

CONSTRUCTION PLANS

FOR

INDEPENDENCE TOWNSHIP

- Bay Court Park Pole Barn -



VICINITY MAP
N.T.S.



NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257

SEAL

PROJECT
Independence Township -
Bay Court Park Pole Barn

CLIENT
Independence Township

Contact: Derek Smith
Phone: (248)-625-8223
Fax: (248)-620-7454
Email:
dosmith@nfe-engr.com

PROJECT LOCATION
Part of the SW ¼
of Section 32
T. 4N, R. 9E
City of Clarkston,
Oakland County, Michigan

SHEET
Topographic Survey



DATE ISSUED/REVISED
8-02-22 OWNER REVIEW
8-23-22 OWNER REVIEW
9-16-22 ISSUED FOR BID

DRAWN BY:

DESIGNED BY:

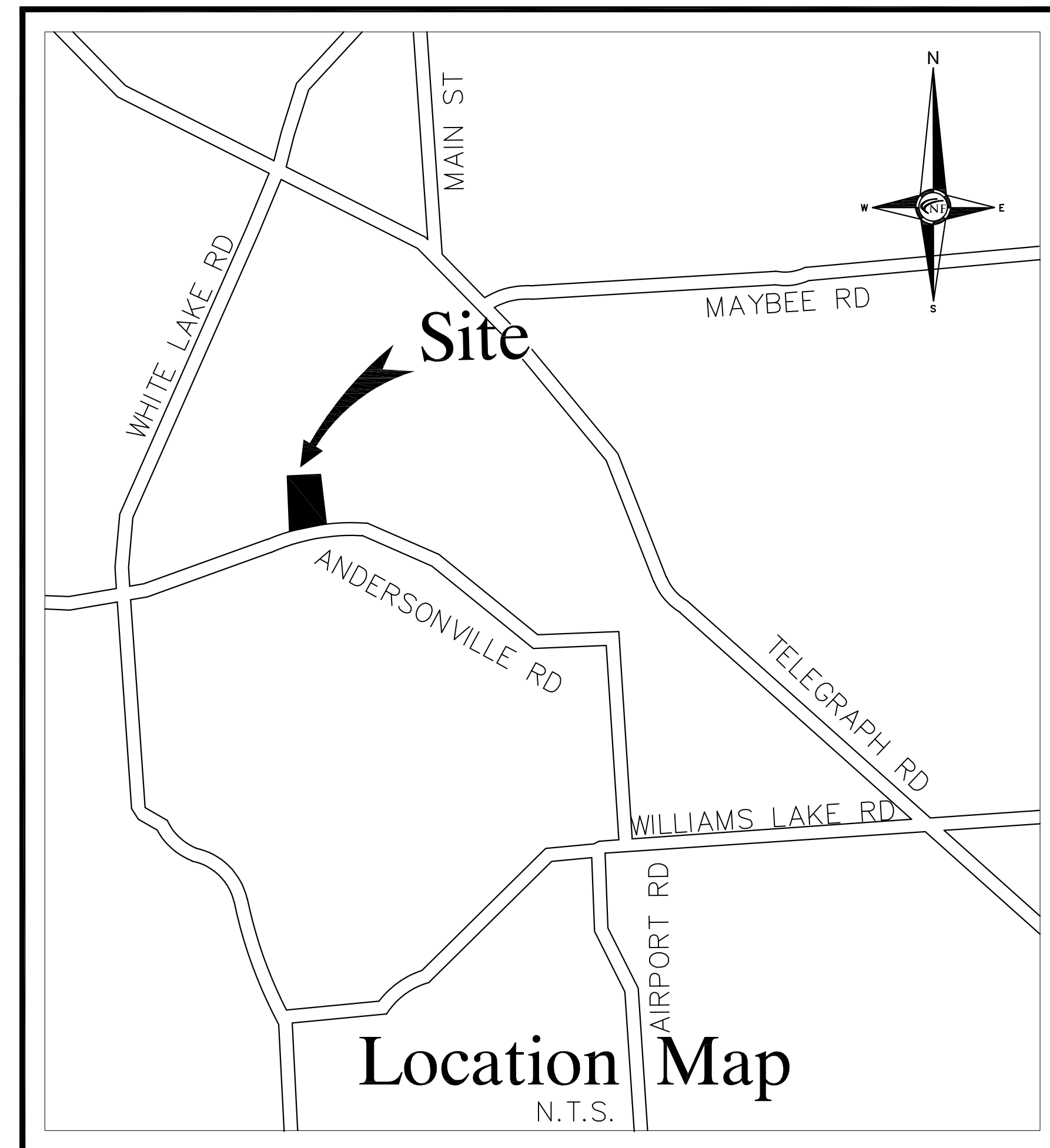
APPROVED BY:

EMAIL CONTACT:

DATE:
9/16/22

SCALE:

NFE JOB NO. SHEET NO.
M383-01 Title



Section 32 T.4N., R.9E.
Independence Township, Oakland County, Michigan

PROJECT PERMITS

SOIL EROSION CONTROL PERMIT
CONTRACTOR SHALL OBTAIN SESC PERMIT FROM THE OAKLAND COUNTY
PRIOR TO PERFORMING ANY PROPOSED WORK ON THE PROJECT

BUILDING PERMIT
CONTRACTOR SHALL OBTAIN BUILDING PERMIT FROM INDEPENDENCE
TOWNSHIP PRIOR TO PERFORMING ANY PROPOSED WORK ON THE PROJECT

ELECTRICAL PERMIT
CONTRACTOR SHALL OBTAIN ELECTRICAL PERMIT FROM INDEPENDENCE
TOWNSHIP PRIOR TO PERFORMING ANY PROPOSED WORK ON THE PROJECT

MECHANICAL PERMIT
CONTRACTOR SHALL OBTAIN MECHANICAL PERMIT FROM INDEPENDENCE
TOWNSHIP PRIOR TO PERFORMING ANY PROPOSED WORK ON THE PROJECT



CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS
46777 WOODWARD AVENUE
PONTIAC, MI 48342-5032
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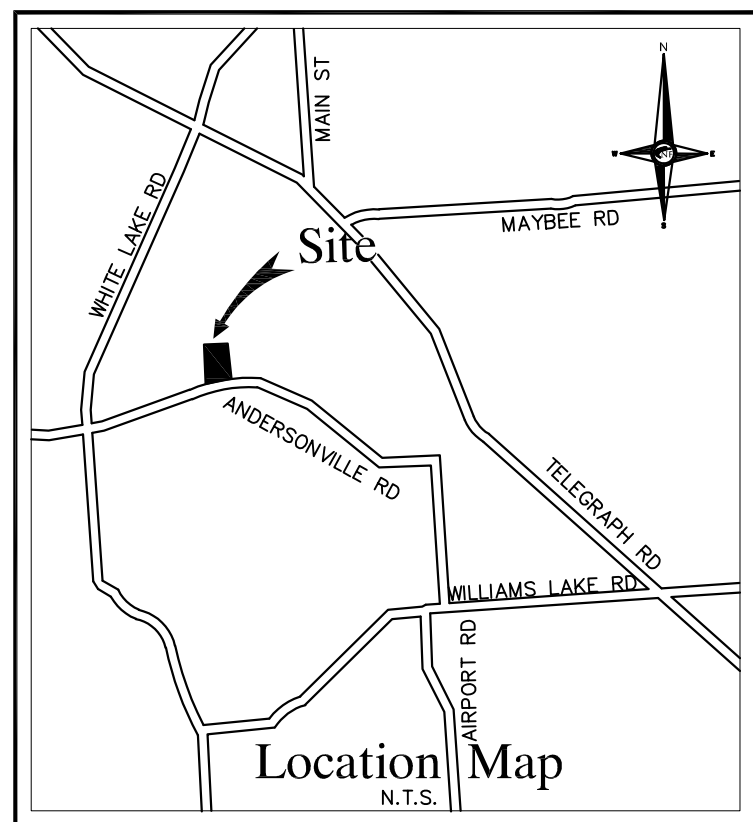
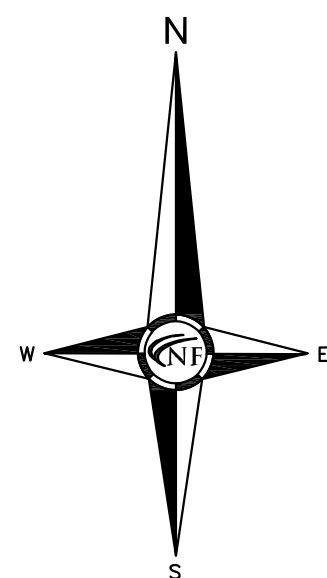
1601 E. CESAR CHAVEZ AVE.
LANSING, MI 48906
PHONE: (517) 487-2511
FAX: (517) 487-2544
administrator@matrixceinc.com



DS ARCHITECTS, INC
7300 DIXIE HWY. #600
CLARKSTON, MI 48346
PHONE: (248) 605-2030
DSARCHITECTS.COM

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E900	Electrical Panel-A Schedules



ENGINEERS

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of Section 32

T. 4N, R. 9E

City of Clarkston

Oakland County, Michigan

SHEET

Topographic Survey



Know what's **below**
Call before you dig

MISS DIG / UTILITY DISCLAIMER NOTE

A MISS DIG TICKET NUMBER 202205230854, PURSUANT TO MICHIGAN PUBLIC ACT 174 WAS ENTERED FOR THE SURVEYED PROPERTY. DUE TO THE EXTENDED REPORTING PERIOD FOR UNDERGROUND FACILITY OWNERS TO PROVIDE THEIR RECORDS, THE SURVEY WAS NOT COMPLETED. THE SURVEYED PROPERTY AND THE SURVEY WAS ISSUED ON 5/25/22. THE SURVEY ONLY REFLECTS THOSE UTILITIES WHICH COULD BE OBSERVED BY THE SURVEYOR IN THE FIELD OR AS DEPICTED BY THE UTILITY COMPANY RECORDS. FURNISH PRIOR TO THE DATE THIS SURVEY WAS ISSUED, THE SURVEYOR HAS NOT BEEN ADVISED OF ANY RECORDS WITH THE FACILITY OWNERS AND/OR THEIR AUTHORIZED AGENTS, THE COMPLETENESS AND EXACTNESS OF THE UTILITIES LOCATION.

TOPOGRAPHIC SURVEY NOTES

ALL ELEVATIONS ARE EXISTING ELEVATIONS, UNLESS OTHERWISE NOTED.

UTILITY LOCATIONS WERE OBTAINED FROM MUNICIPAL OFFICIALS AND RECORDS OF UTILITY COMPANIES, AND NO GUARANTEE CAN BE MADE TO THE COMPLETENESS, OR EXACTNESS OF LOCATION.

THIS SURVEY MAY NOT SHOW ALL EASEMENTS OF RECORD UNLESS
AN UPDATED TITLE POLICY IS FURNISHED TO THE SURVEYOR BY
THE OWNER.

DRAWN BY:

C. Herren

DESIGNED BY:

APPROVED BY:

K. Navaroli

EMAIL CONTACT:
knavaroli@nfe-engr.com

DATE: _____

6/2/22

SCALE: 1" = 20

20 10 0



















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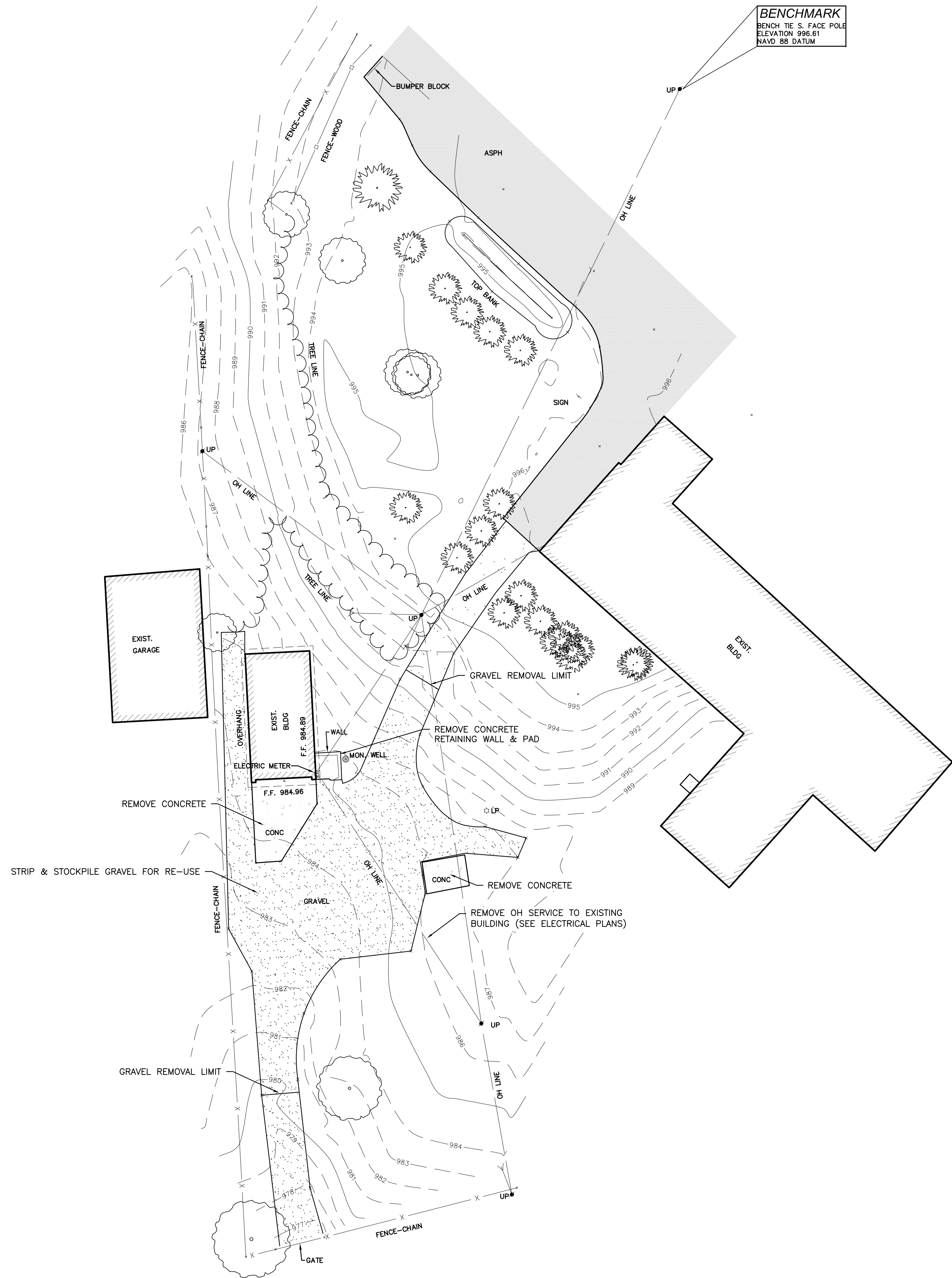
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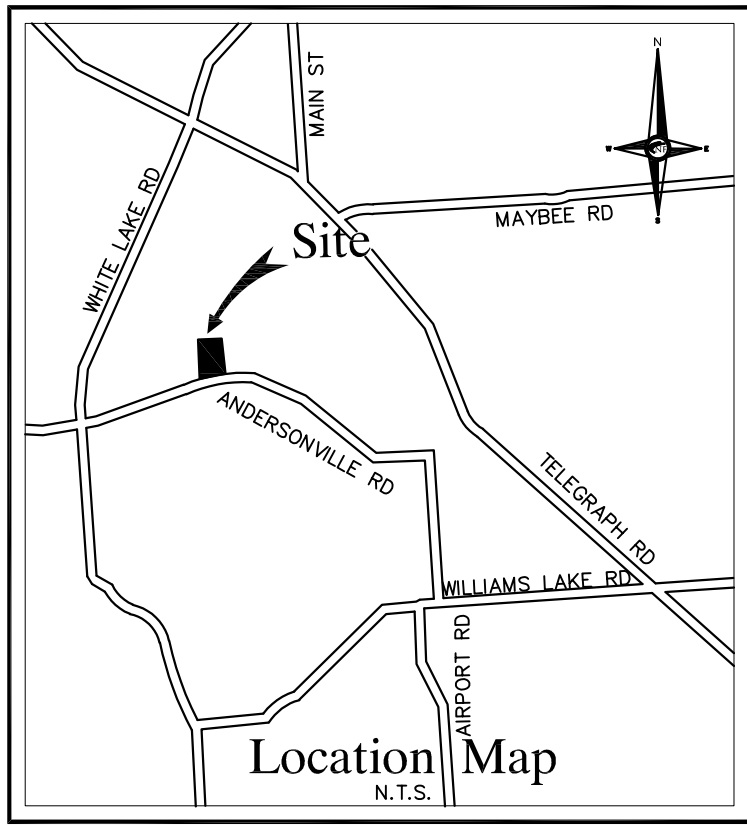
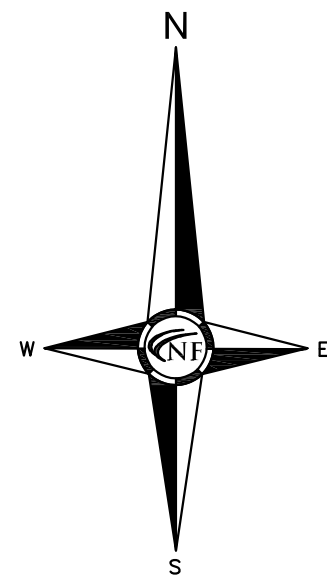
C1

LEGEND

	MANHOLE		EXISTING SANITARY SEWER
	HYDRANT		EXISTING SAN. CLEAN OUT
	GATE VALVE		EXISTING WATER MAIN
	MANHOLE		EXISTING STORM SEWER
	CATCH BASIN		EX. R.Y. CATCH BASIN
	UTILITY POLE		EXISTING BURIED CABLES
	GUY POLE		OVERHEAD LINES
	GUY WIRE		LIGHT POLE
	SIGN		EXISTING GAS MAIN



BENCHMARK
BENCH TIE S. FACE POLE
ELEVATION 996.61
NAVD 88 DATUM



NF
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CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

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of Section 32
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City of Clarkston,
Oakland County, Michigan

