

**GRAPHIC SYMBOLS**

DETAIL NUMBER			EARTH
SHEET WHERE DETAIL IS SHOWN			GRANULAR FILL
SECTION CUT			POURED CONCRETE
BUILDING CROSS SECTION			CONCRETE BLOCK
ELEVATION			FACE BRICK
ROOM NUMBER			STEEL
KEY NOTE			ROUGH WOOD
WINDOW NUMBER			FINISHED WOOD
PARTITION TYPE			PLYWOOD
DOOR NUMBER			RIGID INSULATION
FINISH ITEMS			BATT INSULATION
EQUIP. NUMBER			GYPSTUM BOARD
ELEVATION BENCHMARK			METAL
REVISION NUMBER			CERAMIC TILE
			ASPHALT PAVING

	LEASE LINE
	EXISTING DEMISING PARTITION
	NEW DEMISING PARTITION
	EXISTING PARTITION
	NEW PARTITIONS TO CEILING
	NEW PARTIAL HEIGHT PARTITIONS STOPS SHORT OF CEILING
	PARTITION OR MATERIAL TO BE REMOVED



209 SOUTH CENTERVILLE ROAD  
STURGIS, MI 49091  
ARBY'S INSPIRE CONVERSION



ALL SIGNAGE BY SEPARATE PERMIT SUBMITTAL- SIGNAGE ITEMS SHOWN FOR COORDINATION ONLY.

**DRAWING INDEX**

	REV	DATE
A000 COVER SHEET		
C100 ARCHITECTURAL SITE PLAN - DEMOLITION		
C101 ARCHITECTURAL SITE PLAN		
C102 ARCHITECTURAL SITE DETAILS		
C103 ARCHITECTURAL SITE DETAILS		
D100 DEMOLITION FLOOR PLAN		
D101 DEMOLITION CEILING PLAN		
D102 DEMOLITION ROOF PLAN		
D200 DEMOLITION EXTERIOR ELEVATIONS		
D201 DEMOLITION EXTERIOR ELEVATIONS		
S1.1 GENERAL STRUCTURAL NOTES		
S1.2 STRUCTURAL - TYPICAL DETAILS		
S2.1 STRUCTURAL - FOUNDATION PLAN		
S2.2 STRUCTURAL - ROOF FRAMING PLAN		
S3.1 STRUCTURAL - DETAILS		
S3.1 STRUCTURAL - DETAILS		
S4.1 STRUCTURAL - DETAILS		
A100 FLOOR PLAN		
A101 EQUIPMENT PLAN + SCHEDULE		
A102 EQUIPMENT SCHEDULE		
A103 ACCESSIBILITY REQUIREMENTS		
A200 REFLECTED CEILING PLAN		
A300 ROOF PLAN		
A400 EXTERIOR ELEVATIONS		
A401 EXTERIOR ELEVATIONS		
A500 WALL SECTIONS		
A501 WALL SECTIONS		
A502 WALL SECTIONS		
A600 SCHEDULES		
A601 INTERIOR ELEVATIONS		
A602 INTERIOR ELEVATIONS		
A700 DETAILS - EXTERIOR		
A701 DETAILS - INTERIOR		
M001 MECHANICAL - GENERAL INFORMATION		
M100 MECHANICAL PLAN		
M200 MECHANICAL DETAILS		
M301 MECHANICAL ROOF PLAN		
M401 MECHANICAL SPECIFICATION		
M402 MECHANICAL SPECIFICATION		
H101 HOOD DRAWINGS		
H102 HOOD DRAWINGS		
H103 HOOD DRAWINGS		
H104 HOOD DRAWINGS		
P100 PLUMBING - GENERAL INFORMATION		
P200 PLUMBING WASTE AND VENT PLAN		
P300 PLUMBING WATER AND GAS PLAN		
P400 PLUMBING RISER DIAGRAMS		
P500 PLUMBING DETAILS		
P501 PLUMBING DETAILS		
P600 PLUMBING SCHEDULES		
P700 PLUMBING SPECIFICATIONS		
P701 PLUMBING SPECIFICATIONS		
P702 PLUMBING SPECIFICATIONS		
E000 ELECTRICAL - GENERAL INFORMATION		
E101 ELECTRICAL - LIGHTING PLAN		
E102 ELECTRICAL - SITE PLAN		
E201 ELECTRICAL - POWER PLAN		
E202 ELECTRICAL - P.O.S. SYSTEMS PLAN		
E301 ELECTRICAL - ROOF PLAN		
E401 ELECTRICAL - ONE-LINE DIAGRAM + DETAILS		
E501 ELECTRICAL - SCHEDULES		
E701 ELECTRICAL - SPECIFICATIONS		
E702 ELECTRICAL - SPECIFICATIONS		
E703 ELECTRICAL - SPECIFICATIONS		

**CODE REVIEW**

**CODES:**

**BUILDING** 2015 MICHIGAN BUILDING CODE  
**PLUMBING** 2015 MICHIGAN PLUMBING CODE  
**MECHANICAL** 2015 MICHIGAN MECHANICAL CODE  
**FIRE** 2015 MICHIGAN FIRE CODE  
**ELECTRICAL** 2017 NATIONAL ELECTRICAL CODE/2015 MICHIGAN ELECTRICAL CODE  
**ENERGY** 2017 MICHIGAN ENERGY CODE/2015 IECC AND 2013 ASHRAE 90.1  
**OTHER** 20015 MICHIGAN ACCESSIBILITY CODE

**CONSTRUCTION TYPE:** VB  
**STORIES:** (1) SINGLE STORY  
**CONSTRUCTION TYPE:** VB  
**STORIES:** (1) SINGLE STORY  
**BUILDING GROSS AREA:** 3316 SF

**USE GROUP CLASSIFICATION:** ASSEMBLY  
**OCCUPANCY CLASSIFICATION:** A2  
**CALCULATED OCCUPANCY LOAD**

**DINING ROOM - SEATING PROVIDED FOR 76**

**FIXED SEATING -** 36 OCCUPANTS  
 1 PERSON/24 LINEAR INCH OF SEATING

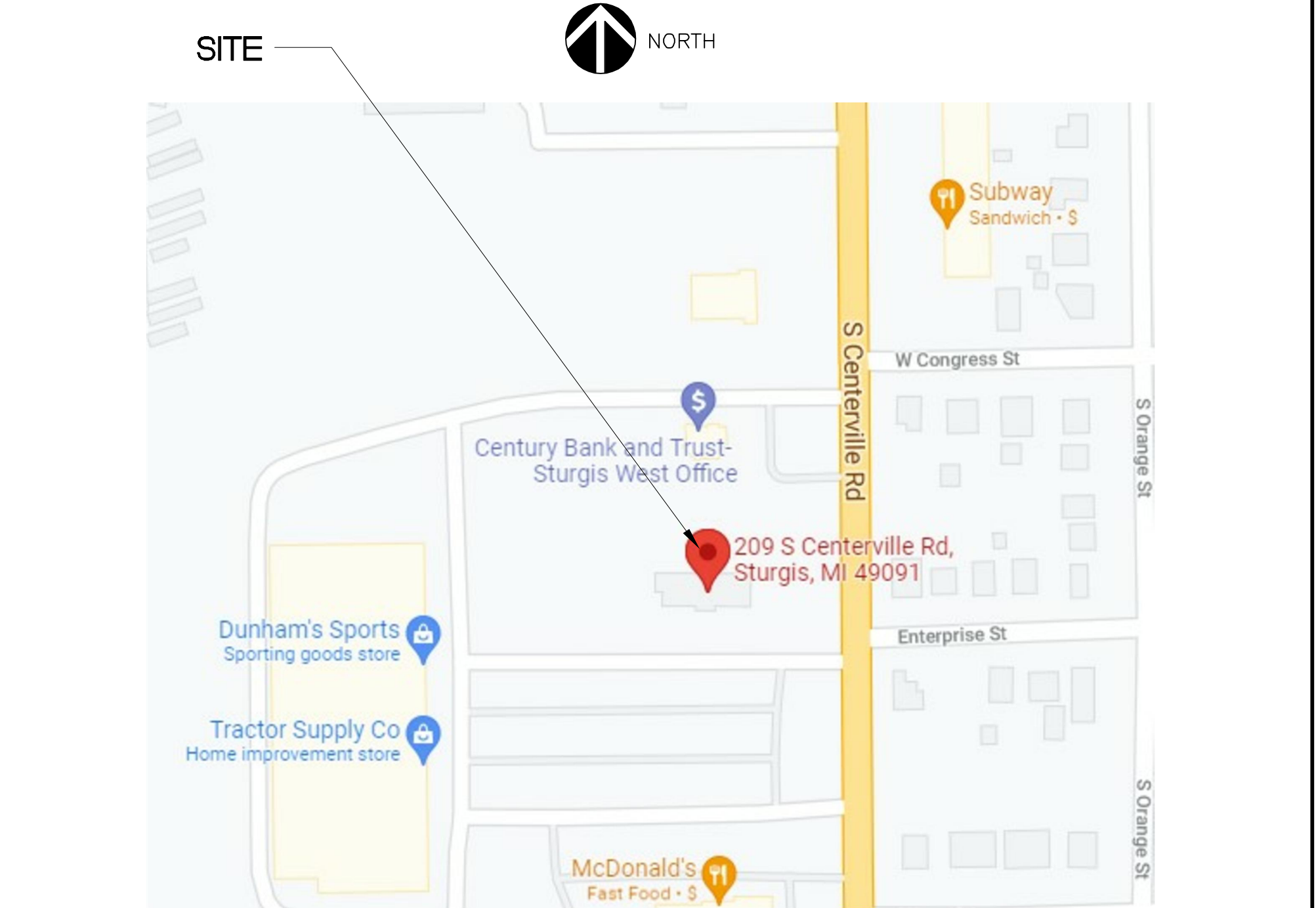
**UNCONCENTRATED SEATING -** 42 OCCUPANTS  
 623 NET S.F. AT 15 S.F./PERSON

**QUEUE LINE /WAITING SPACE -** 4 OCCUPANTS  
 30 NET S.F. AT 5 S.F./PERSON

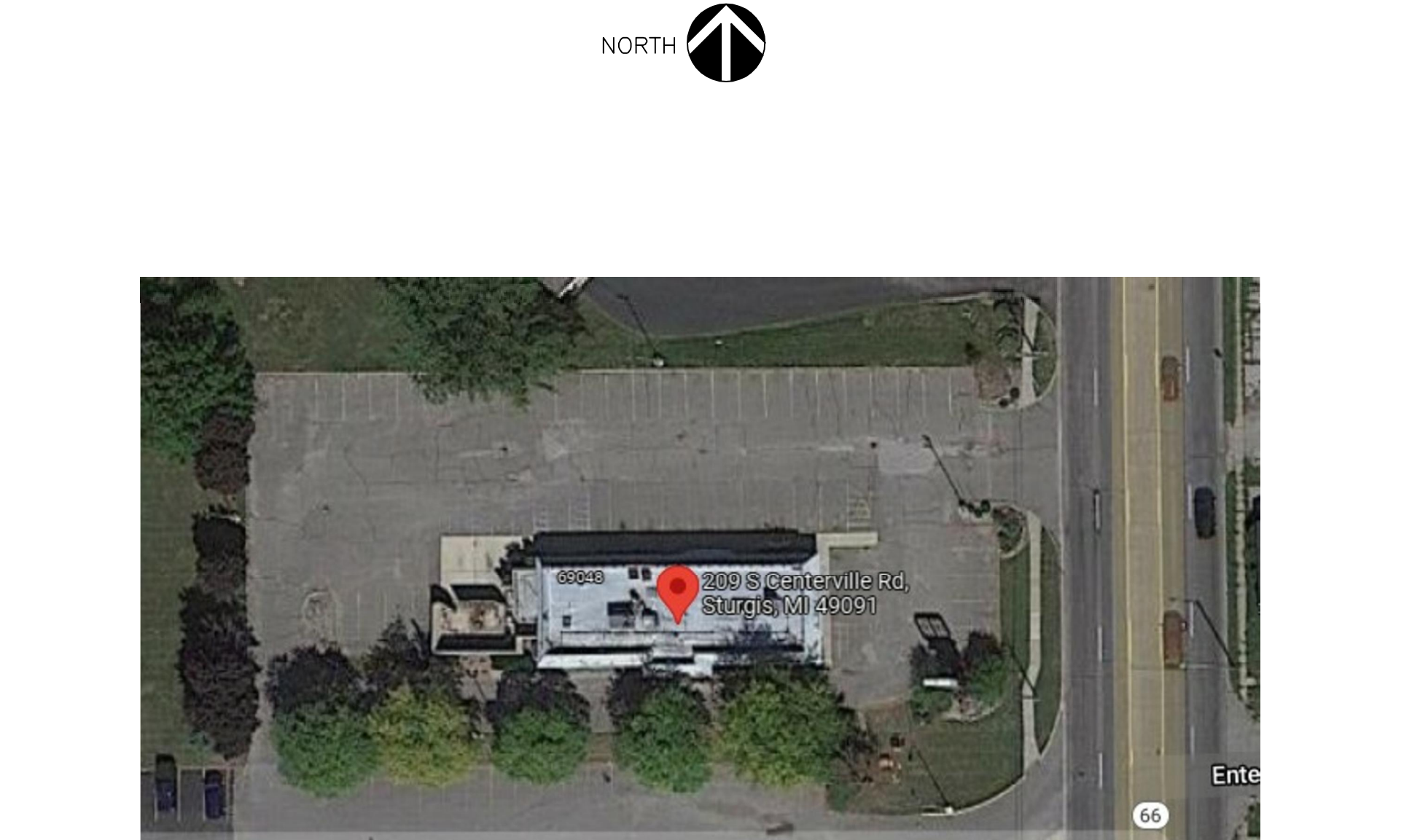
**KITCHEN AREA -** 6 OCCUPANTS  
 1190 GROSS S.F. AT 200 S.F./PERSON

**TOTAL CALCULATED OCCUPANCY LOAD: 77 OCCUPANTS**

**VICINITY MAP**



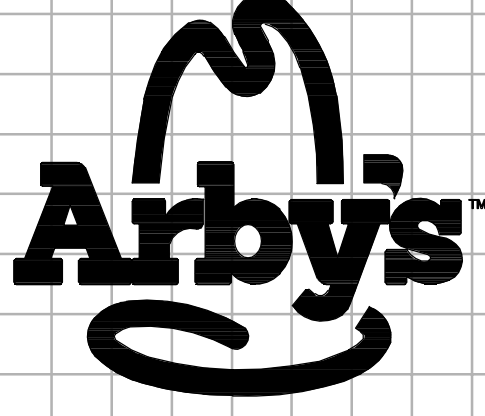
**SITE LOCATION PLAN**



**BUILDING DEPARTMENT**  
STURGIS TOWNSHIP  
62484 KUHLMEYER RD  
CENTERVILLE, MN 49032  
PH: (269) 816-4951

**HEALTH DEPARTMENT**  
MICHIGAN DEPARTMENT OF AGRICULTURE  
AND RURAL DEVELOPMENT FOOD AND DAIRY DIVISION  
525 W. ALLEGAN / P.O. BOX 30017  
LANSING, MI 48909  
PH: (800) 292.3939

**OWNER**  
TRIA RESTAURANTS  
38 WEST FULTON ST. SUITE 314  
GRAND RAPIDS, MI 49503  
ATTN: PAUL GREGORY  
PH: (269) 660-2800 EXT. 118



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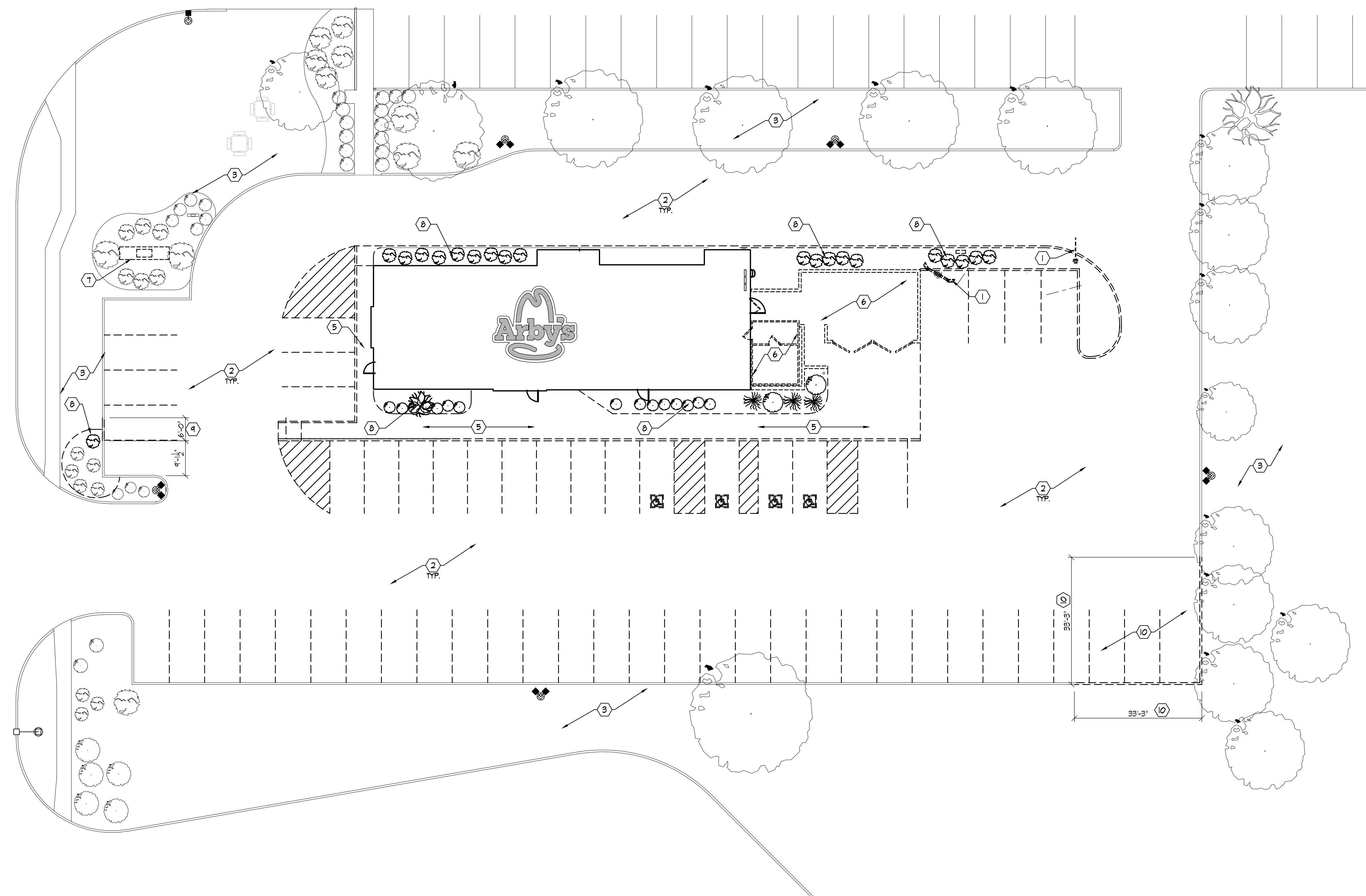
I hereby certify that these plans and specifications were prepared by me or under my direct supervision and to the best of my knowledge, comply with all applicable codes. I am a duly registered architect under the laws of the state of MICHIGAN as signified by my hand and seal.

PROJECT NO:	REV	DATE	DESCRIPTION	NAME
210109				
DRAWN BY: ME				
CHECKED BY: JDW				
ISSUE DATE:				
03/18/21				
COVER SHEET				

ARBY'S CONVERSION - 209 S CENTERVILLE RD, STURGIS, MI 49091

A000





**1 DEMOLITION SITE PLAN**  
SCALE: 1/16" = 1'-0"



**KEYED NOTES**

- ① REMOVE EXISTING SPEAKER POST AND MENU BOARD. COORDINATE EXTENDING EXISTING ELECTRICAL COMMUNICATIONS CONNECTIONS TO NEW SPEAKER POST/ CANOPY LOCATION WITH ELECTRICAL DRAWINGS, SIGN VENDOR. COORDINATE ANY NEW WORK WITH SIGNAGE VENDOR DRAWING.
- ② REMOVE EXISTING PARKING LOT STRIPING AND PAINTED DEMARKATIONS.
- ③ EXISTING LANDSCAPE AREA TO REMAIN. PROTECT VEGETATION FROM DAMAGE THROUGHOUT ALL PHASES OF DEMOLITION/ CONSTRUCTION.
- ④ REMOVE EXISTING ADA SIGNAGE.
- ⑤ REMOVE EXISTING CONCRETE SIDEWALK/CURB FOR NEW WORK.
- ⑥ REMOVE EXISTING TRASH ENCLOSURE AND WALK-IN COOLER, INCLUDING SLAB.
- ⑦ COORDINATE WITH SIGNAGE VENDOR REMOVAL/REPLACEMENT OR RE-USE OF EXISTING SIGNPORTION OF
- ⑧ REMOVE LANDSCAPING AS REQUIRED FOR NEW WORK. COORDINATE WITH OWNER / OWNER'S LANDSCAPE ARCHITECT. SEE C101.
- ⑨ REMOVE SECTION OF CURB TO ALLOW INSTALLATION OF CURB RAMP FOR SIDEWALK ACCESS. SEE C101 FOR BALANCE OF EXTENTS.
- ⑩ REMOVE SECTION OF CURB AND AREA OF PAVING TO ALLOW INSTALLATION OF DUMPSTER ENCLOSURE, HIGH STRENGTH CONCRETE PAD, NEW CURB, AND DRAIN. SEE C101 FOR BALANCE OF EXTENTS.

**GENERAL DEMOLITION NOTES**

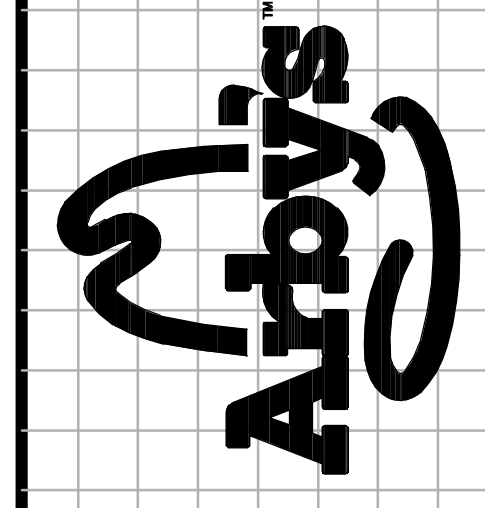
- A. COORDINATE ALL SITE WORK WITH OWNER'S CIVIL ENGINEER (SEPARATE SUBMISSION)
- B. ALL SIGNAGE DRAWINGS ARE SUBMITTED SEPARATELY AND FOR SEPARATE PERMIT BY SIGNAGE VENDOR.
- C. COORDINATE WITH LOCAL FIRE DEPARTMENT/ZONING AUTHORITY FOR ADDRESS IDENTIFYING FEATURES, POSITION AND SIZE.

**LEGEND**

--- ITEM TO BE REMOVED

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STORE # X

REV. DATE DESCRIPTION

PROJECT NO: 210109  
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CHECKED BY: JMW

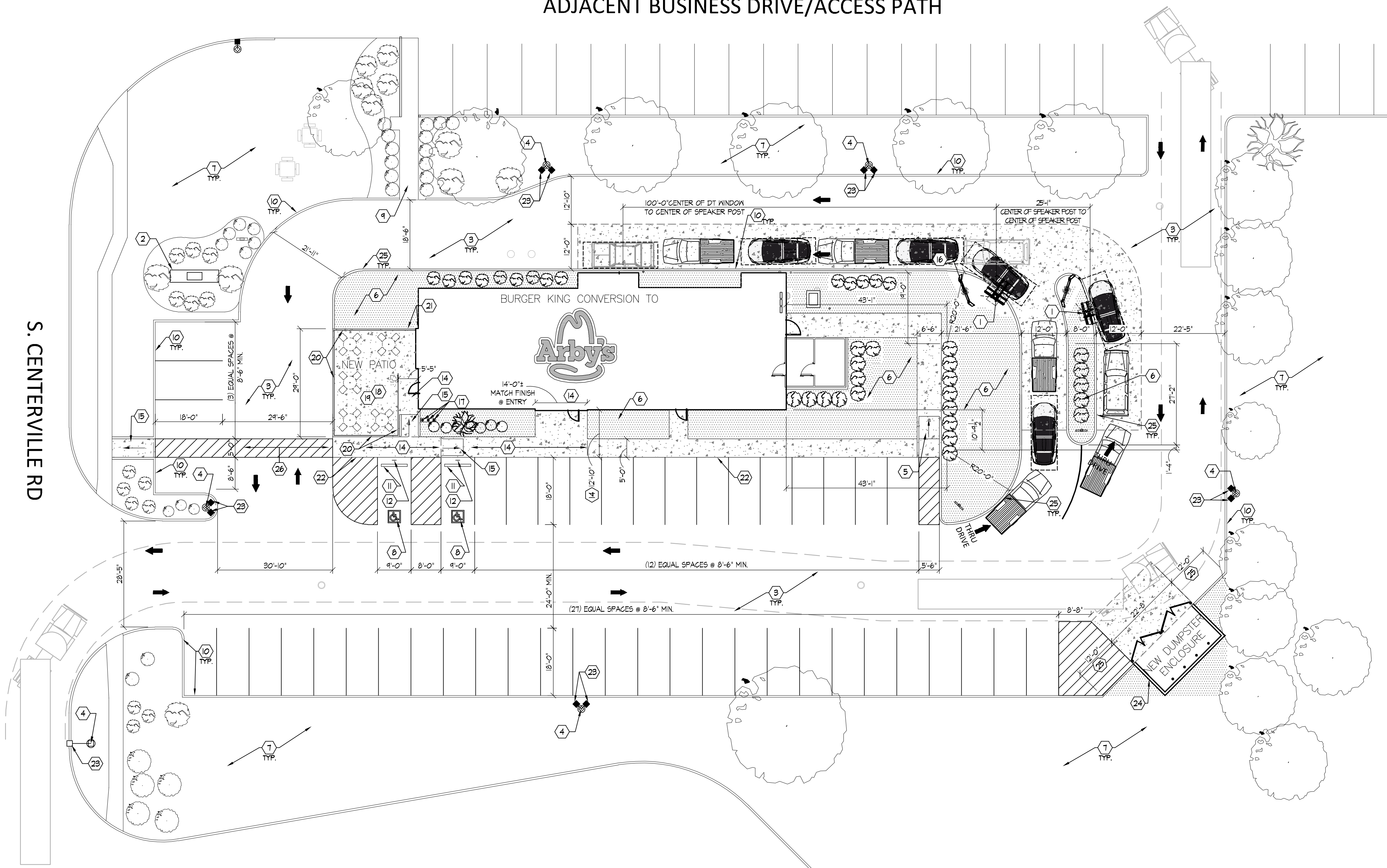
ISSUE DATE:  
03/18/22

ARCH. SITE PLAN - DEMOLITION

**C100**



ADJACENT BUSINESS DRIVE/ACCESS PATH



S. CENTERVILLE RD

1 SITE PLAN  
SCALE: 1/16" = 1'-0"



NORTH

KEYED NOTES

- 1 INSTALL NEW DRIVE THRU CANOPY AND SPEAKER POST ON EXISTING FOOTINGS. SEE 20/0102, COORDINATE WITH CANOPY VENDOR.
- 2 MONUMENT SIGN. COORDINATE NEW SIGN WORK WITH SIGN VENDOR, UNDER SEPARATE PERMIT.
- 3 SEE CIVIL DRAWINGS (SEPARATE PERMIT) FOR SITE RE-SURFACING, DRAINAGE, AND UTILITY WORK SCOPE AND DIRECTION.
- 4 CLEAN, PRIME AND PAINT EXISTING LIGHT POLE CONCRETE BASE. MATCH ORIGINAL COLOR. VERIFY WITH OWNER'S CONSTRUCTION MANAGER ANY WORK REQUIRED ON EXISTING LIGHT POLES.
- 5 NEW CURB RAMP, NOT PART OF ADA ACCESS.
- 6 NEW LANDSCAPING. COORDINATE WITH OWNER / OWNER'S LANDSCAPE ARCHITECT.
- 7 REFRESH/REPLACE LANDSCAPING DURING FINAL PHASE OF CONSTRUCTION. COORDINATE WITH OWNER.
- 8 NEW PAINTED INTERNATIONAL SYMBOL OF ACCESSIBILITY.
- 9 EXISTING SIDEWALK TO REMAIN. POWERWASH AS NEEDED.
- 10 REPAIR EXISTING CURB AS REQUIRED. SEE 6/0102.
- 11 NEW WHEELSTOP. SEE 4/0102.
- 12 ACCESSIBLE PARKING SIGNAGE. SIGNAGE TO MEET ALL LOCAL, STATE, FEDERAL APPLICABLE CODES AND REQUIREMENTS. SEE 1/0102.
- 13 NEW BOLLARD. SEE 3/0102.
- 14 NEW CONCRETE LANDINGS/SIDEWALK. MAX 2% (1/50) SLOPE IN ALL DIRECTIONS.
- 15 NEW ADA COMPLIANT CONCRETE SIDEWALK. MAX RUNNING SLOPE 5% AND CROSS SLOPE 2%.
- 16 NEW MENU BOARD. COORDINATE SIGN WORK WITH SIGN VENDOR, UNDER SEPARATE PERMIT.
- 17 NEW PRE-MANUFACTURED 6" POSTS BY SIGN VENDOR. SEE DETAIL 8/0102 FOR POST BASE DETAIL.
- 18 NEW CONCRETE LEVEL PATIO AREA. MAXIMUM 2% SLOPE IN ALL DIRECTIONS. SMOOTH TRANSITION TO EXISTING SIDEWALK/LANDINGS.
- 19 NEW PATIO FURNITURE, PROVIDED BY OWNER VENDOR. MIN. 5% SEATING ADA ACCESSIBLE.
- 20 NEW WELDED PIPE RAIL, PRIMED AND PAINTED GLOSS BLACK. SEE 5/0102.
- 21 ALIGN.
- 22 NEW SIDEWALK. SEE 2/0102.
- 23 GC TO CONFIRM LIGHT POLE FIXTURES ARE OPERATIONAL. COORDINATE REPLACEMENT OR RETROFIT WITH OWNER.
- 24 NEW DUMPSTER ENCLOSURE. SEE C103.
- 25 NEW CURB. SEE 6/0102.
- 26 NEW STRIPED PATH OF TRAVEL. MAX 2% (1/50) CROSS SLOPE AND 5% (1/20) RUNNING SLOPE FOR ADA COMPLIANCE.

GENERAL NOTES

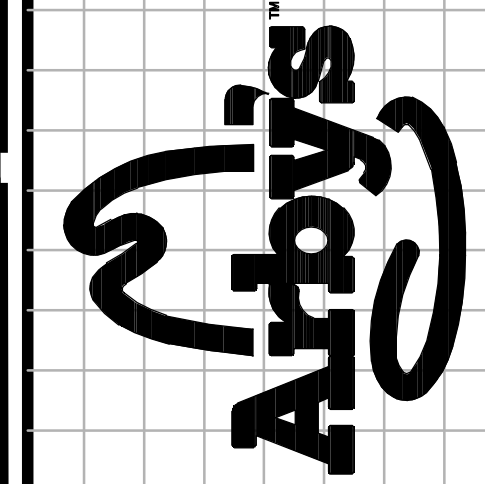
- A. COORDINATE ALL SITE WORK WITH OWNER'S CIVIL CONTRACTOR, INCLUDING DRAWINGS RELATED TO UTILITIES AND DRAINAGE (SEPARATE SUBMITTAL).
- B. IF ANY ACCESSIBLE FEATURES ARE NOT FEASIBLE, OR IF DIMENSIONS DO NOT WORK WITH NEW CIVIL WORK, CONTACT ARCHITECT IMMEDIATELY.
- C. COORDINATE ANY FENCING/SECURITY OF SITE WITH OWNER AND LOCAL AUTHORITY'S REQUIREMENTS.

LEGEND



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STORE # X

REV. DATE DESCRIPTION

PROJECT NO: 210109  
DRAWN BY: -/AM  
CHECKED BY: -/JM

ISSUE DATE:  
03/18/22

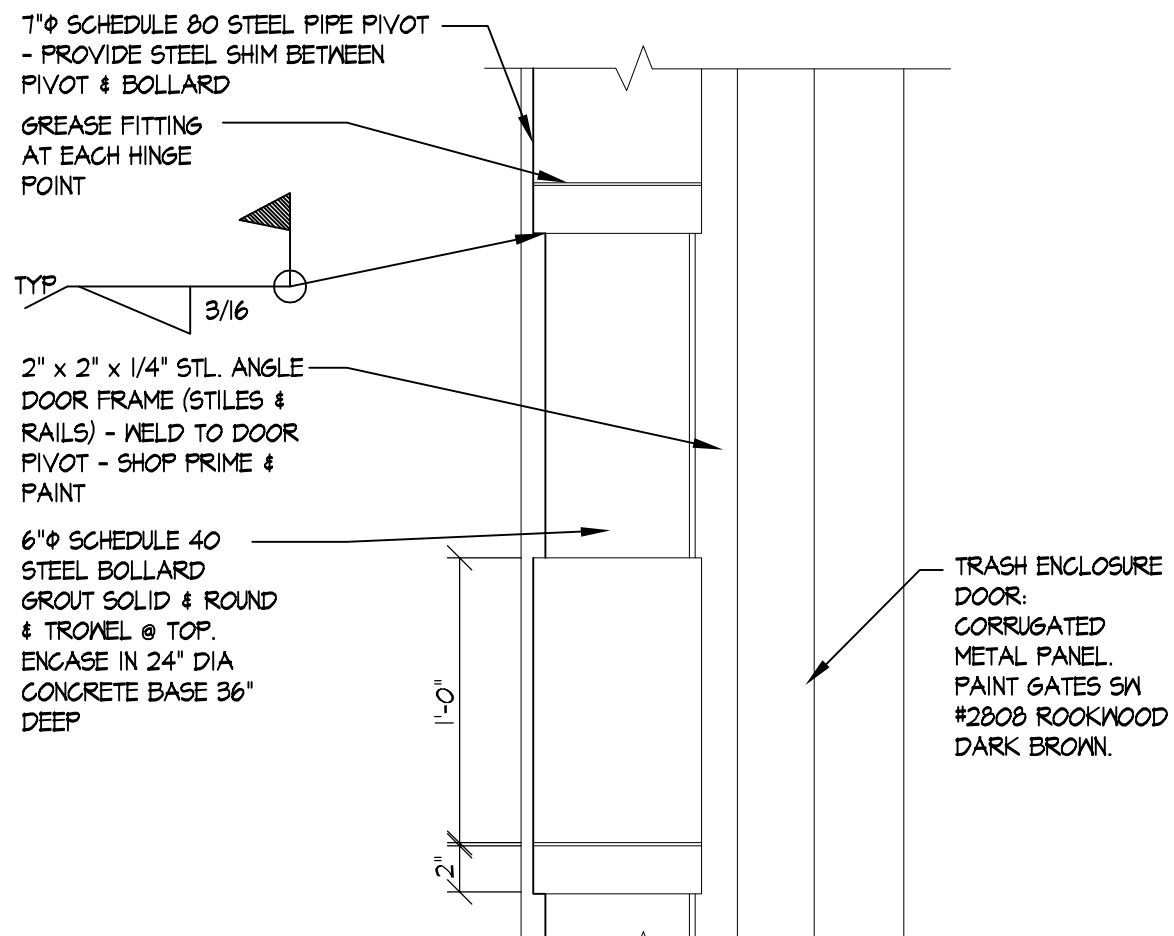
ARCHITECTURAL SITE PLAN

C101

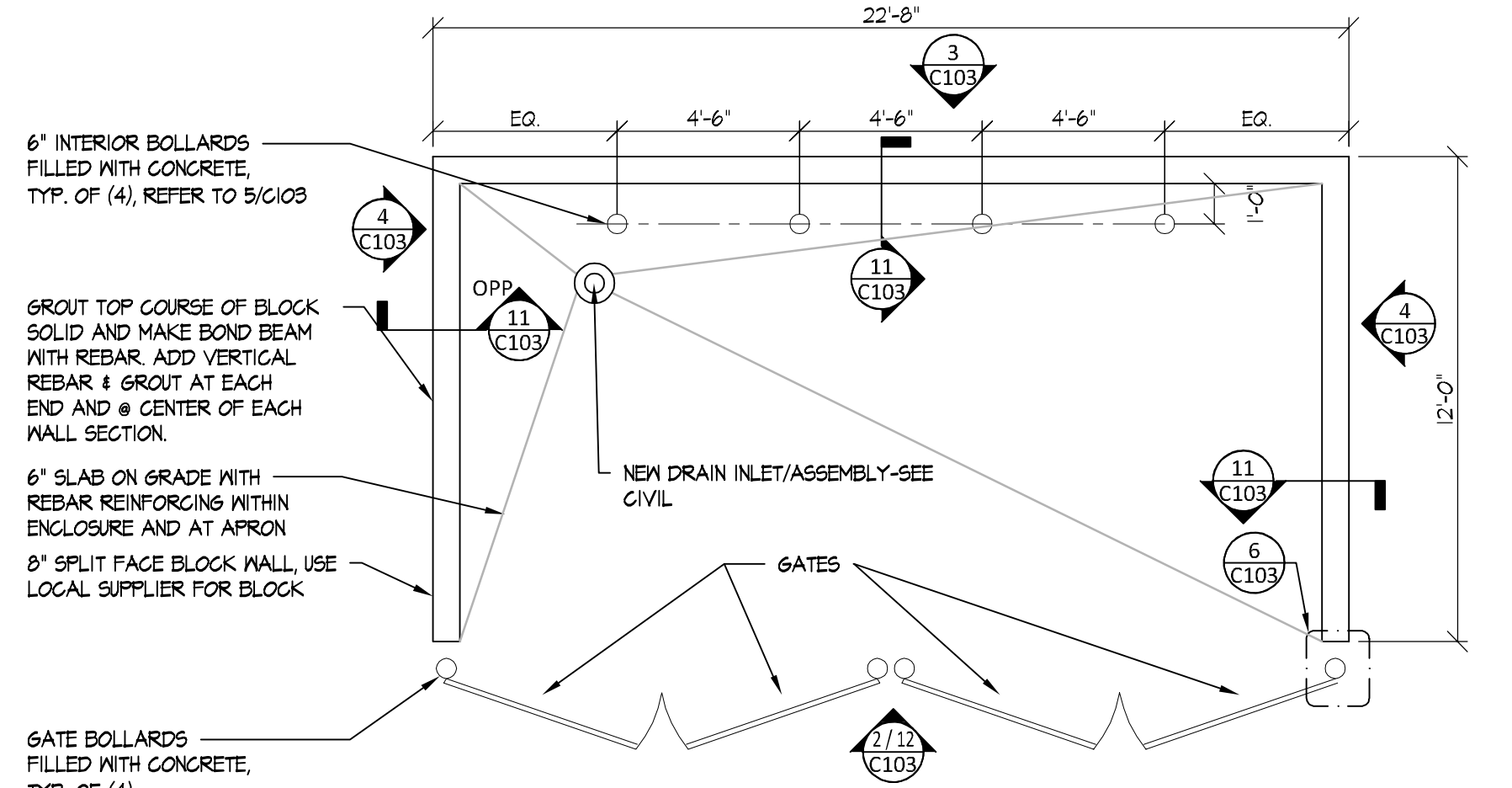




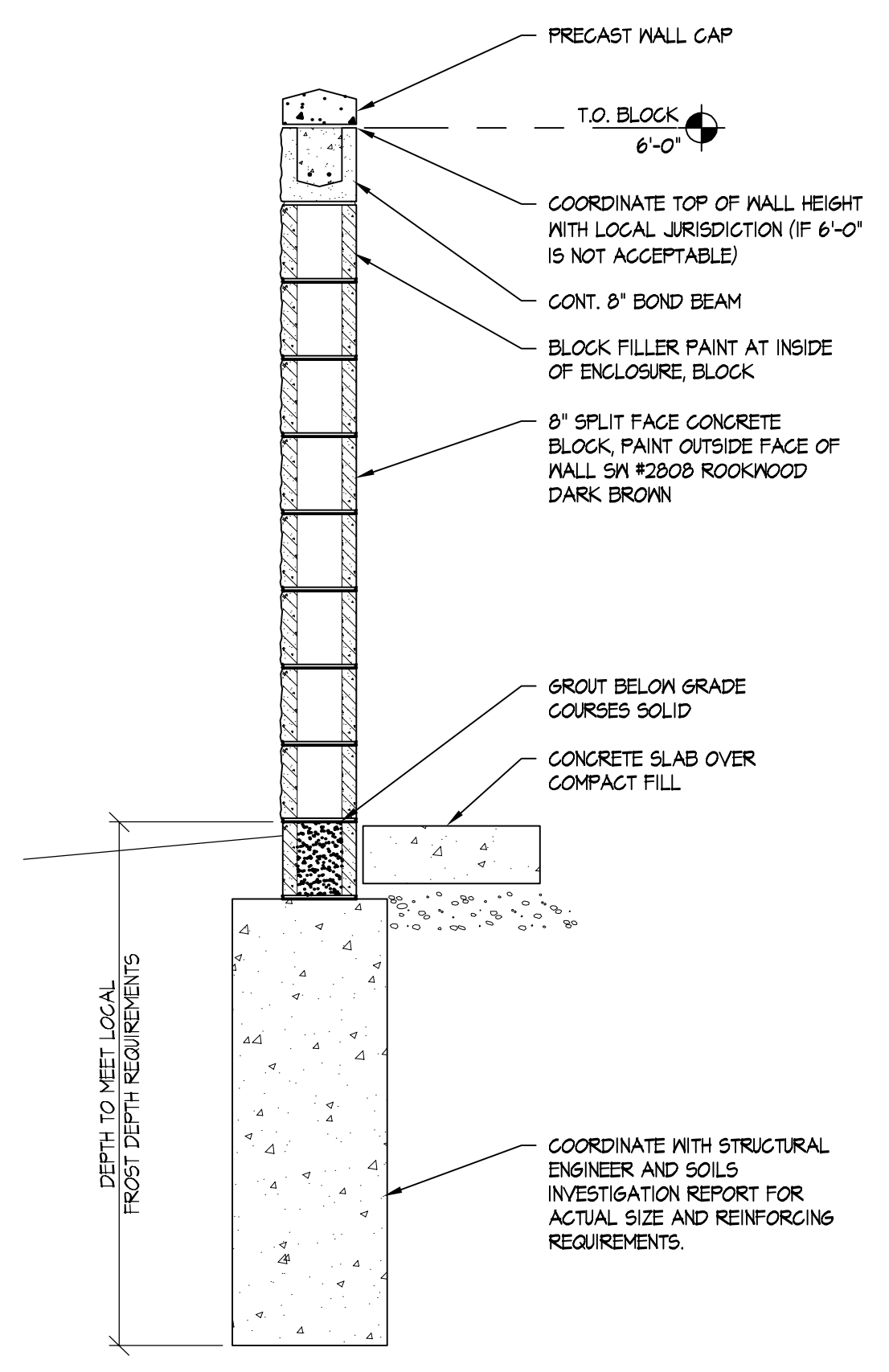




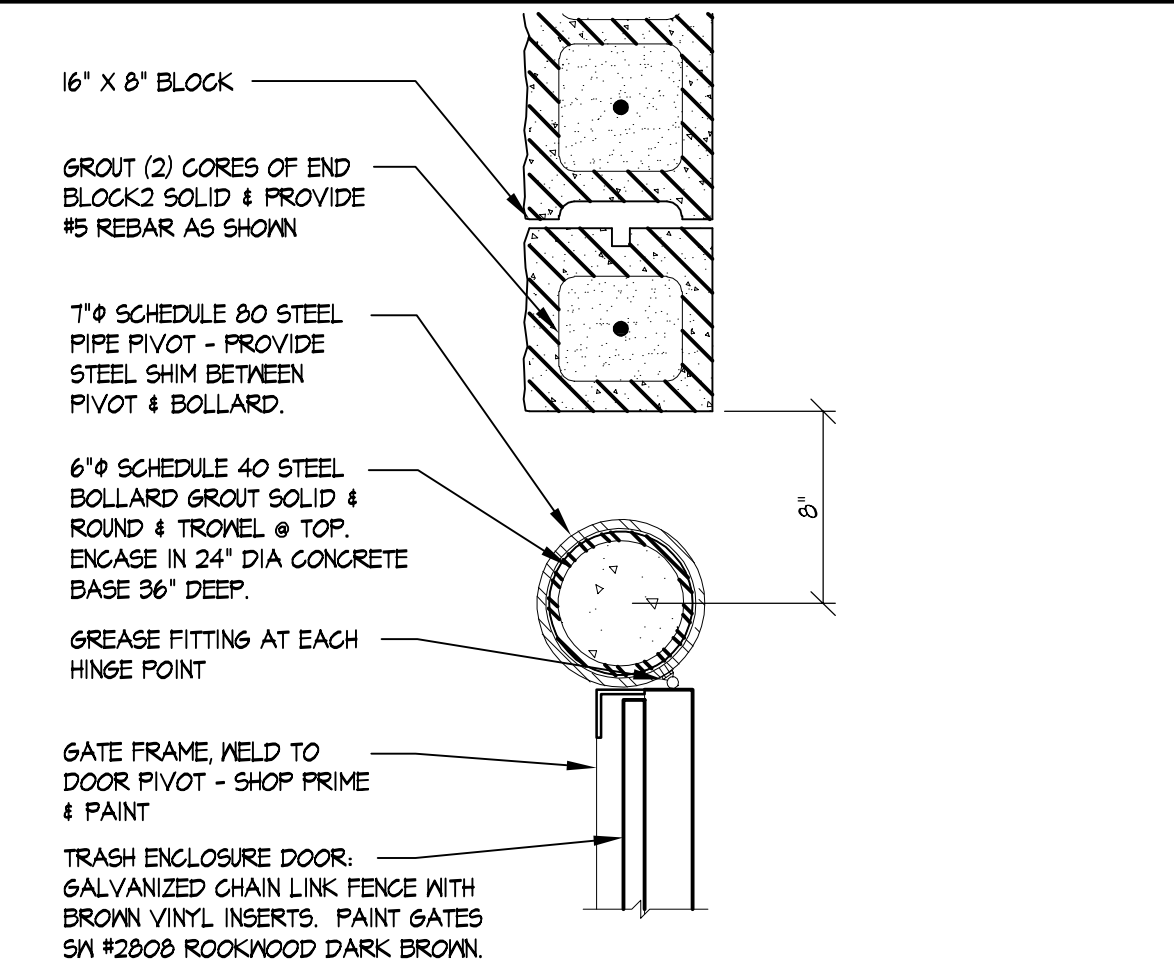
**5 BOLLARD AND PIVOT DETAIL**  
SCALE: 1 1/2"=1'-0"



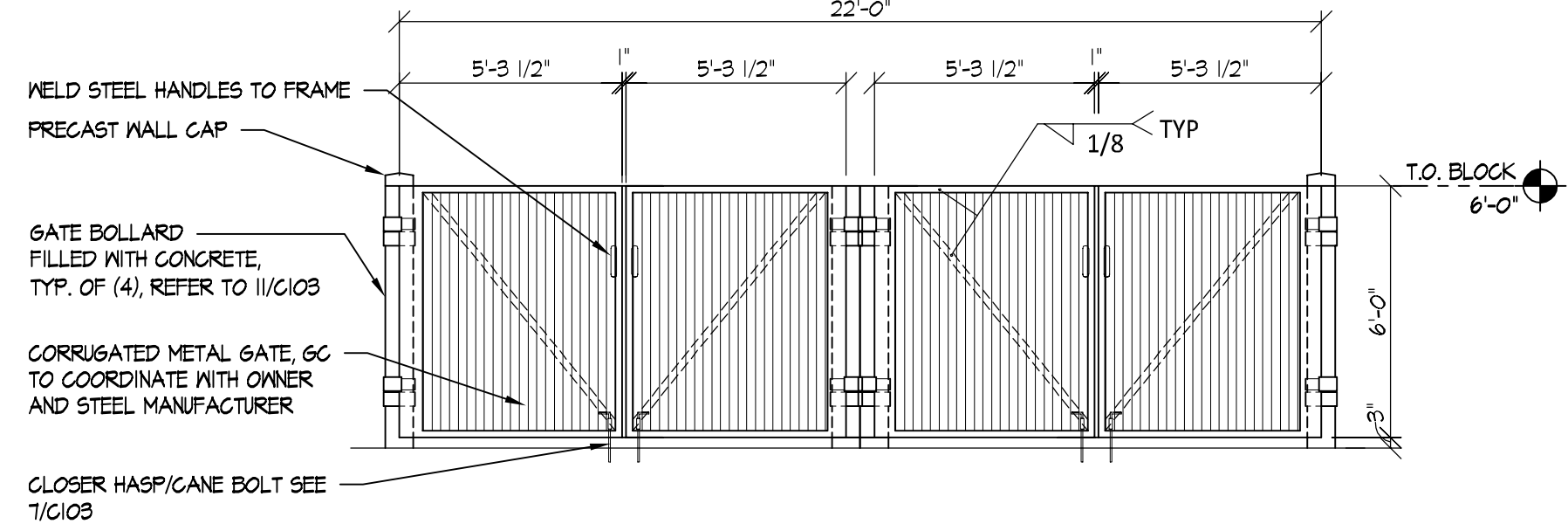
**1 DUMPSTER ENCLOSURE PLAN**  
SCALE: 1/4"=1'-0"



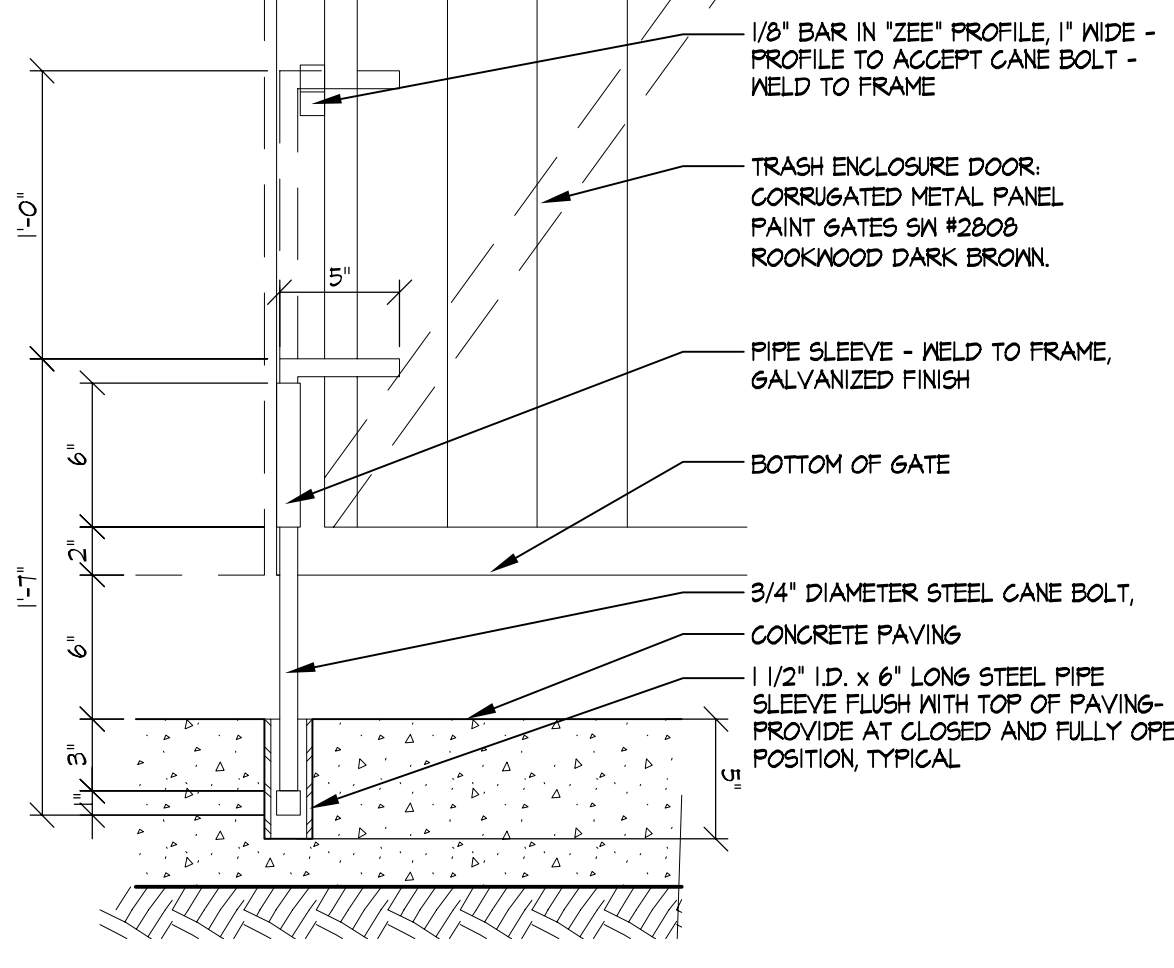
**11 ENCLOSURE SECTION**  
SCALE: 3/4"=1'-0"



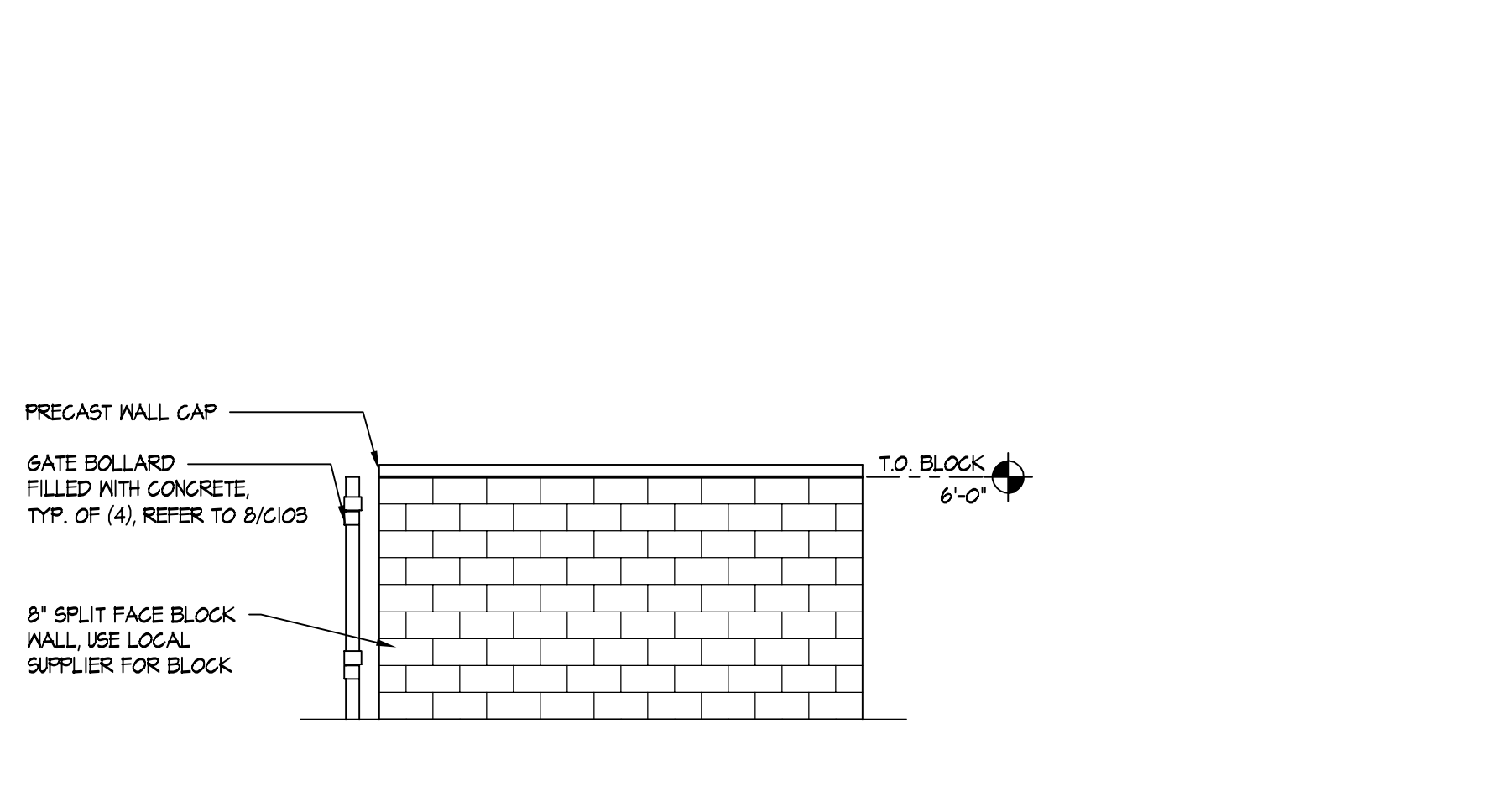
**6 POST DETAIL**  
SCALE: 1 1/2"=1'-0"



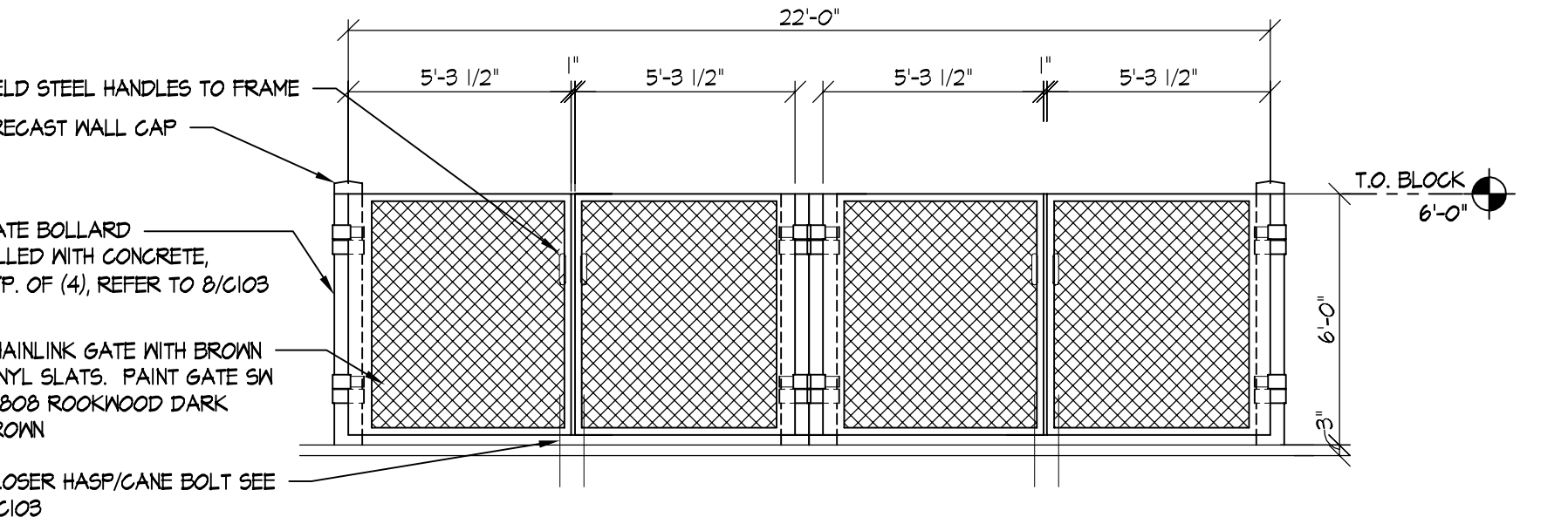
**2 ENCLOSURE ELEVATION**  
SCALE: 1/4"=1'-0"



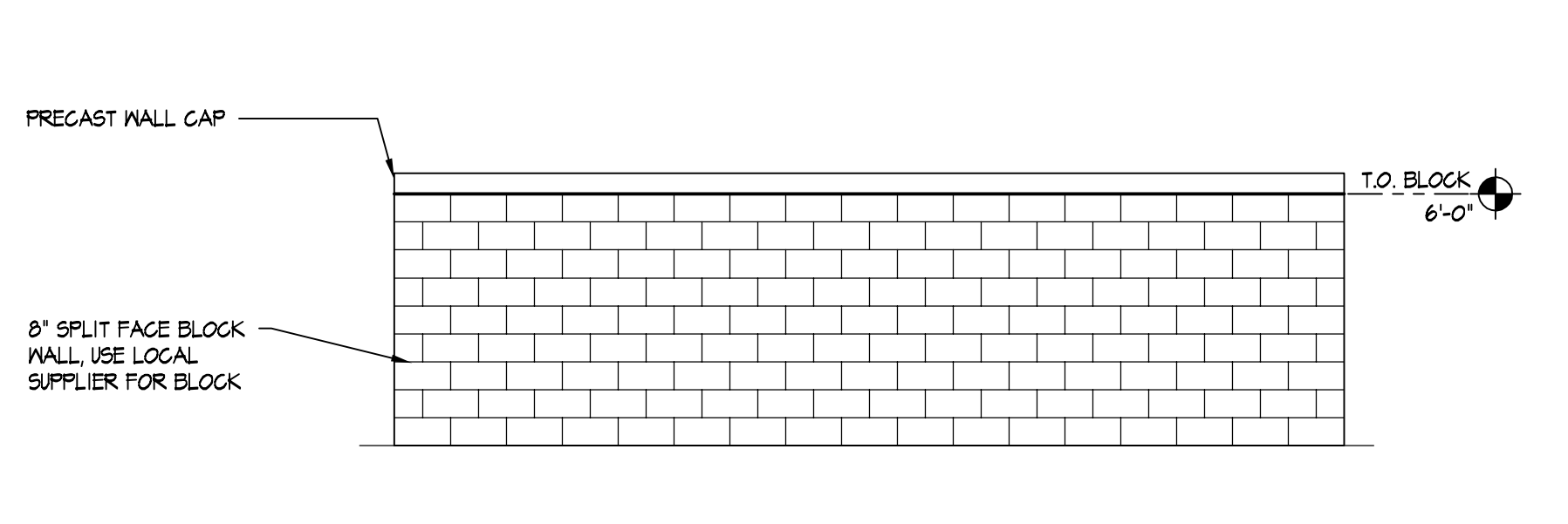
**7 CANE BOLT DETAIL**  
SCALE: 1 1/2"=1'-0"



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



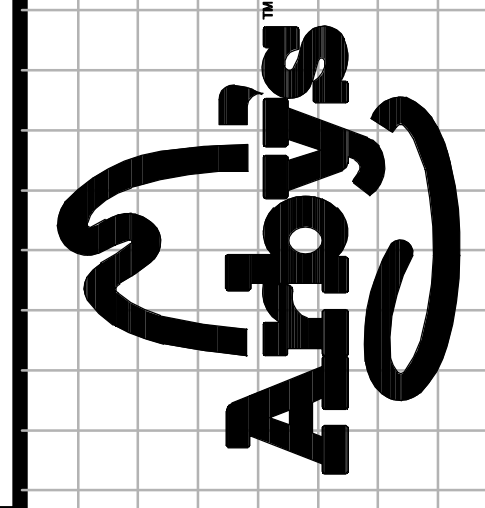
**12 ENCLOSURE ELEVATION - ALTERNATE OPTION**  
SCALE: 1/4"=1'-0"



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

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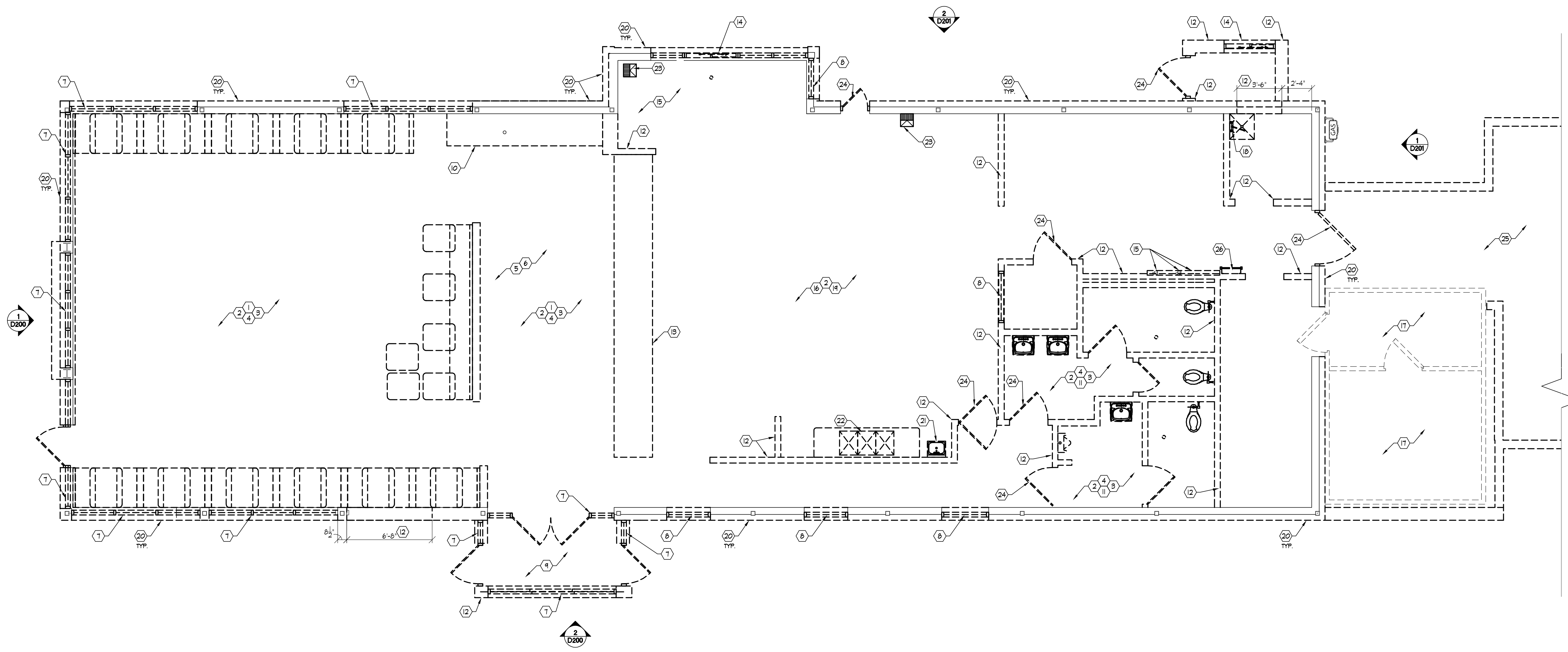
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209 S. CENTERVILLE RD.  
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STORE # X

REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
DRAWN BY: ME  
CHECKED BY: JMW  
ISSUE DATE: 03/18/22

ARCHITECTURAL SITE DETAILS  
**C103**





**1 DEMOLITION FLOOR PLAN**  
SCALE: 1/4" = 1'-0"



PLAN LEGEND	
	- EXISTING WALLS TO REMAIN
	- WALLS, FIXTURES TO BE REMOVED

KEYED NOTES		
1 REMOVE ALL DINING AREA SEATS, TABLES, TRASH ENCLOSURES, DIVIDER WALLS, QUEING LINE AND CONDIMENT COUNTER.	10 PREPARE TO RECEIVE NEW STOREFRONT WINDOWS.	18 REMOVE EXISTING KITCHEN EQUIPMENT/ CASEWORK/ SHELVING. COORDINATE WITH OWNER FOR SALVAGE.
2 REMOVE ALL EXISTING TILE FLOORING AND COVE BASE.	11 REMOVE EXISTING SELF SERVE COUNTER.	20 REMOVE EXISTING BRICK TO SHEATHING AND PREP FOR NEW EXTERIOR FINISHES. SEE A100 AND A400.
3 REMOVE ALL EXISTING WALL COVERINGS AND TRIM THROUGHOUT DINING AREA, HALL, AND VESTIBULE.	12 REMOVE EXISTING RESTROOM PLUMBING FIXTURE AND ALL OTHER RESTROOM ACCESSORIES. CAP SUPPLY AND WASTE LINE PER CODE.	21 REMOVE EXISTING SINK, CAP SUPPLY AND WASTE LINE PER CODE.
4 REMOVE EXISTING WALL TILE. PREP WALL TO RECEIVE NEW WALL FINISHES.	13 REMOVE EXISTING WALL TO EXTENTS INDICATED. SEE SHEET A100.	22 REMOVE EXISTING DISHWASHER STATION. CAP SUPPLY AND WASTE LINE PER CODE.
5 FIELD VERIFY EXTENT OF INTERIOR DECORATIVE FRAMING AREAS & THEIR CONNECTIONS TO THE BUILDING STRUCTURAL ELEMENTS. ADVISE ARCHITECT IMMEDIATELY OF ANY/ALL UNEXPECTED OR DIFFERING CONDITIONS.	14 REMOVE EXISTING DRIVE THRU WINDOW ASSEMBLY. PREPARE TO RECEIVE NEW WINDOW AND NEW FRAMING.	23 EXISTING FLOOR SINK TO REMAIN. COORDINATE WITH NEW PLUMBING WORKS.
6 REMOVE LOW WALLS.	15 REMOVE EXISTING ELECTRICAL PANEL AND CONDUITS BACK TO SOURCE.	24 REMOVE EXISTING DOOR AND FRAME IN THEIR ENTIRETY.
7 REMOVE EXISTING STOREFRONT ASSEMBLY AS INDICATED. SEE A100 AND A400.	16 REMOVE EXISTING FRP FINISHES IN KITCHEN. PREP WALL TO RECEIVE NEW WALL FINISHES.	25 REMOVE EXISTING TRASH ENCLOSURE. SEE SHEET G100 FOR THE REST BEYOND THE BREAK LINE.
8 REMOVE EXISTING WINDOWS.	17 REMOVE EXISTING WALK IN COOLER.	26 REMOVE EXISTING ROOF ACCESS LADDER.
9 REMOVE EXISTING VESTIBULE IN ITS ENTIRETY. EXISTING SLAB TO BE REMOVED TO FACE OF EXTERIOR WALL.	18 REMOVE EXISTING MOP SINK, CAP SUPPLY AND WASTE LINE PER CODE.	

GENERAL NOTES	
A. EXAMINATION OF PREMISES: THE CONTRACTOR, BEFORE SUBMITTING A PROPOSAL FOR THIS WORK SHALL EXAMINE THE PREMISES AND ALL CONDITIONS THEREON AND/OR THEREIN. THE PROPOSAL SHALL TAKE INTO CONSIDERATION ALL SUCH CONDITIONS AS MAY AFFECT THE WORK UNDER THIS CONTRACT. SUBMISSION OF A BID BY THE CONTRACTOR SHALL BE CONSIDERED AS ACKNOWLEDGMENT BY HIM THAT ALL SUCH CONDITIONS ARE FULLY KNOWN TO HIM. ARRANGEMENT FOR SITE VISITS SHALL BE MADE THROUGH LANDLORD.	G. NO OVER-CUTTING WILL BE ALLOWED BEYOND THE NOTED HOLE SIZES FOR ANY NEW OPENINGS IN STRUCTURAL CONCRETE SLAB OR THE EXISTING ROOF, UNLESS OTHERWISE APPROVED BY THE ARCHITECT'S REPRESENTATIVE.
B. GENERAL CONTRACTOR SHALL PAY FOR ALL REQUIRED DEMOLITION PERMIT FEES AND OBTAIN ALL APPLICABLE DEMOLITION PERMITS.	H. GENERAL CONTRACTOR IS TO PATCH AND REPAIR ALL DAMAGED SURFACES TO MATCH ADJACENT SURFACES. ALL EXISTING DRYWALL OR PLASTER THAT IS TO REMAIN AND TO RECEIVE A NEW SCHEDULED PAINT OR WALL COVERING SHALL HAVE ALL DEFECTS, (CRACKS, PAINT CHIPPING, HOLES ETC.) FILLED, PLASTERED OR SPACKLED, SANDED SMOOTH AND CLEANED PRIOR TO THE SCHEDULED FINISH. REPAIR ALL WALLS THAT ARE TO REMAIN TO MATCH EXISTING. WHEREVER A WALL OR FIXTURE HAS BEEN REMOVED OR ANY DAMAGE HAS OCCURRED AS A RESULT OF DEMOLITION OR CONSTRUCTION.
C. AT LEAST ONE RESTROOM MUST BE AVAILABLE DURING ALL PERIODS OF OPERATION.	I. GENERAL CONTRACTOR TO REFER TO SITE PLAN DRAWINGS FOR ALL RELEVANT SITE WORK INCLUDING, BUT NOT LIMITED TO, SIDEWALKS, CURBS, DRIVEWAYS, PARKING AREAS, ETC.
D. ALL REMODELING WORK MUST BE INITIATED IN A MANNER TO ELIMINATE THE POSSIBILITY OF DUST, DEBRIS OR CONTAMINANTS GETTING INTO THE ACTIVE PART OF THE FACILITY.	J. GENERAL CONTRACTOR TO VERIFY ALL EXISTING ELEVATIONS AND BUILDING CONDITIONS IN FIELD PRIOR TO START OF DEMOLITION.
E. GENERAL CONTRACTOR IS TO PROVIDE ALL NECESSARY DUST & TRAFFIC BARRIERS & TEMPORARY PARTITIONS AS REQUIRED TO MAINTAIN A SAFE AND CLEAN ENVIRONMENT FOR THE PUBLIC AND EMPLOYEES THROUGHOUT THE PROJECT.	K. S.C. TO BUILD A TEMPORARY STUD/ FRAMED DUST-PROOF BARRIER BETWEEN DINING AND KITCHEN TO ALLOW DRIVE THROUGH TO REMAIN OPEN DURING ALL PHASES OF WORK. PARTITION SHALL INCLUDE TEMPORARY DOOR TO ALLOW ACCESS TO RESTROOMS.
F. GENERAL CONTRACTOR SHALL REMOVE ALL DEBRIS & EQUIPMENT DAILY DURING THE DEMOLITION WORK.	

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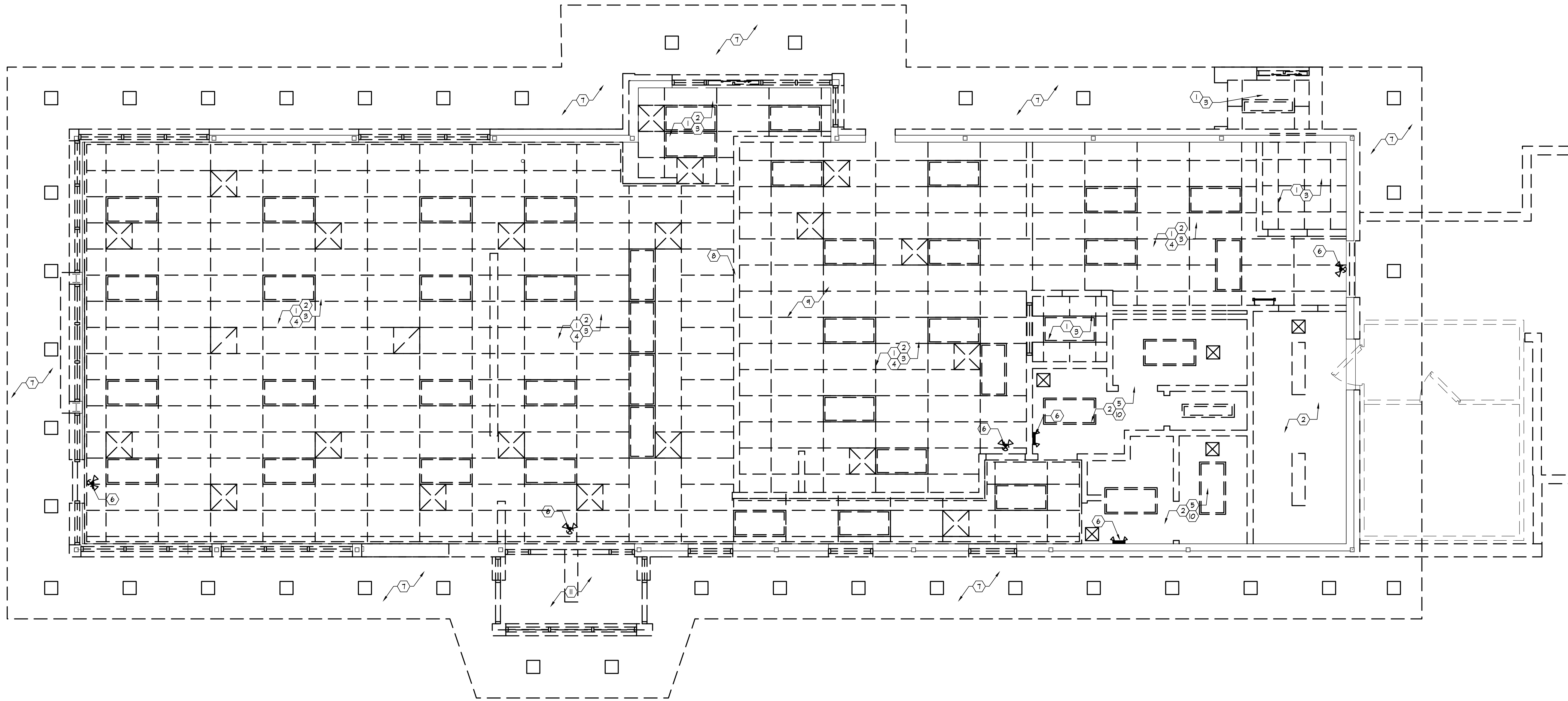
**Arby's**

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209 S. CENTERVILLE RD.  
STURGIS, MI 49091  
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REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
DRAWN BY: MHH  
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ISSUE DATE: 03/18/22  
**DEMOLITION FLOOR PLAN**  
**D100**





**1 DEMOLITION RCP**  
SCALE: 1/4" = 1'-0"



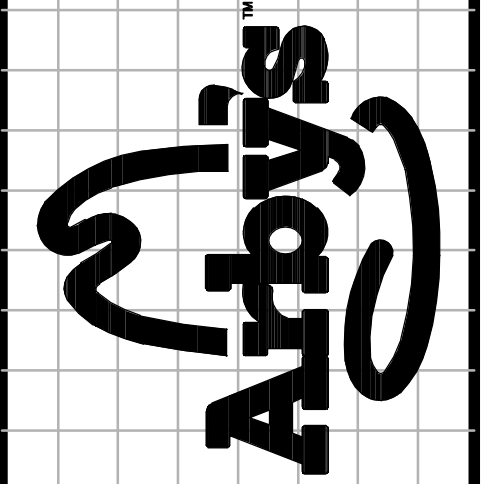
KEYED NOTES	
① REMOVE EXISTING CEILING TILE AND GRID.	⑦ REMOVE EXISTING FASCIA, SOFFIT ANY LIGHTING & C.C. TO CAP EXISTING WIRING PER CODE. ALL STRUCTURAL FEATURES INTEGRAL TO THE MAIN ROOF/STRUCTURE OF THE BUILDING TO BE PROTECTED FROM DAMAGE.
② REMOVE EXISTING DIFFUSER.	⑧ REMOVE EXISTING GYP. SOFFIT.
③ REMOVE EXISTING LIGHT FIXTURES (PENDANTS, CANS, SCONCES 2X2's & 2X4's) AND SURVEILLANCE DEVICES THROUGHOUT DINING ROOM, CUSTOMER QUEUING AREA, SALES AREA, VESTIBULES, AND AS INDICATED. SEE A200, ELECTRICAL.	⑨ REMOVE EXISTING HOOD AND ROOFTOP EXHAUST FAN. CAP CURB ON ROOF. SEE MECHANICAL.
④ REMOVE EXISTING SPEAKERS.	⑩ REMOVE EXISTING GYP. BOARD CEILING.
⑤ REMOVE RESTROOM EXHAUST FAN / DIFFUSER GRILL. SEE MECH. DRAWINGS FOR REPLACEMENT.	⑪ REMOVE EXISTING VESTIBULE IN THEIR ENTIRETY.
⑥ REMOVE EXISTING EXIT SIGN/ EMERGENCY LIGHT.	

PLAN LEGEND	
	- EXISTING 2x2' CEILING GRID AND TILE TO BE REMOVED.
	- EXISTING 2x4' CEILING GRID AND TILE TO BE REMOVED. SEE KEYED AND PLAN NOTES FOR REQUIREMENTS.
	- CEILING MOUNTED ITEMS TO BE REMOVED - SEE KEY NOTES AND SHEET A200

GENERAL NOTES	
A. EXAMINATION OF PREMISES: THE CONTRACTOR, BEFORE SUBMITTING A PROPOSAL FOR THIS WORK, SHALL EXAMINE THE PREMISES AND ALL CONDITIONS THEREON AND/OR THEREIN. THE PROPOSAL SHALL TAKE INTO CONSIDERATION ALL SUCH CONDITIONS AS MAY AFFECT THE WORK UNDER THIS CONTRACT. SUBMISSION OF A BID BY THE CONTRACTOR SHALL BE CONSIDERED AS ACKNOWLEDGMENT BY HIM THAT ALL SUCH CONDITIONS ARE FULLY KNOWN TO HIM. ARRANGEMENT FOR SITE VISITS SHALL BE MADE THROUGH LANDLORD.	6. NO OVER-CUTTING WILL BE ALLOWED BEYOND THE NOTED HOLE SIZES FOR ANY NEW OPENINGS IN STRUCTURAL CONCRETE SLAB OR THE EXISTING ROOF, UNLESS OTHERWISE APPROVED BY THE ARCHITECT'S REPRESENTATIVE.
B. GENERAL CONTRACTOR SHALL PAY FOR ALL REQUIRED DEMOLITION PERMIT FEES AND OBTAIN ALL APPLICABLE DEMOLITION PERMITS.	H. GENERAL CONTRACTOR IS TO PATCH AND REPAIR ALL DAMAGED SURFACES TO MATCH ADJACENT SURFACES. ALL EXISTING GYPSUM BOARD OR PLASTER THAT IS TO REMAIN AND TO RECEIVE A NEW SCHEDULED PAINT OR WALL COVERING SHALL HAVE ALL DEFECTS, (CRACKS, PAINT CHIPPING, HOLES, ETC.) FILLED, PLASTERED OR SPACKLED, SANDED SMOOTH AND CLEANED PRIOR TO THE SCHEDULED FINISH. REPAIR ALL WALLS THAT ARE TO REMAIN TO MATCH EXISTING WHEREVER A WALL OR FIXTURE HAS BEEN REMOVED OR ANY DAMAGE HAS OCCURRED AS A RESULT OF DEMOLITION OR CONSTRUCTION.
C. AT LEAST ONE RESTROOM MUST BE AVAILABLE DURING ALL PERIODS OF OPERATION.	I. GENERAL CONTRACTOR TO VERIFY ALL EXISTING ELEVATIONS AND BUILDING CONDITIONS IN FIELD PRIOR TO START OF DEMOLITION.
D. ALL REMODELING WORK MUST BE INITIATED IN A MANNER TO ELIMINATE THE POSSIBILITY OF DUST, DEBRIS OR CONTAMINANTS GETTING INTO THE ACTIVE PART OF THE FACILITY.	J. G.C. SHALL IMMEDIATELY NOTIFY ARCHITECT OF ANY DISCREPANCIES IN EXISTING STRUCTURAL COMPONENTS OF BUILDING.
E. GENERAL CONTRACTOR IS TO PROVIDE ALL NECESSARY DUST & TRAFFIC BARRIERS & TEMPORARY PARTITIONS AS REQUIRED TO MAINTAIN A SAFE AND CLEAN ENVIRONMENT FOR THE PUBLIC AND EMPLOYEES THROUGHOUT THE PROJECT.	K. ALL SECURITY EQUIPMENT (CAMERAS, SENSORS, KEYPADS) THAT REQUIRES REMOVAL SHALL BE REINSTALLED IN SAME LOCATION.
F. GENERAL CONTRACTOR SHALL REMOVE ALL DEBRIS & EQUIPMENT DAILY DURING THE DEMOLITION WORK.	

REGISTRATION SEAL

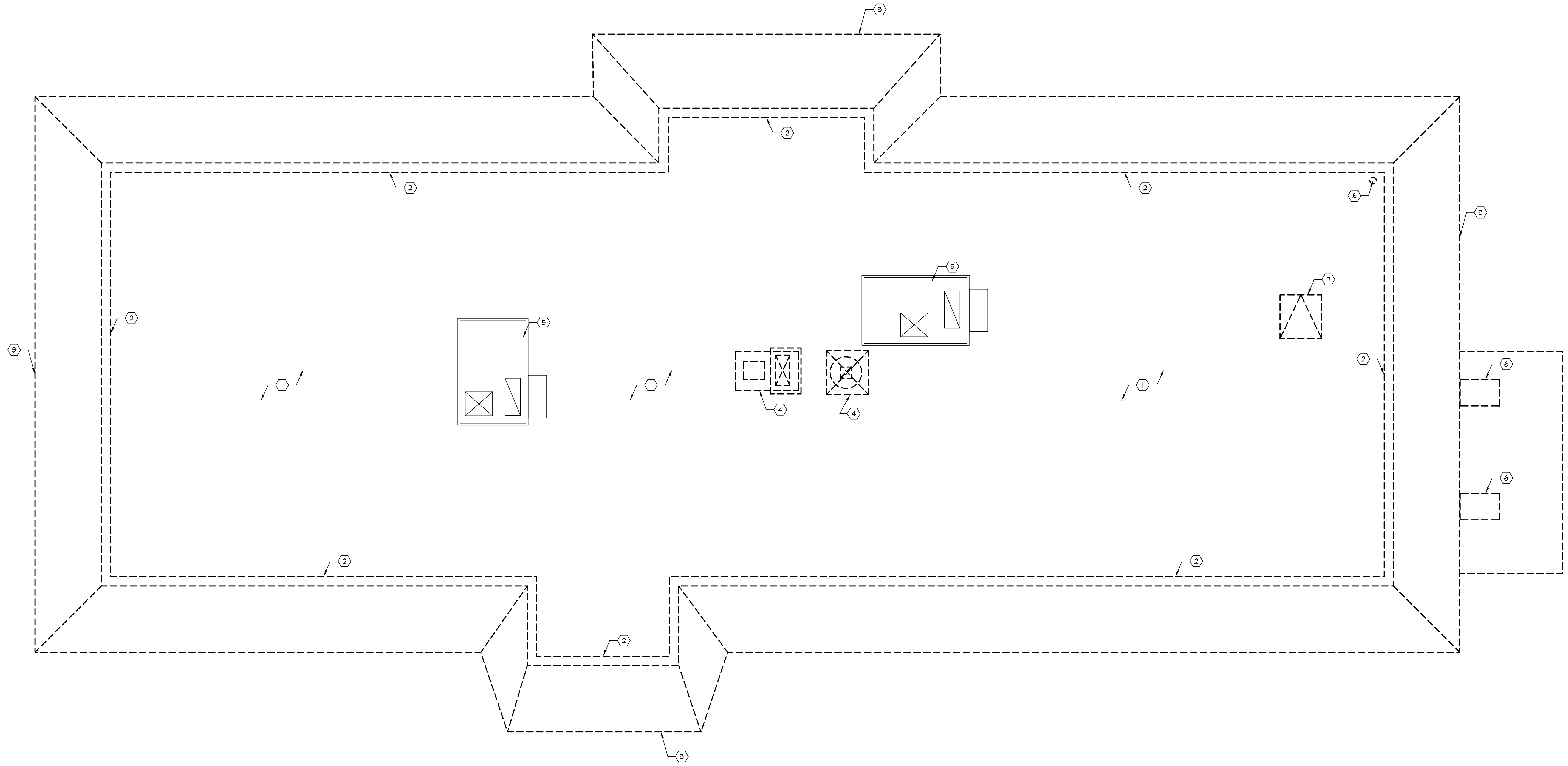
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ARBY'S INSPIRE CONVERSION  
209 S. CENTERVILLE RD.  
STURGIS, MI 49091  
STORE # X

REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
DRAWN BY: WHI/AM  
CHECKED BY: JOW  
ISSUE DATE: 03/18/22  
DEMOLITION CEILING PLAN  
**D101**



**1 DEMOLITION ROOF PLAN**  
**SCALE: 1/4" = 1'-0"**



KEYED NOTES	
①	REMOVE ALL EXISTING ROOF MEMBRANE AND OUTBOARD INSULATION. CLEAN ROOF DECK, PREPARE TO RECEIVE NEW INSULATION AND MEMBRANE.
②	REMOVE EXISTING PARAPET CONSTRUCTION. SEE DEMO ELEVATIONS.
③	REMOVE EXISTING CANTILEVERED FRAMINGS.
④	REMOVE EXISTING MECHANICAL DEVICE.
⑤	EXISTING ROOF TOP UNITS TO REMAIN. PROTECT ALL UNITS AS REQUIRED DURING ALL PHASES OF WORK.
⑥	REMOVE EXISTING ICE CONDENSER ON EXISTING WALK IN FREEZER/COOLER. CAP POWER, SEE ELECTRICAL.
⑦	REMOVE EXISTING ROOF ACCESS HATCH.
⑧	REMOVE EXISTING ROOF DRAINAGE.

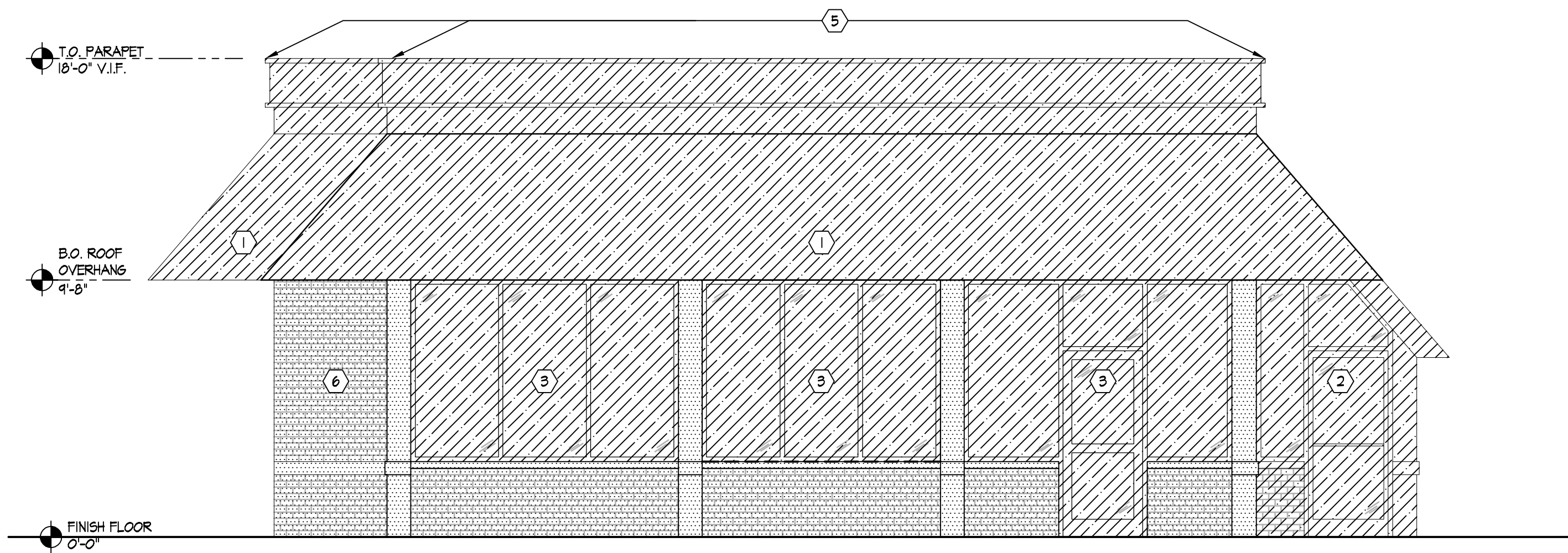
GENERAL NOTES	
A.	AT LEAST ONE RESTROOM MUST BE AVAILABLE DURING ALL PERIODS OF OPERATION.
B.	ALL REMODELING WORK MUST BE INITIATED IN A MANNER TO ELIMINATE THE POSSIBILITY OF DUST, DEBRIS OR CONTAMINANTS GETTING INTO THE ACTIVE PART OF THE FACILITY.
C.	6.C. TO VERIFY EQUIPMENT LOCATION WITH PROJECT MANAGER PRIOR TO INSTALLATION.
D.	GENERAL CONTRACTOR TO VERIFY ALL EXISTING ELEVATIONS AND BUILDING CONDITIONS IN FIELD PRIOR TO START OF CONSTRUCTION.

REGISTRATION SEAL

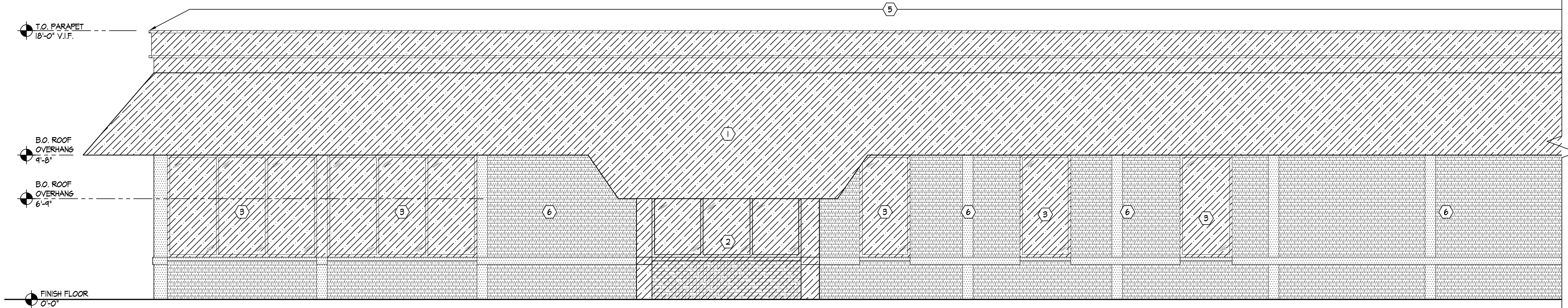
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<b>ARBY'S INSPIRE CONVERSION</b> 209 S. CENTERVILLE RD. STURGIS, MI 49091	<b>STORE # X</b>
PROJECT NO: 210109 DRAWN BY: AM/ CHECKED BY: JMW ISSUE DATE: 03/18/22	<b>DEMOLITION ROOF PLAN</b>
<b>D102</b>	

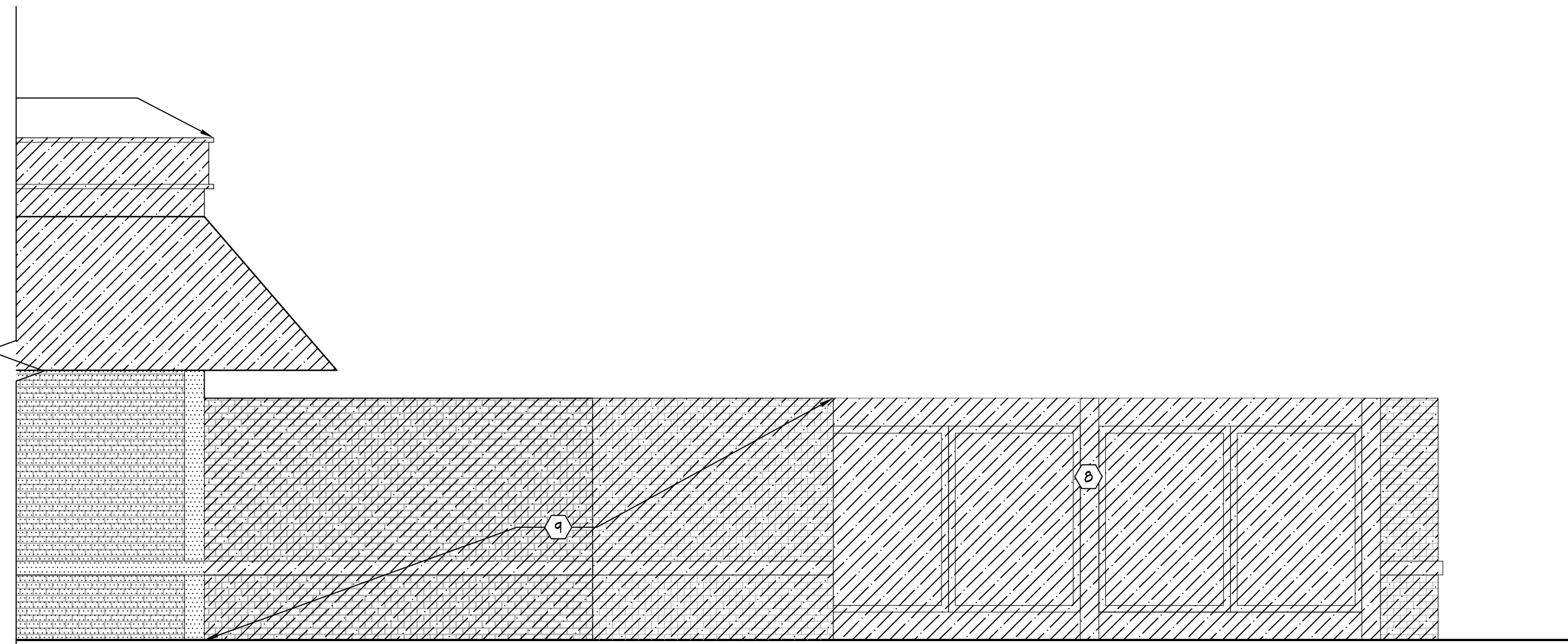




**1 EAST (MAIN ENTRY) ELEVATION**  
SCALE: 1/4" = 1'-0"



**2 NORTH (SECOND ENTRY) ELEVATION**  
SCALE: 1/4" = 1'-0"



**2 NORTH (SECOND ENTRY) ELEVATION CONT'D**  
SCALE: 1/4" = 1'-0"

- ### KEYED NOTES
- 1 REMOVE EXISTING MANSARD ROOF FASCIA, SOFFIT AND LIGHTING, G.C. TO CAP EXISTING PILING AS REQUIRED. PLEASE REFER TO STRUCTURAL FOR STRUCTURAL CONDITIONS.
  - 2 REMOVE EXISTING VESTIBULE IN ITS ENTIRETY. PREPARE TO RECEIVE NEW STOREFRONT WINDOW. SEE SHEET A100 & A400.
  - 3 REMOVE EXISTING STOREFRONT AND WINDOW ASSEMBLY. PREP OPENING TO RECEIVE NEW STOREFRONT/ NEW FRAMING/ NEW DOOR. SEE A100 & A400. G.C. TO INSPECT EXISTING SILL PLATES, HEADERS TO BE REPAIRED AS REQUIRED.
  - 4 REMOVE EXISTING DRIVE THRU WINDOW. PREP OPENING AS REQUIRED TO RECEIVE NEW D.T. WINDOW AND NEW FRAMING. SEE SHEET A100.
  - 5 REMOVE EXISTING PARAPET. PLEASE REFER TO STRUCTURAL FOR STRUCTURAL CONDITIONS.
  - 6 REMOVE EXISTING BRICK FINISH G.C. TO REPAIR OR REPLACE THE SUBSTRATE AS REQUIRED FOR NEW EXTERIOR FINISH.
  - 7 REMOVE EXISTING DOOR.
  - 8 REMOVE EXISTING TRASH ENCLOSURE.
  - 9 REMOVE EXISTING BLOCK AND BRICK WALLS TO EXTENTS INDICATED. SEE D100 FOR ADDITIONAL INFORMATION.

- ### GENERAL NOTES
- A. EXAMINATION OF PREMISES: THE CONTRACTOR, BEFORE SUBMITTING A PROPOSAL FOR THIS WORK, SHALL EXAMINE THE PREMISES AND ALL CONDITIONS THEREON AND/OR THEREIN. THE PROPOSAL SHALL TAKE INTO CONSIDERATION ALL SUCH CONDITIONS AS MAY AFFECT THE WORK UNDER THIS CONTRACT. SUBMISSION OF A BID BY THE CONTRACTOR SHALL BE CONSIDERED AS ACKNOWLEDGMENT BY HIM THAT ALL SUCH CONDITIONS ARE FULLY KNOWN TO HIM. ARRANGEMENT FOR SITE VISITS SHALL BE MADE THROUGH OWNER.
  - B. GENERAL CONTRACTOR SHALL PAY FOR ALL REQUIRED DEMOLITION PERMIT FEES AND OBTAIN ALL APPLICABLE DEMOLITION PERMITS.
  - C. AT LEAST ONE RESTROOM MUST BE AVAILABLE DURING ALL PERIODS OF OPERATION.
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  - F. GENERAL CONTRACTOR SHALL REMOVE ALL DEBRIS & EQUIPMENT DAILY DURING THE DEMOLITION WORK.
  - G. NO OVER-CUTTING WILL BE ALLOWED BEYOND THE NOTED HOLE SIZES FOR ANY NEW OPENINGS IN STRUCTURAL CONCRETE SLAB OR THE EXISTING ROOF, UNLESS OTHERWISE APPROVED BY THE ARCHITECT'S REPRESENTATIVE.
  - H. GENERAL CONTRACTOR IS TO PATCH AND REPAIR ALL DAMAGED SURFACES TO MATCH ADJACENT SURFACES. ALL EXISTING DRYWALL OR PLASTER THAT IS TO REMAIN AND TO RECEIVE A NEW SCHEDULED PAINT OR WALL COVERING SHALL HAVE ALL DEFECTS, CRACKS, PAINT CHIPPING, HOLES, ETC. FILLED, PLASTERED OR SPACKLED, SANDED SMOOTH AND CLEANED PRIOR TO THE SCHEDULED FINISH. REPAIR ALL WALLS THAT ARE TO REMAIN TO MATCH EXISTING. WHEREVER A WALL OR FIXTURE HAS BEEN REMOVED OR ANY DAMAGE HAS OCCURRED AS A RESULT OF DEMOLITION OR CONSTRUCTION.
  - I. GENERAL CONTRACTOR TO REFER TO SITE PLAN DRAWINGS FOR ALL RELEVANT SITE WORK INCLUDING, BUT NOT LIMITED TO, SIDEWALKS, CURBS, DRIVEWAYS, PARKING AREAS, ETC.
  - J. GENERAL CONTRACTOR TO VERIFY ALL EXISTING ELEVATIONS AND BUILDING CONDITIONS IN FIELD PRIOR TO START OF DEMOLITION.

### ELEVATION LEGEND

	- ELEMENTS/FEATURES TO BE REMOVED
	- FINISH MATERIALS TO BE REMOVED/ RESURFACED SUBSTRATE TO REMAIN. SEE KEY NOTES FOR BALANCE OF DIRECTION
	- EXISTING FEATURE TO BE REMOVED

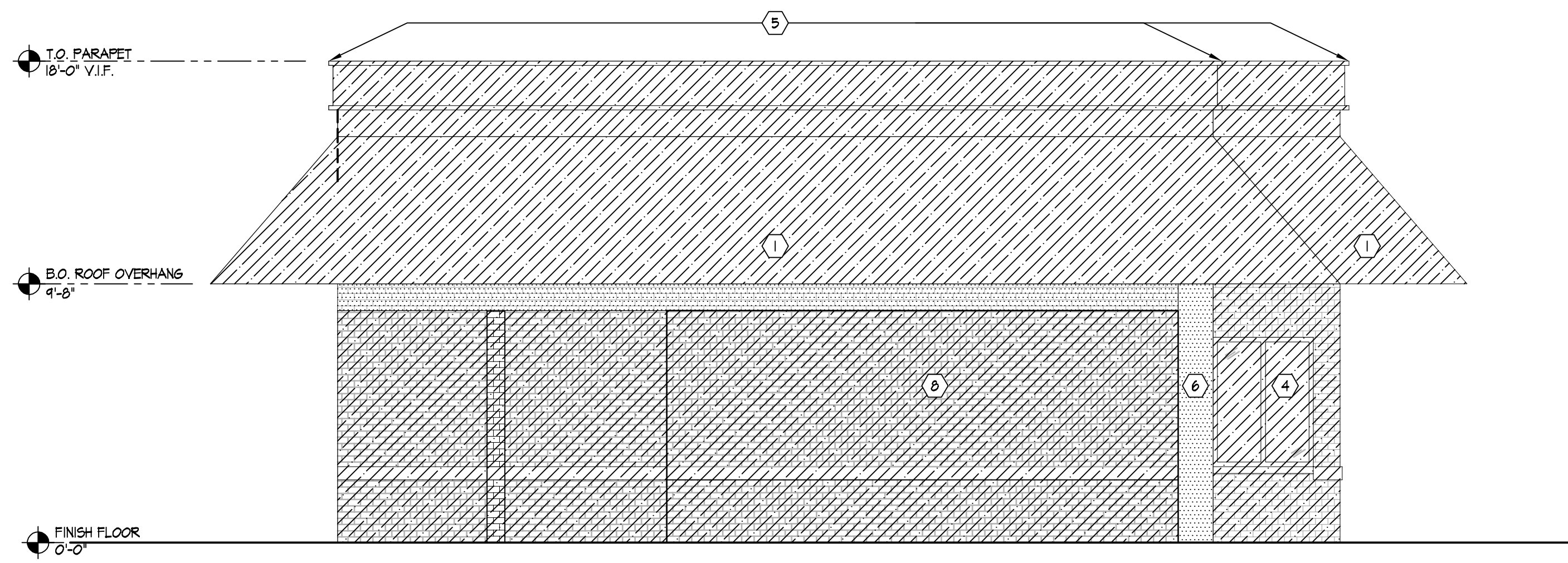
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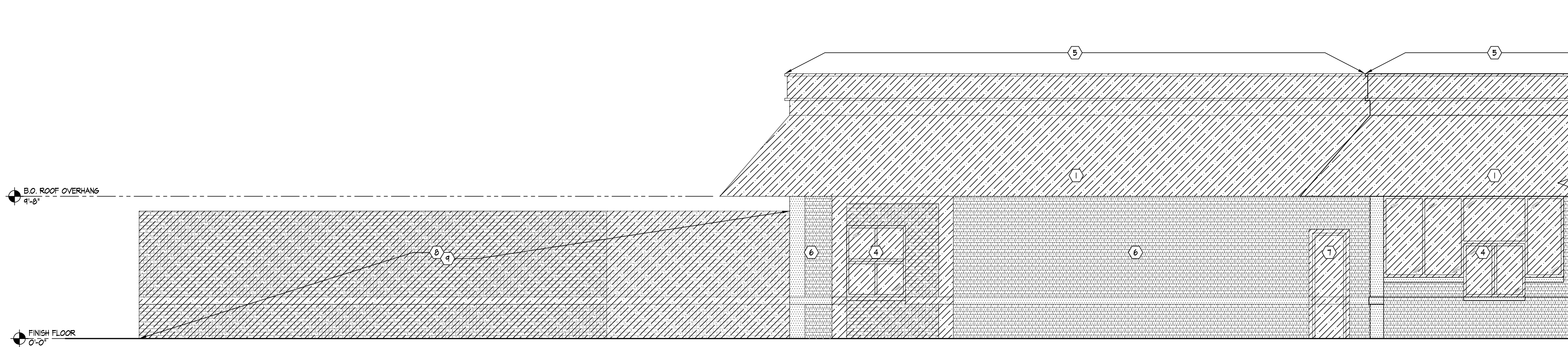
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ARBY'S INSPIRE CONVERSION  
209 S. CENTERVILLE RD.  
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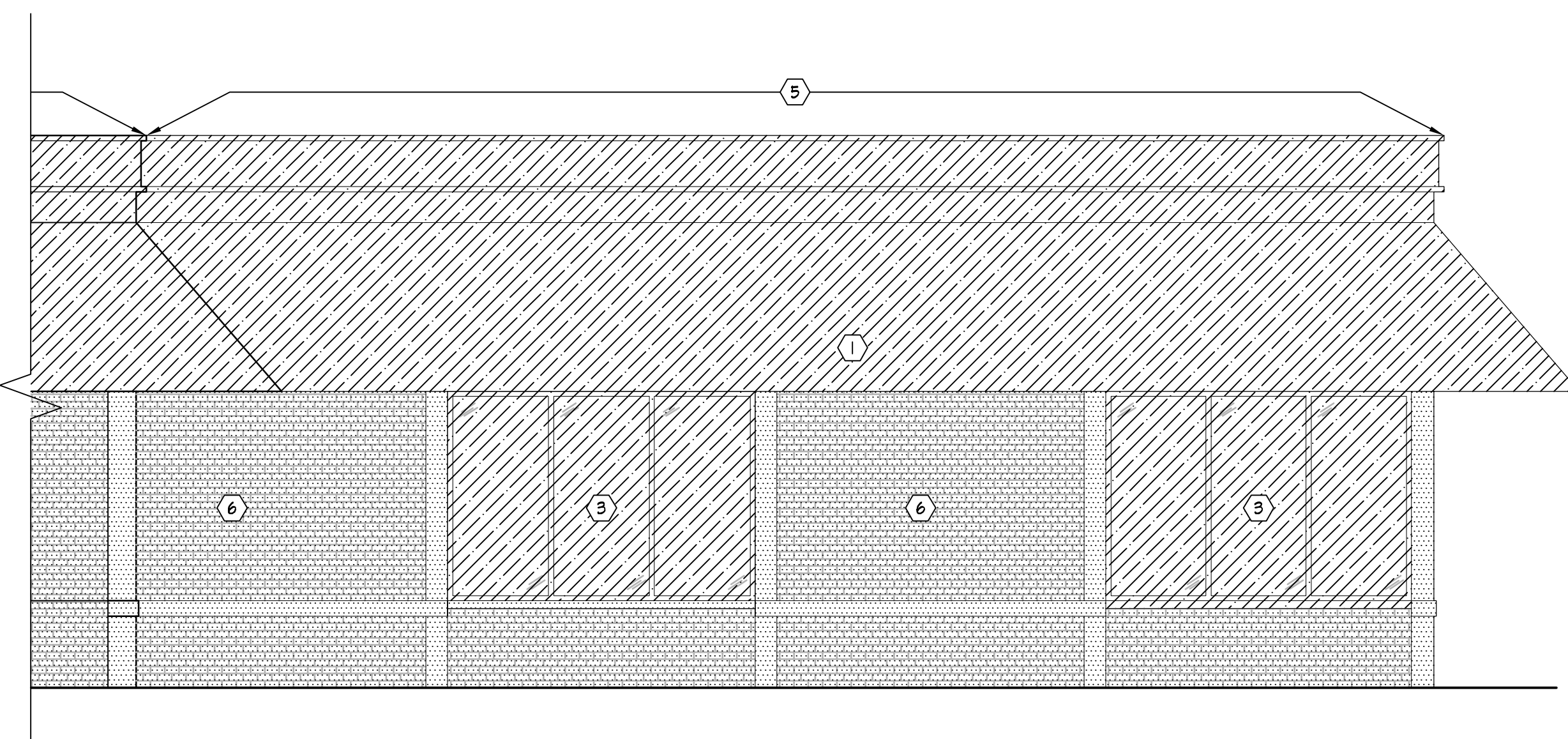
PROJECT NO: 210109  
DRAWN BY: MWH  
CHECKED BY: JOW  
ISSUE DATE: 03/18/22  
DEMOLITION EXTERIOR ELEVATIONS  
**D200**



**1 WEST (REAR) ELEVATION**  
SCALE: 1/4" = 1'-0"



**2 SOUTH (DRIVE-THRU) ELEVATION**  
SCALE: 1/4" = 1'-0"



**2 SOUTH (DRIVE-THRU) ELEVATION CONT'D**  
SCALE: 1/4" = 1'-0"

**KEYED NOTES**

- 1 REMOVE EXISTING MANSARD ROOF FASCIA, SOFFIT AND LIGHTING, G.C. TO CAP EXISTING PILING AS REQUIRED. PLEASE REFER TO STRUCTURAL FOR STRUCTURAL CONDITIONS.
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**GENERAL NOTES**

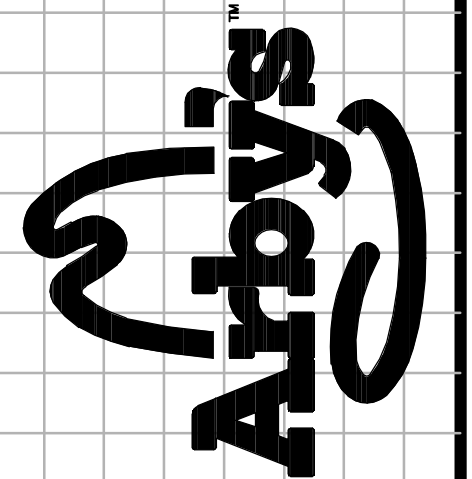
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STORE # X

REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
 DRAWN BY: MPH  
 CHECKED BY: JMW  
 ISSUE DATE: 03/18/22

**D201**

DEMOLITION EXTERIOR ELEVATIONS



ABBREVIATIONS

Table of abbreviations and their meanings, including terms like ANCHOR BOLT, REINFORCING, and CONSTRUCTION.

GENERAL STRUCTURAL NOTES

BUILDING CODE:

2015 EDITION OF THE MICHIGAN BUILDING CODE AND STANDARDS REFERENCED THEREIN, WITH CITY OF STURGIS AMENDMENTS.

LOADS:

ROOFS:

ROOF LIVE LOAD = 20 PSF (REDUCIBLE). GROUND SNOW LOAD, Pg = 25 PSF. FLAT-ROOF SNOW LOAD, Pf = 20 PSF (NON-REDUCIBLE).

LATERAL:

WIND:

ULTIMATE DESIGN WIND SPEED (3-SECOND GUST), V(ui) = 120 MPH. RISK CATEGORY, II.

SEISMIC:

RISK CATEGORY, II. SEISMIC IMPORTANCE FACTOR, I = 1.0. MAPPED SHORT PERIOD SPECTRAL ACCELERATION, Sa = 0.007.

FOUNDATIONS:

ISOLATED AND CONTINUOUS FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED SLT 42" MINIMUM BELOW ADJACENT FINISHED GRADE OR EXISTING GRADE.

CONCRETE:

SPECIFIED 28 DAY COMPRESSIVE STRENGTH F'c: FOUNDATIONS (DESIGN BASED ON 2,500 PSI)----- 3,000 PSI

GENERAL:

ALL CONCRETE CONSTRUCTION SHALL CONFORM TO THE REFERENCED EDITION OF THE ACI STANDARDS. MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED UNLESS NOTED OTHERWISE.

REINFORCING:

ALL REINFORCING SHALL BE CHAIRED OR POSITIONED USING REBAR SPACERS TO ENSURE PROPER CLEARANCES.

LAP SPLICES IN CONCRETE:

ALL SPLICE LOCATIONS SUBJECT TO APPROVAL BY THE STRUCTURAL ENGINEER. PROVIDE BENT CORNER BARS TO MATCH AND LAP WITH HORIZONTAL BARS AT ALL CORNERS AND INTERSECTIONS PER TYPICAL DETAILS.

POST-INSTALLED ANCHORS:

GENERAL:

ALL POST-INSTALLED ANCHORS SHALL UTILIZE THE EXACT ANCHORAGE SYSTEM SPECIFIED IN THE STRUCTURAL DETAILS.

LATERAL:

WIND:

ULTIMATE DESIGN WIND SPEED (3-SECOND GUST), V(ui) = 120 MPH. RISK CATEGORY, II.

SEISMIC:

RISK CATEGORY, II. SEISMIC IMPORTANCE FACTOR, I = 1.0. MAPPED SHORT PERIOD SPECTRAL ACCELERATION, Sa = 0.007.

