UNIT PAD.

EXHAUST FANS

MARK	LOCATION	FAN DATA										BASIS OF DESIGN	NOTES
		WHEEL TYPE	FAN TYPE	CFM	ESP (IN WG)	FAN RPM	DRIVE TYPE	W	FLA	V	PH		
EF-1	RESTROOM	FC	EXHAUST	75	0.21	700	DIRECT	20	0.65	115	1	GREENHECK SP-B90	1, 2, 3

NOTES:
1. PROVIDE WITH PLUG TYPE DISCONNECT
2. PROVIDE WITH INTEGRAL BACKDRAFT DAMPER.
3. INTERLOCK FAN WITH LIGHT SWITCH/MOTION SENSOR.

COIL - DX

MARK	SERVES	CFM	P.D.	EAT		NU. OF CIRCUITS	REFR TYPE	TOTAL CAPACITY (MBH)	SENS CAPACITY (MBH)	BASIS OF DESIGN	NOTES
				DB (°F)	WB (°F)						
CC-1	F-1	1575	0.50	80	67	1	R-410	47.8	36.9	TRANE 4TXCC007DS3	1, 2, 3, 4
CC-2	F-2	1575	0.50	80	67	1	R-410	47.8	36.9	TRANE 4TXCC007DS3	1, 2, 3, 4
CC-3	F-3	1575	0.50	80	67	1	R-410	47.8	36.9	TRANE 4TXCC007DS3	1, 2, 3, 4

NOTES:
1. SUCTION LINE TEMPERATURE = 40°F.
2. PROVIDE WITH CONDENSATE PAN WITH SECONDARY OVERFLOW SWITCH.
3. CASED COIL.
4. ALUMINUM COIL.

DIFFUSER, REGISTERS, AND GRILLES

MARK	MAX STATIC PD (IN W.G.)	MAX NC	DAMPER (Y/N)	FRAME TYPE	FINISH	BASIS OF DESIGN	NOTES
R-1	0.1	20	Y	SURFACE	WHITE	KRUEGER 585	1, 2, 3
G-1	0.1	30	N	SURFACE	WHITE	KRUEGER S80	1, 2

NOTES:
1. SEE PLANS FOR NECK SIZES.
2. PRICE, TITUS, ARE APPROVED MANUFACTURERS.
3. PROVIDE WITH VOLUME CONTROL.

ELECTRIC UNIT HEATER

MARK	LOCATION	CFM	ELECTRICAL DATA				BASIS OF DESIGN	NOTES
			KW	V	PH	AMPS		
EUH-1	RESTOOM	65	2	240	1	8.4	QMARK CWH1202DSF	1, 2, 3
EUH-2	UTILITY	65	2	240	1	8.4	QMARK CWH1202DSF	1, 2, 3

NOTES:
1. PROVIDE WITH MOUNTING HARDWARE AND INTEGRATED THERMOSTAT.
2. PROVIDE WITH DISCONNECT SWITCH.
3. PROVIDE SEMI-RECESSED MOUNTING FRAME MODEL #CWHS1.

RICKY D. HATH
15003
IOWA

MECHANICAL DETAILS & SCHEDULES

No.	Description	Date
	REVISIONS	

LockBox Storage Manawa

McGregor Interests
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

Paul J. Kelly
Architecture
440 North 61st Street
Omaha, Nebraska 68132
(402) 320 - 4131
pjkarchitecture.com

M2-1

Project No. 19720-02
Date 4 May 2020

RDH ENGINEERING, INC.
Mechanical, Electrical, & Energy Engineers

Print on 30" x 42" format for proper scale.

MECHANICAL SPECIFICATIONS INDEX

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SECTION 15075 - MECHANICAL IDENTIFICATION
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SECTION 15083 - PIPE INSULATION
SECTION 15140 - DOMESTIC WATER PIPING
SECTION 15150 - SANITARY WASTE AND VENT PIPING
SECTION 15194 - FUEL GAS PIPING
SECTION 15461 - ELECTRIC, TANKLESS-WATER HEATERS
SECTION 15530 - GAS-FIRED FURNACES
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SECTION 15767 - ELECTRIC UNIT HEATER
SECTION 15815 - METAL DUCTS
SECTION 15820 - DUCT ACCESSORIES
SECTION 15950 - TESTING, ADJUSTING, AND BALANCING

SECTION 15050 - BASIC MECHANICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
1. Piping materials and installation instructions common to most piping systems.
2. Dielectric fittings.
3. Mechanical demolition.
4. Equipment installation requirements common to equipment sections.
5. Supports and anchorages.

1.2 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.
E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.3 SUBMITTALS

A. Welding certificates.

1.4 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."
B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. Electrical Characteristics for Mechanical Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

PART 2 - PRODUCTS

2.1 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 15 piping Sections for pipe, tube, and fitting materials and joining methods.
B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.2 JOINING MATERIALS

A. Refer to individual Division 15 piping Sections for special joining materials not listed below.
B. Pipe-Flange Gasket Materials: ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
D. Brazing Filler Metals: AWS A5.8, BCuP Series or BAg1, unless otherwise indicated.
E. Welding Filler Metals: Comply with AWS D10.12.

2.3 DIELECTRIC FITTINGS

A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.
B. Insulating Material: Suitable for system fluid, pressure, and temperature.
C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.
D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.
E. Dielectric Couplings: Galvanized-steel coupling with inert and non-corrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.
F. Dielectric Nipples: Electroplated steel nipple with inert and non-corrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.

PART 3 - EXECUTION

3.1 MECHANICAL DEMOLITION

A. Refer to Division 1 Sections "Cutting and Patching" and "Selective Demolition" for general demolition requirements and procedures.
B. Disconnect, demolish, and remove mechanical systems, equipment, and components indicated to be removed.
1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
3. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 15 Sections specifying piping systems.
B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
D. Install piping to permit valve servicing.
E. Install piping at indicated slopes.
F. Install piping free of sags and bends.
G. Install fittings for changes in direction and branch connections.
H. Install piping to allow application of insulation.
I. Select system components with pressure rating equal to or greater than system operating pressure.
J. Verify final equipment locations for roughing-in.
K. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.3 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 15 Sections specifying piping systems.
B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.4 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:
1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.
B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
C. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
D. Install equipment to allow right of way for piping installed at required slope.

3.6 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment.
B. Field Welding: Comply with AWS D1.1.

END OF SECTION 15050

SECTION 15075 - MECHANICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following mechanical identification materials and their installation:
1. Equipment nameplates.
2. Pipe markers.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 QUALITY ASSURANCE

A. ASME Compliance: Comply with ASME A13.1, "Scheme for the Identification of Piping Systems," for letter size, length of color field, colors, and viewing angles of identification devices for piping.

PART 2 - PRODUCTS

2.1 EQUIPMENT IDENTIFICATION DEVICES

A. Equipment Nameplates: Metal, with data engraved or stamped, for permanent attachment on equipment.
1. Data:
a. Manufacturer, product name, model number, and serial number.
b. Capacity, operating and power characteristics, and essential data.
c. Labels of tested compliances.
2. Location: Accessible and visible.
3. Fasteners: As required to mount on equipment.

2.2 PIPING IDENTIFICATION DEVICES

B. Manufactured Pipe Markers, General: Preprinted, color-coded, with lettering indicating service, and showing direction of flow.
1. Colors: Comply with ASME A13.1, unless otherwise indicated.
2. Lettering: Use piping system terms indicated and abbreviate only as necessary for each application length.
3. Pipes with OD, Including Insulation, Less Than 6 Inches: Full-band pipe markers extending 360 degrees around pipe at each location.

B. Self-Adhesive Pipe Markers: Plastic with pressure-sensitive, permanent-type, self-adhesive back.ts:
C. Plastic Tape: Continuously printed, vinyl tape at least 3 mils thick with pressure-sensitive, permanent-type, self-adhesive back.
1. Width for Markers on Pipes with OD, Including Insulation, Less Than 6 Inches: 3/4 inch minimum.

PART 3 - EXECUTION

3.1 APPLICATIONS, GENERAL

A. Products specified are for applications referenced in other Division 15 Sections. If more than single-type material, device, or label is specified for listed applications, selection is Installer's option.

3.2 EQUIPMENT IDENTIFICATION

A. Install and permanently fasten equipment nameplates on each major item of mechanical equipment that does not have nameplate or has nameplate that is damaged or located where not easily visible. Locate nameplates where accessible and visible. Include nameplates for the following general categories of equipment:
1. Pumps.
2. Heat exchangers.