SHEET
Site Removals Plan



DATE **ISSUED/REVISED**
8-02-22 OWNER REVIEW
8-23-22 OWNER REVIEW
9-16-22 ISSUED FOR BID

DRAWN BY:
K. Ruiter

DESIGNED BY:
K. Ruiter

APPROVED BY:
S. Sutton

EMAIL CONTACT:
kruiter@nfe-engr.com

DATE:
8/02/22

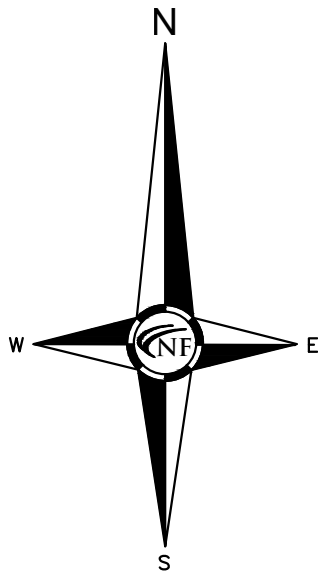
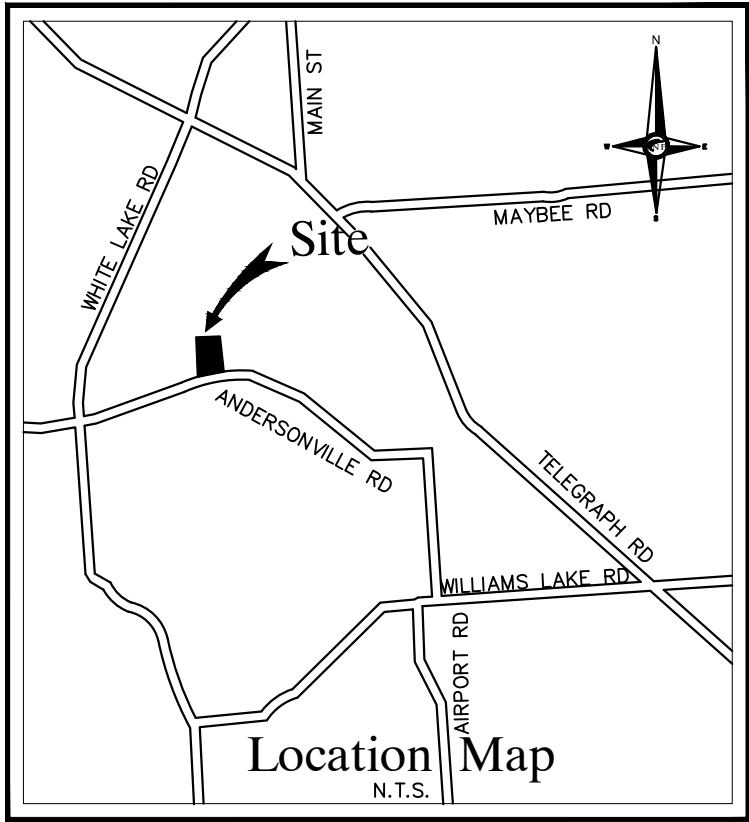
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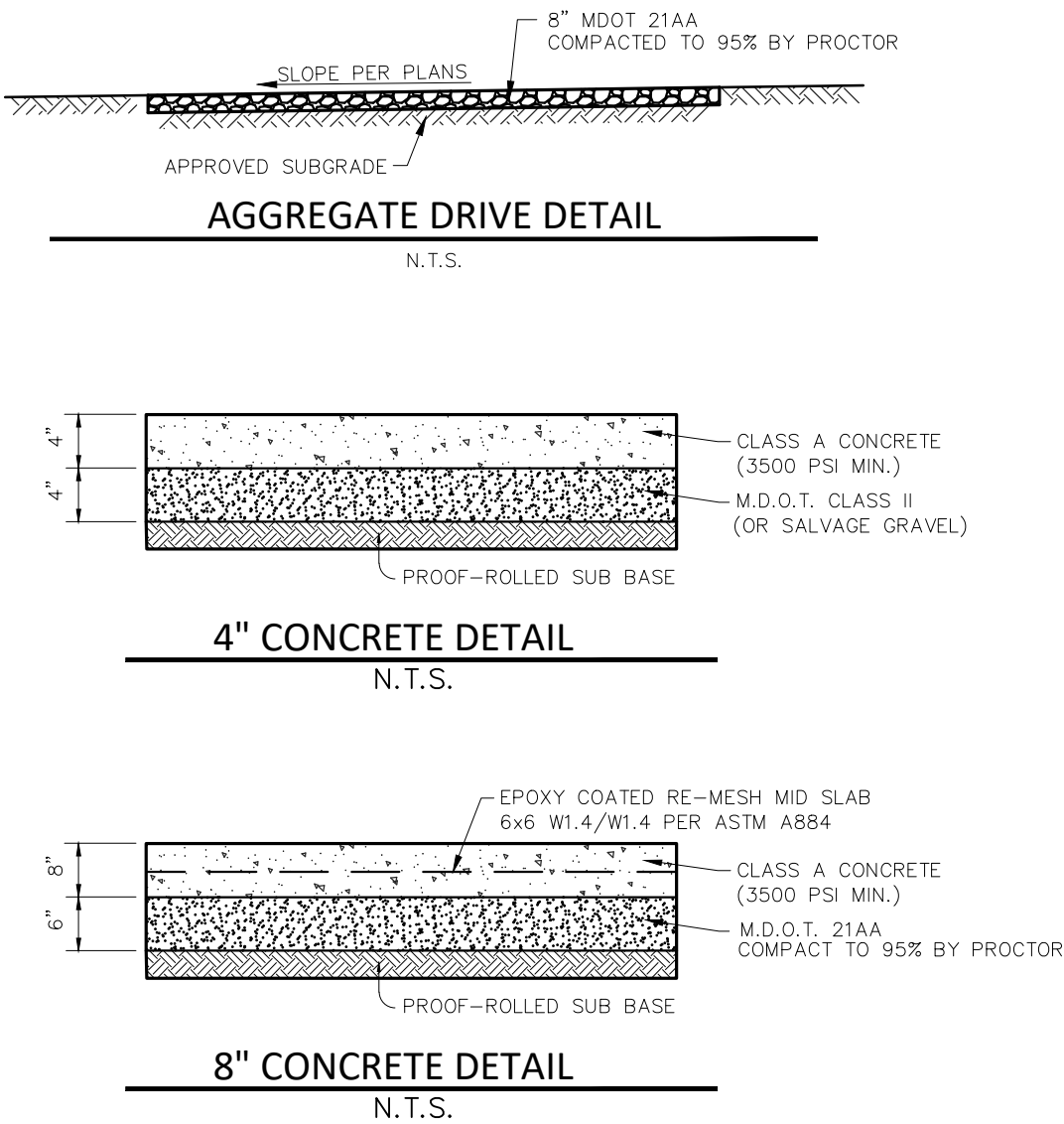
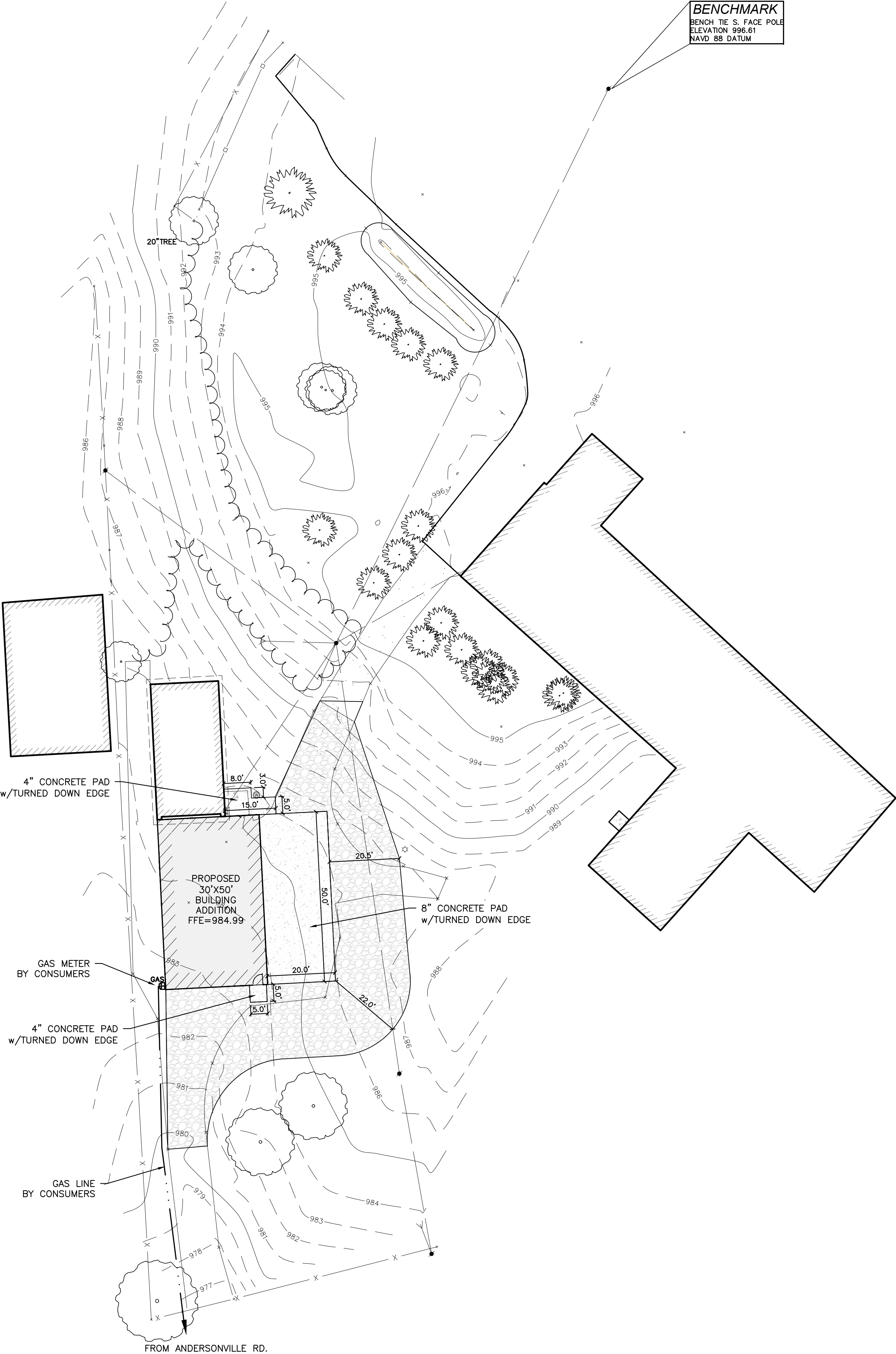
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M383-01

SHEET NO.
C2

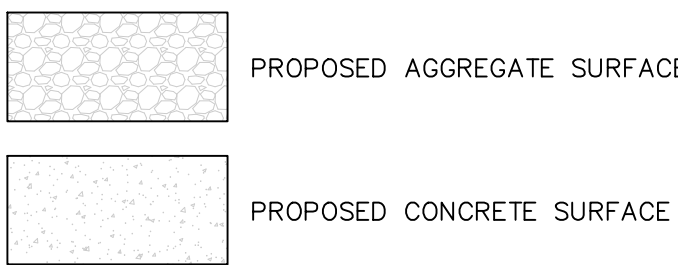
LEGEND	
	MANHOLE
	HYDRANT
	MANHOLE
	UTILITY POLE
	GUY POLE
	GUY WIRE
	SIGN
	EXISTING GAS MAIN
	EXISTING SANITARY SEWER
	EXISTING SAN. CLEAN OUT
	EXISTING WATER MAIN
	EXISTING STORM SEWER
	EX. R.Y. CATCH BASIN
	EXISTING BURIED CABLES
	OVERHEAD LINES
	LIGHT POLE
	SIGN
	EXISTING GAS MAIN



BENCHMARK
BENCH TIE S. FACE POLE
ELEVATION 996.61
NAVD 88 DATUM



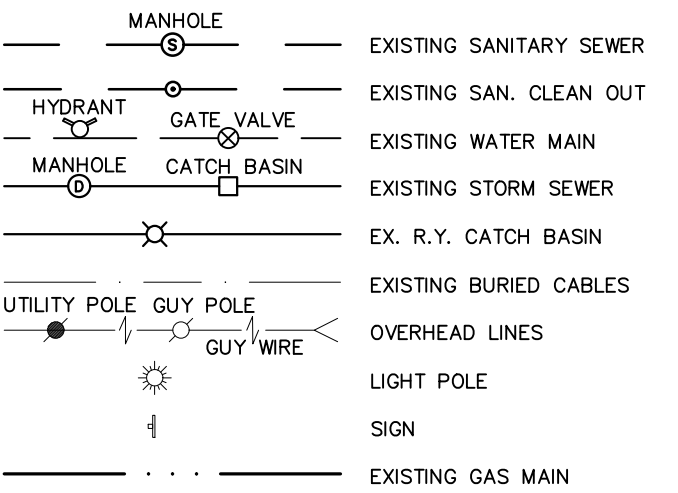
PROPOSED HATCH LEGEND



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LEGEND



811
Know what's below
Call before you dig.

DATE	ISSUED/REVISED
8-02-22	OWNER REVIEW
8-23-22	OWNER REVIEW
9-16-22	ISSUED FOR BID

DRAWN BY:

K. Ruiter

DESIGNED BY:

K. Ruiter

APPROVED BY:

S. Sutton

EMAIL CONTACT:

kruiter@nfe-engr.com

DATE:

8/02/22

SCALE: 1" = 20'

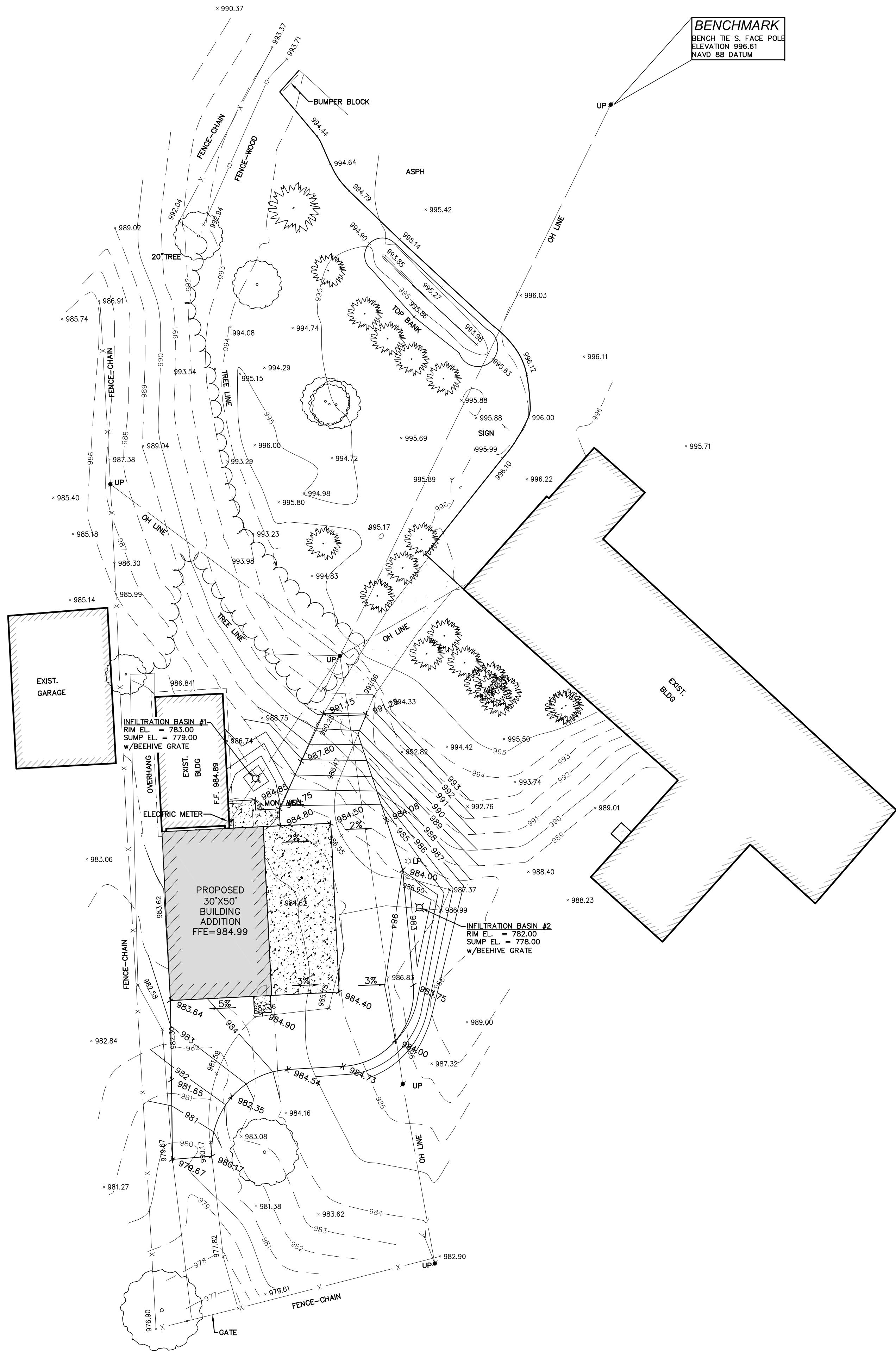


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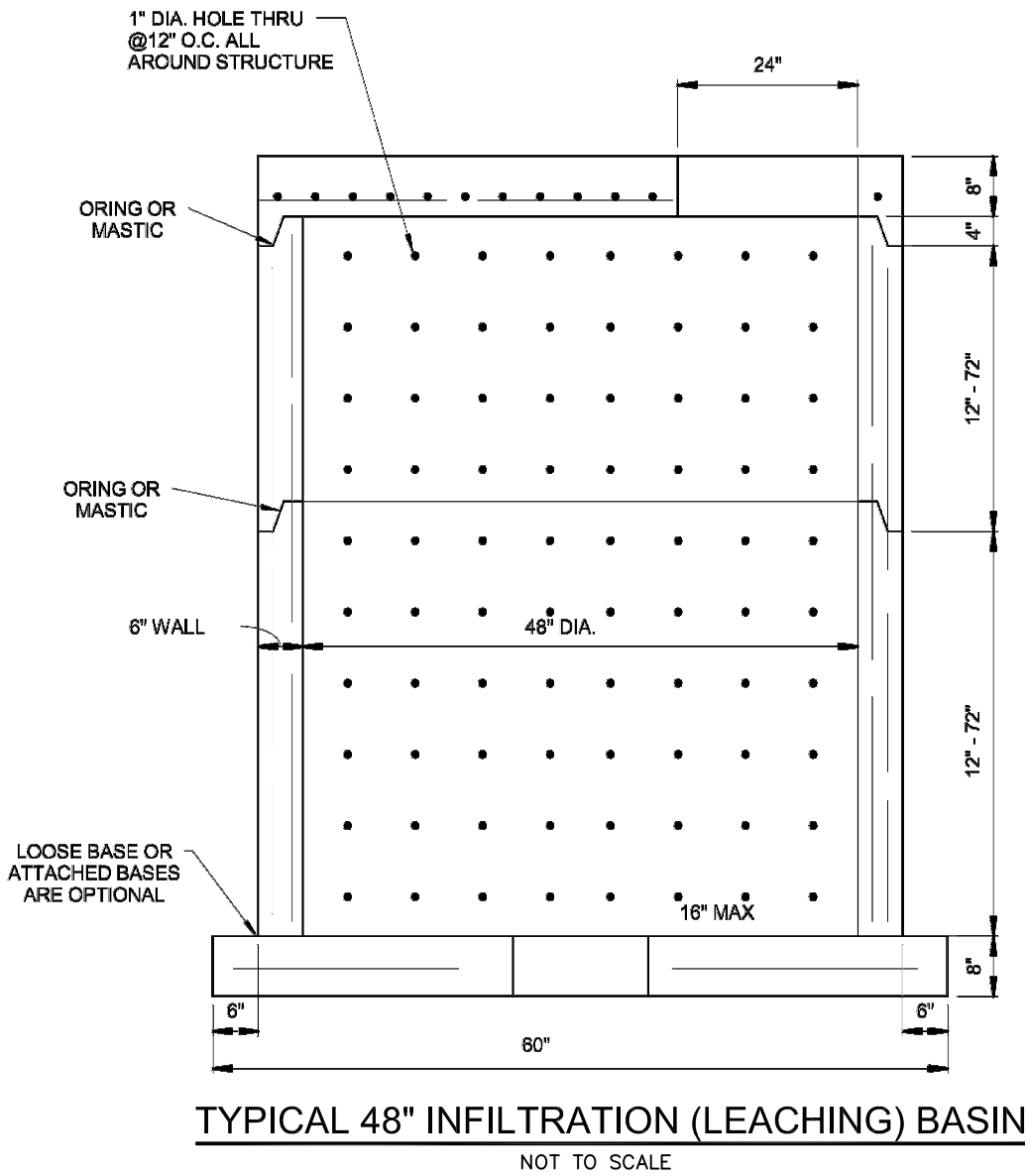
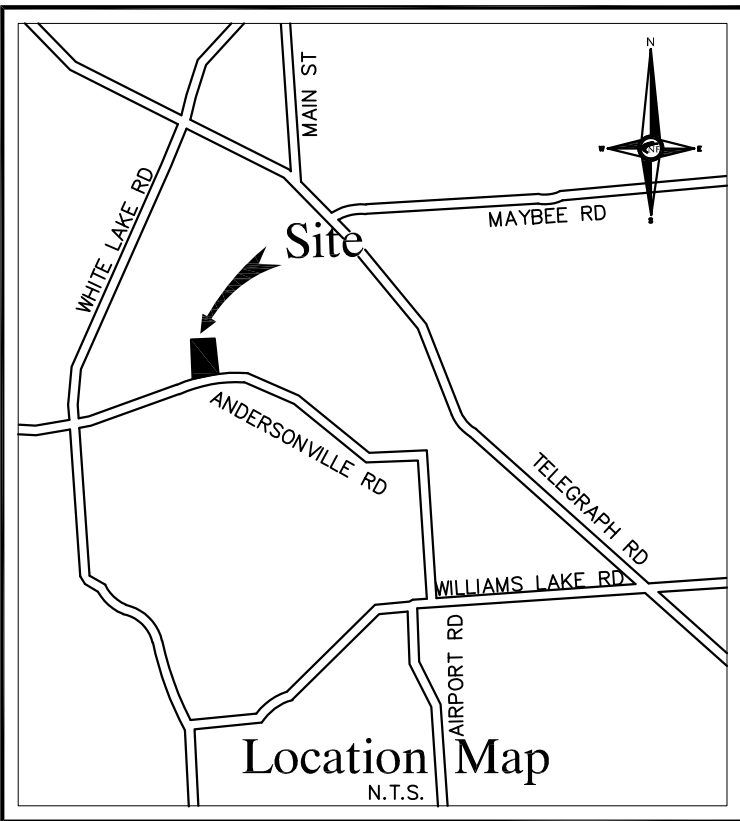
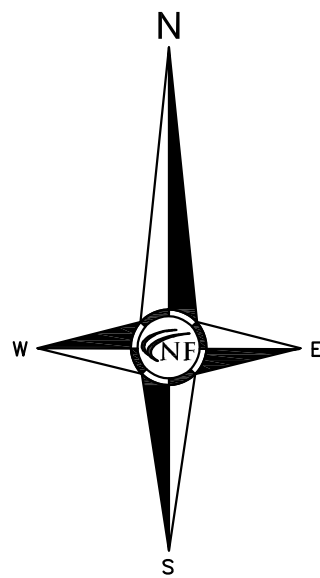
M383-01

SHEET NO.