FOUNDATIONS:

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GENERAL:

ALL CONCRETE CONSTRUCTION SHALL CONFORM TO THE REFERENCED EDITION OF THE ACI STANDARDS. MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED UNLESS NOTED OTHERWISE.

REINFORCING:

ALL REINFORCING SHALL BE CHAIRED OR POSITIONED USING REBAR SPACERS TO ENSURE PROPER CLEARANCES.

PLYWOOD:

ALL PLYWOOD SHALL BE APA "CDX" RATED SHEATHING OR BETTER AND SHALL BEAR THE STAMP OF AN APPROVED TESTING AGENCY.

ALTERNATE:

APA PERFORMANCE RATED SHEATHING (OSB) MAY BE USED AS AN ALTERNATE TO PLYWOOD WITH PRIOR APPROVAL OF OWNER, ARCHITECT AND INSTALLING CONTRACTOR.

GENERAL NOTES:

THE STRUCTURAL CONSTRUCTION DOCUMENTS REPRESENT THE FINISHED STRUCTURE, EXCEPT WHERE NOTED, THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION.

VERIFY:

ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS AND FIELD CONDITIONS. BUILDING DIMENSIONS AND ELEVATIONS, WHERE SHOWN, WERE PROVIDED BY THE ARCHITECT AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND COORDINATE ALL DIMENSIONS PRIOR TO PROCEEDING WITH THE WORK.

CONSTRUCTION:

1. CONCRETE: A. DURING THE TAKING OF TEST SPECIMENS. B. CONTINUOUS INSPECTION DURING THE PLACEMENT OF ALL REINFORCED CONCRETE.

REINFORCING:

ALL REINFORCING SHALL BE CHAIRED OR POSITIONED USING REBAR SPACERS TO ENSURE PROPER CLEARANCES.

WOOD:

WOOD STUDS AND TRUSSES SHALL HAVE A MAXIMUM MOISTURE CONTENT OF 19% WHEN DELIVERED TO THE JOB SITE.

PLUMBING:

PLUMBING, MECHANICAL, DRYWALL, AND ELECTRICAL SUBCONTRACTORS SHALL ACCOUNT FOR A MAXIMUM DIFFERENTIAL SHRINKAGE OF 1/8 IN. PER FOOT IN ALL CONDUITS, DUCTS AND CONNECTIONS.

PRESERVATIVE:

ALL SILL PLATES IN CONTACT WITH CONCRETE SHALL BE PRESERVATIVE-TREATED WOOD. WOOD FRAMING MEMBERS ATTACHED DIRECTLY TO THE INTERIOR OF EXTERIOR MASONRY OR CONCRETE WALLS BELOW GRADE SHALL BE PRESERVATIVE-TREATED WOOD.

FASTENERS:

ALL FASTENERS INCLUDING NUTS AND WASHERS IN CONTACT WITH PRESERVATIVE-TREATED WOOD SHALL BE HOT-DIPPED GALVANIZED STEEL OR STAINLESS STEEL.

SAWN LUMBER:

FRAMING LUMBER SHALL COMPLY WITH THE REFERENCED EDITION OF THE GRADING RULES OF THE WMPA OR THE WCLB.

JOISTS:

2 X 4 AT ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

BEAMS:

2 X 6 OR LESS ----- D.F.L. #1 WIDTH GREATER THAN 4" ----- D.F.L. #1

LEADERS AND TOP PLATES:

2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

POSTS:

4 X 4 ----- D.F.L. #2 4 X 6 OR LARGER ----- D.F.L.#2

WOOD TYPE:

2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE:

2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE:

2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE:

2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

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2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

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WOOD TYPE:

2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE:

2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE:

2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

Applies unless noted otherwise on drawings

STEEL CONSTRUCTION:

1. WELDING: A. VERIFICATION OF VALID WELDER'S CERTIFICATES. B. PERIODIC VISUAL INSPECTION OF ALL SHOP AND FIELD WELDS. C. ALL STRUCTURAL STEEL FABRICATORS SHALL EMPLOY AN AWS CERTIFIED INDEPENDENT TESTING AGENCY TO PROVIDE SHOP WELD INSPECTIONS PER CODE.

SPECIAL CASES:

1. EXPANSION, EPOXY, ADHESIVE, AND SCREW ANCHORS: DURING THE PLACEMENT OF ALL ANCHORS SHOWN ON STRUCTURAL DRAWINGS. ADDITIONAL INSPECTIONS REQUIRED FOR REPAIR DETAILS SHALL BE PERFORMED AT THE CONTRACTOR'S EXPENSE.

SPECIAL INSPECTIONS - NON STRUCTURAL (PERFORMED BY OTHERS):

GEOTECHNICAL INSPECTIONS - SOILS:

1. PERIODIC VERIFICATION THAT MATERIALS BELOW GRADE ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY. 2. PERIODIC VERIFICATION THAT EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.

DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR:

A. THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK ASSIGNED TO BE CERTAIN IT CONFORMS TO THE APPROVED DESIGN DRAWINGS AND SPECIFICATION. B. THE SPECIAL INSPECTOR IS NOT AUTHORIZED TO APPROVE DEVIATIONS FROM THE DESIGN DRAWINGS OR SPECIFICATIONS, AND ALL DEVIATIONS MUST BE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO PROCEEDING WITH THE WORK.

OPTIONS AND SUBSTITUTIONS ARE FOR CONTRACTOR'S CONVENIENCE. IF AN OPTION OR SUBSTITUTION IS CHOSEN, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY CHANGES, APPROVALS AND THE COORDINATION OF THE WORK WITH ALL RELATED TRADES AND SUPPLIERS.

NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS.

VERIFY ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS AND FIELD CONDITIONS. BUILDING DIMENSIONS AND ELEVATIONS, WHERE SHOWN, WERE PROVIDED BY THE ARCHITECT AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND COORDINATE ALL DIMENSIONS PRIOR TO PROCEEDING WITH THE WORK.

CONSTRUCTION MATERIALS SHALL BE SPREAD OUT IF PLACED ON FRAMED CONSTRUCTION. LOAD SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT.

OPTIONS AND SUBSTITUTIONS ARE FOR CONTRACTOR'S CONVENIENCE. IF AN OPTION OR SUBSTITUTION IS CHOSEN, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY CHANGES, APPROVALS AND THE COORDINATION OF THE WORK WITH ALL RELATED TRADES AND SUPPLIERS.

NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS.

VERIFY ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS AND FIELD CONDITIONS. BUILDING DIMENSIONS AND ELEVATIONS, WHERE SHOWN, WERE PROVIDED BY THE ARCHITECT AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND COORDINATE ALL DIMENSIONS PRIOR TO PROCEEDING WITH THE WORK.

SPECIAL INSPECTION - STRUCTURAL ONLY:

SPECIAL INSPECTIONS SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF A STATE REGISTERED STRUCTURAL ENGINEER WHO IS FAMILIAR WITH THE STRUCTURAL DESIGN OF THIS PROJECT. THE SUPERVISING STRUCTURAL ENGINEER SHALL SEAL THE SPECIAL INSPECTION CERTIFICATE.

SPECIAL INSPECTION IS TO BE PROVIDED FOR THE ITEMS LISTED BELOW IN ADDITION TO THE INSPECTIONS CONDUCTED BY THE BUILDING JURISDICTION. "SPECIAL STRUCTURAL INSPECTION" SHALL NOT RELIEVE THE OWNER OR THEIR AGENT FROM REQUESTING THE BUILDING JURISDICTION INSPECTIONS REQUIRED BY SECTION 110 OF THE INTERNATIONAL BUILDING CODE. SPECIAL INSPECTION IS REQUIRED PER CHAPTER 17 FOR THE FOLLOWING:

CONCRETE CONSTRUCTION: 1. CONCRETE: A. DURING THE TAKING OF TEST SPECIMENS. B. CONTINUOUS INSPECTION DURING THE PLACEMENT OF ALL REINFORCED CONCRETE.

REINFORCING: ALL REINFORCING SHALL BE CHAIRED OR POSITIONED USING REBAR SPACERS TO ENSURE PROPER CLEARANCES.

WOOD: WOOD STUDS AND TRUSSES SHALL HAVE A MAXIMUM MOISTURE CONTENT OF 19% WHEN DELIVERED TO THE JOB SITE.

PLUMBING: PLUMBING, MECHANICAL, DRYWALL, AND ELECTRICAL SUBCONTRACTORS SHALL ACCOUNT FOR A MAXIMUM DIFFERENTIAL SHRINKAGE OF 1/8 IN. PER FOOT IN ALL CONDUITS, DUCTS AND CONNECTIONS.

PRESERVATIVE: ALL SILL PLATES IN CONTACT WITH CONCRETE SHALL BE PRESERVATIVE-TREATED WOOD. WOOD FRAMING MEMBERS ATTACHED DIRECTLY TO THE INTERIOR OF EXTERIOR MASONRY OR CONCRETE WALLS BELOW GRADE SHALL BE PRESERVATIVE-TREATED WOOD.

FASTENERS: ALL FASTENERS INCLUDING NUTS AND WASHERS IN CONTACT WITH PRESERVATIVE-TREATED WOOD SHALL BE HOT-DIPPED GALVANIZED STEEL OR STAINLESS STEEL.

SAWN LUMBER: FRAMING LUMBER SHALL COMPLY WITH THE REFERENCED EDITION OF THE GRADING RULES OF THE WMPA OR THE WCLB.

JOISTS: 2 X 4 AT ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

BEAMS: 2 X 6 OR LESS ----- D.F.L. #1 WIDTH GREATER THAN 4" ----- D.F.L. #1

LEADERS AND TOP PLATES: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

POSTS: 4 X 4 ----- D.F.L. #2 4 X 6 OR LARGER ----- D.F.L.#2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

WOOD TYPE: 2 X 4 ----- H.F. #2 2 X 6 OR LARGER ----- H.F. #2

FOR ADDITIONAL INFORMATION SHOWN BUT NOT NOTED, SEE GENERAL STRUCTURAL NOTES ON SHEET S1.1 AND TYPICAL DETAIL SHEETS.

THESE DRAWINGS/CALCULATIONS ARE CONSIDERED PRELIMINARY - NOT FOR CONSTRUCTION OR RECORDING UNLESS THE STRUCTURAL ENGINEER OF RECORD'S SEAL IS AFFIXED WITH WRITTEN SIGNATURE.

PROJECT NUMBER 22-0167 PROJECT MANAGER RAD PROJECT ENGINEER CMJ PROJECT DRAFTER HN

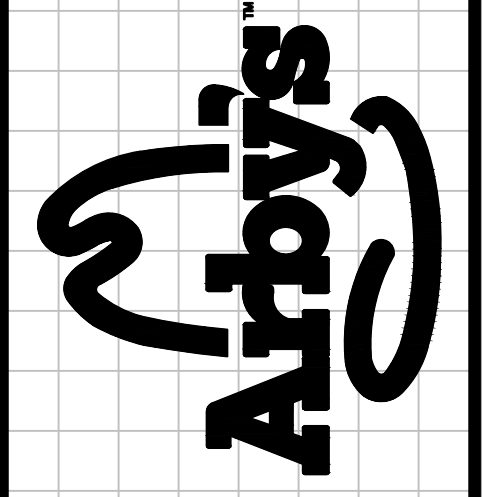
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Professional seal and registration information for Richard Dahmann, Engineer No. 62017MS306, State of Michigan. Includes company name ARCVISION INCORPORATED and address 208 S. CENTERVILLE RD. STURGIS, MI 48091.

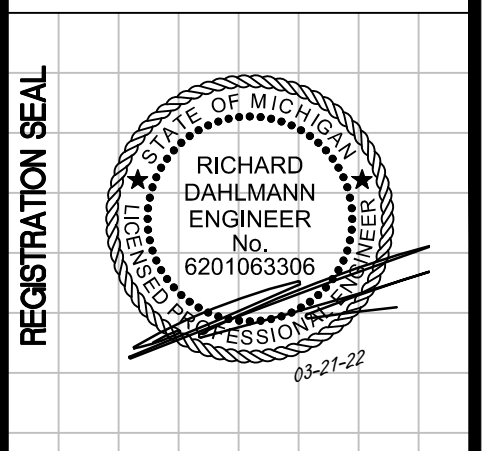


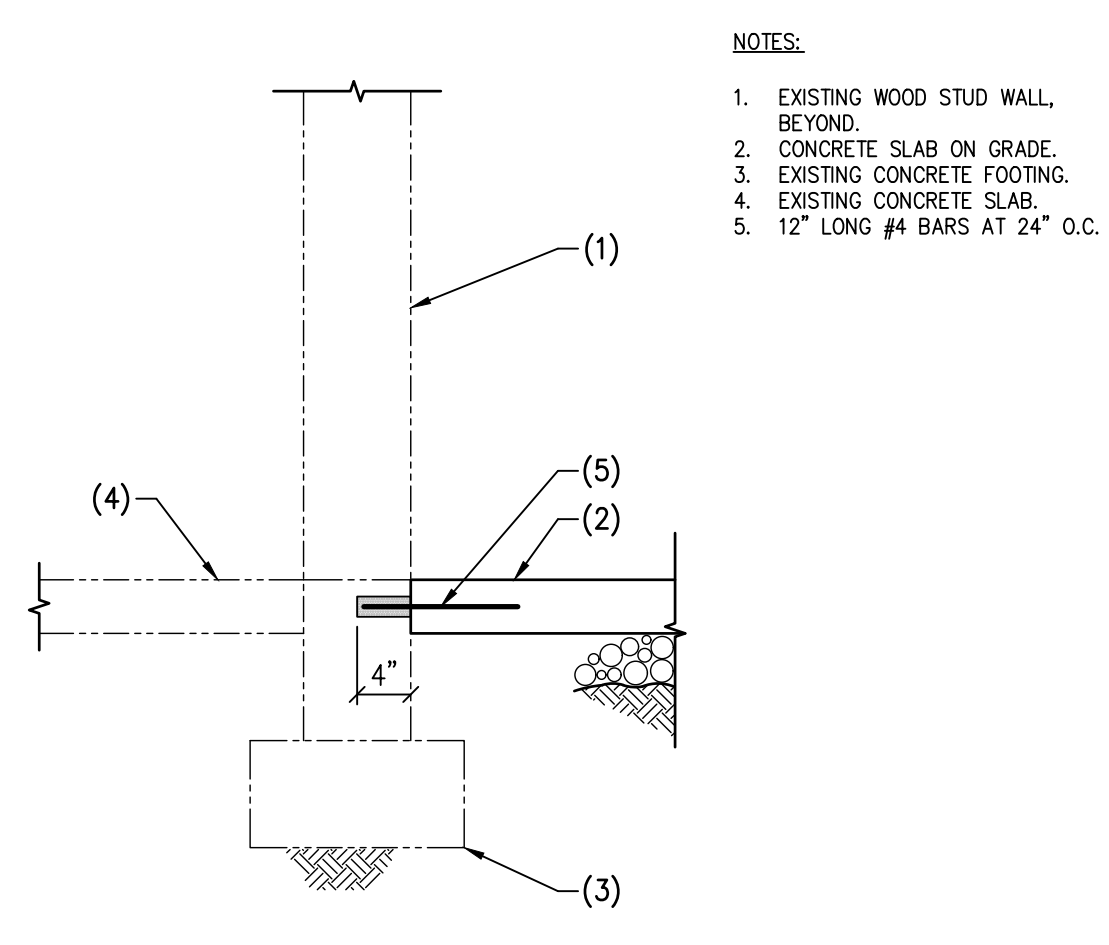
GENERAL STRUCTURAL NOTES STORE # X

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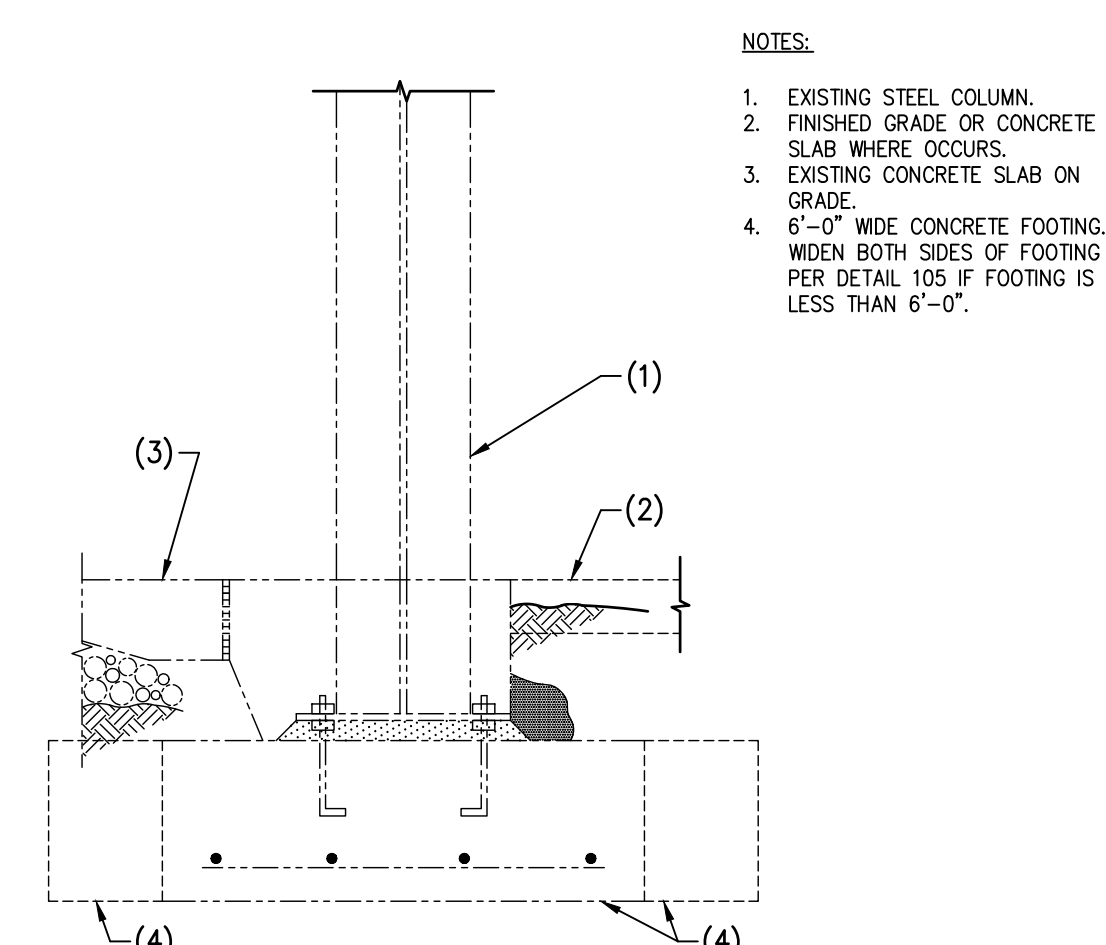


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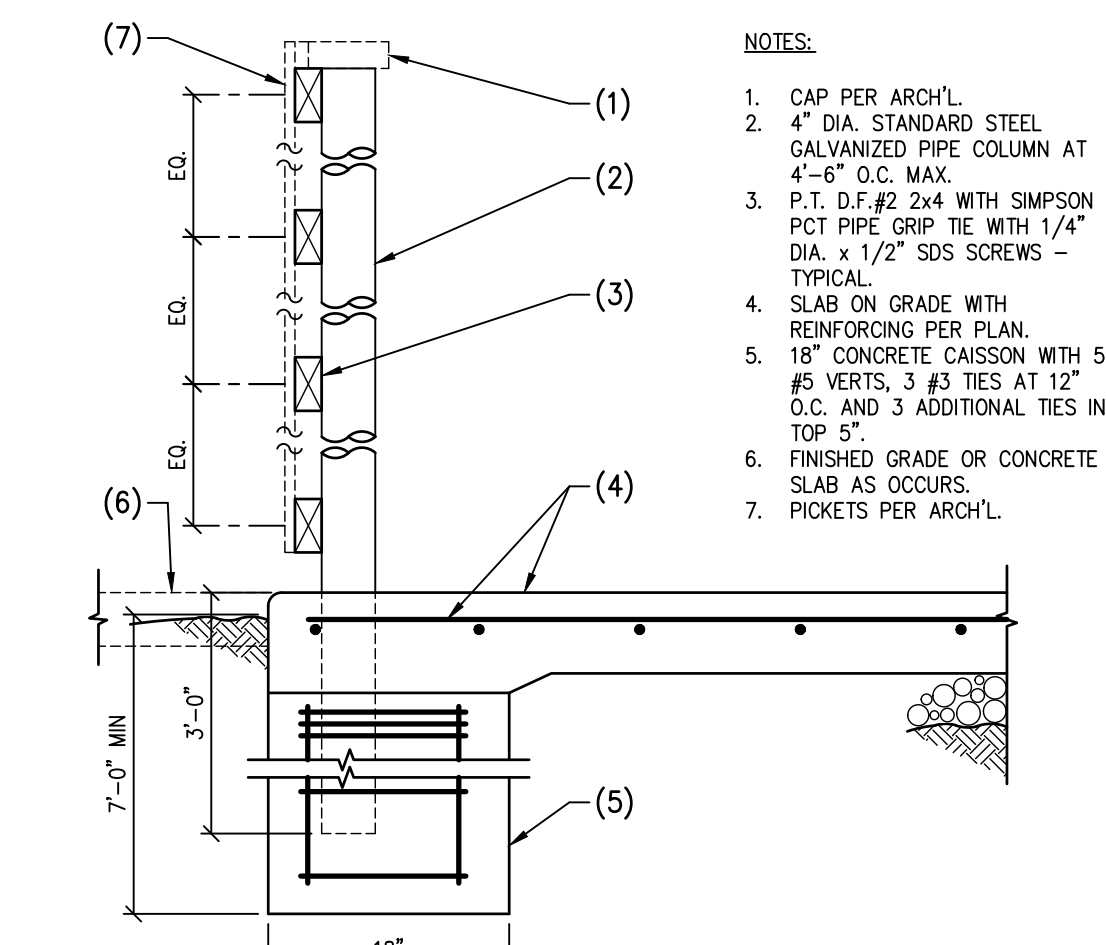




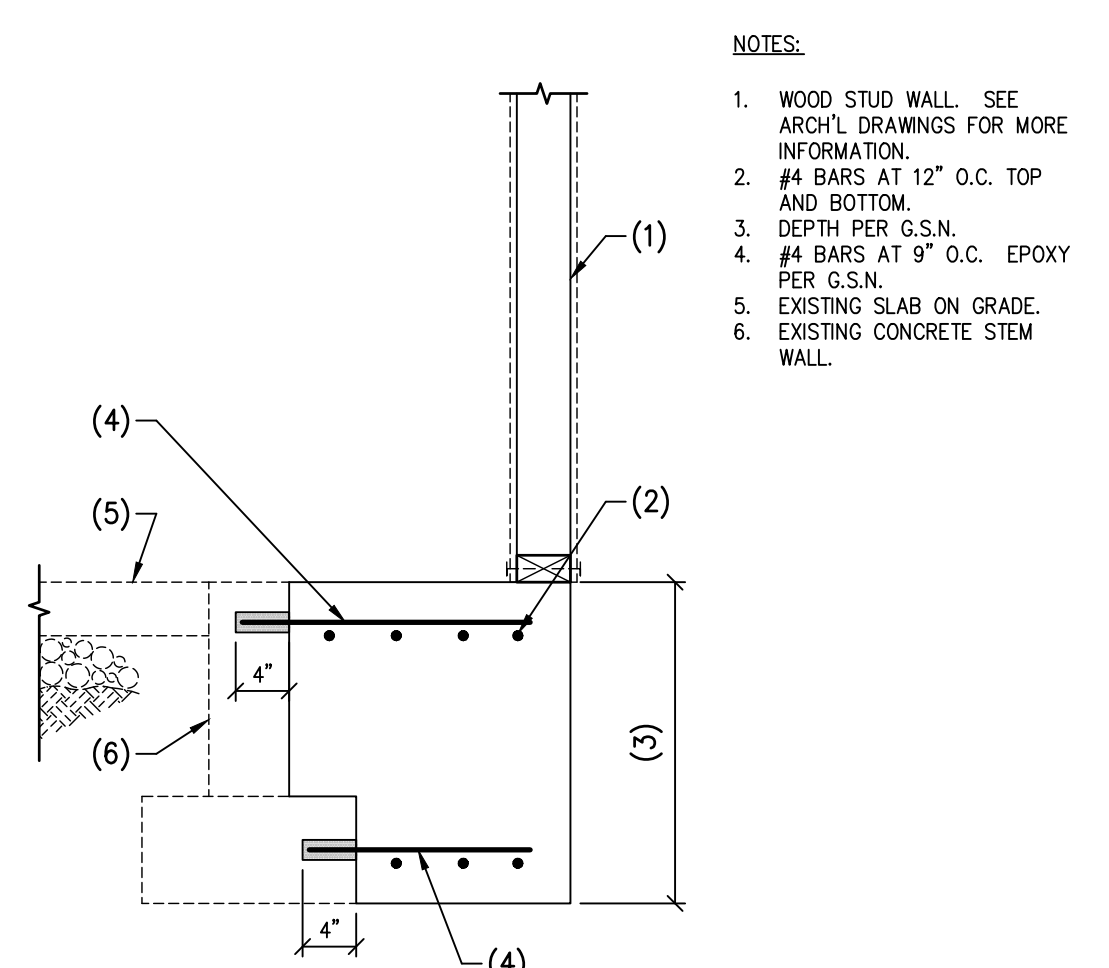
**108** CONCRETE SLAB AT EXISTING WOOD STUD WALL  
801-21.01 NO SCALE



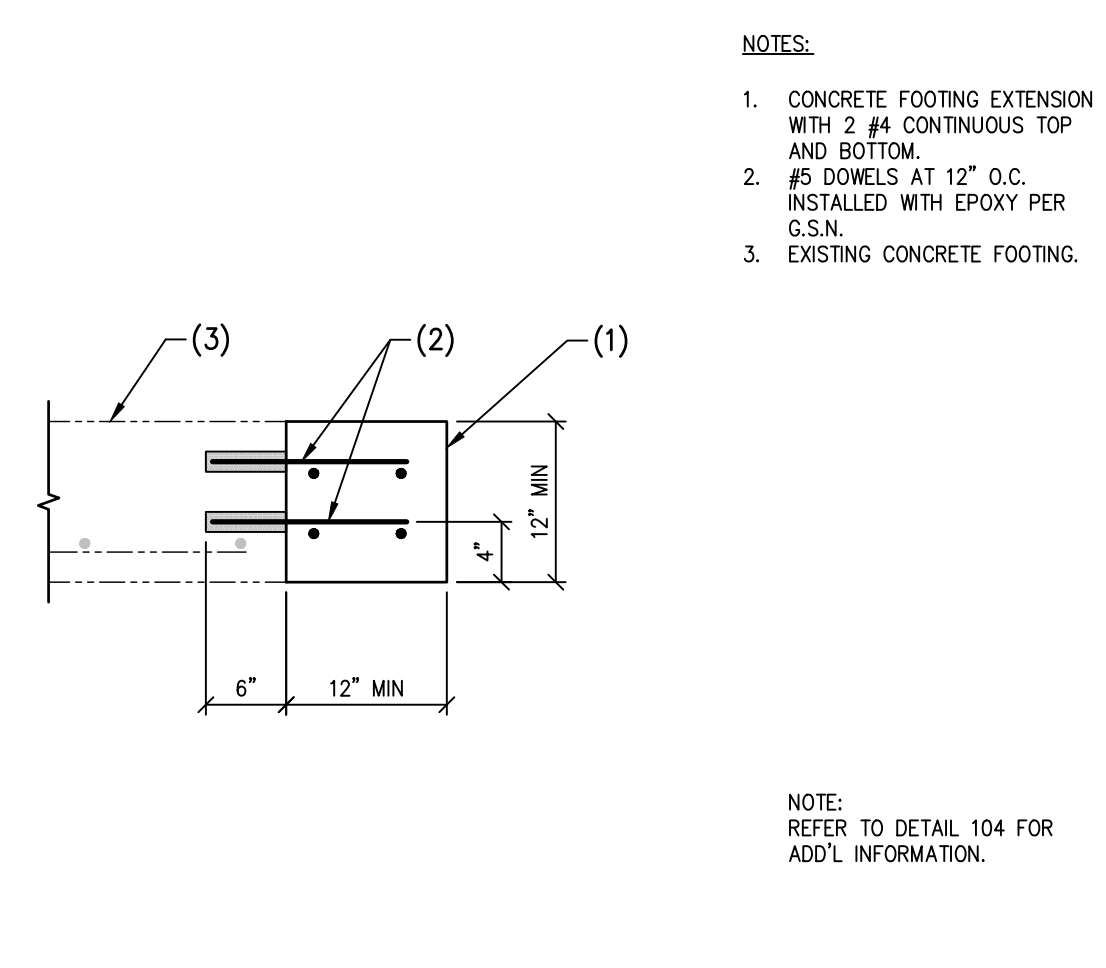
**104** STEEL COLUMN FOOTING  
22-0167 NO SCALE



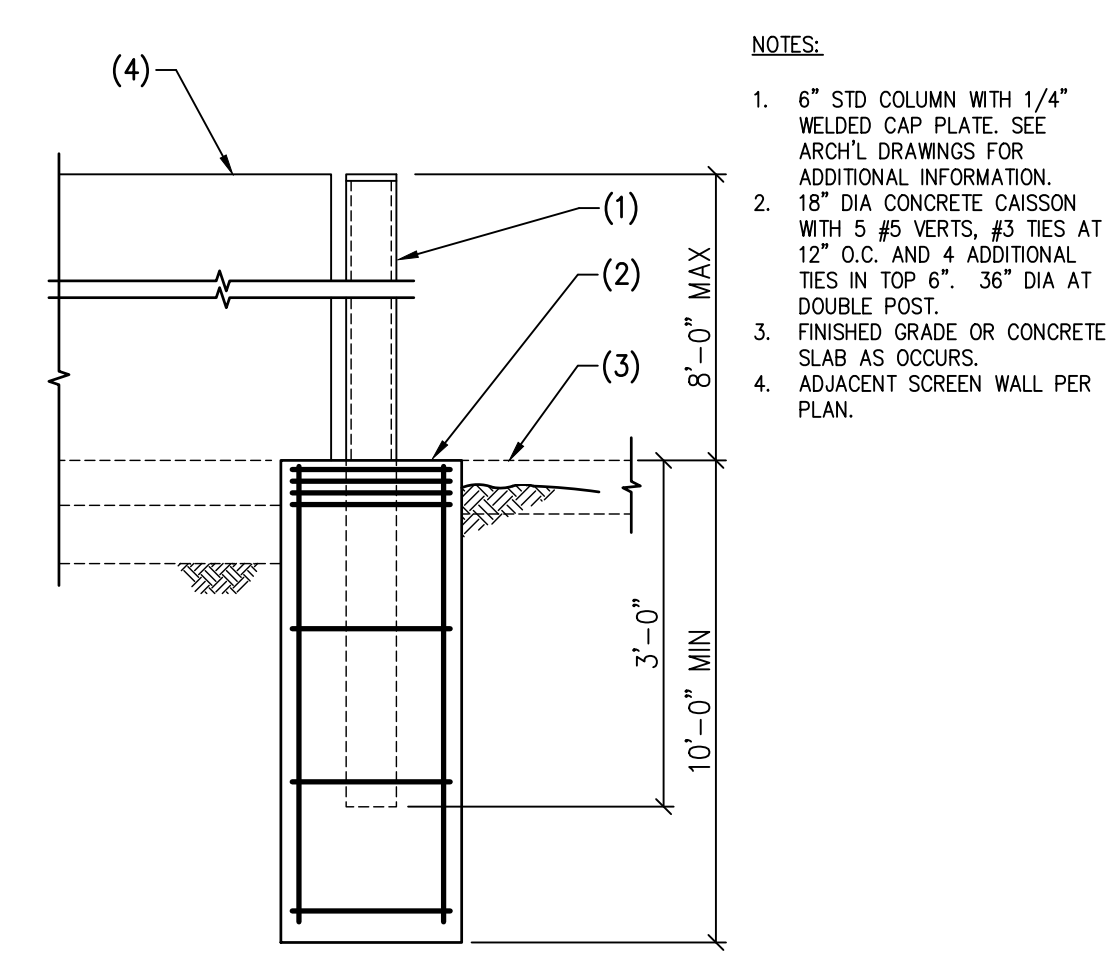
**101** TRASH ENCLOSURE WALL  
22-0167 NO SCALE



**109** FOOTING EXTENSION AT WALL POPOUT  
22-0167 NO SCALE



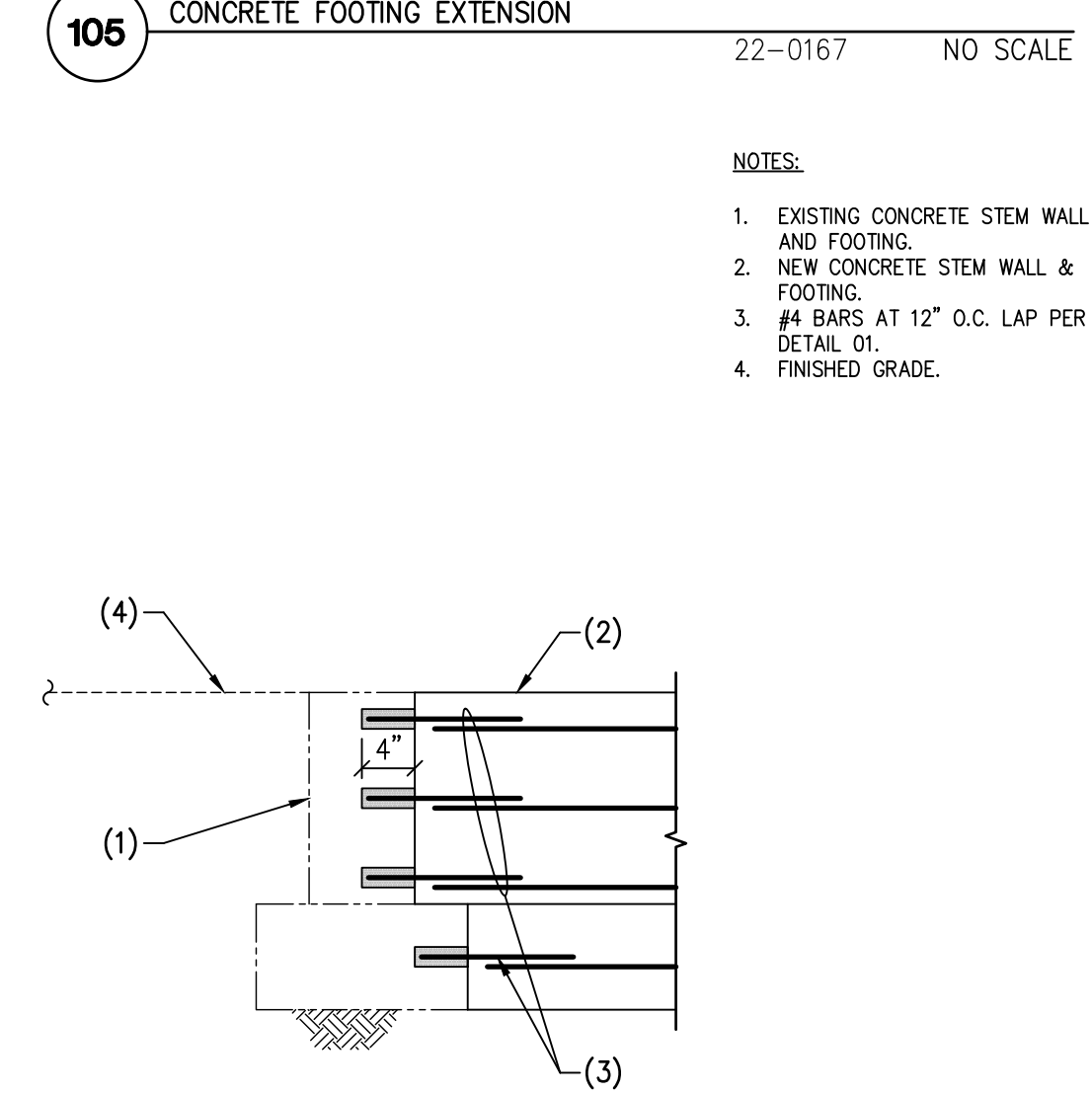
**105** CONCRETE FOOTING EXTENSION  
22-0167 NO SCALE



**102** SCREEN WALL GATE SUPPORT AND FOOTING  
198-99.01M NO SCALE



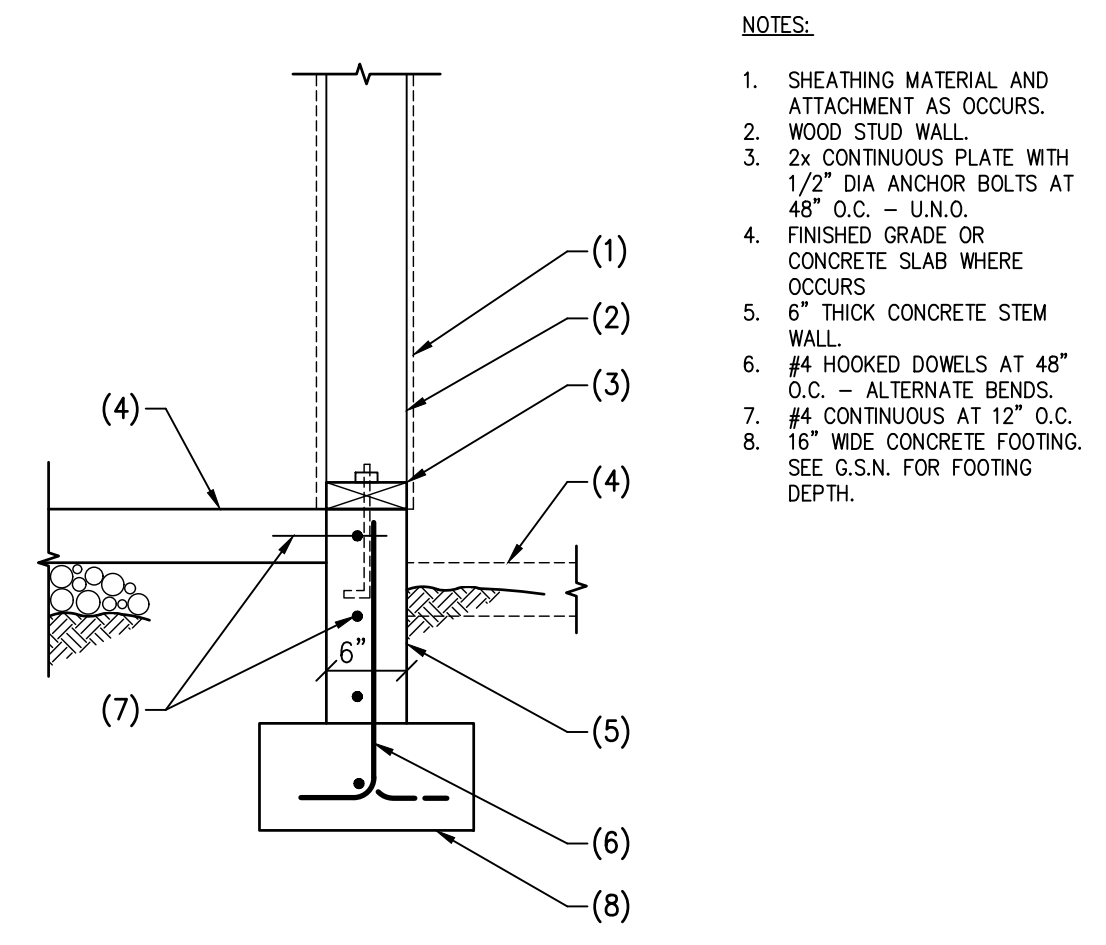
**106** NEW STEM WALL AT EXISTING STEM WALL  
22-0167 NO SCALE



**103** CONCRETE TURNDOWN AT OUTDOOR SLAB  
102-18M NO SCALE



**107** WOOD STUD WALL FOOTING  
134-22.51M NO SCALE

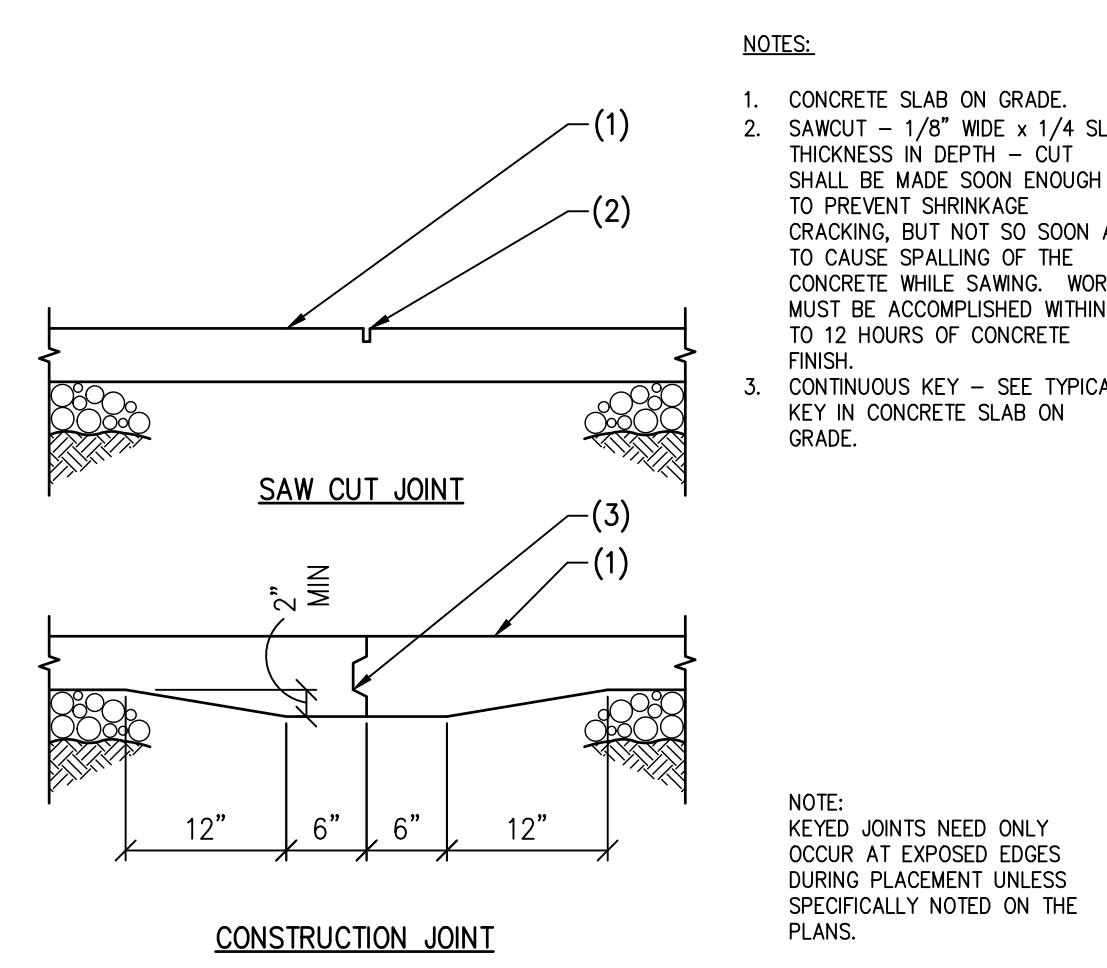


**107** WOOD STUD WALL FOOTING  
134-22.51M NO SCALE

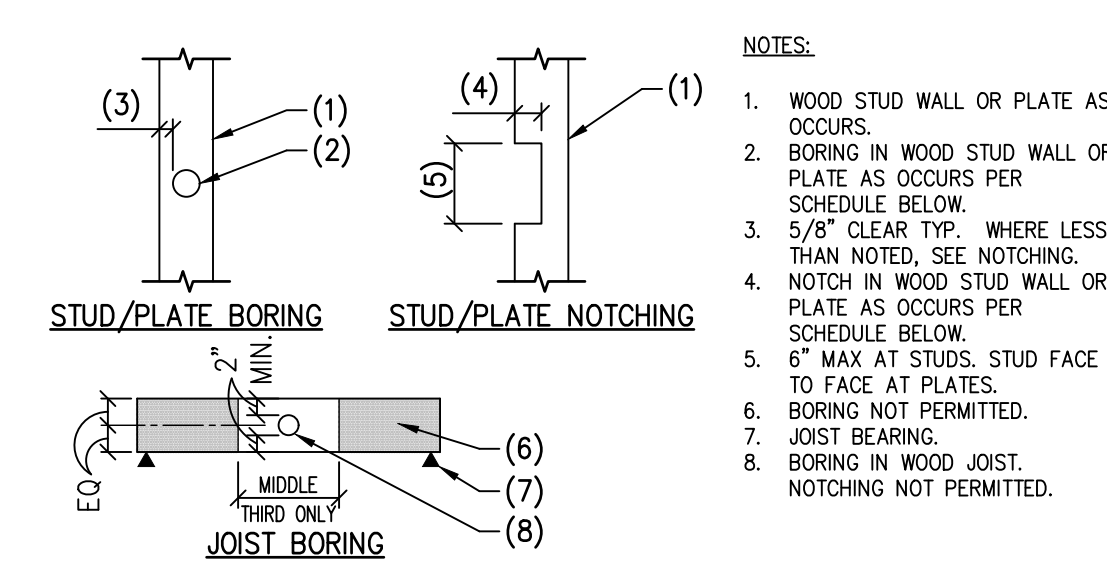
CONC PSI	CLASS B TENSION SPLICE LENGTHS						COMP. BARS	
	f <sub>c</sub> = 2,500/3,000 PSI		f <sub>c</sub> = 4,000 PSI		f <sub>c</sub> = 5,000 PSI		STD LAP	ENCLOSED W/ SPIRAL TIES
BAR SIZE (METRIC)	REGULAR	TOP	REGULAR	TOP	REGULAR	TOP		
#3 (10)	24"	31"	19"	24"	17"	22"	12"	12"
#4 (13)	32"	41"	25"	32"	22"	29"	15"	12"
#5 (16)	39"	51"	31"	40"	28"	36"	19"	14"
#6 (19)	47"	61"	37"	48"	33"	43"	23"	17"
#7 (22)	69"	89"	54"	70"	49"	63"	26"	20"
#8 (25)	78"	102"	62"	80"	55"	72"	30"	23"
#9 (29)	88"	115"	70"	91"	63"	81"	34"	25"
#10 (32)	99"	129"	79"	102"	70"	91"	38"	28"
#11 (36)	110"	143"	87"	113"	78"	101"	42"	31"

NOTES:  
 1. TOP BARS ARE ANY HORIZONTAL BARS PLACED SO THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCEMENT.  
 2. LAP SPLICES SHALL BE CLASS "B" TENSION LAP SPLICES PER LATEST EDITION OF ACI 318 UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS OR SCHEDULES.  
 3. CONTACT STRUCTURAL ENGINEER IF CLEAR SPACING OF REINFORCEMENT IS LESS THAN OR  $\leq$  EQUAL TO 2 BAR DIAMETERS (2db), OR IF CLEAR COVER IS LESS THAN THE BAR DIAMETER (db).  
 4. THIS TABLE IS BASED ON NORMAL WEIGHT CONCRETE.  
 5. FOR ADDITIONAL INFORMATION, SEE G.S.N., PLANS, SCHEDULES AND DETAILS.

**01** LAP SCHEDULE FOR REINFORCING STEEL IN CONCRETE  
201-31.01 NO SCALE



**02** CONTROL JOINTS IN CONCRETE SLAB ON GRADE  
(L)T01-01 NO SCALE



STUD SIZE	ALLOWABLE BORING IN STRUCT'L WALLS	ALLOWABLE BORING IN ARCH'L WALLS	JOIST DEPTH	ALLOWABLE BORING IN STRUCT'L JOISTS	ALLOWABLE BORING IN ARCH'L CEILING JOISTS
2x4	1 7/16" DIA	2" DIA	2x4	NOT PERMITTED	NOT PERMITTED
2x6	2 3/16" DIA	3 5/16" DIA	2x6	1 1/2" DIA	1 1/2" DIA
2-2x4	2" DIA	N/A	2x8	2 3/8" DIA	2 3/8" DIA
2-2x6	3 5/16" DIA	N/A	2x10	3" DIA	3" DIA
			2x12	3 3/4" DIA	3 3/4" DIA

**03** BORING AND NOTCHING OF SAWN LUMBER FRAMING MEMBERS  
602-01 NO SCALE

FOR ADDITIONAL INFORMATION SHOWN BUT NOT NOTED, SEE GENERAL STRUCTURAL NOTES ON SHEET S1.1 AND TYPICAL DETAIL SHEETS.

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PROJECT NUMBER 22-0167 PROJECT MANAGER RAD  
 PROJECT ENGINEER CMJ PROJECT DRAFTER HN

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 consulting structural engineers  
 1215 West Rio Salado Parkway, Suite 200  
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REGISTRATION SEAL

RICHARD DAHMANN  
 ENGINEER  
 No. 62010R3306  
 STATE OF MICHIGAN  
 08-21-22

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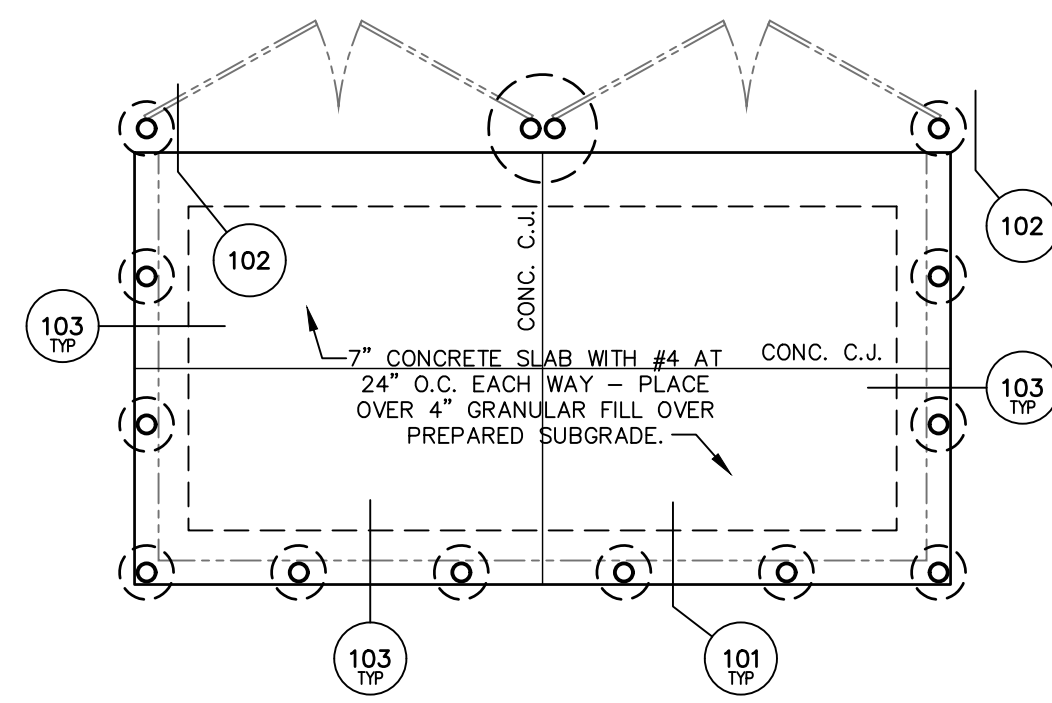
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PROJECT NO: 210109  
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 CHECKED BY:  
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 TYPICAL DETAILS

S12



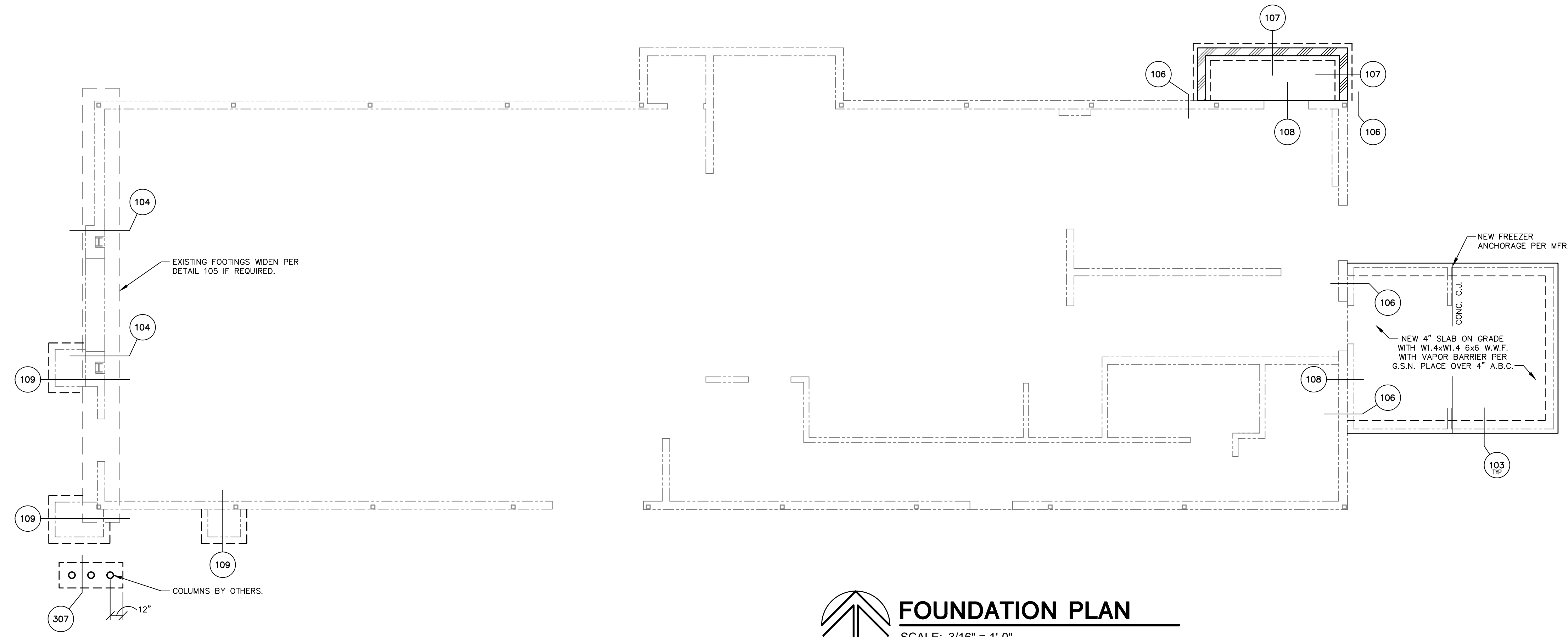
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**TRASH ENCLOSURE  
FOUNDATION PLAN**

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

- FOUNDATION NOTES – TYP U.N.O.:**
1. VERIFY ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS AND FIELD CONDITIONS. BUILDING DIMENSIONS AND ELEVATIONS, WHERE SHOWN, WERE PROVIDED BY THE ARCHITECT AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND COORDINATE ALL DIMENSIONS PRIOR TO PROCEEDING WITH THE WORK. ANY DISCREPANCIES SHALL BE RESOLVED THROUGH THE ARCHITECT.
  2. SCHEDULED MARK DESIGNATIONS ARE TYPICAL TO THE PROJECT AND MAY NOT NECESSARILY BE FOUND ON THIS PLAN.
  3. – AS SHOWN ON PLAN INDICATES 2x6 WOOD STUD SHEAR WALL. SEE PLAN FOR SIZES. WOOD STUDS SHALL BE SPACED AT 16" O.C. AND SHEATH WITH 3/8" WSP WITH 4" EDGE NAILING. FOR LINTELS IN WOOD STUD WALLS, SEE DETAIL 206 – TYP U.N.O. SEE G.S.N., TYPICAL DETAILS, PLANS AND OTHER DETAILS FOR ADDITIONAL INFORMATION.
  4. – AS SHOWN ON PLAN INDICATES NON-STRUCTURAL ARCHITECTURAL WALL. FOR ADDITIONAL INFORMATION, SEE ARCH'L DRAWINGS, G.S.N. AND TYPICAL DETAILS, OR AS NOTED ON PLANS AND DETAILS.
  5. – AS SHOWN ON PLAN INDICATES STRUCTURAL BEARING AND/OR SHEAR WALL BELOW.
  6. UNLESS NOTED OTHERWISE ON PLANS AND/OR DETAILS, DEPTH OF FOOTING DIMENSIONS INDICATED IN THE G.S.N. ARE MINIMUMS. FOUNDATION CONTRACTOR SHALL COORDINATE WITH SOIL REPORT AND ALL TRADES TO INSURE THAT THESE MINIMUMS ARE SUFFICIENT FOR THE WORK. SEE TYPICAL DETAILS FOR ADDITIONAL REQUIREMENTS.
  7. CONC. C.J. – AS SHOWN ON PLAN INDICATES LOCATION OF EITHER KEYED OR SAWCUT CONTROL JOINT IN CONCRETE SLAB ON GRADE AT CONTRACTOR'S OPTION, SEE G.S.N. AND TYPICAL DETAILS.
  8. THE EXISTING CONDITIONS DEPICTED ON THESE DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER IMMEDIATELY.



**FOUNDATION PLAN**

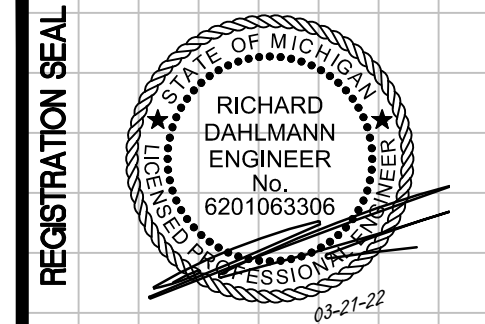
SCALE: 3/16" = 1'-0"

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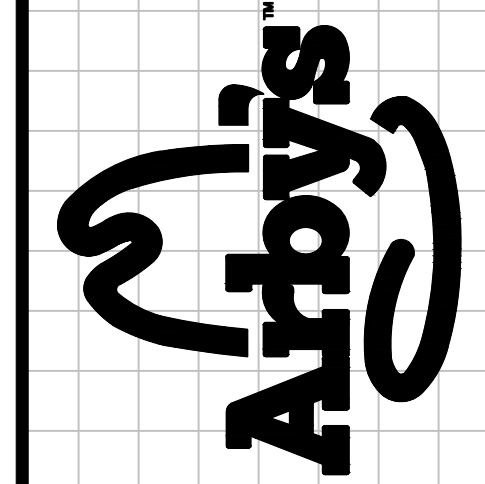
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PROJECT NUMBER	22-0167	PROJECT MANAGER	RAD
PROJECT ENGINEER	CMJ	PROJECT DRAFTER	HN

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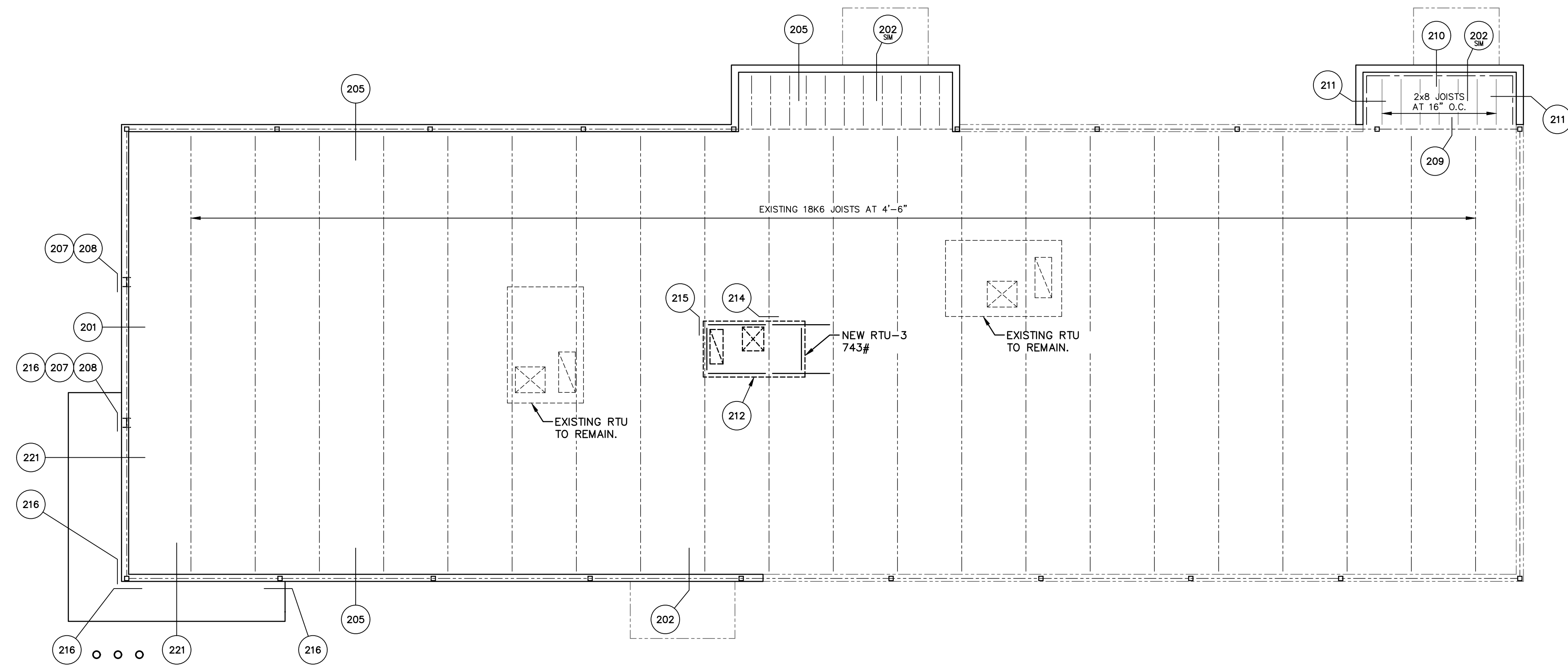
REV.	DATE	DESCRIPTION	NAME

PROJECT NO: 210109  
DRAWN BY: [ ]  
CHECKED BY: [ ]  
ISSUE DATE: 03/21/22

**FOUNDATION PLAN**

**S21**

- ROOF FRAMING NOTES – TYP. U.N.O.:**
- VERIFY ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS AND FIELD CONDITIONS. BUILDING DIMENSIONS AND ELEVATIONS, WHERE SHOWN, WERE PROVIDED BY THE ARCHITECT AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND COORDINATE ALL DIMENSIONS PRIOR TO PROCEEDING WITH THE WORK. ANY DISCREPANCIES SHALL BE RESOLVED THROUGH THE ARCHITECT.
  - SCHEDULED MARK DESIGNATIONS ARE TYPICAL TO THE PROJECT AND MAY NOT NECESSARILY BE FOUND ON THIS PLAN.
  - (X) (X) ETC. – AS SHOWN ON PLAN INDICATES KEYNOTES. SEE ROOF FRAMING KEYNOTES ON THIS SHEET. KEYNOTE DESIGNATIONS ARE TYPICAL TO THE PROJECT AND MAY NOT NECESSARILY BE FOUND ON THIS PLAN.
  - AS SHOWN ON PLAN INDICATES 2x6 WOOD STUD SHEAR WALL. WOOD STUDS SHALL BE SPACED AT 16" O.C. AND SHEATH WITH 3/8" WSP WITH 4" EDGE NAILING FOR LINTELS IN WOOD STUD WALLS, SEE DETAIL 206 – TYP. U.N.O. SEE G.S.N., TYPICAL DETAILS, PLANS AND OTHER DETAILS FOR ADDITIONAL INFORMATION.
  - AS SHOWN ON PLAN INDICATES NON-STRUCTURAL ARCHITECTURAL WALL. FOR ADDITIONAL INFORMATION, SEE ARCH'L DRAWINGS, G.S.N. AND TYPICAL DETAILS, OR AS NOTED ON PLANS AND DETAILS.
  - AS SHOWN ON PLAN INDICATES STRUCTURAL BEARING AND/OR SHEAR WALL BELOW.
  - FOR CLARITY, DETAILS MAY SHOW ONLY ONE SIDE OF FRAMING CONDITIONS. ALL OPENINGS MAY NOT BE SHOWN ON THIS PLAN. FOR EXACT SIZE, NUMBER AND LOCATION OF OPENINGS, SEE ARCHITECTURAL, MECHANICAL, PLUMBING, ELECTRICAL, SPRINKLER AND THEIR RELATED DRAWINGS. FOR FRAMING AT OPENINGS, SEE TYPICAL DETAILS.
  - THE EXISTING CONDITIONS DEPICTED ON THESE DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER IMMEDIATELY.



**ROOF FRAMING PLAN**  
SCALE: 3/16" = 1'-0"

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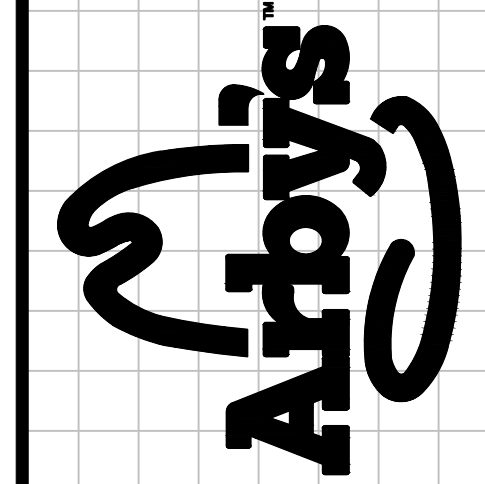
PROJECT NUMBER	22-0167	PROJECT MANAGER	RAD
PROJECT ENGINEER	CMJ	PROJECT DRAFTER	HN

PROJECT NO: 210109  
 DRAWN BY:  
 CHECKED BY:  
 ISSUE DATE: 03/21/22

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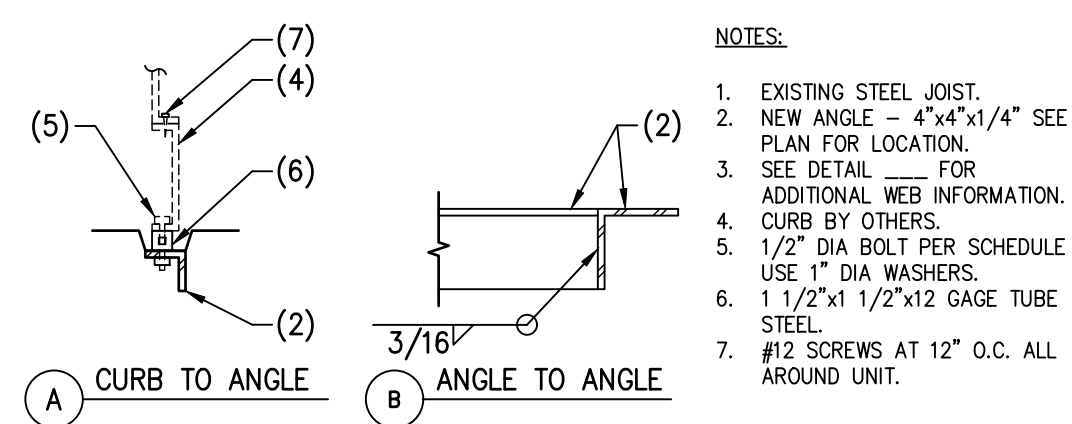
REV	DATE	DESCRIPTION	NAME

PROJECT NO: 210109  
 DRAWN BY:  
 CHECKED BY:  
 ISSUE DATE: 03/21/22

**ROOF FRAMING PLAN**

**S2.2**



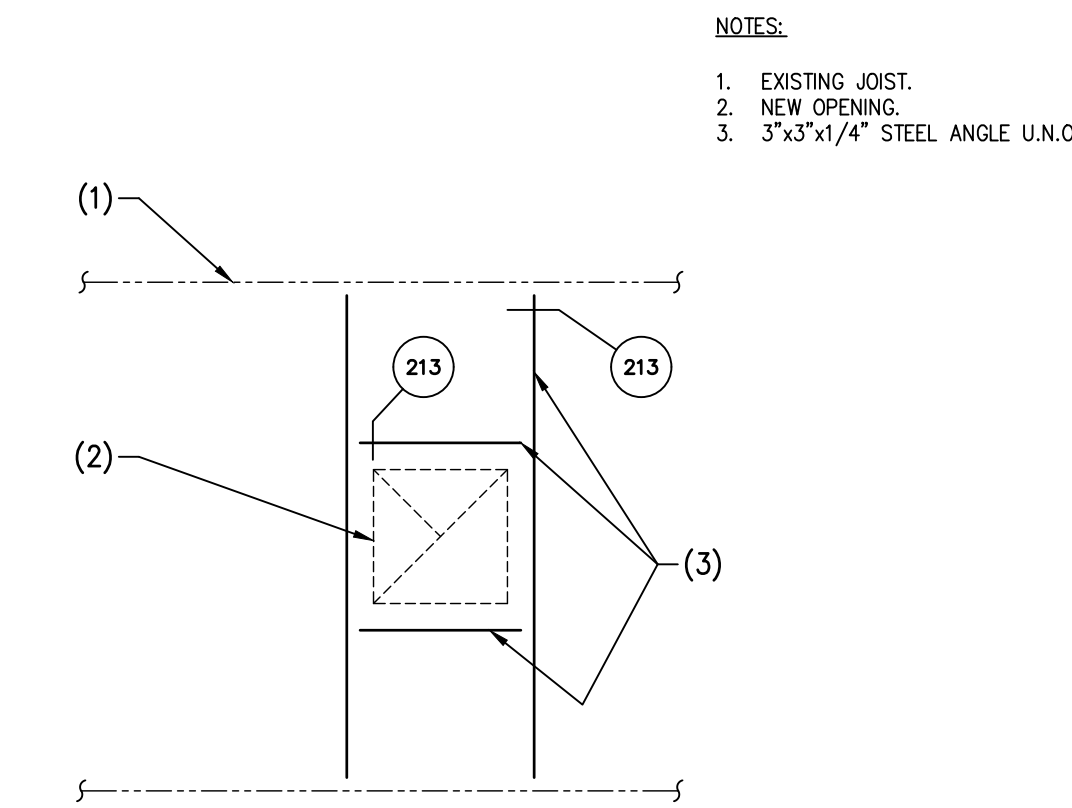


**NOTES:**

- EXISTING STEEL JOIST.
- NEW ANGLE - 4"x4"x1/4" SEE PLAN FOR LOCATION.
- SEE DETAIL FOR ADDITIONAL WEB INFORMATION. CURB BY OTHERS.
- 1/2" DIA BOLT PER SCHEDULE USE 1" DIA WASHERS.
- 1 1/2"x1 1/2"x12 GAGE TUBE STEEL.
- #12 SCREWS AT 12" O.C. ALL AROUND UNIT.

NOTE: EXISTING ROOF NOT SHOWN FOR CLARITY.

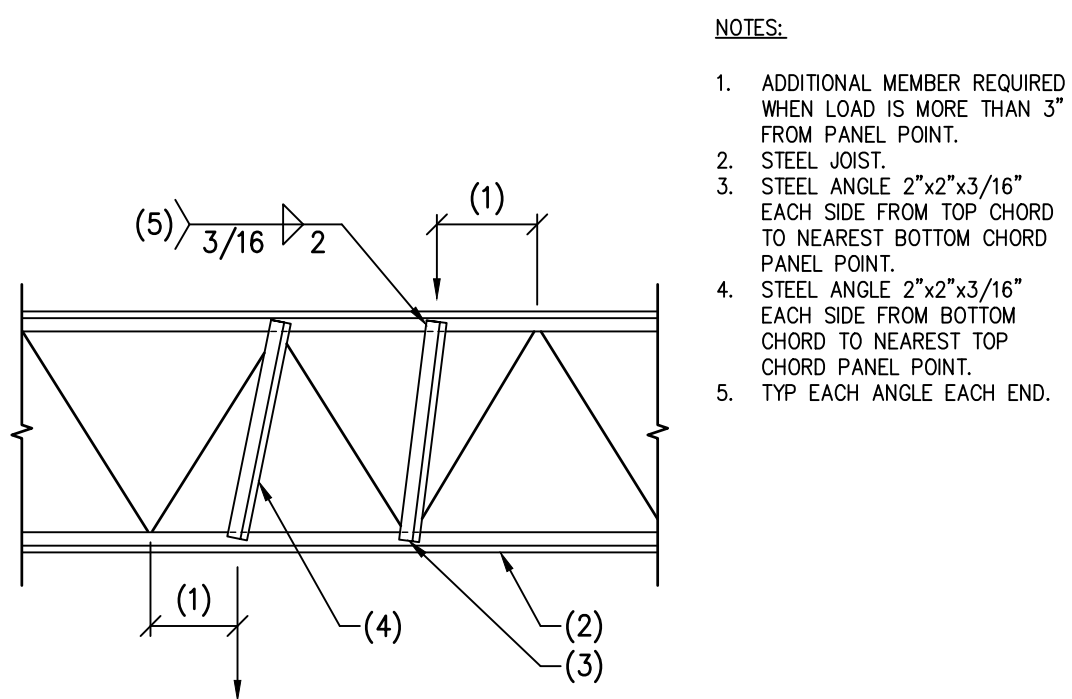
**213** ANGLE CONNECTION UNDER A/C UNIT 1308-10 NO SCALE



**NOTES:**

- EXISTING JOIST.
- NEW OPENING.
- 3"x3"x1/4" STEEL ANGLE U.O.O.

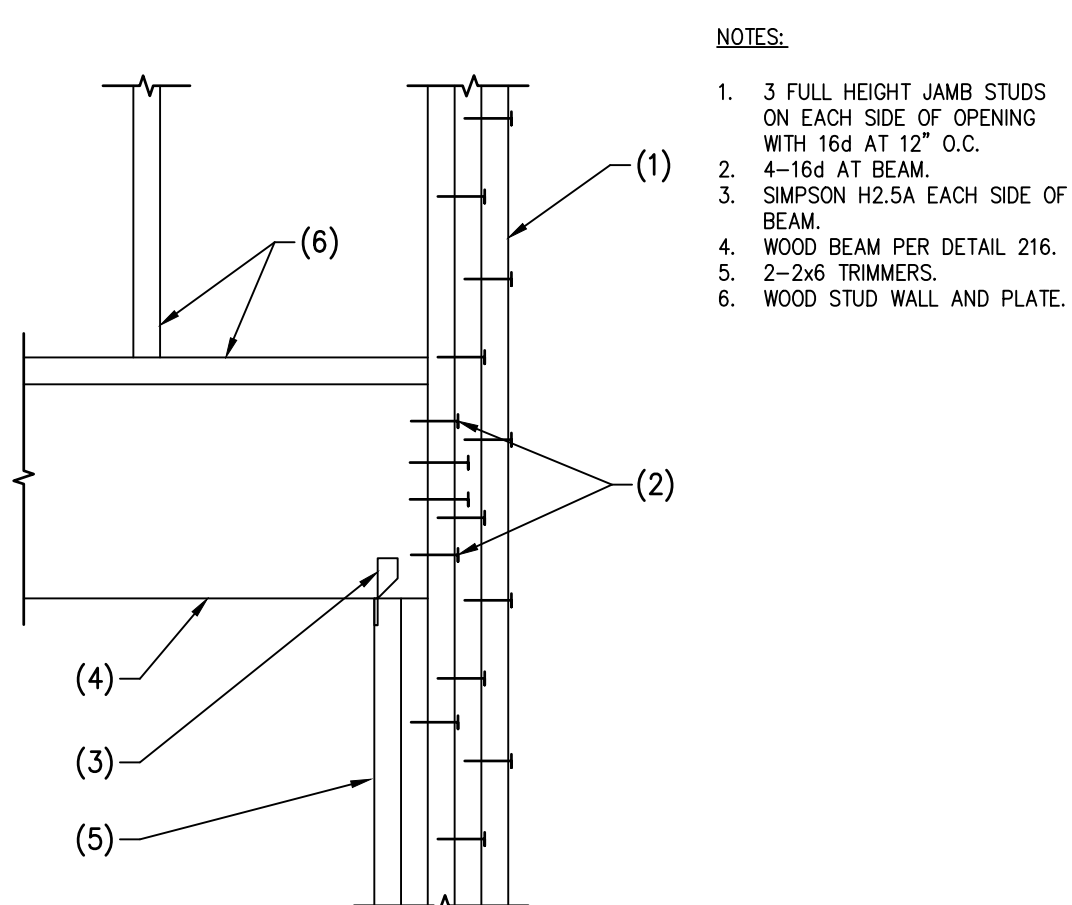
**214** PLAN - NEW OPENING IN EXISTING ROOF 1308-13 NO SCALE



**NOTES:**

- ADDITIONAL MEMBER REQUIRED WHEN LOAD IS MORE THAN 3" FROM PANEL POINT.
- STEEL JOIST.
- STEEL ANGLE 2"x2"x3/16" EACH SIDE FROM TOP CHORD TO NEAREST BOTTOM CHORD PANEL POINT.
- STEEL ANGLE 2"x2"x3/16" EACH SIDE FROM BOTTOM CHORD TO NEAREST TOP CHORD PANEL POINT.
- TYP EACH ANGLE EACH END.

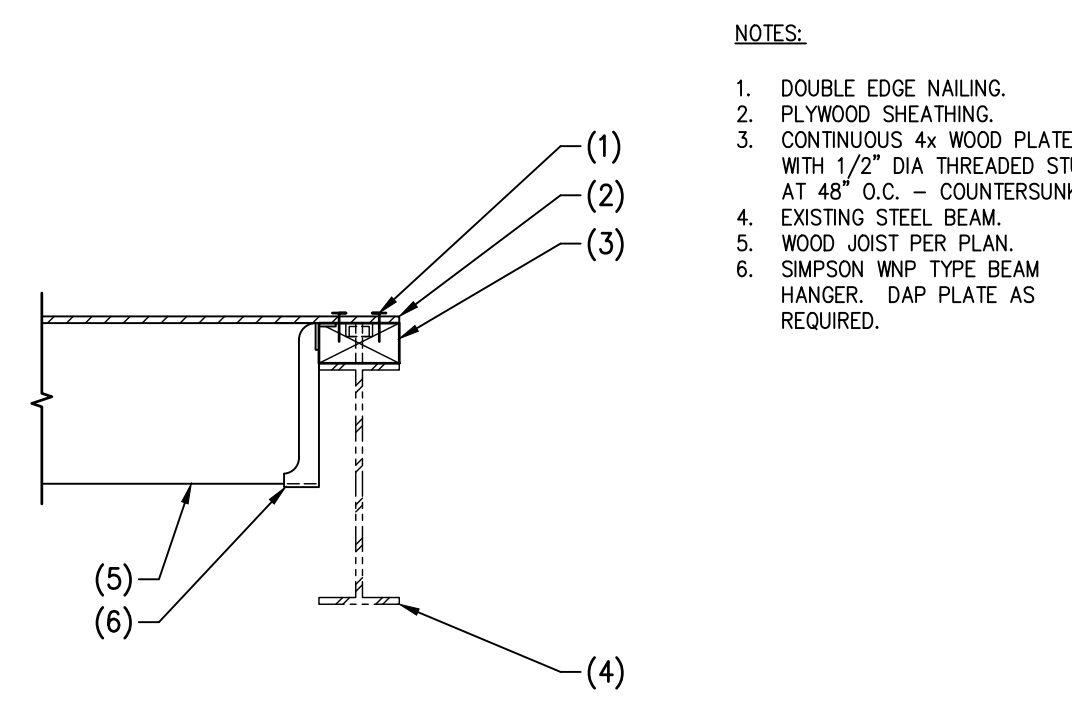
**215** ADDITIONAL WEB MEMBERS FOR CONCENTRATED LOAD OCCURRING AWAY FROM JOIST PANEL POINT 1301-05 NO SCALE



**NOTES:**

- 3 FULL HEIGHT JAMB STUDS ON EACH SIDE OF OPENING WITH 16d AT 12" O.C.
- 4-16d AT BEAM.
- SIMPSON H2.5A EACH SIDE OF BEAM.
- WOOD BEAM PER DETAIL 216.
- 2-2x6 TRIMMERS.
- WOOD STUD WALL AND PLATE.

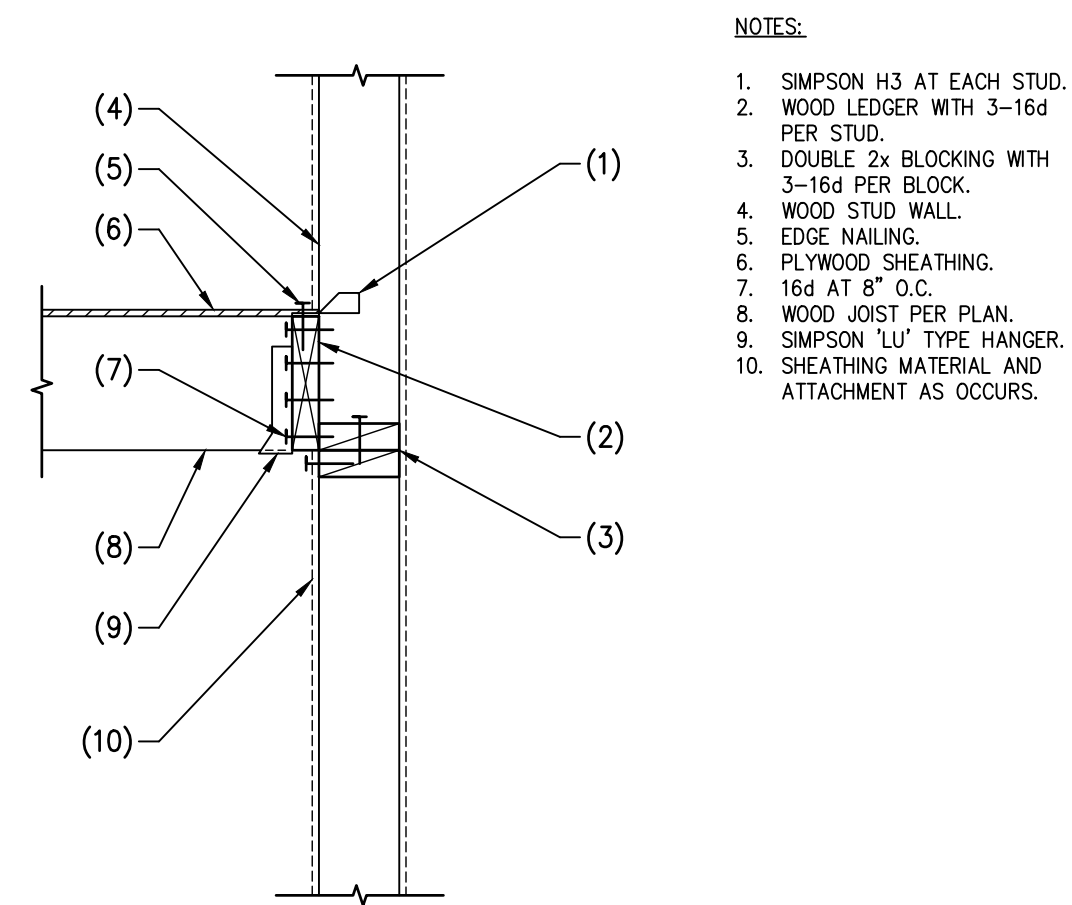
**216** WOOD BEAM IN STUD WALL 652-41.01M NO SCALE



**NOTES:**

- EXISTING EDGE NAILING.
- PLYWOOD SHEATHING.
- CONTINUOUS 4x WOOD PLATE WITH 1/2" DIA THREADED STUDS AT 48" O.C. - COUNTERSUNK.
- EXISTING STEEL BEAM.
- WOOD JOIST PER PLAN.
- SIMPSON WMP TYPE BEAM HANGER. DAP PLATE AS REQUIRED.

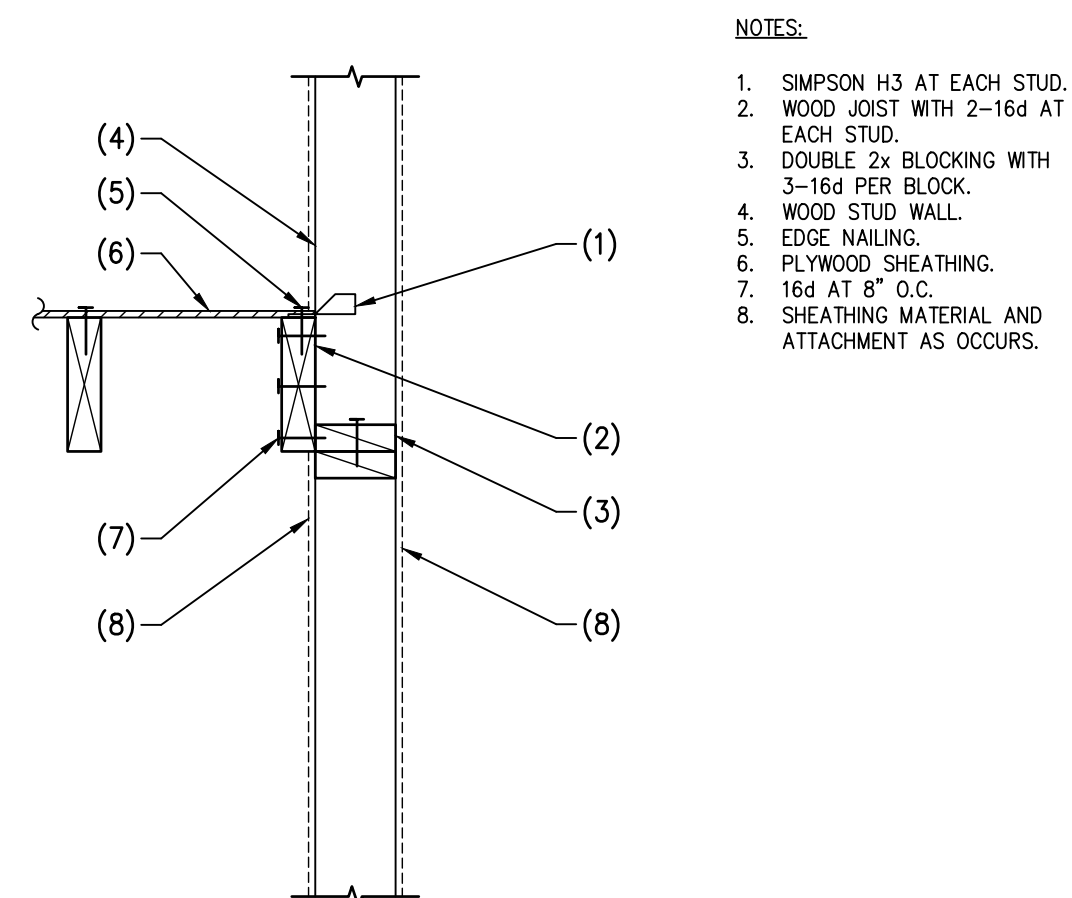
**209** WOOD BEAM AT STEEL BEAM 647-02.06M NO SCALE



**NOTES:**

- SIMPSON H3 AT EACH STUD.
- WOOD LEDGER WITH 3-16d PER STUD.
- DOUBLE 2x BLOCKING WITH 3-16d PER BLOCK.
- WOOD STUD WALL.
- EDGE NAILING.
- PLYWOOD SHEATHING.
- 16d AT 8" O.C.
- WOOD JOIST PER PLAN.
- SIMPSON LU' TYPE HANGER.
- SHEATHING MATERIAL AND ATTACHMENT AS OCCURS.

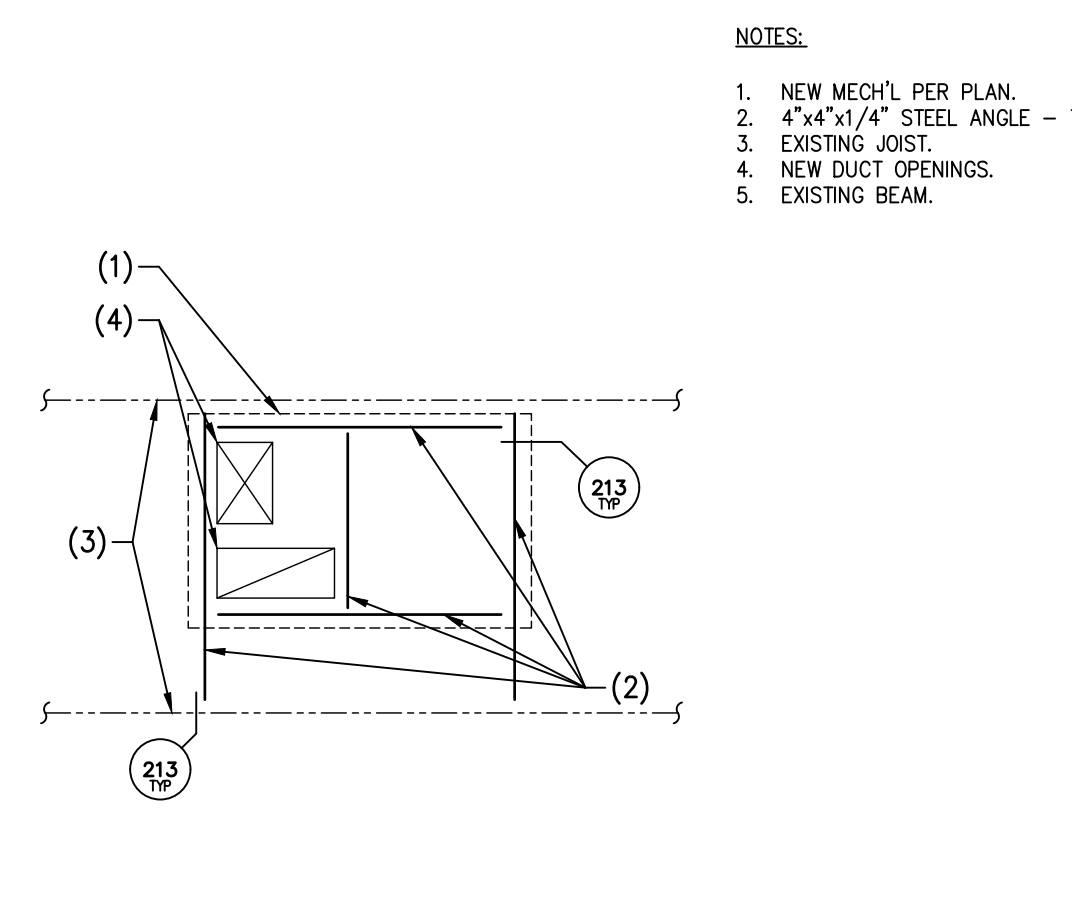
**210** WOOD JOIST AT WOOD STUD WALL 672-01.01 NO SCALE



**NOTES:**

- SIMPSON H3 AT EACH STUD.
- WOOD JOIST WITH 2-16d AT EACH STUD.
- DOUBLE 2x BLOCKING WITH 3-16d PER BLOCK.
- WOOD STUD WALL.
- EDGE NAILING.
- PLYWOOD SHEATHING.
- 16d AT 8" O.C.
- SHEATHING MATERIAL AND ATTACHMENT AS OCCURS.

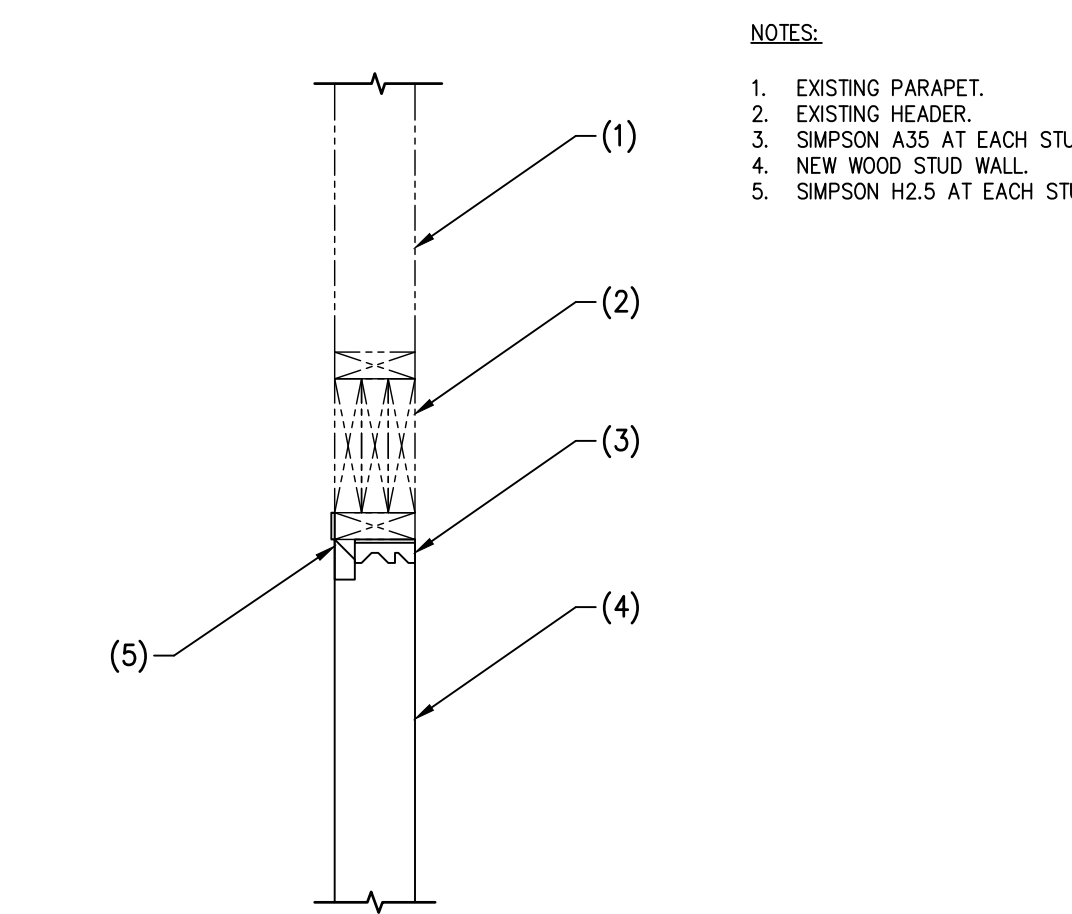
**211** WOOD JOISTS PARALLEL TO WOOD STUD WALL 672-02.01 NO SCALE



**NOTES:**

- NEW MECH. PER PLAN.
- 3/4" STEEL STIFFENER PLATE EACH SIDE OF BEAM WEB.
- EXISTING JOIST.
- NEW DUCT OPENINGS.
- EXISTING BEAM.

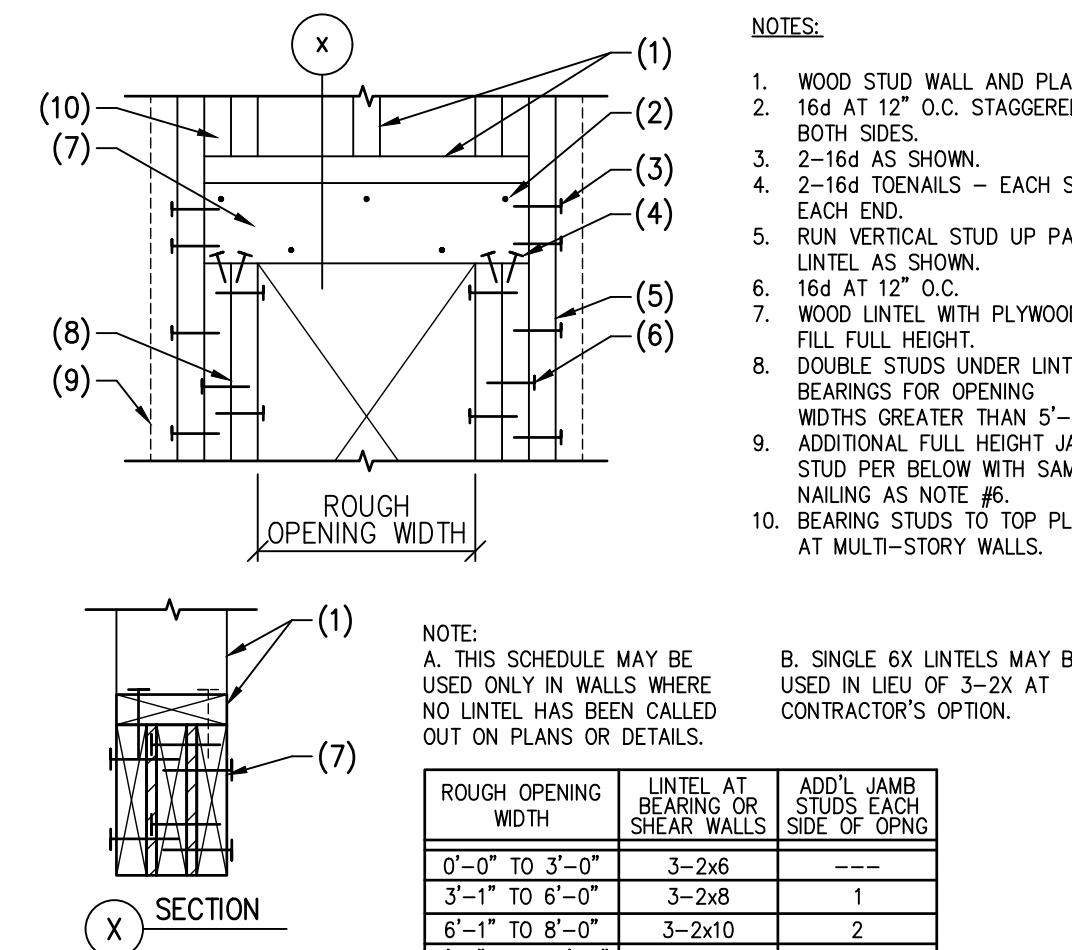
**212** PLAN VIEW RTU 1308-01 NO SCALE



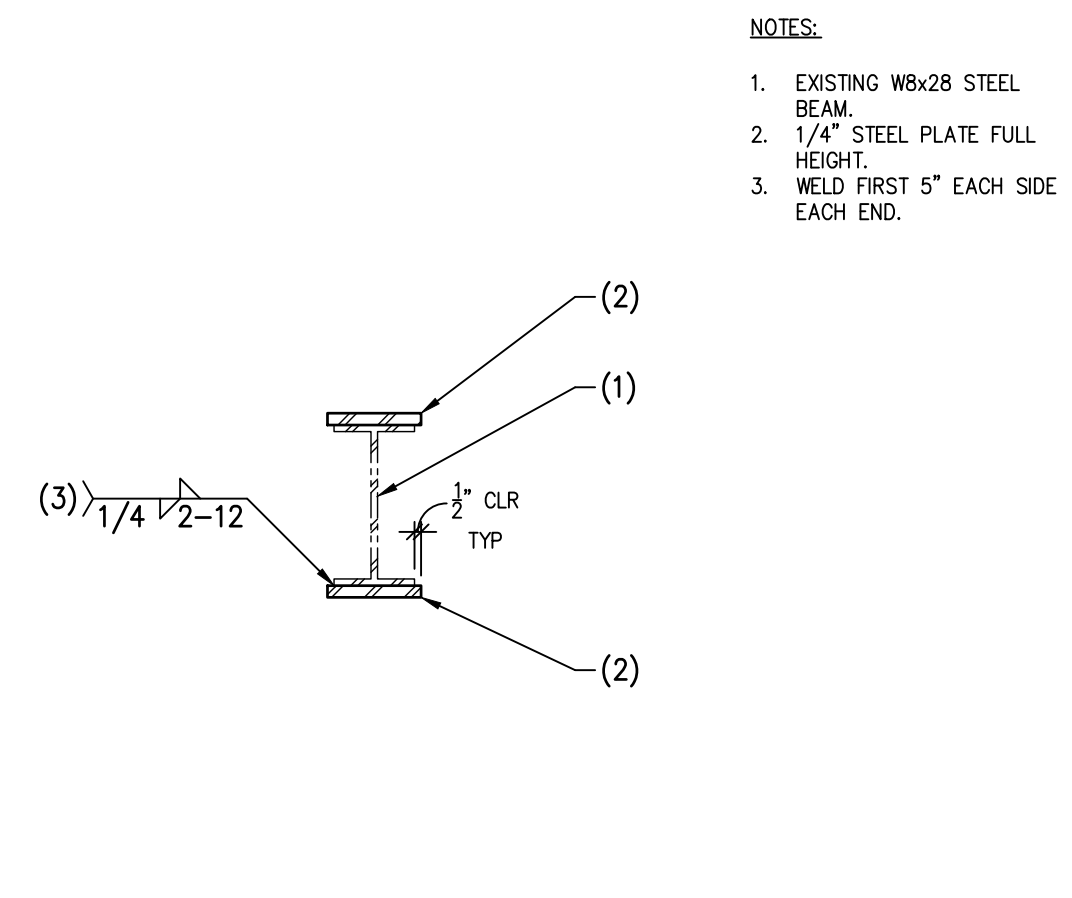
**NOTES:**

- EXISTING PARAPET.
- EXISTING HEADER.
- SIMPSON A35 AT EACH STUD.
- NEW WOOD STUD WALL.
- SIMPSON H2.5 AT EACH STUD.

**205** WOOD STUD INFILL AT WOOD HEADER 22-0167 NO SCALE



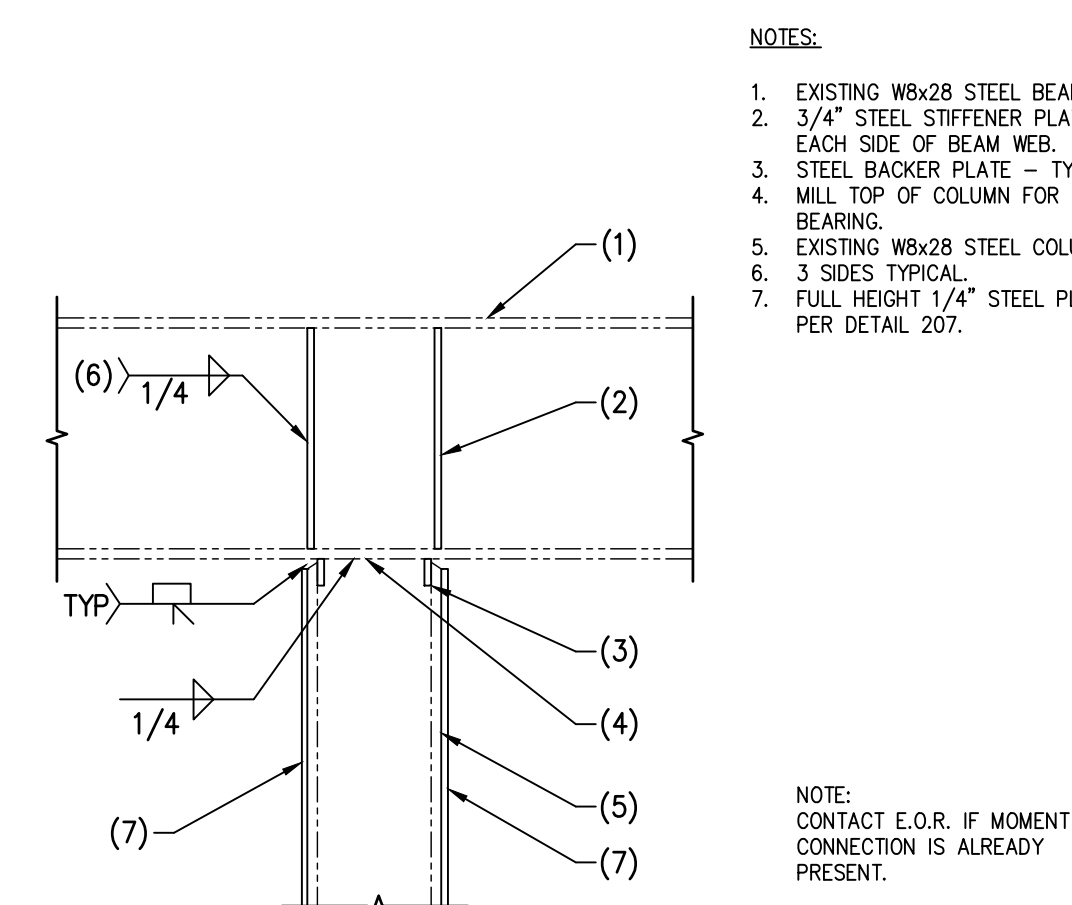
**206** 2x6 WOOD STUD WALL LINTEL SCHEDULE 682-21M NO SCALE



**NOTES:**

- EXISTING W8x28 STEEL BEAM.
- 1/4" STEEL PLATE FULL HEIGHT.
- DOUBLE 2x BLOCKING WITH 3-16d PER BLOCK.
- WOOD STUD WALL.
- EDGE NAILING.
- PLYWOOD SHEATHING.
- 16d AT 8" O.C.
- SHEATHING MATERIAL AND ATTACHMENT AS OCCURS.

**207** STEEL PLATE AT EXISTING STEEL COLUMNS 22-0167 NO SCALE

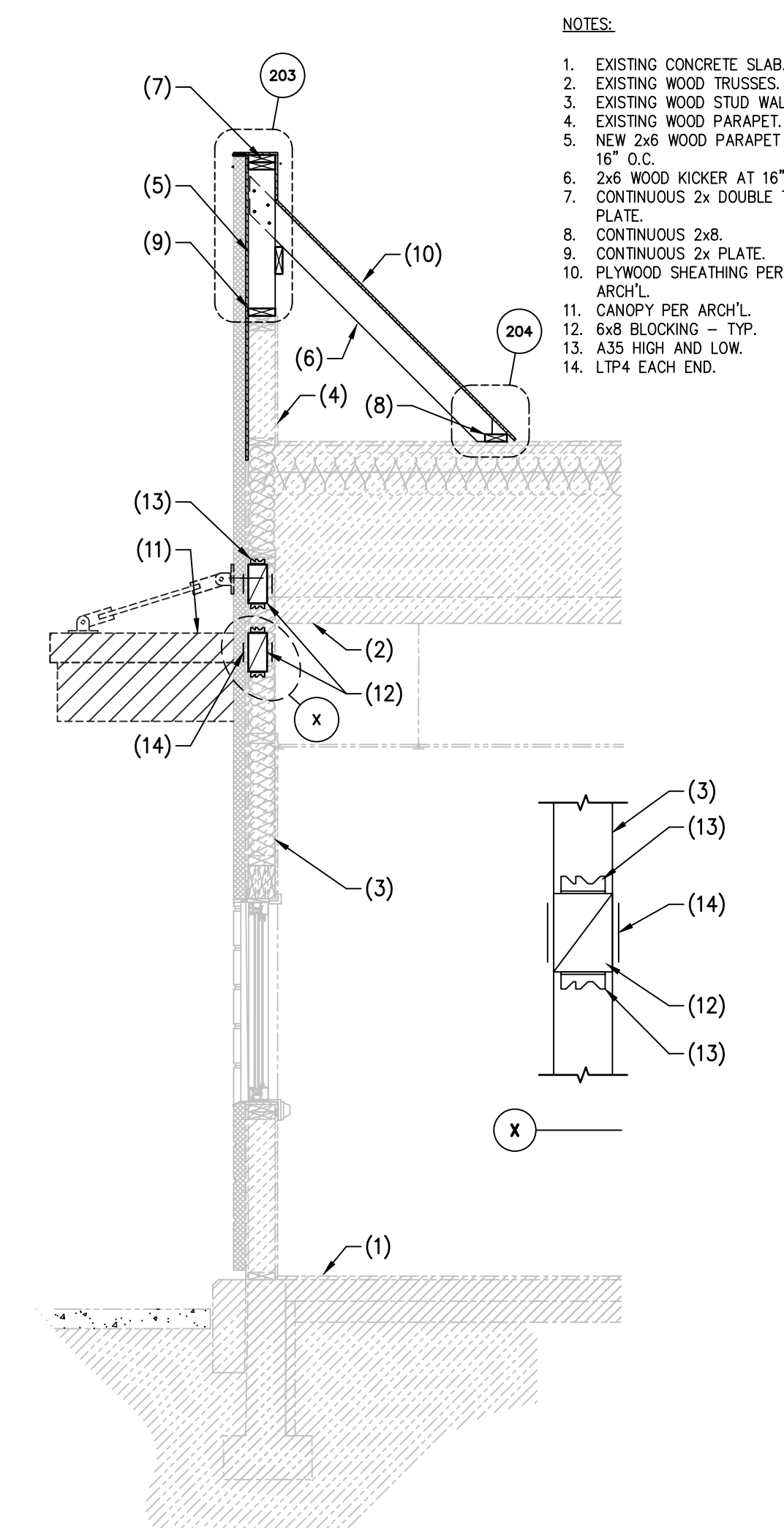


**NOTES:**

- EXISTING W8x28 STEEL BEAM.
- 3/4" STEEL STIFFENER PLATE EACH SIDE OF BEAM WEB.
- STEEL BACKER PLATE - TYP. MILL TOP OF COLUMN FOR BEARING.
- EXISTING W8x28 STEEL COLUMN.
- 3 SIDES TYPICAL.
- FULL HEIGHT 1/4" STEEL PLATE PER DETAIL 207.

NOTE: CONTACT E.O.R. IF MOMENT CONNECTION IS ALREADY PRESENT.

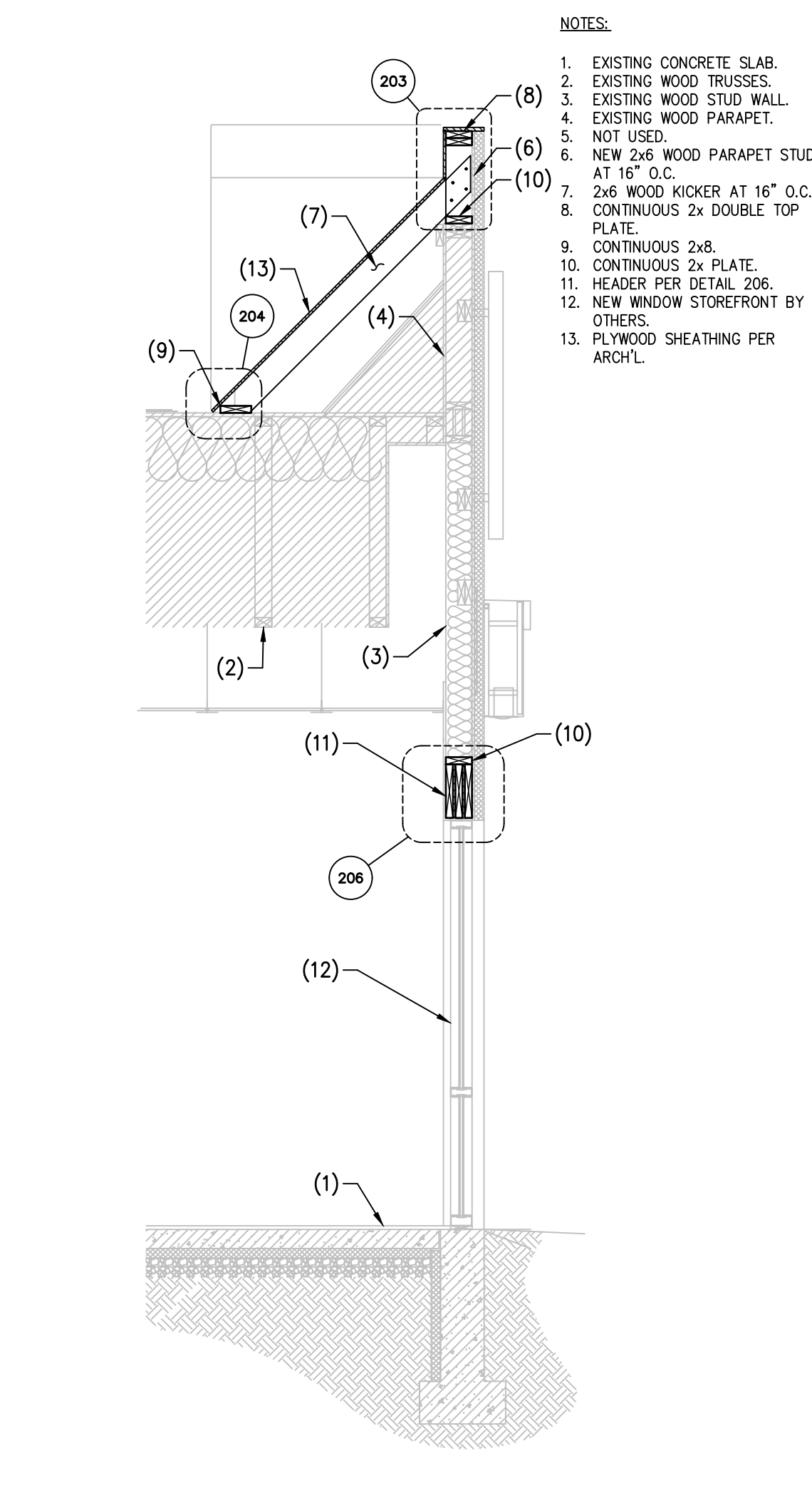
**208** MOMENT CONNECTION - STEEL BEAM TO STEEL COLUMN 414-13M NO SCALE



**NOTES:**

- EXISTING CONCRETE SLAB.
- EXISTING WOOD TRUSSES.
- EXISTING WOOD STUD WALL.
- EXISTING WOOD PARAPET.
- NEW 2x6 WOOD PARAPET AT 16" O.C.
- 2x6 WOOD KICKER AT 16" O.C.
- CONTINUOUS 2x DOUBLE TOP PLATE.
- CONTINUOUS 2x8.
- CONTINUOUS 2x PLATE.
- PLYWOOD SHEATHING PER ARCH'L.
- CANOPY PER ARCH'L.
- 6x8 BLOCKING - TYP.
- A35 HIGH AND LOW.
- LTP4 EACH END.

