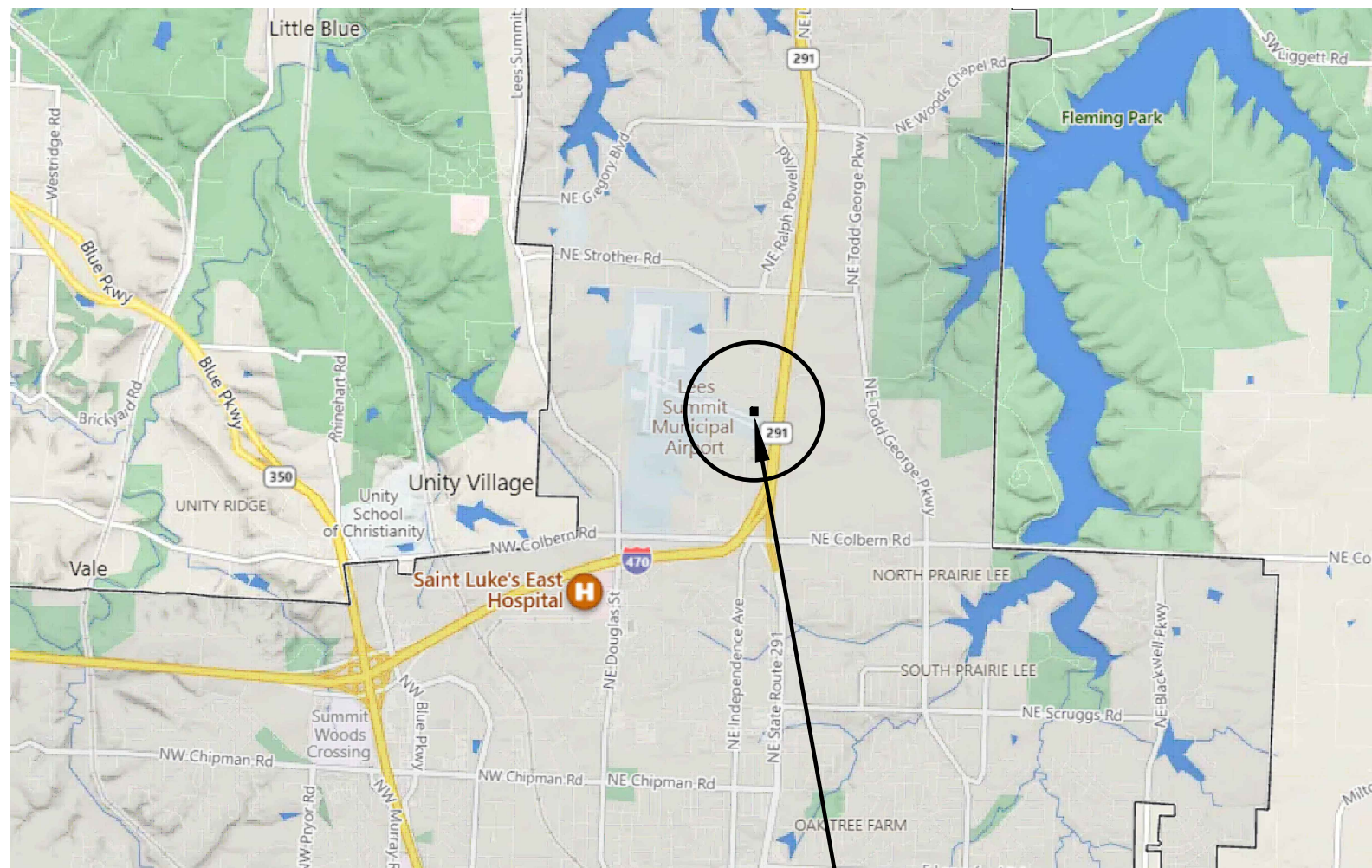


I-470 BUSINESS & TECHNOLOGY CENTER, LOT 7

ISSUED FOR PERMIT

AUGUST 31, 2022



PROJECT LOCATION

H5 VICINITY MAP

SCALE: =

GENERAL NOTES:

1. THE CONTRACTOR SHALL SECURE AND PAY FOR GOVERNMENT LICENSES, INSPECTIONS, TESTING, TEMPORARY UTILITIES AND PERMITS AS REQUIRED BY THE CONSTRUCTION DOCUMENTS AND/OR REGULATORY BODY HAVING AUTHORITY.
2. CONTRACTORS SHALL VISIT THE SITE WHILE BIDDING AND SHALL FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND THE REQUIREMENTS OF THE PROJECT AND CONSTRUCTION DOCUMENTS PRIOR TO DEVELOPING THEIR BID, FABRICATION / CONSTRUCTION, AND PURCHASING. MATERIAL QUANTITIES SHALL BE BASED ON ACTUAL FIELD CONDITIONS AND MEASUREMENTS. DO NOT RELY ON SCALING DRAWINGS FOR ACCURATE DIMENSIONS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT OR OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES, CONFLICTS OR OMISSIONS DISCOVERED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTIONS AND/OR REPAIRS REQUIRED FOR FAILING TO DO SO.
3. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL CONSTRUCTION DOCUMENTS TO THEIR SUBCONTRACTORS AS REQUIRED FOR THEM TO DEVELOP A COMPLETE BID FOR THEIR WORK AND TO HAVE A COMPLETE UNDERSTANDING OF COORDINATION NEEDED WITH OTHER SUBCONTRACTORS FOR RELATED HIDDEN OR EXPOSED WORK TO ENSURE EFFICIENT AND ORDERLY INSTALLATION.
4. THE ARCHITECT ASSUMES NO LIABILITY FOR THE SERVICES AND/OR CONSTRUCTION DOCUMENTS OF DESIGN SUB-CONSULTANTS COMPILED INTO THE SET OF DOCUMENTS ISSUED BY THE ARCHITECT. THESE DESIGN SERVICES MAY INCLUDE, BUT ARE NOT LIMITED TO, CIVIL, LANDSCAPE, STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL, PRE-ENGINEERED METAL BUILDING DESIGN, TILT-UP DESIGN, TRUSS SYSTEM DESIGN, AUTOMATIC FIRE SPRINKLER AND/OR ALARM SYSTEMS, LOW-VOLTAGE ELECTRICAL TELECOMMUNICATION AND SECURITY SYSTEMS AND GUTTER / DOWNSPOUT DESIGN.
5. UNLESS SPECIFICALLY NOTED OTHERWISE, THE CONTRACTOR SHALL PROVIDE AND PAY FOR LABOR, MATERIALS, EQUIPMENT, MACHINERY, SCAFFOLDING, SHORING, TOOLS, LAYOUT, ON-SITE DIMENSIONING, TRANSPORTATION, UTILITIES, AND OTHER FACILITIES AND SERVICES NECESSARY FOR PROPER EXECUTION AND COMPLETION OF THE WORK AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS. THIS SHALL ALSO INCLUDE NECESSARY CUTTING, PATCHING AND REPAIRING OF EXISTING CONSTRUCTION MATERIALS IN PLACE. ALL WORK AND MATERIAL SHALL COMPLY WITH THE APPLICABLE GOVERNING CODES LISTED.
6. WHERE DETAILS AND DESIGN INTENT ARE NOT CLEAR, THE CONTRACTOR SHALL CONSULT THE ARCHITECT FOR CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK.
7. THE CONTRACTOR SHALL DESIGN AND INSTALL ADEQUATE SHORING AND BRACING FOR STRUCTURAL MODIFICATIONS, INSTALLATIONS AND ERECTION.
8. CONTRACTORS SHALL TAKE CARE TO PROTECT ADJACENT AREAS FROM DUST AND DAMAGE DURING THE CONSTRUCTION PROCESS AND SHALL CLEAN UP AFTER THEMSELVES AT THE END OF EACH WORKING DAY. ANY DAMAGE DONE TO ADJACENT AREAS MUST BE REPAIRED TO MATCH ORIGINAL CONDITIONS OR TO THE OWNER'S SATISFACTION. REPAIRS ARE TO BE PAID FOR BY THE CONTRACTOR RESPONSIBLE.
9. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OF ANY ADDITIONAL WORK OR REVISIONS REQUIRED DUE TO SITE CONDITIONS OR ADDITIONAL REQUIREMENTS OF ANY REGULATORY BODIES HAVING AUTHORITY.
10. FOR THE DURATION OF THE PROJECT AND AT ALL TIMES OF EACH DAY, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE CONDITIONS, SECURITY AND SAFETY FOR WORKERS AND THE GENERAL PUBLIC, AS REQUIRED BY THE REGULATORY BODY HAVING AUTHORITY.
11. THE GENERAL CONTRACTOR SHALL PURCHASE AND MAINTAIN INSURANCE COVERAGE IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER. VERIFY AND COORDINATE WITH THE OWNER'S REPRESENTATIVE FOR ANY ADDITIONAL REQUIREMENTS.
12. THE OWNER OR THE OWNER'S SUBCONTRACTORS MAY OCCUPY PORTIONS OF THE PROJECT DURING THE FINAL STAGE OF CONSTRUCTION. COORDINATE AND COOPERATE WITH THE OWNER TO MINIMIZE CONFLICT AND FACILITATE THE OWNER'S OPERATION.
13. THE CONTRACTOR SHALL PROVIDE SECURITY OF THE WORK, INCLUDING TOOLS AND UNINSTALLED MATERIALS, PROTECT THE WORK, STORED PRODUCTS, CONSTRUCTION EQUIPMENT, AND OWNER'S PROPERTY FROM THEFT AND VANDALISM, AND PROTECT THE PREMISES FROM ENTRY BY UNAUTHORIZED PERSONNEL UNTIL FINAL ACCEPTANCE BY THE OWNER.
14. CONTRACTOR SHALL COORDINATE STAGING AREAS AS REQUIRED BY THE LANDLORD / OWNER.
15. THE CONTRACTOR SHALL VERIFY THE SIZE AND LOCATION OF ALL EXISTING UTILITIES.
16. THE STRUCTURAL ENGINEER AND ARCHITECT MUST BE NOTIFIED AND MUST GIVE APPROVAL PRIOR TO ANY STRUCTURAL MEMBER(S) BEING CUT OR MODIFIED TO ACCOMMODATE THE INSTALLATION OF ANY PIPES, DUCTS OR OTHER CONSTRUCTION.
17. THE STRUCTURAL ENGINEER AND ARCHITECT MUST BE NOTIFIED AND MUST GIVE APPROVAL PRIOR TO ANY MODIFICATION TO THE ROOF SYSTEM OR ADDING ANY ADDITIONAL ROOF-MOUNTED EQUIPMENT.

CONSTRUCTION NOTES:

1. PERFORM ALL WORK IN ACCORDANCE WITH ACCEPTABLE TRADE PRACTICE TO ENSURE THE HIGHEST QUALITY FINISHED PRODUCT - EXPRESSED OR IMPLIED. PERFORM ALL WORK BY SKILLED MECHANICS IN ACCORDANCE WITH ESTABLISHED STANDARDS OF WORKMANSHIP IN EACH OF THE VARIOUS TRADES.
2. WHEN THE PROJECT REQUIREMENTS REQUIRE THAT THE INSTALLATION OF WORK SHALL COMPLY WITH MANUFACTURER'S INSTRUCTIONS, PERFORM THE WORK IN STRICT ACCORDANCE WITH THE MOST CURRENT WRITTEN MANUFACTURER'S INSTRUCTIONS.
3. ALL PRODUCTS AND EQUIPMENT SHALL BE DELIVERED IN UNDAMAGED CONDITION AND STORED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS TO AVOID DISRUPTION OF THE WORK OR DAMAGE TO THE ITEMS. REPLACE DAMAGED OR UNFIT MATERIALS, AT NO COST TO THE OWNER.
4. COORDINATE BLOCKING REQUIREMENTS WITH ADJACENT OR RELATED TRADES, ACCESSORIES, EQUIPMENT AND FIXTURES. INSTALL REQUIRED BLOCKING AT NO ADDITIONAL COST TO THE CONTRACT.
5. ALL WEATHER-EXPOSED SURFACES SHALL HAVE A WEATHER-RESISTIVE BARRIER, EXTERIOR OPENINGS SHALL BE FLASHED IN SUCH A MANNER AS TO MAKE THEM WATERPROOF.
6. REPAIR PROPERTY DAMAGE BY THE INSTALLERS TO A LIKE NEW CONDITION, OR REPLACE DAMAGED SURFACES AND MATERIALS OF THE PREVIOUSLY INSTALLED WORK BY OTHER TRADES, INSTALLERS, AND SUBCONTRACTORS.
7. ALLOWABLE TOLERANCES - UNLESS OTHERWISE NOTED OR INDICATED, THE FOLLOWING TOLERANCES SHALL APPLY TO ALL WORK:
 - a. ALL VERTICAL SURFACES SHALL BE PLUMB OR CONSTRUCTED TO THE EXACT SLOPES OR ANGLES INDICATED.
 - b. ALL HORIZONTAL SURFACES SHALL BE LEVEL OR CONSTRUCTED TO THE EXACT ANGLE INDICATED OR INTENDED.
 - c. WALL AND SOFFIT INTERSECTIONS SHALL BE 90° OR THE EXACT ANGLE INDICATED OR INTENDED.
 - d. ALL CORNERS AND EDGES SHALL BE STRAIGHT AND TRUE WITHOUT DENTS, WAVES, BULGES OR OTHER BLEMISHES.
 - e. ALL JOINTS SHALL BE TIGHT, STRAIGHT, EVEN, AND SMOOTH.
 - f. ALL OPERABLE ITEMS SHALL OPERATE SMOOTHLY WITHOUT STICKING OR BINDING AND WITHOUT EXCESSIVE
8. THE CONTRACTOR SHALL NOTIFY THE OWNER WHEN THE WORK IS SUBSTANTIALLY COMPLETE AND READY FOR INSPECTION. UPON INSPECTION, PROVIDE WRITTEN OPERATION AND MAINTENANCE INSTRUCTIONS AND GUARANTEES FOR ALL EQUIPMENT AND MATERIALS INSTALLED. PROVIDE WRITTEN GUARANTEES FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK.

DISCLAIMER:

THESE DRAWINGS ARE CONSIDERED A "BUILDER'S SET", AND BY BEGINNING CONSTRUCTION, THE CONTRACTOR GUARANTEES TO THE ARCHITECT, THAT THE CONTRACTOR HAS THE COMPETENCE AND SKILL IN CONSTRUCTION NECESSARY TO BUILD THE PROJECT WITH THESE DRAWINGS. THE CONTRACTOR WILL BE REQUIRED TO ADAPT THE DRAWINGS TO ACTUAL FIELD CONDITIONS AND MAKE LOGICAL ADJUSTMENTS IN FIT, FORM, DIMENSION AND QUANTITY. IN THE EVENT ADDITIONAL DETAIL OR GUIDANCE IS NEEDED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT. FAILURE TO GIVE NOTICE SHALL RELIEVE THE ARCHITECT OF RESPONSIBILITY FOR ANY RESULTANT EXPENSES, REPAIRS OR ADDITIONAL WORK. IT IS UNDERSTOOD AND AGREED THAT IF THE ARCHITECT IS NOT HIRED TO DO CONSTRUCTION OBSERVATION OR ANY OTHER CONSTRUCTION PHASE SERVICES, THAT THE ARCHITECT IS NOT LIABLE FOR ANY CLAIMS THAT MAY BE IN ANY WAY CONNECTED THERETO.

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C401 SITE STORM DRAINAGE PLAN AND CALCULATIONS
C402 STORM LINES 1 & 2
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S00 NOTES AND DETAILS
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E-201 ELECTRICAL EQUIPMENT POWER PLAN
E-301 ELECTRICAL SCHEDULES AND DIAGRAMS
E-302 ELECTRICAL SCHEDULES

Architect:

MIDWEST ARCHITECTS
1120 NW Eagle Ridge Blvd.
Grain Valley, Missouri 64029
t: (816) 229-8115

Client:

Ward Development
1120 NW Eagle Ridge Blvd.
Grain Valley, Missouri 64029
t: (816) 229-8115

Consultants:

Civil Engineering:

Quist Engineering, Inc.
821 NE Columbus St.
Lee's Summit, Missouri 64063
t: (816) 550-5675

Structural Engineering:

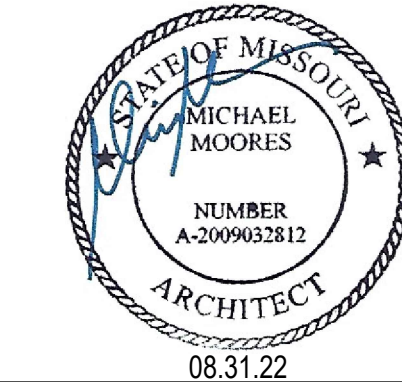
Structura Logica
18901 E. 299th Street
Harrisonville, MO 64701
t: (816) 872-4883

MEP Engineering:

JSC Engineers
1925 Central Street, Suite 201
Kansas City, MO 64108
t: (816) 272-5289

Revisions to technical submissions which are not made or approved by the licensee are prohibited.

Seal:



Michael Moore, MO Architect #2009032812

Project Number: 2201

Project Type: NEW CONSTRUCTION

Project Name and Address:

I-470 B&T CENTER, LOT 7

2701 NE McBaine Drive
Lee's Summit, Missouri 64064

Issue: Date:

Issued for Permit 08.31.22

Sheet Title:

COVER SHEET

G-100

GENERAL

1. Lined foot measurements shown on the plans are horizontal measurements, not slope measurements. All payments shall be made on horizontal measurements.
2. No geological information is shown on these plans.
3. The utility locations shown on these plans are taken from utility company records and are approximate only. They do not constitute actual field locations. The contractor shall verify the location and depth of all utilities prior to construction.
4. The contractor shall adhere to the provisions of the Senate Bill Number 583,78th General Assembly of the State of Missouri. The bill requires that any person of firm doing excavation on public right-of-way do so only after giving notice to, and obtaining information from, utility companies. State law requires 48 hours advance notice. The names and telephone numbers of utility companies, even if only remotely involved with this project are provided. Prior to commencement of work, the contractor shall notify all those companies which have facilities in the near vicinity of the construction to be performed.
5. All waste material resulting from the project shall be disposed of off-site by the contractor.
6. All excavation shall be unclassified. No separate payment will be made for rock excavation.
7. The contractor shall control the erosion and siltation during all phases construction, and he shall keep the streets clean of mud and debris.
8. All manholes, catch basins, utility valves and meter pits to be adjusted or rebuilt to grade as required. All existing utilities shall be adjusted as required.
9. Subgrade soil for all concrete structures, regardless of the type or location, shall be firm, dense and thoroughly compacted and consolidated; shall be free from muck and mud; and shall be sufficiently stable to remain firm and intact under the feet of the workmen or machinery engaged in subgrade surfacing, laying reinforcing steel, and depositing concrete thereon. In all cases where subsoil is mucky or works into mud or muck during such operation, a seal course of either concrete or rock shall be placed below subgrade to provide a firm base for working and for placing the floor slab.
11. The contractor is responsible for providing all surveying that may be required.
12. Easements indicated on these drawings will be provided for on the final plat and properly dimensions. Easements outside the platted area will be provided for by separate documents prior to issuance of a construction permit.

STREETS & STORM SEWER

1. All construction shall follow the City of Lee's Summit Design and Construction Manual as adopted by Ordinance 5813.

CIVIL PLANS FOR LOT 7 OF

I-470 BUSINESS AND TECHNOLOGY CENTER
SECTION 20, TOWNSHIP 48, RANGE 31
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DEVELOPER:

BLUE SPRINGS SAFETY STORAGE LLC
1120 NW EAGLE RIDGE BLVD.
GRAIN VALLEY, MISSOURI 64029
Ph.# 816-229-8115

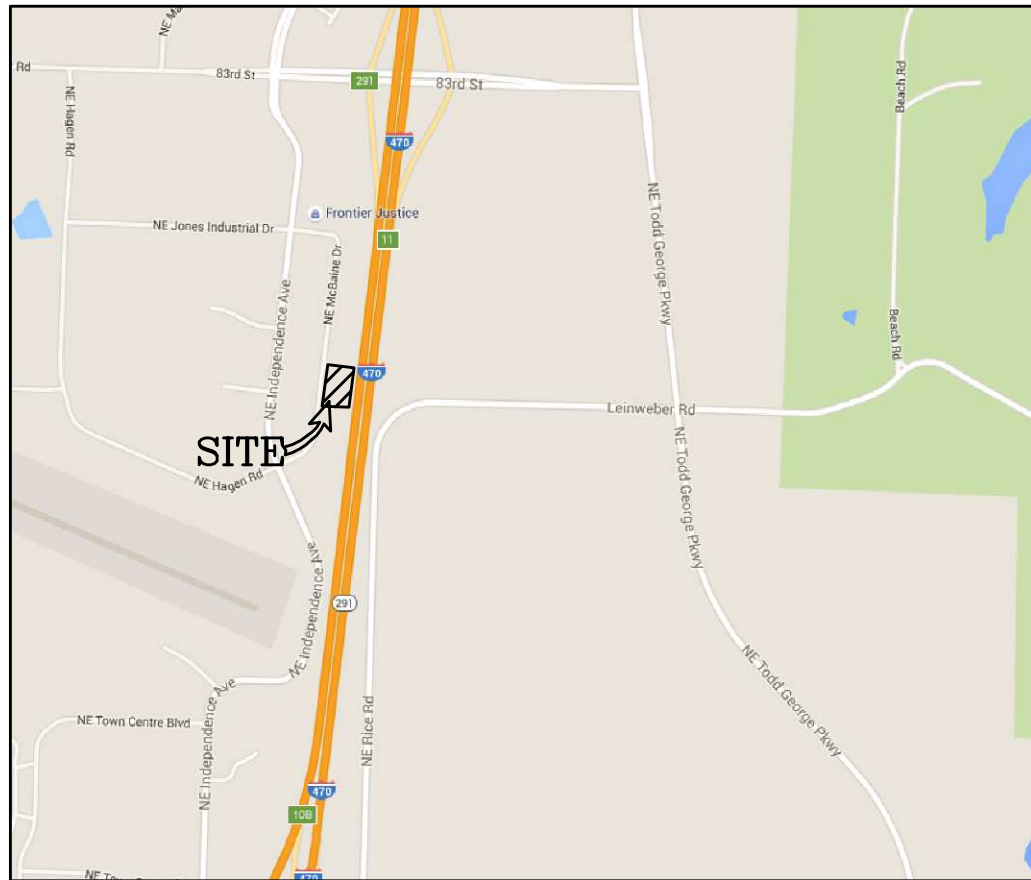
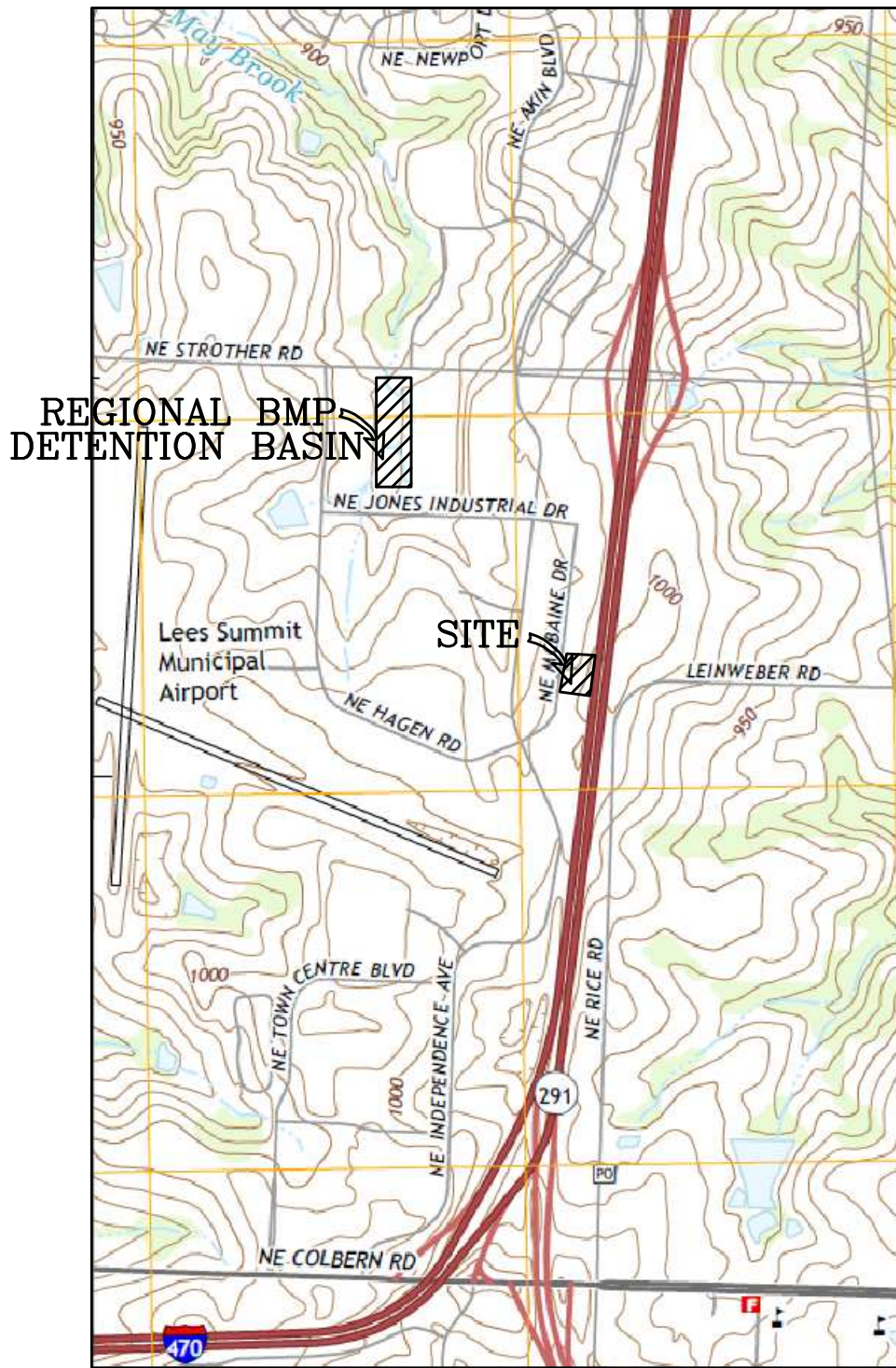
LEGAL DESCRIPTION:
LOT 7 OF "I-470 BUSINESS AND TECHNOLOGY CENTER
LOTS 1 THRU 22 AND TRACTS A AND B" A SUBDIVISION
IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

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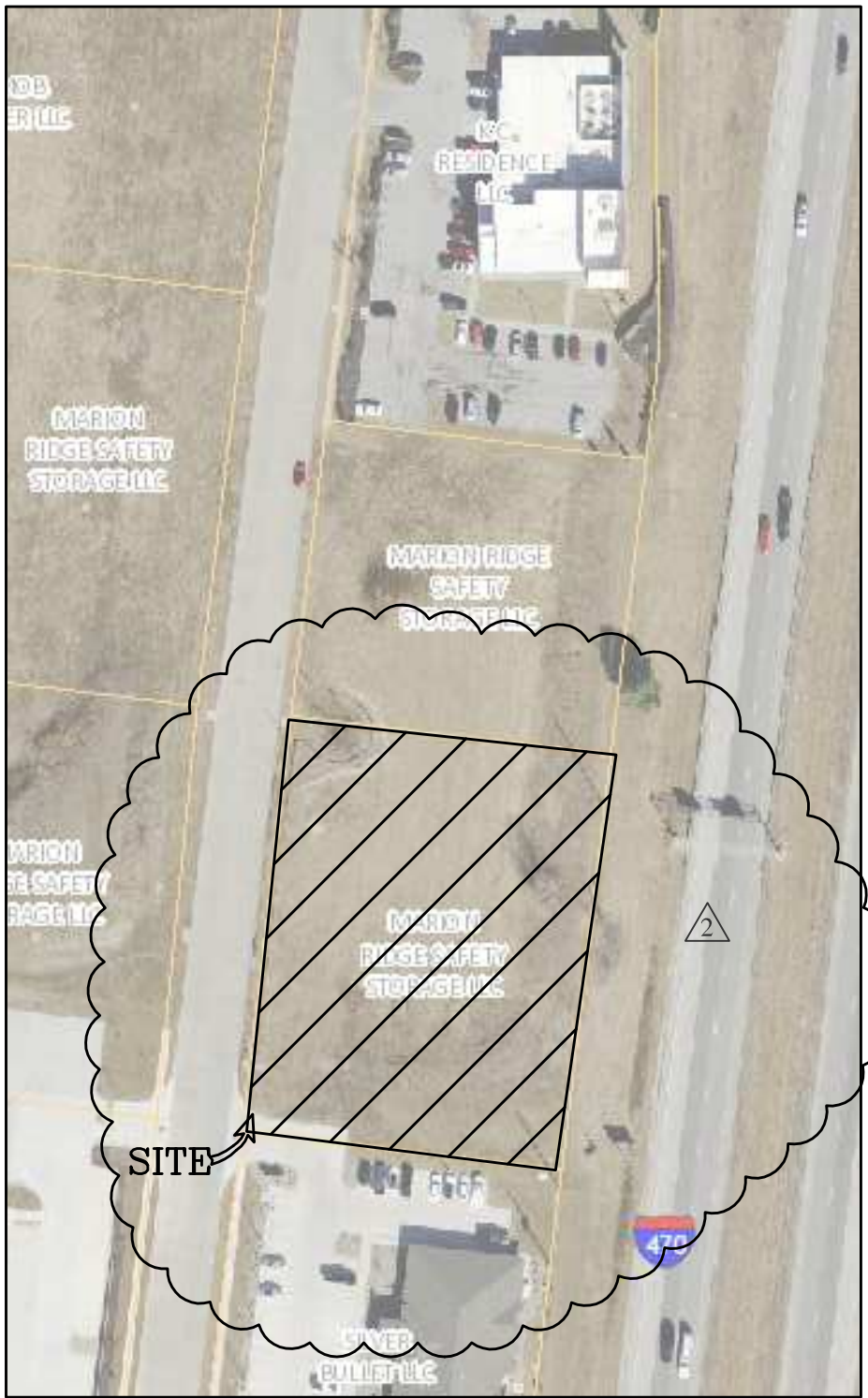
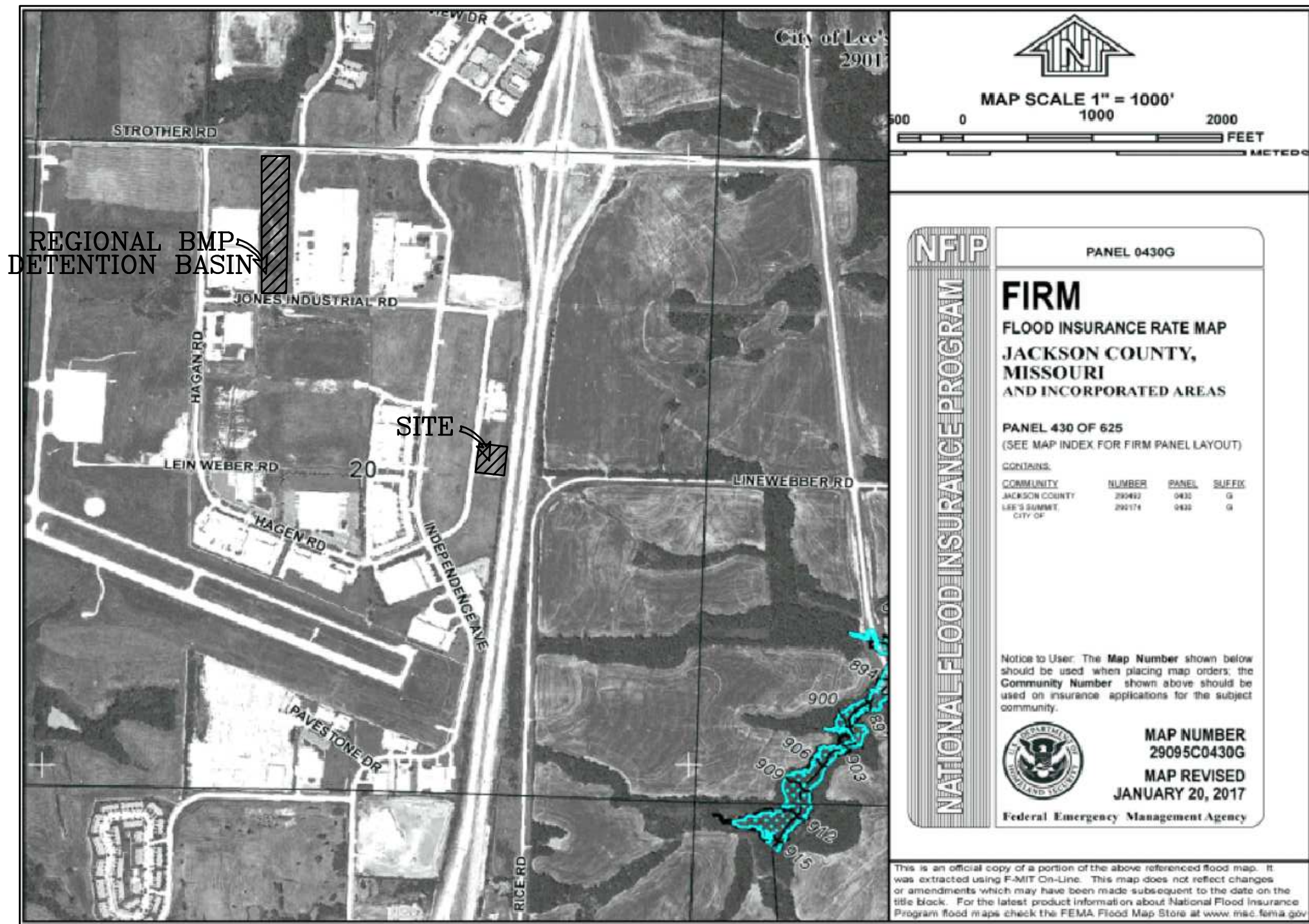
1. NO IMPROVEMENTS ARE PROPOSED WITH THESE PLANS

NOTES:

1. CONTRACTOR SHALL CONTACT THE CITY'S
DEVELOPMENT SERVICES ENGINEERING INSPECTORS 48
HOUR PRIOR TO ANY LAND DISTURBANCE WORK. CALL
(816)969-1200



LOCATION MAP



△ NONE THIS SHEET 11-17-22

UTILITIES

LEE'S SUMMIT PUBLIC WORKS
220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
(816) 969-1800

KANSAS CITY POWER & LIGHT CO.
P.O. BOX 219330
KANSAS CITY, MO 64121-9330
(816) 471-5275

MISSOURI ONE-CALL
1-800-344-7483

MO GAS ENERGY
P.O. BOX 219255
KANSAS CITY, MO 64141
(816) 756-5252

TELEPHONE COMPANY
CENTURY LINK
P.O. BOX 2961
PHOENIX, AZ 85062
(800) 788-3600

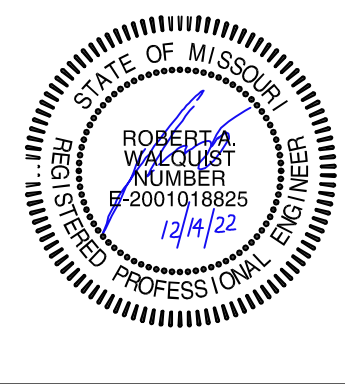
BEFORE YOU
DIG - DRILL - BLAST



Call
1-800-344-7483 (MISSOURI)
1-800-344-7233 (KANSAS)

PROJECT CONTACTS: ROBERT WALQUIST, P.E.,
821 NE COLUMBUS ST
LEE'S SUMMIT, MISSOURI 64063
Phone: (816) 550-5675

CIVIL PLANS COVER SHEET



LOT 7 OF I-470 B & T CENTER
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc
Civil Engineering for Residential &
Commercial Site Development

821 NE Columbus St.
Lee's Summit, Missouri 64063
Phone: (816) 550-5675
email: rwalquist@quistengineering.com

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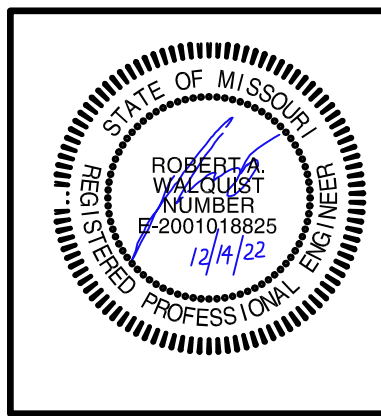
1ST ISSUE
8-2-22

REVISIONS
△ 11-17-22
△ 12-14-22
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△

SHEET NO.

C100

JOB NO.
E21-318



LOT 7 OF I-470 B & T CENTER
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc
Civil Engineering for Residential &
Commercial Site Development
821 NE Columbus St.
Lee's Summit, Missouri 64063
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email: rwalquist@quistengineering.com

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REVISIONS	
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SHEET NO.	
C200	
JOB NO.	
E21-318	

FINAL DEVELOPMENT PLAN
FOR LOT 7 OF
"I-470 BUSINESS AND TECHNOLOGY CENTER,
LOTS 1 THRU 22 AND TRACTS A AND B"
SECTION 20, TOWNSHIP 48, RANGE 31
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DEVELOPER:
BLUE SPRINGS SAFETY STORAGE LLC
1120 NW EAGLE RIDGE BLVD.
GRAIN VALLEY, MISSOURI 64029
Ph.# 816-229-8115

LEGAL DESCRIPTION:
LOT 7 OF "I-470 BUSINESS AND TECHNOLOGY CENTER,
LOTS 1 THRU 22 AND TRCTS A AND B", A SUBDIVISION
IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

- PLAN NOTES:
- 1 HEAVY CONCRETE PAVEMENT RE: SEE SHEET C210
 - 2 LIGHT CONCRETE PAVEMENT RE: SEE SHEET C210
 - 3 30' LIGHT POLE RE: SEE MEP SHEETS
 - 4 ACCESSIBILITY RAMP RE: SEE SHEET C210
 - 5 PAINT ACCESSIBLE PARKING SYMBOLS ACCORDING TO APWA PAVEMENT MARKING STANDARDS. RE: SEE SHEET C210
 - 6 INSTALL ACCESSIBLE PARKING SIGN "TYPE B" RE: SEE SHEET C210
 - 7 INSTALL VAN ACCESSIBLE PARKING SIGN RE: SEE SHEET C210
 - 8 STRIPE PAVING WITH 4" WIDE STRIPE & PAINT ACCORDING TO APWA PAVEMENT MARKING STANDARDS.
 - 8 CURB WALK RE: SEE SHEET C210
 - 9 SITE SIDEWALK RE: SEE SHEET C210
 - 10 TRASH ENCLOSURE RE: SEE ARCHITECTURAL PLANS
 - 11 MODULAR RETAINING WALL RE: SEE SHEET C210
 - 12 SITE MONUMENT SIGN RE: SEE ARCHITECTURAL PLANS
 - 13 5' CITY SIDEWALK RE: SEE CITY DETAILS
 - 14 CITY ADA RAMP RE: SEE CITY DETAILS
 - 15 STRAIGHT BACK CURB (CG-1) DRY RE: SEE CITY DETAIL
 - 16 STRAIGHT BACK CURB (CG-1) WET RE: SEE CITY DETAIL
 - 17 CONCRETE FLUME RE: SEE SHEET C210
- GENERAL NOTES:
1. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
 2. PERFORM TEMPORARY EROSION CONTROL MEASURES IN ACCORDANCE WITH ALL STATE & LOCAL REQUIREMENTS. TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT IMPROVEMENTS ARE IN PLACE.
 3. ALL PARKING STALLS SHALL BE MARKED W/ A 4" WIDE STRIPE. PARKING STRIPES TO BE PAINTED ACCORDING TO SPECIFICATIONS.
 4. CONSTRUCT ALL SIDEWALKS WITH 2% MAX. CROSS SLOPE AWAY FROM BUILDING UNLESS OTHERWISE SHOWN ON PLANS.
 5. PLACE EXPANSION JOINTS, IN SIDEWALKS AT 50' MAX. SPACING, AT ALL DIRECTION CHANGES AND WHEN ADJACENT TO BUILDINGS.
 6. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.

- UTILITY NOTES:
1. SANITARY SEWER
CONTRACTOR SHALL USE EXISTING SEWER STUB
ALL EXISTING SEWER STUBS SHALL BE LOCATED AND CAPED PER CITY REQUIREMENTS
 2. STORM SYSTEM
ALL STORM SEWER WILL BE GATHERED IN A PRIVATE SYSTEM AND THEN CONNECTED TO A PUBLIC SYSTEM AT AN EXISTING INLET.

DEVELOPMENT NOTES:

1. TOTAL LOT AREA = 54,072sf = 1.24ac
2. TOTAL BUILDING FOOTAGE = 11,900sf
3. ESTIMATED 15% OFFICE = 1,785sf
4. PARKING STALLS
REQUIRED STALL = 4 PER 1,000sf OFFICE
(1,785 / 1,000) X 4 = 8 STALLS
1 PER 1,000sf WAREHOUSE
(10,115 / 1,000) X 1 = 11 STALLS
TOTAL REQUIRED = 19

PROPOSED STALLS
STANDARD 19'X9' STALLS = 29
ADA 19'X9' STALL WITH ISLE = 4
TOTAL = 33 STALLS
5. TOTAL GREENS SPACE 19,922sf = 37 %
6. FLOOR AREA RATIO (FAR) = 11,900sf / 54,072sf = 0.22 = 22 % COVERAGE

PERVIOUS VS IMPERVIOUS CALCULATIONS

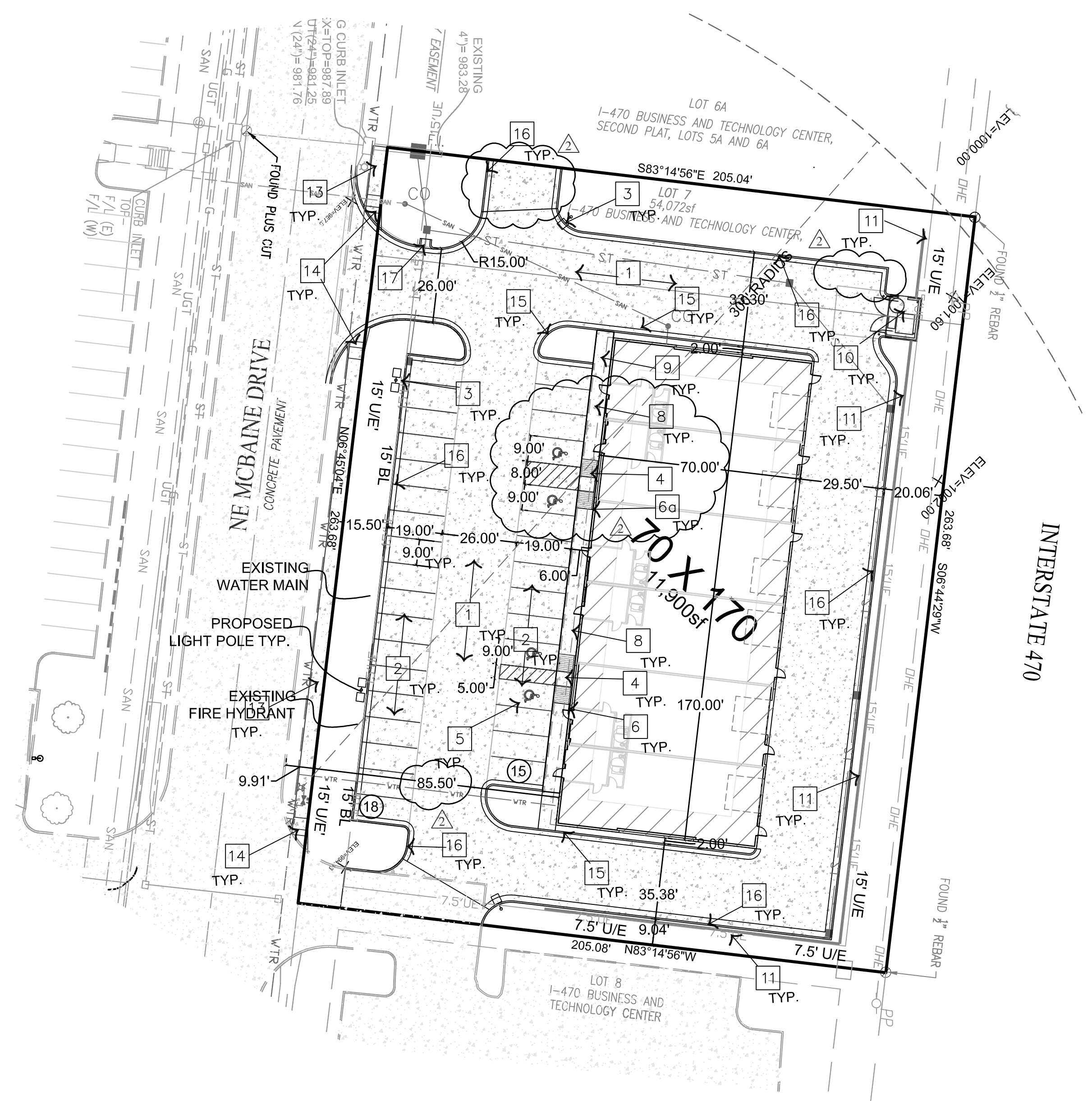
LOT SIZE	54,072 SF
IMPERVIOUS SURFACES	
BUILDINGS, PORCHES, DRIVES, PARKING, WALKS/MISC.	34,150SF
TOTAL	34,150SF
CALCULATIONS	
-/- = 63% IMPERVIOUS	
37% PERVIOUS (GREEN)	

PUBLIC IMPROVEMENTS

1. CITY SANITARY MAIN "NONE"
2. WATER MAIN "NONE"
3. CITY SIDEWALK = "NONE"
4. CITY ADA RAMP = 3

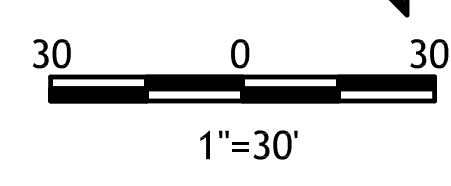
PROJECT CONTACTS: ROBERT WALQUIST, P.E.,
821 NE COLUMBUS ST.
LEE'S SUMMIT, MISSOURI 64063
Phone: (816) 550-5675

FINAL DEVELOPMENT PLAN

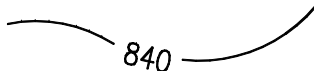
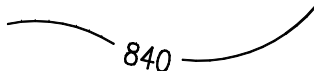
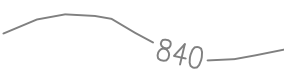
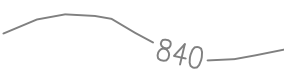


OIL AND GAS WELL NOTE:
1. NO OIL OR GAS WELL WHERE ON RECORD OR OBSERVED ON THE PROPERTY

△ NONE THIS SHEET 11-17-22

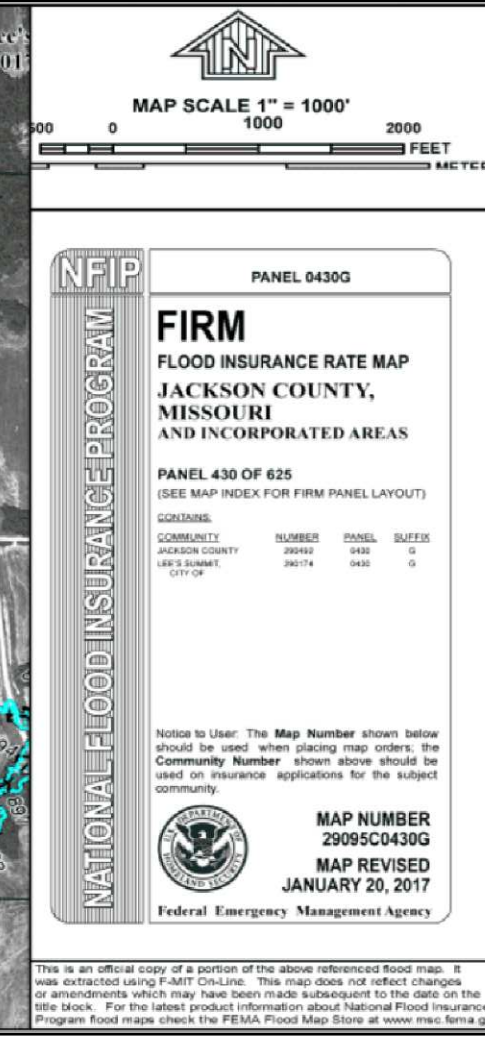
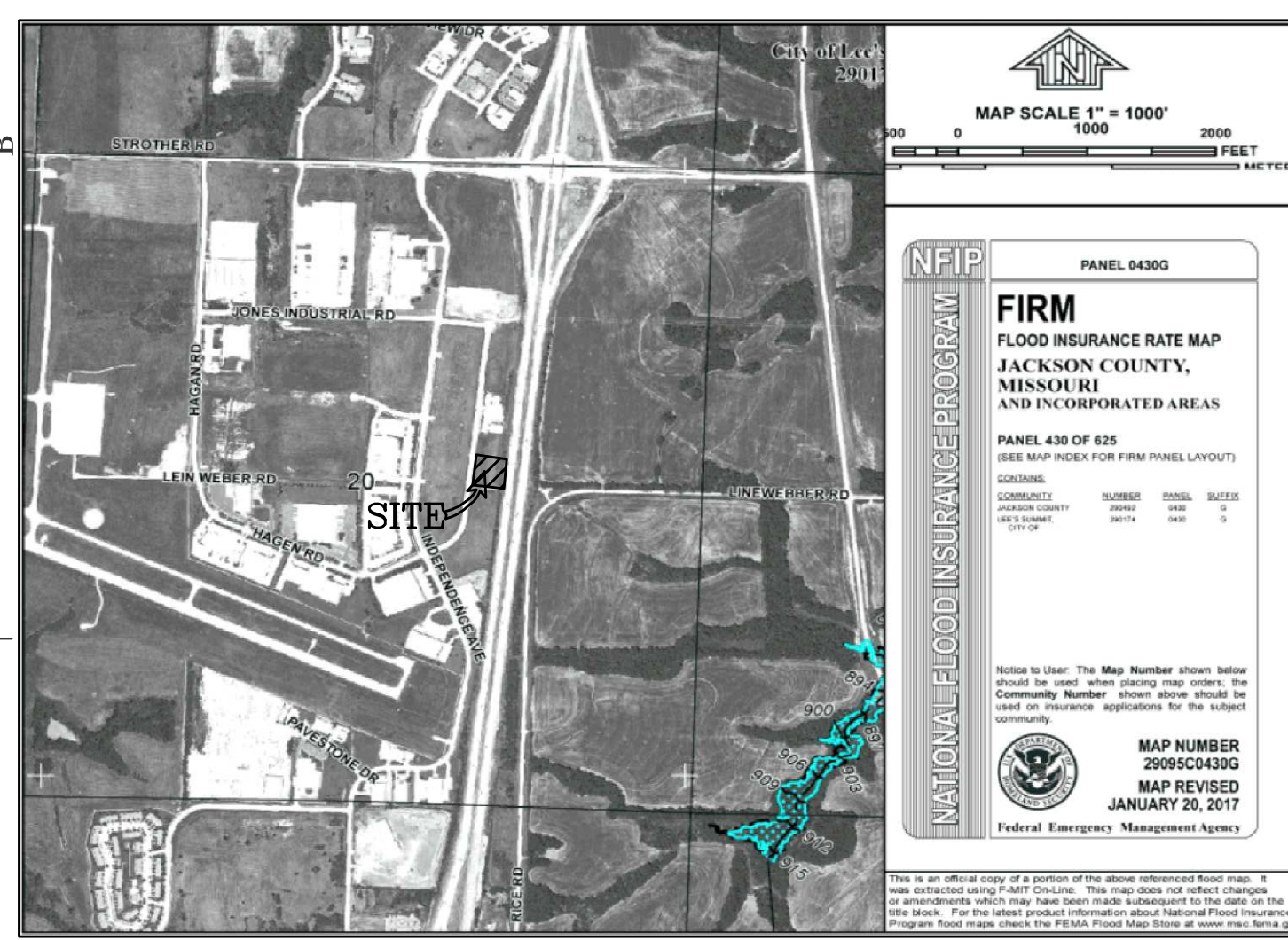


LINE LEGEND

PROPOSED		EXISTING
 ST 	Storm Line	 ST 
 SAN 	Sanitary Line	 SAN 
 VTR 	Water Line	 VTR 
 2" BL 	Building Line	 BL 
	Easement Line	
	4' Sidewalk	
	2' Curb	
 840 	Contour	 840 
	Tree Line	
 X 	Fence Line	 X 
 G 	Gas Line	 G 
	Overhead Telephone Line	 DHT 
	Underground Telephone Line	 UGT 
	Overhead Electrical Line	 DHE 
	Underground Electrical Line	 UGE 

SYMBOL LEGEND

PROPOSED		EXISTING	
MH ●	Manhole	MH ○	-
C.I. 	Curb Inlet	C.I. 	-
JB ■	Junction Box	JB □	-
FI ■	Field Inlet	FI □	-
FES ▲	Flared End Section	FES △	
FH 	Fire Hydrant		
BO ●	Blow Off		
WV ●	Water Valve	●	
WM ○	Water Meter		-
	Straddle		-
	Utility Pole		
	Guy Wire		
	Electric Transformer		
	Telephone Pedestal		
	Cable Pedestal		
CO	Clean Out	○ CO	



Section 14.070. Installation of plant materials

Plant materials, as required by the provisions of this Article, shall be installed by the date specified on the approved landscaping and buffer plan. The Director may allow one (1) planting season in a twelve (12)-month period in which the installation of plant materials shall be completed.