B. Install access panel markers with screws on equipment access panels.

3.3 PIPING IDENTIFICATION

A. Install manufactured pipe markers indicating service on each piping system. Install with flow indication arrows showing direction of flow.
1. Pipes with OD, Including Insulation, Less Than 6 Inches: Pretensioned pipe markers. Use size to ensure a tight fit.
2. Pipes with OD, Including Insulation, Less Than 6 Inches: Self-adhesive pipe markers. Use color-coded, self-adhesive plastic tape, 1-1/2 inches wide, lapped at least 1-1/2 inches at both ends of pipe marker, and covering full circumference of pipe.

B. Locate pipe markers and color bands where piping is exposed in machine rooms; accessible maintenance spaces such as shafts locations as follows:
1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations through walls, floors, ceilings, and non-accessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced markers.

3.4 ADJUSTING AND CLEANING

A. Relocate mechanical identification materials and devices that have become visually blocked by other work.
B. Clean faces of mechanical identification devices.

END OF SECTION 15075

SECTION 15081 - DUCT INSULATION

PART 1 - PRODUCTS

1.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Mineral-Fiber Insulation:
a. CertainTeed Manson.
b. Knauf FiberGlass GmbH.
c. Owens-Corning Fiberglas Corp.

1.2 INSULATION MATERIALS

A. Mineral-Fiber Board Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type 1B, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.
B. Mineral-Fiber Blanket Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.
C. Field-Applied Jackets: ASTM C 921, Type I, unless otherwise indicated.
1. Foil and Paper Jacket: Laminated, glass-fiber-reinforced, flame-retardant kraft paper and aluminum foil.
2. PVC Jacket: High-impact, ultraviolet-resistant PVC, 20 mils thick, roll stock ready for shop or field cutting and forming.
D. Accessories and Attachments:
1. Glass cloth and Tape: Comply with MIL-C-20079H, Type I for cloth and Type II for tape. Woven glass-fiber fabrics, plain weave, presized a minimum of 8 oz./sq. yd.
2. Bands: Aluminum 3/4 inch wide.
3. Wire: 0.080-inch, nickel-copper alloy; 0.0625-inch, soft-annealed, stainless steel; or 0.062-inch, soft-annealed, galvanized steel.
4. Weld-Attached anchor Pins and Washers: Copper-coated steel pin for capacitor-discharge welding and galvanized speed washer. Pin length sufficient for insulation thickness indicated.
5. Adhesive-Attached Anchor Pins and Speed Washers: Galvanized Steel plate, pin and washer manufactured for attachment to duct and plenum with adhesive. Pinlength sufficient for insulation thickness indicated.

PART 2 - EXECUTION
2.1 DUCT AND PLENUM APPLICATION SCHEDULE

A. Service: Concealed rectangular & round, supply-air, and exposed exhaust air ducts.
1. Material: Mineral-fiber blanket.
2. Thickness: 2 inch.
3. Number of Layers: One
4. Field-Applied Jacket: Foil and paper.
5. Vapor Retarder Required: Yes.

END OF SECTION 15081

SECTION 15083 - PIPE INSULATION

1.1 PIPE INSULATION MATERIALS

1. Mineral-Fiber Insulation: Glass fibers bonded with a thermosetting resin complying with the following: Preformed Pipe Insulation; Comply with ASTM C 547, Type I, with factory-applied, all-purpose, vapor-retarder jacket.
2. Blanket Insulation: Comply with ASTM C 553, Type II, without facing.
3. Fire-Resistant Adhesive: Comply with MIL-A-3316C Class 1, Grade A for bonding glass cloth and tape to unfaced glass-fiber insulation, for sealing edges of glass-fiber insulation, and for bonding lagging cloth to unfaced glass-fiber insulation.
4. Vapor-Retarder Mastics: Fire- and water-resistant, vapor-retarder mastic for indoor applications. Comply with MIL-C-19565C, Type II.
5. Mineral-Fiber Insulating Cements: Comply with ASTM C 195.
6. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 339/C 449M.
E. Flexible Elastomeric Thermal Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.

1.2 PIPE INSULATION APPLICATION SCHEDULE

A. Service: Domestic cold water.

1. Operating Temperature: 35 to 60 deg. F.
2. Insulation Material: Mineral fiber preformed pipe.
3. Insulation Thickness: 1/2".

B. Service: Refrigerant suction and hot-gas pipe.

1. Operating Temperature: 35 to 50 deg. F.
2. Insulation Material: Flexible elastomeric.
3. Insulation Thickness: 1-1/2".

END OF SECTION 15083

SECTION 15140 - DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 SUMMARY
A. Section Includes:
1. Under-building slab and aboveground domestic water pipes, tubes, fittings, and specialties inside the building.
2. Water meters furnished by utility company for installation by Contractor.

1.2 SUBMITTALS
A. Product Data: For each type of product indicated.
1. Product Data for Credit EQ 4.1: For solvent cements and adhesive primers, including printed statement of VOC content.

1.3 QUALITY ASSURANCE
A. Piping materials shall bear label, stamp, or other markings of specified testing agency.
B. Comply with NSF 61 for potable domestic water piping and components.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS
A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 COPPER TUBE AND FITTINGS
A. Hard Copper Tube: ASTM B 88, Type L (ASTM B 88M, Type B) and ASTM B 88, Type M (ASTM B 88M, Type C) water tube, drawn temper.
1. Cast-Copper Solder-Joint Fittings: ASME B16.18, pressure fittings.
2. Wrought-Copper Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.
3. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

2.3 CPVC PIPING
A. CPVC Tubing System: ASTM D 2846/D 2846M, SDR 11, tube and socket fittings.

2.4 PVC PIPE AND FITTINGS
A. PVC Pipe: ASTM D 1785, Schedule 40 and Schedule 80.
1. PVC Socket Fittings: ASTM D 2466 for Schedule 40 and ASTM D 2467 for Schedule 80.

2.5 PIPING JOINING MATERIALS
A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free, unless otherwise indicated; full-face or ring type unless otherwise indicated.
B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.
C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
D. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.
E. Solvent Cements for Joining CPVC Piping and Tubing: ASTM F 493.
1. Use CPVC solvent cement that has a VOC content of 490 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Use adhesive primer that has a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
F. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
1. Use PVC solvent cement that has a VOC content of 510 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Use adhesive primer that has a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
G. Plastic, Pipe-Flange Gaskets, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.

2.6 TRANSITION FITTINGS
A. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
B. Sleeve-Type Transition Coupling: AWWA C219.
C. Plastic-to-Metal Transition Fittings:
1. Description: CPVC or PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert and one solvent-cement-socket or threaded end.
D. Plastic-to-Metal Transition Unions:
1. Description: CPVC or PVC four-part union. Include brass or stainless-steel threaded end, solvent-cement-joint plastic end, rubber O-ring, and union nut.

PART 3 - EXECUTION
3.1 PIPING INSTALLATION

A. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."
B. Install shutoff valve immediately upstream of each dielectric fitting.
C. Install water-pressure-reducing valves downstream from shutoff valves.
D. Install domestic water piping level with 0.25 percent slope downward toward drain and plumb.
E. Install piping to permit valve servicing.
F. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than system pressure rating used in applications below unless otherwise indicated.
G. Install piping free of sags and bends.
H. Install fittings for changes in direction and branch connections.
I. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.
J. Install sleeves for piping penetrations of walls, ceilings, and floors.
K. Install sleeve seals for piping penetrations of concrete walls and slabs.
Install escutcheons for piping penetrations of walls, ceilings, and floors.

3.2 JOINT CONSTRUCTION
A. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
B. Soldered Joints: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."
C. Pressure-Sealed Joints: Join copper tube and pressure-seal fittings with tools recommended by fitting manufacturer.
D. Copper-Tubing, Push-on Joints: Clean end of tube. Measure insertion depth with manufacturer's depth gage. Join copper tube and push-on-joint fittings by inserting tube to measured depth.
E. Flanged Joints: Select appropriate asbestos-free, nonmetallic gasket material in size, type, and thickness suitable for domestic water service. Join flanges with gasket and bolts according to ASME B31.9.
F. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements. Apply primer.
2. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
3. PVC Piping: Join according to ASTM D 2855.
G. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

3.3 VALVE INSTALLATION
A. Install shutoff valve close to water main on each branch and riser serving plumbing fixtures or equipment, on each water supply to equipment, and on each water supply to plumbing fixtures that do not have supply stops. Use ball or gate valves for piping NPS 2 and smaller.
B. Install drain valves for equipment at base of each water riser, at low points in horizontal piping, and where required to drain water piping.
1. Hose-End Drain Valves: At low points in water mains, risers, and branches.
2. Stop-and-Waste Drain Valves: Instead of hose-end drain valves where indicated.