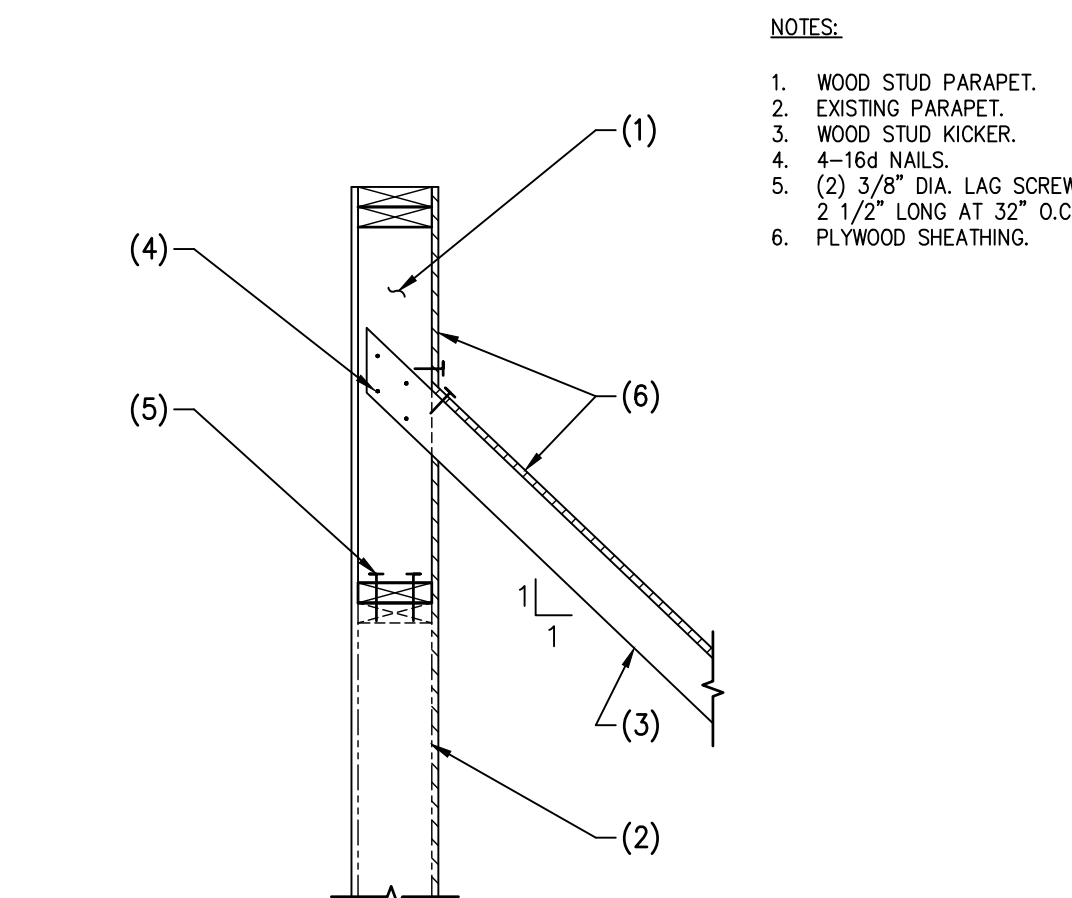
**202** WALL SECTION 22-0167 NO SCALE



**NOTES:**

- EXISTING CONCRETE SLAB.
- EXISTING WOOD TRUSSES.
- EXISTING WOOD STUD WALL.
- EXISTING WOOD PARAPET.
- NOT USED.
- NEW 2x6 WOOD PARAPET STUD AT 16" O.C.
- 2x6 WOOD KICKER AT 16" O.C.
- CONTINUOUS 2x DOUBLE TOP PLATE.
- CONTINUOUS 2x8.
- CONTINUOUS 2x PLATE.
- HEADER PER DETAIL 206.
- NEW WINDOW STOREFRONT BY OTHERS.
- PLYWOOD SHEATHING PER ARCH'L.

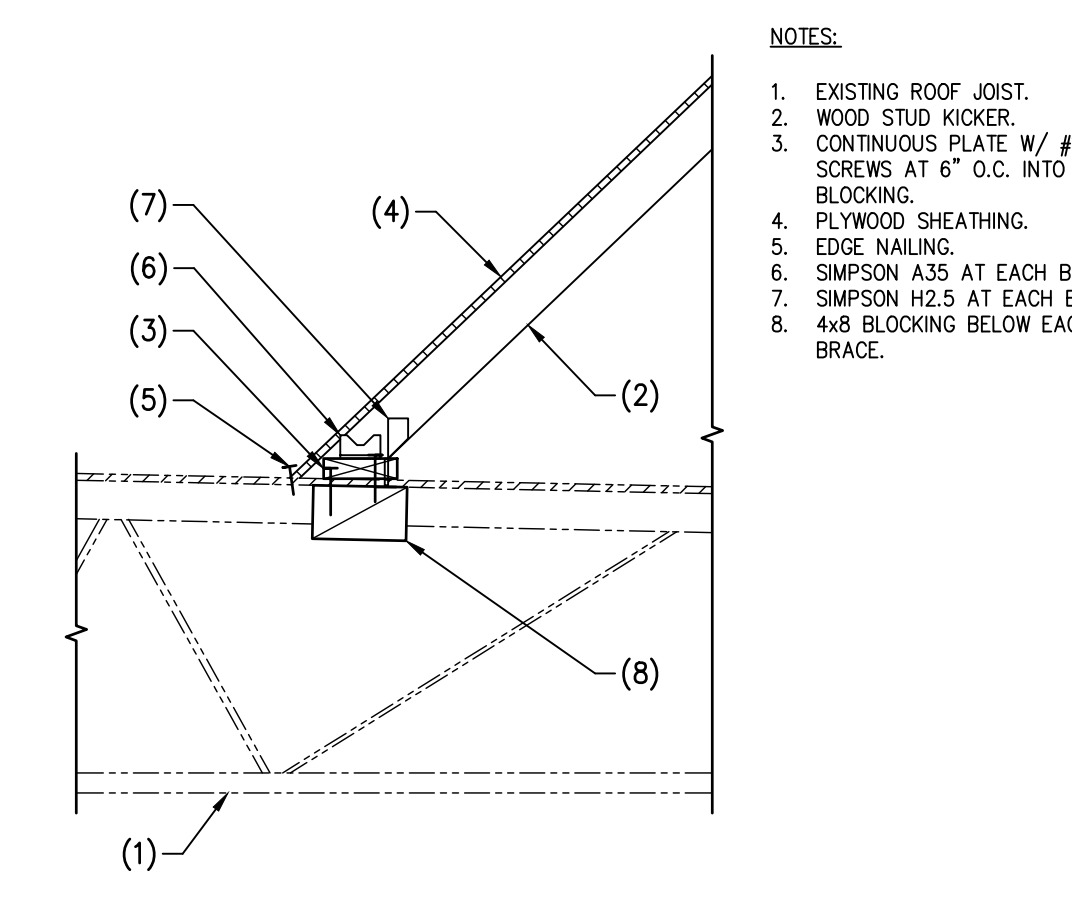
**201** WALL SECTION 22-0167 NO SCALE



**NOTES:**

- WOOD STUD PARAPET.
- EXISTING PARAPET.
- WOOD STUD KICKER.
- 4-16d NAILS.
- (2) 3/8" DIA. LAG SCREWS X 2 1/2" LONG AT 32" O.C.
- PLYWOOD SHEATHING.

**203** NEW PARAPET AT EXISTING PARAPET 22-0167 NO SCALE



**NOTES:**

- EXISTING ROOF JOIST.
- CONTINUOUS PLATE W/ #10x3" SCREWS AT 6" O.C. INTO BLOCKING.
- PLYWOOD SHEATHING.
- EDGE NAILING.
- SIMPSON A35 AT EACH BRACE.
- SIMPSON H2.5 AT EACH BRACE.
- 4x8 BLOCKING BELOW EACH BRACE.

**204** KICKER AT EXISTING WOOD ROOF 22-0167 NO SCALE

FOR ADDITIONAL INFORMATION SHOWN BUT NOT NOTED, SEE GENERAL STRUCTURAL NOTES ON SHEET S1.1 AND TYPICAL DETAIL SHEETS.

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PROJECT NUMBER 22-0167 PROJECT MANAGER RAD  
PROJECT ENGINEER CMJ PROJECT DRAFTER HN

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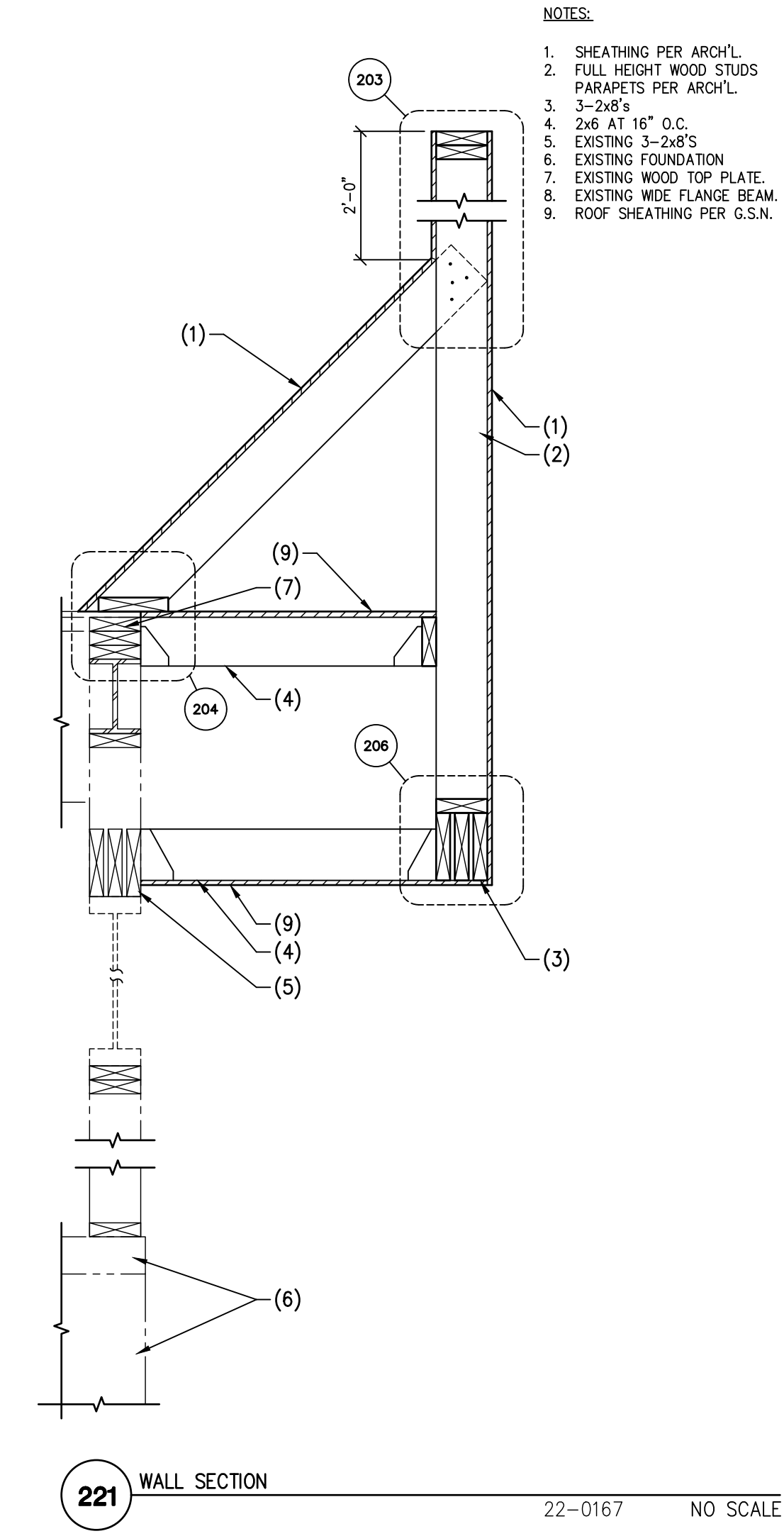
REV.	DATE	DESCRIPTION	NAME

PROJECT NO: 210109  
DRAWN BY: [ ]  
CHECKED BY: [ ]  
ISSUE DATE: 03/21/22

**DETAILS**

**S31**

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- NOTES:
1. SHEATHING PER ARCH'L
  2. FULL HEIGHT WOOD STUDS PARAPETS PER ARCH'L
  3. 3-2x8'S
  4. 2x6 AT 16" O.C.
  5. EXISTING 3-2x8'S
  6. EXISTING FOUNDATION
  7. EXISTING WOOD TOP PLATE
  8. EXISTING WIDE FLANGE BEAM
  9. ROOF SHEATHING PER G.S.N.

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PROJECT ENGINEER	CMJ	PROJECT DRAFTER	HN

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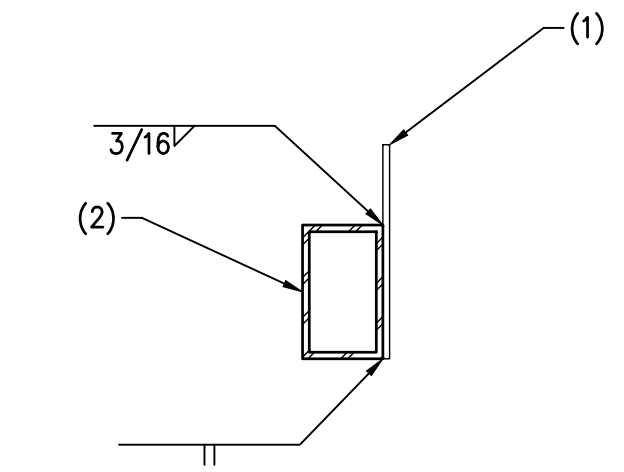
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 RICHARD DAHLMANN  
 ENGINEER  
 No. 62018R3306  
 03-21-22

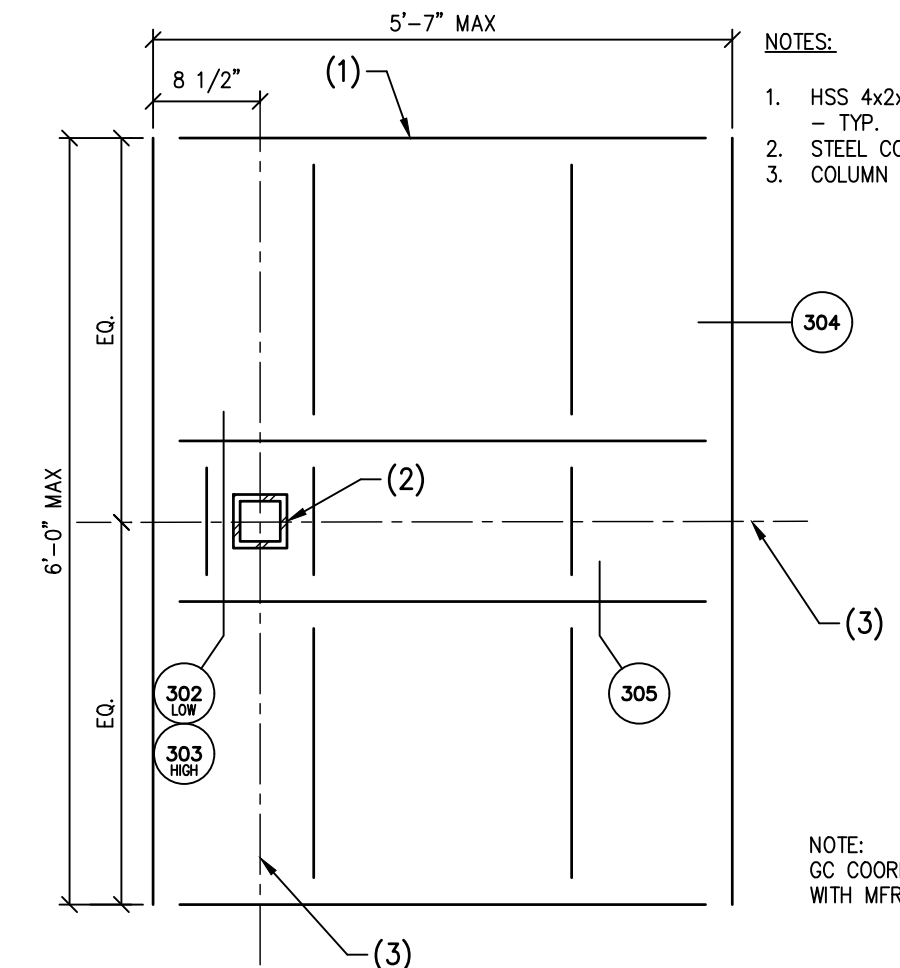


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**304** SIDE PANEL AT BEAM 22-0167 NO SCALE

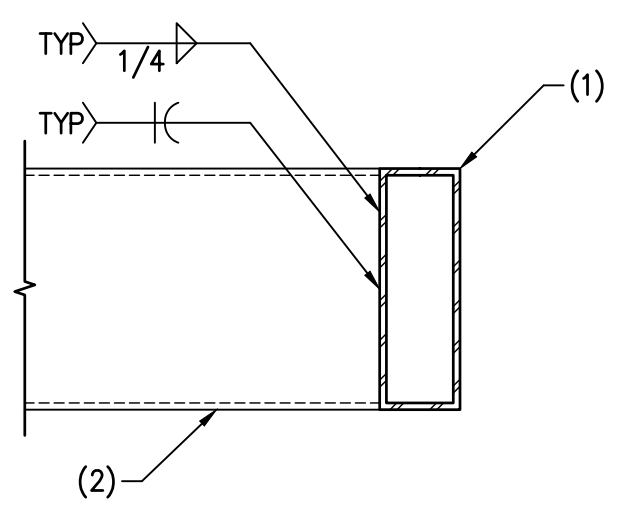
- NOTES:  
 1. SIDE PANEL BY OTHERS.  
 2. ALUMINUM BEAM.



**301** CANOPY FRAME PLAN 22-0167 NO SCALE

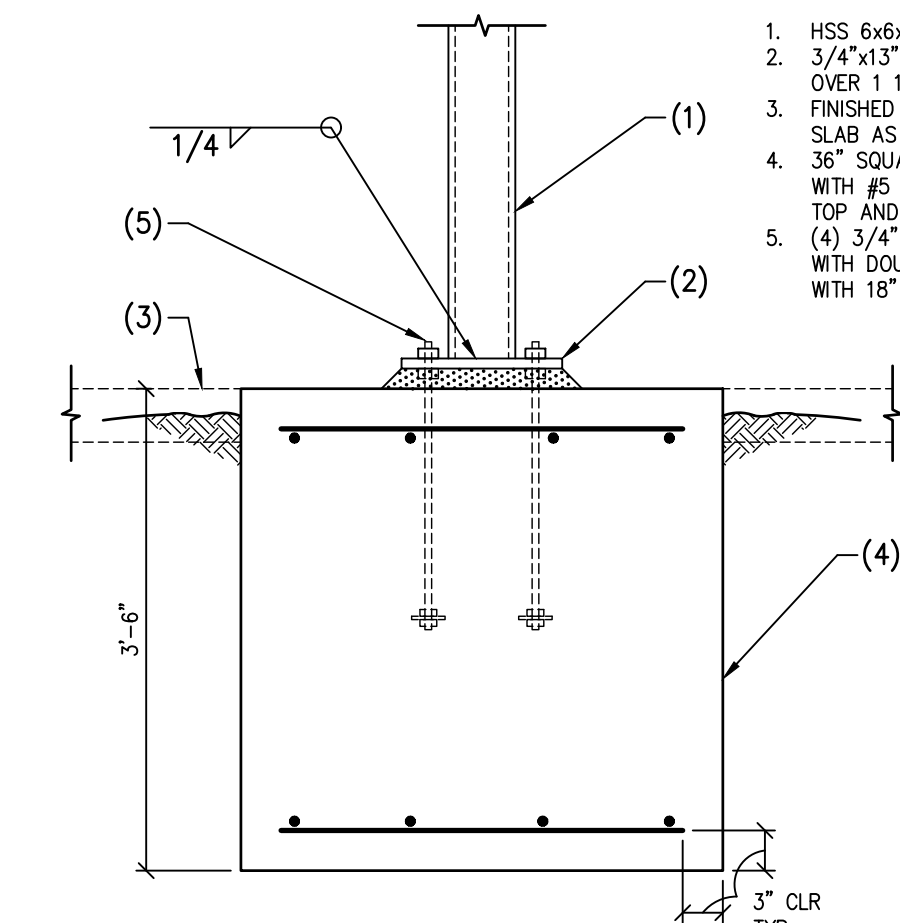
- NOTES:  
 1. HSS 4x2x1/4" ALUMINUM BEAM - TYP.  
 2. STEEL COLUMN.  
 3. COLUMN CENTERLINE.

NOTE:  
 GC COORD ALL DIMENSIONS WITH MFR.



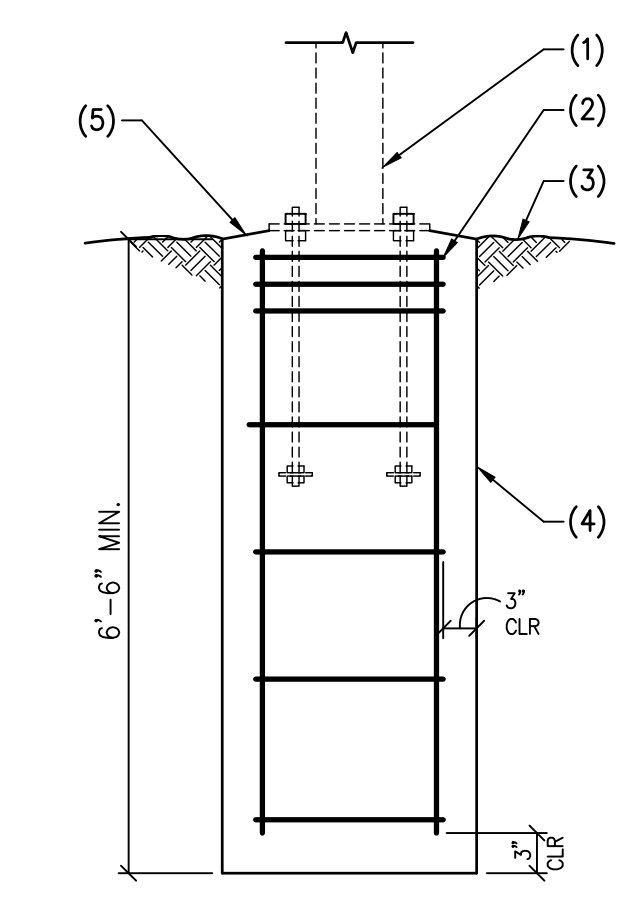
**305** STEEL BEAM TO STEEL BEAM CONNECTION 413-76M NO SCALE

- NOTES:  
 1. CONTINUOUS ALUMINUM BEAM.  
 2. ABUTTING ALUMINUM BEAM.



**302** STEEL COLUMN FOOTING 22-0167 NO SCALE

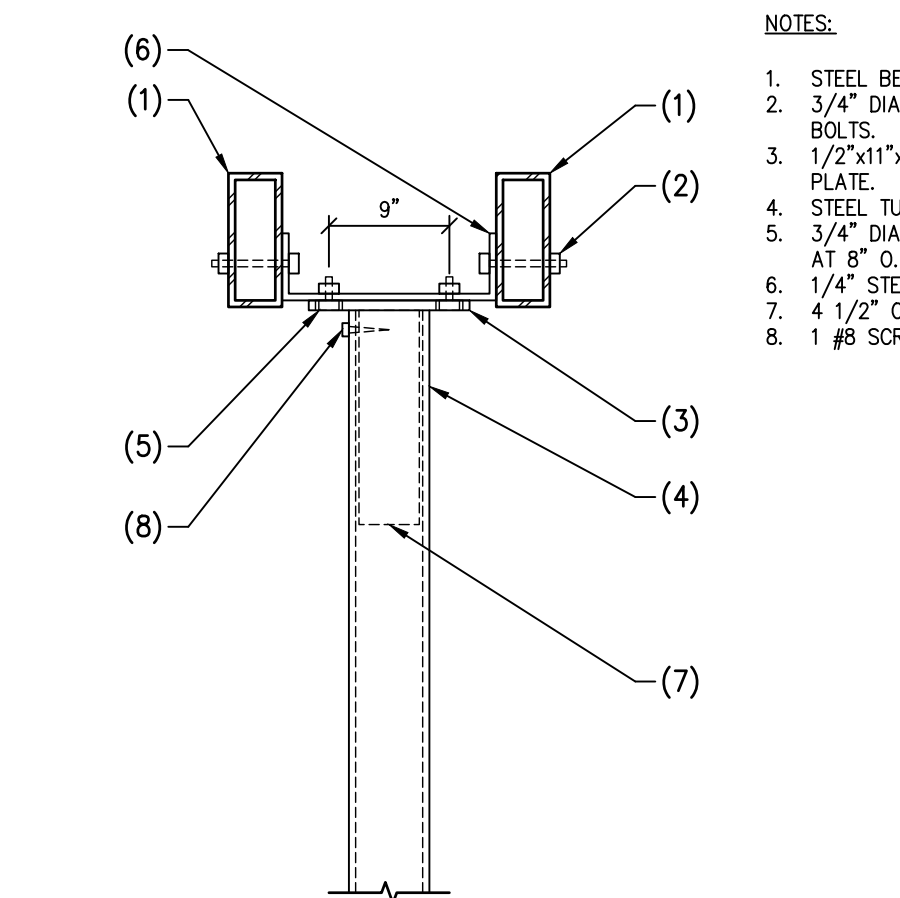
- NOTES:  
 1. HSS 6x6x1/4" STEEL COLUMN.  
 2. 3/4"x13"x13" STEEL BASE PLATE OVER 1 1/2" BRYPAK.  
 3. FINISHED GRADE OR CONCRETE SLAB AS OCCURS.  
 4. 36" SQUARE CONCRETE FOOTING WITH #5 AT 6" O.C. EACH WAY, TOP AND BOTTOM.  
 5. (4) 3/4" DIA. ANCHOR BOLTS WITH DOUBLE NUTS AT 10" O.C. WITH 18" EMBED.



**306** MENU BOARD CAISSON FOOTING 22-0167 NO SCALE

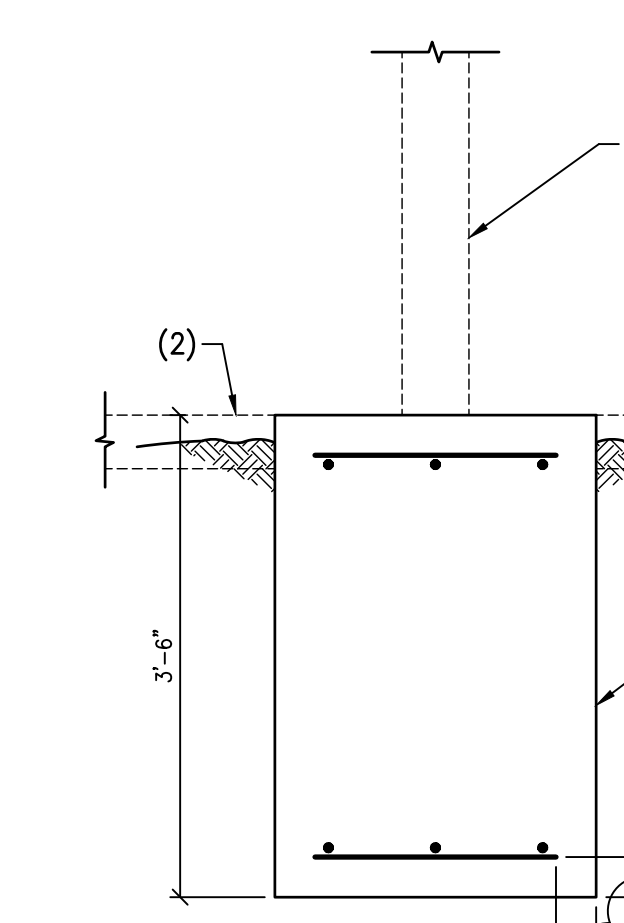
- NOTES:  
 1. MENU BOARD POST AND BASE CONNECTION DESIGNED BY MANUFACTURER.  
 2. 3 #3 TIES IN TOP 5".  
 3. FINISHED GRADE.  
 4. 24" DIA. CONCRETE CAISSON TYPE FOOTING WITH (6) #6 VERTICALS AND #3 TIES AT 8" O.C.  
 5. SLOPE CONCRETE UP SLIGHTLY TO AVOID WATER RETENTION AT BASE.

NOTE:  
 DESIGNED FOR MAX MENU BOARD HEIGHT OF 7'-6" AND A MAX AREA OF 53.2 FT<sup>2</sup>. LATERAL SOIL DESIGN PRESRIPTIVE MIN OF 2x100 PSF/FT



**303** STEEL TUBE AT CANOPY 22-0167 NO SCALE

- NOTES:  
 1. STEEL BEAM.  
 2. 3/4" DIA. STAINLESS STEEL BOLTS.  
 3. 1/2"x11"x12" STEEL CAP PLATE.  
 4. STEEL TUBE.  
 5. 3/4" DIA. COUNTERSUNK BOLTS AT 8" O.C.  
 6. 1/4" STEEL BENT PLATE.  
 7. 4 1/2" O.D. STEEL PIPE.  
 8. 1 #8 SCREW x 3" LONG.



**307** STEEL COLUMN FOOTING 22-0167 NO SCALE

- NOTES:  
 1. COLUMN AND ATTACHMENT BY OTHERS.  
 2. FINISHED GRADE OR CONCRETE SLAB AS OCCURS.  
 3. 24" WIDE CONCRETE FOOTING WITH #5 AT 6" O.C. EACH WAY, TOP AND BOTTOM.

FOR ADDITIONAL INFORMATION SHOWN BUT NOT NOTED, SEE GENERAL STRUCTURAL NOTES ON SHEET S1.1 AND TYPICAL DETAIL SHEETS.

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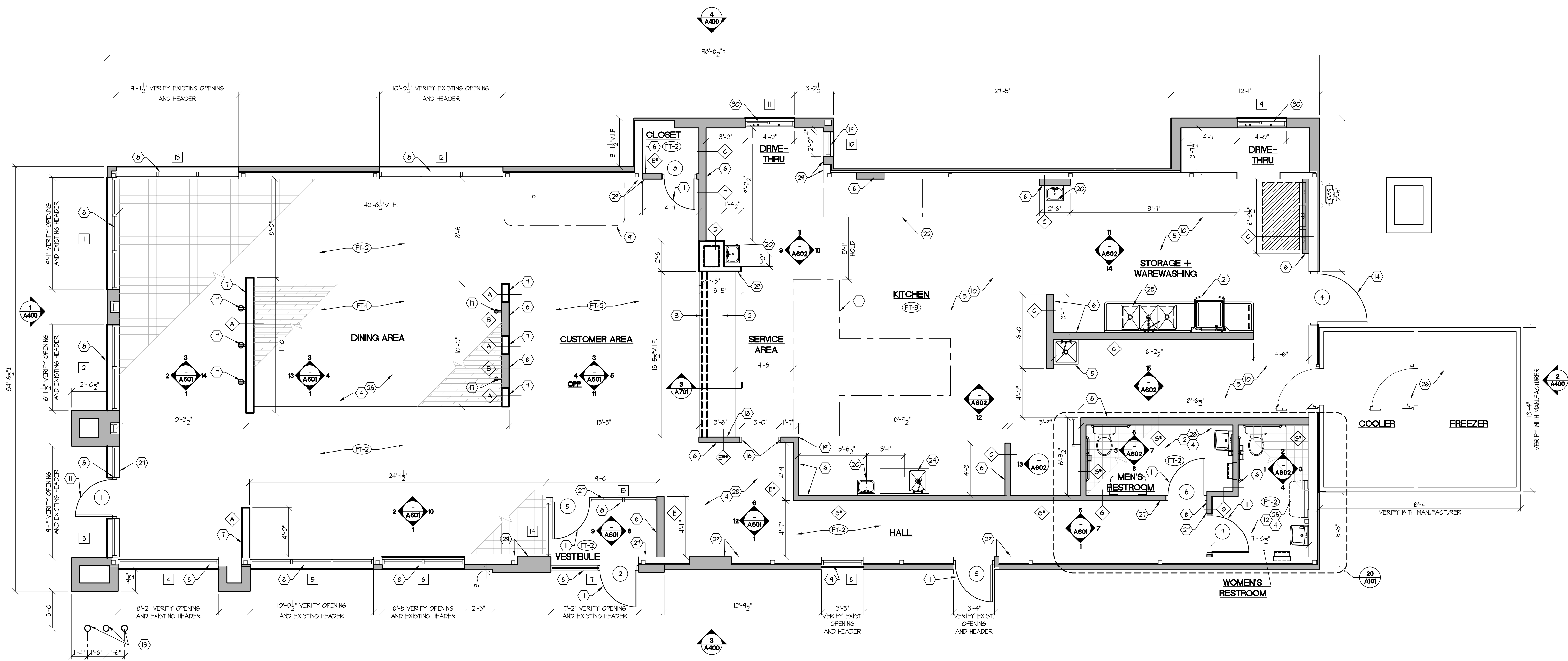
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S41

DETAILS



**1 FLOOR PLAN**  
SCALE: 1/4" = 1'-0"  
NORTH

**NOTE: ALL DIMENSIONS ARE FROM FINISHED FACE OF SURFACE, EXCEPT AT PLUMBING FIXTURES (CENTERLINE)**

PLAN LEGEND	
	- EXISTING WALLS TO REMAIN
	- NEW WALLS TO BE CONSTRUCTED
	- NEW LOW WALL TO BE CONSTRUCTED
	- NEW FLOORING-COTTAGE, MOUNTAIN RETREAT
	- NEW FLOORING - SIMPLY MODERN; 'SIMPLY COFFEE'
	- PARTITION TYPES, SEE 20/A101
	- DOOR NUMBER, SEE DOOR SCHEDULE
	- WINDOW TYPE
	- KEYED NOTE
	- FINISH TYPE - SEE A600 FOR FINISH SCHEDULE

KEYED NOTES	
(1) NEW PRODUCTION TABLE, PROVIDED BY OWNER, INSTALLED BY KES. G.C. TO PROVIDE ALL CONNECTIONS.	(16) NEW WOOD CASED TRIM OPENING, SEE INTERIOR ELEV FOR FINISHES.
(2) NEW SOLID SURFACE COUNTER (BY OTHERS) TOP SET AT 34" AFF. MAX. ON LOW WALL CONSTRUCTION. COORDINATE W/ DECOR VENDOR.	(17) ELECTRICAL OUTLET-SEE ELECTRICAL DRAWINGS FOR TYPE, ETC.
(3) NEW KNEE WALL AT COUNTER. SEE A601/A101 DRAWINGS FOR FINISH INFORMATION.	(18) NEW WALL TILE, SEE FINISH SCHEDULE.
(4) NEW INTERIOR FINISH SEE A600 FINISH SCHEDULE, INSTALLED BY G.C.	(19) NEW WINDOW
(5) NEW FLOOR TILE IN BACK OF HOUSE WITH 6" COVE BASE. USE TILE TRANSITION TO DINING ROOM. SEAL AFTER INSTALLATION.	(20) NEW HAND SINK, SEE PLUMBING DRAWINGS.
(6) NEW FULL HEIGHT INTERIOR WALL.	(21) NEW WAREWASHER, SEE PLUMBING DRAWINGS.
(7) NEW LOW WALL.	(22) NEW FRYER UNIT-OUTLINE SHOWN FOR POSITION REFERENCE OF NEW PRODUCTION TABLE.
(8) NEW STOREFRONT ASSEMBLY.	(23) NEW LOW-WALL TO 66" FINISH HEIGHT, TO EXTENTS INDICATED. SEE A600 SCHEDULE FOR SOLID SURFACE GAP.
(9) NEW BEVERAGE COUNTER WITH EQUIPMENT BY OWNER, INSTALLED BY G.C. TOP OF COUNTER TO BE SET AT 34" AFF. MAX. G.C. TO TRENCH SLAB AS REQUIRED FOR NEW FLOOR SINK. SODA VENDOR TO RUN SODA LINES, G.C. TO PROVIDE A STAINLESS STEEL SHROUD IF PIPING IS RAN OUTSIDE THE WALL. SEE EQUIPMENT SCHEDULE.	(24) NEW PREP SINK, SEE PLUMBING SHEETS.
(10) INSTALL NEW FRP IN KITCHEN, DRIVE THRU, AND PREP AREA.	(25) NEW 3-COMPARTMENT SINK, SEE PLUMBING DRAWINGS.
(11) NEW DOOR AND FRAME, SEE DOOR SCHEDULE.	(26) NEW WALK-IN COOLER/ FREEZER.
(12) NEW RESTROOM PLUMBING FIXTURES AND ACCESSORIES, EXCEPT AS NOTED (SEE ENLARGED PLAN).	(27) NEW ACCESSIBLE RESTROOM EMPLOYEE ONLY, OR EXIT SIGNAGE. SEE HARDWARE GROUPS AND I/A101.
(13) NEW 6" DIAMETER STEEL POST BY CANOPY/SIGNAGE VENDOR. SEE SIGNAGE/CANOPY DRAWINGS FOR BALANCE OF INFORMATION. ANCHOR TO EXISTING SIDEWALK PER SIGN VENDOR DRAWINGS.	(28) AT WALLS OR PORTIONS OF WALLS TO RECEIVE NEW WALL TILE REPLACE ANY GYP ED SUBSTRATE WITH 1/2" OR THICKNESS TO MATCH ADJACENT SUBSTRATE/ GYPSUM BOARD TO 1/4" CENTER BOARD EXISTS. PATCH AND REPAIR PRIOR TO TILE INSTALLATION. SEE 20/A101.
(14) NEW SERVICE DOOR, SEE A400 FOR EXTERIOR FINISH INFORMATION.	(29) ALIGN FINISHES.
(15) NEW MOP SINK.	(30) NEW DRIVE-THRU WINDOW. COORDINATE POWER REQUIREMENT, HOOKUP WITH ELECTRICAL.

GENERAL NOTES	
A. AT LEAST ONE RESTROOM MUST BE AVAILABLE DURING ALL PERIODS OF OPERATION.	E. GENERAL CONTRACTOR TO REFER TO SITE PLAN DRAWINGS FOR ALL RELEVANT SITE WORK INCLUDING, BUT NOT LIMITED TO, SIDEWALKS, CURBS, DRIVEWAYS, PARKING AREAS, ETC.
B. ALL REMODELING WORK MUST BE INITIATED IN A MANNER TO ELIMINATE THE POSSIBILITY OF DIRT, DEBRIS OR CONTAMINANTS GETTING INTO THE ACTIVE PART OF THE FACILITY.	F. GENERAL CONTRACTOR TO VERIFY ALL EXISTING ELEVATIONS AND BUILDING CONDITIONS IN FIELD PRIOR TO START OF CONSTRUCTION.
C. G.C. TO VERIFY DINING LAYOUT WITH LATEST DECOR PLANS PRIOR TO INSTALLATION.	G. G.C. SHALL STORE ALL EXISTING FIRE EXTINGUISHERS FOR REINSTALLATION.
D. ALL EQUIP. REMOVED FROM PREP/DRIVE THRU AREA TO BE RE-MOUNTED TO ORIG. POSITIONS ONCE FLOOR TILE INSTALL. IS COMPLETE.	H. INSTALL FIRE EXTINGUISHERS. POSITION SO THAT THEY ARE WITHIN 75' OF EVERY POINT WITHIN THE BUILDING.
	I. REINSTALL OR PROVIDE NEW CLASS 'K' FIRE EXTINGUISHER WITHIN 30' OF COMMERCIAL COOKING EQUIPMENT.
	J. COORDINATE ALL FINAL FIRE EXTINGUISHER LOCATIONS WITH THE LOCAL FIRE DEPARTMENT.

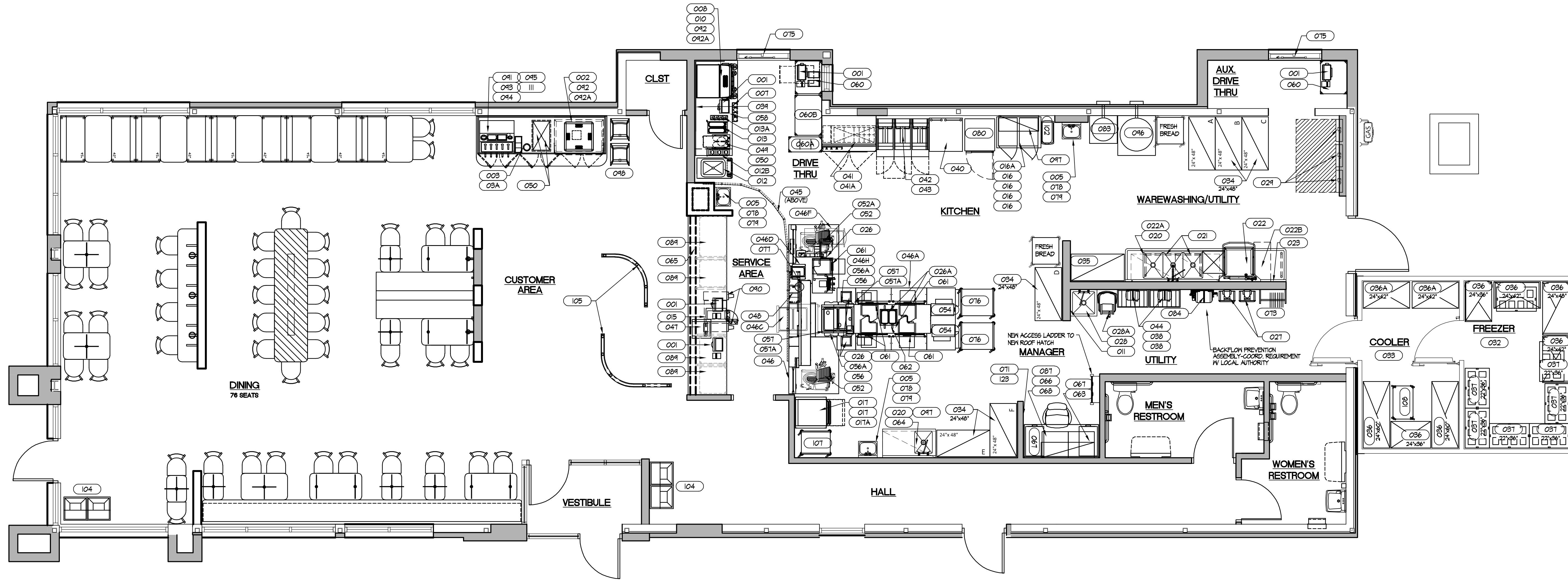
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**Arby's**  
 ARBY'S INSPIRE CONVERSION  
 209 S. CENTERVILLE RD.  
 STURGIS, MI 49091  
 STORE # X

REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
 DRAWN BY: AM/IT/ME  
 CHECKED BY: JMW  
 ISSUE DATE: 03/18/22  
**FLOOR PLAN**  
**A100**





o o o

**1 EQUIPMENT PLAN**  
 SCALE: 1/4"=1'-0"  
 NORTH

- GENERAL NOTES**
- A. COUNTER TOP EQUIPMENT SHALL BE ON 4 INCH HIGH LEGS, SEALED TO COUNTER, OR PORTABLE.
  - B. FLOOR MOUNTED EQUIPMENT SHALL BE ON 6 INCH HIGH LEGS, ON CASTERS OR SEALED TO THE FLOOR.
  - C. EQUIPMENT NOT ON CASTERS SHALL BE SEALED TO THE WALL AND/OR THE ADJOINING EQUIPMENT, OR PROVIDE SPACE TO FACILITATE CLEANING.
  - D. ALL KITCHEN EQUIPMENT IS OF COMMERCIAL QUALITY, DURABLE AND EASILY CLEANED. EVERY ITEM IS NATIONAL SANITATION FOUNDATION (NSF) APPROVED OR EQUAL. ALL FOOD PREP TABLES ARE STAINLESS STEEL. PLASTIC LAMINATE SURFACES ARE NOT TO BE USED FOR DIRECT FOOD CONTACT.
  - E. THE WASTE OUTLET FOR EQUIPMENT DRAINING INTO FLOOR SINKS SHALL TERMINATE AT LEAST 2 INCHES ABOVE THE FLOOD RIM OF SUCH RECEPTOR. INDIRECT WASTE PIPING SHALL BE INSTALLED AS TO PERMIT READY ACCESS FOR FLUSHING AND CLEANING.
  - F. ALL FOOD SERVICE EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS AND PROCEDURES AS SET FORTH BY NSF. THESE PROCEDURES ARE ILLUSTRATED IN THE INSTALLATION MANUAL FOR FOOD SERVICE EQUIPMENT DEVELOPED BY NSF. ALL SPLASH BLOCKS SHALL BE 3 INCHES AWAY FROM ADJACENT WALLS TO AVOID ANY DARK ENCLOSED AREAS OR SPLASH BLOCKS ARE TO BE SEALED TO THE WALL WITH AN APPROVED SILICONE OR SIMILAR CAULKING MATERIAL. ALL SHELVING OR SANITARY STORAGE RACKS SHALL BE LOCATED MINIMUM OF 15' ABOVE THE FLOOR AND SHALL BE 1/2 TO 2 INCHES FROM ADJACENT WALLS TO AID IN CLEANABILITY.
  - G. BEVERAGE INSTALLER TO PROVIDE 'PYTHON' FOR SYRUP LINES TO ALL BEVERAGE STATIONS.
  - H. PLUMBING CONTRACTOR TO INSTALL MANIFOLD FOR OVENS.
  - I. PROVIDE 2X2 FULL HEIGHT STAINLESS STEEL CORNER GUARDS ON ALL OUTSIDE CORNERS IN KITCHEN.
  - J. INSTALL STAINLESS STEEL PANEL BEHIND THE FRYER HOOD AND OVEN HOOD. SEE A100 FOR EXTENTS OF PLACEMENT. (G.C. PROVIDED AND INSTALLED.)
  - K. PROVIDE PLYWOOD BACKING IN LIEU OF GYP. BD. AT SHELVING AND WALL MOUNTED EQUIPMENT. FIELD VERIFY EXACT LOCATIONS.
  - L. REFER TO MEP DRAWINGS FOR EQUIPMENT CONNECTIONS.
  - M. \*\* INDICATES 3-COMP SINK (#19) NEEDED WHEN WAREWASHER (#22) IS NOT INSTALLED.

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**EQUIPMENT PLAN**

**A101**

EQUIPMENT SCHEDULE				
*GEN II CUSTOM FAB: WHEN ORDERING FROM KES, VERIFY LATEST APPROVED SHOP DRAWINGS.				
NO	QTY.	ITEM	MANUF. AND MODEL NO.	REMARKS
1	5	CASH REGISTER	BY OWNER (DEDICATED ELECTRICAL CIRCUIT)	ISOLATED, DEDICATED ELEC. CIRCUIT REQUIRED
2	1	12 HEAD DRINK DISPENSER W/ ICE MAKER ABOVE (SEE #12)	IMI CORNELIUS, ENDURO 300 - 12 HEAD	INCLUDED IN BEVERAGE PACKAGE
3	1	SELF SERVE BEVERAGE COUNTER	KES / DECOR	
3A	1	BAIN MARIE	VOLLRATH 1.25 QT BAIN MARIE 78710	INTEGRATED INTO #3 SELF-SERVE BEVERAGE COUNTER
4	1	ORDER CONFIRMATION SYSTEM (NOT SHOWN)	TECHNOM - DFP300 - 0C5500ARB	
5	3	WALL MOUNTED HAND SINK	KROYNE H52	
7	1	CUP DISPENSER	SAN JAMAR C2410C	INTEGRATED INTO #5B DRIVE-THRU BEVERAGE COUNTER
8	1	8 HEAD DRIVE-THRU DRINK DISPENSER W/ OVERHEAD ICE MAKER ABOVE (SEE #12)	CORNELIUS IDC255 PRO FAST GATE - 8 HEAD, 7 OPTIFIL VALVES & 1 VARIETY VALVE (10 FLAVORS)	INCLUDED IN BEVERAGE PACKAGE
10	1	LID HOLDER	INCLUDED WITH #8	MOUNTED ON ITEM #8
11	1	MOP HOLDER	BY OWNER	
12	1	SHAKE MACHINE - FULL UPRIGHT	TAYLOR 60	
12B	1	DISPOSABLE CUP DISPENSER	SAN JAMAR C8504YFD	
13	1	LEMONADE EQUIPMENT-DISPENSER	SIMPLICITY TWIN MINI BUBBLER, CONFIRM MODEL WITH OWNER	
13A	1	LEMONADE EQUIPMENT-(4) SYRUP BOTTLE DISPENSING RACK	CONFIRM WITH OWNER	
14	1	AUTO GREETER (NOT SHOWN)	ERG/PANASONIC - ULTRADTAGARD	
15	1	SAFE - (4) TILLS	AMERICAN SECURITY PRODUCTS (AMSEC). RETAIL MONEY MANAGER SAFE, MODEL #SK3012-648 A (L OR R SWING)	26" H X 20" W X 18 1/2" D, W/ ACCESS CONTROL SYSTEM, W/ ATTENDANT DRAWER, 4 TILLS, W/ 6 KEYS & COIN RACK UPON REQUEST. G.C. TO COORDINATE LOCATION OF SECURING BOLTS FOR SAFE
16	4	COOK & HOLD CABINET	ALTO-SHAAM - 300TH-ARB1-55 (WITH SITESAGE SPOD)	16-13/16" W X 25-3/16" D X 18-15/16" H
16A	1	COOK & HOLD STAND	SERTEK CF050004-40	40" W X 41 1/2" T MOBILE STAND TO HOLD (4) #16
17	2	DIGITAL COUNTERTOP ELECTRIC CONVECTION OVEN	CADCO, MODEL XAFT-15A	28 1/8" D X 23 5/8" W X 16 7/8" H
17A	1	OVEN STAND	KES	28" W X 41 1/2" MOBILE STAND TO HOLD (2) #17
20	2	LEVER DRAINS	T&S BRASS B-9452-01	
21	LOT	SHELVING ABOVE 3 COMPARTMENT SINK	METRO SMART WALL SYSTEM ARB5W96	MOUNT WALL BRACKET AT 90" AFF. COMPONENTS INCLUDE (4) WALL UPRIGHTS, 56" WALL TRACK, 40" WALL TRACK, (4) SINGLE SHELF SUPPORTS, (2) WALL GRIDS, (10) PRONG HOOKS, (1) DRY RACK, (2) 18"X42 3/4 PRO SHELVES, (2) 6-PRONG BOTTLE HOLDER, (1) TRAY DRYING RACK, (3) LARGE BASKET
22	1	WAREWASHER	HOBART MODEL: AM5-42	
22A	1	3 COMPARTMENT SINK W/ WAREWASHER SOILED TABLE	KES, CUSTOM FAB	INCLUDES LEVER DRAINS AND PRE-RINSE WASH ASSEMBLY
22B	1	CLEAN LANDING DISH TABLE	KES, CUSTOM FAB	
23	1	KNIFE RACK	SAN JAMAR SAF-T-KNIFE STATION 5TK100B	
26	2	BEEF PORTION SCALE	SMALLWARE ITEM	SEE SMALLWARES LIST
26A	2	BEEF PORTION SCALE DISPLAY-INTEGRAL TO #26	SEE PLAN	
27	2	TANKLESS WATER HEATER	RINNAI QU191	SEE PLUMBING DRAWINGS
28	1	MOP SINK - REFER TO PLUMBING DRAWINGS		
28A	1	MOP BUCKET	BY OWNER	
29	LOT	ELECTRICAL PANELS-REFER TO ELECTRICAL DRAWINGS		
31	1	SERVICE TIMER SYSTEM 30 (NOT SHOWN)	HME - C1117B	
32	1	WALK-IN FREEZER	IGS	
33	1	WALK-IN COOLER	IGS	
34	LOT	DRY STORAGE SHELVING, BRIGHT ZINC FINISH	METRO, SEE PLAN FOR LOCATION, QUANTITY, SIZE	ALL SHELVING UNITS TO BE (5) TIERED, PROVIDE 84" POSTS
35	1	DISH DRYING RACK		
36	LOT	COOLER SHELVING, METROSEAL II, EPOXY COATED	METRO, SEE PLAN FOR LOCATION, QUANTITY, SIZE	ALL SHELVING UNITS TO BE (4) TIERED, PROVIDE 74" POSTS
36A	2	BEEF TEMPERING COOLER SHELVING, METROSEAL III	METRO-SUPER ERECTA PRO SHELF, REMOVABLE POLYMER SHELF MAT, METROSEAL III, EPOXY COATED FRAME (1) 24X48 10 TIER SHELVING UNIT	SEE PLAN FOR LOCATION
37	LOT	FREEZER SHELVING METRO	METRO, SEE PLAN FOR LOCATION, QUANTITY, SIZE	ALL SHELVING UNITS TO BE (4) TIERED, PROVIDE 74" POSTS
38	LOT	BAG-IN-BOX SHELVING	MANITONOC, TOP PUMP MOUNT BACKROOM PACKAGE, AR-10-2-2N-TPM	INCLUDED IN BEVERAGE PACKAGE, 80H X 28" W X 20" D, 4H, EPOXY COATED, SEE PLAN FOR SHELF LOCATION, INCLUDED IN BEVERAGE PACKAGE
39	1	WIRELESS DRIVE THRU ORDER SYSTEM	HM ELECTRONICS, MODEL #HME E05 HD DIGITAL SYSTEM, C40000-5-HES-ARB-SYSTEM	WITH (5) ALL-IN-ONE HEADSETS
40	1	FRY BASKET TABLE	KES, CUSTOM FAB ITEM	12" W X 36" D
41	1	FRY DUMP	MARSHALL AIR THERMOGLO, MODEL RRS-48.5TL (RRS-48.5TR FOR REVERSE LAYOUT)	59" H X 48.625" W X 32.75" D, 20 AMP, NEMA 6-20, W/ BUILT-IN FRY STATION TIMER
41A	1	FRY CARTON SHELF	(1) 12" x 36" SHELF WITH (4) 6" POSTS BRIGHT ZINC FINISH	SIT ON TOP OF FRY DUMP
42	1	EXHAUST HOOD	CAPTIVE-AIRE, BO-2 SERIES, SEE MECHANICAL PLANS	60" x 28" x 47", STAINLESS STEEL W/ UL LISTING, FILTERS, 4" BACKSPACER, PROVIDE COMPLETE FIRE SUPPRESSION SYSTEM, ANUL SYSTEM
43	1	3 BAKY FRYER W/ NATURAL GAS	HENNY PENNY, EVOLUTION ELITE, 3 WELL OPEN FRYER, EEG-14335-ARB GAS WITH DIRECT-CONNECT	6AS BURNERS, NATURAL OR LIQUID PETROLEUM GAS, 225,000 BTU/HR, (66.2KW), 1" GAS CONNECTION, 14" AFF. G.C. TO HOOK UP QUICK DISCONNECT (SUPPLIED BY KES). INCLUDE DORMONT GAS ROSE KIT #800-KIT-48. ALSO INCLUDE DIRECT-CONNECT KIT TO ALLOW HOOK-UP TO DARLING 800 H UNIT
44	2	COLD CARBONATOR	CORNELIUS	INCLUDED IN BEVERAGE PACKAGE, PROVIDE SHELF AND MOUNTING BRACKETS. LOCATE SHELF ON WALL BELOW COUNTERTOP BEHIND DRINK DISPENSER.
45	1	MENU BOARD	HOYARD (1) PANEL PLATINUM MODULAR LED MENU BOARD SYSTEM	
46	1	DUAL-LINE PRODUCTION TABLE	KES, CUSTOM FAB ITEM	
46A	1	60" ROLL-IN COLD WELL UNIT	BEVERAGE AIR, SPE 24-60M	
46B	--	NOT USED	--	44" L X 34" D X 36" H
46C	1	UNDERCOUNTER REFRIGERATED DRAWERS	BEVERAGE-AIR MODEL UC0271A-23ARB	INTEGRATED INTO #46 SLICER COUNTER
46D	1	TO-GO BAG HOLDER		INTEGRATED INTO #46 SLICER COUNTER
46F	1	BEEF DRAWER	KES, CUSTOM FAB ITEM	INTEGRATED INTO #46 SLICER COUNTER
46H	1	BACKLINE TIMER	A.J. ANTUNES SOLAR TIMER MODEL #TTS-8 FT	INTEGRATED INTO #46 SLICER COUNTER
47	1	TURNOVER DISPLAY CASE	GAL-MIL, P255-96	24" L X 17" D X 24" H

48	1	SANDWICH SLIDE/ ORGANIZER STAND	KES, CUSTOM FAB ITEM	
49	1	COFFEE MAKER	BUNGMATIC INFUSION TEA AND COFFEE BREWER #52200.0104 ITCB - WIDE DV 24" TRUNK WITH TRAY	
50	4	ICE TEA DISPENSER	BUNN TDO-N-3.5 DISPENSER WITH SOLID LID (3#600.0001)	
52	2	SLICER	GLOBE 421RN	24 5/8" W X 30 5/16" D X 24 5/16" H
52A	1	SLICER HEAT LAMP	MARSHALL AIR THERMO GLO BMB-1	24.875" X 28" X 24.75" STAINLESS STEEL CONSTRUCTION
54	2	HORIZONTAL TOASTER	MARSHALL AIR, AUTOFAST, 18" MODEL HT18, ARBY'S SPEC MM2B-ARB, HIGH SPEED HORIZONTAL CONTACT TOASTER	11.50" H X 21.00" W X 23.975" D
56	2	DUAL CHEESE PUMP	STAR MFG. #SPDE-2ARB	10.75" W X 21.38" D X 32.25" H
56A	2	WIRE SOUFFLE CUP HOLDER	QUADRATEC, DISPVAR 0001	COLOR: BLACK
57	2	HEAT-N-HOLD 3 SHELF CABINET	MERGOECO, MHD3255T1T	20.8" W X 22.5" D X 23.8" H
57A	2	HEAT-N-HOLD 4 SHELF CABINET	MERGOECO, MHD4255L1T	16.2" W X 22.5" D X 23.8" H
58	1	DRIVE-THRU COUNTER (BEVERAGE)	KES, CUSTOM FAB ITEM	86" TOP X 36" TALL
60	2	DRIVE-THRU CASHIER STAND	METRO ARB2430DT	
60A	1	WORK SMART DRIVE THRU STAGING CART	METRO, #ARB14305G	14"X30"X36" CART ON CASTERS. USED WITH WORK SMART DT CASHIER STAND.
60B	1	DRIVE-THRU STATION	METRO, #ARB1430DTBN	24" X 30" DRIVE-THRU STATION
61	5	MICROWAVE OVEN	MENUMASTER COMMERCIAL MODEL MOC24	USED WITH WORK SMART AND FRONT LINE SLICER COUNTER
62	1	HEATED HOLDING	MARSHALL AIR, 3 TIER, 3x2 HOLDING UNIT	19.75" H X 15.375" W X 15.625" D
63	1	MUSIC SYSTEM	3-M	
64	1	PREP SINK	WASSERSTROM 6222-01-144	
65	1	CASHIER / ORDER TAKING COUNTER	KES, CUSTOM FAB ITEM	
66	1	MANAGER DESK TOP	KES, CUSTOM FAB ITEM	28" X 60" W/ SPLASH GUARD
67	2	2 DRAWER FILE CABINET	BY OWNER	BLACK WITH LOCK, INCLUDING CABINET FEET, #A84504B ARG
68	1	DESK CHAIR	BY OWNER	
69	1	BACK OFFICE COMPUTER SYSTEM W/ PRINTER (NOT SHOWN)	BY OWNER	
71	1	BULLETIN BOARD (NOT SHOWN)	BY OWNER	24" X 48"
73	1	COAT RACK	METRO, ARBGR	WALL MOUNT COAT RACK, COLOR: GREY
75	2	AUTOMATIC DRIVE THRU WINDOW	QUIKSERV #55-4035E	FIELD VERIFY EXISTING STOREFRONT AND MATCH FINISH
76	2	MOBILE BREAD RACK, ON CASTERS	METRO, #ARB243060BR	21" X 24" X 60" H, 10 SHELVES
77	1	AU JUS SERVER	SERVER, MODEL SY 10 ARBY'S #85509, 1 GAL. AU JUS SERVER	
78	3	PAPER TOWEL DISPENSER	BY OWNER	
79	3	LIQUID SOAP DISPENSER	BY OWNER	
80	1	SINGLE DOOR UPRIGHT FREEZER	TRAILSEN 612000	
88	1	BULK CO2	NUCO2	WITH ADAPTERS
84	1	WATER BOOST MODULAR FILTER SYSTEM	PENTAIR SHURFLO MB6-MB-22-009-55	
81	1	MUSIC SYSTEM SHELVING, EPOXY COATED	METRO 1442N3	(2) H X 42 WIRE SHELVES, BOTTOM @ 80" AFF. SEE PLAN FOR SHELF LOCATION, EPOXY COATED
84	LOT	FRONT COUNTER SHELVING, BRIGHT ZINC FINISH	METRO (1) 36" x 24" x (3) TIER, (3) 24" x 24" x (3) TIER	SEE PLAN FOR SHELF LOCATION
90	2	UNDERCOUNTER CUP DISPENSER CABINET	KES, CUSTOM FAB ITEM	28" H X 17 1/8" W X 32 1/2" D INCLUDES JAMAR CUP DISPENSER
91	1	SOUFFLE CUP DISPENSER	TOMLINSON KSF10035L	CAN USE 3/4 OR 1 OZ PAPER OR PLASTIC CUPS, INTEGRATED WITH ITEM #11
92	2	ICE MAKER	MANITONOC, 1Y-0886C-161	(1) UNIT MOUNTS ON ITEM #2 IMI CORNELIUS ED300 BEVERAGE DISPENSER IN DINING ROOM. (1) UNIT MOUNTS ON ITEM #8 IMI CORNELIUS IDC255 BEVERAGE DISPENSER IN DRIVE-THRU. REMOTE CONDENSER ICVD-0646, LINE SET R256 CONTROL WIRES FROM CONDENSING UNIT TO COIL. FIELD VERIFY LENGTH OF LINE SET REQUIRED.
92A	2	ICE MAKER REMOTE CONDENSING UNIT	MANITONOC, ICVD-0646	REMOTE CONDENSER FOR ICE MACHINE (92) ON DRINK DISPENSER IN DRIVE THRU (8) AND DINING ROOM (2) LOCATED ON ROOF, REFER TO A300, MEP DRAWINGS FOR LOCATION
93	1	STRAIN & LID HOLDER	KES, CUSTOM FAB ITEM	
94	2	NAPKIN DISPENSER	PROVIDED BY KES	INTEGRATED WITH #11
95	1	DISPENSER FOR SAUCES	SERVER PRODUCTS SE-5D1 (ARBY'S) 07123	INTEGRATED WITH #11, 5 PUMP DISPENSER
96	1	GREASE HOLDING TANK	MAHONEY ENVIRONMENTAL, METRO SECURE-TRACK SYSTEM (MST)	DIRECT CONNECTION WITH THE FRYER UNITS (#43)
97	LOT	WALL MOUNTED SHELVING	METRO 14x36, (2) TIER SHELVING, BRIGHT ZINC FINISH	
98	2	HIGH CHAIR / BOOSTER SEATS	BY OWNER	
102	LOT	TRASH CAN		
104	2	DOUBLE TRASH CAN		
105	2	CUSTOMER DUTIE RAILING	SEE PLAN FOR LAYOUT/TYPE	
107	1	HEAVY DUTY PAN RACK	WIN-HOLT	
108	1	PREP CART	METRO, MMT03	18"X30"
111	1	CONDIMENT TOPPER	KES, CUSTOM FAB ITEM	HOLDS ITEMS #11, #14 AND #15
123	1	SYSTEMS BOARD (NOT SHOWN)	BY OWNER	36" W X 48" T, WHITE PLASTIC POLY PEG BOARD TO BE MOUNTED ON WALL NEAR MANAGERS DESK
126	LOT	CO2 MONITORING SYSTEM	CO2METER RAD-0102	HARDWIRED MONITOR AND REMOTE SENSOR, CONTACT JOSH FRINGLE AT CO2METER.COM, 811.678.4251. MOUNT MONITOR AT 60" AFF. MOUNT REMOTE SENSOR AT 18" AFF.

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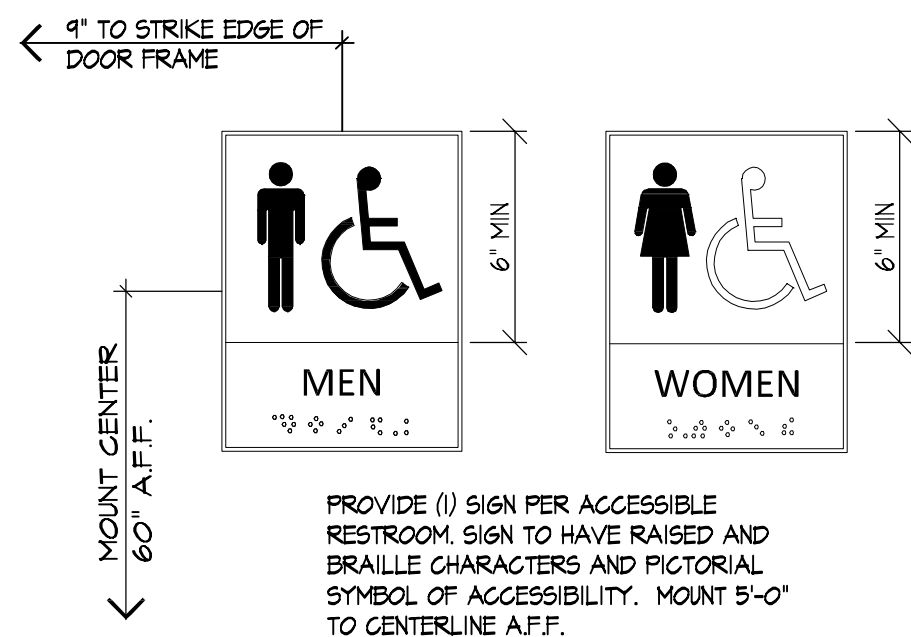
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DESCRIPTION

EQUIPMENT SCHEDULE

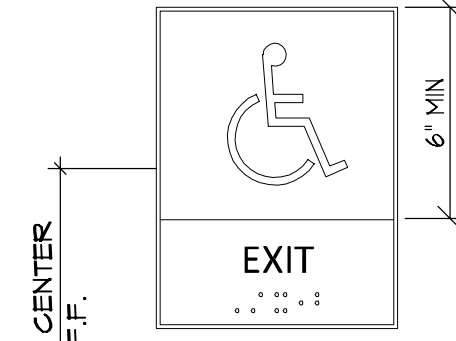
A102





PROVIDE (1) SIGN PER ACCESSIBLE RESTROOM SIGN TO HAVE RAISED AND BRAILLE CHARACTERS AND PICTORIAL SYMBOL OF ACCESSIBILITY. MOUNT 5'-0" TO CENTERLINE A.F.F.

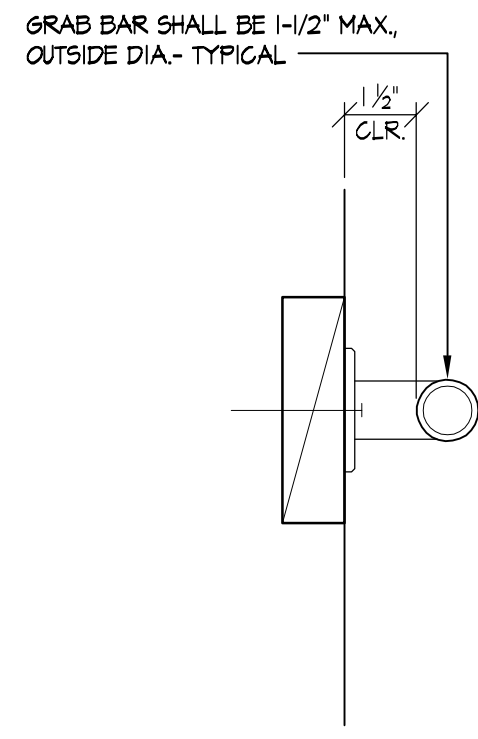
1 1/2" HIGH WHITE LETTERING ON BLACK BACKGROUND. EMBLEMS AND LETTERING MUST BE RAISED OR DEPRESSED MIN 1/32"



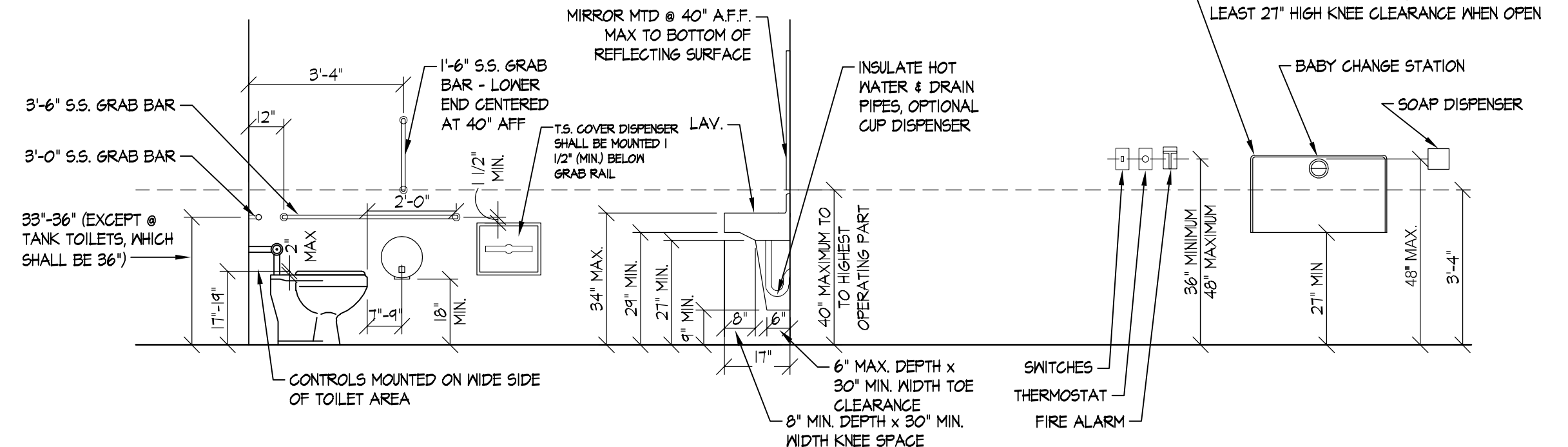
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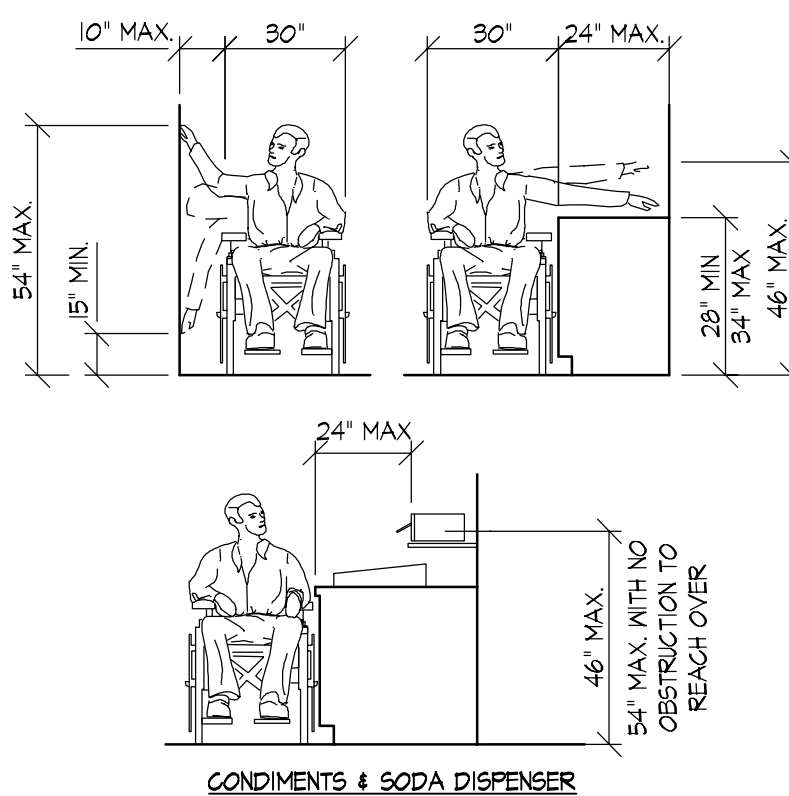
**17 ACCESSIBLE SIGNAGE**  
SCALE: N.T.S.



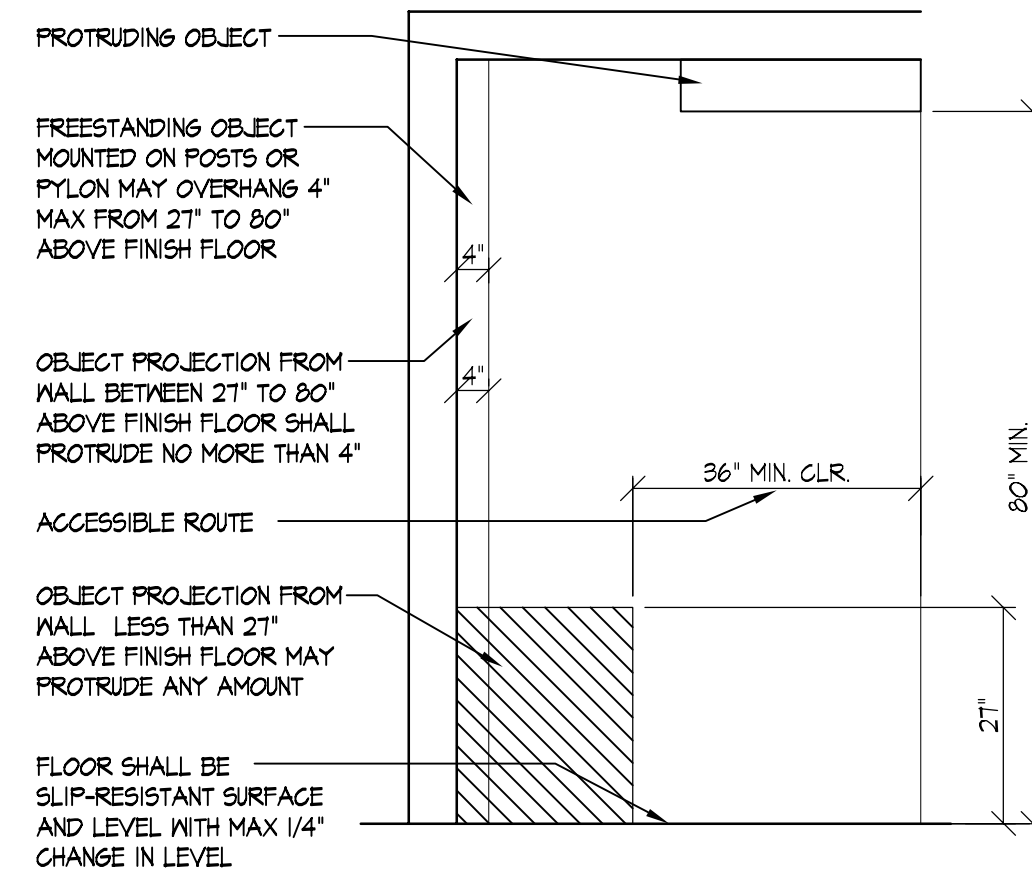
**9 GRAB BAR**  
SCALE: 3" = 1'-0"



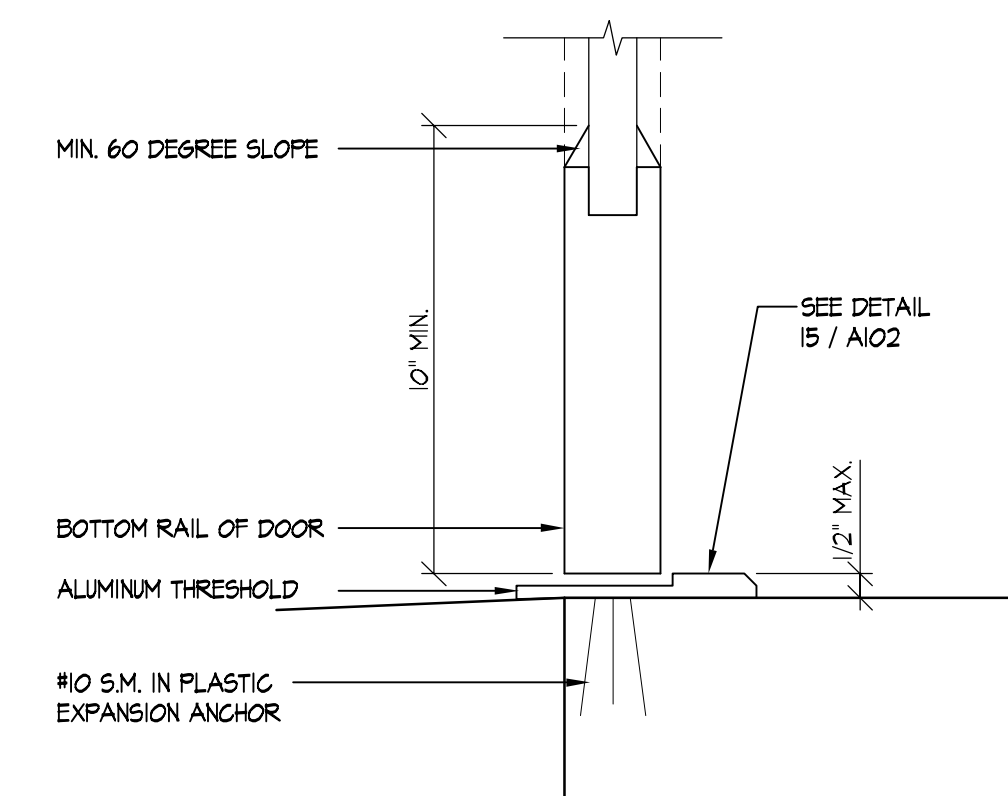
**5 MOUNTING HTS. AND CLEARANCES FOR ACCESSIBILITY BY THE DISABLED**  
SCALE: 3/8" = 1'-0"



**10 REACH RANGES**  
SCALE: N.T.S.



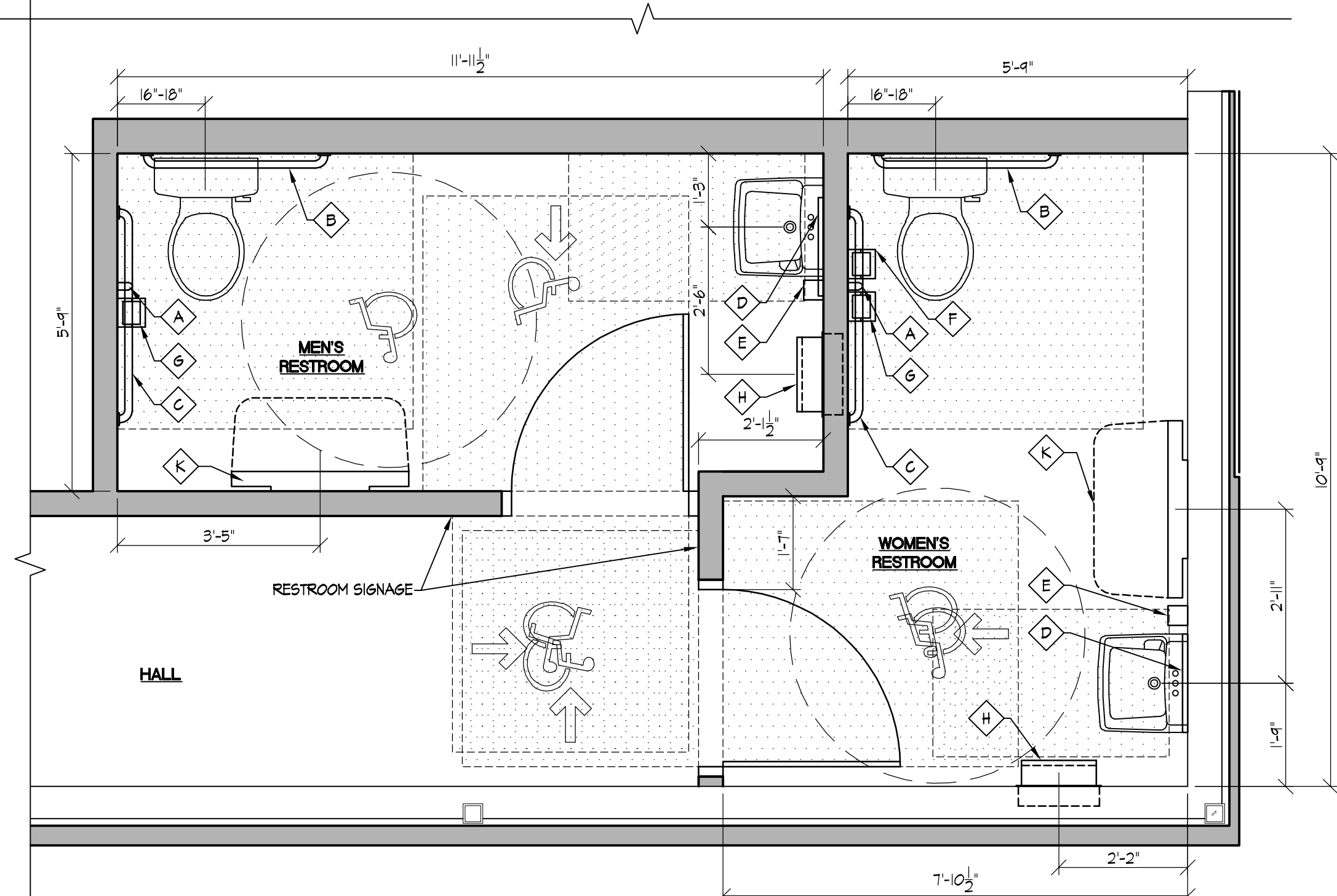
**6 INT. ACCESS. ROUTE CLEARANCES**  
SCALE: 1/2" = 1'-0"



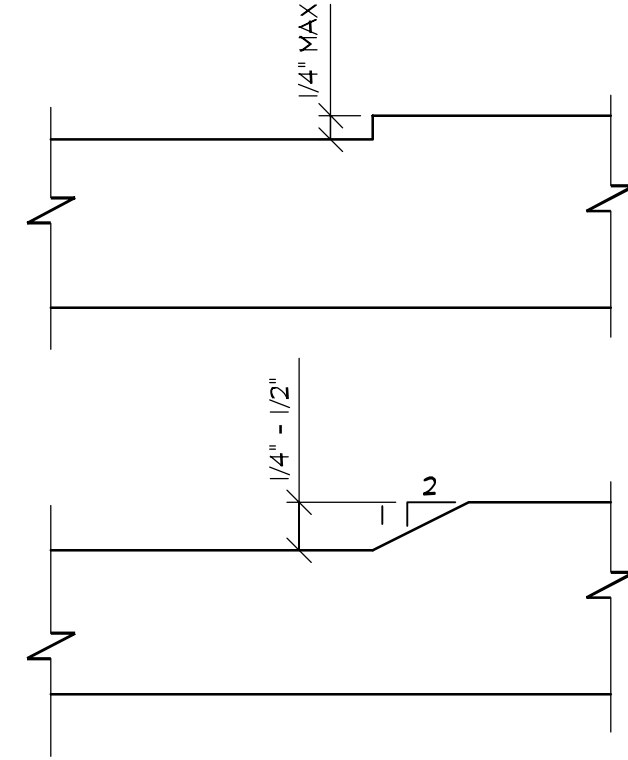
**2 BOTTOM RAIL (EXTERIOR DOOR)**  
SCALE: N.T.S.

RESTROOM ACCESSORIES		
DESCRIPTION/MANUFACTURER	DESCRIPTION/MANUFACTURER	DESCRIPTION/MANUFACTURER
VERTICAL GRAB BAR - 18" BOBRICK B-550	SOAP DISPENSER - SURFACE MOUNTED	NEW BABY CHANGING STATION
GRAB BAR - 36" BOBRICK B-550	SANITARY NAPKIN RECEPTACLE - SURFACE MOUNTED BOBRICK B-210 (IN WOMEN'S ONLY)	
GRAB BAR - 42" BOBRICK B-550	TOILET PAPER DISPENSER - SURFACE MOUNTED BOBRICK B-288B	
NEW MIRROR - 18" W x 30" H WITH TEMPERED GLASS. BOBRICK B-240	PAPER TOWEL DISPENSER + RECEPTACLE - RECESSED BOBRICK B-346	

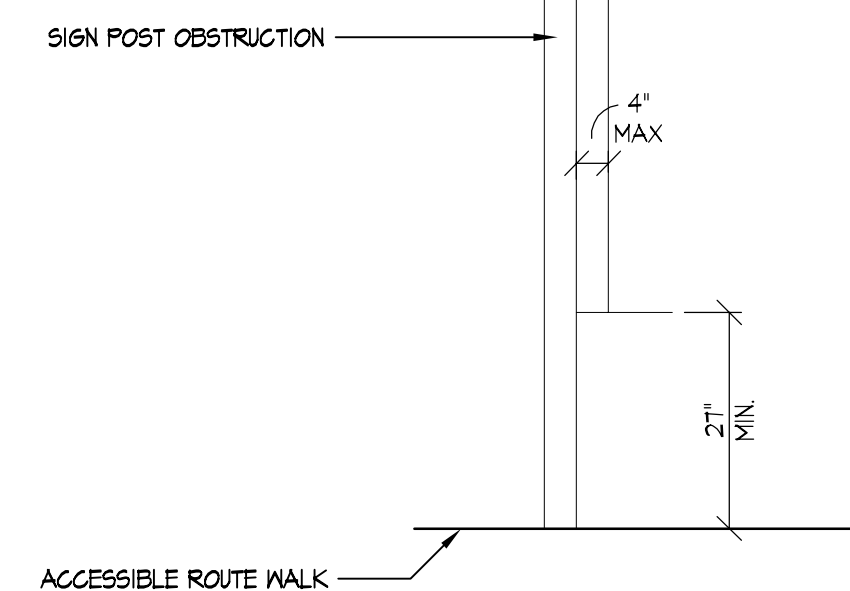
NOTES	
1.	UNLESS NOTED OTHERWISE (DIMENSIONED LOCATIONS), ALL NEW PLUMBING FIXTURES TO BE MOUNTED TO LOCATIONS VACATED BY PREVIOUS FIXTURES ONCE FINISHES ARE APPLIED.
2.	REFER TO ACCESSIBILITY GUIDELINES (THIS SHEET) FOR TYPICAL INSTALLATION.
3.	COORDINATE AUTOMATIC FLUSH VALVES WITH ELECTRICAL (WHERE APPLICABLE)



**20 ENLARGED RESTROOM PLAN AREA**  
SCALE: 1/2" = 1'-0"



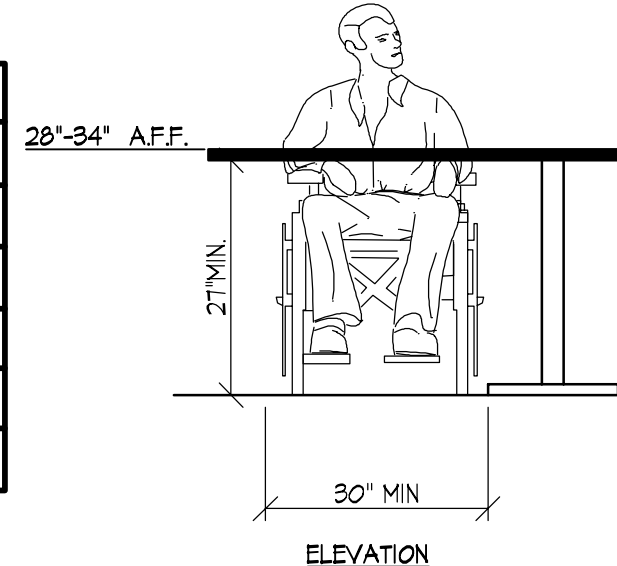
**11 CHANGES IN LEVEL**  
SCALE: N.T.S.



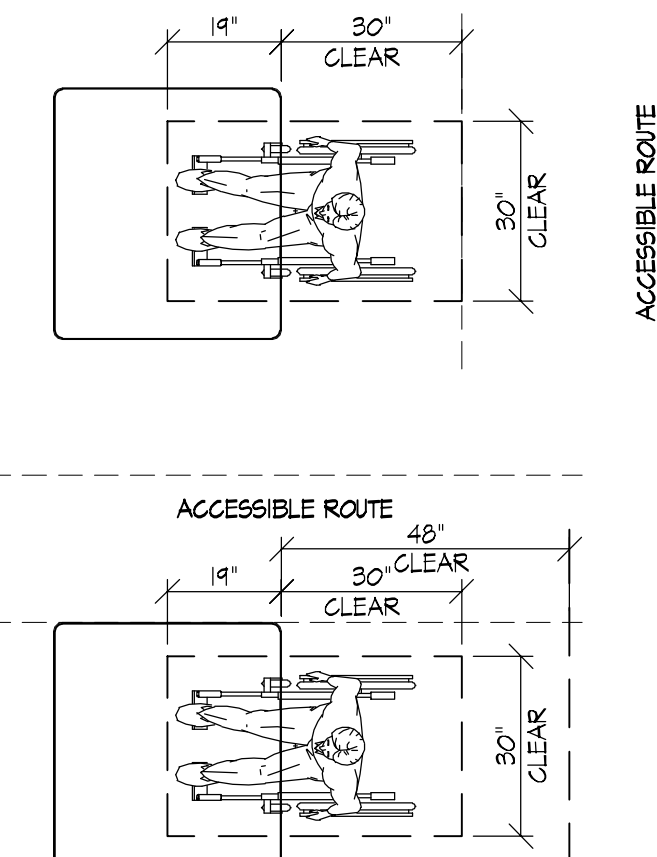
**7 PROTRUDING HAZARDS**  
SCALE: 1/2" = 1'-0"

TOTAL SEATS	ACCESSIBLE SEATS
1 - 20	1
21 - 40	2
41 - 60	3
61 - 80	4
81 - 100	5
101 - 120	6
121 - 140	7

NUMBER OF ACCESSIBLE SEATS



**12 SEATING AND TABLES**  
SCALE: N.T.S.



NOTE: MAINTAIN 44" MIN. CLEAR AISLE EGRESS PATHS TO EXIT DOORS.

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

- INDICATED DIMENSIONS, HEIGHTS, DEPTHS, AND OTHER GRAPHIC INFORMATION ARE PROVIDED AS MINIMUMS THAT MUST BE MAINTAINED. THESE MINIMUMS ARE BASED ON ARBY'S STANDARDS AND MAY EXCEED ADA REQUIREMENTS.
- ACCESS TO THESE FACILITIES SHALL BE PROVIDED AT PRIMARY ENTRANCES.
- THE SLOPE OF PUBLIC WALKS SHALL NOT EXCEED MAX. CROSS SLOPE 2%.
- WALKING SURFACES SLOPING GREATER THAN 2% SHALL BE SLIP RESISTANT.
- PROVIDE A 60" x 60" MIN. LANDINGS ON STRIKE EDGE OF DOOR WITH 44" MINIMUM WIDTH IN DIRECTION OF TRAVEL.
- WALKS SHALL EXTEND 24" TO THE SIDE OF THE STRIKE EDGE OF DOOR OR GATE THAT SWINGS TOWARD THE WALK.
- EVERY REQUIRED EXIT DOORWAY SHALL BE SIZED FOR A DOOR NOT LESS THAN 3'-0" WIDE BY 6'-8" HIGH CAPABLE OF OPENING 90 DEGREES AND MOUNTED SO THAT THE CLEAR WIDTH OF THE EXIT SHALL BE A MINIMUM OF 32".
- THRESHOLDS TO BE A MAXIMUM OF 1/4" ABOVE THE ADJACENT FINISHED FLOOR.
- MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 LBS FOR INTERIOR DOORS AND 15 LBS FOR EXTERIOR DOORS.
- THE BOTTOM 10" OF ALL DOORS EXCEPT AUTOMATIC SLIDERS SHALL HAVE A SMOOTH UNINTERRUPTED SURFACE.
- THE BUILDING SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) AND ANSI A117.1-2009, INCLUDING BUT NOT LIMITED TO OBC CHAPTER II.
- CONTROLS AND OPERATING MECHANISMS SHALL BE ACCESSIBLE AND HAVE MOUNTING HEIGHTS COMPLYING WITH ANSI 4.27.
- ALL ROOM, DIRECTIONAL, AND INFORMATION SIGNS SHALL BE ACCESSIBLE DESIGN COMPLYING WITH ANSI 4.13 AND 4.30.

**4 GENERAL ACCESSIBILITY NOTES**  
SCALE: N.T.S.

REGISTRATION SEAL

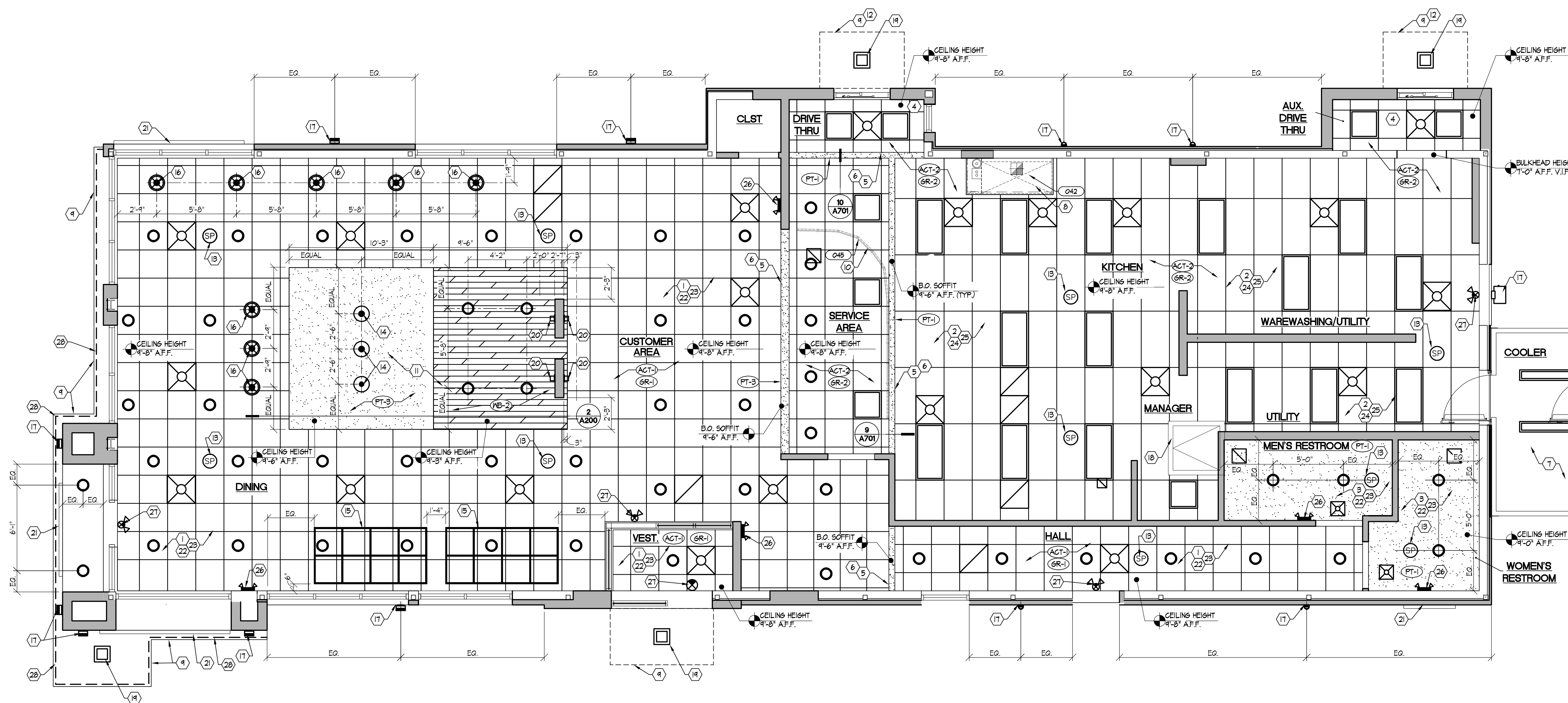
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209 S. CENTERVILLE RD.  
STURGIS, MI 49091  
STORE # X

PROJECT NO: 210109  
DRAWN BY: AM  
CHECKED BY: JMW  
ISSUE DATE: 03/18/22  
ACCESSIBILITY REQUIREMENTS

**A103**



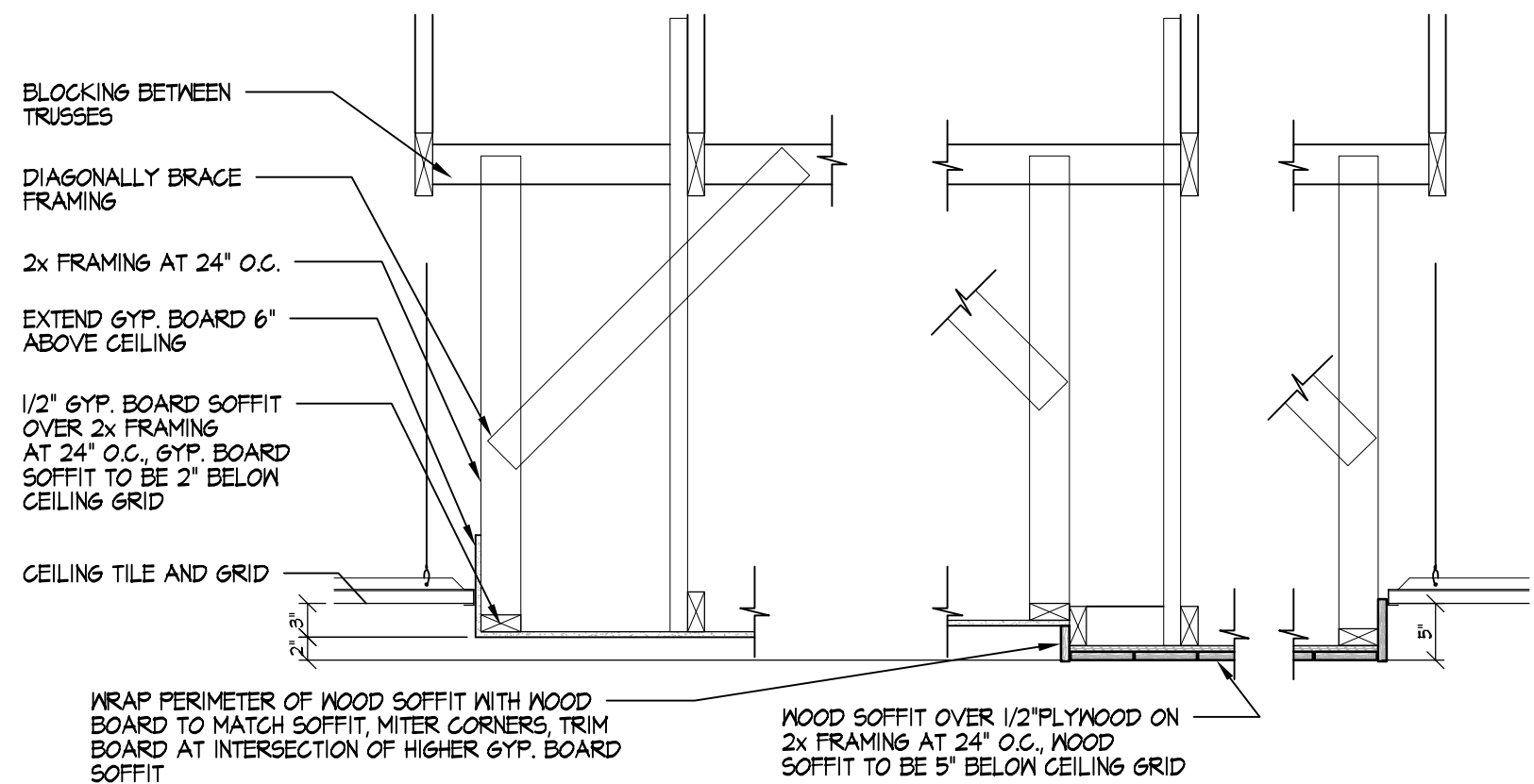
# 1 REFLECTED CEILING PLAN

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

NORTH

### STAINED WOOD PLANKS AND TRIM NOTES

- WOOD PLANKS ARE 48" L. X 5" HT TONGUE & GROOVE, THREE DIFFERENT STAIN LOTS PER STORE ORDER.
- PLAN SHIPPING BOXES ARE MARKED WITH THE STAIN DESIGNATION: "DARK-MEDIUM-LIGHT"
- WOOD TRIM STICKS, 1" X 1/2" EACH FOR AROUND DOORWAYS AND INSIDE CORNERS (LIGHT STAINED).
- WOOD OUTSIDE CORNER TRIM, 1 1/2" X 1 1/2" X 6" EACH FOR OUTSIDE CORNERS (LIGHT STAINED).
- SOME STORES, NOT ALL, HAVE PLANKS DESIGNATED FOR CEILING APPLICATION.
- CUT WOOD PLANKS IN HALF (48" L) FOR RANDOM MIX INSTALLATION OF THE THREE DIFFERENT STAINED LOTS



# 2 SECTION AT WOOD CEILING FEATURE

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

- ### KEYED NOTES
- NEW SUSPENDED ACOUSTICAL CEILING TILE AT FRONT OF HOUSE REFER TO FINISH SCHEDULE ON SHEET A600 FOR SPECIFICATION.
  - NEW SUSPENDED VINYL FACED CEILING TILE AT BACK OF HOUSE REFER TO FINISH SCHEDULE ON SHEET A600 FOR SPECIFICATION.
  - NEW GYP. BOARD CEILINGS ON 2X6 FRAMING. SEE A600 FOR FINISH SPECIFICATION.
  - SEE ELECTRICAL/EQUIPMENT VENDOR DRAWINGS FOR EXACT LOCATIONS OF MONITORS.
  - NEW GYP. BD. SOFFIT TO RECEIVE NEW PAINT.
  - ALIGN EDGE OF SOFFIT WITH CORNER OF MALL.
  - COOLER/FREEZER LIGHT FIXTURES PROVIDED BY OWNER AS PART OF COOLER/FREEZER PACKAGE, INSTALLED BY G.C.
  - EXHAUST HOOD WITH VAPOR PROOF LIGHTS PROVIDED BY HOOD MFR. REFER TO HOOD DRAWINGS.
  - NEW CANOPY/ACCENT BAND.
  - NEW MENU BOARD FURNISHED BY OWNER AND INSTALLED BY G.C. MOUNT BELOW SOFFIT.
  - NEW DROP CEILING FEATURE. COORDINATE/VERIFY POSITION WITH DECOR DRAWINGS.
  - CENTER DRIVE THRU CANOPY ON DRIVE THRU WINDOW.
  - SPEAKER WITH ADJUSTABLE VOLUME. CONCEAL ALL WIRING ABOVE CEILING.
  - ALIGN PENDANT FIXTURES OVER COMMUNAL TABLE REFER TO COORDINATE WITH DECOR DRAWINGS/ FINAL LOCATIONS IN FIELD.
  - NEW SLATTED CEILING BOX BY DECOR VENDOR. INSTALLED BY G.C. G.C. TO ATTACH SLATTED CEILING BOX TO STRUCTURE ABOVE WITH ALL THREAD PROPERLY SECURED.
  - NEW PENDANT LIGHTS CENTER ON TABLES/ BAR BELOW COORDINATE WITH DECOR DRAWINGS/ FINAL LOCATIONS IN FIELD.
  - WALL MOUNTED (EXTERIOR) LIGHT FIXTURE. SEE SHEETS A400, A401, AND ELECTRICAL DRAWINGS.
  - ROOF ACCESS HATCH
  - NEW LIGHTING IN CANOPY BY SIGN VENDOR AS NOTED. PROVIDE POWER AS REQUIRED - SEE ELECTRICAL DRAWINGS FOR MORE INFO.
  - INTERIOR WALL SCONCE. SEE DECOR DRAWINGS.
  - NEW SIGNAGE BY SIGNAGE VENDOR. UNDER SEPARATE PERMIT.
  - NEW 8\"/>

### CEILING FIXTURE LEGEND

SYMBOL	DESCRIPTION
	HVAC SUPPLY DIFFUSERS TO BE PAINTED, NEW DIFFUSERS TO BE BEIGE
	HVAC RETURN DIFFUSERS TO BE PAINTED, NEW DIFFUSERS TO BE BEIGE
	NEW SPEAKER
	EXISTING/NEW EMERGENCY LIGHT FIXTURE. SEE ELECTRICAL
	NEW EXIT LIGHT FIXTURE
	NEW RECESSED CAN LIGHT FIXTURE. SEE ELECTRICAL
	NEW GLASS PENDANT LIGHT. SEE DECOR DRAWINGS AND ELECTRICAL
	NEW BRONZE PENDANT LIGHT. SEE DECOR DRAWINGS AND ELECTRICAL
	2x4 TROFFER. SEE ELECTRICAL SHEETS.
	NEW COOLER/FREEZER LIGHT FIXTURE. VERIFY/COORDINATE WITH WALK IN UNIT VENDOR. SEE ELECTRICAL SHEETS.
	2x2 TROFFER. SEE ELECTRICAL SHEETS.
	NEW EXTERIOR WALL PACK. SEE ELECTRICAL DRAWINGS.
	NEW EXTERIOR SCONCE FIXTURE. SEE ELECTRICAL DRAWINGS.
	NEW EXTERIOR WALL PACK AT SERVICE DOOR

- ### GENERAL NOTES
- CENTER ACOUSTIC CEILING SYSTEM GRID WITHIN EACH ROOM UNLESS NOTED OTHERWISE.
  - SEE MECHANICAL AND ELECTRICAL SHEETS FOR HVAC DEVICE AND LIGHT FIXTURE LOCATIONS.
  - EXPOSED INSULATION TO HAVE A FLAME SPREAD RATING OF 25 OR LESS & A SMOKE DEVELOPMENT RATING OF 450 OR LESS PER IBC 114.5
  - CONCEALED INSULATION TO HAVE A FLAME SPREAD RATING OF 25 OR LESS & A SMOKE DEVELOPMENT RATING OF 450 OR LESS PER IBC 114.2
  - MATERIALS IN FLETHM SPACES SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE - DEVELOPED INDEX OF NOT MORE THAN 50 PER IMC 602.21.
  - STUD CONTRACTOR TO COORDINATE FRAMING AROUND HVAC DUCTS, PIPES, CONDUITS AND OTHER ITEMS LOCATED ABOVE FINISHED CEILING
  - SEE ELECTRICAL DRAWINGS FOR SWITCHING AND CIRCUIT INFORMATION.
  - REFER TO THE DECOR DRAWINGS PRIOR TO FRAMING THE BULKHEAD OVER THE SEATING AREA. DIMENSIONS ARE SUBJECT TO CHANGE BASED ON SEATING LAYOUT.
  - ALL EDGE TRACKS OF FRP WALLS ARE TO BE SEALED TO WALL AND ALL CEILING TILE PENETRATIONS TO HAVE TRIM ALONG EDGES, TYPICAL THROUGHOUT.
  - REFER TO DECOR DRAWINGS FOR ALL DECORATIVE LIGHTING LOCATIONS AND DECORATIVE CEILING TREATMENTS. G.C. IS TO CONFIRM WITH OWNER IF THESE ITEMS ARE PROVIDED BY OWNER.
  - T-BAR SYSTEM IS TO BE HEAVY DUTY
  - ALL CEILING GRID PADS IN VESTIBULES TO BE CLIPPED DOWN.

### CEILING PLAN LEGEND

	NEW GYP. BD. CEILING WHERE NOTED. SEE PLAN
	NEW TONGUE AND GROOVE CEILING
	2x2 CEILING GRID AND TILE. SEE KEYED NOTES AND PLAN NOTES FOR REQUIREMENTS.
	2x4 CEILING GRID AND TILE. SEE KEYED NOTES AND PLAN NOTES FOR REQUIREMENTS.
	KEYED NOTE
	FINISH TYPE - SEE A600 FOR FINISH SCHEDULE

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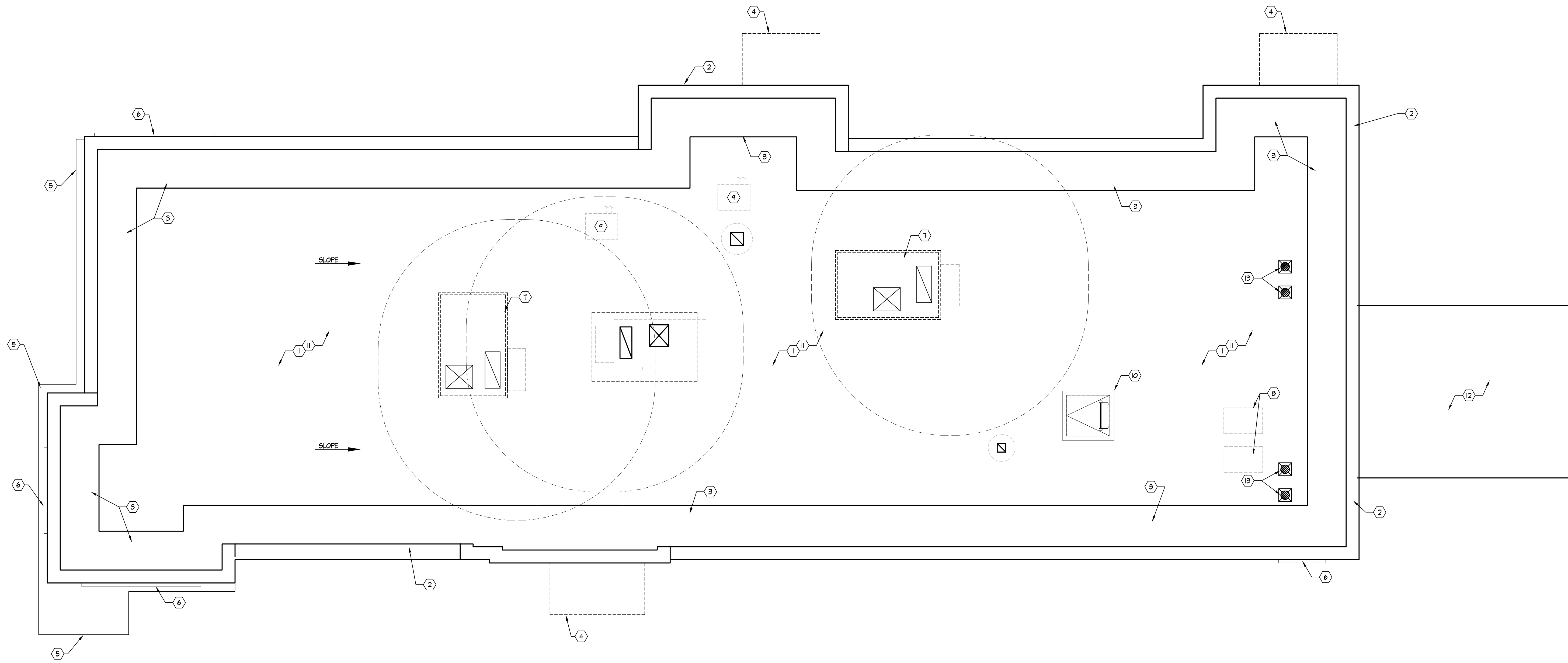
REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
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CHECKED BY: JMW  
ISSUE DATE: 03/18/22

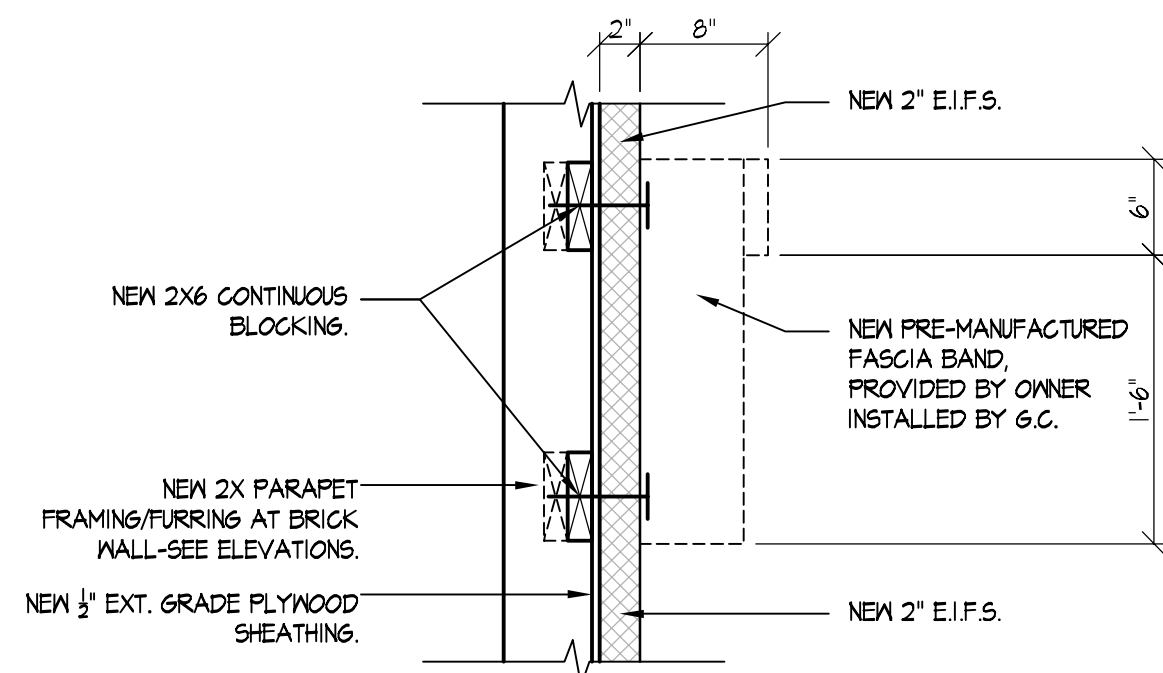
A200

REFLECTED CEILING PLAN





**1 ROOF PLAN**  
SCALE: 1/4" = 1'-0"



**2 BLOCKING DETAIL • FASCIA BAND**  
SCALE: 1" = 1'-0"

**KEYED NOTES**

- 1 NEW TAPERED ROOF INSULATION AND ROOF MEMBRANE.
- 2 NEW PARAPET CONSTRUCTION. SEE ELEVATIONS AND WALL SECTIONS.
- 3 NEW KICKERS ON PARAPET. SEE STRUCTURAL FOR DETAILS.
- 4 NEW PRE-MANUFACTURED DRIVE THRU CANOPY ATTACHED TO EXISTING STRUCTURE. G.C. TO PROVIDE BLOCKING FOR CANOPY SUPPORT. SIGNAGE VENDOR TO SUPPLY AND INSTALL CANOPY.
- 5 NEW PRE-MANUFACTURED FASCIA BAND ATTACHED TO EXISTING STRUCTURE. G.C. TO PROVIDE BLOCKING FOR FASCIA SUPPORT. SIGNAGE VENDOR TO SUPPLY AND INSTALL FASCIA BAND.
- 6 NEW SIGNAGE LOCATION. G.C. TO PROVIDE BLOCKING FOR SIGN SUPPORT. VERIFY BLOCKING & ATTACHMENT CONDITIONS WITH SIGNAGE VENDOR. SIGNAGE VENDOR TO SUPPLY AND INSTALL SIGNAGE.
- 7 EXISTING ROOF TOP UNITS TO REMAIN. TYP. UNQ. SEE MECH. DWGS. FOR ADDITIONAL INFORMATION. PROTECT ALL UNITS TO REMAIN AS REQUIRED DURING CONSTRUCTION.
- 8 NEW ICE CONDENSER FOR WALK-IN FREEZER/COOLER. SEE MECH. DWGS. FOR ADDITIONAL INFORMATION.
- 9 NEW ICE CONDENSER FOR ICE MACHINE. SEE MECH. DWGS. FOR ADDITIONAL INFORMATION.
- 10 NEW ROOF ACCESS HATCH. INSTALL PER MANUFACTURER DETAILS, ON STANDARD ROOF CURB.
- 11 CAP EXISTING ROOF CURBS AFTER REMOVAL OF EXHAUST FAN AND CONDENSING UNITS.
- 12 WALK-IN UNITS BELOW ROOF BY UNIT MANUFACTURER.
- 13 NEW DRAIN AND OVERFLOW. COORDINATE CONNECTION WITH EXISTING LEADER OUTLET. INSTALL PER MANUFACTURER DETAIL FOR ROOF CONDITION.

**GENERAL NOTES**

- A. AT LEAST ONE RESTROOM MUST BE AVAILABLE DURING ALL PERIODS OF OPERATION.
- B. ALL REMODELING WORK MUST BE INITIATED IN A MANNER TO ELIMINATE THE POSSIBILITY OF DUST, DEBRIS OR CONTAMINANTS GETTING INTO THE ACTIVE PART OF THE FACILITY.
- C. G.C. TO VERIFY EQUIPMENT LOCATION WITH PROJECT MANAGER PRIOR TO INSTALLATION.
- D. GENERAL CONTRACTOR TO VERIFY ALL EXISTING ELEVATIONS AND BUILDING CONDITIONS IN FIELD PRIOR TO START OF CONSTRUCTION.

