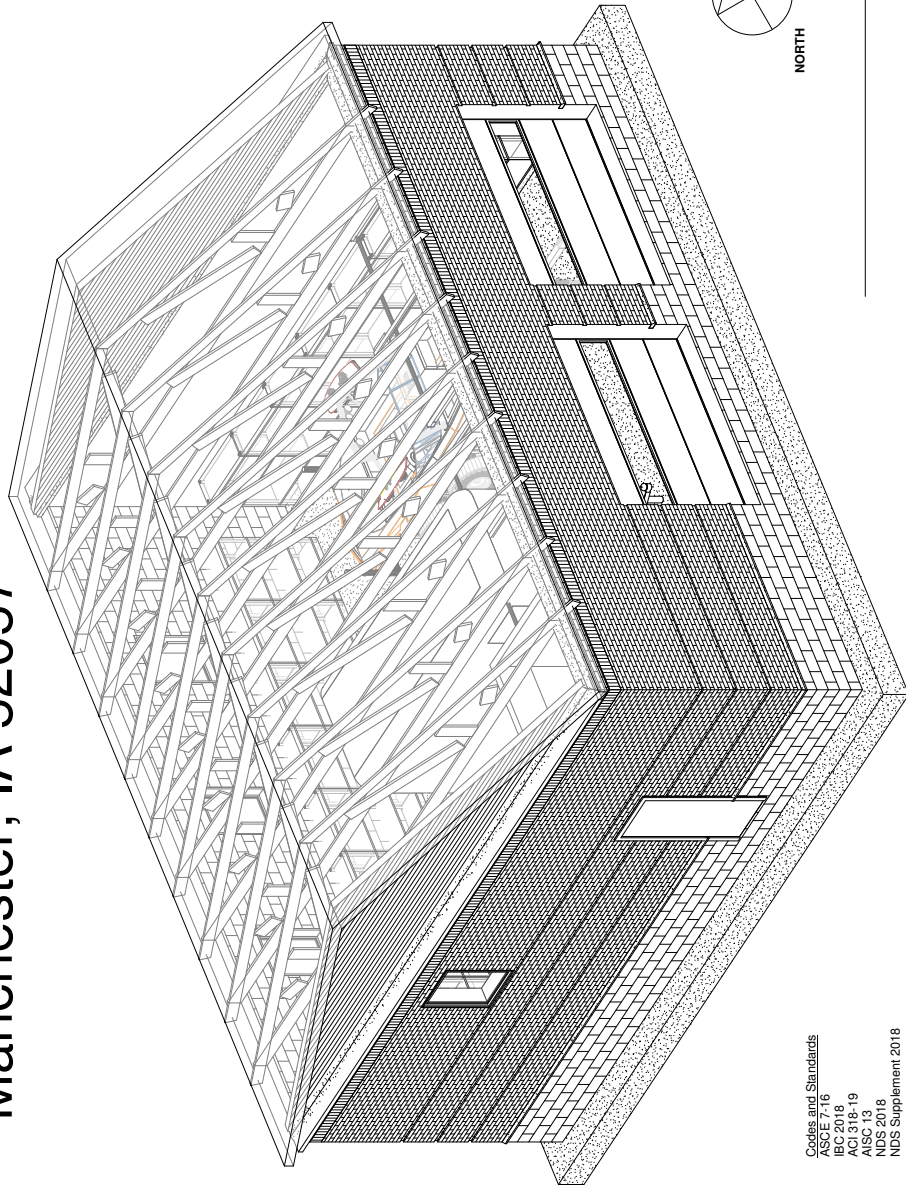


Manchester F.D Cold Storage

400 E Main St,
Manchester, IA 52057



Codes and Standards
 ASCE 7-16
 IBC 2018
 ACI 318-19
 AISC 13
 NDS 2018
 NDS Supplement 2018

Drawing Sheet Index

Structural

- S-00 Cover Sheet
- S-01 Roof Framing
- S-02 Foundation
- S-03 Foundation Framing
- S-04 Building Cross-section
- S-05 Building Cross-section
- S-06 Building Cross-section
- S-07 Building Cross-section
- S-08 East Elevation
- S-09 West Elevation
- S-09 North Elevation
- S-09 South Elevation

Dead Loads			
Top Chord Dead Load	13	PSF	
Bottom Chord Dead Load	7	PSF	
Live Loads			
Roof Live Load	20	PSF	
Snow Loads			
pg Ground Snow Load	30	PSF	
pf Flat Roof Snow Load	16.8	PSF	
ps Sloped Roof Snow Load	13.3	PSF	
Ce Exposure Factor	1.0		
Cs Slope Factor	0.79		
Cd Directionality Factor	1.0		
Ie Importance Factor	1		
Wind Loads			MPH
V Basic Wind Speed	102		
Exposure Category	B		
Internal Pressure Coefficient	+/-0.18		



Manchester F.D Cold Storage

PROJECT: OEE/164/2
 DATE: 11/20/2020
 DRAWN BY: Sae M. Hani
 REVISION:
 CIVIL AND ENVIRONMENTAL ENGINEERING
 405 SEAWALK CENTER FLOOR THE
 ENGINEERING ARTS AND SCIENCES
 103 S CAPITOL ST
 IOWA CITY, IOWA 52242
 PHONE: 319.335.5877
 FAX: 319.335.5697
 EMAIL: cve@hawk@iowa.edu



EDUCATION AND
 ADMINISTRATION

SHEET NAME
 COVER SHEET
 SHEET NO.
S-00

PROJECT: CEE/164-2
 DATE: 11/20/2020
 DRAWN BY: Sae M. Hani
 REVISION:
 EMAIL: ceh@hms@plow.com

THE UNIVERSITY OF IOWA
 CIVIL AND ENVIRONMENTAL ENGINEERING
 165 SE WALKER DRIVE
 IOWA CITY, IOWA 52242
 PHONE: 319.335.5877
 FAX: 319.335.5869



ES&S CONSULTING AND ARCHITECTURE

Manchester F.D Cold Storage

SHEET NAME: ROOF FRAMING PLAN
 SHEET NO.: S-01

Notes

Wood Species: Douglas Fir-Larch
 Grade: No.1
 Fb Reference Bending Design Value: 1,500
 Ft Reference Tension Design Value: 1000
 Fv Reference Shear Design Value: 1700
 E Reference Modulus of Elasticity: 1,300,000
 Fc Reference Compression Design Value Parallel to Grain: 625
 Fc Reference Compression Design Value Perpendicular to Grain: 475
 Emin Reference Modulus of Elasticity: 1,900,000
 Sx Section Modulus: 690,000
 Ix Second Moment of Inertia: 13.1
 Rv Radius of Gyration: 47.6
 G Specific Gravity: 2.093
 0.5

Sawn Lumber Section: 2"x8"
 Service Condition: Dry
 Load Duration: 10 Years

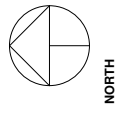
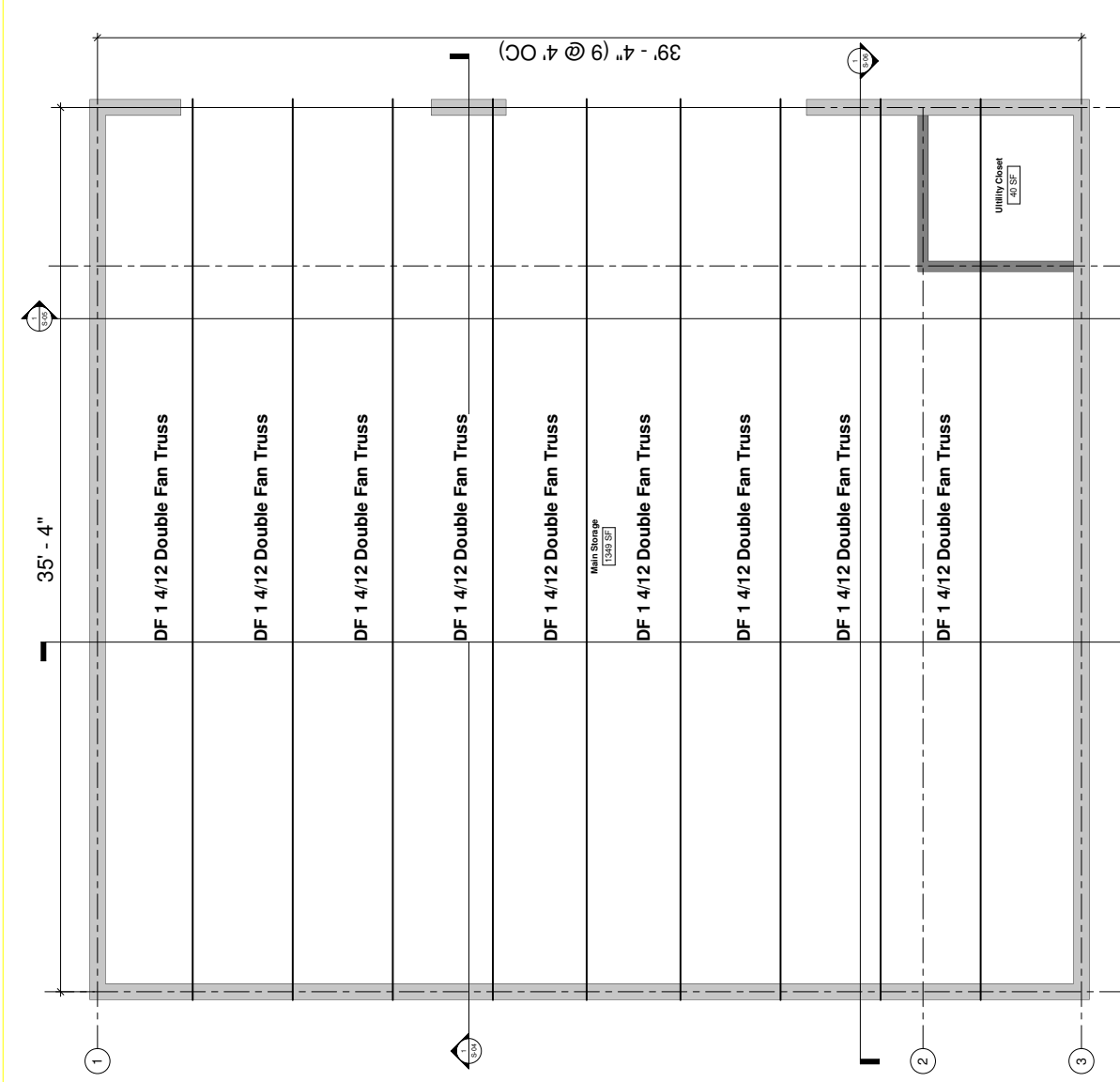
- Roof pitch 4:12
- 18" Overhang on roof

Beams

- 2"x4" Purlins laterally spanning between rafters @ 2' OC
- Trusses @ 4' OC
- Trusses bear on CMU walls
- Moisture barriers and truss anchors to be applied at bearing points
- 18" Overhang on trusses
- See section detail for truss configuration

Roofing

- 1.5" King Rib Series Insulated Trapezoidal Insulated Roof Panels



ROOF FRAMING PLAN
 1/2" = 1'-0"

PROJECT:	THE UNIVERSITY OF IOWA
DATE:	11/20/2020
DESIGNED BY:	SCOTT M. HIRT
REVISION:	

PROJECT: THE UNIVERSITY OF IOWA
 110 S SEMANS CENTER FOR THE
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 FAX: 319.335.5867
 EMAIL: cmh@hawk@uiowa.edu