3.4 HANGER AND SUPPORT INSTALLATION
A. Support vertical piping and tubing at base and at each floor.
B. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 3/4 and Smaller: 60 inches with 3/8-inch rod.
2. NPS 1 and NPS 1-1/4: 72 inches with 3/8-inch rod.
3. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.
C. Install supports for vertical copper tubing every 10 feet.
D. Install vinyl-coated hangers for CPVC piping with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 1 and Smaller: 36 inches with 3/8-inch rod.
2. NPS 1-1/4 to NPS 2: 48 inches with 3/8-inch rod.
E. Install supports for vertical CPVC piping every 60 inches for NPS 1 and smaller, and every 72 inches for NPS 1-1/4 and larger.
F. Install vinyl-coated hangers for PVC piping with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 2 and Smaller: 48 inches with 3/8-inch rod.
I. Install supports for vertical PVC piping every 48 inches.
J. Support piping and tubing not listed in this article according to MSS SP-69 and manufacturer's written instructions.

3.5 FIELD QUALITY CONTROL
A. Perform tests and inspections.
B. Piping Inspections:
1. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
2. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
a. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
b. Final Inspection: Arrange final inspection for authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
3. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
C. Piping Tests:
1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
3. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
4. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
5. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.

3.6 CLEANING
A. Clean and disinfect potable domestic water piping as follows:
1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652.
B. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.7 PIPING SCHEDULE
A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.
C. Aboveground domestic water piping, NPS 2 and smaller, shall be one of the following:

1. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B) ASTM B 88, Type M (ASTM B 88M, Type C); cast- or wrought- copper solder-joint fittings; and brazed soldered joints.
2. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B) or ASTM B 88, Type M (ASTM B 88M, Type C); copper pressure-seal-joint fittings; and pressure-sealed joints.
3. CPVC Tubing System: CPVC tube; CPVC socket fittings; and solvent-cemented joints. **If approved by Authority Having Jurisdiction**
D. Aboveground domestic water piping, NPS 2-1/2 to NPS 4 , shall be one of the following:
1. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B) ASTM B 88, Type M (ASTM B 88M, Type C); cast- or wrought- copper solder-joint fittings; and brazed soldered joints.
2. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B); copper pressure-seal-joint fittings; and pressure-sealed joints.
3. Galvanized-steel pipe and nipples; galvanized, gray-iron threaded fittings; and threaded joints.
4. Galvanized-steel pipe; grooved-joint, galvanized-steel-pipe appurtenances; and grooved joints.
5. PVC, Schedule 40 pipe; PVC, Schedule 40 socket fittings; and solvent-cemented joints. **If approved by Authority Having Jurisdiction**

3.8 VALVE SCHEDULE
E. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
1. Shutoff Duty: Use ball or gate valves for piping NPS 2 and smaller.
2. Throttling Duty: Use ball or globe valves for piping NPS 2 and smaller.
3. Hot-Water Circulation Piping, Balancing Duty: Memory-stop balancing valves.
4. Drain Duty: Hose-end drain valves.
B. Use check valves to maintain correct direction of domestic water flow to and from equipment.
C. Iron grooved-end valves may be used with grooved-end piping.
D. CPVC and PVC valves matching piping materials may be used. **If approved by Authority Having Jurisdiction**

END OF SECTION 15140

SECTION 15150 - SANITARY WASTE AND VENT PIPING

1.1 PIPING MATERIALS

A. Hub-and-Spigot Cast-Iron Pipe and Fittings: ASTM A 74, Service and Extra-Heavy classes.
1. Gaskets: ASTM C 564, rubber.

B. Hubless Cast-Iron Pipe and Fittings: ASTM A 888 or CISPI 301.
1. Couplings: ASTM C 1277 assembly of metal housing, corrosion-resistant fasteners, and ASTM C 564 rubber sleeve with integral, center pipe stop.
a. Heavy-Duty, Type 304, Stainless-Steel Couplings: ASTM A 666, Type 304, stainless-steel shield; stainless-steel bands; and sleeve.
1) NPS 1 1/2 to NPS 4: 3-inch wide shield with 6 bands.
2) NPS 5 to NPS 10: 4-inch wide shield with 4 bands.
b. Heavy-Duty, FMG-Approved Couplings: ASTM A 666, Type 304, stainless-steel housing; stainless-steel bands; and sleeve.
1) NPS 1 1/2 to NPS 4: 3-inch wide housing with 2 bands.
2) NPS 5 to NPS 10: 4-inch wide housing with 2 bands.
c. Heavy-Duty, Cast-Iron Couplings: ASTM A 38, 2-piece, cast-iron housing; stainless-steel bolts and nuts; and sleeve.
d. Heavy-Duty, Type 301 Stainless-Steel Couplings: ASTM A 666, Type 301, stainless-steel shield; stainless-steel bands; and sleeve.
1) NPS 1 1/2 to NPS 4: 3-inch wide shield with 4 bands.
2) NPS 5 to NPS 10: 4-inch wide shield with 6 bands.
e. Compact, Stainless-Steel Couplings: CISPI 310 with ASTM A 167, Type 301, or ASTM A 666, Type 301, stainless-steel corrugated shield; stainles-steel bands; and sleeve.
1) NPS 1 1/2 to NPS 4: 2 1/8-inch wide shield with 2 bands.
2) NPS 5 to NPS 6: 3-inch wide shield with 4 bands.
3) NPS 8 to NPS 10: 4-inch wide shield with 4 bands.
NPS 12 to NPS 15: 5 1/2-inch wide shield with 6 bands.

C. Copper DWV Tube: ASTM B 306, drainage tube, drawn temper.
1. Copper Drainage Fittings: ASME B16.23. cast copper or ASME B16.29, wrought copper, solder-joint fittings.

D. PVC Pipe: ASTM D 2665, solid-wall drain, waste, and vent. (If Approved by Local Codes and Authority having jurisdiction).
1. PVC Socket Fittings: ASTM D 2665, socket type, made to ASTM D 3311, drain, waste, and vent patterns.

F. Aboveground, Soil, Waste, and Vent Piping: Use any of the following piping materials for each size range:

NOTE:
Paint all vent pipes above roof to match color of roof panel material.

1. NPS 1 1/4 and NPS 1 1/2: Use NPS 1 1/2 and one of the following:
a. Couplings: Heavy-duty, Type 302 304, stainless steel.
b. Couplings: Heavy-duty, FMG approved cast iron.
c. Couplings: Compact, stainless steel.
2. NPS 1 1/4 and NPS 1 1/2 Steel pipe; cat-iron, threaded drainage fittings, and threaded joints.
3. NPS 2 to NPS 4 Service class, cast-iron soil piping; gaskets; and gasketed joints.
4. NPS 2 to NPS 4 Hubless, cast-iron soil piping and one of the following:
a. Couplings: Heavy-duty, Type 301, stainless steel.
b. Couplings: Heavy-duty, FMG approved cast iron.
c. Couplings: Compact, stainless steel
5. NPS 2 to NPS 4 Steel pipe; cast-iron, threaded drainage fittings, and threaded joints.
6. NPS 2 to NPS 4 Stainless-steel piping; gaskets, and gasketed joints.

G. Underground, Soil, Waste, and Vent Piping: Use the following piping materials for each size range:
1. NPS 1 1/2-tubless, cast-iron soil piping and one of the following:
a. Couplings: Heavy-duty, Type 301, stainless steel.
b. Couplings: Heavy-duty, cast iron.
c. Couplings: Compact, stainless steel.
2. NPS 2 to NPS 4 Service class, cast-iron soil piping; gaskets, and gasketed joints.
3. NPS 2 to 4 Extra-Heavy class, cast-iron soil piping; gaskets, and gasketed joints.
4. NPS 2 to NPS 4 Hubless, cast-iron soil piping and one of the following:
5. NPS 5 and NPS 6 Service class, cast-iron soil piping; gaskets, and gasketed joints.
6. NPS 5 and NPS 6: Extra-Heavy class, cast-iron soil piping; gaskets; and gasketed joints.
7. NPS 5 and NPS 6: Hubless, cast-iron soil piping and one of the following:
8. NPS 2 to NPS 4: Hubless, PVC soil piping and fittings if approved by Authority Having Jurisdiction.
9. NPS 5 to NPS 8: Hubless, PVC soil piping and fittings if approved by Authority Having Jurisdiction.