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STORE # X

NAME

DESCRIPTION

REV.

DATE

PROJECT NO: 210109  
DRAWN BY: AM/ME  
CHECKED BY: JMW

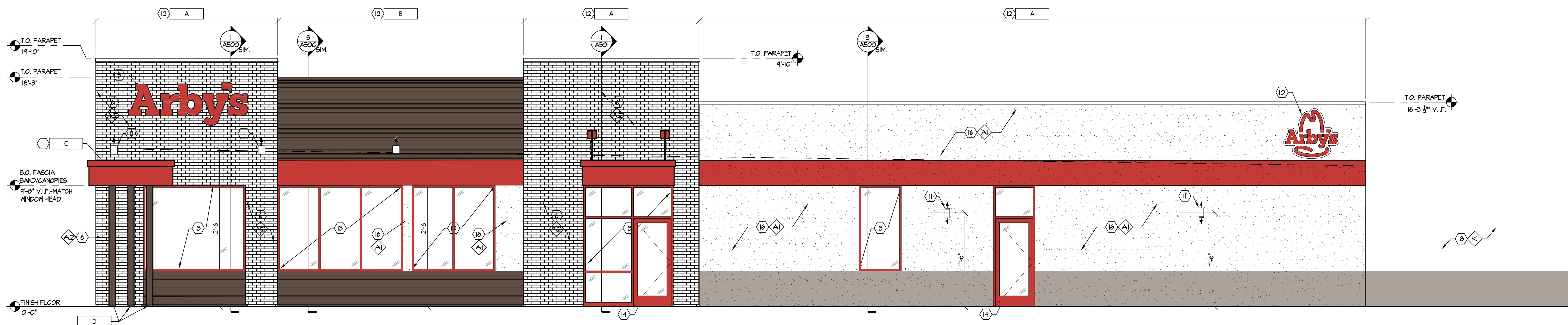
ISSUE DATE:  
03/18/22

ROOF PLAN

**A300**



**1 EAST (FRONT) ELEVATION**  
SCALE: 1/4"=1'-0"



**2 NORTH (SIDE ENTRY) ELEVATION**  
SCALE: 1/4"=1'-0"

FINISH SCHEDULE			
MARK	MANUF	DESCRIPTION	NOTES
FINISHES			
A	NICHHA	EXTERIOR WALL PANEL	COLOR: ARBY01030 TEXTURE: STANDARD
A2	NICHHA	BRICK STAMPED PANEL 28 PT. 3/8" NEW YORK STYLE TEMPLATE	BRICK COLOR: ARBY12022, QUARTZITZ GROUT COLOR: ARBY11004
C	NICHHA	EXTERIOR WALL PANEL WITH V-GROOVE REVEAL MATCHES COLOR	COLOR: ARBY13030 TEXTURE: SANDBLAST
D	SHERWIN WILLIAMS	SW #6864 STOP	SATIN FINISH
F	SHERWIN WILLIAMS	SW #7024 FUNCTIONAL GRAY	SATIN FINISH
G	SHERWIN WILLIAMS	SW #2808 ROCKWOOD DARK BROWN	SATIN FINISH
K	SHERWIN WILLIAMS	SW #7005 PURE WHITE	SATIN FINISH
METALS			
A	EXCEPTIONAL METALS/ DURO-LAST	TWO-PIECE SNAP-ON METAL COPING REGAL WHITE/ DURO-LAST #8R70/TE8T	FOR USE WITH DURO- LAST ROOFING SYSTEM DETAIL FABIO
B	EXCEPTIONAL METALS/ DURO-LAST	TWO-PIECE SNAP-ON METAL COPING DARK BRONZE/ DURO-LAST #8R70/TE8T	FOR USE WITH DURO- LAST ROOFING SYSTEM DETAIL FABIO
C	PRE-FABRICATED CANOPY/BAND	PRODUCT CODE: 9940-3048R PRODUCT NAME: FC 5D RAL --- 3000 FLAME RED	
D	PRE-FABRICATED POST	PRODUCT CODE: 1040-3045TR PRODUCT NAME: FC 5D RAL --- 8017 CHOC. BROWN	
NOTES			
1. PAINT ALL EXPOSED METERS, SERVICE ENTRANCES, GAS PIPE, ROOF ACCESS LADDER, ETC. TO MATCH ADJACENT EXTERIOR WALL SURFACE.			
2. MAKE SURE THAT WALL KEEPS AND FLASHINGS ARE INSTALLED CORRECTLY. DO NOT BLOCK KEEPS.			
3. ALL EXTERIOR GLAZING TO BE 1" INSULATED GLAZING - PROVIDE TEMPERED GLAZING UNITS WITHIN 24 INCHES OF ALL SIDES OF EVERY DOOR AND MINIMUM 24 INCHES ABOVE FLOOR LEVEL.			
4. SIGNAGE IS SHOWN FOR REFERENCE ONLY. FINAL SIZE, LOCATION AND QUANTITY TO BE DETERMINED BY SIGNAGE VENDOR. SIGNAGE VENDOR SHALL PERMIT ALL SIGNS UNDER SEPARATE COVER.			

DESIGN NOTES (X)	
1. INSTALL CANOPY/ACCENT BAND AT 9'-8" AFF. COORDINATE WITH TOP OF WINDOW FRAME.	12. NEW PARAPET CAP ON NEW PARAPET. SEAL JOINTS.
2. CENTER DRIVE THRU CANOPY ON DRIVE THRU WINDOW.	13. NEW STOREFRONT ASSEMBLY. SEE WINDOW TYPES A100, A600.
3. APPLY RED PAINTED ACCENT BAND AT 9'-8" AFF. (TOP OF WINDOW FRAME) WRAP/EXTEND PAINT AT STEPPED CONDITIONS.	14. NEW STOREFRONT DOOR. SEE A100, A600.
4. NEW ARBY'S HAT SIGN CENTERED ON BRICK PATTERN NICHHA BY SIGN VENDOR.	15. NEW BOLLARD.
5. NEW ARBY'S SIGN MOUNTED ON BRICK PATTERN NICHHA, BY SIGN VENDOR.	16. NEW NICHHA PANEL FINISH WALL SURFACE AS NOTED.
6. INSTALL BRICK PATTERNED NICHHA.	17. PRIME PAINT NEW DOOR AND FRAME AS NOTED.
7. INSTALL BROWN NICHHA WITH 4" O.C. V-GROOVES.	18. NEW WALK-IN COOLER. PAINT AS INDICATED.
8. INSTALL BROWN NICHHA WITH 8" O.C. V-GROOVES.	19. NEW ARBY'S SIGN, BY SIGNAGE VENDOR. COORDINATE EXACT LOCATION AND DETAILS WITH SIGNAGE VENDOR, UNDER SEPARATE LIMIT.
9. NEW DRIVE THRU WINDOW. SEE A100, A600.	20. NEW ARBY'S HAT SIGN, BY SIGNAGE VENDOR. COORDINATE EXACT LOCATION AND DETAILS WITH SIGNAGE VENDOR, UNDER SEPARATE LIMIT.
10. NEW ARBY'S HAT SIGN, BY SIGNAGE VENDOR. COORDINATE EXACT LOCATION AND DETAILS WITH SIGNAGE VENDOR, UNDER SEPARATE LIMIT.	21. INSTALL WALL MOUNTED LIGHT FIXTURE. SEE ELECTRICAL.

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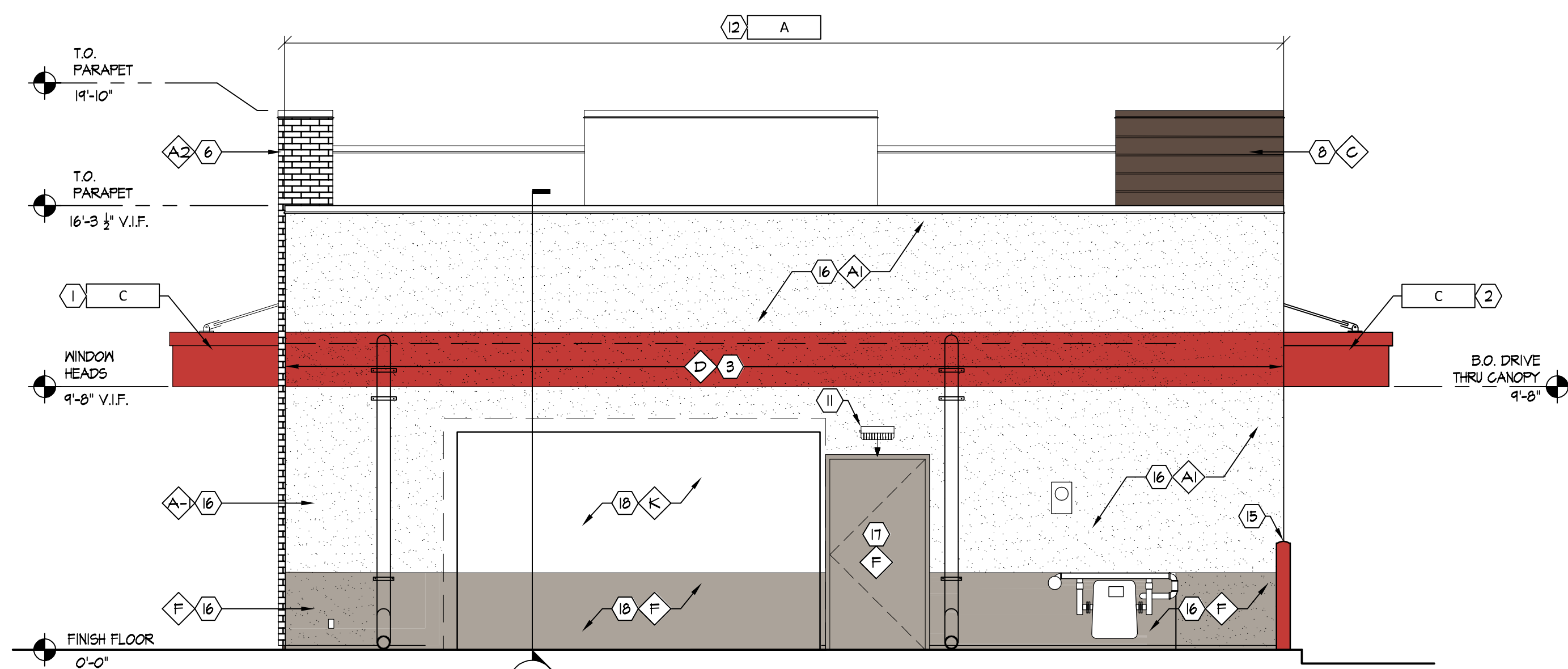
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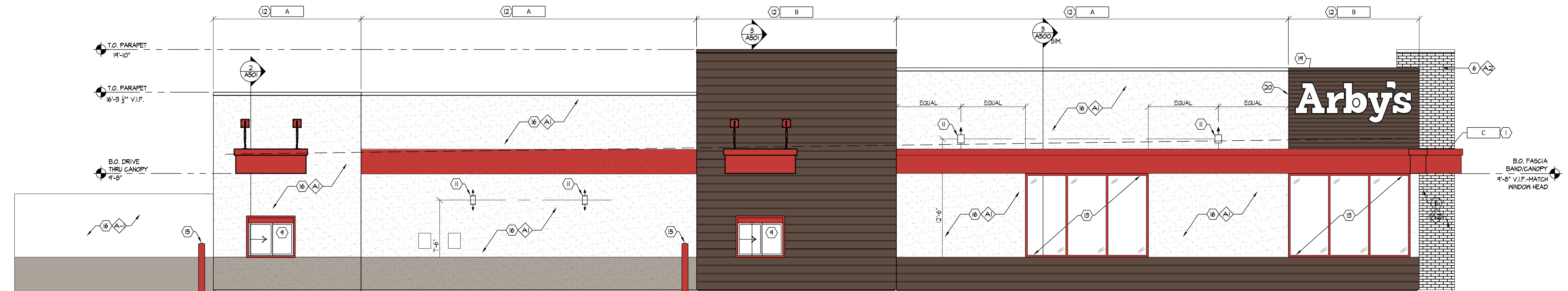
PROJECT NO: 210109  
DRAWN BY: ME/AM  
CHECKED BY: JMW  
ISSUE DATE: 03/18/22  
EXTERIOR ELEVATIONS

A400





**1 WEST (BACK) ELEVATION**  
SCALE: 1/4"=1'-0"



**2 SOUTH (DRIVE-THRU) ELEVATION**  
SCALE: 1/4"=1'-0"

FINISH SCHEDULE			
MARK	MANUF	DESCRIPTION	NOTES
FINISHES			
(A)	NCHHA	EXTERIOR WALL PANEL	COLOR: ARBY01030 TEXTURE: STANDARD
(A-2)	NCHHA	BRICK STAMPED PANEL 28 FT. 3/8" NEW YORK STYLE TEMPLATE	BRICK COLOR: ARBY12022, QUARTZIT GROUT COLOR: ARBY11004
(C)	NCHHA	EXTERIOR WALL PANEL WITH V-GROOVE REVEAL MATCHES COLOR (A)	COLOR: ARBY13030 TEXTURE: SANDBLAST
(D)	SHERWIN WILLIAMS	SW #6864 STOP	SATIN FINISH
(F)	SHERWIN WILLIAMS	SW #T024 FUNCTIONAL GRAY	SATIN FINISH
(G)	SHERWIN WILLIAMS	SW #2808 ROCKWOOD DARK BROWN	SATIN FINISH
(K)	SHERWIN WILLIAMS	SW #T005 PURE WHITE	SATIN FINISH
METALS			
(A)	EXCEPTIONAL METALS/ DURO-LAST	TWO-PIECE SNAP-ON METAL COPING REGAL WHITE/ DURO-LAST #8RTO/TE8T	FOR USE WITH DURO- LAST ROOFING SYSTEM DETAIL FABIO
(B)	EXCEPTIONAL METALS/ DURO-LAST	TWO-PIECE SNAP-ON METAL COPING DARK BRONZE/ DURO-LAST #8RTO/TE8T	FOR USE WITH DURO- LAST ROOFING SYSTEM DETAIL FABIO
(C)	PRE- FABRICATED CANOPY/BAND	PRODUCT CODE: 9940-3018R PRODUCT NAME: FC 5D RAL --- 3000 FLAME RED	
(D)	PRE- FABRICATED POST	PRODUCT CODE: 1040-3015TR PRODUCT NAME: FC 5D RAL --- 801T CHOC. BROWN	
NOTES			
1. PAINT ALL EXPOSED METERS, SERVICE ENTRANCES, GAS PIPE, ROOF ACCESS LADDER, ETC. TO MATCH ADJACENT EXTERIOR WALL SURFACE.			
2. MAKE SURE THAT WALL KEEPS AND FLASHING ARE INSTALLED CORRECTLY. DO NOT BLOCK KEEPS.			
3. ALL EXTERIOR GLAZING TO BE 1" INSULATED GLAZING - PROVIDE TEMPERED GLAZING UNITS WITHIN 24 INCHES OF ALL SIDES OF EVERY DOOR AND MINIMUM 24 INCHES ABOVE FLOOR LEVEL.			
4. SIGNAGE IS SHOWN FOR REFERENCE ONLY. FINAL SIZE LOCATION AND QUANTITY TO BE DETERMINED BY SIGNAGE VENDOR. SIGNAGE VENDOR SHALL PERMIT ALL SIGNS UNDER SEPARATE COVER.			

DESIGN NOTES (X)	
(1) INSTALL CANOPY/ACCENT BAND AT 4'-8" AFF. COORDINATE WITH TOP OF WINDOW FRAME	(2) NEW PARAPET CAP ON NEW PARAPET. SEAL JOINTS.
(2) CENTER DRIVE THRU CANOPY ON DRIVE THRU WINDOW	(3) NEW STOREFRONT ASSEMBLY. SEE WINDOW TYPES A100, A600
(3) APPLY RED PAINTED ACCENT BAND AT 4'-8" AFF. (TOP OF WINDOW FRAME) WRAP/EXTEND PAINT AT STEPPED CONDITIONS.	(4) NEW STOREFRONT DOOR. SEE A100, A600.
(4) NEW ARBY'S HAT SIGN CENTERED ON BRICK PATTERN NCHHA BY SIGN VENDOR.	(5) NEW BOLLARD.
(5) NEW ARBY'S SIGN MOUNTED ON BRICK PATTERN NCHHA BY SIGN VENDOR.	(6) NEW NCHHA PANEL FINISH SURFACE AS NOTED.
(6) INSTALL BRICK PATTERNED NCHHA.	(7) PRIME PAINT NEW DOOR AND FRAME AS NOTED.
(7) INSTALL BROWN NCHHA WITH 4" O.C. V-GROOVES.	(8) NEW WALK-IN COOLER. PAINT AS INDICATED.
(8) INSTALL BROWN NCHHA WITH 8" O.C. V-GROOVES	(9) NEW ARBY'S SIGN. BY SIGNAGE VENDOR-COORDINATE EXACT LOCATION AND DETAILS WITH SIGNAGE VENDOR, UNDER SEPARATE LIMIT.
(9) NEW DRIVE THRU WINDOW. SEE A100, A600.	(10) NEW ARBY'S HAT SIGN. BY SIGNAGE VENDOR-COORDINATE EXACT LOCATION AND DETAILS WITH SIGNAGE VENDOR, UNDER SEPARATE LIMIT.
(10) NEW ARBY'S HAT SIGN. BY SIGNAGE VENDOR-COORDINATE EXACT LOCATION AND DETAILS WITH SIGNAGE VENDOR, UNDER SEPARATE LIMIT.	(11) INSTALL WALL MOUNTED LIGHT FIXTURE. SEE ELECTRICAL.
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(12) NEW PARAPET CAP ON NEW PARAPET. SEAL JOINTS.	(13) NEW STOREFRONT ASSEMBLY. SEE WINDOW TYPES A100, A600
(13) NEW STOREFRONT ASSEMBLY. SEE WINDOW TYPES A100, A600	(14) NEW BOLLARD.
(14) NEW BOLLARD.	(15) NEW NCHHA PANEL FINISH SURFACE AS NOTED.
(15) NEW NCHHA PANEL FINISH SURFACE AS NOTED.	(16) PRIME PAINT NEW DOOR AND FRAME AS NOTED.
(16) PRIME PAINT NEW DOOR AND FRAME AS NOTED.	(17) NEW WALK-IN COOLER. PAINT AS INDICATED.
(17) NEW WALK-IN COOLER. PAINT AS INDICATED.	(18) NEW ARBY'S SIGN. BY SIGNAGE VENDOR-COORDINATE EXACT LOCATION AND DETAILS WITH SIGNAGE VENDOR, UNDER SEPARATE LIMIT.
(18) NEW ARBY'S SIGN. BY SIGNAGE VENDOR-COORDINATE EXACT LOCATION AND DETAILS WITH SIGNAGE VENDOR, UNDER SEPARATE LIMIT.	(19) NEW DRIVE THRU WINDOW. SEE A100, A600.
(19) NEW DRIVE THRU WINDOW. SEE A100, A600.	(20) REVEAL/PANEL JOINT AT FINISH/COLOR TRANSITION.
(20) REVEAL/PANEL JOINT AT FINISH/COLOR TRANSITION.	

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**Arby's**

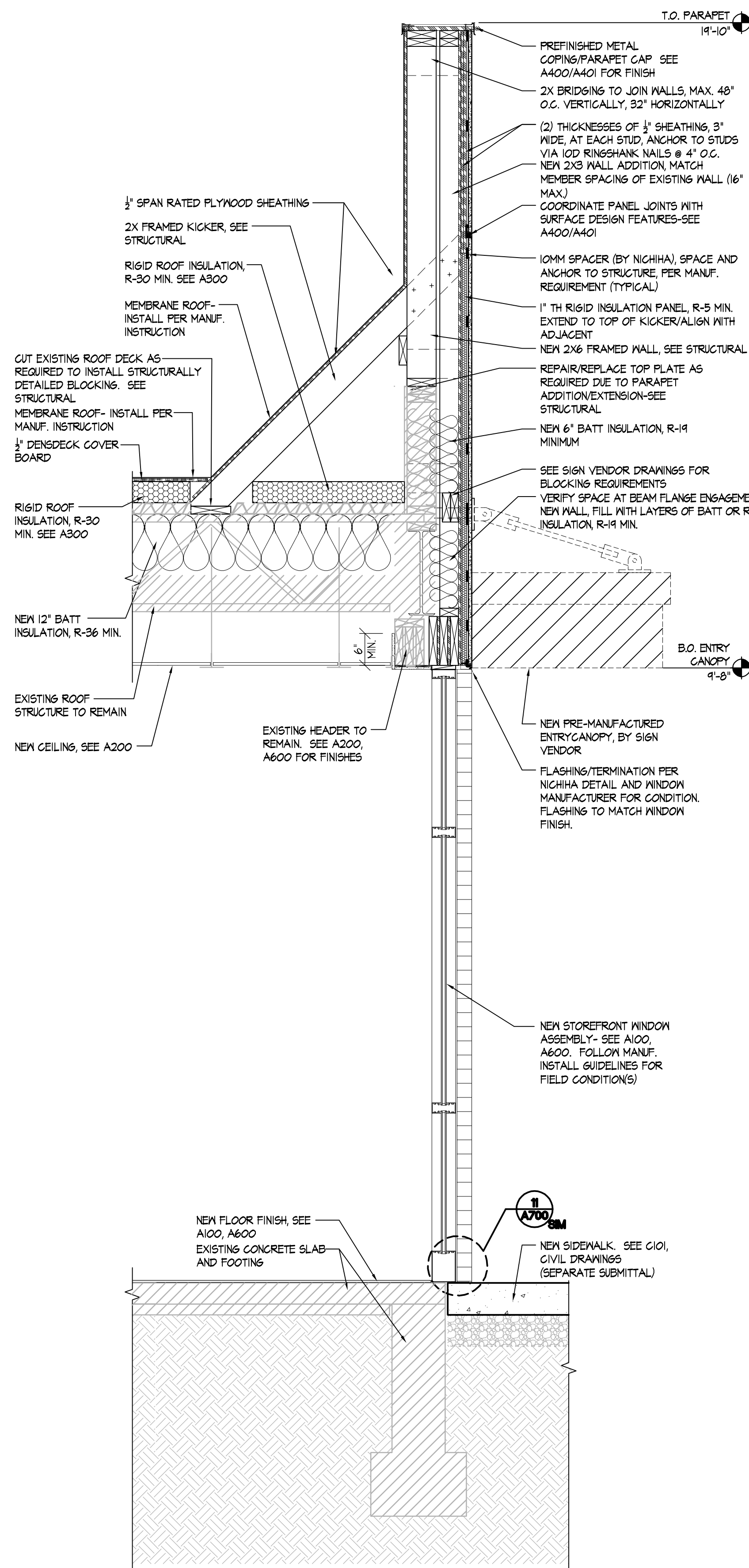
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209 S. CENTERVILLE RD.  
STURGIS, MI 49091  
STORE # X

REV.	DATE	DESCRIPTION

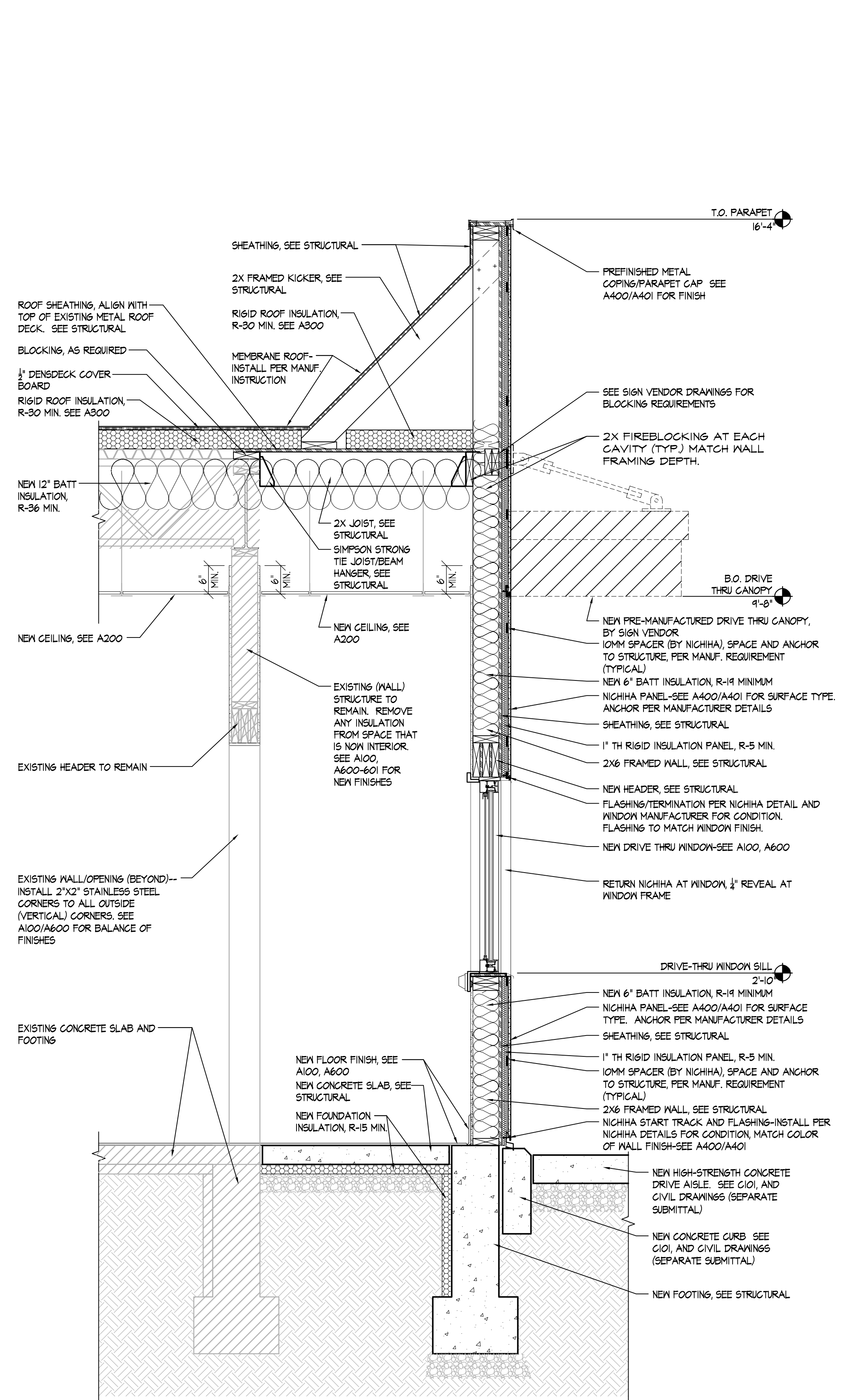
PROJECT NO: 210109  
DRAWN BY: ME/AM  
CHECKED BY: JMW  
ISSUE DATE: 03/18/22  
**EXTERIOR ELEVATIONS**  
**A401**



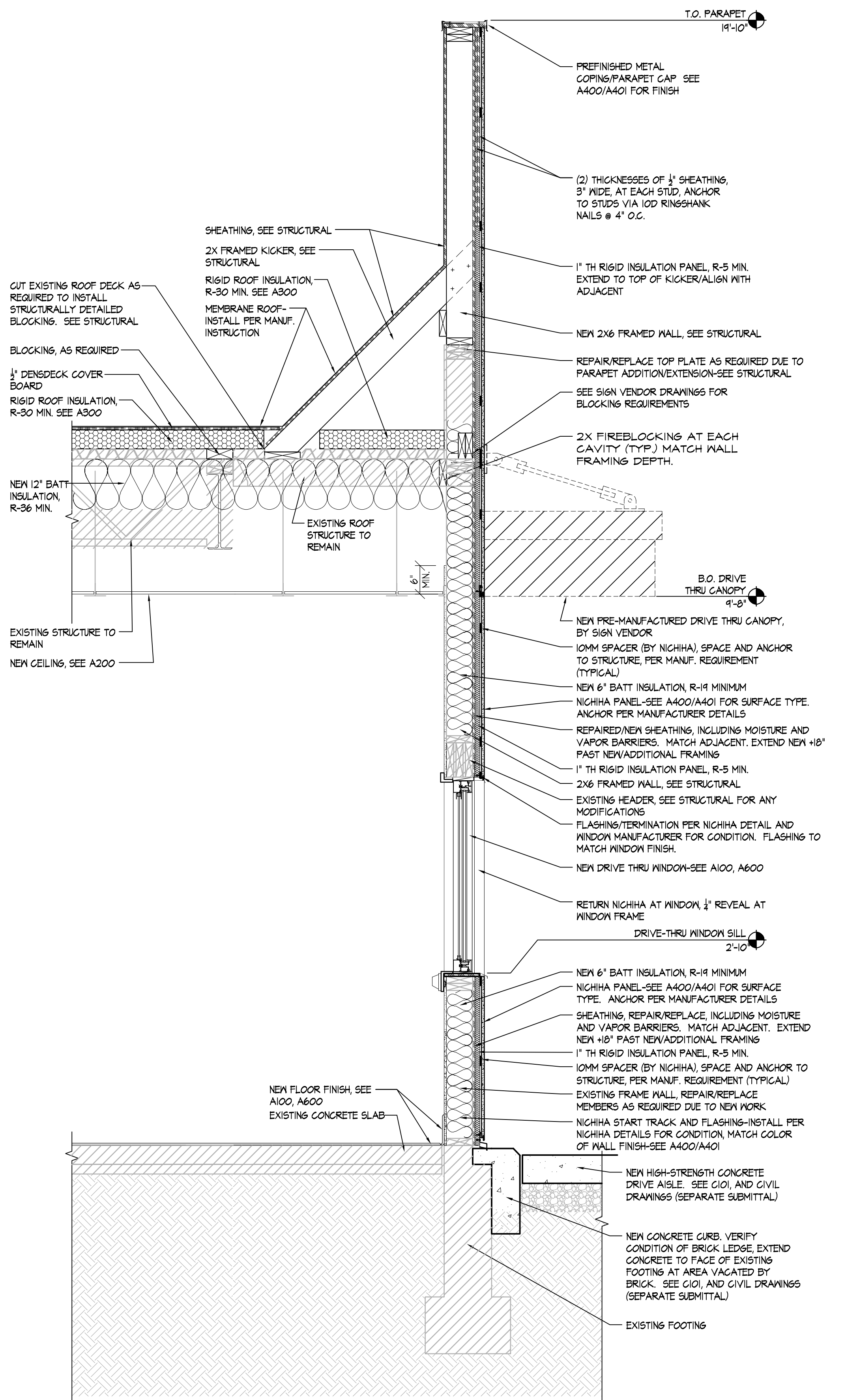




**1 WALL SECTION**  
SCALE: 3/4" = 1'-0"

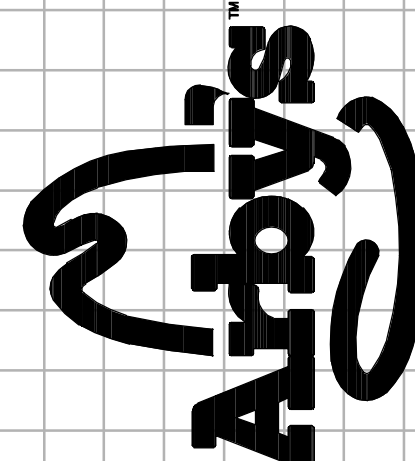


**2 WALL SECTION**  
SCALE: 3/4" = 1'-0"



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

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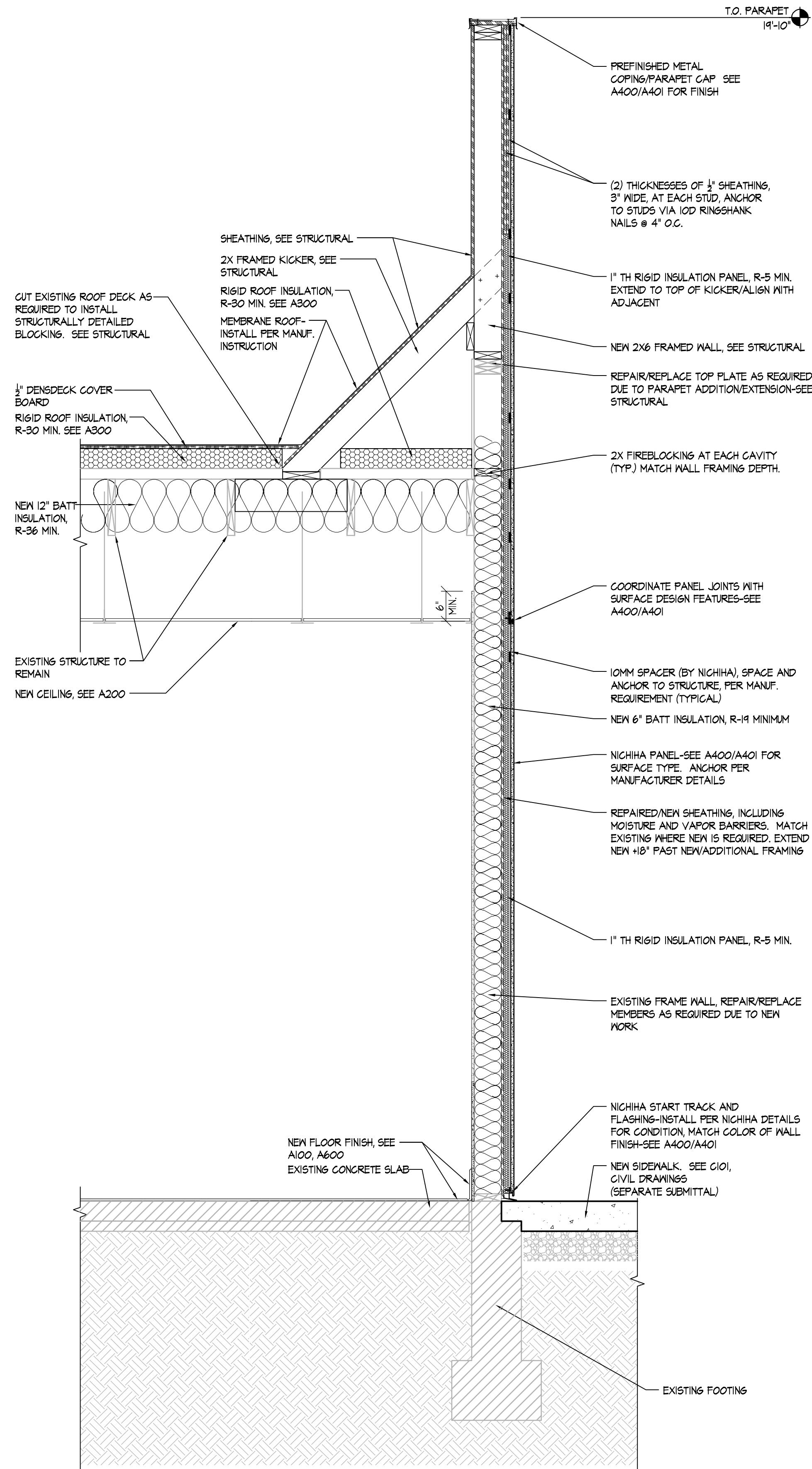
REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
DRAWN BY: ME  
CHECKED BY: JMW  
ISSUE DATE: 03/18/22

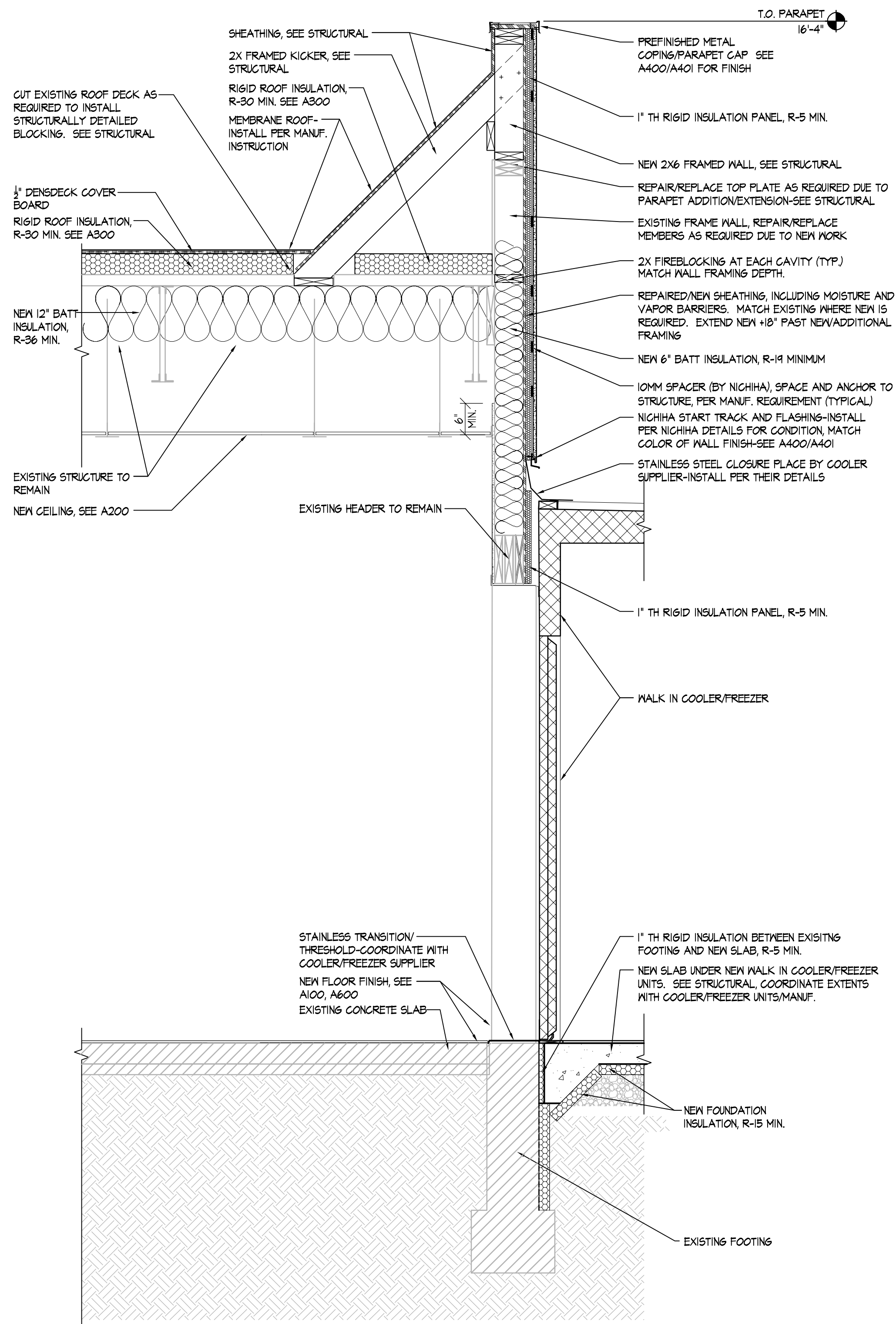
A501

WALL SECTIONS





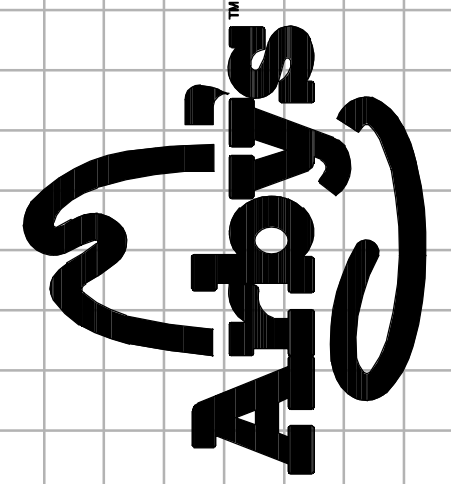
**1 WALL SECTION**  
SCALE: 3/4" = 1'-0"



**2 WALL SECTION**  
SCALE: 3/4" = 1'-0"

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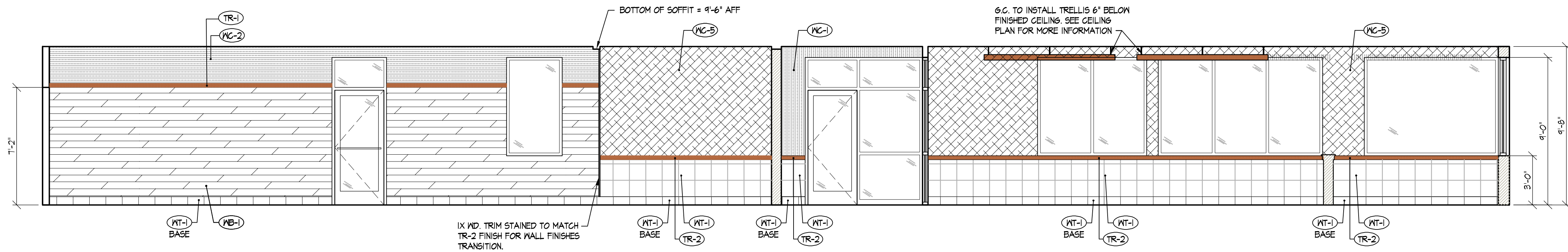
REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
DRAWN BY: ME  
CHECKED BY: JMW  
ISSUE DATE: 03/18/22  
WALL SECTIONS

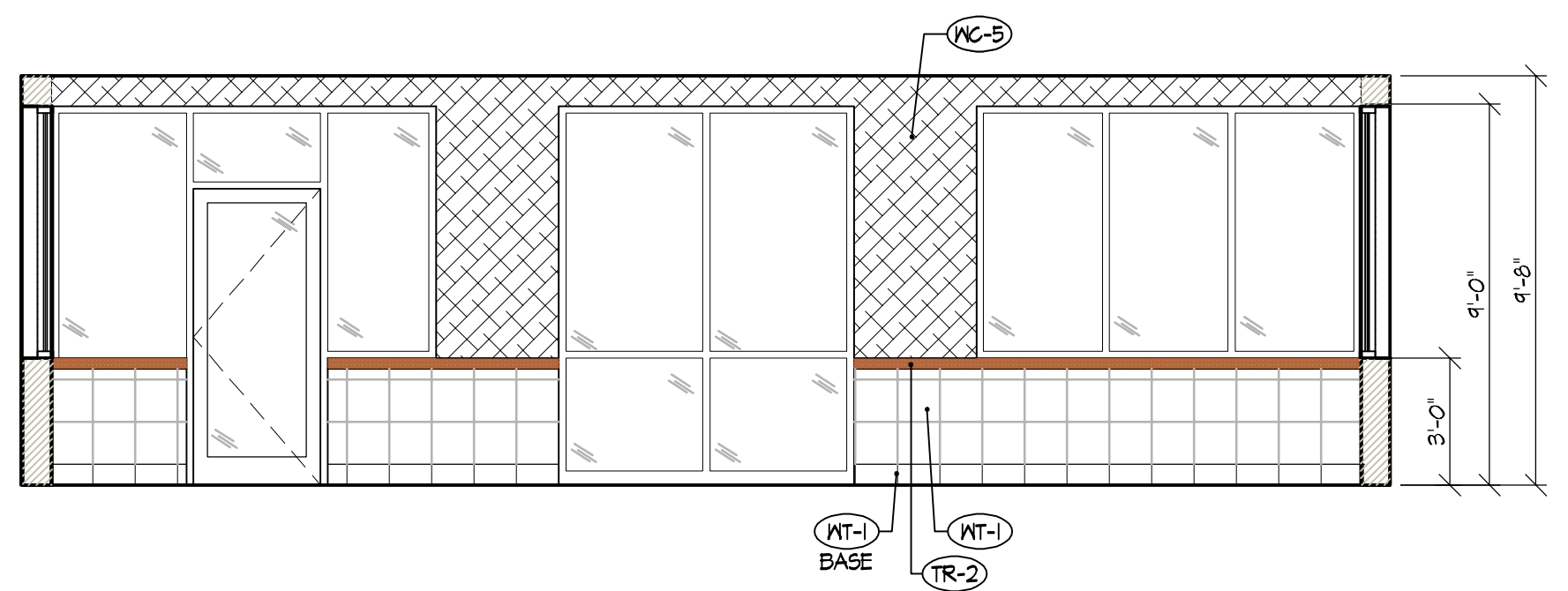
**A502**



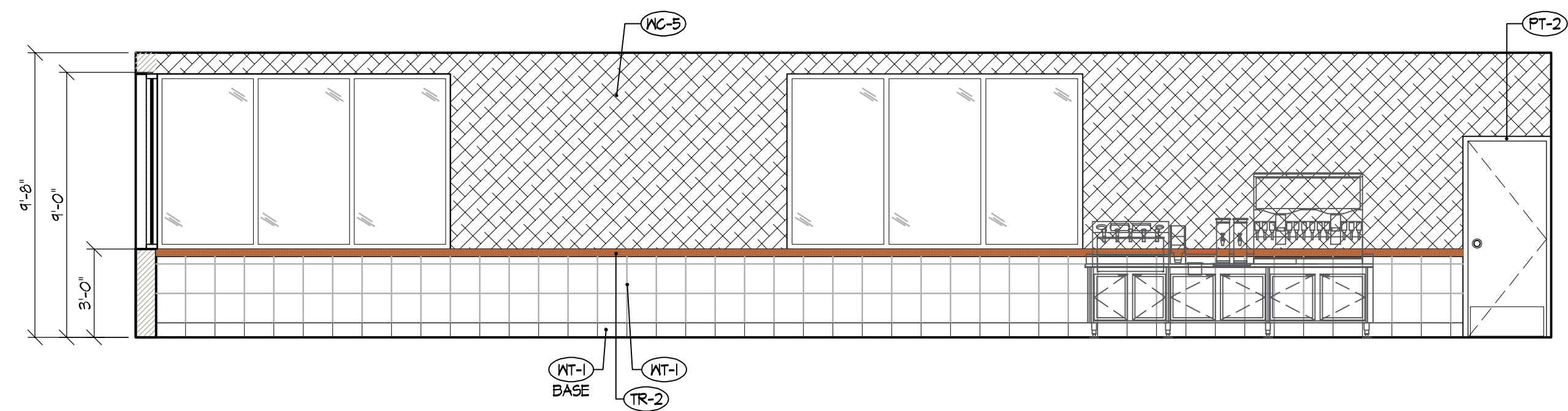




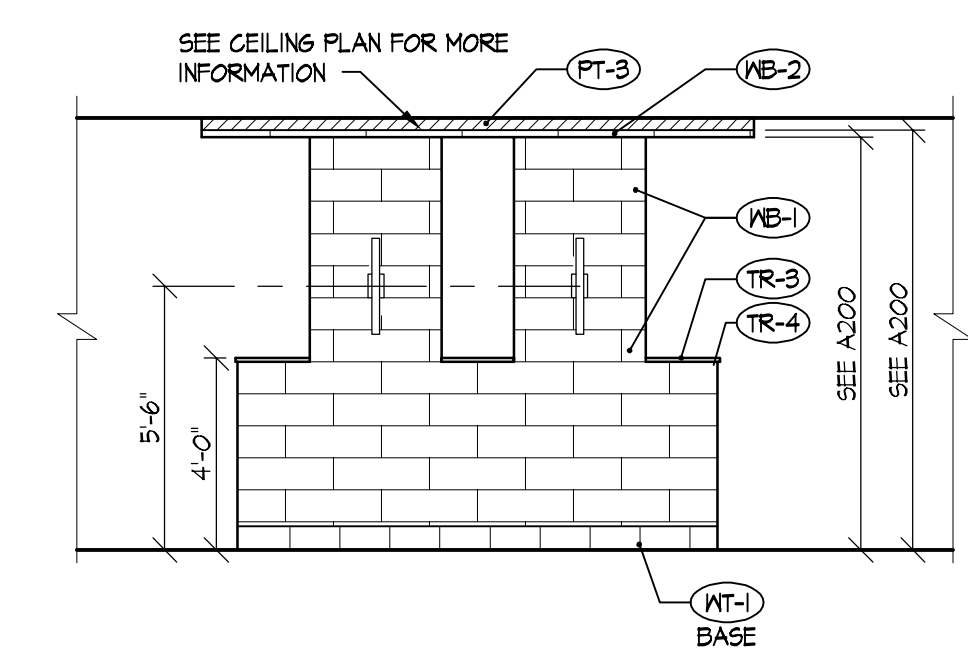
**1 INTERIOR ELEV - DINING ROOM**  
SCALE: 1/4" = 1'-0"



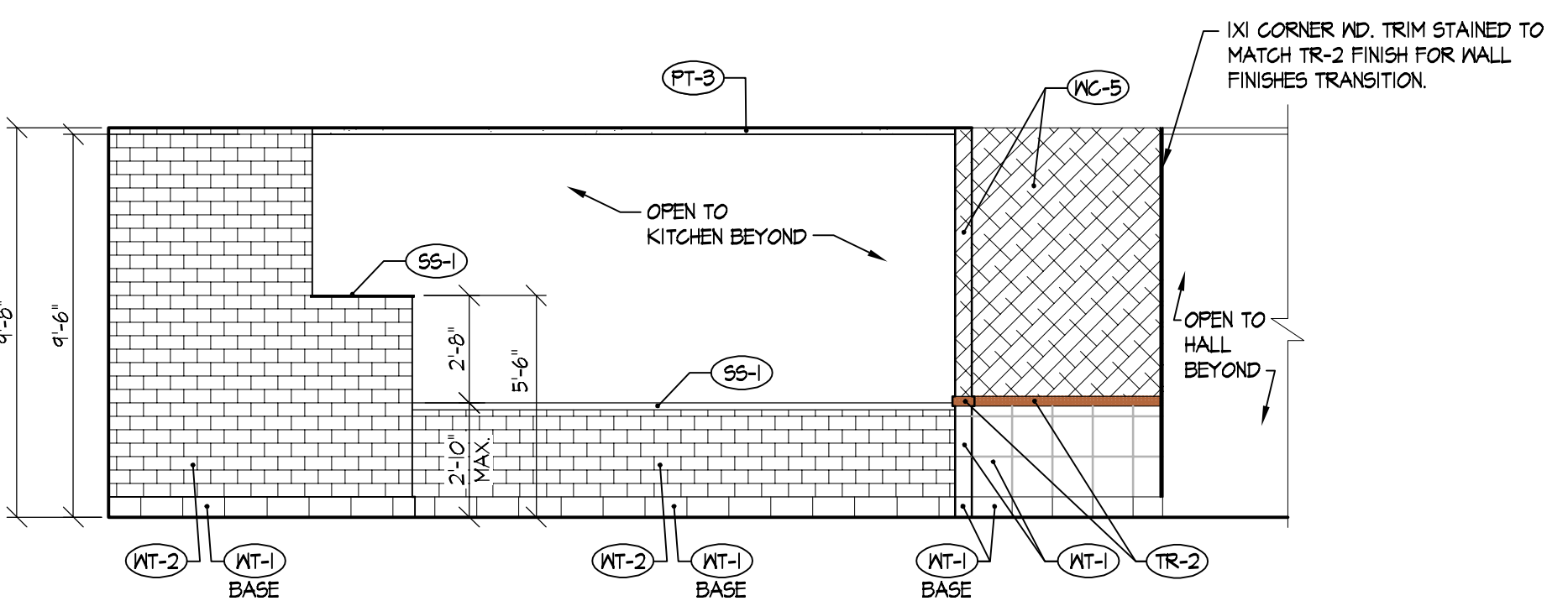
**2 INTERIOR ELEV - DINING ROOM**  
SCALE: 1/4" = 1'-0"



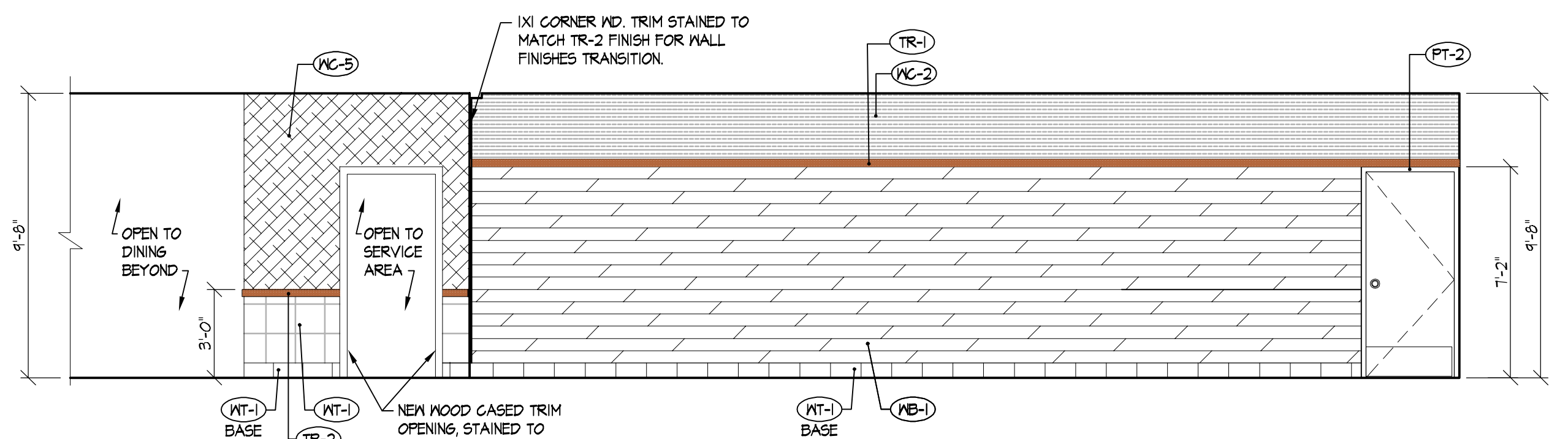
**3 INTERIOR ELEV - DINING/ BEVERAGE STATION**  
SCALE: 1/4" = 1'-0"



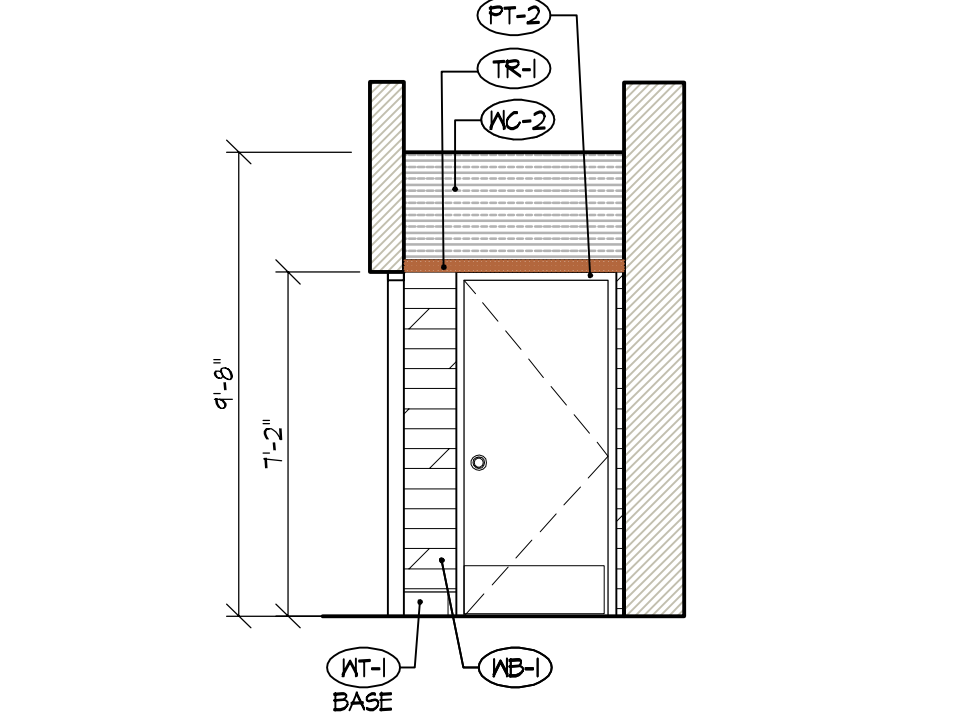
**4 INTERIOR ELEV - DINING**  
SCALE: 1/4" = 1'-0"



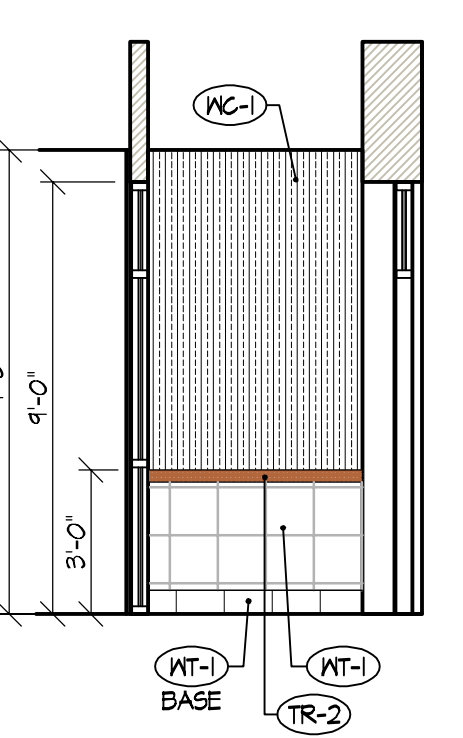
**5 INTERIOR ELEV - CUSTOMER AREA**  
SCALE: 1/4" = 1'-0"



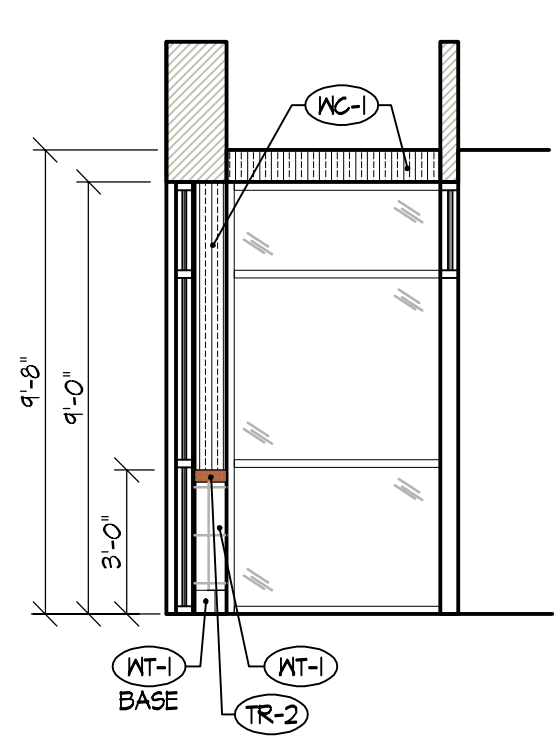
**6 INTERIOR ELEV - HALL**  
SCALE: 1/4" = 1'-0"



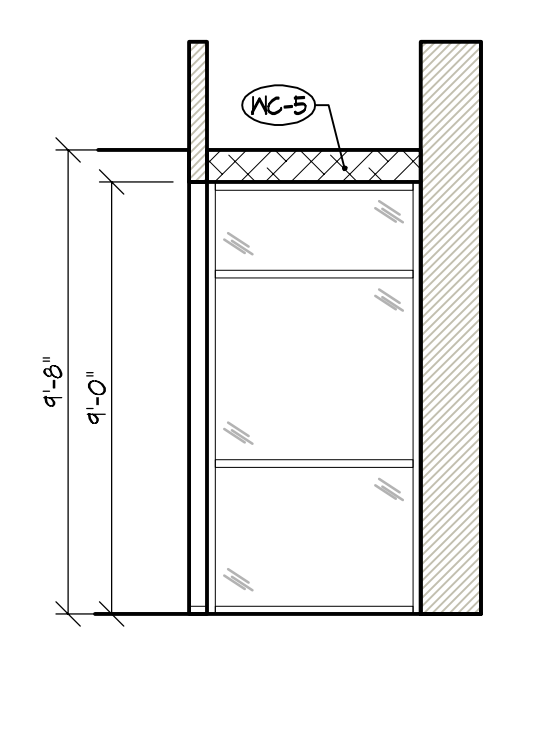
**7 INTERIOR ELEV - HALL**  
SCALE: 1/4" = 1'-0"



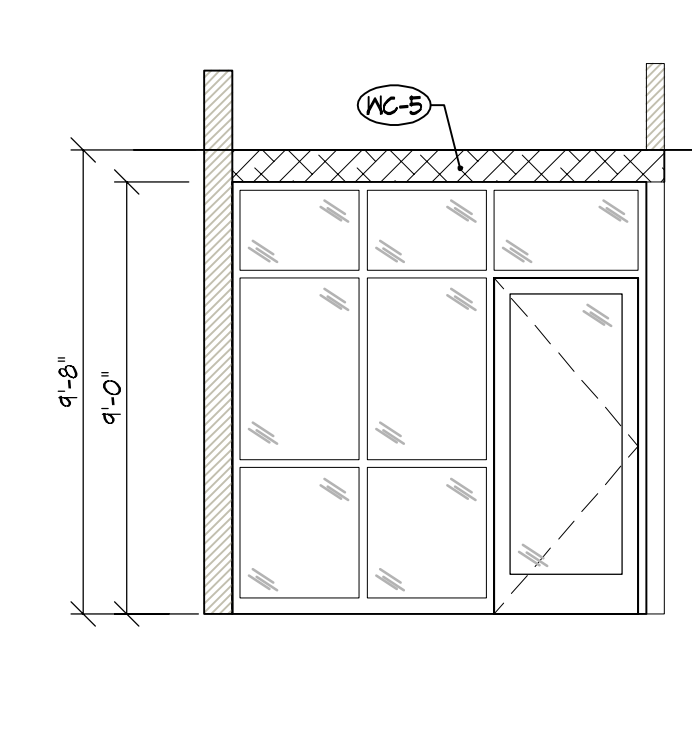
**8 VEST ELEV**  
SCALE: 1/4" = 1'-0"



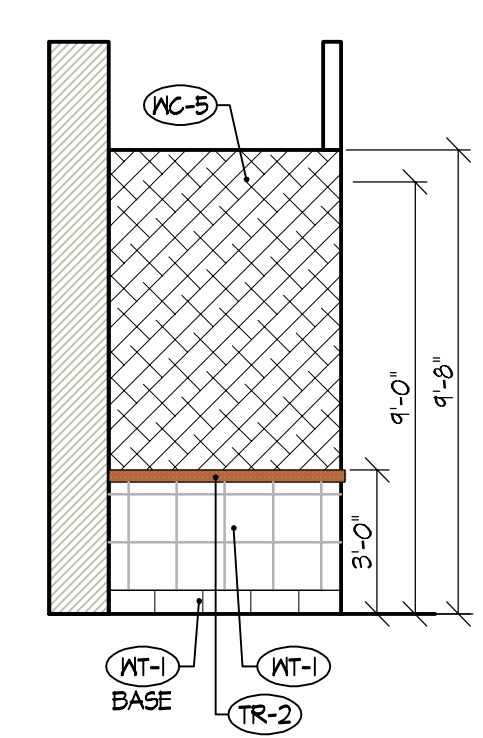
**9 VEST ELEV**  
SCALE: 1/4" = 1'-0"



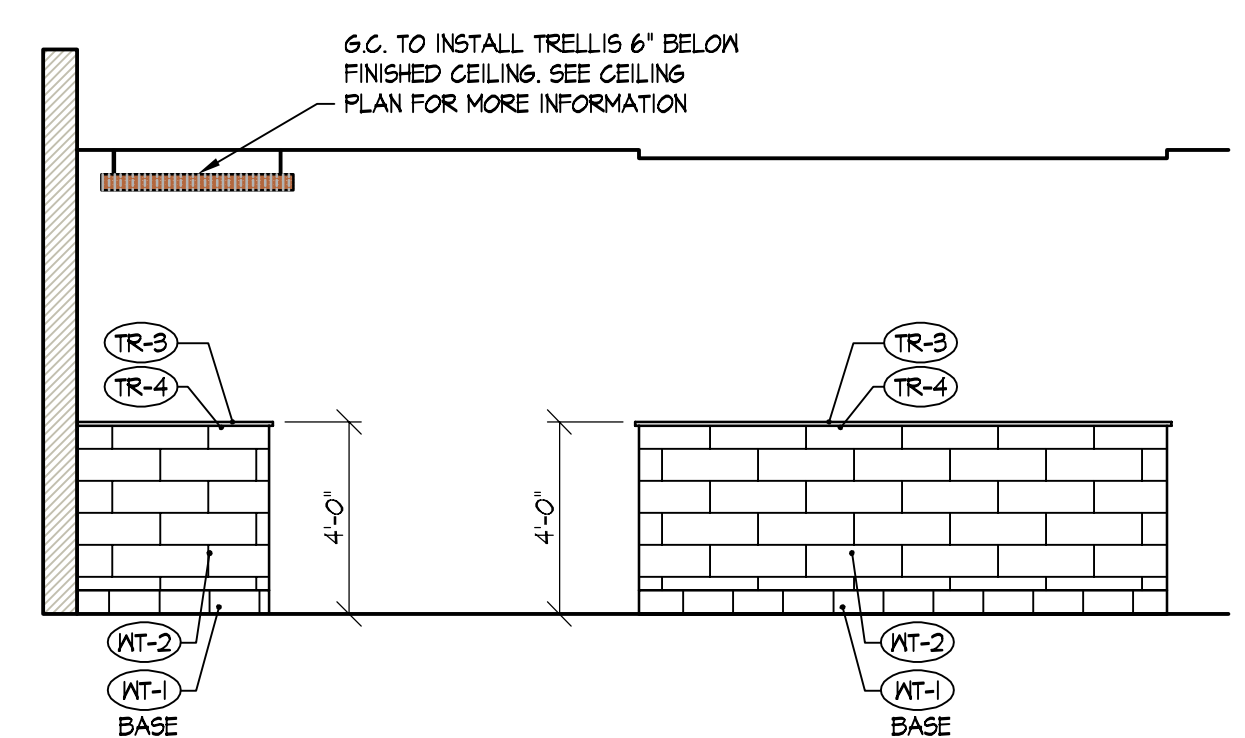
**10 VEST ELEV**  
SCALE: 1/4" = 1'-0"



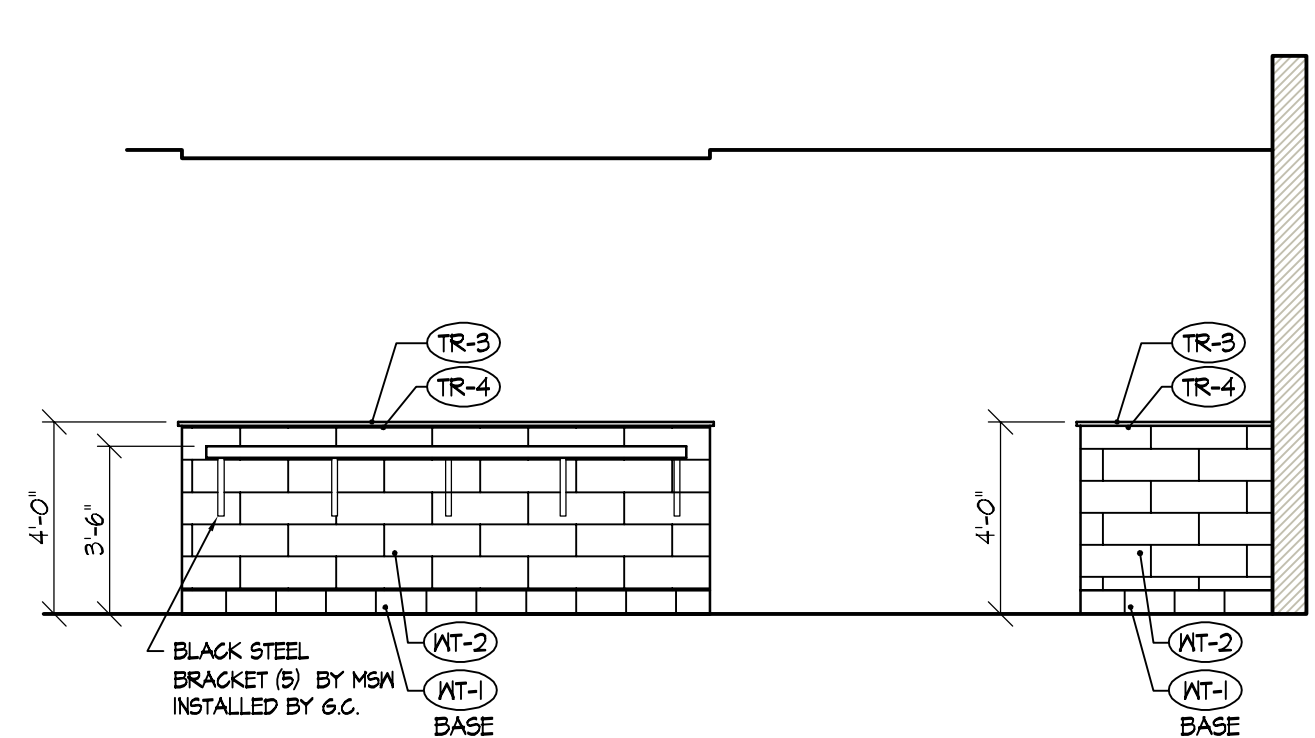
**11 VEST ELEV**  
SCALE: 1/4" = 1'-0"



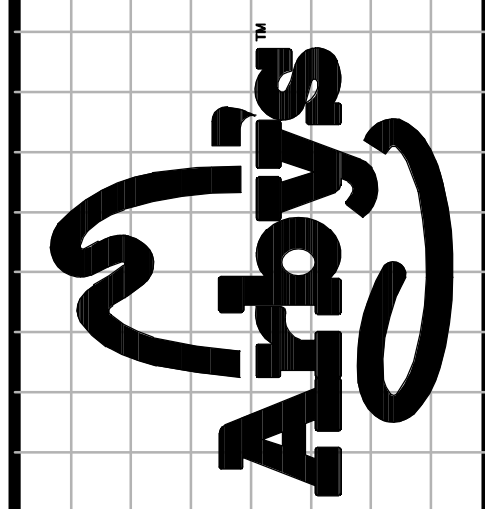
**12 HALL ELEV**  
SCALE: 1/4" = 1'-0"



**13 INTERIOR ELEV - DINING**  
SCALE: 1/4" = 1'-0"



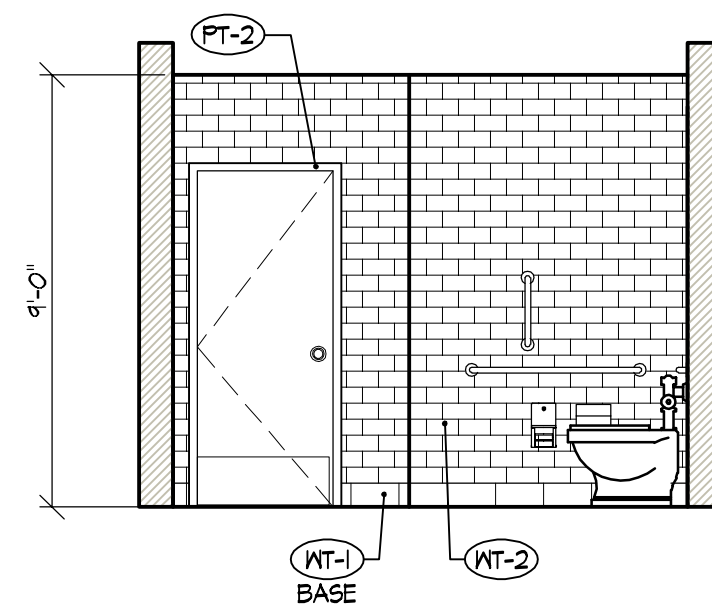
**14 INTERIOR ELEV - DINING**  
SCALE: 1/4" = 1'-0"



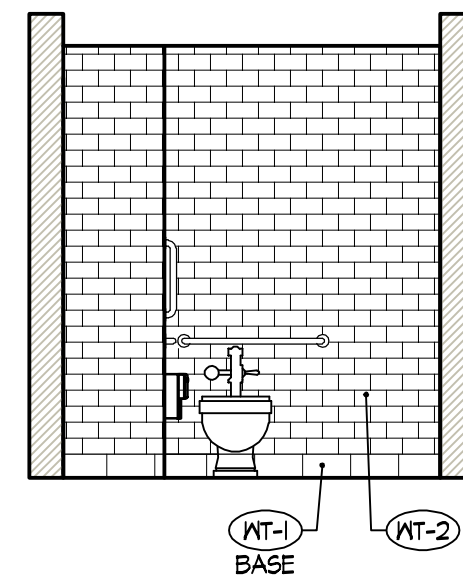
REV	DATE	DESCRIPTION	INVOICE

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ISSUE DATE: 03/18/22

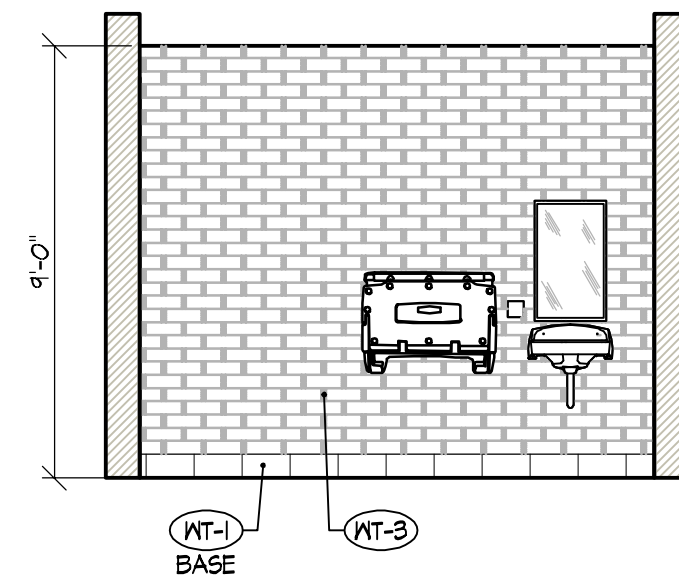




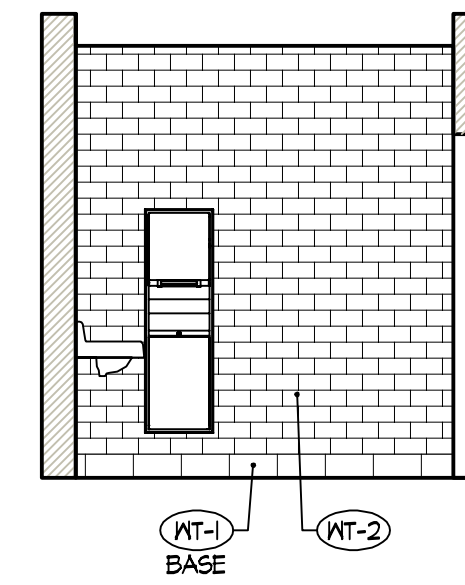
**1 WOMEN'S**  
SCALE: 1/4" = 1'-0"



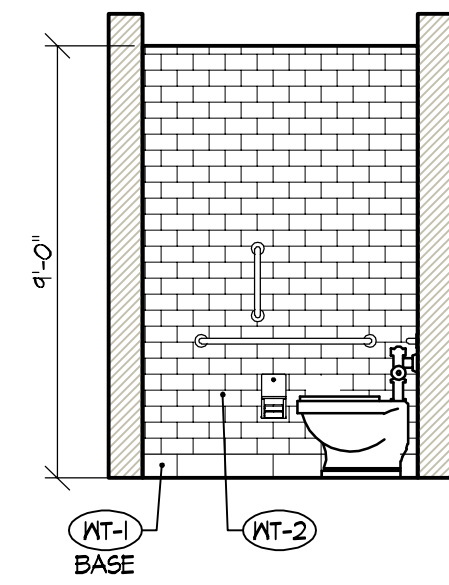
**2 WOMEN'S**  
SCALE: 1/4" = 1'-0"



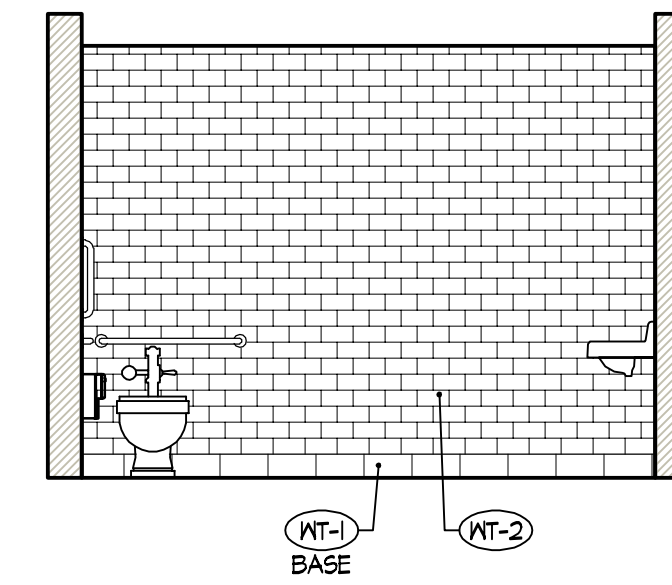
**3 WOMEN'S**  
SCALE: 1/4" = 1'-0"



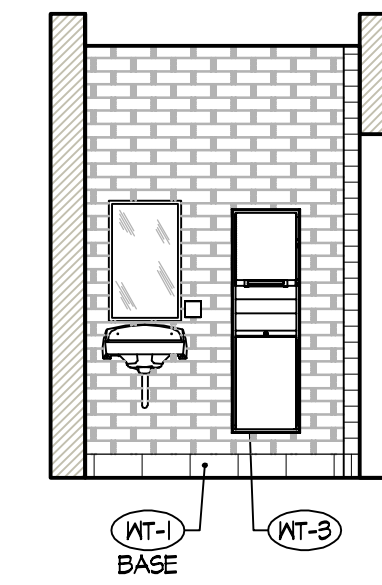
**4 WOMEN'S**  
SCALE: 1/4" = 1'-0"



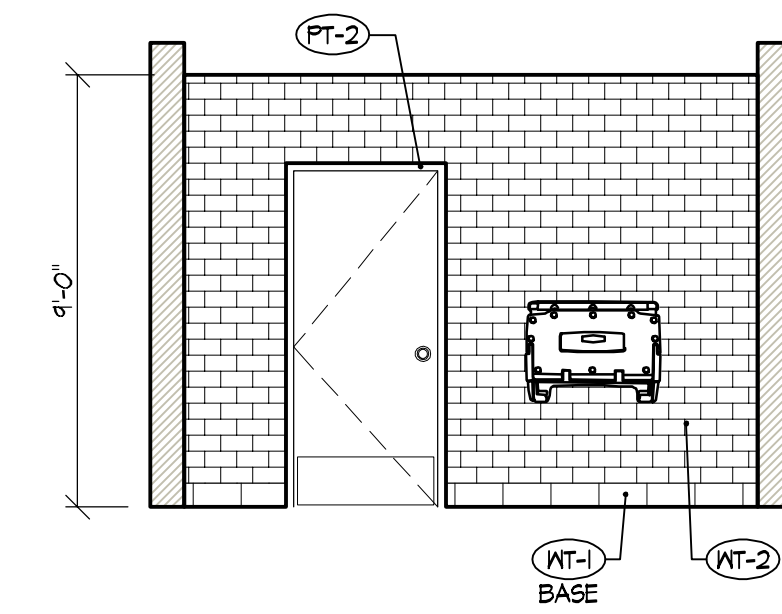
**5 MEN'S**  
SCALE: 1/4" = 1'-0"



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

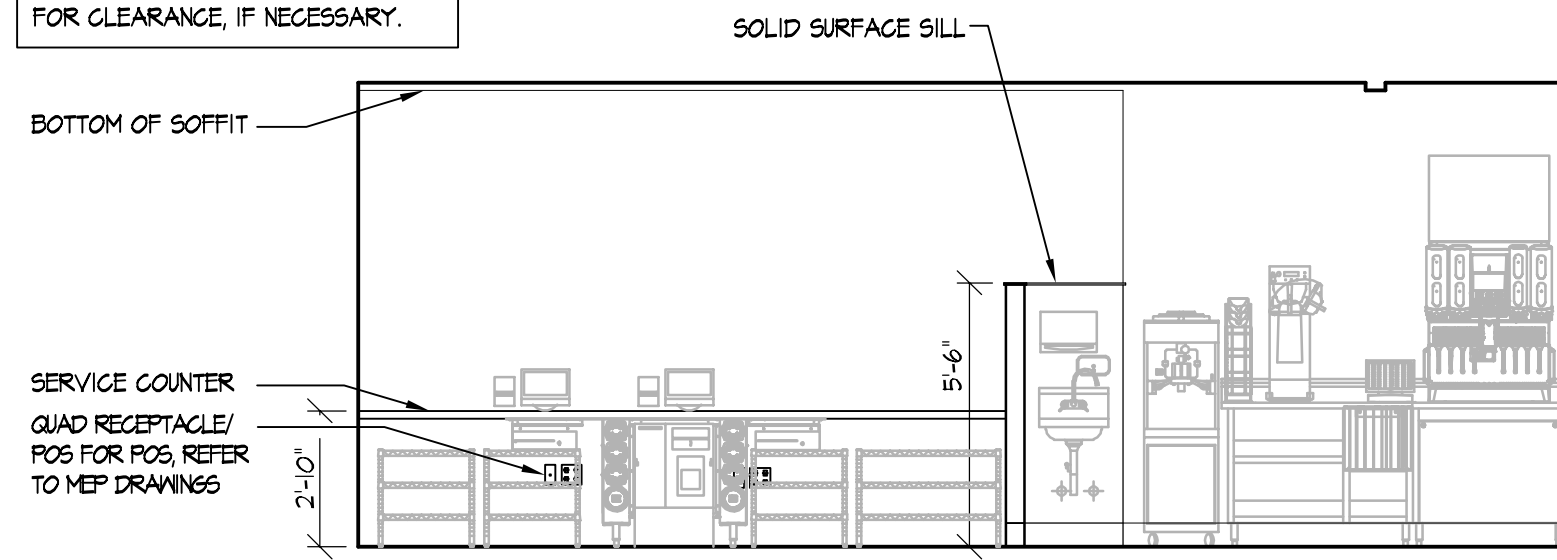


**7 MEN'S**  
SCALE: 1/4" = 1'-0"

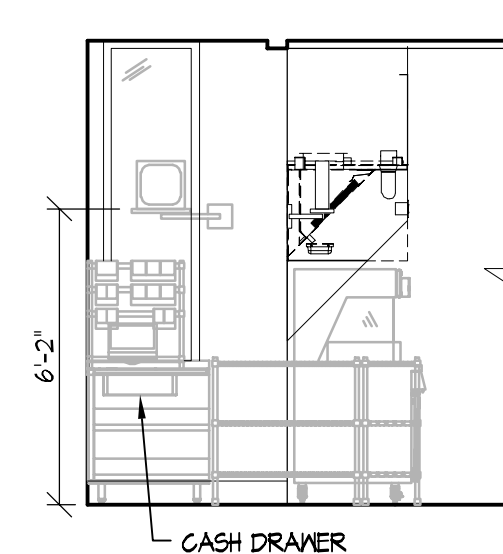


**8 MEN'S**  
SCALE: 1/4" = 1'-0"

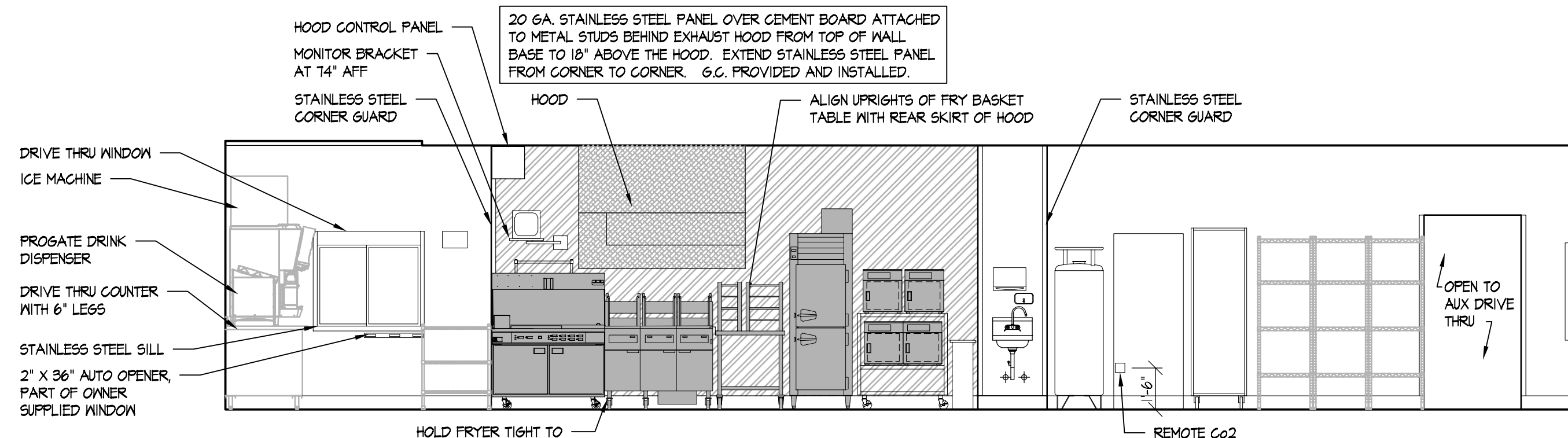
NOTE:  
SHELVING UNITS BELOW FRONT  
COUNTER ARE TO BE ABLE TO SLIDE  
OUT EASILY. KES TO MODIFY TOPS  
OF VERTICAL SUPPORTS TO ALLOW  
FOR CLEARANCE, IF NECESSARY.



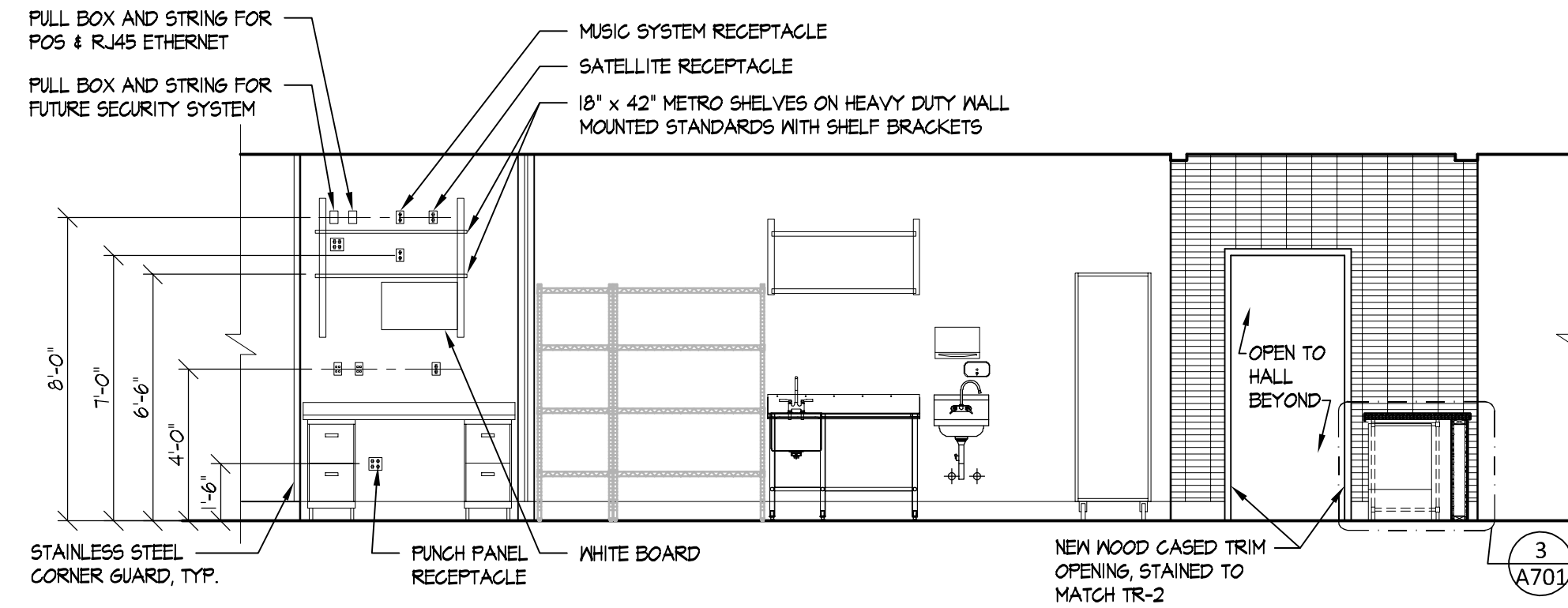
**9 SERVICE AREA/ DRIVE THRU**  
SCALE: 1/4" = 1'-0"



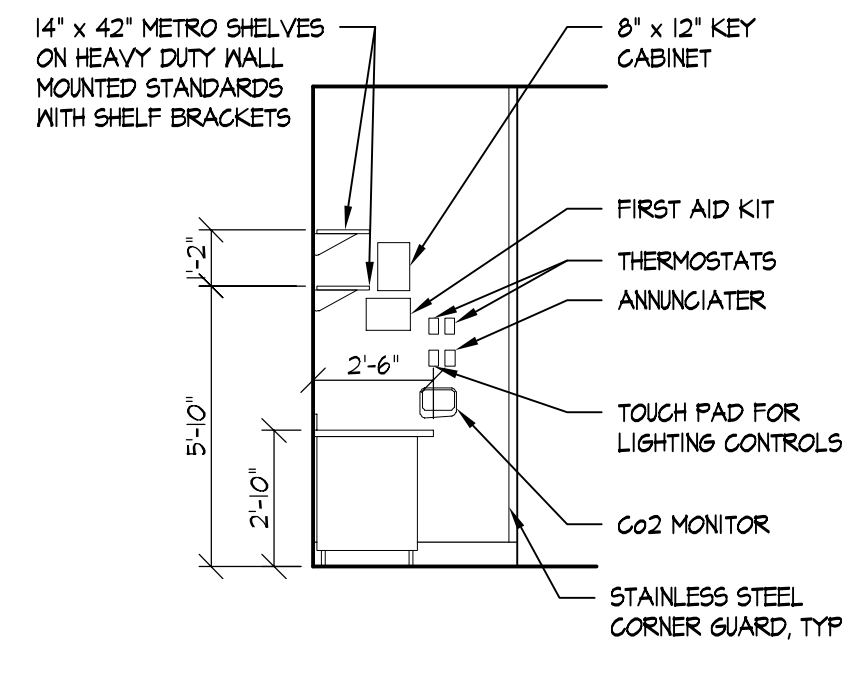
**10 DRIVE-THRU**  
SCALE: 1/4" = 1'-0"



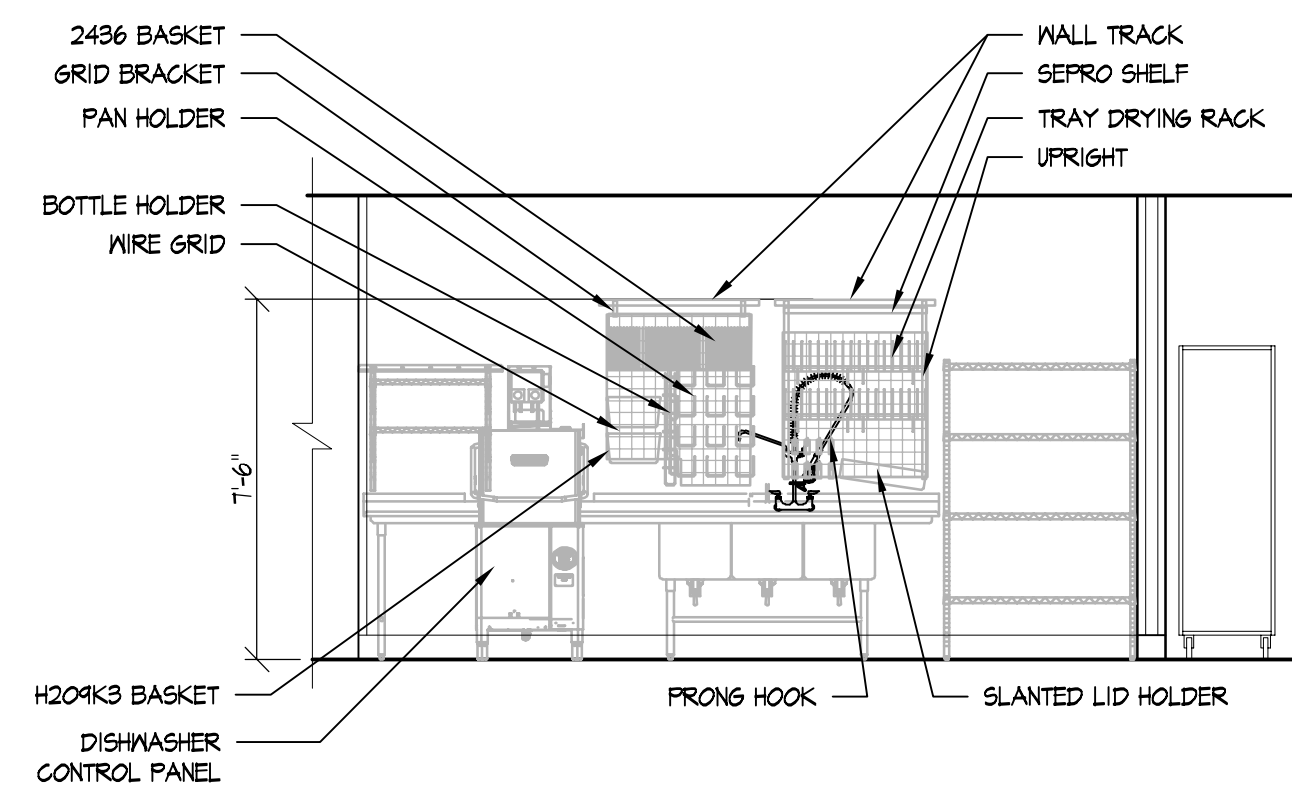
**11 DRIVE-THRU/ KITCHEN**  
SCALE: 1/4" = 1'-0"



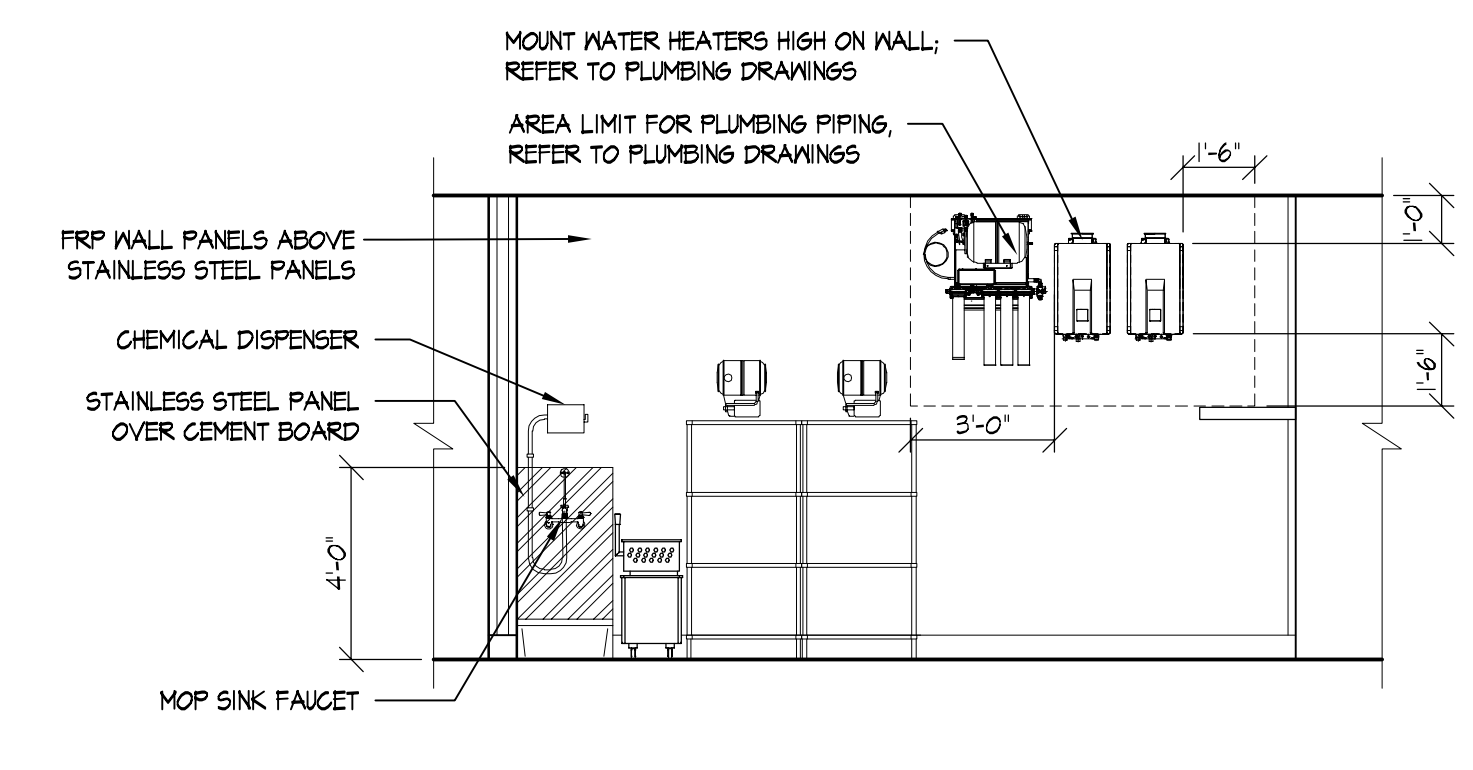
**12 MANAGER'S/ FOOD PREP/ SERVICE AREA**  
SCALE: 1/4" = 1'-0"



**13 MANAGER'S**  
SCALE: 1/4" = 1'-0"



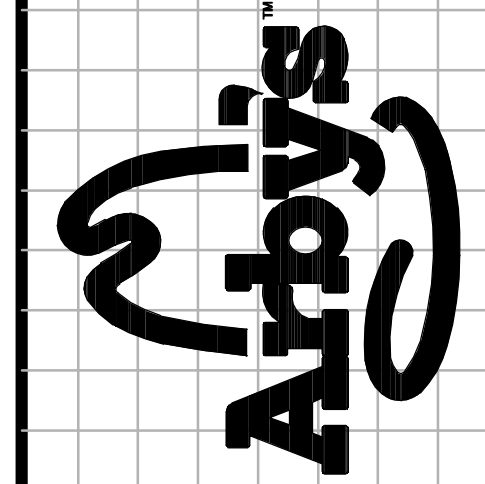
**14 WAREWASHER**  
SCALE: 1/4" = 1'-0"



**15 STORAGE/ UTILITY**  
SCALE: 1/4" = 1'-0"

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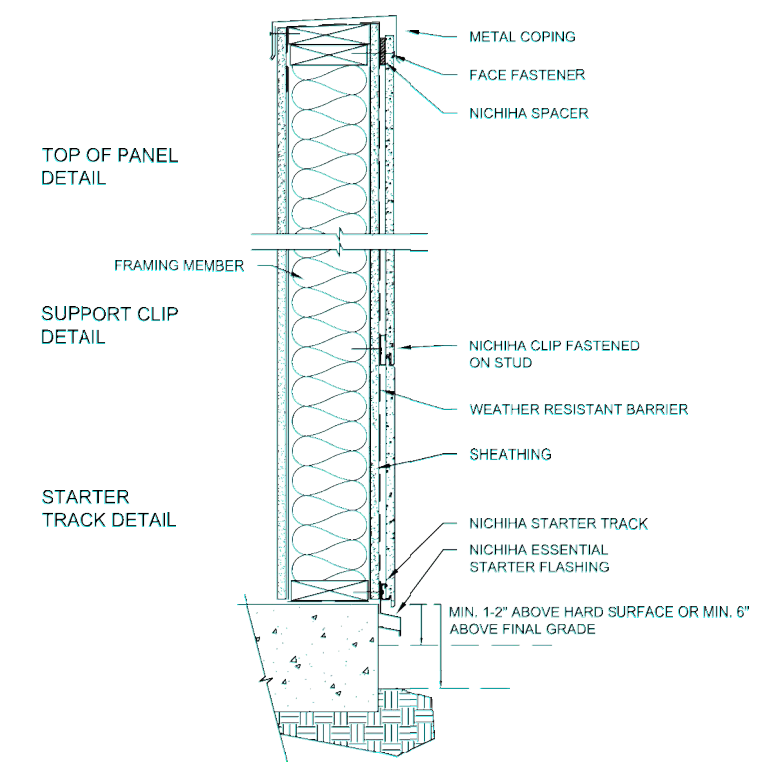
PROJECT NO: 210109  
DRAWN BY: IT  
CHECKED BY: JMW  
ISSUE DATE: 03/18/22

**A602**

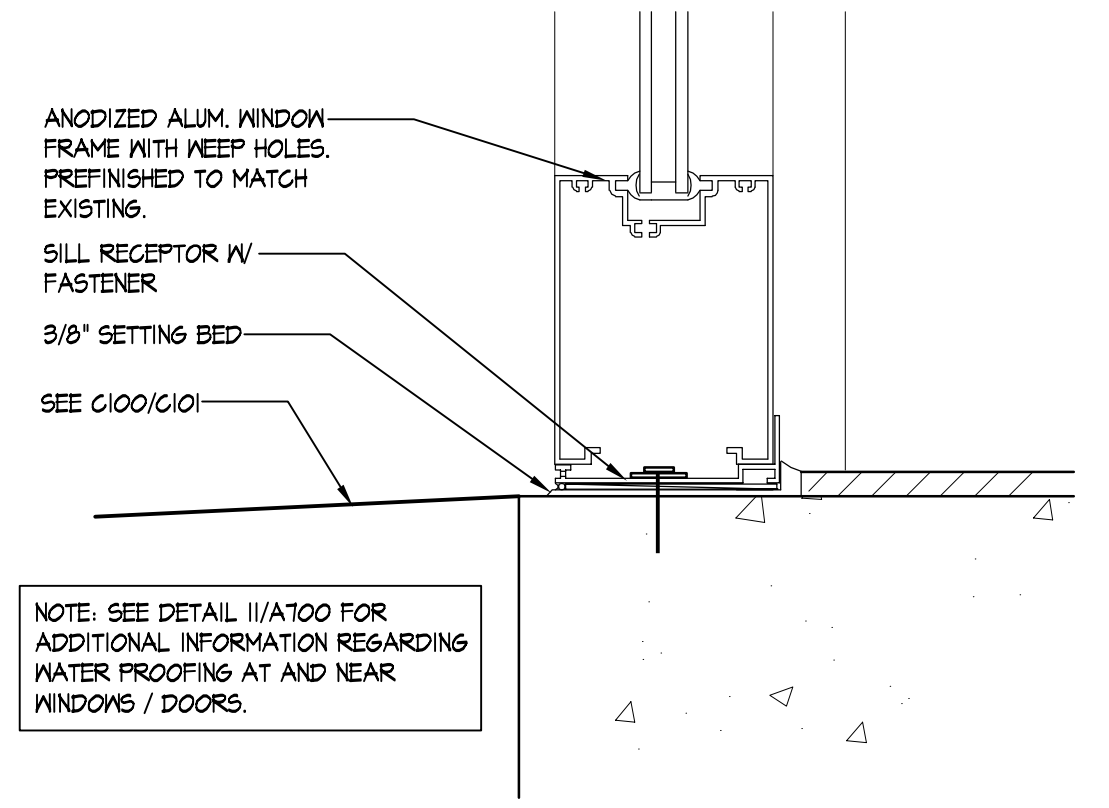
INTERIOR ELEVATIONS



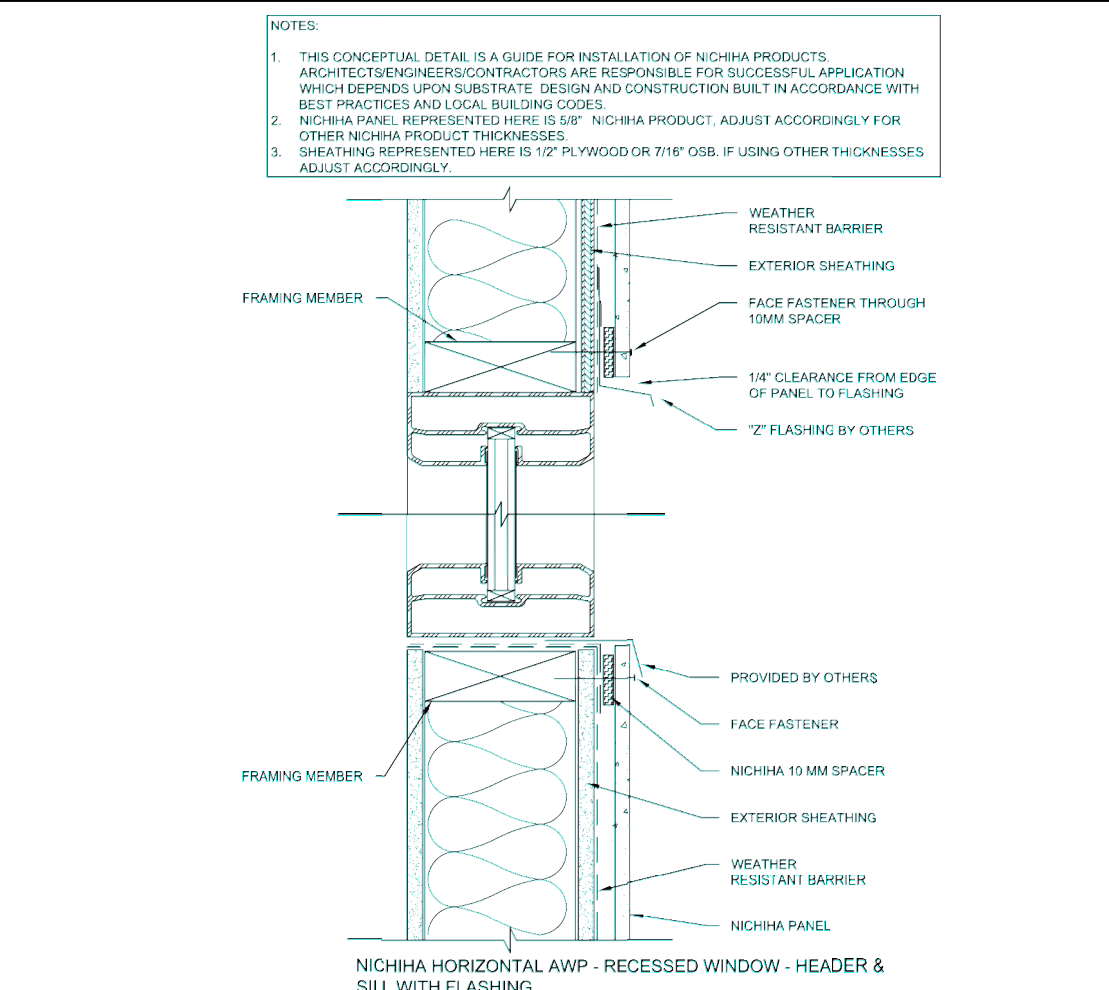
1. THIS CONCEPTUAL DETAIL IS A GUIDE FOR INSTALLATION OF NICHHA PRODUCTS. ARCHITECTS/ENGINEERS/CONTRACTORS ARE RESPONSIBLE FOR SUCCESSFUL APPLICATION WHICH DEPENDS UPON SUBSTRATE, DESIGN AND CONSTRUCTION BUILT IN ACCORDANCE WITH BEST PRACTICES AND LOCAL BUILDING CODES.  
 2. NICHHA PANEL REPRESENTED HERE IS 5/8" NICHHA PRODUCT. ADJUST ACCORDINGLY FOR OTHER NICHHA PRODUCT THICKNESSES.  
 3. SHEATHING REPRESENTED HERE IS 5/8" EXTERIOR GYPSUM WALLBOARD. IF USING OSB OR PLYWOOD ADJUST ACCORDINGLY.



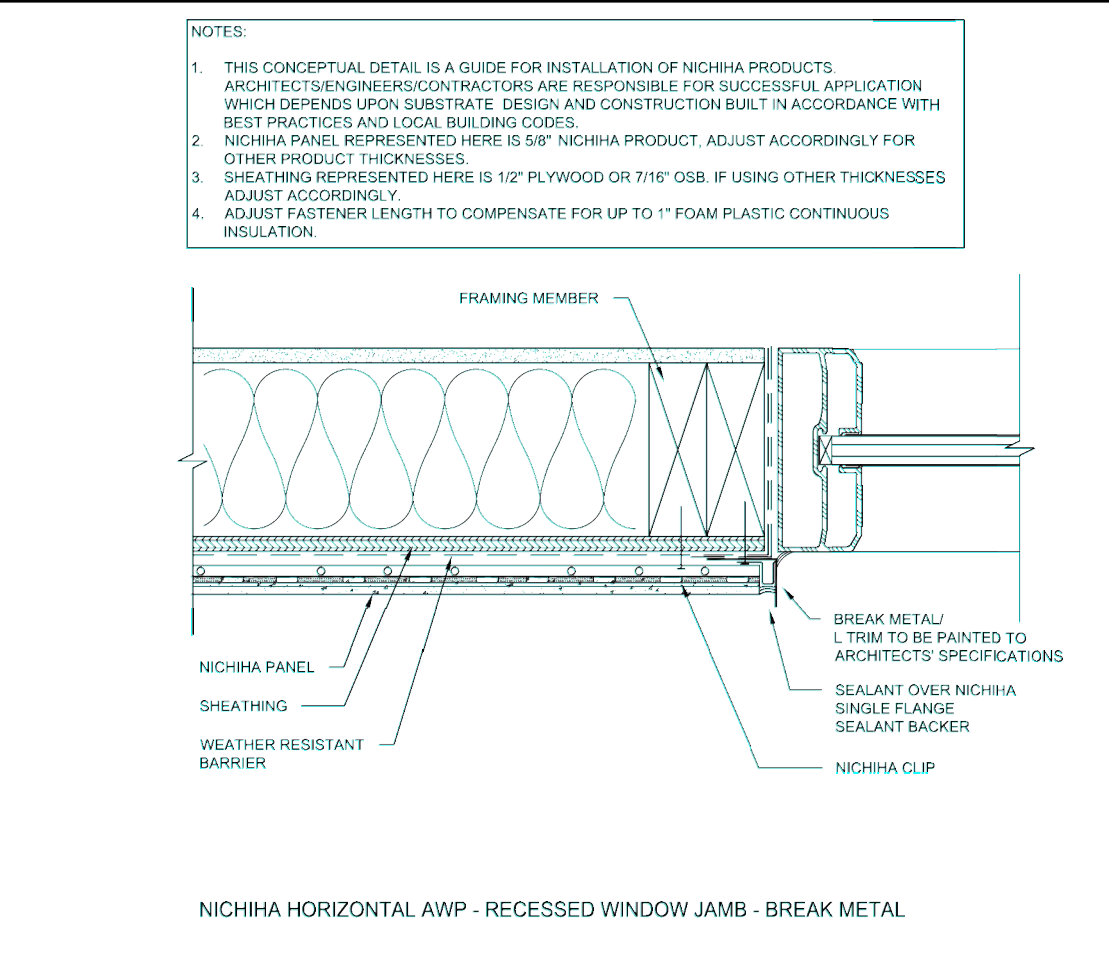
**1 NICHHA PARAPET AND WALL SILL**  
 SCALE: 3' - 1'-0"



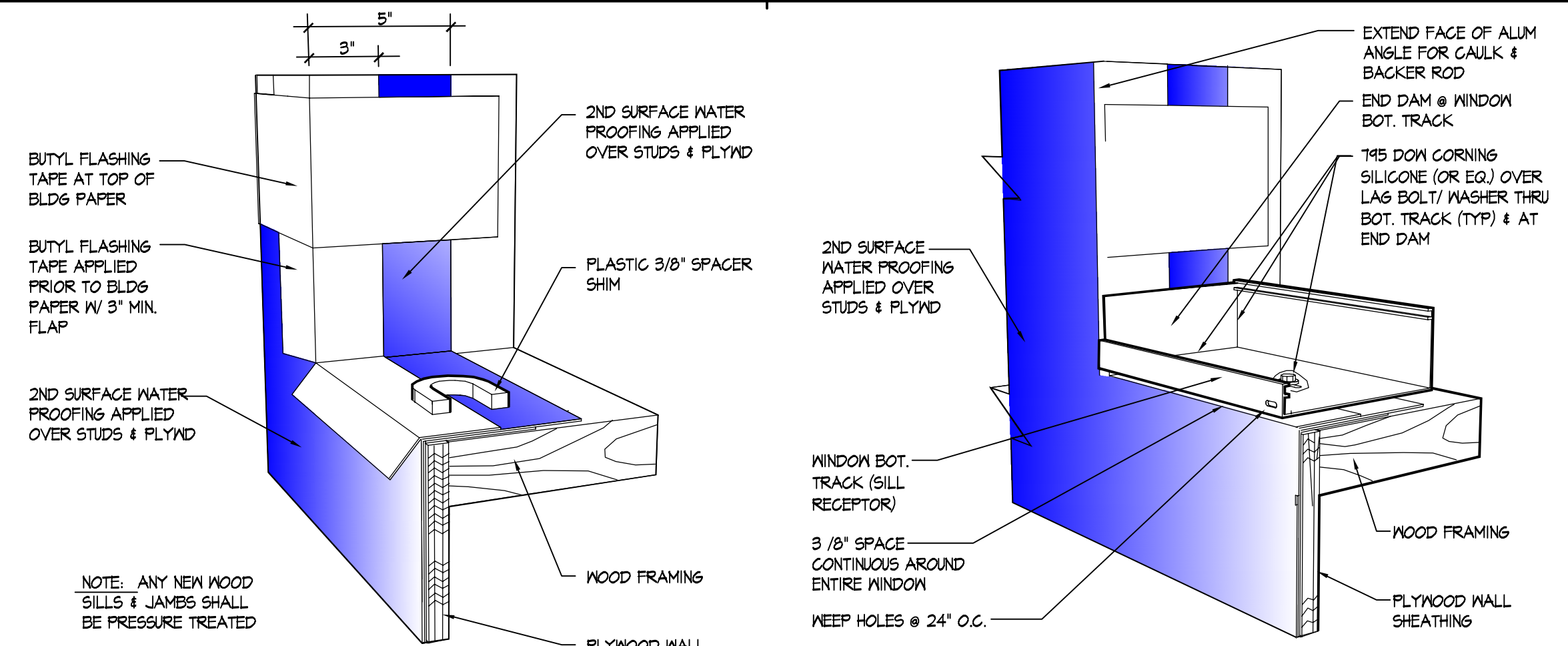
**2 SILL AT NEW STOREFRONT**  
 SCALE: 3' - 1'-0"



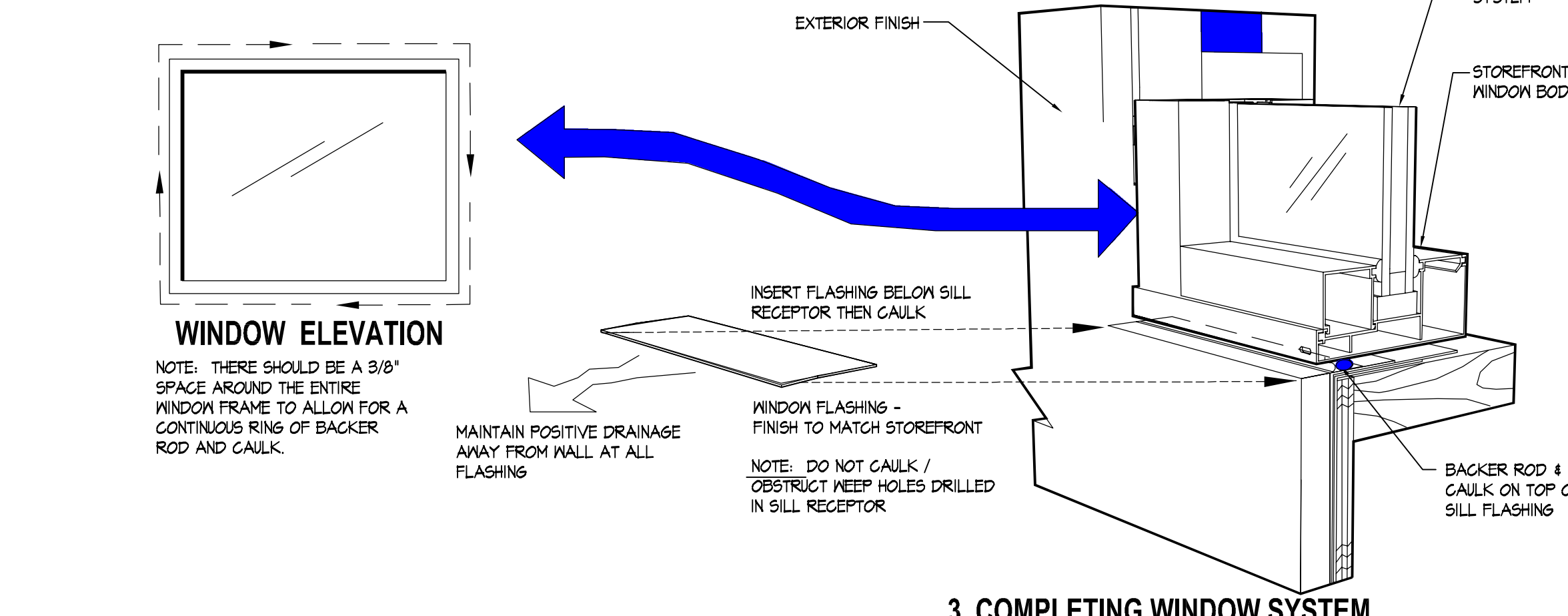
**3 NICHHA SECTION AT WINDOW HEAD/SILL**  
 SCALE: N.T.S.