FOR CONSULTING AND
 ADMINISTRATION

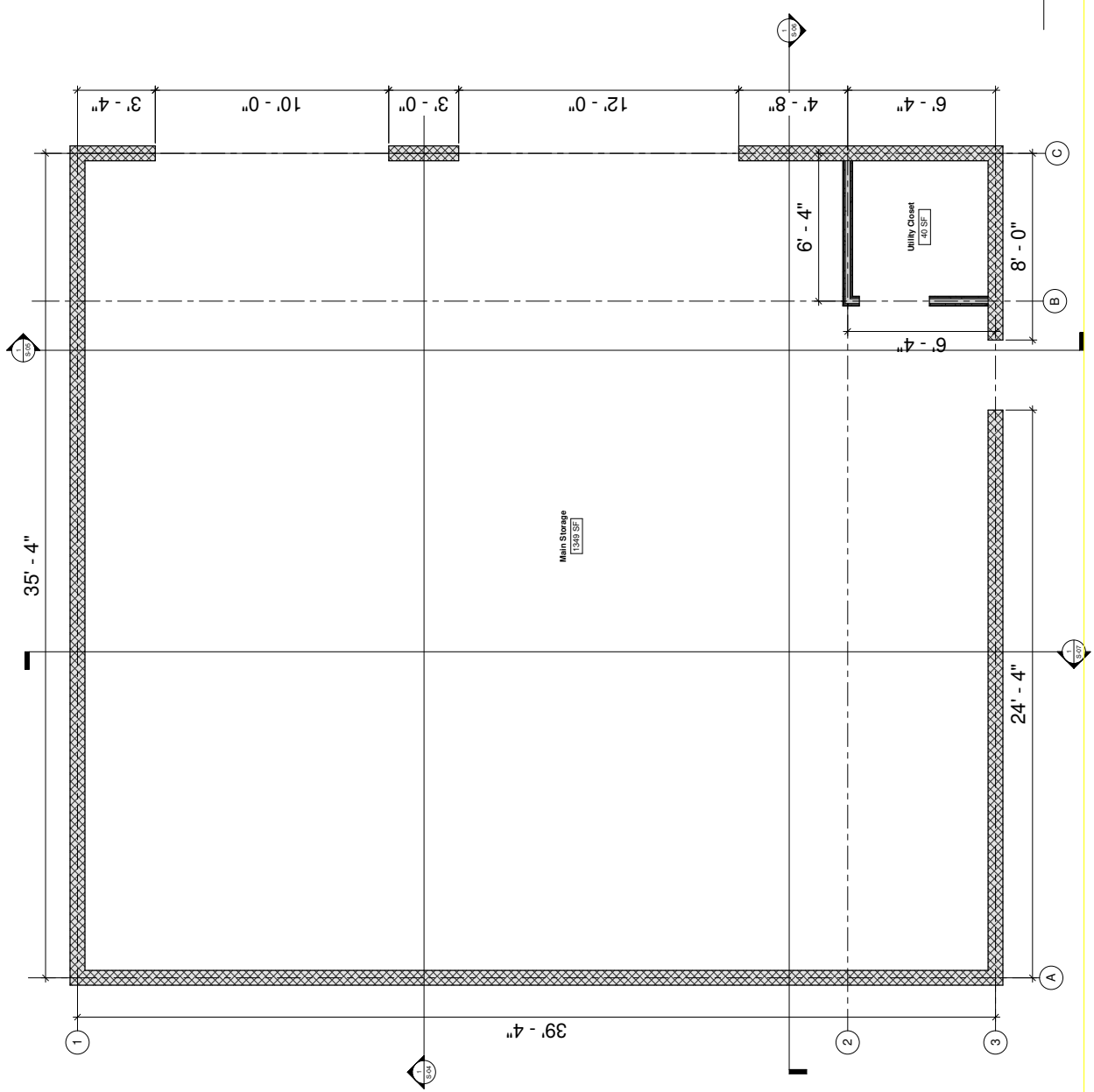
Manchester F.D Cold Storage

SHEET NAME:
 FLOOR
 FRAMING PLAN

SHEET NO.
S-02

Concrete Type	NWC	PCF
Concrete Weight	150	PSI
Compressive Strength of Concrete	4,000	PSI
Modulus of Elasticity of Concrete	3,604,987	PSI
Ultimate Design Strain	0.003	
Concrete Shrink Limit	0.002	
Concrete Cover	1.5	IN
Layers of Reinforcement	1	
Steel Grade	60	
Vertical Reinforcement	#4	
Horizontal Reinforcement	#4	
Modulus of Elasticity of Steel	29,000,000	PSI

- Notes**
- Concrete Type
 - Concrete Weight
 - Compressive Strength of Concrete
 - Modulus of Elasticity of Concrete
 - Ultimate Design Strain
 - Concrete Shrink Limit
 - Concrete Cover
 - Layers of Reinforcement
 - Steel Grade
 - Vertical Reinforcement
 - Horizontal Reinforcement
 - Modulus of Elasticity of Steel
- Wall**
- 8"x8"x16" CMU Blocks
 - 8" Thick with brick veneer starting 8" above grade
 - 14" above grade
 - 1'-6" below grade
- Reinforcement**
- Vertical Reinforcement @ 18" OC
 - Horizontal Reinforcement @ 12" OC
- Windows**
- 36" x 48"
- Doors**
- 36" x 84"



FLOOR FRAMING PLAN
 1/8" = 1'-0"

PROJECT:	THE UNIVERSITY OF IOWA
DATE:	11/20/2020
DESIGNED BY:	SOE, M. HRI
REVISION:	

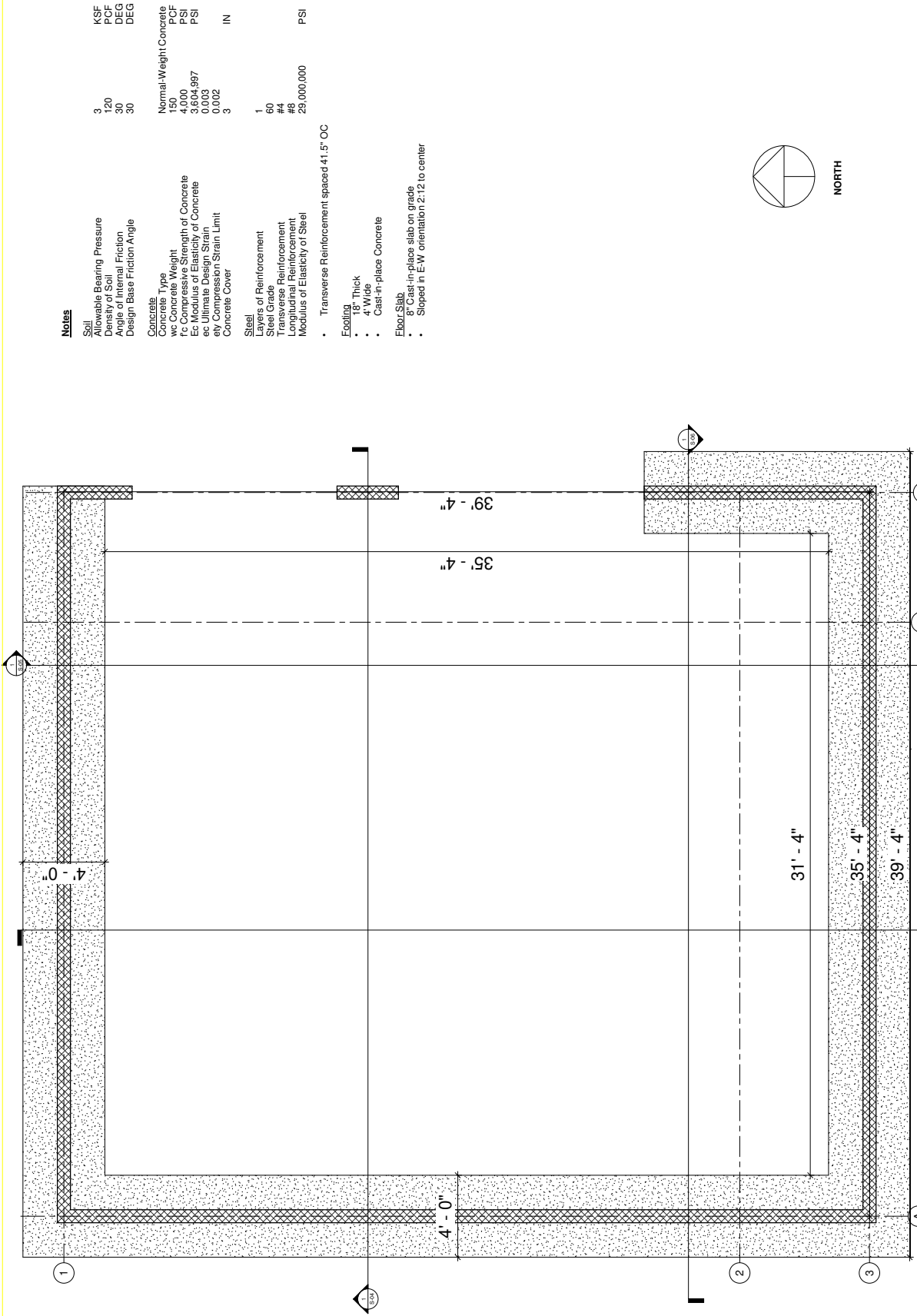
415 SE WALKER STREET, IOWA CITY, IOWA 52242
 PHONE: 319.335.5877
 FAX: 319.335.5869
 EMAIL: civil@hawkdesign.com



FOUNDATION AND
 SUPERSTRUCTURE

Manchester F.D Cold Storage

SHEET NAME
 FOUNDATION
 FRAMING PLAN
 SHEET NO.
S-03



Notes

- Soil
 - Allowable Bearing Pressure KSF 3
 - Density of Soil PCF 120
 - Angle of Internal Friction DEG 30
 - Design Base Friction Angle DEG 30
- Concrete
 - Concrete Type Normal-Weight Concrete
 - wc Concrete Weight PCF 150
 - fc Compressive Strength of Concrete PSI 4,000
 - ec Modulus of Elasticity of Concrete PSI 3,604,997
 - ey Ultimate Design Strain 0.003
 - Concrete Compression Strain Limit 0.002
 - Concrete Cover 3 IN
- Steel
 - Layers of Reinforcement 1
 - Steel Grade 60
 - Transverse Reinforcement #4
 - Longitudinal Reinforcement #8
 - Modulus of Elasticity of Steel 29,000,000 PSI
- Transverse Reinforcement spaced 41.5" OC
- Footing
 - 18" Thick
 - 4' Wide
 - Cast-in-place Concrete
- Floor Slab
 - Cast-in-place slab on grade
 - Sloped in E-W orientation 2:12 to center



NORTH

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

PROJECT: OEE-4164-2
 DATE: 11/20/2020
 DRAWN BY: Scott M. Hirt
 REVISION:

THE UNIVERSITY OF IOWA
 CIVIL AND ENVIRONMENTAL ENGINEERING
 4105 SEAMAN CENTER FOR THE
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 EMAIL: civil-hmw@uiowa.edu

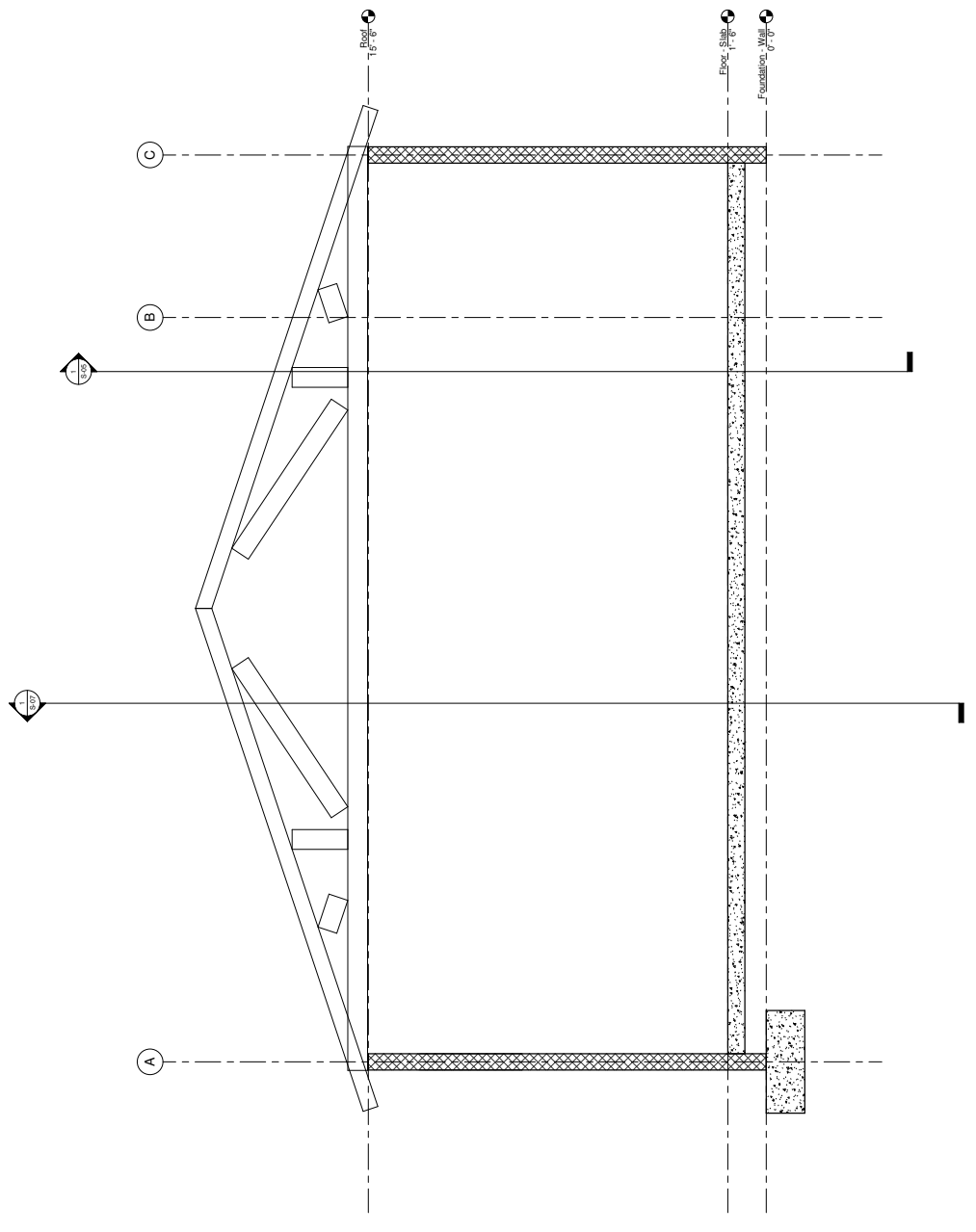


DESIGNATION AND
 DESCRIPTION

Manchester F.D Cold Storage

SHEET NAME
 BUILDING
 CROSS SECTION
 SHEET NO.