END OF SECTION 15150

SECTION 15194 - FUEL GAS PIPING

1.1 PIPING MATERIALS

A. Corrugated Stainless-steel Tubing Systems: Comply with AGA LC 1 and include the following:
1. Tubing: Corrugated stainless steel with plastic jacket or coating.
2. Fittings: Copper alloy with ends made to fit corrugated tubing. Include ends with threads according to ASME B1.20.1 if connection to threaded pipe or fittings is required.
3. Striker Plates: Steel, designed to protect tubing from penetrations.
B. Steel Pipe: ASTM A 53; Type E or S; Grade B; Schedule 40; black.
1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern, with threaded ends according to ASME B1.20.1.
2. Unions: ASME B16.39, Class 150, standard pattern, with threaded ends according to ASME B1.20.1.
3. Cast-Iron Flanges and Flanged Fittings: ASME B16.1, Class 125.
4. Steel Welding Fittings: ASME B16.9, wrought steel or ASME B16.11, forged steel.
5. Steel Threaded Fittings: ASME B16.11, forged steel with threaded ends, according to ASME B1.20.1.
6. Joint Compound and Tape: Suitable for natural gas.
7. Steel Flanges and Flanged Fittings: ASME B16.5.
8. Gasket Material: Thickness, material, and type suitable for natural gas.

1.2 VALVES

A. Valves, NPS 2 and smaller: Threaded ends according to ASME B1.20.1 for pipe threads.
B. Valves, NPS 2 1/2 and Larger: Flanged ends according to ASME B16.5 for steel flanges and according to ASME B16.24 for copper and copper-alloy flanges.
C. Appliance Connector Valves: ANSI Z21.15 and IAS listed.
D. Gas Stops: Bronze body with AGA stamp, plug type with bronze plug and flat or square head, bail type with chrome-plated brass ball and lever handle, or butterfly valve with stainless-steel disc and fluorocarbon elastomer seal and lever handle; 2-psig minimum pressure rating.
E. Gas Valves, NPS 2 and Smaller: ASME B16.33 and IAS listed bronze body and 125-psig pressure rating.
F. Plug Valves, NPS 2 1/2 and Larger: ASME B16.38 and MSS SP-78 cast-iron, lubricated plug valves, with 125-psig pressure rating.
G. Exterior steel gas piping shall be protected from corrosion per IFGC 403.8.

1.3 PIPING APPLICATIONS

A. Use flanges, unions, transition, and special fittings in applications below, unless otherwise indicated.
1. NPS 1/2 and Smaller: NPS 3/4 steel pipe, malleable-iron threaded fittings and threaded joints.
2. NPS 1/2 and Smaller: Corrugated, stainless-steel tubing system and threaded joints.
3. NPS 3/4 and NPS 1: Steel pipe, malleable-iron threaded fittings, and threaded joints.
4. NPS 3/4 and NPS 1: Corrugated, stainless-steel tubing system and threaded joints.
5. NPS 1 1/4 to NPS 4: Steel pipe, malleable-iron threaded fittings, and threaded joints.
6. NPS 1 1/4 to NPS 4: Steel pipe, steel welding fittings, and welded joints.
7. Larger Than NPS 4: Steel pipe, steel welding fittings, and welded joints.

1.4 VALVE APPLICATIONS

A. Appliance Shutoff Valves for Pressure 0.5 psig or Less: Appliance connector valve or gas stop.
B. Appliance Shutoff Valves for Pressure 0.5 to 2 psig: Gas stop or gas valve.
C. Piping Line Valves, NPS 2 and Smaller: Gas valve.
D. Piping Line Valves, NPS 2 1/2 and Larger: Plug valve or general-duty valve.
E. Valves at Service Meter, NPS 2 and Smaller: Gas valve.
F. Valves at Service Meter, NPS 2 1/2 and Larger: Plug valve.

END OF SECTION 15194
SECTION 15530 - GAS-FIRED FURNACES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
1. **Gas-fired, condensing** furnaces and accessories complete with controls.
2. Air filters.
3. Refrigeration components.

1.2 SUBMITTALS

A. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories for each of the following:
1. Furnace.
2. Thermostat.
3. Refrigeration components.

B. Operation and maintenance data.
C. Warranty, one year.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2004, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
C. ASHRAE/IESNA 90.1-2004 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6 - "Heating, Ventilating, and Air-Conditioning."
Comply with NFPA 70.

1.4 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace the following components of furnaces that fail in materials or workmanship within specified warranty period:
1. Warranty Period, Commencing on Date of Substantial Completion:
a. Furnace Heat Exchanger: 10 years.
b. Integrated Ignition and Blower Control Circuit Board: Five years.
c. Draft-Inducer Motor: Five years.
d. Refrigeration Compressors: 10 years.
e. Evaporator and Condenser Coils: Five years.

PART 2 - PRODUCTS

2.1 GAS-FIRED FURNACES, CONDENSING

A. Basis-of-Design Product: Subject to compliance with requirements, provide or equal.
B. General Requirements for Gas-Fired, Condensing Furnaces: Factory assembled, piped, wired, and tested; complying with ANSI Z21.47/CSA 2.3, "Gas-Fired Central Furnaces," and with NFPA 54.
C. Cabinet: Steel, Galvanized steel.
1. Cabinet interior around heat exchanger shall be factory-installed insulation.
2. Lift-out panels shall expose burners and all other items requiring access for maintenance.
3. Factory paint external cabinets in manufacturer's standard color.
4. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.

F. Type of Gas: Natural.
G. Heat Exchanger:
1. Primary: Aluminized steel.
2. Condensate Drain Piping: Copper or CPVC, as approved by local authority and manufacture, extended full sized to riser made from same material or condensate pump as shown on design drawings.

H. Burner:
1. Gas Valve: 100 percent safety main gas valve, main shutoff valve, pressure regulator, safety pilot with electronic flame sensor, limit control, transformer, and combination ignition/fan timer control board.
2. Ignition: Electric pilot ignition, with hot-surface igniter or electric spark ignition.

I. Gas-Burner Safety Controls:
1. Electronic Flame Sensor: Prevents gas valve from opening until pilot flame is proven; stops gas flow on ignition failure.
2. Flame Rollout Switch: Installed on burner box; prevents burner operation.
3. Limit Control: Fixed stop at maximum permissible setting; de-energizes burner on excessive bonnet temperature; automatic reset.

J. Combustion-Air Inducer: Centrifugal fan with thermally protected motor and sleeve bearings prepurges heat exchanger and vents combustion products; pressure switch prevents furnace operation if combustion-air inlet or flue outlet is blocked.
K. Furnace Controls: Solid-state board integrates ignition, heat, cooling, and fan speeds; adjustable fan-on and fan-off timing; terminals for connection to accessories; diagnostic light with viewport.
L. Accessories:
1. Combination Combustion-Air Intake and Vent: CPVC plastic fitting to combine combustion-air inlet and vent through roof as approved by manufacturer & AHJ.
2. CPVC Plastic Vent Materials:
a. CPVC Plastic Pipe: Schedule 40, complying with ASTM D 1785.
b. CPVC Plastic Fittings: Schedule 40, complying with ASTM D 2466, socket type.
CPVC Solvent Cement: ASTM D 2564.

2.2 THERMOSTATS

A. Solid-State Thermostat: Wall-mounting, programmable, microprocessor-based unit with automatic switching from heating to cooling, preferential rate control, seven-day programmability with minimum of four temperature presets per day, and battery backup protection against power failure for program settings.
B. Control Wiring: Unshielded twisted-pair cabling.
1. No. 24 AWG, 100 ohm, four pair.

C. Controls shall comply with requirements in ASHRAE/IESNA 90.1-2004, "Controls."

2.3 AIR FILTERS

A. Disposable Filters: 1-inch- thick fiberglass media in sheet metal frame.

2.4 REFRIGERATION COMPONENTS

A. General Refrigeration Component Requirements:
1. Refrigeration compressor, coils, and specialties shall be designed to operate with CFC-free refrigerants.
2. Energy Efficiency: Equal to or greater than prescribed by ASHRAE/IESNA 90.1-2004, "Energy Standard for Buildings except Low-Rise Residential Buildings."