Buffers, if required, shall be installed before a certificate of occupancy permit is granted; except where the weather is not suitable for planting and escrow provisions are made in accordance with guidelines of the Department.

Section 14.080. Maintenance of required plant materials

- A. The owner, tenant and their agent, if any, shall be jointly responsible for the maintenance in good condition of the plant materials used to meet the minimum requirements of this Article for landscaping, buffer or tree replanting. The plant materials shall be kept free from refuse and debris.
- B. Plants that are not in sound growing condition or are dead shall be removed and replaced with a plant of a species or variety as determined by the Director.
- C. Other landscape materials shall be maintained in proper repair and shall be kept clear of refuse and debris.

1. UDC SECTION 14. LANDSCAPING, BUFFERS AND TREE PROTECTION PLAN REQUIREMENTS
- A. TREE PROTECTION: THIS SITE HAS NO TREES TO BE REMOVED.
- B. BUFFERS: WE HAVE SHOWN A 15' LANDSCAPING BUFFER ON CITY STREET FRONTAGE.
- C. STREET TREES & SHRUBS: THIS SITE HAS A TOTAL OF 264 L.F. OF CITY ROW FRONTAGE
1. REQUIRED TREES 264 / 30 = 9
2. REQUIRED SHRUBS 264 / 20 = 13
- D. OPEN YARD AREA: (TOTAL REMAINING YARD AFTER FULL DEVELOPMENT =14,001sf)
(TOTAL LOT AREA = 54,072sf)
1. REQUIRED 1 TREES PER 5,000sf OF REMAINING YARD = 3
2. REQUIRED 2 SHRUBS PER 5,000sf OF REMAINING YARD = 6

TOTAL LANDSCAPING REQUIRED
TREES =12
SHRUBS = 19

- E. PROPOSED TREES & SHRUBS:
1. TREES ALONG THE ROW McBAIN DR. (ORNAMENTAL TREES) =7
TREES =3
TOTAL=10
2. SHRUBS ALONG THE ROW McBAIN DR. = 12
"THESE WILL BE MET BY THE PARKING SCREENING REQUIREMENTS"
3. OTHER PROPOSED TREES =0
4. OTHER PROPOSED ORNAMENTAL TREES =2
5. OTHER PROPOSED SHRUBS =8

2. UDC SECTION 8. PARKING LOT SCREENING
DO TO THE GRADES OF THIS SITE WE INTEND TO USE PLANITNG ONLY AS OUT SCREENING
1. REQUIRED 12 18" TALL SHRUBS PER 40' OF PARKING AREA LEES DRIVE ENTRANCES AND SIGHT TRIANGLES.

TOTAL LANDSCAPING REQUIRED
1. PARKING LOT ALONG McBAIN = 162 L.F.
REQUIERED SHRUBS = 162 X 12 =49

- E. PROPOSED SHRUBS:
1. SHRUBS ALONG THE ROW McBAIN DR. = 49
TOTAL SHRUBS =49

TOTAL TREES = 12
TOTAL SHRUBS = 56

B PLANTING SCHEDULE

	COMMON NAME	SCIENTIFIC NAME	CALIPER	TOTAL PROPOSE
S-A	STATE STREET MAPLE	ACER MIYABEI	3" CAL.	3
S-B	PACIFIC SUNSET MAPLE	ACER TRUNCATUM 'PACIFICSUNSET'	3" CAL.	0
S-C	AUTUMN BLAZE MAPLE	ACER X 'AUTUMN BLAZE'	3" CAL.	0
S-D	SHAWNEE BRAVE BALD CYPRESS	TAXODIUM DISTICHUM 'SHAWNEE BRAVE'	3" CAL.	0
S-E	VALLEY FORGE ELM	ULMUS AMERICANA 'VALLEY FORGE'	3" CAL.	0
S-F	SWAMP WHITE OAK	QUERCUS BICOLOR	3" CAL.	0
ORNAMENTAL TREES				TOTAL PROPOSED =3
O-A	ROYAL RAINDROPS CRABAPPLE	MALUS 'ROYAL RAINDROPS'	3" CAL.	0
O-B	HOT WINGS MAPLE	ACER TATARICUM 'HOT WINGS'	3" CAL.	9
O-C	IVORY SILK TREE LILAC	SYRINGA RETICULATA 'IVORY SILK'	3" CAL.	0
O-D	REDBUD	CERCIS CANADENSIS	3" CAL.	0
O-E	JUNE SNOW DOGWOOD	CORNUS CONTROVERSA 'JUNE SNOW'	3" CAL.	0
O-F	SPRING FLURRY SERVICEEBERRY	AMELNCHIER LAEVIS 'SPRING FLURRY'	3" CAL.	0
				TOTAL PROPOSED = 9

A EVERGREEN TREES/ SHRUB

E-A	NORWAY SPRUCE	PICEA ABIES	8" HT.	9
E-B	CANAERTI JUNIPER	JUNIPERUS VIRGINIANA 'CANAERTI'	8" HT.	0
E-C	GREEN GIANT ARBORVIATAE	THUJA PLICATA 'GREEN GIANT'	8" HT.	0

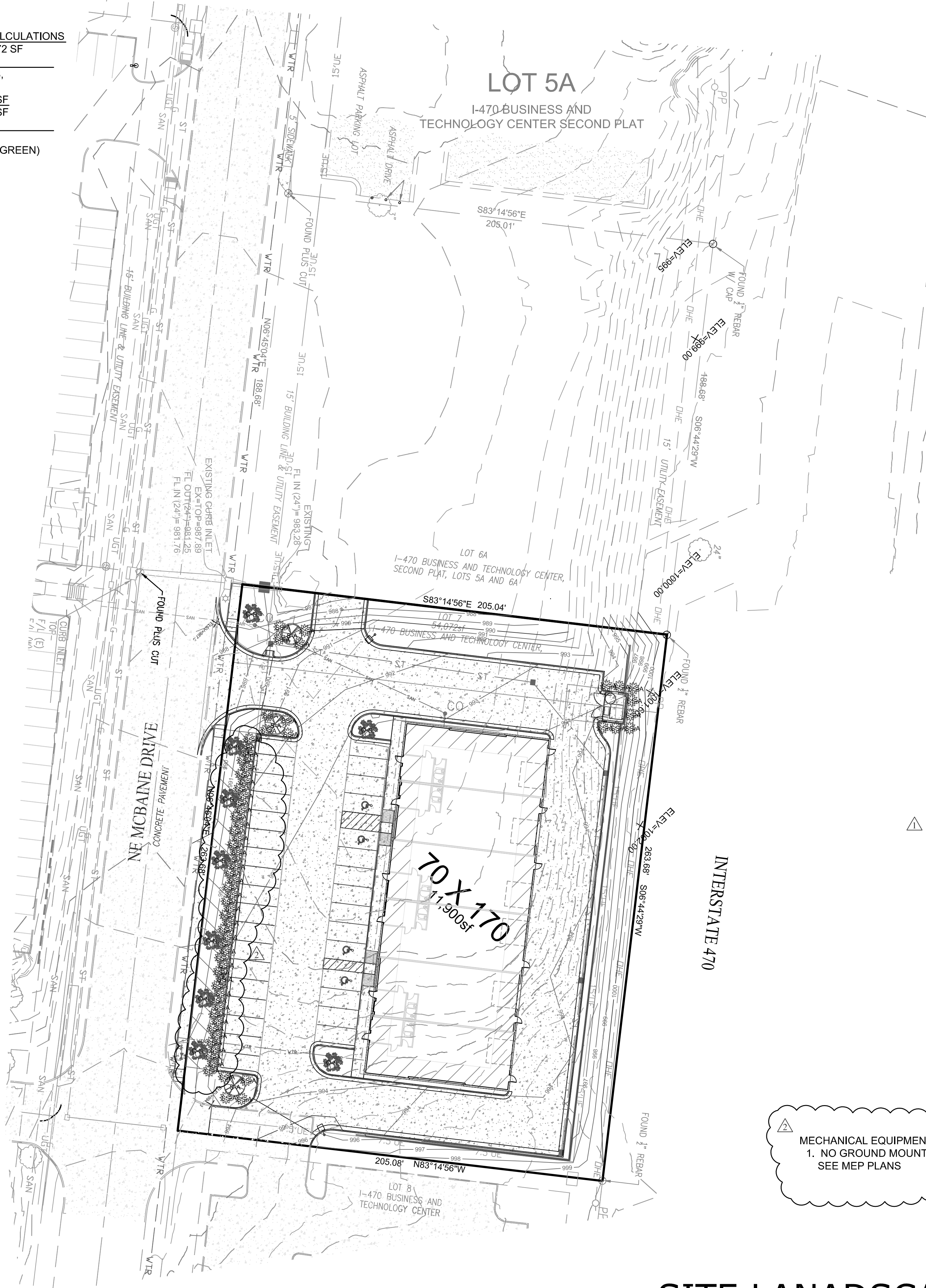
TRUE SHRUBS

SS-A	BOX WOOD	BUXUS SEMPERVERENS	18" HT	56
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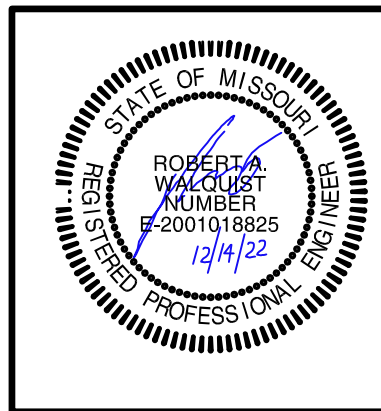
TOTAL PROPOSED = 56

LANDSCAPING PLAN

PERVIOUS VS IMPERVIOUS CALCULATIONS	
LOT SIZE	54,072 SF
IMPERVIOUS SURFACES	
BUILDINGS, PORCHES, DRIVES, PARKING	
WALKS/MISC.	40,071SF
TOTAL	40,071SF
CALCULATIONS	
-/- =	74% IMPERVIOUS
	26% PERVIOUS (GREEN)



SITE LANADSCAPING PLAN



LOT 7 OF I-470 B & T CENTER
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc
Civil Engineering for Residential &
Commercial Site Development
821 NE Columbus St.
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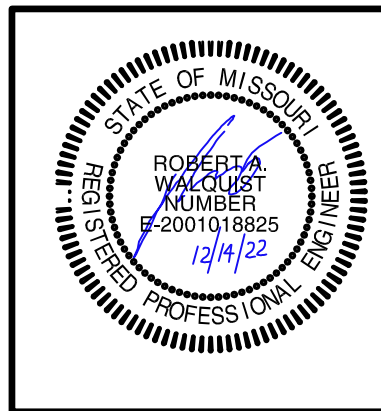
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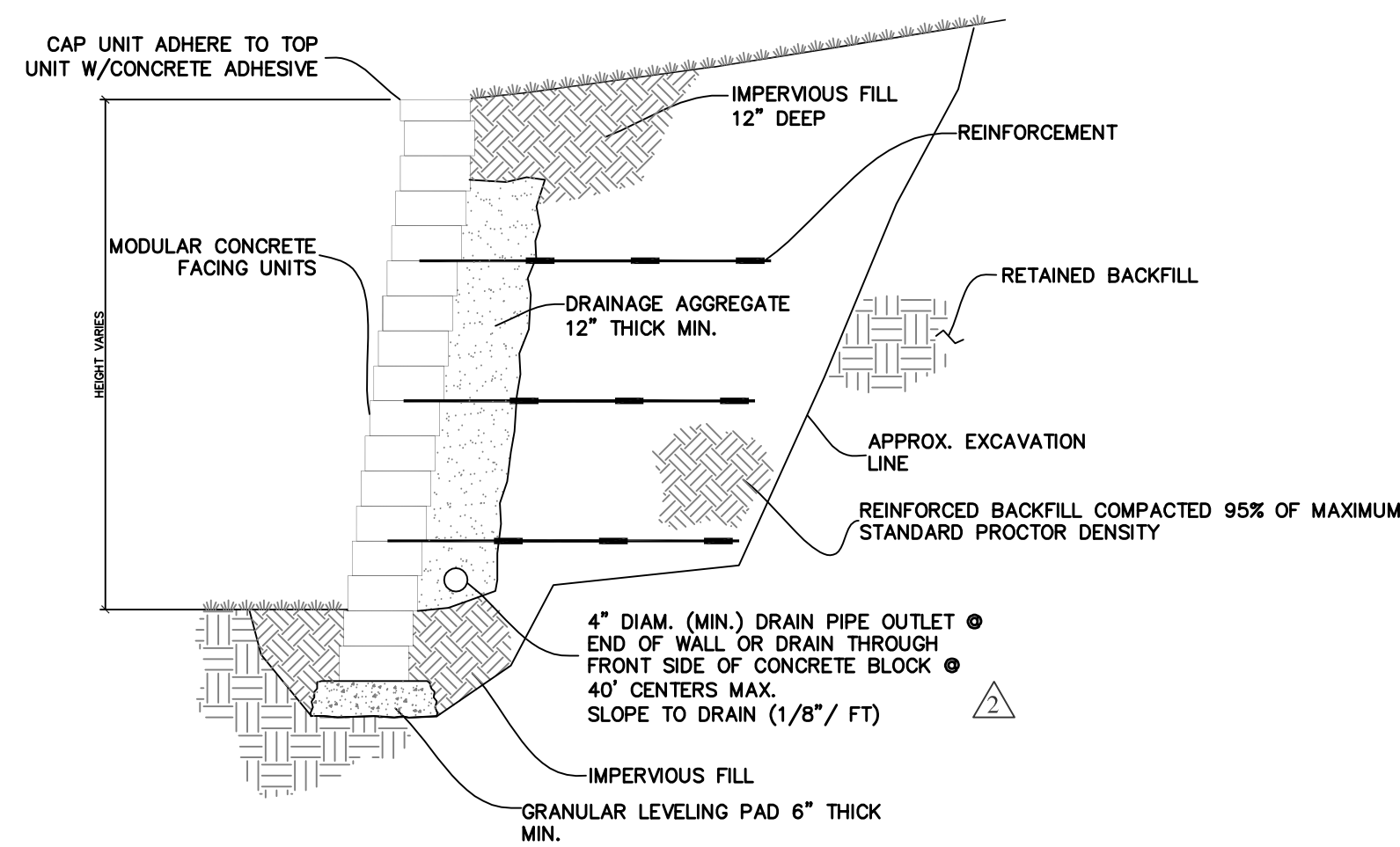
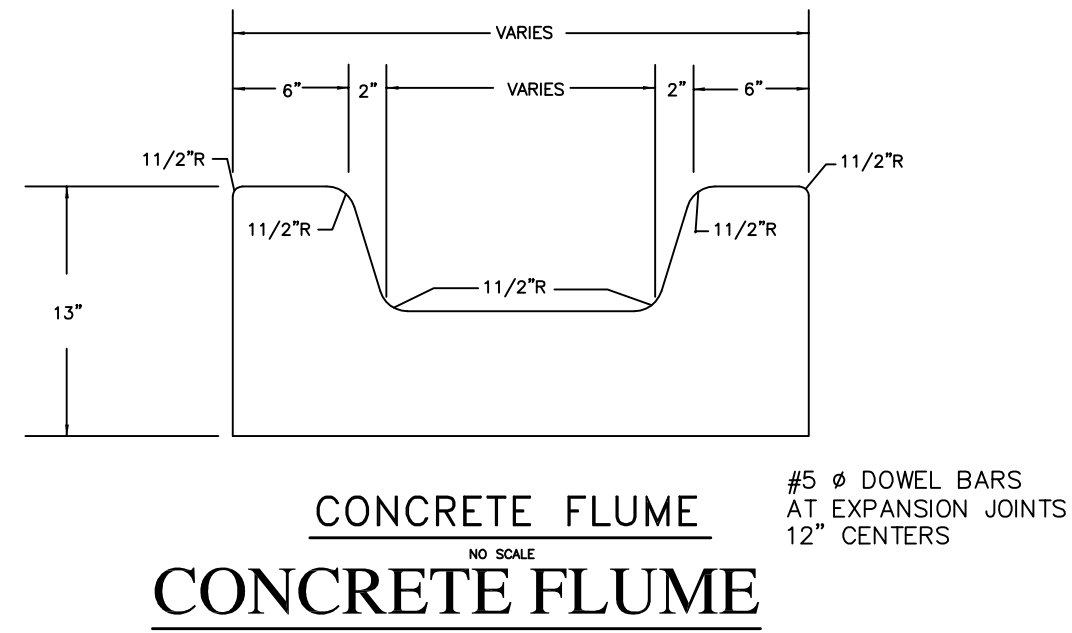
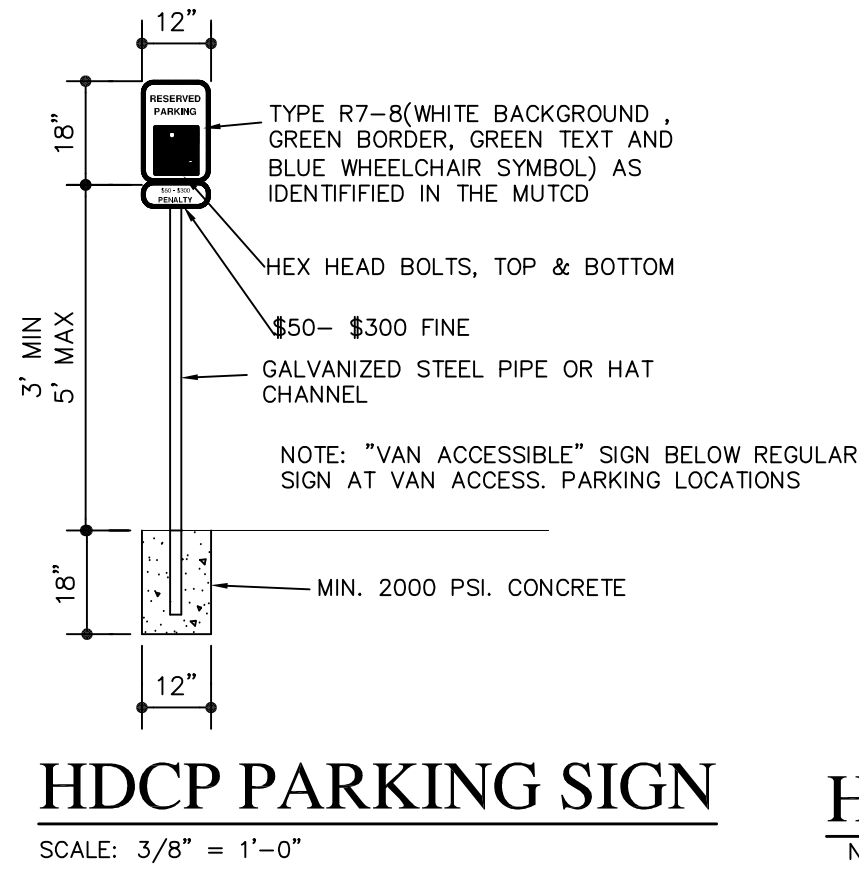
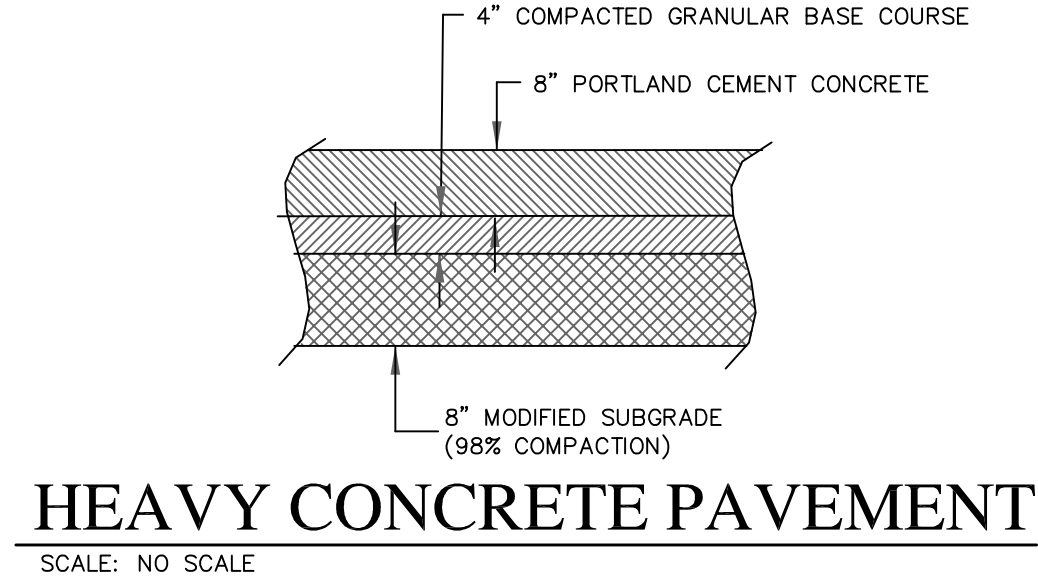
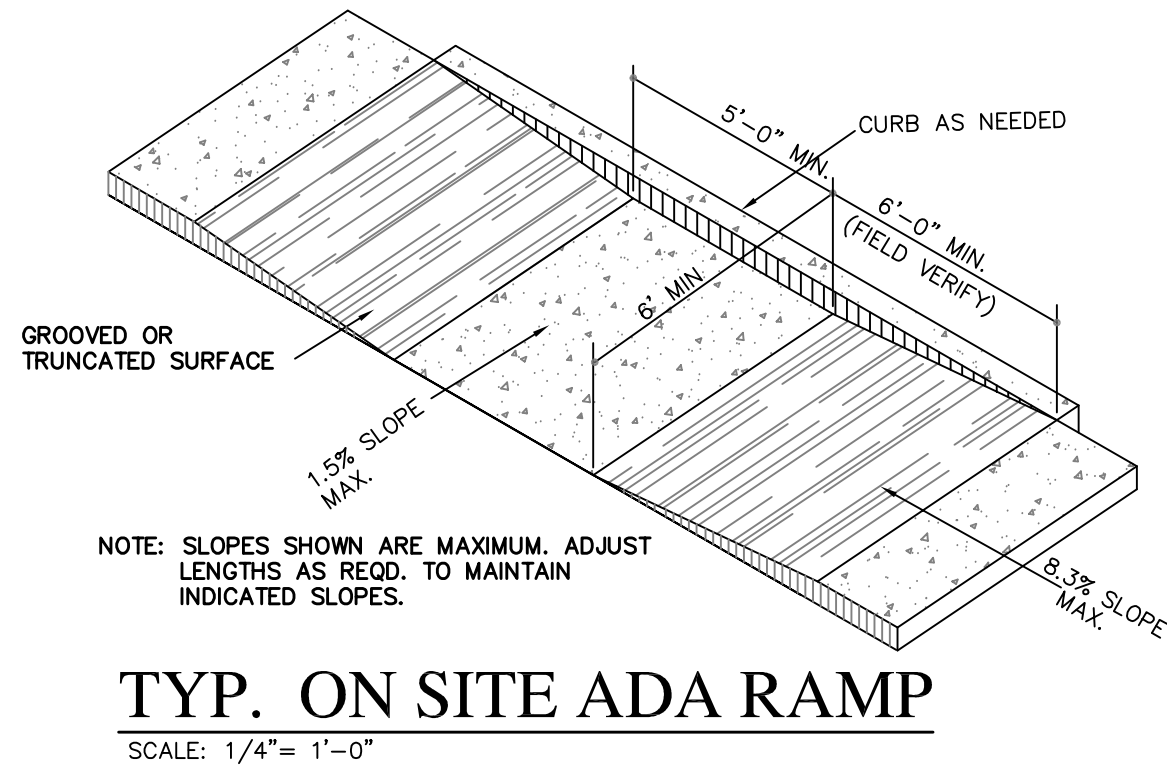
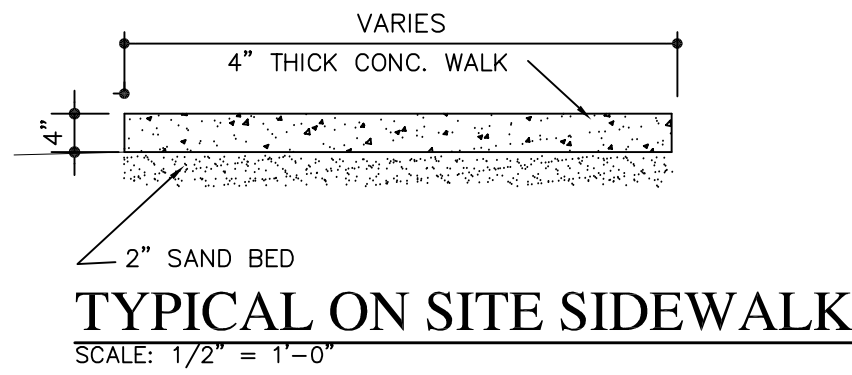
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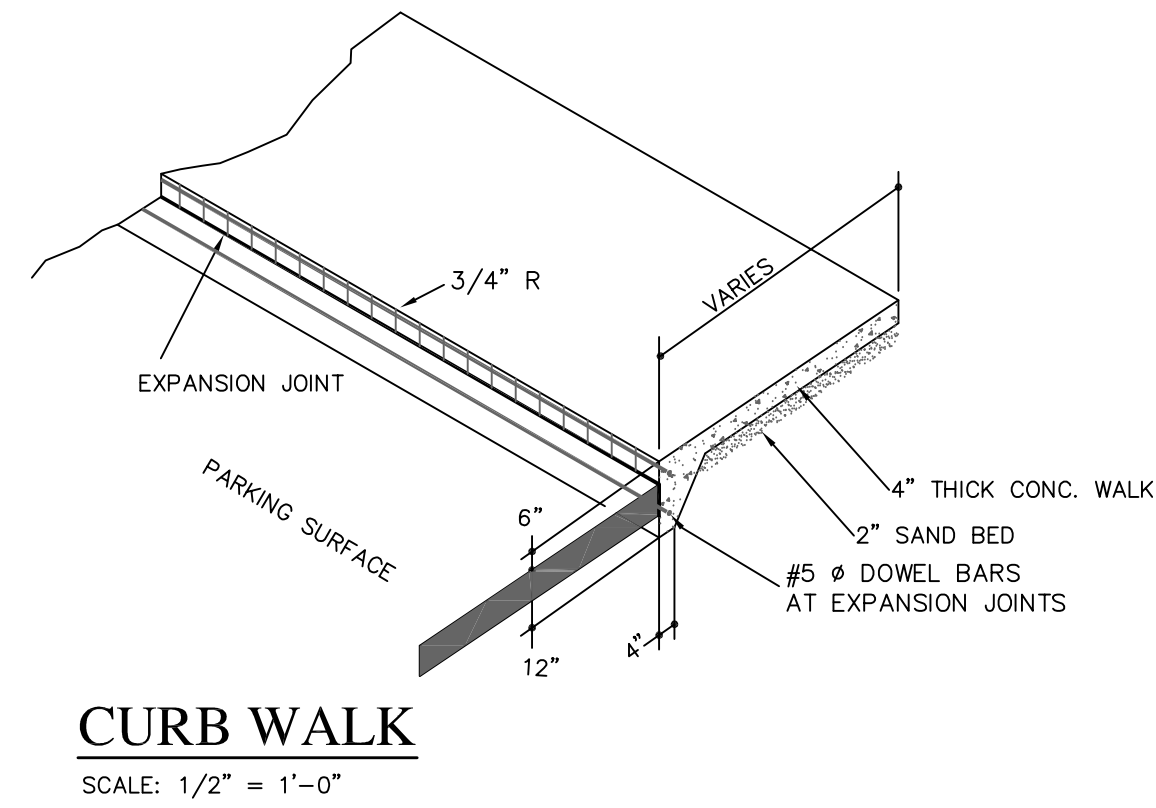
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- △ 12-14-22 REMOVED CURB DETAILS



SITE NOTES

- The Contractor shall strip the building area of top soil and stockpile it. He shall then install fill dirt as per soils report included within the specifications.
- The bottoms of footings shall bear on soils as per soils report included within the specifications. The footings shall be at depths indicated on plans, or deeper as required due to specific site conditions.
- Topsoil finish grade shall be 8" below the finish floor elevations, sloping away 6" in 10' minimum. Finish grades shall not exceed a 2:1 slope.
- Finish grade shall be 2" below the surface of walks, slabs, steps, etc., except where necessary to accommodate drainage. Contractor shall seed all areas of site disturbed by construction.
- Sidewalks shall not exceed 5% (1'-0" in 20'-0") slope with a 2% (1'-0" in 50'-0") cross-slope and shall be 5' wide except as noted on Site Plan. Provide stairs, ramps, curbs, etc., as noted and detailed.
- The Contractor shall obtain and pay for building permit(s) as may be required.
- The Contractor shall furnish and install one mailboxes as post office requires.
- Parking areas @ handicap accessible spaces and access isles shall not exceed a 2% slope (1'-0" in 50'-0") slope in any direction. Other portions of the accessible routes shall not exceed a 5% (1'-0" in 20'-0") longitudinal slope and a 2% (1'-0" in 50'-0") cross-slope. Other parking areas and cross-slopes of drives shall not exceed a 5% (1'-0" in 20'-0") slope.

SITE DETAILS



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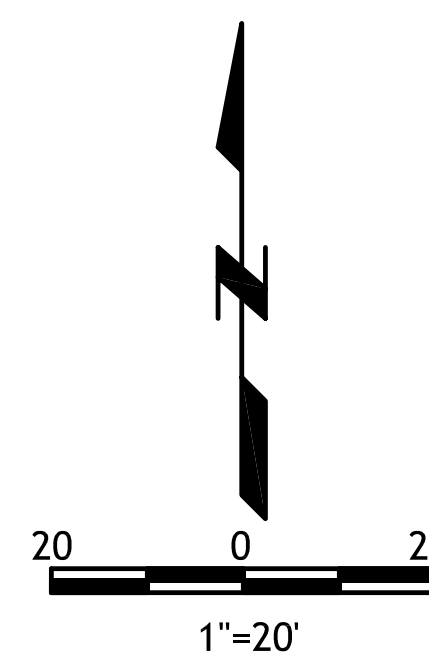
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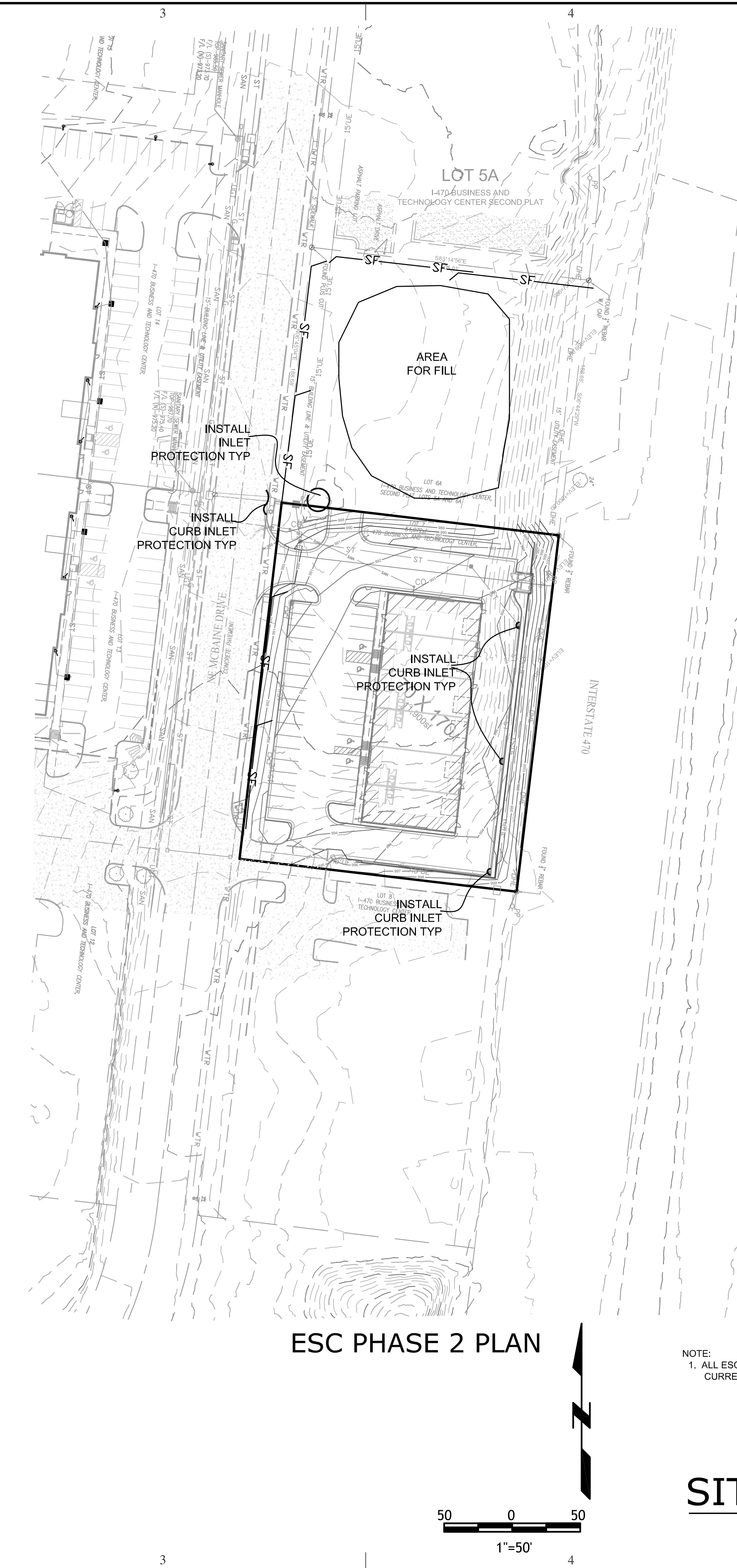
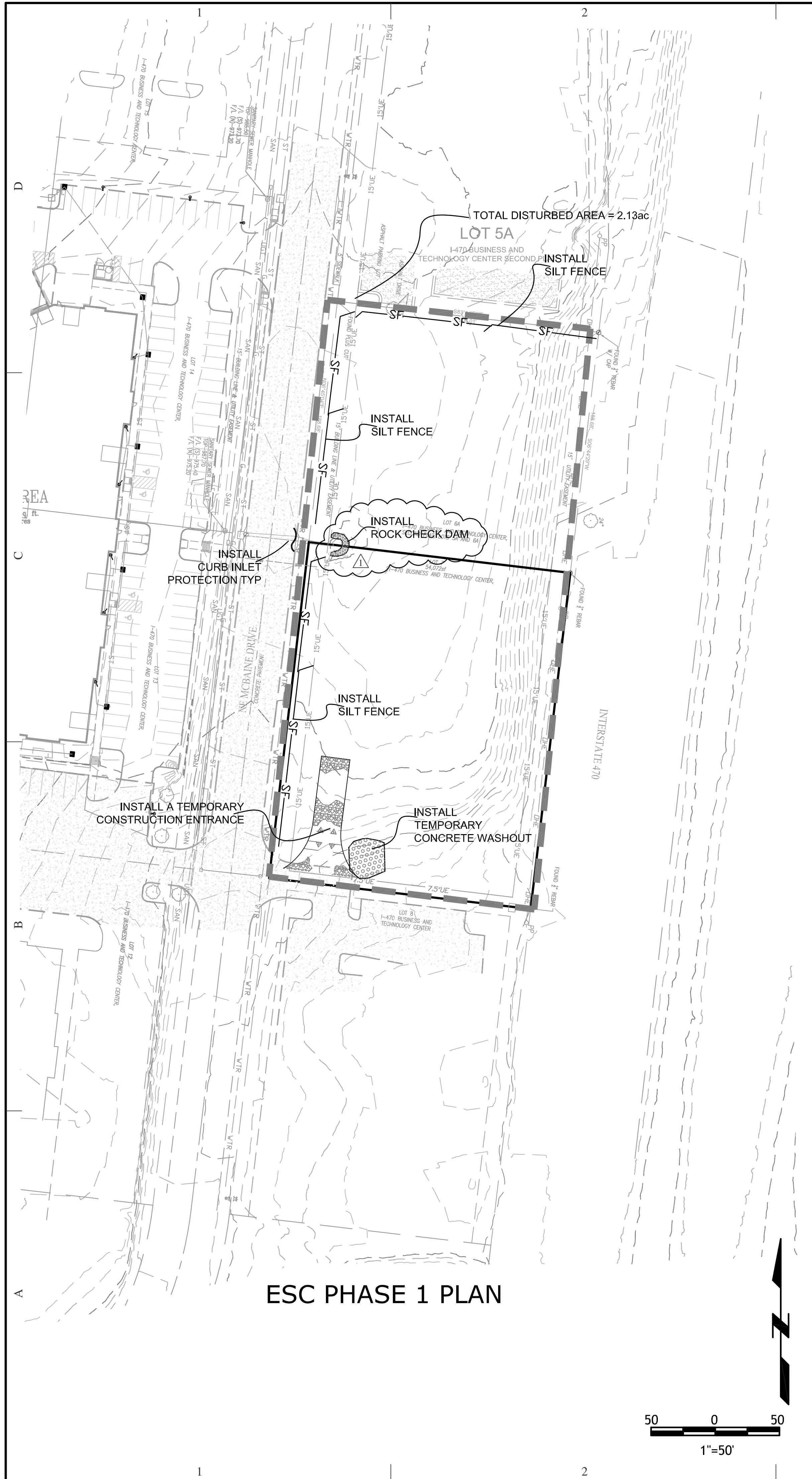


GRADING NOTES:

1. TOTAL CUT = 1,376cyd
2. TOTAL FILL = 5,138cyd
3. TOTAL BUILDING FOOTING CUT = 440cyd
4. TOTAL PARKING LOT AND DRIVE PAVEMENT
SIDEWALK, CURB CUT = 995cyd
6. TOTAL OF FILL = 2,327cyd
7. THESE NUMBERS ARE FOR CLIENT
USE ~~NOT~~ MEANT TO BE USED FOR
FINAL BIDS

1 NONE THIS SHEET 11-17-22





GENERAL NOTES:

- ADJACENT LAND ACRES SHALL BE PROTECTED FROM EROSION AND SILTATION WITH HAY BALES OR FILTER FABRIC.
- SILT CONTAINMENT LINES FROM THE ENCLOSED STORM DRAINAGE SYSTEMS SHALL BE PROVIDED WITH END SECTIONS AND THE DRAINAGE DITCHES PREPARED TO DISSIPATE FLOW AND CONTROL EROSION.
- THE FOLLOWING MAY BE USED AS EROSION/SILTATION CONTROL AS INDICATED ON THE PLANS: DEBRIS/SILT BASINS, SILT FENCING, STAKED STRAW BALES, RETENTION STRUCTURES, DIVERSIONS, OTHER METHODS AS DETAILED ON THE PLANS.
- ALL METHODS SHALL BE UTILIZED AND MAINTAINED UNTIL THE SURFACE HAS BEEN STABILIZED WITH VEGETATION OR MULCH.
- ALL STRAW BALES MUST BE EITHER WIRE BOUND OR STRING TIED. INSTALL BALES SO THAT BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. BALES SHALL BE OF STRAW ONLY.
- GRAVING AND SEDIMENT CONTROL SHALL BE AS SPECIFIED IN THE "MODEL GRAVING AND SEDIMENT CONTROL ORDINANCE" DEVELOPED BY THE MID-AMERICA ASSOCIATION OF CONSERVATION DISTRICTS AND THE MID-AMERICA REGIONAL COUNCIL.
- STRAW BALES SHALL BE BURIED IN THE SOIL A MINIMUM OF FOUR INCHES.
- STRAW BALES SHALL BE PLACED IN A ROW AS INDICATED ON THE ABOVE DRAWING.
- STRAW BALES SHALL BE ANCHORED IN PLACE BY STAKES OR REBARS AS SHOWN IN THE DETAIL. PROVIDED, THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD A PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
- ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 INCHES.
- STRAW BALES SHALL BE REMOVED UPON COMPLETION OF CONSTRUCTION AND SEEDING AND MULCHING OF GRADED AREAS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF STRAW BALES OR OTHER EROSION OR SEDIMENT CONTROL DEVICES UNTIL UP-SLOPE AREAS HAVE BEEN STABILIZED.
- VEGETATION ESTABLISHMENT FOR URBAN DEVELOPMENT SITES: GRADED AND EXCAVATED AREA OF 2.2 ACRES TO BE SOON AFTER CONSTRUCTION WITH ONE OF THE FOLLOWING:
 - A. TALL FESCUE - 25 LBS./ACRE
 - B. SMOOTH BROME - 35 LBS./ACRES
 - C. COMBING: FESCUE @ 20 LBS./ACRE AND BROME @ 15 LBS./ACRE
 - D. OTHER SEEDING MIXTURES AS APPROVED BY THE SOIL CONSERVATION SERVICE.

SEEDING PERIODS:
FESCUE OR BROME - MARCH 1 TO JUNE 1

MULCH RATES: (REQUIRED FOR ALL PERMANENT SEEDING)
4,555 LBS./ACRE

FERTILIZER:
A. NITROGEN 90 LBS./ACRE
B. PHOSPHATE 90 LBS./ACRE
C. POTASSIUM 80 LBS./ACRE
D. LIME 700 LBS./ACRE (EFFECTIVE NEUTRALIZING MATERIAL AS PER STATE EVALUATION OF QUARRIED ROCK)
E. OTHER RATES AS DEFINED BY A CURRENT SOIL TEST AND APPROVED BY THE SOIL CONSERVATION SERVICE.

PHASE 1 SHALL INCLUDE THE FOLLOWING:

- INSTALL SILT FENCE
- INSTALL TEMPORARY CONSTRUCTION ENTRANCE

PHASE 2 SHALL INCLUDE THE FOLLOWING:

- REMOVE TOP SOIL, CURB, SIDEWALK, FENCE, AND TREES.
- ROUGH GRADE CUT A ENGINEERED FILL
- INSTALL UTILITIES
- INSTALL FOOTING AND WALLS
- INSTALL PARKING LOT, SIDEWALK AND MAIN ENTRANCES
- SEED AND SOD ALL DISTURBED AREAS

PHASE 3 SHALL INCLUDE THE FOLLOWING:

- FULLY VEGETATED SITE
- REMOVE SILTATION FENCE

NOTE:
1. ALL ESC INSPECTIONS REPORTS SHALL BE MADE PER THE CURRENT SWPPP REQUIREMENTS AND COPIES KEPT ON SITE.

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SITE ESC PHASE 1 AND 2 PLAN

LOT 7 OF I-470 B & T CENTER
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc.
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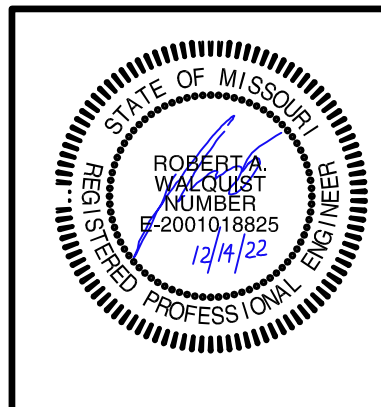
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LOT 7 OF I-470 B & T CENTER
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

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3" to 6" aggregate

2'

FLOW

Type I
(2 Acres or less of Drainage Area)

Not to Scale

12" riprap downstream

3" to 6" aggregate upstream

FLOW

Type II
(2-10 Acres of Drainage Area)

Not to Scale

ROCK DITCH CHECK

Temporary Rock Ditch Check Spacing	
Ditch Centerline Slope (%)	Spacing Interval (feet)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29

Note: Use this spacing only for Rock Ditch Checks.

Elevation of end Points "A" must be minimum 6" higher than elevation of flow line at point "B"

Front View
Not to Scale

Place downstream structure such that Point "B" is approximately level with the toe elevation of the upstream structure

Spacing Between Check Dams (all types)
Not to Scale

Notes:

1. Rock check dams shall be used only for drainage areas less than 10 acres unless approved by the City Engineer.
2. Use rock checks only in situations where the ditch slope exceeds 5%.

Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches 1/2 the height of the ditch check.
2. Replace and reshape as necessary to maintain function and integrity of installation.

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION	
KANSAS CITY METRO CHAPTER	
ROCK DITCH CHECKS	STANDARD DRAWING NUMBER ESC-10 ADOPTED: 10/24/2016

Posts (*) at 4' Max. spacing

Filter fabric Material (**)

2' Min.

Backfilled trench

For additional strength filter fabric material can be attached to seven wire fencing with min. wire gauge between 8 and 14 and max. mesh spacing of 6" which has been fastened to the post.

4' min length post at 4' max spacing

Geotextile fabric 2' wide

Staples, plastic zip ties or other material approved by the field engineer. (50 lb tensile strength) located in top 6"

Direction of Flow

2' Min. Post embedment (See Note 6.3)

Machine slice 6" - 12" depth

Notes:

1. In order to contain water, the ends of the silt fence must be turned uphill (Figure A).
2. Long perimeter runs of silt fence must be limited to 100'. Runs should be broken up into several smaller segments to minimize water concentrations (Figure A).
3. Long slopes should be broken up with intermediate rows of silt fence to slow runoff velocities.
4. Attach fabric to upstream side of post.
5. Install posts a minimum of 2' into the ground.
6. Trenching will only be allowed for small or difficult installation, where slicing machine cannot be reasonably used.

Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches 1/2 the height of silt fence.
2. Repair as necessary to maintain function and structure.

(*) EDGIS

- MIN. LENGTH 4'
- HARDWOOD 1 3/4" x 1 3/4"
- NO.2 SOUTHERN PINE 2 3/4" x 2 3/4"
- STEEL 1.33 LB/FT

(**) - Geotextile Fabric shall meet the requirements of AASHTO M288

SILT FENCE DETAILS
Not to Scale

Incorrect

Correct

Ends Turned Uphill (Typ.)

SILT FENCE LAYOUT
Not to Scale

Install silt fence at the top of the slope to slow velocity and volume of water and 6" to 10' away from the toe to create a sediment storage area.

18" Minimum

Overlap filter fabric between posts

Wrap filter fabric around and attach to the post with staples or plastic zip ties

JOINING FENCE SECTIONS
Not to Scale

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION	
KANSAS CITY METRO CHAPTER	
SILT FENCE	STANDARD DRAWING NUMBER ESC-03 ADOPTED: 10/24/2016

NONE THIS SHEET 12-14-22

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Existing Ground

50' Min.

20' Min.*

Washrack / Rubble Strip (Optional)

10' Min.

Existing Pavement

10' Min.

2-3" Coarse Aggregate

Positive drainage

Sediment Trapping Device

* - Must extend full width of ingress and egress operation

Plan View
Not to Scale

Existing Ground

50' Min.

3'

5:1

Existing Pavement

6" Min.

Non-Woven Geotextile

Mountable Berm (Optional)

Side Elevation
Not to Scale

20' Min.

3" Min.

3" Min.

Non-Woven Geotextile

Section A-A
Not to Scale

Excavated material shall be used for perimeter berm. Soil for berm shall be compacted in the same manner as trench backfill.