S-04



1/8" = 1'-0"

90-S

SHEET NO.

SHEET NAME
BUILDING
CROSS SECTION

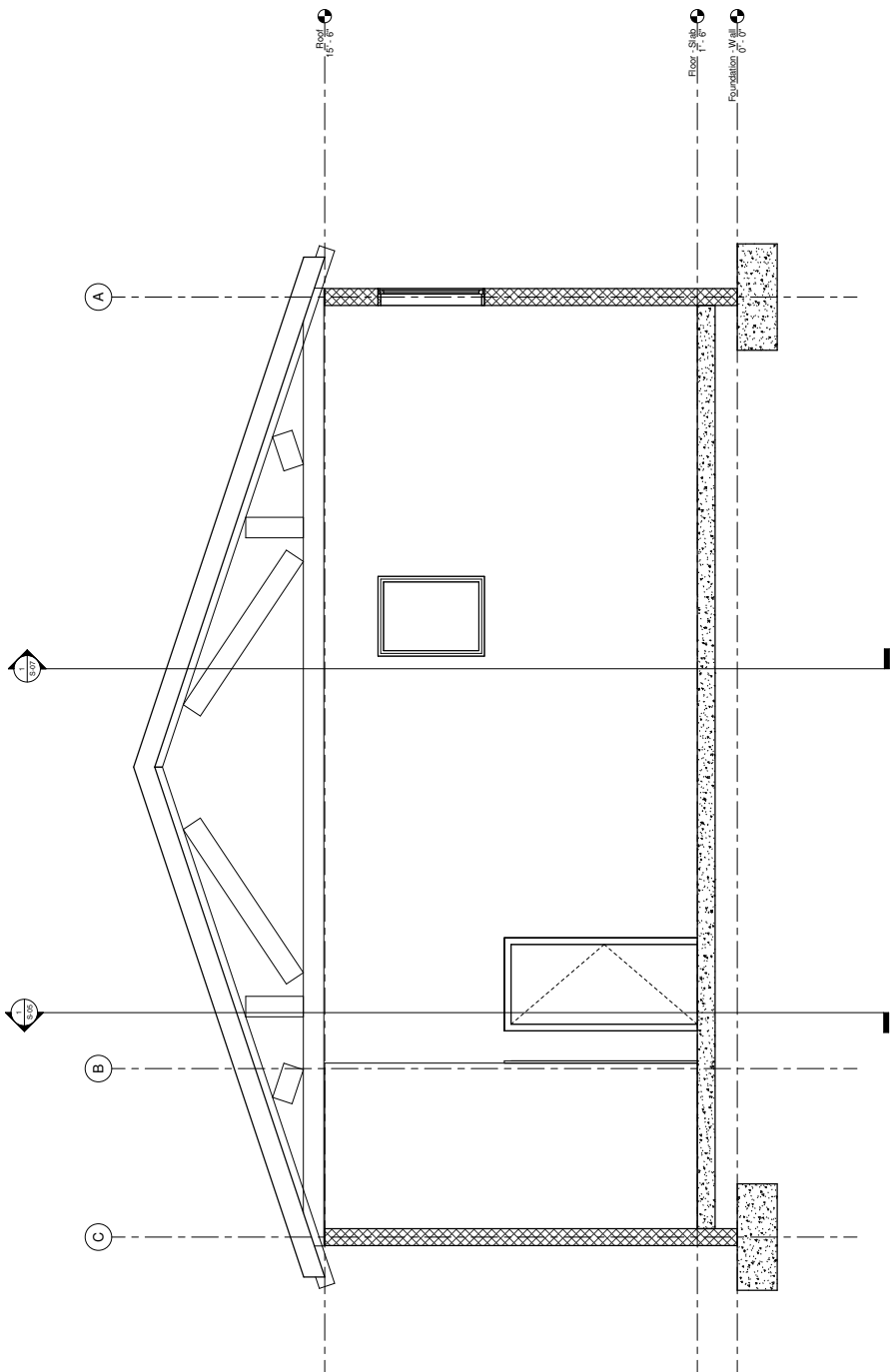
Manchester F.D Cold Storage

EXPANSION AND
CONTRACTION



THE UNIVERSITY OF IOWA
CIVIL AND ENVIRONMENTAL ENGINEERING
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IOWA CITY, IOWA 52242
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FAX: 319.335.5660
EMAIL: civi1-hmw@iowa.edu

PROJECT:	CEE4164-2
DATE:	11/20/2020
DRAWN BY:	Soe M. Hrit
REVISION:	



1/8" = 1'-0"

PROJECT: OEE-164-2
 DATE: 11/20/2020
 DRAWN BY: Scott M. Hirt
 REVISION:

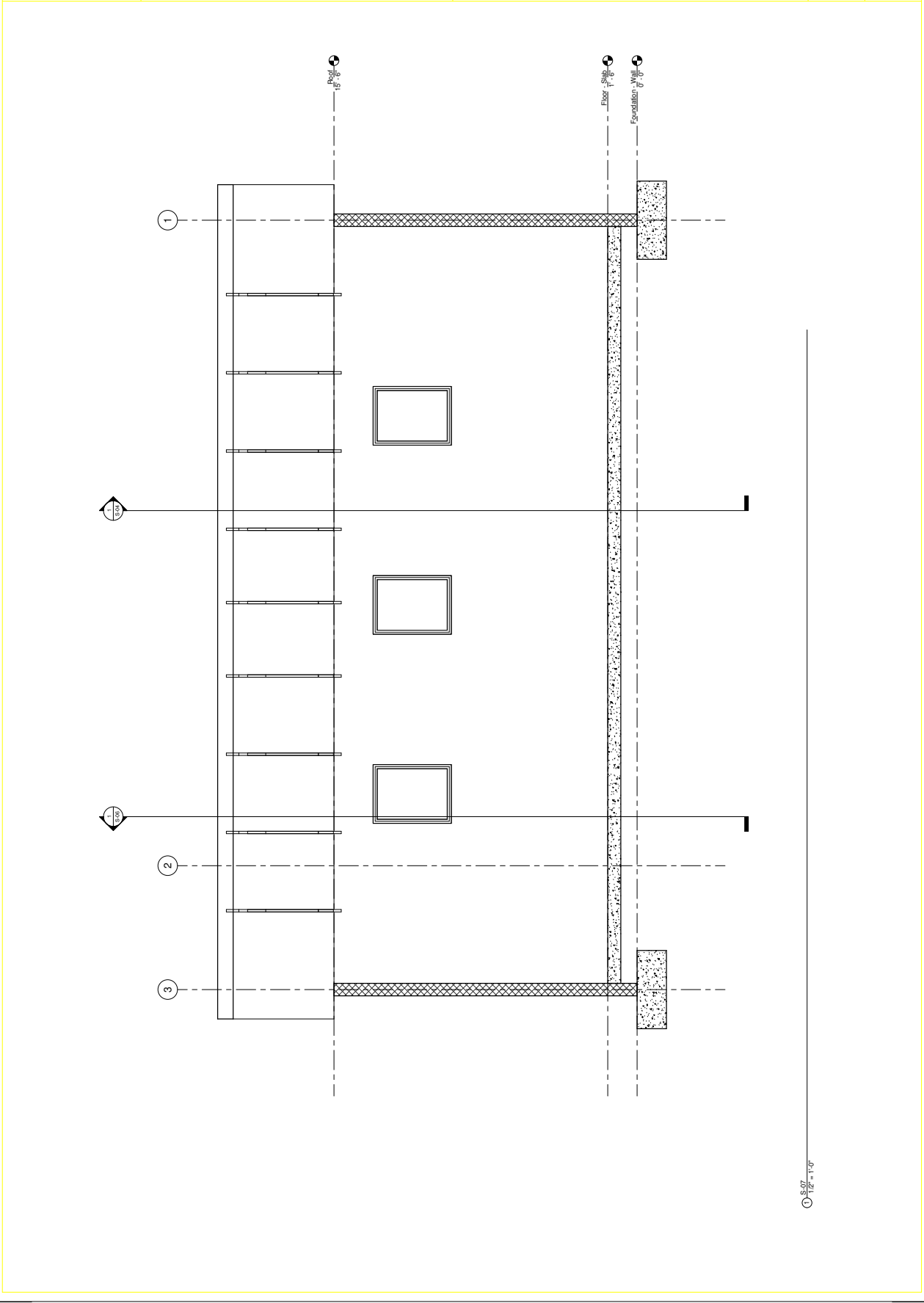
THE UNIVERSITY OF IOWA
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 EMAIL: civil-haws@uiowa.edu



FOUNDATION AND
 CONSTRUCTION

Manchester F.D Cold Storage

SHEET NAME
 BUILDING
 CROSS SECTION
 SHEET NO.
S-07



① S-07
 1/2" = 1'-0"

PROJECT:	CEE4164-2
DATE:	11/20/2020
DRAWN BY:	Soe M. Hui
REVISION:	

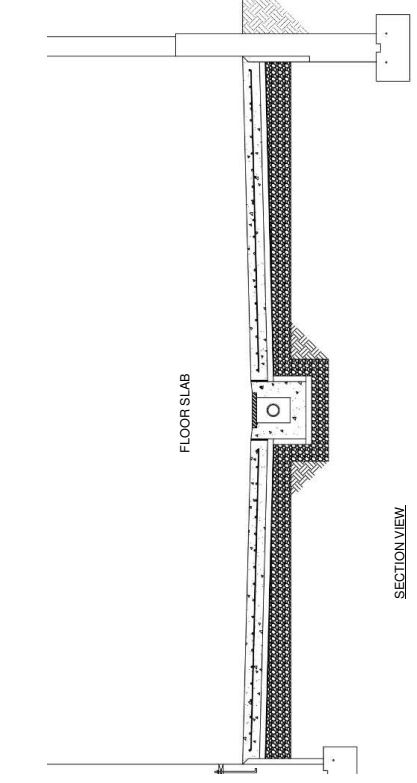
THE UNIVERSITY OF IOWA
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 EMAIL: civi-hui@uiowa.edu



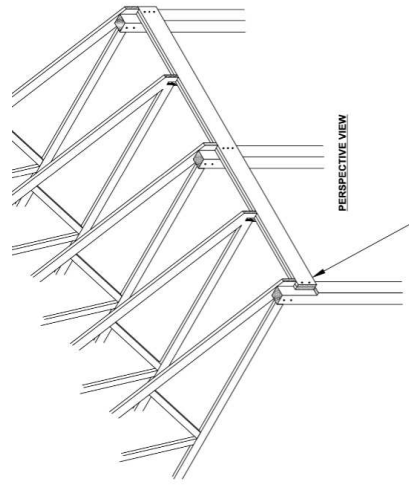
EDUCATION AND
 PROFESSIONAL
 REGISTRATION

Manchester F.D Cold Storage

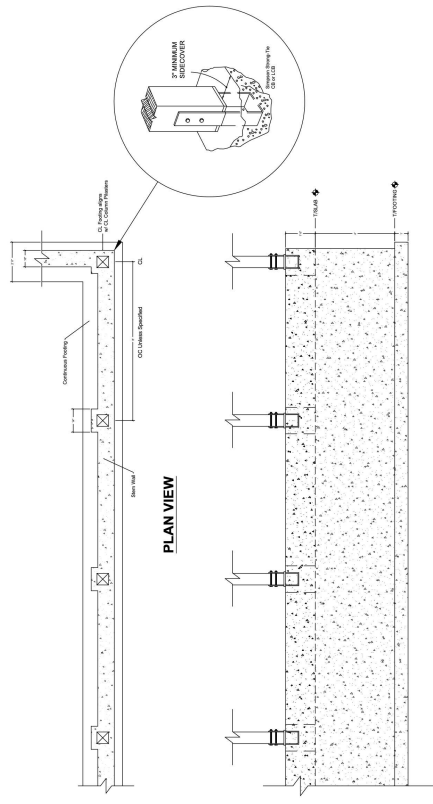
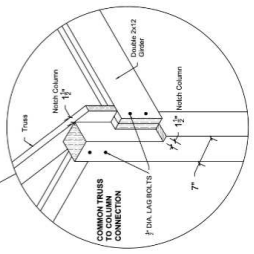
SHEET NAME
 SECTION DETAILS
 SHEET NO.
S-08