C3



BENCHMARK
BENCH TIE S. FACE POLE
ELEVATION 996.61
NAVD 88 DATUM



LEGEND

— 987 —	PROPOSED CONTOUR
— 987 —	EXISTING MAJOR CONTOUR
— 987 —	EXISTING MINOR CONTOUR
X 983.75	PROPOSED SPOT ELEVATION
• 981.00	EXISTING SPOT ELEVATION

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LEGEND

— MANHOLE —	— EXISTING SANITARY SEWER —
— HYDRANT —	— EXISTING SAN. CLEAN OUT —
— MANHOLE —	— EXISTING WATER MAIN —
— GATE VALVE —	— EXISTING STORM SEWER —
— CATCH BASIN —	— EX. R.Y. CATCH BASIN —
— UTILITY POLE —	— EXISTING BURIED CABLES —
— GUY POLE —	— OVERHEAD LINES —
— GUY WIRE —	— LIGHT POLE —
— SIGN —	— EXISTING GAS MAIN —



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SEAL

PROJECT

Independence Township -
Bay Court Park Pole Barn

CLIENT

Independence Township

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PROJECT LOCATION

Part of the SW ¼
of Section 32
T. 4N, R. 9E
City of Clarkston,
Oakland County, Michigan

SHEET

Site Grading and Drainage
Plan



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DESIGNED BY:

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DATE:

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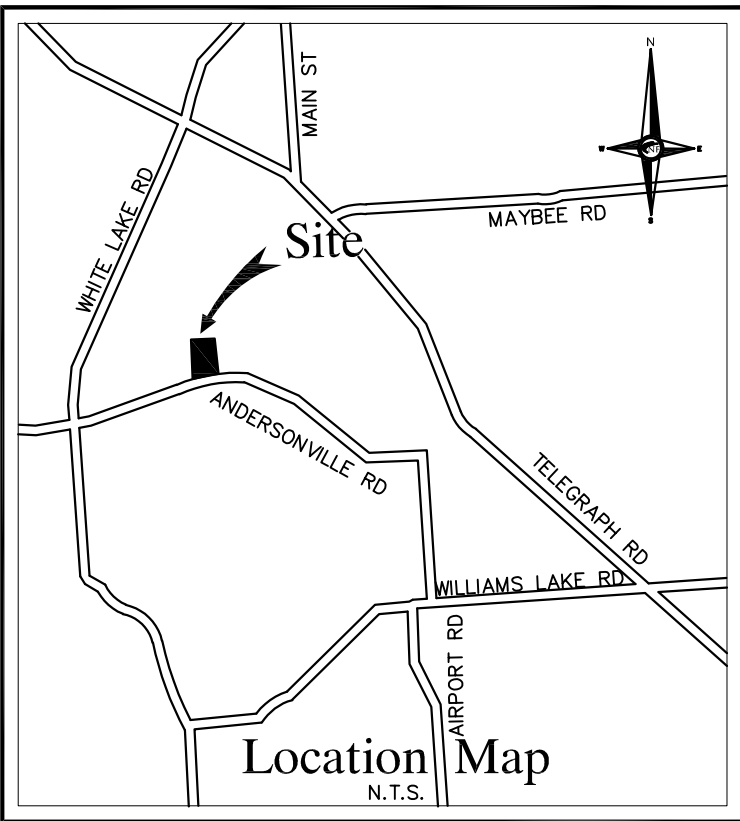
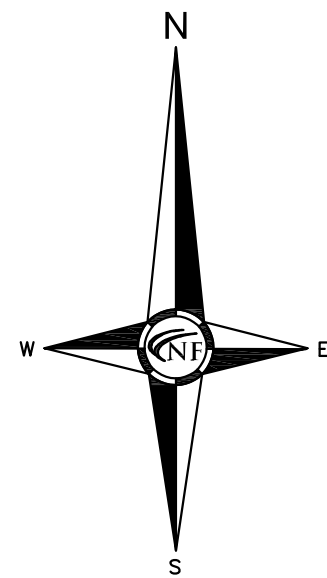
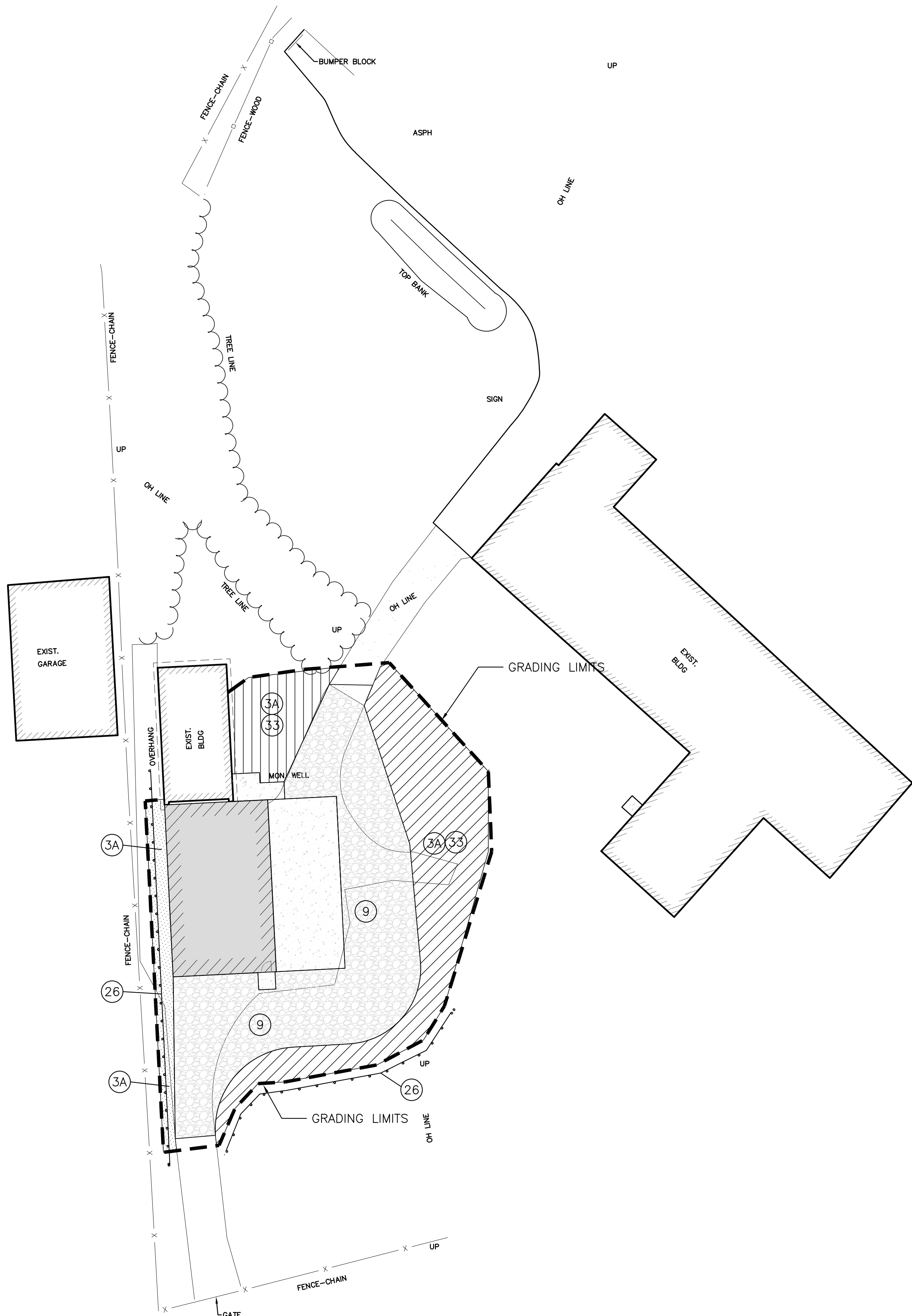


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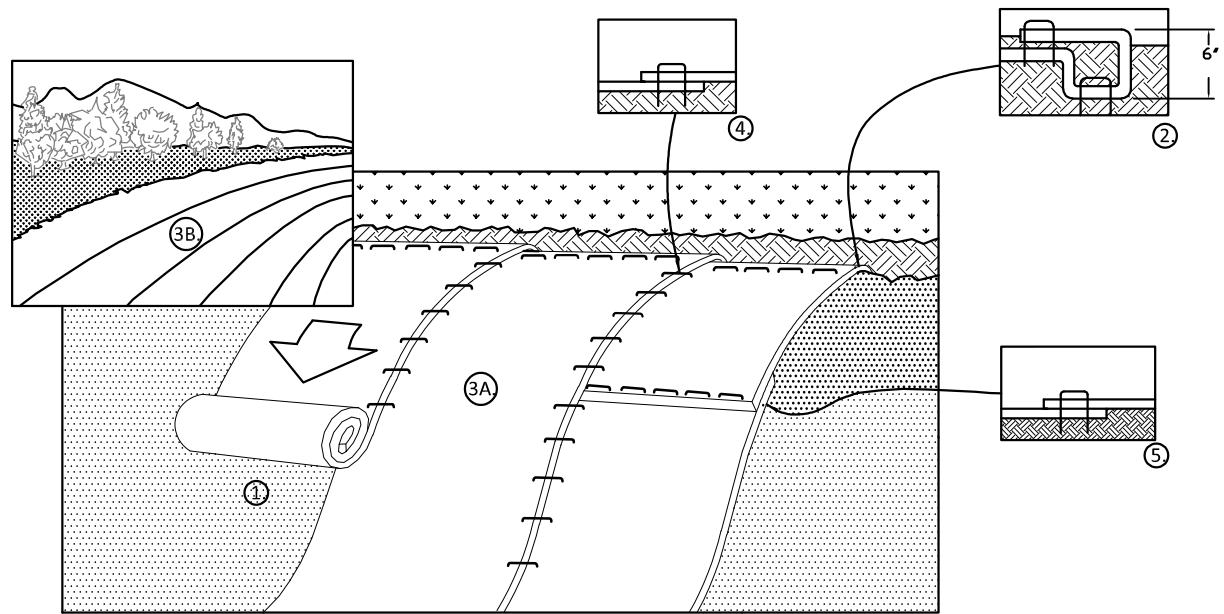
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SHEET NO.

C4



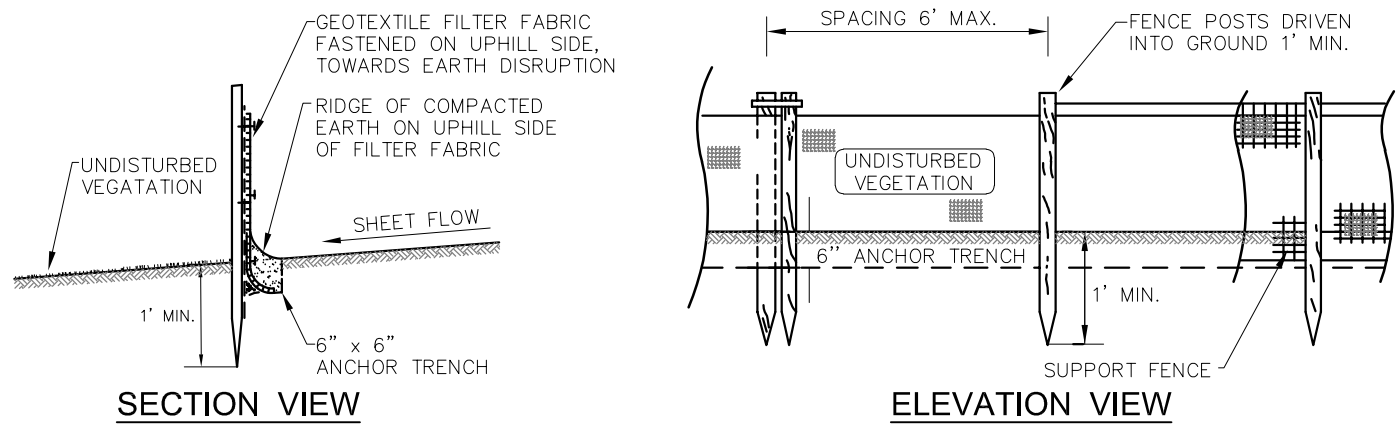
S.E.S.C. TEMPORARY AND PERMANENT MEASURE LEGEND			
PLAN SYMBOL	KEY #	DESCRIPTION	NOTES
	(3A)	PERMANENT SEEDING	TOPSOIL SEED AND STRAW MULCH
	(9)	AGGREGATE COVER	PERMANENT AGGREGATE PARKING SURFACE
	(26)	SILT FENCE	REFER TO SILT FENCE DETAIL THIS SHEET
	(33)	HIGH VELOCITY MULCH BLANKET	REFER TO "HIGH VELOCITY STRAW MULCH EROSION BLANKET" DETAIL THIS SHEET.



- INSTALLATION BEST PRACTICES**
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, APPLICATION OF SEED, FERTILIZER, AND MULCH.
 2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DP X 6" W TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
 3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE MANUFACTURERS STAPLE PATTERN GUIDE.
 4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
 5. CONSECUTIVE BLANKETS SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE "3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH.

- NOTES:**
1. *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.
 2. FOR USE IN AREAS WHERE SLOPE EXCEEDS 1H:3V.

HIGH VELOCITY STRAW MULCH EROSION BLANKET



SILT FENCE DETAIL

N.T.S.

CONSTRUCTION SEQUENCE / TIMING SCHEDULE

(TO BE COMPLETED BY CONTRACTOR)	ANTICIPATED DATE
1. INSTALL SILT FABRIC FENCING AND TEMP. CONSTRUCTION ACCESS PER PLAN.	
2. CONDUCT DEMOLITION AND SITE CLEARING AS REQUIRED PER PLAN.	
3. STRIP AND STOCK PILE OR REMOVE TOPSOIL PER PLAN	
4. COMMENCE MASS GRADING OF SITE.	
5. COMPLETE ALL BUILDING CONSTRUCTION, LANDSCAPE ACTIVITY AND SITE RESTORATION.	
6. COMPLETE PERMANENT SEEDING (BEGIN MAINTENANCE PERIOD).	
7. REMOVE ALL TEMPORARY SOIL EROSION MEASURES.	



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SEAL

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CLIENT
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PROJECT LOCATION
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SHEET
S.E.S.C. Plan



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20 10 0 10 20 30

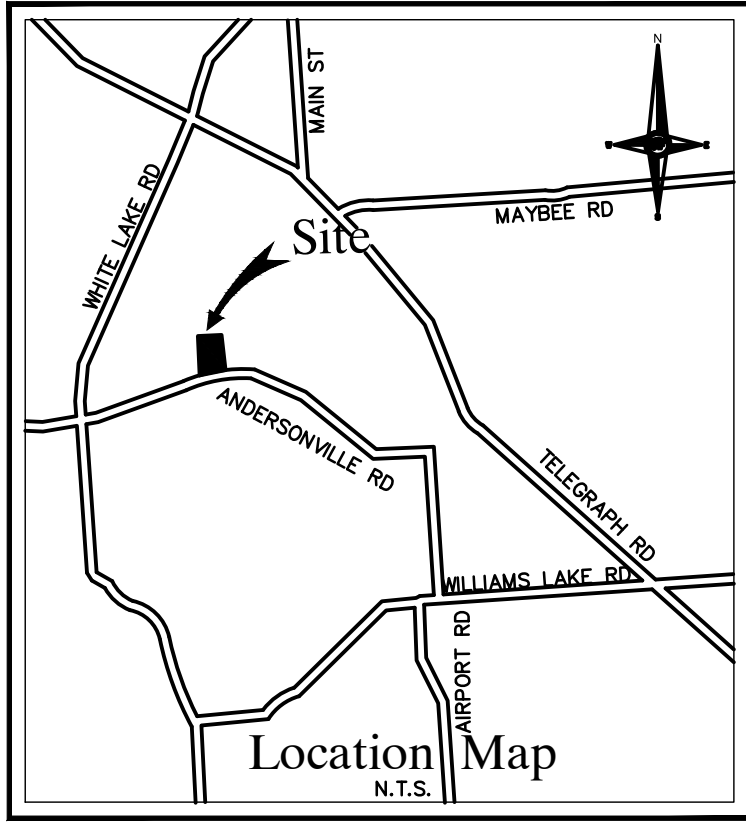
NFE JOB NO.

M383-01

SHEET NO.

C5

DESIGN CRITERIA	
CODE INFO.	
USE GROUP: U - UTILITY CONSTRUCTION TYPE: 5B OCCUPANT LOAD: 8	
AREA OF NEW BUILDING - 1,500 S.F. AREA OF EXISTING BUILDING - 800 S.F. TOTAL BUILDING AREA - 2,300	
DESIGN LOADS	
ROOF LOADS	
DEAD LOAD:	TOP CHORD: 10 PSF BOTTOM CHORD: 5 PSF
WIND LOADS: 3 SECONDS GUST WIND SPEED	
	VULT= 115 MPH VASD= 89 MPH EXPOSURE= C RISK= II
SNOW LOAD:	BASIC GROUND SNOW LOAD: Pg=25 PSF SNOW EXPOSURE FACTOR: Ce=1.0 SNOW LOAD IMPORTANCE FACTOR: Is=.8 THERMAL FACTOR: Ct=1.2



civil Engineers
Land Surveyors
Land Planners

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DESIGN CRITERIA



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DRAWN BY:

KJM

DESIGNED BY:

DJS

APPROVED BY:

DJS

email contact:

DATE:

8/08/22

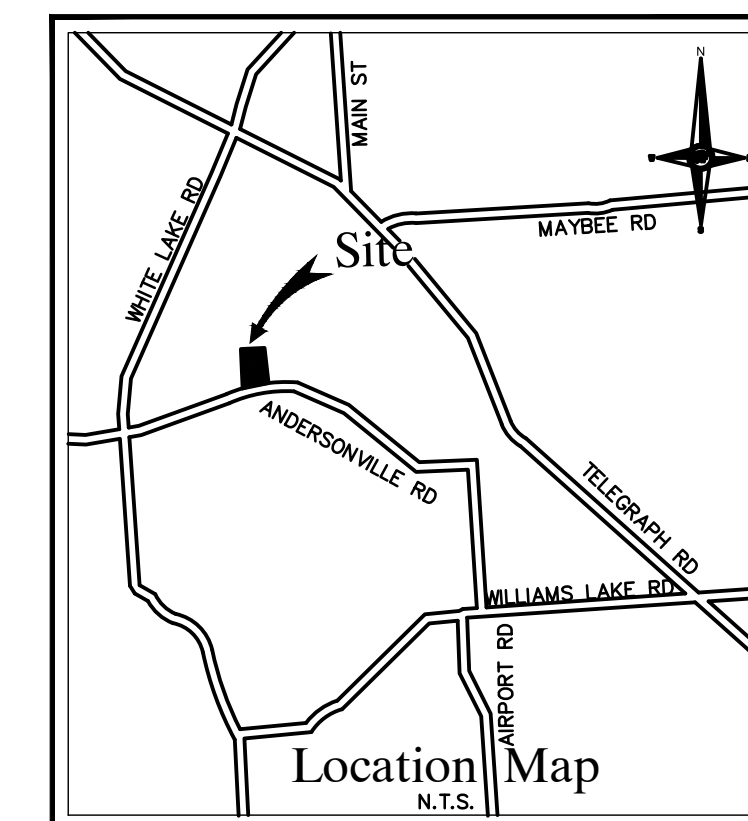
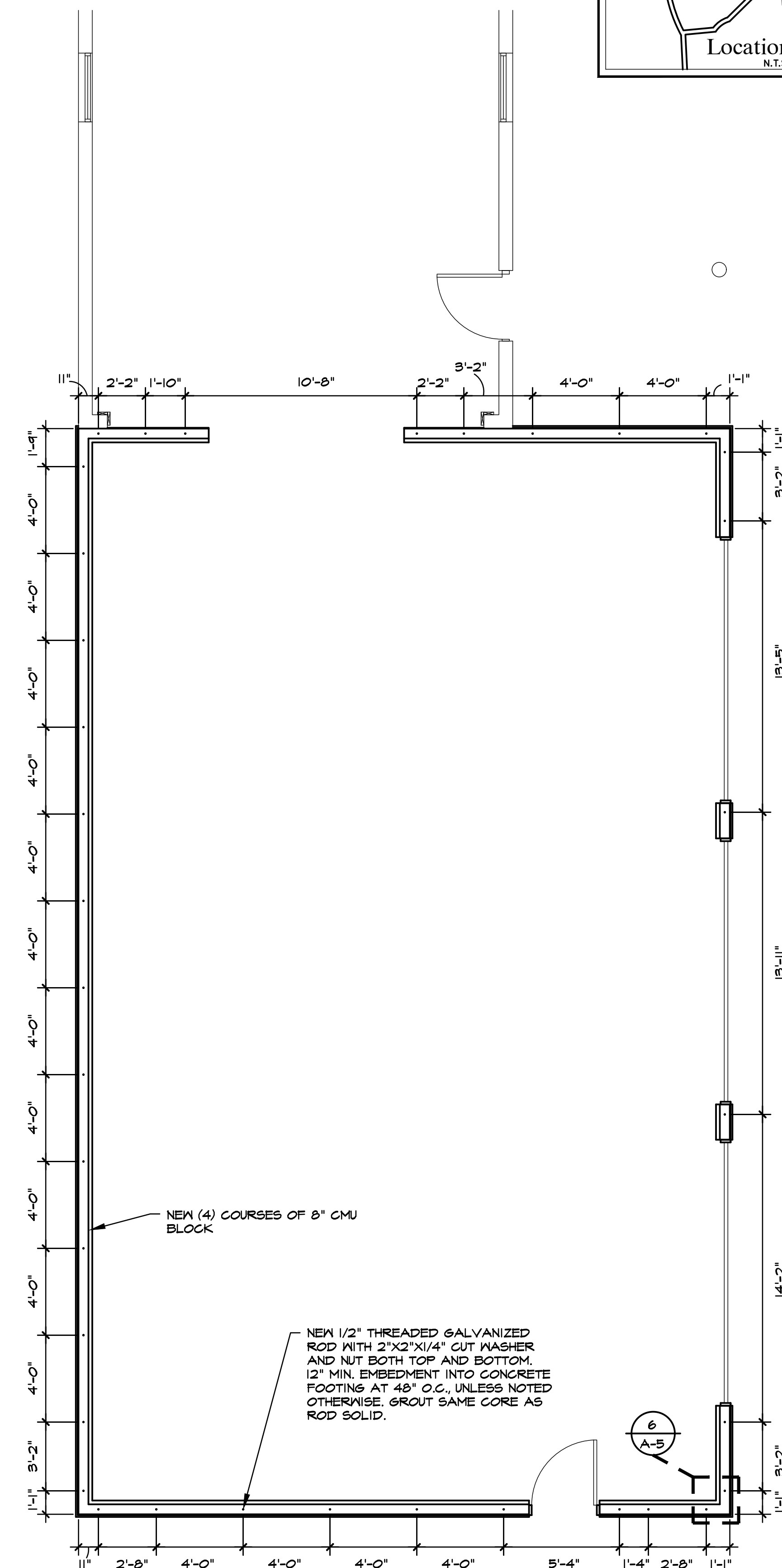
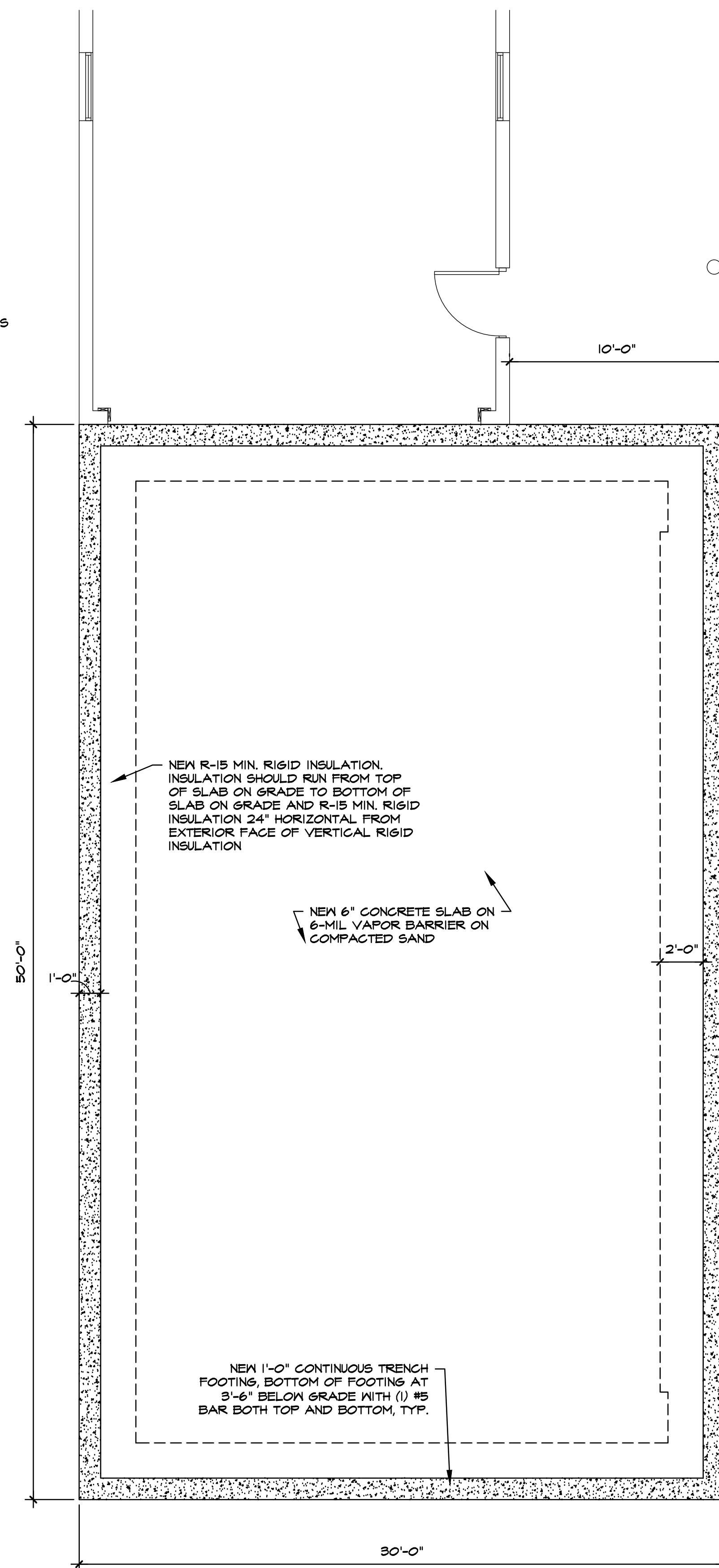
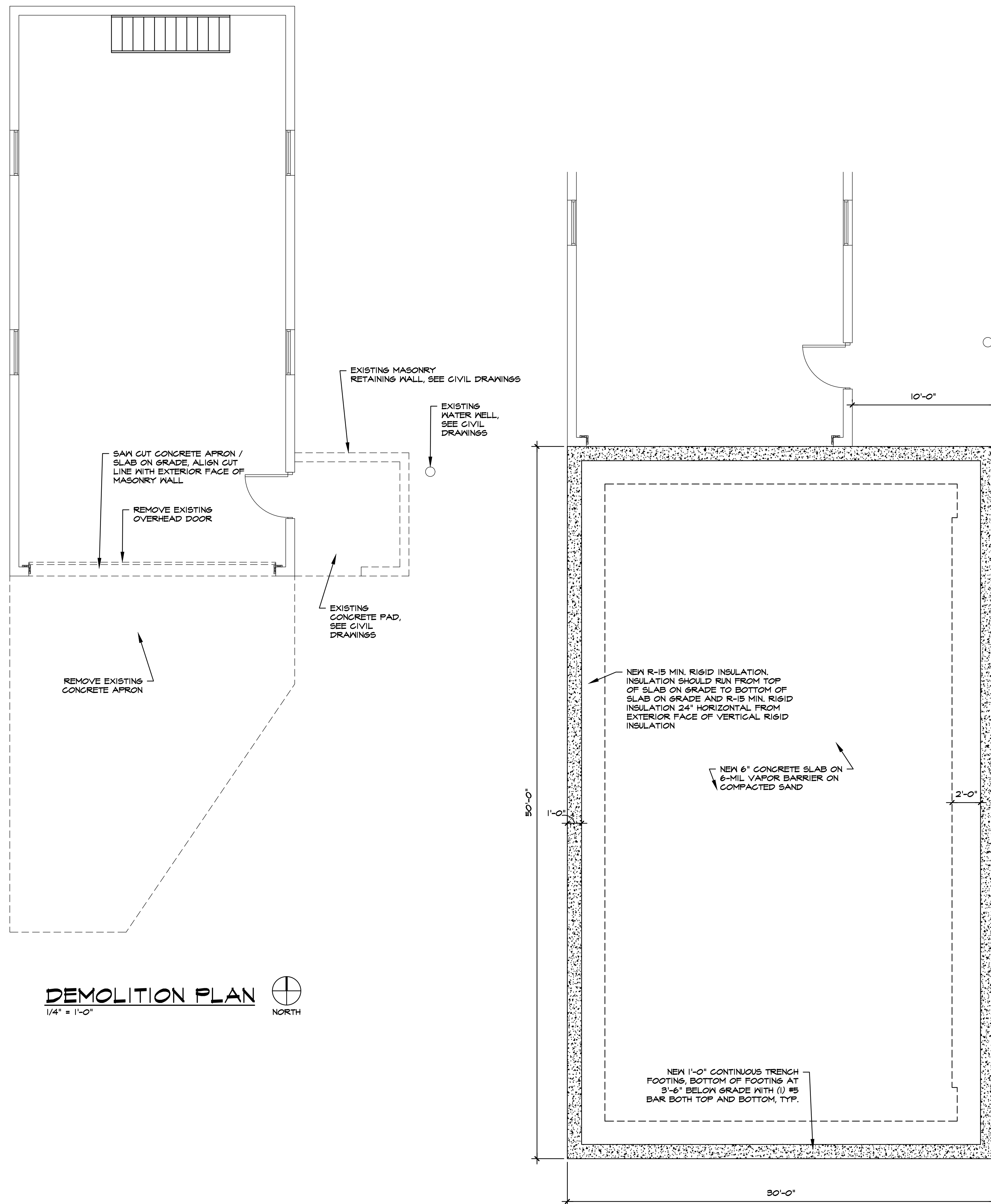
SCALE: N/A