Construction Fence (optional)

Vehicle Tracking Control

CONCRETE WASHOUT

Notes for Concrete Washout:

1. Concrete washout areas shall be installed prior to any concrete placement on site.
2. Concrete washout areas shall include a flat subsurface pit sized relative to the amount of concrete to be placed on site. The slopes leading out of the subsurface pit shall be 2:1. The vehicle tracking post shall be sloped towards the concrete washout area.
3. Vehicle tracking control is required at the access point to all concrete washout areas.
4. Signs shall be placed at the construction site entrance, washout area and elsewhere as necessary to clearly indicate the location(s) of the concrete washout area(s) to operators of concrete truck and pump rigs.
5. A one-place impervious liner may be required along the bottom and sides of the subsurface pit in sandy or gravelly soils.

Maintenance for Concrete Washout:

1. Concrete washout materials shall be removed once the materials have filled the washout to approximately 75% full.
2. Concrete washout areas shall be enlarged as necessary to maintain capacity for washed concrete.
3. Concrete washout water, washed pieces of concrete and all other debris in the subsurface pit shall be transported from the job site in a water-tight container and disposed of properly.
4. Concrete washout areas shall remain in place until all concrete for the project is placed.
5. When concrete washout areas are removed, excavations shall be filled with suitable compacted backfill and topped, any disturbed areas associated with the installation, maintenance, and/or removal of the concrete washout areas shall be stabilized.

Notes for Construction Entrance:

1. Avoid locating on steep slopes, at curves on public roads, or downhill of disturbed areas.
2. Remove all vegetation and other unsuitable material from the foundation area, grade, and crown for positive drainage.
3. If slope towards the public road exceeds 2%, construct a 6- to 8-inch high ridge with 30:1 side slopes across the foundation approximately 15 feet from the edge of the public road to divert runoff from it.
4. Install pipe under the entrance if needed to maintain drainage ditches along public roads.
5. Place stone to dimensions and grade as shown on plans. Leave surface sloped for drainage.
6. Divert all surface runoff and drainage from the entrance to a sediment control device.
7. If conditions warrant, place geotextile fabric on the graded foundation to improve stability.

Maintenance for Construction Entrance:

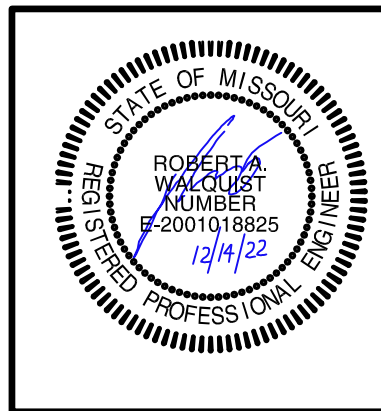
1. Reshape entrance as needed to maintain function and integrity of installation. Top dress with clean aggregate as needed.

CONSTRUCTION ENTRANCE

Construction Entrance modified from 2015 Overland Park Standard Details for Erosion and Sediment Control. Concrete Washout modified from 2009 City of Great Bend Standard Drawings.

AMERICAN PUBLIC WORKS ASSOCIATION	
KANSAS CITY METRO CHAPTER	
CONSTRUCTION ENTRANCE AND CONCRETE WASHOUT	STANDARD DRAWING NUMBER ESC-01 ADOPTED: 10/24/2016

SITE ESC DETAILS



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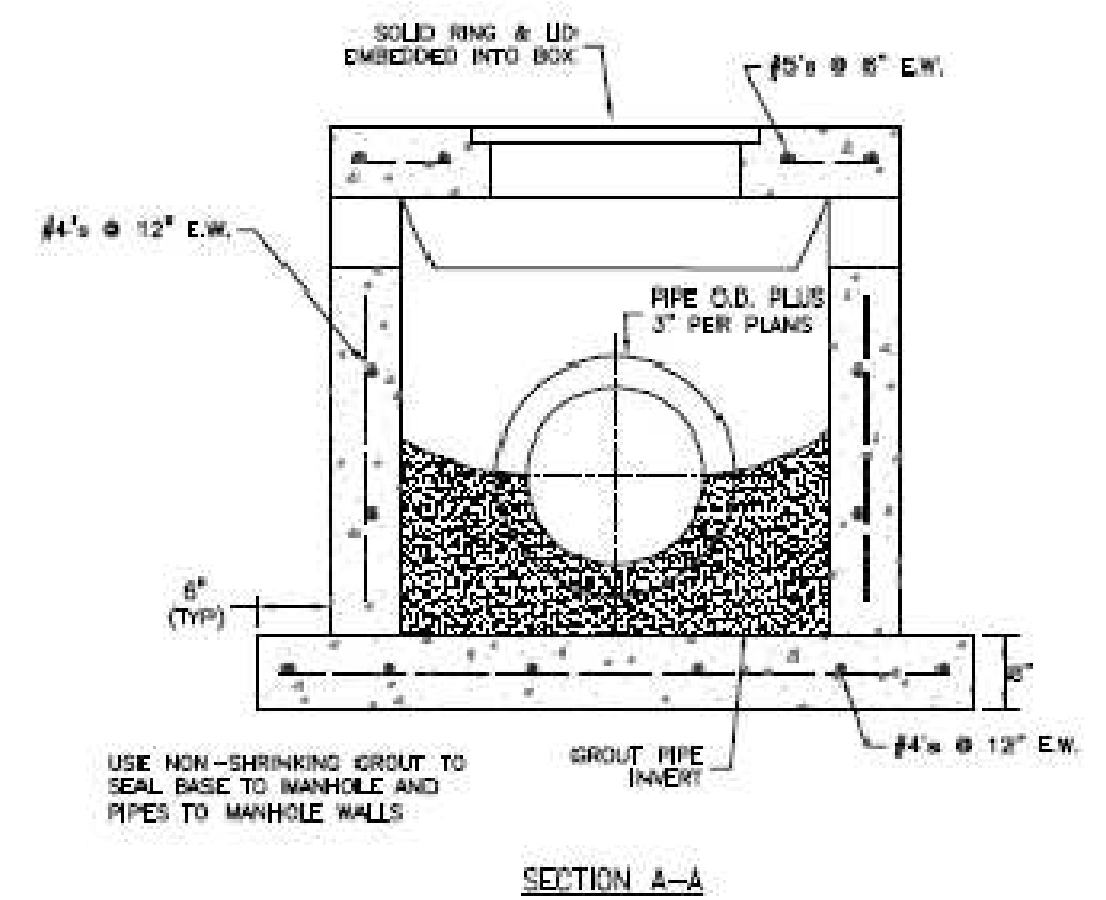
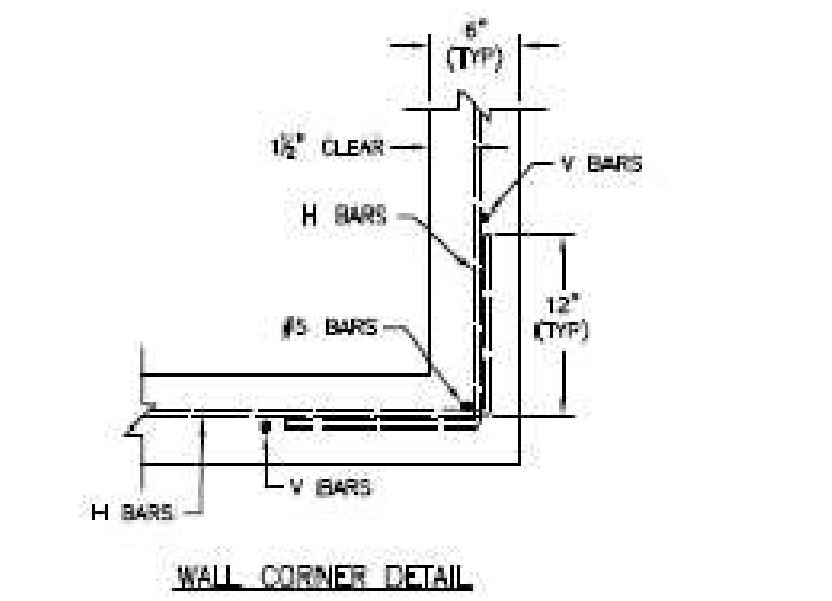
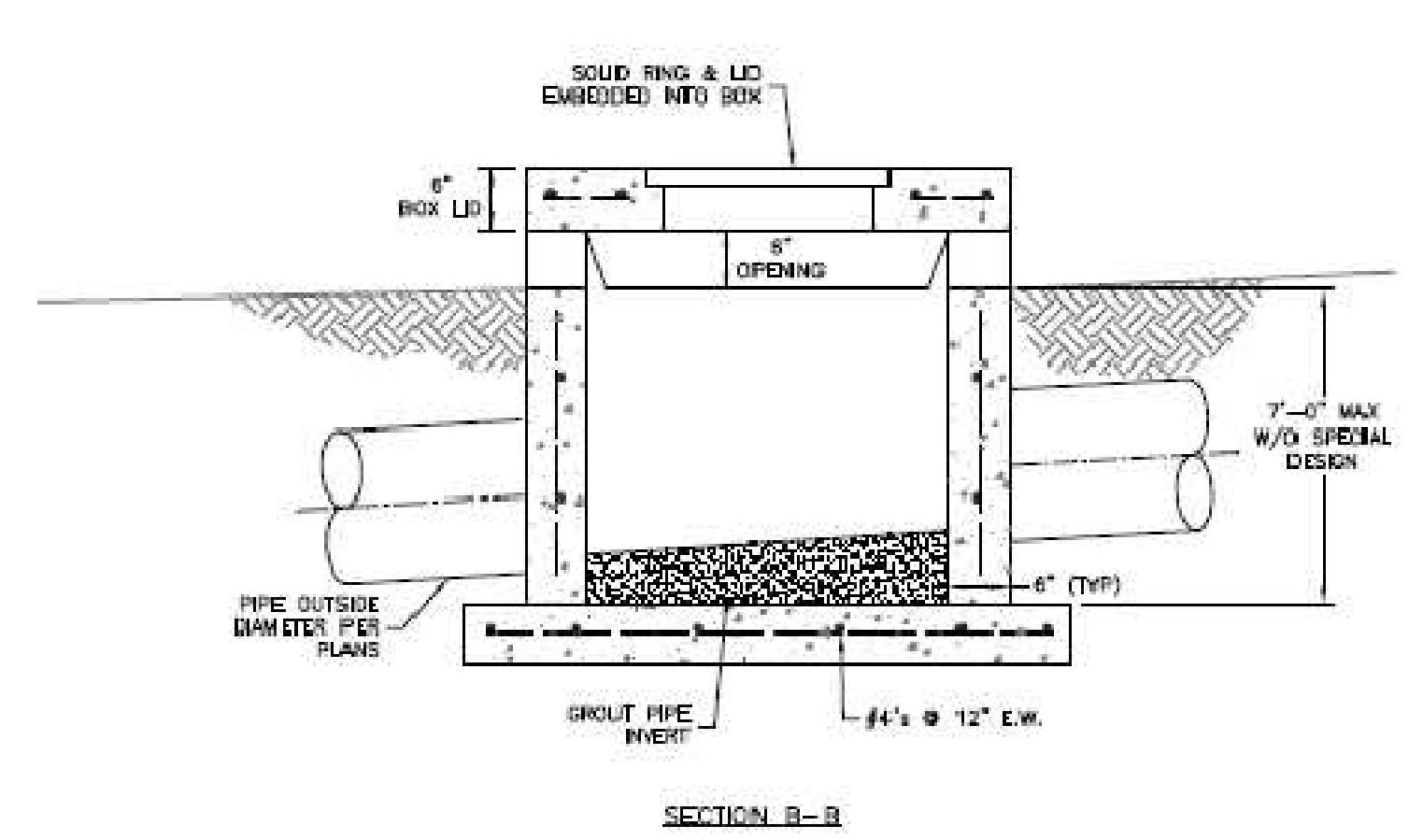
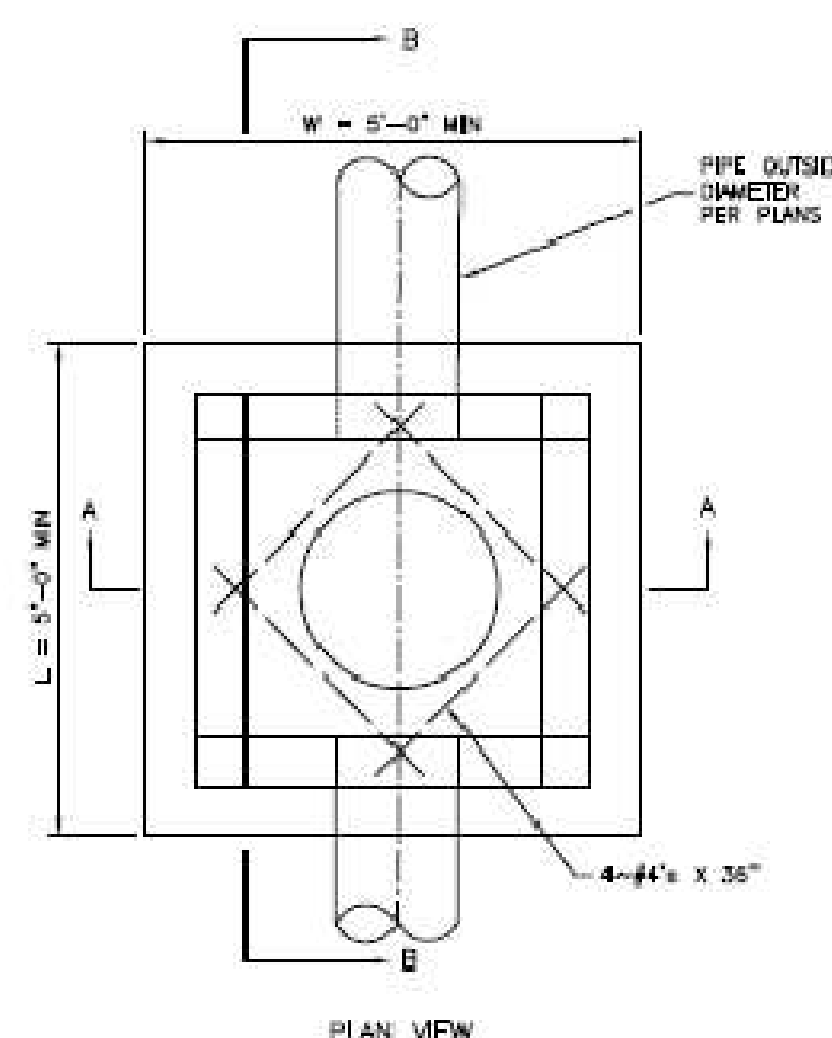
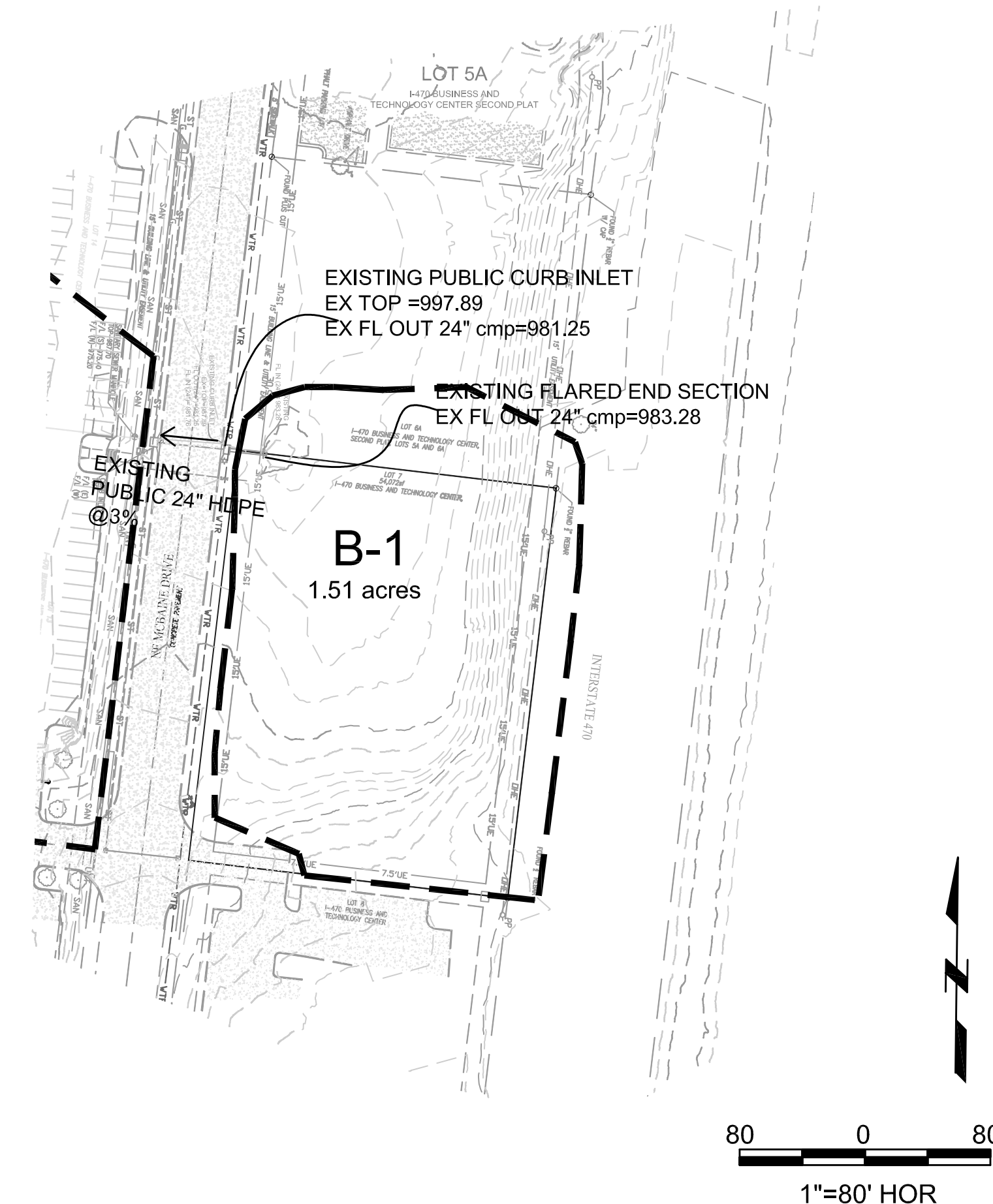
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- GENERAL NOTES:**
1. LOCATE RING AND COVER OVER OUTLET ON BLANK WALL.
 2. USE 1/2" CHAMFER ON ALL EXPOSED CONCRETE CORNERS.
 3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
 4. STEPS REQUIRED AT 18" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 3' ON BLANK WALL IF POSSIBLE.
 5. BOXOUTS WILL NOT BE ALLOWED TO PROJECT THROUGH THE CORNERS OF THE STRUCTURE.
 6. THE MINIMUM REINFORCING SHALL BE 1 H-BAR OVER A CAST-IN-PLACE PIPE AND 2 H-BARS OVER A PRECAST BOXOUT.
 7. SHOW FIELD INLET ORIENTATION ON PLANS PLUS NUMBER AND SIDE OF OPENINGS.
 8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON-SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
 9. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.

IS LEE'S SUMMIT MISSOURI
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
FIELD INLET DETAIL

STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
FIELD INLET DETAIL
STM-2

PRIVATE STORM IMPROVEMENT PLAN





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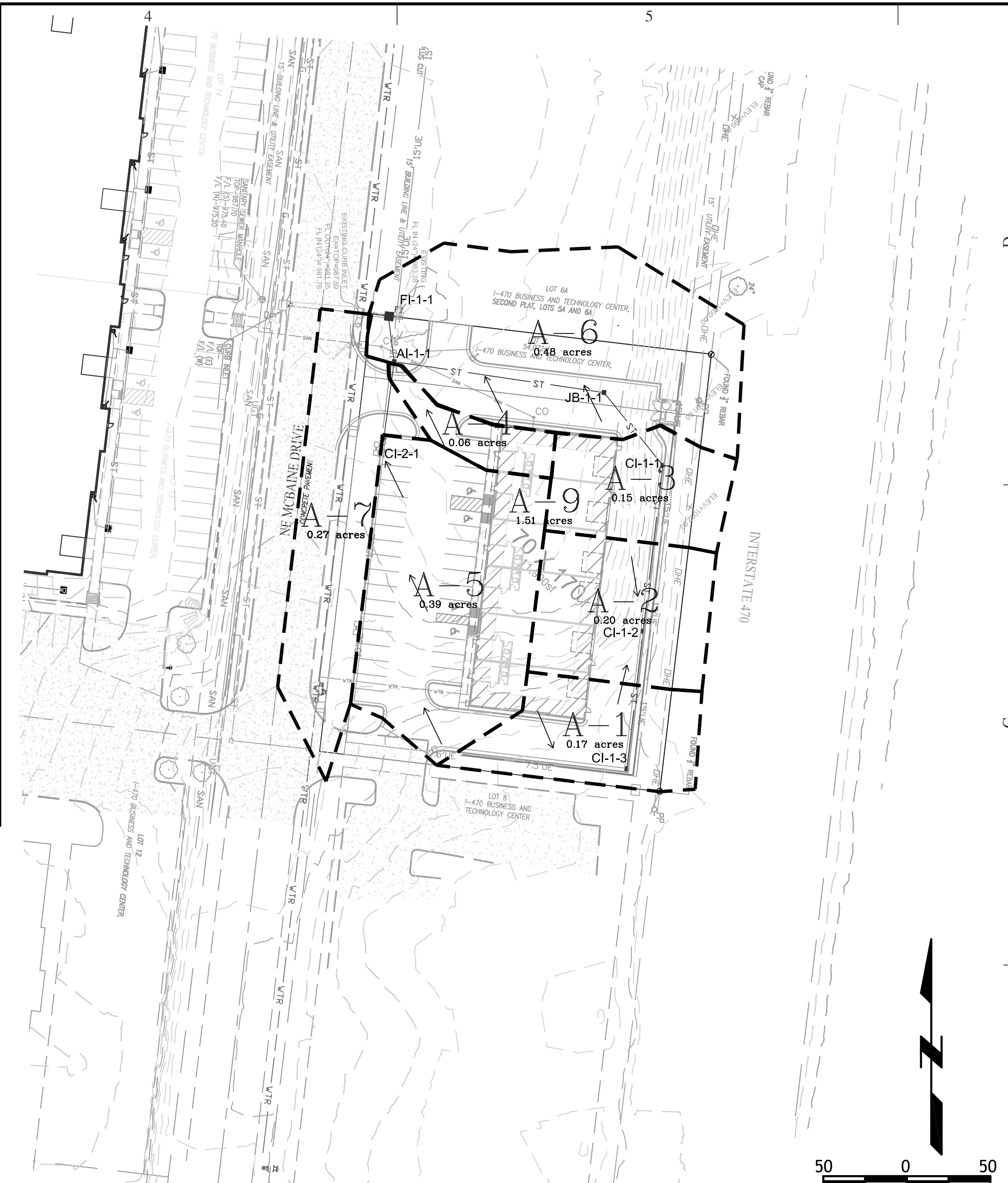
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②	12-14-22	
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C401

JOB NO.

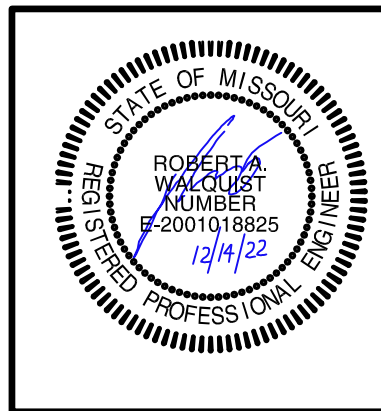
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POST-DEVELOPMENT

STORM SEWER CALCULATIONS TABLE																															
Sewer Location			Drainage Area to Inlet			Time of Flow	Rainfall Runoff Flow										Elevation			Sewer Characteristics							Velocity stats				
Line	From	To	Designation	Area	Coef	T _c	1100 Intensity	125 Intensity	110 Intensity	Inlet 100yr K*1°C*A	Inlet 25yr K*1°C*A	Inlet 10yr K*1°C*A	Additional Flow Lines	Additional cfs	In-pipe 100yr K*1°C*A	In-pipe 25yr K*1°C*A	In-pipe 10yr K*1°C*A	Inlet	Top elevation	Coverage	Pipe Size (in)	FLin	Flout	segment length	slope	pipe area	Pipe Capacity (cfs)	100yr overflow	V 10ys	V 100 yr	
LINE 1	CI-1-3	CI-1-2	A-1	0.17	0.88	5.00	10.32	8.53	7.35	1.93	1.40	1.10			1.93	1.40	1.10	CI-1-3	993.50	2.00	12.00	990.50	989.50	83.00	1.20	0.79	3.91	Yes	1.40	2.46	
	CI-1-2	CI-1-1	A-2	0.20	0.88	5.00	10.32	8.53	7.35	2.27	1.65	1.29			4.20	3.05	2.39	CI-1-2	994.10	3.55	15.00	989.30	988.30	100.00	1.00	1.23	6.46	Yes	1.95	3.43	
		CI-1-1	JB-1-1	A-3	0.15	0.88	5.00	10.32	8.53	7.35	1.70	1.24	0.97			5.90	4.29	3.36	CI-1-1	994.10	4.75	15.00	988.10	987.50	56.00	1.07	1.23	6.68	Yes	2.74	4.81
		JB-1-1	AI-1-1	NA	0.00	0.88	5.00	10.32	8.53	7.35	0.00	0.00	0.00			5.90	4.29	3.36	JB-1-1	993.30	4.50	18.00	987.30	985.00	127.00	1.81	1.77	14.13	Yes	1.90	3.34
		AI-1-1	FI-1-1	A-5	0.06	0.88	5.00	10.32	8.53	7.35	0.68	0.50	0.39	LINE-2	3.22	9.81	8.01	6.97	AI-1-1	989.00	2.70	18.00	984.80	984.00	27.00	2.96	1.77	18.07	Yes	3.95	5.55
		FI-1-1	EXC-CI	A-6	0.46	0.88	5.00	10.32	8.53	7.35	5.22	3.80	2.98			15.03	11.81	9.95	FI-1-1	987.50	2.77	24.00	982.73	981.76	15.00	6.47	3.14	57.50	Yes	3.17	4.79
LINE 2	CI-2-2	AI-1-1	A-5	0.39	0.88	5.00	10.32	8.53	7.35	4.43	3.22	2.52			4.43	3.22	2.52	CI-2-2	992.30	4.30	12.00	987.00	985.00	46.00	4.35	0.79	7.43	Yes	3.21	5.64	

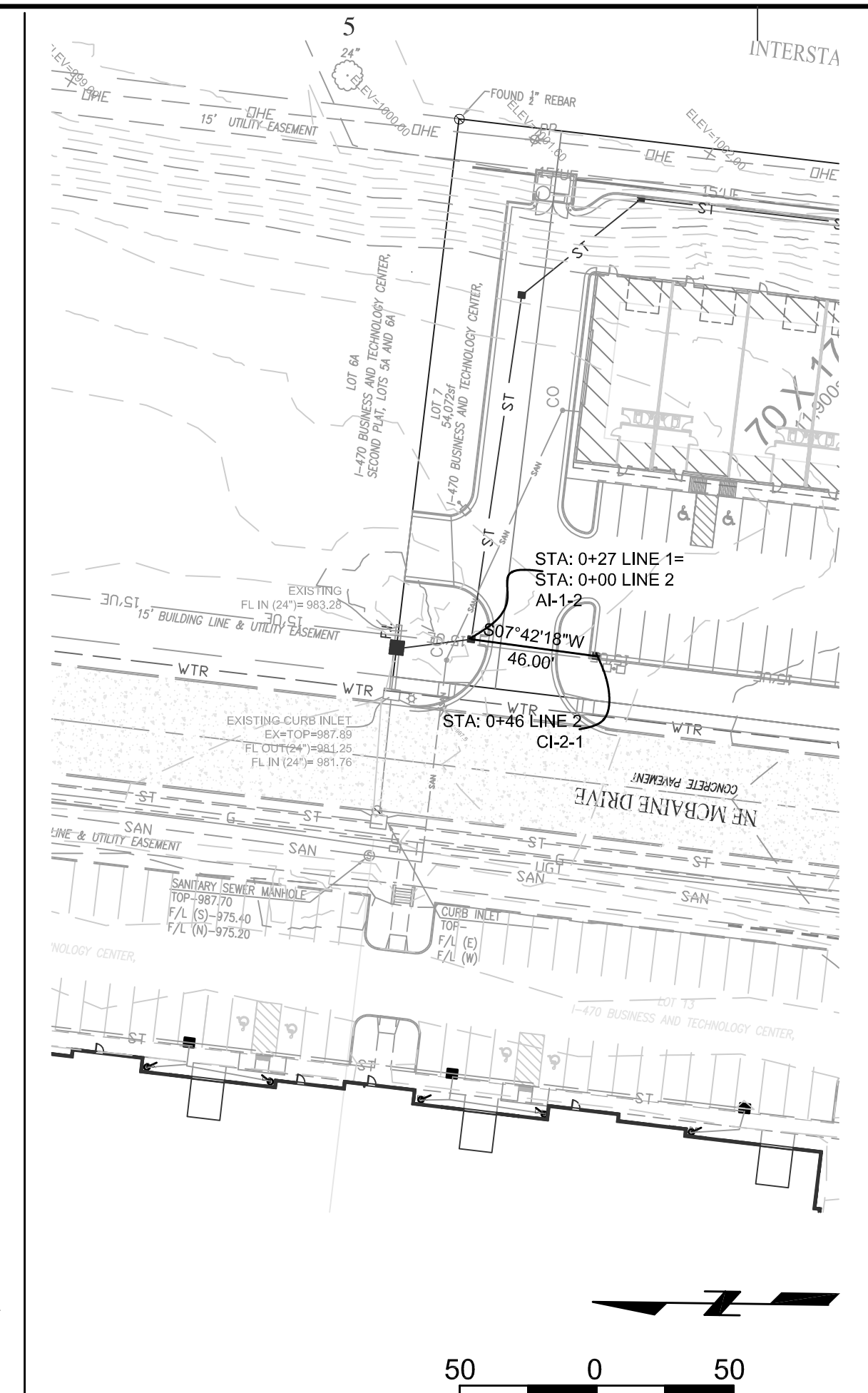
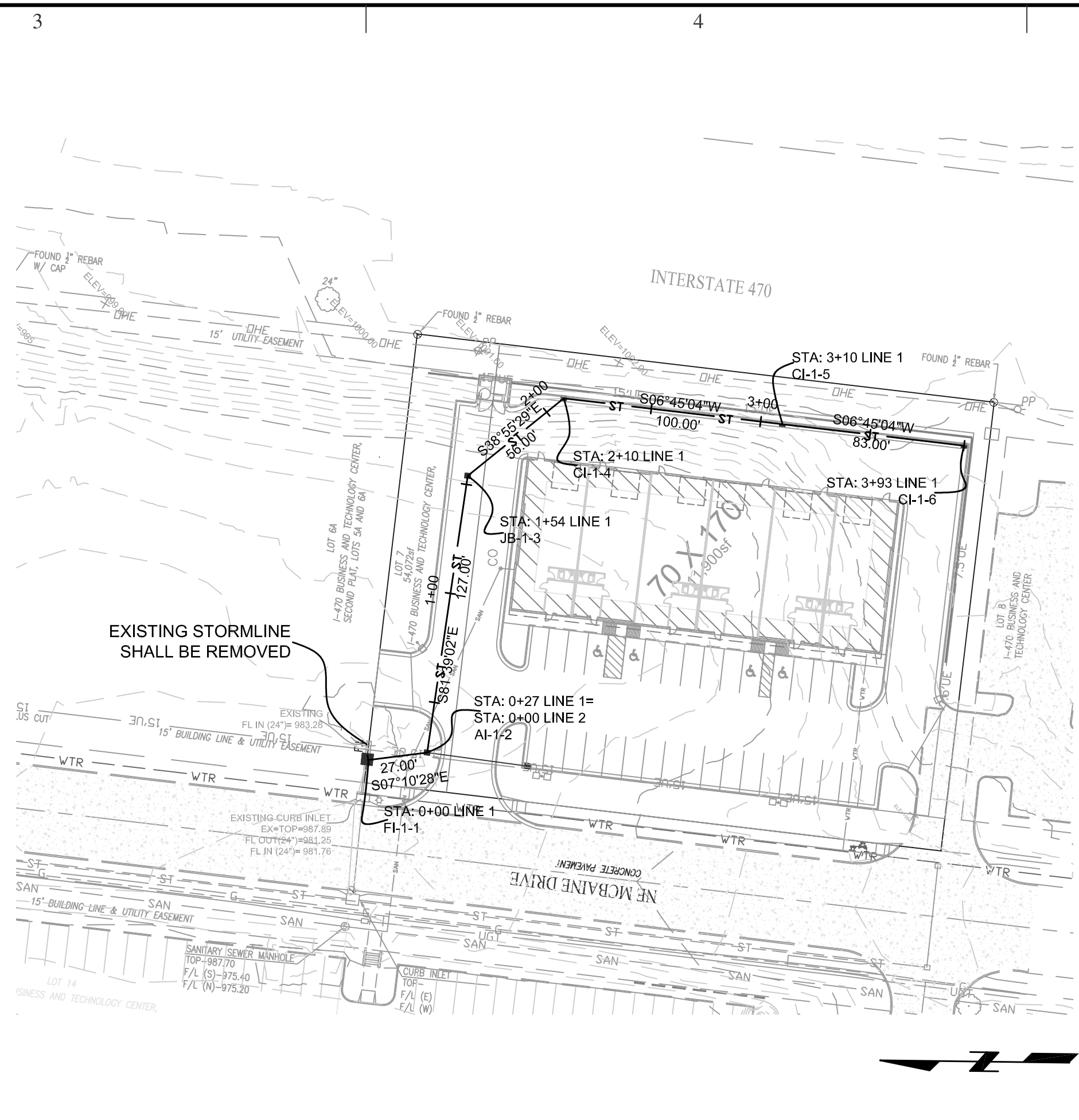
SITE STORM DRAINAGE PLAN AND CALCULATIONS



LOT 7 OF I-470 B & T CENTER
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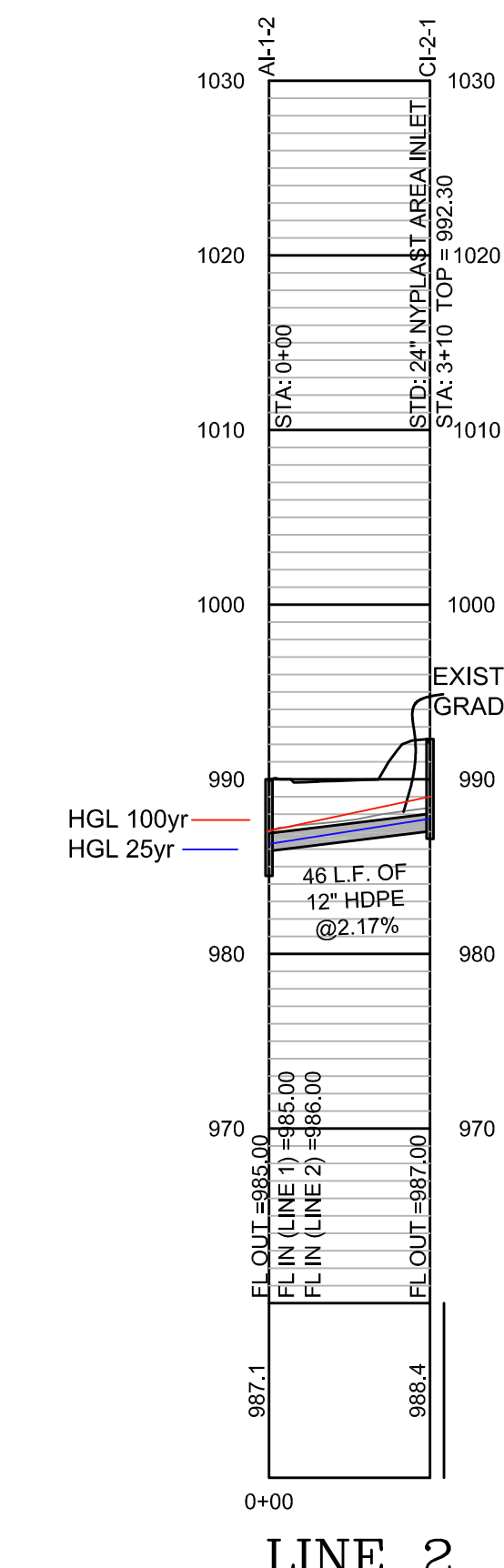
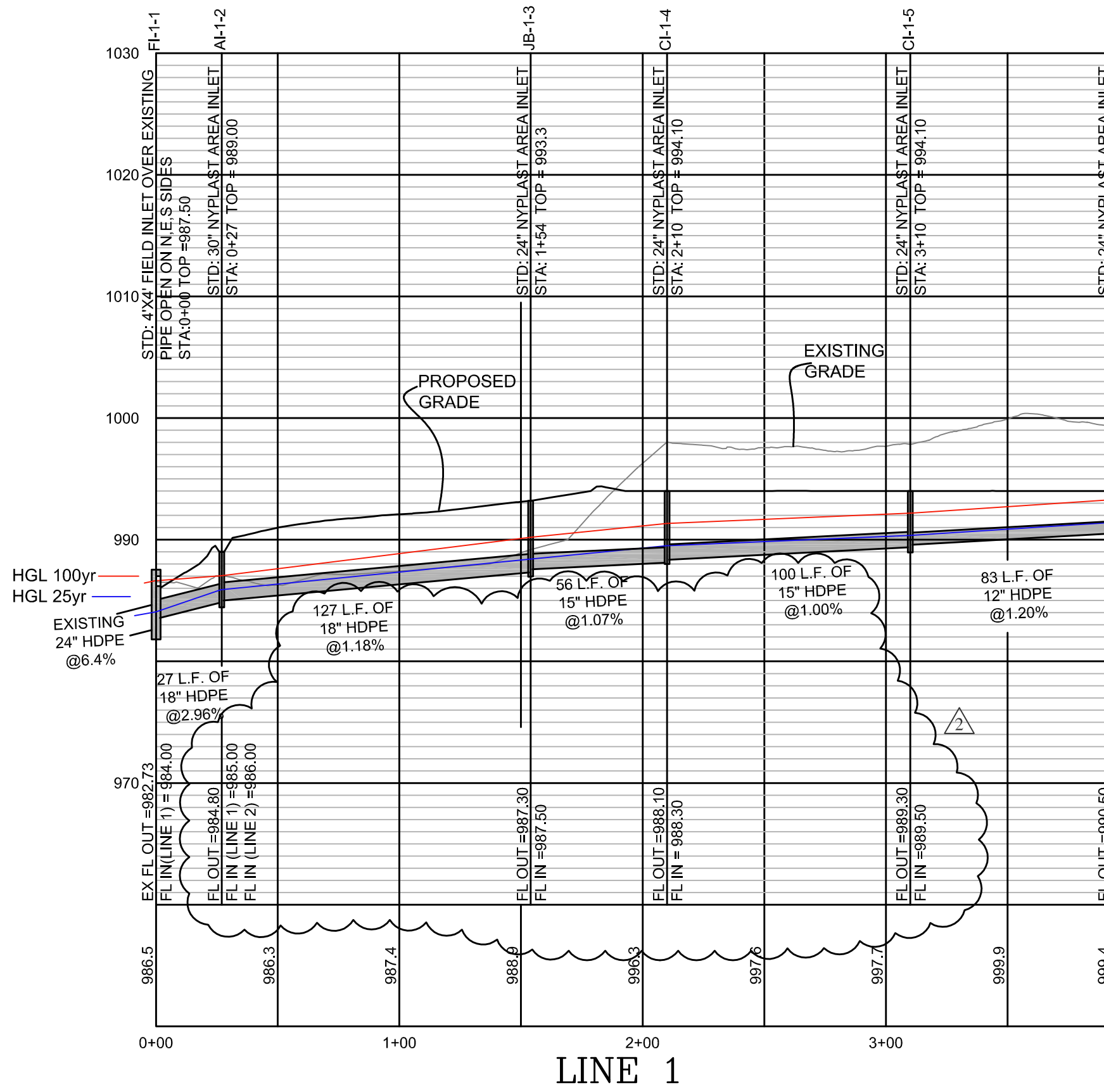
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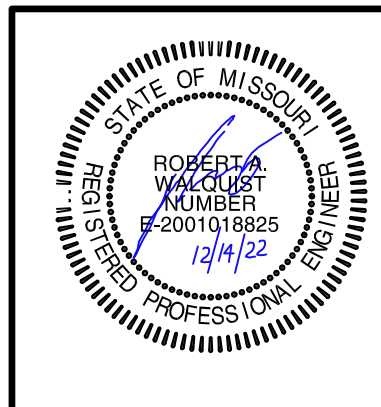
NOTE:
1. COMPACTED FILL SHALL BE PLACED A MIN 18"
ABOVE TOP OF PIPE PRIOR TO INSTALLATION.

1"=50' HOR
1"=10' VERT

△ NONE THIS SHEET 11-17-22



PRIVATE STORM LINES 1 & 2



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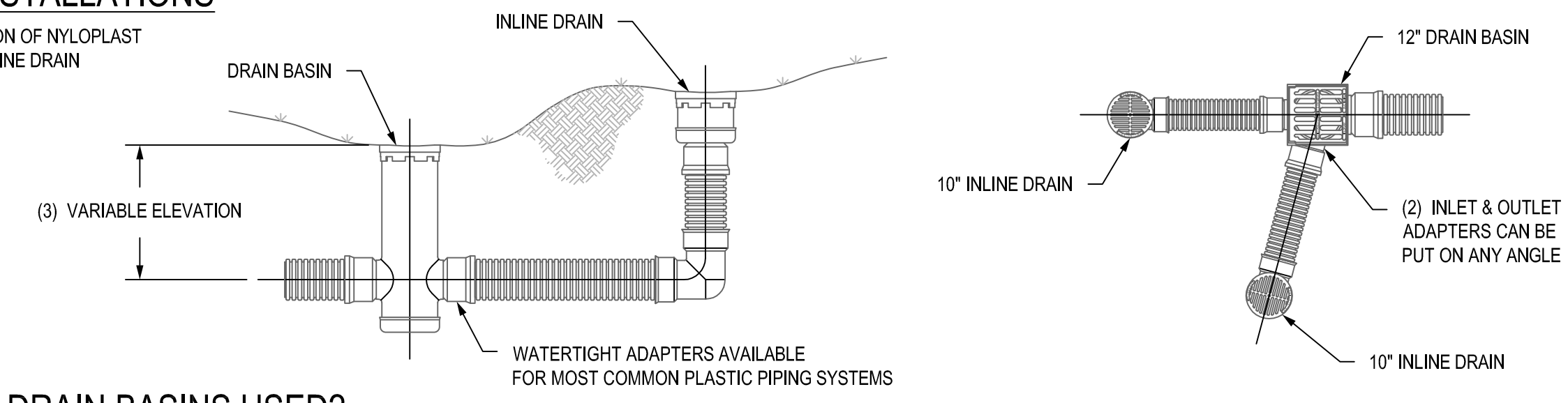
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WHEN ARE INLINE DRAINS USED?

- 2708AG __X
- 2710AG __X
- 2712AG __X
- 2715AG __X
- 2718AG __X
- 2724AG __X
- 2730AG __X

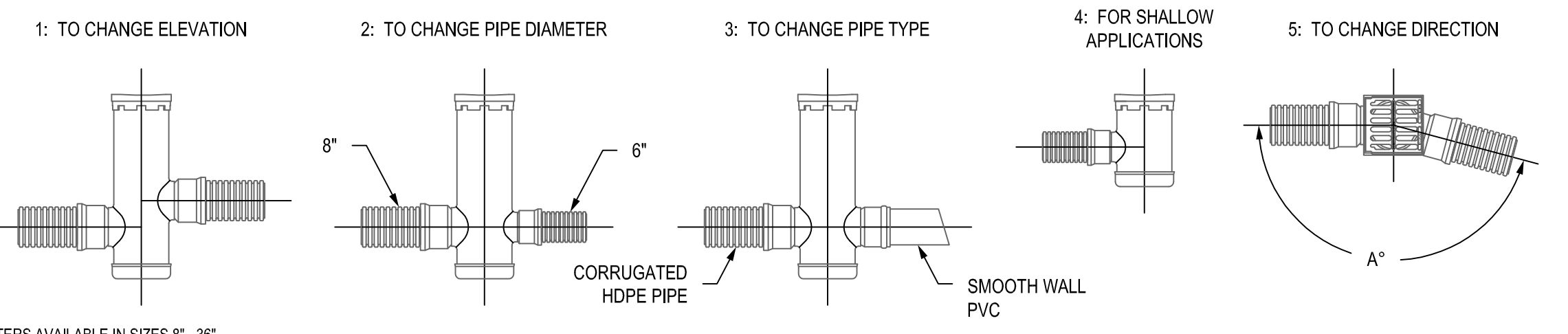
TYPICAL INSTALLATIONS

TYPICAL INSTALLATION OF NYLOPLAST DRAIN BASIN AND INLINE DRAIN



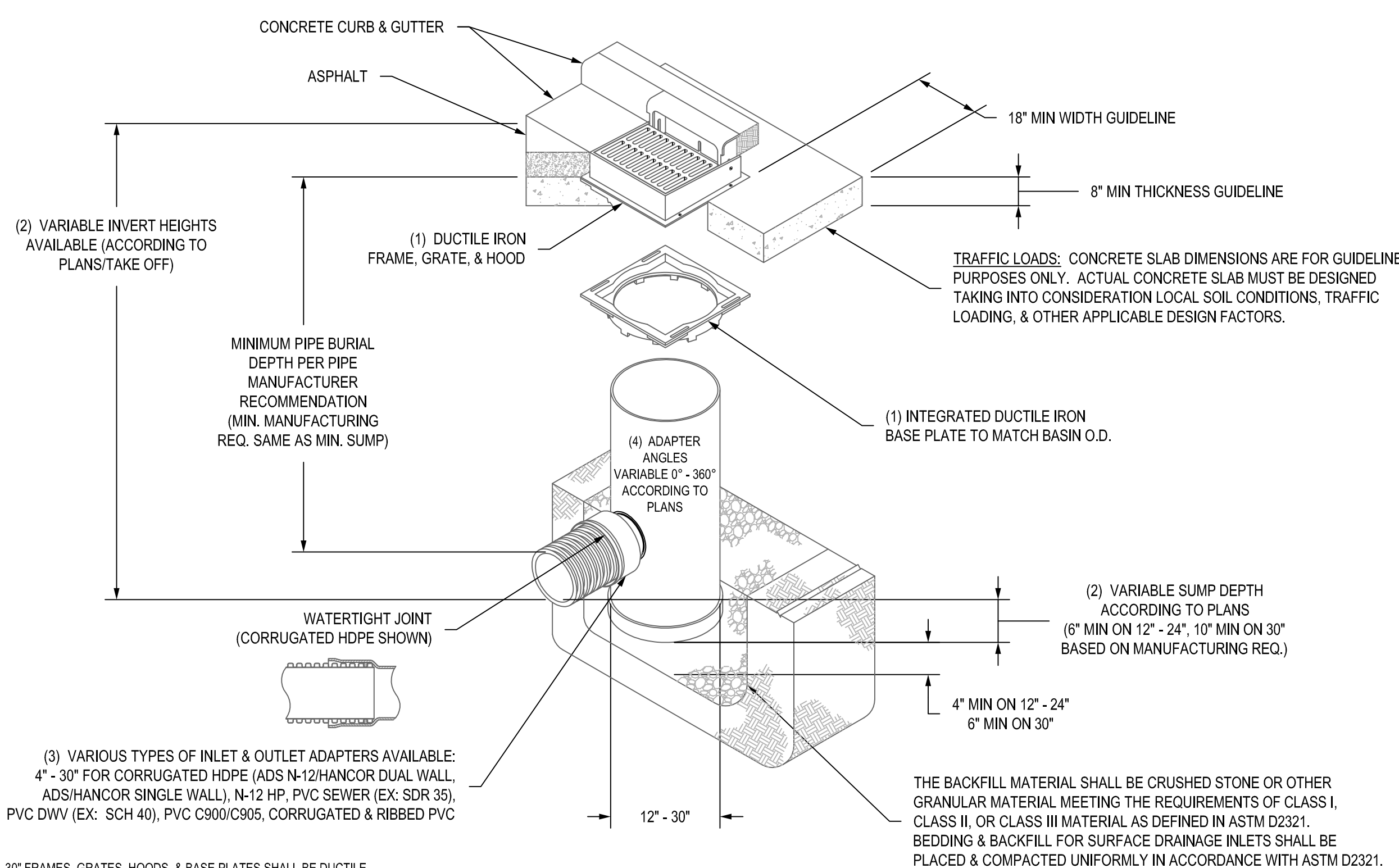
WHEN ARE DRAIN BASINS USED?