**4 NICHHA PLAN SECTION AT WINDOW JAMB**  
 SCALE: N.T.S.



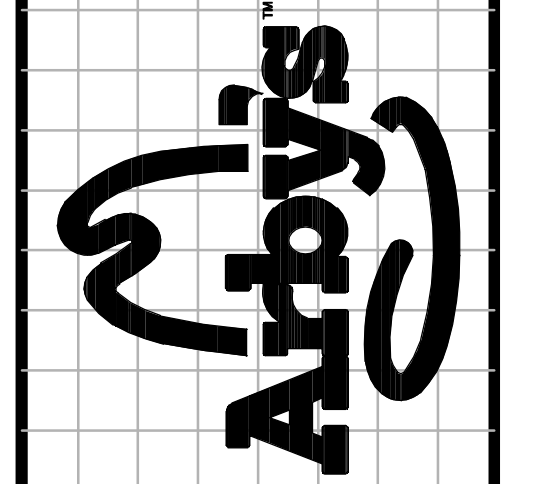
**1. WATER PROOFING ROUGH OPENING**  
 AFTER FRAMING 2ND SURFACE WATER PROOFING PER EIFS MANUFACTURER. ADD FLASHING TAPE AROUND THE ROUGH OPENING FOR THE WINDOW AND DOOR OPENING.  
**2. ADD SILL RECEPTOR AND END DAM**  
 THIS DIAGRAM SHOWS THE APPLICATION OF SILL RECEPTOR. USE 100% PURE ISOPROPYL ALCOHOL TO CLEAN METAL SURFACE PRIOR TO APPLYING SILICONE.



**3. COMPLETING WINDOW SYSTEM**  
 SET STOREFRONT WINDOW APPLY EIFS SYSTEM AND THEN ADD WINDOW FLASHING OVER TOP OF EIFS AT WINDOW SILL.

**11 WINDOW WATERPROOFING DETAILS**  
 SCALE: 1-1/2' - 1'-0" AT REPLACED WINDOWS, WHERE REQUIRED

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REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
 DRAWN BY: ME  
 CHECKED BY: JMW  
 ISSUE DATE: 03/18/22  
**A700**  
 DETAILS - EXTERIOR









THE EQUIPMENT AND DIMENSIONED LOCATIONS FOR CONNECTIONS ARE ACCURATE TO THE BEST OF OUR KNOWLEDGE, BUT SHALL BE VERIFIED WITH THE EQUIPMENT SUPPLIER, EQUIPMENT ROUGH-IN DRAWINGS, AND/OR THE OWNER. IN SOME INSTANCES, THE OWNER OR SUPPLIER MAY MAKE SUBSTITUTIONS OR THE EQUIPMENT MAY VARY FROM WHAT IS SHOWN ON THE PLAN. THE ARCHITECT/ENGINEER SHALL BE IMMEDIATELY NOTIFIED, PRIOR TO CONSTRUCTION, OF ANY DEVIATIONS FROM WHAT IS SHOWN OR IMPLIED ON THESE DRAWINGS. FAILURE OF THE APPROPRIATE CONTRACTOR TO VERIFY ROUGH-INS OR THEIR LOCATIONS SHALL PLACE THE RESPONSIBILITY FOR ANY SUBSEQUENT RELOCATION AND/OR ADDITIONAL ROUGH-INS DIRECTLY UPON THE CONTRACTOR.

### MECHANICAL GENERAL NOTES

- ALL WORK AND MATERIALS SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE GOVERNING CITY, INCLUDING APPLICABLE SECTIONS OF NFPA, UBC, OSHA, OR ANY INTERIM AMENDMENTS AT THE TIME OF THE PROPOSAL. PURCHASE ALL PERMITS ASSOCIATED WITH THE WORK. OBTAIN ALL INSPECTIONS REQUIRED BY CODE.
- CONTRACTORS AND SUB-CONTRACTORS SHALL CAREFULLY REVIEW THE CONSTRUCTION DOCUMENTS. INFORMATION REGARDING THE WORK IS DISPERSED THROUGHOUT THE DOCUMENT SET AND CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE COMPLETE DOCUMENT SET.
- EXISTING CONDITIONS ARE BASED ON "AS-BUILT" DRAWINGS PROVIDED BY THE OWNER AND LIMITED FIELD VERIFICATION. CONTRACTOR SHALL ADJUST TO ACTUAL FIELD CONDITIONS AT NO ADDITIONAL EXPENSE TO THE OWNER. CONTRACTOR IS TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING.
- ALL EQUIPMENT AND APPLIANCES SHALL BE INSTALLED AS REQUIRED BY THE TERMS OF THEIR APPROVAL, IN ACCORDANCE WITH THE CONDITIONS OF THE LISTING, THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND THE LOCAL CODE. MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT THE TIME OF INSPECTION.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO RECEIVE, OFFLOAD, STORE, INSURE, CARRY UP, DISPOSE OF DEBRIS AND SET IN PLACE ALL OWNER-FURNISHED ITEMS AND EQUIPMENT.
- EXHAUST FANS SHALL BE LOCATED A MINIMUM OF 10'-0" HORIZONTAL DISTANCE FROM FRESH AIR INTAKES OR SHALL HAVE A VERTICAL SEPARATION OF 3'-0" ABOVE FRESH AIR INTAKES.
- CONTRACTOR SHALL PROVIDE DUCTWORK SUPPORTS AND HANGERS PER CODE.
- CONTRACTOR SHALL PROVIDE SHOP DRAWINGS SHOWING PROPOSED FABRICATION AND INSTALLATION COORDINATED WITH EXISTING FIELD CONDITIONS AND OTHER TRADES.
- CONTRACTOR SHALL COORDINATE INSTALLATION OF MECHANICAL WORK WITH ALL OTHER TRADES TO AVOID UNNECESSARY DELAY OR INTERFERENCES. CONTRACTOR TO REVIEW ARCHITECTURAL AND EQUIPMENT SHEETS.

### MECHANICAL KEYED NOTES

- EXISTING RTU-2 PHEEM 10.0 TON ROOFTOP UNIT MODEL RKHL-D120CM15E SERIAL NUMBER F421600319 TO REMAIN AND REUSE. PROVIDE AND INSTALL A LOW LEAKAGE ECONOMIZER WITH FDD AND BARMETRIC RELIEF. REBALANCE UNIT TO 4000 CFM, WITH OUTSIDE AIR TO 840 CFM. FIELD VERIFY LOCATION AND CONDITION.
- EXISTING RTU-1 CARRIER 6.0 TON ROOFTOP UNIT MODEL 48TCFA07A25A0A0G0 SERIAL NUMBER 3618C79380 TO REMAIN AND REUSE. PROVIDE AND INSTALL A LOW LEAKAGE ECONOMIZER WITH FDD AND BARMETRIC RELIEF. REBALANCE UNIT TO 2000 CFM, WITH OUTSIDE AIR TO 460 CFM. FIELD VERIFY LOCATION AND CONDITION.
- NEW CONDENSING UNIT FOR WALK-IN COOLER/FREEZER ADDITION. MOUNT ON FIELD-FABRICATED PLATFORM WHERE SHOWN. LEVEL PLATFORM AND ROOF PENETRATIONS BY GENERAL CONTRACTOR.
- INSTALL LED TOUCHSCREEN (WITH CONTROLS LOCKED BY 2015 MICHIGAN MECHANICAL CODE) 24/7 PROGRAMMABLE THERMOSTAT MOUNTED AT 48" AFF. COORDINATE EXACT LOCATION WITH OWNER.
- NEW RTU-3 3 TON LENNOX ROOFTOP UNIT INSTALL ON EXISTING LANDLORD ROOF CURB WITH ROOF CURB ADAPTER. SEE ROOFTOP UNIT SCHEDULE ON THIS SHEET.
- FURNISH AND INSTALL SMOKE DETECTOR IN THE RETURN AIR DUCT, IN ACCORDANCE WITH 2018 UNIFORM MECHANICAL CODE. DUCT SMOKE DETECTOR WIRED BY ELECTRICAL CONTRACTOR. SEE ELECTRICAL SHEET FOR INFORMATION.
- ENSURE DOOR UNDERCUT 0.75". COORDINATE WITH GENERAL CONTRACTOR.
- NEW ROOF-MOUNTED EXHAUST FAN (EF-1). FAN SHALL BE SET LEVEL-ON ROOF. INSTALL AT LOCATION SHOWN. INTERLOCK WITH NEW HOOD. CONTRACTOR AND ARBY'S CONSTRUCTION MANAGER SHALL COORDINATE LOCATION OF NEW ROOF MOUNTED EXHAUST FAN TO MAINTAIN A MINIMUM OF 10'-0" AWAY FROM ANY OUTSIDE AIR INTAKE. FIELD VERIFY LOCATION. ADJUST UNIT AND DUCT INSTALLATION AS NEEDED. REFER TO HOOD DRAWINGS FOR INFORMATION.
- NEW TYPE I FRYER EXHAUST HOOD WITH CONTROL PANEL. EXHAUST HOOD INCLUDES FACTORY INSTALLED 1" LAYER OF INSULATION AT THE BACK OF THE HOOD. TO MEET 0 INCH REQUIREMENTS FOR CLEARANCE TO COMBUSTIBLE SURFACES. PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR. REFER TO HOOD DRAWINGS FOR INFORMATION. CONTRACTOR SHALL FIELD CUT EXHAUST DUCT RISER CONNECTION.
- 11"x10" 16-GAUGE BLACK STEEL DUCT, FOR TYPE I EXHAUST HOOD, WITH LIQUID-TIGHT CONTINUOUS EXTERNAL WELD. PROVIDE CLEAN-OUT ACCESS. WRAP WITH TWO (2) LAYERS OF 3M FIRE COMBUSTIBLES BARRIER DUCT WRAP 615+, 1-1/2" THICK WITH MIN. 3" PERIMETER & LONGITUDINAL OVERLAPS. PROVIDES TWO-HOUR FIRE RESISTIVE RATING AND ZERO CLEARANCE TO AT OVERLAP OR COLLAR. 3M FIRE BARRIER DUCT WRAP IS LISTED BY INTERTEK 3MU/FRD 120-18 (ASTM E2336). INSTALL PER MANUFACTURER'S INSTRUCTIONS. SEE GREASE EXHAUST DUCT DETAIL.
- LOCATE NEW ANSUL PULL STATION FOR TYPE I EXHAUST HOOD 10'-20' FROM HOOD.
- ROOM TEMPERATURE SENSOR, FOR EXHAUST HOOD REMOTE CONTROL PANEL, 48" AFF. FIELD WIRED BY ELECTRICAL CONTRACTOR. SEE HOOD DRAWINGS.
- PROVIDE REMOTE TEMPERATURE SENSOR MOUNTED MOUNTED AT 72" A.F.F. FOR EXISTING RTU-1 AND RTU-2. WIRE BACK TO THERMOSTAT IN OFFICE.
- PROVIDE REMOTE TEMPERATURE SENSOR MOUNTED MOUNTED AT 72" A.F.F. FOR EXISTING RTU-3. WIRE BACK TO THERMOSTAT IN OFFICE.
- PROVIDE 20"x18" SUPPLY AIR DUCT AND 26"x12" RETURN AIR DUCT UP TO ROOFTOP UNIT ON ROOF.
- PROVIDE CLEAR PLASTIC INSERT TO BLANK OFF DIFFUSER THROW AT THE EXHAUST HOOD AS SHOWN.
- 8"x8" TOILET EXHAUST AIR DUCT UP THROUGH ROOF TO EF-2
- NEW CONDENSING UNIT FOR ICE MACHINE AT DINING ROOM AND DRIVE -THRU. PROVIDE NEW REFRIGERANT PIPING AS REQUIRED FOR NEW ICE MACHINE INSTALLATION. ROUTE NEW PIPING TO OPENING IN ROOF. VERIFY EXISTING ROOF CONDITIONS (CRICKETS, FANS, ROOFTOP UNITS) AND ADJUST PIPE ROUTING AS REQUIRED. INSTALL ON EQUIPMENT SUPPORT RAILS ON ROOF. ROUTE PIPING DOWN IN WALL BEHIND DRINK DISPENSER. ADJUST CONDENSING UNIT LOCATION AS REQUIRED.
- MECHANICAL CONTRACTOR PROVIDED 3" PVC SCHEDULE 40 COMBUSTION AIR INTAKE AND VENT PIPE. CONNECT TO A 4" CONCENTRIC VENT THRU ROOF. PROVIDE RAIN CAP FOR TANKLESS WATER HEATER. COORDINATE WORK WITH ALL TRADES. REFER TO DETAILS D/P4.0. (TYPICAL FOR TWO TANKLESS WATER HEATERS).
- REMOVE EXISTING EXHAUST HOODS, FANS, CONTROLS, DUCTWORK, SUPPORTS, ETC. FIELD VERIFY LOCATIONS. DISPOSE OF IN ACCORDANCE WITH DIRECTION FROM ARBY'S CONSTRUCTION MANAGER. COORDINATE ROOF REPAIR WITH GENERAL CONTRACTOR.
- PROVIDE NEW LOW PRESSURE SUPPLY AND RETURN AIR DUCTS AS REQUIRED ABOVE LAY-IN CEILING. DUCTWORK SHALL BE INSTALLED WITH 2" THICK, 3/4 LB. DENSITY EXTERNAL INSULATION WITH A MINIMUM INSTALLED R-VALUE OF 6.0. PROVIDE TRANSITIONS, OFFSETS, FITTINGS, HANGERS AND TERMINATIONS AS REQUIRED. DUCT DIMENSIONS ARE CLEAR INTERNAL AIR PATH DIMENSIONS. FIELD VERIFY SIZE AND LOCATION AS REQUIRED.
- PROVIDE NEW FLEX DUCT WITH 2" THICK (3/4 LB. DENSITY) EXTERNALLY INSULATED WITH AN INSTALLED VALUE OF R-6.0 AS REQUIRED FOR ALL NEW SUPPLY DIFFUSERS AND RETURN AIR GRILLES. CONNECTIONS BETWEEN DUCT AND DIFFUSER SHALL BE AIR DUCT AND COMPLYING WITH NFPA STANDARDS 90A AND 90B.
- PROVIDE NEW MANUAL DAMPER AS REQUIRED.

### EXHAUST FAN SCHEDULE

UNIT DATA			PERFORMANCE DATA				MOTOR DATA			COMMENTS	
TAG	MODEL	FUNCTION	FAN TYPE	CFM	ESP	DAMPER	BELT OR DIRECT	HP	VOLTS		PH
EF-1	DU50HFA	KH-1 HOOD EXHAUST	ROOF MOUNTED UP BLAST	1200	0.75	-	BELT	1/2	115	1	1,2
EF-2	DR10HFA	RESTROOM EXHAUST	ROOF MOUNTED DOWN BLAST	200	0.25	-	BELT	FRACT.	115	1	1,2

NOTES:  
 1. FACTORY PROVIDED DISCONNECT SWITCH  
 2. FACTORY PROVIDED 21"x21" ROOF CURB

### AIR BALANCE SCHEDULE

ITEM	OA	RA	SA	EA	PRESSURE
NEW EF-1	--	--	--	1200	-1200
NEW EF-2	--	--	--	200	-200
EXIST. RTU-1	460	1540	2000	--	+460
EXIST. RTU-2	840	3160	4000	--	+840
NEW RTU-3	200	800	1000	--	+200
TOTAL	1500	5500	7000	1400	+100

### ROOFTOP UNIT SCHEDULE

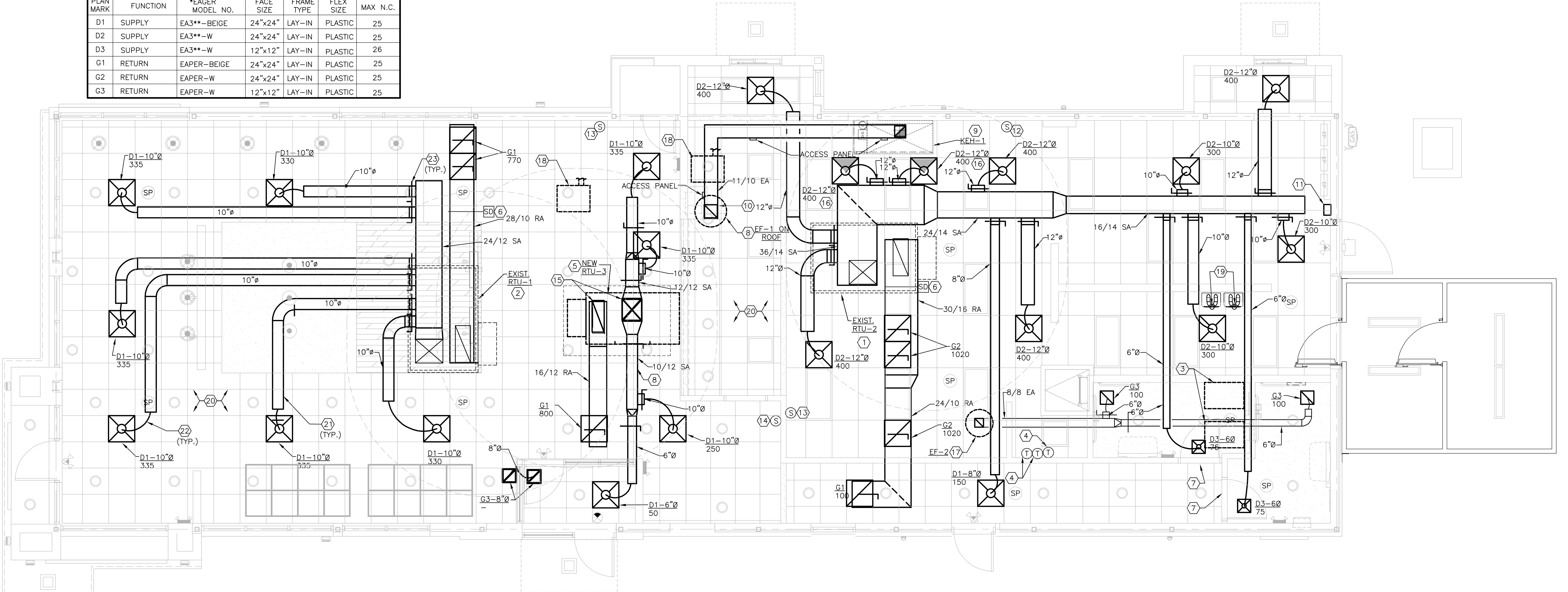
MFR.	MODEL NO.	BASE UNIT WT.	UNIT SIZE	VOLTS	HZ	PH	MCA	MIN. OUTSIDE AIR CFM	TOTAL CFM	FILTERS NO.	SIZE	TYPE
LENNOX	LGH036H4E	743 LBS.	3.0 TONS	208	60	3	20	200	1000	4	16x20x2	T/A

COOLING CAPACITY		EER	GAS HEAT CAPACITY		AFUE%	EVAP. COIL SIZE	COIL ROWS	EVAPORATOR FAN MOTOR
SENSIBLE	TOTAL		INPUT	OUTPUT		SIZE	ROWS	
24.2 MBH	36.1 MBH	12.8	65.0 MBH	52.0 MBH	80	7.78 SQ.FT.	3	0.5 HP

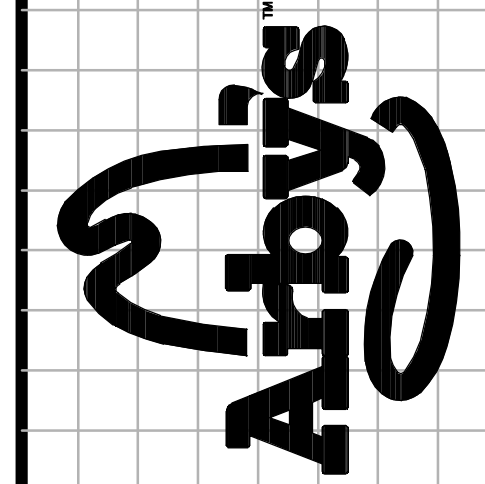
- ACCESSORIES:  
 1. FACTORY PROVIDED DISCONNECT  
 2. MANUAL OUTSIDE AIR INTAKE.  
 3. DIRECT DRIVE MOTOR  
 4. HAIL GUARD  
 5. ROOF CURB ADAPTER

### AIR DEVICE SCHEDULE

PLAN MARK	FUNCTION	*EAGER MODEL NO.	FACE SIZE	FRAME TYPE	FLEX SIZE	MAX N.C.
D1	SUPPLY	EA3**--BEIGE	24"x24"	LAY-IN	PLASTIC	25
D2	SUPPLY	EA3**--W	24"x24"	LAY-IN	PLASTIC	25
D3	SUPPLY	EA3**--W	12"x12"	LAY-IN	PLASTIC	26
G1	RETURN	EAPER--BEIGE	24"x24"	LAY-IN	PLASTIC	25
G2	RETURN	EAPER--W	24"x24"	LAY-IN	PLASTIC	25
G3	RETURN	EAPER--W	12"x12"	LAY-IN	PLASTIC	25



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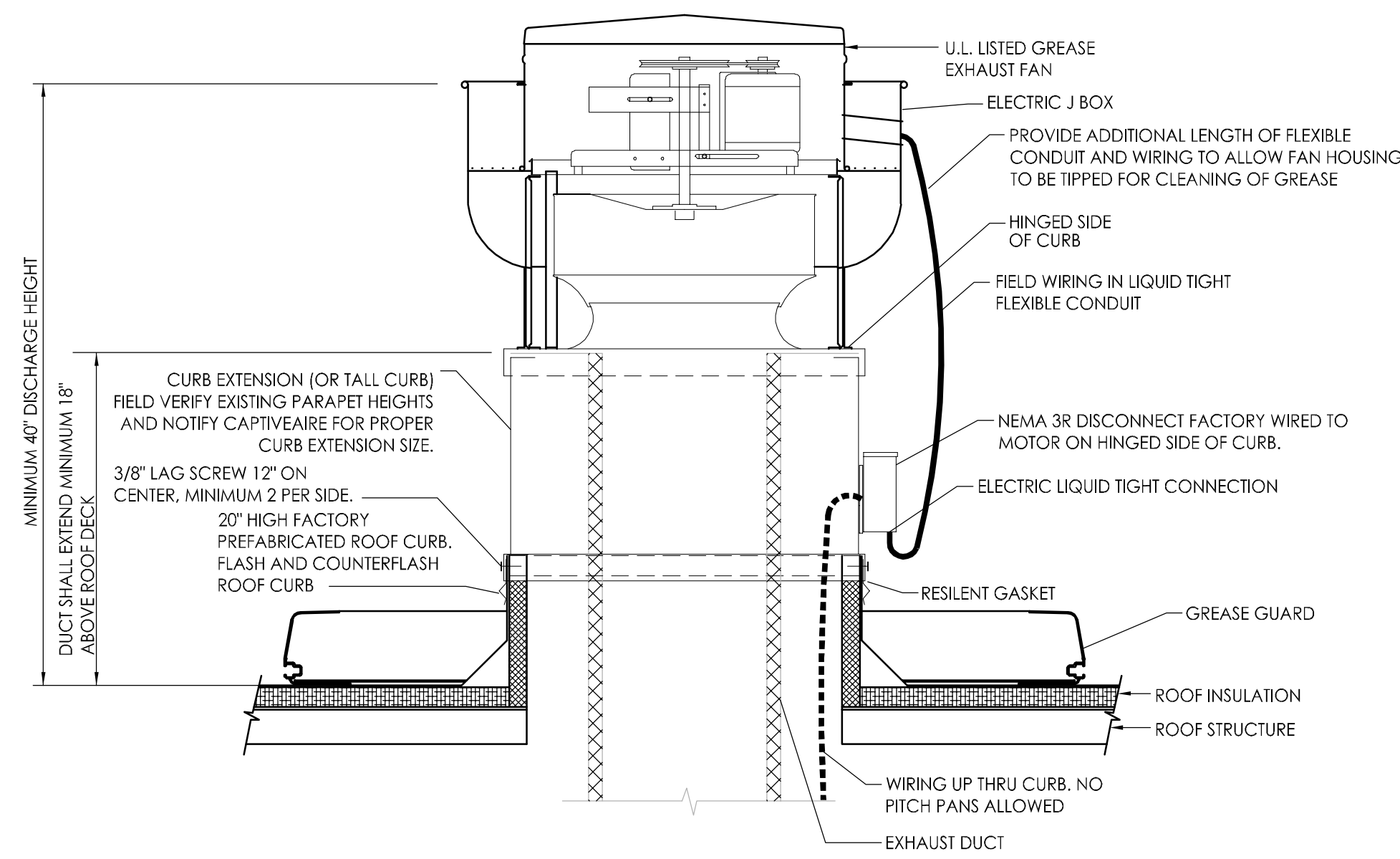
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REV.	DATE	DESCRIPTION	NAME

PROJECT NO: 210109  
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 ISSUE DATE: 03/18/22  
**MECHANICAL PLAN**

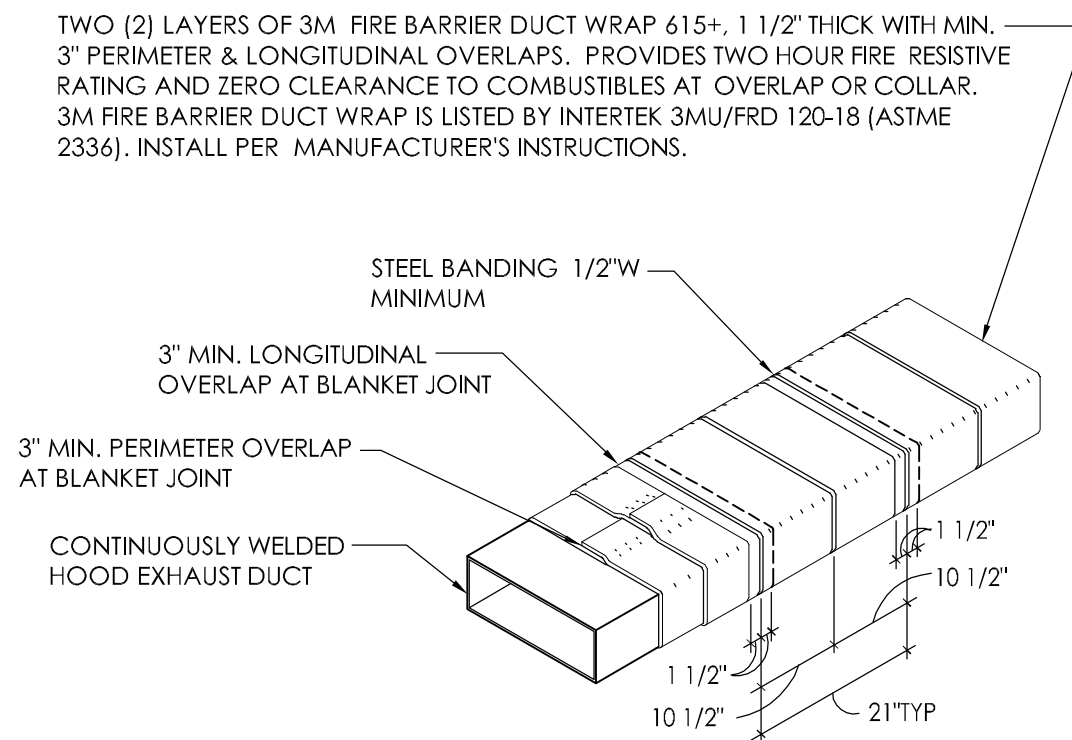
**M100**





- NOTES:
1. INSTALLATION SHALL BE IN ACCORDANCE WITH NFPA 96 REQUIREMENTS.
  2. CUT AND PATCH EXISTING ROOFING AS REQUIRED FOR NEW CURB INSTALLATION.
  3. CURB SHALL BE TAPERED TYPE AND MATCH THE PITCH OF THE ROOF.
  4. CONTRACTOR TO PROVIDE TREATED WOOD BLOCKINGS AND SHIM FLAT ROOF CURB TILL LEVEL FOR ALL EXHAUST FANS AND TO ACHIEVE ROOF CURB HEIGHTS. PROVIDE ROOF CURB EXTENSION IF REQUIRED.

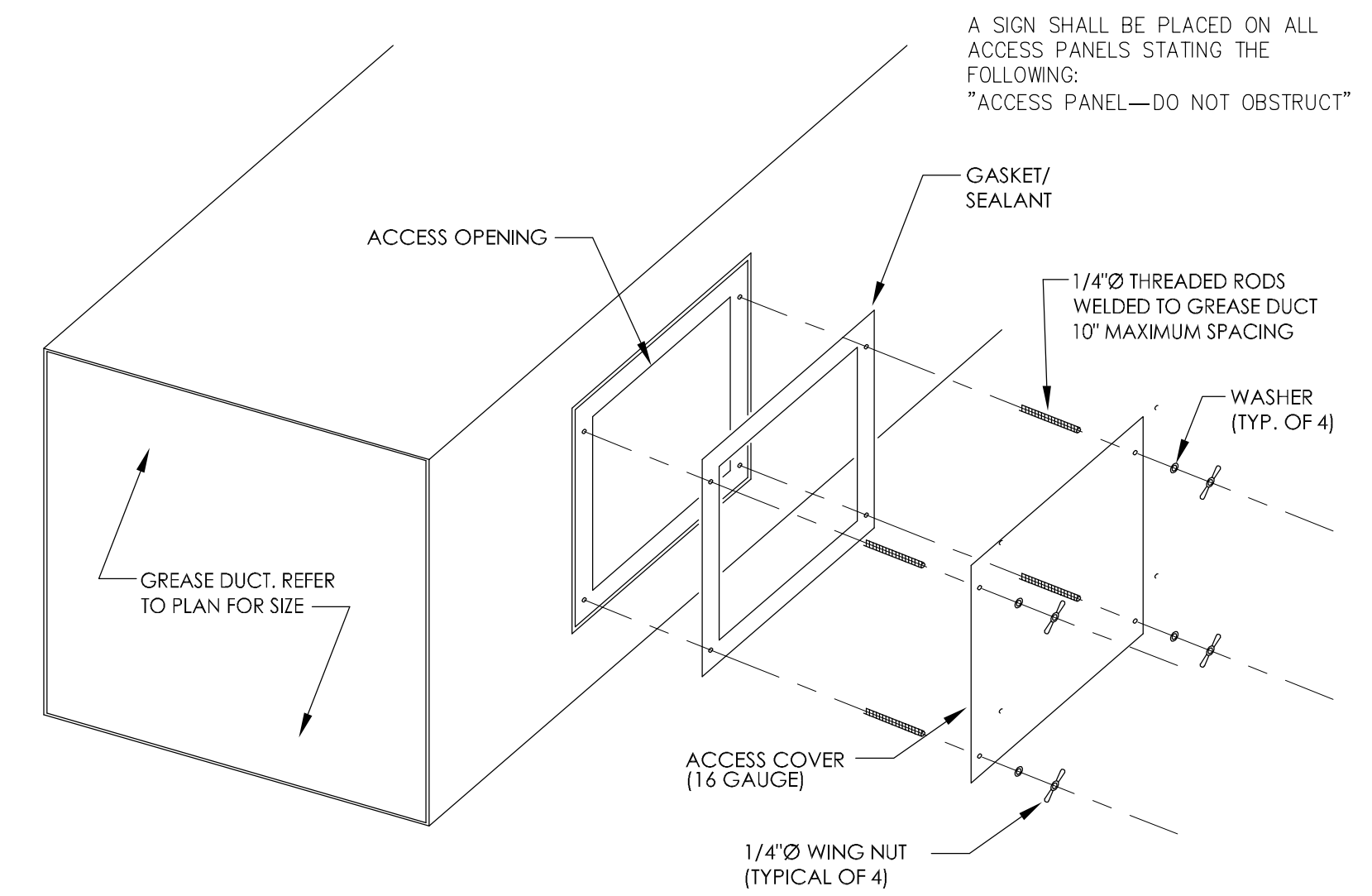
**1 GREASE EXHAUST FAN DETAIL**  
SCALE: NONE



- NOTES:
1. BANDING REQUIREMENTS: USE STEEL BANDS A MAXIMUM 2' FROM BLANKET EDGE AND SPACED A MAXIMUM OF 10 1/2' ON CENTER.
  2. WRAP GREASE DUCT CONTINUOUS AS SHOWN FROM CONNECTION AT FAN THROUGH CURB AND EXTEND 18" MIN. BELOW ROOF DECK.
  3. FOR HORIZONTAL RUNS OF EXHAUST DUCTS PROVIDE TYPICAL TRAPEZE SUPPORT SYSTEM WITH 1/2" HANGER RODS A MAXIMUM OF 6' FROM INSULATION EDGE. TRAPEZE SUPPORTS SHALL BE SPACED A MAXIMUM OF 60" ON CENTER FROM CENTERLINE OF VERTICAL EXHAUST DUCT.
  4. SLOPE HORIZONTAL EXHAUST DUCT RUNS A MINIMUM OF 1/4" PER FOOT (2% SLOPE) TOWARDS EXHAUST HOOD.
  5. PROVIDE INSULATED ACCESS DOORS OR PANELS FOR CLEANING AND INSPECTION OF DUCT. PROVIDE AN APPROVED SIGN ON EACH ACCESS DOOR OR PANEL WHICH READS "ACCESS PANEL - DO NOT OBSTRUCT".

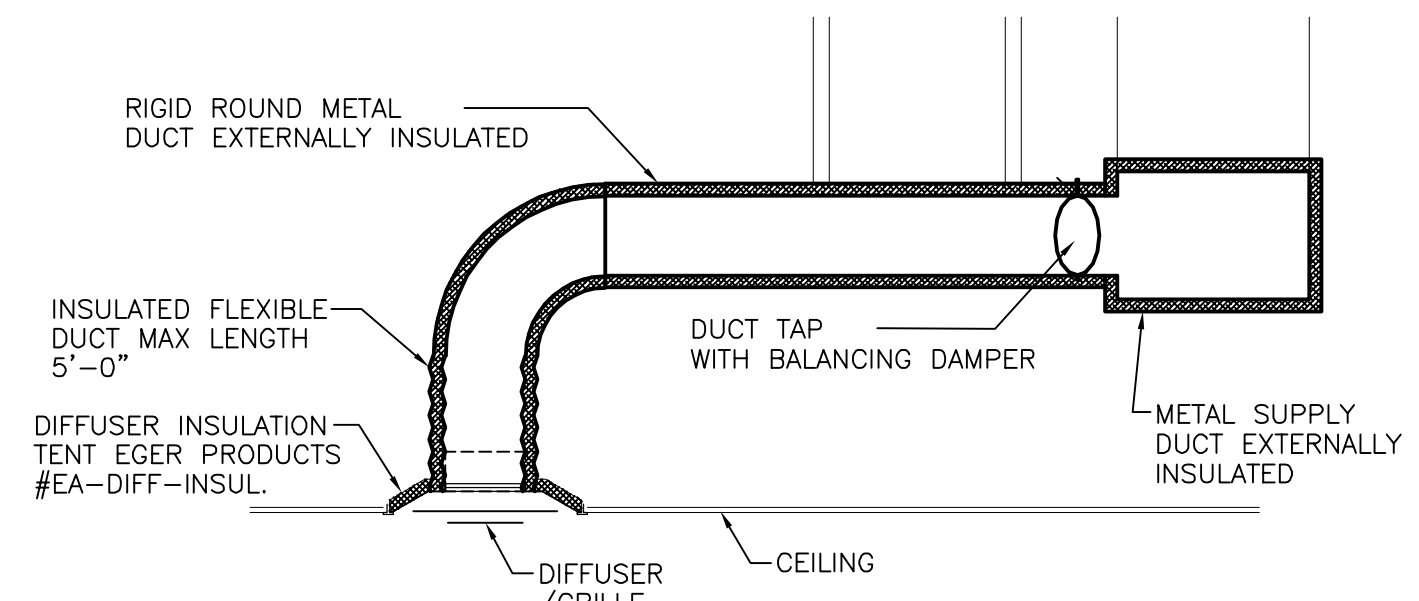
REFER TO 3M FIRE BARRIER DUCT WRAP 615+ PRODUCT DATA SHEET AND INSTALLATION GUIDE, PAGE 4.

**2 GREASE EXHAUST DUCT SYSTEM DETAIL**  
SCALE: NONE

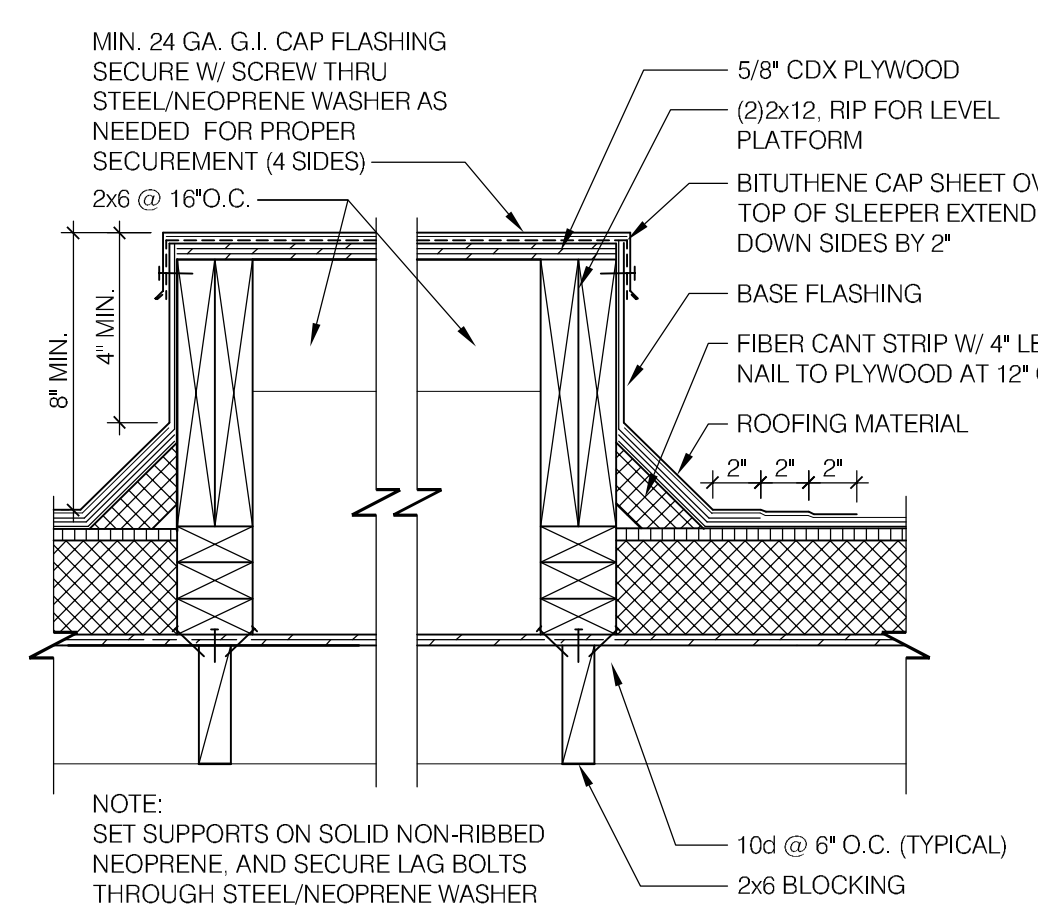


A SIGN SHALL BE PLACED ON ALL ACCESS PANELS STATING THE FOLLOWING:  
"ACCESS PANEL—DO NOT OBSTRUCT"

**3 GREASE DUCT ACCESS PANEL DETAIL**  
SCALE: NONE

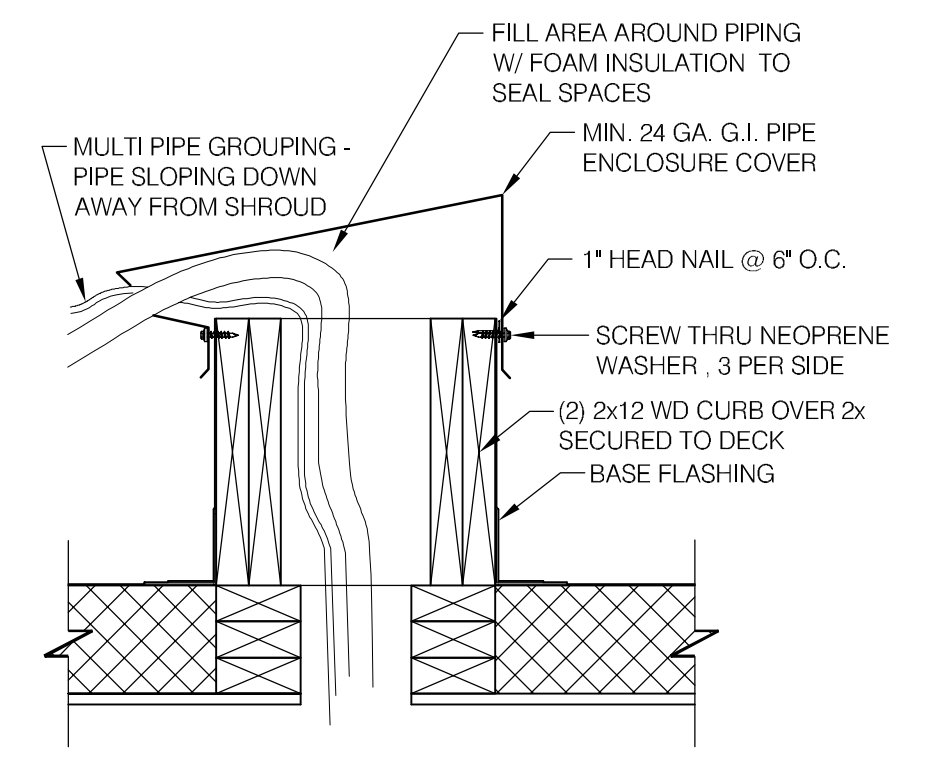


**4 HVAC DUCTWORK DETAIL**  
SCALE: NONE



NOTE:  
SET SUPPORTS ON SOLID NON-RIBBED NEOPRENE AND SECURE LAG BOLTS THROUGH STEEL/NEOPRENE WASHER

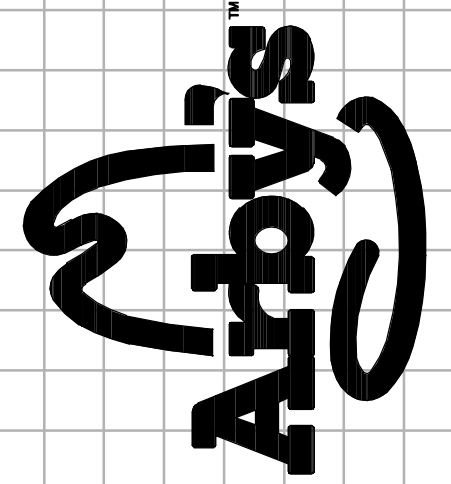
**5 SLEEPER SUPPORT**  
SCALE: NONE



**6 MULTIPLE PIPE FLASHING**  
SCALE: NONE

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**M200**

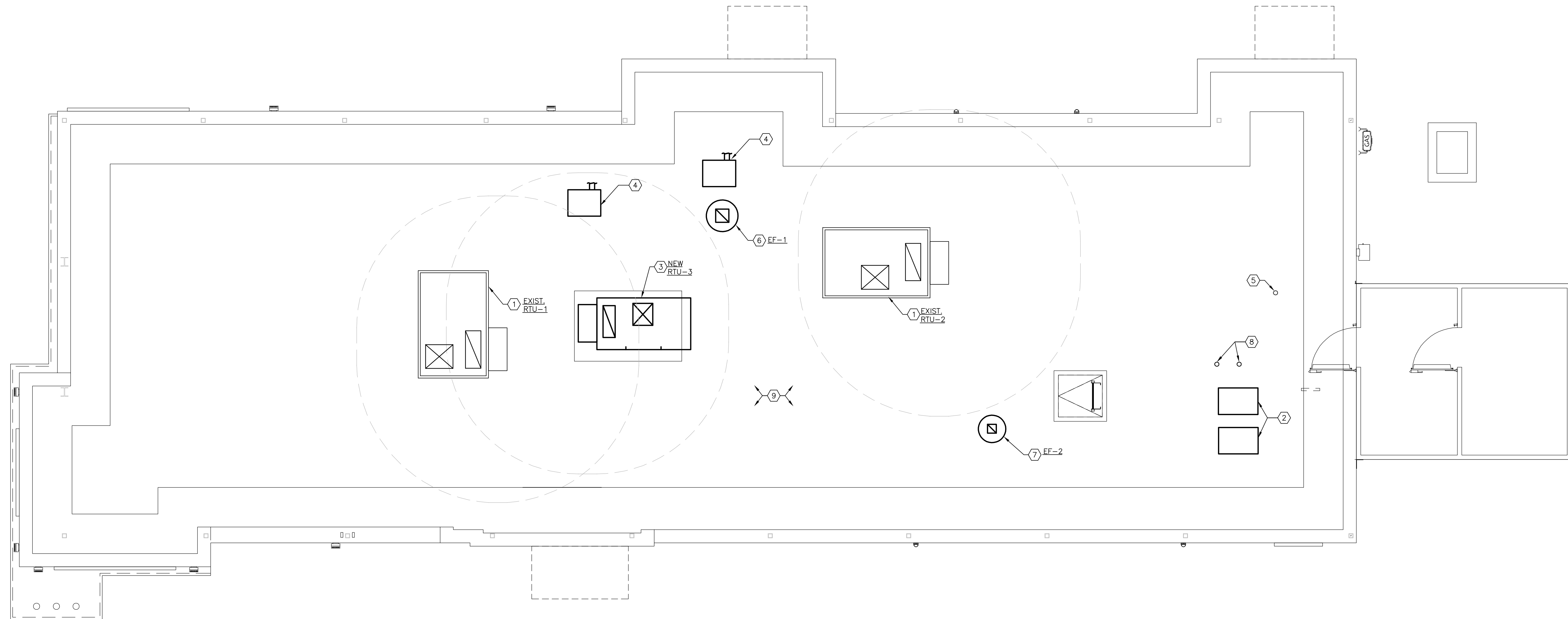
MECHANICAL DETAILS

**GENERAL NOTES:**

- A. MOUNT ALL HVAC EQUIPMENT ON ROOF PER DETAILS ON SHEET M5.1.
- B. CONTRACTOR TO MAINTAIN MINIMUM MANUFACTURER RECOMMENDED SERVICE CLEARANCE AROUND EACH PIECE OF EQUIPMENT.
- C. CONTRACTOR TO ENSURE A MINIMUM OF 10' CLEARANCE BETWEEN ALL OA INTAKES AND ANY EXHAUST FANS, VENTS, FLUES, ETC.
- D. CONTRACTOR TO ENSURE ALL MECHANICAL EQUIPMENT IS INSTALLED A MINIMUM OF 10' FROM THE ROOF EDGE.
- E. COORDINATE EXHAUST LOCATION OF RTUS WITH STRUCTURE TO ENSURE DUCT DROPS ARE LOCATED WITHIN TRUSS.
- F. ALL MAINTAINABLE EQUIPMENT SHALL BE A MINIMUM OF 10'-0" AWAY FROM THE EDGE OF THE ROOF.

**CODED NOTES: ( # )**

- ① EXISTING RTU-1 AND RTU-2 TO REMAIN AND REUSE. FIELD VERIFY LOCATION AND CONDITION.
- ② NEW CONDENSING UNIT FOR WALK-IN COOLER/FREEZER ADDITION. MOUNT ON FIELD-FABRICATED PLATFORM WHERE SHOWN. LEVEL PLATFORM AND ROOF PENETRATIONS BY GENERAL CONTRACTOR.
- ③ NEW RTU-3 INSTALL ON EXISTING LANDLORD ROOF CURB WITH ROOF CURB ADAPTER. SEE ROOFTOP UNIT SCHEDULE ON THIS SHEET.
- ④ NEW CONDENSING UNIT FOR ICE MACHINE AT DINING ROOM AND DRIVE -THRU. ROUTE NEW REFRIGERATION PIPING DOWN TO NEW ICE MACHINE. VERIFY EXISTING ROOF CONDITIONS (CRICKETS, FANS, ROOFTOP UNITS) AND ADJUST PIPE ROUTING AS REQUIRED. INSTALL ON EQUIPMENT SUPPORT RAILS ON ROOF. ADJUST CONDENSING UNIT LOCATION AS REQUIRED.
- ⑤ PLUMBING VENT PIPING SHOWN FOR REFERENCE. MAINTAIN A MINIMUM OF 10'-0" CLEARANCE TO ANY OA INTAKE.
- ⑥ NEW ROOF-MOUNTED EXHAUST FAN (EF-1). FAN SHALL BE SET LEVEL-ON ROOF. INSTALL AT LOCATION SHOWN. INTERLOCK WITH NEW HOOD. CONTRACTOR AND ARBY'S CONSTRUCTION MANAGER SHALL COORDINATE LOCATION OF NEW ROOF MOUNTED EXHAUST FAN TO MAINTAIN A MINIMUM OF 10'-0" AWAY FROM ANY OUTSIDE AIR INTAKE.
- ⑦ NEW TOILET EXHAUST FAN EF-2. FAN SHALL BE SET LEVEL-ON ROOF. INSTALL AT LOCATION SHOWN. EXHAUST FAN TO MAINTAIN A MINIMUM OF 10'-0" AWAY FROM ANY OUTSIDE AIR INTAKE.
- ⑧ MECHANICAL CONTRACTOR PROVIDED 3" PVC SCHEDULE 40 COMBUSTION AIR INTAKE AND VENT PIPE. CONNECT TO A 4" CONCENTRIC VENT THRU ROOF. PROVIDE RAIN CAP FOR TANKLESS WATER HEATER. COORDINATE WORK WITH ALL TRADES. (TYPICAL FOR TWO TANKLESS WATER HEATERS).
- ⑨ REMOVE EXISTING EXHAUST FANS, MAKE UP AIR UNIT, SUPPORTS, ETC. FIELD VERIFY LOCATIONS. DISPOSE OF IN ACCORDANCE WITH DIRECTION FROM ARBY'S CONSTRUCTION MANAGER. COORDINATE ROOF REPAIR WITH GENERAL CONTRACTOR.



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

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ROOF PLAN MECHANICAL

M301



# SPECIFICATIONS - DIVISION 23 - HVAC

## GENERAL MECHANICAL REQUIREMENTS:

HVAC SUBCONTRACTOR SHALL PROVIDE AT BID TIME A BID TO PROVIDE PREVENTATIVE MAINTENANCE SERVICES FOR ONE YEAR.

FURNISH TO THE OWNER ALL OPERATING & MAINTENANCE MANUALS, RECORD DRAWINGS, TEST & BALANCE REPORT. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER REPRESENTATIVES FOR EMPLOYEE TRAINING REQUIREMENTS FOR ALL EQUIPMENT.

MECHANICAL CONTRACTOR SHALL SUBMIT COMPLIANCE CHECKLIST TO BUILDING OFFICIAL UPON SUBSTANTIAL COMPLETION OF PROJECT.  
PROVIDE EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM.

### DEFINITIONS:

**FURNISH:** MEANS TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION.

**INSTALL:** MEANS TO PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR USE.

**PROVIDE:** MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR INTENDED USE.

### WARRANTY:

PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION. CONTRACTOR SHALL INCLUDE ONE YEAR WARRANTY ON OWNER FURNISHED EQUIPMENT. CONTRACTOR SHALL INCLUDE COSTS FOR RECEIVING, HANDLING, STORAGE, AND HOISTING OF OWNER FURNISHED EQUIPMENT.

PROVIDE OPERATION MANUALS, MAINTENANCE MANUALS AND SCHEMATICS FOR ALL MECHANICAL EQUIPMENT INSTALLED.

### COORDINATION:

COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

### DUCT DIMENSIONS:

UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON THE DRAWINGS ARE INSIDE CLEAR DIMENSIONS.

### TEMPERATURE CONTROLS:

PROVIDE PROGRAMMABLE THERMOSTATS WITH REMOTE TEMPERATURE SENSORS AND REMOTE HUMIDISTATS COMPATIBLE WITH ROOFTOP UNIT. CONTROL WIRING SHALL BE INSTALLED IN CONDUIT. THERMOSTAT SHALL MEET SETPOINT ADJUSTMENT FOR UNOCCUPIED MODE: HEATING DOWN TO 55 DEGREES AND COOLING UP TO 85 DEGREES. PROVIDE INTERLOCK CONTROL WIRING BETWEEN HOOD EXHAUST FANS AND ROOFTOP UNITS.

END OF SECTION

## SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. SUBMITTALS:
  - 1. CERTIFIED TAB REPORTS.
- B. TAB FIRM QUALIFICATIONS: AABC NEBB OR TABB CERTIFIED.
- C. TAB REPORT FORMS: STANDARD TAB CONTRACTOR'S FORMS APPROVED BY ARCHITECT.
- D. PERFORM TAB AFTER LEAKAGE AND PRESSURE TESTS ON AIR DISTRIBUTION SYSTEMS HAVE BEEN SATISFACTORILY COMPLETED.

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION

##### 3.1 EXAMINATION

- A. EXAMINE THE CONTRACT DOCUMENTS TO BECOME FAMILIAR WITH PROJECT REQUIREMENTS AND TO DISCOVER CONDITIONS IN SYSTEMS' DESIGNS THAT MAY PRECLUDE PROPER TAB OF SYSTEMS AND EQUIPMENT.
- B. EXAMINE THE APPROVED SUBMITTALS FOR HVAC SYSTEMS AND EQUIPMENT.
- C. EXAMINE SYSTEMS FOR INSTALLED BALANCING DEVICES, SUCH AS TEST PORTS, GAGE COCKS, THERMOMETER WELLS, FLOW-CONTROL DEVICES, BALANCING VALVES AND FITTINGS, AND MANUAL VOLUME DAMPERS. VERIFY THAT LOCATIONS OF THESE BALANCING DEVICES ARE ACCESSIBLE.
- D. EXAMINE SYSTEM AND EQUIPMENT INSTALLATIONS AND VERIFY THAT FIELD QUALITY-CONTROL TESTING, CLEANING, AND ADJUSTING SPECIFIED IN INDIVIDUAL SECTIONS HAVE BEEN PERFORMED.
- E. EXAMINE HVAC EQUIPMENT AND FILTERS AND VERIFY THAT BEARINGS ARE GREASED, BELTS ARE ALIGNED AND TIGHT, AND EQUIPMENT WITH FUNCTIONING CONTROLS IS READY FOR OPERATION.
- F. EXAMINE TERMINAL UNITS, SUCH AS VARIABLE-AIR-VOLUME BOXES, AND VERIFY THAT THEY ARE ACCESSIBLE AND THEIR CONTROLS ARE CONNECTED AND FUNCTIONING.
- G. EXAMINE AUTOMATIC TEMPERATURE SYSTEM COMPONENTS TO VERIFY THE FOLLOWING:
  - 1. DAMPERS, VALVES, AND OTHER CONTROLLED DEVICES ARE OPERATED BY THE INTENDED CONTROLLER.
  - 2. DAMPERS AND VALVES ARE IN THE POSITION INDICATED BY THE CONTROLLER.
  - 3. INTEGRITY OF DAMPERS AND VALVES FOR FREE AND FULL OPERATION AND FOR TIGHTNESS OF FULLY CLOSED AND FULLY OPEN POSITIONS. THIS INCLUDES DAMPERS IN MULTIZONE UNITS, MIXING BOXES, AND VARIABLE-AIR-VOLUME TERMINALS.
  - 4. AUTOMATIC MODULATING AND SHUTOFF VALVES, INCLUDING TWO-WAY VALVES AND THREE-WAY MIXING AND DIVERTING VALVES, ARE PROPERLY CONNECTED.
  - 5. THERMOSTATS AND HUMIDISTATS ARE LOCATED TO AVOID ADVERSE EFFECTS OF SUNLIGHT, DRAFTS, AND COLD WALLS.
  - 6. SENSORS ARE LOCATED TO SENSE ONLY THE INTENDED CONDITIONS.
  - 7. SEQUENCE OF OPERATION FOR CONTROL MODES IS ACCORDING TO THE CONTRACT DOCUMENTS.
  - 8. CONTROLLER SET POINTS ARE SET AT INDICATED VALUES.
  - 9. INTERLOCKED SYSTEMS ARE OPERATING.
  - 10. CHANGEOVER FROM HEATING TO COOLING MODE OCCURS ACCORDING TO INDICATED VALUES.
- H. REPORT DEFICIENCIES DISCOVERED BEFORE AND DURING PERFORMANCE OF TEST AND BALANCE PROCEDURES.

##### 3.2 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM ACCORDING TO THE PROCEDURES CONTAINED IN AABC'S "NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE", ASHRAE 111, NEBB'S "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS" OR SMACNA'S "HVAC SYSTEMS - TESTING, ADJUSTING, AND BALANCING" AND IN THIS SECTION.
- B. CUT INSULATION, DUCTS, PIPES, AND EQUIPMENT CABINETS FOR INSTALLATION OF TEST PROBES TO THE MINIMUM EXTENT NECESSARY FOR TAB PROCEDURES. AFTER TESTING AND BALANCING, PATCH PROBE HOLES IN DUCTS WITH SAME MATERIAL AND THICKNESS AS USED TO CONSTRUCT DUCTS. INSTALL AND JOIN NEW INSULATION THAT MATCHES REMOVED MATERIALS. RESTORE INSULATION, COVERINGS, VAPOR BARRIER, AND FINISH.
- C. MARK EQUIPMENT AND BALANCING DEVICES, INCLUDING DAMPER-CONTROL POSITIONS, VALVE POSITION INDICATORS, FAN-SPEED-CONTROL LEVERS, AND SIMILAR CONTROLS AND DEVICES, WITH PAINT OR OTHER SUITABLE, PERMANENT IDENTIFICATION MATERIAL TO SHOW FINAL SETTINGS.

##### 3.3 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. PREPARE SCHEMATIC DIAGRAMS OF SYSTEMS "AS-BUILT" DUCT LAYOUTS.
- B. FOR VARIABLE-AIR-VOLUME SYSTEMS, DEVELOP A PLAN TO SIMULATE DIVERSITY.
- C. DETERMINE THE BEST LOCATIONS IN MAIN AND BRANCH DUCTS FOR ACCURATE DUCT AIRFLOW MEASUREMENTS.
- D. VERIFY THAT MOTOR STARTERS ARE EQUIPPED WITH PROPERLY SIZED THERMAL PROTECTION.

E. CHECK FOR AIRFLOW BLOCKAGES.

F. CHECK CONDENSATE DRAINS FOR PROPER CONNECTIONS AND FUNCTIONING.

G. CHECK FOR PROPER SEALING OF AIR-HANDLING UNIT COMPONENTS.

H. CHECK FOR PROPER SEALING OF AIR DUCT SYSTEM.

#### 3.4 TOLERANCES

- A. SET HVAC SYSTEM AIRFLOW AND WATER FLOW RATES WITHIN THE FOLLOWING TOLERANCES:
  - 1. SUPPLY, RETURN, AND EXHAUST FANS AND EQUIPMENT WITH FANS: PLUS OR MINUS 10 PERCENT.
  - 2. AIR OUTLETS AND INLETS: PLUS OR MINUS 10 PERCENT.

END OF SECTION 230593

## SECTION 230700 - HVAC INSULATION

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

##### A. SURFACE-BURNING CHARACTERISTICS:

- 1. INDOOR INSULATION AND RELATED MATERIALS: TO BE FACTORY LABELED DESIGNATING MAXIMUM FLAME-SPREAD INDEX OF 25 OR LESS, AND SMOKE-DEVELOPED INDEX OF 50 OR LESS ACCORDING TO ASTM E 84.

##### 2.2 INSULATION MATERIALS

- A. FLEXIBLE ELASTOMERIC: CLOSED-CELL, SPONGE- OR EXPANDED-RUBBER MATERIALS. COMPLY WITH ASTM C 534, TYPE I FOR TUBULAR MATERIALS AND TYPE II FOR SHEET MATERIALS.
- B. MINERAL-FIBER BLANKET INSULATION: COMPLY WITH ASTM C 553, TYPE II AND ASTM C 1290, TYPE I.
  - 1. FSK JACKET: ALUMINUM-FOIL, FIBERGLASS-REINFORCED SCRIM WITH KRAFT-PAPER BACKING; COMPLYING WITH ASTM C 1136, TYPE II.
  - 2. FSK TAPE: FOIL-FACE, VAPOR-RETARDER TAPE MATCHING FACTORY-APPLIED JACKET WITH ACRYLIC ADHESIVE; COMPLYING WITH ASTM C 1136.
- C. MINERAL-FIBER, PIPE AND TANK INSULATION: COMPLYING WITH ASTM C 1393, TYPE II OR TYPE IIIA CATEGORY 2, OR WITH PROPERTIES SIMILAR TO ASTM C 612, TYPE IB; AND HAVING FACTORY-APPLIED ASJ JACKET. NOMINAL DENSITY IS 2.5 LB/CU. FT. OR MORE. THERMAL CONDUCTIVITY (K-VALUE) AT 100 DEG F IS 0.29 BTU IN./IN./H SQ. FT. X DEG F OR LESS.
  - 1. ASJ: WHITE, KRAFT-PAPER, FIBERGLASS-REINFORCED SCRIM WITH ALUMINUM-FOIL BACKING; COMPLYING WITH ASTM C 1136, TYPE I.
  - 2. ASJ TAPE: WHITE VAPOR-RETARDER TAPE MATCHING FACTORY-APPLIED JACKET WITH ACRYLIC ADHESIVE; COMPLYING WITH ASTM C 1136.
- D. FLEXIBLE ELASTOMERIC ADHESIVE: COMPLY WITH MIL-A-24179A, TYPE II, CLASS I.
- E. MINERAL-FIBER ADHESIVE: COMPLY WITH MIL-A-3316C, CLASS 2, GRADE A.
- F. VAPOR-BARRIER MASTIC: WATER BASED; SUITABLE FOR INDOOR AND OUTDOOR USE ON BELOW AMBIENT SERVICES; COMPLY WITH MIL-PRF-19565C, TYPE II.

### PART 3 - EXECUTION

#### 3.1 INSULATION INSTALLATION

- A. COMPLY WITH REQUIREMENTS OF THE MIDWEST INSULATION CONTRACTORS ASSOCIATIONS "NATIONAL COMMERCIAL & INDUSTRIAL INSULATION STANDARDS" FOR INSULATION INSTALLATION ON PIPES AND EQUIPMENT.
- B. INSULATION INSTALLATION AT INTERIOR WALL AND PARTITION PENETRATIONS (THAT ARE NOT FIRE RATED): INSTALL INSULATION CONTINUOUSLY THROUGH WALLS AND PARTITIONS.
- C. INSULATION INSTALLATION AT FIRE-RATED WALL, PARTITION, AND FLOOR PENETRATIONS: INSTALL INSULATION CONTINUOUSLY THROUGH PENETRATIONS. SEAL PENETRATIONS. COMPLY WITH REQUIREMENTS IN SECTION 078400.
- D. FLEXIBLE ELASTOMERIC INSULATION INSTALLATION:
  - 1. SEAL LONGITUDINAL SEAMS AND END JOINTS WITH ADHESIVE TO ELIMINATE OPENINGS IN INSULATION THAT ALLOW PASSAGE OF AIR TO SURFACE BEING INSULATED.
  - 2. INSULATION INSTALLATION ON PIPE FITTINGS AND ELBOWS: INSTALL MITERED SECTIONS OF PIPE INSULATION. SECURE INSULATION MATERIALS AND SEAL SEAMS WITH ADHESIVE TO ELIMINATE OPENINGS IN INSULATION THAT ALLOW PASSAGE OF AIR TO SURFACE BEING INSULATED.
- E. MINERAL-FIBER INSULATION INSTALLATION:
  - 1. INSULATION INSTALLATION ON STRAIGHT PIPES AND TUBES: WHERE VAPOR BARRIERS ARE INDICATED, SEAL LONGITUDINAL SEAMS, END JOINTS, AND PROTRUSIONS WITH VAPOR-BARRIER MASTIC AND JOINT SEALANT.
  - 2. FOR INSULATION WITH FACTORY-APPLIED JACKETS ON ABOVE AMBIENT SURFACES, SECURE LAPS WITH OUTWARD CLINCHED STAPLES AT 6 INCHES O.C.
  - 3. FOR INSULATION WITH FACTORY-APPLIED JACKETS ON BELOW AMBIENT SURFACES, DO NOT STAPLE LONGITUDINAL TABS BUT SECURE TABS WITH ADDITIONAL ADHESIVE AS RECOMMENDED BY INSULATION MATERIAL MANUFACTURER AND SEAL WITH VAPOR-BARRIER MASTIC AND FLASHING SEALANT.
  - 4. BLANKET INSULATION INSTALLATION ON DUCTS AND PLENUMS: SECURE WITH ADHESIVE AND INSULATION PINS.
  - 5. FOR DUCTS AND PLENUMS WITH SURFACE TEMPERATURES BELOW AMBIENT, INSTALL A CONTINUOUS UNBROKEN VAPOR BARRIER.
- F. PLENUMS AND DUCTS REQUIRING INSULATION:
  - 1. CONCEALED SUPPLY AIR.
  - 2. CONCEALED AND EXPOSED OUTDOOR AIR.
  - 3. CONCEALED AND EXPOSED RETURN AIR LOCATED IN NONCONDITIONED SPACE.

##### 3.2 DUCT AND PLENUM INSULATION SCHEDULE

RETAIN "ONE OF" OPTION IN PARAGRAPHS IN THIS ARTICLE TO ALLOW CONTRACTOR TO SELECT PIPING MATERIALS FROM THOSE RETAINED.

- A. CONCEALED DUCT INSULATION SHALL BE 1-1/2" THICK MINERAL-FIBER BLANKET WITH A 1.5-LB/CU. FT. NOMINAL DENSITY.
- 3.3 HVAC PIPING INSULATION SCHEDULE
  - A. CONDENSATE PIPING: INSULATION SHALL BE 1" THICK FLEXIBLE ELASTOMERIC.
  - B. REFRIGERANT PIPING: INSULATION SHALL BE 1" THICK FLEXIBLE ELASTOMERIC.

END OF SECTION 230700

## SECTION 232300 - REFRIGERANT PIPING

### PART 2 - PRODUCTS

#### 2.1 TUBES AND FITTINGS

- A. COPPER TUBE: ASTM B 88, TYPE K OR TYPE L, ANNEALED OR DRAWN-TEMPER TUBING AND WROUGHT-COPPER FITTINGS WITH BRAZED OR SOLDERED JOINTS.
- B. WROUGHT-COPPER FITTINGS AND UNIONS: ASME B16.22.
- C. SOLDER FILLER METALS: ASTM B 32. USE 95-5 TIN ANTIMONY OR ALLOY HB SOLDER TO JOIN COPPER SOCKET FITTINGS ON COPPER PIPE.
- D. BRAZING FILLER METALS: AWS A5.8.

#### 2.2 VALVES AND SPECIALTIES

- A. AS REQUIRED BY THE KITCHEN EQUIPMENT MANUFACTURER.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. INSTALL REFRIGERANT PIPING AND CHARGE WITH REFRIGERANT ACCORDING TO ASHRAE 15.
- B. INSTALL REFRIGERANT PIPING AS REQUIRED BY THE KITCHEN EQUIPMENT MANUFACTURER.

END OF SECTION 232300

## SECTION 233100 - HVAC DUCTS AND CASINGS

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE".
- B. STRUCTURAL PERFORMANCE: DUCT HANGERS AND SUPPORTS SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS DESCRIBED IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE".
- C. COMPLY WITH NFPA 96 FOR DUCTS CONNECTED TO COMMERCIAL KITCHEN HOODS.

#### 2.2 DUCTS

- A. GALVANIZED-STEEL SHEET: ASTM A 653/A 653M, AND A 924 WITH G90 HOT-DIP GALVANIZED COATING.
  - 1. GALVANIZED COATING DESIGNATION: G90.
- B. TYPE I KITCHEN EXHAUST DUCTWORK
  - 1. FIELD FABRICATED RECTANGULAR KITCHEN GREASE DUCT:
    - a. MINIMUM 16 GAUGE CARBON STEEL WHERE CONCEALED, AND OF MINIMUM 16 GAUGE STAINLESS STEEL WHERE EXPOSED. JOINTS AND SEAMS SHALL BE CONTINUOUSLY WELDED LIQUID TIGHT ON THE EXTERNAL SIDE OF THE DUCT SYSTEM.
    - b. PROVIDE GREASE RESERVOIR AS REQUIRED BY THE REQUIREMENTS OF IMC 506.3.7.1 AND PROVIDE DUCT CLEANOUT(S) AS REQUIRED BY THE REQUIREMENTS OF IMC 506.8.3.
    - c. COMPOSITE GREASE DUCT ENCLOSURE ASSEMBLIES: PROVIDE FLEXIBLE BLANKET-TYPE INSULATION COMPOSED OF FIBER BLANKET ENCAPSULATED IN AN ALUMINUM FOIL SCRIM, PROVIDING A NONCOMBUSTIBLE WRAP TO PROVIDE A VAPOR AND DUST BARRIER. DUCT WRAP SYSTEM SHALL HAVE FLAME SPREAD INDEX OF NOT MORE THAN 5, AND SMOKE DEVELOPED INDEX NOT EXCEEDING 5, WHEN TESTED PER ASTM E-84 METHOD. INSULATION AND JACKET SHALL BE RATED FOR OPERATING TEMPERATURES UP TO 2000°F. DUCT WRAP SYSTEM MUST COMPLY WITH ALL FIVE FIRE TESTS OF STANDARD ASTM E2336. GREASE DUCT ENCLOSURE SYSTEM, AND THE DUCT FIRESTOP SYSTEM SHALL BE ASTM E814 CLASSIFIED. FABRICATE DUCT WRAP ENCLOSURE WITH (2) LAYERS OF DUCT WRAP TO PROVIDE 2-HOUR FIRE RATING. PROVIDE COMPOSITE GREASE DUCT FIRE PROTECTION INSULATION FROM ONE OF THE FOLLOWING: THERMAL CERAMICS FIREMASTER FASTWRAP XL, UNIFRAX FIREWRAP 2.0 MAX.
- C. JOINT AND SEAM TAPE, AND SEALANT: COMPLY WITH UL 181A. PROVIDE POLYMERIC RUBBER TYPIC SEALANT FOR USE ON BOTH INTERIOR LOCATED DUCTWORK AND DUCTWORK EXPOSED TO OUTDOOR CONDITIONS. SEALER SHALL HAVE HIGH BONDING STRENGTH FOR SURE, FIRST TIME SEALING OF JOINTS IN LOW, MEDIUM, AND HIGH PRESSURE DUCT SYSTEMS. SEALER SHALL BE HIGH IN SOLID CONTENT. PROVIDE A TWO PART TAPE SEALING SYSTEM, CONSISTING OF WOVEN FIBER TAPE IMPREGNATED WITH A GYPSUM MINERAL COMPOUND, AND A MODIFIED ACRYLIC/SILICONE ACTIVATOR THAT REACTS EXOTHERMICALLY WITH THE TAPE. TWO PART TAPE SEALING SYSTEM MUST BE RATED FOR BOTH INDOOR AND OUTDOOR APPLICATION. TAPE SHALL NOT CONTAIN ASBESTOS.
- D. METAL DUCT FABRICATION: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE".

#### 2.3 ACCESSORIES

- A. VOLUME DAMPERS AND CONTROL DAMPERS: SINGLE-BLADE AND MULTIPLE OPPOSED-BLADE DAMPERS, STANDARD LEAKAGE RATING, AND SUITABLE FOR HORIZONTAL OR VERTICAL APPLICATIONS; FACTORY FABRICATED AND COMPLETE WITH REQUIRED HARDWARE AND ACCESSORIES.
  - 1. ROUND VOLUME DAMPERS: PROVIDE MINIMUM 20 GAUGE GALVANIZED STEEL FRAME AND BLADES, MINIMUM 3/8" SQUARE STEEL AXLE, MOLDED SYNTHETIC BEARINGS, WITH LOCKING POSITION REGULATOR. REGULATOR SHALL BE POSITIONED WITH SHEET METAL BRACKET BEYOND DUCT COVERING. WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE, PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING OR WALL INSTALLATION, AS REQUIRED.
  - 2. RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM 1/2" HEXAGONAL AXLE, BOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN THE FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".
- B. FLEXIBLE DUCT CONNECTORS: FLAME-RETARDED OR NONCOMBUSTIBLE FABRICS, COATINGS, AND ADHESIVES COMPLYING WITH UL 181, CLASS 1. CONNECTOR TO BE 30 OUNCE, NEOPRENE COATED, FIBERGLASS FABRIC.
- C. FLEXIBLE DUCTS: FACTORY ASSEMBLED, UL 181, CLASS 1, WITH 1-1/2-INCH THICK (R-5 MIN.), 1 PCF FIBERGLASS INSULATION AND REINFORCED OUTER PROTECTIVE COVER/VAPOR BARRIER. FLEXIBLE DUCT SHALL MEET NFPA 90A WITH FLAME SPREAD UNDER 25, SMOKE DEVELOPED UNDER 50, AND SHALL BE RATED FOR MINIMUM 2-INCH WG PRESSURE AND 0 TO 250°F TEMPERATURE. PROVIDE SCREW-OPERATED METAL ADJUSTABLE CLAMPING DEVICES. USE TWIST-LOCK CONICAL TAP COLLARS AT CONNECTIONS INTO SHEET METAL DUCTWORK. MAXIMUM EXTENDED LENGTH OF FLEXIBLE DUCT SHALL NOT EXCEED 5 FEET.
- D. TURNING VANES: PROVIDE FABRICATED TURNING VANES AND VANE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS". PROVIDE TURNING VANES CONSTRUCTED OF CURVED BLADES, SUPPORTED WITH BARS PERPENDICULAR TO BLADES, AND SET INTO SIDE STRIPS SUITABLE FOR MOUNTING IN DUCTWORK. FOLLOW SMACNA GUIDELINES FOR SPACING SUPPORT, AND CONSTRUCTION. ALL BLADES SHALL BE DOUBLE THICKNESS AIRFOIL TYPE.
- E. BIRD SCREENS AND FRAMES: PROVIDE BIRD SCREENS THAT CONFORM TO ASTM E 2016, NO. 2 MESH, ALUMINUM OR STAINLESS STEEL. PROVIDE "MEDIUM-LIGHT" RATED ALUMINUM SCREENS. PROVIDE "LIGHT" RATES STAINLESS STEEL SCREENS.
- F. DUCT-MOUNTED ACCESS DOORS: FABRICATE ACCESS PANELS ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE"; FIGURES 2-10, "DUCT ACCESS DOORS AND PANELS;" AND 2-11, "ACCESS PANELS - ROUND DUCT."

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. INSTALL DUCTWORK, ACCESSORIES, AND SUPPORTS ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" UNLESS OTHERWISE INDICATED.
  - B. SEAL DUCTS TO THE FOLLOWING SEAL CLASSES ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE": 1-INCH WG, SEAL CLASS A.
  - C. CONCEAL DUCTS FROM VIEW IN FINISHED AND OCCUPIED SPACES.
  - D. AVOID PASSING THROUGH OR ABOVE ELECTRICAL EQUIPMENT SPACES AND ENCLOSURES.
  - E. CLEAN DUCT SYSTEMS BEFORE TESTING, ADJUSTING, AND BALANCING.
- #### 3.2 TESTING, ADJUSTING, AND BALANCING
- A. BALANCE AIRFLOW WITHIN DISTRIBUTION SYSTEMS, INCLUDING SUBMAINS, BRANCHES, AND TERMINALS TO INDICATED QUANTITIES PER SPECIFICATIONS.

END OF SECTION 233100

## SECTION 233423 - HVAC EXHAUST FANS

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. PRODUCTS SHALL BE LICENSED TO USE THE AMCA-CERTIFIED RATINGS SEAL.
- B. EXHAUST FANS SHALL COMPLY WITH UL 705. TYPE 1 FANS SHALL ALSO COMPLY WITH UL 762.
- C. TYPE 1 FANS TO BE DESIGNED FOR HIGH HEAT OPERATION AT 300°F.
- D. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.

#### 2.2 CENTRIFUGAL VENTILATORS

- A. HOUSING: REMOVABLE, SPUN-ALUMINUM, DOME TOP AND OUTLET BAFFLE; SQUARE, ONE-PIECE, ALUMINUM BASE WITH VENTURI INLET CONE.
  - 1. UPBLAST UNITS: ALUMINUM DISCHARGE BAFFLE TO DIRECT DISCHARGE AIR UPWARD, WITH RAIN AND SNOW DRAINS.
- B. FAN WHEELS: ALUMINUM HUB AND WHEEL WITH BACKWARD-INCLINED BLADES.
- C. BELT-DRIVEN DRIVE ASSEMBLY: RESILIANT MOUNTED TO HOUSING.
  - 1. FAN SHAFT: TURNED, GROUND, AND POLISHED STEEL; KEYED TO WHEEL HUB.
  - 2. SHAFT BEARINGS: PERMANENTLY LUBRICATED, PERMANENTLY SEALED, SELF-ALIGNING BALL BEARINGS.
  - 3. PULLEYS: CAST-IRON, ADJUSTABLE-PITCH MOTOR PULLEY.
  - 4. FAN AND MOTOR ISOLATED FROM EXHAUST AIRSTREAM.
- D. ACCESSORIES:
  - 1. DISCONNECT SWITCH: NON-FUSIBLE TYPE, WITH THERMAL-OVERLOAD PROTECTION, FACTORY WIRED THROUGH AN INTERNAL ALUMINUM CONDUIT.
  - 2. BIRD SCREENS: REMOVABLE, 1/2-INCH MESH, ALUMINUM OR BRASS WIRE.
  - 3. DAMPERS: COUNTERBALANCED, PARALLEL-BLADE, BACKDRAFT DAMPERS MOUNTED IN CURB BASE; FACTORY SET TO CLOSE WHEN FAN STOPS.
  - 4. MOTORREED DAMPERS: PARALLEL-BLADE DAMPERS MOUNTED IN CURB BASE WITH ELECTRIC ACTUATOR; WIRED TO CLOSE WHEN FAN STOPS.
  - 5. GREASE BOX FOR TYPE 1 EXHAUST FANS.
  - 6. G2 GREASE GUARD FOR TYPE 1 EXHAUST FANS.
- E. ROOF CURBS: 20 GAUGE GALVANIZED STEEL; MITERED AND WELDED CORNERS; 1-1/2-INCH THICK, RIGID, FIBERGLASS INSULATION ADHERED TO INSIDE WALLS; AND 1-1/2-INCH WOOD NAILER. SIZE AS REQUIRED TO SUIT ROOF OPENING AND FAN BASE.

- 1. CONFIGURATION: SELF-FLASHING WITHOUT A CANT STRIP, WITH MOUNTING FLANGE.
- 2. OVERALL HEIGHT: 12 INCHES FOR GENERAL EXHAUST FANS; 20 INCHES FOR KITCHEN EXHAUST FANS.
- 3. PITCH MOUNTING: MANUFACTURE CURB FOR ROOF SLOPE.
- 4. MOUNTING PEDESTAL: GALVANIZED STEEL WITH REMOVABLE ACCESS PANEL.
- 5. TYPE 1 AND TYPE 2 ROOF CURBS TO BE HINGED TYPE.

#### F. CAPACITIES AND CHARACTERISTICS:

- 1. SEE SCHEDULE.

#### 2.3 MOTORS

- A. COMPLY WITH NEMA DESIGNATION, TEMPERATURE RATING, SERVICE FACTOR, ENCLOSURE TYPE, AND EFFICIENCY REQUIREMENTS FOR MOTORS.
  - 1. MOTOR SIZES: MINIMUM SIZE AS INDICATED. IF NOT INDICATED, LARGE ENOUGH SO DRIVEN LOAD WILL NOT REQUIRE MOTOR TO OPERATE IN SERVICE FACTOR RANGE ABOVE 1.0.
- B. ENCLOSURE TYPE: TOTALLY ENCLOSED, FAN COOLED.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. INSTALL UNITS WITH CLEARANCES FOR SERVICE AND MAINTENANCE.
- B. ROOF-MOUNTED UNITS: INSTALL ROOF CURB ON ROOF STRUCTURE, ACCORDING TO ARI GUIDELINE B. INSTALL AND SECURE ROOF-MOUNTED FANS ON CURBS, AND COORDINATE ROOF PENETRATIONS AND FLASHING WITH ROOF CONSTRUCTION.

END OF SECTION 233423

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MECHANICAL SPECIFICATIONS



# SPECIFICATIONS - DIVISION 23 - HVAC (CONTINUED)

## SECTION 233713 - DIFFUSERS, REGISTERS, AND GRILLES

- PART 1 - GENERAL
- 1.1 SECTION REQUIREMENTS
- A. SUBMITTALS:
- PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED, INCLUDING COLOR CHARTS FOR FACTORY FINISHES.
- PART 2 - PRODUCTS
- 2.1 DIFFUSERS, REGISTERS, AND GRILLES:
- A. REFER TO SCHEDULES FOR FINISH TYPE, COLOR, MATERIAL, AND MOUNTING.
- PART 3 - EXECUTION
- 3.1 INSTALLATION
- A. INSTALL DIFFUSERS, REGISTERS, AND GRILLES LEVEL AND PLUMB.
- B. CEILING-MOUNTED OUTLETS AND INLETS: DRAWINGS INDICATE GENERAL ARRANGEMENT OF DUCTS, FITTINGS, AND ACCESSORIES. MAKE FINAL LOCATIONS WHERE INDICATED, AS MUCH AS PRACTICAL, FOR UNITS INSTALLED IN LAY-IN CEILING PANELS. LOCATE UNITS IN THE CENTER OF PANEL UNLESS OTHERWISE INDICATED. WHERE ARCHITECTURAL FEATURES OR OTHER ITEMS CONFLICT WITH INSTALLATION, NOTIFY ARCHITECT FOR A DETERMINATION OF FINAL LOCATION.
- C. AFTER INSTALLATION, ADJUST DIFFUSERS, REGISTERS, AND GRILLES TO AIR PATTERNS INDICATED, OR AS DIRECTED, BEFORE STARTING AIR BALANCING.

END OF SECTION 233713

## SECTION 237413 - PACKAGED ROOFTOP UNITS

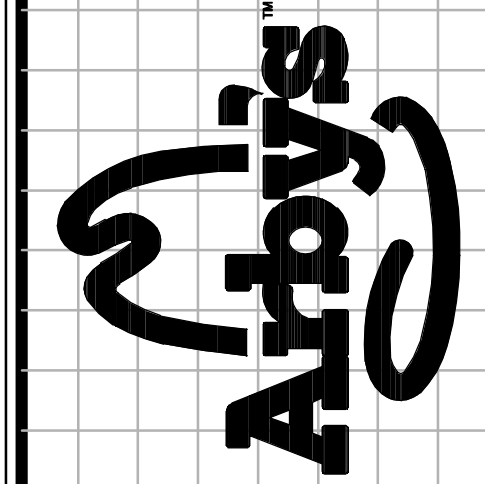
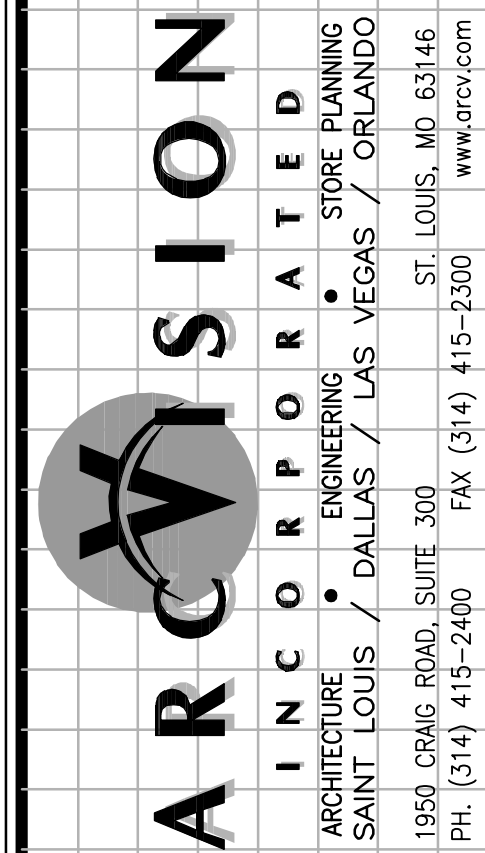
- 1.1 SUMMARY
- A. THIS SECTION INCLUDES PACKAGED, ROOFTOP UNITS WITH THE FOLLOWING COMPONENTS AND ACCESSORIES:
- DIRECT-EXPANSION COOLING.
  - GAS FURNACE.
  - ECONOMIZER OUTDOOR-AND RETURN-AIR DAMPER SECTION.
  - INTEGRAL SPACE TEMPERATURE CONTROLS.
  - ROOF CURBS.
- 1.2 SECTION REQUIREMENTS
- A. SUBMITTALS:
- PRODUCT DATA: INCLUDE MANUFACTURER'S TECHNICAL DATA FOR EACH RTU, INCLUDING RATED CAPACITIES, DIMENSIONS, REQUIRED CLEARANCES, CHARACTERISTICS, FURNISHED SPECIALTIES, AND ACCESSORIES.
- PART 2 - PRODUCTS
- 2.1 CASING
- A. GENERAL FABRICATION REQUIREMENTS FOR CASINGS: FORMED AND REINFORCED INSULATED PANELS, FABRICATED TO ALLOW REMOVAL FOR ACCESS TO INTERNAL PARTS AND COMPONENTS, WITH JOINTS BETWEEN SECTIONS SEALED.
- B. EXTERIOR CASING MATERIAL: GALVANIZED STEEL WITH FACTORY-PAINTED FINISH, WITH PITCHED ROOF PANELS AND KNOCKOUTS WITH GROMMET SEALS FOR ELECTRICAL AND PIPING CONNECTIONS AND LIFTING LUGS.
- CASING THICKNESS: 1/6 GAUGE THICK.
- C. CASING INSULATION AND ADHESIVE: COMPLY WITH NFPA 90A.
- MATERIALS: ASTM C 1071, TYPE I.
  - THICKNESS: 1/2 INCH
  - LINER MATERIALS SHALL HAVE AIR-STREAM SURFACE INSULATED WITH A MINIMUM 1/2-IN. THICK, MINIMUM 1 1/2 LB DENSITY, FLEXIBLE FIBERGLASS INSULATION BONDED WITH A PHENOLIC BINDER, NEOPRENE COATED ON THE AIR SIDE.
  - LINER ADHESIVE: COMPLY WITH ASTM C 916, TYPE I.
- D. UNIT SHALL HAVE A THRU-THE-BASE GAS AND ELECTRICAL CONNECTIONS.
- 2.2 FANS  
OPTION A OR B:
- A. DIRECT-DRIVEN SUPPLY-AIR FANS: DOUBLE WIDTH, BACKWARD INCLINED, CENTRIFUGAL; WITH PERMANENTLY LUBRICATED, MOTOR RESILIENTLY MOUNTED IN THE FAN INLET, ALUMINUM OR PAINTED-STEEL WHEELS, AND GALVANIZED-OR PAINTED-STEEL FAN SCROLLS.
- B. BELT-DRIVEN SUPPLY-AIR FANS: DOUBLE WIDTH, FORWARD CURVED, CENTRIFUGAL; WITH PERMANENTLY LUBRICATED, SINGLE-SPEED MOTOR INSTALLED ON AN ADJUSTABLE FAN BASE RESILIENTLY MOUNTED IN THE CASING, ALUMINUM OR PAINTED-STEEL WHEELS, AND GALVANIZED-OR PAINTED-STEEL FAN SCROLLS.
- C. CONDENSER-COIL FAN: DIRECT DRIVE, PROPELLER, MOUNTED ON SHAFT OF PERMANENTLY LUBRICATED MOTOR WITH THERMAL OVERLOAD PROTECTION.
- D. POWER EXHAUST: FORWARD CURVED, SHAFT MOUNTED ON PERMANENTLY LUBRICATED MOTOR.
- 2.3 COILS
- A. SUPPLY-AIR REFRIGERANT COIL:
- ALUMINUM-PLATE FIN AND SEAMLESS INTERNALLY GROOVED COPPER TUBE IN STEEL CASING WITH EQUALIZING-TYPE VERTICAL DISTRIBUTOR.
  - POLYMER STRIP SHALL PREVENT ALL COPPER COIL FROM CONTACTING STEEL COIL FRAME OR CONDENSATE PAN.
  - CATHODIC EPOXY COATING.
  - CONDENSATE DRAIN PAN: GALVANIZED STEEL WITH CORROSION-RESISTANT COATING FORMED WITH PITCH AND DRAIN CONNECTIONS.
- B. OUTDOOR-AIR REFRIGERANT COIL:
- ALUMINUM-PLATE FIN AND SEAMLESS INTERNALLY GROOVED COPPER TUBE IN STEEL CASING WITH EQUALIZING-TYPE VERTICAL DISTRIBUTOR.
  - POLYMER STRIP SHALL PREVENT ALL COPPER COIL FROM CONTACTING STEEL COIL FRAME OR CONDENSATE PAN.
  - CATHODIC EPOXY COATING.
- C. HOT-GAS REHEAT REFRIGERANT COIL (OPTIONAL):
- ALUMINUM-PLATE FIN AND SEAMLESS INTERNALLY GROOVED COPPER TUBE IN STEEL CASING WITH EQUALIZING-TYPE VERTICAL DISTRIBUTOR.
  - POLYMER STRIP SHALL PREVENT ALL COPPER COIL FROM CONTACTING STEEL COIL FRAME OR CONDENSATE PAN.
  - CATHODIC EPOXY COATING.
- 2.4 REFRIGERANT CIRCUIT COMPONENTS
- A. NUMBER OF REFRIGERANT CIRCUITS: TWO
- B. COMPRESSOR: HERMETIC, SCROLL, MOUNTED ON VIBRATION ISOLATORS; WITH INTERNAL OVERCURRENT AND HIGH-TEMPERATURE PROTECTION, INTERNAL PRESSURE RELIEF AND CRANKCASE HEATER.
- C. REFRIGERATION SPECIALTIES:
- REFRIGERANT: R-410A
  - EXPANSION VALVE WITH REPLACEABLE THERMOSTATIC ELEMENT.
  - REFRIGERANT FILTER/DRYER.
  - MANUAL-RESET HIGH-PRESSURE SAFETY SWITCH.
  - AUTOMATIC-RESET LOW-PRESSURE SAFETY SWITCH.

- MINIMUM OFF-TIME RELAY.
  - AUTOMATIC-RESET COMPRESSOR MOTOR THERMAL OVERLOAD.
  - BRASS SERVICE VALVES INSTALLED IN COMPRESSOR SUCTION AND LIQUID LINES.
  - LOW-AMBIENT KIT HIGH-PRESSURE SENSOR.
  - HOT-GAS REHEAT SOLENOID VALVE WITH A REPLACEABLE MAGNETIC COIL.
- 2.5 AIR FILTRATION
- A. PROVIDE 2" THROW-AWAY FIBERGLASS FILTERS.
- 2.6 GAS FURNACE
- A. BURNERS: IN-SHOT TYPE CONSTRUCTED OF ALUMINUM-COATED STEEL.
- FUEL: NATURAL GAS.
  - IGNITION: DIRECT SPARK IGNITION (DSI).
- VERIFY AVAILABILITY OF HIGH-ALTITUDE FEATURE WITH MANUFACTURERS.
- HIGH-ALTITUDE KIT: FOR PROJECT ELEVATIONS MORE THAN 2,000 FEET ABOVE SEA LEVEL.
  - HEAT-EXCHANGER AND DRAIN PAN: STAINLESS STEEL.
- C. INDUCED DRAFT COMBUSTION BLOWER.
- D. SAFETY CONTROLS:
- GAS CONTROL VALVE: TWO STAGE.
  - GAS TRAIN: SINGLE-BODY, REGULATED, REDUNDANT, 24-V AC GAS VALVE ASSEMBLY CONTAINING PILOT SOLENOID VALVE, PILOT FILTER, PRESSURE REGULATOR, PILOT SHUTOFF, AND MANUAL SHUTOFF.
- 2.7 DAMPERS
- A. OUTDOOR AND RETURN AIR MIXING DAMPERS: PARALLEL OR OPPOSED-BLADE GALVANIZED-STEEL DAMPERS MECHANICALLY FASTENED TO CADMIUM PLATED FOR GALVANIZED-STEEL OPERATING ROD IN REINFORCED CABINET. CONNECT OPERATING RODS WITH COMMON LINKAGE AND INTERCONNECT LINKAGES SO DAMPERS OPERATE SIMULTANEOUSLY.
- DAMPER MOTOR: MODULATING WITH ADJUSTABLE MINIMUM POSITION.
  - RELIEF AIR DAMPER: GRAVITY ACTUATED, WITH BIRD SCREEN AND HOOD.
- 2.8 ELECTRICAL POWER CONNECTION
- A. PROVIDE FOR SINGLE CONNECTION OF POWER TO UNIT WITH UNIT-MOUNTED DISCONNECT SWITCH ACCESSIBLE FROM OUTSIDE UNIT AND CONTROL-CIRCUIT TRANSFORMER WITH BUILT-IN OVERCURRENT PROTECTION.
- 2.9 CONTROLS
- A. BASIC UNIT CONTROLS:
- CONTROL-VOLTAGE TRANSFORMER.
  - WALL-MOUNTED THERMOSTAT OR SENSOR WITH THE FOLLOWING FEATURES:
    - HEAT-COOL-OFF SWITCH.
    - FAN ON-AUTO SWITCH.
    - FAN-SPEED SWITCH.
    - AUTOMATIC CHANGEOVER.
    - ADJUSTABLE DEADBAND.
    - EXPOSED SET POINT.
    - EXPOSED INDICATION.
    - DEGREE F INDICATION.
    - UNOCCUPIED-PERIOD-OVERRIDE PUSH BUTTON.
    - DATA ENTRY AND ACCESS PORT TO INPUT TEMPERATURE AND HUMIDITY SET POINTS, OCCUPIED AND UNOCCUPIED PERIODS, AND OUTPUT ROOM TEMPERATURE AND HUMIDITY, SUPPLY-AIR TEMPERATURE, OPERATING MODE, AND STATUS.
  - WALL-MOUNTED HUMIDISTAT OR SENSOR WITH THE FOLLOWING FEATURES:
    - EXPOSED SET POINT.
    - EXPOSED INDICATION.
  - REMOTE WALL-MOUNTED ANNUNCIATOR PANEL WITH KEYED ACCESS FOR EACH UNIT:
    - LIGHTS TO INDICATE POWER ON, UNIT ALARM OR FAILURE, SMOKE DETECTION.
- B. DDC CONTROLLER:
- CONTROLLER SHALL HAVE VOLATILE-MEMORY BACKUP.
  - SAFETY CONTROL OPERATION:
    - SMOKE DETECTORS: STOP FAN AND CLOSE OUTDOOR-AIR DAMPER IF SMOKE IS DETECTED. PROVIDE ADDITIONAL CONTACTS FOR ALARM INTERFACE TO FIRE ALARM CONTROL PANEL.
    - FIRE ALARM CONTROL PANEL INTERFACE WHERE APPLICABLE.
    - LOW-DISCHARGE TEMPERATURE: STOP FAN AND CLOSE OUTDOOR-AIR DAMPER IF SUPPLY AIR TEMPERATURE IS LESS THAN 40°F. RETAIN FIRST SUBPARAGRAPH BELOW FOR AIR-TO-AIR HEAT-PUMP FEATURE.
    - DEFROST CONTROL FOR CONDENSER COIL: PRESSURE DIFFERENTIAL SWITCH TO INITIATE DEFROST SEQUENCE.
3. UNIT SHALL BE CAPABLE OF DIRECT COMMUNICATION WITH GENERIC OPEN PROTOCOL SUCH AS BACNET MS/TP, LONATALK, OR MODBUS. THIS WILL ALLOW THE UNIT TO INTEGRATE WITH A FACILITY ENERGY MANAGEMENT SYSTEM.
4. SCHEDULED OPERATION: OCCUPIED AND UNOCCUPIED PERIODS ON SEVEN-DAY CLOCK WITH A MINIMUM OF FOUR PROGRAMMABLE PERIODS PER DAY.
5. UNOCCUPIED PERIOD:
- HEATING SETBACK: 10°F.
  - COOLING SETBACK: SYSTEM OFF.
  - OVERRIDE OPERATION: TWO HOURS.
6. SUPPLY FAN OPERATION:
- OCCUPIED PERIODS: RUN FAN CONTINUOUSLY.
  - UNOCCUPIED PERIODS: CYCLE FAN TO MAINTAIN SETBACK TEMPERATURE.
7. REFRIGERANT CIRCUIT OPERATION:
- OCCUPIED PERIODS: CYCLE OR STAGE COMPRESSORS AND OPERATE HOT-GAS BYPASS TO MATCH COMPRESSOR OUTPUT TO COOLING LOAD TO MAINTAIN ROOM TEMPERATURE AND HUMIDITY. CYCLE CONDENSER FANS TO MAINTAIN MAXIMUM HOT-GAS PRESSURE. OPERATE LOW-AMBIENT CONTROL KIT TO MAINTAIN MINIMUM HOT-GAS PRESSURE.
  - UNOCCUPIED PERIODS: CYCLE COMPRESSORS AND CONDENSER FANS FOR HEATING TO MAINTAIN SETBACK TEMPERATURE.
8. HOT-GAS REHEAT-COIL OPERATION (OPTIONAL):
- OCCUPIED PERIODS: HUMIDISTAT OPENS HOT-GAS VALVE TO PROVIDE HOT-GAS REHEAT, AND CYCLES COMPRESSOR.
  - UNOCCUPIED PERIODS: REHEAT NOT REQUIRED.
9. GAS FURNACE OPERATION:
- OCCUPIED PERIODS: STAGE BURNER TO MAINTAIN ROOM TEMPERATURE.
  - UNOCCUPIED PERIODS: CYCLE BURNER TO MAINTAIN SETBACK TEMPERATURE.
10. FIXED MINIMUM OUTDOOR-AIR DAMPER OPERATION:
- OCCUPIED PERIODS: OPEN TO 25 PERCENT.
  - UNOCCUPIED PERIODS: CLOSE THE OUTDOOR-AIR DAMPER.
11. ECONOMIZER OUTDOOR-AIR DAMPER OPERATION:
- OCCUPIED PERIODS: OPEN TO 25 PERCENT FIXED MINIMUM INTAKE, AND MAXIMUM 100 PERCENT OF THE FAN CAPACITY TO COMPLY WITH ASHRAE CYCLE II. CONTROLLER SHALL PERMIT AIR-SIDE ECONOMIZER OPERATION WHEN OUTDOOR AIR IS LESS THAN 60 ° F. USE MIXED-AIR TEMPERATURE AND SELECT BETWEEN OUTDOOR-AIR AND RETURN-AIR ENTHALPY TO ADJUST MIXING DAMPERS DURING ECONOMIZER CYCLE OPERATION. LOCK OUT COOLING.
  - UNOCCUPIED PERIODS: CLOSE OUTDOOR-AIR DAMPER AND OPEN RETURN-AIR DAMPER.
- 2.10 ACCESSORIES
- A. DUPLEX, 115-V, GROUND-FAULT-INTERRUPTER OUTLET WITH 15-A OVERCURRENT PROTECTION. INCLUDE TRANSFORMER IF REQUIRED.
- B. LOW-AMBIENT KIT STAGED DOWN TO 0°F.

- C. FILTER DIFFERENTIAL PRESSURE SWITCH WITH SENSOR TUBING ON EITHER SIDE OF FILTER. SET FOR FINAL FILTER PRESSURE LOSS.
- D. HAIL GUARDS OF GALVANIZED STEEL, PAINTED TO MATCH CASING.
- E. DUCT MOUNTED SMOKE DETECTOR IN RETURN AIR STREAM CAPABLE OF SHUTTING DOWN THE UNIT IN THE PRESENCE OF SMOKE DETECTION.
- 2.11 ROOF CURBS
- A. MATERIALS: GALVANIZED STEEL WITH CORROSION-PROTECTION COATING, WATERTIGHT GASKETS, AND FACTORY-INSTALLED WOOD NAILER; COMPLYING WITH NRCA STANDARDS.
- CURB INSULATION AND ADHESIVE: COMPLY WITH NFPA 90A OR NFPA 90B.
    - MATERIALS: ASTM C 1071, TYPE I OR II.
    - THICKNESS: 1-1/2 INCHES.
  - APPLICATION: FACTORY APPLIED WITH ADHESIVE AND MECHANICAL FASTENERS TO THE INTERNAL SURFACE OF CURB.
    - LINER ADHESIVE: COMPLY WITH ASTM C 916, TYPE I
    - MECHANICAL FASTENERS: GALVANIZED STEEL, SUITABLE FOR ADHESIVE ATTACHMENT; MECHANICAL ATTACHMENT, OR WELDING ATTACHMENT TO DUCT WITHOUT DAMAGING LINER WHEN APPLIED AS RECOMMENDED BY MANUFACTURER AND WITHOUT CAUSING LEAKAGE IN CABINET.
    - LINER MATERIALS SHALL HAVE AIR-STREAM SURFACE INSULATED WITH A MINIMUM 1/2-IN. THICK, MINIMUM 1 1/2 LB DENSITY, FLEXIBLE FIBERGLASS INSULATION BONDED WITH A PHENOLIC BINDER, NEOPRENE COATED ON THE AIR SIDE.
    - LINER ADHESIVE: COMPLY WITH ASTM C 916, TYPE I
- B. CURB HEIGHT: 14 INCHES TYPICAL. PROVIDE 24 INCH CURB IN AREAS WITH EXPECTED HEAVY SNOWFALL.
- PART 3 - EXECUTION
- 3.1 EXAMINATION
- A. EXAMINE SUBSTRATES, AREAS, AND CONDITIONS, WITH INSTALLER PRESENT, FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES AND OTHER CONDITIONS AFFECTING PERFORMANCE OF RTUS.
- B. EXAMINE ROUGH-IN FOR RTUS TO VERIFY ACTUAL LOCATIONS OF PIPING AND DUCT CONNECTIONS BEFORE EQUIPMENT INSTALLATION.
- C. EXAMINE ROOFS FOR SUITABLE CONDITIONS WHERE RTUS WILL BE INSTALLED.
- D. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
- 3.2 INSTALLATION
- A. ROOF CURB: INSTALL ON ROOF STRUCTURE, LEVEL AND SECURE. INSTALL RTUS ON CURBS AND COORDINATE ROOF PENETRATIONS AND FLASHING WITH ROOF CONSTRUCTION. RTUS TO UPPER CURB RAIL, AND SECURE CURB BASE TO ROOF FRAMING OR CONCRETE BASE WITH ANCHOR BOLTS.
- 3.3 CONNECTIONS
- A. THE FOLLOWING ARE SPECIFIC CONNECTION REQUIREMENTS:
- INSTALL DUCTS TO TERMINATION AT TOP OF ROOF CURB.
  - REMOVE ROOF DECKING ONLY AS REQUIRED FOR PASSAGE OF DUCTS. DO NOT CUT OUT DECKING UNDER ENTIRE ROOF CURB.
- 3.4 COORDINATION
- A. CONTRACTOR TO COORDINATE WITH KITCHEN EQUIPMENT SUPPLIER TO ENSURE THAT THE RTUS ARE COORDINATED WITH THE KITCHEN EQUIPMENT, PARTICULARLY THE EXHAUST HOODS AND THE MAKE-UP AIR UNIT, TO PROPERLY PRESSURIZE THE BUILDING/SPACE.
- B. CONTRACTOR TO ENSURE THAT ALL THERMOSTATS AND SENSORS ARE COMPATIBLE WITH THE RTU CONTROLS.
- 3.5 FIELD QUALITY CONTROL
- A. MANUFACTURER'S FIELD SERVICE: ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO INSPECT, TEST, AND ADJUST COMPONENTS, ASSEMBLIES, AND EQUIPMENT INSTALLATIONS, INCLUDING CONNECTIONS. REPORT RESULTS IN WRITING.
- B. PERFORM TESTS AND INSPECTIONS AND PREPARE TEST REPORTS.
- C. TESTS AND INSPECTIONS:
- AFTER INSTALLING RTUS AND AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, TEST UNITS FOR COMPLIANCE WITH REQUIREMENTS.
  - OPERATIONAL TEST: AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, START UNITS TO CONFIRM PROPER MOTOR ROTATION AND UNIT OPERATION.
  - TEST AND ADJUST CONTROLS AND SAFETIES. REPLACE DAMAGED AND MALFUNCTIONING CONTROLS AND EQUIPMENT.
  - REMOVE AND REPLACE MALFUNCTIONING UNITS AND RETEST AS SPECIFIED ABOVE.
- 3.6 STARTUP SERVICE
- A. ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO PERFORM STARTUP SERVICE.
- B. COMPLETE INSTALLATION AND STARTUP CHECKS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS AND DO THE FOLLOWING:
- INSPECT FOR VISIBLE DAMAGE TO UNIT CASING, FURNACE COMBUSTION CHAMBER, COMPRESSOR, COILS, AND FANS.
  - VERIFY THAT LABELS ARE CLEARLY VISIBLE. CLEARANCES HAVE BEEN PROVIDED FOR SERVICING, CONTROLS ARE CONNECTED AND OPERABLE, AND FILTERS ARE INSTALLED.
  - CLEAN CONDENSER COIL AND FURNACE AND INSPECT FOR CONSTRUCTION DEBRIS.
  - REMOVE PACKING FROM VIBRATION ISOLATORS.
  - VERIFY LUBRICATION ON FAN AND MOTOR BEARINGS.
  - INSPECT FAN-WHEEL ROTATION FOR MOVEMENT IN CORRECT DIRECTION WITHOUT VIBRATION AND BINDING.
  - ADJUST FAN BELTS TO PROPER ALIGNMENT AND TENSION.
  - START UNIT ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
    - INSPECT AND RECORD PERFORMANCE OF INTERLOCKS AND PROTECTIVE DEVICES; VERIFY SEQUENCES.
  - OPERATE UNIT FOR AN INITIAL PERIOD AS RECOMMENDED OR REQUIRED BY MANUFACTURER.
  - PERFORM THE FOLLOWING OPERATIONS FOR BOTH MINIMUM AND MAXIMUM FIRING. ADJUST BURNER FOR PEAK EFFICIENCY.
    - MEASURE GAS PRESSURE ON MANIFOLD.
    - INSPECT OPERATION OF POWER VENTS.
    - MEASURE SUPPLY-AIR TEMPERATURE AND VOLUME WHEN BURNER IS AT MAXIMUM FIRING RATE AND WHEN BURNER IS OFF. CALCULATE USEFUL HEAT TO SUPPLY AIR.
  - ADJUST AND INSPECT HIGH-TEMPERATURE LIMITS.
  - INSPECT OUTDOOR-AIR DAMPERS FOR PROPER STROKE AND INTERLOCK WITH RETURN-AIR DAMPERS.
  - INSPECT CONTROLS FOR CORRECT SEQUENCING OF HEATING, MIXING DAMPERS, REFRIGERATION, AND NORMAL AND EMERGENCY SHUTDOWN.
  - SIMULATE MAXIMUM COOLING DEMAND AND INSPECT THE FOLLOWING:
    - COMPRESSOR REFRIGERANT SUCTION AND HOT-GAS PRESSURES.
    - SHORT CIRCUITING OF AIR THROUGH CONDENSER COIL OR FROM CONDENSER FANS TO OUTDOOR-AIR INTAKE.
  - VERIFY OPERATION OF REMOTE PANEL INCLUDING PILOT-LIGHT OPERATION AND FAILURE MODES. INSPECT THE FOLLOWING:
    - HIGH-TEMPERATURE LIMIT ON GAS-FIRED HEAT EXCHANGER.
    - LOW-TEMPERATURE SAFETY OPERATION.
    - FILTER HIGH-PRESSURE DIFFERENTIAL ALARM.
    - ECONOMIZER TO MINIMUM OUTDOOR-AIR CHANGEOVER.
    - RELIEF-AIR FAN OPERATION.
    - SMOKE ALARMS.

- AFTER STARTUP AND PERFORMANCE TESTING AND PRIOR TO SUBSTANTIAL COMPLETION, REPLACE EXISTING FILTERS WITH NEW FILTERS.
- 3.7 CLEANING AND ADJUSTING
- A. OCCUPANCY ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTING SYSTEM TO SUIT ACTUAL OCCUPIED CONDITIONS. PROVIDE UP TO TWO VISITS TO SITE DURING OTHER-THAN-NORMAL OCCUPANCY HOURS FOR THIS PURPOSE.
- B. AFTER COMPLETING SYSTEM INSTALLATION AND TESTING, ADJUSTING, AND BALANCING RTU AND AIR-DISTRIBUTION SYSTEMS, CLEAN FILTER HOUSINGS AND INSTALL NEW FILTERS.

REGISTRATION SEAL



ARBY'S INSPIRE CONVERSION  
209 S. CENTERVILLE RD.  
STURGIS, MI 49091  
STORE # X

REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
DRAWN BY: NK  
CHECKED BY: JCC  
ISSUE DATE: 03/18/22

M402

MECHANICAL SPECIFICATIONS



**HOOD INFORMATION - JOB#5254484**

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S)				HOOD CONSTRUCTION	HOOD CONFIG				
										WIDTH	LENG	HEIGHT	DIA		CFM	VEL	SP	END TO END	ROW
1	KEH-1	3044 BD-2	CAPTIVEAIRE	5' 0"	450 DEG	I	MEDIUM	240	1200	10'	11'	4'		1200	1571	-0.471'	430 SS WHERE EXPOSED	ALONE	ALONE

FOR QUESTIONS, CALL THE  
Atlanta Office  
REGION 50  
PHONE: (800) 882-6626  
EMAIL: reg50@captiveaire.com

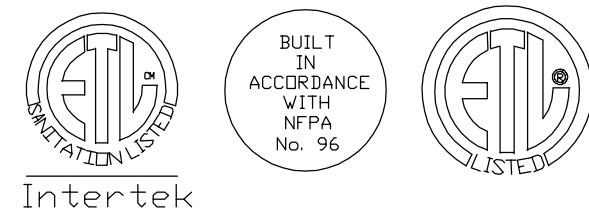
**HOOD INFORMATION**

HOOD NO	TAG	TYPE	FILTER(S)		LIGHT(S)				UTILITY CABINET(S)				FIRE SYSTEM	HOOD HANGING WEIGHT		
			QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE	WIRE GUARD	LOCATION	SIZE	TYPE			SIZE	ELECTRICAL MODEL #
1	KEH-1	SS BAFFLE WITH HANDLES	3	16"	16"	30%	2	L55 SERIES E26	NO	LEFT	12"x30"x24"	ANSUL R-102	3.0		YES	295 LBS

**HOOD OPTIONS**

HOOD NO	TAG	OPTION
1	KEH-1	FIELD WRAPPER 37.00" HIGH FRONT, LEFT, RIGHT.
		BACKSPLASH 63.00" HIGH X 36.00" LONG 430 SS VERTICAL.
		BACKSPLASH 63.00" HIGH X 36.00" LONG 430 SS VERTICAL.
		BACKSPLASH 120.00" HIGH X 18.00" LONG 430 SS VERTICAL.
		BACKSPLASH 120.00" HIGH X 18.00" LONG 430 SS VERTICAL.
		RIGHT QUARTER END PANEL 20" TOP WIDTH, 0" BOTTOM WIDTH, 20" HIGH 430 SS.
		LEFT QUARTER END PANEL 20" TOP WIDTH, 0" BOTTOM WIDTH, 20" HIGH 430 SS.
		INSULATION FOR BACK OF HOOD.
		RISER SENSOR INSTALL 6IN PLEN.