NFE JOB NO.

M383-01

sheet no.

A-1



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Land Surveyors
Land Planners

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City of Clarkston,
Oakland County, Michigan

SHEET

DEMOLITION PLAN
FOUNDATION PLAN
ANCHOR BOLT PLAN



Know what's **below**
Call before you dig

DATE	ISSUED/REVISION
8-02-22	OWNER REVIEW
8-23-22	OWNER REVIEW
9-16-22	BID

DRAWN BY:

KJM

DESIGNED BY:

DJS

APPROVED BY:

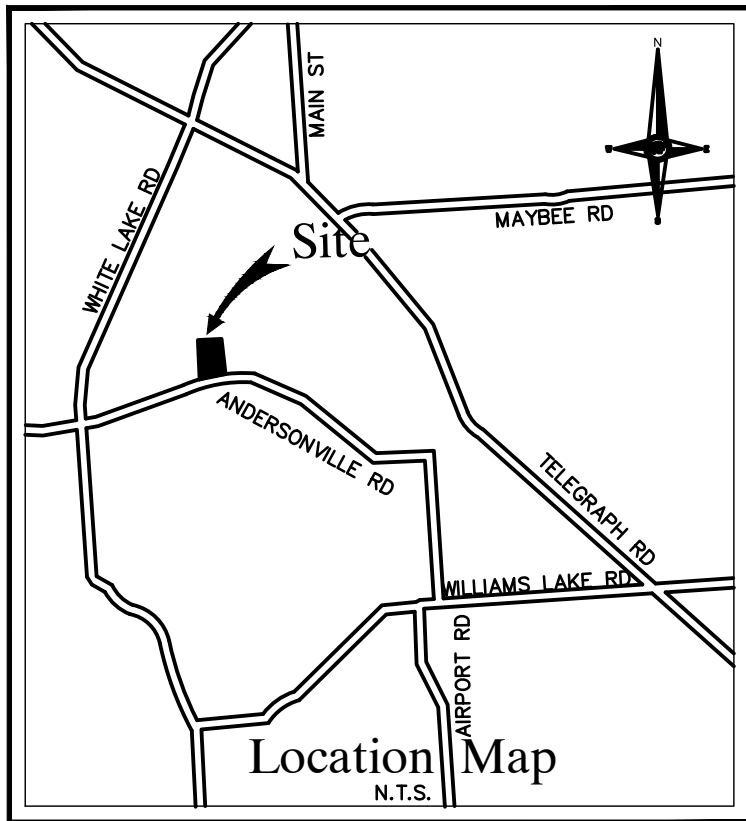
DJS

email contact:

DATE:
8/08/22

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

NFE JOB NO. **M383-01** sheet no. **A-2**



civil Engineers
Land Surveyors
Land Planners

NOWAK & FRAUS ENGINEERS
46777 Woodward Ave.
Pontiac, MI 48342-5032
Tel. (248) 332-7931
Fax. (248) 332-8257

SEAL

PROJECT

Independence Township -
Bay Court Park Pole Barn

CLIENT

Independence Township

Contact: Derek Smith
Phone: (248)-625-8223
Fax: (248)-620-7454
Email:
dosmith@nfe-engr.com

PROJECT LOCATION

Part of the SW ¼
of Section 32
T. 4N, R. 9E
City of Clarkston,
Oakland County, Michigan

SHEET

FLOOR PLAN
SHEAR WALL PANEL
PLAN
FRAMING / ROOF PLAN



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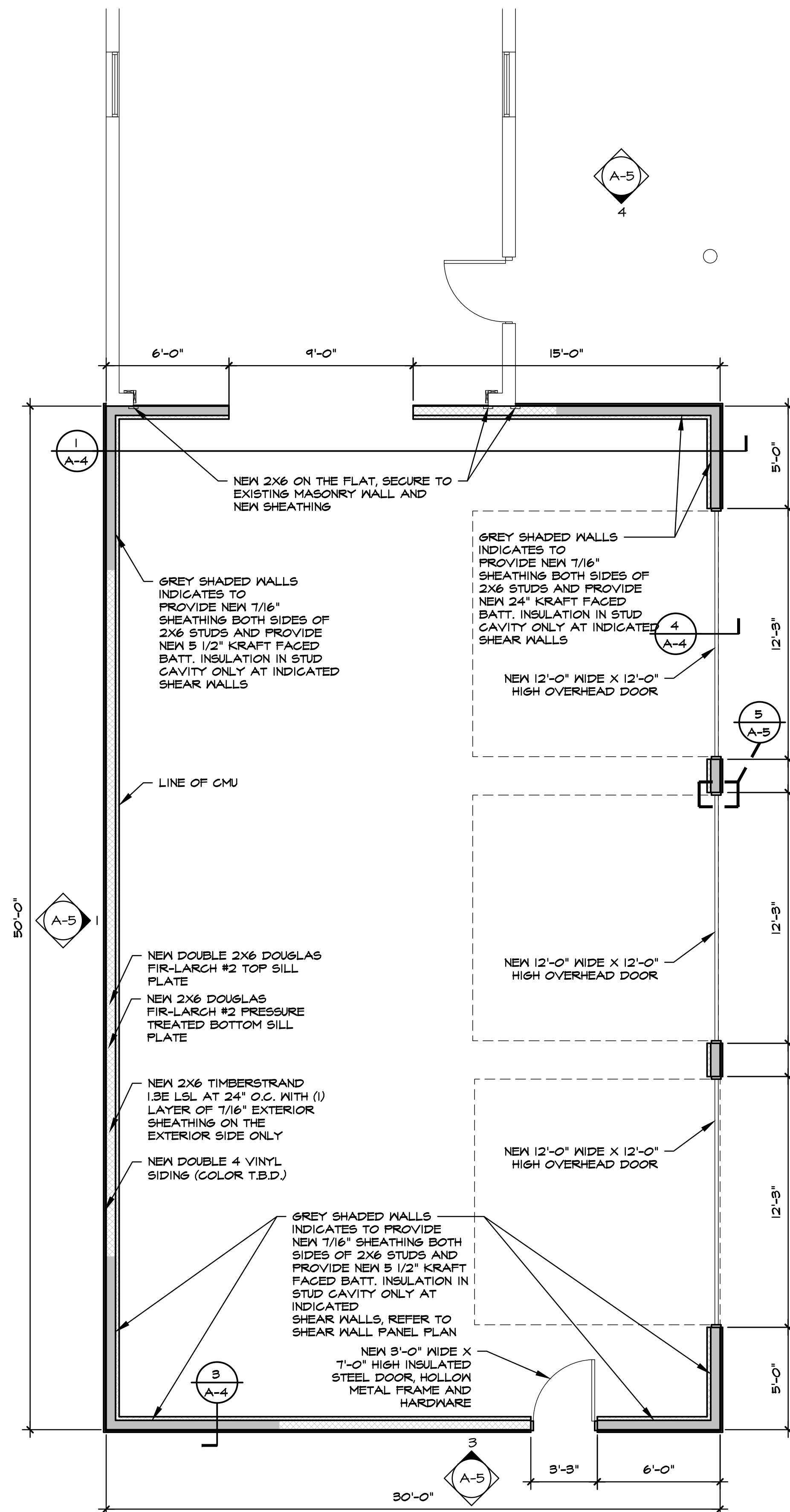
SCALE: 1/4" = 1'-0"

NFE JOB NO.

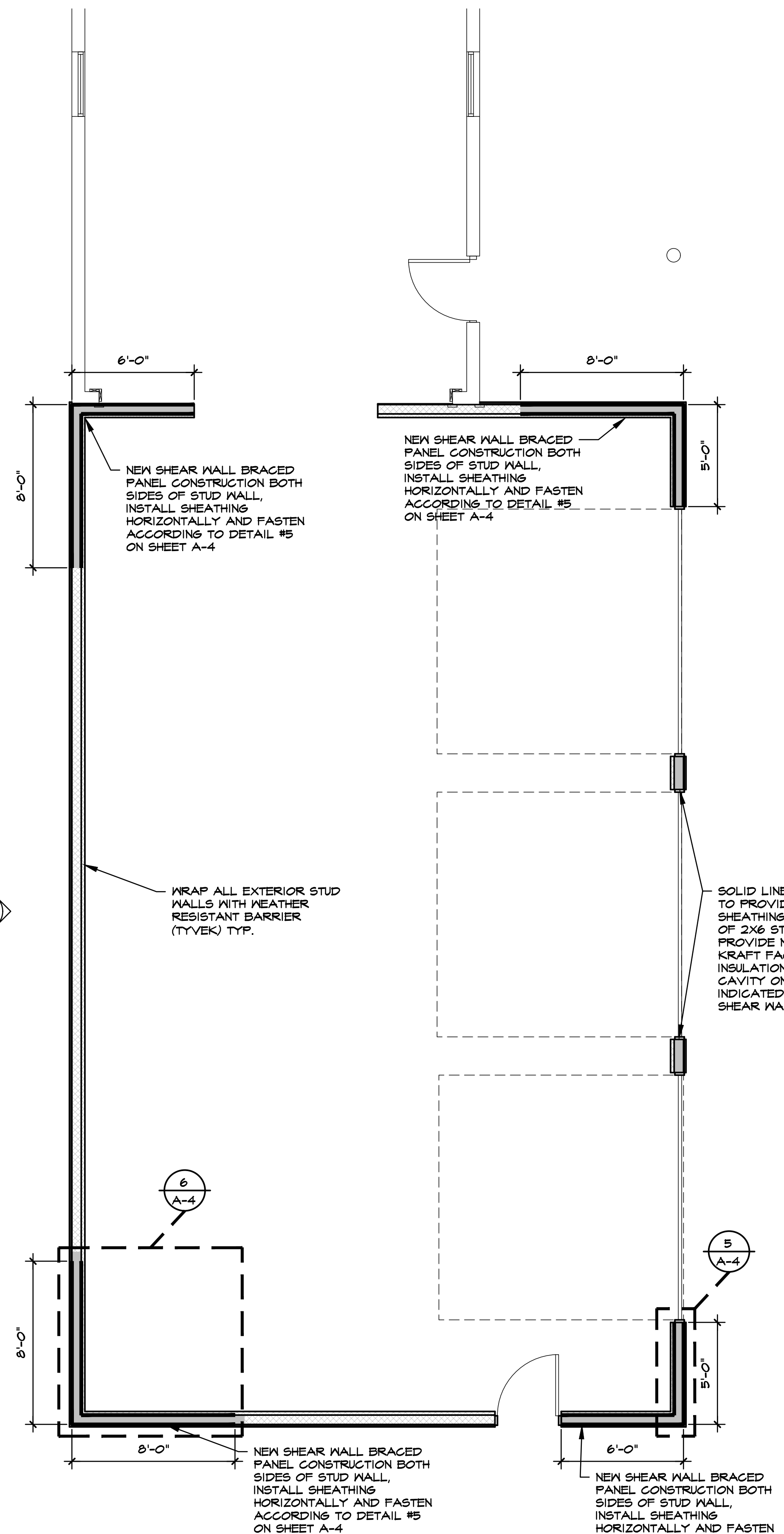
M383-01

sheet no.

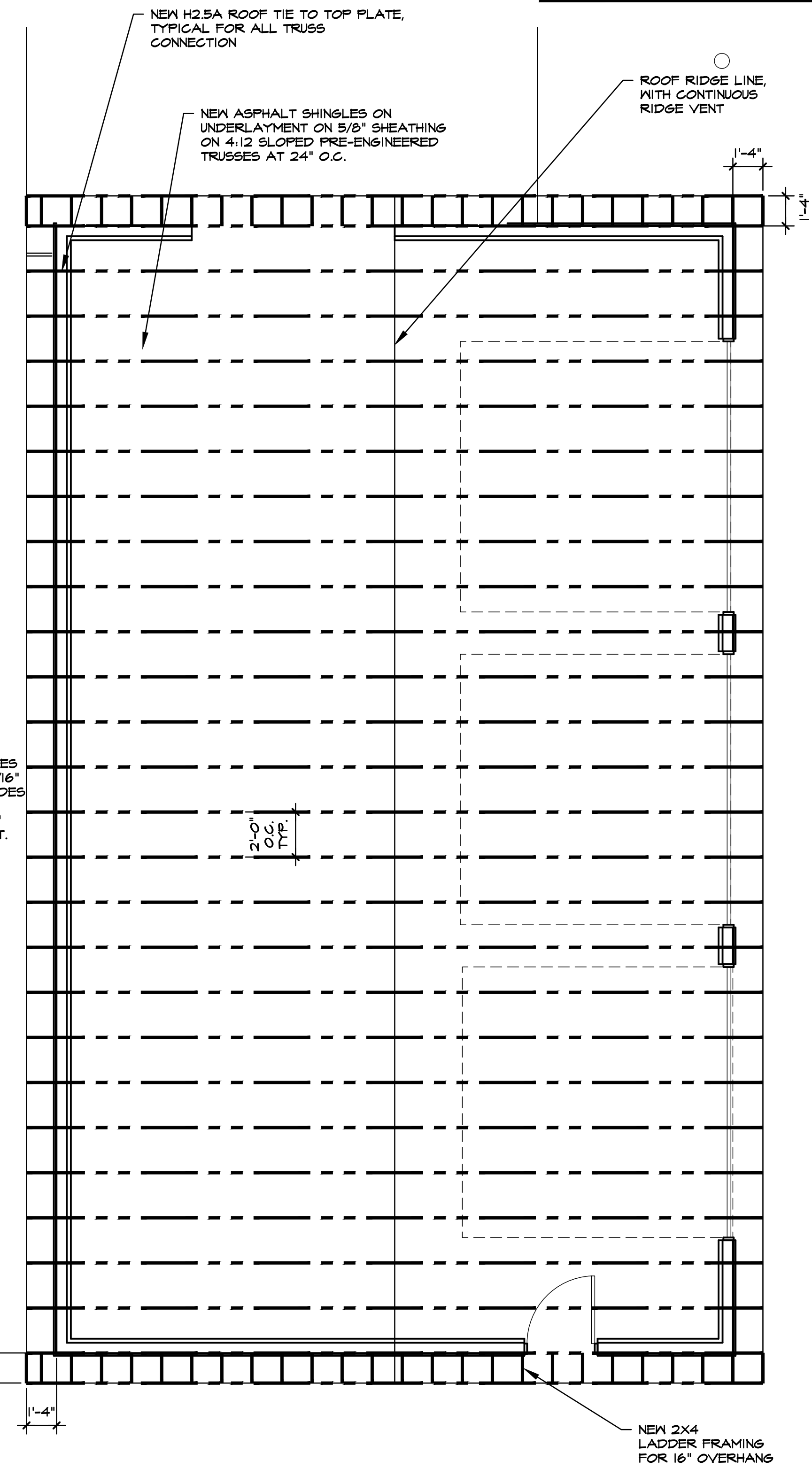
A-3



FLOOR PLAN
1/4" = 1'-0"

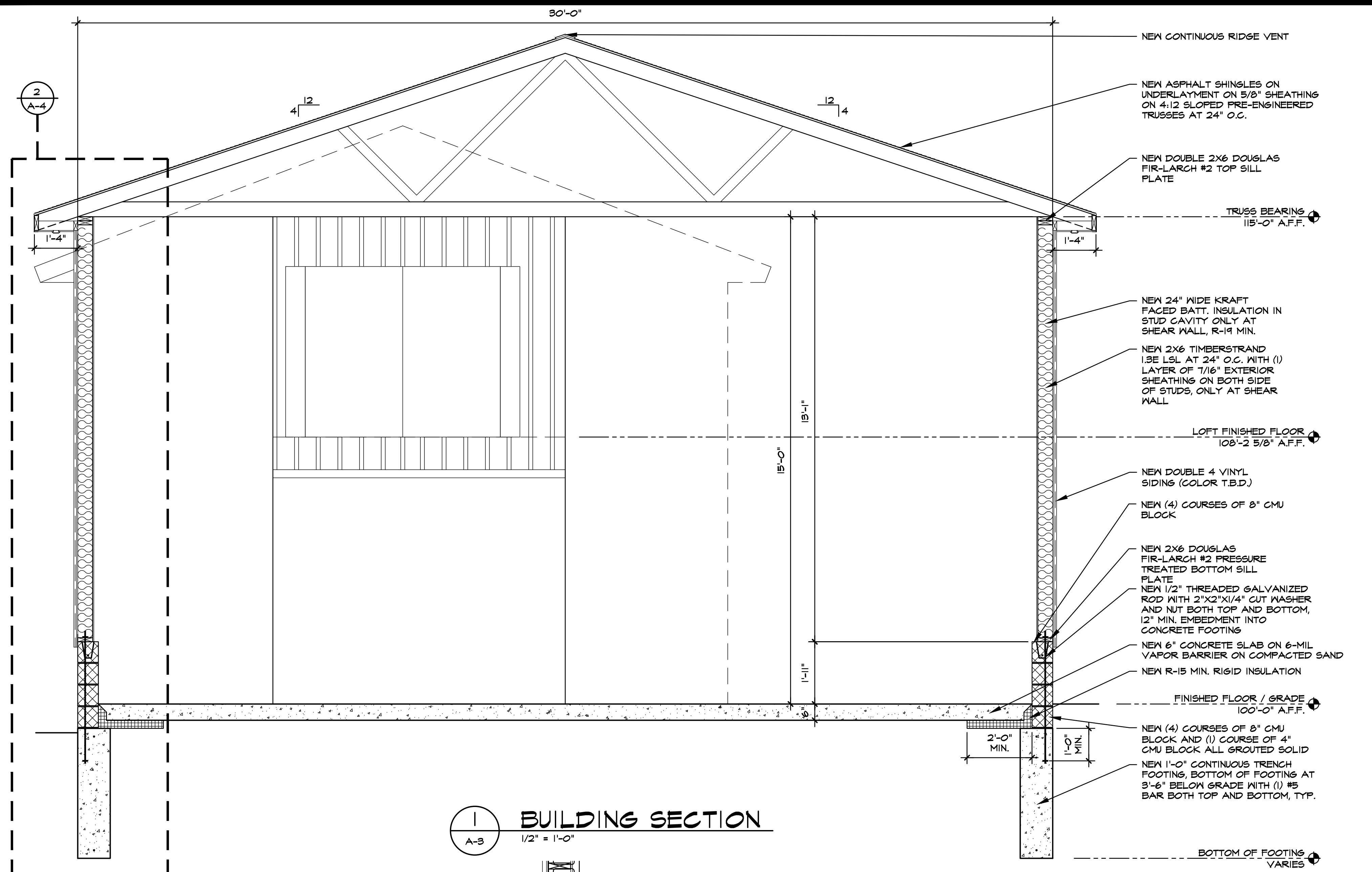


SHEAR WALL PANEL PLAN
1/4" = 1'-0"