- 2808AG __X
- 2810AG __X
- 2812AG __X
- 2815AG __X
- 2818AG __X
- 2824AG __X
- 2830AG __X
- 2836AG __X



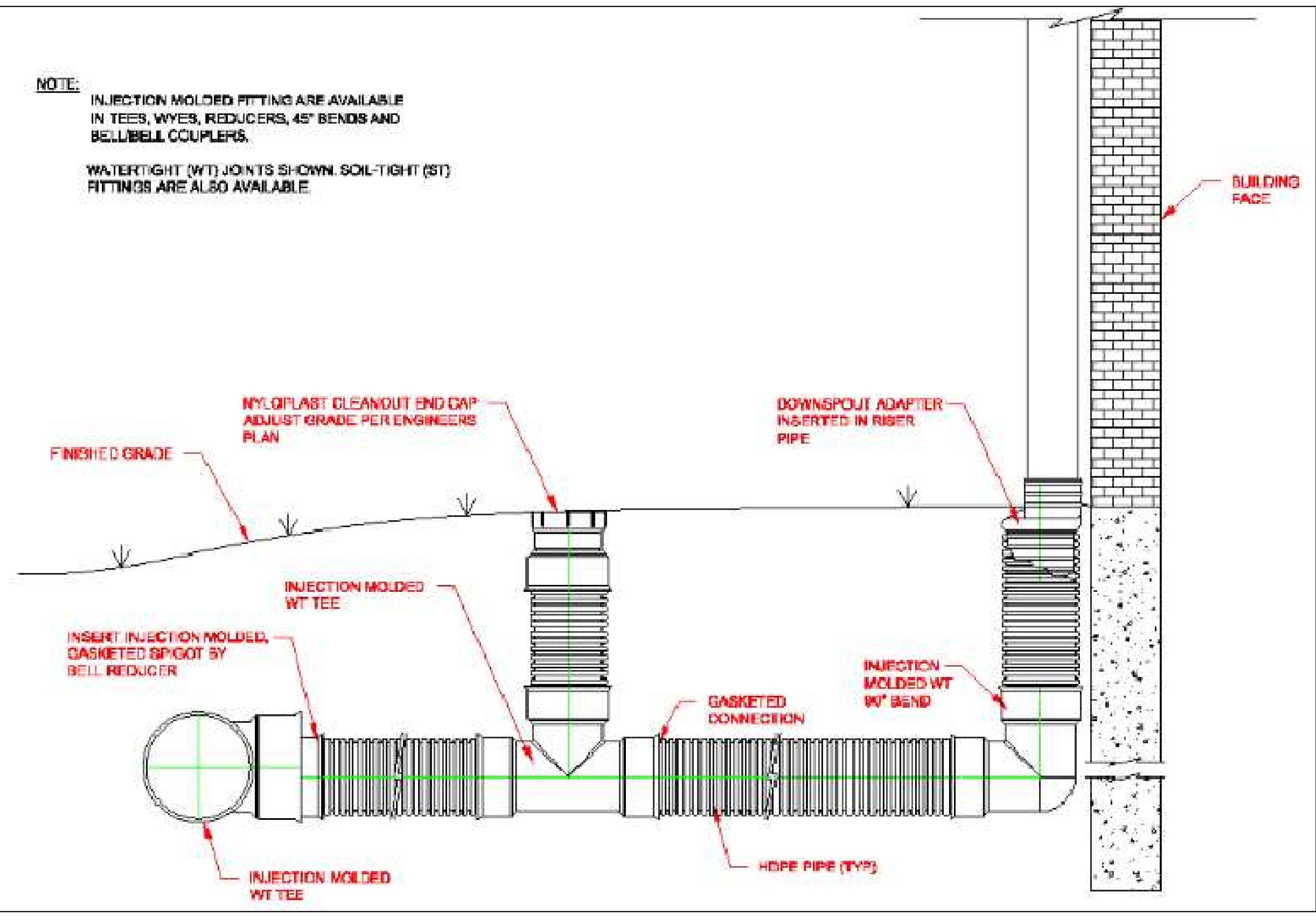
- 1 - STRUCTURES & ADAPTERS AVAILABLE IN SIZES 8" - 36"
- 2 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°, TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012
- 3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065
- 4 - REDUCING CONES DOWN TO 30" DIAMETER WILL BE REQUIRED FOR 36" DRAIN BASINS.

NYLOPLAST 2 FT X 2FT CURB INLET STRUCTURE: 30 __ AGS __ X

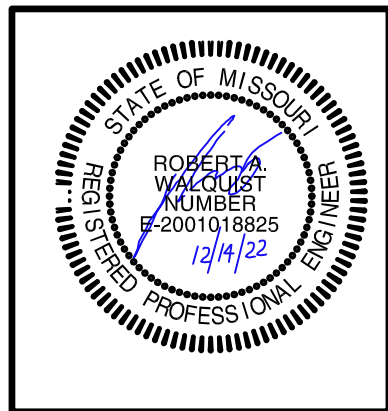
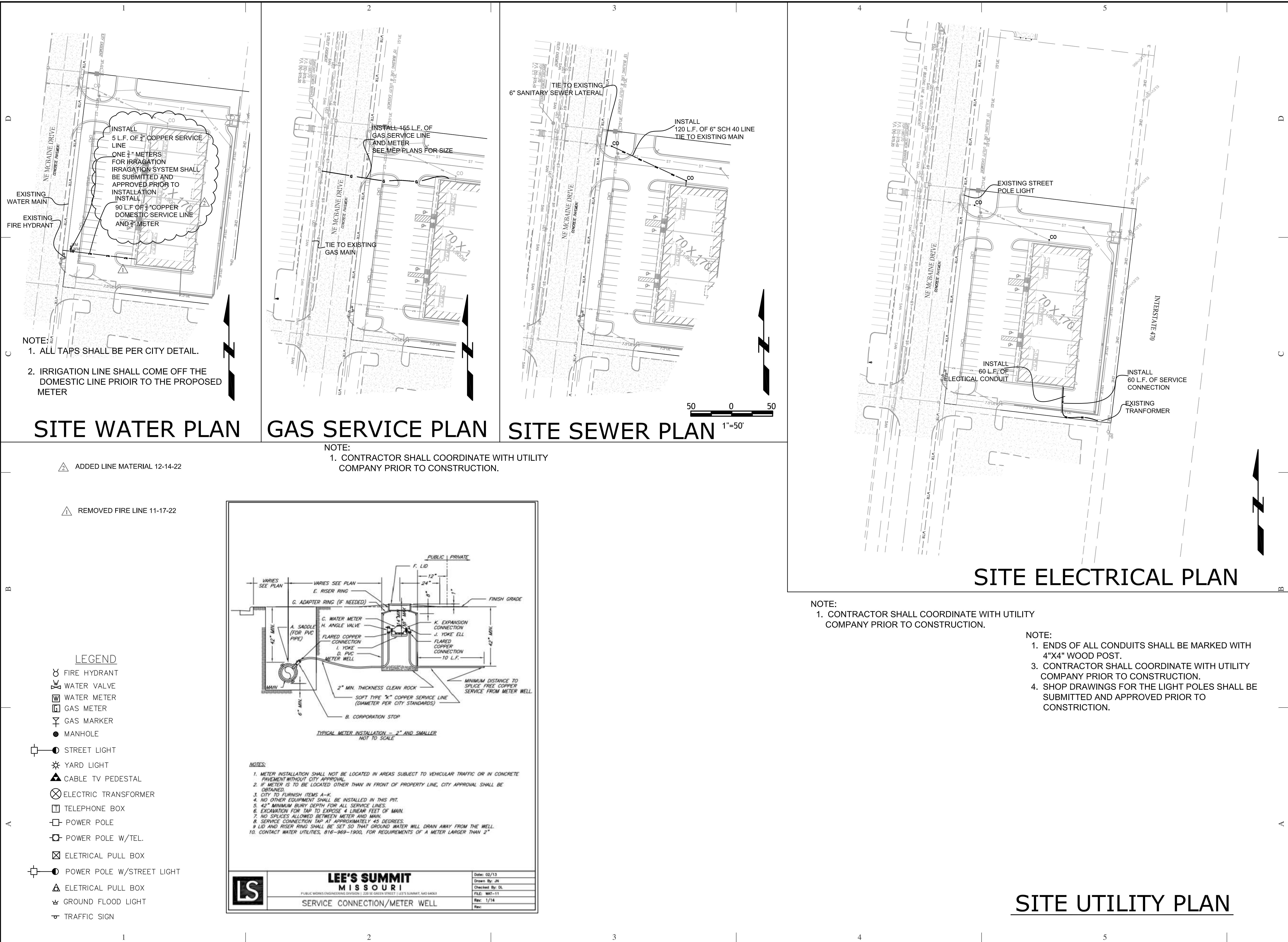


- 1 - 12" - 30" FRAMES, GRATES, HOODS, & BASE PLATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
- 2 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS.
- 3 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL, N-12 HP, & PVC SEWER (4" - 24").
- 4 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°, TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
- 5 - ALL CURB INLET GRATE OPTIONS (STANDARD & DIAGONAL) SHALL MEET H-20 LOAD RATING

NOTE:
INJECTION MOLDED FITTINGS ARE AVAILABLE IN TEES, WYES, REDUCERS, 45° BENDS AND BELLBELL COUPLERS.
WATERTIGHT (WT) JOINTS SHOWN. SOIL-TIGHT (ST) FITTINGS ARE ALSO AVAILABLE



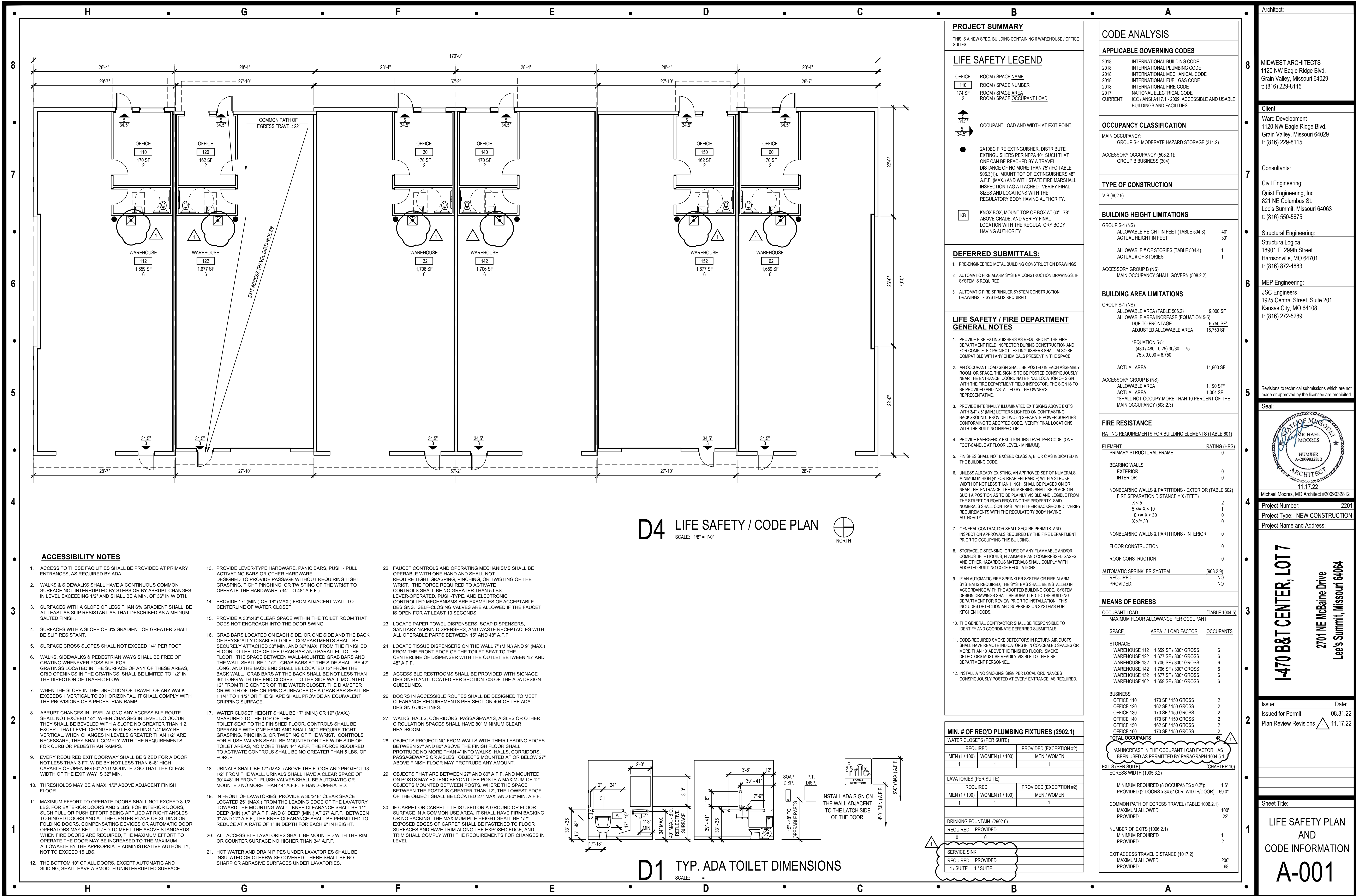
STORM LINE DETAILS



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PROJECT SUMMARY

THIS IS A NEW SPEC. BUILDING CONTAINING 6 WAREHOUSE / OFFICE SUITES.

LIFE SAFETY LEGEND

OFFICE 110 174 SF 2
ROOM / SPACE NAME
ROOM / SPACE NUMBER
ROOM / SPACE AREA
ROOM / SPACE OCCUPANT LOAD

34.5' 5
34.5'

OCCUPANT LOAD AND WIDTH AT EXIT POINT

2A10BC FIRE EXTINGUISHER, DISTRIBUTE EXTINGUISHERS PER NFPA 101 SUCH THAT ONE CAN BE REACHED BY A TRAVEL DISTANCE OF NO MORE THAN 75' (IFC TABLE 506.3(1)). MOUNT TOP OF EXTINGUISHERS 48" A.F.F. (MAX.) AND WITH STATE FIRE MARSHALL INSPECTION TAG ATTACHED. VERIFY FINAL SIZES AND LOCATIONS WITH THE REGULATORY BODY HAVING AUTHORITY.

KB KNOX BOX, MOUNT TOP OF BOX AT 60" - 78" ABOVE GRADE, AND VERIFY FINAL LOCATION WITH THE REGULATORY BODY HAVING AUTHORITY

DEFERRED SUBMITTALS:

- PRE-ENGINEERED METAL BUILDING CONSTRUCTION DRAWINGS
- AUTOMATIC FIRE ALARM SYSTEM CONSTRUCTION DRAWINGS, IF SYSTEM IS REQUIRED
- AUTOMATIC FIRE SPRINKLER SYSTEM CONSTRUCTION DRAWINGS, IF SYSTEM IS REQUIRED

LIFE SAFETY / FIRE DEPARTMENT GENERAL NOTES

- PROVIDE FIRE EXTINGUISHERS AS REQUIRED BY THE FIRE DEPARTMENT FIELD INSPECTOR DURING CONSTRUCTION AND FOR COMPLETED PROJECT. EXTINGUISHERS SHALL ALSO BE COMPATIBLE WITH ANY CHEMICALS PRESENT IN THE SPACE.
- AN OCCUPANT LOAD SIGN SHALL BE POSTED IN EACH ASSEMBLY ROOM OR SPACE. THE SIGN IS TO BE POSTED CONSPICUOUSLY NEAR THE ENTRANCE. COORDINATE FINAL LOCATION OF SIGN WITH THE FIRE DEPARTMENT FIELD INSPECTOR. THE SIGN IS TO BE PROVIDED AND INSTALLED BY THE OWNER'S REPRESENTATIVE.
- PROVIDE INTERNALLY ILLUMINATED EXIT SIGNS ABOVE EXITS WITH 3/4" x 6" (MIN.) LETTERS LIGHTED ON CONTRASTING BACKGROUND. PROVIDE TWO (2) SEPARATE POWER SUPPLIES CONFORMING TO ADOPTED CODE. VERIFY FINAL LOCATIONS WITH THE BUILDING INSPECTOR.
- PROVIDE EMERGENCY EXIT LIGHTING LEVEL PER CODE (ONE FOOT-CANDLE AT FLOOR LEVEL - MINIMUM).
- FINISHES SHALL NOT EXCEED CLASS A, B, OR C AS INDICATED IN THE BUILDING CODE.
- UNLESS ALREADY EXISTING, AN APPROVED SET OF NUMERALS, MINIMUM 6" HIGH (4" FOR REAR ENTRANCE) WITH A STROKE WIDTH OF NOT LESS THAN 1/8", SHALL BE PLACED ON OR NEAR THE ENTRANCE. THE NUMBERING SHALL BE PLACED IN SUCH A POSITION AS TO BE PLAINLY VISIBLE AND READABLE FROM THE STREET OR ROAD FRONTING THE PROPERTY. SAID NUMERALS SHALL CONTRAST WITH THEIR BACKGROUND. VERIFY REQUIREMENTS WITH THE REGULATORY BODY HAVING AUTHORITY.
- GENERAL CONTRACTOR SHALL SECURE PERMITS AND INSPECTION APPROVALS REQUIRED BY THE FIRE DEPARTMENT PRIOR TO OCCUPANCY OF THIS BUILDING.
- STORAGE, DISPENSING, OR USE OF ANY FLAMMABLE AND/OR COMBUSTIBLE LIQUIDS, FLAMMABLE AND COMPRESSED GASES AND OTHER HAZARDOUS MATERIALS SHALL COMPLY WITH ADOPTED BUILDING CODE REGULATIONS.
- IF AN AUTOMATIC FIRE SPRINKLER SYSTEM OR FIRE ALARM SYSTEM IS REQUIRED, THE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE ADOPTED BUILDING CODE. SYSTEM DESIGN DRAWINGS SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT FOR REVIEW PRIOR TO INSTALLATION. THIS INCLUDES DETECTION AND SUPPRESSION SYSTEMS FOR KITCHEN HOODS.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO IDENTIFY AND COORDINATE DEFERRED SUBMITTALS.
- CODE-REQUIRED SMOKE DETECTORS IN RETURN AIR DUCTS SHALL HAVE REMOTE INDICATORS IF IN CONCEALED SPACES OR MORE THAN 10' ABOVE THE FINISHED FLOOR. SMOKE DETECTORS MUST BE READILY VISIBLE TO THE FIRE DEPARTMENT PERSONNEL.
- INSTALL A NO SMOKING SIGN PER LOCAL ORDINANCES CONSPICUOUSLY POSTED AT EVERY ENTRANCE, AS REQUIRED.

MIN. # OF REQ'D PLUMBING FIXTURES (2902.1)

WATER CLOSETS (PER SUITE)		PROVIDED (EXCEPTION #2)	
MEN (1 / 100)	WOMEN (1 / 100)	MEN / WOMEN	
1	1	1	

LAVATORIES (PER SUITE)		PROVIDED (EXCEPTION #2)	
MEN (1 / 100)	WOMEN (1 / 100)	MEN / WOMEN	
1	1	1	

DRINKING FOUNTAIN (2902.6)	
REQUIRED	PROVIDED
0	0

SERVICE SINK	
REQUIRED	PROVIDED
1 / SUITE	1 / SUITE

CODE ANALYSIS

APPLICABLE GOVERNING CODES

2018	INTERNATIONAL BUILDING CODE
2018	INTERNATIONAL PLUMBING CODE
2018	INTERNATIONAL MECHANICAL CODE
2018	INTERNATIONAL FUEL GAS CODE
2018	INTERNATIONAL FIRE CODE
2017	NATIONAL ELECTRICAL CODE
CURRENT	ICC / ANSI A117.1 - 2009, ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES

OCCUPANCY CLASSIFICATION

MAIN OCCUPANCY: GROUP S-1 MODERATE HAZARD STORAGE (311.2)

ACCESSORY OCCUPANCY (508.2.1): GROUP B BUSINESS (304)

TYPE OF CONSTRUCTION

V-B (602.5)

BUILDING HEIGHT LIMITATIONS

GROUP S-1 (NS)

ALLOWABLE HEIGHT IN FEET (TABLE 504.3)	40'
ACTUAL HEIGHT IN FEET	30'

ALLOWABLE # OF STORIES (TABLE 504.4)

1

ACTUAL # OF STORIES

1

ACCESSORY GROUP B (NS)

MAIN OCCUPANCY SHALL GOVERN (508.2.2)

BUILDING AREA LIMITATIONS

GROUP S-1 (NS)

ALLOWABLE AREA (TABLE 506.2)	9,000 SF
ALLOWABLE AREA INCREASE (EQUATION 5-5)	
DUE TO FRONTAGE	6,750 SF*
ADJUSTED ALLOWABLE AREA	15,750 SF

*EQUATION 5-5:
(480 / 480 - 0.25) 30/30 = .75
.75 x 9,000 = 6,750

ACTUAL AREA

11,900 SF

ACCESSORY GROUP B (NS)

ALLOWABLE AREA	1,190 SF*
ACTUAL AREA	1,004 SF

*SHALL NOT OCCUPY MORE THAN 10 PERCENT OF THE MAIN OCCUPANCY (508.2.3)

FIRE RESISTANCE

RATING REQUIREMENTS FOR BUILDING ELEMENTS (TABLE 601)

ELEMENT	RATING (HRS)	
PRIMARY STRUCTURAL FRAME	0	
BEARING WALLS		
EXTERIOR	0	
INTERIOR	0	
NONBEARING WALLS & PARTITIONS - EXTERIOR (TABLE 602)		
FIRE SEPARATION DISTANCE = X (FEET)		
X < 5	2	
5 <= X < 10	1	
10 <= X < 30	0	
X >= 30	0	
NONBEARING WALLS & PARTITIONS - INTERIOR	0	
FLOOR CONSTRUCTION	0	
ROOF CONSTRUCTION	0	
AUTOMATIC SPRINKLER SYSTEM (903.2.9)		
REQUIRED:	NO	
PROVIDED:	NO	
SPACE	AREA / LOAD FACTOR	OCCUPANTS
STORAGE		
WAREHOUSE 112	1,659 SF / 300' GROSS	6
WAREHOUSE 122	1,677 SF / 300' GROSS	6
WAREHOUSE 132	1,706 SF / 300' GROSS	6
WAREHOUSE 142	1,706 SF / 300' GROSS	6
WAREHOUSE 152	1,677 SF / 300' GROSS	6
WAREHOUSE 162	1,659 SF / 300' GROSS	6
BUSINESS		
OFFICE 110	170 SF / 150 GROSS	2
OFFICE 120	162 SF / 150 GROSS	2
OFFICE 130	170 SF / 150 GROSS	2
OFFICE 140	170 SF / 150 GROSS	2
OFFICE 150	162 SF / 150 GROSS	2
OFFICE 160	170 SF / 150 GROSS	2
MINIMUM REQUIRED (8 OCCUPANTS x 0.2')	16"	
PROVIDED (2 DOORS x 34.5' CLR. WIDTH/DOOR):	69.0"	
MAXIMUM ALLOWED	100'	
PROVIDED	22'	
MINIMUM REQUIRED	1	
PROVIDED	2	
MAXIMUM ALLOWED	200'	
PROVIDED	68'	

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Seal:

Michael Moore, MO Architect #2009032812

Project Number: 2201

Project Type: NEW CONSTRUCTION

Project Name and Address:

I-470 B&T CENTER, LOT 7

2701 NE McBaine Drive
Lee's Summit, Missouri 64064

Issue: Date:

Issued for Permit: 08.31.22

Plan Review Revisions: 11.17.22

Sheet Title:

LIFE SAFETY PLAN
AND
CODE INFORMATION

A-001

HARDWARE SETS

- 1 1/2 PAIR BUTT HINGES, 1" PUSH / PULL SET, KEYED CYLINDER LOCK, SURFACE-MOUNTED CLOSER, ALUMINUM THRESHOLD, SWEEP AND PILE WEATHERSEAL SET
- 1 1/2 PAIR BUTT HINGES, LEVER-HANDLE CLASSROOM FUNCTION LOCKSET, WALL STOP
- 1 1/2 PAIR BUTT HINGES, LEVER-HANDLE PRIVACY FUNCTION LOCKSET, WALL STOP
- 1 1/2 PAIR BUTT HINGES, LEVER-HANDLE ENTRY FUNCTION LOCKSET, SURFACE-MOUNTED CLOSER, ALUMINUM THRESHOLD, SWEEP AND WEATHERSEAL SET
- BY MANUFACTURER

DOOR NOTES

DOORS SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:

- ALL DOOR HANDLES TO BE LEVER TYPE.
- EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
- PROVIDE DOOR STOPS OF APPROPRIATE TYPE FOR ALL INTERIOR DOORS, MATCH ADJACENT HARDWARE FINISH.
- DOOR CLOSERS SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 90 DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO AN OPEN POSITION OF 12 DEGREES WILL BE 5 SECONDS MINIMUM.
- MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 8 1/2 POUNDS FOR EXTERIOR DOORS AND 5 POUNDS FOR INTERIOR DOORS. SUCH PULL OR PUSH EFFORT BEING APPLIED AT RIGHT ANGLES TO HINGED DOORS AND AT THE CENTER PLANE OF SLIDING OR FOLDING DOORS. COMPENSATING DEVICES OR AUTOMATIC DOOR OPERATORS MAY BE UTILIZED TO MEET THE ABOVE STANDARDS. WHEN FIRE DOORS ARE REQUIRED, THE MAXIMUM EFFORT TO OPERATE THE DOOR MAY BE INCREASED TO THE MAXIMUM ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY, NOT TO EXCEED 15 POUNDS.
- THE BOTTOM 10" OF ALL DOORS EXCEPT AUTOMATIC DOORS, POWER ASSISTED DOORS, AND SLIDING DOORS SHALL HAVE A SMOOTH, UNINTERRUPTED SURFACE TO ALLOW THE DOOR TO BE OPENED BY A WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION.
- EXIT DOORS IN ASSEMBLY AND EDUCATION OCCUPANCIES SERVING AN OCCUPANT LOAD OF 50 OR MORE SHALL BE EQUIPPED WITH PANIC HARDWARE, WITH THE EXCEPTION BELOW (NOTE 7).
- MAIN EXIT DOORS HAVING KEY-OPERATED LOCKING DEVICES ON THE EGRESS SIDE IN GROUP A OCCUPANCIES (SERVING 300 OCCUPANCIES OR LESS), GROUPS B, F, M, S, AND PLACES OF RELIGIOUS WORSHIP SHALL HAVE DURABLE SIGNAGE ABOVE THE DOOR IN 1" HIGH LETTERS ON CONTRASTING BACKGROUND STATING: "THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED". LOCKING DEVICES SHALL BE READILY DISTINGUISHABLE AS LOCKED.
- LATCHING AND LOCKING DOORS THAT ARE HAND ACTIVATED AND WHICH ARE IN THE PATH OF TRAVEL SHALL BE OPERABLE WITH A SINGLE EFFORT BY LEVER TYPE HARDWARE, PANIC BARS, PUSH-PULL ACTIVATING BARS OR OTHER HARDWARE DESIGNED TO PROVIDE PASSAGE WITHOUT REQUIRING THE ABILITY TO GRASP THE OPENING HARDWARE. LOCKABLE EXIT DOORS SHALL OPERATE AS ABOVE IN EGRESS DIRECTION.
- HAND-ACTIVATED DOOR OPENING HARDWARE TO BE CENTERED BETWEEN 34" AND 44" ABOVE THE FLOOR.
- EVERY DOORWAY WHICH IS LOCATED WITHIN AN ACCESSIBLE PATH OF TRAVEL SHALL BE OF A SIZE AS TO PERMIT THE INSTALLATION OF A DOOR NOT LESS THAN 3'-0" IN WIDTH AND NOT LESS THAN 6'-8" IN HEIGHT. WHEN INSTALLED, EXIT DOORS SHALL BE CAPABLE OF OPENING SO THAT THE CLEAR WIDTH OF THE EXIT IS NOT LESS THAN 32" MEASURED BETWEEN THE FACE OF THE OPENED DOOR AND THE OPPOSITE STOP.
- MINIMUM MANEUVERING CLEARANCES AT DOORS SHALL BE AS REQUIRED BY THE ICC/ANSI A117.1 ACCESSIBILITY CODE. THE FLOOR OR GROUND AREA WITHIN THE REQUIRED CLEARANCES SHALL BE LEVEL AND CLEAR. THE FLOOR OR LANDING SHALL BE NOT MORE THAN 1/2" LOWER THAN THE THRESHOLD OF THE DOORWAY.
- DOORS SHALL NOT PROJECT MORE THAN 7" INTO THE REQUIRED CORRIDOR WIDTH WHEN FULLY OPENED OR MORE THAN ONE HALF INTO THE REQUIRED WIDTH WHEN IN ANY POSITION.
- WHERE A PAIR OF DOORS IS UTILIZED, AT LEAST ONE OF THE DOORS SHALL PROVIDE A CLEAR, UNOBSTRUCTED OPENING WIDTH OF 32" WITH THE LEAF POSITIONED AT AN ANGLE OF 90° FROM ITS CLOSED POSITION.
- EXIT DOORS SHALL SWING IN THE DIRECTION OF EXIT TRAVEL WHEN SERVING 50 OR MORE OCCUPANTS.

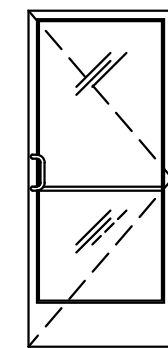
DOOR SCHEDULE

DOOR NO.	DOOR					FRAME			DETAILS - (SEE THIS SHEET)			HARD-WARE	COMMENTS
	TYPE	SIZE	MATERIAL	PUSH FINISH	PULL FINISH	MATERIAL	PUSH FINISH	PULL FINISH	HEAD	JAMB	THRESHOLD		
110A	A	1 3/4" X 3'-0" X 7'-0"	AL	ANOD	ANOD	AL	ANOD	ANOD	-	-	-	①	
110B	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	②	
111	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	③	
112A	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	④	
112B	C	12' X 14'	AL	ANOD	ANOD	-	-	-	-	-	-	⑤	REF. DETAILS OF OVERHEAD DOOR MANUFACTURER - TO BE SELECTED BY OWNER
120A	A	1 3/4" X 3'-0" X 7'-0"	AL	ANOD	ANOD	AL	ANOD	ANOD	-	-	-	①	
120B	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	②	
121	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	③	
122A	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	④	
122B	C	12' X 14'	AL	ANOD	ANOD	-	-	-	-	-	-	⑤	REF. DETAILS OF OVERHEAD DOOR MANUFACTURER - TO BE SELECTED BY OWNER
130A	A	1 3/4" X 3'-0" X 7'-0"	AL	ANOD	ANOD	AL	ANOD	ANOD	-	-	-	①	
130B	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	②	
131	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	③	
132A	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	④	
132B	C	12' X 14'	AL	ANOD	ANOD	-	-	-	-	-	-	⑤	REF. DETAILS OF OVERHEAD DOOR MANUFACTURER - TO BE SELECTED BY OWNER
140A	A	1 3/4" X 3'-0" X 7'-0"	AL	ANOD	ANOD	AL	ANOD	ANOD	-	-	-	①	
140B	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	②	
141	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	③	
142A	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	④	
142B	C	12' X 14'	AL	ANOD	ANOD	-	-	-	-	-	-	⑤	REF. DETAILS OF OVERHEAD DOOR MANUFACTURER - TO BE SELECTED BY OWNER
150A	A	1 3/4" X 3'-0" X 7'-0"	AL	ANOD	ANOD	AL	ANOD	ANOD	-	-	-	①	
150B	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	②	
151	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	③	
152A	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	④	
152B	C	12' X 14'	AL	ANOD	ANOD	-	-	-	-	-	-	⑤	REF. DETAILS OF OVERHEAD DOOR MANUFACTURER - TO BE SELECTED BY OWNER
160A	A	1 3/4" X 3'-0" X 7'-0"	AL	ANOD	ANOD	AL	ANOD	ANOD	-	-	-	①	
160B	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	②	
161	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	③	
162A	B	1 3/4" X 3'-0" X 7'-0"	HM	PNT	PNT	HM	PNT	PNT	-	-	-	④	
162B	C	12' X 14'	AL	ANOD	ANOD	-	-	-	-	-	-	⑤	REF. DETAILS OF OVERHEAD DOOR MANUFACTURER - TO BE SELECTED BY OWNER

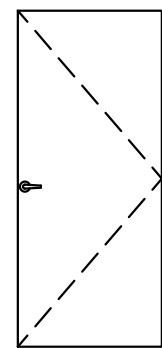
ROOM FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	FLOOR MATERIAL	BASE MATERIAL	WALL FINISH (NORTH)	WALL FINISH (EAST)	WALL FINISH (SOUTH)	WALL FINISH (WEST)	CEILING		COMMENTS
								MATERIAL	FINISH	
110	OFFICE	CONC	RCB	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	-	
111	TOILET	SC	RCB	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	-	
112	WAREHOUSE	CONC	-	-	-	-	-	EXP	-	
120	OFFICE	CONC	RCB	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	-	
121	TOILET	SC	RCB	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	-	
122	WAREHOUSE	CONC	-	-	-	-	-	EXP	-	
130	OFFICE	CONC	RCB	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	-	
131	TOILET	SC	RCB	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	-	
132	WAREHOUSE	CONC	-	-	-	-	-	EXP	-	
140	OFFICE	CONC	RCB	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	-	
141	TOILET	SC	RCB	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	-	
142	WAREHOUSE	CONC	-	-	-	-	-	EXP	-	
150	OFFICE	CONC	RCB	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	-	
151	TOILET	SC	RCB	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	-	
152	WAREHOUSE	CONC	-	-	-	-	-	EXP	-	
160	OFFICE	CONC	RCB	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	-	
161	TOILET	SC	RCB	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	-	
162	WAREHOUSE	CONC	-	-	-	-	-	EXP	-	

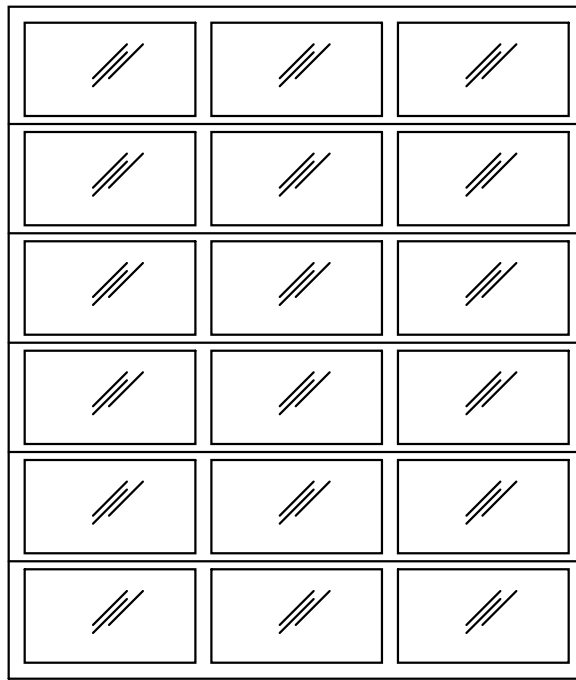
DOOR TYPES



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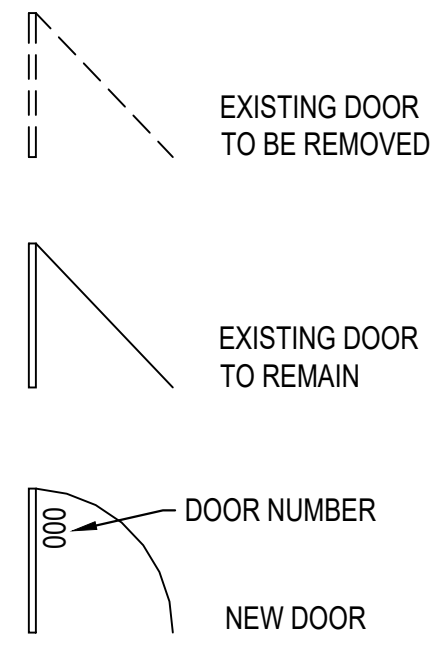


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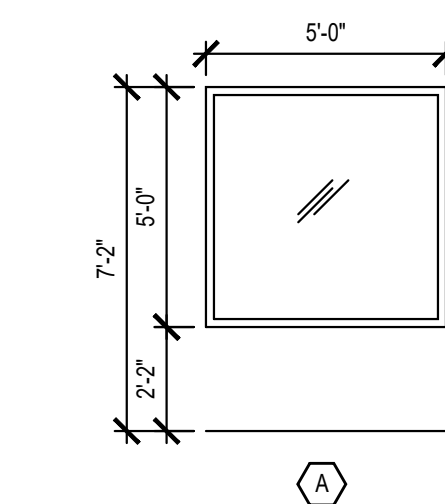


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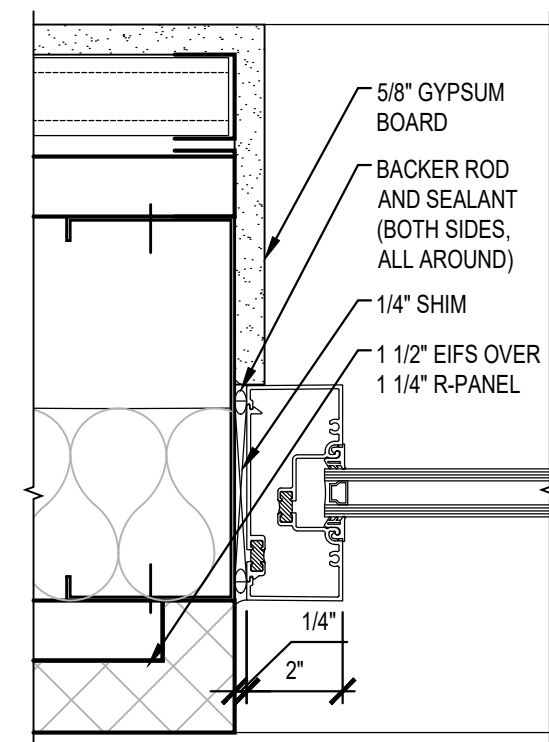
DOOR SYMBOLS



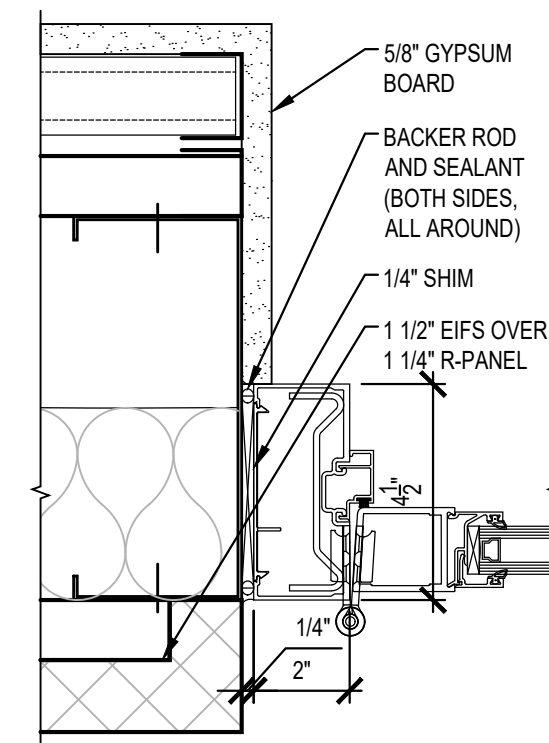
WINDOW LEGEND



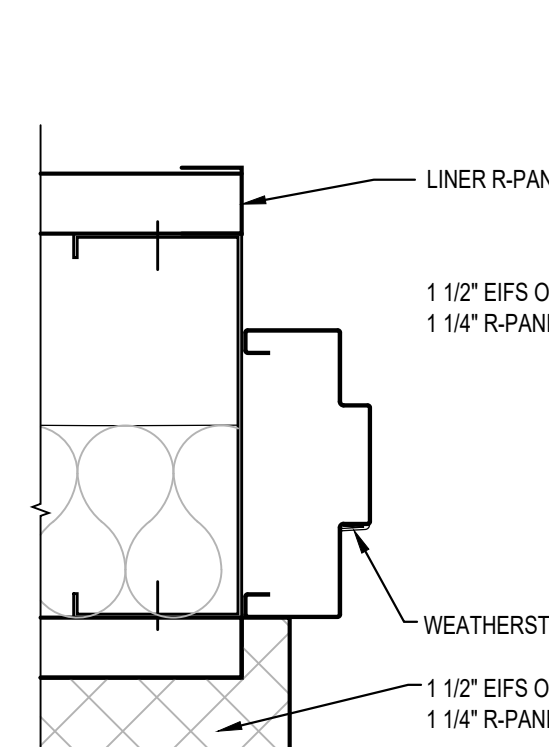
2" x 4 1/2" THERMALLY BROKEN DARK BRONZE ANODIZED ALUMINUM STOREFRONT WITH 1" LOW-E INSULATED CLEAR TEMPERED GLASS, TUBELITE (OR EQUAL)



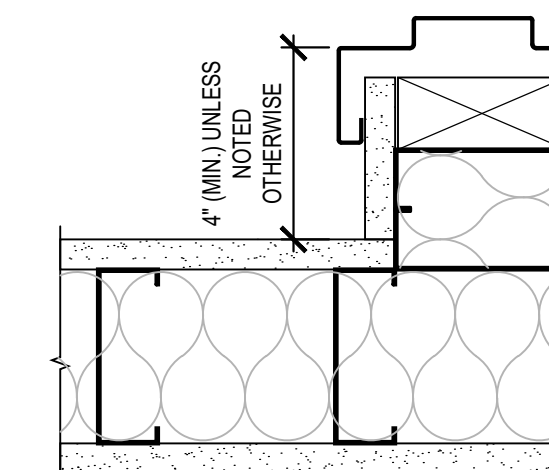
ALUMINUM STOREFRONT JAMB DETAIL



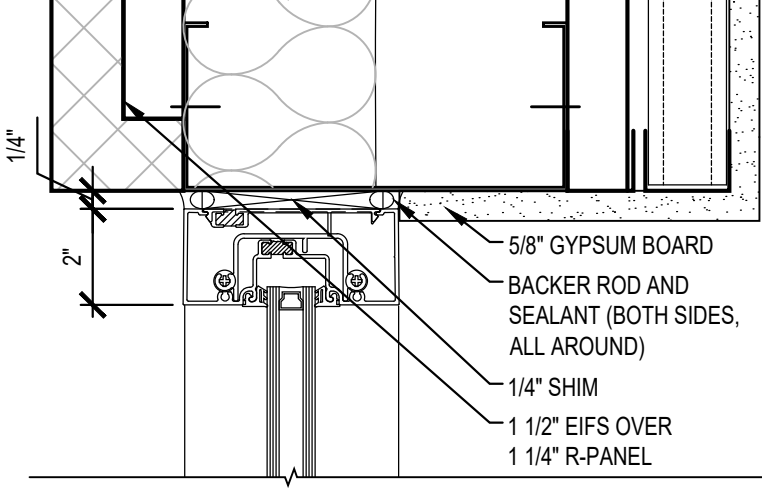
ALUMINUM DOOR FRAME JAMB DETAIL



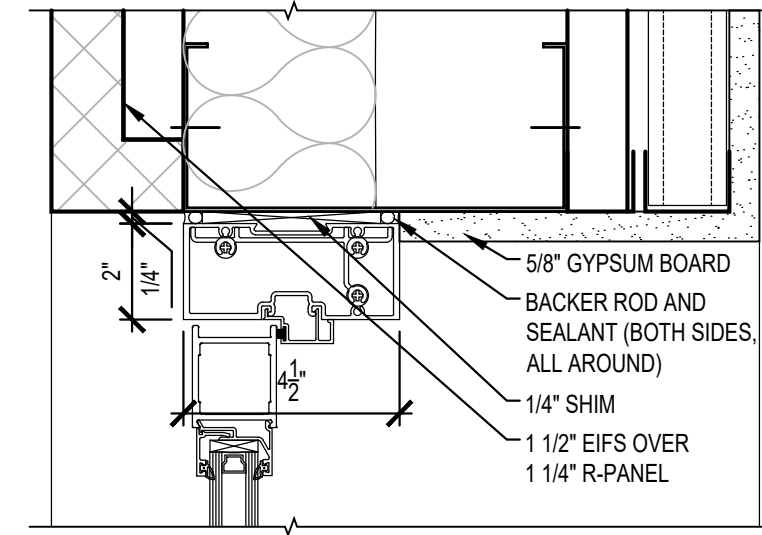
EXTERIOR HOLLOW METAL DOOR FRAME JAMB DETAIL



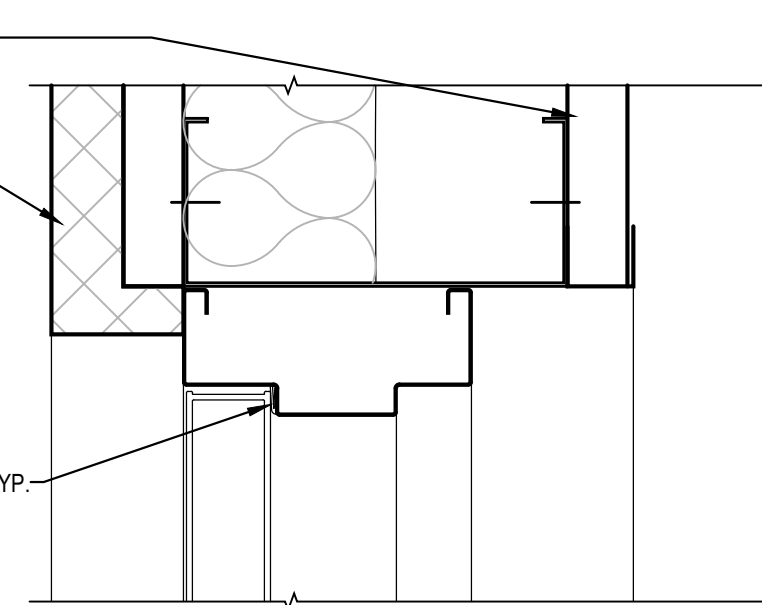
HOLLOW METAL DOOR FRAME JAMB DETAIL



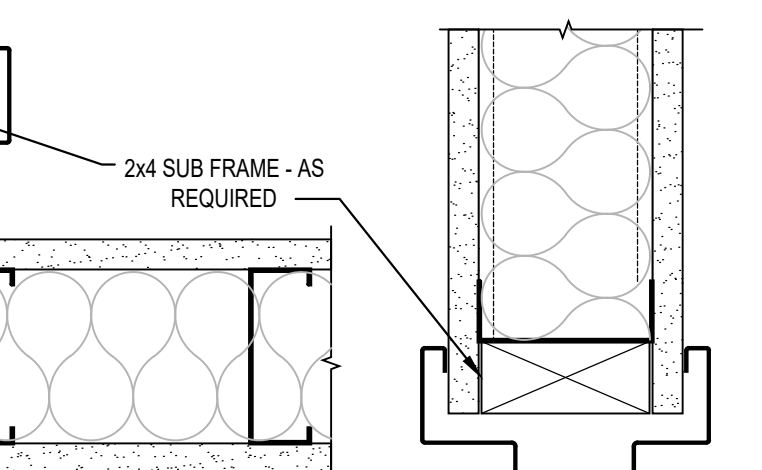
ALUMINUM STOREFRONT HEAD / SILL DETAILS



ALUMINUM DOOR FRAME HEAD / THRESHOLD DETAILS



EXTERIOR HOLLOW METAL DOOR FRAME HEAD DETAIL



HOLLOW METAL DOOR FRAME HEAD DETAIL

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MEP Engineering:

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Seal:



Michael Moore, MO Architect #2009032812

Project Number: 2201

Project Type: NEW CONSTRUCTION

Project Name and Address:

I-470 B&T CENTER, LOT 7

2701 NE McBaine Drive
Lee's Summit, Missouri 64064

Issue:

Date:

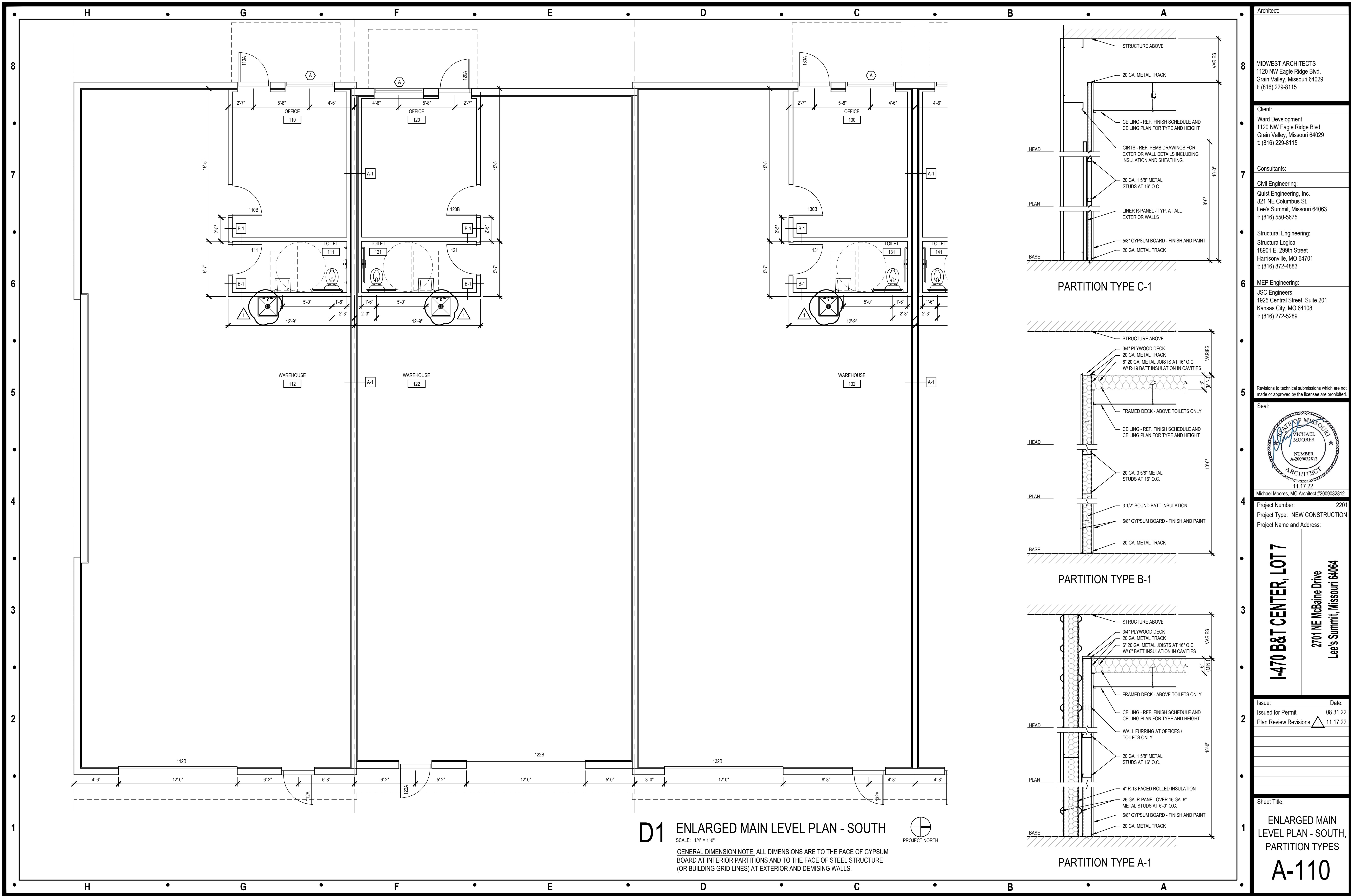
Issued for Permit

08.31.22

Sheet Title:

DOOR, WINDOW, &
FINISH SCHEDULES
AND TYP. DETAILS

A-002



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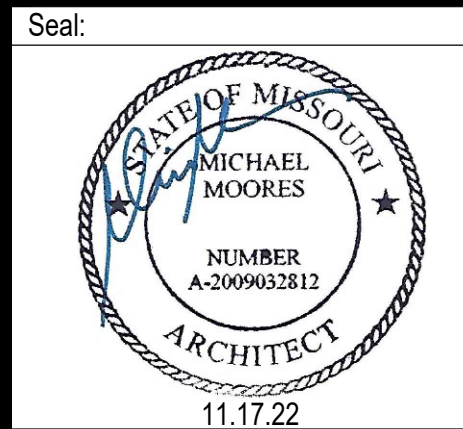
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Issue: 08.31.22