SECTION VIEW

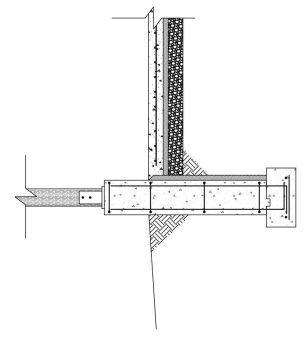


PERSPECTIVE VIEW

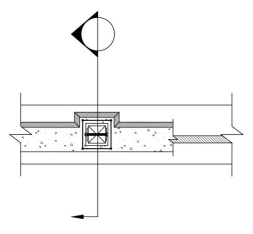


PLAN VIEW

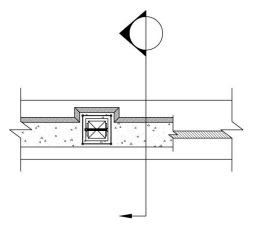
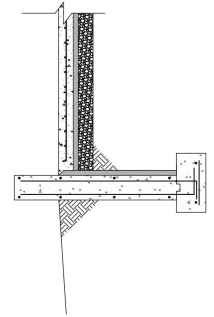
ELEVATION VIEW

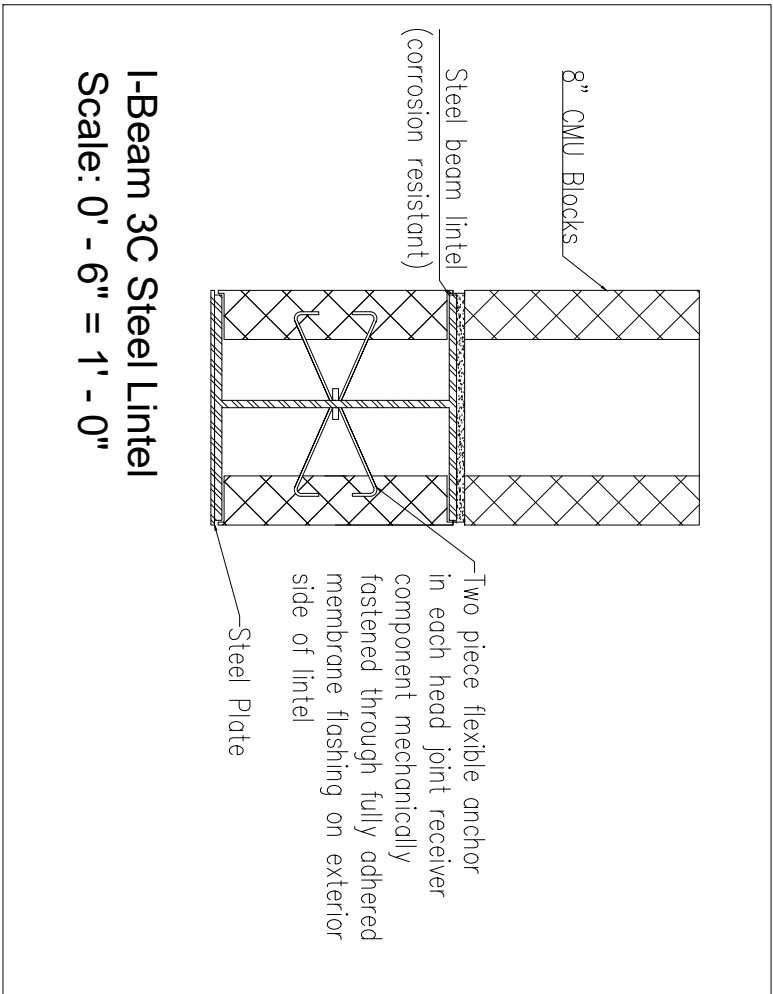


SECTION VIEW



PLAN VIEW





Lintel	Length (ft)	Width (in)	Height (in)	Thickness (in)	Total UDL (kip)	Application	Total #
I-Beam 3C	13.78	7.68	8.94	0.125	7.8	(1) 12'x12' garage door	1
I-Beam 3C	13.29	7.68	8.94	0.125	9	(1) 10'x12' garage door	1
I-Beam 2C	6.89	7.68	5.98	0.1	6.75	(1) standard entry door and (4) standard windows	5

PROJECT: CEE:4
 DATE : 12/02/2
 DRAWN BY:
 REVISION:

THE UNIVERSITY OF IOWA
CIVIL AND ENVIRONMENTAL ENGINEERING
 4105 SEAMANS CENTER FOR THE
 ENGINEERING ARTS AND SCIENCES
 103 S. CAPITOL ST
 IOWA CITY, IOWA 52242
 PHONE: 319.335.5647
 FAX: 319.335.5660
 EMAIL: civil-hawks@uiowa.edu



EDUCATIONAL - NOT FOR CONSTRUCTION

Manchester Fire Station Expansion

400 E Main Street
 Manchester, IA 52057

SHEET NAME
 Lintel Details

SHEET NO.
S-09

PROJECT: CEE/164-2
 DATE: 11/20/2020
 DRAWN BY: Scot M. Hill
 REVISION:
 IOWA CITY, IOWA 52242
 410 SEAWING CENTER FOR THE
 ENGINEERING ARTS AND SCIENCES
 PH: 319.335.5877
 FAX: 319.335.5869
 EMAIL: cmt.hill@uiowa.edu



EXPANDED FROM
 CONSTRUCTION

Manchester F.D Cold Storage

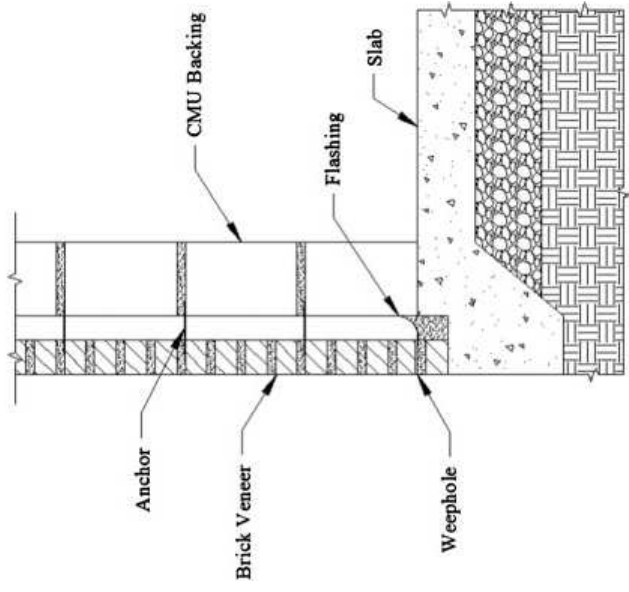
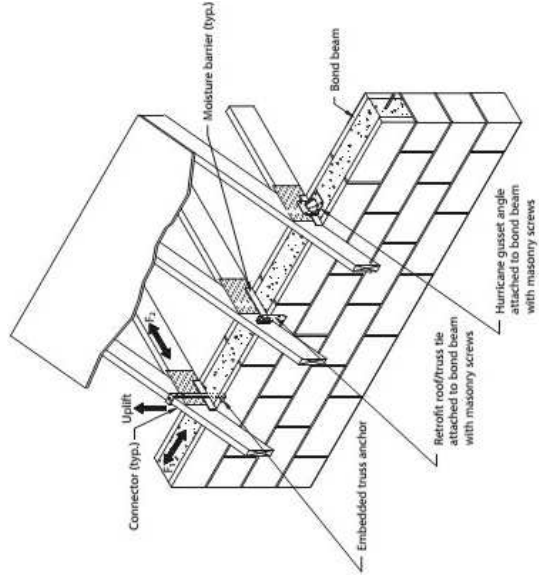
SHEET NAME
 WALL
 CROSS SECTION
 SHEET NO.

S-10

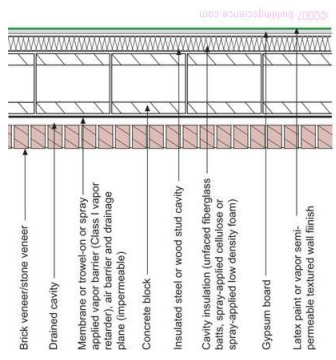


KingRib INSULATED ROOF PANEL

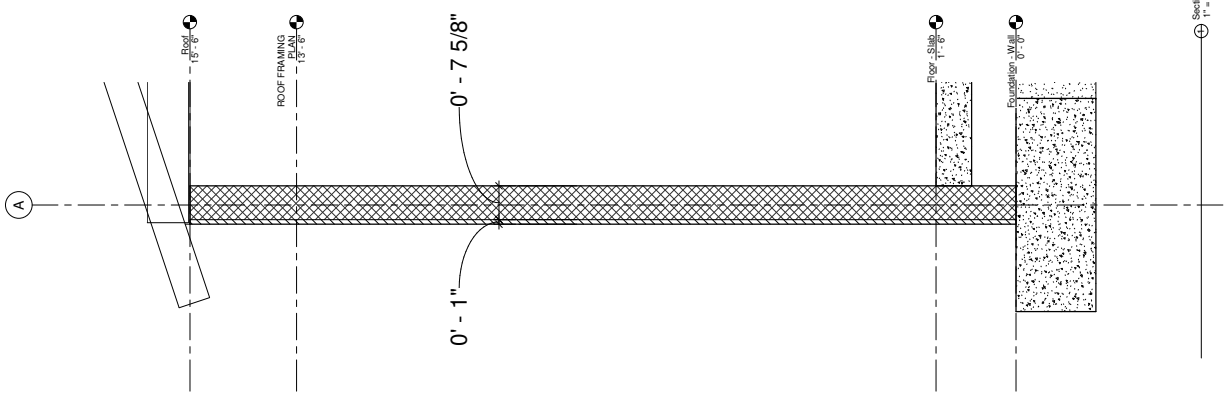
WALL-ROOF CONNECTIONS



WALL SECTION DETAIL



WALL SECTION DETAIL



Section 1
 1" = 1'-0"

PROJECT: OEE4164-2
 DATE: 11/20/2020
 DRAWN BY: Scot M. Hirt
 REVISION:

THE UNIVERSITY OF IOWA
 CIVIL AND ENVIRONMENTAL ENGINEERING
 4105 SEAMAN CENTER FOR THE
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 103 S CAPITOL ST
 IOWA CITY, IOWA 52242
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 EMAIL: civil-hires@uiowa.edu



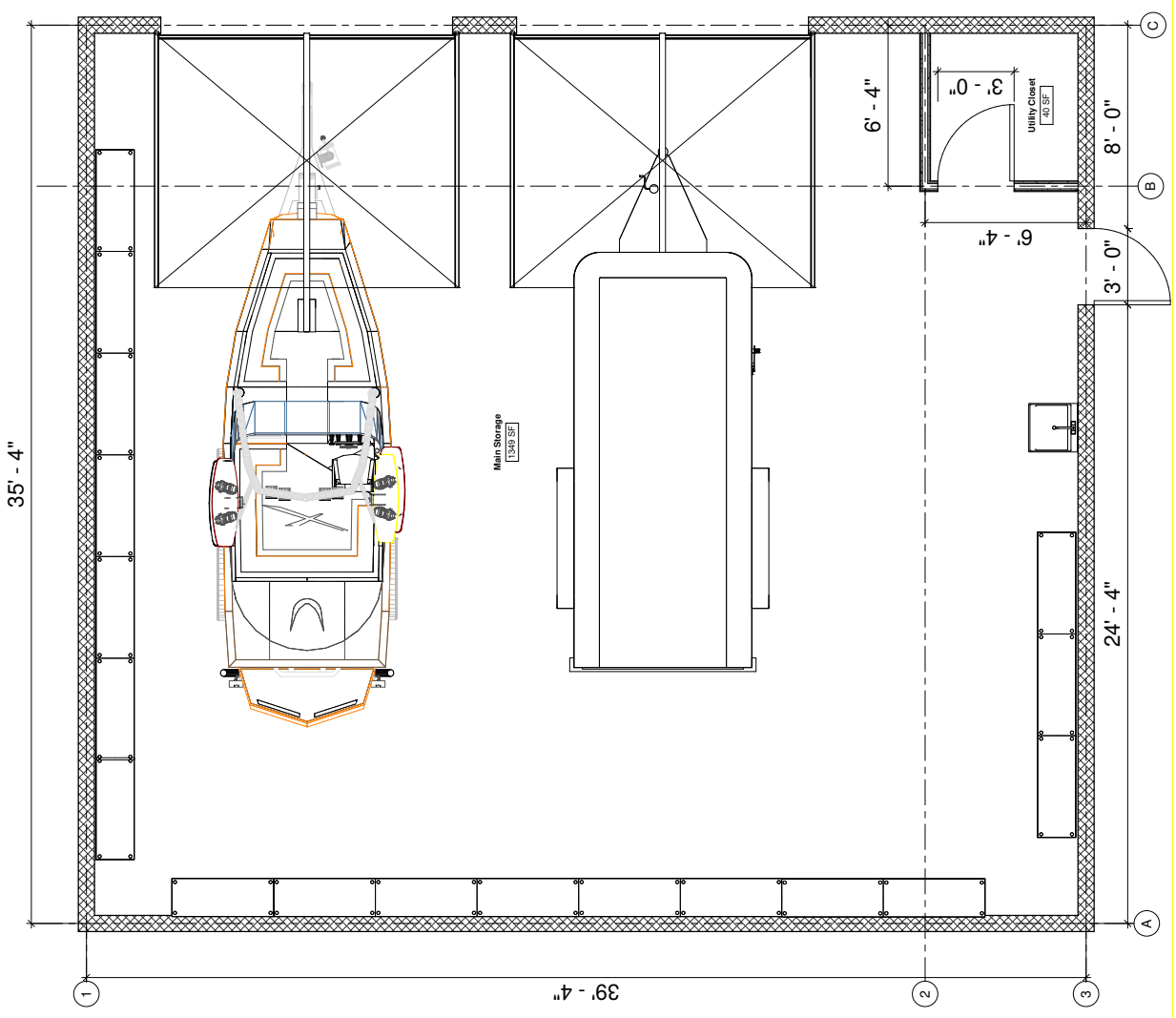
EXPANSION AND
 RECONSTRUCTION

Manchester F.D Cold Storage

SHEET NAME
 Floor Plan

SHEET NO.
A-01

- Notes**
- Windows
 - 30" x 48"
 - Doors
 - 36" x 64"



Arch Floor Plan
 1/2" = 1'-0"

A-02

SHEET NO.