B. Refrigerant Coil: Copper tubes mechanically expanded into aluminum fins. Comply with ARI 210/240, "Unitary Air-Conditioning and Air-Source Heat Pump Equipment." Match size with furnace. Include condensate drain pan with accessible drain outlet.
1. Refrigerant Coil Enclosure: Steel, matching furnace and evaporator coil, with access panel and flanges for integral mounting at or on furnace cabinet and galvanized sheet metal drain pan coated with black asphaltic base paint.
2. Condensate Drain Piping: Copper or CPVC, as approved by local authority and manufacture, extended full sized to riser made from same material or condensate pump as shown on design drawings.
C. Refrigerant Line Kits:
1. Refrigerant Line Kits: Annealed-copper suction and liquid lines factory cleaned, dried, pressurized with nitrogen, sealed, and with suction line insulated. Provide in standard lengths for installation without joints, except at equipment connections.
2. Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I, 1 inch thick.

D. Air-Cooled, Compressor-Condenser Unit:
1. Casing: Steel, finished with baked enamel, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
2. Compressor: Hermetically sealed reciprocating or scroll type.
a. Crankcase heater.
b. Vibration isolation mounts for compressor.
c. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
d. Two-speed compressor motors shall have manual-reset high-pressure switch and automatic-reset low-pressure switch.
e. Refrigerant Charge: R-22.
3. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with liquid subcooler.
4. Fan: Aluminum-propeller type, directly connected to motor.
5. Motor: Permanently lubricated, with integral thermal-overload protection.
6. Low Ambient Kit: Permits operation down to 45 deg F.
7. Mounting Base: Polyethylene.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install gas-fired furnaces and associated fuel and vent features and systems according to NFPA 54.
B. Base-Mounted Units: Secure units to substrate. Provide optional bottom closure base if required by installation conditions.
C. Controls: Install thermostats at mounting height of 50 inches above floor.
D. Wiring Method: Install control wiring in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Conceal control wiring except in unfinished spaces.
E. Install ground-mounted, compressor-condenser components on 4-inch- thick, reinforced concrete base; 4 inches larger on each side than unit. Concrete, reinforcement, and formwork are specified in Division 3 Section "Cast-in-Place Concrete." Coordinate anchor installation with concrete base.

RDH ENGINEERING, INC.
Mechanical, Electrical, & Energy Engineers

LICENSED PROFESSIONAL ENGINEER
RICKY D. HIATT
15003
IOWA

MECHANICAL SPECIFICATIONS

REVISIONS

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pjkarchitecture.com

M3-1

Project No. 197-20-02
Date 4 May 2020

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3.2 CONNECTIONS

A. Gas piping installation requirements are specified in Division 15 Section "Fuel Gas Piping." Drawings indicate general arrangement of piping, fittings, and specialties. Connect gas piping with union or flange and appliance connector valve.

B. Install piping adjacent to equipment to allow service and maintenance.

C. Vent and Outside-Air Connection, Condensing, Gas-Fired Furnaces: Connect plastic piping vent material to furnace connections and extend outdoors. Terminate vent outdoors with a cap and in an arrangement that will protect against entry of birds, insects, and dirt.

1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
2. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
3. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
   a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
   b. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
   c. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
4. Slope pipe vent back to outside terminal.

D. Connect ducts to furnace with flexible connector. Comply with requirements in Division 15 Section "Duct Accessories."

E. Connect refrigerant tubing kits to refrigerant coil in furnace and to air-cooled, compressor-condenser unit.

1. Flared Joints: Use ASME B16.26 fitting and flared ends, following procedures in CDA's "Copper Tube Handbook."
2. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
3. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

F. Comply with requirements in Division 15 Section "Refrigerant Piping" for installation and joint construction of refrigerant piping.

G. Complete installation and startup checks and start units according to manufacturer's written instructions.

H. Verify proper operation of capacity control device.

I. Adjust airflow and initial temperature and humidity set points.

J. Set controls, burner, and other adjustments for optimum heating performance and efficiency. Adjust heat-distribution features, including shutters, dampers, and relays, to provide optimum heating performance and system efficiency.

K. After completing installation, clean furnaces internally according to manufacturer's written instructions.

L. Install new filters in each furnace within 14 days after Substantial Completion.

3.3 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. Perform electrical test and visual and mechanical inspection.
2. Leak Test: After installation, charge systems with refrigerant and oil and test for leaks. Repair leaks, replace lost refrigerant and oil, and retest until no leaks exist.
3. Operational Test: After electrical circuitry has been energized, start units to confirm proper operation, product capability, and compliance with requirements.
4. Verify that fan wheel is rotating in the correct direction and is not vibrating or binding.
5. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Verify that vibration isolation and flexible connections properly dampen vibration transmission to structure.

END OF SECTION 15530

SECTION 15767- ELECTRIC UNIT HEATER

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes electric unit heaters.

1.2 SUBMITTALS

A. Product Data: Include specialties and accessories for each unit type and configuration indicated.

B. Shop Drawings:

1. Plans, elevations, sections, and details.
2. Details of anchorages and attachments to structure and to supported equipment.
3. Wiring Diagrams: Power, signal, and control wiring.
4. Equipment schedules to include rated capacities, furnished specialties, and accessories.

C. Field quality-control test reports.

D. Operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Qmark.
2. Carrier Corp.
3. McQuay International.

2.2 UNIT HEATERS

A. Description: An assembly including casing, coil, fan, and motor in horizontal discharge configuration with horizontal, adjustable louvers in blow-through configuration.

2.3 MATERIALS

A. Casing: Heavy gauge die-formed steel housing, with removable panels.

B. Cabinet Finish: Bonderize, phosphatize, and flow-coat with baked-on primer and manufacturer's standard paint applied to factory-assembled and -tested propeller unit heater before shipping.

2.4 ELECTRIC-RESISTANCE HEATING ELEMENTS

A. Aluminum -finned copper clad steel sheath heating element.

1. Circuit Protection: One-time fuses in terminal box for overcurrent protection and limit controls for overtemperature protection of heaters.
2. Wiring Terminations: Match conductor materials and sizes indicated.
3. Automatic reset linear capillary thermal cut-out.

2.5 FAN

A. Propeller with aluminum blades directly connected to motor.

2.6 FAN MOTORS

A. Motors, 1/2 HP and Smaller: Completely enclosed multispeed motor with integral thermal-overload protection.

B. Motors, 3/4 HP and Larger: Totally enclosed with permanently lubricated ball bearings.

2.7 ACCESSORIES

A. Horizontal Configuration: Louver fin diffuser.

2.8 SOURCE QUALITY CONTROL

A. Test propeller unit heater coils according to ASHRAE 33.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install propeller unit heaters to comply with NFPA 90A.

B. Wall mount unit heater using manufacturer's universal wall bracket

C. Thermostat shall be unit mounted.

3.2 CONNECTIONS

A. Unless otherwise indicated, install shutoff valve and union or flange on each connection.

B. Install piping adjacent to machine to allow service and maintenance.

3.3 FIELD QUALITY CONTROL

A. Testing: Perform the following field quality-control testing and report results in writing;

1. After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
2. Operate electric heating elements through each stage to verify proper operation and electrical connections.
3. Test and adjust controls and safeties.