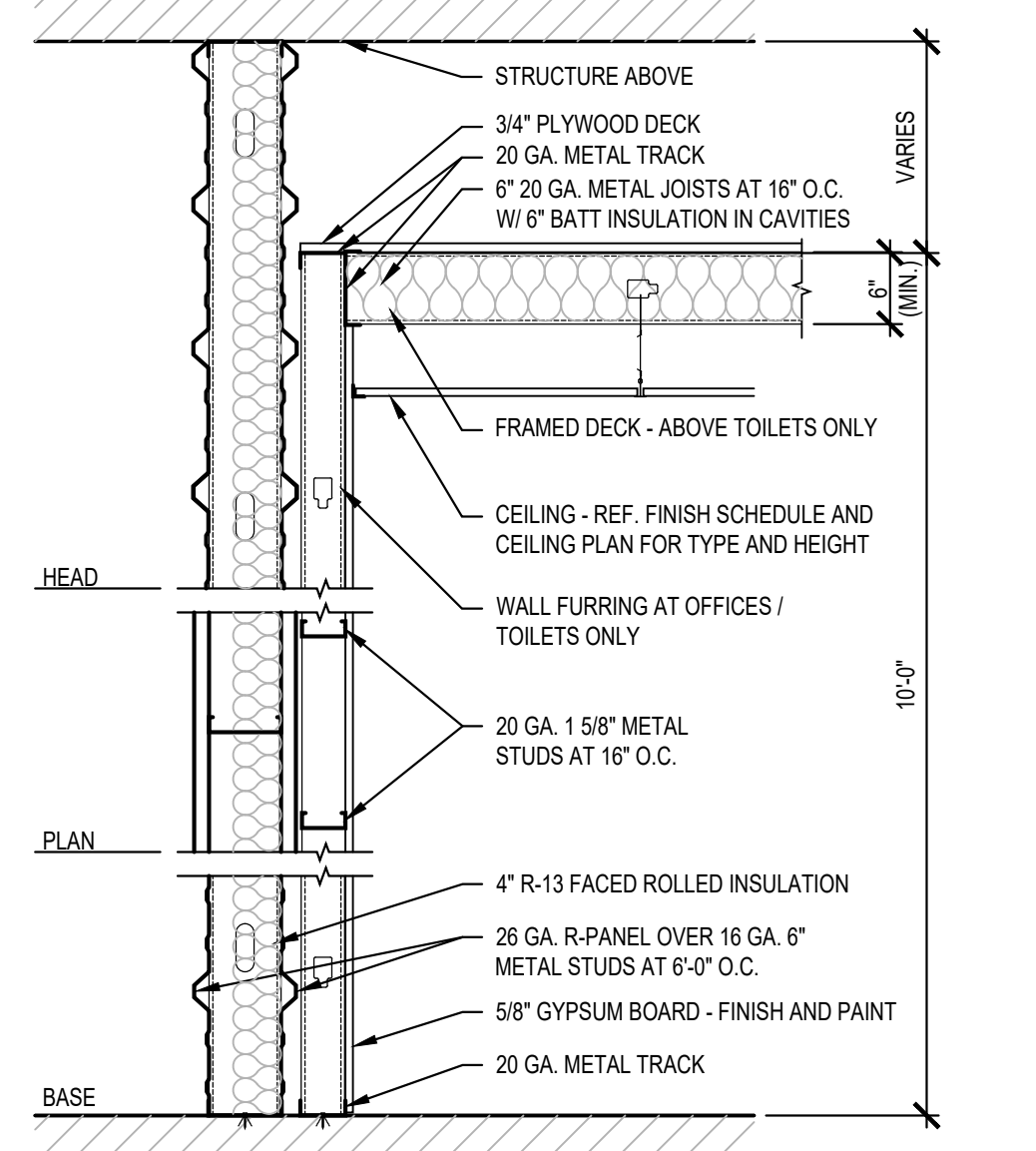
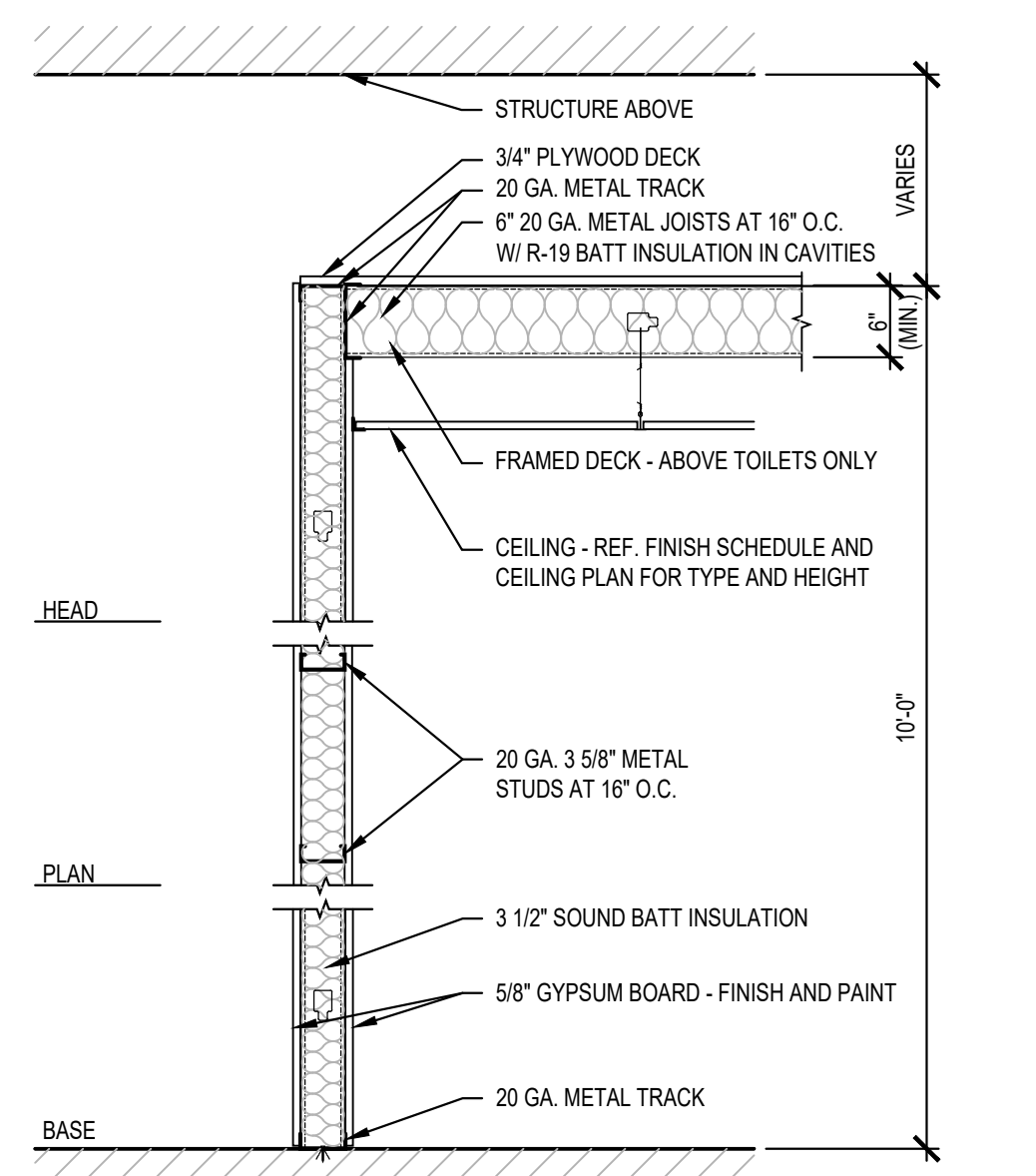
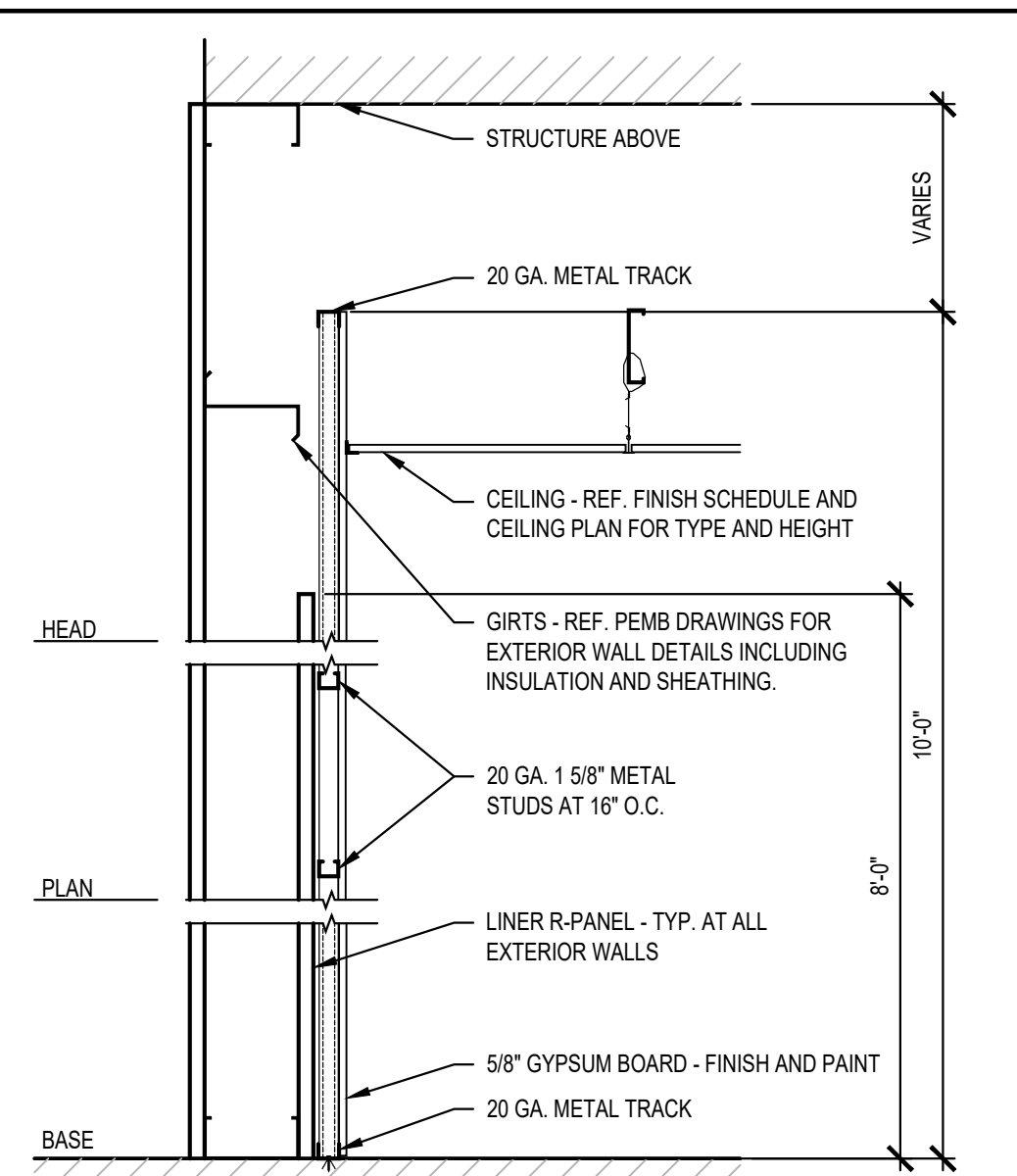
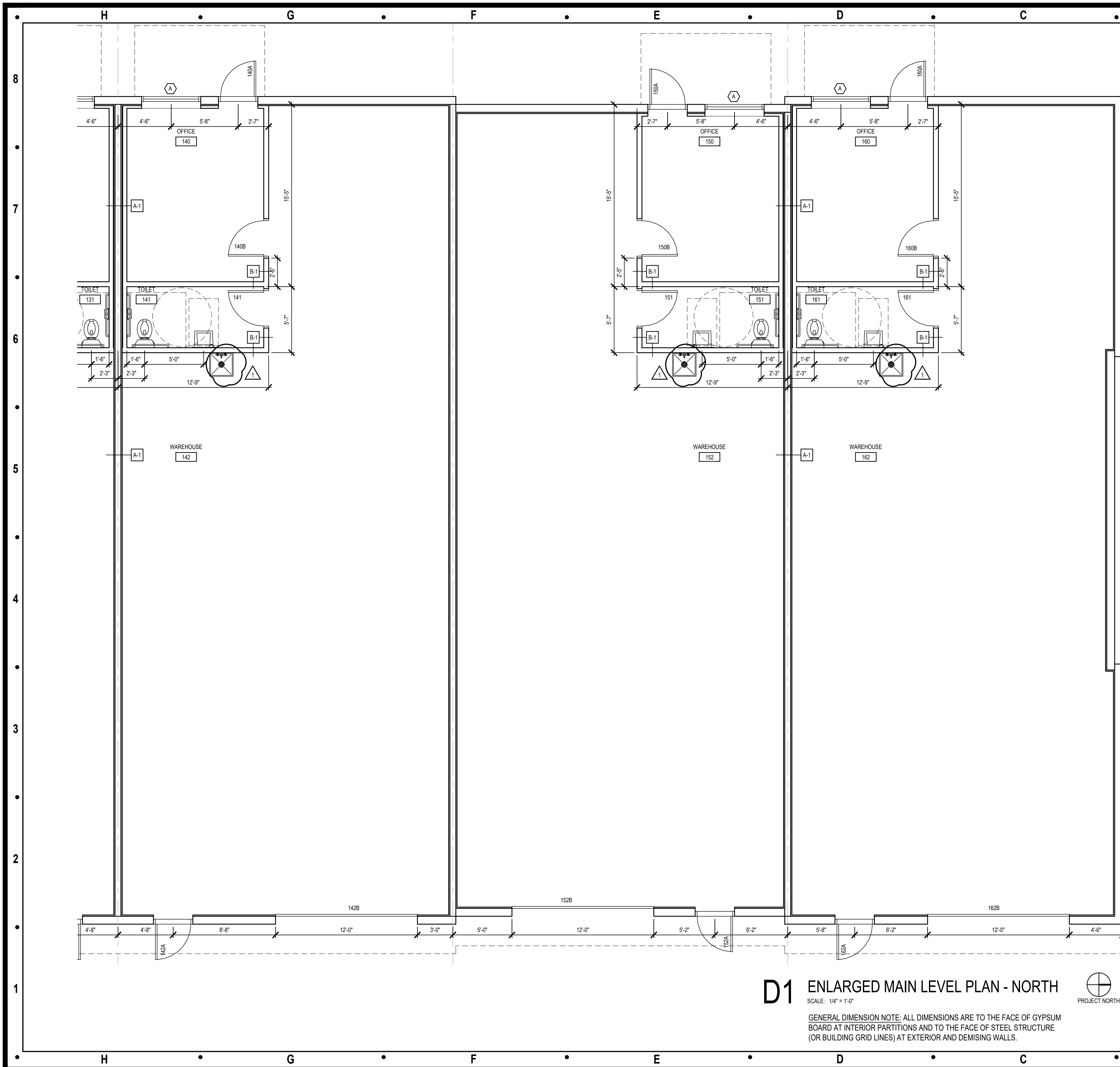
Issued for Permit: 08.31.22

Plan Review Revisions: 1 11.17.22

Sheet Title:

ENLARGED MAIN
LEVEL PLAN - SOUTH,
PARTITION TYPES

A-110



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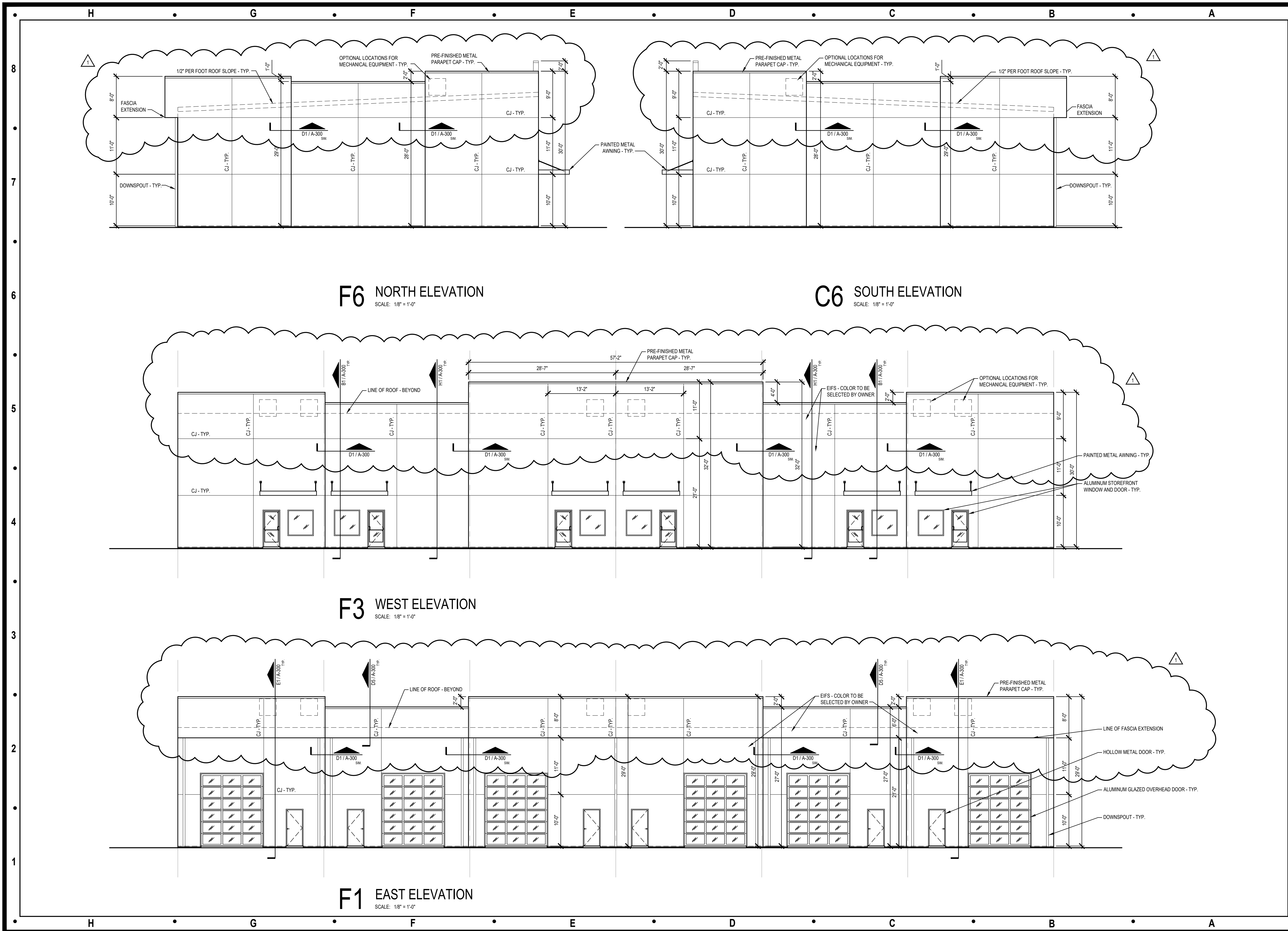
Seal:

Michael Moore, MO Architect #2009932812

Project Number: 2201
Project Type: NEW CONSTRUCTION
Project Name and Address:
I-470 B&T CENTER, LOT 7
2701 NE McBaine Drive
Lee's Summit, Missouri 64064

Issue: 08.31.22
Issued for Permit: 08.31.22
Plan Review Revisions: 1 11.17.22

Sheet Title:
ENLARGED MAIN LEVEL PLAN - NORTH, PARTITION TYPES
A-111



Architect:

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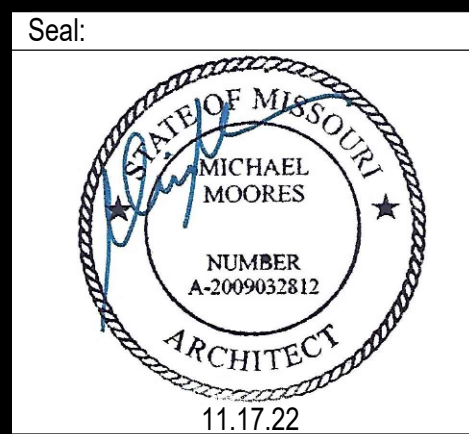
Client:
Ward Development
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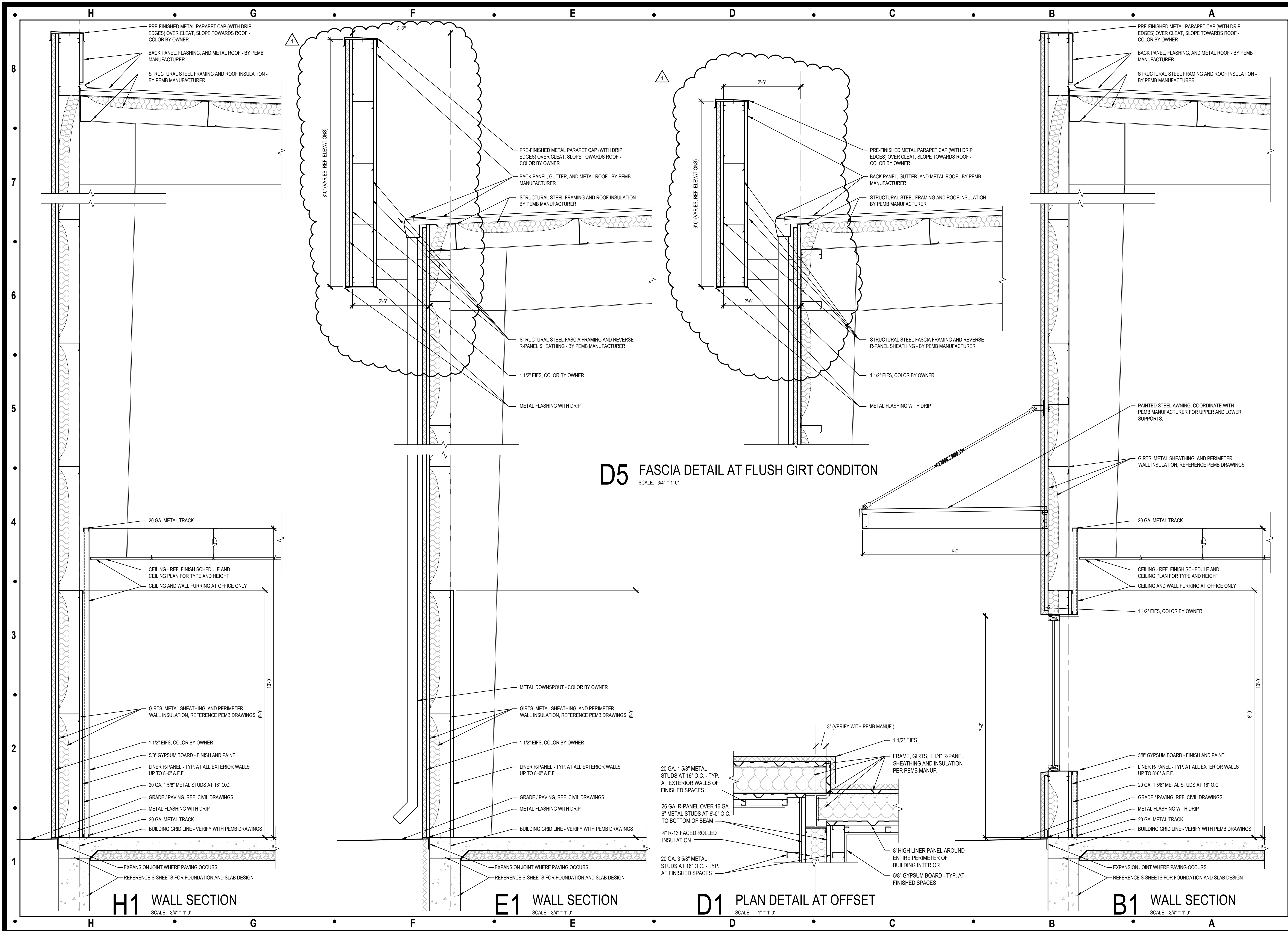
Michael Moore, MO Architect #2009032812
Project Number: 2201
Project Type: NEW CONSTRUCTION
Project Name and Address:

I-470 B&T CENTER, LOT 7
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Lee's Summit, Missouri 64064

Issue: 08.31.22
Date:
Issued for Permit: 08.31.22
Plan Review Revisions: 11.17.22

Sheet Title:

EXTERIOR ELEVATIONS
A-200



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Seal:

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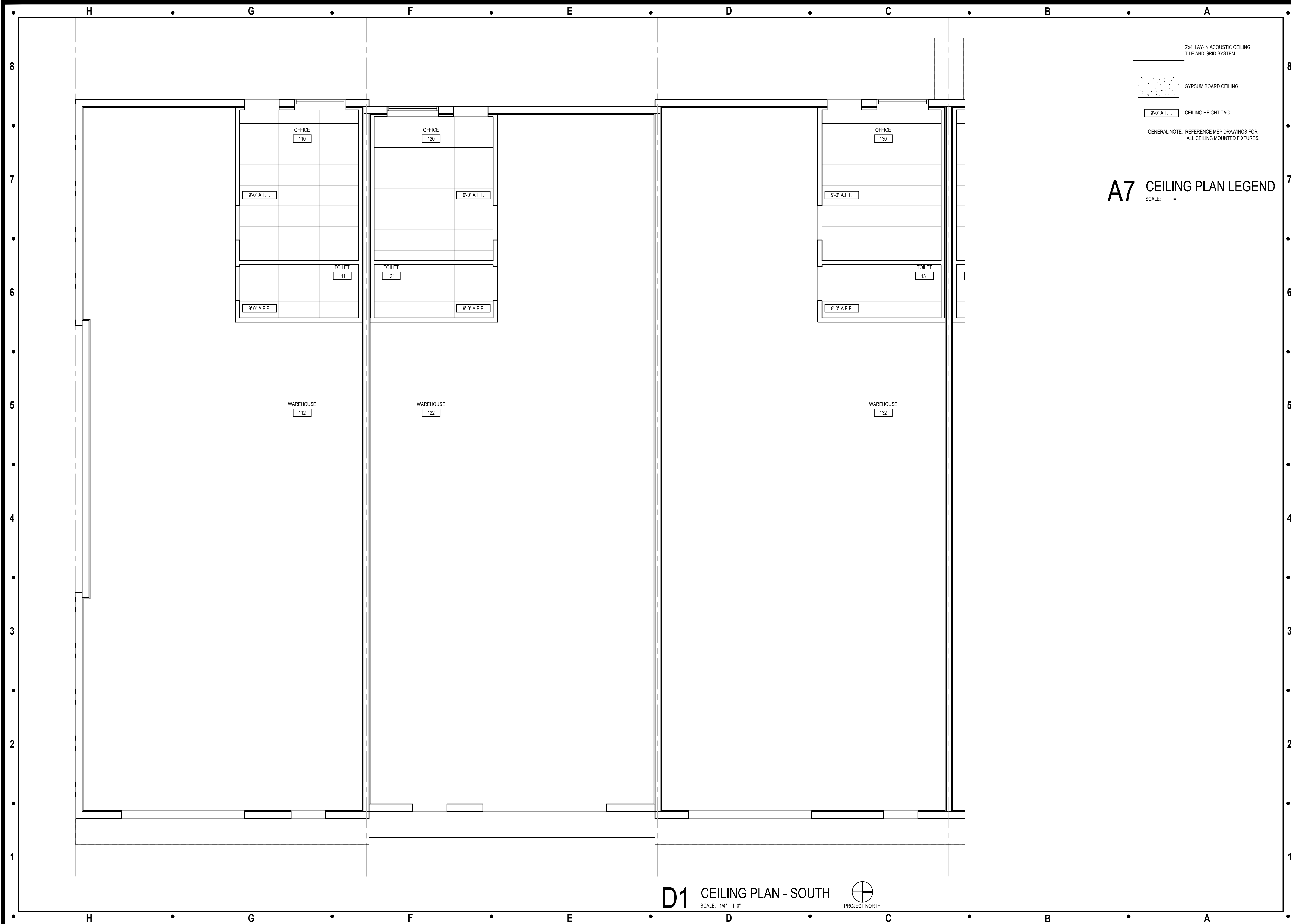
Project Number: 2201
Project Type: NEW CONSTRUCTION
Project Name and Address:

I-470 B&T CENTER, LOT 7
2701 NE McBaine Drive
Lee's Summit, Missouri 64064

Issue: 08.31.22
Issued for Permit: 08.31.22
Plan Review Revisions: 11.17.22

Sheet Title:

WALL SECTIONS AND PLAN DETAIL
A-300



Architect:

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Seal:

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Project Number: 2201

Project Type: NEW CONSTRUCTION

Project Name and Address:

I-470 B&T CENTER, LOT 7

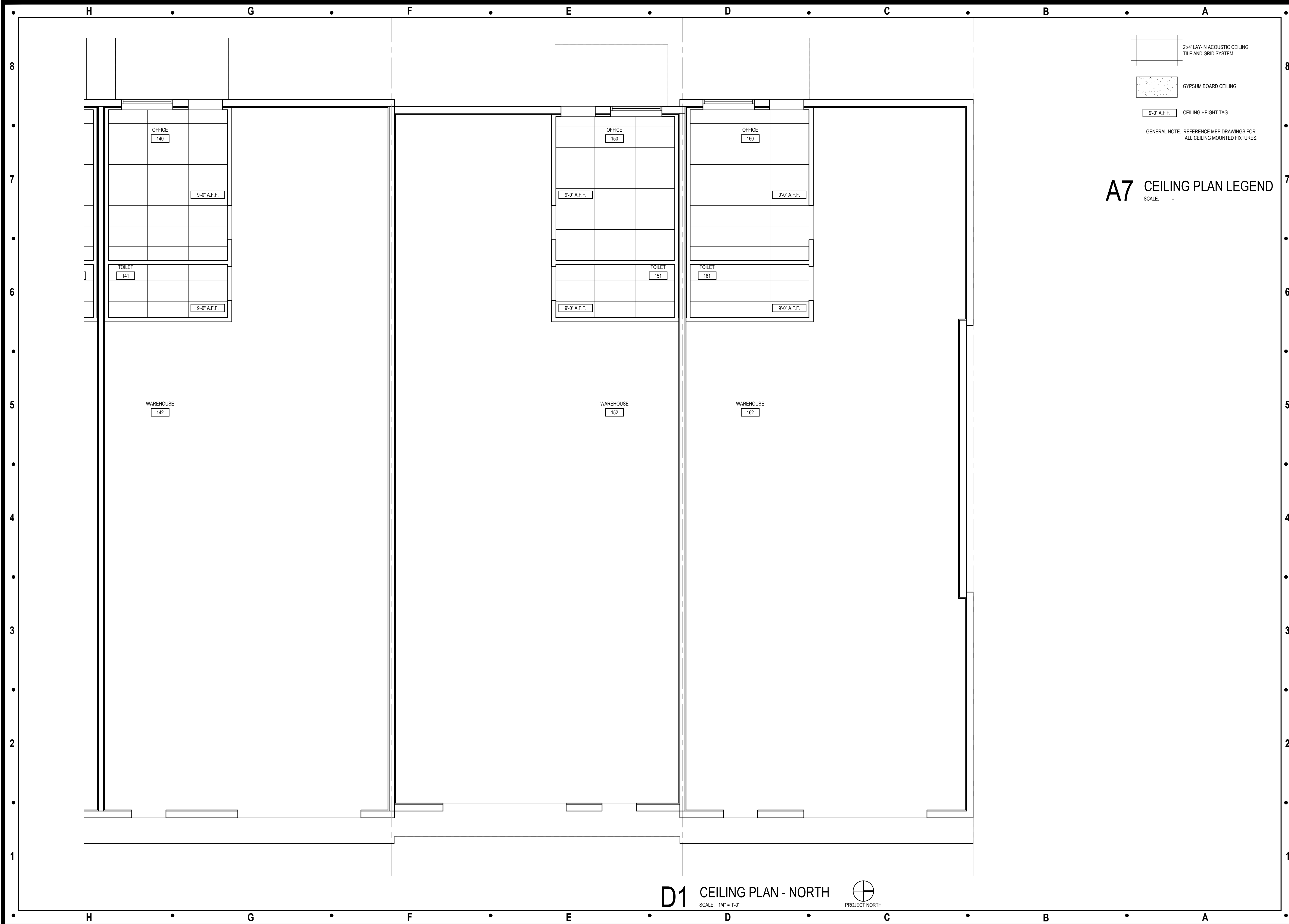
2701 NE McBaine Drive
Lee's Summit, Missouri 64064

Issue: Date:
Issued for Permit 08.31.22

Sheet Title:

CEILING PLAN - SOUTH

A-410



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Seal:

Michael Moore, MO Architect #2009032812

Project Number: 2201

Project Type: NEW CONSTRUCTION

Project Name and Address:

I-470 B&T CENTER, LOT 7

2701 NE McBaine Drive
Lee's Summit, Missouri 64064

Issue: Date:

Issued for Permit 08.31.22

Sheet Title:

CEILING PLAN - NORTH

A-411

- A. The contractor shall verify dimensions and conditions and notify the architect/engineer of any discrepancies, inconsistencies, or difficulties affecting cost of work before proceeding.
- B. The contractor shall coordinate all disciplines, verifying size and location of all openings. All conflicts, inconsistencies, or other difficulties affecting structural work shall be called to the attention of the architect or engineer for direction before proceeding.
- C. All design and construction for this project shall conform to the requirements of the 2018 International Building Code (IBC), as adopted and amended.
- D. These drawings are for this specific project, and no other use is authorized.

- A. All trench footing concrete shall develop a minimum compressive design strength of 3,500 psi in 28 days.
All formed and slab concrete to be a minimum compressive design strength of 4,000 psi in 28 days.
- B. Concrete exposed to weather shall have a 6% +/- 1% air entrainment.
- C. Contractor shall verify that all concrete inserts, reinforcing and embedded items are correctly located and rigidly secured prior to concrete placement.
- D. No aluminum items shall be embedded in any concrete.
- E. Provide concrete design submittal for approval.
- F. Anchor bolts or threaded rods per ASTM F1554 Grade 36.
- G. Epoxy anchors are not acceptable as a substitute for tension loading conditions and major column bases. Anchors and fasteners smaller than $\frac{3}{4}$ " diameter may be epoxy or Kwik bolt style fasteners. See Detail.

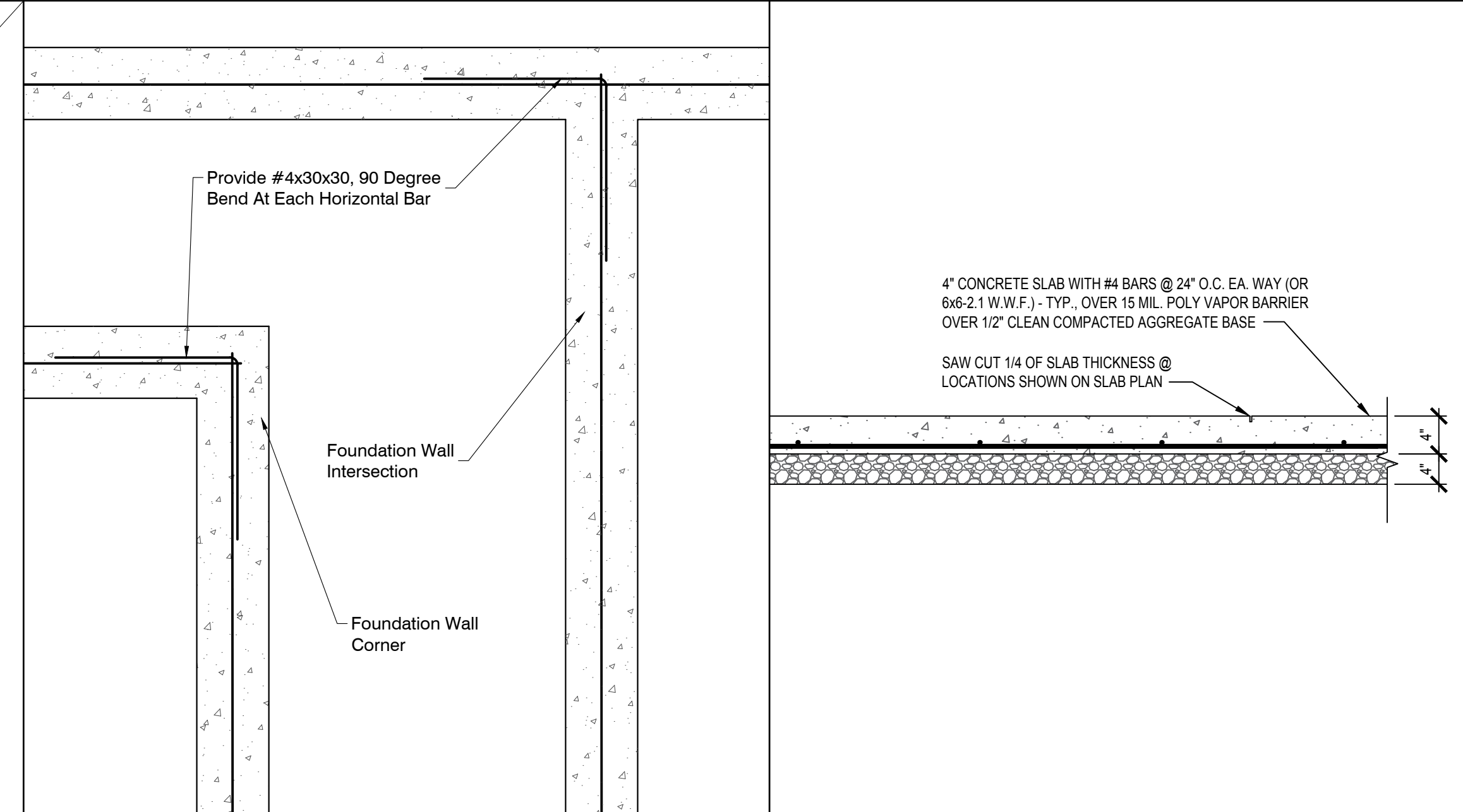
- A. All reinforcing steel shall conform to the requirements of ASTM A615 Grade 60.
- B. Stirrups & ties shall conform to the requirements of ASTM A615 Grade 40.
- C. Clear minimum coverage of concrete over reinforcing steel shall be as follows:
 - Concrete placed against earth 3"
 - Formed concrete against earth 2"
- D. All dowels shall be the same size and spacing as adjoining main bars.
- E. Splice laps, hooks and bends per ACI and detailed herein.
- F. Wire tie steel prior to pour to insure steel remains in place when concrete is poured.
- G. Provide reinforcing steel submittal for approval.

- A. Contractor to maintain OSHA safety precautions for workers.
- B. Excavate and remove all organic soil material below pad base per soil report.
- C. Excavate and remove soft soil per soil report. This design is based upon the soil conditions providing a minimum capacity of 2,000 psf.

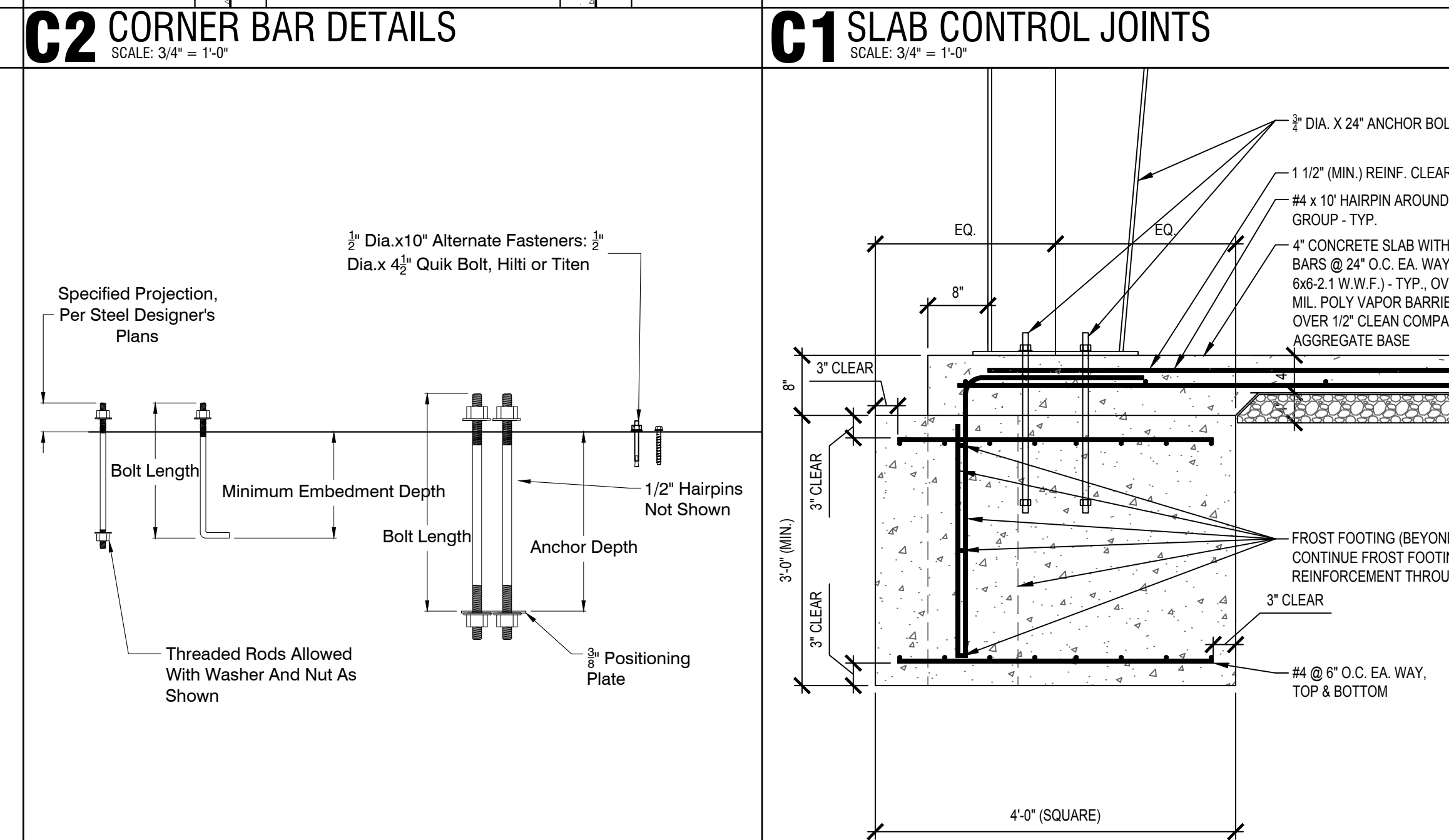
A. Steel building plans take precedence over these plans. Contractor to verify baseplate and anchor bolt locations and projections.

- A. High strength bolts - ASTM A325
- B. Field welding if used - Not currently planned
- C. Testing of concrete: Lab testing footing, and pier concrete required.
- D. Steel Framing: At the request of the City and Architect of Record, Inspect Building Steel Framing

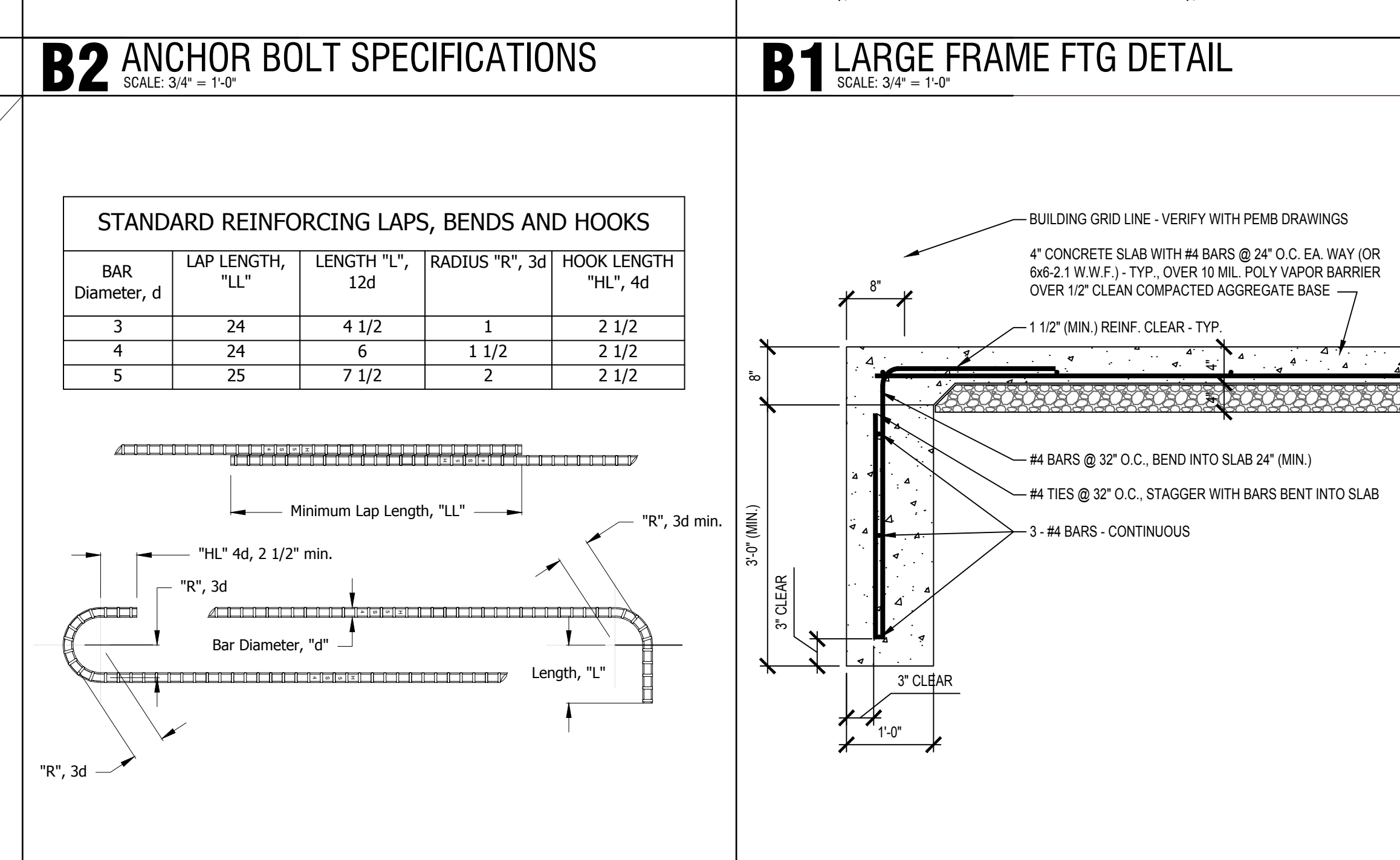
A.B.	Anchor Bolts
@	At
E.W.	Each Way
ELEV.	Elevation (Relative Grade Height)
#	Number
Sq.Ft.	Square Feet
T.O.B.	Top Of Beam
T.O.F.	Top Of Footing
T.O.W.	Top Of Wall
O.C.	On Center Spacing
U.N.O.	Unless Noted Otherwise



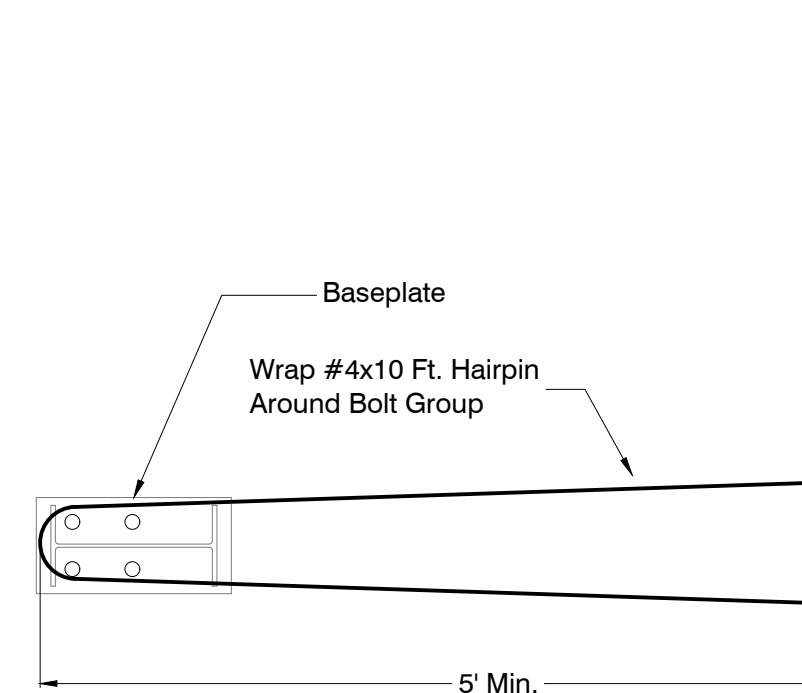
C1 SLAB CONTROL JOINTS
SCALE: 3/4" = 1'-0"



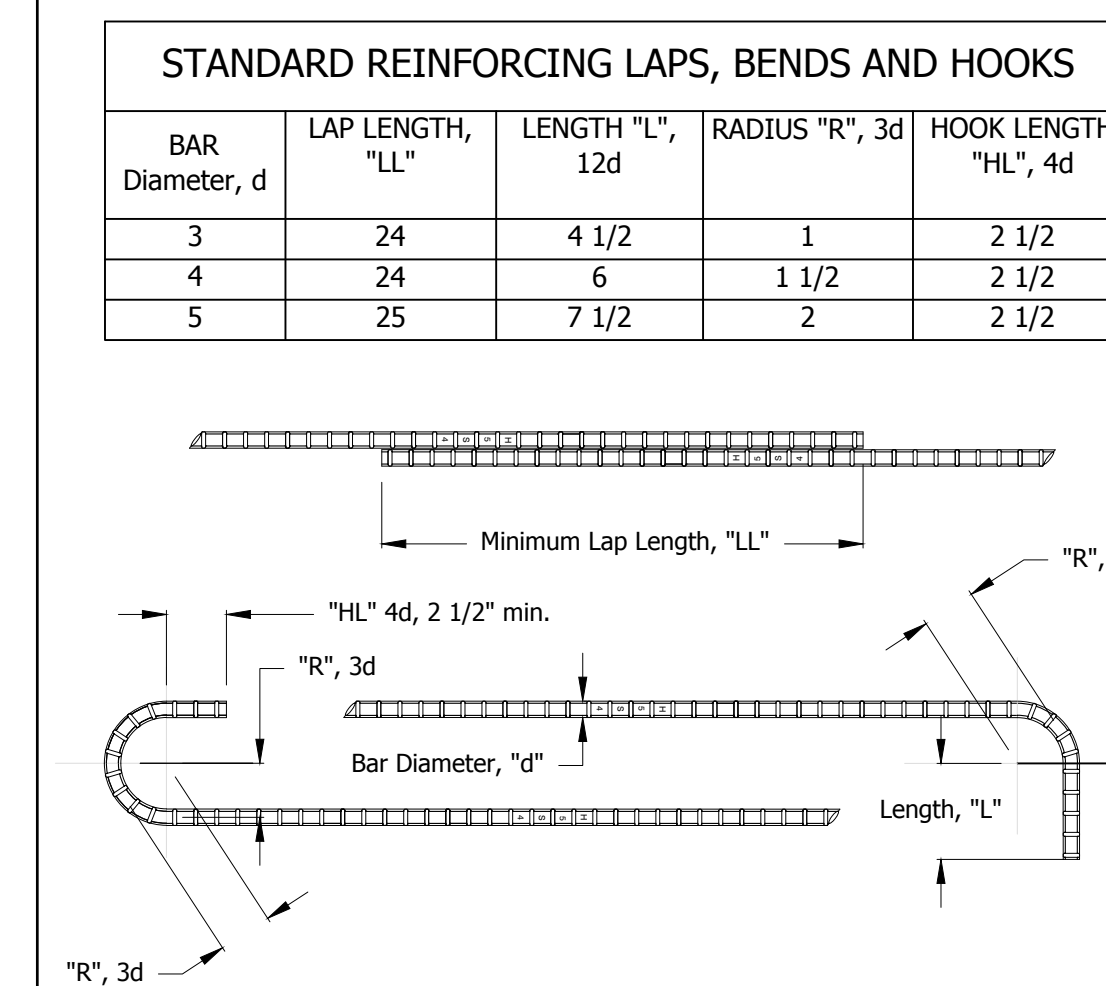
B1 LARGE FRAME FTG DETAIL
SCALE: 3/4" = 1'-0"



A1 TYPICAL TRENCH FROST FOOTING DETAIL



B3 HAIR PIN DETAIL (PLAN VIEW)



A2 LAPS & HOOKS DETAILS

C3 NOT USED
SCALE: 1 1/2" = 1'-0"

C2 CORNER BAR DETAILS

A3 NOT USED
SCALE: 1 1/2" = 1'-0"

A2 LAPS & HOOKS DETAILS

MIDWEST ARCHITECTS
1120 NW EAGLE RIDGE BLVD
GRAIN VALLEY, MO 64029
t: (816) 229-8115

Ward Development
1120 NW Eagle Ridge Blvd.
Grain Valley, Missouri 64029
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Civil Engineering:
Quist Engineering, Inc.
821 NE Columbus St.
Lee's Summit, Missouri 64063
t: (816) 550-5675

Structura Logica
18901 E. 299th Street
Harrisonville, MO 64701
t: (816) 872-4883

JSC Engineers
1925 Central Street, Suite 201
Kansas City, MO 64108
t: (816) 272-5289

Revisions to technical submissions which are not made or approved by the licensee are prohibited.