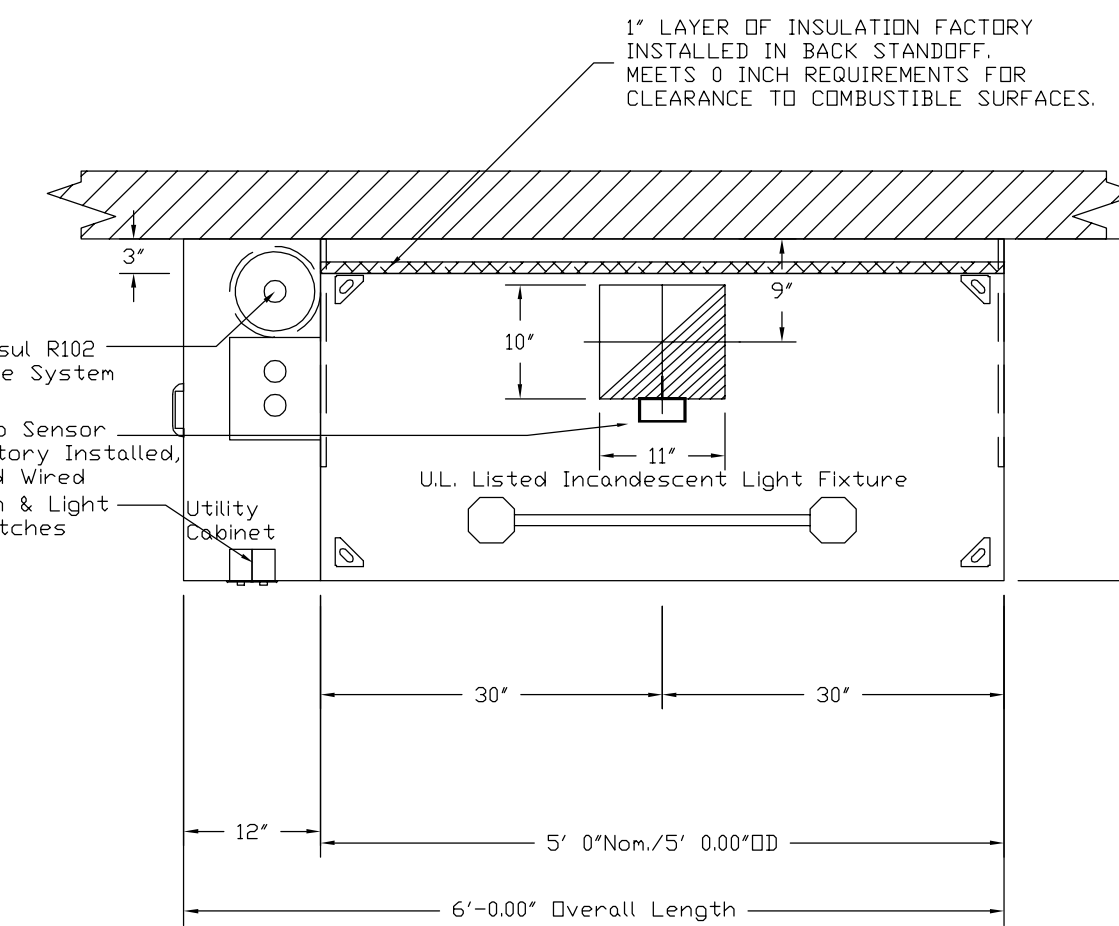
CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH



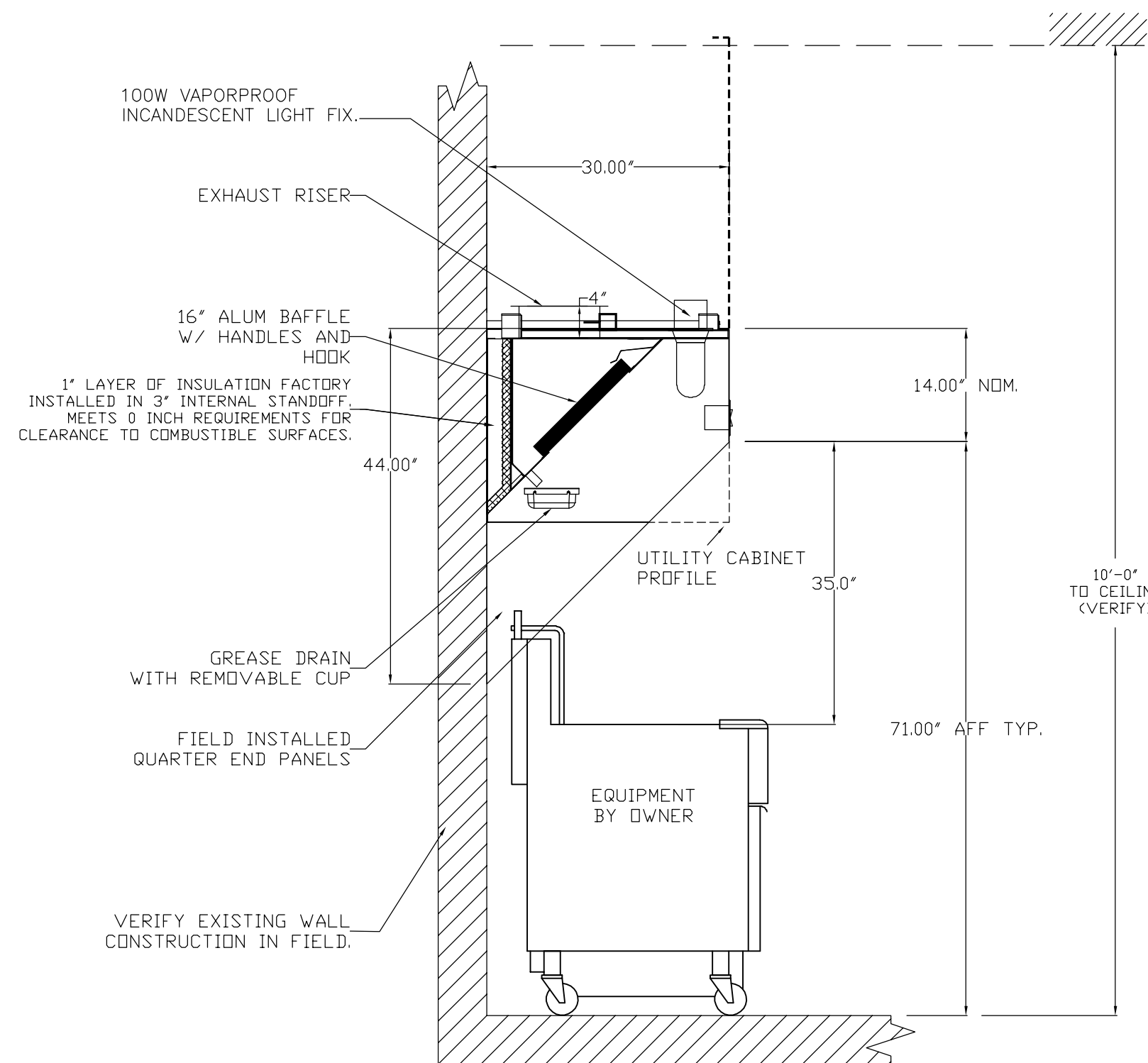
NFPA #96  
UL 710 & ULC710 STANDARDS  
E.T.L. LISTED 3054804-001

UNLESS SPECIFICALLY NOTED:

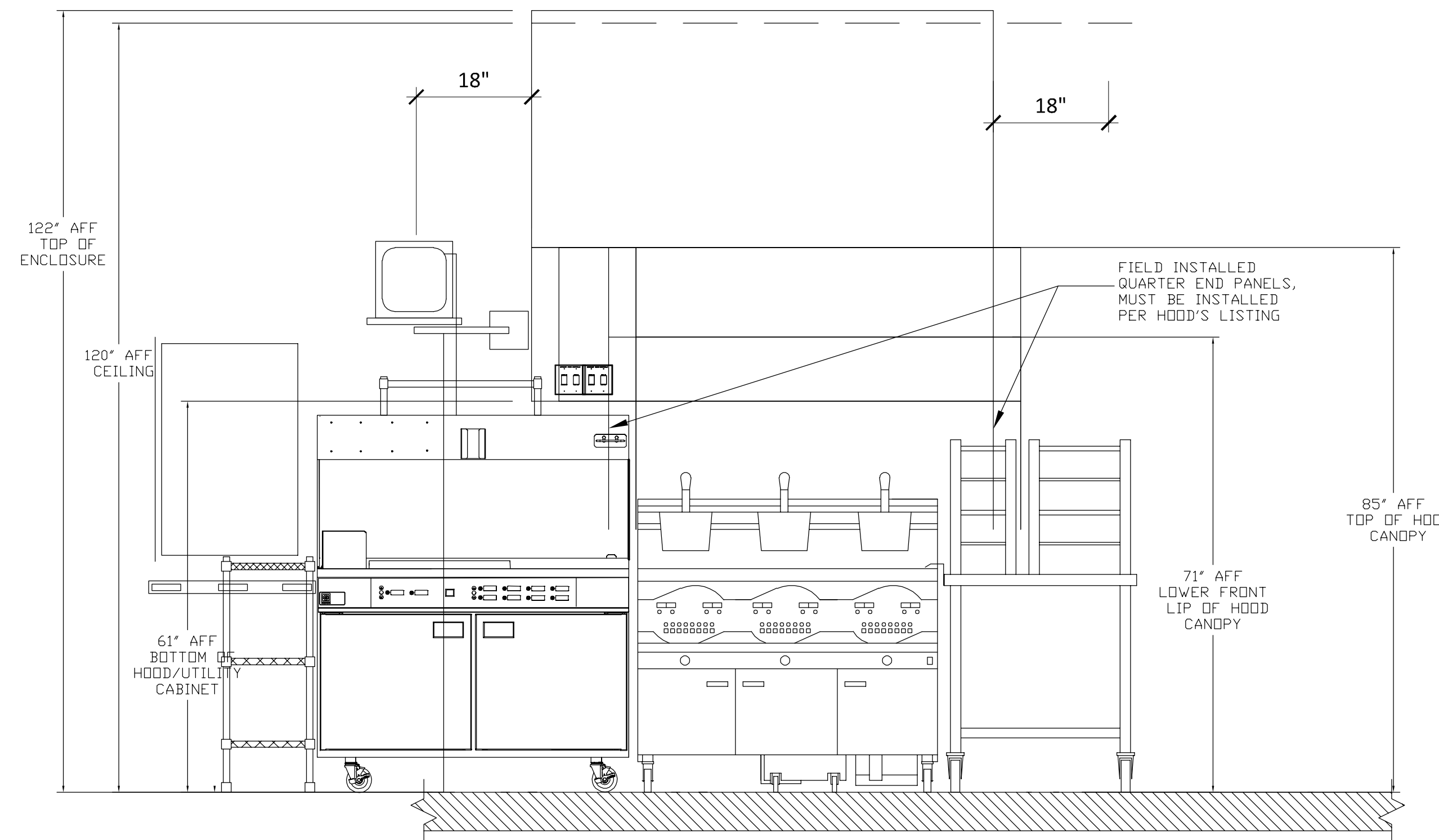
THE MODEL BD-2 HOOD IS LISTED WITH A MINIMUM SIDE OVERHANG TO THE COOKING EQUIPMENT SURFACE OF 0", AND A MINIMUM FRONT OVERHANG OF -3". FOR 450°F APPLICATIONS, THE MINIMUM EXHAUST RATE IS 150 CFM/FT.



PLAN VIEW - Hood #1 (H-1)  
5' 0.00" LONG 3044BD-2



SECTION VIEW - MODEL 3044BD-2



ELEVATION VIEW - MODEL 3044BD-2

**REVISIONS**

NO.	DESCRIPTION	DATE

**CAPTIVE-AIRE**  
Atlanta Office  
www.captiveaire.com  
110 Londonderry Ct., Suite 136A, Woodstock, GA, 30188 PHONE: (800) 882-6626 FAX: (919) 227-6984 EMAIL: reg50@captiveaire.com

**ARCVISION**  
INCORPORATED  
ARCHITECTURE • ENGINEERING • STORE PLANNING  
SAINT LOUIS / DALLAS / LAS VEGAS / ORLANDO  
1950 CRAIG ROAD, SUITE 300 ST. LOUIS, MO 63146  
PH: (314) 415-2400 FAX: (314) 415-2400 www.arcv.com

**Arby's**

Arby's - Sturgis MI  
209 S Centerville Rd,  
Sturgis, MI, 49091

ARBY'S INSPIRE CONVERSION  
209 S. CENTERVILLE RD.  
STURGIS, MI 49091  
STORE # X

DATE: 2/4/2022  
DWG.#: 5254484  
DRAWN BY: WAH-50  
SCALE: 3/4" = 1'-0"  
MASTER DRAWING

SHEET NO. 1

PROJECT NO: 210109  
DRAWN BY: NK  
CHECKED BY: JCC  
ISSUE DATE: 03/18/22  
HOOD DRAWING

**H101**

**EXHAUST FAN INFORMATION - JOB#5254484**

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SDNES
1	KEF-1	1	DU50HFA	CAPTIVEAIRE	1200	0.750	1432	DDP	0.500	0.3220	1	115	8.4	456 FPM	84	14.6

**FAN OPTIONS**

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KEF-1	1	GREASE BOX
		1	2 YEAR PARTS WARRANTY

**FAN ACCESSORIES**

FAN UNIT NO	TAG	EXHAUST				SUPPLY		
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	KEF-1	YES						

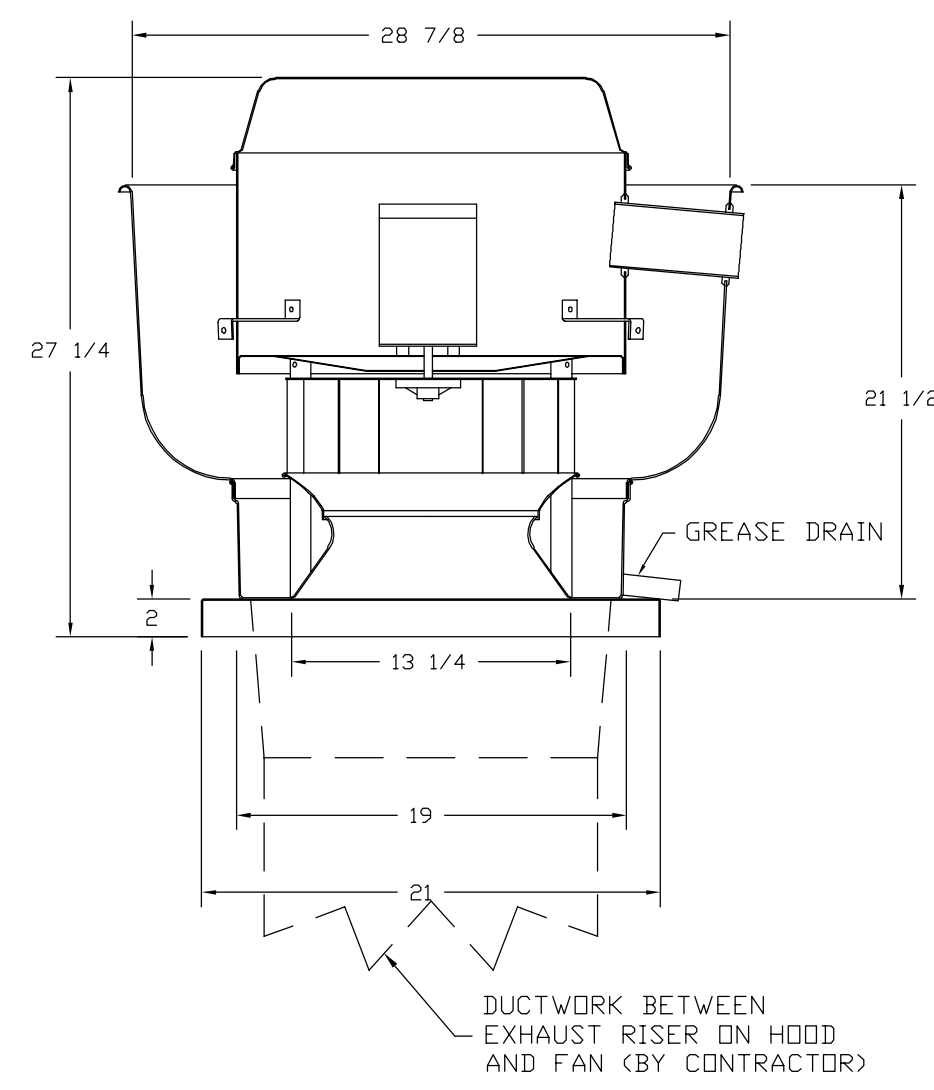
**CURB ASSEMBLIES**

NO	DN FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KEF-1	40 LBS	CURB	19.500"W X 19.500"L X 28.000"H ALONG LENGTH, RIGHT VENTED HINGED.

**FIRE SYSTEM INFORMATION - JOB#5254484**

FIRE SYSTEM NO	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION	
					SYSTEM	LOCATION ON HOOD
1		ANSUL R102	3.0	11	FIRE CABINET LEFT	LEFT, HOOD 1

FAN #1 DU50HFA - EXHAUST FAN (KEF-1)



**FEATURES:**

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL762
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION: 300°F (149°C)
- GREASE CLASSIFICATION TESTING

**NORMAL TEMPERATURE TEST**

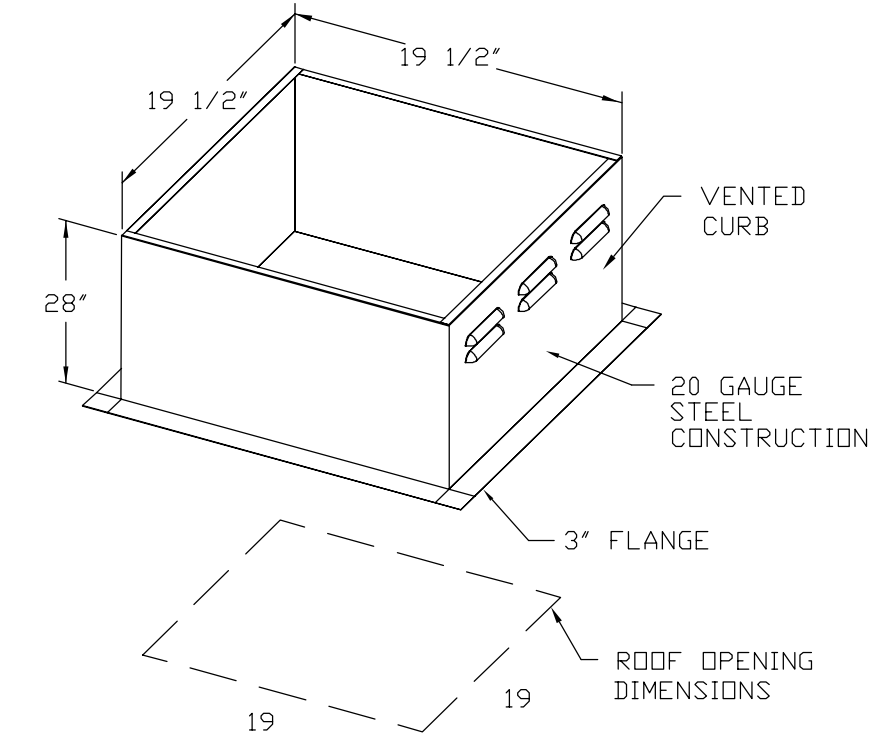
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

**ABNORMAL FLARE-UP TEST**

EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

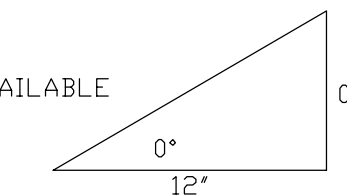
**OPTIONS**

GREASE BOX



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH:  
EXAMPLE: 7/12 PITCH = 30° SLOPE

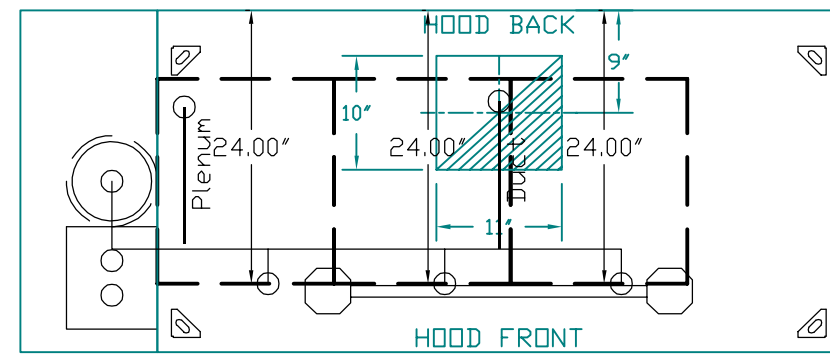


**REVISIONS**

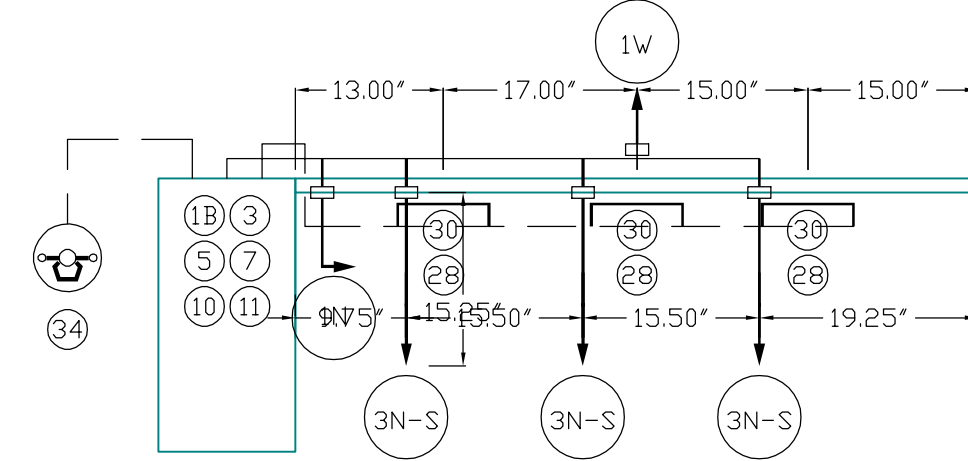
DESCRIPTION	DATE

**CAPTIVEAIRE**

Atlanta Office  
110 Londonderry Ct., Suite 136A, Woodstock, GA, 30188 PHONE: (800) 862-6626 FAX: (919) 227-5864 EMAIL: reg50@captiveaire.com



HOOD # 1 (KEH-1) JOB # 5254484  
MODEL: BD-2 SIZE: 30"x44" LENGTH: 5' 0"



**NOTES**

- FIELD PIPE DROPS AS SHOWN
- SLEEVING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
- RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVING, SALAMANDERS, ETC.
- MAXIMUM 9 ELBOWS IN SUPPLY LINE.
- MINIMUM 72 INCHES OF AGENT LINE FROM TANK TO FIRST NOZZLE COVERING A RANGE, FRYER, OR WOK TO REFLECT GENERAL PIPING REQUIREMENTS.
- IF APPLICABLE, PRE-PIPED CHARBROILER DROPS ARE SHIPPED LOOSE.
- FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.
- APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.
- THIS FIRE SYSTEM COMPLIES WITH UL 300 REQUIREMENTS.

JOB #: 5254484  
JOB NAME: ARBY'S - STURGIS MI.

SYSTEM SIZE: ANSUL-3.0 TOTAL FP REQUIRED: 11.  
HOOD # 1 5' 0.00" LONG x 30" WIDE x 44" HIGH.  
RISER # 1 SIZE: 10" x 11".  
HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.

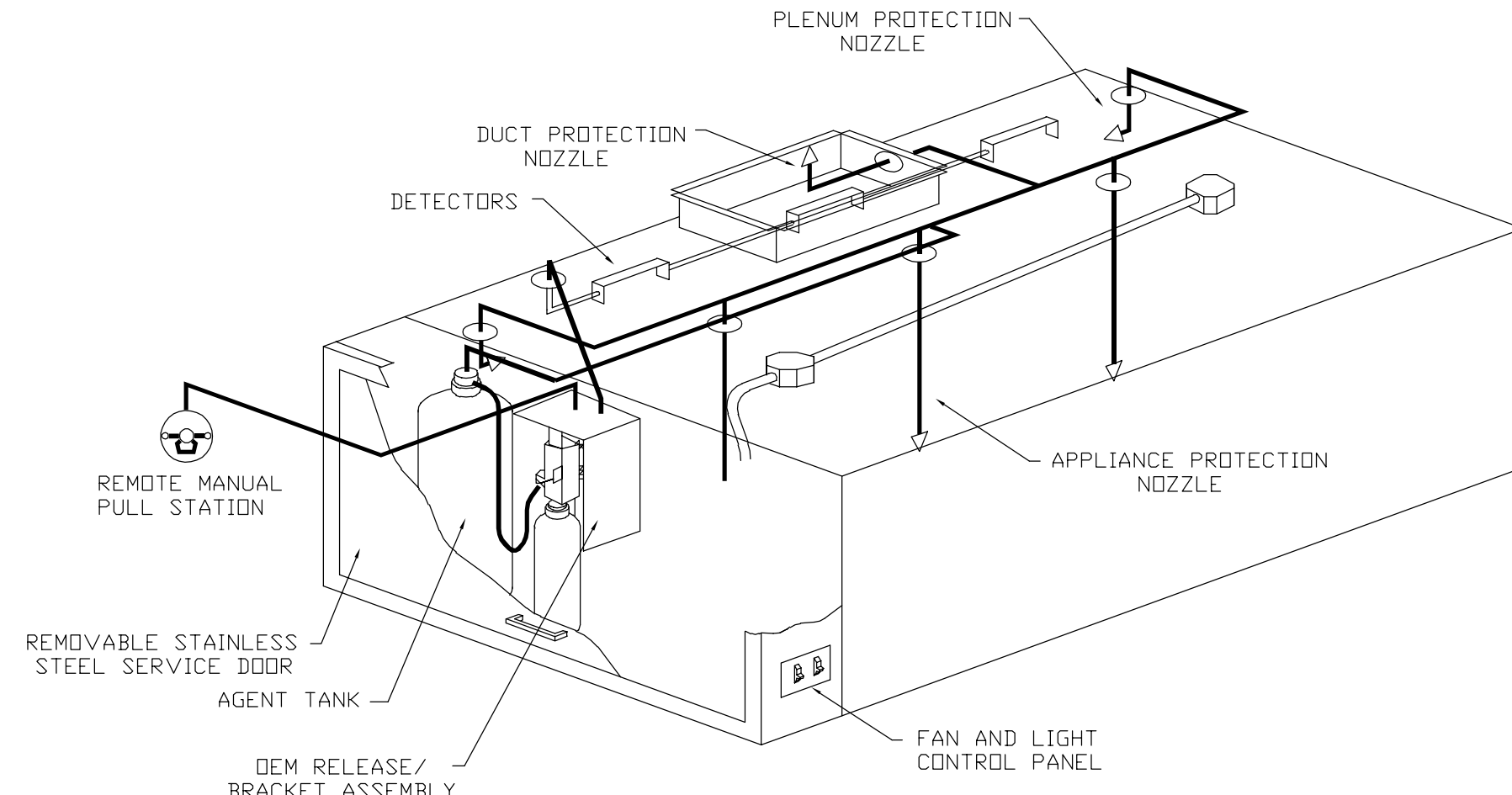
**SPECIFICATIONS**

THE RESTAURANT FIRE SUPPRESSION SYSTEM SHALL BE THE PRE-ENGINEERED TYPE WITH A FIXED NOZZLE AGENT DISTRIBUTION NETWORK. IT SHALL BE LISTED WITH UNDERWRITERS LABORATORIES, INC. (UL)

THE SYSTEM SHALL BE CAPABLE OF AUTOMATIC DETECTION AND ACTUATION WITH LOCAL OR REMOTE MANUAL ACTUATION. ACCESSORIES SHALL BE AVAILABLE FOR MECHANICAL OR ELECTRICAL GAS LINE SHUT-OFF APPLICATIONS.

THE EXTINGUISHING AGENT SHALL BE A POTASSIUM CARBONATE, POTASSIUM ACETATE-BASED FORMULATION DESIGNED FOR FLAME KNOCKDOWN AND SECUREMENT OF GREASE RELATED FIRES. IT SHALL BE AVAILABLE IN PLASTIC CONTAINERS WITH INSTRUCTIONS FOR LIQUID AGENT HANDLING AND USAGE.

THE REGULATED RELEASE MECHANISM SHALL BE COMPATIBLE WITH A FUSIBLE LINK DETECTION SYSTEM. THE FUSIBLE LINK SHALL BE SELECTED AND INSTALLED ACCORDING TO THE OPERATING TEMPERATURE IN THE VENTILATING SYSTEM. THE FUSIBLE LINK SHALL BE SUPPORTED BY A DETECTOR BRACKET/LINKAGE ASSEMBLY.



TYPICAL ANSUL R-102 SYSTEM LAYOUT

FRYER-H V/DRIP BOARD HIGH PROXIMITY 15.50' L X18.00' D	FRYER-M V/DRIP BOARD HIGH PROXIMITY 15.50' L X18.00' D	FRYER-H V/DRIP BOARD HIGH PROXIMITY 15.50' L X18.00' D
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Arby's - Sturgis MI  
209 S Centerville Rd,  
Sturgis, MI, 49091

DATE: 2/4/2022  
DWG #: 5254484  
DRAWN BY: WAH-50  
SCALE: 3/4" = 1'-0"  
MASTER DRAWING

SHEET NO. 2

REGISTRATION SEAL

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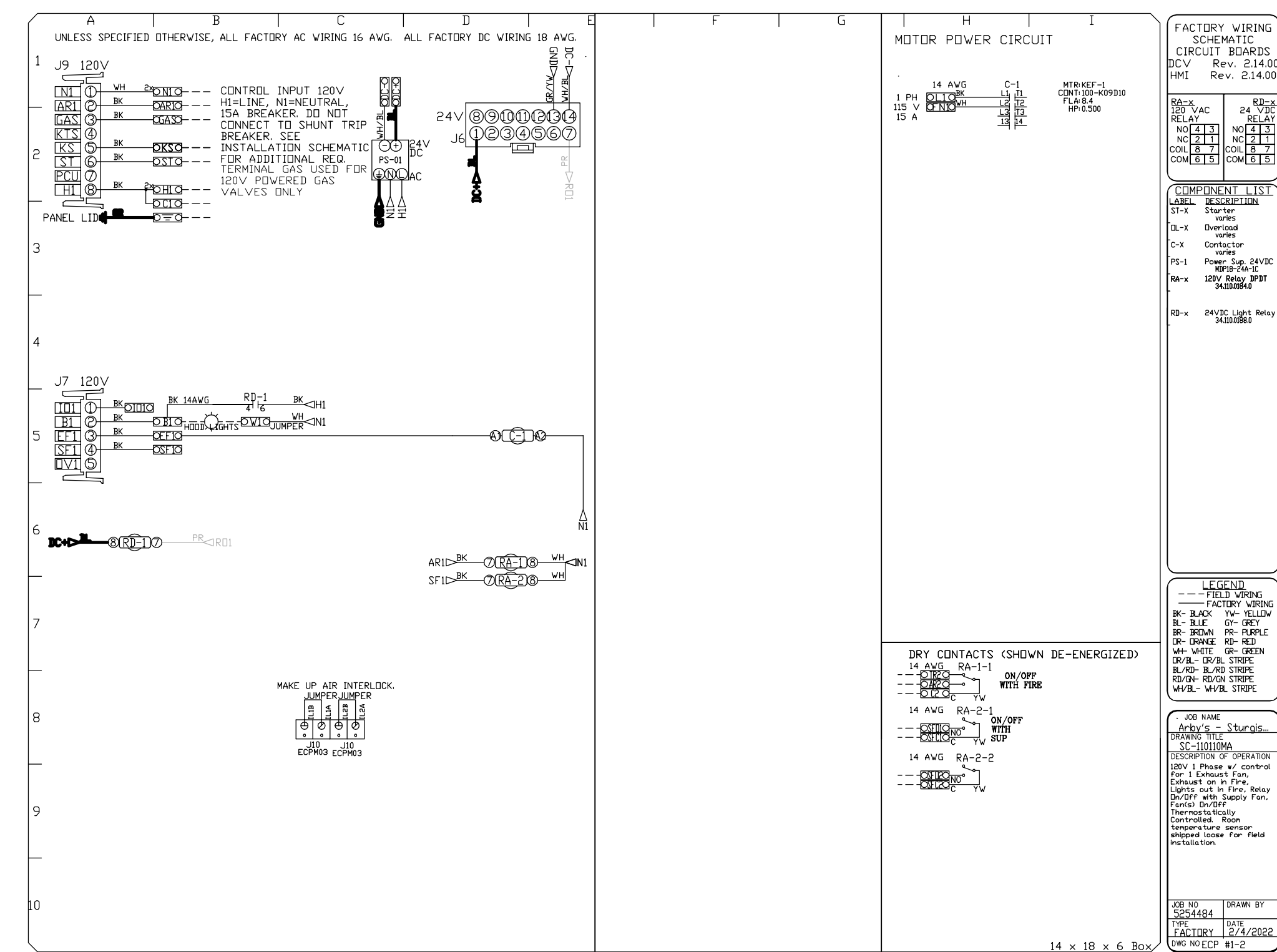
PROJECT NO: 210109  
DRAWN BY: NK  
CHECKED BY: ACC  
ISSUE DATE: 03/18/22  
HOOD DRAWING

**H102**



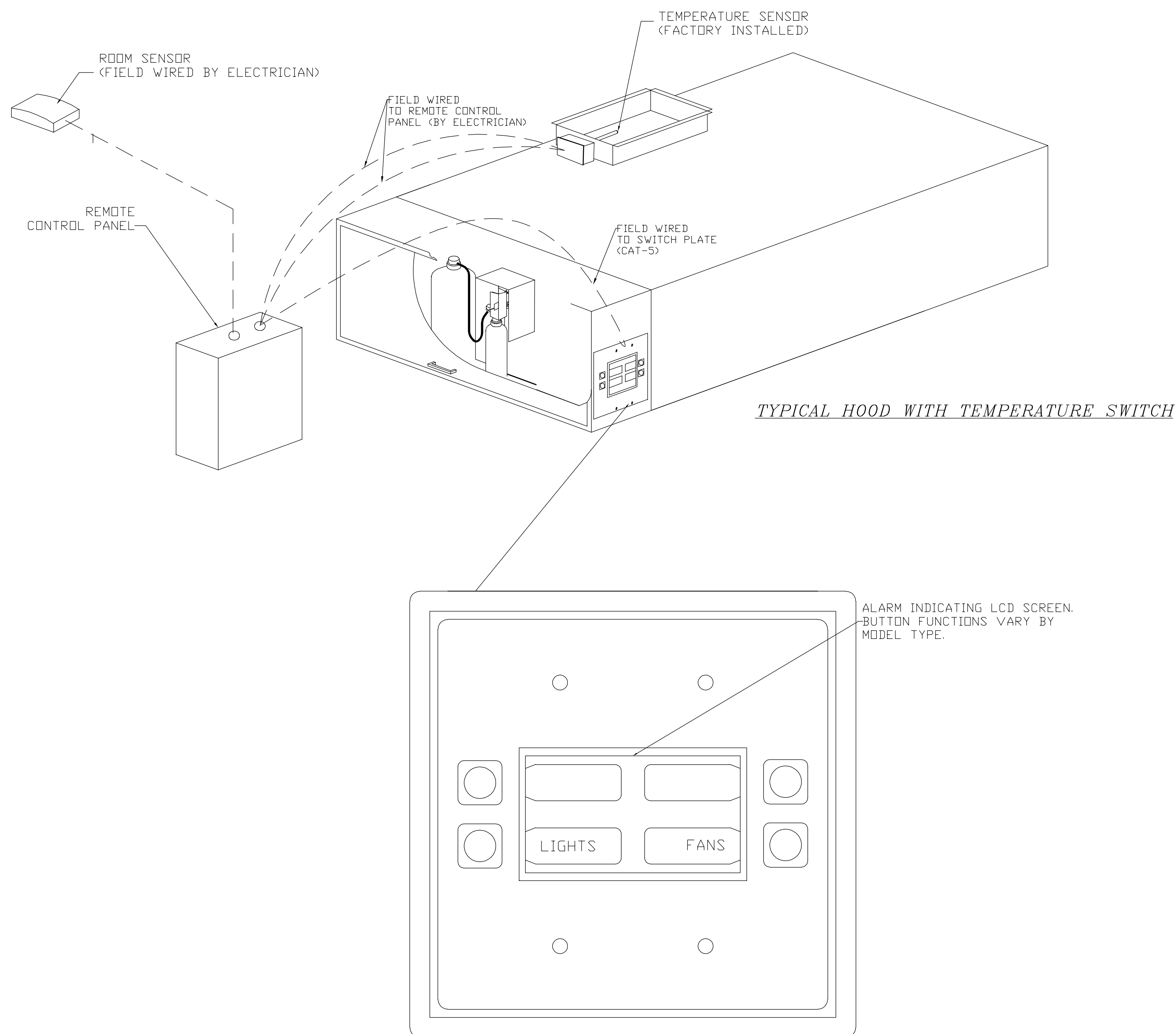
ELECTRICAL PACKAGE - JOB#5254484

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	HP	VOLT	FLA	
1	EP-1	SC-11010MA	WALL MOUNT IN SS BOX	03 - UTILITY CABINET LEFT	1 LIGHT 1 FAN	SMART CONTROLS THERMOSTATIC CONTROL W/ RELAY ON/OFF WITH SUPPLY	KEF-1	EXHAUST	1	0.500	115	8.4



TEMPERATURE SENSOR INTERLOCK

The Temperature Sensor Interlock option complies with IMC 2006 507.2.1.1 and NFPA 96 11.1.1 by interlocking with cooking appliances through means of a heat sensor to automatically activate exhaust fans during cooking operations.



**REVISIONS**

NO.	DESCRIPTION	DATE

**CAPTIVE**

Atlanta Office  
110 Londonderry Ct., Suite 136A, Woodstock, GA 30188 PHONE: (800) 862-6626 FAX: (919) 227-6964 EMAIL: reg@captivewire.com

Arby's - Sturgis MI  
209 S Centerville Rd,  
Sturgis, MI, 49091

DATE: 2/4/2022  
DWG.#: 5254484  
DRAWN BY: WAH-50  
SCALE: 3/4" = 1'-0"  
MASTER DRAWING

SHEET NO. 3

REGISTRATION SEAL

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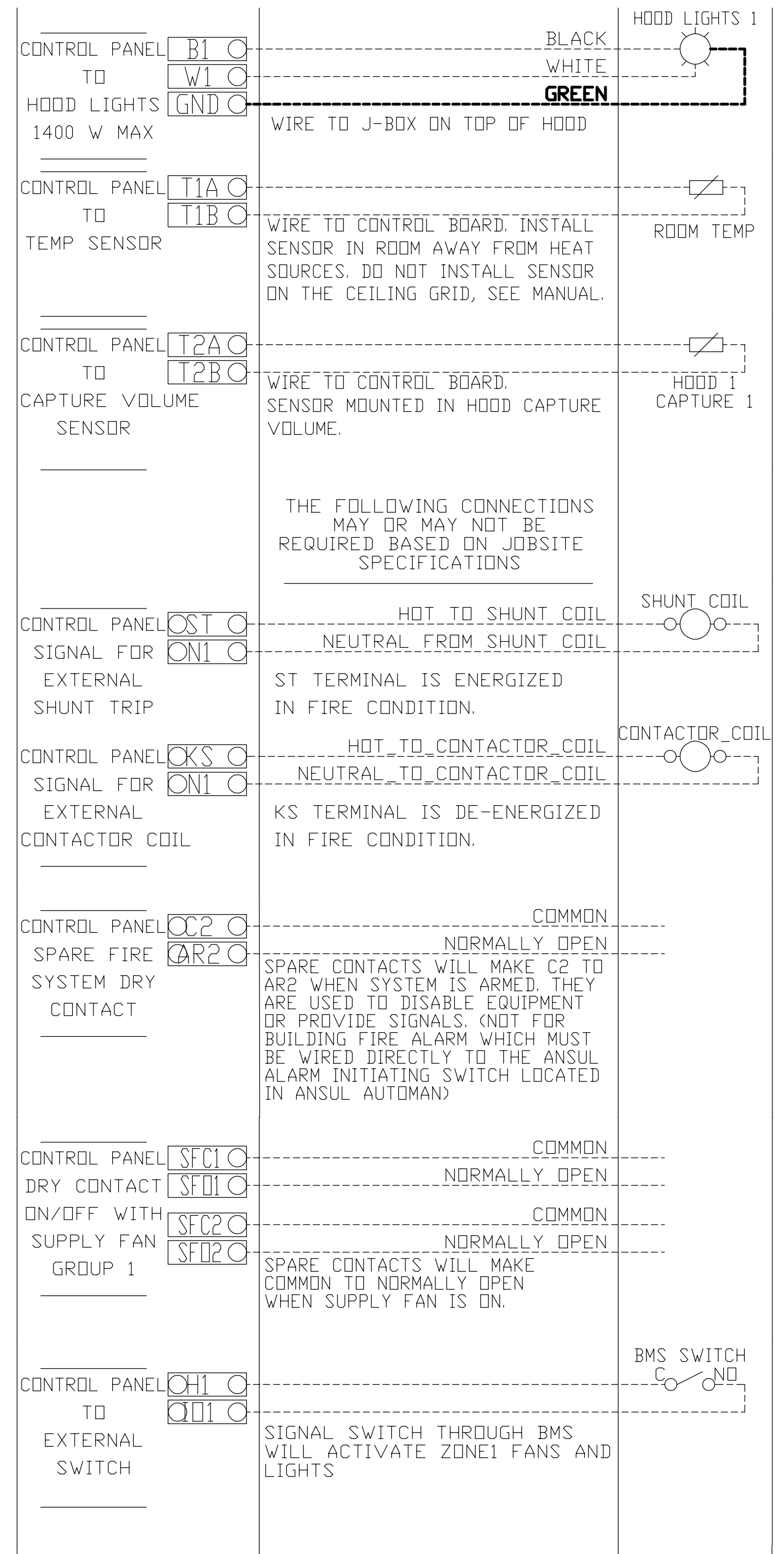
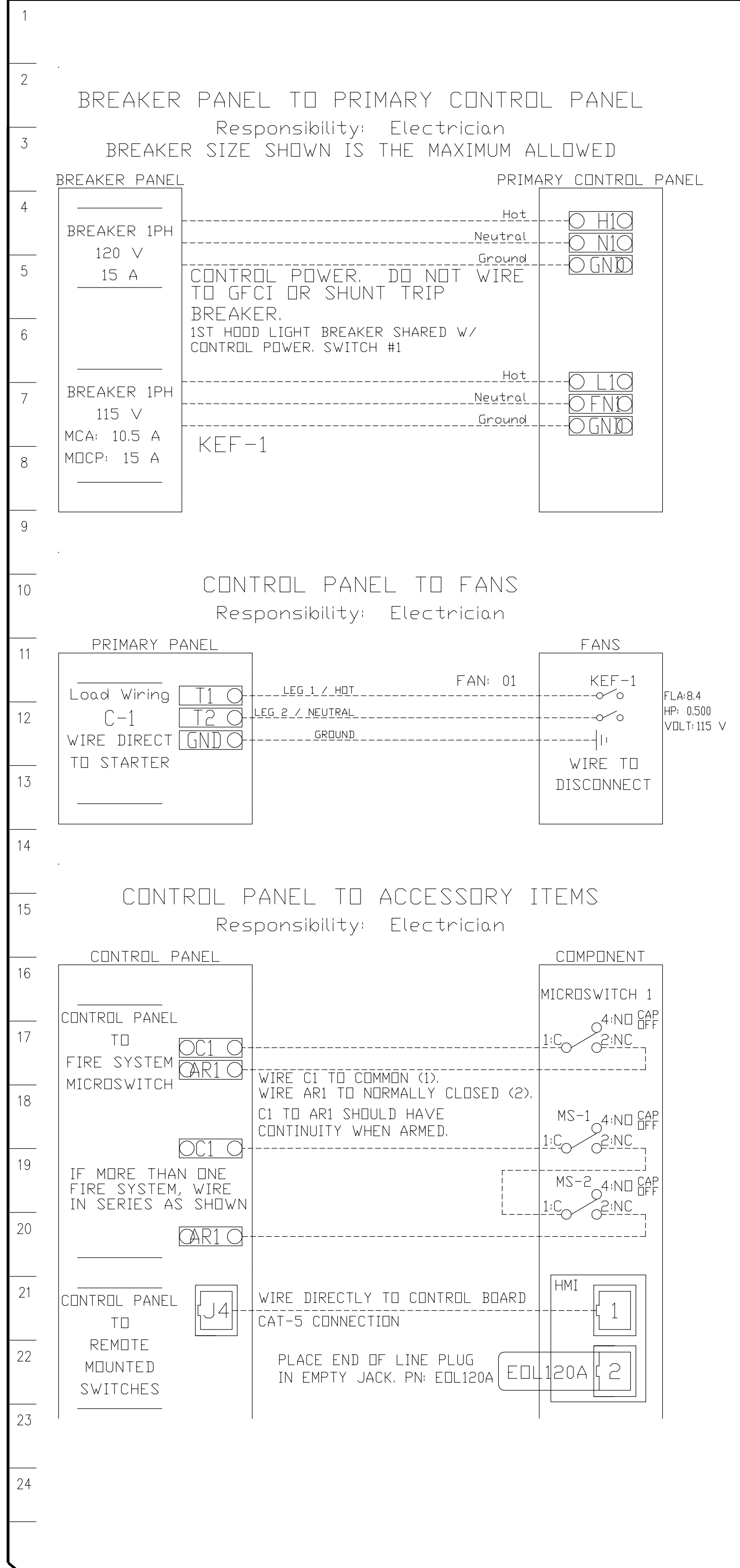
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STORE # X

REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
DRAWN BY: NK  
CHECKED BY: JCC  
ISSUE DATE: 03/18/22  
HOOD DRAWING

**H103**

JOB NO 5254484	MODEL NUMBER SC-110110MA	DRAWN BY	SCHEMATIC TYPE INSTALL	DESCRIPTION OF OPERATION: 120V 1 Phase w/ control for 1 Exhaust Fan, Exhaust on in Fire, Lights out in Fire, Relay On/Off with Supply Fan, Fan(s) On/Off Thermostatically Controlled. Room temperature sensor shipped loose for field installation.
JOB NAME Arby's - Sturgis MI	DATE 2/4/2022	DWG NO ECP #1-1		



REVISIONS	
DESCRIPTION	DATE

**CAPTIVE**

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Arby's - Sturgis MI  
209 S Centerville Rd,  
Sturgis, MI, 49091

DATE: 2/4/2022  
DWG.#: 5254484  
DRAWN BY: WAH-50  
SCALE: 3/4" = 1'-0"  
MASTER DRAWING

SHEET NO. 4

REGISTRATION SEAL

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REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
DRAWN BY: NK  
CHECKED BY: JCC  
ISSUE DATE: 03/18/22  
HOOD DRAWING

**H104**



PLUMBING LEGEND			
	EXISTING TO REMAIN		BALL VALVE
	EXISTING TO BE DEMOLISHED		BUTTERFLY VALVE
	SANITARY		GATE VALVE (SCREWED BODY)
	STORM (BELOW GROUND)		GATE VALVE (FLANGED BODY)
	STORM (ABOVE GROUND)		BALANCING VALVE
	OVERFLOW (SECONDARY STORM)		CHECK VALVE
	GREASE WASTE		PLUG VALVE
	DO NOT TAP		THERMOSTATIC MIXING VALVE
	DOMESTIC COLD WATER		PRESSURE REDUCING VALVE
	DOMESTIC HOT WATER		PRESSURE GAUGE
	DOMESTIC HOT WATER RETURN		RELIEF VALVE
	NATURAL GAS		SOLENOID VALVE
	VENT		STRAINER
	FILTERED WATER		UNION
	SODA CONDUIT		WATER HAMMER ARRESTOR
	PIPE TURNED UP		THERMOMETER
	PIPE TURNED DOWN		CONNECT TO EXISTING
	PETE'S PLUG		FLOOR PENETRATION MARKER

ABBREVIATIONS			
(D)	DEMOLITION	HD	HEAD
(E)	EXISTING	HGT	HEIGHT
(F)	FUTURE	HP	HORSEPOWER
(R)	RELOCATE	INV	INVERT
AAV	AIR ADMITTANCE VALVE	IW	INDIRECT WASTE
ABV	ABOVE	KEC	KITCHEN EQUIPMENT CONTRACTOR
AFF	ABOVE FINISHED FLOOR	LB	POUNDS
AFG	ABOVE FINISHED GRADE	LF	LINEAR FEET
AHJ	AUTHORITY HAVING JURISDICTION	LG	LENGTH
AUTO	AUTOMATIC	MAX	MAXIMUM
AVG	AVERAGE	MFC	MANUFACTURER
BLDG	BUILDING	MIN	MINIMUM
BOP	BOTTOM OF PIPE	MS	MOP SINK
BFP	BACKFLOW PREVENTER	N/A	NOT APPLICABLE
CA	COMPRESSED AIR	NC	NORMALLY CLOSED
CAP	CAPACITY	NO	NORMALLY OPEN
CFH	CUBIC FEET PER HOUR	NPW	NON-POTABLE WATER
CFM	CUBIC FEET PER MINUTE	NTS	NOT TO SCALE
CO	CLEANOUT	OF	OWNER FURNISHED
CONN	CONNECTION OR CONNECT	PC	PLUMBING CONTRACTOR
CONT	CONTINUATION	PD	PUMPED DISCHARGE
CU FT	CUBIC FEET	PLBG	PLUMBING
DCVA	DOUBLE CHECK VALVE ASSEMBLY	PPM	PARTS PER MILLION
DCW	DOMESTIC COLD WATER	PRS	PRESSURE
DEPT	DEPARTMENT	PRV	PRESSURE REDUCING VALVE
DHW	DOMESTIC HOT WATER	PSI	POUNDS PER SQUARE INCH
DIA	DIAMETER	PSIG	PSI GAUGE
DN	DOWN	RP	RECIRCULATION PUMP
DW	DIRECT WASTE	RPZ	REDUCED PRESSURE ZONE
DWG	DRAWING	SH	SHOWER
DWV	DRAIN WASTE VENT	SRD	SECONDARY ROOF DRAIN
EL	ELEVATION	STD	STANDARD
EWC	ELECTRIC WATER COOLER	STR	STRAINER
EXH	EXHAUST	TEMP	TEMPERATURE
°F	DEGREES FAHRENHEIT	TMV	THERMOSTATIC MIXING VALVE
FD	FLOOR DRAIN	TOP	TOP OF PIPE
FIN	FINISHED	TP	TRAP PRIMER
FT	FOOT OR FEET	TS	TRAP SEAL
G	GAS	TWS	TEMPERED WATER SUPPLY
GA	GAUGE	TYP	TYPICAL
GAL	GALLONS	UNO	UNLESS NOTED OTHERWISE
GC	GENERAL CONTRACTOR	UR	URINAL
GPD	GALLONS PER DAY	V	VENT
GPH	GALLONS PER HOUR	VB	VACUUM BREAKER
GPM	GALLONS PER MINUTE	VDC	VENTED DOUBLE CHECK
HB	HOSE BIBB	VTR	VENT THRU ROOF
HC	HVAC CONTRACTOR	WC	WATER CLOSET

PLUMBING GENERAL NOTES:	
A.	ALL WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE GOVERNING CITY, INCLUDING APPLICABLE SECTIONS OF ANY INTERIM AMENDMENTS AT THE TIME OF THE PROPOSAL. PLUMBING CONTRACTOR SHALL PURCHASE ALL PERMITS ASSOCIATED WITH THE WORK AND OBTAIN ALL INSPECTIONS REQUIRED BY CODE.
B.	CONTRACTORS AND SUB-CONTRACTORS SHALL CAREFULLY REVIEW THE CONSTRUCTION DOCUMENTS, INFORMATION REGARDING THE COMPLETE WORK IS DISPERSED THROUGHOUT THE DOCUMENT SET AND CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE COMPLETE DOCUMENT SET.
C.	COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. PROVIDE PIPE RISES, DROPS, AND OFFSETS AS REQUIRED FOR FIELD INSTALLATION AND TRADE COORDINATION. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING WORK. IF PLUMBING CONTRACTOR FAILS TO COORDINATE WITH OTHER TRADES AND WORK IS REQUIRED TO BE ALTERED, THE PLUMBING CONTRACTOR WILL BE RESPONSIBLE FOR THE WORK AT THEIR OWN EXPENSE.
D.	DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED, THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT, REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS, REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS, PROVIDE PIPING, CONNECTIONS, FITTINGS, VALVES, OFFSETS, ETC. AND ALL MATERIALS NECESSARY FOR A COMPLETE SYSTEM.
E.	PROVIDE BACKFLOW PREVENTION DEVICES IN WATER LINES FEEDING PLUMBING FIXTURES AND/OR EQUIPMENT, AS SHOWN ON PLANS AND ELSEWHERE AS REQUIRED BY LOCAL AUTHORITIES, USE DEVICES OF APPROVED TYPE (ASSE LISTED ATMOSPHERIC VACUUM, PRESSURE VACUUM, DOUBLE CHECK, REDUCED PRESSURE ZONE) AND MANUFACTURER.
F.	VERIFY SERVICE CONNECTION POINTS, SIZES, ELEVATIONS, INVERTS, AND METERING LOCATIONS FOR PROJECT WITH LOCAL UTILITIES CO. AND/OR CIVIL ENGINEER, SERVICES TO INCLUDE BUT NOT LIMITED TO (DOMESTIC WATER, FIRE, SANITARY SEWER, STORM SEWER, GAS, ETC.) PRIOR TO STARTING WORK.
G.	VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION, IF PRESSURE AT BUILDING ENTRY PRIOR TO ALL LOCALLY REQUIRED DEVICES SUCH AS WATER METER, BACKFLOW PREVENTION DEVICES, ETC. IS LESS THAN 55 PSIG STATIC, CONTACT OWNERS REPRESENTATIVES, IF PRESSURE IS IN EXCESS OF 80 PSIG STATIC, INSTALLATION OF PRESSURE REDUCING VALVE IS REQUIRED.
H.	PLUMBING CONTRACTOR TO VISIT THE SITE PRIOR TO SUBMITTING BID, INCLUDE ANY ADDITIONAL ITEMS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.
I.	ALL CUTTING OF EXISTING FLOORS, EXCAVATION AND BACK FILL TO BE PART OF THE PLUMBING CONTRACTOR BID, PATCHING OF FLOORS AND ROOF TO BE BY GENERAL CONTRACTOR.
J.	PLUMBING CONTRACTOR TO REMOVE FROM THE SITE ANY SURPLUS EXCAVATION.
K.	EXTERIOR GAS LINE PIPING TO BE PAINTED TO MATCH BUILDING EXTERIOR.
L.	COORDINATE ALL FLOOR PENETRATIONS WITH STRUCTURAL DRAWINGS, SET SLEEVES IN FLOORS AND WALLS AND ATTACHMENTS FOR HANGERS AS CONSTRUCTION PROGRESSES, ALL PENETRATIONS MUST BE SEALED AND HELD AS TIGHT TO COLUMNS OR WALLS AS POSSIBLE.
M.	ALL PIPING SHALL BE CONCEALED INSIDE WALLS, BELOW FLOORS OR ABOVE CEILINGS UNLESS INDICATED OTHERWISE.
N.	ALL PIPING SHALL BE SLOPED AS PER THE MINIMUM GRADE REQUIRED BY CODE (UNLESS NOTED OTHERWISE) FOR EACH PARTICULAR PIPE SIZE.
O.	COORDINATE UNDERGROUND PIPING WITH GRADE BEAMS AND WALL FOOTINGS.
P.	DO NOT RUN PLUMBING PIPING THROUGH ELECTRICAL ROOMS, DIRECTLY ABOVE ELECTRICAL PANELS OR THROUGH OTHER WATER SENSITIVE AREAS.
Q.	PROVIDE WATER HAMMER ARRESTORS IN ALL BRANCH LINES SERVING FIXTURES, BANK OF FIXTURES, AND ALL FIXTURES/EQUIPMENT WITH QUICK CLOSING VALVES, SOLENOID VALVES AND/OR FLUSH VALVES IN ACCORDANCE WITH STANDARD PDI-WH-201A AND THE LOCAL PLUMBING CODE.
R.	PLUMBING VENTS EXTENDING THROUGH ROOF SHALL TERMINATE AT 1'-0" (MINIMUM) ABOVE ROOF AND AT A MINIMUM DISTANCE OF 12'-0" HORIZONTALLY FROM ANY AIR INTAKE OR OPERABLE WINDOW.
S.	ALL EQUIPMENT, PIPING, APPURTENANCES SHALL BE PROTECTED FROM DEBRIS AND DAMAGE, SENSITIVE EQUIPMENT SHALL NOT BE DELIVERED TO THE JOB SITE UNTIL SUCH TIME AS IT IS TO BE INSTALLED, PIPING ENDS SHALL BE CLOSED BY TEMPORARY MEANS WHEN PORTIONS OF THE SYSTEM ARE NOT COMPLETE.
T.	LOCATE ALL VALVES WHERE THEY ARE ACCESSIBLE FOR SERVICE AND USE, WHERE ACCESS PANELS ARE REQUIRED COORDINATE SELECTION AND LOCATION WITH ARCHITECT.
U.	PROVIDE TRAP PRIMER AND CONNECTION FOR ANY FLOOR DRAIN, FLOOR SINK OR HUB DRAIN NOT SUBJECT TO REGULAR FLOW.
V.	ALL PENETRATIONS AT FLOORS AND RATED PARTITIONS SHALL HAVE A UL CLASSIFIED FIRE STOP SYSTEM TESTED TO ASTM E814 AND UL 1497 BY UNDERWRITERS LABORATORIES, FIRE STOP SYSTEMS SHALL BE PROSET SYSTEMS, PENSL FIRESTOP SYSTEMS OR 3M COMPANY.
W.	REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL PLUMBING FIXTURES, EXACT LOCATION OF ALL FIXTURES MUST BE VERIFIED IN THE FIELD PRIOR TO INSTALLATION, FINAL LOCATION SHALL BE AS DIRECTED BY THE GENERAL CONTRACTOR.
X.	PLUMBING CONTRACTOR TO COORDINATE WITH TENANT ON EXACT LOCATION OF ROUGH-INS.
Y.	ALL MIXING VALVES SHALL BE SET TO PROVIDE WATER AT TEMPERATURES THAT COMPLY WITH ASSE 1070 STANDARDS FOR PERFORMANCE REQUIREMENTS FOR WATER TEMPERATURE LIMITING DEVICES.
Z.	MATERIALS IN PLENUM SPACES SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE - DEVELOPED INDEX OF NOT MORE THAN 50 PER IMC 602.2.1.
AA.	PLUMBING CONTRACTOR TO VERIFY INVERT OF ALL TIE-IN POINTS INDICATED ON PLAN PRIOR TO INSTALLATION, NOTIFY ARCHITECT IMMEDIATELY IF EXISTING INVERT WILL BE INSUFFICIENT.
AB.	WHERE AIR ADMITTANCE VALVES SHALL BE INSTALLED, PRIOR TO INSTALLATION PERFORM TESTING REQUIRED BY SECTION 312 OF THE 2006 IPC.
AC.	ALL PIPING PENETRATING CEILINGS AND WALLS SHALL BE INSTALLED WITH CHROME-PLATED ESCUTCHEONS AT THE PENETRATION, ALL PIPING PENETRATING EXTERIOR WALLS AND ROOFS SHALL BE FLASHED IN AN APPROVED MANNER AND SHALL BE PROTECTED AS REQUIRED BY LOCAL CODE AUTHORITY.
AD.	TOPS OF ALL FLOOR DRAINS AND CLEANOUTS SHALL BE SET FLUSH WITH FINISHED FLOOR.
AE.	ALL PIPING ABOVE GRADE SHALL BE PROPERLY SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING TILES OR CEILING STRUCTURE.
AF.	PLUMBING CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE ELECTRICAL DRAWINGS, AND SHALL FURNISH EQUIPMENT WIRED FOR THE VOLTAGES SHOWN THEREIN.
AG.	WATER PIPING ROUTED ABOVE CEILINGS SHALL BE ROUTED ON HEATED SIDE (UNDERSIDE) OF CEILING INSULATION.
AH.	ALL PLUMBING EQUIPMENT AND SYSTEMS SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR AFTER START-UP.
AI.	INCLUDE THE COST IN BID TO USE LANDLORD'S ROOFER (AND ANY OTHER LANDLORD DESIGNATED CONTRACTORS) IF DIRECTED BY CONSTRUCTION MANAGER.

PLUMBING FOOD SERVICE NOTES:	
A.	FOOD SERVICE EQUIPMENT IS FURNISHED AND INSTALLED BY THE FOOD SERVICE EQUIPMENT CONTRACTOR AS INDICATED BY FOOD SERVICE DOCUMENTATION INCLUDED UNDER SEPARATE CONTRACT WITH THE DESIGN DOCUMENTATION FOR THIS PROJECT. PLUMBING ACCESSORIES, INCLUDING FAUCETS, DRAINS, VALVES, PRESSURE/FLOW REGULATORS, FILTERS, ETC., IS FURNISHED LOOSE WITH THE FOOD SERVICE EQUIPMENT, FOR INSTALLATION AND FINAL CONNECTION BY THE PLUMBING CONTRACTOR, UNLESS INDICATED OTHERWISE.
B.	INSTALL FOOD SERVICE EQUIPMENT PIPING AND ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS, SEE FOOD SERVICE DOCUMENTATION FOR SPECIFIC DIRECTION AT INDIVIDUAL ITEMS.
C.	SEE FOOD SERVICE DOCUMENTATION FOR ADDITIONAL INFORMATION PERTAINING TO FOOD SERVICE EQUIPMENT PLUMBING REQUIREMENTS, INCLUDING UTILITIES REQUIRED, CONNECTION SIZES AND ROUGH-IN LOCATIONS FOR SPECIFIC ITEMS (SUPPLY AND DRAIN), COORDINATE FINAL INSTALLATION WITH THE FOOD SERVICE EQUIPMENT AS ACTUALLY INSTALLED, LOCATIONS OF FLOOR DRAINS, FLOOR SINKS AND OTHER ASSEMBLIES UTILIZED FOR INDIRECT DRAINAGE FROM FOOD SERVICE EQUIPMENT, ARE TO BE DETERMINED FROM THE ARCHITECTURAL SLAB PLAN, THE PLUMBING CONTRACTOR SHALL EXTEND PIPING BELOW COUNTERS, IN CASEWORK OR STRUCTURE AS REQUIRED FROM DROP OR RISE POINTS INDICATED ON PLANS TO EQUIPMENT CONNECTION POINTS.
D.	ALL FOOD SERVICE EQUIPMENT INTERCONNECTING PIPING (SUPPLY AND DRAIN) IS FURNISHED AND INSTALLED BY THE PLUMBING CONTRACTOR, UNLESS INDICATED OTHERWISE ON THESE OR THE FOOD SERVICE DRAWINGS, SEE FOOD SERVICE DRAWINGS FOR PIPING NOT SHOWN ON PLUMBING CONTRACT DRAWINGS, INCLUDING CONDENSATION DRAIN PIPING FROM REFRIGERATION EQUIPMENT, ALL DRAIN PIPING WITHIN REFRIGERATOR/FREEZER ENCLOSURES TO BE INSULATED AS SPECIFIED FOR DOMESTIC HOT WATER PIPING TO A POINT 24" OUTSIDE OF ENCLOSURE, FOOD SERVICE EQUIPMENT CONTRACTOR SHALL PROVIDE HEAT TRACING UNDERNEATH INSULATION FOR ENTIRE LENGTH OF DRAIN PIPING WITHIN WALK-IN FREEZER, COORDINATE INSTALLATION WITH FOOD SERVICE AND ELECTRICAL CONTRACTORS.
E.	WHERE WASTE LINES FROM FOOD SERVICE EQUIPMENT ARE INDICATED TO BE INDIRECTLY DISCHARGED TO THE SANITARY SYSTEM, A MINIMUM AIR GAP OF 2", OR TWICE THE EFFECTIVE OPENING OF THE INDIRECT WASTE PIPE, SHALL BE MAINTAINED ABOVE THE FLOOD RIM OF THE DRAIN PER "SAFE WASTE" REQUIREMENTS.
F.	PLUMBING SUPPLY PIPING (DHW, DCW, ETC.) SERVING FOOD SERVICE EQUIPMENT PROVIDED WITH SOLENOID VALVES OR OTHER QUICK-CLOSING DEVICES SHALL HAVE A SHOCK ABSORBER FURNISHED AND INSTALLED BY THE PLUMBING CONTRACTOR AT THE TOP OF THE SUPPLY DROP OR BASE OF SUPPLY RISER INDICATED ON PLANS, MULTIPLE ITEMS SERVED BY A COMMON SUPPLY DROP OR RISE MAY BE SERVED BY A SINGLE SHOCK ABSORBER, SIZED AND INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS FOR TYPE AND QUANTITY OF FIXTURES SERVED, WHERE QUICK CLOSING DEVICES SUPPLY PIPING IS FURNISHED WITH A BACKFLOW PREVENTER OR CHECK VALVE, THE SHOCK ABSORBER SHALL BE INSTALLED DOWNSTREAM SIDE OF THE BACKFLOW PREVENTER OR CHECK VALVE.
G.	WHERE A SINGLE PLUMBING SUPPLY DROP OR RISE SERVES MULTIPLE FOOD SERVICE ITEMS, VERIFY LOCATIONS AND SIZES OF INDIVIDUAL SUPPLY CONNECTIONS FROM THE FOOD SERVICE CONTRACT DRAWINGS, PROVIDE INDIVIDUAL SUPPLY BRANCHES TO EQUIPMENT, WITH STOP VALVES AS REQUIRED.
H.	EACH FOOD SERVICE FIXTURE AND/OR PIECE OF EQUIPMENT TO BE PROVIDED WITH INDIVIDUAL IN-LINE STOP VALVE IN EACH PLUMBING SUPPLY CONNECTED, NATURAL GAS STOPS TO BE A.G.A. LISTED TWO PIECE BALL VALVE WITH LEVER HANDLE.
I.	RUN PIPING CONCEALED WHENEVER POSSIBLE, IN STRUCTURE OR CASEWORK, SECURE PIPING TO STRUCTURE PROVIDED UNDER SEPARATE CONTRACT WITHIN CASEWORK (WHERE APPLICABLE) WITH COMPATIBLE FASTENERS PROVIDED BY THE PLUMBING CONTRACTOR.
J.	COORDINATE INSTALLATION OF ALL ITEMS AND VERIFY CONDITIONS IN ADVANCE WITH THE FOOD SERVICE FIXTURES/EQUIPMENT CONTRACTOR(S).
K.	GREASE BEARING DRAIN/WASTE PIPING FROM FIXTURES AND/OR EQUIPMENT TO INTERCEPTOR IS TO BE SLOPED AT A MINIMUM 1/4" PER LINEAR FOOT PER CODE REQUIREMENTS.
L.	INSULATE ALL HOT WATER AND ALL COLD WATER PIPING PER SPECIFICATIONS.
M.	COMPLY W/ LOCAL HEALTH DEPARTMENT REGULATIONS, OMIT ESCUTCHEONS IN FOOD SERVICE AREAS, SEAL PIPES NEATLY WITH GROUT AT WALL, FLOOR, OR CEILING PENETRATIONS, OMIT INSULATION ON EXPOSED PIPING BEHIND AND UNDER EQUIPMENT, PROVIDE CLEARANCE BEHIND AND UNDER EXPOSED PIPING AS REQUIRED BY HEALTH DEPARTMENT, WHEREVER POSSIBLE, INSTALL PIPING IN FOOD SERVICE AREAS CONCEALED, CONFORM TO HEALTH DEPARTMENT REQUIREMENTS FOR LOCATIONS OF FLOOR SINKS, NO EXPOSED PEX TUBING IF PEX TUBING IS USED.
N.	FURNISH ACCESS DOORS TO ALLOW ACCESS TO VALVES LOCATED ABOVE GYPSUM WALLBOARD, CEILINGS OR ELSEWHERE AS REQUIRED OR SHOWN, COORDINATE THE LOCATION AND INSTALLATION OF ALL ACCESS DOORS WITH THE GENERAL TRADES CONTRACTOR.

DRAWING INDEX	
P100	GENERAL INFORMATION - PLUMBING
P200	WASTE AND VENT PLAN - PLUMBING
P300	WATER AND GAS PLAN - PLUMBING
P400	ISOMETRICS - PLUMBING
P500	DETAILS - PLUMBING
P501	DETAILS - PLUMBING
P600	SCHEDULES - PLUMBING
P700	SPECIFICATIONS - PLUMBING
P701	SPECIFICATIONS - PLUMBING
P702	SPECIFICATIONS - PLUMBING

REGISTRATION SEAL

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209 S. CENTERVILLE RD.  
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STORE # X

PROJECT NO: 210109

DRAWN BY: CH

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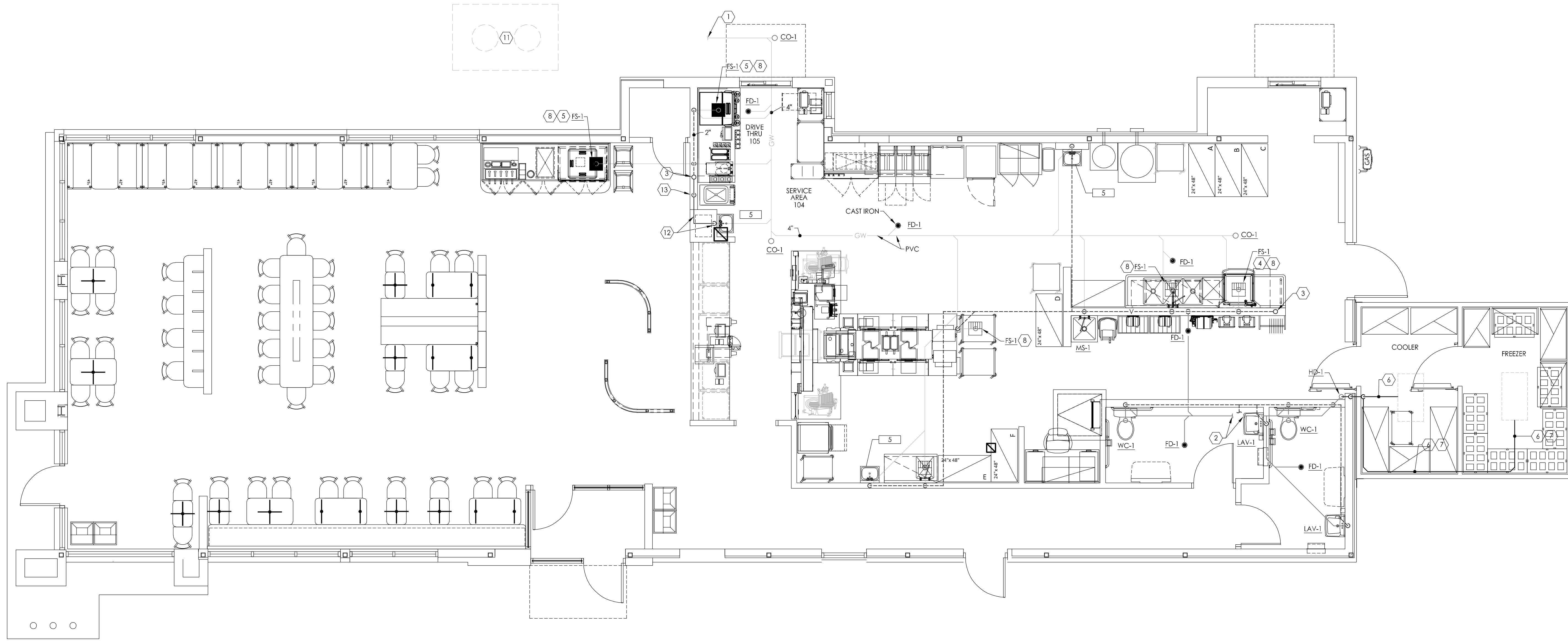
DESCRIPTION

REV.

DATE

GENERAL INFORMATION PLUMBING

P100



1 WASTE AND VENT PLAN - PLUMBING  
1/4" = 1'-0"

**GENERAL NOTES:**

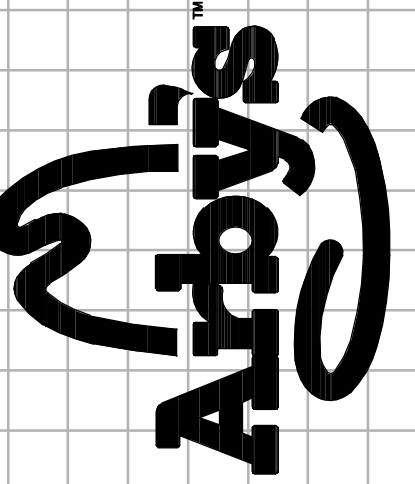
- A. CONTRACTOR SHALL PROVIDE ALTERNATE BID FOR SURESEAL TRAP GUARD OR EQUIVALENT PRODUCT IN LIEU OF TRAP PRIMERS. CONTRACTOR SHALL VERIFY LOCAL CODE REQUIREMENTS.
- B. CONTRACTOR SHALL FIELD VERIFY EXACT CONTINUATION AND ROUTING OF SANITARY PIPING FOR A PROPER OPERATING SYSTEM. PLUMBING CONTRACTOR SHALL FIELD VERIFY INVERT ELEVATION PRIOR TO SANITARY LINE INSTALLATION AND NOTIFY ARCHITECT/ENGINEER WITH ANY DISCREPANCIES IMMEDIATELY.
- C. ALL SANITARY PIPING 2-1/2" AND SMALLER SHALL BE INSTALLED WITH A SLOPE OF 1/4" PER FOOT. ALL SANITARY PIPING 3" AND LARGER SHALL BE INSTALLED AT A SLOPE OF 1/8" PER FOOT. PROVIDE PROPER SLOPE FOR VENT PIPING TO DRAIN BACK TO DRAINAGE SYSTEM TO DRAIN ANY ACCUMULATIVE MOISTURE.
- D. ALL UNDERGROUND GREASE WASTE PIPING UPSTREAM OF GREASE INTERCEPTOR SHALL BE INSTALLED WITH A SLOPE OF 1/4" PER FOOT.
- E. ALL UNDERGROUND GREASE WASTE PIPING TO BE PVC. CAST IRON PIPING SHALL BE USED FOR THE FLOOR DRAIN IN FRONT OF FRYER.
- F. ALL WASTE PIPING SHOWN IS LOCATED BELOW FINISHED FLOOR, U.N.O.
- G. ALL VENT PIPING SHOWN IS LOCATED ABOVE FINISHED CEILINGS AND INSIDE WALLS. U.N.O.
- H. ROOF OVERFLOW DRAINAGE IS BY SCUPPERS. REFER TO THE ARCHITECTURAL DRAWINGS.
- I. REFER TO STACK DIAGRAM AND SCHEDULES FOR COMPLETE PIPE SIZING INFORMATION.
- J. SMOKE ALL PLUMBING VENT PIPING PRIOR TO CLOSING WALL CAVITIES AND PRIOR TO TURN OVER.

**CODED NOTES: #**

- 1. EXTEND AND CONNECT NEW 4" GREASE WASTE PIPING TO EXISTING GREASE WASTE PIPE OF THE SAME SIZE OR LARGER. CONTRACTOR TO VERIFY EXACT LOCATION, SIZE AND INVERT ELEVATION.
- 2. EXTEND AND CONNECT NEW 4" SANITARY SEWER PIPE TO EXISTING SANITARY SEWER PIPE OF THE SAME SIZE OR LARGER AT THE APPROXIMATE LOCATION INDICATED AT EXISTING RESTROOMS BEING REMOVED. CONTRACTOR IS TO FIELD VERIFY EXACT LOCATION, SIZE AND INVERT ELEVATION.
- 3. PROVIDE 3" VTR. REFER TO DETAIL ON SHEET P4.2.
- 4. PROVIDE 2" DRAINAGE PIPE FROM DISHWASHER (22) AND INDIRECT FULLSIZE TO FLOOR SINK WITH A MINIMUM 3" AIR GAP.
- 5. PROVIDE DRAINAGE PIPING FROM ICE MACHINE AND BEVERAGE DISPENSER TO FS-1 PER MANUFACTURER INSTRUCTIONS.
- 6. 1" COPPER CONDENSATE DRAIN FROM COOLER/FREEZER EVAPORATOR. EXTEND TO HUB DRAIN. PROVIDE 3" AIR GAP. PROVIDE CORROSION RESISTANT STAND-OFFS TO ALLOW 1" CLEARANCE BETWEEN WALL AND PIPING. INSULATE PIPING WITH 3/4" THICK ELASTOMERIC INSULATION.
- 7. WALK-IN COOLER VENDOR TO PROVIDE HEAT TRACING ON FREEZER DRAIN LINE. COORDINATE ELECTRICAL CONNECTION WITH ELECTRICAL CONTRACTOR.
- 8. PROVIDE 3" (MIN.) AIR GAP AT INDIRECT CONNECTION (TYPICAL). CONTRACTOR SHALL VERIFY LOCAL CODE REQUIREMENTS.
- 9. NOT USED.
- 10. NOT USED.
- 11. APPROXIMATE GREASE INTERCEPTOR LOCATION. CONTRACTOR IS TO HAVE THE INTERCEPTOR EMPTIED AND INSPECTED TO ENSURE THAT IS IN PROPER WORKING ORDER. REPORT FINDING TO GENERAL CONTRACTOR.
- 12. PROVIDE VENT PIPING IN LOW WALL CAVITY.
- 13. PROVIDE VENT PIPING DOWN TO LOW WALL CAVITY. ROUTE PIPING IN LOW WALL CAVITY. **DO NOT PENETRATE SHEET WALL.**

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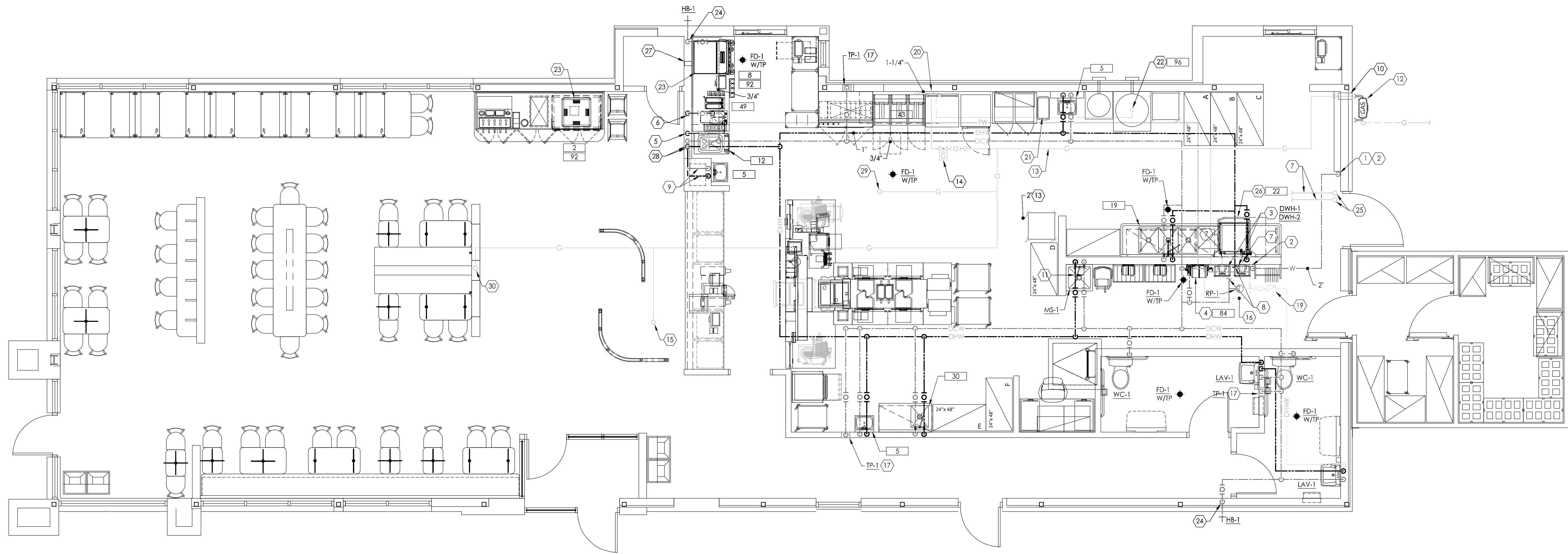
REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
DRAWN BY: CH  
CHECKED BY: ACR  
ISSUE DATE:  
03/18/22

WASTE AND VENT PLAN - PLUMBING

**P200**





1 WATER AND GAS PLAN - PLUMBING  
1/4" = 1'-0"

**GENERAL NOTES:**

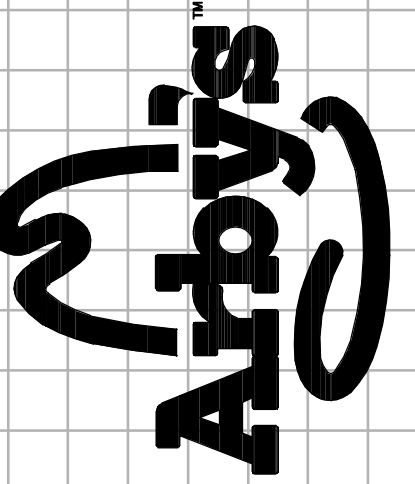
- A. PLUMBING CONTRACTOR SHALL PROVIDE ALTERNATE BID FOR SURESEAL TRAP GUARD OR EQUIVALENT TRAP GUARD AS OPPOSED TO TRAP PRIMERS IF LOCAL CODE PERMITS THE USE OF TRAP GUARDS.
- B. THE BASIS OF DESIGN FOR THE DOMESTIC COLD WATER SYSTEM SHALL BE PEX PIPING SYSTEM.
- C. REFER TO SCHEDULE ON SHEET P5.1 FOR ADDITIONAL PIPE SIZING INFORMATION.
- D. ROUTE PIPING UP IN TRUSS SPACE WHERE CEILING SPACE IS LIMITED.
- E. TRAP PRIMER/VALVES TO BE IN AN ACCESSIBLE SPACE ABOVE CEILING. IF NOT PROVIDE A MINIMUM 12"x12" ACCESS PANEL, OR LARGER IF REQUIRED TO ADEQUATELY ACCESS THE TRAP PRIMER/VALVES. REFER TO DETAIL ON SHEET P4.1.
- F. ALL GAS PIPING IN CONCEALED AREAS SHALL BE WELDED.

**CODED NOTES:**

1. EXTEND AND CONNECT NEW 2" COLD WATER PIPE TO EXISTING 2" COLD WATER SERVICE PIPE AT THIS APPROXIMATE LOCATION. FIELD VERIFY EXACT LOCATION.
2. 2" DOMESTIC WATER SERVICE ENTRANCE. REFER TO DETAIL ON SHEET P4.2.
3. PROVIDE WATER HEATERS ON FACE OF SOFFIT AS HIGH AS POSSIBLE. REFER TO DETAIL ON SHEET P4.1.
4. 1/2" DCW WITH BALL SHUT OFF VALVE AND ASSE 1022 LISTED BFP 6" BELOW CEILING TO WATER BOOSTER FILTER SYSTEM (B4). COORDINATE EXACT REQUIREMENTS WITH SODA VENDOR. REFER TO WATER FILTER SYSTEM DETAIL ON SHEET P4.2.
5. CONNECT TO SODA PROVIDED FILTERED WATER LINE ABOVE CEILING AND PROVIDED 1/2" FW DROP IN WALL TO 21" AFF FOR SHAKE MACHINE (12). PROVIDE BALL STOP VALVE, ASSE 1022 LISTED BFP AND FINAL CONNECTION TO EQUIPMENT. COORDINATE EXACT REQUIREMENTS WITH SODA VENDOR.
6. CONNECT TO SODA PROVIDED FILTERED WATER LINE ABOVE CEILING AND PROVIDE 1/2" FW DROP DOWN IN WALL AND UNDER COUNTERTOP TO 44" AFF FOR COFFEE MAKER (49). PROVIDE BALL SHUTOFF VALVE, ASSE 1022 LISTED BFP AND FINAL CONNECTION TO EQUIPMENT. COORDINATE EXACT REQUIREMENTS WITH SODA VENDOR.
7. INSTALL WATER HEATER CONCENTRIC INTAKE AIR AND FLUE VENT PIPING THROUGH ROOF PER DETAIL ON SHEET P4.2.
8. DCW, DHW, DHWR, AND GAS PIPING ROUTED TO WATER HEATERS. REFER TO WATER HEATER DETAIL ON SHEET P4.1.
9. PROVIDE 1/2" DCW AND DHW IN LOW WALL CAVITY TO SINK AND CONNECT.
10. ROUTE GAS PIPING INTO BUILDING AND RISE IN WALL CAVITY TO ABOVE CEILING WITHIN TRUSS SPACE. PROVIDE WATERTIGHT SEAL AT WALL PENETRATION. PAINT EXTERIOR PIPING TO MATCH EXTERIOR WALL FINISHES. COORDINATE COLOR WITH CONSTRUCTION MANAGER AND ARCHITECT.
11. 3/4" DCW AND 3/4" DHW DOWN IN WALL TO MOP SINK.
12. GAS METER AND SERVICE ENTRANCE. REFER TO DETAIL ON SHEET P4.1. PC SHALL COORDINATE NEW GAS SERVICE AND METER WITH LOCAL NATURAL GAS AUTHORITY. TOTAL GAS LOAD: 955 CFH; DELIVERY PRESSURE: 7" WC; TOTAL EQUIVALENT LENGTH OF PIPE: 125 FEET.
13. GAS PIPING ROUTED ABOVE CEILING WITHIN TRUSS SPACE.
14. PROVIDE 1-1/2" GAS PIPING DOWN THROUGH CEILING TO MECHANICAL GAS SHUT-OFF VALVE. MECHANICAL GAS SHUT-OFF VALVE FURNISHED BY HOOD MANUFACTURER AND INSTALLED BY THE PC. MANUAL SHUT-OFF VALVE PROVIDED BY PC. INSTALL MECHANICAL VALVE AND MANUAL VALVE BELOW CEILING. REFER TO GAS RISER DIAGRAM ON THIS SHEET AND DETAIL ON SHEET P4.2.
15. 1-1/4" GAS PIPING ROUTED UP THROUGH ROOF TO NEW RTU-1.
16. AREA FOR WATER METER AND BACKFLOW PREVENTER ACCESS.
17. TRAP PRIMER. REFER TO DETAIL ON SHEET P4.2.
18. NOT USED.
19. PROVIDE CHECK VALVE, BALL VALVE AND PETE'S PLUGS ABOVE CEILING IN DHWR PIPING.
20. PC SHALL ROUTE 3/4" GALVANIZED USED FRYER GREASE PIPING DOWN ON WALL AND HORIZONTALLY TO THE FRYERS PER MANUFACTURERS RECOMMENDATIONS. SECURE INLET PIPE TO WALL WITH STANDOFF BRACKETS AND PIPE COVER. REFER TO PIPE COVER DETAIL ON SHEET P4.1. REFER TO NOTE 22 AND 23 FOR COORDINATION.
21. USED FRYER GREASE PIPING ROUTED ABOVE CEILING. INSTALL PIPE PER MANUFACTURERS RECOMMENDATIONS WITH 1/8" MIN SLOPE TO ALLOW FOR RESIDUAL GREASE TO DRAIN INTO STORAGE TANK WHEN THE SYSTEM IS NOT IN USE.
22. USED FRYER GREASE HOLDING TANK (96) BY KITCHEN EQUIPMENT SUPPLIER.
23. CONNECT TO SODA PROVIDED FILTERED WATER LINE ABOVE CEILING AND PROVIDE 1/2" FW DROP TO 84" AFF TO ICE MAKER (22) WITH WHP CONNECTOR FURNISHED BY SODA VENDOR. PROVIDE BALL SHUTOFF VALVE, ASSE 1022 LISTED BFP AND FINAL CONNECTION TO EQUIPMENT. COORDINATE EXACT REQUIREMENTS WITH SODA VENDOR.
24. 3/4" DCW DOWN IN WALL TO EXTERIOR WALL HYDRANT. PIPE INSULATION TO RUN CONTINUOUSLY WITHIN WALL STRUCTURE. COORDINATE MOUNTING HEIGHT OF WALL HYDRANT WITH ARCHITECT AND ARBY'S CONSTRUCTION MANAGER.
25. INSTALL VERTICAL CONCENTRIC ROOF TERMINATION KIT FURNISHED BY WATER HEATER MANUFACTURER. REFER TO DETAIL ON SHEET P4.2.
26. PROVIDE 1/2" VALVED DHW DOWN IN WALL TO DISHWASHER (22) AND CONNECT. PROVIDE ASSE 1013 BACKFLOW PREVENTER ON DHW LINE IN AN ACCESSIBLE LOCATION. PROVIDE DRAIN LINE FROM BACKFLOW PREVENTER TO NEAREST DRAIN. COORDINATE EXACT LOCATION OF DRAIN WITH CONSTRUCTION MANAGER.
27. PROVIDE 4" CONDUIT IN WALL BETWEEN SODA DISPENSERS FOR SODA CONDUIT. PROVIDE 12X12 CUT OUT HOLE UNDER DRIVE THROUGH COUNTER TO CONNECT SODA LINES.
28. PROVIDE 1/2" DCW AND DHW DOWN IN WALL TO LOW WALL CAVITY. **DO NOT PENETRATE SHEET WALL.**
29. 1 1/4" UP THRU ROOF TO EXISTING RTU-2. EXTEND AND CONNECT NEW GAS PIPE TO EXISTING GAS PIPE THAT SERVES THE EXISTING ROOF TOP UNIT. FIELD VERIFY.
30. 1 1/4" UP THRU ROOF TO EXISTING RTU-1. EXTEND AND CONNECT NEW GAS PIPE TO EXISTING GAS PIPE THAT SERVES THE EXISTING ROOF TOP UNIT. FIELD VERIFY.

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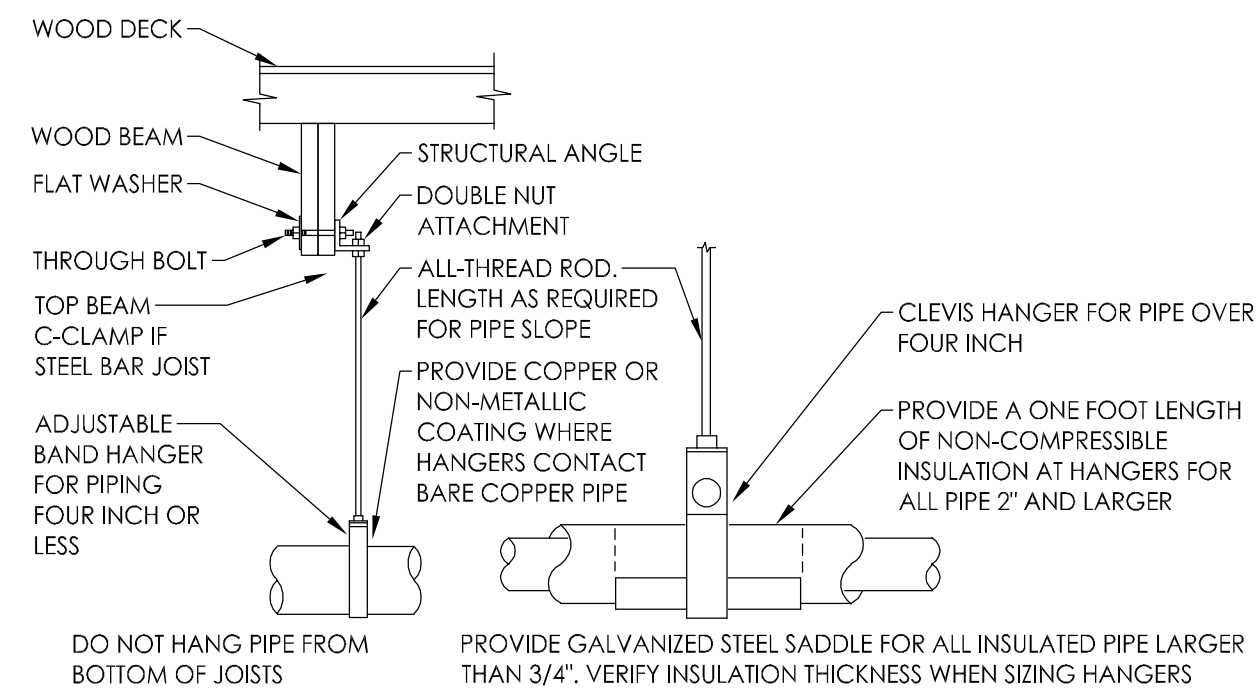
PROJECT NO: 210109  
DRAWN BY: CH  
CHECKED BY: ACR  
ISSUE DATE: 03/18/22

**P300**

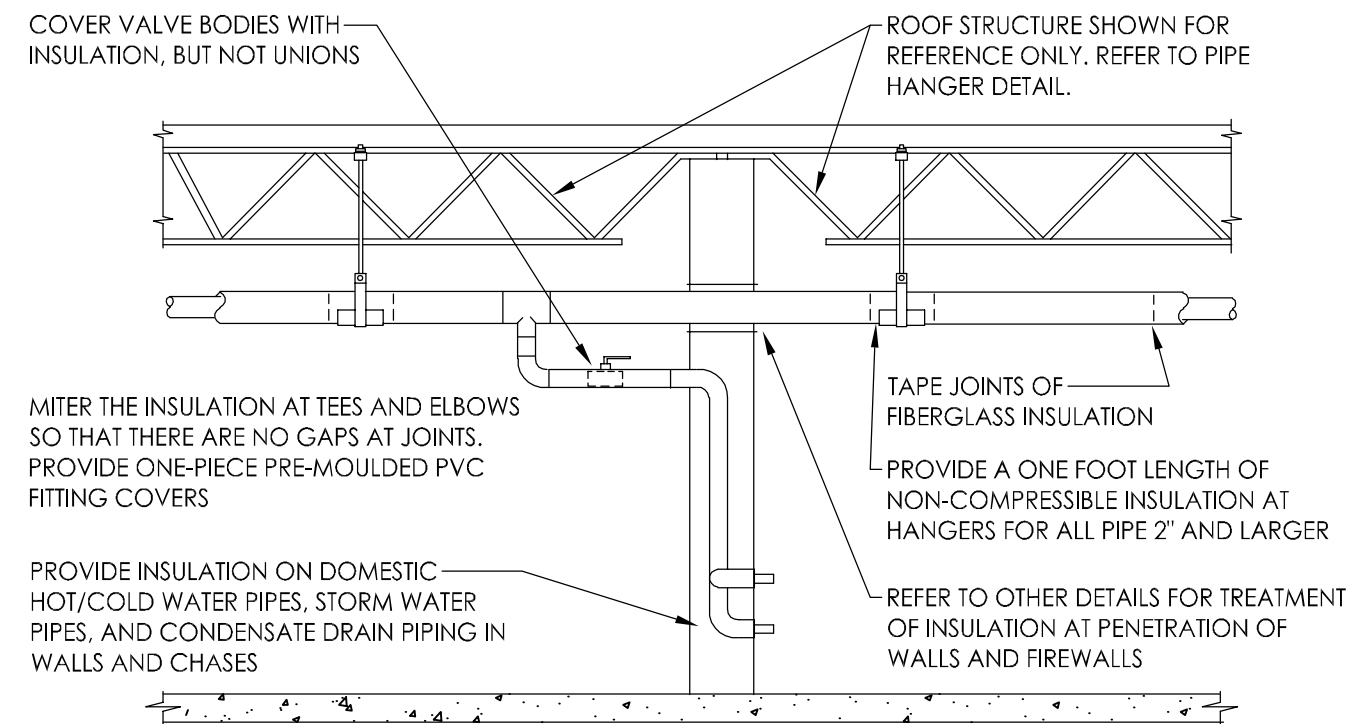
WATER AND GAS PLAN - PLUMBING



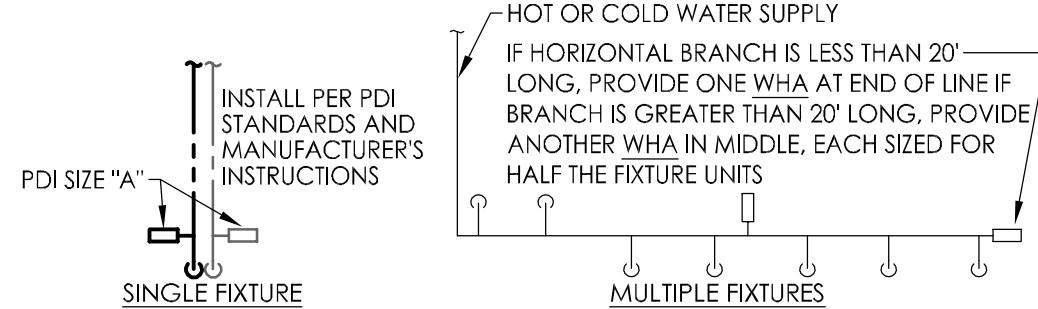




1 PIPE HANGER DETAIL  
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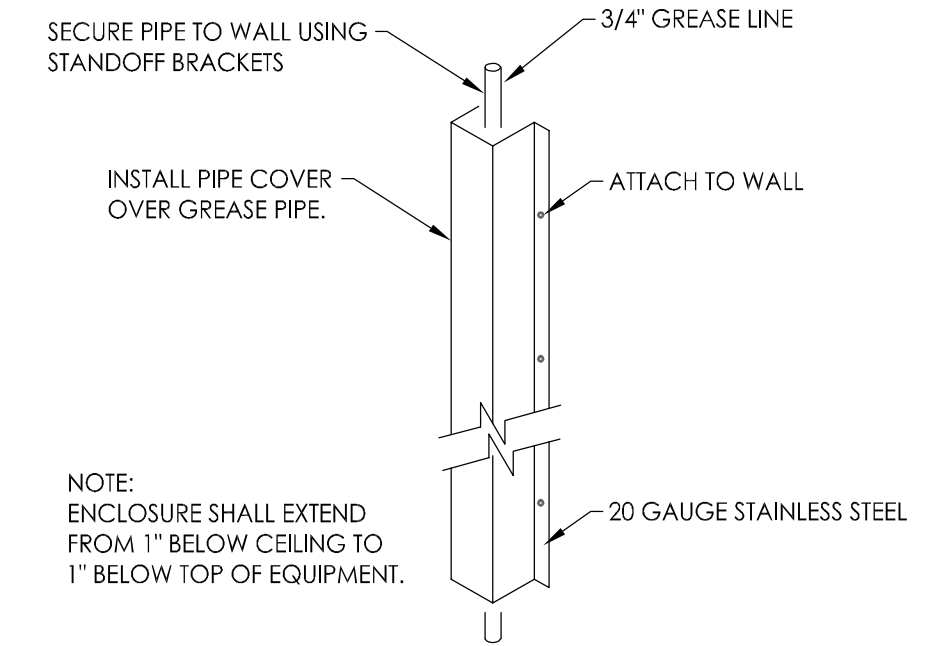


2 PIPE INSULATION DETAIL  
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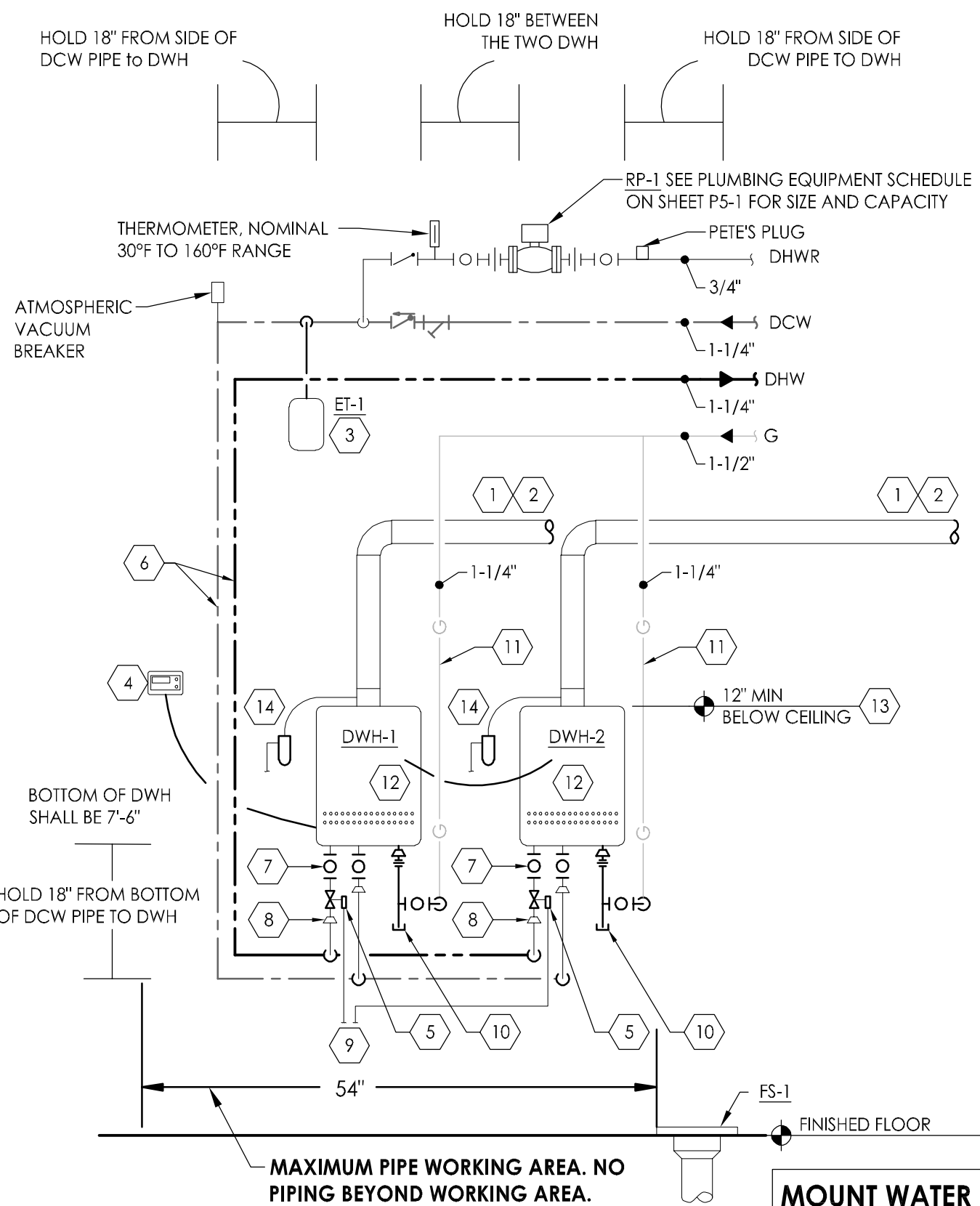


PDI SIZE	PIPE SIZE	FIXTURE UNIT LOAD	FIXTURE UNIT TABULATION	
A	B	C	D	E
1/2"	3/4"	1"	1-1/4"	1-1/2"
1-11	12-32	33-60	61-113	114-154
TANK WATER CLOSET	URINAL	LAVATORY	SINK	MOP BASIN
5	5	1.5	3	2.25
--	--	1.5	3	2.25

3 WATER HAMMER ARRESTERS DETAIL  
N.T.S.

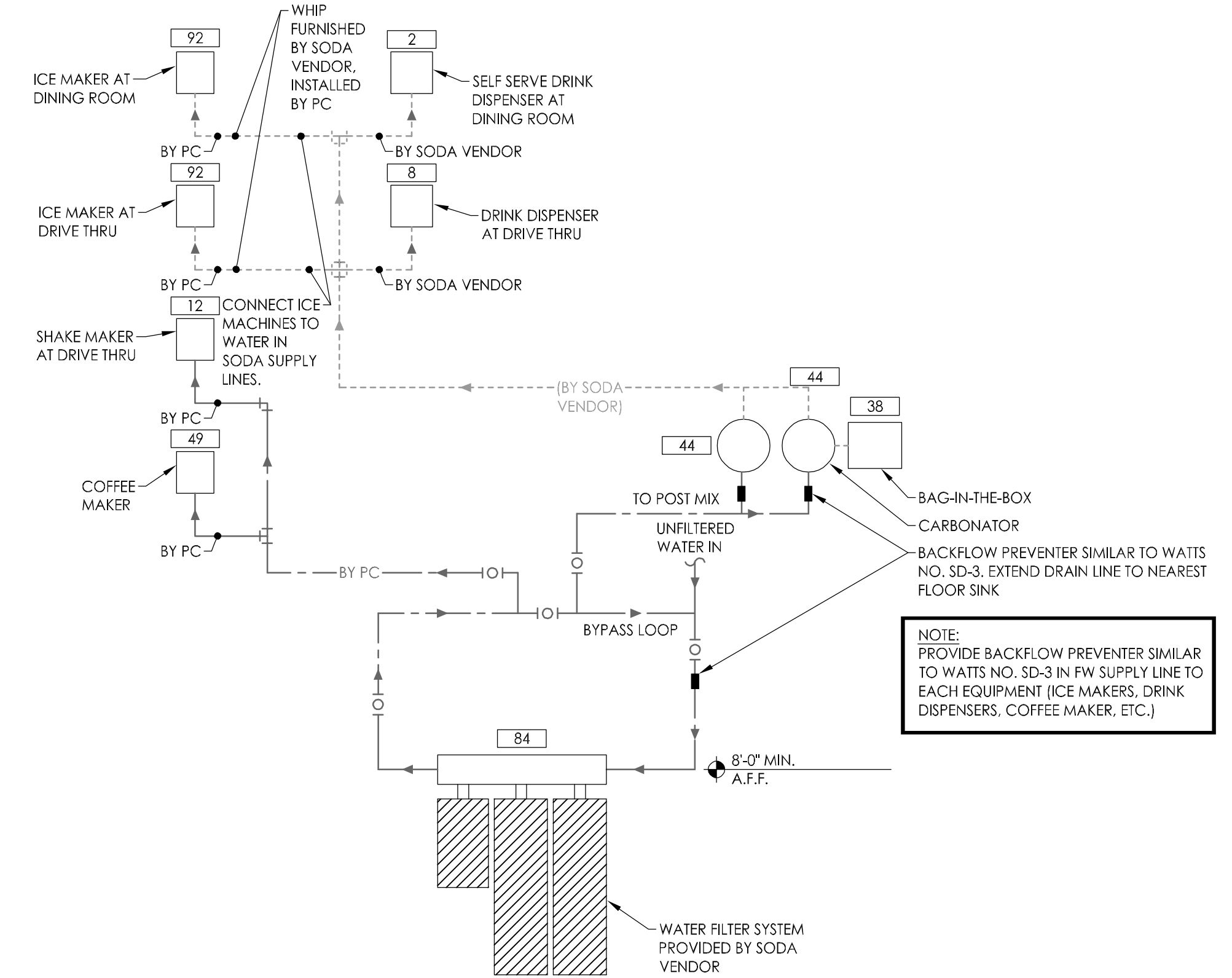


4 PIPE COVER DETAIL  
N.T.S.

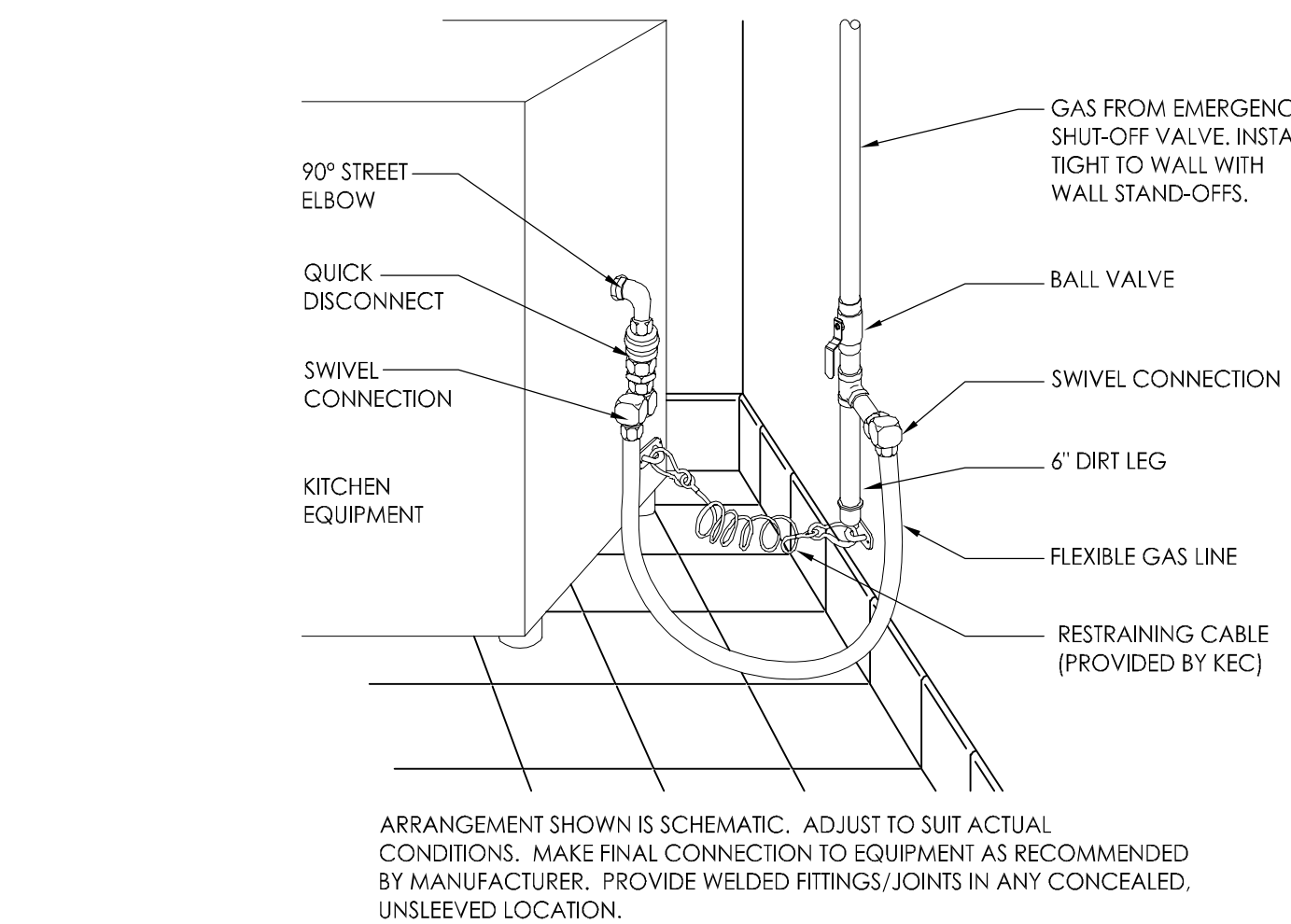


5 INSTANTANEOUS WATER HEATER DETAIL  
N.T.S.

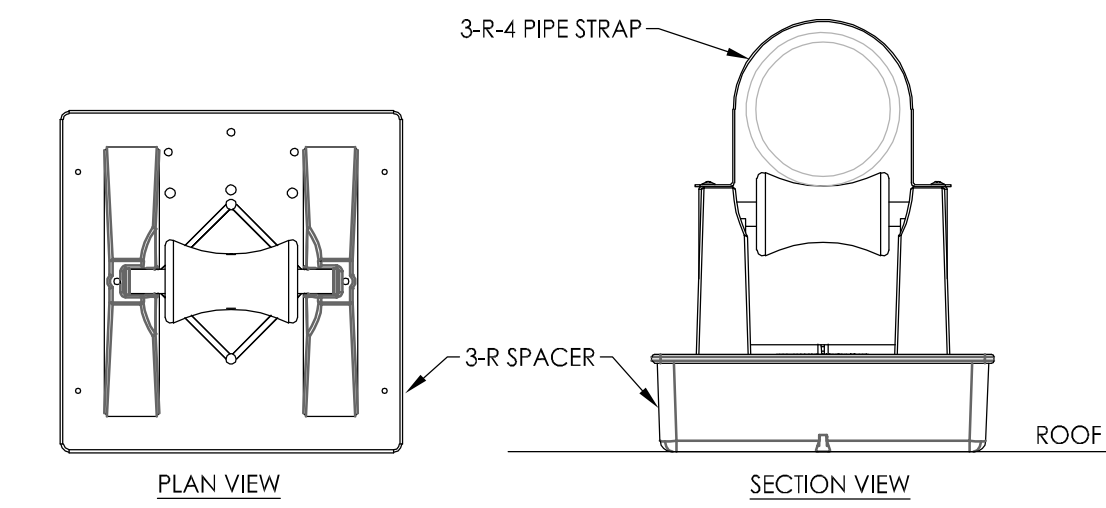
- WATER HEATER DETAIL NOTES**
1. PROVIDE 5" RINNAI/UBINK ROLUX CONCENTRIC VENT SYSTEM AVAILABLE FROM HEATER MANUFACTURER AND INSTALL PER THE MANUFACTURER'S INSTRUCTIONS. SLOPE HORIZONTAL SECTION OF VENT 1/4" PER FOOT BACK TOWARDS THE HEATER FOR CONDENSATE DISPOSAL.
  2. PROVIDE RINNAI/UBINK ROLUX CONCENTRIC VERTICAL TERMINATION KIT FOR FLUE/INTAKE TERMINATION THROUGH ROOF. INSTALL PER MANUFACTURER'S INSTRUCTIONS. REFER TO DETAIL ON SHEET P4-2.
  3. PROVIDE EXPANSION TANK AS SHOWN PER MANUFACTURER'S REQUIREMENTS. SUPPORT TANK FROM WALL OR STRUCTURE ABOVE. INSTALL REMOTE CONTROL PANEL 48" IN LOCATION AS SHOWN ON SHEET P2-1. PROVIDE WIRING FROM THE REMOTE CONTROL PANEL TO THE WATER HEATER. CONCEAL WIRING WITHIN THE WALL.
  4. PROVIDE PRESSURE RELIEF VALVE, PIPE PRESSURE RELIEF VALVE TO FS-1. ROUTE DCW AND DHW PIPING EXPOSED ON SURFACE OF WALL. SUPPORT PIPING WITH WALL STANDOFFS. INSULATE PIPING PER SPECIFICATIONS AND COVER EXPOSED INSULATION WITH PVC PROTECTIVE JACKET.
  5. PROVIDE THE ISOLATOR EXP™ TANKLESS WATER HEATER SERVICE VALVES MANUFACTURED BY WEBSTONE COMPANY, INC. EXPOSED AT THE COLD AND HOT WATER CONNECTIONS TO THE WATER HEATER.
  6. IF THE COLD, HOT, OR GAS PIPE LINE SIZE AS SHOWN ON THE PLUMBING PLANS IS LARGER THAN THE WATER HEATER CONNECTION SIZES, PROVIDE REDUCERS WITHIN 6" OF THE WATER HEATER.
  7. PIPE PRESSURE RELIEF VALVE DISCHARGE AND FLUE CONDENSATE DRAIN TO FS-1. DRAIN THROUGH AN AIR GAP.
  8. PROVIDE AN EXPOSED DRIP LEG AND LINE-SIZE GAS VALVE ON THE GAS SERVICE TO THE WATER HEATER.
  9. ROUTE GAS PIPING EXPOSED ON SURFACE OF THE WALL.
  10. PROVIDE QUICK CONNECT CORD TO CONNECT THE WATER HEATERS. INSTALL THE TWO UNITS 18.5" - 37.4" APART ON CENTER TO ENSURE THE CORD WILL REACH.
  11. MOUNT HEATER AS HIGH AS POSSIBLE BELOW CEILING. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. COORDINATE EXACT LOCATION WITH CONSTRUCTION MANAGER.
  12. PROVIDE CONDENSATE TRAP AVAILABLE WITH WATER HEATER AND INDIRECT DRAIN TO MOP SINK.
- WATER HEATER INSTALLATION NOTES**
- A. CLEAN INLET STRAINERS AFTER CONSTRUCTION HAS BEEN COMPLETED AND PRIOR TO TURNOVER OF THE BUILDING TO THE OWNER.
  - B. INSTALL PIPING WITH AS FEW ELBOWS AS POSSIBLE.
  - C. MAINTAIN REQUIRED CLEARANCES TO COMBUSTIBLE MATERIALS.
  - D. ADJUST WATER HEATER TO A SETPOINT OF 140° F.