SHEET NAME
BUILDING
EAST ELEVATION

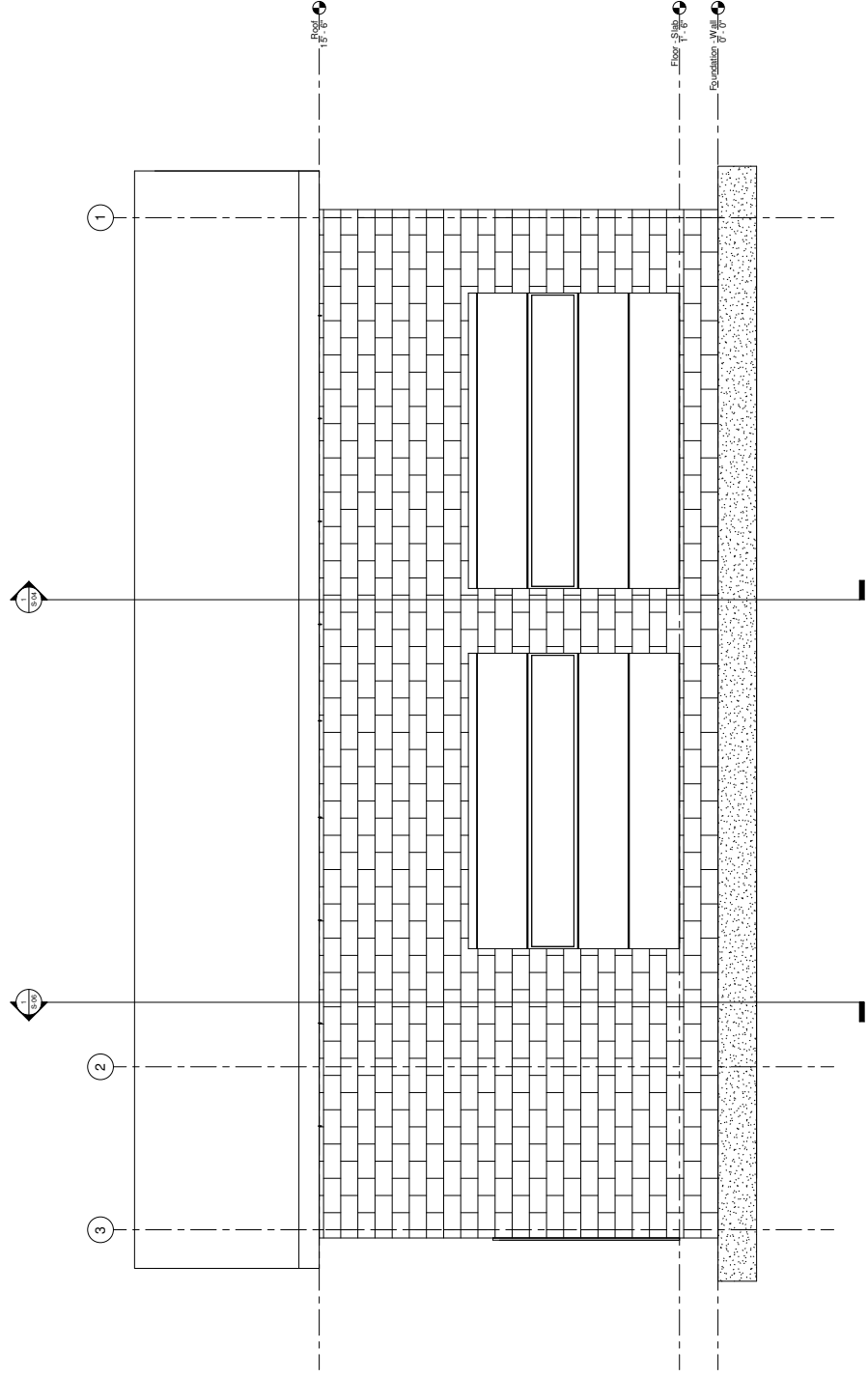
Manchester F.D Cold Storage

EXPLANATION
CONSTRUCTION



THE UNIVERSITY OF IOWA
CIVIL AND ENVIRONMENTAL ENGINEERING
4105 SEAMAN CENTER FOR THE
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IOWA CITY, IOWA 52242
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PROJECT:	CEE4164-2
DATE:	11/20/2020
DRAWN BY:	Soe M. Huh
REVISION:	



1/8" = 1'-0"

PROJECT: CEE4164-2
 DATE: 11/20/2020
 DRAWN BY: Scot M. Hirt
 REVISION:

THE UNIVERSITY OF IOWA
 CIVIL AND ENVIRONMENTAL ENGINEERING
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 103 S CAPITOL ST
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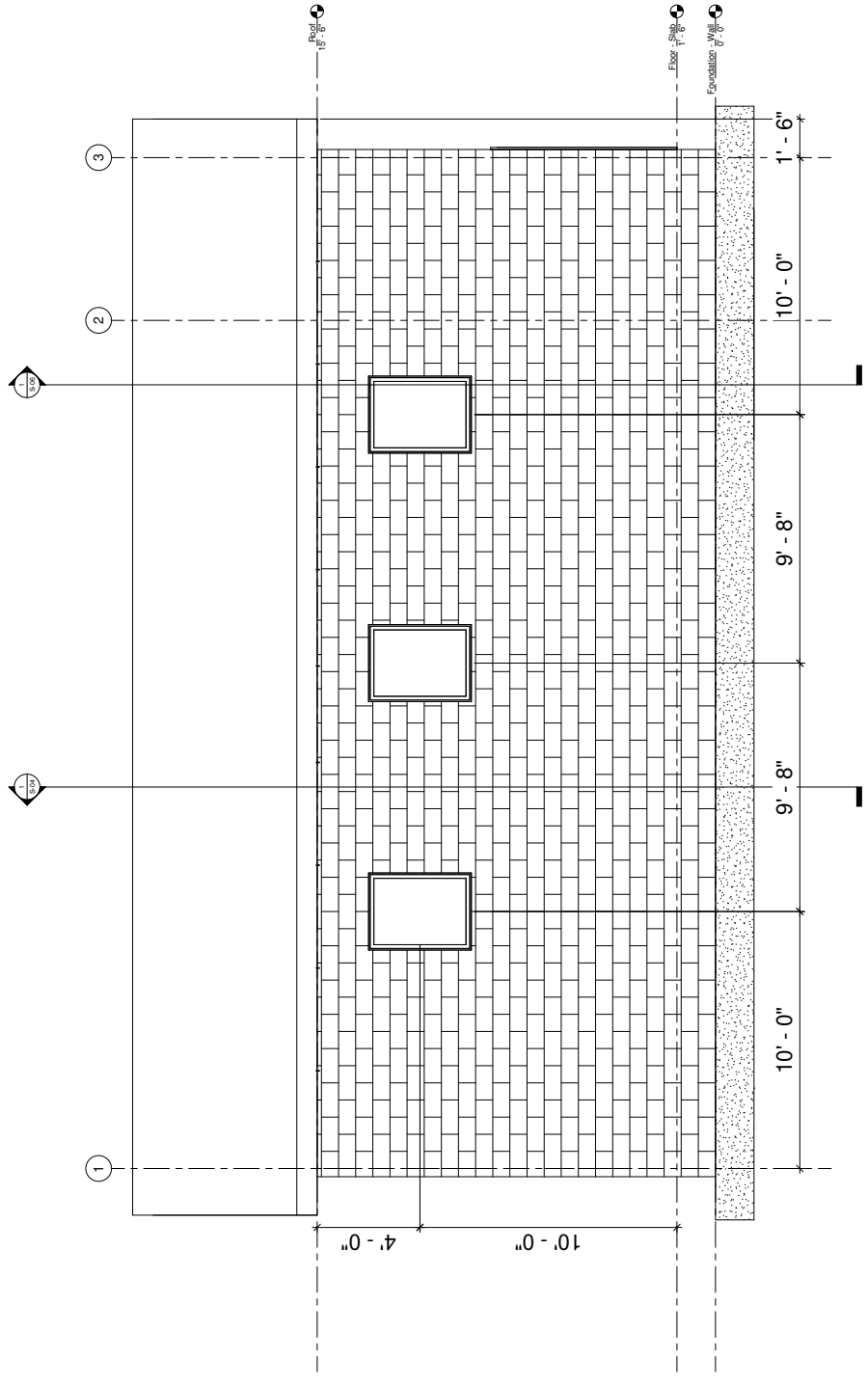


EXPLANATION
 OF SYMBOLS AND
 DIMENSIONS

Manchester F.D Cold Storage

SHEET NAME
 BUILDING
 WEST ELEVATION
 SHEET NO.

A-03



West
 1/2" = 1'-0"

A-04

SHEET NO.

SHEET NAME
BUILDING
NORTH ELEVATION

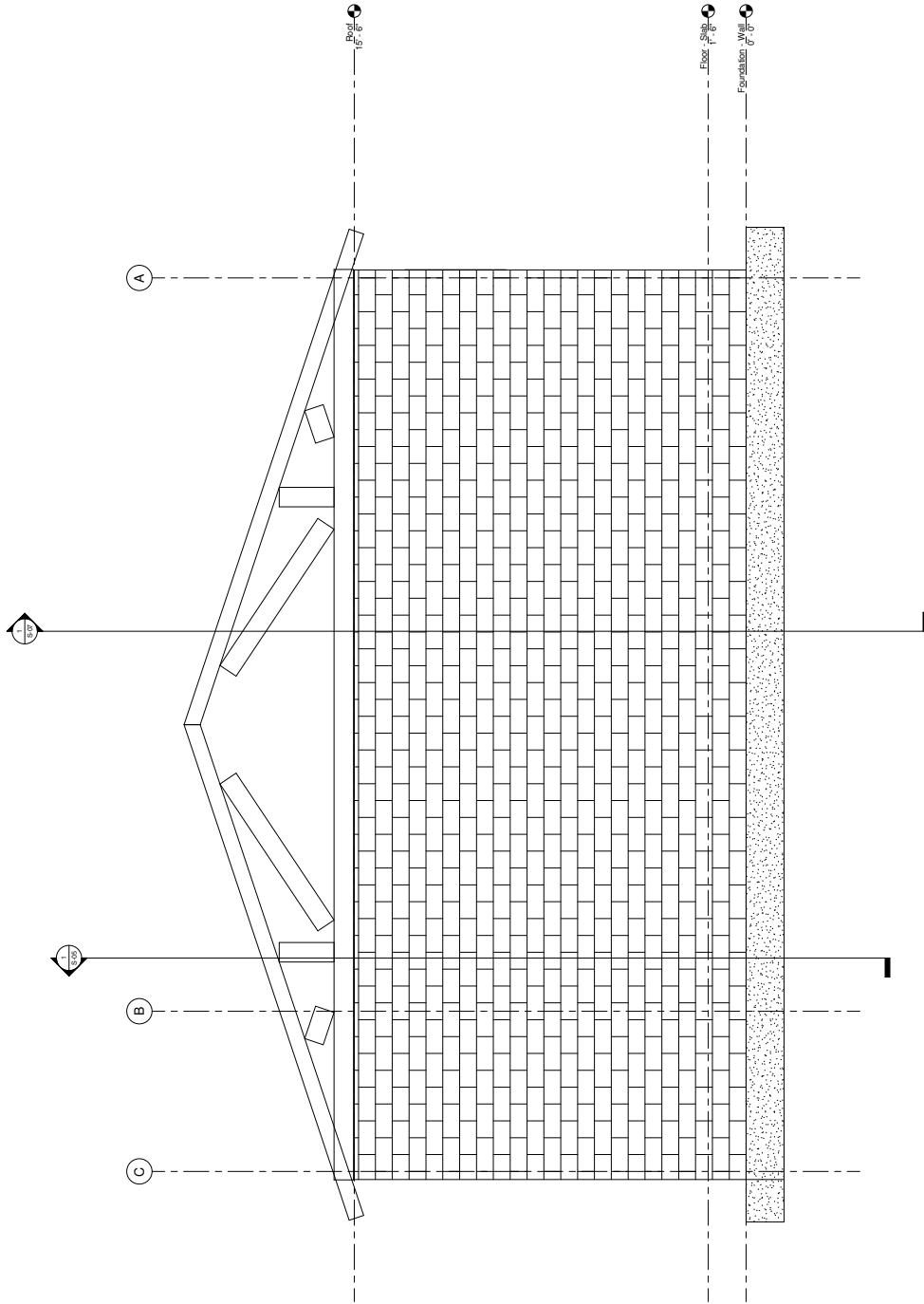
Manchester F.D Cold Storage

EXPLANATION
CONSTRUCTION



THE UNIVERSITY OF IOWA
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IOWA CITY, IOWA 52242
PHONE: 319.335.5877
FAX: 319.335.5860
EMAIL: civi1-hmw@uiowa.edu