B. Repair or replace malfunctioning units. Retest as specified above after repairs or replacements are made.

END OF SECTION 15767



MECHANICAL SPECIFICATIONS

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ELECTRICAL SYMBOLS AND ABBREVIATIONS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
(1)	FLUORESCENT LIGHT: NUMBER = TYPE		HOME RUN: NO. OF ARROWS = NO. OF CIRCUITS NO. OF HATCHES = NO. OF WIRES UNHATCHED = 2 WIRES
(2)	FLUORESCENT LIGHT STRIP: NUMBER = TYPE		BRANCH CIRCUIT CONCEALED
(3)	WALL LIGHT: NUMBER = TYPE		BRANCH CIRCUIT IN FLOOR
(4)	CEILING LIGHT: NUMBER = TYPE		BRANCH CIRCUIT EXPOSED
(5)	EXIT LIGHT: NUMBER = TYPE		CIRCUIT UP
	SINGLE RECEPTACLE		CIRCUIT DOWN
	DUPLEX RECEPTACLE	TV	TELEVISION RACEWAY 3/4" MINIMUM
	FLOOR RECEPTACLE	T	TELEPHONE RACEWAY 3/4" MINIMUM
	RANGE RECEPTACLE	FA	FIRE ALARM CIRCUIT
	20A. 250V. RECEPTACLE	S	SOUND SYSTEM CIRCUIT
	30A. 250V. RECEPTACLE	C	CLOCK SYSTEM CIRCUIT
	SPECIAL RECEPTACLE	N	NURSE CALL CIRCUIT
	SPLIT DUPLEX RECEPTACLE	NL	NIGHT LIGHT CIRCUIT
	JUNCTION BOX		LIGHTING PANEL
	JUNCTION BOX FLOOR		TELEPHONE PANEL
	JUNCTION BOX WALL		POWER PANEL
	CLOCK HANGER OUTLET	WP	INDICATES WEATHERPROOF
	TELEVISION OUTLET	CF	INDICATES CARPET FLANGE
	TELEPHONE OUTLET ◁ COMBO DATA/COMM.	F	INDICATES FLOOR MOUNTED
	COMPUTER OUTLET	P	INDICATES PILOT LIGHT
S	SINGLE POLE SWITCH	K	KEY OPERATED
S_2	DOUBLE POLE SWITCH	AL	ALUMINUM
S_3	3-WAY SWITCH	CU	COPPER
S_4	4-WAY SWITCH	GFI	GROUND FAULT INTERRUPTION
S_{DM}	DIMMER SWITCH	CKT	CIRCUIT
S_{FC}	SSU BOX COVER FUSETRON SWITCH	C	CONDUIT
S_{PC}	SPDT CENTER OFF SWITCH	A.F.F.	ABOVE FINISHED FLOOR
S_{PL}	PILOT LIGHT SWITCH	EWC	ELECTRIC WATER COOLER
S_{TE}	SWITCH WITH THERMAL ELEMENT	AWG	AMERICAN WIRE GAUGE
	PUSHBUTTON SWITCH	UG	UNDERGROUND
	BATTERY EMERGENCY LIGHT	PC	PHOTOCELL
	REMOTE LAMP HEAD		SAFETY DISCONNECT–FUSED ◻F UNFUSED
	SOLENOID VALVE		MAGNETIC STARTER
P	PRESSURE SWITCH		COMBINATION STARTER–DISCONNECT
T	THERMOSTAT		FAN CUT–OFF RELAY
A	AQUASTAT		MOTOR CONTROL PUSHBUTTON
T	DRY TRANSFORMER		MOTOR–HORSEPOWER AS INDICATED
	BUZZER		FLOAT SWITCH
	CHIME		ALTERNATOR
CB	BELL	PE	PNEUMATIC–ELECTRIC SWITCH
CB	FIRE ALARM–BELL		DAMPER SWITCH
F	FIRE ALARM–MANUAL STATION		CEILING SPEAKER
HF	FIRE ALARM–HORN MAY BE COMBINATION		WALL SPEAKER
F	FIRE ALARM–STROBE		FLOOR MICROPHONE
D	FIRE ALARM–HEAT DETECTOR		WALL MICROPHONE
D_I	FIRE ALARM–IONIZATION DETECTOR	N	NURSE CALL STATION
D_S	FIRE ALARM–SMOKE DETECTOR	C	CORRIDOR DOME LIGHT
FA	FIRE ALARM–CONTROL PANEL	Z	ZONE LIGHT
	SPRINKLER FLOW SWITCH	OS	OCCUPANCY SENSOR
DR	ELECTRO–MAGNETIC DOOR RELEASE		

ELECTRICAL SPECIFICATIONS 26 00 00

26 01 00

1. The general conditions and supplemental general conditions as set forth elsewhere in this specification shall apply to this Electrical.

2. All work shall be in accordance with applicable State and Local Codes.

3. Where the drawings indicate fixtures and equipment which are to be furnished and installed by others and which require connections to the electrical systems the Electrical Contractor shall furnish and install all rough-ins; all necessary conduit, wire, junction boxes, switches, wiring devices, and fittings, and shall make final connections to the fixtures and equipment. Rough-in locations shall be determined from the equipment itself or from the equipment manufacturer's shop drawings.

4. Shop drawings and/or descriptive literature shall be submitted in accordance with these specifications for all major items of material.

5. The work shall include furnishing, installing and connecting all circuits, materials, and electrical equipment specified herein, or shown or noted on the drawings, for the Electrical Systems.

26 05 33

6. All wiring shall be installed in metal raceways. No raceway smaller than 1/2" shall be used. All rigid conduit and electrical metallic tubing shall be hot-dipped galvanized mild steel and shall bear the Underwriter's label and the manufacturer's label or stamp. All conduit may be rigid or EMT at the Contractor's option.
All connections to motors and other vibrating equipment shall be flexible metal conduit or sealtight as necessary.

7. All metallic conduits, supports, cabinets and equipment shall be grounded.

8. All conductors shall be copper. No wire shall be smaller than No. 12 AWG, except that wiring for signal and pilot control circuits may be No. 14 AWG.

9. Furnish and install outlet boxes and raceway fittings as described below or approved equal. Numbers indicated are Steel City.
Lighting Boxes -No. H54561 Series
Switch, Receptacles
and Junction Boxes -No. 52151 Series
Couplings -Series TK-111
Connectors -Series TC-111

26 06 20

10. Furnish and install wiring devices as indicated by symbols on the drawings. Devices shall be Bryant or approved equal.
Single Pole No. 4901-GRY
Double Pole No. 4902-GRY
Three-Way No. 4903-GRY
Four-way No. 4904-GRY
Switches shall Be mounted at +48" above finished floor.
Duplex Receptacles No. 5362-GRY
Furnish and install wall plates for all wiring devices. Plates on flush devices shall be satin finish, stainless steel. Where devices are installed on exposed fittings or boxes, the plates shall be galvanized steel and of a type

26 50 20

11. Furnish and install new fixtures and lamps as shown in the lighting fixture schedule. The Electrical Contractor shall furnish and install all necessary supports and hangers for all lighting fixtures.

26 24 16

12. New lighting panels shall be furnished and installed as shown. Panels shall be Square 'D' type 'NQ' or equal with bolt-on breakers.

13. Cutting, fitting, patching, repairing and finishing of carpentry work, metal work, or concrete work, etc., which may be required for this work shall be done by this Contractor at his expense and shall be done by craftsmen skilled in their respective trades. Where cutting is required, it shall be done in such a manner as not to weaken walls, partitions or floors; and holes required to be cut must be drilled without breaking out around the holes. The fire-resistant rating of walls, partitions, ceilings, and floors shall be maintained by sealing or caulking around penetration with approved fire resistant material or by the use of U.L. approved manufactured devices for this purpose. Poke through wiring will not be allowed.

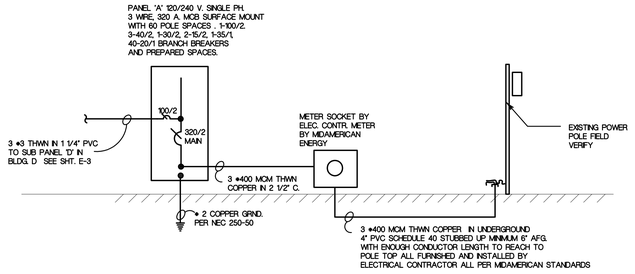
14. Arrange the work so that electrical power is available to the site at all times, except for short periods of interruption necessary for the performance of new work. Connections shall not be interrupted without the owner's approval as to time and duration. Connections to existing facilities shall not be disconnected until new or temporary connections are installed.