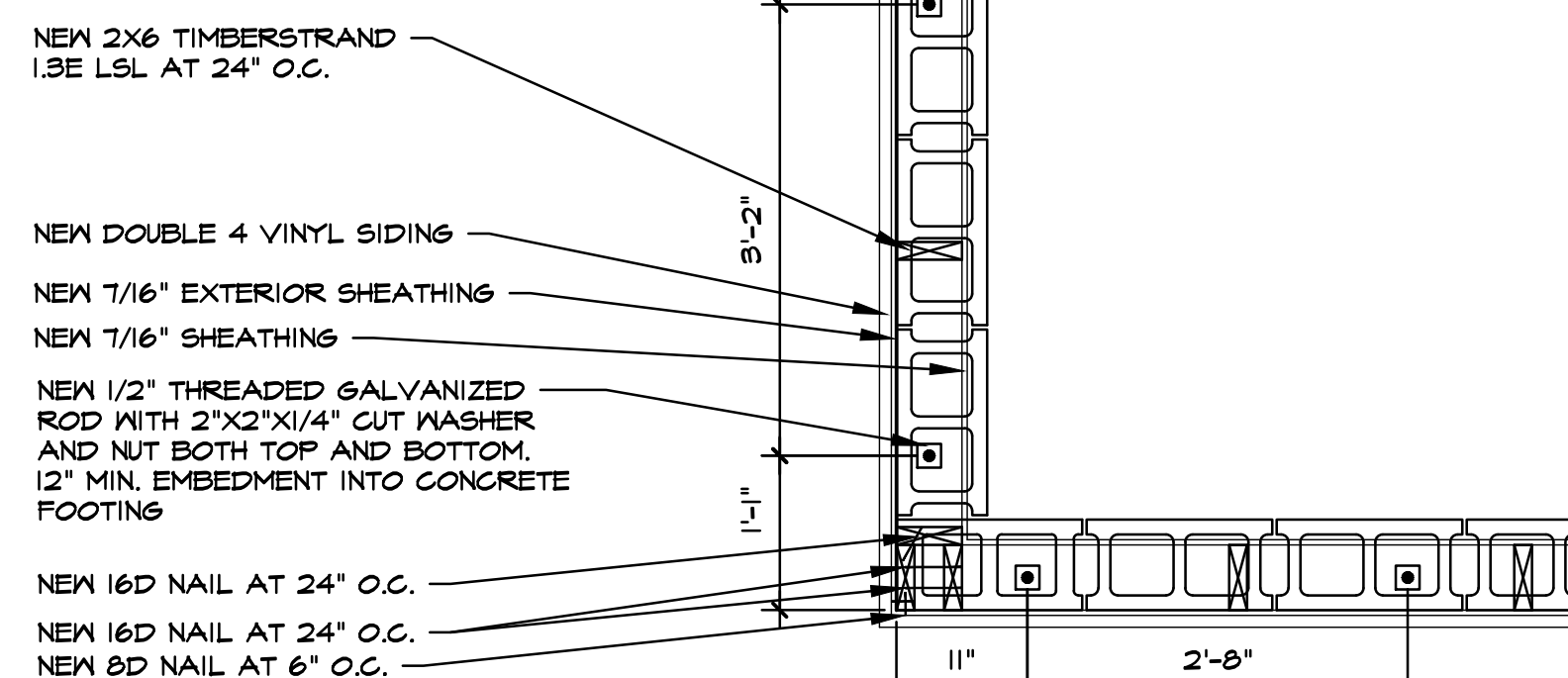


FRAMING / ROOF PLAN
1/4" = 1'-0"

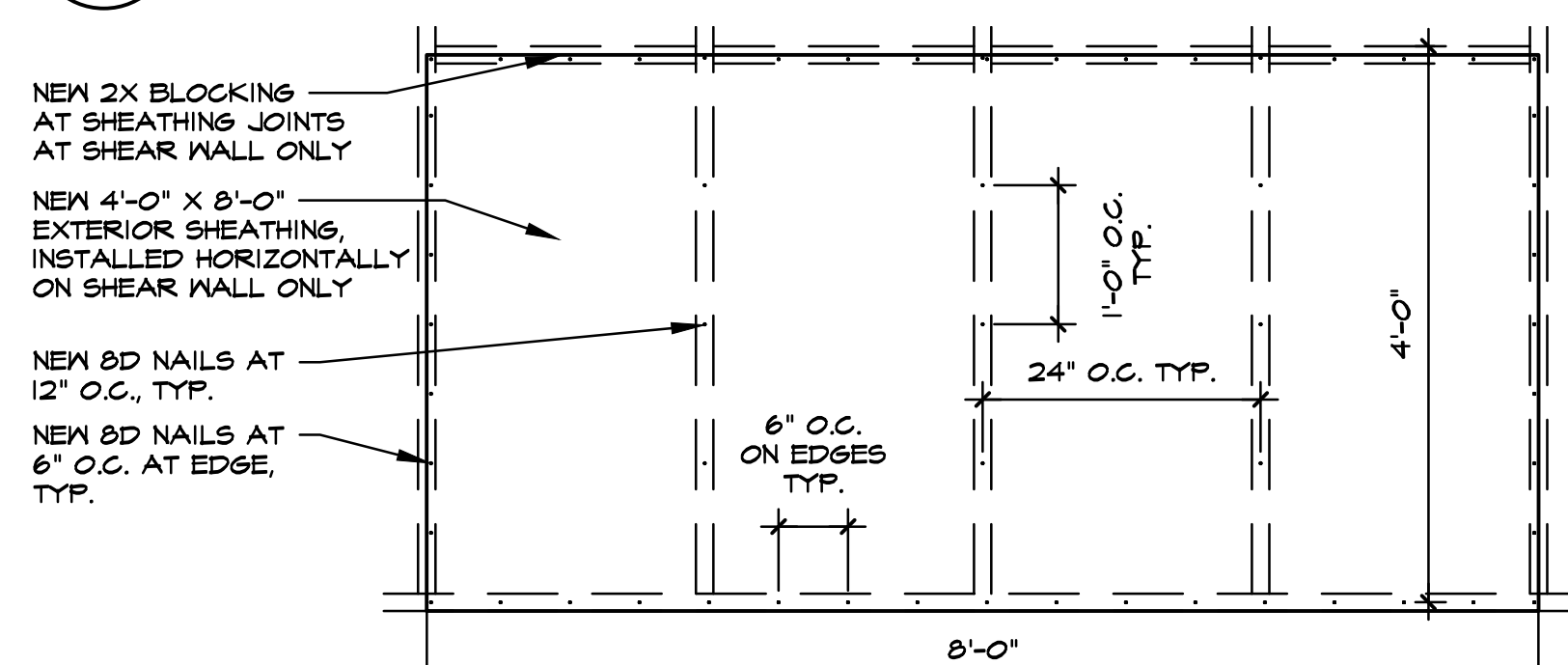




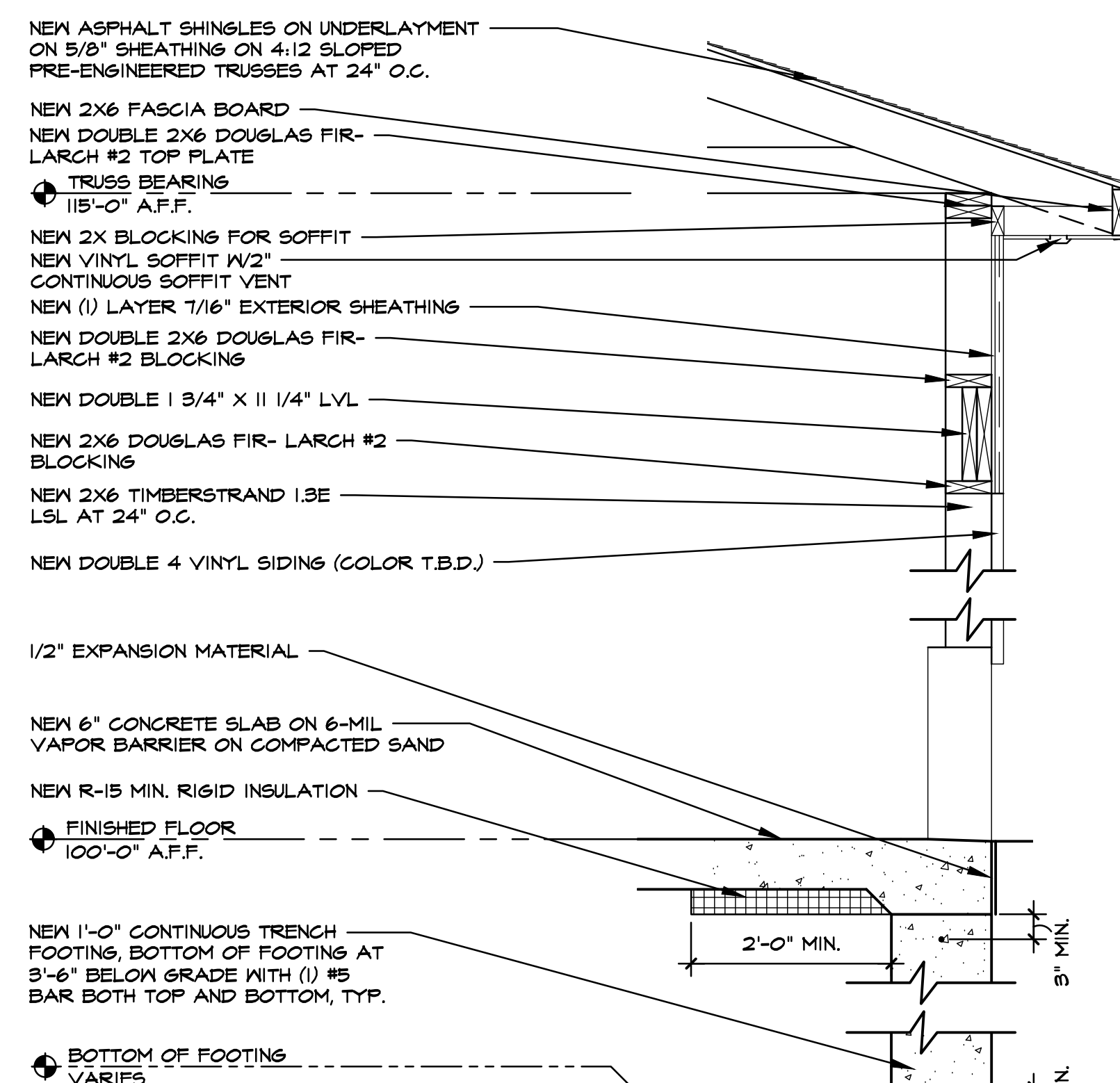
1 BUILDING SECTION
A-3 1/2" = 1'-0"



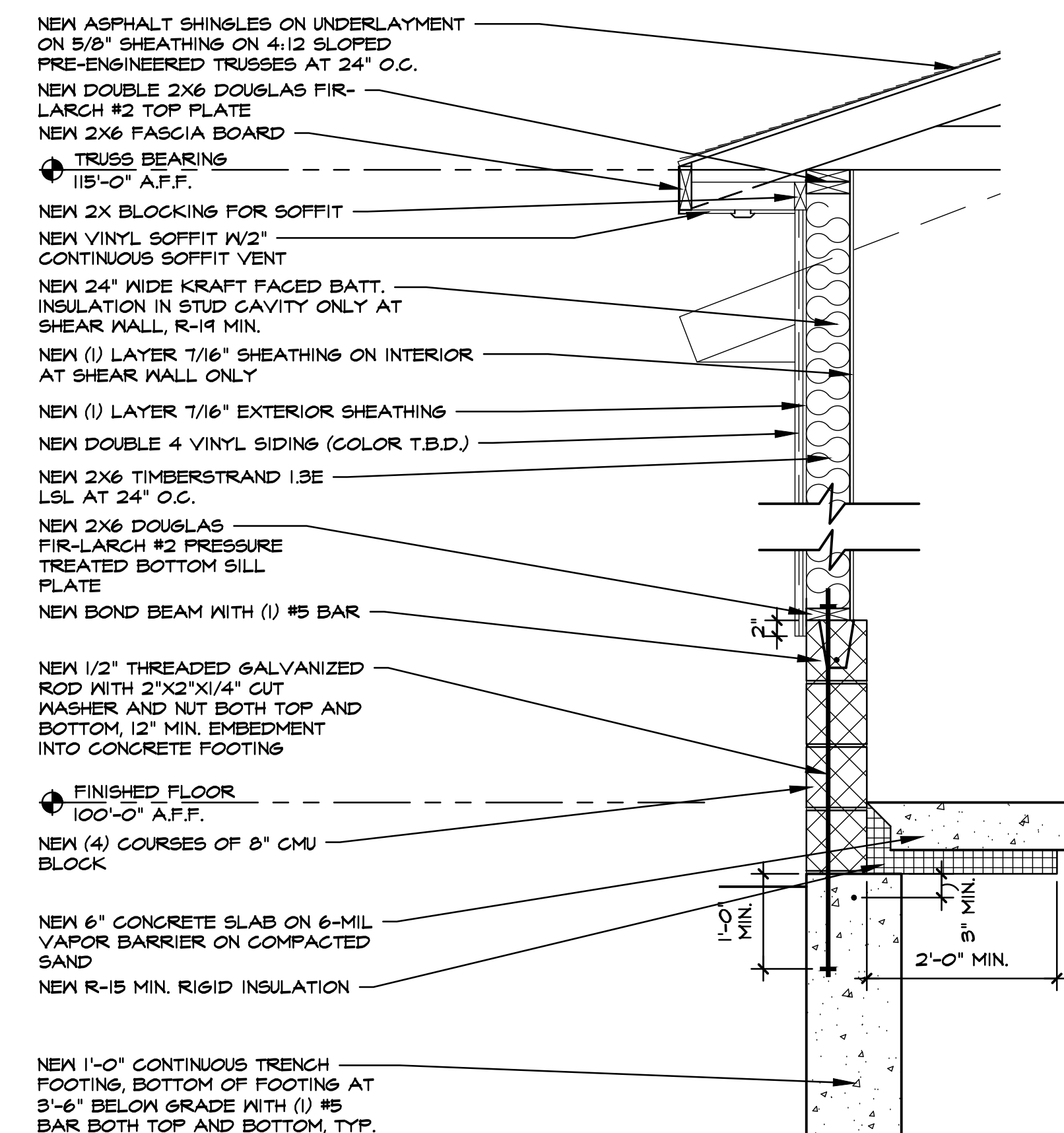
6 CORNER FRAMING
A-3 3/4" = 1'-0"



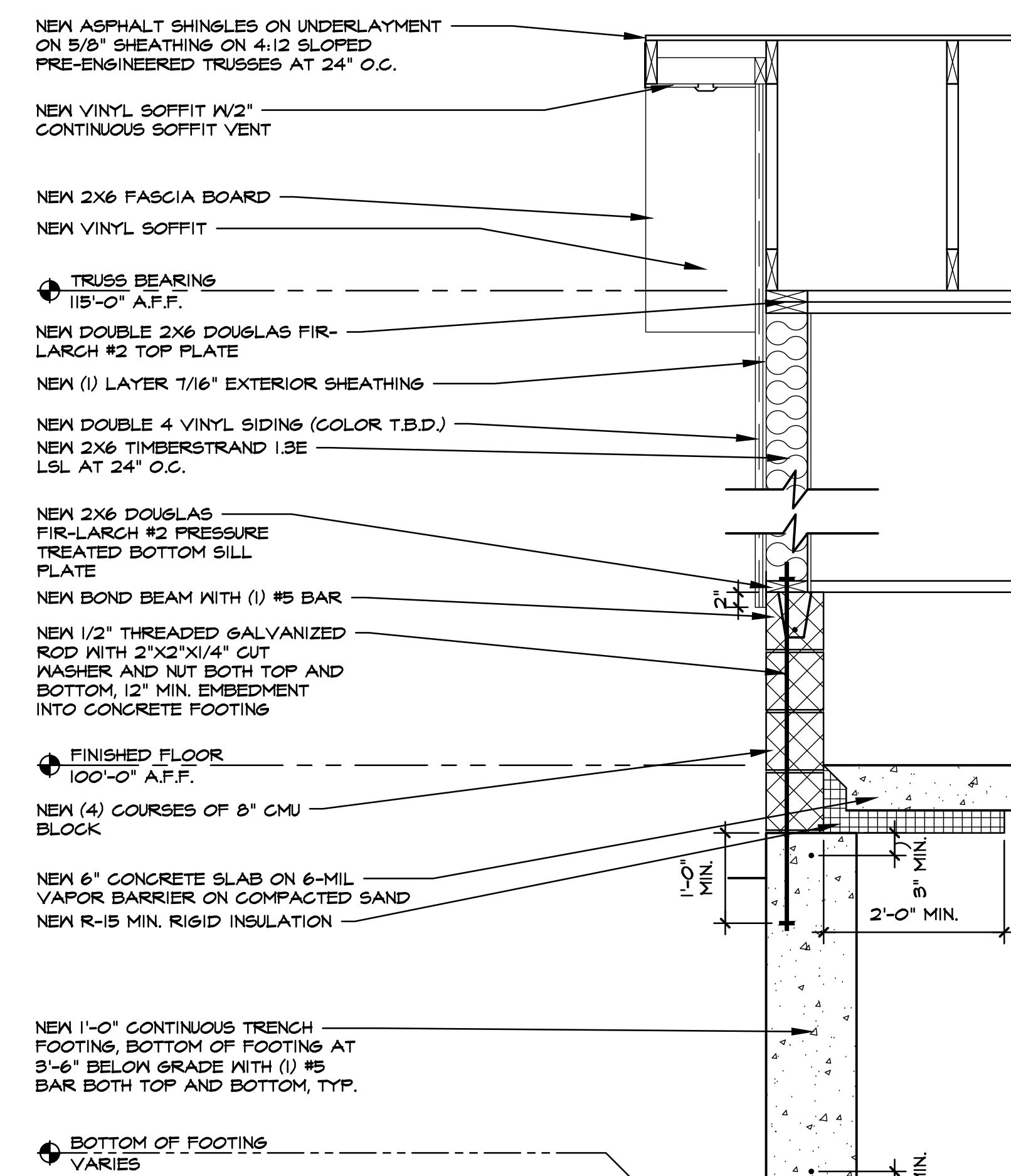
5 SHEATHING NAILING PATTERN
A-3 3/4" = 1'-0"



4 WALL SECTION
A-3 3/4" = 1'-0"



2 WALL SECTION
A-4 3/4" = 1'-0"



3 WALL SECTION
A-3 3/4" = 1'-0"



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SHEET

ELEVATIONS AND
DETAIL



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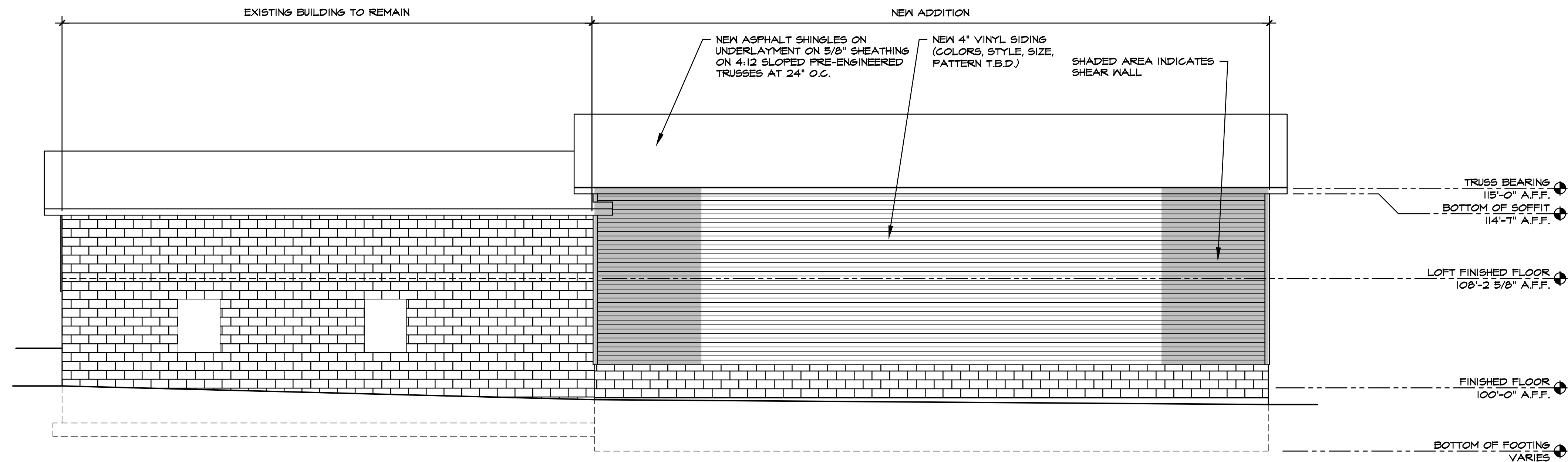
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DATE:
8/08/22