Project Type: NEW CONSTRUCTION

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I-470 B&T CENTER, LOT 7

Lee's Summit, Missouri 64064

Issue:	Date:
Issued For Permit Submittal	08.31.22

NOTES & DETAILS

S0.0

September 28, 2022

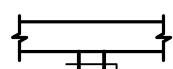
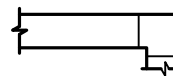
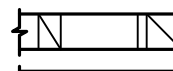
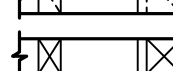
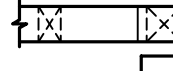
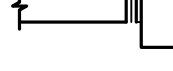
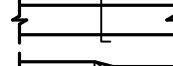
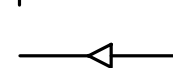
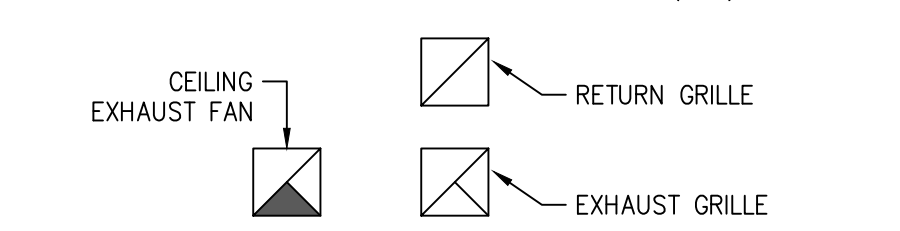
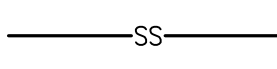
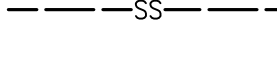
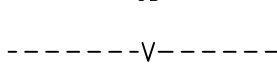
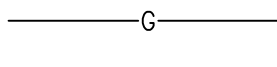
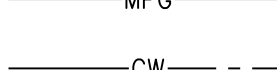
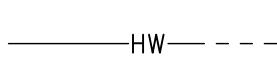
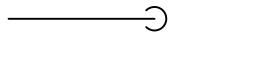
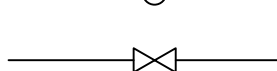
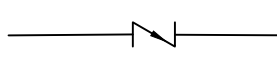
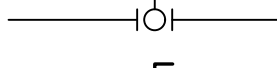
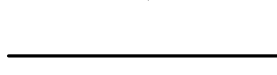
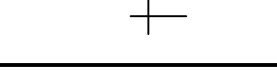
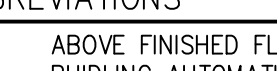
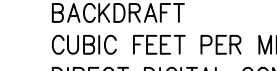
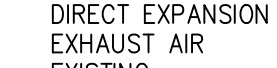
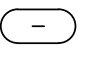
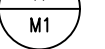
MECHANICAL AND PLUMBING SPECIFICATIONS

1. GENERAL PROVISIONS:
- A. PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR THE COMPLETE INSTALLATION OF THE PLUMBING AND MECHANICAL SYSTEMS OUTLINED.
- B. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATIONS OF COMPLIANCE OR APPROVAL AS REQUIRED BY AUTHORITIES.
- C. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.
- D. ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.
- E. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, PIPE, DUCT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.
- F. PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY. PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.
- G. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECT FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.
- H. INSPECTION OF THE SITE: THIS CONTRACTOR SHALL THOROUGHLY ACQUAINT HIMSELF WITH THE MEP DRAWINGS, SPECIFICATIONS, DETAIL, AND THE SITE. THIS CONTRACTOR SHALL NOTIFY THE ARCHITECT OF ANY SPECIAL OR UNUSUAL PROBLEMS, CONFLICTS, OR OBSTRUCTIONS THAT AFFECT HIS BID.
- I. FOR THE PURPOSE OF CLEARNESS AND LEGIBILITY, THE MECHANICAL AND PLUMBING DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND DO NOT SHOW ALL OFFSETS AND FITTINGS REQUIRED FOR INSTALLATION. DO NOT SCALE DRAWINGS. THE SIZE AND LOCATION OF EQUIPMENT IS SHOWN TO SCALE WHEREVER POSSIBLE. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DATA AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATION SECTIONS WHERE MECHANICAL WORK INTERFACES WITH OTHER TRADES.
- J. IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN ITEMS INDICATED ON THE PLANS OR WITH CODE REQUIREMENTS, THE NOTE OR CODE WHICH PRESCRIBES AND ESTABLISHES THE MORE COMPLETE JOB OR HIGHER STANDARD SHALL PREVAIL.
- K. INSTALL MATERIALS AND SYSTEMS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND APPROVED SUBMITTALS. INSTALL MATERIALS IN PROPER RELATION WITH ADJACENT CONSTRUCTION AND WITH UNIFORM APPEARANCE FOR EXPOSED WORK. COORDINATE WITH WORK OF OTHER SECTIONS. COMPLY WITH APPLICABLE REGULATIONS AND CODE REQUIREMENTS. PROVIDE PROPER CLEARANCES FOR SERVING.
- L. INCLUDE ALL BASIC MATERIALS AND CONSTRUCTION METHODS INCLUDING PIPES, PIPE FITTINGS, AND SPECIALTIES AND SUPPORTING DEVICES, VALVES, PIPE AND VALVE IDENTIFICATION, PUMPS, VIBRATION ISOLATION, ETC.
- M. FURNISH ADEQUATE ACCESS PANELS AND DOORS TO ALLOW FOR FUTURE PIPING ALTERATIONS, REPLACEMENT, AND MAINTENANCE OF PIPING. PROPERLY IDENTIFY ALL ACCESS PANELS AND DOORS.
2. OPERATION AND MAINTENANCE MANUALS:
- A. DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.
- B. ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATING AND MAINTENANCE MANUALS.
3. MANUFACTURERS:
- A. MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN.
- B. THE ELECTRICAL SYSTEM DESIGN IS BASED IN PART ON THE SPECIFIED EQUIPMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE ELECTRICAL REQUIREMENTS OF THE EQUIPMENT BEING FURNISHED. ANY CHANGES TO THE ELECTRICAL SYSTEM DUE TO HVAC EQUIPMENT OTHER THAN THE SPECIFIED EQUIPMENT BEING FURNISHED SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
4. MOTORS:
- A. PROVIDE THERMAL OVERLOAD PROTECTION FOR EACH MOTOR PROVIDED BY THIS WORK.
5. PLUMBING:
- A. PROVIDE AN APPROVED WATER HAMMER ARRESTOR FOR EACH PLUMBING FIXTURE SUPPLY AS REQUIRED BY FIXTURE MANUFACTURER.
- B. ALL EXPOSED PIPE IN FINISHED AREAS SHALL BE CHROME PLATED BRASS PIPE, NO FERROUS PIPE.
- C. PROVIDE CLEANOUTS AT EACH CHANGE IN DIRECTION AND AT 100 FOOT INTERVALS IN STRAIGHT RUNS.
- D. PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES AND TRAPS.
- E. CLEANOUTS:
1. UNFINISHED FLOOR (FCO):JR SMITH #4240, OR EQUAL.
2. WALL (WCO):JR SMITH #4472, OR EQUAL, 24" ABOVE THE FLOOR.
3. GRADE (GCO):JR SMITH #4256, OR EQUAL, WITH HEAVY DUTY CAST IRON BODY AND COVER.
- F. ALL SEWER PIPING LOCATED INSIDE THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES.
1. INSTALL 2-1/2" AND SMALLER PIPE AT 1/4" PER FOOT FALL.
2. INSTALL 3" AND LARGER PIPE AT 1/8" PER FOOT FALL.
3. CONDENSATE DRAIN SHALL BE INSTALLED AT 1/8" PER FOOT FALL.
- G. PROVIDE DIELECTRIC UNIONS WITH APPROPRIATE END CONNECTION TO MATCH THE PIPE SYSTEM IN WHICH INSTALLED (SCREWED, SOLDERED, OR FLANGED). PROVIDE DIELECTRIC UNIONS ON ALL PIPING CONNECTIONS TO HOT WATER HEATERS AND EXPANSION JOINTS.
- H. ALL SEWER PIPING LOCATED EXTERIOR TO THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES.
1. INSTALL 4" AND SMALLER PIPE AT A MINIMUM OF 2% SLOPE.
2. INSTALL 6" AND LARGER PIPE AT A MINIMUM OF 1% SLOPE.
6. PIPING
- A. DOMESTIC COLD, HOT, AND HOT WATER RECIRCULATING (ABOVEGROUND).
1. TYPE L HARD DRAWN COPPER TUBING, ASTM B-88 WITH WROUGHT BRONZE SOLDERED FITTINGS.
2. GATE VALVE: CRANE #428 OR EQUAL.
3. BALL VALVE: CRANE #932 OR EQUAL.
- B. DOMESTIC COLD, HOT, AND HOT WATER RECIRCULATING, 1"-3" (UNDERGROUND).
1. TYPE K HARD OR SOFT DRAWN COPPER TUBING, ASTM B-88 WITH WROUGHT BRONZE SOLDERING FITTINGS.
- C. SANITARY SEWER AND VENTS (UNDERGROUND, INTERIOR TO BUILDING).
1. POLYVINYL CHLORIDE (PVC) DWV PIPE, SCHEDULE 40, SOLVENT JOINT.
2. SEWER LINES SHALL BE LOCATED IN GENERAL AS SHOWN ON THE DRAWINGS, THE EXACT LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR IN SUCH A MANNER AS TO MAINTAIN PROPER CLEARANCES AND SUFFICIENT SLOPE TO ENSURE DRAINAGE.
3. VENT STACKS SHALL BE EXTENDED FULL SIZE THROUGH THE ROOF AND FLASHED WITH 4 POUND LEAD SHEETS TURNED DOWN INTO THE STACK AT LEAST 2" AND EXTENDED 12" IN ALL DIRECTIONS FROM THE PIPE AT THE ROOF LINE. VENTS THROUGH ROOF SHALL NOT BE LESS THAN 3". PVC PIPING SHALL NOT BE USED FOR VENT PIPING THROUGH THE ROOF, WHERE APPLICABLE FOR ROOFING SYSTEM USED, PROVIDE FLASHING VIA PLEATED EPDM CONE IN LIEU OF LEAD. ALL VENT STACKS IN OR AT OUTSIDE WALLS SHALL BE OFFSET 1"-6" MINIMUM FROM OUTSIDE WALLS BEFORE GOING THROUGH THE ROOF, TO FACILITATE FLASHING.
- D. CONDENSATE DRAIN AND INDIRECT WASTE (ABOVEGROUND)
1. PVC DWV PIPE, SCHEDULE 40, SOLVENT JOINT.
- E. NATURAL GAS PIPING:
1. SCHEDULE 40 BLACK STEEL PIPING: 2" AND SMALLER WITH SCREWED JOINTS AND 150 LB. MALLEABLE IRON SCREWED FITTINGS. PIPE 2-1/2" AND LARGER SHALL USE STANDARD WEIGHT BLACK STEEL WELDING FITTINGS WITH WELDED JOINTS.
2. GAS VALVES SHALL BE ROCKWELL 142/143, PLUG VALVE.
3. SUPPORT PIPING AT INTERVALS NOT TO EXCEED THOSE LISTED IN TABLE 415.1 OF THE I.F.G.C.
4. PROVIDE A.G.A. APPROVED SHUT OFF VALVES AND DIRT LEGS AT CONNECTIONS TO ALL EQUIPMENT.
5. EPOXY PAINT ALL EXTERIOR GAS PIPING TO PREVENT CORROSION.
- F. REFRIGERANT
1. ASTM B 280, TYPE ACR, HARD DRAWN STRAIGHT LENGTHS, AND SOFT-ANNEALED COILS, SEAMLESS COPPER TUBING.
2. WROUGHT COPPER, ANSI B16.22, STREAMLINED PATTERN, FITTINGS, BRAZED JOINTS, AWS A 5.8 CLASSIFICATION BAG-1 (SILVER).
3. TUBING TO BE FACTORY CLEANED, READY FOR INSTALLATION, AND HAVE ENDS CAPPED TO PROTECT CLEANLINESS OF PIPE INTERIORS PRIOR TO SHIPPING.
4. SIZE AND INSTALLATION OF PIPING SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S

- RECOMMENDATIONS.
- G. ALL PIPE HANGERS AND SUPPORTS SHALL BE STANDARD PRODUCTS OF GRINNELL, FEE AND MASON, OR ANVIL. HANGER SPACING SHALL BE IN ACCORDANCE WITH MSS-SP-69.
- H. SLEEVES
1. PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK. ALL SLEEVES SHALL BE OF SUFFICIENT SIZE TO PERMIT PIPE MOVEMENT DUE TO EXPANSION AND CONTRACTION AND TO ACCOMMODATE PIPE INSULATION.
2. INTERIOR PARTITIONS: 16 GAUGE GALVANIZED STEEL, PACK BETWEEN PIPE AND SLEEVE WITH FIRE SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.
3. ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WATERPROOF SEAL. COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY.
4. PLUMBING VENTS: FLASH ROOF VENT INTO ROOFING SYSTEM AS REQUIRED BY THE ROOFING CONTRACTOR TO MAINTAIN THE EXISTING ROOF WARRANTY. ALL PLUMBING VENT TERMINALS SHALL TERMINATE A MINIMUM OF 12" ABOVE ROOF OR EQUAL TO HEIGHT OF PARAPET, WHICHEVER IS GREATER.
- I. PROVIDE CHROME PLATED ESCUTCHEONS ON ALL PIPE ENTERING FINISHED AREAS.
7. INSULATION:
- A. ALL INSULATIONS AND ACCESSORIES SHALL HAVE A FIRE HAZARD CLASSIFICATION WITH A FLAME SPREAD RATING OF NOT OVER 25, A FUEL CONTRIBUTION RATING OF NOT OVER 50, AND A SMOKE DEVELOPMENT RATING OF NOT OVER 50, IN ACCORDANCE WITH NFPA.
- B. PIPE INSULATION (ABOVE GRADE):
1. THE PIPE INSULATION USED SHALL HAVE A THERMAL CONDUCTIVITY OF 0.27 BTU PER IN/HRSQ-FT-F IN/HRSQ-FT-F OR LESS.
2. FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER, ASJ JACKET, FACTORY APPLIED PRESSURE SEALING LONGITUDE LAP JOINT, NO STAPLES, ZESTON PREMOLED PVC FITTING COVERS. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. FLEXIBLE CLOSED CELL ELASTOMERIC THERMAL INSULATION, UNSLIT OR PRESLIT WITH PRESSURE SENSITIVE ADHESIVE SYSTEM FOR CLOSURE AND VAPOR SEALING, EQUAL TO ARMSTRONG AP ARMAFLEX OR ARMAFLEX 2000.
4. FOR NON CIRCULATING SYSTEMS THE FIRST 8 FEET OF INLET AND OUTLET PIPING BETWEEN THE TANK AND HEAT TRAP (INCLUDING THE HEAT TRAP) MUST BE INSULATED.
5. INSULATION SCHEDULE:
- a. DOMESTIC COLD WATER: 1/2"
- b. DOMESTIC HOT WATER: 1"
- c. REFRIGERANT SUCTION: 1-1/2" FOR PIPING UP TO 1-1/2", 2" FOR PIPING 1-1/2" AND LARGER.
- C. DUCTWORK INSULATION:
1. DUCT COVERING: 3/4 LB/CF, FIBERGLASS BLANKET WITH FACTORY APPLIED VAPOR BARRIER AND FACING. THICKNESS AS SCHEDULED, INSTALLATION IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. DUCT COVERING SHALL BE MINIMUM R-6.
- a. SUPPLY AIR DUCT: 2"
- b. RETURN AIR DUCT: 2"
- B. TESTING, BALANCING AND CLEANING:
- A. ALL PIPING SHALL BE TESTED FOR LEAKS BEFORE BEING CONCEALED IN WALL CONSTRUCTION OR COVERED WITH INSULATION.
- B. SEWER AND VENT PIPING SHALL BE HYDROSTATICALLY TESTED WITH NO LESS THAN 10 FEET OF HEAD FOR A PERIOD OF NOT LESS THAN 15 MINUTES, PER THE LOCAL PLUMBING CODE, WITH NO LEAKS.
- C. DOMESTIC WATER PIPING SHALL BE HYDROSTATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 60 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.
- D. BEFORE DOMESTIC WATER PIPING IS PLACED IN SERVICE, ALL DOMESTIC WATER DISTRIBUTION SYSTEMS, INCLUDING THOSE FOR COLD WATER AND HOT WATER SYSTEMS, SHALL BE FLUSHED, STERILIZED AND CHLORINATED IN ACCORDANCE WITH THE HEALTH DEPARTMENT REGULATIONS. THE SYSTEMS SHALL BE THOROUGHLY FLUSHED AND FOREIGN MATTER, THEN FILLED WITH WATER TREATED WITH 50 PPM OF CHLORINE. DURING THE FILLING PROCESS, VALVES AND FAUCETS SHALL BE OPENED SEVERAL TIMES TO ASSURE TREATMENT OF THE ENTIRE SYSTEM. THE TREATED WATER SHALL BE LEFT IN THE SYSTEM FOR 24 HOURS AFTER WHICH TIME THE SYSTEM SHALL BE FLUSHED; IF THE RESIDUAL CHLORINE IS NOT LESS THAN 10 PPM, THE FLUSHING SHALL BE REPEATED. AFTER STERILIZATION SAMPLES OF WATER FROM THE SYSTEM SHALL BE APPROVED BY THE BOARD OF HEALTH.
- E. NATURAL GAS SYSTEMS SHALL BE TESTED WITH AIR AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE , BUT NOT LESS THAN 50 PSIG FOR A PERIOD OF 2 HOURS WITH NO LEAKS.
- F. THE INSPECTION AUTHORITY HAVING JURISDICTION SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO PERFORMANCE OF ALL TESTS SO THAT THEY TESTS MAY BE WITNESSED IF DEEMED NECESSARY.
- G. DUCTWORK AND PIPING SHALL BE BALANCED BY QUALIFIED BALANCING PERSONNEL WHO HAVE PREVIOUS EXPERIENCE WITH BALANCING PROCEDURES AND ARE FAMILIAR WITH TESTING AND BALANCING PROCEDURES OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).
1. BALANCING SHALL INCLUDE THE BALANCING OF THE EQUIPMENT AND AIR DISTRIBUTION SYSTEMS TO PROVIDE DESIGN QUANTITIES INDICATED AND VERIFICATION PERFORMANCE OF ALL EQUIPMENT AND AUTOMATIC CONTROLS.
2. WITH IN 30 DAYS OF THE COMPLETION OF THE TESTING AND BALANCING WORK, SUBMIT THE TEST AND BALANCING REPORT BEARING THE SIGNATURE OF THE TEST AND BALANCE ENGINEER. THE REPORTS SHALL BE CERTIFIED PROOF THAT THE SYSTEMS HAVE BEEN TESTED, ADJUSTED, AND BALANCED IN ACCORDANCE WITH THE REFERENCED STANDARDS; ARE AN ACCURATE REPRESENTATION OF HOW THE SYSTEMS HAVE BEEN INSTALLED AND ARE OPERATING. REPORTS SHALL BE BOUND IN A VINYL BINDER AND THE BINDER LABELLED OR MAY BE AN ELECTRONIC PDF SUBMITTAL.
9. DUCTWORK:
- A. ALL DUCTWORK UNLESS OTHERWISE INDICATED SHALL BE FABRICATED FROM GALVANIZED SHEET STEEL COMPLYING WITH ASTM A 527, LOCKFORMING QUALITY, WITH G60 ZINC COATING IN ACCORDANCE WITH ASTM A 525, AND MILL PHOSPHATIZED FOR EXPOSED LOCATIONS.
- B. DUCTWORK METAL GAUGES, REINFORCING, ETC SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," LATEST EDITION FOR A 2" WATER GAUGE STATIC PRESSURE.
- C. ALL FITTINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," LATEST EDITION.
- D. RECTANGULAR DUCT:
1. ELBOWS, UNLESS INDICATED OTHERWISE, SHALL BE CONSTRUCTED WITH CENTERLINE RADIUS OF NOT LESS THAN 1.5 DUCT WIDTH OR SQUARE ELBOWS WITH DOUBLE WALL STREAMLINE ELBOWS. TAKE-OFF FITTINGS: BRANCH DUCT TAKE-OFF FITTINGS FOR SUPPLY AND EXHAUST DIFFUSER/REGISTERS SHALL INCLUDE AN INTEGRAL MANUAL VOLUME DAMPER WITH LOCKING QUADRANT, DAMPER NOT REQUIRED ON RETURN AIR. FOR RECTANGULAR TO ROUND TAKE-OFFS, UTILIZE A "BUCKLEY" MODEL 3300 & 3300D OR EQUAL.
3. RETURN AIR ACOUSTIC ELBOWS AND SOUND BOOTS SHALL BE A SQUARE ELBOW WITH NO TURNING VANES.
4. SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE A MINIMUM 1 TO 3.
- E. ROUND AND OVAL SPIRAL SEAM DUCT:
1. PROVIDE RADIUS TYPE FITTINGS FABRICATED OF MULTIPLE SECTIONS WITH MAXIMUM 15 DEGREE CHANGE OF DIRECTION PER SECTION. UNLESS SPECIFICALLY DETAILED OTHERWISE, USE 45 DEGREE LATERALS FOR BRANCH TAKEOFF CONNECTIONS. WHERE 90 DEGREE BRANCHES ARE INDICATED PROVIDE CONICAL TYPE TEES.
2. SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 3.
3. ROUND LONGITUDINAL SEAM DUCT: USE FOR RIGID METAL DUCT ON LEAVING SIDE OF DUCT IN CONCEALED LOCATIONS FOR EXTENSION TO FLEX FOR DIFFUSERS.
- F. SEAL ALL CONCEALED DUCTWORK JOINTS WITH NON-HARDENING, NON-MIGRATING MASTIC SEALANT, AS RECOMMENDED FOR SEALING SEAMS AND JOINTS IN DUCTWORK. OIL BASED CAULKING AND GLAZING COMPOUNDS SHALL NOT BE ACCEPTABLE. DUCTS SHALL BE SEALED TO THE CLASS LEVEL LISTED BELOW:
- (1) UNCONDITIONED SPACES: CLASS B CLASS C CLASS B
- (2) CONDITIONED SPACES (PLENUM): CLASS C CLASS B CLASS C
- SUPPLY 2"WC OR LESS, EXHAUST RETURN
- G. DUCT SIZES SHOWN ON THE DRAWINGS ARE SHEET METAL SIZES. INCREASE SHEET METAL SIZES ACCORDINGLY TO ACCOUNT FOR THICKNESS OF DUCT LINER.
- H. WHETHER SHOWN ON PLANS OR NOT, PROVIDE MANUAL VOLUME DAMPERS IN EACH RUNOUT TO EACH

- SUPPLY DIFFUSER OR REGISTER. PROVIDE ACCESS PANELS TO DAMPERS LOCATED ABOVE HARD CEILINGS.
- I. PROVIDE AUXILIARY STEEL AS REQUIRED TO ADEQUATELY SUPPORT DUCTWORK.
- J. WHERE DUCTS PASS THROUGH FIRE-RATED FLOORS, WALLS, OR PARTITIONS, PROVIDE FIRESTOPPING BETWEEN DUCT AND WALL.
- K. WHERE DUCTS PASS THROUGH INTERIOR PARTITIONS OR EXTERIOR WALLS, AND ARE EXPOSED TO VEW, CONCEAL SPACE BETWEEN OPENING AND DUCT OR DUCT INSULATION WITH SHEET METAL FLANGES OF SAME GAUGE AS DUCT. OVERLAP OPENING ON 4 SIDES BY AT LEAST 1-1/2". FASTEN TO DUCT AND WALL.
10. FLEXIBLE DUCT:
- A. ATCO #086 (R-6), OR EQUAL.
- B. FACTORY APPLIED INSULATION AND VAPOR BARRIER, 1-1/2" THICK.
- C. MAXIMUM LENGTH OF 6'-0".
11. FLUES AND ACCESSORIES:
- A. FLUE FOR GAS FIRED FURNACE SHALL BE AS RECOMMENDED BY THE GAS APPLIANCE MANUFACTURER. FLUES SHALL BE SCHEDULE 40 PVC OR CPVC PER THE MANUFACTURE'S INSTALLATION REQUIREMENTS.
- B. PROVIDE MANUFACTURERS STANDARD ACCESSORY ITEMS INCLUDING BIRD PROOF TOP, STORM COLLAR, ROOF THIMBLE, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION. ROOF THIMBLES THROUGH THE BUILDING ROOF SHALL BE SUITABLE FOR USE WITH THE ROOF PROVIDED.
- C. FLUES FOR HEATERS SHALL BE DOUBLE WALL TYPE B EQUAL TO METALBESTOS. PROVIDE MANUFACTURER'S STANDARD FITTING AND ACCESSORIES (ROOF THIMBLE, STORM COLLAR, COUNTER FLASHING, ETC.) AS REQUIRED FOR A COMPLETE INSTALLATION.
12. EXHAUST FANS:
- A. CENTRIFUGAL CEILING EXHAUSTERS SHALL BE ELECTRICALLY POWERED CENTRIFUGAL TYPE FAN SUITABLE FOR MOUNTING IN THE CEILING WITH A PERFORATED OFF-WHITE METAL GRILLE WITH A THUMBSCREW ATTACHMENT FOR EASY ACCESS TO FAN HOUSING. UNIT SHALL CONSIST OF A GALVANIZED STEEL HOUSING LINED WITH ACOUSTICAL INSULATION AND SHALL INCLUDE AN INTEGRAL BACKDRAFT DAMPER ON FAN DISCHARGE. MOTOR SHALL BE A PERMANENT SPLIT-CAPACITOR TYPE MOTOR, PERMANENTLY LUBRICATED WITH THERMAL OVERLOAD PROTECTION. PROVIDE DISCONNECT SWITCH OR OTHER MEANS OF DISCONNECT AT MOTOR IN FAN HOUSING.
13. FURNACE AND CONDENSING UNIT:
- A. CONDENSING FURNACES:
1. GAS FIRED FURNACE SHALL BE FACTORY ASSEMBLED, PRE-WIRED UNIT CONSISTING OF SHEETMETAL CASING, SUPPLY FAN, GAS FIRED HEAT EXCHANGER, AND CONTROLS. CAPACITY SHALL BE AS SCHEDULED.
2. THE PRIMARY HEAT EXCHANGER SHALL BE ALUMINIZED STEEL CONSTRUCTION WITH A STAINLESS STEEL SECONDARY HEAT EXCHANGER.
3. THE FURNACE SHALL BE OF THE CONDENSING TYPE, UTILIZING A SEALED COMBUSTION CHAMBER. UNIT SHALL INCLUDE FINNED CAST IRON HEAT EXCHANGER, ALUMINIZED STEEL EXHAUST DECOUPLER SECTION AND FINNED STAINLESS STEEL TUBE CONDENSER SECTION.
4. THE UNIT SHALL BE EQUIPPED WITH THE MANUFACTURER'S STANDARD CONTROLS INCLUDING 24V CONTROL TRANSFORMER, AUTOMATIC SPARK IGNITION, AUTOMATIC GAS VALVE TRAIN, HIGH TEMPERATURE LIMIT SWITCH, AND FAN TIMED DELAY RELAY.
5. RETURN AIR INLET ON UNIT SHALL BE PROVIDED WITH 1" THROWAWAY TYPE FILTER AND SLIDE IN FRAME, MOUNTED ON THE UNIT.
6. FAN SHALL BE A DIRECT DRIVE MULTI-SPEED BLOWER, RESILIENTLY MOUNTED IN THE CASING. MOTOR SHALL BE PROVIDED WITH AUTOMATIC THERMAL OVERLOAD PROTECTION.
7. FURNACE SHALL BE AGA APPROVED.
- B. CONDENSING UNIT SHALL BE FACTORY ASSEMBLED AND TESTED AIR-COOLED CONDENSING UNIT CONSISTING OF COMPRESSOR, CONDENSER COIL, FAN, MOTOR, REFRIGERANT RESERVOIR, OPERATING CONTROLS, ETC. CAPACITY AND ELECTRICAL CHARACTERISTICS SHALL BE AS SCHEDULED.
1. COMPRESSOR: HERMETICALLY SEALED WITH BUILT-IN OVERLOADS AND VIBRATION ISOLATION. COMPRESSOR MOTOR SHALL HAVE THERMAL AND CURRENT SENSITIVE OVERLOAD DEVICES. INTERNAL HIGH PRESSURE PROTECTION, HIGH AND LOW PRESSURE CUTOUT SWITCHES, START CAPACITOR AND RELAY, 2-POLE CONTACTOR, CRANKCASE HEATER, AND TEMPERATURE ACTUATED SWITCH AND TIMER TO PREVENT COMPRESSOR RAPID CYCLE.
2. COIL SHALL BE COPPER TUBING WITH ALUMINUM FINS: COMPLETE WITH LIQUID ACCUMULATOR AND LIQUID SUBCOOLER. UNIT SHALL INCLUDE FILTER DRYER, SIGHT GLASS, COMPRESSOR SERVICE VALVE, LIQUID LINE SERVICE VALVE, AND REFRIGERANT PIPING EXTENDED TO EXTERIOR OF CASING.
14. ELECTRIC WALL HEATERS
- A. UNIT SHALL INCLUDE ELECTRIC HEATING ELEMENTS WITH SAFETY AND DISCONNECT DEVICES AS REQUIRED BY NEC, INCLUDING RELAYS, CONTROLLERS AND REQUIRED EQUIPMENT TO FORM A COMPLETE AND FUNCTIONAL HEATER.
- B. ELEMENTS SHALL BE HEAVY DUTY ALUMINUM-FINNED, COPPER CLAD STEEL SHEATH. PROVIDE AUTOMATIC RESET THERMAL OVER-HEAT PROTECTION. THERMAL PROTECTOR SHALL BE LINEAR TYPE TO SENSE TEMPERATURES THE ENTIRE LENGTH OF HEATING ELEMENT.
- C. FANS SHALL BE DIRECT DRIVE USING PERMANENT SPLIT CAPACITOR TYPE MOTORS WITH BUILT-IN AUTOMATIC RESET MOTOR OVERLOAD PROTECTION.

M&P SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS, ETC, ARE NECESSARILY USED ON THE DRAWINGS.			
HVAC EQUIPMENT & DUCTWORK			
	SPIN-IN FITTING WITH MANUAL VOLUME DAMPER		
	BRANCH DUCT WITH 45° RECTANGLE-ROUND BRANCH FITTING AND MANUAL VOLUME DAMPER		
	ELBOW WITH TURNING VANES		
	RETURN, EXHAUST, OR OUTSIDE AIR DUCT UP		
	RETURN, EXHAUST, OR OUTSIDE AIR DUCT DOWN		
	SUPPLY AIR DUCT UP		
	SUPPLY AIR DUCT DOWN		
	EQUIPMENT WITH FLEXIBLE DUCT CONNECTION		
	MANUAL VOLUME DAMPER		
	SQUARE TO ROUND TRANSITION		
	DUCT TRANSITION		
	THERMOSTAT		
	DUCT MOUNTED SMOKE DETECTOR		
			
HVAC EQUIPMENT & DUCTWORK			
SYMBOL	DESCRIPTION		
	SANITARY SEWER (ABOVE GRADE)		
	SANITARY SEWER (BELOW GRADE)		
	CONDENSATE DRAIN		
	VENT PIPING		
	G = GAS PIPING LESS THAN 2 PSI		
	MPG = GAS PIPING 2 PSI		
	COLD WATER PIPING		
	HOT WATER PIPING		
	PIPE ELBOW DOWN		
	PIPE ELBOW UP		
	GATE VALVE		
	BACKFLOW PREVENTER		
	BALL VALVE		
	PLUG VALVE		
	FLOOR CLEANOUT (FCO)		
	WALL CLEANOUT (WCO)		
	FLOOR DRAIN		
	HOSE BIB		
ABBREVIATIONS			
AFF	ABOVE FINISHED FLOOR	MC	MECHANICAL CONTRACTOR
BAS	BUILDING AUTOMATION SYSTEM	MIN	MINIMUM
BD	BACKDRAFT	NC	NOISE CRITERIA
CFM	CUBIC FEET PER MINUTE	OA	OUTSIDE AIR
DDC	DIRECT DIGITAL CONTROL	RA	RETURN AIR
DX	DIRECT EXPANSION	SA	SUPPLY AIR
EA	EXHAUST AIR	SD	SMOKE DUCT DETECTOR
(E)	EXISTING	TFA	TO FLOOR ABOVE
FFB	FROM FLOOR BELOW	TFB	TO FLOOR BELOW
GPM	GALLONS PER MINUTE	TYP	TYPICAL
IN WC	INCHES OF WATER COLUMN	U.G.	UNDER GROUND
MAX	MAXIMUM	WCO	WALL CLEANOUT
MBH	1000 BTU PER HOUR	W/O	WITHOUT
ANNOTATION			
#	PLAN WORK NOTE		
	MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)		
	PLUMBING FIXTURE DESIGNATION		
	CONNECTION POINT OF NEW WORK TO EXISTING		
	DETAIL REFERENCE UPPER NUMBER INDICATED DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER		

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Seal:



Project Number: 22-215

Project Type: NEW CONSTRUCTION

Project Name and Address:

I-470 B&T CENTER, LOT 7

2701 NE McBaine Drive
Lee's Summit, Missouri 64064

Issue:

Date:

Plan Review

09.30.22

Sheet Title:

MECHANICAL AND
PLUMBING
SPECIFICATIONS AND
SYMBOLS

MP-001

	WITH CHROME PLATED STOP VALVES, P-TRAP WITH CLEANOUT AND ESCUTCHEONS, INSULATE WITH "HANDI-LAV-GUARD" MODEL 102, OR EQUAL.	
	MS	MOP SINK: PRO FLOW PFM82424, 24"x24"x10" MOP BASIN WITH DRAIN. PROVIDE WALL MOUNT SINK, PRO FLOW MODEL PF118, WITH TWO HANDLES, VACUUM BREAKER AND 3/4" HOSE THREAD.
	RPZ	REDUCED PRESSURE ZONE BACKFLOW PREVENTER: WATTS LF009, 1", MEETING ASSE 1013, LEAD FREE CAST BRONZE BODY, QUARTER TURN TESTING COCKS,

NOTES:

- A. EXTERNAL STATIC PRESSURE LISTED REPRESENTS STATIC PRESSURE REQUIRED FOR DUCTWORK AND DIFFUSERS OUTSIDE THE HVAC UNIT COMPLETELY INDEPENDENT OF ANY PRESSURE DROP THROUGH THE HVAC EQUIPMENT INCLUDING FILTER AND COIL.
- B. PROVIDE UNIT WITH 7-DAY PROGRAMMABLE HEAT/COOL/AUTO CHANGEOVER MULTISTAGE THERMOSTAT W/HUMIDITY SENSOR.
- C. PROVIDE MANUFACTURER'S CONCENTRIC VENT KIT, SIZE AND INSTALL PER MANUFACTURER'S WRITTEN INSTRUCTIONS WHILE ADHERING TO LENGTH AND FITTING LIMITATIONS.
- D. PROVIDE END RETURN FILTER KIT.
- E. ADJUST FACTORY DEFAULT SETTINGS TO LIMIT BLOWER SPEED TO 840 CFM.

NOTES:	
A.	PROVIDE INTERNAL CABINET BACKDRAFT DAMPER, CEILING GRILLE, ALL THREAD RODS AND VIBRATION ISOLATORS.
B.	INTERLOCK WITH RESTROOM LIGHTSWITCH.

NOTES:

A. PROVIDE TIME DELAY ON COMPRESSOR RE-START KIT, CRANKCASE HEATER, AND COMPRESSOR LOCK-OUT WITH AMBIENT BELOW 35F.

B. MECHANICAL CONTRACTOR SHALL COORDINATE ALL UNIT MOC'S OF ACTUAL INSTALLED EQUIPMENT WITH ELECTRICAL CONTRACTOR.

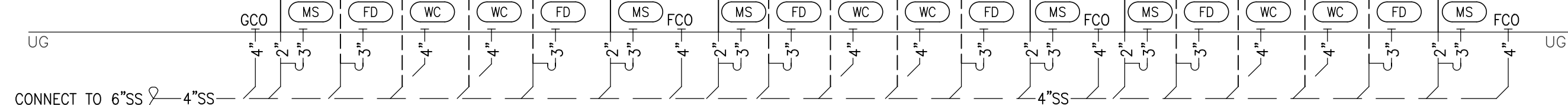
C. PROVIDE MIN. 4" TALL PRE-MANUFACTURED POLYOLEFIN PAD.

NOTES:

- A. PROVIDE WALL MOUNTED THERMOSTAT.
- B. PROVIDE 4" TYPE 'B' VENT.
- C. DISCONNECT BY ELECTRICAL.
- E. PROVIDE NECESSARY MOUNTING BRACKET AND ACCESSORIES FOR VERTICAL MOUNTING.

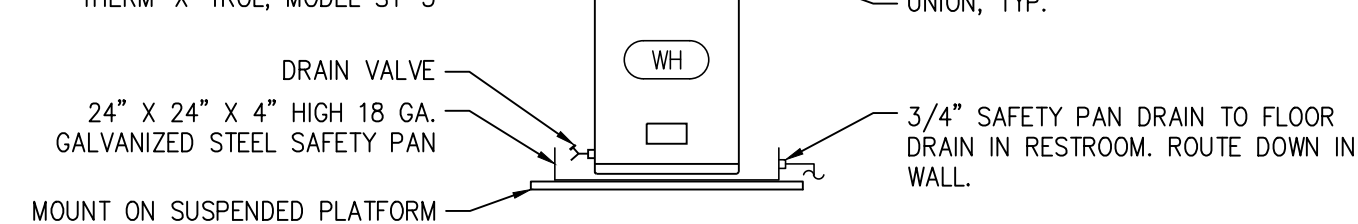
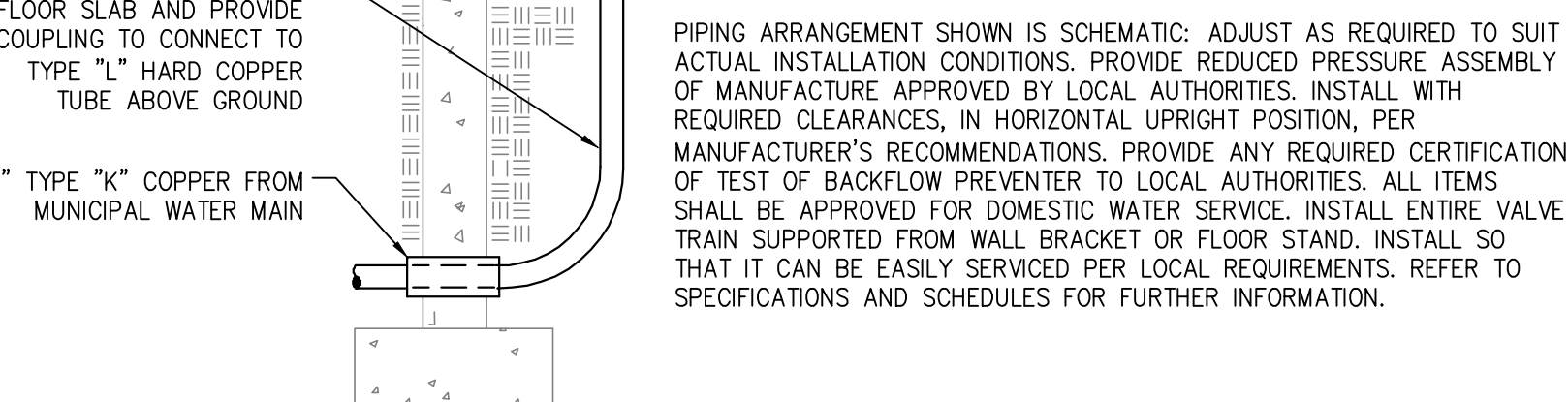
RETURN							
CRG-1	TITUS	50F	EGGGRATE	LAY-IN	24x24	25	A,B,C,D
NOTES:							
A. NECK SIZE SHOWN ON DRAWINGS.							
B. BAKED ENAMEL FINISH, WHITE							
C. FRAME TYPE TO MATCH CEILING CONSTRUCTION, COORDINATE WITH ARCHITECTURAL REFLECTED CEILING PLAN.							
D. PAINT THE INSIDE OF CANS FLAT BLACK.							

WATER CLOSET (FLUSH TANK)	1/2	-	4	2
NOTE:	PIPE SIZES SHOWN ARE MINIMUM. 2" MIN. UNDERGROUND.			



3

3



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1



Project Type: NEW CONSTRUCTION

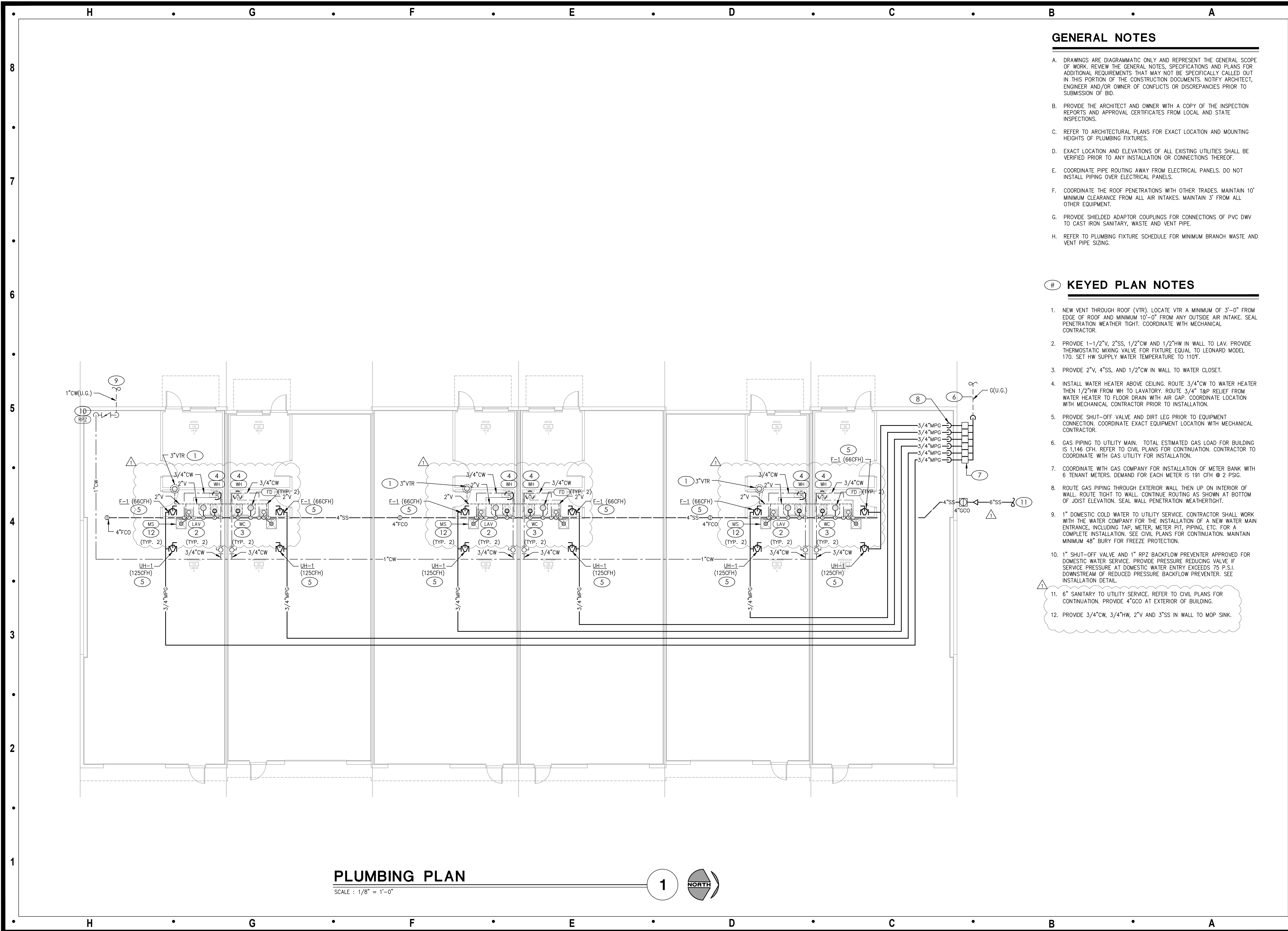
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Plan Review 09.30.22

MECHANICAL AND PLUMBING SCHEDULES AND DETAILS

MP-002



GENERAL NOTES

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- PROVIDE THE ARCHITECT AND OWNER WITH A COPY OF THE INSPECTION REPORTS AND APPROVAL CERTIFICATES FROM LOCAL AND STATE INSPECTIONS.
- REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF PLUMBING FIXTURES.
- EXACT LOCATION AND ELEVATIONS OF ALL EXISTING UTILITIES SHALL BE VERIFIED PRIOR TO ANY INSTALLATION OR CONNECTIONS THEREOF.
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- COORDINATE THE ROOF PENETRATIONS WITH OTHER TRADES. MAINTAIN 10' MINIMUM CLEARANCE FROM ALL AIR INTAKES. MAINTAIN 3' FROM ALL OTHER EQUIPMENT.
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- REFER TO PLUMBING FIXTURE SCHEDULE FOR MINIMUM BRANCH WASTE AND VENT PIPE SIZING.

KEYED PLAN NOTES

- NEW VENT THROUGH ROOF (VTR). LOCATE VTR A MINIMUM OF 3'-0" FROM EDGE OF ROOF AND MINIMUM 10'-0" FROM ANY OUTSIDE AIR INTAKE. SEAL PENETRATION WEATHER TIGHT. COORDINATE WITH MECHANICAL CONTRACTOR.
- PROVIDE 1-1/2"V, 2"SS, 1/2"CW AND 1/2"HV IN WALL TO LAV. PROVIDE THERMOSTATIC MIXING VALVE FOR FIXTURE EQUAL TO LEONARD MODEL 170. SET HW SUPPLY WATER TEMPERATURE TO 110°F.
- PROVIDE 2"V, 4"SS, AND 1/2"CW IN WALL TO WATER CLOSET.
- INSTALL WATER HEATER ABOVE CEILING. ROUTE 3/4"CW TO WATER HEATER THEN 1/2"HV FROM WH TO LAVATORY. ROUTE 3/4" T&P RELIEF FROM WATER HEATER TO FLOOR DRAIN WITH AIR GAP. COORDINATE LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.
- PROVIDE SHUT-OFF VALVE AND DIRT LEG PRIOR TO EQUIPMENT CONNECTION. COORDINATE EXACT EQUIPMENT LOCATION WITH MECHANICAL CONTRACTOR.
- GAS PIPING TO UTILITY MAIN. TOTAL ESTIMATED GAS LOAD FOR BUILDING IS 1,146 CFH. REFER TO CIVIL PLANS FOR CONTINUATION. CONTRACTOR TO COORDINATE WITH GAS UTILITY FOR INSTALLATION.
- COORDINATE WITH GAS COMPANY FOR INSTALLATION OF METER BANK WITH 6 TENANT METERS. DEMAND FOR EACH METER IS 191 CFH @ 2 PSIG.
- ROUTE GAS PIPING THROUGH EXTERIOR WALL THEN UP ON INTERIOR OF WALL. ROUTE TIGHT TO WALL. CONTINUE ROUTING AS SHOWN AT BOTTOM OF JOIST ELEVATION. SEAL WALL PENETRATION WEATHERTIGHT.
- 1" DOMESTIC COLD WATER TO UTILITY SERVICE. CONTRACTOR SHALL WORK WITH THE WATER COMPANY FOR THE INSTALLATION OF A NEW WATER MAIN ENTRANCE, INCLUDING TAP, METER, METER PIT, PIPING, ETC. FOR A COMPLETE INSTALLATION. SEE CIVIL PLANS FOR CONTINUATION. MAINTAIN MINIMUM 48" BURY FOR FREEZE PROTECTION.
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- PROVIDE 3/4"CW, 3/4"HV, 2"V AND 3"SS IN WALL TO MOP SINK.