15. All branch circuit conduits shall have a separate green ground wire.

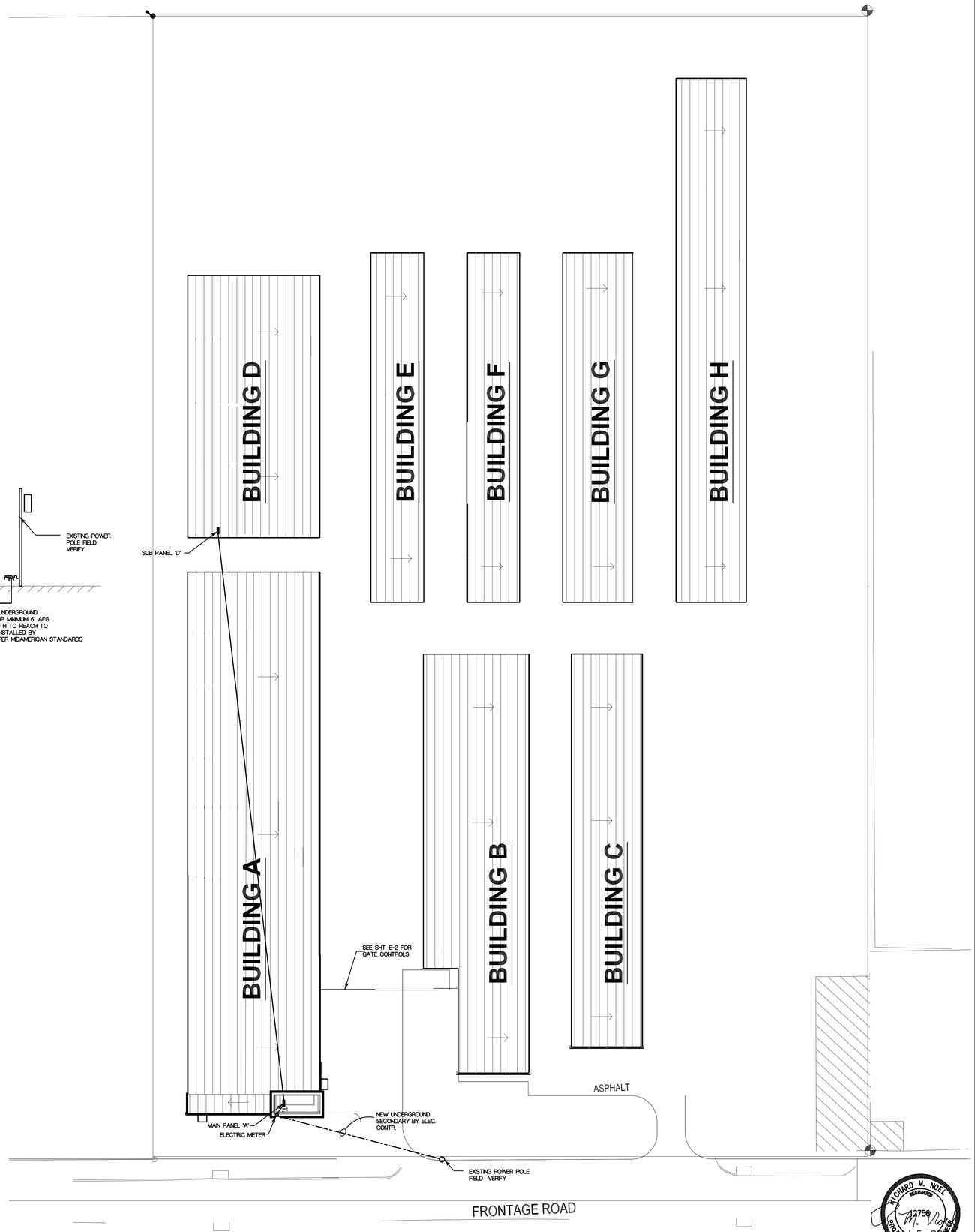
16. All multi-wire branch circuits shall be per NEC Art. 210.4 with 2 pole branch breakers to disconnect all ungrounded conductors.

17. All manufactured panelboards shall have interrupting rating permanently labeled.

18. The Electrical Contractor shall provide field labeling and dating , which shall indicate the arc fault available at each panel.



ELECTRICAL SERVICE DIAGRAM



SITE PLAN – ELECTRICAL
SCALE: N.T.S.

VETERANS MEMORIAL HIGHWAY

REVISIONS

No.	Description	Date

LockBox Storage Manawa

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Project No.
Date 4 MAY 2020

1 of 3

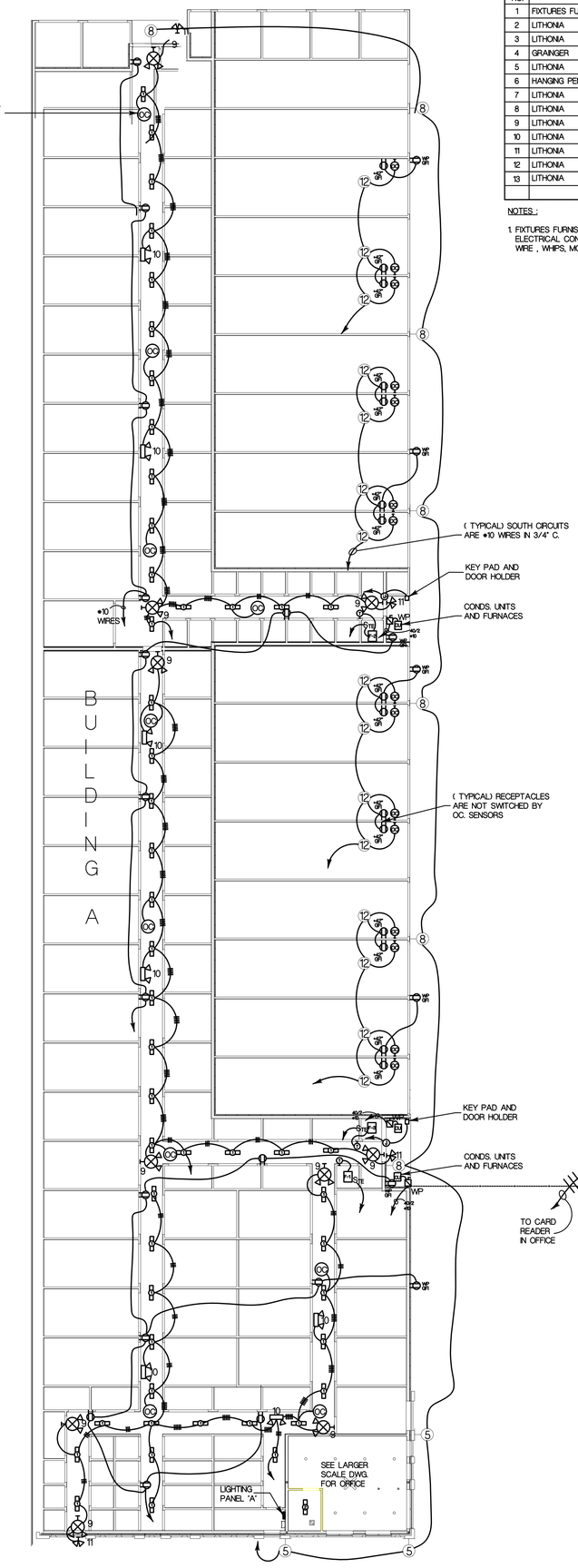
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LIGHTING FIXTURE SCHEDULE

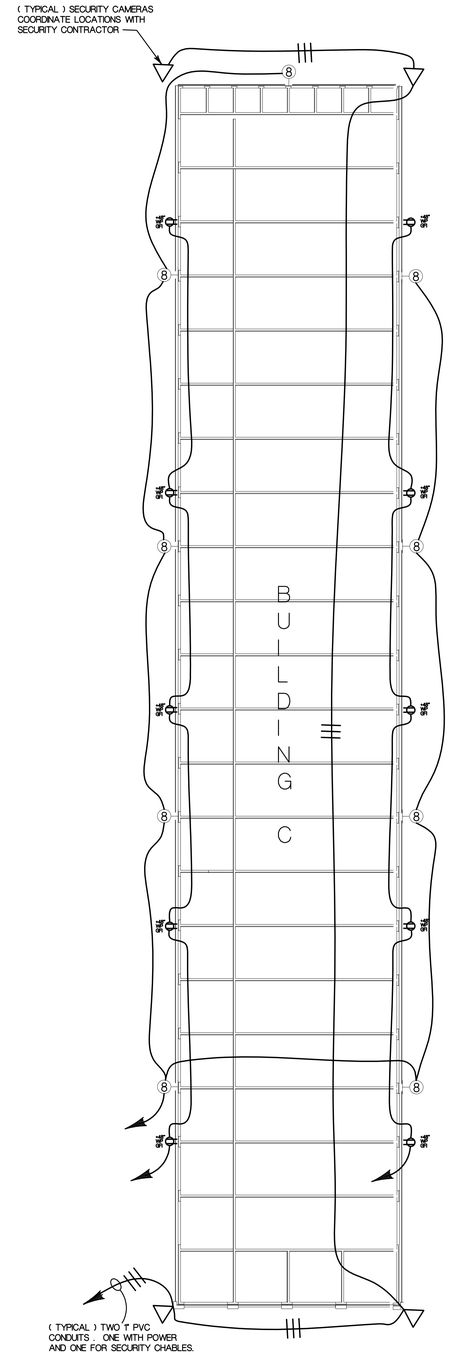
FIXT. NO.	MANUFACTURER	CATALOG NUMBER	LAMPS NUMBER AND SIZE	MOUNTING CLG.	WALL	REC.	PEND.	REMARKS
1	FIXTURES FURNISHED AND MOUNTED BY THE BUILDING SUPPLIER					X		SEE NOTE • 1
2	LITHONIA	LBL4 LP835	4 K LUMENS LED	X				
3	LITHONIA	DOM6 LED 900L-120-DO6AZ	900 LUMENS LED			X		IN-CONTACT RATED-AIR TITE
4	GRAINGER	6NP15/6NP27	4-60 W.	X				CEILING FAN WITH LIGHT KIT
5	LITHONIA	VGR2C 40LED-120-DWHG-LP1	40 LED		X			DAMP LOCATION
6	HANGING PENDANT LIGHT FURNISHED BY OWNER, INSTALLED BY ELEC. CONTR.							
7	LITHONIA	WL4-25L-D24-LP840-N100-NESPDT7-EL14L 2.5 K LED		X				WITH OCCUPANCY SENSOR
8	LITHONIA	OLW31-M2	3967 LUMENS LED		X			FULL SHIELD & PHOTO-CELL
9	LITHONIA	LHQMLED-3-R-HO	INCLUDED	X	X			BATTERY EXIT/EMERGENCY
10	LITHONIA	ELM1254/H1212-SD	INCLUDED		X			BATTERY EMERGENCY
11	LITHONIA	ELATNX/H1206	INCLUDED		X			REMOTE EMERGENCY
12	LITHONIA	VR2-7TT-120-LP1	1-CF7TT-35	X				COLD WEATHER LAMP
13	LITHONIA	5GI-MB-LED-L5R	600 LUMENS LED			X		DAMP LOCATION