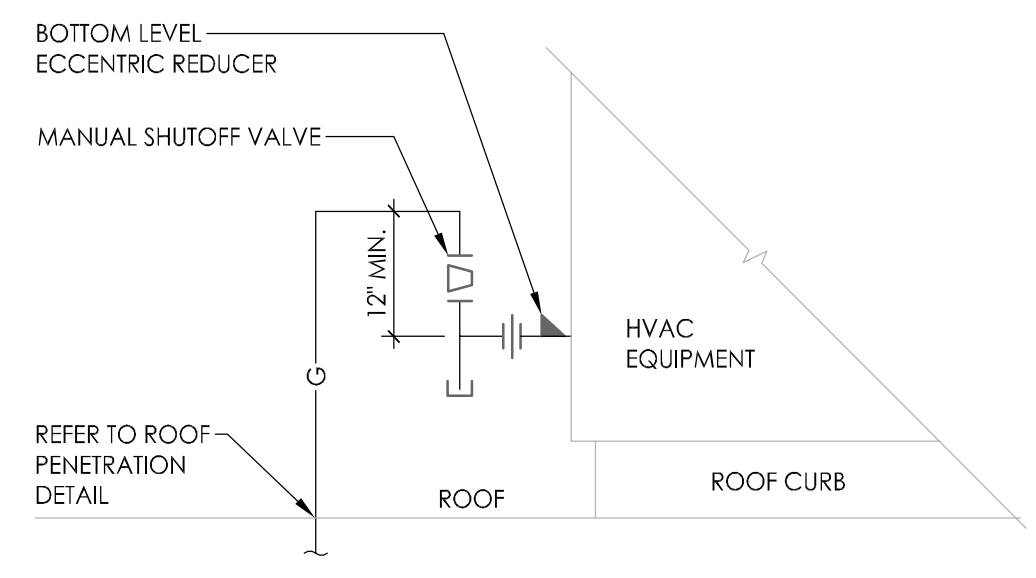
6 WATER FILTER SYSTEM DETAIL  
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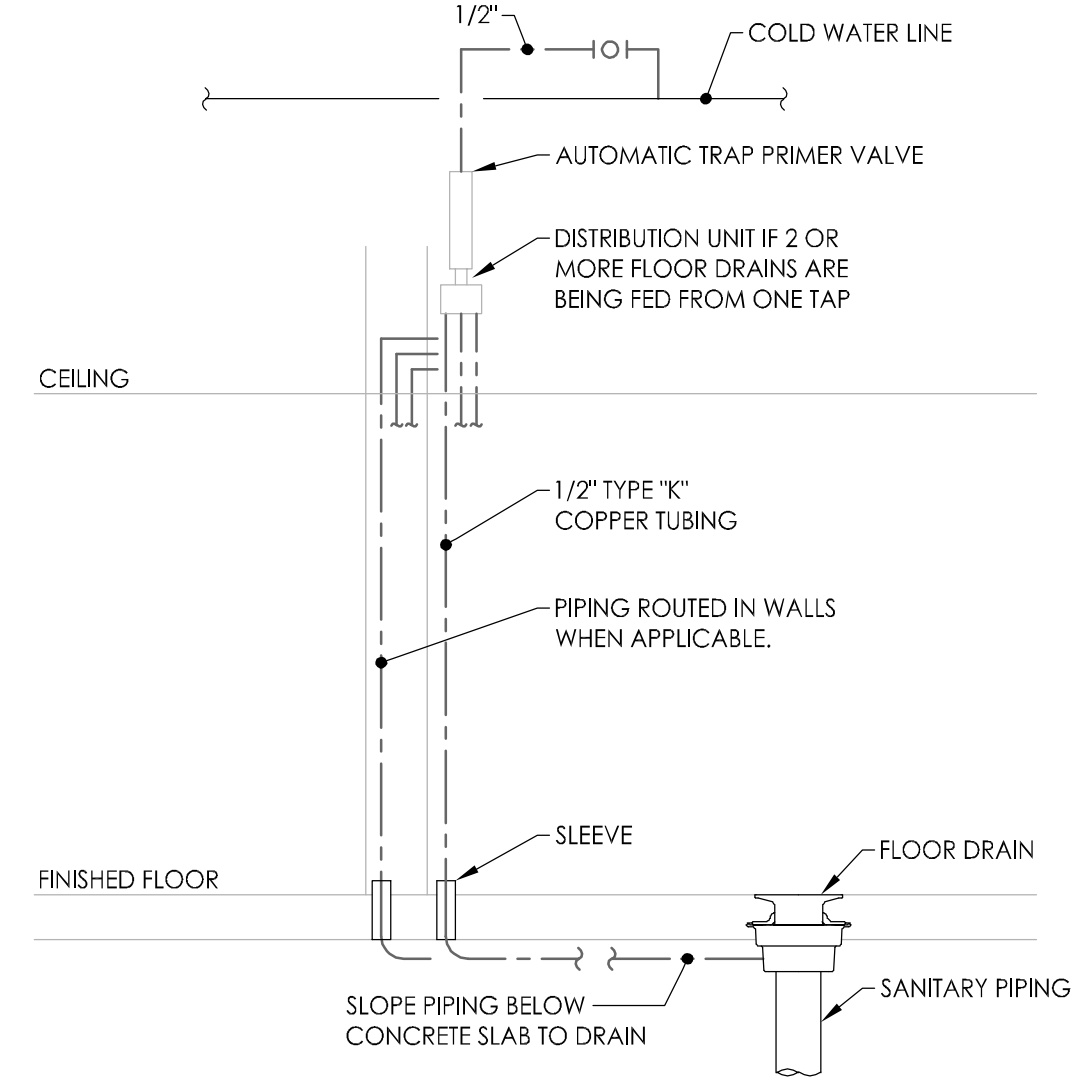
8 KITCHEN GAS CONNECTION DETAIL  
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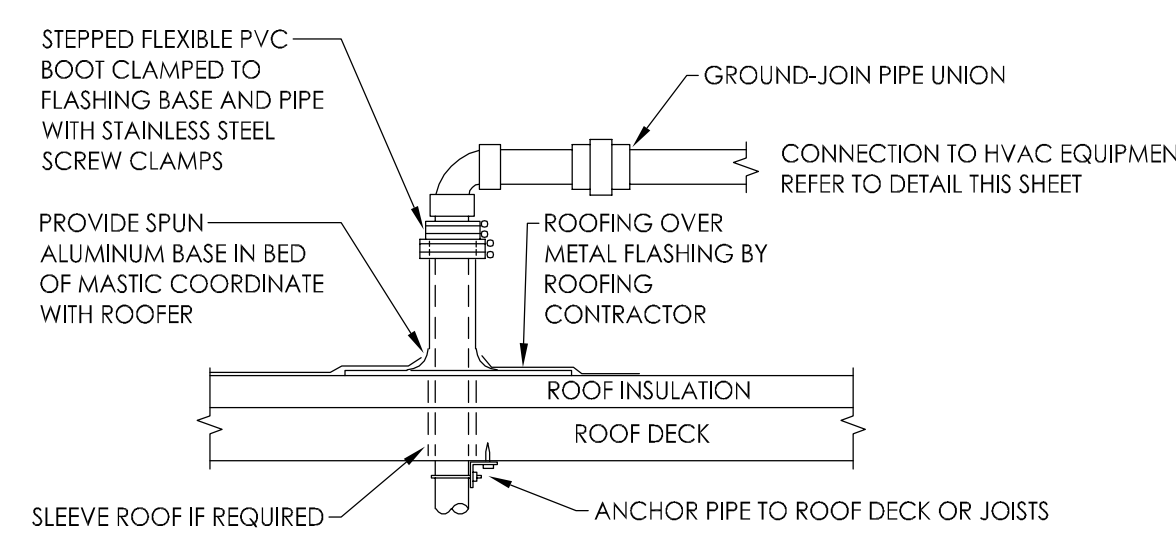
9 ROOF GAS PIPING SUPPORT DETAIL  
N.T.S.



10 RTU GAS CONNECTION DETAIL  
N.T.S.



7 TRAP PRIMER DETAIL  
N.T.S.



11 ROOF PENETRATION  
N.T.S.

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PROJECT NO: 21009  
DRAWN BY: CH  
CHECKED BY: ACR  
ISSUE DATE: 03/18/22  
DETAILS PLUMBING

P500





WATER HEATER SCHEDULE				
TAG	DESCRIPTION	MBH INPUT	RECOVERY	MANUFACTURER/ MODEL NO.
DWH-1	GAS-FIRED INSTANTANEOUS DOMESTIC WATER HEATER	15,200 - 199,000	3.8 GPM @ 100° RISE	RINNAI CU199I
DWH-2	GAS-FIRED INSTANTANEOUS DOMESTIC WATER HEATER	15,200 - 199,000	3.8 GPM @ 100° RISE	RINNAI CU199I

- COMMENTS:
- REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION
  - U.L. LISTED
  - PROVIDE REMOTE CONTROLLERS
  - SET HOT WATER SUPPLY TEMPERATURE TO 140 DEGREES F

GAS CONNECTED LOAD SCHEDULE				
TAG	EQUIPMENT	INLET CONNECTION	MIN. SUPPLY INLET PRESSURE (WC)	INPUT LOAD (CFH)
43	3-BANK DEEP FRYER	1"	3.5"	225
DWH-1	TANKLESS WATER HEATER	3/4"	5"	199
DWH-2	TANKLESS WATER HEATER	3/4"	5"	199
RTU-1	EXISTING ROOF TOP UNIT	1/2"	11"	150
RTU-2	EXISTING ROOF TOP UNIT	3/4"	11"	150
RTU-3	NEW ROOF TOP UNIT	1/2"	11"	65
TOTAL				988

GAS PIPE SIZING IS BASE ON THE 2018 INTERNATIONAL FUEL GAS CODE TABLE 402.4(1)

PLUMBING EQUIPMENT SCHEDULE				
TAG	ITEM	MANUFACTURER	MODEL NO.	COMMENTS
TP-1	TRAP PRIMER	PRECISION PLUMBING	PR-500	ALL BRASS BODY TRAP PRIMER VALVE. PRESSURE DROP OF 5 - 10 PSIG OPENS VALVE. OPERATING RANGE: 35 - 75 PSIG, 1/2" MALE NPT INLET CONNECTION, 1/2" FEMALE NPT OUTLET CONNECTION.
ET-1	EXPANSION TANK	ZURN	XT-18	THERMAL EXPANSION TANK, MOUNT ON WALL NEAR WATER HEATER. SEE PLANS FOR EXACT LOCATION. REFER TO DETAIL ON SHEET P4.20.
RP-1	DOMESTIC HOT WATER RECIRCULATION PUMP	GRUNDFOS	ALPHA 15-555F	ALL BRONZE CONSTRUCTION, LISTED FOR POTABLE WATER SERVICE AND 120 PSIG WORKING PRESSURE, 6.3 GPM AT 6 FEET OF HEAD, 115 VOLTS, 45 WATTS, SINGLE PHASE, 3250 RPM. MOUNT PUMP NEAR WATER HEATER IN ACCESSIBLE LOCATION. PUMP TO BE ON A TIMELOCK. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
GT-1	GREASE TRAP	ZURN	Z-2700	IN GROUND GREASE INTERCEPTOR WITH #21108 FLOW CONTROL FITTING, 50GPM, 100 LB CAPACITY
HB-1	EXTERIOR WALL HYDRANT	ZURN	Z1321-C-BFP	EXTERIOR FREEZEPROOF WALL HYDRANT RECESSED IN LOCKABLE WALL BOX. AUTOMATIC DRAINING WITH INTEGRAL ASSE 1052 APPROVED DOUBLE CHECK BACKFLOW PREVENTER. LOOSE KEY, HARDENED STAINLESS STEEL OPERATING STEM AND ONE-PIECE VALVE PLUNGER TO CONTROL BOTH FLOW AND DRAIN FUNCTIONS. BRONZE SEAT AND SEAT WASHER, 3/4" INLET AND 3/4" HOSE OUTLET CONNECTION, CHROME FINISH, ANODIZED ALUMINUM WALL BOX AND DOOR WITH OPERATION KEY LOCK AND "WATER" STAMPED ON COVER. INSTALL UNIT AT 24" ABOVE FINISHED GRADE AND SECURE TO STRUCTURE.

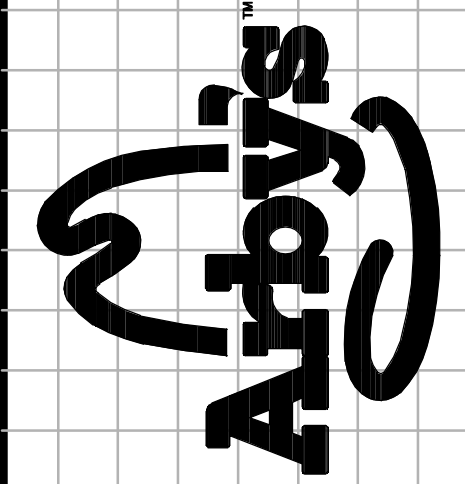
DRAIN AND CLEANOUT SCHEDULE				
TAG	ITEM	MANUFACTURER	MODEL NO.	COMMENTS
FD-1	FLOOR DRAIN	ZURN	FR06NIC3N	LIGHT-DUTY PLASTIC FLOOR DRAIN WITH 6" DIA. NICKEL BRONZE STRAINER, MEMBRANE FLASHING CLAMP AND 1/2" TRAP PRIMER CONNECTION. PROVIDE OUTLET WITH P-TRAP. CLEAN AND POLISH ROUND STRAINER TOP AFTER INSTALLATION.
FS-1	FLOOR SINK INDIRECT WASTE RECEPTOR	ZURN	FD2370-PVC-DS-H-Y	PVC PLASTIC FLOOR RECEPTOR WITH 12" X 12" SQUARE TOP, 6" DEEP SUMP BODY, PVC BODY, PVC LOOSE SET 1/2 GRATE, STAINLESS STEEL DEBRIS BASKET AND ANCHOR FLANGE. PROVIDE OUTLET WITH P-TRAP. PROVIDE WITH FLASHING COLLAR WHERE REQUIRED.
CO-1	FINISHED AREA FLOOR CLEANOUT	ZURN	CR06NIC3N	LIGHT-DUTY CAST IRON CLEANOUT WITH GAS TIGHT POLYPROPYLENE PLUG, AND 6" DIA. ADJUSTABLE SCORAIATED NICKEL BRONZE TOP.
CO-2	FINISHED WALL CLEANOUT	ZURN	Z1441	PROVIDE CLEANOUT TEE. PROVIDE COUNTERSUNK ABS TAPERED THREAD PLUG AND ROUND SMOOTH STAINLESS STEEL WALL ACCESS COVER AND SECURING SCREW.
CO-3	EXTERIOR CLEANOUT	ZURN	ZN1400-HD	EXTRA HEAVY-DUTY ADJUSTABLE CLEANOUT, CAST IRON BODY WITH ANCHOR FLANGE AND ABS TAPERED THREAD PLUG, ROUND SCORAIATED EXTRA HEAVY-DUTY NICKEL BRONZE VENEER CAST IRON COVER. SET TOP OF CASTING FLUSH WITH ADJACENT FINISHED PAVEMENT.

PLUMBING FIXTURE SCHEDULE												
FIXTURE								ACCESSORIES				DESCRIPTION
TAG	ITEM	MANUFACTURER	MODEL	DCW	DHW	DRAIN	VENT	ITEM	MANUFACTURER	MODEL		
WC-1	WATER CLOSET	ZURN	Z5665-8WL1	1"	-	4"	2"	SEAT	ZURN	Z59555S-EL	ADA COMPLIANT FLOOR MOUNTED WHITE VITREOUS CHINA TOILET, ELONGATED BOWL, 16-1/2" RIM HEIGHT. EXPOSED 1-1/2" TOP SPUD, 1.28 GPF, PROVIDE FLOOR BOLTS, WAX RING & BOLT COVERS. PROVIDE HEAVY-DUTY PLASTIC ELONGATED OPEN FRONT SEAT LESS COVER WITH STAINLESS STEEL SELF-SUSTAINING CHECK HINGES. PROVIDE CHROME PLATED BRASS 1.28 GPF HARD WIRED SENSOR ACTIVATED FLUSHMETER WITH MANUAL OVERRIDE FLUSH BUTTON.	
								FLUSHOMETER	ZURN	ZER6000AV-HET		
UR-1 (FOR MULTIPLE OCC. RESTROOM)	URINAL	ZURN	Z5730	3/4"	-	2"	1-1/2"	FLUSHOMETER	ZURN	ZEMS6003IS-WS1	ADA COMPLIANT WALL MOUNTED WHITE VITREOUS CHINA URINAL SIPHON JET, 17" RIM HEIGHT, 1.0 GPF, EXPOSED 3/4" TOP INLET SPUD. PROVIDE CHROME PLATED BRASS 1.0 GPF HARD WIRED SENSOR ACTIVATED FLUSHMETER WITH MANUAL OVERRIDE FLUSH BUTTON. PROVIDE RIGID IN-WALL PLATE TYPE SUPPORT SYSTEM. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHTS.	
								CARRIER	ZURN	Z1221-F/ZC-Z5730		
LAV-1	LAVATORY	ZURN	Z5344	3/8"	3/8"	1-1/4"	1-1/2"	FAUCET	ZURN	Z6915-CWB-F	ADA COMPLIANT WALL MOUNTED WHITE VITREOUS CHINA LAVATORY, 4" CENTER FAUCET HOLES, OVERFLOW. PROVIDE CHROME PLATED BRASS 4" CENTERSET HARD WIRED SENSOR ACTIVATED FAUCET, 0.5 GPM VANDAL RESISTANT SPRAY HEAD, PROVIDE CHROME PLATED GRID STRAINER DRAIN WITH CHROME PLATED BRASS TAILPIECE, PROVIDE CHROME PLATED BRASS P-TRAP WITH CLEANOUT, WALL BEND AND WALL FLANGE. PROVIDE CHROME PLATED BRASS LOOSE KEY ANGLE BALL STOP WITH CHROME PLATED FLEXIBLE COPPER SUPPLY RISERS. PROVIDE CHROME FINISH ASSE 1070 LISTED UNDER-SINK THERMOSTATIC MIXING VALVE SET AT 105°F, PROVIDE MOLDED VINYL SAFETY COVERS FOR ALL EXPOSED SUPPLY AND DRAIN PIPING. PROVIDE RIGID IN-WALL CONCEALED ARM LAVATORY SUPPORT SYSTEM.	
								DRAIN	ZURN	Z8743-6-PC		
								TRAP	ZURN	Z8702-9BWCBX-WC-PC		
								SUPPLY	ZURN	Z8802-XL-LR-LK-Q-PC		
								ASSE 1070 TMV	ZURN WILKINS	ZW1070XL		
								PIPING COVER	ZURN	Z8946-1-NT		
MS-1	MOP SINK	ZURN	Z1996-24	1/2"	1/2"	3"	1-1/2"	FAUCET	ZURN	Z843M1-XL-CS	FLOOR MOUNTED ONE-PIECE MOLDED FIBERGLASS MOP SERVICE BASIN WITH INTEGRAL MOLDED-IN DRAIN AND REMOVABLE STAINLESS STEEL STRAINER. PROVIDE CHROME PLATED CAST BRASS SERVICE SINK FAUCET WITH COLOR-CODED METAL LEVER HANDLES, QUARTER-TURN CERAMIC DISC CARTRIDGES, INTEGRAL SERVICE STOPS, INTEGRAL CHECK STOPS, 6" CAST BRASS SPOUT WITH VACUUM BREAKER, 3/4" HOSE THREAD OUTLET, PAIL HOOK AND ADJUSTABLE WALL BRACE. PROVIDE HOSE AND STAINLESS STEEL HOSE HOLDER, STAINLESS STEEL MOP HANGER, STAINLESS STEEL BUMPER GUARDS, STAINLESS STEEL WALL GUARDS. INSTALL FAUCET AT 36" ABOVE FINISH FLOOR.	
								HOSE & BRACKET	ZURN	J1996-HH		
								MOP HANGER	ZURN	J1996-MH		
								BUMPER GUARDS	ZURN	J1996-BS24		
								WALL GUARDS	ZURN	JP1996-WG24		

KITCHEN EQUIPMENT PLUMBING SCHEDULE										
GENERAL INFORMATION					PLUMBING INFORMATION					
TAG	QTY	DESCRIPTION	PROVIDED BY	INSTALLED BY	DCW	FW	DHW	DRAIN	GAS	REMARKS
2	1	12-HEAD DRINK DISPENSER	OWNER	OWNER	-	BY SODA VENDOR	-	3/4" & 1/2"	-	3/4" DRAIN FROM BIN & 1/2" DRAIN FROM TOWER.
5	1	WALL MOUNTED HAND SINK	OWNER	GC	1/2"	-	1/2"	1-1/2"	-	G.C. TO RUN PLUMBING AND CONNECT PROVIDE WITH ASSE 1070 LISTED MIXING VALVE SIMILAR TO THE WATTS LEAD FREE LFMV-UT-M1. SET THE MIXED OUTLET WATER TEMPERATURE AT 110°F.
8	1	8-HEAD DRIVE-THRU DRINK DISPENSER W/ OVERHEAD ICE MAKER ABOVE (SEE #92)	OWNER	OWNER	-	BY SODA VENDOR	-	3/4" & 1/2"	-	3/4" DRAIN FROM ICE MAKER & 1/2" DRAIN FROM TOWER.
12	1	SHAKE MACHINE	OWNER	GC	-	1/2"	-	-	-	REQUIRES A SERVER 3 PUMP RAIL FOR SYRUPS. PROVIDE A 1/2" X 3/8" LEAD-FREE CHROME PLATED BRASS 1/4-TURN BALL STOP, WATTS #SD-3 ASSE 1022 LISTED LISTED DUAL CHECK BACKFLOW PREVENTER W/INLET STRAINER AND FOOD GRADE PLASTIC TUBING ON SUPPLY CONNECTION.
19	1	3 COMPARTMENT SINK	OWNER	GC	1/2"	-	1/2"	1-1/2" F.S.	-	16" AFF (DCW AND DHW), 8" AFF (DRAIN), G.C. TO RUN PLUMBING AND CONNECT. INCLUDES (1) B231 FAUCET WITH 12" SPOUT, (1) B133B FAUCET W/ BACKSPASH MOUNT, (1) B-157 PRE-RINSE FAUCET AND (3) LEVER WASTES
22	1	DISHWASHER	OWNER	GC	-	-	1/2"	2" F.S.	-	INDIRECT DRAIN TO FS-1 WITH AIR GAP. ATMOSPHERIC VACUUM BREAKER INTEGRAL WITH DISHWASHER. VERIFY VACUUM BREAKER IS INSTALLED AT LEAST 6" ABOVE SPILL LINE AND LOCATED ON THE DISCHARGE SIDE OF THE LAST CONTROL VALVE.
30	1	PREP TABLE 2/ BACKSPASH AND HAND SINK	OWNER	GC	1/2"	-	1/2"	1-1/2"	-	16" AFF (DCW AND DHW), 8" AFF (DRAIN), G.C. TO RUN PLUMBING AND CONNECT. INCLUDES (1) B231 FAUCET WITH 12"
43	1	3 BANK, 6 BASKET FRYER W/ NATURAL GAS	OWNER	GC	-	-	-	-	1"	(3) @ 75,000 BTU/H INPUT PER FRYPOT, FACTORY MANIFOLD TO (1) CONNECTION TOTAL 225,000 BTU/H., 1" CONNECTION AT 11.5" AFF, G.C. TO HOOK UP QUICK DISCONNECT (SUPPLIED BY KES). INCLUDE DORMONT GAS HOSE KIT #16100-KIT-48. ALSO INCLUDE DIVERTER KIT TO ALLOW HOOK-UP TO DARLING 1500 H UNIT.
49	1	COFFEE MAKER	OWNER	GC	-	1/4"	-	-	-	PROVIDE A 1/2" X 1/4" LEAD-FREE CHROME PLATED BRASS 1/4-TURN BALL STOP, WATTS #SD-3 ASSE 1022 LISTED LISTED DUAL CHECK BACKFLOW PREVENTER W/INLET STRAINER AND FOOD GRADE PLASTIC TUBING ON SUPPLY CONNECTION.
60	1	DRIVE-THRU COUNTER W/ HAND SINK	OWNER	GC	1/2"	-	1/2"	1-1/2"	-	16" AFF (DCW AND DHW), 8" AFF (DRAIN), G.C. TO RUN PLUMBING AND CONNECT.
84	1	WATER BOOST MODULAR FILTER SYSTEM	OWNER	GC	3/8"	3/8"	-	-	-	PROVIDE A 1/2" X 3/8" LEAD-FREE CHROME PLATED BRASS 1/4-TURN BALL STOP, WATTS #SD-3 ASSE 1022 LISTED LISTED DUAL CHECK BACKFLOW PREVENTER W/INLET STRAINER, PRESSURE GAUGE AND UNION AT INLET CONNECTION. PROVIDE UNION, SWING CHECK VALVE, PRESSURE GAUGE, BALL SHUTOFF VALVE AND FOOD GRADE PLASTIC TUBING AT OUTLET CONNECTION.
92	2	ICE MAKER	OWNER	GC	-	1/2"	-	-	-	(1) UNIT MOUNTS ON PEPS UNIT AT DRIVE THRU, (1) UNIT MOUNTS ON ITEM #2 IMI CORNELIUS ED300 BEVERAGE DISPENSER IN DINING AREA. REMOTE CONDENSER ICVD-0695, LINE SET RC21 CONTROL WIRES FROM CONDENSING UNIT TO COIL. PROVIDE A 1/2" X 3/8" LEAD-FREE CHROME PLATED BRASS 1/4-TURN BALL STOP, WATTS #SD-3 ASSE 1022 LISTED LISTED DUAL CHECK BACKFLOW PREVENTER W/INLET STRAINER AND FOOD GRADE PLASTIC TUBING ON SUPPLY CONNECTION.

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ISSUE DATE: 03/18/22  
SCHEDULES PLUMBING

**P600**

# SPECIFICATIONS - DIVISION 22 - PLUMBING

## SECTION 220500 - COMMON WORK RESULTS FOR PLUMBING

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. HANGERS AND SUPPORTS FOR PLUMBING PIPING EQUIPMENT:
- DESIGN SUPPORTS FOR MULTIPLE PIPES CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, AND SYSTEM CONTENTS.
  - DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND COMPONENTS.
  - DESIGN SEISMIC-RESTRAINT HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT AND OBTAIN APPROVAL FROM AUTHORITIES HAVING JURISDICTION.

#### 2.2 SLEEVES AND SLEEVE SEALS

- GALVANIZED-STEEL-PIPE SLEEVES: ASTM A 53/A 53M, TYPE E, GRADE B, SCHEDULE 40, ZINC COATED, WITH PLAIN ENDS.
- PVC-PIPE SLEEVES: ASTM D 1785, SCHEDULE 40.
- GALVANIZED-STEEL-SHEET SLEEVES: 0.0239-INCH MINIMUM THICKNESS; ROUND TUBE CLOSED WITH WELDED LONGITUDINAL JOINT.

#### 2.3 GROUT

- STANDARD: ASTM C 1107/C 1107M, GRADE B, POST-HARDENING AND VOLUME-ADJUSTING, DRY, HYDRAULIC-CEMENT GROUT.
  - CHARACTERISTICS: NONSHRINK; RECOMMENDED FOR INTERIOR AND EXTERIOR APPLICATIONS.
  - DESIGN MIX: 5000-PSI, 28-DAY COMPRESSIVE STRENGTH.
  - PACKAGING: PREMIXED AND FACTORY PACKAGED.

#### 2.4 ESCUTCHEONS AND FLOOR PLATES

- ONE-PIECE, DEEP-PATTERN TYPE: DEEP-DRAWN, BOX-SHAPED BRASS WITH CHROME-PLATED FINISH AND SPRING-CLIP FASTENERS.
- ONE-PIECE, STAMPED-STEEL TYPE: WITH CHROME-PLATED FINISH AND SPRING-CLIP FASTENERS.
- ONE-PIECE FLOOR PLATES: CAST-IRON FLANGE WITH HOLES FOR FASTENERS.

#### 2.5 PRESSURE GAGES AND TEST PLUGS

- DIRECT-MOUNTED, METAL-CASE, DIAL-TYPE PRESSURE GAGES:
  - STANDARD: ASME B40.100.
  - CASE: SEALED OPEN-FRONT, PRESSURE RELIEF TYPE(S); CAST ALUMINUM OR DRAWN STEEL 4-1/2-INCH NOMINAL DIAMETER.
  - MOVEMENT: MECHANICAL, WITH LINK TO PRESSURE ELEMENT AND CONNECTION TO POINTER.
  - DIAL: NONREFLECTIVE ALUMINUM WITH PERMANENTLY ETCHED SCALE MARKINGS GRADUATED IN PSI.
  - POINTER: DARK-COLORED METAL.
  - WINDOW: PLASTIC.
  - RING: METAL.
  - ACCURACY: GRADE A, PLUS OR MINUS 1 PERCENT OF MIDDLE HALF OF SCALE RANGE.
- TEST PLUG: CORROSION-RESISTANT BRASS OR STAINLESS-STEEL BODY WITH TWO SELF-SEALING RUBBER CORE INSERTS AND GASKETED AND THREADED CAP, WITH EXTENDED STEM FOR UNITS TO BE INSTALLED IN INSULATED PIPING, MINIMUM PRESSURE AND TEMPERATURE RATING 500 PSIG AT 200 DEG F.

#### 2.6 HANGERS AND SUPPORTS FOR PLUMBING PIPING EQUIPMENT

- CARBON-STEEL PIPE HANGERS AND SUPPORTS:
  - DESCRIPTION: MSS SP-58, TYPES 1 THROUGH 58, FACTORY-FABRICATED COMPONENTS.
  - GALVANIZED METALLIC COATINGS: PREGALVANIZED OR HOT DIPPED.
  - NONMETALLIC COATINGS: PLASTIC COATING, JACKET, OR LINER.
  - PADDED HANGERS: HANGER WITH FIBERGLASS OR OTHER PIPE INSULATION PAD OR CUSHION TO SUPPORT BEARING SURFACE OF PIPING.
  - HANGER RODS: CONTINUOUS-THREAD ROD, NUTS, AND WASHER MADE OF CARBON STEEL.
- COPPER PIPE HANGERS:
  - DESCRIPTION: MSS SP-58, TYPES 1 THROUGH 58, COPPER-COATED-STEEL, FACTORY-FABRICATED COMPONENTS.
  - HANGER RODS: CONTINUOUS-THREAD ROD, NUTS, AND WASHER MADE OF COPPER-COATED STEEL.

- FASTENER SYSTEMS:
  - MECHANICAL-EXPANSION ANCHORS: INSERT-WEDGE-TYPE, ZINC-COATED STEEL ANCHORS, FOR USE IN HARDENED PORTLAND CEMENT CONCRETE; WITH PULL-OUT, TENSION, AND SHEAR CAPACITIES APPROPRIATE FOR SUPPORTED LOADS AND BUILDING MATERIALS WHERE USED.
- MISCELLANEOUS MATERIALS:
  - STRUCTURAL STEEL: ASTM A 36/A 36M, CARBON-STEEL PLATES, SHAPES, AND BARS; BLACK AND GALVANIZED.
  - GROUT: ASTM C 1107, FACTORY-MIXED AND -PACKAGED, DRY, HYDRAULIC-CEMENT, NONSHRINK AND NONMETALLIC GROUT; SUITABLE FOR INTERIOR AND EXTERIOR APPLICATIONS.
    - PROPERTIES: NONSTAINING, NONCORROSIVE, AND NONGASEOUS.
    - DESIGN MIX: 5000-PSI, 28-DAY COMPRESSIVE STRENGTH.

### PART 3 - EXECUTION

- GENERAL PIPING INSTALLATIONS
- INSTALL PIPING FREE OF SAGS AND BENDS.
- INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS.

- SLEEVES:
  - INSTALL SLEEVES FOR PIPING PASSING THROUGH PENETRATIONS IN FLOORS, PARTITIONS, ROOFS, AND WALLS.
  - INSTALL SLEEVES IN CONCRETE FLOORS, CONCRETE ROOF SLABS, AND CONCRETE WALLS AS NEW SLABS AND WALLS ARE CONSTRUCTED.
    - USE GROUT AND SEAL THE SPACE OUTSIDE OF SLEEVES IN SLABS AND WALLS WITHOUT SLEEVE-SEAL SYSTEM.
  - INSTALL SLEEVES FOR PIPES PASSING THROUGH INTERIOR PARTITIONS.
  - FIRE-BARRIER PENETRATIONS: MAINTAIN INDICATED FIRE RATING OF WALLS, PARTITIONS, CEILINGS, AND FLOORS AT PIPE PENETRATIONS. SEAL PIPE PENETRATIONS WITH FIRESTOP MATERIALS. COMPLY WITH REQUIREMENTS FOR FIRESTOPPING SPECIFIED IN SECTION 078446 "PENETRATION FIRESTOPPING."

- ESCUTCHEONS AND FLOOR PLATES:
  - INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FINISHED FLOORS.
  - INSTALL ESCUTCHEONS WITH ID TO CLOSELY FIT AROUND PIPE, TUBE, AND INSULATION OF PIPING AND WITH OD THAT COMPLETELY COVERS OPENING.
  - INSTALL FLOOR PLATES FOR PIPING PENETRATIONS OF EQUIPMENT-ROOM FLOORS.
  - INSTALL FLOOR PLATES WITH ID TO CLOSELY FIT AROUND PIPE, TUBE, AND INSULATION OF PIPING AND WITH OD THAT COMPLETELY COVERS OPENING.

- METERS AND GAGES:
  - INSTALL DIRECT-MOUNTED PRESSURE GAGES IN PIPING TEES WITH PRESSURE GAGE LOCATED ON PIPE AT THE MOST READABLE POSITION.
  - INSTALL METERS AND GAGES ADJACENT TO MACHINES AND EQUIPMENT TO ALLOW SERVICE AND MAINTENANCE OF

- METERS, GAGES, MACHINES, AND EQUIPMENT.
  - ADJUST FACES OF METERS AND GAGES TO PROPER ANGLE FOR BEST VISIBILITY.
- INSTALL UNIONS AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT.
- INSTALL DIELECTRIC UNIONS AND FLANGES TO CONNECT PIPING MATERIALS OF DISSIMILAR METALS IN GAS PIPING.
- INSTALL DIELECTRIC COUPLING AND NIPPLE FITTINGS TO CONNECT PIPING MATERIALS OF DISSIMILAR METALS IN WATER PIPING.

- HANGERS AND SUPPORTS
  - COMPLY WITH MSS SP-69 AND MSS SP-89. INSTALL BUILDING ATTACHMENTS WITHIN CONCRETE OR TO STRUCTURAL STEEL.
  - INSTALL HANGERS AND SUPPORTS TO ALLOW CONTROLLED THERMAL AND SEISMIC MOVEMENT OF PIPING SYSTEMS.
  - INSTALL POWDER-ACTUATED FASTENERS AND MECHANICAL-EXPANSION ANCHORS IN CONCRETE AFTER CONCRETE IS CURED. DO NOT USE IN LIGHTWEIGHT CONCRETE OR IN SLABS LESS THAN 4 INCHES THICK.
  - LOAD DISTRIBUTION: INSTALL HANGERS AND SUPPORTS SO PIPING LIVE AND DEAD LOADING AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT.
  - HORIZONTAL-PIPING HANGERS AND SUPPORTS: UNLESS OTHERWISE INDICATED AND EXCEPT AS SPECIFIED IN PIPING SYSTEM SPECIFICATION SECTIONS, INSTALL THE FOLLOWING TYPES:
    - ADJUSTABLE STEEL CLEVIS HANGERS (MSS TYPE 1): FOR SUSPENSION OF NONINSULATED OR INSULATED STATIONARY PIPES, NPS 1/2 TO NPS 30.
    - PIPE HANGERS (MSS TYPE 5): FOR SUSPENSION OF PIPES, NPS 1/2 TO NPS 4, TO ALLOW OFF-CENTER CLOSURE FOR HANGER INSTALLATION BEFORE PIPE ERECTION.
    - ADJUSTABLE STEEL BAND HANGERS (MSS TYPE 7): FOR SUSPENSION OF NONINSULATED STATIONARY PIPES, NPS 1/2 TO NPS 8.
    - ADJUSTABLE BAND HANGERS (MSS TYPE 9): FOR SUSPENSION OF NONINSULATED STATIONARY PIPES, NPS 1/2 TO NPS 8.
    - ADJUSTABLE SWIVEL-RING BAND HANGERS (MSS TYPE 10): FOR SUSPENSION OF NONINSULATED STATIONARY PIPES, NPS 1/2 TO NPS 2.

- VERTICAL-PIPING CLAMPS: UNLESS OTHERWISE INDICATED AND EXCEPT AS SPECIFIED IN PIPING SYSTEM SPECIFICATION SECTIONS, INSTALL THE FOLLOWING TYPES:
  - EXTENSION PIPE OR RISER CLAMPS (MSS TYPE 8): FOR SUPPORT OF PIPE RISERS, NPS 3/4 TO NPS 20.
  - CARBON- OR ALLOY-STEEL RISER CLAMPS (MSS TYPE 42): FOR SUPPORT OF PIPE RISERS, NPS 3/4 TO NPS 20, IF LONGER ENDS ARE REQUIRED FOR RISER CLAMPS.

- GENERAL EQUIPMENT INSTALLATIONS
  - INSTALL EQUIPMENT TO ALLOW MAXIMUM POSSIBLE HEADROOM UNLESS SPECIFIC MOUNTING HEIGHTS ARE NOT INDICATED.
  - INSTALL EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, UNLESS OTHERWISE INDICATED.
  - INSTALL MECHANICAL EQUIPMENT TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS. CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM INTERFERENCE TO OTHER INSTALLATIONS. EXTEND GREASE FITTINGS TO ACCESSIBLE LOCATIONS.
  - INSTALL EQUIPMENT TO ALLOW RIGHT OF WAY FOR PIPING INSTALLED AT REQUIRED SLOPE.

END OF SECTION

## SECTION 220523 - GENERAL-DUTY VALVES FOR PLUMBING PIPING

### PART 1 - GENERAL

- SECTION REQUIREMENTS
  - SUBMITTALS:
    - PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED.

### PART 2 - PRODUCTS

- SYSTEM DESCRIPTION
  - ASME COMPLIANCE: ASME B16.10 AND ASME B16.34 FOR FERROUS VALVE DIMENSIONS AND DESIGN CRITERIA.
  - NSF COMPLIANCE: NSF 61 FOR VALVE MATERIALS FOR POTABLE-WATER SERVICE.
- GENERAL-DUTY VALVES
  - VALVE SIZES: SAME AS UPSTREAM PIPING UNLESS OTHERWISE INDICATED.
  - ENDS IN INSULATED PIPING: WITH 2-INCH STEM EXTENSIONS.
  - END CONNECTIONS; THREADS SHALL COMPLY WITH ANSI B1.20.1. FLANGES SHALL COMPLY WITH ANSI B16.24 FOR BRONZE VALVES. SOLDER-JOINT CONNECTIONS SHALL COMPLY WITH ANSI B16.18.
  - ONE-PIECE, COPPER-ALLOY BALL VALVES: LEAD FREE BRONZE BODY WITH CHROME-PLATED BRASS BALL, MTFE SEATS, AND 600-PSIG MINIMUM CWP RATING.
  - TWO-PIECE, COPPER-ALLOY BALL VALVES: LEAD FREE BRONZE BODY WITH FULL-PORT, CHROME-PLATED BRASS BALL; RPPE SEATS AND 600-PSIG MINIMUM CWP RATING AND BLOWOUT-PROOF STEM.
  - LEAD FREE BRONZE, SWING CHECK VALVES: CLASS 125, BRONZE BODY WITH BRONZE DISC AND SEAT.

### PART 3 - EXECUTION

- INSTALLATION
  - USE BALL VALVES FOR SHUTOFF DUTY AND FOR THROTTLING DUTY.
  - LOCATE VALVES FOR EASY ACCESS AND PROVIDE SEPARATE SUPPORT WHERE NECESSARY.
  - INSTALL VALVES FOR EACH FIXTURE AND ITEM OF EQUIPMENT.
  - INSTALL VALVES IN HORIZONTAL PIPING WITH STEM AT OR ABOVE CENTER OF PIPE.
  - INSTALL VALVES IN A POSITION TO ALLOW FULL STEM MOVEMENT.
  - INSTALL CHECK VALVES FOR PROPER DIRECTION OF FLOW IN HORIZONTAL POSITION WITH HINGE PIN LEVEL.

END OF SECTION 220523

## SECTION 220700 - PLUMBING INSULATION

### PART 2 - PRODUCTS

- PERFORMANCE REQUIREMENTS
  - INSULATION INSTALLED INDOORS: FLAME-SPREAD INDEX OF 25 OR LESS, AND SMOKE-DEVELOPED INDEX OF 50 OR LESS ACCORDING TO ASTM E 84.
- INSULATION MATERIALS
  - MINERAL-FIBER, PREFORMED PIPE INSULATION: COMPLY WITH ASTM C 547, TYPE I, GRADE A, WITH FACTORY-APPLIED ASJ.
    - PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
      - JOHNS MANVILLE: MICRO-LOK.
      - KNAUF INSULATION: 1000-DEGREE PIPE INSULATION.
      - OWENS CORNING: FIBERGLAS PIPE INSULATION.
    - TYPE I, 850 DEG F MATERIALS: MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 547, TYPE I, GRADE A, WITH FACTORY-APPLIED ASJ. FACTORY-APPLIED JACKET REQUIREMENTS ARE SPECIFIED IN "FACTORY-APPLIED JACKETS" ARTICLE.
  - PROTECTIVE SHIELDING PIPE COVERS:
    - MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
      - MCQUIRE MANUFACTURING.

- PLUMBEX.
  - TRUEBRO; A BRAND OF IPS CORPORATION.
  - ZURN INDUSTRIES, LLC; TUBULAR BRASS PLUMBING PRODUCTS OPERATION.
- DESCRIPTION: MANUFACTURED PLASTIC WRAPS FOR COVERING PLUMBING FIXTURE HOT- AND COLD-WATER SUPPLIES AND TRAP AND DRAIN PIPING. COMPLY WITH AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS.

- ADHESIVES
  - MINERAL-FIBER ADHESIVE: COMPLY WITH MIL-A-3316C, CLASS 2, GRADE A.
    - FOR INDOOR APPLICATIONS, ADHESIVE SHALL HAVE A VOC CONTENT OF 80 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).
    - ADHESIVE SHALL COMPLY WITH THE TESTING AND PRODUCT REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES' STANDARD PRACTICE FOR THE TESTING OF VOLATILE ORGANIC EMISSIONS FROM VARIOUS SOURCES USING SMALL-SCALE ENVIRONMENTAL CHAMBERS."

- MASTICS
  - VAPOR-BARRIER MASTIC: WATER BASED; SUITABLE FOR INDOOR USE ON BELOW AMBIENT SERVICES.
    - FOR INDOOR APPLICATIONS, USE MASTICS THAT HAVE A VOC CONTENT OF 50 G/L OR LESS.
    - WATER-VAPOR PERMEANCE: ASTM E 96/E 96M, PROCEDURE B, 0.013 PERM AT 43-MIL DRY FILM THICKNESS.
    - SERVICE TEMPERATURE RANGE: MINUS 20 TO PLUS 180 DEG F.
    - SOLIDS CONTENT: ASTM D 1644, 58 PERCENT BY VOLUME AND 70 PERCENT BY WEIGHT.
    - COLOR: WHITE.
  - BREATHER MASTIC: WATER BASED; SUITABLE FOR INDOOR AND OUTDOOR USE ON ABOVE AMBIENT SERVICES.
    - WATER-VAPOR PERMEANCE: ASTM F 1249, 1.8 PERMS AT 0.0625-INCH DRY FILM THICKNESS.
    - SERVICE TEMPERATURE RANGE: MINUS 20 TO PLUS 180 DEG F.
    - SOLIDS CONTENT: 60 PERCENT BY VOLUME AND 66 PERCENT BY WEIGHT.
    - COLOR: WHITE.

- SEALANTS
  - JOINT SEALANTS:
    - MATERIALS SHALL BE COMPATIBLE WITH INSULATION MATERIALS, JACKETS, AND SUBSTRATES.
    - PERMANENTLY FLEXIBLE, ELASTOMERIC SEALANT.
    - SERVICE TEMPERATURE RANGE: MINUS 100 TO PLUS 300 DEG F.
    - COLOR: WHITE OR GRAY.
    - FOR INDOOR APPLICATIONS, SEALANTS SHALL HAVE A VOC CONTENT OF 420 G/L OR LESS.
  - ASJ FLASHING SEALANTS:
    - MATERIALS SHALL BE COMPATIBLE WITH INSULATION MATERIALS, JACKETS, AND SUBSTRATES.
    - FIRE- AND WATER-RESISTANT, FLEXIBLE, ELASTOMERIC SEALANT.
    - SERVICE TEMPERATURE RANGE: MINUS 40 TO PLUS 250 DEG F.
    - COLOR: WHITE.
    - FOR INDOOR APPLICATIONS, SEALANTS SHALL HAVE A VOC CONTENT OF 420 G/L OR LESS.

- FACTORY-APPLIED JACKETS
  - INSULATION SYSTEM SCHEDULES INDICATE FACTORY-APPLIED JACKETS ON VARIOUS APPLICATIONS. WHEN FACTORY-APPLIED JACKETS ARE INDICATED, COMPLY WITH THE FOLLOWING:
    - ASJ: WHITE, KRAFT-PAPER, FIBERGLASS-REINFORCED SCRIM WITH ALUMINUM-FOIL BACKING; COMPLYING WITH ASTM C 1136, TYPE I.

- TAPES
  - ASJ TAPE: WHITE VAPOR-RETARDER TAPE MATCHING FACTORY-APPLIED JACKET WITH ACRYLIC ADHESIVE, COMPLYING WITH ASTM C 1136.
    - WIDTH: 3 INCHES.
    - THICKNESS: 11.5 MILS.
    - ADHESION: 90 OUNCES FORCE/INCH IN WIDTH.
    - ELONGATION: 2 PERCENT.
    - TENSILE STRENGTH: 40 LBF/INCH IN WIDTH.
    - ASJ TAPE DISKS AND SQUARES: PRECUT DISKS OR SQUARES OF ASJ TAPE.

- EXECUTION
  - PIPE INSULATION INSTALLATION
    - COMPLY WITH REQUIREMENTS OF THE MIDWEST INSULATION CONTRACTORS ASSOCIATION'S "NATIONAL COMMERCIAL & INDUSTRIAL INSULATION STANDARDS" FOR INSULATION INSTALLATION ON PIPES AND EQUIPMENT.
    - INSULATION INSTALLATION AT INTERIOR WALL AND PARTITION PENETRATIONS (THAT ARE NOT FIRE RATED): INSTALL INSULATION CONTINUOUSLY THROUGH WALLS AND PARTITIONS.
    - INSULATION INSTALLATION AT FIRE-RATED WALL, PARTITION, AND FLOOR PENETRATIONS: INSTALL INSULATION CONTINUOUSLY THROUGH PENETRATIONS. SEAL PENETRATIONS, COMPLY WITH REQUIREMENTS IN SECTION 078400.
    - MINERAL-FIBER INSULATION INSTALLATION:
      - INSULATION INSTALLATION ON STRAIGHT PIPES AND TUBES: WHERE VAPOR BARRIERS ARE INDICATED, SEAL LONGITUDINAL SEAMS, END JOINTS, AND PROTRUSIONS WITH VAPOR-BARRIER MASTIC AND JOINT SEALANT.
      - FOR INSULATION WITH FACTORY-APPLIED JACKETS ON ABOVE AMBIENT SURFACES, SECURE LAPS WITH OUTWARD CLINCHED STAPLES AT 6 INCHES O.C.
      - FOR INSULATION WITH FACTORY-APPLIED JACKETS ON BELOW AMBIENT SURFACES, DO NOT STAPLE LONGITUDINAL TABS BUT SECURE TABS WITH ADDITIONAL ADHESIVE AS RECOMMENDED BY INSULATION MATERIAL MANUFACTURER AND SEAL WITH VAPOR-BARRIER MASTIC AND FLASHING SEALANT.
  - INTERIOR PIPING SYSTEM APPLICATIONS: INSULATE THE FOLLOWING PIPING SYSTEMS:
    - DOMESTIC HOT WATER.
    - RE-CIRCULATED DOMESTIC HOT WATER.
    - EXPOSED WATER SUPPLIES AND SANITARY DRAINS OF FIXTURES FOR PEOPLE WITH DISABILITIES.
  - DO NOT APPLY INSULATION TO THE FOLLOWING SYSTEMS, MATERIALS, AND EQUIPMENT:
    - FLEXIBLE CONNECTORS.
    - SANITARY DRAINAGE AND VENT PIPING.
    - DRAINAGE PIPING LOCATED IN CRAWLSPACES UNLESS OTHERWISE INDICATED.
    - CHROME-PLATED PIPES AND FITTINGS, EXCEPT FOR PLUMBING FIXTURES FOR PEOPLE WITH DISABILITIES.
    - PIPING SPECIALTIES, INCLUDING AIR CHAMBERS, UNIONS, STRAINERS, CHECK VALVES, PLUG VALVES, AND FLOW REGULATORS.

- INDOOR PIPING INSULATION SCHEDULE
  - DOMESTIC COLD WATER:
    - NPS 1 AND SMALLER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1/2 INCH THICK.
    - NPS 1-1/4 AND LARGER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1 INCH THICK.
  - DOMESTIC HOT AND RE-CIRCULATED HOT WATER:
    - NPS 2 AND SMALLER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1 INCH THICK.
    - NPS 2 AND SMALLER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1 INCH THICK.

- EXPOSED SANITARY DRAINS, DOMESTIC WATER, DOMESTIC HOT WATER, AND STOPS FOR PLUMBING FIXTURES FOR PEOPLE WITH DISABILITIES:
  - ALL PIPE SIZES: INSULATION SHALL BE THE FOLLOWING:
    - PROTECTIVE SHIELDING PIPING COVERS.
    - MANUFACTURED PLASTIC WRAPS FOR COVERING PLUMBING FIXTURE HOT- AND COLD-WATER SUPPLIES AND TRAP AND DRAIN PIPING. COMPLY WITH AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS.

- INDOOR PIPING INSULATION SCHEDULE
  - DOMESTIC COLD WATER:
    - NPS 1 AND SMALLER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1/2 INCH THICK.
    - NPS 1-1/4 AND LARGER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1 INCH THICK.
  - DOMESTIC HOT AND RE-CIRCULATED HOT WATER:
    - NPS 2 AND SMALLER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1 INCH THICK.
    - NPS 2 AND SMALLER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1 INCH THICK.

- INDOOR PIPING INSULATION SCHEDULE
  - DOMESTIC COLD WATER:
    - NPS 1 AND SMALLER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1/2 INCH THICK.
    - NPS 1-1/4 AND LARGER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1 INCH THICK.
  - DOMESTIC HOT AND RE-CIRCULATED HOT WATER:
    - NPS 2 AND SMALLER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1 INCH THICK.
    - NPS 2 AND SMALLER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1 INCH THICK.

- EXPOSED SANITARY DRAINS, DOMESTIC WATER, DOMESTIC HOT WATER, AND STOPS FOR PLUMBING FIXTURES FOR PEOPLE WITH DISABILITIES:
  - ALL PIPE SIZES: INSULATION SHALL BE THE FOLLOWING:
    - PROTECTIVE SHIELDING PIPING COVERS.
    - MANUFACTURED PLASTIC WRAPS FOR COVERING PLUMBING FIXTURE HOT- AND COLD-WATER SUPPLIES AND TRAP AND DRAIN PIPING. COMPLY WITH AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS.

END OF SECTION

## SECTION 221116 - DOMESTIC WATER PIPING

### PART 2 - PRODUCTS

- PERFORMANCE REQUIREMENTS
  - POTABLE-WATER PIPING AND COMPONENTS SHALL COMPLY WITH NSF 14 AND NSF 61.
- PIPE AND FITTINGS
  - PEX TUBE AND FITTINGS: ASTM F 877, SDR 9 PEX TUBING AND ASTM F 1807, METAL INSERT-TYPE FITTINGS WITH COPPER OR STAINLESS-STEEL CRIMP RINGS.
    - MANIFOLD: ASTM F 877 PLASTIC OR CORROSION-RESISTANT-METAL ASSEMBLY, WITH A PLASTIC OR CORROSION-RESISTANT-METAL VALVE FOR EACH OUTLET.
  - SPECIAL-DUTY VALVES:
    - COMPLY WITH REQUIREMENTS IN SECTION 220523 "GENERAL-DUTY VALVES FOR PLUMBING PIPING" FOR GENERAL-DUTY METAL VALVES.
    - COMPLY WITH REQUIREMENTS IN SECTION 221119 "DOMESTIC WATER PIPING SPECIALTIES" FOR BALANCING VALVES, DRAIN VALVES, BACKFLOW PREVENTERS, AND VACUUM BREAKERS.
  - TRANSITION FITTINGS: MANUFACTURED PIPING COUPLING OR SPECIFIED PIPING SYSTEM FITTING. SAME SIZE AS PIPES TO BE JOINED AND PRESSURE RATING AT LEAST EQUAL TO PIPES TO BE JOINED.
  - FLEXIBLE CONNECTORS: STAINLESS-STEEL, CORRUGATED-METAL TUBING WITH WIRE-BRAID COVERING, WORKING-PRESSURE RATING A MINIMUM OF 200 PSIG.

### PART 3 - EXECUTION

- INSTALLATION
  - COMPLY WITH REQUIREMENTS IN SECTION 220500 "COMMON WORK RESULTS FOR PLUMBING" FOR BASIC PIPING INSTALLATION REQUIREMENTS.
  - INSTALL WALL PENETRATION SYSTEM AT EACH SERVICE PIPE PENETRATION THROUGH FOUNDATION WALL. MAKE INSTALLATION WATERIGHT. COMPLY WITH REQUIREMENTS IN SECTION 220500 "COMMON WORK RESULTS FOR PLUMBING" FOR WALL PENETRATION SYSTEMS.
  - INSTALL SHUTOFF VALVE, HOSE-END DRAIN VALVE, STRAINER, PRESSURE GAGE, AND TEST TEE WITH VALVE, INSIDE THE BUILDING AT EACH DOMESTIC WATER SERVICE ENTRANCE. COMPLY WITH REQUIREMENTS IN SECTION 220500 "COMMON WORK RESULTS FOR PLUMBING" FOR PRESSURE GAGES AND SECTION 221119 "DOMESTIC WATER PIPING SPECIALTIES" FOR DRAIN VALVES AND STRAINERS.
  - INSTALL DOMESTIC WATER PIPING WITHOUT PITCH FOR HORIZONTAL PIPING AND PLUMB FOR VERTICAL PIPING.
  - COMPLY WITH REQUIREMENTS IN SECTION 220500 "COMMON WORK RESULTS FOR PLUMBING" FOR BASIC PIPING JOINT CONSTRUCTION.
    - COMPLY WITH REQUIREMENTS IN SECTION 220500 "COMMON WORK RESULTS FOR PLUMBING" FOR PIPE HANGER AND SUPPORT DEVICES.
      - INSTALL HANGERS FOR STEEL PIPING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS:
        - NPS 1-1/4 AND SMALLER: 84 INCHES WITH 3/8-INCH ROD.
        - NPS 1-1/2: 108 INCHES WITH 3/8-INCH ROD.
        - NPS 2: 10 FEET WITH 3/8-INCH ROD.
        - NPS 2-1/2: 11 FEET WITH 1/2-INCH ROD.
        - SUPPORT VERTICAL PIPING AT EACH FLOOR.
      - INSTALL VINYL-COATED HANGERS FOR PEX PIPING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS:
        - NPS 1 AND SMALLER: 32 INCHES WITH 3/8-INCH ROD.
        - INSTALL HANGERS FOR VERTICAL PEX PIPING EVERY 48 INCHES.
    - INSPECTING AND CLEANING
      - INSPECT AND TEST PIPING SYSTEMS AS FOLLOWS:
        - FILL DOMESTIC WATER PIPING. CHECK COMPONENTS TO DETERMINE THAT THEY ARE NOT AIR BOUND AND THAT PIPING IS FULL OF WATER.
        - TEST FOR LEAKS AND DEFECTS IN NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED.
      - CLEAN AND DISINFECT POTABLE DOMESTIC WATER PIPING BY FILLING SYSTEM WITH WATER/CHLORINE SOLUTION WITH AT LEAST 50 PPM OF CHLORINE. ISOLATE WALL VALVES AND ALLOW TO STAND FOR 24 HOURS. FLUSH SYSTEM WITH CLEAN, POTABLE WATER UNTIL NO CHLORINE IS IN WATER COMING FROM SYSTEM AFTER THE STANDING TIME.

- INSPECTING AND CLEANING
  - INSPECT AND TEST PIPING SYSTEMS AS FOLLOWS:
    - FILL DOMESTIC WATER PIPING. CHECK COMPONENTS TO DETERMINE THAT THEY ARE NOT AIR BOUND AND THAT PIPING IS FULL OF WATER.
    - TEST FOR LEAKS AND DEFECTS IN NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED.
  - CLEAN AND DISINFECT POTABLE DOMESTIC WATER PIPING BY FILLING SYSTEM WITH WATER/CHLORINE SOLUTION WITH AT LEAST 50 PPM OF CHLORINE. ISOLATE WALL VALVES AND ALLOW TO STAND FOR 24 HOURS. FLUSH SYSTEM WITH CLEAN, POTABLE WATER UNTIL NO CHLORINE IS IN WATER COMING FROM SYSTEM AFTER THE STANDING TIME.

- PIPING SCHEDULE
  - ABOVEGROUND DISTRIBUTION PIPING: PEX PIPING.
  - VALVE SCHEDULE
- DRAWINGS INDICATE VALVE TYPES TO BE USED. WHERE SPECIFIC VALVE TYPES ARE NOT INDICATED, THE FOLLOWING REQUIREMENTS APPLY:
  - SHUTOFF DUTY: USE BRONZE BALL VALVES FOR PIPING NPS 2 AND SMALLER.
  - THROTTLING DUTY: USE BRONZE BALL VALVES FOR PIPING NPS 2 AND SMALLER.
  - HOT-WATER-PIPING, BALANCING DUTY: MEMORY-STOP BALANCING VALVES.
  - DRAIN DUTY: HOSE-END DRAIN VALVES.

- INSULATION
  - INSULATION INSTALLED INDOORS: FLAME-SPREAD INDEX OF 25 OR LESS, AND SMOKE-DEVELOPED INDEX OF 50 OR LESS ACCORDING TO ASTM E 84.
  - INSULATION MATERIALS
    - MINERAL-FIBER, PREFORMED PIPE INSULATION: COMPLY WITH ASTM C 547, TYPE I, GRADE A, WITH FACTORY-APPLIED ASJ.
      - PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
        - JOHNS MANVILLE: MICRO-LOK.
        - KNAUF INSULATION: 1000-DEGREE PIPE INSULATION.
        - OWENS CORNING: FIBERGLAS PIPE INSULATION.
      - TYPE I, 850 DEG F MATERIALS: MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 547, TYPE I, GRADE A, WITH FACTORY-APPLIED ASJ. FACTORY-APPLIED JACKET REQUIREMENTS ARE SPECIFIED IN "FACTORY-APPLIED JACKETS" ARTICLE.
    - PROTECTIVE SHIELDING PIPE COVERS:
      - MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
        - MCQUIRE MANUFACTURING.
- INDOOR PIPING INSULATION SCHEDULE
  - DOMESTIC COLD WATER:
    - NPS 1 AND SMALLER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1/2 INCH THICK.
    - NPS 1-1/4 AND LARGER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1 INCH THICK.
  - DOMESTIC HOT AND RE-CIRCULATED HOT WATER:
    - NPS 2 AND SMALLER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1 INCH THICK.
    - NPS 2 AND SMALLER: INSULATION SHALL BE THE FOLLOWING:
      - MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I, 1 INCH THICK.

END OF SECTION



# SPECIFICATIONS - DIVISION 22 - PLUMBING (CONTINUED)

SECTION 221119 - DOMESTIC WATER PIPING SPECIALTIES

- PART 2 - PRODUCTS
- 2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES
- A. POTABLE-WATER PIPING AND COMPONENTS SHALL COMPLY WITH NSF 61 AND NSF 14.
- 2.2 PERFORMANCE REQUIREMENTS
- A. MINIMUM WORKING PRESSURE FOR DOMESTIC WATER PIPING SPECIALTIES: 125 PSIG UNLESS OTHERWISE INDICATED.
- 2.3 MANUFACTURED UNITS
- A. PIPE-APPLIED, ATMOSPHERIC-TYPE VACUUM BREAKERS:
- STANDARD: ASSE 1001.
  - SIZE: NPS 1/4 TO NPS 3, AS REQUIRED TO MATCH CONNECTED PIPING.
  - BODY: BRONZE.
  - INLET AND OUTLET CONNECTIONS: THREADED.
  - FINISH: CHROME PLATED.
- B. HOSE-CONNECTION VACUUM BREAKERS:
- STANDARD: ASSE 1011.
  - BODY: BRONZE, NONREMOVABLE, WITH MANUAL DRAIN.
  - OUTLET CONNECTION: GARDEN-HOSE THREADED COMPLYING WITH ASME B1.20.7.
  - FINISH: CHROME OR NICKEL PLATED BRONZE.
- C. REDUCED-PRESSURE-PRINCIPLE BACKFLOW PREVENTERS:
- STANDARD: ASSE 1013.
  - OPERATION: CONTINUOUS-PRESSURE APPLICATIONS.
  - PRESSURE LOSS: 12 PSIG MAXIMUM, THROUGH MIDDLE THIRD OF FLOW RANGE.
  - BODY: LEAD FREE BRONZE OR STAINLESS STEEL FOR NPS 2 AND SMALLER.
  - END CONNECTIONS: THREADED FOR NPS 2 AND SMALLER.
  - CONFIGURATION: DESIGNED FOR HORIZONTAL, STRAIGHT-THROUGH FLOW.
  - ACCESSORIES:
    - VALVES NPS 2 AND SMALLER: BALL TYPE WITH THREADED ENDS ON INLET AND OUTLET.
    - AIR-GAP FITTING: ASME A112.1.2, MATCHING BACKFLOW-PREVENTER CONNECTION.
- D. WATER REGULATORS:
- STANDARD: ASSE 1003.
  - PRESSURE RATING: INITIAL WORKING PRESSURE OF 150 PSIG.
  - DESIGN OUTLET PRESSURE SETTING: 60 PSIG.
  - BODY: LEAD FREE BRONZE WITH CHROME-PLATED FINISH FOR NPS 2 AND SMALLER.
  - END CONNECTIONS: THREADED FOR NPS 2 AND SMALLER.
- E. MEMORY-STOP BALANCING VALVES:
- STANDARD: MSS SP-110 FOR TWO-PIECE, COPPER-ALLOY BALL VALVES.
  - PRESSURE RATING: 400-PSIG MINIMUM CWP.
  - SIZE: NPS 2 OR SMALLER.
  - BODY: LEAD FREE COPPER ALLOY.
  - PORT: FULL PORT.
  - BALL: CHROME-PLATED BRASS.
  - SEATS AND SEALS: REPLACEABLE.
  - END CONNECTIONS: SOLDER JOINT OR THREADED.
  - HANDLE: VINYL-COVERED STEEL WITH MEMORY-SETTING DEVICE.
- F. THERMOSTATIC, WATER MIXING VALVES:
- STANDARD: ASSE 1017.
  - PRESSURE RATING: 125 PSIG MINIMUM UNLESS OTHERWISE INDICATED.
  - TYPE: EXPOSED-MOUNTED, THERMOSTATICALLY CONTROLLED, WATER MIXING VALVE.
  - MATERIAL: LEAD FREE BRONZE BODY WITH CORROSION-RESISTANT INTERIOR COMPONENTS.
  - CONNECTIONS: THREADED OR UNION INLETS AND OUTLET.
  - ACCESSORIES: MANUAL TEMPERATURE CONTROL, CHECK STOPS ON HOT- AND COLD-WATER SUPPLIES, AND ADJUSTABLE TEMPERATURE-CONTROL HANDLE.
  - TEMPERED-WATER SETTING: AS SPECIFIED ON DRAWINGS.
  - PRESSURE DROP AT DESIGN FLOW RATE: NOT EXCEED 15 PSIG.
  - VALVE FINISH: CHROME PLATED.
  - PIPING FINISH: CHROME PLATED.
- G. Y-PATTERN STRAINERS:
- PRESSURE RATING: 125 PSIG MINIMUM UNLESS OTHERWISE INDICATED.
  - BODY: LEAD FREE BRONZE FOR NPS 2 AND SMALLER.
  - END CONNECTIONS: THREADED FOR NPS 2 AND SMALLER.
  - SCREEN: STAINLESS STEEL WITH ROUND PERFORATIONS UNLESS OTHERWISE INDICATED.
  - PERFORATION SIZE:
    - STRAINERS NPS 2 AND SMALLER: 0.020 INCH.
  - DRAIN: PIPE PLUG.
- H. HOSE BIBBS:
- STANDARD: ASME A112.18.1 FOR SEDIMENT FAUCETS.
  - BODY MATERIAL: BRONZE.
  - SEAT: BRONZE, REPLACEABLE.
  - SUPPLY CONNECTIONS: NPS 3/4 THREADED OR SOLDER-JOINT INLET.
  - OUTLET CONNECTION: GARDEN-HOSE THREAD COMPLYING WITH ASME B1.20.7.
  - PRESSURE RATING: 125 PSIG.
  - VACUUM BREAKER: INTEGRAL, NONREMOVABLE, DRAINABLE, HOSE-CONNECTION VACUUM BREAKER COMPLYING WITH ASSE 1011.
  - FINISH FOR EQUIPMENT ROOMS: ROUGH BRONZE, OR CHROME OR NICKEL PLATED.
  - FINISH FOR SERVICE AREAS: CHROME OR NICKEL PLATED.
  - FINISH FOR FINISHED ROOMS: CHROME OR NICKEL PLATED.
  - OPERATION FOR EQUIPMENT ROOMS: WHEEL HANDLE OR OPERATING KEY.
  - OPERATION FOR SERVICE AREAS: OPERATING KEY.
  - OPERATION FOR FINISHED ROOMS: OPERATING KEY.
  - INCLUDE OPERATING KEY WITH EACH OPERATING-KEY HOSE BIBB.
  - INCLUDE INTEGRAL WALL FLANGE WITH EACH CHROME- OR NICKEL-PLATED HOSE BIBB.

- I. NONFREEZE WALL HYDRANTS:
- STANDARD: ASME A112.21.3M FOR CONCEALED OR EXPOSED-OUTLET, SELF-DRAINING WALL HYDRANTS.
  - PRESSURE RATING: 125 PSIG.
  - OPERATION: LOOSE KEY.
  - CASING AND OPERATING ROD: OF LENGTH REQUIRED TO MATCH WALL THICKNESS. INCLUDE WALL CLAMP.
  - INLET: NPS 3/4.
  - OUTLET: CONCEALED, WITH INTEGRAL VACUUM BREAKER AND GARDEN-HOSE THREAD COMPLYING WITH ASME B1.20.7.
  - BOX: DEEP, FLUSH MOUNTED WITH COVER.
  - BOX AND COVER FINISH: CHROME PLATED.
  - OUTLET: EXPOSED, WITH INTEGRAL VACUUM BREAKER AND GARDEN-HOSE THREAD COMPLYING WITH ASME B1.20.7.
  - NOZZLE AND WALL-PLATE FINISH: POLISHED NICKEL BRONZE.
  - OPERATING KEYS: ONE WITH EACH WALL HYDRANT.
- J. BALL-VALVE-TYPE, HOSE-END DRAIN VALVES:
- STANDARD: MSS SP-110 FOR STANDARD-PORT, TWO-PIECE BALL VALVES.
  - PRESSURE RATING: 400-PSIG MINIMUM CWP.
  - SIZE: NPS 3/4.
  - BODY: COPPER ALLOY.
  - BALL: CHROME-PLATED BRASS.
  - SEATS AND SEALS: REPLACEABLE.
  - HANDLE: VINYL-COVERED STEEL.
  - INLET: THREADED OR SOLDER JOINT.
  - OUTLET: THREADED, SHORT NIPPLE WITH GARDEN-HOSE THREAD COMPLYING WITH ASME B1.20.7 AND CAP WITH BRASS CHAIN.
- K. WATER-HAMMER ARRESTERS:
- STANDARD: ASSE 1010 OR PDI-WH 201.
  - TYPE: COPPER TUBE WITH PISTON.
  - SIZE: ASSE 1010, SIZES AA AND A THROUGH F, OR PDI-WH 201, SIZES A THROUGH F.
- L. SUPPLY-TYPE, TRAP-SEAL PRIMER DEVICE:
- STANDARD: ASSE 1018
  - PRESSURE RATING: 125 PSIG MINIMUM.
  - BODY: BRONZE.
  - INLET AND OUTLET CONNECTIONS: NPS 1/2 THREADED, UNION, OR SOLDER JOINT.
  - GRAVITY DRAIN OUTLET CONNECTION: NPS 1/2 THREADED OR SOLDER JOINT.
  - FINISH: CHROME PLATED, OR ROUGH BRONZE FOR UNITS USED WITH PIPE OR TUBE THAT IS NOT CHROME FINISHED.
- M. WATER FILTERS: CARTRIDGE TYPE, INCLUDING HOUSING, FITTINGS, FILTER CARTRIDGES, AND CARTRIDGE END CAPS.
- PART 3 - EXECUTION
- 3.1 INSTALLATION
- A. INSTALL BACKFLOW PREVENTERS IN EACH WATER SUPPLY TO MECHANICAL EQUIPMENT AND SYSTEMS AND TO OTHER EQUIPMENT AND WATER SYSTEMS THAT MAY BE SOURCES OF CONTAMINATION. COMPLY WITH AUTHORITIES HAVING JURISDICTION.
- B. INSTALL WATER REGULATORS WITH INLET AND OUTLET SHUTOFF VALVES. INSTALL PRESSURE GAGES ON INLET AND OUTLET.
- C. INSTALL BALANCING VALVES IN LOCATIONS WHERE THEY CAN EASILY BE ADJUSTED.
- D. INSTALL TEMPERATURE-ACTUATED, WATER MIXING VALVES WITH CHECK STOPS OR SHUTOFF VALVES ON INLETS AND WITH SHUTOFF VALVE ON OUTLET.
- E. INSTALL Y-PATTERN STRAINERS FOR WATER ON SUPPLY SIDE OF EACH CONTROL VALVE, WATER PRESSURE-REDUCING VALVE, SOLENOID VALVE AND PUMP.
- F. INSTALL WATER-HAMMER ARRESTERS IN WATER PIPING ACCORDING TO PDI-WH 201.
- G. INSTALL SUPPLY-TYPE, TRAP-SEAL PRIMER VALVES WITH OUTLET PIPING PITCHED DOWN TOWARD DRAIN TRAP A MINIMUM OF 1 PERCENT, AND CONNECT TO FLOOR-DRAIN BODY, TRAP, OR INLET FITTING. ADJUST VALVE FOR PROPER FLOW.
- 3.2 FIELD QUALITY CONTROL
- A. PERFORM THE FOLLOWING TESTS AND INSPECTIONS:
- TEST EACH PRESSURE VACUUM BREAKER, REDUCED-PRESSURE-PRINCIPLE BACKFLOW PREVENTER, AND DOUBLE-CHECK BACKFLOW-PREVENTION ASSEMBLY ACCORDING TO AUTHORITIES HAVING JURISDICTION AND THE DEVICES REFERENCE STANDARD.
  - DOMESTIC WATER PIPING SPECIALTIES WILL BE CONSIDERED DEFECTIVE IF THEY DO NOT PASS TESTS AND INSPECTIONS.
  - PREPARE TEST AND INSPECTION REPORTS.

END OF SECTION 221119

SECTION 221123 - DOMESTIC WATER PUMPS

- PART 2 - PRODUCTS
- 2.1 PERFORMANCE REQUIRMENTS
- A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
- B. COMPLY WITH UL 778 FOR MOTOR-OPERATED WATER PUMPS.
- 2.2 DOMESTIC WATER PUMPS
- A. HOT WATER CIRCULATOR PUMP, RP-1:
- BASIS-OF-DESIGN PRODUCT: GRUNDFOS ALPHA 15-555F, AS INDICATED ON DRAWINGS.
  - CASING: STAINLESS STEEL WITH COMPANION-FLANGE CONNECTIONS.
  - MOTOR: AUTOMATIC ADJUSTABLE, WET-ROTOR, PERMANENT MAGNET.
- 2.3 MOTORS
- A. COMPLY WITH NEMA DESIGNATION, TEMPERATURE RATING, SERVICE FACTOR, ENCLOSURE TYPE, AND EFFICIENCY REQUIREMENTS FOR MOTORS.
- B. MOTOR SIZES: MINIMUM SIZE AS INDICATED. IF NOT INDICATED, LARGE ENOUGH SO DRIVEN LOAD WILL NOT REQUIRE MOTOR TO OPERATE IN SERVICE FACTOR RANGE ABOVE 1.0.
- 2.4 CONTROLS
- A. TIMERS: ELECTRIC, FOR CONTROL OF HOT-WATER CIRCULATION PUMP.
- TYPE: PROGRAMMABLE, SEVEN-DAY CLOCK WITH MANUAL OVERRIDE ON-OFF SWITCH.
  - PROGRAMMABLE SEQUENCE OF OPERATION: UP TO TWO ON-OFF CYCLES EACH DAY FOR SEVEN DAYS.
- PART 3 - EXECUTION
- 3.1 INSTALLATION
- A. INSTALL PUMPS WITH ACCESS FOR PERIODIC MAINTENANCE, INCLUDING REMOVAL OF MOTORS, IMPELLERS, COUPLINGS, AND ACCESSORIES.
- B. SUPPORT PUMPS AND PIPING SO WEIGHT OF PIPING IS NOT SUPPORTED BY PUMP VOLUME.
- C. INSTALL ELECTRICAL CONNECTIONS FOR POWER, CONTROLS, AND DEVICES.

- D. SUSPEND IN-LINE PUMPS INDEPENDENT FROM PIPING. USE CONTINUOUS-THREAD HANGER RODS AND VIBRATION ISOLATION HANGERS. FABRICATE BRACKETS OR SUPPORTS AS REQUIRED FOR PUMPS.
- E. CONNECT PIPING WITH VALVES THAT ARE AT LEAST THE SAME SIZE AS PIPING CONNECTING TO PUMPS.
- F. INSTALL SUCTION AND DISCHARGE PIPE SIZES EQUAL TO OR GREATER THAN DIAMETER OF PUMP NOZZLES.
- G. INSTALL SHUTOFF VALVE AND STRAINER ON SUCTION SIDE OF PUMPS.
- H. INSTALL NONSLAM CHECK VALVE AND THROTTLING VALVE ON DISCHARGE SIDE OF PUMPS.
- I. INSTALL THERMOSTATS IN HOT-WATER RETURN PIPING.
- J. INSTALL TEST PLUGS ON SUCTION AND DISCHARGE OF EACH PUMP. INSTALL AT INTEGRAL PRESSURE GAGE TAPPINGS WHERE PROVIDED.

END OF SECTION 221123

SECTION 221316 - SANITARY WASTE AND VENT PIPING

- PART 2 - PRODUCTS
- 2.1 PERFORMANCE REQUIREMENTS
- A. COMPONENTS AND INSTALLATION SHALL BE CAPABLE OF WITHSTANDING THE FOLLOWING MINIMUM WORKING PRESSURE UNLESS OTHERWISE INDICATED:
- SOIL, WASTE, AND VENT PIPING: 10-FOOT HEAD OF WATER.
- B. PIPING MATERIALS SHALL BEAR LABEL, STAMP, OR OTHER MARKINGS OF SPECIFIED TESTING AGENCY.
- C. COMPLY WITH NSF/ANSI 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS," FOR PLASTIC PIPING COMPONENTS.
- 2.2 PIPES AND FITTINGS
- A. COPPER DRAINAGE TUBE AND FITTINGS: ASTM B 306, TYPE DWV DRAWN TEMPER WITH ASME B16.23. CAST COPPER OR ASME B16.29, WROUGHT COPPER, SOLDER-JOINT FITTINGS.
- COPPER FLANGES: ASME B16.24, CLASS 150, CAST COPPER WITH SOLDER-JOINT END.
    - FLANGE GASKET MATERIALS: ASME B16.21, FULL-FACE, FLAT, NONMETALLIC, ASBESTOS-FREE, 1/8-INCH MAXIMUM THICKNESS UNLESS THICKNESS OR SPECIFIC MATERIAL IS INDICATED.
    - FLANGE BOLTS AND NUTS: ASME B18.2.1, CARBON STEEL UNLESS OTHERWISE INDICATED.
  - SOLDER: ASTM B 32, LEAD FREE WITH ASTM B 813, WATER-FLUSHABLE FLUX.
- B. PVC PLASTIC, DWV PIPE AND FITTINGS: ASTM D 2665, SCHEDULE 40, PLAIN ENDS WITH PVC SOCKET-TYPE, DWV PIPE FITTINGS.
- ADHESIVE PRIMER: ASTM F 656.
    - ADHESIVE PRIMER SHALL HAVE A VOC CONTENT OF 550 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).
  - SOLVENT CEMENT: ASTM D 2564.
    - PVC SOLVENT CEMENT SHALL HAVE A VOC CONTENT OF 510 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).

PART 3 - EXECUTION

- 3.1 PIPING INSTALLATION
- A. INSTALL WALL PENETRATION SYSTEM AT EACH PIPE PENETRATION THROUGH FOUNDATION WALL. MAKE INSTALLATION WATERTIGHT. COMPLY WITH REQUIREMENTS IN SECTION 220513 "COMMON WORK RESULTS FOR PLUMBING" FOR WALL PENETRATION SYSTEMS.
- B. MAKE CHANGES IN DIRECTION FOR SOIL AND WASTE DRAINAGE AND VENT PIPING USING APPROPRIATE BRANCHES, BENDS, AND LONG-SWEEP BENDS. SANITARY TEES AND SHORT-SWEEP 1/4 BENDS MAY BE USED ON VERTICAL STACKS IF CHANGE IN DIRECTION OF FLOW IS FROM HORIZONTAL TO VERTICAL. USE LONG-TURN, DOUBLE-Y-BRANCH AND 1/8-BEND FITTINGS IF TWO FIXTURES ARE INSTALLED BACK TO BACK OR SIDE BY SIDE WITH COMMON DRAIN PIPE. STRAIGHT TEES, ELBOWS, AND CROSSES MAY BE USED ON VENT LINES. DO NOT CHANGE DIRECTION OF FLOW MORE THAN 90 DEGREES. USE PROPER SIZE OF STANDARD INCREASERS AND REDUCERS IF PIPES OF DIFFERENT SIZES ARE CONNECTED. REDUCING SIZE OF DRAINAGE PIPING IN DIRECTION OF FLOW IS PROHIBITED.
- C. LAY BURIED BUILDING DRAINAGE PIPING BEGINNING AT LOW POINT OF EACH SYSTEM. INSTALL TRUE TO GRADES AND ALIGNMENT INDICATED, WITH UNBROKEN CONTINUITY OF INVERT. PLACE HUB ENDS OF PIPING UPSTREAM. INSTALL REQUIRED GASKETS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS FOR USE OF LUBRICANTS, CEMENTS, AND OTHER INSTALLATION REQUIREMENTS. MAINTAIN SWAB IN PIPING AND PULL PAST EACH JOINT AS COMPLETED.
- D. INSTALL SOIL AND WASTE DRAINAGE AND VENT PIPING AT THE FOLLOWING MINIMUM SLOPES, UNLESS OTHERWISE INDICATED:
- HORIZONTAL SANITARY DRAINAGE PIPING: 2 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 2-1/2 AND SMALLER; 1 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 3 AND LARGER.
  - VENT PIPING: ALL VENT AND BRANCH VENT PIPING SHALL BE GRADED AND CONNECTED TO DRAIN BACK TOWARD VERTICAL FIXTURE VENT OR TOWARD VENT STACK.
- G. INSTALL PVC SOIL AND WASTE DRAINAGE AND VENT PIPING ACCORDING TO ASTM D 2665.
- H. INSTALL UNDERGROUND PVC SOIL AND WASTE DRAINAGE PIPING ACCORDING TO ASTM D 2321.
- I. DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT IS INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.
- J. COMPLY WITH REQUIREMENTS IN SECTION 220513 "COMMON WORK RESULTS FOR PLUMBING" FOR BASIC PIPING JOINT CONSTRUCTION.
- K. SOLDERED JOINTS: USE ASTM B 813, WATER-FLUSHABLE, LEAD-FREE FLUX; ASTM B 32, LEAD-FREE-ALLOY SOLDER; AND ASTM B 828 PROCEDURE UNLESS OTHERWISE INDICATED.
- L. COMPLY WITH REQUIREMENTS IN SECTION 220513 "COMMON WORK RESULTS FOR PLUMBING" FOR PIPE HANGER AND SUPPORT DEVICES.
- 3.2 PIPE SCHEDULE
- A. ABOVEGROUND APPLICATIONS: PVC PLASTIC, DWV PIPE AND FITTINGS WITH SOLVENT-CEMENTED JOINTS, COPPER DRAINAGE TUBE AND FITTINGS WITH SOLDERED JOINTS, PVC PLASTIC PIPE AND FITTINGS SHALL NOT BE PERMITTED FOR INSTALLATION IN RETURN AIR PLENUMS OR LOCATIONS EXPOSED TO RETURN AIR PLENUMS.
- B. BELOWGROUND APPLICATIONS: H PVC PLASTIC, DWV PIPE AND DRAINAGE-PATTERN FITTINGS WITH CEMENTED JOINTS.

END OF SECTION

SECTION 221319 - SANITARY WASTE PIPING SPECIALTIES

- PART 1 - GENERAL
- 1.1 SECTION REQUIREMENTS
- A. SUBMITTALS:
- PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED.
    - INCLUDE RATED CAPACITIES, OPERATING CHARACTERISTICS, AND ACCESSORIES FOR GREASE INTERCEPTORS.
- PART 2 - PRODUCTS
- 2.1 PERFORMANCE REQUIREMENTS
- A. DRAINAGE PIPING SPECIALTIES SHALL BEAR LABEL, STAMP, OR OTHER MARKINGS OF SPECIFIED TESTING AGENCY.
- 2.2 MANUFACTURED UNITS - AS INDICATED ON DRAWINGS
- A. FLOOR CLEANOUTS: PER STANDARD ASME A112.36.2M-2002.
- B. WALL CLEANOUTS:
- C. FLOOR DRAINS: PER STANDARD ASME A112.6.3-2001.

- D. CAST IRON FLOOR SINKS: PER STANDARD ASME A112.6.7-2001.
- E. PVC PLASTIC FLOOR SINKS: PER STANDARD ASME A112.6.7-2001.

PART 3 - EXECUTION

- 3.1 INSTALLATION
- A. INSTALL CLEANOUTS AT GRADE AND EXTEND TO WHERE BUILDING SANITARY DRAINS CONNECT TO BUILDING SANITARY SEWERS.
- B. INSTALL FLOOR DRAINS AT LOW POINTS OF SURFACE AREAS TO BE DRAINED. SET GRATES OF DRAINS FLUSH WITH FINISHED FLOOR UNLESS OTHERWISE INDICATED.
- INSTALL FLOOR-DRAIN FLASHING COLLAR OR FLANGE SO NO LEAKAGE OCCURS BETWEEN DRAIN AND ADJOINING FLOORING. MAINTAIN INTEGRITY OF WATERPROOF MEMBRANES WHERE PENETRATED.
  - INSTALL INDIVIDUAL TRAPS FOR FLOOR DRAINS CONNECTED TO SANITARY BUILDING DRAIN, UNLESS OTHERWISE INDICATED.
- C. PROVIDE A 2" MINIMUM AIR-GAP OR 2 TIMES THE PIPE DIAMETER (WHICHEVER IS GREATER) ON INDIRECT-WASTE PIPING DISCHARGE INTO SANITARY DRAINAGE SYSTEM.

END OF SECTION

SECTION 22 34 00 - FUEL-FIRED, DOMESTIC WATER HEATERS

PART 1 - GENERAL

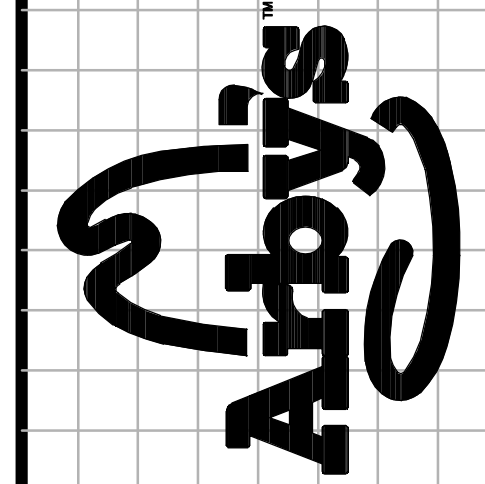
- 1.1 SUMMARY
- A. SECTION INCLUDES:
- COMMERCIAL, GAS-FIRED, HIGH-EFFICIENCY, TANKLESS, DOMESTIC-WATER HEATERS.
  - DOMESTIC-WATER HEATER ACCESSORIES.
- 1.2 QUALITY ASSURANCE
- A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
- B. NSF COMPLIANCE: FABRICATE AND LABEL EQUIPMENT COMPONENTS THAT WILL BE IN CONTACT WITH POTABLE WATER TO COMPLY WITH NSF 61, "DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS."
- 1.3 WARRANTY
- A. SPECIAL WARRANTY: MANUFACTURER'S STANDARD FORM IN WHICH MANUFACTURER AGREES TO REPAIR OR REPLACE COMPONENTS OF FUEL-FIRED, DOMESTIC-WATER HEATERS THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD.
- FAILURES INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
    - STRUCTURAL FAILURES INCLUDING STORAGE TANK AND SUPPORTS.
    - FAULTY OPERATION OF CONTROLS.
    - DETERIORATION OF METALS, METAL FINISHES, AND OTHER MATERIALS BEYOND NORMAL USE.
  - WARRANTY PERIODS: FROM DATE OF SUBSTANTIAL COMPLETION.
    - GAS-FIRED, TANKLESS, DOMESTIC-WATER HEATERS:
      - HEAT EXCHANGER: TEN YEARS.
      - CONTROLS AND OTHER COMPONENTS: FIVE YEARS.
      - THERMAL EXPANSION TANK: FIVE YEARS.

PART 2 - PRODUCTS

- A. COMMERCIAL, GAS-FIRED, HIGH-EFFICIENCY, TANKLESS, DOMESTIC-WATER HEATER, DWH-1 & DWH-2:
- BASIS-OF-DESIGN PRODUCT: NAVIER MODEL NO. NP-240, PROVIDE AS INDICATED ON DRAWINGS.
  - STANDARD: ANSI Z21.10.3/CSA 4.3 FOR GAS-FIRED, INSTANTANEOUS, DOMESTIC WATER HEATERS FOR INDOOR APPLICATIONS.
  - FORCED DRAFT DIRECT VENT SYSTEM.
- B. DOMESTIC WATER COMPRESSION TANKS:
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: RETAIN OPTION IN FIRST SUBPARAGRAPH BELOW IF MANUFACTURER'S NAME AND MODEL NUMBER ARE INDICATED IN SCHEDULES OR PLANS ON DRAWINGS; DELETE OPTION AND INSERT MANUFACTURER'S NAME AND MODEL NUMBER IF NOT INCLUDED ON DRAWINGS.
    - AMTROL INC.
    - RHEEM-RUUD.
    - WATTS WATER TECHNOLOGIES, CO.
    - WESSELS TANK CO.
  - DESCRIPTION: STEEL, PRESSURE-RATED TANK CONSTRUCTED WITH WELDED JOINTS AND FACTORY-INSTALLED BUTYL-RUBBER DIAPHRAGM. INCLUDE AIR PRECHARGE TO MINIMUM SYSTEM-OPERATING PRESSURE AT TANK.
  - CONSTRUCTION:
    - TAPPINGS: FACTORY-FABRICATED STEEL, WELDED TO TANK BEFORE TESTING AND LABELING. INCLUDE ASME B1.20.1 PIPE THREAD.
    - INTERIOR FINISH: COMPLY WITH NSF 61 BARRIER MATERIALS FOR POTABLE-WATER TANK LININGS, INCLUDING EXTENDING FINISH INTO AND THROUGH TANK FITTINGS AND OUTLETS.
    - AIR-CHARGING VALVE: FACTORY INSTALLED.
  - GAS SHUTOFF VALVES: ANSI Z21.15/CSA 9.1-M, MANUALLY OPERATED, FURNISH FOR INSTALLATION IN PIPING.
  - GAS PRESSURE REGULATORS: ANSI Z21.18/CSA 6.3, APPLIANCE TYPE. INCLUDE 1/2-PSIG PRESSURE RATING AS REQUIRED TO MATCH GAS SUPPLY.
  - AUTOMATIC GAS VALVES: ANSI Z21.21/CSA 6.5, APPLIANCE, ELECTRICALLY OPERATED, ON-OFF AUTOMATIC VALVE.
- F. SOURCE QUALITY CONTROL
- HYDROSTATICALLY TEST COMMERCIAL DOMESTIC-WATER HEATERS TO MINIMUM OF ONE AND ONE-HALF TIMES PRESSURE RATING BEFORE SHIPMENT.
  - DOMESTIC-WATER HEATERS WILL BE CONSIDERED DEFECTIVE IF THEY DO NOT PASS TESTS AND INSPECTIONS.
  - PREPARE TEST AND INSPECTION REPORTS.

REGISTRATION SEAL

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CHECKED BY: ACR  
ISSUE DATE: 03/18/22

**SPECIFICATIONS PLUMBING**

**P701**

# SPECIFICATIONS - DIVISION 22 - PLUMBING (CONTINUED)

PART 3 - EXECUTION

3.1 DOMESTIC WATER HEATER INSTALLATION

- A. INSTALL TANKLESS DOMESTIC WATER HEATERS AT LEAST 80 INCHES ABOVE FLOOR ON WALL BRACKET.
  - 1. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES.
  - 2. ARRANGE UNITS SO CONTROLS AND DEVICES THAT REQUIRE SERVICING ARE ACCESSIBLE.
  - 3. PLACE AND SECURE ANCHORAGE DEVICES. USE SETTING DRAWINGS, TEMPLATES, DIAGRAMS, INSTRUCTIONS, AND DIRECTIONS FURNISHED WITH ITEMS TO BE EMBEDDED.
  - 4. INSTALL ANCHOR BOLTS TO ELEVATIONS REQUIRED FOR PROPER ATTACHMENT TO SUPPORTED EQUIPMENT.
  - 5. ANCHOR DOMESTIC-WATER HEATERS TO SUBSTRATE.
- B. INSTALL GAS-FIRED, DOMESTIC-WATER HEATERS ACCORDING TO NFPA 54.
  - 1. INSTALL GAS SHUTOFF VALVES ON GAS SUPPLY PIPING TO GAS-FIRED, DOMESTIC-WATER HEATERS WITHOUT SHUTOFF VALVES.
  - 2. INSTALL GAS PRESSURE REGULATORS ON GAS SUPPLIES TO GAS-FIRED, DOMESTIC-WATER HEATERS WITHOUT GAS PRESSURE REGULATORS IF GAS PRESSURE REGULATORS ARE REQUIRED TO REDUCE GAS PRESSURE AT BURNER.
  - 3. INSTALL AUTOMATIC GAS VALVES ON GAS SUPPLIES TO GAS-FIRED, DOMESTIC-WATER HEATERS IF REQUIRED FOR OPERATION OF SAFETY CONTROL.
- C. INSTALL PRESSURE RELIEF VALVES IN WATER PIPING FOR DOMESTIC WATER HEATERS WITHOUT STORAGE. EXTEND COMMERCIAL-WATER-HEATER RELIEF-VALVE OUTLET, WITH DRAIN PIPING SAME AS DOMESTIC-WATER PIPING IN CONTINUOUS DOWNWARD PITCH, AND DISCHARGE BY POSITIVE AIR GAP ONTO CLOSEST FLOOR DRAIN.
- D. INSTALL WATER-HEATER DRAIN PIPING AS INDIRECT WASTE TO SPILL BY POSITIVE AIR GAP INTO OPEN DRAINS OR OVER FLOOR DRAINS. INSTALL HOSE-END DRAIN VALVES AT LOW POINTS IN WATER PIPING FOR DOMESTIC-WATER HEATERS THAT DO NOT HAVE TANK DRAINS.
- E. INSTALL THERMOMETER ON OUTLET PIPING OF DOMESTIC-WATER HEATERS. COMPLY WITH REQUIREMENTS FOR THERMOMETERS SPECIFIED IN SECTION 220500 - "COMMON WORK RESULTS FOR PLUMBING".

3.2 FIELD QUALITY CONTROL

- A. PERFORM TESTS AND INSPECTIONS.
    - 1. MANUFACTURER'S FIELD SERVICE: ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO INSPECT COMPONENTS, ASSEMBLIES, AND EQUIPMENT INSTALLATIONS, INCLUDING CONNECTIONS, AND TO ASSIST IN TESTING.
    - 2. LEAK TEST: AFTER INSTALLATION, CHARGE SYSTEM AND TEST FOR LEAKS. REPAIR LEAKS AND RETEST UNTIL NO LEAKS EXIST.
    - 3. OPERATIONAL TEST: AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, START UNITS TO CONFIRM PROPER OPERATION.
    - 4. TEST AND ADJUST CONTROLS AND SAFETIES, REPLACE DAMAGED AND MALFUNCTIONING CONTROLS AND EQUIPMENT.
  - B. DOMESTIC-WATER HEATERS WILL BE CONSIDERED DEFECTIVE IF THEY DO NOT PASS TESTS AND INSPECTIONS.
  - C. PREPARE TEST AND INSPECTION REPORTS.
- 3.3 DEMONSTRATION
- A. ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE, AND MAINTAIN COMMERCIAL, GAS-FIRED, STORAGE, DOMESTIC-WATER HEATERS.

END OF SECTION

SECTION 224000 - PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. SUBMITTALS:
  - 1. PRODUCT DATA FOR EACH TYPE OF PLUMBING FIXTURE, INCLUDING TRIM, FITTINGS, ACCESSORIES, APPLIANCES, APPURTENANCES, EQUIPMENT, AND SUPPORTS.
  - 2. DOCUMENTATION INDICATING FLOW AND WATER CONSUMPTION REQUIREMENTS.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. REGULATORY REQUIREMENTS: COMPLY WITH REQUIREMENTS IN ICC A117.1, "ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES"; PUBLIC LAW 90-480, "ARCHITECTURAL BARRIERS ACT"; AND PUBLIC LAW 101-336, "AMERICANS WITH DISABILITIES ACT" FOR PLUMBING FIXTURES FOR PEOPLE WITH DISABILITIES.
- B. REGULATORY REQUIREMENTS: COMPLY WITH REQUIREMENTS IN PUBLIC LAW 102-486, "ENERGY POLICY ACT," ABOUT WATER FLOW AND CONSUMPTION RATES FOR PLUMBING FIXTURES.
- C. NSF STANDARD: COMPLY WITH NSF 61, "DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS," FOR FIXTURE MATERIALS THAT WILL BE IN CONTACT WITH POTABLE WATER.
- D. FIXTURES SHALL BE PROVIDED AS SCHEDULED ON THE DRAWINGS.

PART 3 - EXECUTION

3.1 INSTALLATIONS

- A. INSTALL FITTING INSULATION KITS ON FIXTURES FOR PEOPLE WITH DISABILITIES.
- B. INSTALL FIXTURES WITH FLANGES AND GASKET SEALS.
- C. INSTALL TANKS FOR ACCESSIBLE, TANK-TYPE WATER CLOSETS WITH LEVER HANDLE MOUNTED ON WIDE SIDE OF COMPARTMENT.
- D. FASTEN WALL-HANGING PLUMBING FIXTURES SECURELY TO SUPPORTS ATTACHED TO BUILDING SUBSTRATE WHEN SUPPORTS ARE SPECIFIED, AND TO BUILDING WALL CONSTRUCTION WHERE NO SUPPORT IS INDICATED.
- E. FASTEN FLOOR-MOUNTED FIXTURES TO SUBSTRATE. FASTEN FIXTURES HAVING HOLES FOR SECURING FIXTURE TO WALL CONSTRUCTION, TO REINFORCEMENT BUILT INTO WALLS.
- F. FASTEN WALL-MOUNTED FITTINGS TO REINFORCEMENT BUILT INTO WALLS.
- G. FASTEN COUNTER-MOUNTING PLUMBING FIXTURES TO CASEWORK.
- H. SECURE SUPPLIES TO SUPPORTS OR SUBSTRATE WITHIN PIPE SPACE BEHIND FIXTURE.
- I. SET MOP BASINS IN LEVELING BED OF CEMENT GROUT.
- J. INSTALL INDIVIDUAL SUPPLY INLETS, SUPPLY STOPS, SUPPLY RISERS, AND TUBULAR BRASS TRAPS WITH CLEANOUTS AT FIXTURE.
- K. INSTALL WATER-SUPPLY STOP VALVES IN ACCESSIBLE LOCATIONS.
- L. INSTALL TRAPS ON FIXTURE OUTLETS. OMIT TRAPS ON FIXTURES HAVING INTEGRAL TRAPS. OMIT TRAPS ON INDIRECT WASTES UNLESS OTHERWISE INDICATED.
- M. INSTALL ESCUTCHEONS AT WALL, FLOOR, AND CEILING PENETRATIONS IN EXPOSED, FINISHED LOCATIONS AND WITHIN CABINETS AND MILLWORK. USE DEEP-PATTERN ESCUTCHEONS WHERE REQUIRED TO CONCEAL PROTRUDING PIPE FITTINGS.
- N. SEAL JOINTS BETWEEN FIXTURES AND WALLS, FLOORS, AND COUNTERS USING SANITARY-TYPE, ONE-PART, MILDEW-RESISTANT, SILICONE SEALANT. MATCH SEALANT COLOR TO FIXTURE COLOR.
- O. INSTALL PIPING CONNECTIONS BETWEEN PLUMBING FIXTURES AND PIPING SYSTEMS AND PLUMBING EQUIPMENT. INSTALL INSULATION ON SUPPLIES AND DRAINS OF FIXTURES FOR PEOPLE WITH DISABILITIES.

END OF SECTION

SECTION 221623 - FACILITY NATURAL-GAS PIPING

PART 2 - PRODUCTS

- 2.1 PERFORMANCE REQUIREMENTS
  - A. MINIMUM OPERATING-PRESSURE RATINGS:
    - 1. PIPING AND VALVES: 100 PSIG MINIMUM UNLESS OTHERWISE INDICATED.

- B. NATURAL-GAS SYSTEM PRESSURE WITHIN BUILDING: ONE DISTRIBUTION PRESSURE. 14" W.C., BUT NOT MORE THAN 2.0 PSIG. PIPES, TUBES, AND FITTINGS

- A. STEEL PIPE: ASTM A 53/A 53M. BLACK STEEL, SCHEDULE 40, TYPE E OR S, GRADE B.
  - 1. MALLEABLE-IRON THREADED FITTINGS: ASME B16.3, CLASS 150, STANDARD PATTERN.
  - 2. WROUGHT-STEEL WELDING FITTINGS: ASTM A 234/A 234M FOR BUTT WELDING AND SOCKET WELDING.
  - 3. UNIONS: ASME B16.39, CLASS 150, MALLEABLE IRON WITH BRASS-TO-IRON SEAT, GROUND JOINT, AND THREADED ENDS.
  - 4. PROTECTIVE COATING FOR UNDERGROUND PIPING: FACTORY-APPLIED, THREE-LAYER COATING OF EPOXY, ADHESIVE, AND PE.
- B. CORRUGATED, STAINLESS-STEEL TUBING: COMPLY WITH ANSI/AS LC 1; INCLUDE FLAME-RETARDANT PE COATING, COPPER-ALLOY THREADED ENDS, AND STRIKER PLATES.

2.3 SPECIALTIES

- A. APPLIANCE FLEXIBLE CONNECTORS:
  - 1. INDOOR, FIXED-APPLIANCE FLEXIBLE CONNECTORS: COMPLY WITH ANSI Z21.24.
  - 2. INDOOR, MOVABLE-APPLIANCE FLEXIBLE CONNECTORS: COMPLY WITH ANSI Z21.69.
  - 3. OUTDOOR, APPLIANCE FLEXIBLE CONNECTORS: COMPLY WITH ANSI Z21.75.
  - 4. CORRUGATED STAINLESS-STEEL TUBING WITH POLYMER COATING.

- B. STRAINERS: ASTM A 126, CLASS B, CAST-IRON BODY, Y-PATTERN, FULL SIZE OF CONNECTING PIPING, CWP RATING OF 125 PSIG. INCLUDE 40-MESH STARTUP STRAINER, AND PERFORATED STAINLESS-STEEL BASKET.
- C. WEATHERPROOF VENT CAP: CAST- OR MALLEABLE-IRON INCREASER FITTING WITH CORROSION-RESISTANT WIRE SCREEN, WITH FREE AREA AT LEAST EQUAL TO CROSS-SECTIONAL AREA OF CONNECTING PIPE AND THREADED-END CONNECTION, VALVES

2.4

- A. GENERAL REQUIREMENTS FOR METALLIC MANUAL GAS SHUTOFF VALVES: COMPLY WITH ASME B16.33.
  - 1. CWP RATING: 125 PSIG.
- B. ONE-PIECE, BRONZE BALL VALVE WITH BRONZE TRIM: MSS SP-110.
  - 1. BODY: BRONZE, COMPLYING WITH ASTM B 584.
  - 2. BALL: CHROME-PLATED BRASS.
  - 3. STEM: BRONZE; BLOWOUT PROOF.
  - 4. SEATS: REINFORCED TFE; BLOWOUT PROOF.
  - 5. PACKING: SEPARATE PACKNUT WITH ADJUSTABLE STEM PACKING THREADED ENDS.
  - 6. CWP RATING: 600 PSIG.
  - 7. LISTING: VALVES NPS 1 AND SMALLER SHALL BE LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
  - 8. SERVICE: SUITABLE FOR NATURAL-GAS SERVICE WITH "WOG" INDICATED ON VALVE BODY.
- C. TWO-PIECE, FULL-PORT, BRONZE BALL VALVES WITH BRONZE TRIM: MSS SP-110.
  - 1. BODY: BRONZE, COMPLYING WITH ASTM B 584.
  - 2. BALL: CHROME-PLATED BRONZE.
  - 3. STEM: BRONZE; BLOWOUT PROOF.
  - 4. SEATS: REINFORCED TFE; BLOWOUT PROOF.
  - 5. PACKING: THREADED BODY PACKNUT DESIGN WITH ADJUSTABLE STEM PACKING.
  - 6. CWP RATING: 600 PSIG.
  - 7. LISTING: VALVES NPS 1 AND SMALLER SHALL BE LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
  - 8. SERVICE: SUITABLE FOR NATURAL-GAS SERVICE WITH "WOG" INDICATED ON VALVE BODY.

- D. BRONZE PLUG VALVES: MSS SP-78.
  - 1. BODY: BRONZE, COMPLYING WITH ASTM B 584.
  - 2. PLUG: BRONZE.
  - 3. OPERATOR: SQUARE HEAD OR LUG TYPE WITH TAMPERPROOF FEATURE WHERE INDICATED.
  - 4. PRESSURE CLASS: 125 PSIG.
  - 5. LISTING: VALVES NPS 1 AND SMALLER SHALL BE LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
  - 6. SERVICE: SUITABLE FOR NATURAL-GAS SERVICE WITH "WOG" INDICATED ON VALVE BODY.
- E. CAST-IRON, NONLUBRICATED PLUG VALVES: MSS SP-78.
  - 1. BODY: CAST IRON, COMPLYING WITH ASTM A 126, CLASS B.
  - 2. PLUG: BRONZE OR NICKEL-PLATED CAST IRON.
  - 3. SEAT: COATED WITH THERMOPLASTIC.
  - 4. STEM SEAL: COMPATIBLE WITH NATURAL GAS.
  - 5. OPERATOR: SQUARE HEAD OR LUG TYPE WITH TAMPERPROOF FEATURE WHERE INDICATED.
  - 6. PRESSURE CLASS: 125 PSIG.
  - 7. LISTING: VALVES NPS 1 AND SMALLER SHALL BE LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
  - 8. SERVICE: SUITABLE FOR NATURAL-GAS SERVICE WITH "WOG" INDICATED ON VALVE BODY.

- F. ELECTRICALLY OPERATED, AUTOMATIC GAS VALVES: COMPLY WITH UL 429.
- 2.5 PRESSURE REGULATORS
  - A. GENERAL REQUIREMENTS: SINGLE STAGE, STEEL JACKETED, AND CORROSION RESISTANT. INCLUDE ELEVATION COMPENSATOR.
  - B. LINE PRESSURE REGULATORS: ANSI Z21.80; 2-PSIG MAXIMUM INLET PRESSURE. FACTORY- OR FIELD-INSTALLED, STAINLESS-STEEL SCREEN IN VENT OPENING IF NOT CONNECTED TO VENT PIPING.
  - C. APPLIANCE PRESSURE REGULATORS: ANSI Z21.18; 2-PSIG MAXIMUM INLET PRESSURE. REGULATOR MAY INCLUDE VENT LIMITING DEVICE, INSTEAD OF VENT CONNECTION, IF APPROVED BY AUTHORITIES HAVING JURISDICTION.

PART 3 - EXECUTION

3.1 OUTDOOR PIPING INSTALLATION

- A. COMPLY WITH REQUIREMENTS IN SECTION 220500 "COMMON WORK RESULTS FOR PLUMBING" FOR BASIC PIPING INSTALLATION REQUIREMENTS.
  - B. INSTALL SHUTOFF VALVE, DOWNSTREAM FROM GAS METER, OUTSIDE BUILDING AT GAS SERVICE ENTRANCE.
  - C. INSTALL WALL PENETRATION SYSTEM AT EACH SERVICE PIPE PENETRATION THROUGH FOUNDATION WALL. MAKE INSTALLATION WATER-TIGHT.
- 3.2 INDOOR PIPING INSTALLATION
- A. COMPLY WITH REQUIREMENTS IN SECTION 220500 "COMMON WORK RESULTS FOR PLUMBING" FOR BASIC PIPING INSTALLATION REQUIREMENTS.
  - B. INSTALL PIPING IN CONCEALED LOCATIONS UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS.
  - C. INSTALL ESCUTCHEONS AT PENETRATIONS OF INTERIOR WALLS, CEILINGS, AND FLOORS.
  - D. FIRE-BARRIER PENETRATIONS: MAINTAIN INDICATED FIRE RATING OF WALLS, PARTITIONS, CEILINGS, AND FLOORS AT PIPE PENETRATIONS. SEAL PIPE PENETRATIONS WITH FIRESTOP MATERIALS. COMPLY WITH REQUIREMENTS IN SECTION 078413 "PENETRATION FIRESTOPPING."
  - E. INSTALL GAS STOPS FOR SHUTOFF TO APPLIANCES WITH LOW-PRESSURE GAS SUPPLY.
  - F. INSTALL NATURAL-GAS PIPING AT UNIFORM GRADE OF 2 PERCENT DOWN TOWARD DRIP AND SEDIMENT TRAPS.
  - G. USE ECCENTRIC REDUCER FITTINGS TO MAKE REDUCTIONS IN PIPE SIZES. INSTALL FITTINGS WITH LEVEL SIDE DOWN.
  - H. CONNECT BRANCH PIPING FROM TOP OR SIDE OF HORIZONTAL PIPING.

- I. INSTALL UNIONS IN PIPES NPS 2 AND SMALLER, ADJACENT TO EACH VALVE. AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT, UNIONS ARE NOT REQUIRED AT FLANGED CONNECTIONS.

- J. INSTALL STRAINER ON INLET OF EACH LINE PRESSURE REGULATOR AND AUTOMATIC OR ELECTRICALLY OPERATED VALVE.
- K. INSTALL PRESSURE GAGE PLUG UPSTREAM AND DOWNSTREAM FROM EACH LINE REGULATOR.
- L. CONNECT GAS PIPING TO EQUIPMENT AND APPLIANCES WITH SHUTOFF VALVES AND UNIONS. INSTALL GAS VALVE UPSTREAM FROM AND WITHIN 72 INCHES OF EACH APPLIANCE USING GAS. INSTALL UNION OR FLANGED CONNECTIONS DOWNSTREAM FROM VALVES.
- M. EXTEND RELIEF VENT CONNECTIONS FOR SERVICE REGULATORS, LINE REGULATORS, AND OVERPRESSURE PROTECTION DEVICES TO THE OUTDOORS AND TERMINATE WITH WEATHERPROOF VENT CAP.
- N. DO NOT USE NATURAL-GAS PIPING AS GROUNDING ELECTRODE.

3.3 PIPING JOINT CONSTRUCTION

- A. THREADED JOINTS: THREAD PIPE WITH TAPERED PIPE THREADS COMPLYING WITH ASME B1.20.1.
- B. WELDED JOINTS: CONSTRUCT JOINTS ACCORDING TO AWS D10.12M/D10.12, USING QUALIFIED PROCESSES AND WELDING OPERATORS.
- C. JOINTS IN STEEL PIPING WITH PROTECTIVE COATING: APPLY JOINT COVER KITS TO PIPE AFTER JOINING TO COVER, SEAL, AND PROTECT JOINTS.
- D. FLANGED JOINTS: INSTALL GASKET MATERIAL, SIZE, TYPE, AND THICKNESS APPROPRIATE FOR NATURAL-GAS SERVICE. INSTALL GASKET CONCENTRICALLY POSITIONED.

3.4 VALVE INSTALLATION

- A. INSTALL MANUAL GAS SHUTOFF VALVE FOR EACH GAS APPLIANCE AHEAD OF CORRUGATED STAINLESS-STEEL TUBING, ALUMINUM, OR COPPER CONNECTOR.
  - B. INSTALL REGULATORS AND OVERPRESSURE PROTECTION DEVICES WITH MAINTENANCE ACCESS SPACE ADEQUATE FOR SERVICING AND TESTING.
- 3.5 OUTDOOR PIPING SCHEDULE
- A. ABOVEGROUND NATURAL-GAS PIPING SHALL BE THE FOLLOWING:
    - 1. STEEL PIPE WITH MALLEABLE-IRON FITTINGS AND THREADED JOINTS. COAT PIPE AND FITTINGS WITH PROTECTIVE COATING FOR STEEL PIPING.
  - B. INDOOR PIPING SCHEDULE FOR SYSTEM PRESSURES MORE THAN 7" W.C. AND LESS THAN 5 PSIG.
    - 1. CORRUGATED STAINLESS-STEEL TUBING WITH MECHANICAL FITTINGS HAVING SOCKET OR THREADED ENDS TO MATCH ADJACENT PIPING.
    - 2. STEEL PIPE WITH MALLEABLE-IRON FITTINGS AND THREADED JOINTS.

- A. ABOVEGROUND, BRANCH PIPING NPS 1 AND SMALLER SHALL BE THE FOLLOWING:
  - 1. CORRUGATED STAINLESS-STEEL TUBING WITH MECHANICAL FITTINGS HAVING SOCKET OR THREADED ENDS TO MATCH ADJACENT PIPING.
  - 2. STEEL PIPE WITH MALLEABLE-IRON FITTINGS AND THREADED JOINTS.
- B. ABOVEGROUND, DISTRIBUTION PIPING SHALL BE THE FOLLOWING:
  - 1. STEEL PIPE WITH MALLEABLE-IRON FITTINGS AND THREADED JOINTS.

END OF SECTION 221623

REGISTRATION SEAL

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ARBY'S INSPIRE CONVERSION

209 S. CENTERVILLE RD.

STURGIS, MI 49091

STORE # X

REV.	DATE	DESCRIPTION

PROJECT NO: 210109

DRAWN BY: CH

CHECKED BY: ACR

ISSUE DATE: 03/18/22

P702

SPECIFICATIONS PLUMBING



# Arby's Restaurant Group Responsibilities Schedule

**Key notes:**  
 O/F: OWNER FURNISH (also includes work by owner's vendors)  
 O/I: OWNER INSTALL (also includes work by owner's vendors)  
**C/F: CONTRACTOR FURNISHED (includes contractor or subcontractors under his direction)**  
**C/I: CONTRACTOR INSTALLED (includes contractor or subcontractors under his direction)**  
**S: REQUIRES SUBMITTAL or SHOP DWG'S**

CATEGORY / TASK	O/F	O/I	C/F	C/I	S	COMMENTS/REMARKS
<b>16000 ELECTRICAL</b>						
Parking lot lights	x			x		
Parking lot light bases			x	x		
Decorative light fixtures	x			x		
All light fixtures	x			x		
Light bulbs for all fixtures			x	x		
Power to roof top air conditioning units			x	x		Electrician
Power to make up air units			x	x		Electrician
Power to exhaust fans			x	x		Electrician
Power to condensing units			x	x		Electrician
Power to hood system			x	x		Electrician
Ansul/hood/gas shut down system wiring			x	x		Electrician
Conduit/wiring for fire alarm system			x	x		Electrician
Power for walk in cooler/freezer			x	x		Electrician
Power for all kitchen equipment			x	x		Electrician
Power for water softener			x	x		Electrician
Power for all A/V equipment			x	x		Electrician
Wiring for speakers	x	x				
Power for ice machine			x	x		Electrician
Power for water heater			x	x		Electrician
Power for drive thru window			x	x		
Power for dishwasher			x	x		Electrician
POS wiring	x	x				
POS conduit			x	x		
POS junction boxes			x	x		
Telephone wiring	x	x				
Telephone conduit homeruns to phone board			x	x		
Exterior signage	x	x				
Power for exterior signage			x	x		
Door bell/transformer			x	x		
Panels, breakers & switches			x	x	S	
Any internal step down transformers			x	x	S	
Secondary from transformer			x	x		
Time clocks			x	x		
Photo electric cells			x	x		
Solenoid valves for refrigeration			x	x		
Control wiring for refrigeration			x	x		
Power for irrigation control			x	x		
Temporary power for construction			x	x		
Power to temporary hiring trailer			x	x		
<b>MISCELLANEOUS</b>						
Cleaning chemicals and equipment install	x	x				
Paper products and devices	x	x				
Phone, House	x	x		x		Electrician to run conduit & pull string
Stainless steel corners in Kitchen	x			x		
Bath room signage			x	x		
ADA identifying devices			x	x		
<b>UTILITIES</b>						
Gas service and meter			x	x		GC to have utilities in their name until Turnover Date
Water service and meter			x	x		GC to have utilities in their name until Turnover Date
Sewer			x	x		GC to have utilities in their name until Turnover Date
Transformer			x	x		GC to have utilities in their name until Turnover Date
Electrical service and meter			x	x		GC to have utilities in their name until Turnover Date
Phone connections			x	x		

NOTE #1: Unless specified herein not to be provided, installed, and/or finished by General Contractor, the General Contractor or his Subcontractors are to provide install and finish all items in the construction documents and specified in the project manual.  
 NOTE #2: Where submittals are not required, the exact spec must be used.