PROJECT:	CEE4164-2
DATE:	11/20/2020
DRAWN BY:	Soe M. Hrit
REVISION:	



North
1/8" = 1'-0"

PROJECT: CEE4164.2
 DATE: 11/20/2020
 DRAWN BY: Sae M. Hani
 REVISION:

THE UNIVERSITY OF IOWA
 CIVIL AND ENVIRONMENTAL ENGINEERING
 410 SEAMAN CENTER FOR THE
 ENGINEERING ARTS AND SCIENCES
 103 S CAPITOL ST
 IOWA CITY, IOWA 52242
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 EMAIL: civil-haws@uiowa.edu

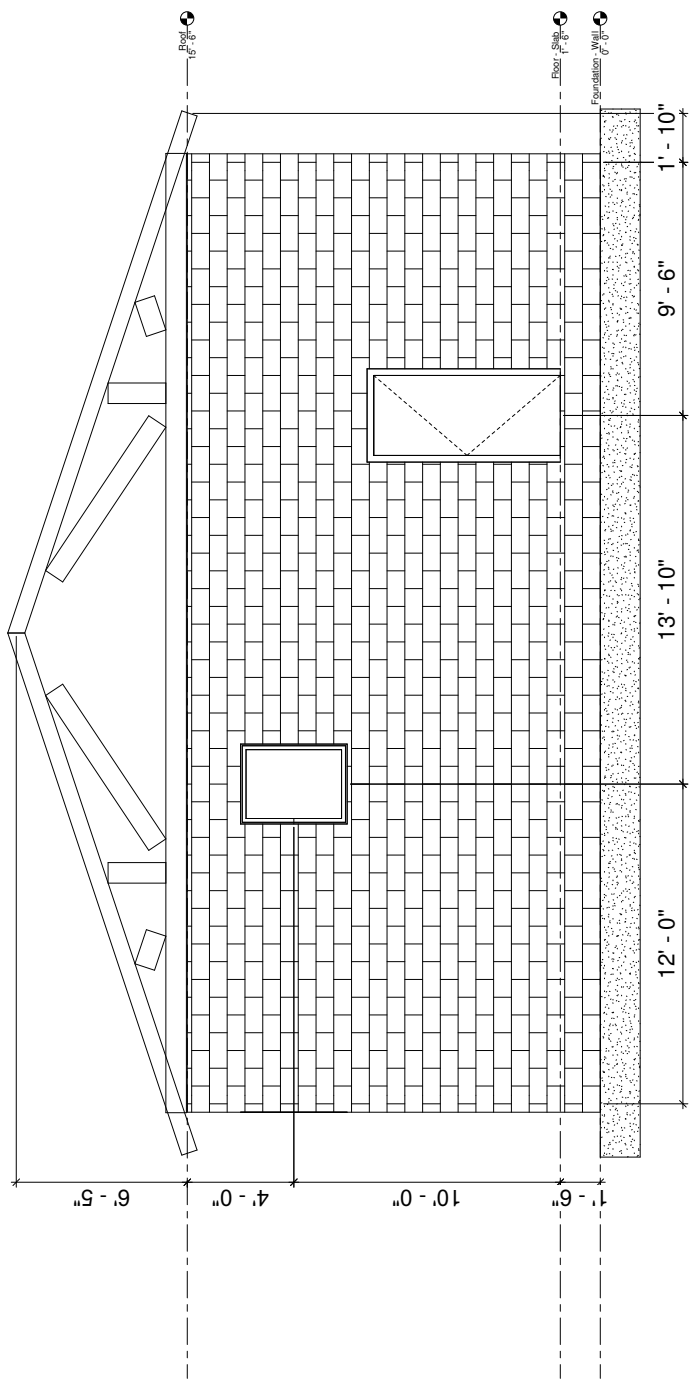


EXHIBIT 100
 CONSTRUCTION
 ADMINISTRATION

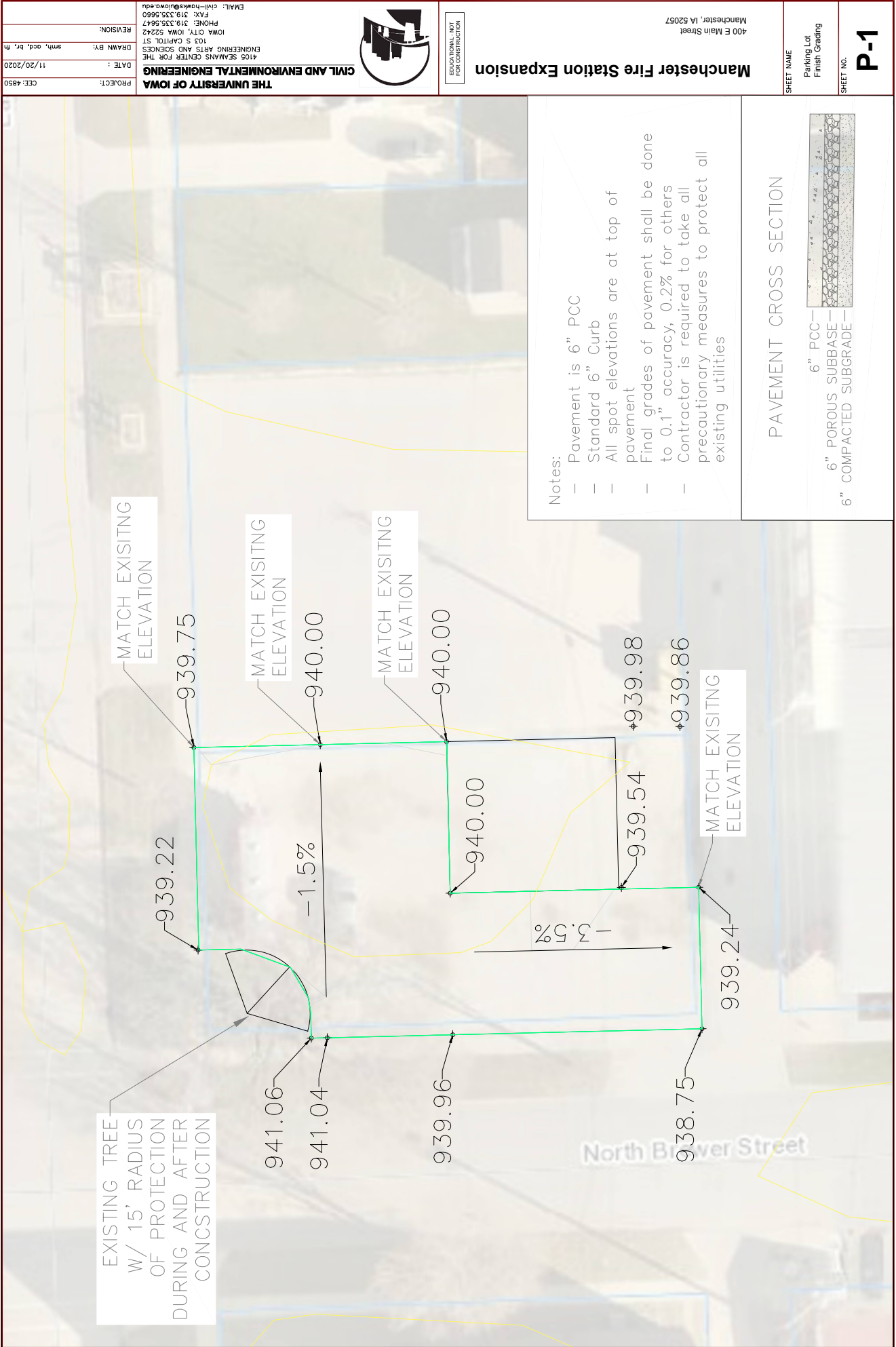
Manchester F.D Cold Storage

SHEET NAME
 BUILDING
 SOUTH ELEVATION
 SHEET NO.

A-05



1/2" = 1'-0"



Notes:

- Pavement is 6" PCC
- Standard 6" Curb
- All spot elevations are at top of pavement
- Final grades of pavement shall be done to 0.1" accuracy, 0.2% for others
- Contractor is required to take all precautionary measures to protect all existing utilities

PAVEMENT CROSS SECTION



Manchester Fire Station Expansion
 400 E Main Street
 Manchester, IA 52057

THE UNIVERSITY OF IOWA
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 PHONE: 319.335.5647
 FAX: 319.335.5660
 EMAIL: civil-hawks@uiowa.edu

PROJECT: CEE: 4850
DATE: 11/20/2020
DRAWN BY: smh, ocd, br, th
REVISION:

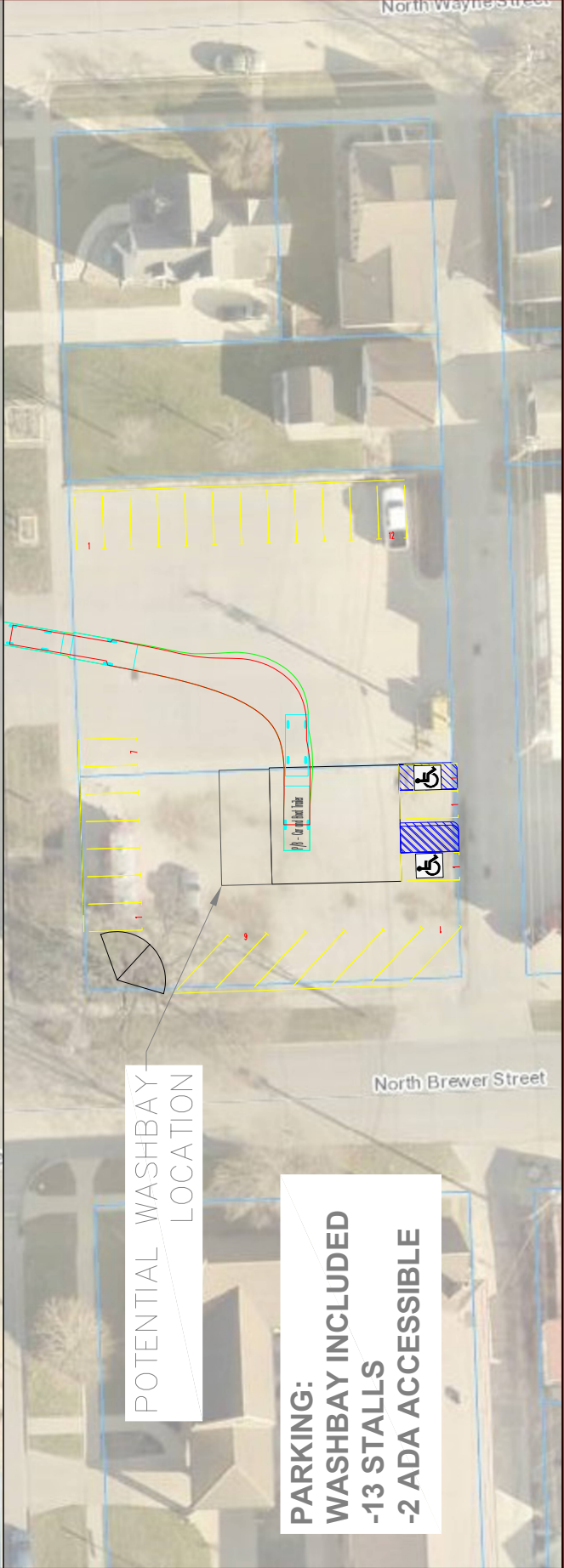
THE UNIVERSITY OF IOWA
 CIVIL AND ENVIRONMENTAL ENGINEERING
 4105 SEAMANS CENTER FOR THE ENGINEERING ARTS AND SCIENCES
 103 S CAPITOL ST
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 FAX: 319.335.5660
 EMAIL: civil-hawks@uiowa.edu