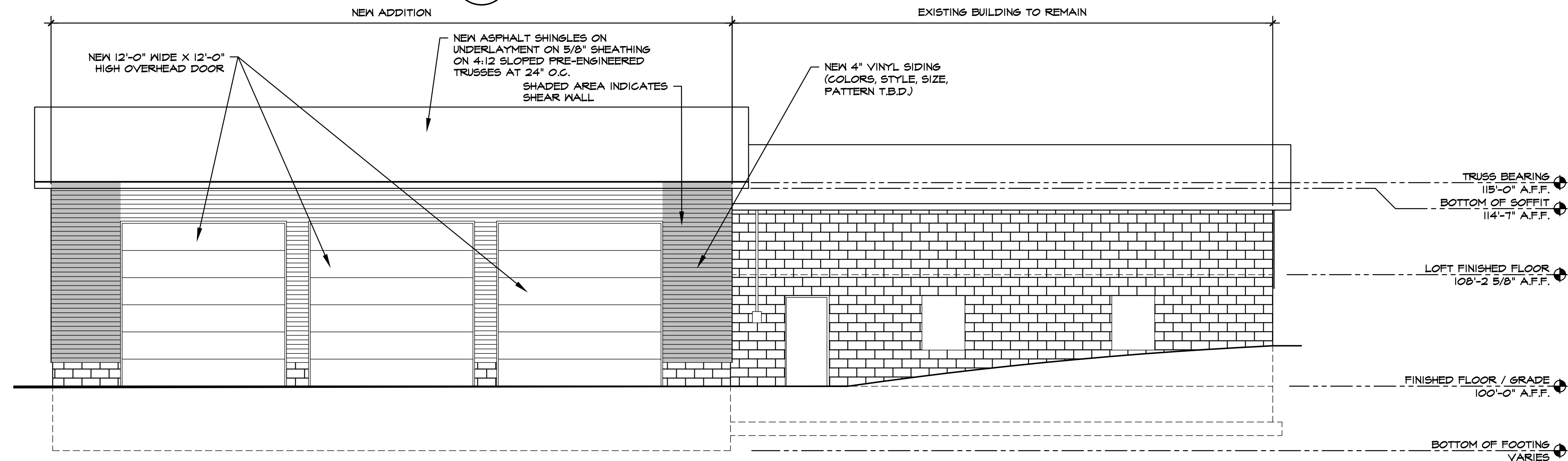
SCALE: 3/16" = 1'-0"

NFE JOB NO.
M383-01

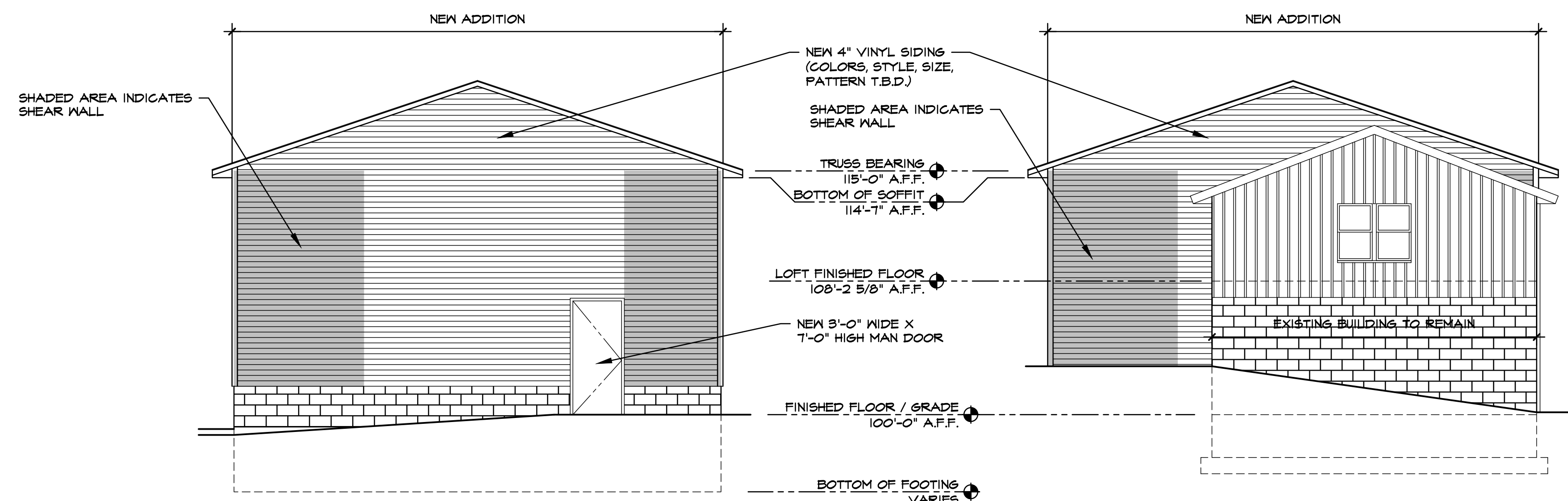
sheet no.
A-5



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



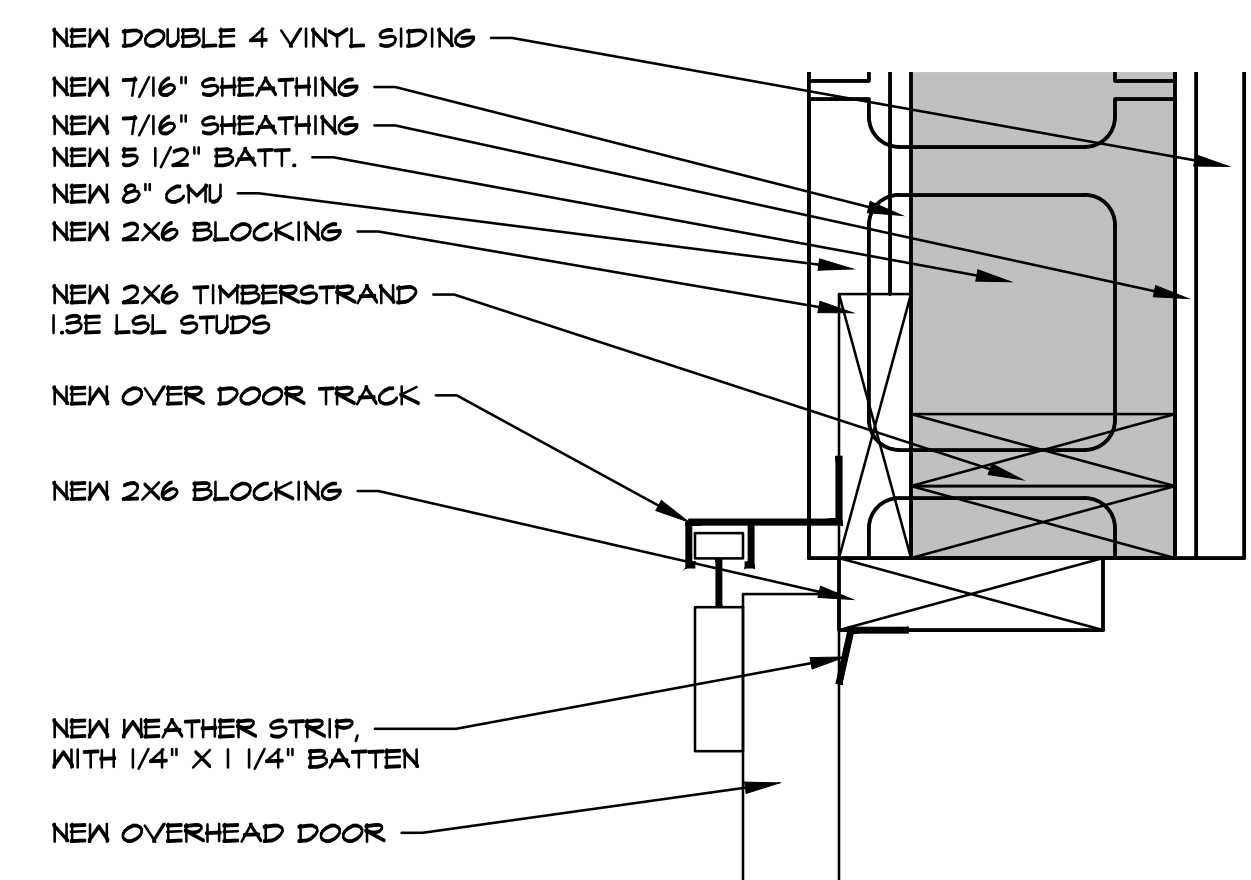
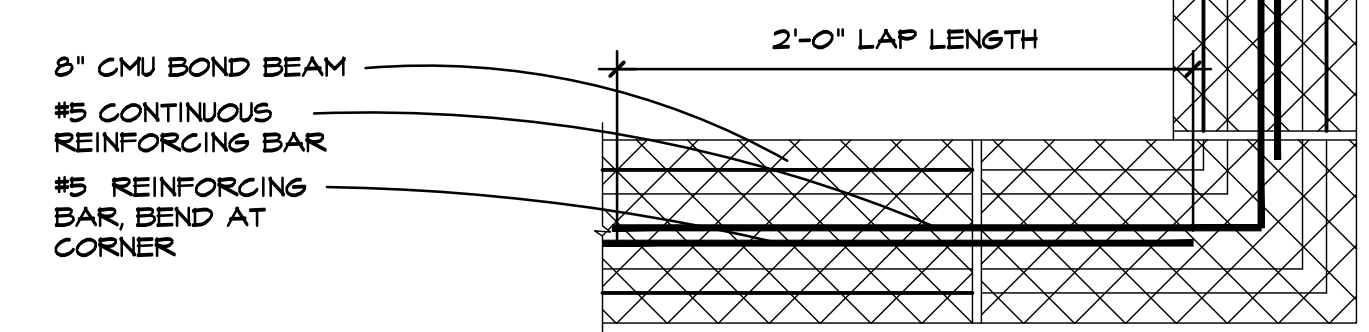
2 EAST ELEVATION
3/16" = 1'-0"



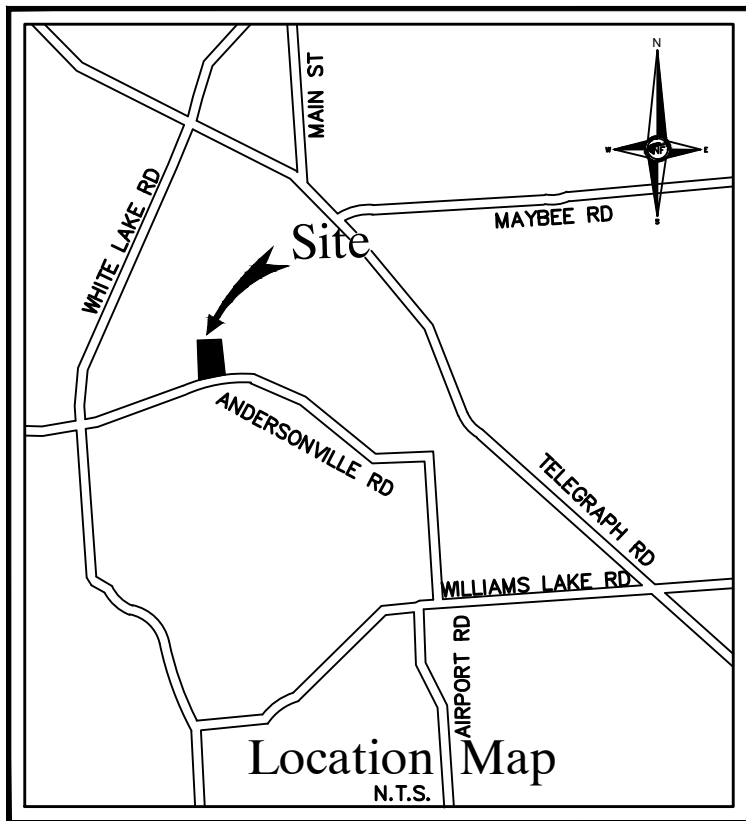
3 SOUTH ELEVATION
3/16" = 1'-0"

4 NORTH ELEVATION
3/16" = 1'-0"

6 BOND BEAM CORNER
A-2 1 1/2" = 1'-0" REINFORCING



5 OVERHEAD DOOR JAMB
A-3 3" = 1'-0"



GAS-FIRED UNIT HEATER SCHEDULE									
TAG	MODEL	MBH		FLUE SIZE (IN)	VENT SIZE (IN)	VOLTS	PHASE	HP	COMMENTS
		INPUT	OUTPUT						
UH-1	HDS 100	100	82	4"	4"	120	1	1/6	1,2,3,4,5
UH-2	HDS 45	45	36.9	3"	3"	120	1	1/15	1,2,3,4,5
NOTES: 1. BASED ON MODINE 2. SEPARATED COMBUSTION 3. HORIZONTAL CONCENTRIC VENT 4. DISCONNECT BY EC 5. THERMOSTAT BY MANUFACTURER									

REGULATOR SCHEDULE				
TAG	INLET PRESSURE RANGE	OUTLET PRESSURE	CAPACITY	AUSI STANDARD
R-1	1 PSI - 5 PSI	7" WC	150 CFH	ANSI Z21.80

HVAC & PLUMBING ABBREVIATIONS

CFM	CUBIC FEET PER MINUTE	LAT	LEAVING AIR TEMPERATURE
DB	DRY BULB	LH	LATENT HEAT (MBH)
DIA	DIAMETER	MAX	MAXIMUM
DN	DOWN	MBH	BTU PER HOUR (THOUSAND)
EAT	ENTERING AIR TEMPERATURE	MIN	MINIMUM
E.T.C.	ELECTRICAL TRADES CONTRACTOR	I.E.A.	MECHANICAL TRADES CONTRACTOR
EXH	EXHAUST	NTS	NOT TO SCALE
EXIST	EXISTING	PD	PRESSURE DROP
FF	FINISH FLOOR	PVC	POLY-VINYL-CHLORIDE
FT	FEET	REQ'D	REQUIRED
GAL	GALLON	RH	RELATIVE HUMIDITY
GPH	GALLONS PER HOUR	SH	SENSIBLE HEAT (MBH)
GPM	GALLONS PER MINUTE	SM	SHEET METAL
HD	HEAD (FT)	SQ. FT.	SQUARE FEET
HP	HORSE POWER	TYP	TYPICAL
HTG	HEATING	UH	UNIT HEATER
HVAC	HEATING, VENTILATION, & AIR CONDITIONING		
ID	INSIDE DIAMETER		
I.E.	INVERT ELEVATION		

GENERAL HVAC NOTES

1. LOCATE OUTDOOR INTAKES AT LEAST 6 FEET ABOVE GROUND LEVEL OR 3 FEET ABOVE ROOF LEVEL, UNLESS OTHERWISE INDICATED.
2. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER DISCIPLINES PRIOR TO CONSTRUCTION TO AVOID CONFLICTS.
3. THE CONTRACTOR SHALL FIELD VERIFY THE SIZES, LOCATION, ELEVATIONS, AND DETAILS OF ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ALL EQUIPMENT AND MATERIALS IN A "NEW" CONDITION DURING CONSTRUCTION.
5. ALL WORK SHALL BE PERFORMED BY LICENSED CONTRACTORS AND SUBCONTRACTORS AS REQUIRED BY LAW.
6. ALL WORK SHALL CONFORM TO MICHIGAN MECHANICAL CODE, LATEST APPLICABLE EDITION.
7. CONTRACTOR SHALL USE LOW PRESSURE LOSS DUCT FITTINGS IN ACCORDANCE WITH SMACNA. (WYES, RADIOUSED OR VANED TEES, ETC.) DUCTWORK SHALL BE GALVANIZED SHEET METAL, MIN. 26 GA.
8. ALL DUCT DIMENSIONS SHOWN ARE INSIDE CLEAR DIMENSION. INCREASE DUCT SIZE FOR LINING.
9. ALL EXTERNALLY ISOLATED HVAC EQUIPMENT SHALL HAVE FLEXIBLE DUCT CONNECTORS.

GENERAL PLUMBING NOTES

1. ALL PLUMBING WORK SHALL CONFORM TO MICHIGAN PLUMBING CODE, LATEST APPLICABLE EDITION.
2. SITE CONTRACTOR TO RUN UTILITIES TO 5'-0" FROM BUILDING LINE
3. ALL INVERT ELEVATIONS ARE BASED ON A FINISH FLOOR LEVEL OF 100'-00".
4. ALL ELEVATIONS SHOWN ARE INVERTS OF PIPING. THE SLEEVES SHALL BE COORDINATED WITH THESE ELEVATIONS.
5. ALL PIPE SIZES SHOWN ARE SERVICE SIZE. SIZE SLEEVES FOR 1" CLEAR SPACE BETWEEN PIPE AND SLEEVE FOR INSTALLATION OF MECHANICAL SEAL.
6. THE CONTRACTOR SHALL FIELD VERIFY THE SIZES, LOCATION, ELEVATIONS, AND DETAILS OF ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ALL EQUIPMENT AND MATERIALS IN A "NEW" CONDITION DURING CONSTRUCTION.
8. ALL WORK SHALL BE PERFORMED BY LICENSED CONTRACTORS AND SUBCONTRACTORS AS REQUIRED BY LAW.

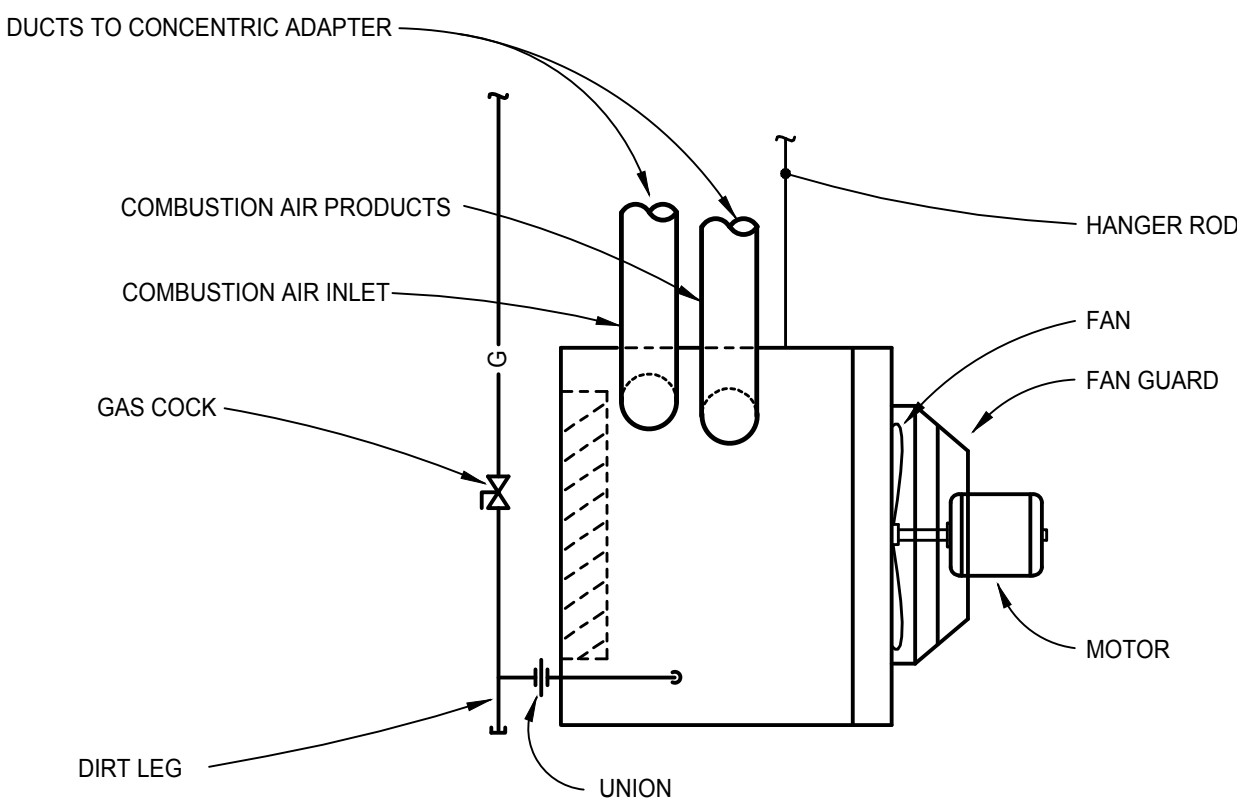
MECHANICAL KEY NOTES

1. CONTRACTOR SHALL COORDINATE WITH MISS DIG TO LOCATE EXISTING UTILITIES PRIOR TO TRENCHING/BORING FOR NEW GAS MAIN PIPING.