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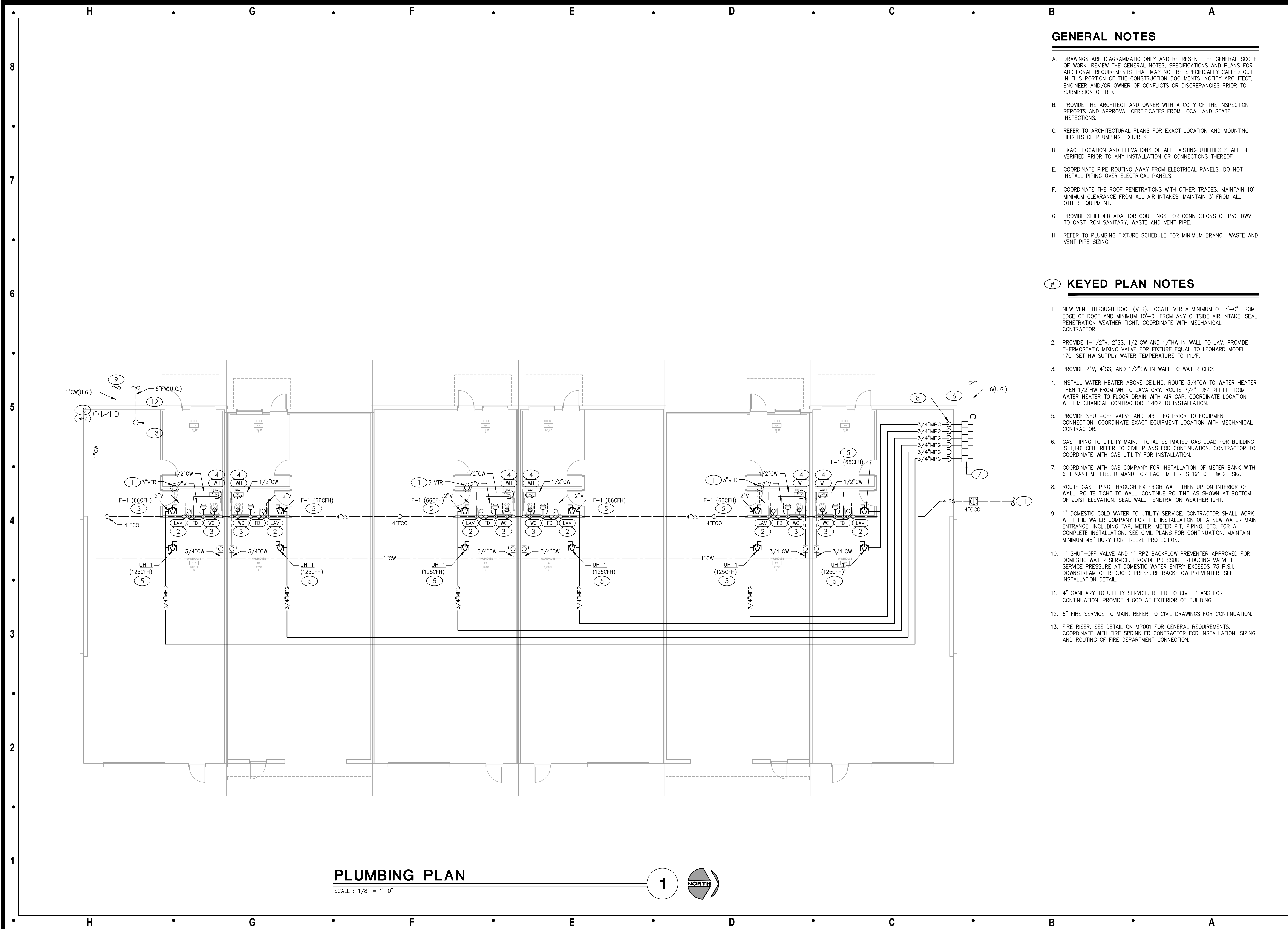
Project Number: 22-215
Project Type: NEW CONSTRUCTION
Project Name and Address:

I-470 B&T CENTER, LOT 7
2701 NE McBaine Drive
Lee's Summit, Missouri 64064

Issue: Date:
Plan Review 09.30.22
Plan Review Revisions 11.17.22

Sheet Title:

PLUMBING PLAN
P-101



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- 6" FIRE SERVICE TO MAIN. REFER TO CIVIL DRAWINGS FOR CONTINUATION.
- FIRE RISER. SEE DETAIL ON MP001 FOR GENERAL REQUIREMENTS. COORDINATE WITH FIRE SPRINKLER CONTRACTOR FOR INSTALLATION, SIZING, AND ROUTING OF FIRE DEPARTMENT CONNECTION.

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PLUMBING PLAN

P-101

ELECTRICAL SPECIFICATIONS

PART I - GENERAL

A. CONDITIONS

1. FURNISH AND INSTALL A COMPLETELY WIRED AND OPERATIONAL ELECTRICAL SYSTEM AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO, THESE MAJOR ITEMS.
- A. LIGHTING FIXTURES AS INDICATED AND SPECIFIED ON THE PLANS.
- B. ELECTRICAL PANELS, SERVICE, CONDUIT, WIRING, ETC., FOR ALL OUTLETS AND EQUIPMENT.
- C. TELEPHONE, TELEVISION, AND FIRE ALARM. OUTLETS AND CONDUIT AS INDICATED.
2. OBTAIN AND REVIEW ALL OTHER DRAWINGS INCLUDING REFLECTED CEILING PLAN, INTERIOR AND EXTERIOR ELEVATIONS, FURNITURE PLANS AND ALL MILL WORK DRAWINGS. COORDINATE INSTALLATION OF ALL ELECTRICAL DEVICES AND EQUIPMENT PRIOR TO ROUGH-IN.
3. OBTAIN SUBMITTAL AND SHOP DRAWINGS FROM OTHER TRADES AND EQUIPMENT TO COORDINATE INSTALLATION ACCORDINGLY.
4. INSTALLATION SHALL COMPLY WITH ALL CURRENT APPLICABLE CODES AND GOVERNING AGENCIES HAVING JURISDICTION.
5. FIRE ALARM SYSTEM, IF REQUIRED PER IBC, SHALL BE DESIGN-BUILD BY OWNER'S/GC'S FIRE ALARM CONTRACTOR. DESIGN SHALL BE IN ACCORDANCE WITH NFPA 72. FIRE ALARM CONTRACTOR SHALL SUBMIT STAMPED DRAWINGS TO AHI FOR REVIEW AND APPROVAL. FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR TESTING AND VERIFYING THAT THE AUDIBILITY OF THE FIRE ALARM SYSTEM MEETS A MINIMUM OF 15 DBA ABOVE AMBIENT NOISE LEVELS. ADD HORNS WHERE REQUIRED TO MAINTAIN MINIMUM LEVELS.
6. PROVIDE FIRE STOP ON ALL PIPING THAT PENETRATES RATED WALLS. METHOD OF FIRE STOP SHALL MEET WALL RATING. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF FIRE RATED WALLS. THIS CONTRACTOR SHALL PROVIDE FIRE RATED ENCLOSURES AROUND ALL ROUGH-IN BOXES, PANELS, ETC. THAT ARE LOCATED IN FIRE RATED WALLS AND SHALL FIRE CAULK ALL OPENINGS IN RATED ASSEMBLIES.

B. RELATED WORK BY OTHERS

1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT, TRENCH, AND BACKFILL FOR ELECTRICAL SERVICE ENTRANCE FROM THE MAIN SERVICE TO UTILITY POINT OF ELECTRICAL SERVICE. ELECTRICAL CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE ELECTRICAL SERVICE ENTRANCE WITH SERVING UTILITY COMPANY.
2. THE ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT, TRENCH, AND BACKFILL FOR PRIMARY PHONE AND CATV SERVICE FROM THE TELEPHONE TERMINAL BOARD OR CABINET TO THE PHONE COMPANY AND CATV COMPANY POINT OF SERVICE. COORDINATE WITH LOCAL UTILITY COMPANIES.

C. CODES, REGULATIONS, AND STANDARDS

1. THE INSTALLATION SHALL COMPLY WITH APPLICABLE LOCAL AND STATE CODES AND ORDINANCES, WITH THE REGULATIONS OF THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE AND WITH THE REQUIREMENTS OF THE POWER, TELEPHONE, AND CATV COMPANIES FURNISHING SERVICES TO THIS INSTALLATION.
2. THE LATEST EDITIONS OF THE FOLLOWING INDUSTRY STANDARDS, SPECIFICATIONS, AND CODES ARE MINIMUM REQUIREMENTS:
- A. THE NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION STANDARDS.
- B. THE NATIONAL ELECTRICAL CODE, INCLUDING LOCAL AMENDMENTS.
- C. UNDERWRITER LABORATORIES INCORPORATED STANDARDS.
- D. AMERICAN NATIONAL STANDARDS INSTITUTE.
- E. INTERNATIONAL BUILDING CODE.

D. INSPECTION OF SITE

1. PRIOR TO SUBMITTING A BID FOR ELECTRICAL WORK, THE CONTRACTOR SHALL VISIT THE SITE OF THE PROPOSED CONSTRUCTION AND SHALL THOROUGHLY ACQUAINT HIMSELF WITH EXISTING UTILITIES, AND WORKING CONDITIONS TO BE ENCOUNTERED, ETC. ALLOWANCE WILL NOT BE MADE FOR NONCOMPLIANCE WITH THIS CONDITION AFTER BIDDING.
2. ELECTRICAL INSTALLATION SHALL MEET THE EXISTING CONDITIONS.

E. STORAGE AND HANDLING OF MATERIAL

1. DELIVER MATERIALS AND EQUIPMENT TO THE PROJECT IN THE MANUFACTURER'S ORIGINAL, UNOPENED, LABELED CONTAINERS. PROTECT AGAINST MOISTURE, TAMPERING, OR DAMAGE FROM IMPROPER HANDLING OR STORAGE. CONTRACTOR SHALL PROTECT AND BE RESPONSIBLE FOR ANY DAMAGE TO WORK OR MATERIALS UNTIL FINAL ACCEPTANCE BY THE OWNER. OWNER SHALL MAKE GOOD WITHOUT COST TO THE OWNER, ANY DAMAGE OR LOSS THAT MAY OCCUR DURING THIS PERIOD.
2. ARRANGE FOR TIMELY DELIVERY OF MATERIALS AND EQUIPMENT TO THE JOB SITE IN ORDER TO MINIMIZE THE LENGTH OF TIME BETWEEN DELIVERY AND INSTALLATION.
3. COVER AND PROTECT ANY MATERIAL WHICH MAY BE AFFECTED BY THE WEATHER WHILE IN TRANSIT OR STORED AT THE PROJECT SITE. ANY MATERIAL FOUND DEFECTIVE OR NOT INSTALLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS MAY BE REJECTED BY THE ENGINEER.

F. CLEANUP

1. KEEP THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIALS, OR RUBBISH CAUSED BY EMPLOYEES OR WORK UNDER THIS DIVISION OF THE SPECIFICATIONS. AT THE COMPLETION OF THE WORK REMOVE ALL SURPLUS MATERIALS, TOOLS, ETC., AND LEAVE THE PREMISES BROOM-CLEAN.

G. EXCAVATION, CUTTING, AND FITTING

1. PERFORM ALL EXCAVATION AND BACK FILLING REQUIRED FOR WORK PERFORMED UNDER THIS DIVISION OF THE SPECIFICATIONS. USE EXCAVATED MATERIALS FOR BACKFILL UNLESS OFF SITE MATERIALS ARE DEEMED NECESSARY.
2. PERFORM THE EXCAVATION, CUTTING, FITTING, REPAIRING, AND FINISHING OF THE WORK NECESSARY FOR THE INSTALLATION OF THE EQUIPMENT OF THIS SECTION. HOWEVER, NO CUTTING OF THE WORK OF OTHER TRADES OR OF ANY STRUCTURAL MEMBERS SHALL BE DONE WITHOUT THE CONSENT OF THE ARCHITECT.

H. DRAWINGS

1. THE DRAWINGS INDICATE THE GENERAL ARRANGEMENT AND LOCATIONS OF THE ELECTRICAL WORK DATA PRESENTED ON THESE DRAWINGS ARE AS ACCURATE AS PLANNING CAN DETERMINE, BUT FIELD VERIFICATION OF ALL DIMENSIONS, LOCATIONS, LEVELS, ETC., TO SUIT FIELD CONDITIONS IS REQUIRED. REVIEW ALL ARCHITECTURAL, STRUCTURAL, AND MECHANICAL DRAWINGS AND ADJUST ALL WORK TO MEET THE REQUIREMENTS OF CONDITIONS SHOWN. THE ARCHITECTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER ALL OTHER DRAWINGS. DISCREPANCIES BETWEEN DIFFERENT PLANS, OR BETWEEN DRAWINGS AND SPECIFICATIONS, OR REGULATIONS AND CODES GOVERNING THE INSTALLATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IN WRITING BEFORE THE DATE OF BID OPENING. IF DISCREPANCIES ARE NOT REPORTED, THE CONTRACTOR SHALL BID THE GREATER QUANTITY OR BETTER QUALITY, AND APPROPRIATE ADJUSTMENTS WILL BE MADE AFTER CONTRACT AWARD. CONTRACTOR SHALL BE RESPONSIBLE TO FIELD MEASURE AND CONFIRM MOUNTING HEIGHTS AND LOCATION OF ELECTRICAL EQUIPMENT WITH RESPECT TO COUNTERS, RADIATION, ETC. DO NOT SCALE DISTANCES OFF THE ELECTRICAL DRAWINGS, USE ACTUAL BUILDING DIMENSIONS.

I. COOPERATION WITH OTHER CONTRACTORS

1. COOPERATE WITH THE OTHER TRADES SO THAT THE INSTALLATION OF THE ELECTRICAL OUTLETS AND EQUIPMENT WILL BE PROPERLY COORDINATED. CONDUIT, LIGHTING FIXTURES, AND OTHER EQUIPMENT LOCATIONS SHALL BE VERIFIED WITH OTHER TRADES TO AVOID CONFLICT WITH THE PIPING, DUCTWORK, STEEL, BEAMS, OR OTHER OBSTRUCTIONS.
2. CAREFULLY VERIFY THE LOCATIONS OF THE OUTLET BOXES AND DETERMINE THAT THEY HAVE NOT BEEN DISTURBED DURING THE INSTALLATION OF MATERIALS OF OTHER TRADES.
3. COORDINATE THE LOCATION OF THE TRENCHES AND CONDUITS FOR ELECTRICAL AND TELEPHONE UTILITY SERVICES WITH THE GENERAL CONTRACTOR.
4. COORDINATE HVAC AND PLUMBING EQUIPMENT CONNECTION REQUIREMENTS WITH HVAC AND PLUMBING CONTRACTORS.

J. RECORD DRAWINGS

1. THE ELECTRICAL CONTRACTOR SHALL MAINTAIN A SET OF DRAWINGS AT THE JOB SITE FOR THE EXCLUSIVE PURPOSE OF MAINTAINING A RECORD OF ALL WORK INSTALLED AND TO SHOW ANY DEVIATIONS FROM THE WORK INDICATED ON THE DRAWINGS.
2. AT THE COMPLETION OF THE PROJECT, ONE SET OF REPRODUCIBLE DRAWINGS, SHOWING ALL RECORD CONDITIONS, SHALL BE DELIVERED TO THE OWNER FOR ACCEPTANCE PRIOR TO FINAL PAYMENT.

PART II - PRODUCTS AND EXECUTION

A. MATERIALS

1. ALL MATERIALS SHALL BE NEW AND OF QUALITY AS SPECIFIED ON THE PLANS OR SPECIFICATIONS AND MUST CARRY THE UNDERWRITER'S LABORATORIES APPROVAL COVERING THE PURPOSE FOR WHICH THEY ARE USED, IN ADDITION TO MEETING ALL REQUIREMENTS OF THE CURRENT APPLICABLE CODES AND REGULATIONS.

B. SHOP DRAWINGS AND APPROVALS

1. THE ITEMS SPECIFIED HEREIN AND ON DRAWINGS ARE USED AS A STANDARD OF QUALITY. ANY MATERIALS OF EQUAL QUALITY AND AESTHETIC VALUE WILL BE GIVEN CONSIDERATION AS A SUBSTITUTE FOR THE MATERIALS SPECIFIED. NO APPROVAL WILL BE GIVEN TO A SPECIFIC CATALOG NUMBER, MODEL, OR TYPE OF EQUIPMENT, PRIOR TO BIDDING. AFTER BIDDING, THE DECISION OF THE ARCHITECT AND/OR ENGINEER DETERMINING EQUAL MATERIALS WILL BE FINAL.
2. THE CONTRACTOR SHALL SUBMIT SEVEN (7) IDENTICAL BOUND SETS OF SHOP DRAWINGS ON THE FOLLOWING ITEMS:
- A. LIGHTING FIXTURE CUTS AND PERFORMANCE DATA.
- B. OUTLINE DRAWINGS AND DATA SHEETS OF EACH PANELBOARD, LOAD CENTERS, AND DISTRIBUTION PANELS.
- C. OUTLINE DRAWINGS OF ALL SWITCH GEAR COMPONENTS.
- D. WIRING DEVICES AND COVERPLATES.
- E. ALL CIRCUIT BREAKERS INSTALLED IN PANELBOARDS, LOAD CENTERS, AND DISTRIBUTION PANELS.
3. SUBMIT ITEMS AT ONE TIME IN A NEAT AND ORDERLY MANNER WITHIN 15 DAYS OF AWARD OF CONTRACT. PARTIAL SUBMITTALS WILL NOT BE ACCEPTABLE.

C. SYSTEM GROUNDING

1. GROUNDING SHALL COMPLY WITH REQUIREMENTS OF ARTICLE 250. ALL EXPOSED NONCURRENT CARRYING METALLIC PARTS OF ELECTRICAL EQUIPMENT, METALLIC RACEWAY SYSTEMS, METALLIC CABLE ARMOR, GROUNDING CONDUCTOR OF NONMETALLIC SHEATHED CABLES, GROUNDING CONDUCTOR IN NONMETALLIC RACEWAYS, AND GROUNDED CONDUCTORS OF THE WIRING SYSTEM SHALL BE GROUNDED.
2. GROUNDING CONDUCTOR (NEUTRAL) OF THE WIRING SYSTEM SHALL BE CONNECTED TO THE SYSTEM GROUNDING CONDUCTOR AT A SINGLE PLACE IN EACH SYSTEM BY REMOVABLE BONDING JUMPERS, SIZED ACCORDING TO THE APPLICABLE PROVISIONS OF THE NATIONAL ELECTRICAL CODE. THE GROUNDED CONDUCTOR (NEUTRAL) TO THE GROUNDING CONDUCTOR CONNECTION SHALL BE LOCATED IN THE ENCLOSURE FOR THE SYSTEM'S OVERCURRENT PROTECTION OR WHERE OTHERWISE INDICATED ON THE PLANS OR SPECIFICATIONS.
3. A GROUND BUS SEPARATE FROM THE NEUTRAL BUS SHALL BE PROVIDED IN ALL DISTRIBUTION PANELS AND PANELBOARDS. PROPER TORQUE ON GROUND BUS SHALL BE VERIFIED, PER MANUFACTURER'S RECOMMENDATIONS, PRIOR TO ENERGIZING EQUIPMENT.
4. GROUND BUSES AND NEUTRAL BUSES IN ALL DISTRIBUTION PANELS, LOAD CENTERS, PANELBOARDS, AND THOSE PROVIDED IN ANY EQUIPMENT SHALL BE ISOLATED EXCEPT WHERE REQUIRED TO BE CONNECTED AS SPECIFIED ABOVE FOR THE SERVICE ENTRANCE.
5. WHEN INDICATED ON THE DRAWINGS, EQUIPMENT GROUNDING CONDUCTORS SHALL BE EXTENDED FROM THE GROUND BUS IN THE DISTRIBUTION EQUIPMENT TO THE RECEPTACLE, FIXTURE OR DEVICE LUGS WHERE THEY ARE PROVIDED. EQUIPMENT GROUNDING CONDUCTORS SHALL BE CONNECTED TO EQUIPMENT ENCLOSURES. THE CONNECTIONS SHALL BE ARRANGED SUCH THAT REMOVAL OF THE RECEPTACLE, EQUIPMENT GROUND CONDUCTORS, OR GROUND JUMPERS FROM GROUND BUSING SHALL NOT AFFECT THE GROUND SYSTEM.
6. RACEWAYS MAY NOT BE USED AS A GROUNDING CONDUCTOR FOR POWER AND LIGHTING CIRCUITS. ALL CONDUIT SHALL HAVE SEPARATE CODE SIZED GREEN GROUND WIRE INSTALLED IN THE CONDUIT TO INSURE A CONTINUOUS GROUNDING PATH.
7. IN INACCESSIBLE LOCATIONS, MAKE CONNECTIONS BY EXOTHERMIC WELD PROCESS.
8. IN ACCESSIBLE LOCATIONS, CONNECTIONS SHALL BE MADE WITH BOLTED THROUGH, APPROVED SOLDERLESS BRONZE GROUNDING DEVICES.

D. WIRE

1. CONDUCTOR SIZES SHOWN ON THE DRAWINGS ARE BASED ON COPPER WIRE. UNLESS OTHERWISE SPECIFIED, ALL WIRE SHALL BE TYPE XHHW OR SE FOR FEEDERS OR BRANCH CIRCUITS LARGER THAN 4 AWG, TYPE THHN/THWN INSULATION FOR FEEDERS AND BRANCH CIRCUITS 4 AWG AND SMALLER. ALL BRANCH CIRCUIT WIRING SHALL BE COPPER.
2. ALUMINUM CONDUCTORS MAY BE UTILIZED FOR SERVICE ENTRANCE AND PANEL FEEDERS. CONDUCTORS SHALL BE ALUMINUM ALLOW AA-8000 SERIES.
3. THE WIRES SHALL BE MARKED WITH COLOR TO SIMPLIFY CIRCUIT IDENTIFICATION. UNLESS OTHERWISE REQUIRED BY LOCAL ORDINANCES GROUND WIRES SHALL BE GREEN, NEUTRAL WIRES SHALL BE 120V-WHITE, AND LIVE WIRES 208Y/120V AND 120/240 SHALL BE BLACK (PHASE A), RED (PHASE B), AND BLUE (PHASE C). CIRCUIT SHALL BE LABELED IN EACH J-BOX.
4. ALL CONDUCTORS SHALL BE RATED 600 VOLT.
5. SPLICES IN EXTERIOR PULL BOXES AND MANHOLES SHALL BE WEATHERPROOF USING "SCOTCHCAST" SPLICE KIT OR APPROVED EQUAL. SEAL ENDS OF CONDUITS AND DUCTS WITH "DUCTSEAL" OR APPROVED EQUAL.
6. PROVIDE SOLID CONDUCTOR FOR 12 AWG AND SMALLER.
7. NO WIRE SHALL BE INSTALLED IN THE CONDUIT SYSTEM UNTIL THE CONDUIT SYSTEM IS COMPLETE. USE MINERLAC NO. 100 OR EQUIVALENT AS A LUBRICANT TO FACILITATE THE INSTALLATION OF THE CONDUCTORS IN THE CONDUIT SYSTEM.
8. MC CABLE WITH COPPER CONDUCTORS AND GROUND WIRE MAY BE USED WHERE PERMITTED.

E. CONDUIT

1. ALL WIRING SHALL BE INSTALLED IN LISTED METALLIC CONDUIT EXCEPT AS PERMITTED IN OTHER SECTIONS. RGS, WITH A 20 MIL PVC COATING WILL BE USED WHEN IN CONTACT WITH EARTH. IMC MAY BE USED IN INDOOR LOCATIONS NOT IN CONTACT WITH THE EARTH. EMT MAY BE USED IN INDOOR LOCATIONS NOT IN CONTACT WITH EARTH, NOT IN CONCRETE SLABS OR WALLS AND NOT SUBJECT TO DAMAGE. PVC MAY BE USED IN OR BELOW CONCRETE AND DIRECT BURIED IN EARTH. FLEXIBLE STEEL CONDUIT SHALL BE USED FOR INDOOR FINAL CONNECTIONS TO EQUIPMENT IN LENGTHS NOT TO EXCEED 72". LIQUID-TIGHT FLEXIBLE STEEL CONDUIT SHALL BE FOR OUTDOOR FINAL CONNECTIONS TO EQUIPMENT NOT TO EXCEED 48".
2. WHERE CONDUIT ENTERS OUTLET BOXES, FIXTURES OR CABINETS, FIRMLY FASTEN WITH STEEL SET SCREW, COMPRESSION CONNECTORS, OR DOUBLE LOCKNUTS FOR GRC. ALL CONNECTIONS SHALL HAVE BUSHINGS OR INSULATED THROAT CONNECTORS. FIRMLY FASTEN CONDUIT TO THE BUILDING CONSTRUCTION. RUN EXPOSED CONDUIT PARALLEL TO THE BUILDING LINES, SUPPORTED BY APPROPRIATE HANGERS (UNISTRUT, T & B OR APPLETON, OR EQUAL).
3. COVER METALLIC CONDUIT IN CONTACT WITH EARTH WITH POLYETHYLENE TAPED SPIRAL WRAPPED, 1/2 LAPPED TO PROVIDE 20 MIL THICKNESS. TAPE SHALL BE SCOTCH NO. 50 TAPE. CONDUIT AND DUCTS NOT UNDER BUILDINGS AND FEEDER DUCTS SHALL BE INSTALLED PER N.E.C. 300-5. MAKE JOINTS WITH COMPOUND TO BE WATERTIGHT.
4. SCHEDULE 40 PVC CONDUIT SHALL BE PERMITTED UNDERGROUND WITH PROPER FITTINGS, ALL UL APPROVED AND CEMENTED JOINTS. PENETRATIONS THROUGH FLOOR SLABS AND BENDS GREATER THAN 22" SHALL BE WRAPPED RIGID GALVANIZED STEEL ELBOWS.
5. FITTINGS AND CONDUIT BODIES SHALL BE STEEL. DIECAST FITTINGS ARE NOT ACCEPTABLE.
6. CONDUIT SIZES SHALL BE AS REQUIRED BY CODE AND AS INDICATED OR SPECIFIED.
7. ALL EMPTY CONDUIT SYSTEMS SHALL HAVE A 200 LB. TEST NYLON PULL STRING TO FACILITATE INSTALLATION OF FUTURE WIRE.
8. WIRING, CONDUITS, AND OUTLETS SHALL BE CONCEALED WITH THE BUILDING STRUCTURE, EXCEPT THAT CERTAIN MOTOR AND LIGHTING FEEDER CONDUITS MAY BE RUN EXPOSED IN CERTAIN AREAS AS INDICATED ON THE DRAWINGS.
9. CONDUIT PENETRATION THROUGH ROOF SHALL HAVE ROOF FLASHING WITH CAULK TYPE COUNTER FLASHING SLEEVE. INSTALLATION SHALL BE WATERTIGHT.
10. CONDUITS SHALL BE ROUTED PARALLEL AND PERPENDICULAR TO THE STRUCTURE.

F. OUTLET, PULL, AND JUNCTION BOXES

1. ALL JUNCTION AND OUTLET BOXES CONCEALED IN WALLS SHALL BE STEEL.
2. BOXES INSTALLED IN POLISHED CEMENT FLOORS SHALL BE FLUSH TYPE CAST IRON OR STEEL WITH WATERTIGHT GASKETED COVERS. WHERE BOXES ARE INSTALLED IN FLOORS WITH TILE OR CARPET FLOOR COVERING, COVERS SHALL BE OF THE RECESSED TYPE TO ACCOMMODATE THE FLOOR COVERING.
3. BOXES INSTALLED FOR THE ALARM, COMPUTER, AND SECURITY SYSTEM SHALL BE PROVIDED WITH APPROPRIATE COVER PLATES.
4. BOXES FOR TELEPHONE, COMPUTER, T.V., FIRE ALARM, SECURITY, AND SIMILAR SYSTEMS SHALL BE MINIMUM 2-1/8" DEEP.

G. WIRING DEVICES (COMMERCIAL)

1. WALL SWITCHES SHALL BE SPECIFICATION GRADE AC SILENT TYPE SWITCHES, 20A 120/277 VOLT.
2. RECEPTACLES SHALL BE SPECIFICATION GRADE, DUPLEX TYPE, NEMA5-20R, 20 AMPERE, 120VOLT GROUNDED TYPE. SPECIAL APPLICATION RECEPTACLES SHALL BE INDICATED ON PLANS. MOUNT WITH THE GROUND DOWN.
3. DEVICE PLATES SHALL BE EQUAL TO SIERRA SMOOTH-LINE PLASTIC WALL PLATES. COLOR SHALL BE WHITE, UNLESS OTHERWISE NOTED.
4. RECEPTACLES IN OUTDOOR AND WET LOCATIONS SHALL BE INSTALLED WITH A HINGED OUTLET COVER/ENCLOSURE CLEARLY MARKED AND U.L. LISTED SUITABLE FOR WET LOCATIONS WHILE IN USE, EQUAL TO TAYMAC SPECIFICATION GRADE.

H. SERVICE ENTRANCE SECTION

1. THE SERVICE ENTRANCE EQUIPMENT SHALL BE AS INDICATED ON THE DRAWINGS. EQUIPMENT SHALL CARRY THE U.L. LABEL AND SHALL CONFORM TO THE POWER COMPANY REGULATIONS.
2. SERVICE ENTRANCE EQUIPMENT SHALL BE PROVIDED WITH A FULLY RATED COPPER OR ALUMINUM BUS. HORIZONTALLY TAPERED BUSSING SHALL NOT BE ALLOWED.

J. PANEL BOARDS

1. CIRCUIT BREAKER TYPE AS INDICATED ON DRAWINGS. UNLESS INDICATED OTHERWISE, ALL PANELS SHALL HAVE PANEL HAVE PANEL BOARD TYPE CONSTRUCTION WITH BOLT-ON CIRCUIT BREAKERS FOR 3ø PANELS.
2. MANUFACTURERS SHALL BE GENERAL ELECTRIC, SQUARE D, SIEMENS, CUTLER-HAMMER WITH VOLTAGE, SIZES, AND RATINGS AS INDICATED ON DRAWINGS.
3. THE CIRCUIT BREAKERS SHALL BE OPERABLE IN ANY POSITION AND BE REMOVABLE FROM THE FRONT OF THE PANEL BOARD WITHOUT DISTURBING THE ADJACENT UNITS. BRANCH BREAKERS SHALL BE OF SUCH DESIGN THAT COMBINATION OF SINGLE-POLE, DOUBLE-POLE, AND THREE-POLE BREAKERS CAN BE ASSEMBLED ON THE SAME PANEL. EACH BRANCH CIRCUIT SHALL BE CLEARLY NUMBERED. BRANCH AND MAIN TERMINALS SHALL BE SOLDERLESS TYPE. HANDLE TIES TO FORM MULTI-POLE BREAKERS NOT ACCEPTABLE.

L. LIGHTING FIXTURES

1. PROVIDE ALL LIGHTING FIXTURES, WIRED AND CONNECTED. THE DRAWINGS INDICATE THE FIXTURES FOR EACH LOCATION. PROVIDE LAMPS FOR ALL FIXTURES. THE LAMPS SHALL BE BY THE SAME MANUFACTURER. VERIFY CEILING CONSTRUCTION BEFORE ORDERING RECESSED UNITS. PROVIDE PLASTER FRAMES AND HANGERS AS REQUIRED. CEILING CONSTRUCTION, ARCHITECTURAL ACCESSORIES, VOLTAGE, AND BALLASTS TO MEET THE EXISTING CEILING CONDITION.

M. LIGHTING CONTROL

1. FURNISH AND INSTALL TIME SWITCHES, PHOTOCELLS, CONTRACTORS AND FULL LIGHTING CONTROL SYSTEMS AS REQUIRED FOR LIGHTING CONTROLS INDICATED ON THE DRAWINGS.
2. TIME SWITCHES SHALL BE EQUAL TO PARAGON, GENERAL ELECTRIC, TORK, OR INTERMATIC AND SHALL HAVE SIZE AND NUMBER OF POLES AS REQUIRED.
3. PHOTOCELLS SHALL BE EQUAL TO TORK OR INTERMATIC WITH VOLTAGE AS INDICATED.

N. TELEPHONE AND CABLE TELEVISION SYSTEMS

1. TELEPHONE WALL OUTLETS SHALL CONSIST OF STANDARD BOXES MOUNTED 18" ABOVE THE FLOOR UNLESS OTHERWISE INDICATED. PROVIDE A TERMINAL MOUNTING BOARD FOR THE INCOMING SERVICE CABLE.
2. CABLE TELEVISION OUTLETS SHALL CONSIST OF STANDARD BOXES MOUNTED 18" ABOVE THE FLOOR UNLESS OTHERWISE INDICATED. PROVIDE A TERMINAL MOUNTING BOARD FOR THE INCOMING SERVICE CABLE.

Q. GUARANTEE

1. GUARANTEE ALL MATERIAL FURNISHED AND ALL WORKMANSHIP PERFORMED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF WORK. ANY DEFECTS DEVELOPING WITHIN THIS PERIOD, TRACEABLE TO MATERIAL FURNISHED AS A PART OF THIS SECTION OR WORKMANSHIP PERFORMED HEREUNDER, SHALL BE MADE GOOD AT NO EXPENSE TO THE OWNER.

SYMBOLS LEGEND

NOTE: THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS, ETC, ARE NECESSARILY USED ON THE DRAWINGS.

LIGHTING FIXTURES - SYMBOL/LETTER INDICATES LIGHT FIXTURE AS INDICATED ON FIXTURE SCHEDULE

- LED FIXTURE (SEE LIGHTING FIXTURE SCHEDULE)
- FIXTURE WITH EMERGENCY BATTERY DRIVER UNIT
- TRACK LIGHT
- DOWNLIGHT FIXTURE WITH EMERGENCY BATTERY DRIVER UNIT
- WALL MOUNTED FIXTURE WITH EMERGENCY BATTERY DRIVER UNIT
- PENDANT MOUNTED FIXTURE WITH EMERGENCY BATTERY DRIVER UNIT
- DOWNLIGHT FIXTURE
- WALL MOUNTED FIXTURE
- PENDANT MOUNTED FIXTURE
- WALL WASHER
- SINGLE FACE EXIT SIGN - UNIVERSAL MOUNTED
- SINGLE FACE EXIT SIGN W/ DIRECTIONAL ARROWS - UNIVERSAL MTD
- DOUBLE FACE EXIT SIGN W/ DIRECTIONAL ARROWS - UNIVERSAL MTD
- DUAL HEADED EMERGENCY UNIT
- COMBO DUAL HEADED EMERGENCY AND EXIT SIGN UNIT

LIGHTING CONTROLS

- S SINGLE POLE SWITCH @ +48" UNLESS NOTED
- Sabc SWITCH BANK @ +48" UNLESS NOTED. LOWER CASE LETTER INDICATES FIXTURE CONTROLLED.
- S3 3-WAY SWITCH @ +48" UNLESS NOTED
- S4 4-WAY SWITCH @ +48" UNLESS NOTED
- Sd DIMMER SWITCH - SIZE AS REQUIRED @ +48" UNLESS NOTED
- Sm MANUAL MOTOR STARTER
- Sos WALL SWITCH WITH OCCUPANCY SENSOR. DIGITAL LOW VOLTAGE WALL SWITCH. SWITCH @ +48" UNLESS NOTED.
- SLV TWO BUTTON DIGITAL LOW VOLTAGE WALL SWITCH. PROVIDES ON/OFF/0-10V DIMMING. SWITCH @ +48" UNLESS NOTED. PROVIDE EXTRA CONTROL CABLES NEEDED TO FIXTURE CONTROLLED.
- CS LIGHTING CONTROLS CEILING MOUNT OCCUPANCY SENSOR
- PC LIGHTING CONTROLS POWER PACK
- PC PHOTOCELL
- TC TIMECLOCK

POWER DISTRIBUTION

- SWITCHBOARD, MOTOR CONTROL CENTER OR DISTRIBUTION BOARD
- 277/480V, 3 PHASE, 4 WIRE PANELBOARD, UNO
- 120/208V, 3 PHASE, 4 WIRE PANELBOARD, UNO
- 120/240V, 1 PHASE, 3 WIRE PANELBOARD, UNO
- TRANSFORMER

POWER DEVICES

- SPECIAL HEAVY DUTY RECEPTACLE - SIZE AS NOTED. @ +18" UNLESS NOTED
- 1/2 SWITCHED RECEPTACLE @ +18" UNLESS NOTED
- FIRE RATED POKE THRU WITH TYPE INDICATED
- FLUSH FLOOR BOX WITH TYPE INDICATED
- SINGLE RECEPTACLE @ +18" UNLESS NOTED
- DUPLEX RECEPTACLE @ +18" UNLESS NOTED
- DOUBLE DUPLEX RECEPTACLE @ +18" UNLESS NOTED
- DUPLEX RECEPTACLE INSTALLED ABOVE COUNTERTOP
- GFCI-RATED DUPLEX RECEPTACLE
- ARC FAULT RATED DUPLEX RECEPTACLE
- TAMPER RESISTANT RATED DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE WITH WEATHERPROOF COVERPLATE @ 18" UNLESS NOTED
- JUNCTION BOX
- DISCONNECT SWITCH - SIZE AND TYPE NOTED
- COMBINATION FUSED STARTER DISCONNECT SWITCH FUSE SIZE AS INDICATED, STARTER SIZE '1'

AUXILIARY SYSTEMS

- MECHANICAL EQUIP. CONNECTION, SEE SCHED. ON MECH. PLAN
- TELEPHONE OUTLET @ +18" UNLESS NOTED
- DATA OUTLET @ +18" UNLESS NOTED
- COMBINATION TELEPHONE/DATA OUTLET @ +18" UNLESS NOTED
- TELEVISION OUTLET @ +60" UNLESS NOTED
- SMOKE DETECTOR
- HEAT DETECTOR
- DUCT SMOKE DETECTOR
- REMOTE TEST STATION WITH INDICATING LIGHT. MOUNT AT 48" AFF UNO.
- AUXILIARY SYSTEM TERMINAL CABINET

GENERAL

- CONDUIT RUN CONCEALED IN WALL OR ABOVE CEILING
- CONDUIT RUN BELOW FLOOR OR GRADE
- HOMERUN TO PANELBOARD, INFORMATION AT ARROWS ARE CIRCUIT NUMBERS AND PANELBOARD FOR TERMINATION. REFER TO ASSOCIATED NOTE FOR BRANCH CIRCUIT CONDUCTOR SIZES.
- (E) OR ETR: DENOTES EXISTING ITEM/EQUIPMENT TO REMAIN

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Issue:

Date:

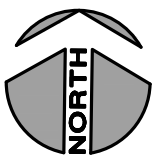
Plan Review

09.30.22

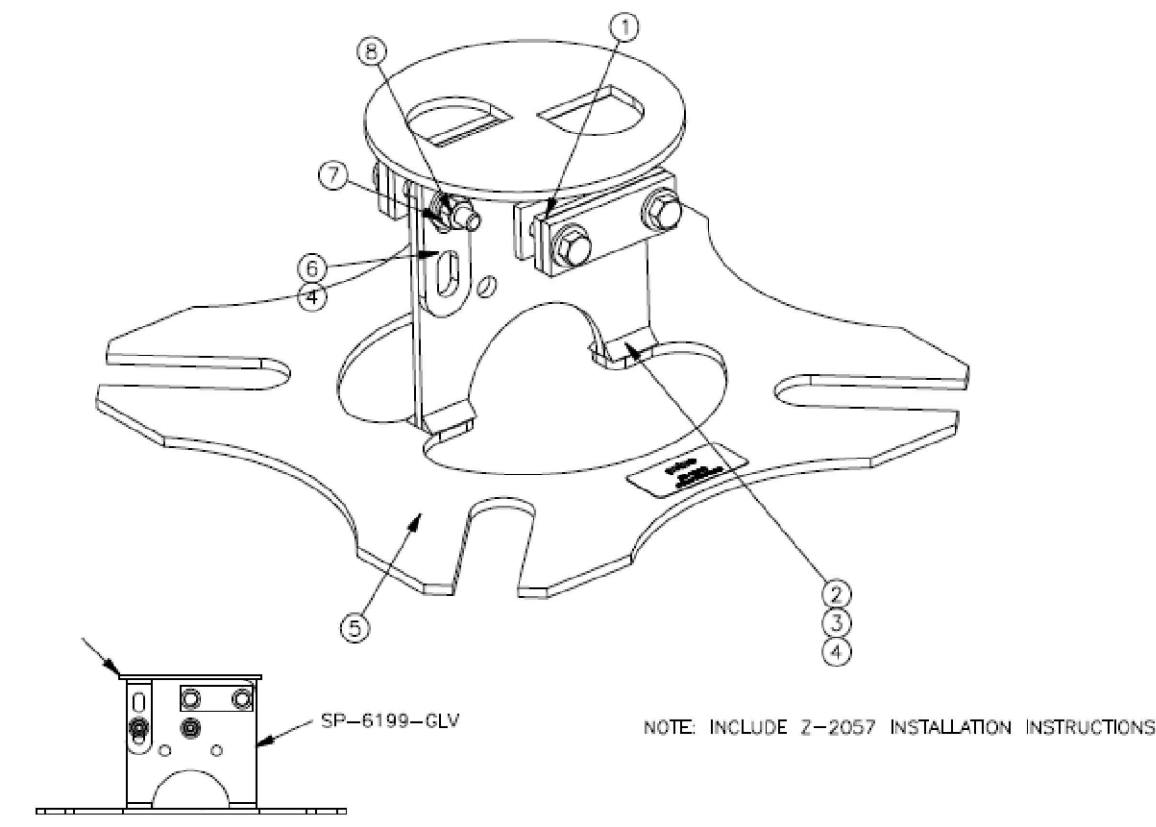
Sheet Title:

ELECTRICAL
SPECIFICATIONS AND
SYMBOLS

E-001

E-002

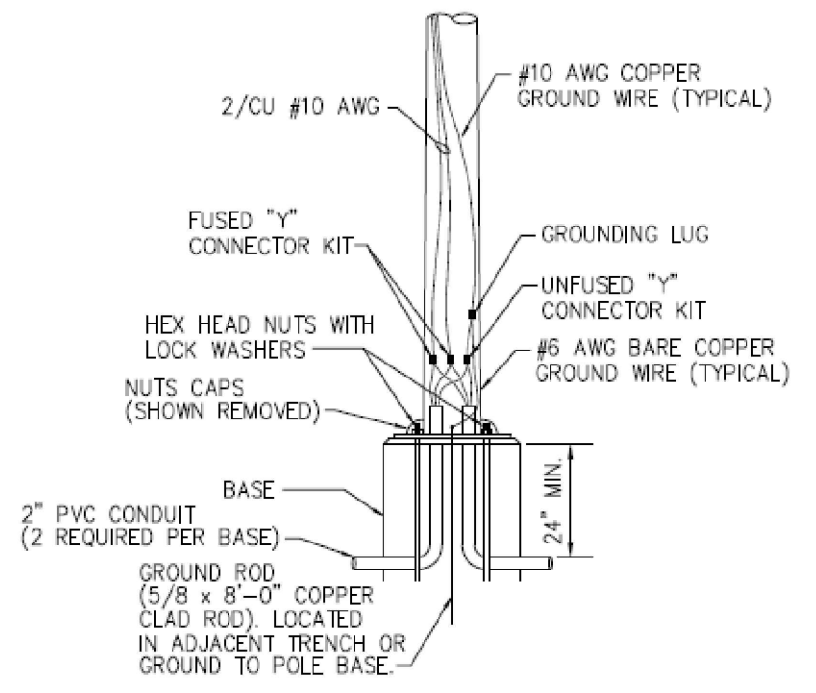
CABLE RETAINER ASSEMBLY DETAIL



ITEM	PART NUMBER	DESCRIPTION	QTY
1	SP-6199	HELMINT, CABLE RETAINER ASSY. FOR 6" FOUNDATION ANCHOR, STEEL	1
2	FS-1001-SS	NUT, HEX 5/16"-18, STAINLESS, 304, WAXED	4
3	FS-4201-SS	WASHER, LOCK SPLIT, 5/16", STAINLESS	4
4	FS-4101-SS	WASHER, FLAT, 5/16" X .750" OD, STAINLESS	8
5	D-3140	LABEL, 1" X 2" CABLE RETAINER	1
6	FS-2016-SS	BOLT, HEX HD TAP, 5/16"-18 X 2-1/4", STAINLESS	4
7	SP-6199-3	BAR, CABLE RETAINER ASSEMBLY, STEEL	2
8	SP-6199-4	PAD, CABLE RETAINER, 3/16" THICK, 90 DURO, RED URETHANE	4

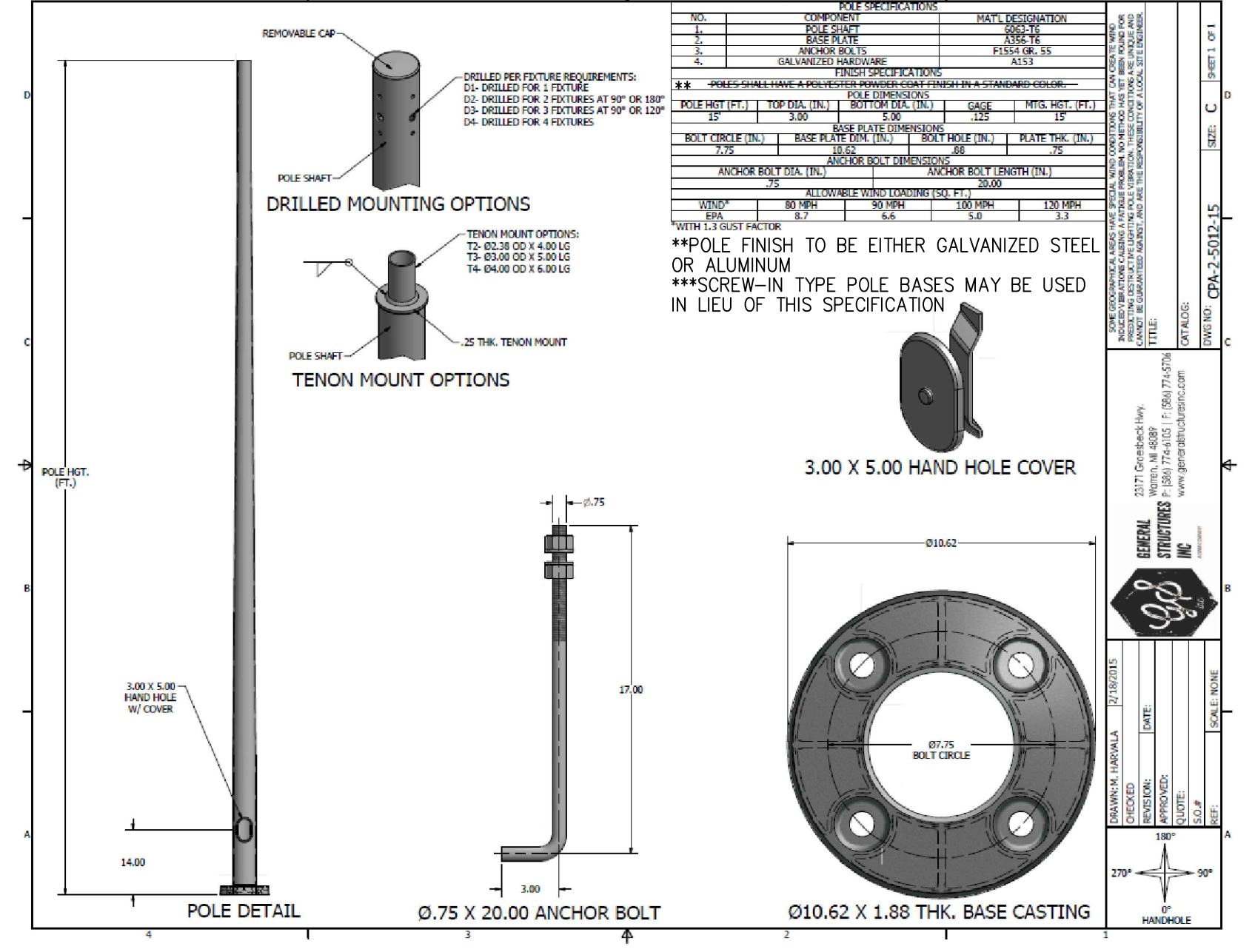
CABLE RETAINER ASSEMBLY FOR 6" FOUNDATION ANCHOR
N.T.S.