P-1

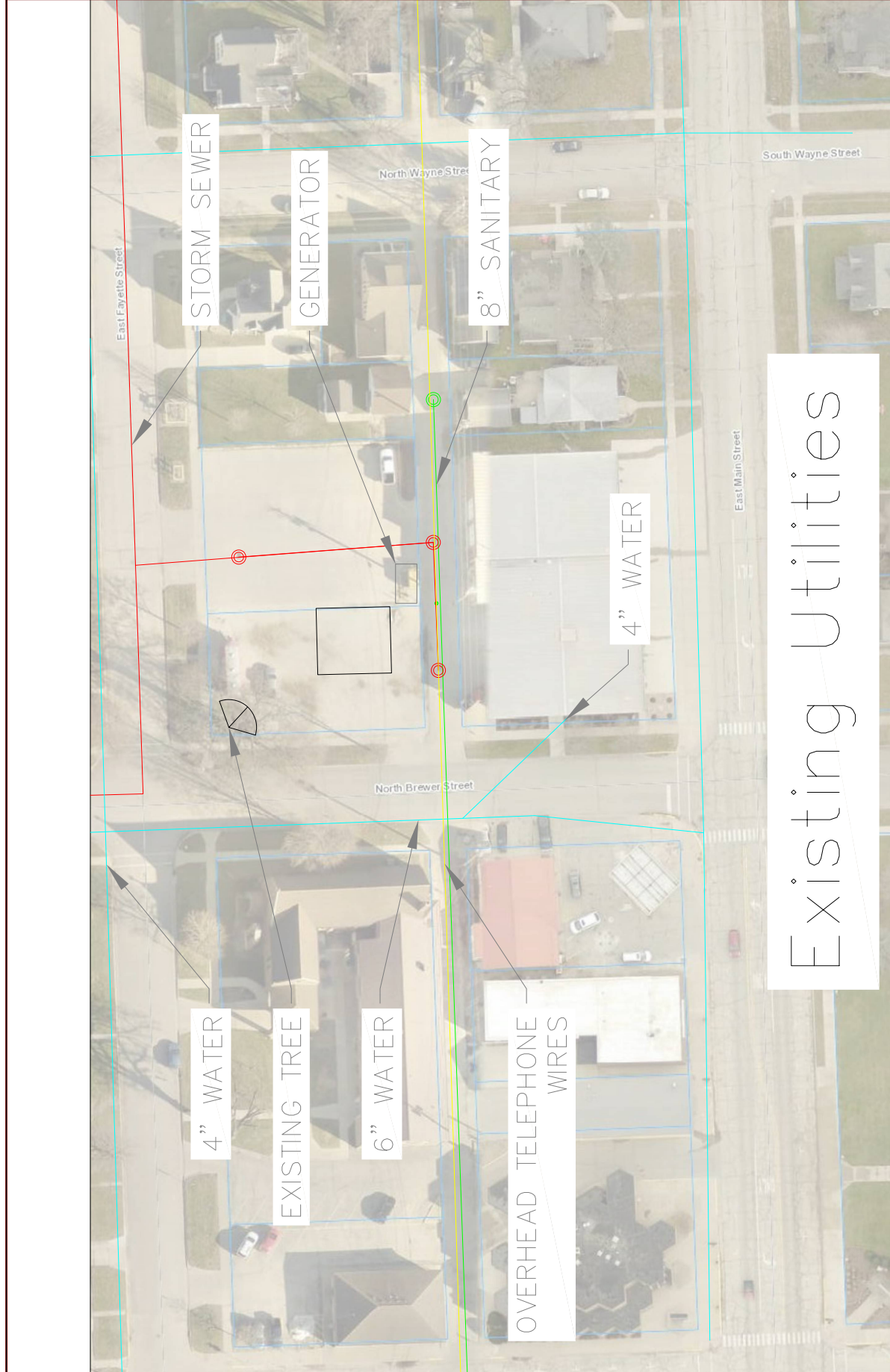
SHEET NAME
 Paving Lot
 Finish Grading

SHEET NO.

	THE UNIVERSITY OF IOWA CIVIL AND ENVIRONMENTAL ENGINEERING 4105 SEAMANS CENTER FOR THE ENGINEERING ARTS AND SCIENCES 103 S CARROLL ST IOWA CITY, IOWA 52242 PHONE: 319.335.5647 FAX: 319.335.5660 EMAIL: civil-hawks@iowag.edu	Manchester Fire Station Expansion 400 E Main Street Manchester, IA 52057	SHEET NAME Parking Lot Striping Options	P-2 SHEET NO.
	PROJECT: CEE:4850 DATE: 11/20/2020 DRAWN BY: smh, ocd, br, th REVISION:	CIVIL AND ENVIRONMENTAL ENGINEERING CIVIL ENGINEERING CIVIL ENGINEERING	SHEET NO. NOT FOR CONSTRUCTION	



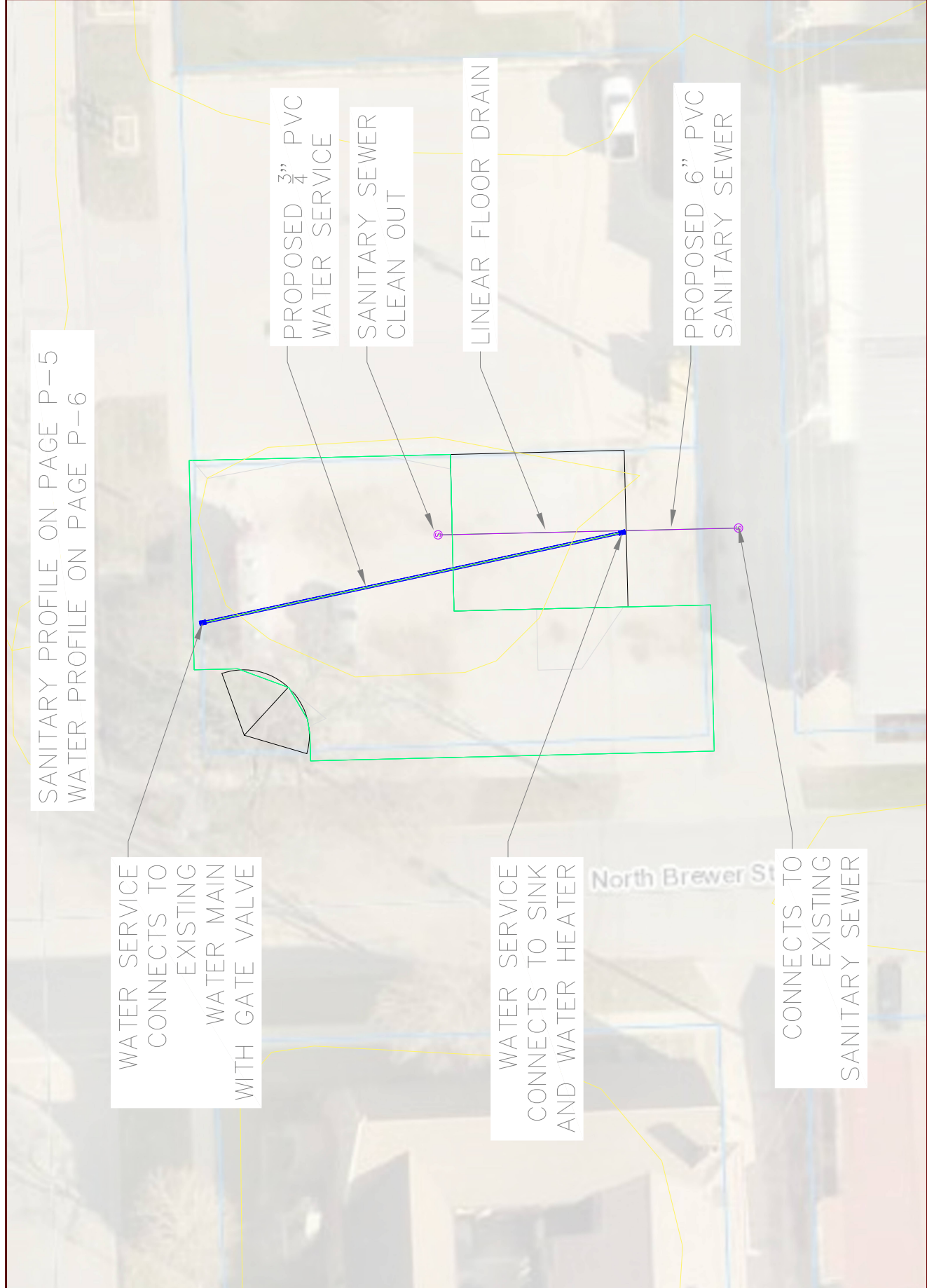
THE UNIVERSITY OF IOWA CIVIL AND ENVIRONMENTAL ENGINEERING 4105 SEAMANS CENTER FOR THE ENGINEERING ARTS AND SCIENCES 103 S CARROLL ST IOWA CITY, IOWA 52242 PHONE: 319.335.5647 FAX: 319.335.5660 EMAIL: civil-hawks@iowaweb.org			Manchester Fire Station Expansion 400 E Main Street Manchester, IA 52057
PROJECT: CEE: 4850	DATE: 11/20/2020	DRAWN BY: smh, ocd, br, th	REVISIONS:



Existing Utilities

SHEET NAME Existing Utilities	P-3
SHEET NO.	

THE UNIVERSITY OF IOWA CIVIL AND ENVIRONMENTAL ENGINEERING 4105 SEAMANS CENTER FOR THE ENGINEERING ARTS AND SCIENCES 103 S CAPITOL ST IOWA CITY, IOWA 52242 PHONE: 319.335.5647 FAX: 319.335.5660 EMAIL: civil-hawks@iowa.edu			MANCHESTER FIRE STATION EXPANSION 400 E Main Street Manchester, IA 52057
PROJECT: CEE:4850	DATE: 11/20/2020	DRAWN BY: smh, ocd, br, th	REVISION:
SHEET NAME: Proposed Utilities			
SHEET NO. P-4			