NATURAL GAS SUMMARY

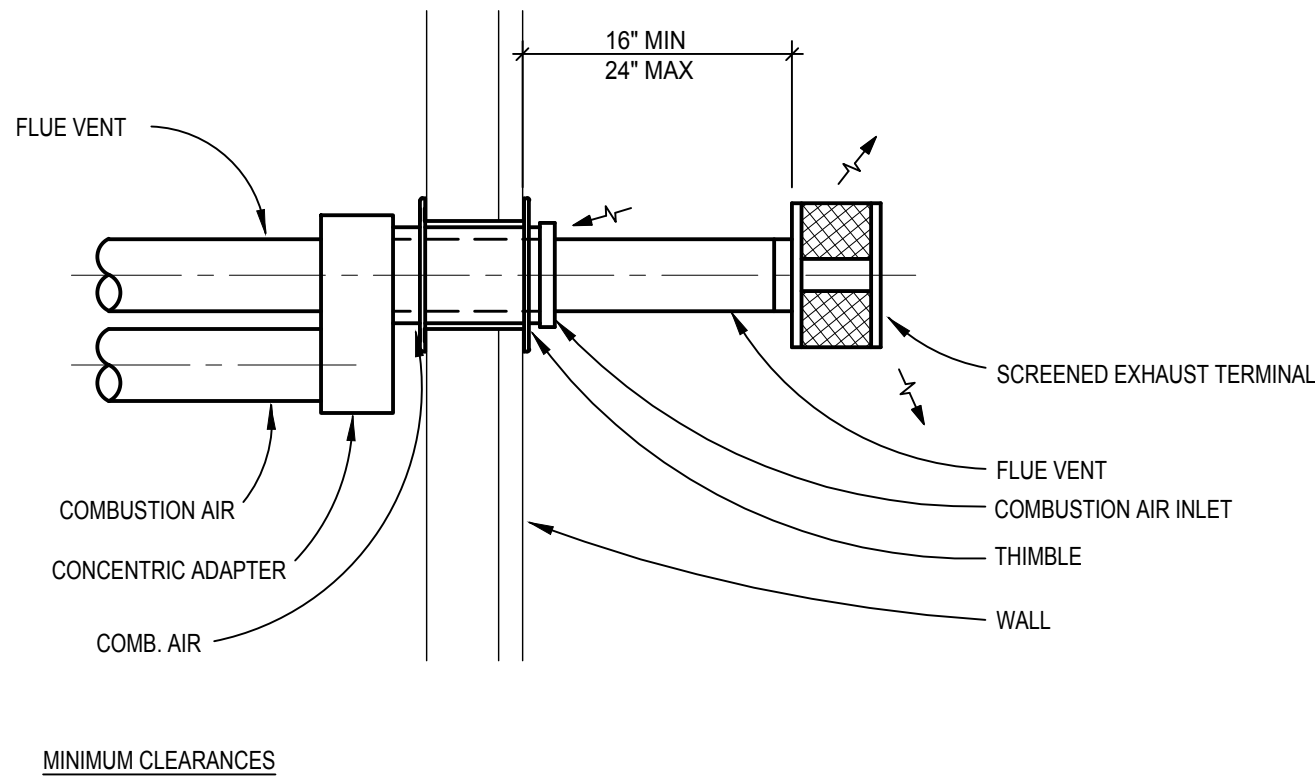
UH-1 = 100 MCF (4" - 14" WC)
UH-2 = 45 MCF (4" - 14" WC)
TOTAL = 145 MCF AT 5 PSI

CONTRACTOR SHALL COORDINATE NEW GAS LOAD WITH UTILITY PROVIDER REGARDING GAS METER CAPACITY



1 GAS UNIT HEATER DETAIL

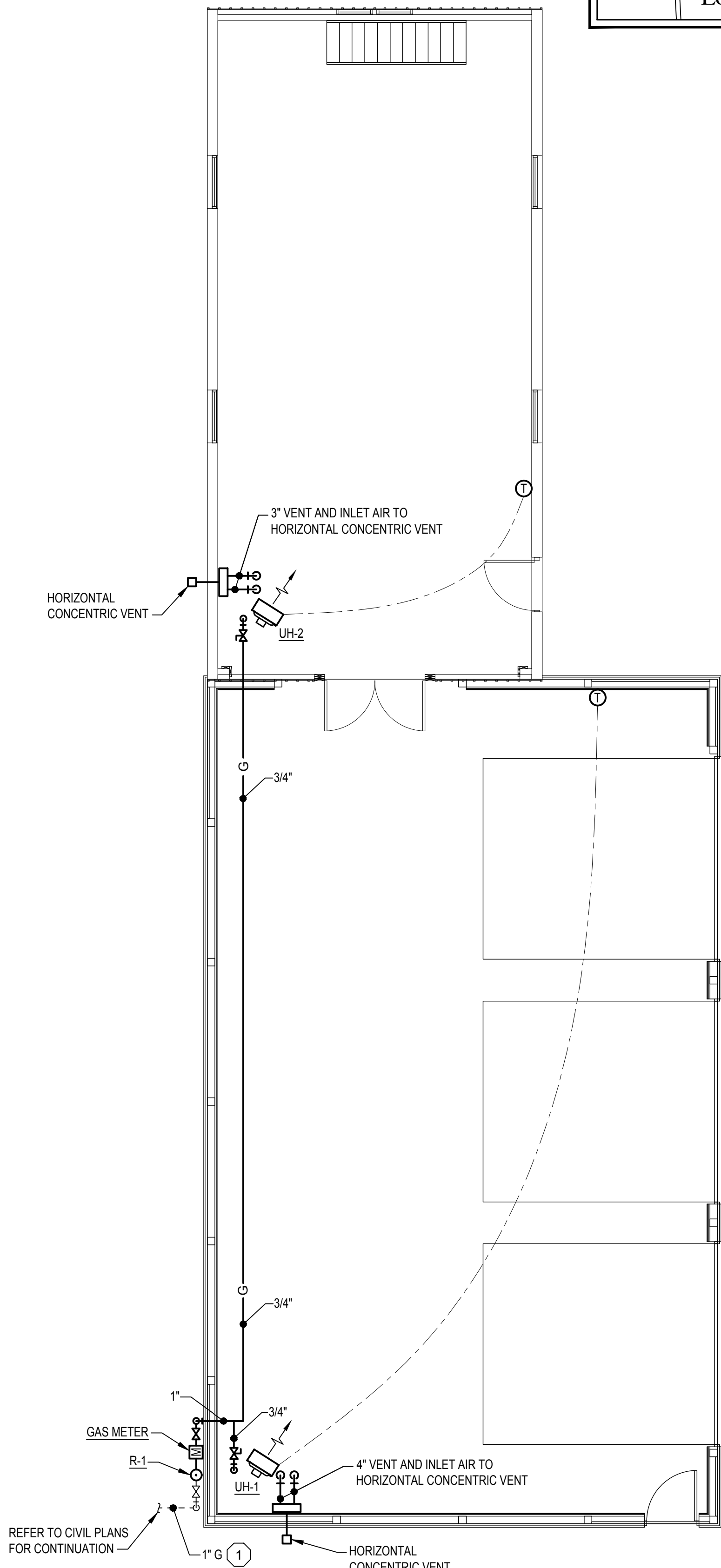
SCALE: NTS



2 UNIT HEATER HORIZONTAL CONCENTRIC VENTING DETAIL

SCALE: NTS

1. HORIZONTAL VENT MUST BE AT LEAST 3 FEET ABOVE FORCED AIR INLET WITHIN 10 FEET OF VENT.
2. HORIZONTAL VENT MUST BE AT LEAST 4 FEET BELOW, 4 FEET HORIZONTALLY, AND 1 FOOT ABOVE DOORS, WINDOWS, OR GRAVITY AIR INLET OR COMBUSTION AIR INLETS FOR OTHER APPLIANCES. IF REQUIRED TO MEET THESE REQUIREMENTS SEAL OPERABLE WINDOWS AS REQUIRED TO OBTAIN MINIMUM CLEARANCE.
3. HORIZONTAL VENT MUST BE AT LEAST 1 FOOT ABOVE GRADE LEVEL.



FLOOR PLAN - HVAC NEW

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

1601 E. CESAR CHAVEZ AVE.
LANSING, MI 48906
PHONE (313) 487-2511
FAX (313) 487-2544
administrator@matrixceinc.com
Main Project No. 22309.00

MEP ENGINEER
MATRIX
CONSULTING ENGINEERS, INC.

SEAL

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Bay Court Park Pole Barn

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SHEET

MECHANICAL
FLOOR PLAN
HVAC



DATE ISSUED/REVISE

8- 02- 22 OWNER REVIEW

8- 23- 22 OWNER REVIEW

9- 16- 22 ISSUED FOR BID

DRAWN BY:

NRF

DESIGNED BY:

NRF

APPROVED BY:

CAT

email contact:

NFOX@MATRIXCEINC.COM

DATE:

9/16/22

SCALE: AS SHOWN

NFE JOB NO.

M383-01

sheet no.

M-100

ELECTRICAL SYMBOLS LEGEND

OUTLETS		FIXTURES	
⌀	SINGLE RECEPTACLE (120 VOLT)	⬮	LIGHT FIXTURE
⌀	DUPLEX RECEPTACLE	⬮	STRIP FIXTURE
⌀	EMERGENCY RECEPTACLE	⬮	EMERGENCY LIGHT FIXTURE
⌀	DOUBLE DUPLEX RECEPTACLE	⬮	IN-GRADE LIGHT FIXTURE
⌀	FLUSH FLOOR BOX	⬮	SPOTLIGHT (number of heads shown)
⌀	SURFACE FLOOR BOX	⬮	EXIT SIGN (face & direction as shown)
⌀	SPECIAL EQUIPMENT RECEPTACLE	⬮	WALL MOUNT LIGHT FIXTURE
⬮	TELEPHONE OUTLET	⬮	CEILING LIGHT FIXTURE
⬮	DATA OUTLET	⬮	TRACK & FIXTURE
⬮	TELEPHONE / DATA OUTLET	⬮	STREET TYPE POLE FIXTURE
⬮	POWER POLE	⬮	POLE MOUNTED LIGHT FIXTURE
⬮	JUNCTION BOX	⬮	EXTERIOR WALL MOUNT LIGHT FIXTURE
⬮	WALL JUNCTION BOX	⬮	WALLPACK LIGHT FIXTURE
⬮	PULL (JUNCTION) BOX	⬮	SPECIAL PURPOSE LIGHT FIXTURE
⬮	UNDERFLOOR JUNCTION BOX	⬮	HIGH BAY LIGHT FIXTURE
⬮	CEILING MOUNTED WIFI	⬮	EMERGENCY EGRESS LIGHT FIXTURE (number of heads shown)
SWITCHES		⬮	DOCK LIGHT FIXTURE
\$	SINGLE-POLE SWITCH	CIRCUITRY and RACEWAYS	
\$	THREE-WAY SWITCH	—	CONDUIT INSTALLED (by E.C.)
\$	FOUR-WAY SWITCH	—	CONDUIT INSTALLED (by others)
\$	SWITCH WITH PILOT LIGHT	—	CONDUIT STUB UP
\$	THERMAL OVERLOAD SWITCH	—	CONDUIT STUB DOWN
\$	MANUAL MOTOR SWITCH	— 1.3	HOME RUN (with circuit numbers)
\$	KEY SWITCH	—	END OF CONDUIT RUN
\$	TIME SWITCH	—	END OF CONDUIT RUN, CAP AND STAKE
\$	DIMMER SWITCH	—	"CONDUIT RUN CONTINUES" INDICATION
MECHANICAL		—	FLEXIBLE PIGTAILS/CONNECTIONS
⊙	SINGLE PHASE MOTOR	— WM —	WIREMOLD AS SPECIFIED
⊙	THREE PHASE MOTOR	— PM —	PLUGMOLD AS SPECIFIED
⊙	RESISTANCE HEATER, KW SHOWN	— BD —	BUS DUCT
⊙	PIPE TRACE HEATER	— UFD —	UNDERFLOOR DUCT
⊙	ELECTRIC UNIT HEATER	SOUND and SIGNAL	
⊙	ELECTRIC WATER HEATER	⊙	SPEAKER
NURSE CALL		⊙	WALL MOUNTED SPEAKER
NCC	NURSE CALL CONTROLLER	⊙	WALL MOUNTED SPEAKER / CLOCK COMBO
M	MASTER STATION	⊙	SINGLE FACE CLOCK
P	EMERGENCY PULL STATION	⊙	DUAL FACE CLOCK
E	EMERGENCY PUSH STATION	⊙	VIDEO INPUT
CB	CODE BLUE STATION	⊙	AUDIO / VIDEO INPUT
A	PENDENT INTERFACE	⊙	BELL
L	BED / LIGHT INTERFACE	⊙	VOLUME CONTROL
B1	SINGLE BED STATION	⊙	BUZZER
B2	DUAL BED STATION	⊙	CHIME
⊙	DOME LIGHT	⊙	TELEVISION OUTLET
SRS	STAFF REGISTER STATION	⊙	MICROPHONE OUTLET
S	STAFF STATION	⊙	INTERCOM OUTLET
DS	DUTY STATION	⊙	CAMERA
DESIGNATIONS		⊙	DOOR CONTACT
⬮	DEMOLITION NOTE	⊙	MOTION DETECTOR
⬮	PLAN NOTE	⊙	BEAM DETECTOR
⬮	ADDENDUM NOTE	⊙	KEY PAD
		⊙	SECURITY SYSTEM CONTROL PANEL
		⊙	CCTV CONTROL PANEL
		⊙	CARD READER
		⊙	STUDENT STATION
		⊙	ADMINISTRATION STATION
		⊙	TEACHER STATION
		⊙	GLASS BREAK

SERVICE and EQUIPMENT	
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
VFD	VARIABLE FREQUENCY DRIVE
T	TRANSFORMER
⊙	DISCONNECT SWITCH
⊙	MAGNETIC STARTER
⊙	COMB. STARTER
⊙	PANELBOARD, SURFACE MOUNTED
⊙	PANELBOARD, FLUSH MOUNTED
⊙	WEATHERHEAD
⊙	UTILITY METER, AS REQUIRED
⊙	DIGITAL EQUIPMENT METER, AS REQUIRED
⊙	CURRENT TRANSFORMERS
⊙	GENERATOR, KW SHOWN
⊙	TELEPHONE TERMINAL BOARD
⊙	GROUND CONNECTION PER N.E.C.
⊙	WIREWAY
⊙	TRANSFER SWITCH
⊙	ENCLOSED CIRCUIT BREAKER
⊙	CAPACITOR
CONTROL	
⊙	THERMOSTAT
⊙	HUMIDISTAT
⊙	PHOTOCELL (voltage as required)
⊙	TIME CLOCK (24 hour U.O.N.)
⊙	PUSHBUTTON STATION (number of buttons indicated)
⊙	CONTROL TRANSFORMER
⊙	LIGHTING CONTACTOR
⊙	IRRIGATION CONTROLLER (120 volt xxVA connection by x/c)
⊙	WALL MOUNT DUAL TECHNOLOGY SENSOR
⊙	OCCUPANCY SENSOR / PHOTOCELL
⊙	ULTRASONIC SENSOR - 360° - 2 CIRCUIT
⊙	DUAL TECHNOLOGY SENSOR - 360° - 1000 SQ FT
⊙	DUAL TECHNOLOGY SENSOR - 360° - 500 SQ FT
⊙	SWITCH STYLE OCCUPANCY SENSOR
⊙	POWER PACK
⊙	DIGITAL TIME SWITCH
FIRE ALARM	
⊙	SMOKE DETECTOR
⊙	HEAT DETECTOR
⊙	DUCT SMOKE DETECTOR
⊙	DUCT SMOKE DETECTOR
⊙	HORN
⊙	HORN & LIGHT
⊙	SPEAKER
⊙	SPEAKER & LIGHT
⊙	PULL STATION
⊙	FIRE ALARM CONTROL PANEL
⊙	ANNUNCIATOR PANEL
⊙	END OF LINE DEVICE
⊙	REMOTE INDICATING LIGHT, WALL MTD.
⊙	REMOTE INDICATING LIGHT, CLG. MTD.
⊙	MAGNETIC DOOR HOLDER
⊙	FIREFIGHTER COMMUNICATION JACK
⊙	FLOW SWITCH (furnished by FP/C)
⊙	TAMPER SWITCH (furnished by FP/C)
⊙	VISUAL ONLY UNIT
⊙	FIRE CONTROL POWER SUPPLY
⊙	MONITOR MODULE
⊙	CONTROL MODULE
⊙	CARBON MONOXIDE DETECTOR

ABBREVIATIONS LEGEND

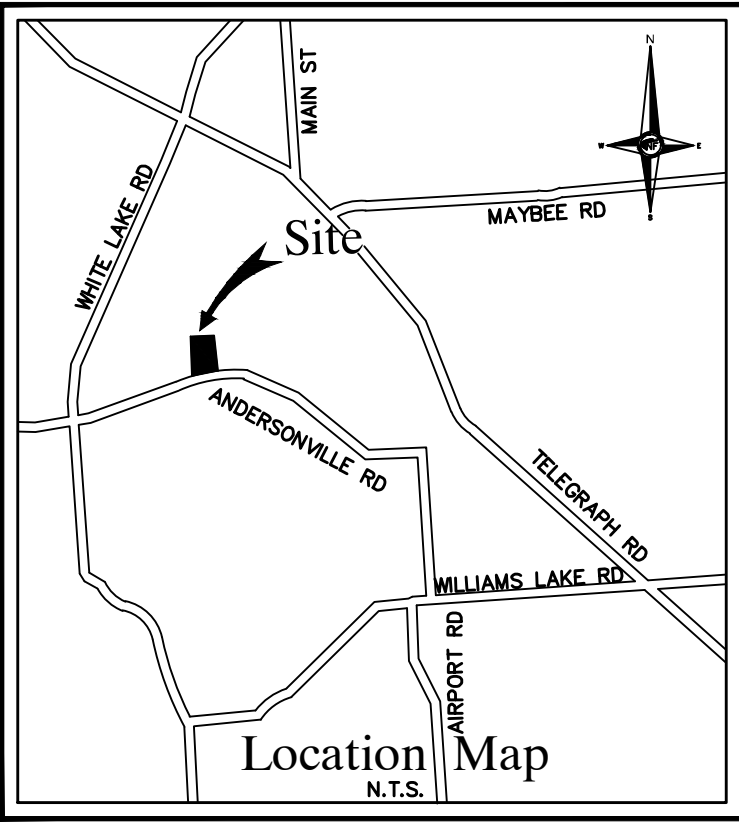
A	AMPS	GC	GENERAL CONTRACTOR	P	POLE
AC	ABOVE COUNTER	GFI	GROUND FAULT INTERRUPTER	P-	PUMP
ACU-	AIR CONDITIONING UNIT	GND	GROUND	PB	PULL BOX
AFF	ABOVE FINISHED FLOOR	H-	HUMIDIFIER	PNL	PANEL
AHJ	AUTHORITY HAVING JURISDICTION	HQA	HIGH INTENSITY DISCHARGE	PRV-	POWER ROOF VENTILATOR
AHU	AIR HANDLING UNIT	HP	HORSEPOWER	PVC	POLY VINYL CHLORIDE
AIC	AMPS INTERRUPTING CAPACITY	HR	HOUR	PWR	POWER
AS	ABOVE SHELF	HVAC	HEATING/VENTILATING/AIR CONDITIONING	RECEPT	RECEPTACLE
ATS	AUTOMATIC TRANSFER SWITCH	IG	ISOLATED GROUND	RCC	RIGID GALVANIZED STEEL CONDUIT
B-	BOILER	IMC	INTERMEDIATE METAL CONDUIT	RTU-	ROOF TOP UNIT
BC	BELOW COUNTER	JB	JUNCTION BOX	SF-	SUPPLY FAN
BLDG	BUILDING	LC	LIGHT CONTROL	SPEC	SPECIFICATIONS
CHLR-	CHILLER	LT	LIGHT	SW	SWITCH
CND (C)	CONDUIT	LTG	LIGHTING	SWBD	SWITCHBOARD
CKT	CIRCUIT	LT FLEX	LIQUID TIGHT FLEXIBLE METAL CONDUIT	TCC	TEMPERATURE CONTROL CONTRACTOR
CKT BKR	CIRCUIT BREAKER	MAX	MAXIMUM	TR	TAMPER PROOF RECEPTACLE
CT-	COOLING TOWER	MC	MECHANICAL CONTRACTOR	TS	TAMPER PROOF SWITCH
CU-	CONDENSING UNIT	MCC	MOTOR CONTROL CENTER	TYP	TYPICAL
CUH-	CABINET UNIT HEATER	MIN	MINIMUM	UF	UNDER FLOOR
DFU-	DUCT FURNACE	MLO	MAIN LUG ONLY	UH-	UNIT HEATER
DISC	DISCONNECT	MTD	MOUNTED	UL	UNDERWRITERS' LABORATORIES, INC.
DWG	DRAWING	MTG	MOUNTING	UNO	UNLESS NOTED OTHERWISE
DWH-	DOMESTIC WATER HEATER	MUAU-	MAKE-UP AIR UNIT	V	VOLTS
EBB-	ELECTRIC BASEBOARD	NC	NORMALLY CLOSED	VL	VERIFY LOCATION WITH OWNER
EC	ELECTRICAL CONTRACTOR	NIC	NOT IN CONTRACT	W	WATTS
EF-	EXHAUST FAN	NL	NIGHT LIGHT	W/	WITH
EM	EMERGENCY	NO	NORMALLY OPEN	W/O	WITHOUT
EMT	ELECTRICAL METALLIC TUBING	NTS	NOT TO SCALE	WP	WEATHER PROOF
EWC	ELECTRIC WATER COOLER			XFMR	TRANSFORMER
EXIST (E)	EXISTING				
FLA	FULL LOAD AMPS				
FLEX	FLEXIBLE CONDUIT				
FLR	FLOOR				
FLUOR	FLUORESCENT				
FSES	FOOD SERVICE EQUIP. SUPPLIER				
F/S	FIRE/SMOKE				
FU-	FURNACE				

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NO.	DESCRIPTION AND COMMENTS	DIMMING INFO	FIXTURE MOUNTING HEIGHT	DRIVER
LA	LITHONIA	FEM4L96-9000LM-LPAFL-WD-MVOLT-GZ10-40K-80CRI	LED SUSPENDED 8' FIXTURE WITH WIDE DISTRIBUTION.	0-10V	12' AFF	9000 LUMENS 53W, 4000K LED
LB	LITHONIA	WPX1-LED-P1-40K-MVOLT-DBLXD	LED EXTERIOR WALLPACK WITH BLACK FINISH.	0-10V	15' ABOVE GRADE	1550 LUMENS 11W, 4000K LED

GENERAL ELECTRICAL NOTES

- ALL WALL AND FLOOR PENETRATIONS ARE TO BE SEALED TO MAINTAIN ORIGINAL RATING.
- ALL CONDUITS TO BE FIELD ROUTED ALONG EXISTING PIPING AND STRUCTURAL STEEL.
- THE DIVISION 26 CONTRACTORS SHALL VISIT THE PROJECT AND DETERMINE THE EXACT EXTENT OF THE DEMOLITION WORK REQUIRED BEFORE BIDDING THE PROJECT.
- REMOVE ALL EXISTING OBSOLETE EXPOSED CONDUIT, WIRE AND UNUSED EQUIPMENT WHERE WORK IS BEING DONE EXCEPT ITEMS NOTED OTHERWISE.
- WHERE BUILDING SURFACES ARE DAMAGED BY THE REMOVAL OF OLD WORK, SURFACES SHALL BE PATCHED TO MATCH ADJACENT.
- EXISTING WORK WHICH IS PRESENTLY CONCEALED AND WHICH WILL REMAIN CONCEALED AND DOES NOT INTERFERE WITH ANY NEW WORK OF ANY TRADE NEED NOT BE REMOVED. HOWEVER, ALL CONDUIT SHALL BE CAPPED BELOW FINISH SURFACE AND THEN PATCHED TO MATCH, OR AS NOTED.
- EXISTING OPENINGS, WHICH ARE TO BE REUSED, SHALL BE MODIFIED OR ENLARGED TO SUIT THE NEW SYSTEMS AS REQUIRED. PROVIDE ALL REQUIRED CUTTING AND PATCHING.
- IF ASBESTOS IS PRESENT, IT WILL BE REMOVED OR RENDERED HARMLESS UNDER SEPARATE CONTRACT BY THE OWNER.
- THE DIVISION 26 CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING THE EXISTING WALLS TO MATCH THE ADJACENT SURFACES BEHIND ALL SURFACE MOUNTED EQUIPMENT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CIRCUITING. MAXIMUM LIGHTING LOAD PER 20A-1P CIRCUIT IS 1400 WATTS. MAXIMUM RECEPTACLE LOAD PER 20A-1P CIRCUIT SHALL BE (8) DUPLEXES. SIZE MOTOR OR EQUIPMENT CIRCUITS 125% OF RATED LOAD.
- CONTRACTOR SHALL FIELD VERIFY ALL EQUIPMENT VOLTAGES AND LOADS PRIOR TO INSTALLING SERVICE TO EQUIPMENT.
- DRAWINGS ARE BASED ON EXISTING RECORD DOCUMENT AND CASUAL FIELD OBSERVATION. REPORT ANY DISCREPANCIES TO ENGINEER FOR CLARIFICATION.