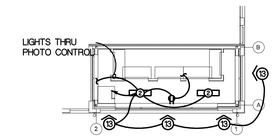
NOTES :

1. FIXTURES FURNISHED AND MOUNTED BY THE BUILDING SUPPLIER . ELECTRICAL CONTRACTOR SHALL FURNISH & INSTALL WIRE , WHIPS, MOTION SENSORS, AND THE CIRCUITING SHOWN .

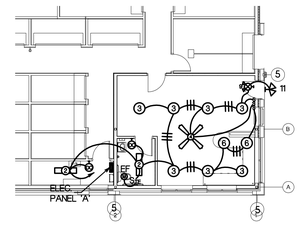


BUILDINGS A,B,&C. ELECTRICAL
SCALE N.T.S.

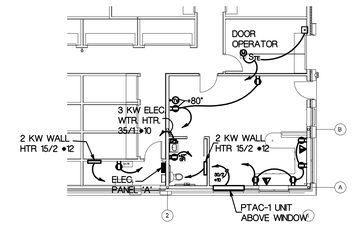




TOWER ELECTRICAL
SCALE N.T.S.



OFFICE DETAIL—LIGHTING
SCALE N.T.S.



OFFICE DETAIL—POWER
SCALE N.T.S.

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LockBox Storage Manawa

McGregor Interests

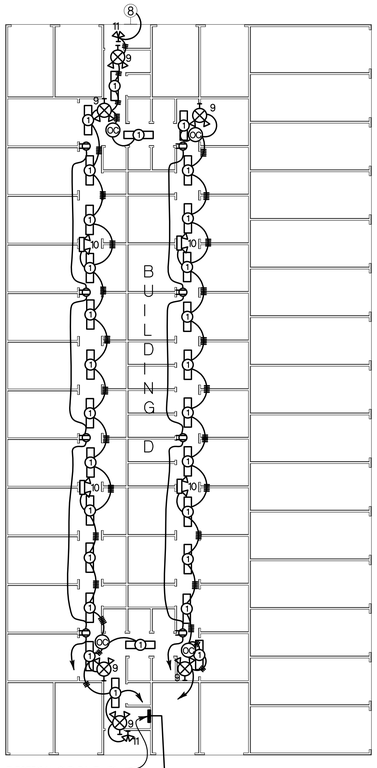
706 Veteran's Memorial Highway, Council Bluffs, IA 51502

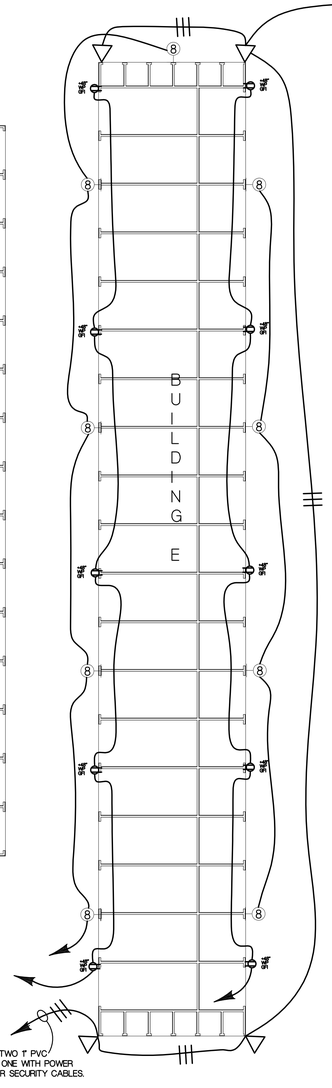
Paul J. Kelly
Architecture
440 North 61st Street
Omaha, Nebraska 68132
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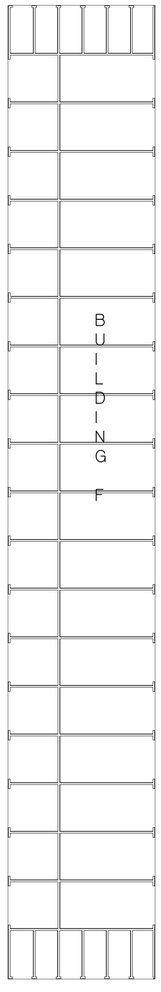
E-2

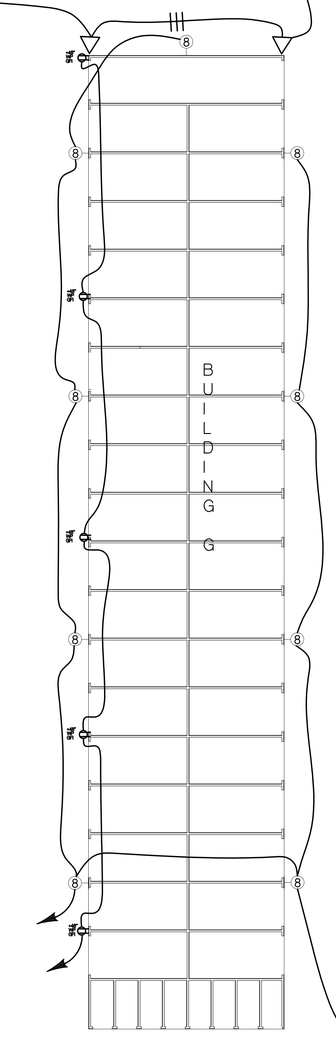
Project No. 19-035-01
Date 4 May 2020

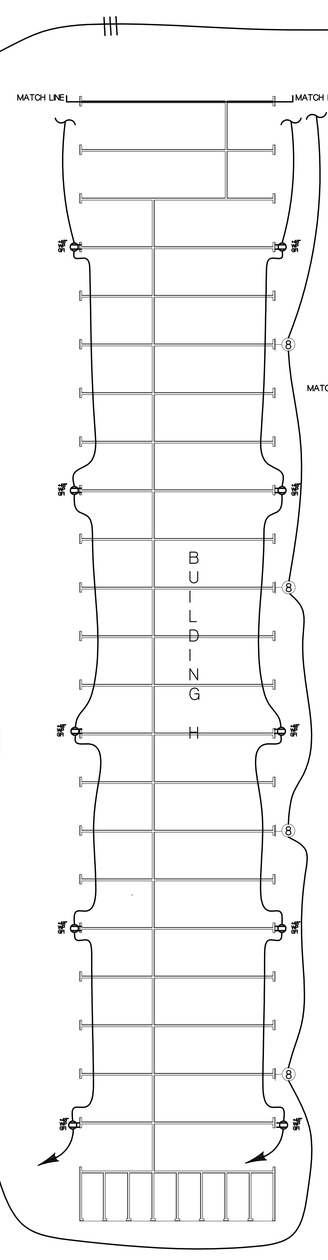
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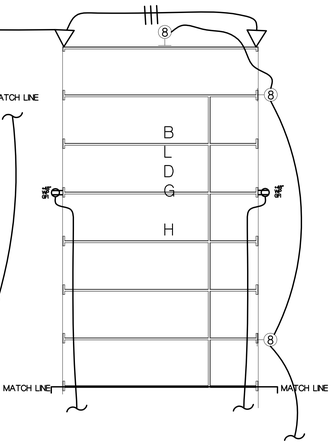












N

BUILDINGS D,E,F,G,&H. ELECTRICAL

SCALE: N.T.S.

RICHARD M. NOEL
REGISTERED
12756
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PROJECT # 20-02
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REVISIONS

No.	Description	Date

LockBox Storage Manawa

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Prints on 30" x 42" formats for proper scale.