POLE-TO-BASE CONNECTION DETAIL

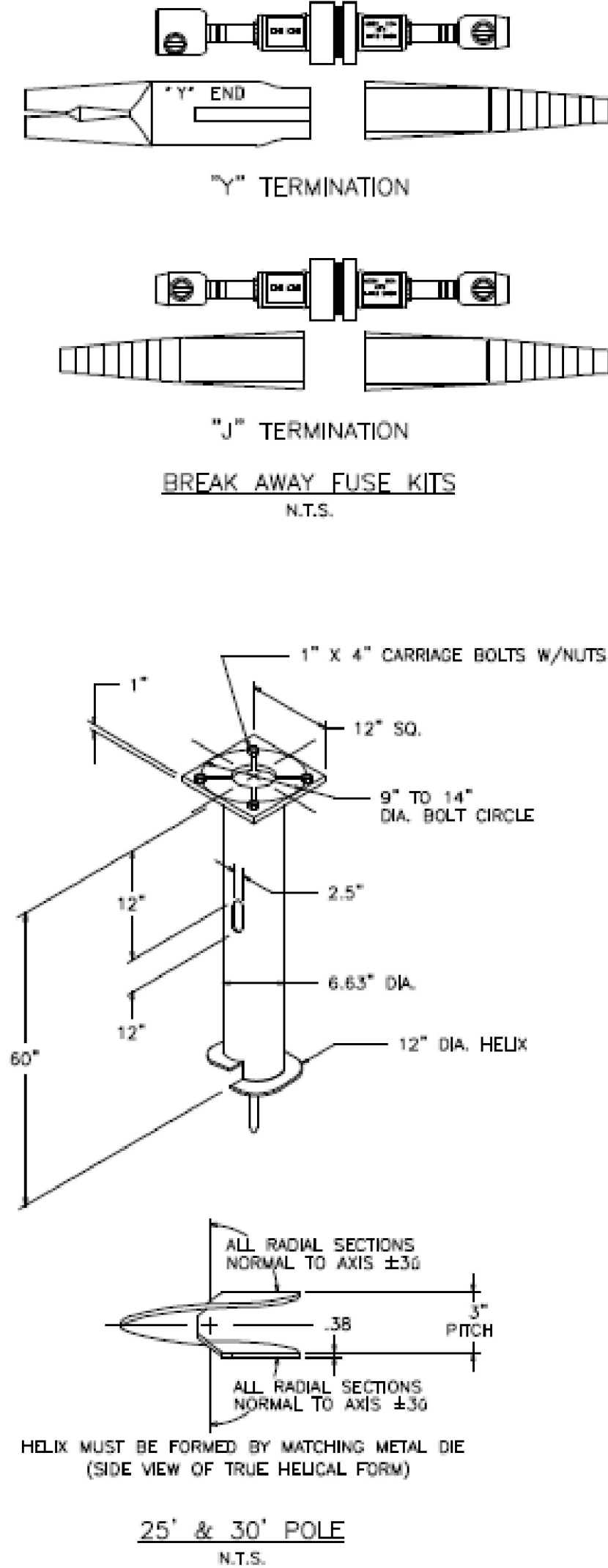


POLE TO BASE CONNECTIONS
NOT TO SCALE

FIXTURE POLE SPECIFICATION

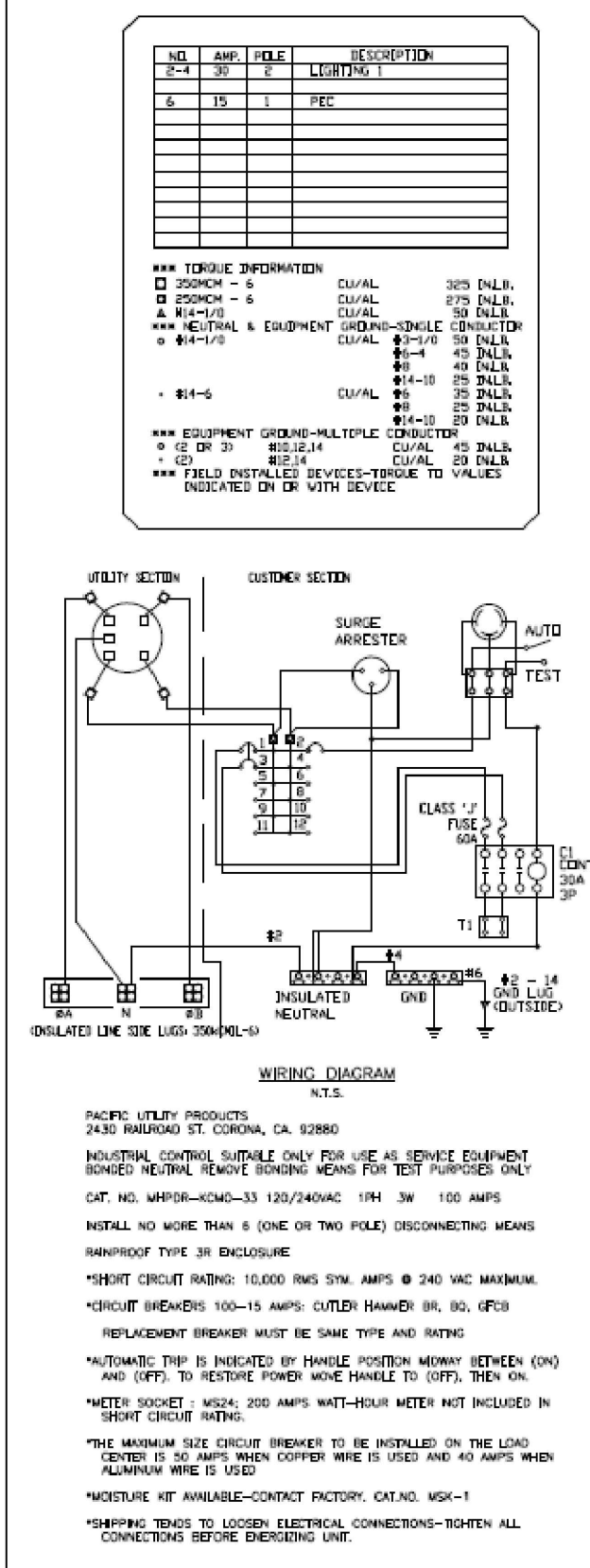


BREAK AWAY FUSE DETAILS

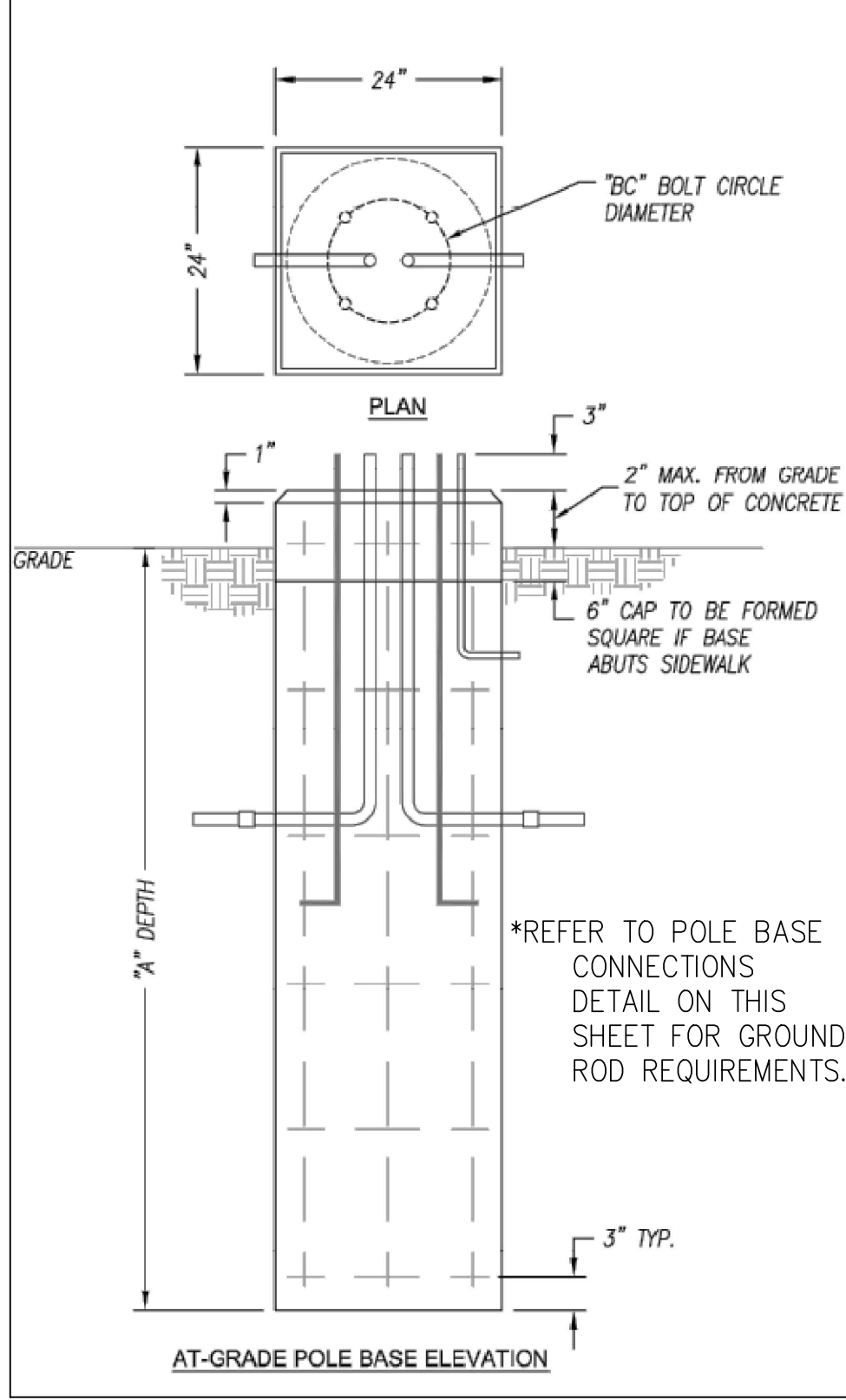


- NOTES:
- FINISH: HOT DIP GALVANIZE PER ASTM-A153 (LATEST REVISION).
 - BASEPLATE TO BE PERPENDICULAR TO SHAFT AXIS ($\pm 1\%/250$) AND HOLE CENTERLINE CONCENTRIC ($\pm 1/88$) TO SHAFT AXIS.
 - STENCIL MIN. 1/2 IN. LETTERS MANUFACTURER'S NUMBER AFTER GALVANIZING.
 - PILOT POINT AND SHAFT AXES TO BE CONCENTRIC ($\pm 1/25$ FIM) AND IN LINE ($\pm 2\%/250$).
 - FLAME CUT SLOT PERPENDICULAR TO THE BASEPLATE.
 - PREHEAT, TUMBLEBLAST, HANDGRIND, AND CLEAN BASEPLATE, HELIX, AND PILOT POINT ON ALL WELDED AREAS.
 - FLAMECUT IRREGULARITIES PERMISSIBLE: (1) VALLEYS NOT TO EXCEED 3/32 IN. BELOW NOMINAL SURFACE LEVEL. (2) PEAKS OR POSITIVE IRREGULARITIES NOT TO EXCEED 1/32 IN. ABOVE NOMINAL SURFACE LEVEL OR INTERSECTIONS OF NOMINAL SURFACES.
 - MANUFACTURER TO HAVE IN EFFECT INDUSTRY RECOGNIZED WRITTEN QUALITY CONTROL FOR ALL MATERIALS AND MANUFACTURING PROCESSES.
 - ALL MATERIAL IS TO BE NEW, UNUSED AND WILL TRACEABLE MEETING THE FOLLOWING SPECIFICATIONS:
- BASEPLATE: ASTM A36-(LATEST REVISION) HOT ROLLED STEEL PLATE, (CONFORM TO AASHTO TECH. BUL. #270)
- SHAFT: STEEL PIPE PILES, SEAMLESS OR STRAIGHT WELDED, GRADE-2 PER ASTM A252.
- ALT. MATERIAL: STEEL PIPE TYPE E OR S, GRADE-B PER ASTM A53.
- HELIX: ASTM A635 (LATEST REVISION) HOT ROLLED STEEL.
- PILOT POINT: ASTM A575 (LATEST REVISION) STEEL BAR.
- BOLTS: CARR BOLT PER ANSI B-18.2.1, SAE J429 GRADE-5.3
10. BASEPLATE IS PERMANENTLY STAMPED WITH MANUFACTURER'S IDENTIFICATION "ABC" IN 1/2" LETTERS AND DATE CODE IN 1/4" LETTERS.

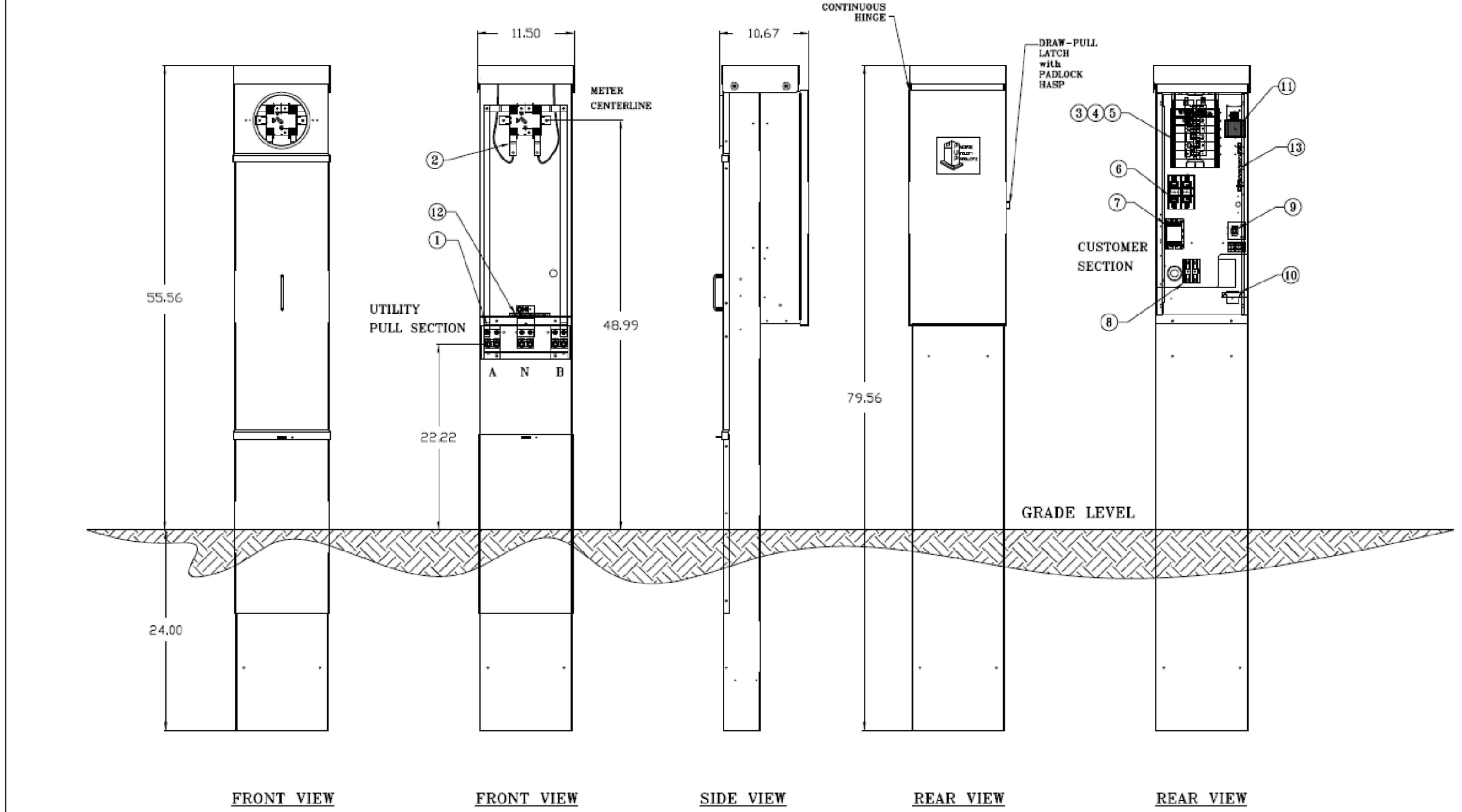
PEDESTAL WIRING DIAGRAM



POLE BASE DETAIL - CONFIRM "A" DIMENSION WITH POLE MANUFACTURER



METER PEDESTAL DETAIL - PROVIDE WITH PHOTOCELL LOCATED ON METER PEDESTAL WITH SHIELD AND/OR TIME DELAY FUNTION.



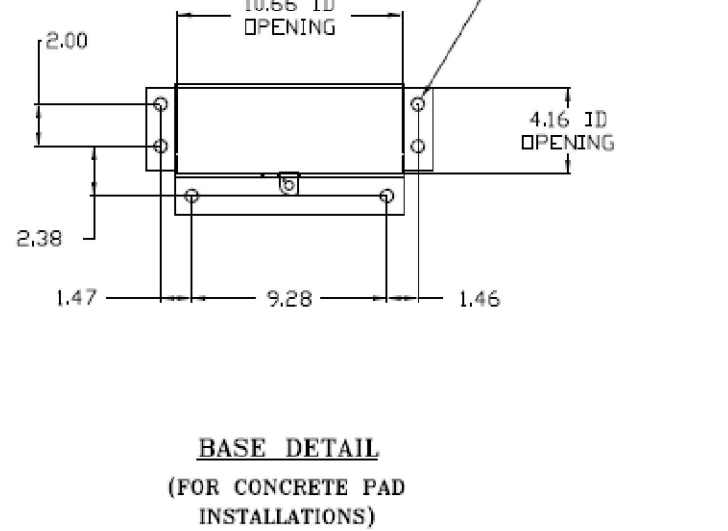
SHOWN LESS COVERS

COMPONENT	CAT. NO.	MFG.
1	120/240 VAC 1 PH 3W 100AMPS	1
2	LANDING LUGS DIA. 350XCMIL - 6	2
3	MTR SKT 4JAW 100AMPS WITH 5TH CLIP	3
4	LOADCENTER 125A 1PH 12-CKT	4
5	(2) 250 30A 2P 120/240VAC 10A/10A	5
6	(1) CB 15A 1P 120/240VAC 10A/10A	6
7	(2) FUSE 60A CLASS J 200V BUSSMAN	7
8	CONTRACTOR EH 30A SIEMENS LE	8
9	250 30A 2P 120/240VAC 10A/10A	9
10	SWITCH TOGGLE SPST 20A	10
11	RECEPTABLE	11
12	BONDED NEUTRAL	12
13	INSULATED NEUTRAL	13

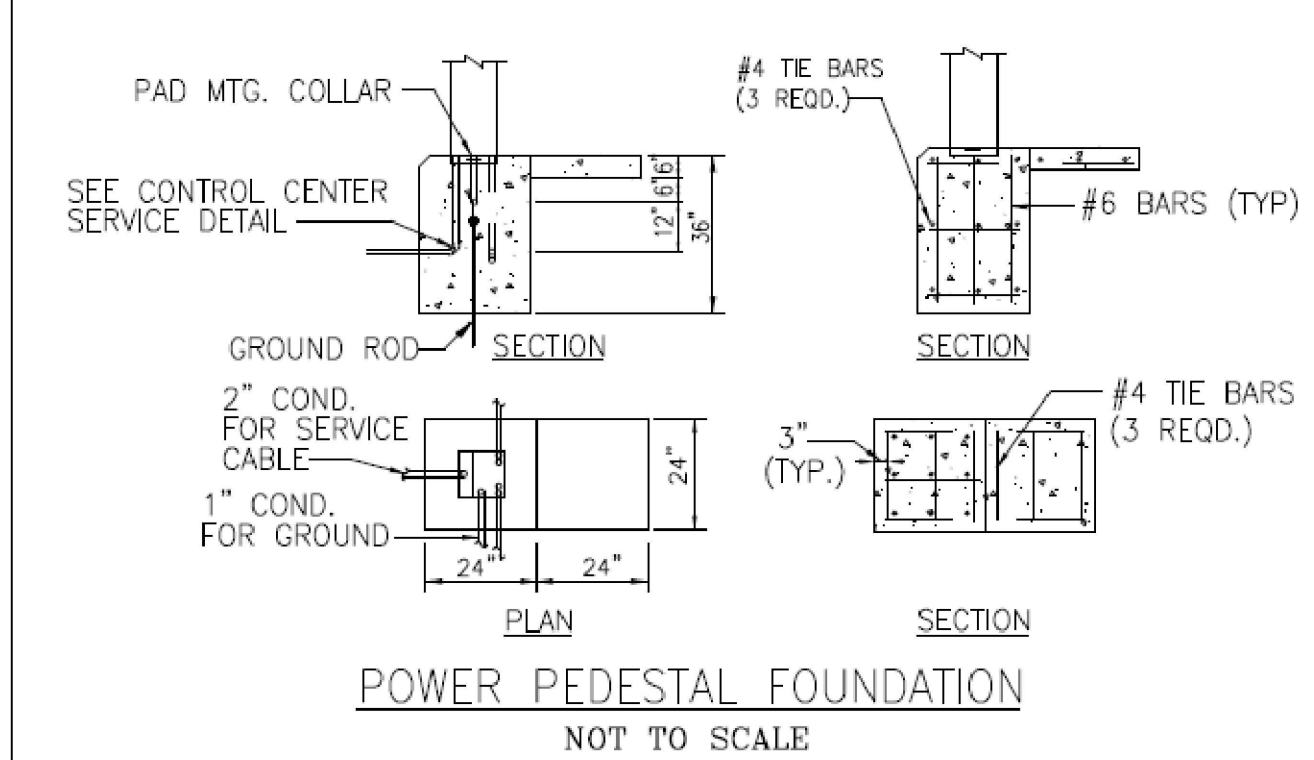
USP RESIDENTIAL SERVICE PEDESTAL 0 - 200 AMPERES 0 - 600 VOLTS N.T.S.

- SPECIFICATIONS
- NEW 19 CONSTRUCTION
 - FABRICATED FROM CORROSION- RESISTANT ZINC COATED STEEL
 - FACTORY WIRING 600 VOLT RATED COPPER
 - COLOR FOREST/DARK GREEN UNLESS OTHERWISE SPECIFIED
 - POLYESTER POWDER-COATED FINISH EXCEEDS ASTM B-117 SPECIFICATIONS
 - ALL EXTERIOR HINGES CONTINUOUS PLANO TYPE STAINLESS STEEL
 - ALL COMPONENTS ARE UL LISTED
 - DELAY TIMER OR SHIELD FOR PHOTO CELL

SHOWN LESS COVERS



POWER PEDESTAL FOUNDATION DETAIL



- PROVIDE GROUND ROD(S) AS REQUIRED FOR MAXIMUM OF 25 OHMS RESISTANCE TO GROUND. EXOTHERMIC WELD ONE END OF NO. 6 AWG GROUND CONDUCTOR TO THE GROUND ROD(S) AND BRUSH ON 2 COATS OF AN INSULATING VARNISH TO THE WELDED AREAS.
- CONCRETE SLAB TO PROVIDE SEMI-DRY WORKING AREA IN FRONT OF CONTROLLER CABINET.
- SECONDARY POWER SERVICE (DIRECT BURY) THRU CONTRACTOR INSTALLED 2" CONDUIT AND ELBOW.

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Seal:



Project Number: 22-215

Project Type: NEW CONSTRUCTION

Project Name and Address:

I-470 B&T CENTER, LOT 7

2701 NE McBaine Drive
Lee's Summit, Missouri 64064

Issue:

Date:

Plan Review

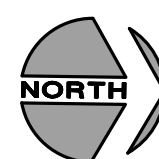
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Sheet Title:

PHOTOMETRIC PLAN

E-003





1. MAKE CONNECTION TO DIV 22/23 EQUIPMENT PER MANUFACTURER'S RECOMMENDATION AND NEC REQUIREMENTS. COORDINATE WORK WITH DIVISION 22/23 CONTRACTOR PRIOR TO CONSTRUCTION.
2. WIRE SO THAT ON/OFF OPERATION OF EXHAUST FAN COORDINATES WITH LIGHTING IN ROOM.
3. MAKE CONNECTION FROM INDOOR TO OUTDOOR UNIT PER MANUFACTURER'S RECOMMENDATIONS. COORDINATE WORK WITH DIVISION 23 CONTRACTOR.
4. INSTALL ROOF SERVICE RECEPTACLE ON UNISTRUT STAND NEXT TO CONDENSING UNIT DISCONNECT SWITCH.

E-201

ELECTRICAL LIGHTING SCHEDULE (OR EQUAL. VERIFY ALL SELECTIONS AND FINISHES WITH OWNER AND ARCHITECT PRIOR TO ORDERING).							
FIXTURE TYPE	MANUFACTURER		VOLT AMPS	MOUNTING	LAMP TYPE	REMARKS	VOLT
	NAME	SERIES					
A	LITHONIA	EPANL	31	RECESSED/GRID	INCLUDED 4000K LED	LED 2'X4' FLAT PANEL - 4000LM OUTPUT HIGH EFFICIENCY	MVOLT
B	LITHONIA	WF6	14	RECESSED	INCLUDED 2700K LED	WAFER-STYLE 6" LED DOWNLIGHT	MVOLT
C	LSI	RH8-LED-18L-UNV-DIM-40-BLK	147	SUSPENDED	INCLUDED 4000K LED	COMPACT HIGH-BAY LED WAREHOUSE FIXTURE - 18000 LUMEN OUTPUT	MVOLT
W	LITHONIA	WDGE3	59	WALL	INCLUDED 4000K LED	EXTERIOR WALL PACK - P2 PACKAGE - PROVIDE WITH 'P' PHOTOCELL OPTION	MVOLT
	LITHONIA	ELM2L-SDRT	5	SURFACE	INCLUDED LED	EMERGENCY EGRESS LIGHTING UNIT WITH 90 MIN. BATTERY PACK	120
	LITHONIA	LHQM-LED-R-SD	5	SURFACE	INCLUDED LED	EMERGENCY EXIT EGRESS COMBO LIGHTING UNIT WITH RED FACE EXIT SIGN AND 90 MIN. BATTERY PACK	120
	LITHONIA	LQM-S-W-3-R-MVOLT-EL N-SD	5	SURFACE	INCLUDED LED	EMERGENCY EXIT SIGN WITH RED LETTERS AND 90 MIN. BATTERY PACK	MVOLT
	LITHONIA	ELA-B-T-QWP-L0309-SD	5	SURFACE	INCLUDED LED	OUTDOOR EMERGENCY REMOTE EGRESS LIGHTING UNIT	120

Short-Circuit and Voltage Drop Calculations

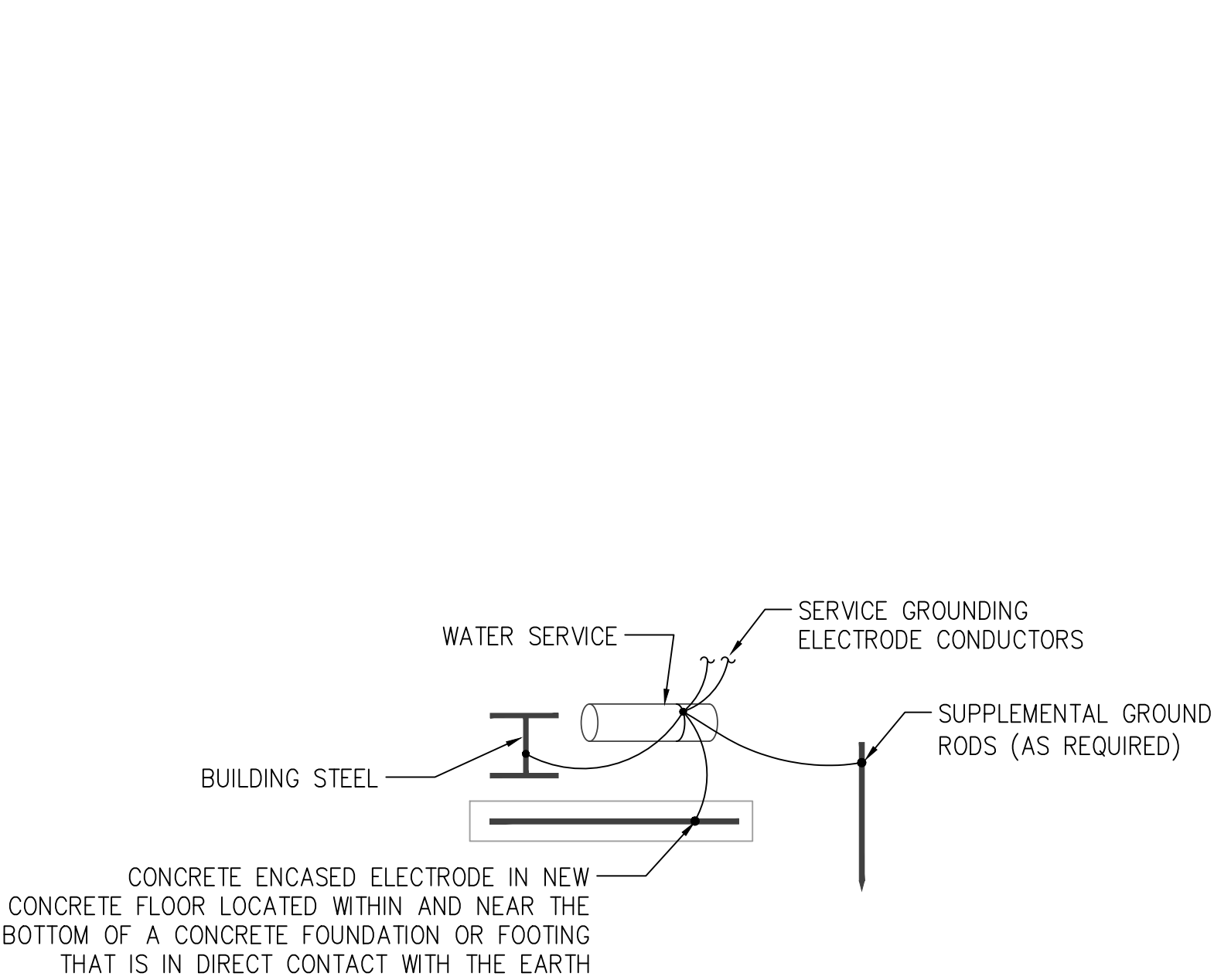
Distances are for calculation purposes only and shall not be used for contractor takeoffs nor bidding - Contractor shall notify Engineer of any field condition that results in a change of 10% or greater circuit distance

The following calculations are based on the "PostKeyPoint" method where:			
ISC ₁ = ISC ₁ @ M ₁	Feeder:	$I_{sc1} = \frac{V_{p1} \times I_{sc1} \times 100}{M^2 \times 1000}$	3PBR: $I_{sc1} = \frac{V_{p1} \times I_{sc1} \times 173 \times \sqrt{3}}{100 \times 1000 \times \sqrt{3} \times 1000}$
ISC ₂ = Short circuit current at fault point 2	Feeder:	$I_{sc2} = \frac{V_{p2} \times I_{sc2} \times 100}{M^2 \times 1000}$	3PBR: $I_{sc2} = \frac{V_{p2} \times I_{sc2} \times 173 \times \sqrt{3}}{100 \times 1000 \times \sqrt{3} \times 1000}$
ISC ₃ = Short circuit current at fault point 2			
V_{p1} = Primary short circuit voltage V_{p2} = Primary voltage V_{s1} = Secondary short circuit voltage V_{s2} = Secondary voltage L = Length of cable E = Line to line volts C = "C" Factor from Bussman table where "C" = 1 / impedance per linear foot Feeder Types: IM = Non-Magnetic Conduit, M = Magnetic Conduit, FB = Feeder Busway, PB = Plug-in Busway, TX = Transformer			
VOLTAGE DROP (%): %VD₁ = (R x cos(acosccpf)) + X x sin(acosccpf) x L x 100 / (E x 1000) %VD₂ = (R x cos(acosccpf)) + X x sin(acosccpf) x L x 100 / (E x 1000) %VD₃ = (R x cos(acosccpf)) + X x sin(acosccpf) x L x 100 / (E x 1000)			
%VD CUMULATIVE: Cumulative Voltage Drop from Feeder Point 1 to Feeder Point # R= resistance in ohms per LF X= reactance in ohms per LF			

Rail Point (m)	Bus/Feder Description	Signature (F)	Phase (F)	Source (F)	Conductor (F)	Material	Length (m)	Conductor C-Value	Bunwire C-Value	L-L Voltage (V)	Circuit Length (m)	Load Power Factor (%)	Circuit Load Ampage	Conductor			Type	Degree Rec.	Transformer				System Voltage				480V/177-3 phase			
														Resistance (R)	Reactance (X)	Impedance (Z)			kVA	Exsiting	Secondary	Tap	1	M	Current (A)	Voltage (V)	Drop (%)	Drop (V)	Current (A)	Voltage (V)
Utility Service Point																														
Motor Contribution																														
TO SERVICE DISCONNECT		1	3	6300	NM	AL	4	300			480	100	0.9	0.000001	0.00000	0.451027			0.350	0.74	48280	-0.63%	-0.63%							
3	TO METER CENTER	2	3	45520	M	AL	4	54614	350	15484	→	480	10	0.9	0.000003	0.00000	0.451027			0.029	0.59	46676	-0.59%	-0.59%	3					
4	TO PABLO D	2	3	48360	M	AL	4	54614	350	15122	→	480	10	0.9	0.000003	0.00002	0.451027			0.028	0.51	27835	-0.40%	-1.00%	4					
5	TO PABLO D	3	3	48559	M	AL	4	54614	250	15122	→	480	10	0.9	0.000008	0.00000	0.451027			1.208	2.44	22007	-0.55%	-1.21%	5					
6	TO PABLO D	3	3	48559	M	AL	4	54614	250	15122	→	480	150	0.9	0.000008	0.00002	0.451027			1.817	3.58	16669	-0.71%	-1.45%	6					
7	TO PABLO D	3	3	48559	M	AL	4	54614	250	15122	→	480	150	0.9	0.000008	0.00002	0.451027			2.097	182	15144	-0.81%	-1.67%	7					
8	TO PABLO D	3	3	48559	M	AL	4	54614	250	15122	→	480	185	0.9	0.000008	0.00002	0.451027			2.556	328	13609	-1.07%	-1.46%	8					
9	TO PABLO D	3	3	48559	M	AL	4	54614	250	15122	→	480	200	0.9	0.000008	0.00002	0.451027			2.796	326	13272	-1.16%	-1.85%	9					
10	TO PABLO D	3	3	48559	M	AL	4	54614	250	15122	→	480	200	0.9	0.000008	0.00002	0.451027			2.796	326	13272	-1.16%	-1.85%	10					
11	TO PABLO D	4	3	27315	M	CU	4	54614	3	6140	→	480	20	0.9	0.000004	0.00004	0.451027			0.786	0.58	13910	-0.14%	-1.23%	11					
12	TO MMR T-2	5	3	20796	M	CU	4	54614	3	6140	→	480	20	0.9	0.000004	0.00004	0.451027			0.851	0.62	12846	-0.14%	-1.25%	12					
13	TO MMR T-3	5	3	16663	M	CU	4	54614	3	6140	→	480	20	0.9	0.000004	0.00004	0.451027			0.489	0.41	11142	-0.14%	-1.15%	13					
14	TO MMR T-4	7	3	16164	M	CU	4	54614	3	6140	→	480	20	0.9	0.000004	0.00004	0.451027			0.451	0.69	10448	-0.14%	-1.20%	14					
15	TO PABLO D	5	3	13205	M	CU	4	54614	3	6140	→	480	20	0.9	0.000004	0.00004	0.451027			0.560	0.43	10505	-0.14%	-1.15%	15					
16	TO PABLO D	9	3	12372	M	CU	4	54614	3	6140	→	480	20	0.9	0.000004	0.00004	0.451027			0.368	0.75	9042	-0.14%	-1.96%	16					
17	TO PABLO D	23	3	3085	M	CU	4	54614	3		→	480	20	0.9	0.000020	0.00009	0.451027			0.106	0.90	2785	-0.33%	-1.21%	17					
18	TO PABLO D	24	3	3081	M	CU	4	54614	3		→	480	20	0.9	0.000020	0.00009	0.451027			0.105	0.91	2779	-0.33%	-1.19%	18					
19	TO PABLO D	25	3	3013	M	CU	4	54614	3		→	480	20	0.9	0.000020	0.00009	0.451027			0.103	0.91	2776	-0.33%	-1.91%	19					
20	TO PABLO D	26	3	2980	M	CU	4	54614	3		→	480	20	0.9	0.000020	0.00009	0.451027			0.104	0.91	2782	-0.33%	-2.33%	20					
21	TO PABLO D	27	3	2950	M	CU	4	54614	3		→	480	20	0.9	0.000020	0.00009	0.451027			0.105	0.90	2778	-0.33%	-2.20%	21					
22	TO PABLO D	28	3	2943	M	CU	4	54614	3		→	480	20	0.9	0.000020	0.00009	0.451027			0.106	0.91	2801	-0.33%	-2.22%	22					
23	WFMRT T-1	11	3	13912	TX						→	480	20	0.9	0.000020	0.00009	0.451027			0.405	2.44	244	-0.33%	-1.44%	23					
24	WFMRT T-2	12	3	12603	TX						→	480	20	0.9	0.000020	0.00009	0.451027			0.686	1.10	3061	-0.33%	-1.35%	24					
25	WFMRT T-3	13	3	11142	TX						→	480	20	0.9	0.000020	0.00009	0.451027			0.444	2.44	244	-0.33%	-1.44%	25					
26	WFMRT T-4	14	3	10449	TX						→	480	20	0.9	0.000020	0.00009	0.451027			0.685	1.10	3060	-0.33%	-1.70%	26					
27	WFMRT T-5	15	3	9423	TX						→	480	20	0.9	0.000020	0.00009	0.451027			1.071	1.14	2950	-0.33%	-0.80%	27					
28	WFMRT T-6	16	3	8562	TX						→	480	20	0.9	0.000020	0.00009	0.451027			1.156	1.14	2983	-0.33%	-1.90%	28					

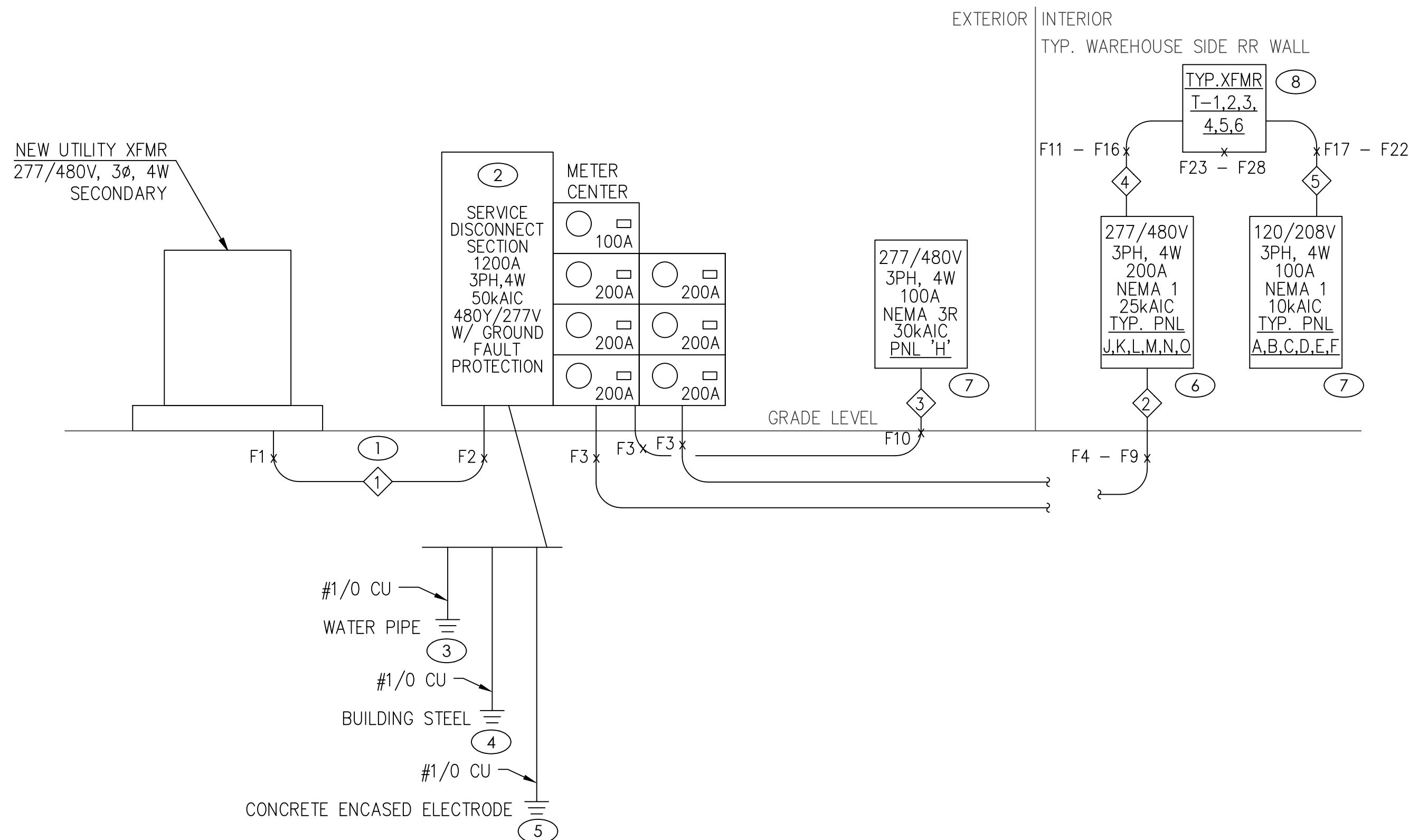
SC / VD CALCULATIONS

SCALE : NO SCALE



GROUNDING ELECTRODE SYSTEM DIAGRAM

SCALE : NO SCALE



ELECTRICAL SINGLE LINE DIAGRAM

SCALE : NO SCALE

FEEDER SCHEDULE	
FEEDER NUMBER	CONDUIT AND CONDUCTOR SIZES
①	(4) 3" C EA W/ 4 #500KCM AL
②	(1) 2-1/2" C W/ 4 #250KCM AL & #4 AL GND
③	(1) 1-1/2" C W/ 4 #1 AL & #6 AL GND
④	(1) 1" C W/ 4 #6 CU & #10 CU GND
⑤	(1) 1-1/4" C W/ 4 #3 CU & #8 CU GND
THE DESIGN PROFESSIONAL HAS PERFORMED ALL THE REQUIRED VOLTAGE DROP CALCULATIONS FOR ALL BRANCH CIRCUITS AND FEEDERS PER THE NATIONAL ELECTRICAL CODE, ARTICLE 210.19(A)(1) FPN NO. 4. THE DESIGN PROFESSIONAL HAS PERFORMED ALL THE REQUIRED SHORT CIRCUIT CALCULATIONS AND THE AIC RATING INDICATED FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.	

KEYED SLD NOTES

1. PROVIDE NEW CONDUIT AND CONDUCTORS TO UTILITY SOURCE. VERIFY EXACT LOCATION AND REQUIREMENTS WITH UTILITY PRIOR TO ROUGH-IN.
2. NEW DISCONNECT WITH GROUND FAULT PROTECTION PER UTILITY REQUIREMENTS.
3. PROVIDE NEW GROUND PER NEC 250.52(A)(1).
4. PROVIDE NEW GROUND PER NEC 250.52(A)(2).
5. PROVIDE NEW GROUND PER NEC 250.52(A)(3).
6. NEW 120/208V PANELBOARD. SEE PANELBOARD SCHEDULES ON SHEET E-302 FOR MORE INFORMATION.
7. NEW 277/480V PANELBOARD. SEE PANELBOARD SCHEDULES ON SHEET E-302 FOR MORE INFORMATION.
8. NEW 480/277V PRIMARY, 208/120V SECONDARY, 30KVA, NEMA 1 RATED TRANSFORMER.

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Revisions to technical submissions which are not made or approved by the licensee are prohibited.

Seal:



Project Number: 22-215

Project Type: NEW CONSTRUCTION

Project Name and Address:

I-470 B&T CENTER, LOT 7

Issue: _____ Date: _____

Plan Review	09.30.22
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Sheet Title

ELECTRICAL SCHEDULES AND DIAGRAMS

E-301

PANELBOARD: H (NEW)										FED FROM: METER CENTER					LINE-SIDE LUGS: MECHANICAL				
BUS AMPS: 100A										A/C RATING: 30000 FULLY RATED					EQUIPMENT GROUND BUS				
MAIN SIZE/TYPE: MLO										SERVES: EXTERIOR									
VOLTS/PHASE: 480Y/277V, 3PH, 4W										MOUNTING: SURFACE									
SECTION: 1										LOCATION: EXT. WALL SERVICE ENTRANCE					SERVICE ENTRANCE RATED				
CKT NO.	DESCRIPTION			VOLTAMPS/PHASE			WIRE NO.	BKR AMP	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE			DESCRIPTION			CKT NO.	
	A	B	C									A	B	C					
1	LTG - PARKING LOT			210			12	20	2	1	20				SPARE			2	
3					210					1	20				SPARE			4	
5	PROVISIONAL SPACE									1	20				SPARE			6	
7	PROVISIONAL SPACE									1	20				SPARE			8	
9	PROVISIONAL SPACE									1	1				PROVISIONAL SPACE			10	
11	PROVISIONAL SPACE									1	1				PROVISIONAL SPACE			12	
13	PROVISIONAL SPACE									1	1				PROVISIONAL SPACE			14	
15	PROVISIONAL SPACE									1	1				PROVISIONAL SPACE			16	
17	PROVISIONAL SPACE									1	1				PROVISIONAL SPACE			18	
SUBTOTAL				210	210										SUBTOTAL				
TOTAL PHASE A - VA		210	LOAD		CONN. VA		DF	LOAD		CONN. VA		DF							
AMPS		1	COOLING				1.00	REFRIG				1.00							
TOTAL PHASE B - VA		210	HEATING				0	SIGN/DISP				1.25							
AMPS		1	LIGHTING		420		1.25	KITCHEN				1.00							
TOTAL PHASE C - VA			RECEPTACLES				1.0/5	EXISTING				1.00							
AMPS			MOTORS				1.00	LRG MOTOR				1.25	TOTAL DEMAND						
TOTAL PNLBD - VA		420	SUPP HEAT				1.00	SHOW/WNDW				1.25							
AMPS		1	MISC EQUIP				1.00	LTG TRACK				1.00	525 VA 1 A						
PANELBOARD NOTES																			

PANELBOARD: J,K,L,M,N,O (TYP) (NEW)										FED FROM: METER CENTER					LINE-SIDE LUGS: MECHANICAL EQUIPMENT GROUND BUS				
BUS AMPS: 225A										A/C RATING: 25000 FULLY RATED									
MAIN SIZE/TYPE: MLO										SERVES: WAREHOUSE & OFFICE									
VOLTS/PHASE: 480Y/277V, 3PH, 4W										MOUNTING: SURFACE									
SECTION: 1										LOCATION: WAREHOUSE SIDE RR WALL					SERVICE ENTRANCE RATED				
CKT NO.	DESCRIPTION			VOLTAMPS/PHASE			WIRE NO.	BKR AMP	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE			DESCRIPTION			CKT NO.	
	A	B	C									A	B	C					
1	SUBFEED TO			3,062						1						PROVISIONAL SPACE			2
3	PNL A,B,C,D,E,F (TYP.)				5,467		6	50	3	1						PROVISIONAL SPACE			4
5	VIA XFMR T-1 2,3,4,5,6 (TYP.)					3,507				1						PROVISIONAL SPACE			6
7	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			8
9	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			10
11	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			12
13	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			14
15	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			16
17	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			18
19	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			20
21	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			22
23	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			24
25	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			26
27	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			28
29	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			30
SUBTOTAL				3,062	5,467	3,507										SUBTOTAL			
TOTAL PHASE A - VA				3,062	LOAD				CONN. VA		DF	LOAD				CONN. VA		DF	
AMPS				11	COOLING				4,898		1.00	REFRIG						1.00	
TOTAL PHASE B - VA				5,467	HEATING				1,300		0	SIGN/DISP						1.25	
AMPS				20	LIGHTING				1,762		1.25	KITCHEN						1.00	
TOTAL PHASE C - VA				3,507	RECEPTACLES				2,700		1.0/5	EXISTING						1.00	
AMPS				13	MOTORS				800		1.00	LRG MOTOR						1.25	
TOTAL PNLBD - VA				12,036	SUPP HEAT				1,500		1.00	SHOW/WNDW						1.25	
AMPS				14	MISC EQUIP						1.00	LTG TRACK						1.00	
PANELBOARD NOTES																			

PANELBOARD: A,B,C,D,E,F (TYP) (NEW)										FED FROM: PNLBD J,K,L,M,N,O (TYP) VIA XF										LINE-SIDE LUGS: MECHANICAL EQUIPMENT GROUND BUS									
BUS AMPS: 100A										A/C RATING: 10000 FULLY RATED																			
MAIN SIZE/TYPE: MLO										SERVES: WAREHOUSE & OFFICE																			
VOLTS/PHASE: 208Y/120V, 3PH, 4W										MOUNTING: SURFACE																			
SECTION: 1										LOCATION: WAREHOUSE SIDE RR WALL										SERVICE ENTRANCE RATED									
CKT NO	DESCRIPTION			VOLTAMPS/PHASE			WIRE NO	P	BKR NO	WIRE NO	VOLTAMPS/PHASE			DESCRIPTION			CKT NO												
				A	B	C					A	B	C																
1	LTG - WAREHOUSE			1,608			12	20	1	1	20	12	154	LTG - OFFICE / RESTROOM			2												
3	RCPT - OFFICE				1,260		12	20	1	1	20	12		720	RCPT - GENERAL 1			4											
5	RCPT - ROOF SERVICE					180	12	20	1	1	20	12			540	RCPT - GENERAL 2			6										
7	*PWR - UNIT HTR			1,300			12	20	1	1	20	12	924	*PWR - FURNACE			8												
9	*PWR - CU-1				1,987		10	30	2	1	20	12		1,500	*PWR - WATER HEATER			10											
11						1,987				1	20	12			800	PWR - OVERHEAD DOOR			12										
13	SPARE						20	1	1	20						SPARE			14										
15	SPARE						20	1	1	20						SPARE			16										
17	SPARE						20	1	1	20						SPARE			18										
19	SPARE						20	1	1	20						SPARE			20										
21	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			22										
23	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			24										
25	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			26										
27	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			28										
29	PROVISIONAL SPACE									1	1					PROVISIONAL SPACE			30										
SUBTOTAL				2,908	3,247	2,167							1,078	2,220	1,340	SUBTOTAL													
TOTAL PHASE A - VA				3,986	LOAD		CONN. VA		DF		TOTAL PHASE B - VA				5,467	LOAD		CONN. VA		DF									
AMPS				33	COOLING		4,898		100		REFRIG						100												
TOTAL PHASE B - VA				5,467	HEATING		1,300		0		SIGN/DISP						125												
AMPS				46	LIGHTING		1,762		125		KITCHEN						100												
TOTAL PHASE C - VA				3,507	RECEPTACLES		2,700		10/5		EXISTING						100												
AMPS				29	MOTORS		800		100		LRG MOTOR						125												
TOTAL PNLBD - VA				12,960	SHP/ HEAT		1,500		100		SUNNNW/ND						125												
AMPS				36	MISC EQUIP				100		LTG TRACK						100												
PANELBOARD NOTES																													
* = HACR-TYPE CIRCUIT BREAKER																													