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Main Project No. 2209.00

MATRIX
CONSULTING ENGINEERS, INC.

MEP ENGINEER

SEAL

PROJECT
Independence Township -
Bay Court Park Pole Barn

CLIENT
Independence Township

Contact: Derek Smith
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Email:
dosmith@nfe-engr.com

PROJECT LOCATION
Part of the SW ¼
of Section 32
T. 4N, R. 9E
City of Clarkston,
Oakland County, Michigan

SHEET
ELECTRICAL SYMBOLS,
ABBREVIATIONS, NOTES,
AND SCHEDULES



DATE	ISSUED/REVIEW
8-02-22	OWNER REVIEW
8-23-22	OWNER REVIEW
9-16-22	ISSUED FOR BID

DRAWN BY:
BTT

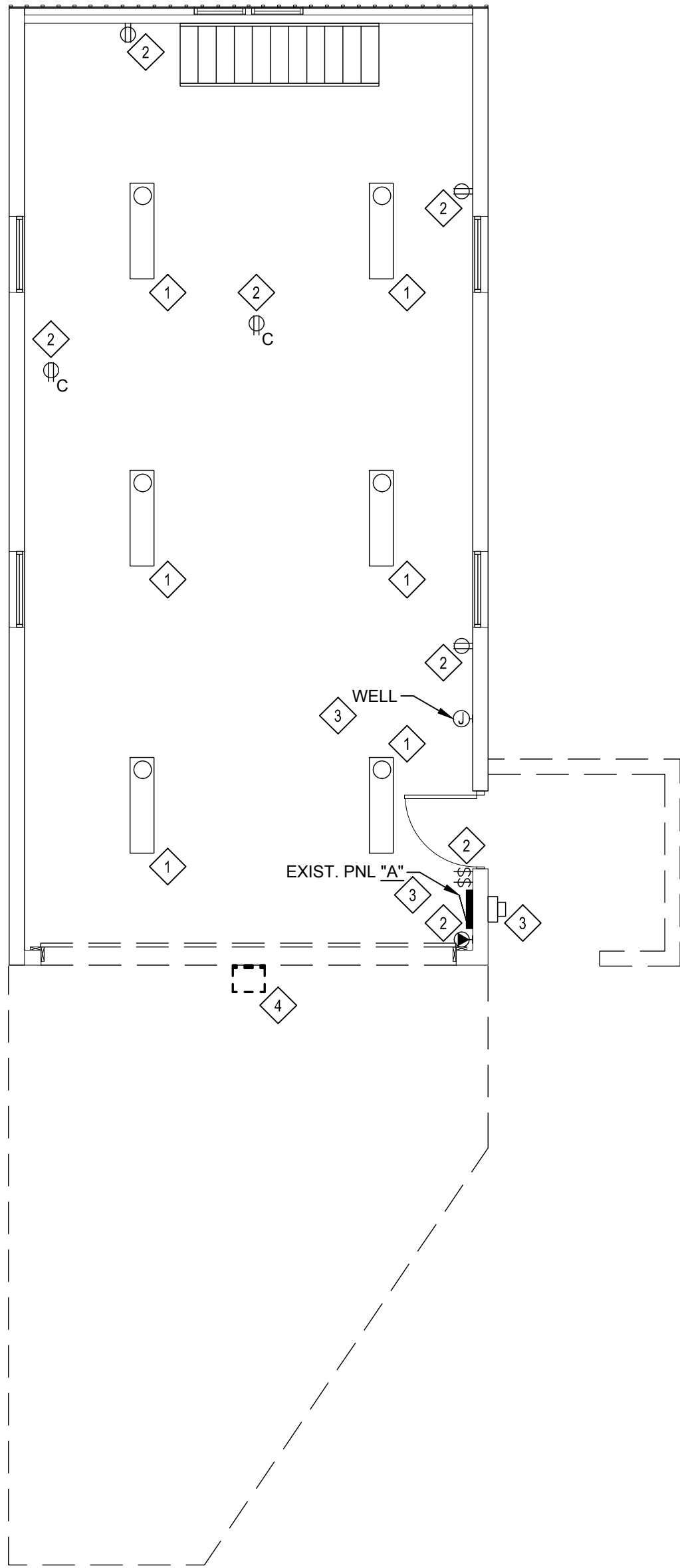
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APPROVED BY:
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email contact:
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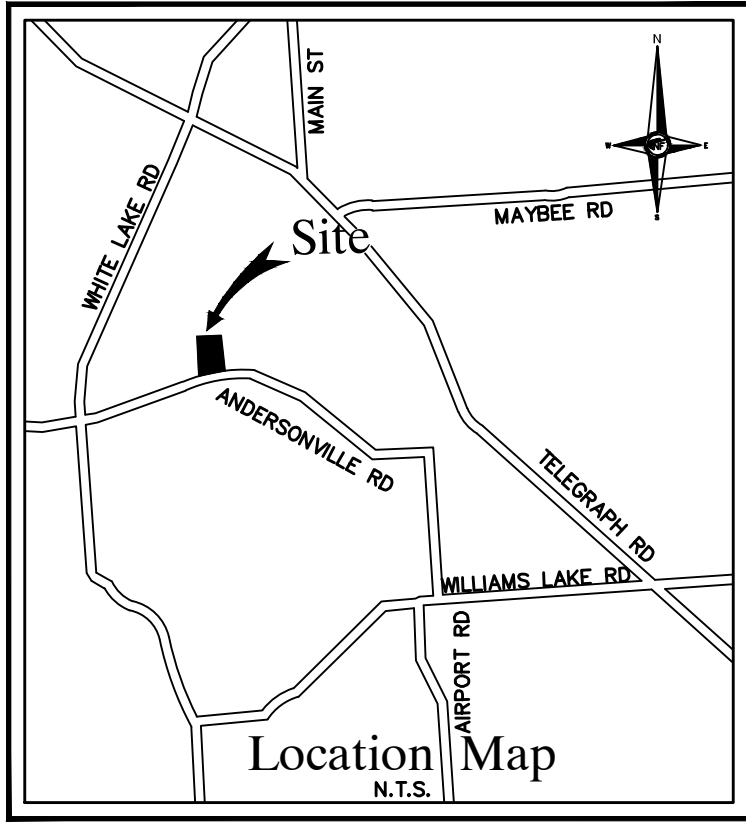
DATE:
9/16/22

SCALE: **AS SHOWN**



DEMOLITION NOTES

- 1 EXISTING LIGHT FIXTURE TO REMAIN.
2 EXISTING DEVICE TO REMAIN.
3 EXISTING EQUIPMENT TO REMAIN.
4 DISCONNECT & REMOVE EXISTING LIGHT FIXTURE. REMOVE ASSOCIATED CONDUIT & WIRE.



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PROJECT LOCATION
Part of the SW ¼
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City of Clarkston,
Oakland County, Michigan

SHEET
ELECTRICAL
FLOOR PLAN
DEMOLITION



Know what's below
Call before you dig.

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APPROVED BY:
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email contact:
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DATE:
9/16/22

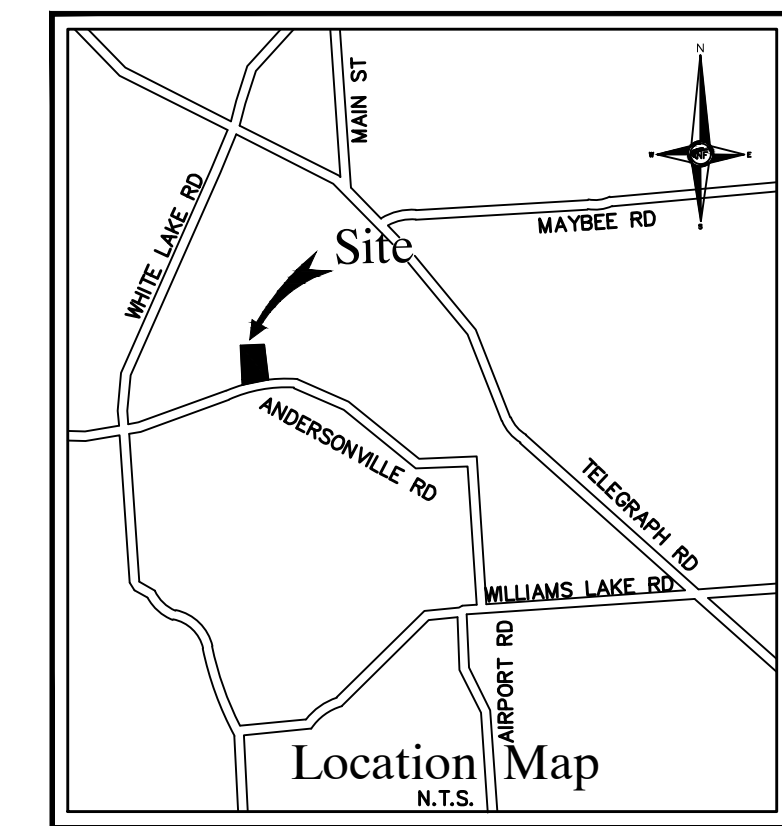
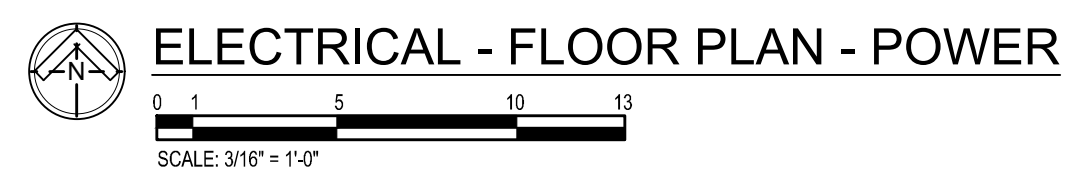
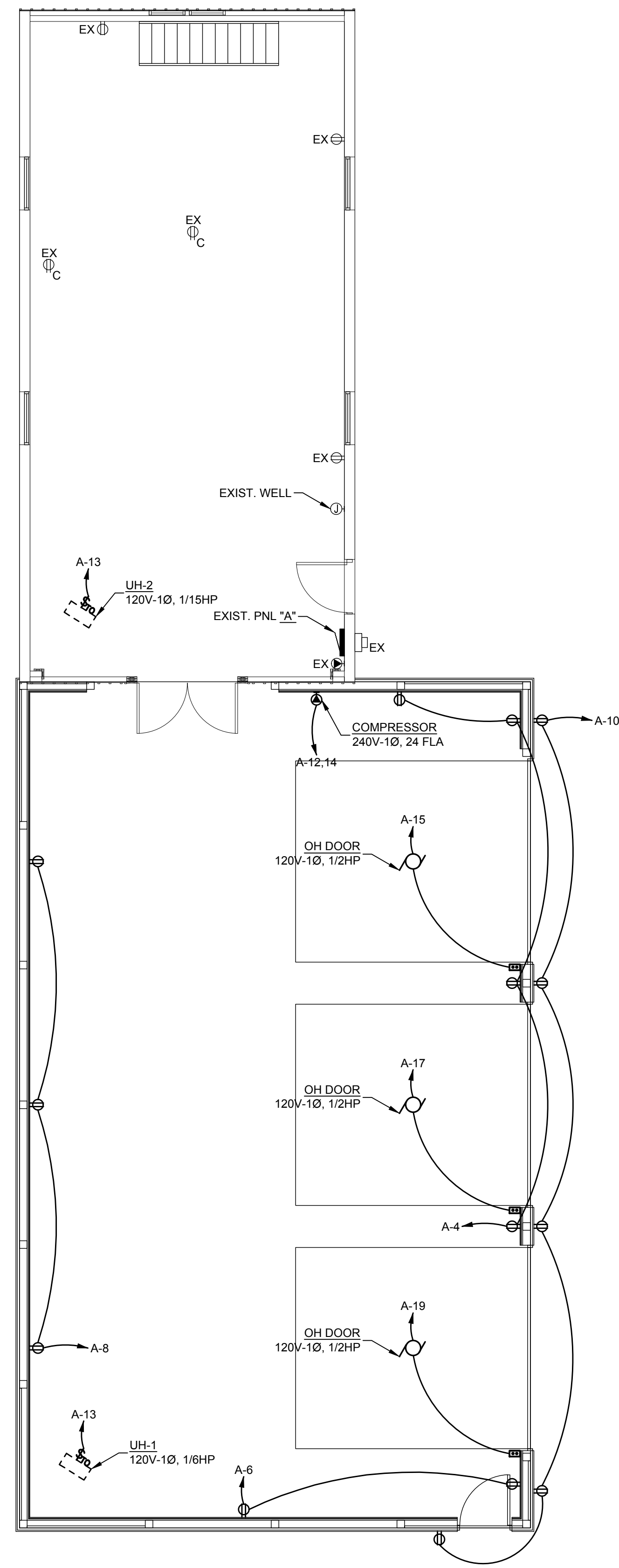
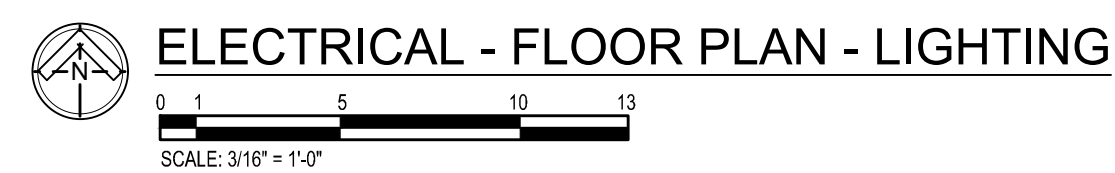
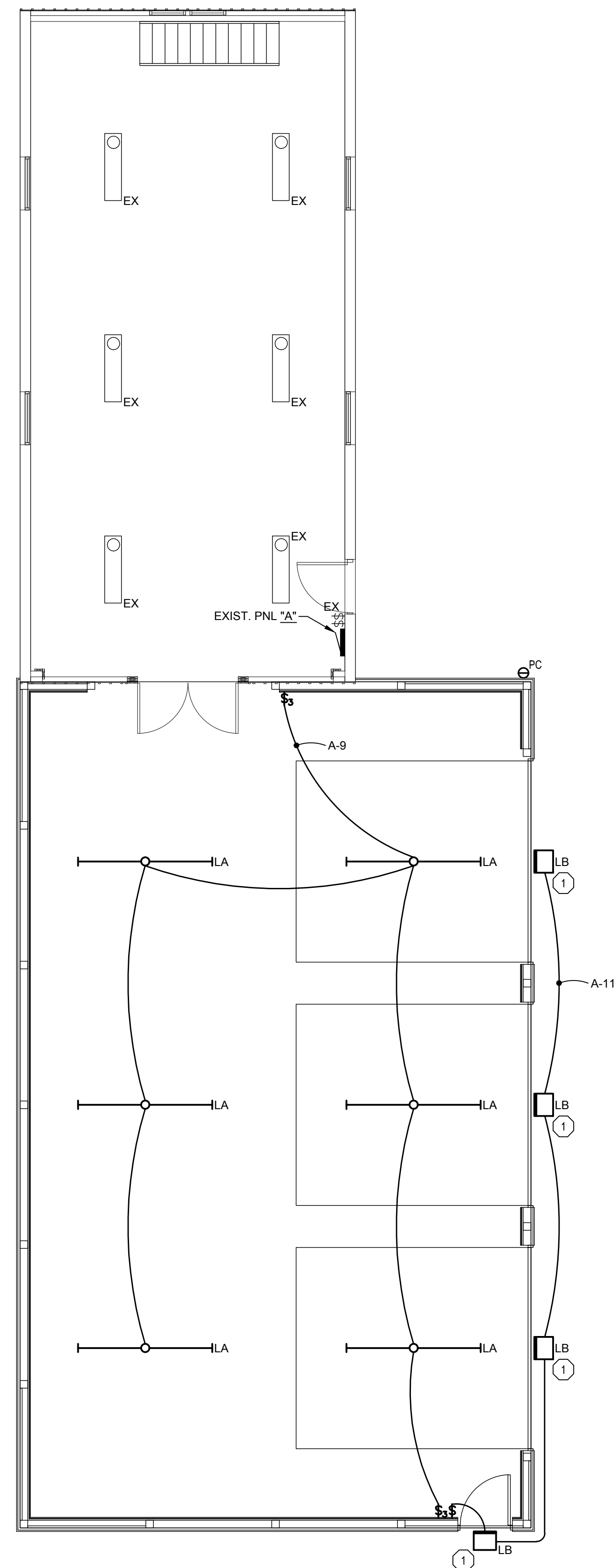
SCALE: AS SHOWN

NFE JOB NO. sheet no.
M383-01 **E-300**



ELECTRICAL - FLOOR PLAN - DEMOLITION

0 1 5 10 15
SCALE: 3/16" = 1'-0"



GENERAL ELECTRICAL NOTES


1. ALL INTERIOR RECEPTACLES SHALL BE MOUNTED 36" ABOVE GRADE AND SHALL HAVE GFI PROTECTION.
2. ALL EXTERIOR RECEPTACLES SHALL BE WEATHERPROOF GFI.

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MEP ENGINEER



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SEAL

PROJECT

Independence Township -
Bay Court Park Pole Barn

CLIENT

Independence Township

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PROJECT LOCATION

Part of the SW ¼
of Section 32
T. 4N, R. 9E
City of Clarkston,
Oakland County, Michigan

SHEET

ELECTRICAL
FLOOR PLAN
LIGHTING & POWER

Know what's **below**
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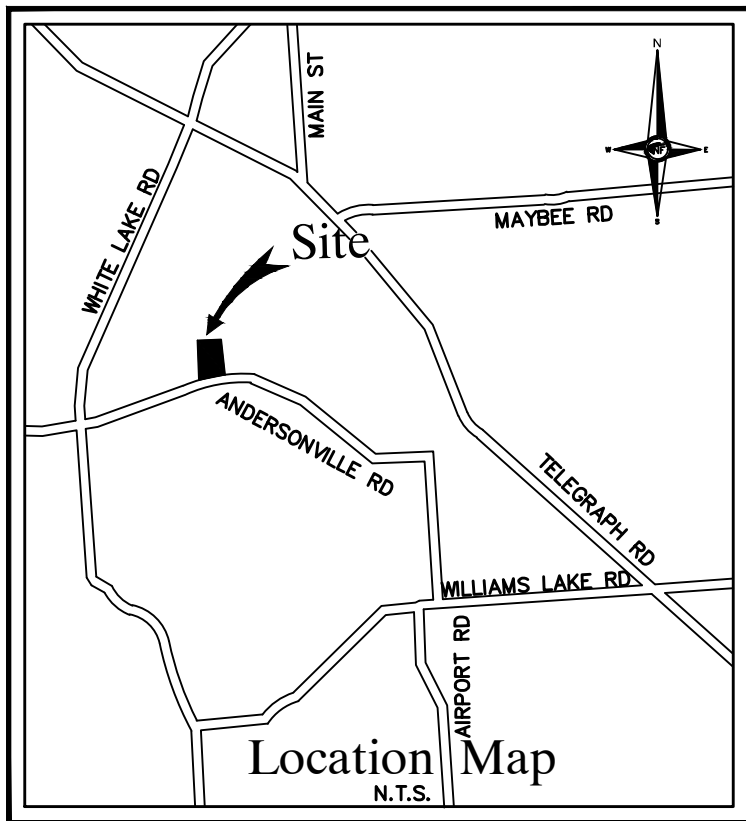
email contact:
BTHELEN@MATRIXCEINC.COM

DATE:
9/16/22

SCALE: AS SHOWN

NFE JOB NO.

sheet no.
E-400



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EXISTING PANEL "A"												
VOLTS: 240 / 120 PHASE: 1 WIRE: 3 AMPS: 100 MAIN: MCB												
BRKR		DESCRIPTION	CIRCUIT		PHASE LOADS			CIRCUIT		DESCRIPTION	BRKR	
A	P		VA		A		C		VA		A	P
20	1	EXIST. WALL RECEPTACLES		1	0			2		EXIST. CEILING RECEPTACLE	20	1
20	1	EXIST. WALL RECEPTACLES		3			0	4		SPACE		
15	1	EXIST. LIGHTS		5	0			6		SPACE		
15	1	EXIST. OUTSIDE POLE LIGHT		7			0	8		SPACE		
		SPACE		9	0			10		SPACE		
		SPACE		11			0	12		SPACE		
		SPACE		13	0			14		SPACE		
		SPACE		15			0	16		EXIST. WELL	20	2
		SPACE		17	0			18		-	-	-
		SPACE		19			0	20		SPACE		
CONNECTED					0		0	NEW CONNECTED LOAD				
TOTAL CONNECTED					0			0 VOLT-AMPS				
					0			0.00 AMPS				

REVISED PANEL "A"												
VOLTS: 240 / 120 PHASE: 1 WIRE: 3 AMPS: 100 MAIN: MCB												
BRKR		DESCRIPTION	CIRCUIT		PHASE LOADS			CIRCUIT		DESCRIPTION	BRKR	
A	P		VA		A		C		VA		A	P
20	1	EXIST. WALL RECEPTACLES		1	0			2		EXIST. CEILING RECEPTACLE	20	1
20	1	EXIST. WALL RECEPTACLES		3			720	4	720	NEW RECEPTACLES - EAST	20	1
15	1	EXIST. LIGHTS		5	360			6	360	NEW RECEPTACLES - SOUTH	20	1
15	1	EXIST. OUTSIDE POLE LIGHT		7			540	8	540	NEW RECEPTACLES - WEST	20	1
20	1	NEW INTERIOR LIGHTS	318	9	1218			10	900	NEW EXTERIOR RECEPTACLES	20	1
20	1	NEW EXTERIOR LIGHTS	44	11			2924	12	2880	NEW COMPRESSOR	30	2
20	1	NEW UH-1 & UH-2	1056	13	3936			14	2880	-	-	-
20	1	NEW GARAGE DOOR	1176	15			1176	16		EXIST. WELL	20	2
20	1	NEW GARAGE DOOR	1176	17	1176			18		-	-	-
20	1	NEW GARAGE DOOR	1176	19			1176	20		SPACE		
CONNECTED					6690		6536	NEW CONNECTED LOAD				
TOTAL CONNECTED					13226			13226 VOLT-AMPS				
								55.11 AMPS				

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SHEET
ELECTRICAL PANEL
SCHEDULES



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