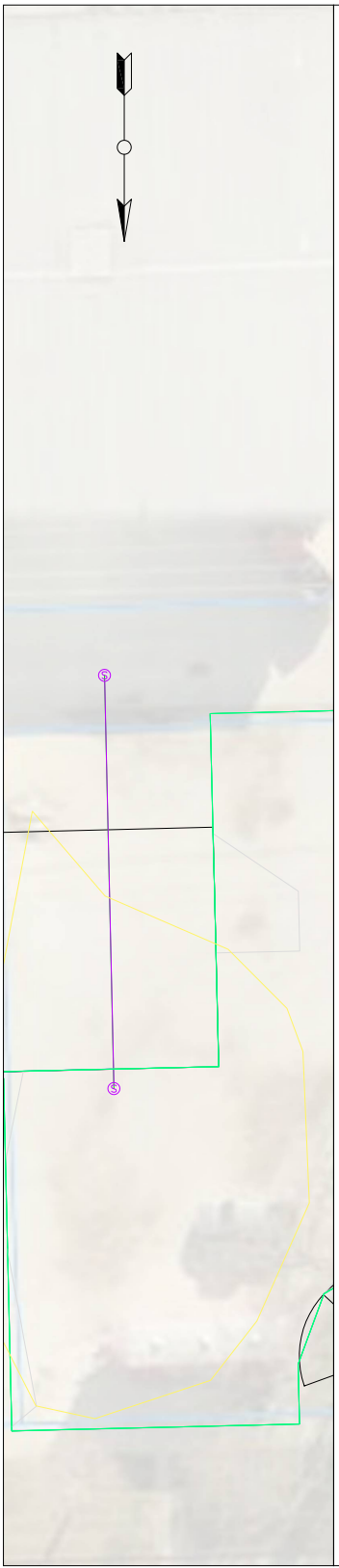


REVISIONAL UNIT FOR CONSTRUCTION

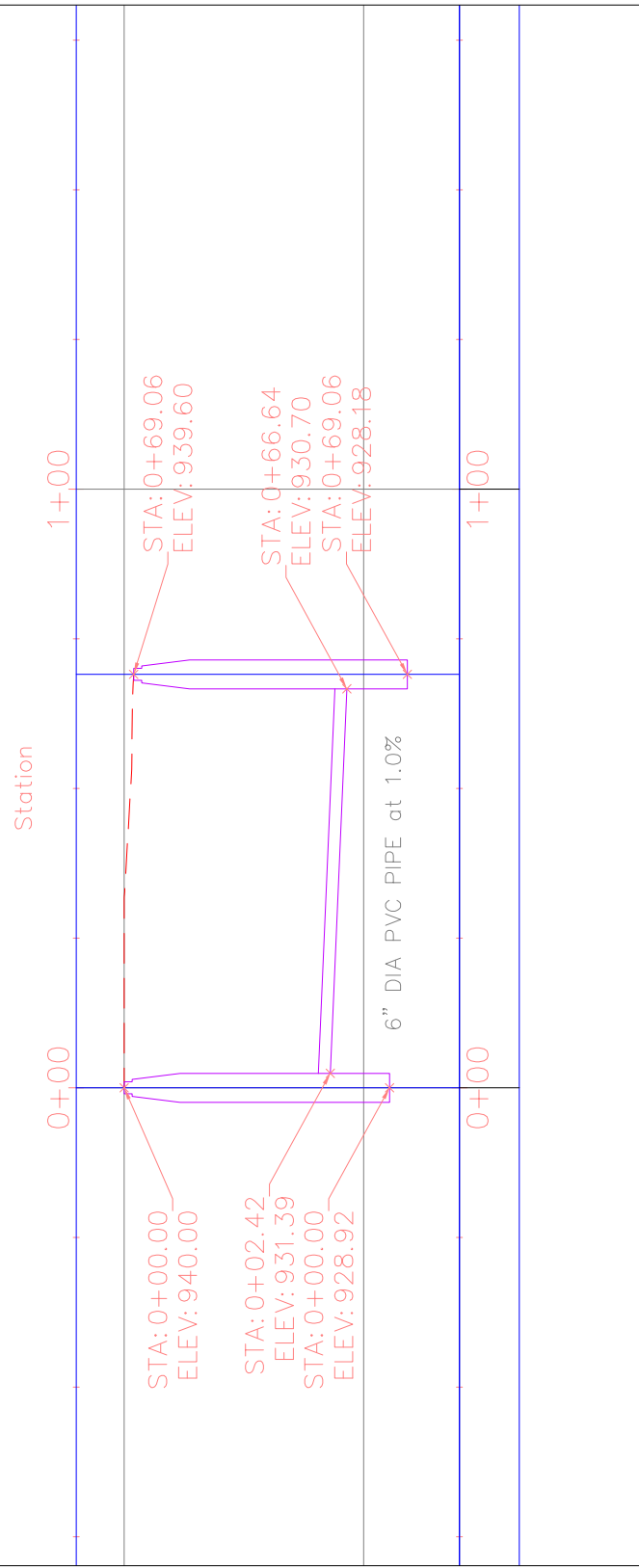
Manchester Fire Station Expansion
 400 E Main Street
 Manchester IA 52057

SHEET NAME
 Sanitary
 Plan and Profile
 SHEET NO.

P-5



Sanitary PROFILE



PROJECT: CEE: 4850
DATE: 11/20/2020
DRAWN BY: smh, ocd, br, th
REVISION:
THE UNIVERSITY OF IOWA
4105 SEAMANS CENTER FOR THE
ENGINEERING ARTS AND SCIENCES
103 S CAPITOL ST
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PHONE: 319.335.5647
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EMAIL: civl-hawks@iowa.edu

NOVA PDF
CIVIL AND ENVIRONMENTAL ENGINEERING

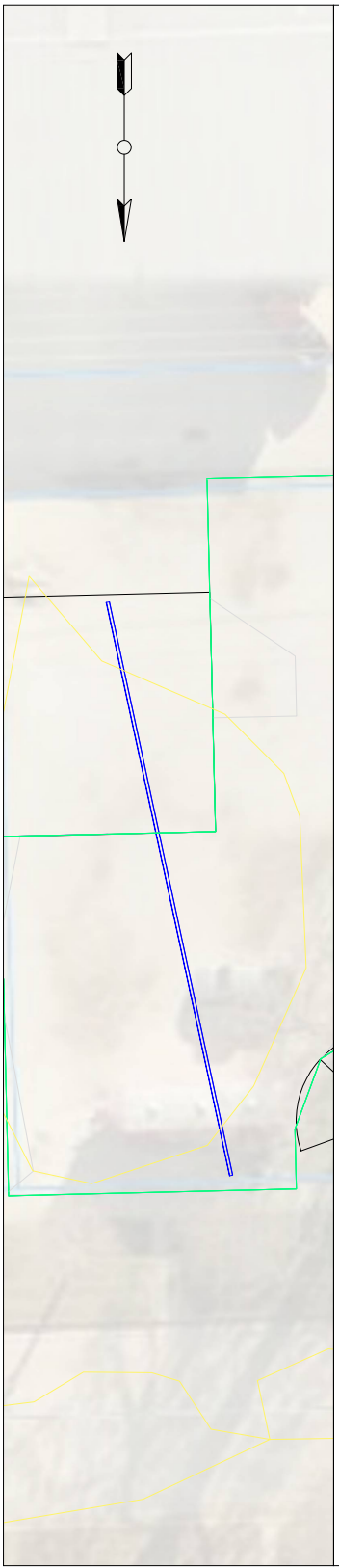


REGISTRATION: IAWQ
FOR CONSTRUCTION

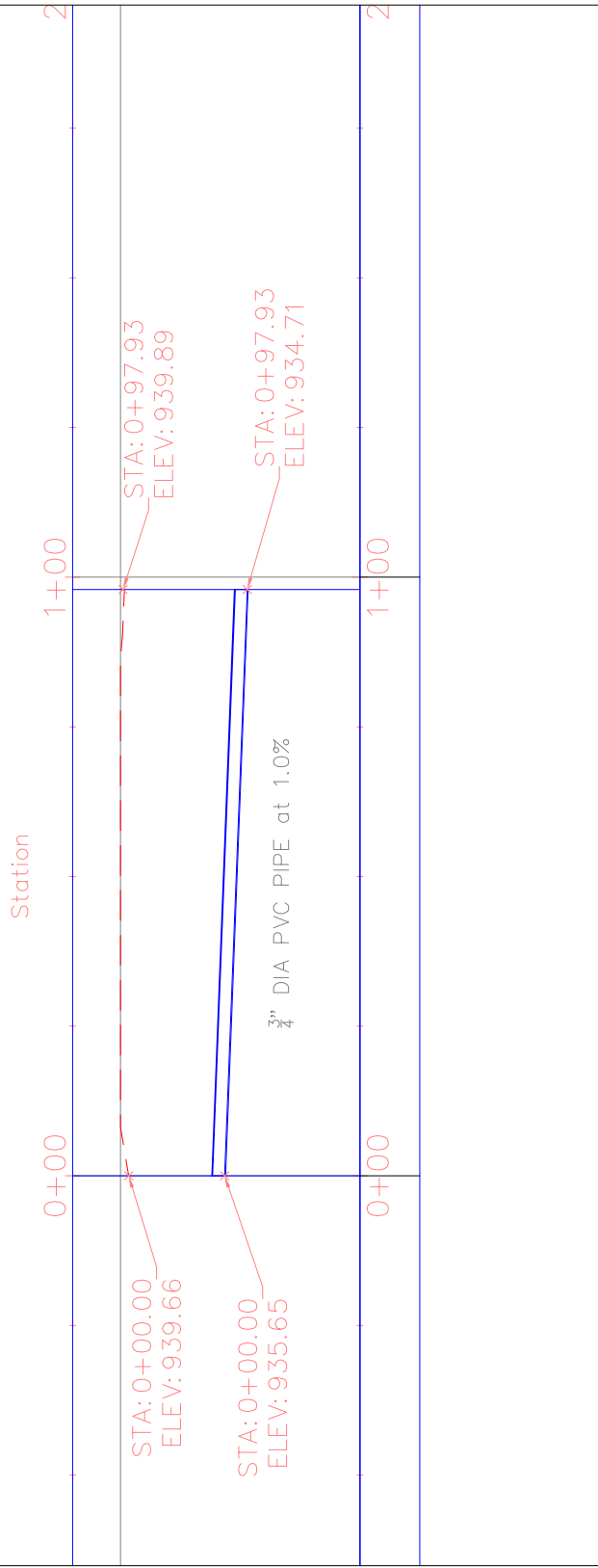
Manchester Fire Station Expansion
400 E Main Street
Manchester IA 52057

SHEET NAME
Water
Plan and Profile
SHEET NO.

P-6



Water Service PROFILE





EDUCATIONAL - NOT FOR CONSTRUCTION



Legend

- Switch - Lights
- Circuit Breaker Box
- LED Tube-Style Light Fixture
- 12.5" LED Dusk-to-Dawn Soffit Light Fixture

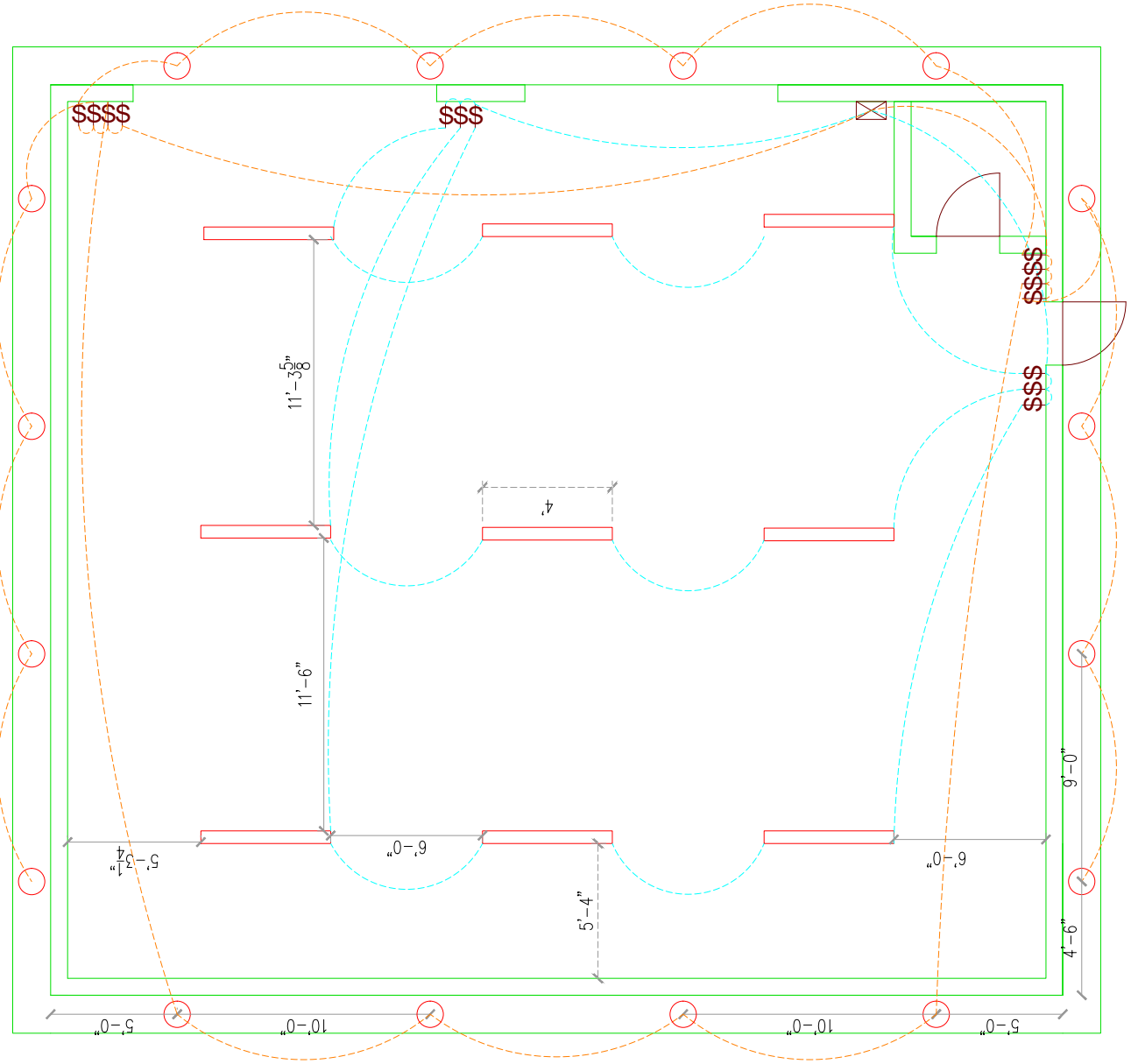
Legend



LED Tube-Style Light Fixture








12.5" LED Dusk-to-Dawn Soffit Light Fixture





Legend

-  Ventilation Pipes
-  Sink
-  Furnace
-  LED Tube-Style Light Fixture
-  Tankless Water Heater

Note

Tankless water heater,
manufactured by
Takagi

70,000 BTU furnace
manufactured by
Blueridge