## ELECTRICAL LEGEND

DETAIL	DESCRIPTION
	SIMPLEX RECEPTACLE
	DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE ABOVE COUNTER
	DUPLEX RECEPTACLE - GFCI
	DUPLEX RECEPTACLE - GFCI, ABOVE COUNTER
	SPLIT RECEPTACLE
	DUPLEX RECEPTACLE - WITH WEATHERPROOF COVER & GFCI
	DOUBLE DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE IN CEILING
	DUPLEX RECEPTACLE - 20A, 125V, WITH ISOLATED GROUND
	BRANCH CIRCUIT HOME-RUN WITH CIRCUIT NUMBER
	FLOOR MOUNTED DUPLEX RECEPTACLE
	SPECIAL RECEPTACLE (SEE PLANS FOR TYPE)
	JUNCTION BOX
	MOTOR (SINGLE PHASE & THREE PHASE)
	TIME CLOCK
	VOLUME CONTROL
	PULL BOX - SIZE & TYPE AS REQUIRED
	TELEPHONE / DATA OUTLET
	TV CABLE OUTLET
	DISCONNECT - NON FUSED
	DISCONNECT - FUSED
	UTILITY METER
	ELECTRICAL PANEL
	LIGHTING CONTROL

## LIGHTING LEGEND

TAG	DESCRIPTION
	INTERIOR RECESSED DOWNLIGHT
	INTERIOR RECESSED DOWNLIGHT
	INTERIOR RECESSED DOWNLIGHT
	PENDANT
	PENDANT
	PENDANT
	TRACK LIGHT
	VANITY LIGHT
	WALL SCONCE
	2X4 LAY-IN TROFFER
	2X4 NIGHT LIGHT
	2X4 EMERGENCY LIGHT
	EXIT/EMERGENCY LIGHT W/ BATTERY PACK AND DUAL HEADS
	EXIT/EMERGENCY LIGHT WITH BATTERY PACK
	EXIT LIGHT (SURFACE MOUNTED)
	EXIT LIGHT (CEILING MOUNTED)
	REMOTE EMERGENCY HEADS
	EMERGENCY BATTERY PACK AND DUAL HEADS
	DIMMER SWITCH EQUAL TO LUTRON NOVA SERIES T
	TOGGLE SWITCH SINGLE POLE SWITCH WITH COVER PLATE
	TOGGLE SWITCH 2 POLE SWITCH WITH COVER PLATE
	TOGGLE SWITCH 3 WAY SWITCH WITH COVER PLATE
	TOGGLE SWITCH KEY OPERATED SWITCH WITH COVER PLATE
	PHOTOCELL
	WALL MOUNTED OCCUPANCY SENSOR
	CEILING MOUNTED OCCUPANCY SENSOR SENSORSWITCH MODEL #CMR 9 2P

## GENERAL NOTES:

- A. ALL WORK TO COMPLY TO ALL STATE, LOCAL, NEC, & NFPA CODES.
- B. ELECTRICAL CONTRACTOR TO VISIT THE SITE PRIOR TO SUBMITTING A BID & INCLUDE IN THEIR BID ANY ITEM ANY ITEMS NECESSARY FOR A COMPLETE & OPERATIONAL SYSTEM.
- C. DRAWINGS ARE SCHEMATIC IN NATURE. ELECTRICAL CONTRACTOR IS TO ADD ANY ITEMS THAT ARE REQUIRED FOR A COMPLETE & OPERATIONAL SYSTEM IN THEIR PROPOSAL.
- D. ELECTRICAL CONTRACTOR IS TO COORDINATE THEIR INSTALLATION WITH THE OTHER TRADES. IF A CONFLICT OCCURS AND IT IS DUE TO THE ELECTRICAL CONTRACTOR'S LACK OF COORDINATION, ALL WORK INVOLVED IN RESOLVING THE CONFLICT WILL BE AT THE EXPENSE OF THE ELECTRICAL CONTRACTOR.
- E. ELECTRICAL CONTRACTOR SHALL PAY ALL FEES AND PERMITS.

## ABBREVIATIONS

(A)	EXISTING TO BE ABANDONED	INCD	INCANDESCENT
(D)	EXISTING TO BE DEMOLISHED	KVA	KILOVOLT AMPERE
(E)	EXISTING TO REMAIN	KW	KILOWATT
(F)	FUTURE	LTG	LIGHTING OR LIGHT
(R)	EXISTING TO BE RELOCATED	LRA	LOCKED ROTOR AMPS
A	AMPERE	MCA	MAXIMUM CURRENT AMPACITY
AC	ALTERNATING CURRENT OR AIR CONDITIONER	MCB	MAIN CIRCUIT BREAKER
AFF	ABOVE FINISHED FLOOR	MCC	MOTOR CONTROL CENTER
AFG	ABOVE FINISHED GRADE	MDP	MAIN DISTRIBUTION PANEL
AIC	AMPS INTERRUPTING CAPACITY	MLO	MAIN LUGS ONLY
ANNC	ANNUNCIATOR	MOCP	MAXIMUM OVERCURRENT PROTECTION
AWG	AMERICAN WIRE GAUGE	MSB	MAIN SWITCHBOARD
BPS	BOLTED PRESSURE SWITCH	MH	METAL HALIDE
C	CONDUIT	MTS	MANUAL TRANSFER SWITCH
CB	CIRCUIT BREAKER	NAC	NOTIFICATION APPLIANCE CIRCUIT
CCTV	CLOSED CIRCUIT TELEVISION	NC	NORMALLY CLOSED
CKT	CIRCUIT	NO	NORMALLY OPEN
CM	CONSTRUCTION MANAGER	NF	NON-FUSED
DC	DIRECT CURRENT	OCC	OCCUPANCY
DP	DISTRIBUTION PANELBOARD	PA	PUBLIC ADDRESS
DTT	DOUBLE TWIN TUBE	PB	PULL BOX OR PUSH BUTTON
EB	ELECTRONIC BALLAST	PVC	POLYVINYL CHLORIDE (PLASTIC PIPE)
EC	ELECTRICAL CONTRACTOR	PWR	POWER
EM	EMERGENCY	RECP	RECEPTACLE
EMT	ELECTRICAL METAL TUBING	STP	SHIELDED, TWISTED PAIR
EWC	ELECTRIC WATER COOLER	TC	TIME CLOCK
FA	FIRE ALARM	TRT	TRIPLE TUBE
FLA	FULL LOAD AMPS	TYP	TYPICAL
G	GROUND	UNO	UNLESS NOTED OTHERWISE
GC	GENERAL TRADES CONTRACTOR	UTP	UNSHIELDED, TWISTED PAIR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	V	VOLT
GEN	GENERATOR	W	WATT
HOA	HAND-OFF-AUTOMATIC	WAP	WIRELESS ACCESS POINT
HP	HORSEPOWER	WH	WATHOUR
HPC	HIGH PRESSURE CONTACT SWITCH	WP	WEATHERPROOF, NEMA 3R UNO
HZ	HERTZ	XFMR	TRANSFORMER
IG	ISOLATED GROUND	Z	IMPEDANCE
IMC	INTERMEDIATE METAL CONDUIT	Φ	PHASE

## DRAWING INDEX

E000	GENERAL INFORMATION - ELECTRICAL
E101	LIGHTING PLAN - ELECTRICAL
E102	SITE AND PHOTOMETRIC PLAN - ELECTRICAL
E103	SITE LIGHTING SPECIFICATIONS
E104	SITE LIGHTING SPECIFICATIONS
E201	POWER PLAN - ELECTRICAL
E202	POS SYSTEMS PLAN
E301	ROOF PLAN - ELECTRICAL
E401	DIAGRAMS AND DETAILS - ELECTRICAL
E501	SCHEDULES - ELECTRICAL
E701	SPECIFICATIONS - ELECTRICAL
E702	SPECIFICATIONS - ELECTRICAL
E703	SPECIFICATIONS - ELECTRICAL

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ARBY'S INSPIRE CONVERSION

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STURGIS, MI 49091

STORE # X

NAME

DESCRIPTION

REV

DATE

PROJECT NO: 210109

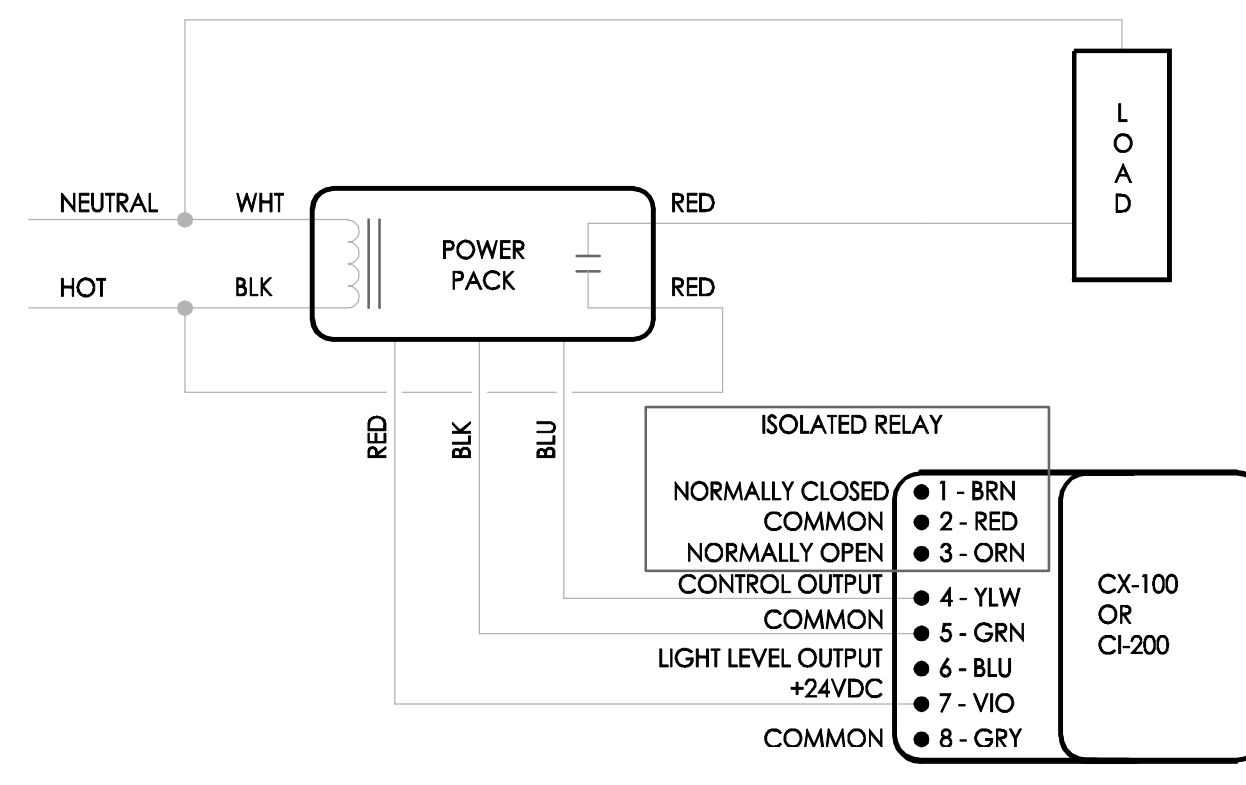
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ISSUE DATE: 03/18/22

E000

ELECTRICAL GENERAL INFORMATION



2 TYPICAL OCCUPANCY SENSOR WIRING DIAGRAM  
N.T.S.

- ### LIGHTING KEYED NOTES:
- MOUNT AT 8'-6" A.F.F. TO CENTER OF FIXTURE, VERIFY MOUNTING HEIGHT W/ARCH. SHEET A400.
  - EC SHALL MAKE FINAL CONNECTION TO FREEZER/COOLER LIGHTING PER MANUFACTURER'S RECOMMENDATIONS. FREEZER/COOLER LIGHTING SHALL BE FURNISHED BY FREEZER/COOLER MFRG AND INSTALLED BY GC.
  - VAPOR PROOF LIGHT FIXTURES FURNISHED BY EXHAUST HOOD MANUFACTURER. INSTALL FIXTURES PER MANUFACTURER'S RECOMMENDATION AND WIRE THRU EXHAUST HOOD CONTROLLER. SEE POWER PLAN.
  - THRU RELAY PANEL. SEE DETAIL AND SCHEDULE SHEET E401.
  - EXTERIOR SIGN: NEMA-3R JUNCTION BOX AT 19'-0". DO NOT COMBINE OR SHARE NEUTRALS WITH OTHER CIRCUITS. IF SIGN IS NOT EQUIPPED WITH INTEGRAL DISCONNECT, PROVIDE NEMA-3R DISC SW. COORDINATE WITH SIGN VENDOR. MOUNT J-BOX INSIDE BUILDING IN TRUSS SPACE.
  - DIGITAL SWITCH: ACUIITY "CHELSEA" CH4-BWH-PWH
  - NOT USED.
  - MOUNT AT 7'-6" A.F.F. TO CENTER OF FIXTURE, VERIFY MOUNTING HEIGHT W/ARCH. SHEET A400.
  - PROVIDE WP J-BOX FOR CANOPY LIGHTING PROVIDED WITH CANOPY.
  - RELAY PANEL: ACUIITY "BLUE BOX LT" GR1416-L1-ENC-SMNE1-GR1416-L1-INT-8NOL-DTC-DV.
  - DIGITAL SWITCH: ACUIITY "CHELSEA" CH1-BWH-PWH.
  - MOUNT AT 12'-6" A.F.F. TO CENTER OF FIXTURE, AIM FIXTURE UP, VERIFY MOUNTING HEIGHT W/ARCH. SHEET A400.
  - EXTERIOR SIGN: PROVIDE WP J-BOX IN BAND AT 11'-0". DO NOT COMBINE OR SHARE NEUTRALS WITH OTHER CIRCUITS. IF SIGN IS NOT EQUIPPED WITH INTEGRAL DISCONNECT PROVIDE DISC SW. COORDINATE WITH SIGN VENDOR.
  - EXTERIOR EMERGENCY EGRESS LIGHT FIXTURE. MOUNT FIXTURE AT 9'-2" TO CENTER OF FIXTURE. VERIFY MOUNTING HEIGHT W/ARCH. SHEET A400.
  - EMERGENCY LIGHT FIXTURE. PROVIDE A SEPARATE HOT LEAD FROM LOCAL AREA LIGHTING CIRCUIT. TO EM CONTROL IN FIXTURE. BY-PASSING ALL SWITCHING AND LIGHTING CONTROL. (NOTE: CONTRACTOR TO VERIFY/PROVIDE IDENTIFICATION OF CIRCUIT BREAKERS SERVING EMERGENCY FIXTURES). SEE LIGHTING FIXTURE SCHEDULE AND GENERAL NOTES. THIS SHEET. (NOTE: CONTRACTOR TO PROVIDE ADDITIONAL CODE COMPLIANT EMERGENCY EGRESS LIGHTING FIXTURES IF REQUIRED BY THE A.H.J.)
  - CEILING MOUNTED SPEAKER. VERIFY EXACT SPEAKER LOCATION WITH OWNER. CONTRACTOR TO INSTALL SPEAKERS PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE LOW VOLTAGE PLENUM-RATED CABLE AS REQUIRED. MAKE ALL FINAL CONNECTIONS AND VERIFY SOUND SYSTEMS IS FULLY OPERATIONAL.
  - CEILING MOUNTED DUAL-TECHNOLOGY OCCUPANCY SENSOR. PROGRAM TIMING SETTINGS AND LOADS PER OWNERS INSTRUCTIONS. SEE TYPICAL OCCUPANCY SENSOR DIAGRAM, THIS SHEET. MANUFACTURER: WAITSTOPPER CX-100 OR CI-100
  - NEW EXTERIOR LED LIGHTING INTEGRATED INTO FASCIA-BAND. BY SIGN VENDOR/INSTALLER. SEE ARCHITECTURAL PLANS FOR EXACT MOUNTING LOCATIONS AND HEIGHTS. PROVIDE A NEMA-1 JUNCTION BOX, LOCATED ABOVE ACCESSIBLE CEILING NEAREST THE EXTERIOR WALL. EXTEND CONDUCTORS THROUGH A WEATHER-TIGHT PENETRATION INTO THE EXTERIOR FACIA-BAND. EXTEND CONDUCTORS TO EACH POWER SUPPLY LOCATION. ALL WIRING SHALL BE CONCEALED INSIDE WALLS/CEILING AND SEAL ALL PENETRATIONS.
  - WALK-IN COOLER/FREEZER UNITS ARE FACTORY-PROVIDED WITH CEILING MOUNTED MOTION CONTROL FOR LIGHTING. IF UNIT IS NOT PROVIDED WITH A MOTION SENSOR FOR LIGHTING. PROVIDE KASON #1901A MOTION SENSOR MOUNTED TO LIGHT FIXTURE KNOCK-OUT.

- ### GENERAL NOTES
- REFER TO REFLECTED CEILING PLAN FOR COORDINATION OF CEILING GRID, DIFFUSERS AND LIGHTING.
  - ALL NIGHT LIGHTING, EXIT AND EGRESS EMERGENCY LIGHTING SHALL BE CONNECTED TO LOCAL LIGHTING CIRCUIT AHEAD OF SWITCH LEG.
  - CONTRACTOR PROVIDE ALL MATERIALS TO PROVIDE A COMPLETE INSTALLATION IN ACCORDANCE WITH THE CURRENT EDITION OF THE NEC AND ALL STATE AND LOCAL CODES.
  - REFER TO DECOR PLANS FOR COORDINATION OF ALL DECORATIVE PENDANT AND SCONCE LIGHTING. INCLUDING MOUNTING HEIGHTS AND SUSPENSION HEIGHTS & SPECIFICATIONS.
  - MOUNT EXIT LIGHTS IN DINING ROOM ON BULKHEAD ABOVE DOOR.
  - EMERGENCY LIGHTS, EXIT SIGNS & N.L. (NIGHT LIGHT) SHALL BE SUPPLIED BY HOT LEG, NOT SWITCHED LEG.
  - ALL FIXTURES MARKED "EM" (EMERGENCY) SHALL HAVE (2) LAMPS ON AN UNSWITCHED LEG OF THE ROOM LIGHTING CIRCUIT WITH AN EMERGENCY BATTERY INVERTER BALLAST.
  - ALL FINAL CONNECTIONS ARE MADE BY THE ELECTRICAL CONTRACTOR.
  - ALL WORK & MATERIALS SHALL COMPLY WITH GOVERNING CODES, SAFETY ORDERS & REGULATIONS. CONTRACTOR SHALL OBTAIN & PAY FOR ALL NECESSARY PERMITS, FEES, & INSPECTIONS REQUIRED BY GOVERNING AUTHORITIES.
  - CONTRACTOR PROVIDES CONDUIT FOR LINE & LOW VOLTAGE WIRING, LINE VOLTAGE WIRING SWITCHES, DISCONNECTS, CIRCUIT BREAKERS, FINAL CONNECTIONS, & ITEMS INDICATED.
  - THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN SERVICE ACCESS SPACE IN ACCORDANCE TO MANUFACTURER'S, LOCAL CODE & AUTHORITY REQUIREMENTS.
  - THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL THE HVAC SYSTEM CONTROLS INCLUDING LOW VOLTAGE WIRING.
  - CONTRACTOR SHALL COORDINATE INSTALLATION OF MECHANICAL WORK WITH ALL OTHER TRADES SO AS TO AVOID UNNECESSARY DELAY OR INTERFERENCES. CONTRACTOR TO REVIEW ARCHITECTURAL & EQUIPMENT SHEETS.
  - REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR ALL PENDANT LIGHT LOCATIONS.
  - PROVIDE A MINIMUM #10 AWG CONDUCTORS FOR ALL EMERGENCY CIRCUITS SERVING NIGHT / EMERGENCY LIGHTING (FOR THE ENTIRE CIRCUIT), ON ALL OTHER 120V CIRCUITS OVER 100 FEET, & 277V CIRCUITS OVER 200 FEET.
  - SIGN & AWNING LIGHTING PROVIDED BY MANUFACTURE. G.C. TO PROVIDE ELECTRICAL POWER & HOOK-UP.
  - THE CAPITAL LETTER BESIDE THE LIGHTING SYMBOL INDICATES THE FIXTURE TYPE, REFER TO THE LIGHT SCHEDULE, THIS SHEET, FOR THE LIGHT FIXTURE INFORMATION. THE LOWER CASE LETTER BESIDE THE LIGHTING SYMBOL (WHERE APPLICABLE) DENOTES SWITCHING DESIGNATION. PROVIDE A COMMON SWITCH FOR ALL FIXTURES WITH THE SAME SWITCH DESIGNATION.
  - IF FIRE ALARM IS PROVIDED, AN AUDIBLE & VISUAL ALARM MUST BE PROVIDED IN ALL COMMON AREAS & SHALL BE MOUNTED AT 8' ABOVE THE HIGHEST FLOOR LEVEL WITHIN THE SPACE OR 6' BELOW THE CEILING, WHICHEVER IS LOWER.
  - WHERE NEW FIXTURES, OUTLETS, SWITCHES, DEVICES, ETC. ARE INSTALLED IN EXISTING WALLS OR CEILINGS. REPAIR EXISTING SURFACES TO MATCH ADJACENT FINISH. COORDINATE EXISTING CEILING & WALL REPAIRS WITH THE GENERAL CONTRACTOR.
  - COORDINATE FIXTURE LOCATIONS WITH ARCHITECT'S REFLECTED CEILING PLAN, CEILING CONTRACTOR, BUILDING STRUCTURE, MECHANICAL EQUIPMENT & DUCTWORK LOCATIONS, ETC.
  - ALL FIXTURES IN FOOD PREP AREAS SHALL BE LENSED. PROVIDE NEW PROTECTIVE LENSES AS NEEDED.

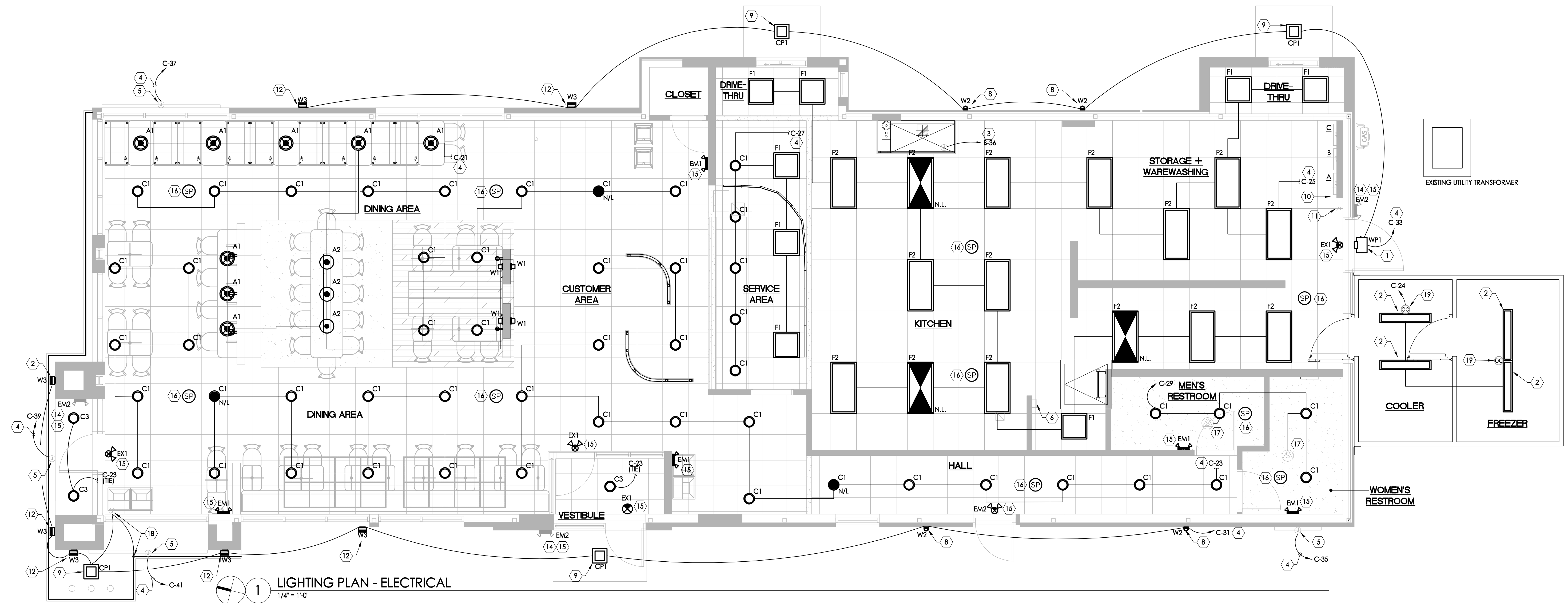
NOTE:  
CONTRACTOR TO VERIFY CEILING TYPE & PROVIDE NECESSARY ACCESSORIES FOR INSTALLATION PRIOR TO ORDERING LIGHT FIXTURES.

NOTE:  
SIDE LIGHT DAYLIGHT AREAS LOCATED IN THE FIRST FLOOR, ABOVE GRADE OF A RESTAURANT ARE EXEMPT FROM DAYLIGHT-RESPONSIVE CONTROL REQUIREMENTS PER 2015 IECC CODE C405.2.3 EXCEPT 3 (NOTE: A RESTAURANT IS CLASSIFIED AS AN A-2 ASSEMBLY GROUP, DEFINED IN SECTION 303.3 OF THE LOCALLY ADOPTED BUILDING CODE)

LIGHTING FIXTURE SCHEDULE										
TYPE	DESCRIPTION	MANUFACTURER	MODEL	HOUSING / MOUNTING	LAMP TYPE	BALLAST / DRIVER	COMMENTS	VOLTS	INPUT WATTS	QTY.
A1	PENDANT	KICHLER	42046 OZ 1	SUSPENDED	SAICO S9578	N/A	-	120	4.5	8
A2	PENDANT	KICHLER	78200 LT 1	SUSPENDED	SAICO S9578	N/A	-	120	4.5	3
C1	LED DOWNLIGHT	CREE	CR6-B25L-27K-12-E26/RC6-GU24 E26 ADAPTER	RECESSED	LED ENGINE	LED DRIVER	WHITE TRIM RING	120	11	51
C3	LED CYLINDER	CREE	CR6-1600L-27K-12-E26/RC6-GU24 E26 ADAPTER	RECESSED	LED ENGINE	LED DRIVER	TRIM-CR51-TRMBKBB-1	120	21	3
CP1	RECESSED CANOPY LIGHT	TRACELIGHT	RC140-4K-WH-SC	RECESSED	LED ENGINE	LED DRIVER	CONTRACTOR TO PROVIDE	120	41	4
F1	LED TROFFER	CREE	C-TR-B-FP22-50L-40K-WH-2	RECESSED	LED ENGINE	LED DRIVER	-	120	40	8
F2	LED TROFFER	CREE	C-TR-B-FP24-50L-40K-WH-2	RECESSED	LED ENGINE	LED DRIVER	-	120	50	15
W1	INTERIOR SCONCE	BESALIGHTING	DARCI 21 #2726 272607-BR	WALL	SAICO SB746	N/A	-	120	40	4
W2	EXTERIOR UP/DOWN SCONCE	SAICO	NUVO62/1143R1*	WALL	3000K CCT LED	LED DRIVER	-	120	20	4
W3	EXTERIOR WALL SCONCE	WESTGATE	LW A-12-CS-XX*	WALL	LED ENGINE	LED DRIVER	-	120	12	7
WP1	LED EXTERIOR WALL PACK	GENERAL ELECTRIC	EW530E3E1401XXXX*	WALL	LED ENGINE	LED DRIVER	-	120	25	1
EX1	COMBINATION EMERGENCY EXIT SIGN	EXITRONIX	VLED-51-WH	UNIVERSAL	WITH UNIT	N/A	MOUNTED AT 10'-0"	120	14	4
EM1	EMERGENCY BATTERY PACK WITH DUAL HEADS	EXITRONIX	LED-90	WALL/CLG	WITH UNIT	N/A	-	120	14	5
EM2	EMERGENCY WP REMOTE TWIN HEAD	EXITRONIX	2RL1-WP-GR*	WALL	WITH UNIT	N/A	TWIN HEADS	120	2	3

- NOTES:
- Call National Account Representative Mr. Kevin Price, E. Sam Jones 1-800-624-9849 for ordering.
  - Call National Account, Hermitage Lighting for ordering: (800) 264-3383 or email Lindsey Sanders lsanders@hermitagelighting.com
  - Call National Account, Regency Lighting for ordering: (800) 284-2024 x5100 or arbys@regencylighting.com
  - Call National Account, Regency Lighting for ordering: (800) 284-2024 x5100 or arbys@regencylighting.com

\*NOTE CONTRACTOR TO VERIFY FINISH/COLOR OF ALL EXTERIOR LIGHTING FIXTURES WITH ARBY'S CONSTRUCTION MANAGER PRIOR TO ORDERING FIXTURES. SEE ARCHITECTURAL DRAWINGS FOR MORE INFORMATION



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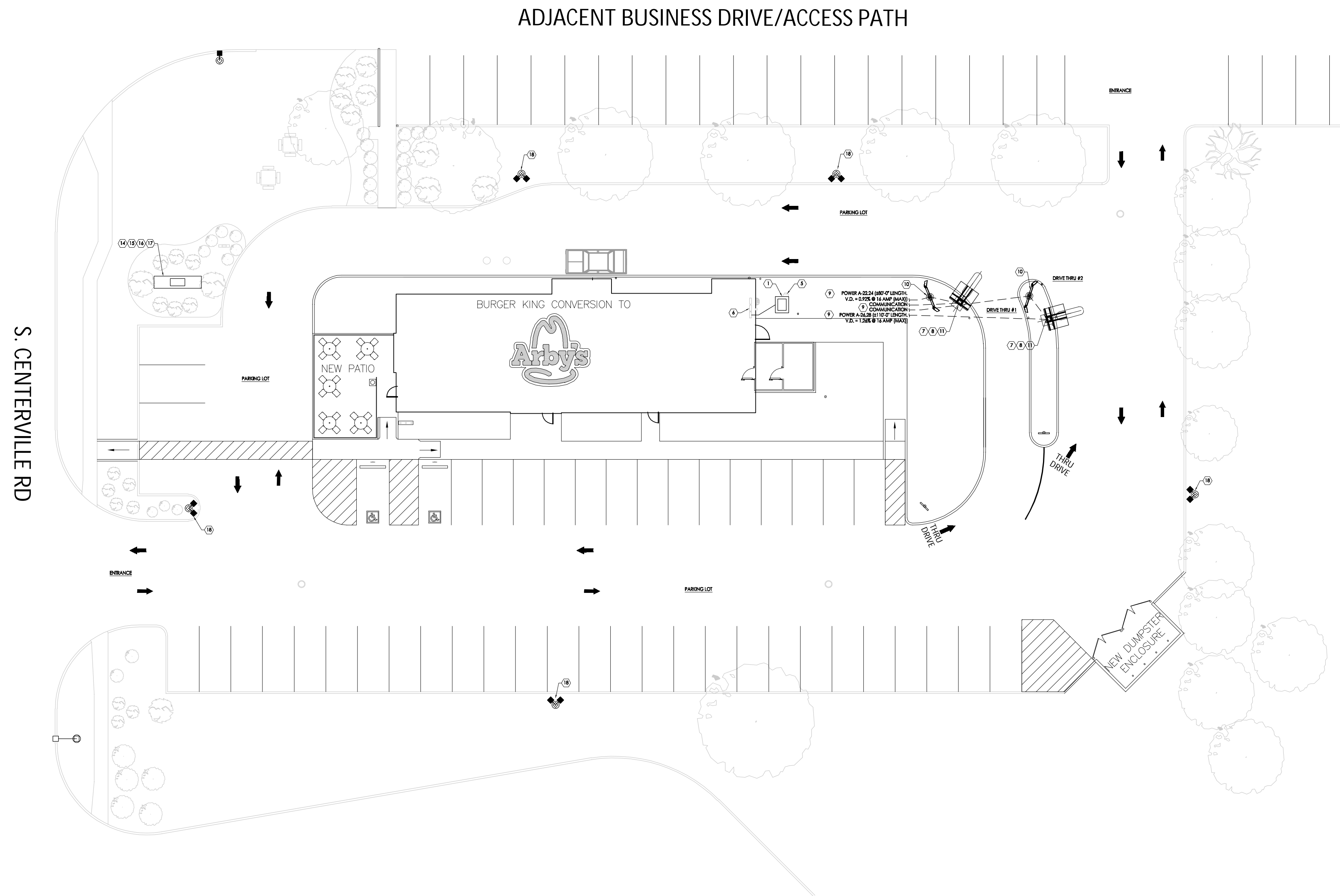
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REV.	DATE	DESCRIPTION

PROJECT NO: 210109  
DRAWN BY: SAH  
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ISSUE DATE: 03/18/22  
**E101**

**ELECTRICAL LIGHTING PLAN**





1 SITE PLAN - ELECTRICAL  
1" = 20'-0"

**GENERAL NOTES**

- A. THE ELECTRICIAN IS RESPONSIBLE FOR ALL TEMPORARY POWER AS NECESSARY.
- B. THE ELECTRICIAN IS RESPONSIBLE FOR ALL FLOOR & WALL PENETRATIONS FOR ELECTRICAL WORK. ALL SUCH OPENINGS SHALL BE FRAMED & REINFORCED.
- C. ELECTRICIAN TO PROVIDE & INSTALL ALL EQUIPMENT NEUTRAL & GROUND WIRING AS REQUIRED.
- D. WHERE BRANCH CIRCUIT HOMERUNS INDICATE WIRE SIZES, THE BRANCH CIRCUIT SHALL BE THAT SIZE WIRE THROUGHOUT, INCLUDING SWITCH LEGS, ETC.
- E. THE ELECTRICIAN SHALL BE OBLIGATED TO VISIT THE JOB SITE PRIOR TO SUBMITTING HIS BID TO ENSURE THAT THE EXISTING SERVICE EQUIPMENT (METER, MAIN DISCONNECT SWITCH, PANELBOARDS, ETC.), ARE CORRECT & COMPLIANT TO THE ADOPTED VERSION OF THE ELECTRICAL & LOCAL GOVERNING CODES. THE CONTRACTOR'S INSPECTIONS SHALL INCLUDE STRUCTURAL MOUNTING OF EQUIPMENT, GROUNDING & WEATHER-PROOFING, ETC.. THE CONTRACTOR WILL NOT BE PAID COMPENSATION FOR HIS FAILURE TO VISIT THE JOB SITE.
- F. IF DRAWINGS ARE INCORRECT FROM ACTUAL SITE CONDITIONS, ELECTRICIAN SHALL NOTIFY ENGINEER(S) & PROVIDE INFORMATION REFLECTING ACTUAL CONDITIONS.
- G. COORDINATE FINAL DESIGN WITH SITE PLAN "C" SHEETS'.
- H. ALL NIGHT LIGHTING, EXIT AND EGRESS EMERGENCY LIGHTING SHALL BE CONNECTED TO LOCAL LIGHTING CIRCUIT AHEAD OF SWITCH LEG.
- I. CONTRACTOR PROVIDE ALL MATERIALS TO PROVIDE A COMPLETE INSTALLATION AND WORKMANSHIP IN ACCORDANCE WITH THE CURRENT ADOPTED EDITION OF THE N.E.C., STATE AND LOCAL CODES.
- J. ALL FINAL CONNECTIONS ARE MADE BY THE ELECTRICAL CONTRACTOR.
- K. ALL WORK & MATERIALS SHALL COMPLY WITH GOVERNING CODES, SAFETY ORDERS & REGULATIONS. CONTRACTOR SHALL OBTAIN & PAY FOR ALL NECESSARY PERMITS, FEES, & INSPECTIONS REQUIRED BY GOVERNING AUTHORITIES.
- L. CONTRACTOR PROVIDES CONDUIT FOR LINE & LOW VOLTAGE WIRING, LINE VOLTAGE WIRING SWITCHES, DISCONNECTS, CIRCUIT BREAKERS, FINAL CONNECTIONS, & ITEMS INDICATED.
- M. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN SERVICE ACCESS SPACE IN ACCORDANCE TO MANUFACTURER'S LOCAL CODE & AUTHORITY REQUIREMENTS.
- N. SIGN & AWNING LIGHTING PROVIDED BY MANUFACTURER, G.C. TO PROVIDE ELECTRICAL POWER & HOOK-UP.
- O. THE CAPITAL LETTER BESIDE THE LIGHTING SYMBOL INDICATES THE FIXTURE TYPE. REFER TO THE LIGHT SCHEDULE. FOR THE LIGHT FIXTURE INFORMATION, THE LOWER CASE LETTER BESIDE THE LIGHTING SYMBOL, (WHERE APPLICABLE) DENOTES SWITCHING DESIGNATION. PROVIDE A COMMON SWITCH FOR ALL FIXTURES WITH THE SAME SWITCH DESIGNATION.

**PLAN KEYED NOTES:** #

- 1. APPROXIMATE LOCATION OF EXISTING UTILITY PAD MOUNTED TRANSFORMER. COORDINATE EXACT LOCATION IN FIELD.
- 2. NOT USED.
- 3. NOT USED.
- 4. CONTRACTOR TO PROVIDE/COORDINATE THE INSTALLATION OF NEW U.G. 120/208V, 3PH, 4W SECONDARY ELECTRICAL SERVICE CONDUCTORS FOR EXISTING TRANSFORMER TO NEW PANEL "A". SEE CIVIL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION. COORDINATE ANY NEW SERVICE FEEDER WORK WITH LOCAL UTILITY AND N.E.C. DIRECTION.
- 5. APPROXIMATE LOCATION OF EXISTING ELECTRICAL SERVICE METER. SEE SHEET E4.1 FOR ADDITIONAL INFORMATION.
- 6. INTERIOR BRANCH PANELS AND LIGHTING CONTROL. ROUTE CONDUIT UNDER-GRADE AND STUB-UP BELOW LIGHTING BRANCH PANEL AND EXTEND INTO PANEL.
- 7. GENERAL REQUIREMENTS FOR ORDER CONFIRMATION BOARD (NOTE, FIELD VERIFY, DEVICE REQUIREMENTS MAY VARY AT DIFFERENT SITES):  
ONE 1" DATA CONDUIT TO MANAGERS OFFICE (WITH PULLWIRE)  
TWO 1" CONDUITS TO DRIVE THRU COMMUNICATIONS SYSTEM (WITH PULLWIRE)  
ONE 2#10, 1#10G, IN 3/4" CONDUIT TO ELECTRIC PANEL (SEE KEYED NOTE #6)
- 8. GENERAL REQUIREMENTS FOR MENUBOARD (NOTE, FIELD VERIFY, DEVICE REQUIREMENTS MAY VARY AT DIFFERENT SITES):  
ONE 1" DATA CONDUIT TO DRIVE-THRU WINDOW COMMUNICATIONS (WITH PULLWIRE)  
ONE 2#10, 1#10G, IN 3/4" CONDUIT TO ELECTRIC PANEL (SEE KEYED NOTE #6)
- 9. CONTRACTOR TO VERIFY NEW DRIVE THRU SYSTEM POWER AND COMMUNICATIONS IS SUITABLE FOR INSTALLATION AT SITE, PRIOR TO ANY WORK. REFER TO INSTALLATION GUIDELINES AND KEYED NOTES #7 AND #8.
- 10. ORDER AND MENU BOARD SHALL BE ON A NON-SWITCH (ALWAYS ON) CIRCUIT. CANOPY LIGHTING-ONLY SHALL BE ON A TIMECLOCK CONTROLLED CIRCUIT.
- 11. NEW CANOPY, FIELD VERIFY EXACT REQUIREMENTS & LOCATION, COORDINATE INSTALLATION WITH GENERAL CONTRACTOR, OWNER & SITE DRAWINGS. SET CONDUITS IN-PLACE PRIOR TO "FORMS" BEING POURED, PROVIDE STUB-UPS UNDER PROPOSED CANOPY POST. COORDINATE WITH SITE DETAIL DRAWINGS. MAKE FINAL CONNECTIONS.
- 12. NOT USED.

**PLAN KEYED NOTES (CONTINUED):** #

- 13. NOT USED.
- 14. EXISTING SITE Pylon/MONUMENT SIGN TO BE REWORKED BY SIGN VENDOR. SIGN LOCATION AND SIGN POWER SHOWN FOR REFERENCE. SIGNAGE UNDER SEPARATE PERMIT. CONTRACTOR TO DEMO EXISTING Pylon CIRCUIT BACK TO A SUITABLE LOCATION FOR EXTENSION TO NEW SERVING ELECTRICAL PANEL. PROVIDE/EXTEND/RE-CIRCUIT EXISTING Pylon SIGN TO CIRCUIT A-36 (MATCH EXISTING CONDUIT/CONDUCTORS). PROVIDE NEW BREAKER (MATCH EXISTING) IN SERVING PANEL AND MAKE ALL FINAL CONNECTIONS. IF EXISTING Pylon CIRCUIT CAN NOT BE REUSED, CONTRACTOR TO PROVIDE ALL NEW BRANCH CIRCUIT (BREAKER, CONDUIT, CONDUCTORS) FOR Pylon SIGN, AS NECESSARY. NEW Pylon BRANCH CIRCUIT SHALL BE PROVIDED/INSTALLED IN ACCORDANCE WITH THE CURRENT LOCALLY ADOPTED VERSION OF THE ELECTRICAL CODE. CONTRACTOR TO DETERMINE ROUTING/TRENCHING OF CONDUIT (FROM SERVING PANEL TO Pylon SIGN) IN FIELD (NOTE: CONTRACTOR TO ADJUST CONDUCTOR SIZES TO ACCOUNT FOR VOLTAGE DROP). CONTRACTOR TO ROUTE Pylon SIGN CIRCUIT THRU NEW AUTOMATIC LIGHTING CONTROL SYSTEM. PROVIDE ALL NECESSARY DEVICES AND MAKE ALL FINAL CONNECTIONS. AS REQUIRED FIELD VERIFY ALL UTILITIES PRIOR TO START OF WORK/TRENCHING. COORDINATE CONSTRUCTION OF PROPOSED WORK WITH LANDLORD, ARBY'S CONSTRUCTION MANAGER & SERVING UTILITY COMPANY IN FIELD TO AVOID DAMAGE/CONFLICTS (INCLUDING ROUTING OF CONDUITS THROUGHOUT SITE).
- 15. FURNISH AND INSTALL IF NOT EXISTING, (1) 20A, 125V, GROUND-FAULT INTERRUPTER (GFCI) DUPLEX RECEPTACLE WITH A STEEL WEATHER-PROOF IN-USE COVER, FOR SERVICE. MOUNT ON OR ADJACENT TO SIGN. COORDINATE WITH SIGN MANUFACTURER.
- 16. FURNISH AND INSTALL IF NOT EXISTING, 20 AMP WEATHERPROOF TOGGLE SWITCH FOR SIGN DISCONNECT SWITCH. VERIFY DISCONNECT SWITCH MOUNTING LOCATION WITH SIGN VENDOR AND MAKE FINAL CONNECTIONS TO SIGN.
- 17. AS NEEDED, STUB UP UNDERGROUND CONDUIT AND INSTALL A WEATHERPROOF J-BOX WITH GASKETED BLANK COVER PLATE. EXTEND CIRCUITS IN SEALTITE CONDUIT FROM J-BOX TO RECEPTACLE AND SIGN DISCONNECT SWITCH.
- 18. EXISTING POLE MOUNTED AREA SITE LIGHTING FIXTURE (REFER TO CIVIL/SITE LIGHTING PLANS FOR ADDITIONAL/REQUIREMENTS INFORMATION). CONTRACTOR TO FIELD VERIFY ELECTRICAL REQUIREMENTS EXISTING AREA LIGHTING. FIELD VERIFY & REUSE EXISTING CIRCUITS (CONDUITS/CONDUCTORS) FROM EXISTING SITE LIGHTING POLES, WHERE POSSIBLE. PROVIDE/EXTEND EXISTING CIRCUIT(S) TO NEW CIRCUIT BREAKER(S) IN NEW ELECTRICAL PANEL(S), IF EXISTING SITE LIGHTING CIRCUITS CAN NOT BE REUSED, CONTRACTOR TO PROVIDE ALL NEW BRANCH CIRCUIT(S) (BREAKERS, CONDUIT, CONDUCTORS) FOR SITE LIGHTING, AS NECESSARY. SITE LIGHTING BRANCH CIRCUITS (BREAKERS, CONDUITS & CONDUCTORS) SHALL BE PROVIDED/INSTALLED IN ACCORDANCE WITH THE CURRENT LOCALLY ADOPTED VERSION OF THE ELECTRICAL CODE. CONTRACTOR TO DETERMINE ROUTING/TRENCHING OF CONDUITS (FROM SERVING PANEL TO SITE LIGHTING POLES) IN FIELD & TOTAL WATTAGE CONNECTED ON EACH BRANCH CIRCUIT (NOTE: CONTRACTOR TO ADJUST CONDUCTOR SIZES TO ACCOUNT FOR VOLTAGE DROP. TOTAL CONNECTED LOAD ON EACH SITE LIGHTING BRANCH CIRCUIT SHALL NOT EXCEED 2,912 VA ON A 208-VOLT 20-AMP, SINGLE-PHASE BRANCH CIRCUIT OR 1,600 VA ON A 120-VOLT 20-AMP, SINGLE-PHASE BRANCH CIRCUIT (PROVIDE ADDITIONAL BRANCH CIRCUITS AS NEEDED). CONTRACTOR TO ROUTE SITE LIGHTING CIRCUITS THRU NEW AUTOMATIC LIGHTING CONTROL SYSTEM, AS NECESSARY. FIELD VERIFY ALL UTILITIES PRIOR TO START OF WORK/TRENCHING. COORDINATE CONSTRUCTION OF PROPOSED WORK WITH LANDLORD, ARBY'S CONSTRUCTION MANAGER & SERVING UTILITY COMPANY IN FIELD TO AVOID DAMAGE/CONFLICTS (INCLUDING ROUTING OF CONDUITS THROUGHOUT SITE).

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**ELECTRICAL SITE PLAN**

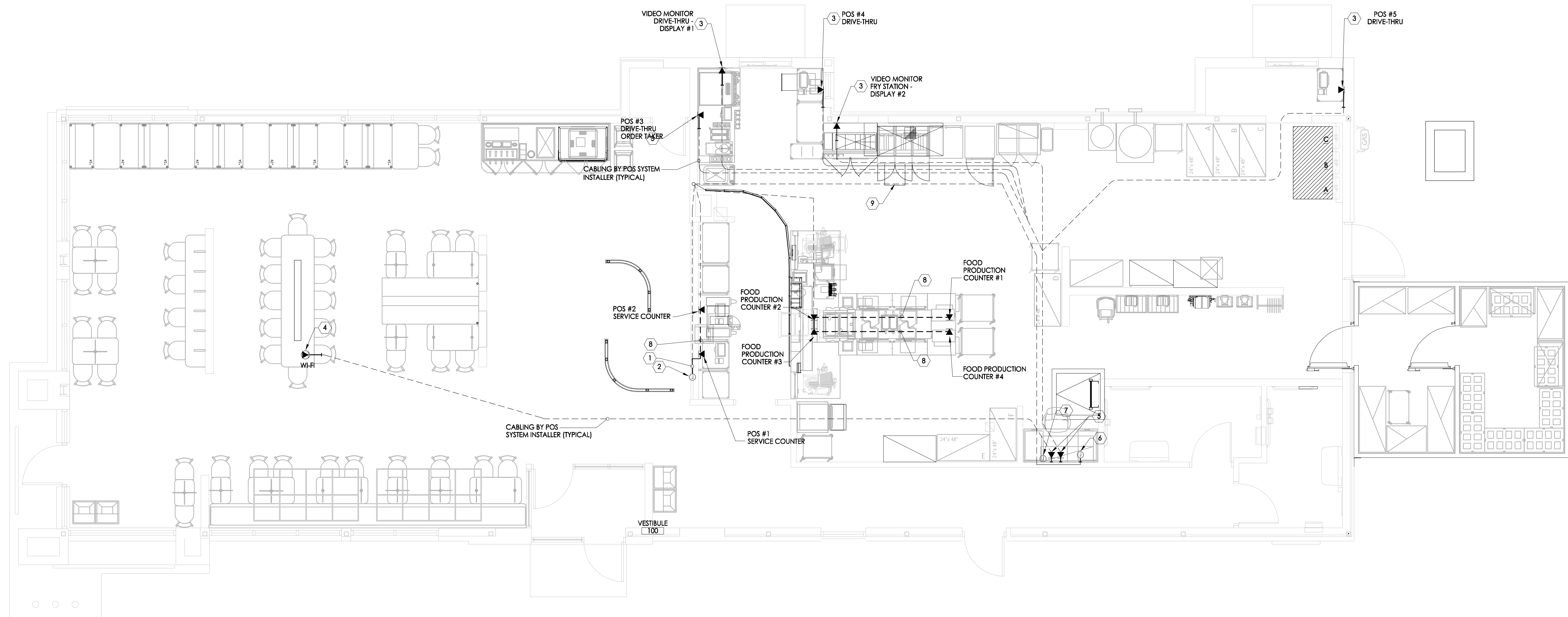
**E102**

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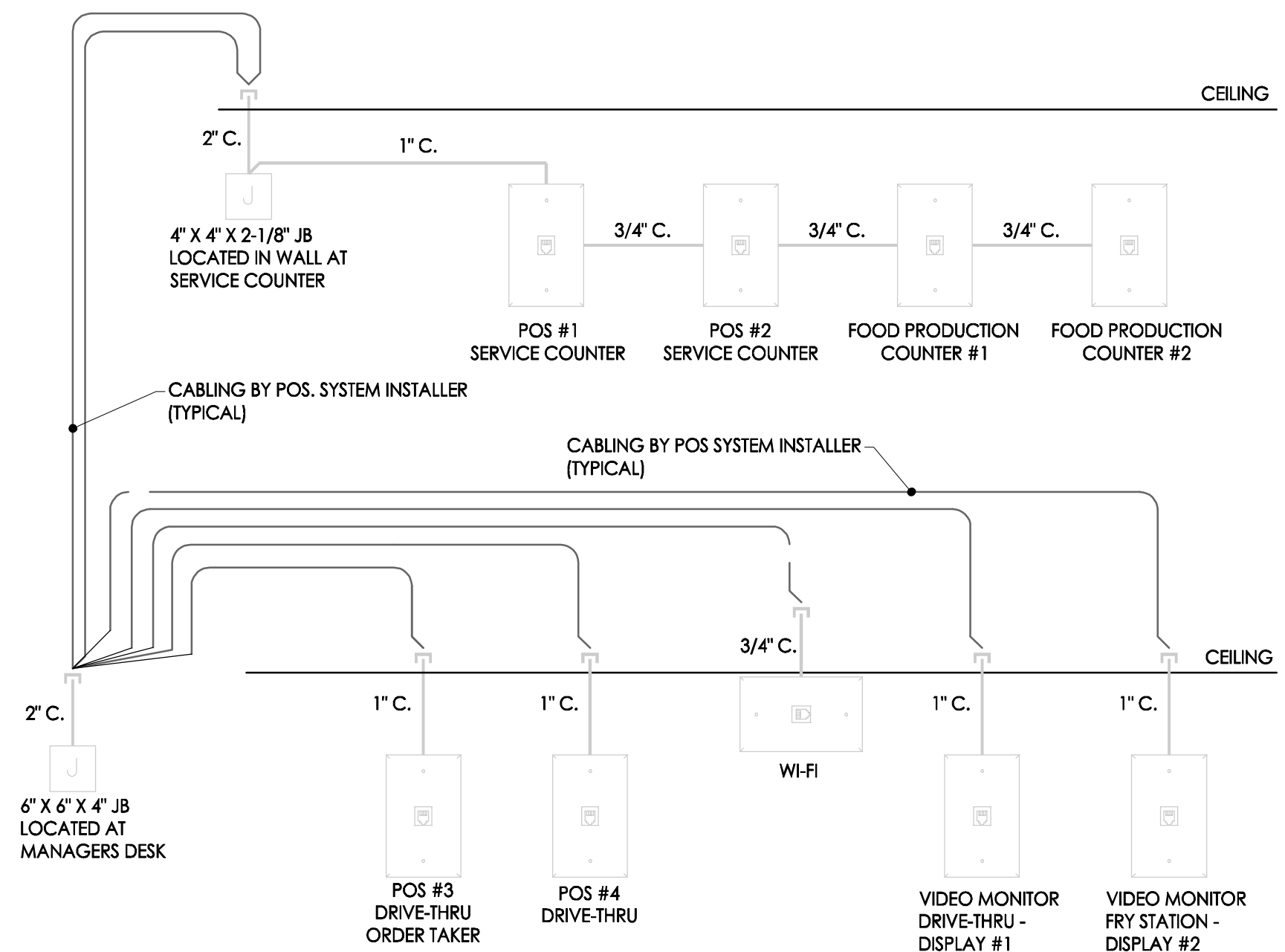
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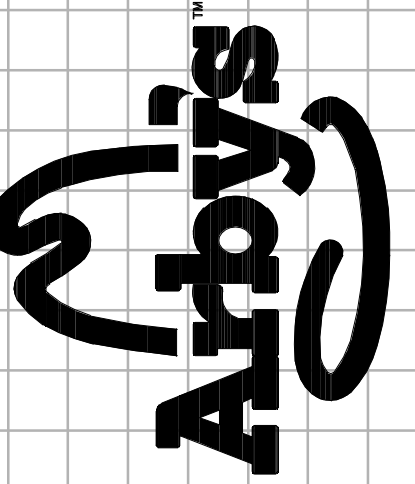


2 P.O.S. SYSTEM CONDUIT/CABLING SCHEMATIC  
N.T.S.



**CODED NOTES:** #

1. PROVIDE 1" CONDUIT FROM WALL JUNCTION BOX.
2. PROVIDE JUNCTION BOX AND 2" CONDUIT FOR POS SYSTEM. COORDINATE WITH POS INSTALLER PRIOR TO ROUGH-IN. SEE SCHEMATIC THIS SHEET.
3. PROVIDE JUNCTION BOX AND 1" CONDUIT FOR POS SYSTEM. COORDINATE WITH POS INSTALLER PRIOR TO ROUGH-IN. SEE CONDUIT/CABLING SCHEMATIC THIS SHEET FOR MORE INFORMATION.
4. PROVIDE JUNCTION BOX WITH PULL STRING AND (1) "898C" CONNECTOR ABOVE CEILING. SECURE TO LOBBY SIDE OF TRUSS ABOVE DECOR WALL FOR FUTURE WIFI. COORDINATE EXACT LOCATION WITH GENERAL CONTRACTOR.
5. PROVIDE JUNCTION BOX AND (2) 3/4" EMPTY CONDUITS WITH PULLSTRING TO ABOVE ACCESSIBLE CEILING FOR (2) "RJ11" PHONE JACKS (BY OTHERS).
6. PROVIDE EMPTY 2" CONDUIT WITH PULLSTRING FROM 6"x6"x4" JUNCTION BOX TO ABOVE ACCESSIBLE CEILING FOR POS SYSTEM CABLES.
7. PROVIDE JUNCTION BOX FOR PHONE/DATA PUNCH PANEL LOCATED BELOW ITB.
8. PROVIDE 3/4" CONDUIT RUN IN HALF WALL.
9. PROVIDE CONDUIT ABOVE CEILING BACK TO MANAGERS DESK.

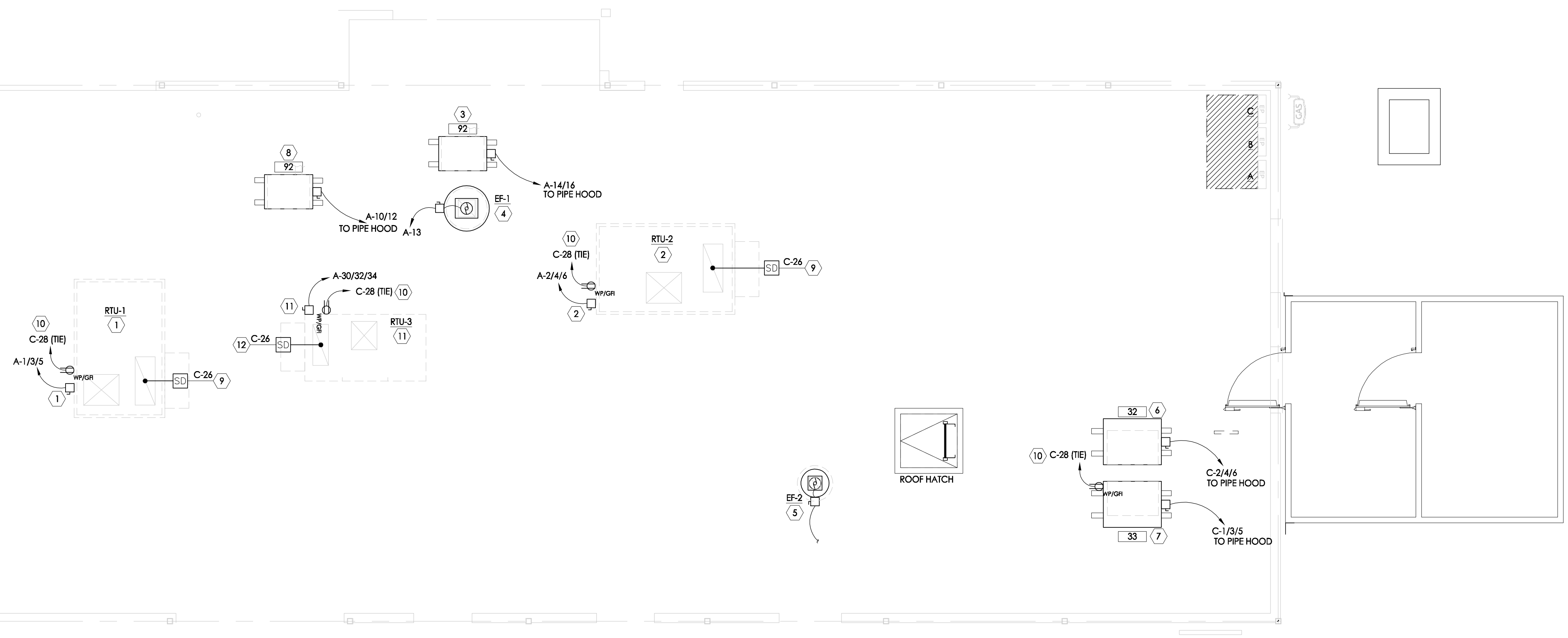


REV	DATE	DESCRIPTION

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ELECTRICAL P.O.S. SYSTEMS PLAN

**ROOF PLAN KEYED NOTES: #**

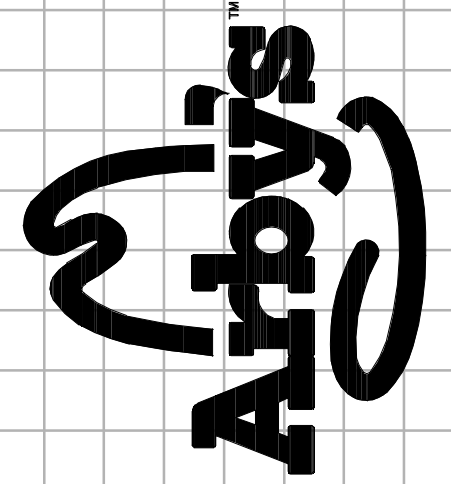
1. EXISTING RTU-1: 29.7 MCA, 208V-3PH, 50A/3P BREAKER THRU FACTORY SUPPLIED DISCONNECT TO UNIT. RE-CIRCUIT TO NEW PANEL AS INDICATED (PROVIDE/EXTEND EXISTING BRANCH CIRCUIT AS REQUIRED.) VERIFY PROPER ELECTRICAL OPERATION AND CODE COMPLIANCE.
2. EXISTING RTU-2: 47.9 MCA, 208V-3PH, 70A/3P BREAKER THRU FACTORY SUPPLIED DISCONNECT TO UNIT. RE-CIRCUIT TO NEW PANEL AS INDICATED (PROVIDE/EXTEND EXISTING BRANCH CIRCUIT AS REQUIRED.) VERIFY PROPER ELECTRICAL OPERATION AND CODE COMPLIANCE.
3. DRIVE-THRU BEVERAGE STATION ICE MAKER CONDENSING UNIT: SEE ELECTRICAL EQUIPMENT SCHEDULE ON SHEET E501 FOR ELECTRICAL LOAD INFORMATION. PROVIDE (2) #12, #12G IN 3/4" CONDUIT FROM 20A/2P BREAKER THROUGH 30A/2P NON-FUSED NEMA 3R DISC SWITCH TO UNIT. MAKE FINAL CONNECTION.
4. EF-1: PROVIDE (2) #12, #12G IN 3/4" CONDUIT THROUGH HOOD MASTER CONTROL PANEL FOR FAN CONTROL TO FACTORY SUPPLIED DISCONNECT AND TERMINATE IN UNIT. SEE SHEET E201 FOR COORDINATION.
5. EF-2: FRACTIONAL HP, 120V, ROUTE CIRCUIT TO KITCHEN LIGHTING CIRCUIT TO OPERATE WHENEVER RESTAURANT IS IN USE. SEE SHEET E501 FOR CIRCUIT INFORMATION.
6. 32 - WALK-IN FREEZER CONDENSING UNIT: SEE ELECTRICAL EQUIPMENT SCHEDULE ON SHEET E501 FOR ELECTRICAL LOAD INFORMATION. PROVIDE (3) #10, #10G IN 3/4" CONDUIT FROM 30A/3P BREAKER THROUGH UNIT MOUNTED 30A/3P FUSED NEMA 3R DISC SWITCH TO UNIT. MAKE FINAL CONNECTION.
7. 33 - WALK-IN COOLER CONDENSING UNIT: SEE ELECTRICAL EQUIPMENT SCHEDULE ON SHEET E501 FOR ELECTRICAL LOAD INFORMATION. PROVIDE (3) #12, #12G IN 3/4" CONDUIT FROM 20A/3P BREAKER THROUGH UNIT MOUNTED 30A/3P NON-FUSED NEMA 3R DISC SWITCH TO UNIT. MAKE FINAL CONNECTION.
8. BEVERAGE STATION ICE MAKER CONDENSING UNIT: SEE ELECTRICAL EQUIPMENT SCHEDULE ON SHEET E5.1 FOR ELECTRICAL LOAD INFORMATION. PROVIDE (2) #12, #12G IN 3/4" CONDUIT FROM 20A/2P BREAKER THROUGH 30A/2P NON-FUSED NEMA 3R DISC SWITCH TO UNIT. MAKE FINAL CONNECTION.
9. EXISTING SMOKE DUCT DETECTOR (WITHIN UNIT). E.C. TO FIELD VERIFY UPON ACTIVATION, DETECTOR WILL SHUT DOWN RTUS. COORDINATE WITH MECHANICAL CONTRACTOR. E.C. TO CIRCUIT SMOKE DUCT DETECTOR AS INDICATED & MAKE ALL FINAL CONNECTIONS (AS NECESSARY). PROVIDE DUCT DETECTOR CIRCUIT BREAKER WITH HANDLE LOCK-ON CLIP & INDICATE BREAKER FOR USE. REPLACE IF NON-FUNCTIONING.
10. FIELD VERIFY THAT AT LEAST (1) 120V, GFCI RECEPTACLE IS LOCATED WITHIN 25'-0" (MAXIMUM) OF ALL EQUIPMENT THAT REQUIRES MAINTENANCE. PROVIDE (2) ADDITIONAL ROOFTOP RECEPTACLES AS NEEDED. PROVIDE A NEW GFCI BRANCH BREAKER IN PANEL (IF NONE EXISTS). SEE DEMOLITION SHEETS FOR PREVIOUS LOCATION. MOUNT AT DEDICATED SPACE ON UNIT.
11. NEW RTU-3: 20 MCA (19.4 FLA), 208V-3PH. PROVIDE (3) #10, #10G IN 1" CONDUIT FROM 25A/3P BREAKER THRU FACTORY SUPPLIED DISCONNECT TO UNIT. MAKE FINAL CONNECTION.
12. NEW SMOKE DUCT DETECTOR (WITHIN UNIT). E.C. TO FIELD VERIFY UPON ACTIVATION, DETECTOR WILL SHUT DOWN RTUS. COORDINATE WITH MECHANICAL CONTRACTOR. E.C. TO CIRCUIT SMOKE DUCT DETECTOR AS INDICATED & MAKE ALL FINAL CONNECTIONS (AS NECESSARY). PROVIDE DUCT DETECTOR CIRCUIT BREAKER WITH HANDLE LOCK-ON CLIP & INDICATE BREAKER FOR USE.



**1** ROOF PLAN - ELECTRICAL  
1/4" = 1'-0"

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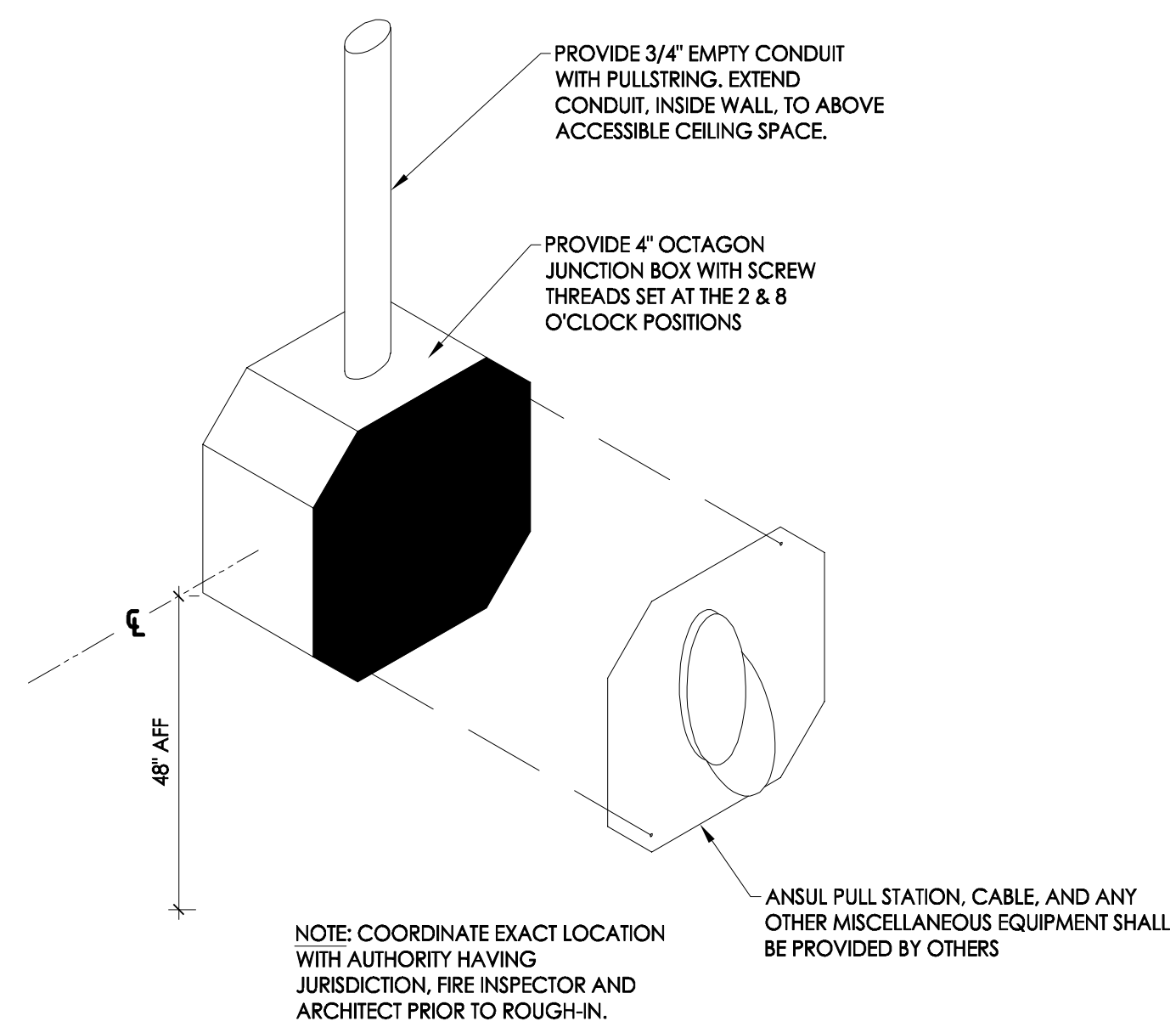
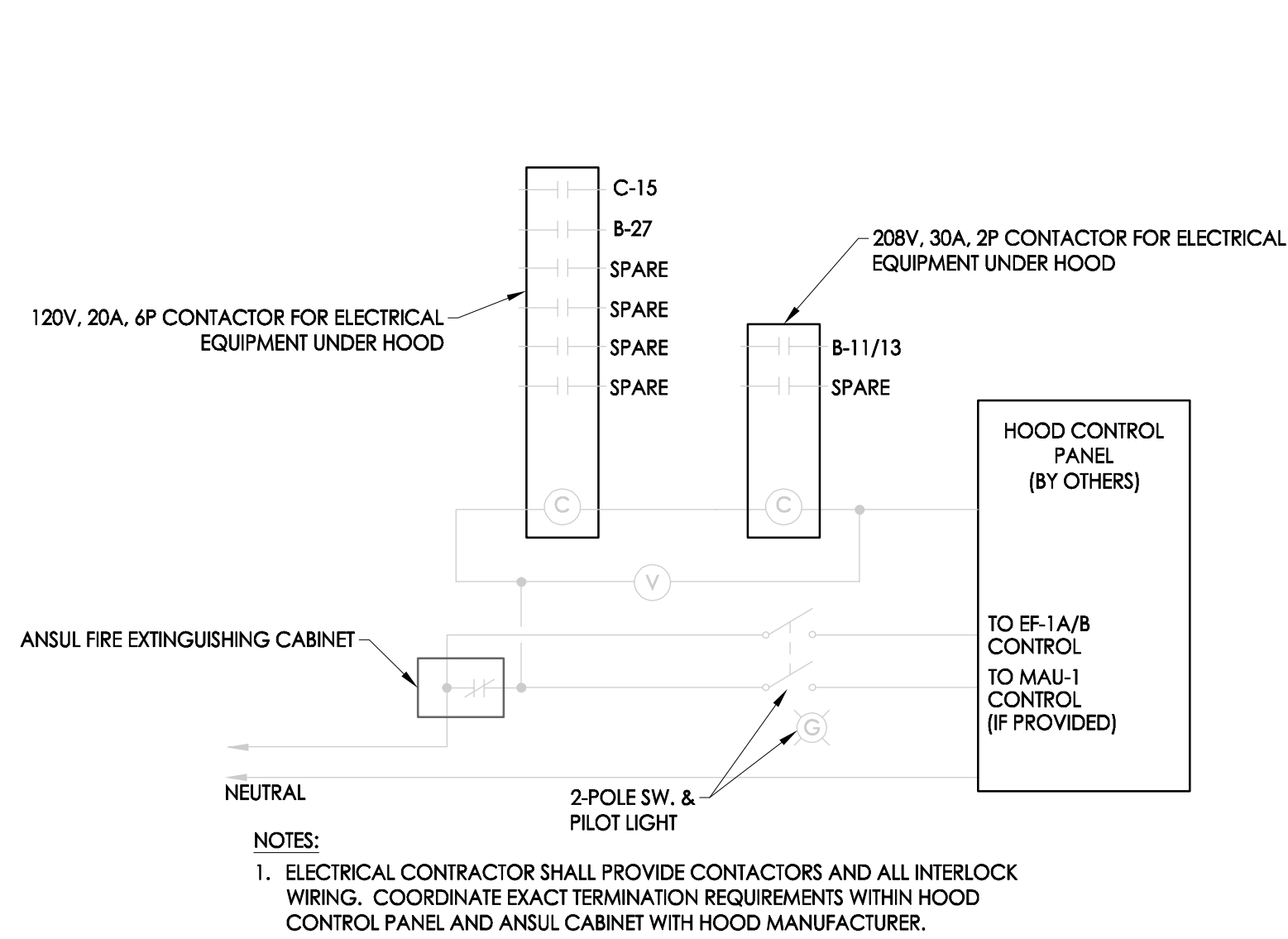
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**E301**

**ELECTRICAL PLAN ROOF**

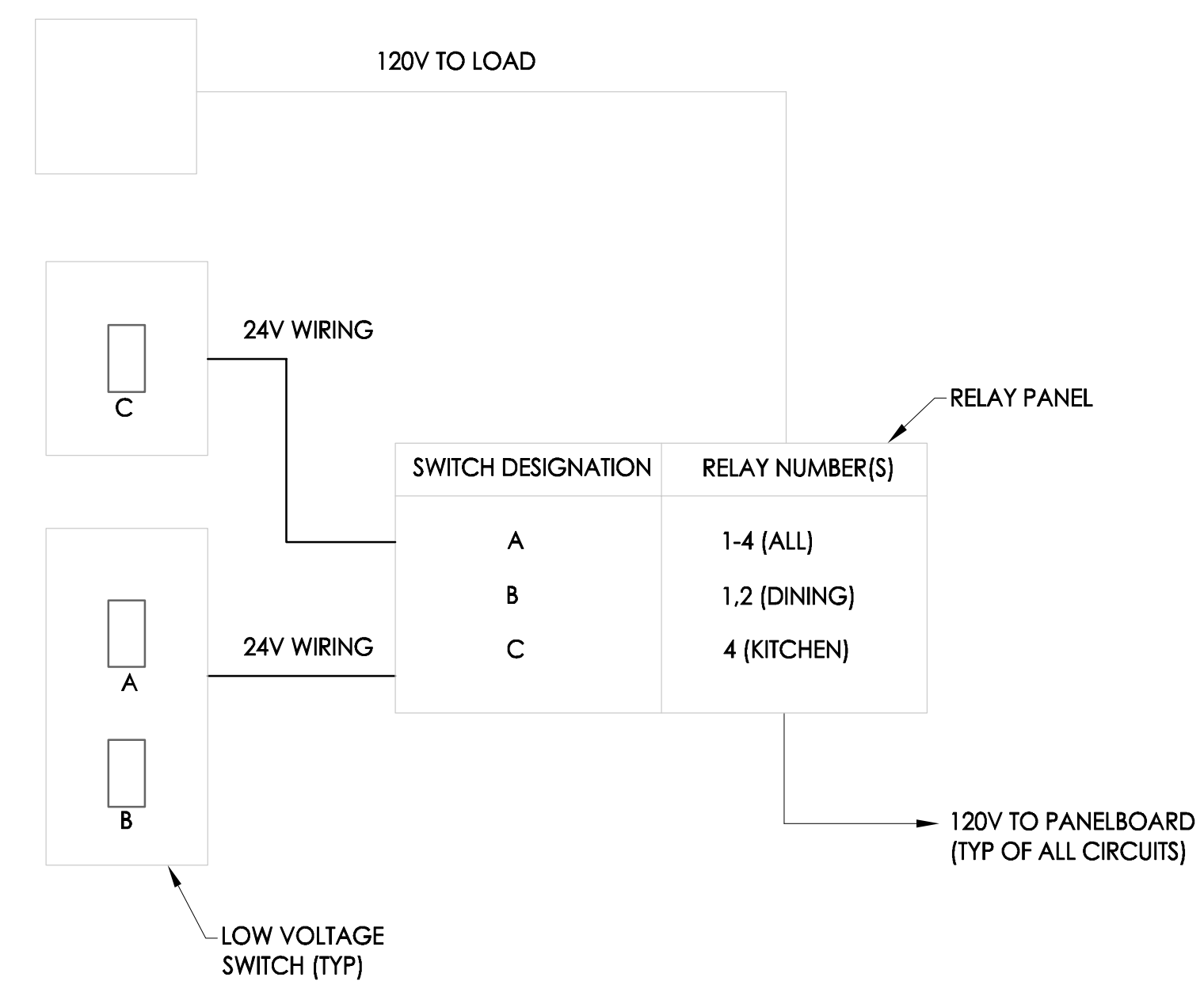




**LIGHTING CONTROL PANEL SCHEDULE**

RELAY	CIRCUIT NUMBER	AREA CONTROLLED	CONTROL	VOLTS
1	C-21	DINING LIGHTING	LVS/TC	120
2	C-23	DINING LIGHTING	LVS/TC	120
3	C-25	KITCHEN LIGHTING/EF-2	LVS/TC	120
4	C-27	SERVICE LIGHTING	LVS/TC	120
5	C-31	EXTERIOR LIGHTING	TC/PC	120
6	C-33	EXTERIOR LIGHTING	TC/PC	120
7	C-35	EXTERIOR SIGNAGE	TC	120
8	C-37	EXTERIOR SIGNAGE	TC	120
9	C-39	EXTERIOR SIGNAGE	TC	120
10	C-41	EXTERIOR SIGNAGE	TC	120
11	C-16	SHOW WINDOW	TC	120
12	A-21,23	SITE LIGHTING	TC/PC	208
13	A-25,27	SITE LIGHTING	TC/PC	208
14	A-29,31	SITE LIGHTING	TC/PC	208
15		SPARE		
16		SPARE		
17		SPARE		

TC = TIME CLOCK  
PC = PHOTOCELL  
LVS = LOW VOLTAGE SWITCH



**4 SHUNT TRIP WIRING DIAGRAM**  
N.T.S.

**3 ANSUL PULL STATION**  
N.T.S.

**2 LIGHTING CONTROL WIRING DIAGRAM**  
N.T.S.

**GROUNDING ELECTRODE DETAIL GENERAL NOTES:**

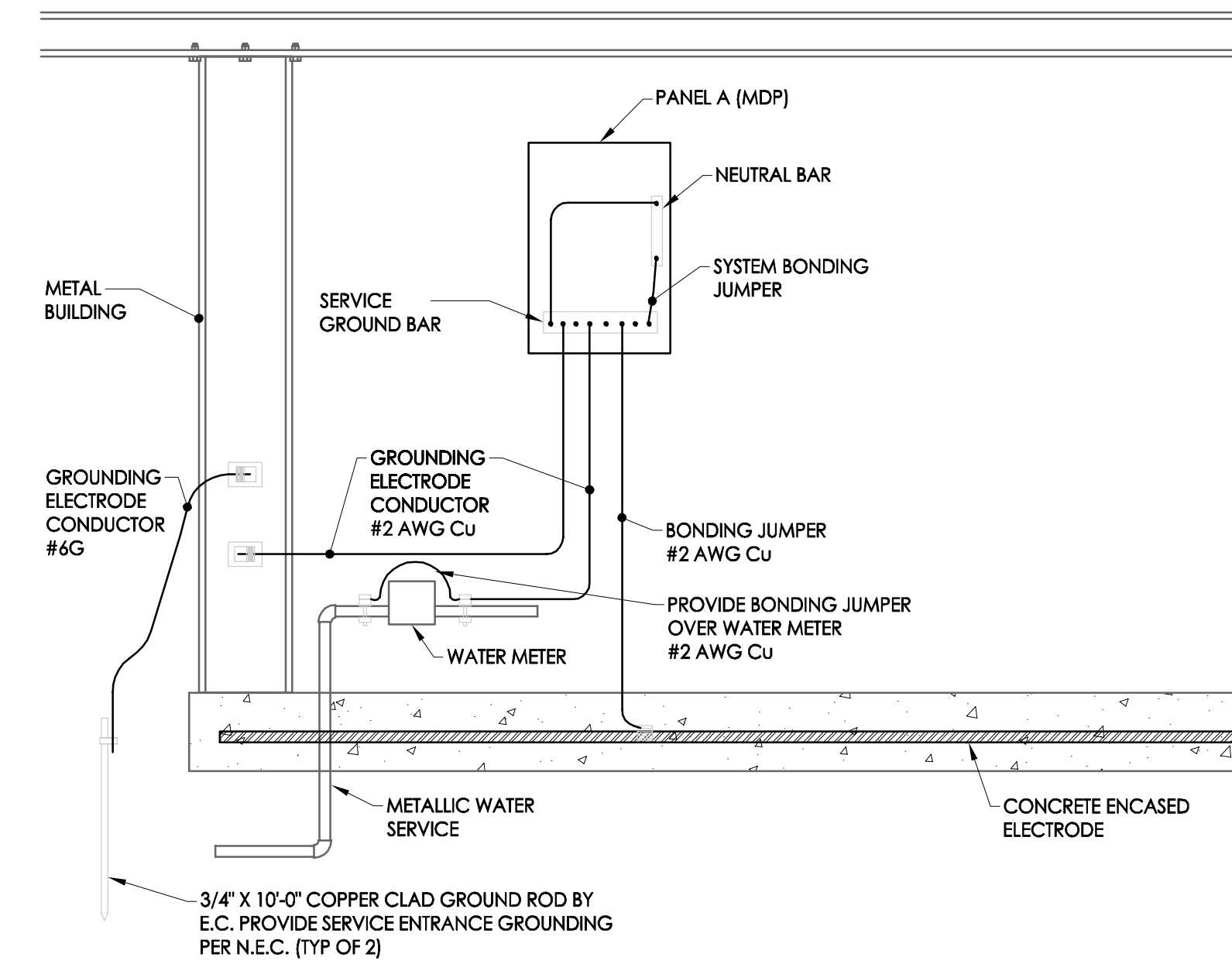
A. ALL GROUNDING ELECTRODES PRESENT SHALL BE BONDED TOGETHER.

B. ALL GROUNDING ELECTRODE CONDUCTORS SHALL BE SIZED PER NEC TABLE 250.66 UNLESS NOTED OTHERWISE.

C. GROUND RING SHALL BE #2 CU MINIMUM WITH FULL SIZE BONDING JUMPER.

D. ALL BONDING JUMPERS SHALL BE SIZED PER NEC TABLE 250.122 UNLESS NOTED OTHERWISE.

F. THIS DETAIL SHOWS ALL SUPPLEMENTAL GROUNDING METHODS. PER NEC 250.52(A)(1) ONE OF THE METHODS SHOWN MUST SUPPLEMENT BONDING TO WATER METER.



**5 GROUNDING ELECTRODE SYSTEM DETAIL**  
N.T.S.

**GENERAL ONE LINE NOTES:**

A. PARALLEL FEEDER CONDUCTORS SHALL BE CUT TO EXACTLY THE SAME LENGTHS AND SHALL BE FROM THE SAME FACTORY RUN. ALL CONNECTIONS FOR SAME SHALL BE TORQUED TO IDENTICAL VALUES.

B. EXTERIOR ELECTRICAL WORK SHALL NOT ONLY BE WEATHERPROOF AND WATER-TIGHT, BUT SHALL ALSO BE RUST-RESISTANT.

C. CONDUCTORS BELOW GRADE OR SUBJECT TO MOISTURE SHALL BE "XHHW-2".

D. PROVIDE FACTORY SERIES COORDINATION FOR ALL CIRCUIT BREAKERS (INCLUDING ALL BRANCH BREAKERS) RELATIVE TO "UPSTREAM" BREAKERS, SO THAT ONLY THE BREAKER CLOSEST IN THE CIRCUIT TO THE LOAD TRIPS UPON AN OVERLOAD OR FAULT CONDITION.

F. GROUNDING ELECTRODE CONDUCTORS SHALL BE PROVIDED IN STRICT COMPLIANCE WITH N.E.C., INCLUDING N.E.C. ARTICLE 250 AND TABLE 250-66.

G. EQUIPMENT GROUNDING CONDUCTORS SHALL BE PROVIDED IN STRICT COMPLIANCE WITH N.E.C., INCLUDING N.E.C. ARTICLE 250 AND TABLE 250-122. THESE CONDUCTORS MAY NOT BE INDICATED ON RISERS OR SINGLELINES, BUT SHALL BE PROVIDED UNDER BASE BID NEVERTHELESS.

H. WORKING CLEARANCES SHALL BE PROVIDED FOR ALL ELECTRICAL EQUIPMENT (SWITCHBOARDS, PANELBOARDS, TRANSFORMERS, STARTERS, DISCONNECTS, ETC.) AS APPLICABLE IN STRICT COMPLIANCE WITH N.E.C. CHAPTER 1, PART 8, SECTION 110-26(O). LOCATIONS SHOWN ON FLOOR PLANS ARE SCHEMATIC AND DIAGRAMMATIC IN NATURE. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING COMPLIANCE WITH THE ABOVE N.E.C. REFERENCE. THIS REQUIREMENT APPLIES TO EQUIPMENT ON FLOOR PLANS AS WELL AS TO EQUIPMENT SHOWN ON RISER.

I. HOLD ALL NEW OVERHEAD ELECTRICAL WORK AS TIGHT AS POSSIBLE TO THE BOTTOM OF THE OVERHEAD STRUCTURE. LOCATE ANY RELATED PULLBOXES SO THAT THEY WILL BE FULLY ACCESSIBLE AFTER ALL CONSTRUCTION WORK IS COMPLETE. AS WITH ALL WORK, COORDINATE IN ADVANCE WITH ALL OTHER TRADES.

J. ALL PANELS HAVE NEMA 1 ENCLOSURES UNLESS OTHERWISE NOTED.

K. ALL PANELS ARE FLUSH MOUNTED UNLESS OTHERWISE NOTED.

L. NEW ELECTRICAL PANELBOARD FRAME AND BREAKER A.I.C. RATINGS TO MATCH EXISTING PANELBOARD AND BREAKER A.I.C. RATINGS.

M. ELECTRICAL CONTRACTOR TO VERIFY PANEL LOADING WITH NEW CIRCUITS AND INSTALL NEW CIRCUIT DESCRIPTION CARDS.

**CONDUCTOR NOMENCLATURE**

D250-4A\*

FEEDER SIZED TO COMPENSATE FOR VOLTAGE DROP

SPECIAL - ISOLATED GROUND (I)

CONDUCTOR MATERIAL COPPER (C) VS. ALUMINUM (A)

NUMBER OF CONDUCTORS

CONDUCTOR AMPACITY

GROUND SIZED FOR DERIVED SERVICE (D), BRANCH (B) OR REMOVED FOR SERVICE ENTRANCE FROM UTILITY (U).

\* ALL ISOLATED GROUND CONDUCTORS SHALL BE CONTINUED TO SERVICE ENTRANCE GROUND BAR.

**ONE LINE RISER WIRE SIZES**

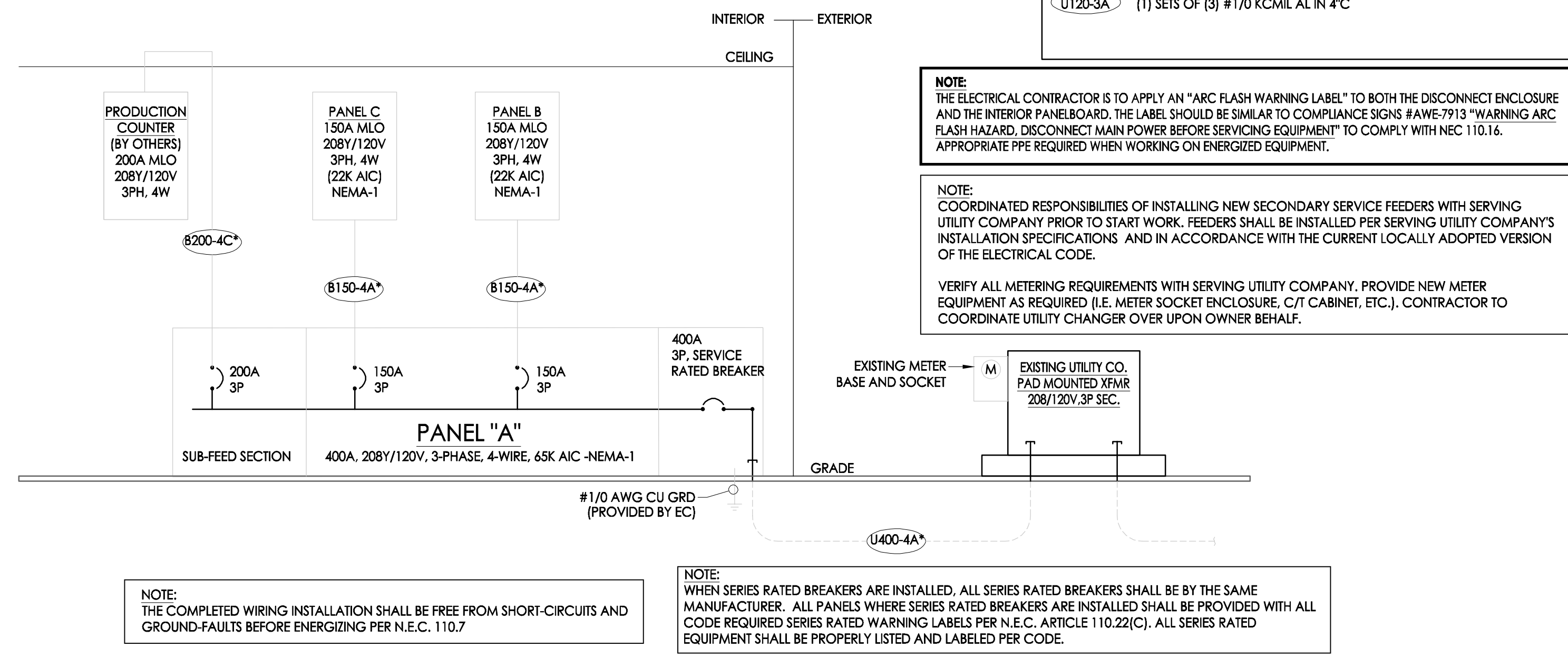
B200-4C\* (4) #3/0 AWG CU, #6 AWG CU GROUND IN 2" CONDUIT

B150-4A\* (4) #3/0 AWG AL, #4 AWG AL GROUND IN 2" CONDUIT

U400-4A\* NEW (2) SETS OF (4) #3C-350 MCM AL IN 4" CONDUIT EACH

B400-4A\* NEW (2) SETS OF (4) #250 KCMIL, (1) #1 GND AL IN 3" CONDUIT EACH

U120-3A (1) SETS OF (3) #1/0 KCMIL AL IN 4" C



**1 ONE LINE RISER DIAGRAM**  
N.T.S.

**Arby's Restaurant Group Responsibilities Schedule**

Key notes:  
O/F: OWNER FURNISH (also includes work by owner's vendors)  
O/I: OWNER INSTALL (also includes work by owner's vendors)  
C/F: CONTRACTOR FURNISHED (includes contractor or subcontractors under his direction)  
C/I: CONTRACTOR INSTALLED (includes contractor or subcontractors under his direction)  
S: REQUIRES SUBMITTAL or SHOP DWG'S

CATEGORY / TASK	O/F	O/I	C/F	C/I	S	COMMENTS/REMARKS
Electrical Panels	x			x		
Electrical Breakers	x			x		
Light Control panel	v			v		

REGISTRATION SEAL

**ARCVISION**  
INCORPORATED  
ARCHITECTURE • ENGINEERING • STORE PLANNING  
SAINT LOUIS / DALLAS / LAS VEGAS / ORLANDO  
1950 ORANGE ROAD, SUITE 300 ST. LOUIS, MO 63146  
PH: (314) 415-2400 FAX: (314) 415-2300 www.arcv.com

**Arby's**

ARBY'S INSPIRE CONVERSION  
208 S. CENTERVILLE RD.  
STURGIS, MI 49091  
STORE # X

ELECTRICAL DIAGRAMS AND DETAILS

PROJECT NO: 210109  
DRAWN BY: SAH  
CHECKED BY: SAH  
ISSUE DATE: 03/18/22

**E401**

PANEL		<b>A (I-LINE PANEL)</b>		NEW INSTALL <b>X</b>		FED TOP											
VOLTAGE		<b>120/208 3 PHASE</b>		EXIST LOCATION		FED BOTTOM <b>X</b>											
AMP BUS		<b>400</b>		RELOCATED EXIST		MTD FLUSH <b>X</b>											
AMP MAIN		<b>400</b>		A.I.C. RATING <b>SERIES RATE TO 65K</b>		SURFACE <b>X</b>											
KEY NOTE	CKT #	DESCRIPTION	WATTS	LOAD TYPE	WIRE SIZE	BRKR SIZE	POLE	A	B	C	POLE BRKR SIZE	WIRE SIZE	LOAD TYPE	WATTS	DESCRIPTION	CKT #	KEY NOTE
	5.7	1 RTU-1	3564	H	EXISTING (VERIFY)	50	3	9312						5748	RTU-2	2	5.7
	3	-	3564	H	-	-	-	9312						5748	-	4	
	5	-	3564	H	-	-	-	9312						5748	-	6	
	7	PRODUCTION COUNTER	15978	*	SEE SHEET E4.1	200	3	15978						-	SPARE	8	
	9	-	14612	*	-	-	-	15692						1080	ICE MAKER COND	10	5
	11	-	14874	*	-	-	-	15954						1080	-	12	
	5.6	13 EF-1	1127	H	2#12, 1#12G IN 3/4"	20	1	2207						1080	ICE MAKER COND.	14	5
	15	WALK-IN FREEZER EVAP.	1200	K	2#12, 1#12G IN 3/4"	20	2	2280						1080	-	16	
	17	-	1200	K	-	-	-	3900						2700	DISHWASHER - 22	18	5
	19	WALK-IN COOLER EVAP.	400	K	2#12, 1#12G IN 3/4"	20	1	3100						2700	-	20	
	2.7	21 SITE LIGHTING	500	L	EXISTING (VERIFY)	20	2	1300						300	D.T. MENU/SPKR/CANOPY #1	22	
	23	-	500	L	-	-	-	800						300	LOOP DETECTOR #1	24	
	2.7	25 SITE LIGHTING	500	L	EXISTING (VERIFY)	20	2	1300						300	D.T. MENU/SPKR/CANOPY #2	26	
	27	-	500	L	-	-	-	800						300	LOOP DETECTOR #2	28	
	2.7	29 SITE LIGHTING	500	L	EXISTING (VERIFY)	20	2	2564						2064	RTU-3	30	5
	31	-	500	L	-	-	-	2564						2064	-	32	
	33	BLANK	-	-	-	-	-	2064						2064	-	34	
	35	BLANK	-	-	-	-	-	1200						1200	PYLON SIGN	36	2.7
	37	PANEL B	8100	*	SEE SHEET E4.1	150	3	17231						9131	PANEL C	38	
	39	-	8300	*	-	-	-	18110						9810	-	40	
	41	-	8600	*	-	-	-	18169						9569	-	42	
PHASE DIFF.								51692 49558 51899						153149 CONNECTED WATTS			
								-642 1492 -849								4.5% BALANCE	
L= LIGHTING/SIGNS		12950		125% =		16188											
R= RECEPTACLES		4560		100% =		4560											
M= MISC		10200		100% =		10200											
H= HVAC		35255		100% =		35255											
K= KITCHEN		90184		65% =		58620											
LARGEST MOTOR		7056		25% =		1764											
DEMAND WATTS		126586														= 351.6 DEMAND AMPS	
KEYED NOTES																	
1		IF A.H.J. REQUIRES:		PROVIDE LOCKABLE SERVICE DISCONNECT													
2		CIRCUIT TO BE ROUTED THRU LIGHTING CONTROL.															
3		PROVIDE G.F.C.I. BREAKER IN PANEL															
4		PROVIDE E.G.F.C.I. PROTECTION DEVICE PER N.E.C. 427.22															
5		VERIFY ELECTRICAL WITH EXACT EQUIPMENT INSTALLED															
6		PROVIDE LOCK-OUT/TAG-OUT BREAKER DEVICE															
7		EXISTING LOAD(S) ON NEW BREAKER. VERIFY CIRCUIT.															

PANEL		<b>B</b>		NEW INSTALL <b>X</b>		FED TOP											
VOLTAGE		<b>120/208 3 PHASE</b>		EXIST LOCATION		FED BOTTOM <b>X</b>											
AMP BUS		<b>200</b>		RELOCATED EXIST		MTD FLUSH <b>X</b>											
AMP MAIN		<b>150</b>		A.I.C. RATING <b>SERIES RATE TO 65K</b>		SURFACE											
KEY NOTE	CKT #	DESCRIPTION	WATTS	LOAD TYPE	WIRE SIZE	BRKR SIZE	POLE	A	B	C	POLE BRKR SIZE	WIRE SIZE	LOAD TYPE	WATTS	DESCRIPTION	CKT #	KEY NOTE
	1	WATER HEATER - 27	100	M	2#12, 1#12G IN 3/4"	20	1	100						-	SPARE	2	3
	3	RESTROOM AUTO SENSORS	600	M	2#12, 1#12G IN 3/4"	20	1	2800						2200	SHAKE MACHINE - 12	4	3
	5	D.T. ORDER SYSTEM - 39	400	M	2#12, 1#12G IN 3/4"	20	1							2200	-	6	
	7	ICE MAKER - 92	200	K	2#12, 1#12G IN 3/4"	20	1	1300						1100	8-HEAD DRINK DISP - 8	8	3
	9	D.T. WINDOW OPENER - 75	100	M	2#12, 1#12G IN 3/4"	20	1	100						-	FUTURE - AIR CURTAIN	10	3
	11	FRY DUMP - 41	1600	K	2#12, 1#12G IN 3/4"	20	2							-	-	12	
	13	-	1600	K	-	-	-	2800						1200	CONVECTION OVEN - 17	14	3
	15	COOK N HOLD - 16	800	K	2#12, 1#12G IN 3/4"	20	1	2000						1200	-	16	
	17	COFFEE MAKER - 49	1700	K	2#12, 1#12G IN 3/4"	20	1							-	SPARE	18	3
	19	MENU BOARD	400	L	2#12, 1#12G IN 3/4"	20	1	1200						800	COOK N HOLD - 16	20	3
	1.3	21 CO2 MON. SYSTEM - 126	400	M	2#12, 1#12G IN 3/4"	20	1	400						-	SPARE	22	3
	3	23 SPARE	-	-	-	-	-	0						-	SPARE	24	3
	3	25 SPARE	-	-	-	-	-	700						700	U.C. FREEZER - 80	26	3
	3	27 3-BANK FRYER - 43	1200	K	2#12, 1#12G IN 3/4"	20	1	1200						-	SPARE	28	3
	3	29 D.T. WINDOW OPENER - 75	100	M	2#12, 1#12G IN 3/4"	20	1							800	COOK N HOLD - 16	30	3
	1.4	31 HEAT TRACE	300	K	2#12, 1#12G IN 3/4"	20	1	1100						800	COOK N HOLD - 16	32	3
	3	33 LEMONADE DISP. - 13	400	K	2#12, 1#12G IN 3/4"	20	1	900						500	HOOD CNT/GAS SOLENOID	34	1
	3	35 BAG N BOX - 84	500	K	2#12, 1#12G IN 3/4"	20	1	1000						500	HOOD LIGHTING	36	2
	3	37 GREASE STORAGE - 96	200	K	2#12, 1#12G IN 3/4"	20	1	900						700	CARBONATOR - 44	38	3
	3	39 CARBONATOR - 44	700	K	2#12, 1#12G IN 3/4"	20	1	900						200	ICE MAKER - 92	40	3
	3	41 12-HEAD DRINK DISP - 2	600	K	2#12, 1#12G IN 3/4"	20	1							200	IRRIGATION	42	3
PHASE DIFF.								8100 8300 8600						25000 CONNECTED WATTS			
								233 33 -267								5.8% BALANCE	
L= LIGHTING/SIGNS		900		125% =		1125											
R= RECEPTACLES		0		100% =		0											
M= MISC		2400		100% =		2400											
H= HVAC		0		100% =		0											
K= KITCHEN		21700		65% =		14105											
LARGEST MOTOR		4400		25% =		1100											
DEMAND WATTS		18730														= 52.03 DEMAND AMPS	
KEYED NOTES																	
1		PROVIDE LOCK-ON BREAKER DEVICE.															
2		CIRCUIT TO BE ROUTED THRU LIGHTING CONTROL.															
3		PROVIDE G.F.C.I. BREAKER IN PANEL															
4		PROVIDE E.G.F.C.I. PROTECTION DEVICE PER N.E.C. 427.22															
5		VERIFY ELECTRICAL WITH EXACT EQUIPMENT INSTALLED															
6		PROVIDE LOCK-OUT/TAG-OUT BREAKER DEVICE															

PANEL		<b>C</b>		NEW INSTALL <b>X</b>		FED TOP											
VOLTAGE		<b>120/208 3 PHASE</b>		EXIST LOCATION		FED BOTTOM <b>X</b>											
AMP BUS		<b>200</b>		RELOCATED EXIST		MTD FLUSH <b>X</b>											
AMP MAIN		<b>150</b>		A.I.C. RATING <b>SERIES RATE TO 65K</b>		SURFACE											
KEY NOTE	CKT #	DESCRIPTION	WATTS	LOAD TYPE	WIRE SIZE	BRKR SIZE	POLE	A	B	C	POLE BRKR SIZE	WIRE SIZE	LOAD TYPE	WATTS	DESCRIPTION	CKT #	KEY NOTE
	5	1 WALK-IN COOLER CND - 33	900	K	3#12, 1#12G IN 3/4"	20	3	2700						1800	WALK-IN FREEZER CND - 32	2	5
	3	-	900	K	-	-	-	2700						1800	-	4	
	5	-	900	K	-	-	-	2700						1800	-	6	
	3	7 D.T. TIMER SYSTEM	800	M	2#12, 1#12G IN 3/4"	20	1	900						100	MICROPHONE SPEAKER	8	3
	9	MUSIC SYSTEM - 63	600	M	2#12, 1#12G IN 3/4"	20	1	600						-	SPARE	10	3
	3	11 EQ SATELLITE RECEIVER	500	M	2#12, 1#12G IN 3/4"	20	1	1600						1100	EQ POS - FRONT COUNTER	12	3
	13	SPARE	-	-	-	-	-	500						500	POS/MON (DRIVE THRU)	14	3
	3	15 EQ POS/MON. (FRY DUMP)	500	M	2#12, 1#12G IN 3/4"	20	1	1940						1440	SHOW WINDOW REC	16	2
	3	17 SPARE	-	-	-	-	-	0						-	SPARE	18	3
	19	NIGHT LIGHTING	200	L	2#12, 1#12G IN 3/4"	20	1	900						700	MANAGERS DESK REC	20	3
	1.2	21 DINING LIGHTING	210	L	2#12, 1#12G IN 3/4"	20	1	210						-	SPARE	22	
	1.2	23 DINING LIGHTING	525	L	2#12, 1#12G IN 3/4"	20	1	725						200	WALK-IN LIGHTING	24	1
	1.2	25 KITCHEN LIGHTING/EF-2															



# SPECIFICATIONS - DIVISION 26 - ELECTRICAL

## SECTION 26 00 01 - GENERAL ELECTRICAL REQUIREMENTS

### PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
- A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTAL CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO WORK OF DIVISION 26 SECTIONS.
  - B. E-SERIES DRAWINGS APPLY TO WORK OF DIVISION 26 SECTIONS AND VICE VERSA.
- 1.2 GENERAL STANDARDS
- A. PROVIDE WORK IN COMPLIANCE WITH APPLICABLE PROVISIONS OF THE FOLLOWING STANDARDS. PROVIDE UL LISTING AND UL LABEL FOR ALL ELECTRICAL MATERIALS, EQUIPMENT, LUMINAIRES, DEVICES, ETC. IN CASES WHERE UL LISTING AND/OR LABELING IS NOT AVAILABLE FOR A PARTICULAR PRODUCT, PROVIDE EQUIVALENT LISTING AND LABELING FROM ANOTHER THIRD PARTY NATIONALLY RECOGNIZED CERTIFICATION LABORATORY, SUBJECT TO APPROVAL BY LOCAL ELECTRICAL INSPECTOR AND AUTHORITIES HAVING JURISDICTION.
  - B. PROVIDE WORK IN STRICT ACCORDANCE WITH THE LATEST EDITION OF APPLICABLE CODES INCLUDING (BUT NOT LIMITED TO) THE FOLLOWING CODES AND STANDARDS.
    - 1. NATIONAL ELECTRICAL CODE (NEC), NFPA 70.
    - 2. LIFE SAFETY CODE, NFPA 101.
    - 3. OTHER PROVISIONS OF NFPA AS APPLICABLE.
    - 4. LOCAL ELECTRICAL CODES.
    - 5. LOCAL UTILITY COMPANY REQUIREMENTS.
    - 6. ADA/ADAAG REQUIREMENTS.
    - 7. ASME.
    - 8. INTERNATIONAL BUILDING CODE.
    - 9. INTERNATIONAL ENERGY CONSERVATION CODE.
- 1.3 MATERIALS AND EQUIPMENT
- A. UNLESS SPECIFICALLY INDICATED OTHERWISE PROVIDE (FURNISH AND INSTALL) ALL SPECIFIED AND DRAWN EQUIPMENT, RACEWAY, BOXES, LUMINAIRES, CONTROLS, WIRING, CABLING, SUPPORTS AND OTHER MATERIALS AS REQUIRED TO RENDER ALL ELECTRICAL AND ELECTRICALLY OPERATED EQUIPMENT, LUMINAIRES, DEVICES, ETC. FULLY OPERATIONAL, UNLESS SPECIFICALLY INDICATED OTHERWISE PROVIDE (FURNISH AND INSTALL) ALL MATERIALS THAT ARE SPECIFIED UNDER DIVISION 26. DISCREPANCIES OR UNCERTAINTIES PERCEIVED BY A BIDDER, OR OTHER QUESTIONABLE INTERPRETATIONS BY A BIDDER, ARE SUBJECT TO FINAL INTERPRETATIONS AND DECISIONS BY THE OWNER'S REPRESENTATIVE UNLESS ADDRESSED BEFORE BIDDING BY ADDENDUM OR UNLESS QUALIFIED OR EXCEPTED WITHIN BIDS.
  - B. PROVIDE MATERIALS THAT ARE NEW, FULL WEIGHT, OF THE BEST QUALITY. PROVIDE SIMILAR MATERIALS THAT ARE OF THE SAME TYPE AND MANUFACTURER. PROVIDE MATERIALS, APPARATUS AND EQUIPMENT WITH UNDERWRITER'S LABORATORY, INC. LABEL WHERE REGULARLY SUPPLIED.
  - C. MAINTAIN SAFETY AND GOOD CONDITION OF THE MATERIALS AND EQUIPMENT INSTALLED UNTIL FINAL ACCEPTANCE BY THE OWNER. STORE MATERIALS TO PREVENT DAMAGE AND WEATHERING PRIOR TO INSTALLATION.
  - D. WHEN SEVERAL MATERIALS, PRODUCTS OR ITEMS OF EQUIPMENT ARE SPECIFIED BY NAME FOR ONE USE, SELECT ONE OF THOSE SPECIFIED.

- END OF SECTION
- SECTION 26 00 02 - BASIC ELECTRICAL MATERIALS AND METHODS
- PART 1 - GENERAL
- 1.1 GENERAL
- A. FURNISH AND INSTALL ALL LABOR AND MATERIAL, TOOLS AND EQUIPMENT NECESSARY TO RENDER ALL SYSTEMS COMPLETE AND OPERATIONAL, AND READY FOR TURNOVER TO OWNER.
- 1.2 HEIGHT OF BOXES
- A. OUTLET MOUNTING HEIGHTS AS INDICATED ON THE PLANS ARE APPROXIMATE. DETERMINE THE EXACT MOUNTING HEIGHTS (AND LOCATIONS) OF OUTLETS IN THE FIELD WITH RELATION TO ARCHITECTURAL DETAIL AND EQUIPMENT BEING SERVED. COORDINATE OUTLET LOCATION WITH EQUIPMENT, WITH FURNITURE PLANS AND WITH ARCHITECTURAL ELEVATION PLANS, WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, CONTACT THE OWNER'S REPRESENTATIVE FOR DIRECTION.
  - B. PRIOR TO ROUGH-IN, COORDINATE FINAL MOUNTING HEIGHTS OF SYSTEM OUTLET BOXES IN FIELD WITH OWNER'S REPRESENTATIVE. INSTALL BOXES AT HEIGHTS AS FOLLOWS, TO CENTER OF BOX, UNLESS DIRECTED OTHERWISE IN FIELD OR OTHERWISE NOTED ON E-SERIES DRAWINGS OR ARCHITECTURAL PLANS. HEIGHT OF BOXES DIMENSIONED FROM CEILING APPLY TO ROOMS HAVING CEILINGS 9' OR LESS; IN ROOMS HAVING HIGHER CEILINGS, LOCATE THESE AS DIRECTED IN THE FIELD.

SWITCHES - COUNTERS	44" (FIELD VERIFY & MATCH COUNTER RECEPT. HEIGHTS)
SWITCHES - ELSEWHERE	48" TO TOP OF OUTLET BOX
OCCUPANCY SENSORS - WALLBOX SWITCHES	48" TO TOP OF OUTLET BOX
OCCUPANCY SENSORS - ELSEWHERE	AS RECOMMENDED BY MANUFACTURER
RECEPTACLES - COUNTERS	44" (FIELD VERIFY)
RECEPTACLES - ELSEWHERE	18"
DISCONNECTS	46"
CIRCUIT BREAKER PANELBOARDS	72" TO TOP OF PANEL UNLESS SPECIAL CIRCUMSTANCES ARE INDICATED OR OTHERWISE APPLY AS NOTED ON PLANS OR AS DIRECTED BY ARCHITECT
WALL MOUNTED LUMINAIRES	
CONTROL STATIONS	46"
FIRE ALARM MANUAL PULL STATIONS	46" TO TOP OF OPERATING HANDLE
FIRE ALARM AUDIO/VISUAL ANNUNCIATORS	80" TO BOTTOM OF OUTLET BOX
TELEPHONE OUTLETS - DESK PHONE	18"
TELEPHONE OUTLETS - WALL PHONE	46"
DATA OUTLETS	18" TO TOP OF OUTLET BOX.

- 1.3 ELECTRICAL INSTALLATIONS
- A. INSTALL WORK CONDUIT, WIRING, OUTLET BOX TYPE WORK IN FINISHED AREAS CONCEALED. SUCH WORK INSTALLED IN UNFINISHED AREAS MAY BE EXPOSED AT THE DISCRETION OF THE OWNER'S REPRESENTATIVE.
  - B. VERIFY DIMENSIONS BY FIELD MEASUREMENTS. TAKE MEASUREMENTS AND BE RESPONSIBLE FOR EXACT SIZE AND LOCATIONS OF OPENINGS REQUIRED FOR THE INSTALLATION OF WORK. FIGURED DIMENSIONS ARE REASONABLY ACCURATE AND SHOULD GOVERN IN SETTING OUT WORK. WHERE DETAILED METHOD OF INSTALLATION IS NOT INDICATED OR WHERE VARIATIONS EXIST BETWEEN DESCRIBED WORK AND APPROVED PRACTICE, FOLLOW DIRECTION OF THE OWNER'S REPRESENTATIVE.
  - C. PROVIDE BRANCH SUBFEEDER CIRCUITS AS SHOWN ON THE PLANS. THE SYMBOLS USED TO INDICATE THE PURPOSE OF WHICH THE VARIOUS OUTLETS ARE INTENDED ARE IDENTIFIED IN THE ELECTRIC LEGEND. WHERE OUTLETS ARE INDICATED BY LETTERS ON PLANS, PROVIDE CORRESPONDING SWITCHES TO CONTROL THEM.
  - D. PROVIDE NO WIRE SIZE SMALLER THAN NO. 12 FOR BRANCH CIRCUITS UNLESS OTHERWISE NOTED ON PLANS FOR CONTROL CIRCUITS. PROVIDE LARGER SIZES WHERE REQUIRED BY PREVAILING CODES OR INDICATED ON CONTRACT DOCUMENTS. PROVIDE NEUTRAL CONDUCTOR FOR ALL MULTI-POLE FEEDERS. PROVIDE NEUTRAL CONDUCTOR(S) FOR ALL MULTI-POLE FEEDERS AND BRANCH CIRCUITS UNLESS THIS CONTRACTOR DETERMINES IN FIELD THAT THE AFFECTED LOAD(S) WILL NEVER HAVE NEED FOR A NEUTRAL CONDUCTOR AND NEC DOES NOT MANDATE OTHERWISE.
- 1.4 COORDINATION
- A. PLANS ARE DIAGRAMMATIC INDICATING DESIGN INTENT AND INDICATING REQUIRED SIZE, POINTS OF TERMINATION AND, IN SOME CASES, SUGGESTED ROUTES OF RACEWAYS, ETC. HOWEVER, IT IS NOT INTENDED THAT DRAWINGS INDICATE FULLY COORDINATED CONDUIT ROUTING, NECESSARY OFFSETS, ETC. THE DRAWINGS ARE AN OUTLINE TO INDICATE THE APPROXIMATE LOCATION AND ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, OUTLETS, RACEWAYS, CABLES, ETC. INSTALL PIPING, CONDUIT, RACEWAYS, CABLE ASSEMBLIES, ETC. AS STRAIGHT AS POSSIBLE AND SYMMETRICAL (PERPENDICULAR TO OR PARALLEL WITH) WITH ARCHITECTURAL ITEMS. WORK IN AND ON THE BUILDING INSTALLED DIAGONAL TO BUILDING MEMBERS IS PROHIBITED.

- B. CONSULT THE PLANS OF OTHER TRADES BEFORE INSTALLING WORK SO THAT WORK WILL NOT INTERFERE WITH THOSE.
- C. PARTICIPATE IN COORDINATION EFFORTS AND IN PREPARATION OF COORDINATION DRAWINGS PRIOR TO FABRICATION OR INSTALLATION OF EQUIPMENT, MATERIALS, ETC. COORDINATE ACTUAL CLEARANCES OF INSTALLED EQUIPMENT. COORDINATE EXACT LOCATION OF ELECTRICAL OUTLETS, LIGHTING FIXTURES, CONDUITS, RACEWAYS, EQUIPMENT, CABLE ASSEMBLIES, APPLICABLE DEVICES, ETC. WELL IN ADVANCE OF INSTALLATION SO THERE WILL BE NO INTERFERENCES AT INSTALLATION BETWEEN THE VARIOUS TRADES.
- D. ENSURE THAT WORK AND WORKING CLEARANCES IN ELECTRICAL ROOMS AND SIMILAR SPACES COMPLIES WITH NEC ARTICLE 110. THIS ALSO APPLIES TO FINALIZING LOCATIONS OF DISCONNECTS, STARTERS, CONTACTORS AND OTHER ELECTRICALLY OPERATED EQUIPMENT THAT MAY REQUIRE TESTING OR MAINTENANCE WHILE ENERGIZED.
- E. COORDINATE AND CORRECT CONFLICTS IN EQUIPMENT AND MATERIALS PRIOR TO INSTALLATION. IF A CONFLICT CANNOT BE RESOLVED, REFER THE MATTER TO THE OWNER'S REPRESENTATIVE FOR A FINAL DECISION AS TO METHOD AND MATERIAL.

- 1.5 IDENTIFICATION
- A. GENERAL
    - 1. SUBMIT MANUFACTURER'S DATA ON ELECTRICAL IDENTIFICATION MATERIALS AND PRODUCTS. SUBMIT DETAILED NAMEPLATE SCHEDULE INDICATING PROPOSED NOMENCLATURE, COLORS, TEXT HEIGHTS, FASTENING METHODS, ETC.
  - B. CABLE AND CONDUCTOR IDENTIFICATION
    - 1. PROVIDE MANUFACTURER'S STANDARD VINYL-CLOTH SELF-ADHESIVE CONDUCTOR MARKERS OF WRAP-AROUND TYPE, EITHER PRE-NUMBERED PLASTIC COATED TYPE, OR WRITE-ON-TYPE WITH CLEAR PLASTIC SELF-ADHESIVE COVER FLAP. NUMBERED TO SHOW CIRCUIT IDENTIFICATION. PROVIDE ON CONDUCTORS. PROVIDE COLOR CODED INSULATION FOR CONDUCTORS. PROVIDE COLOR CODED JACKETS FOR CABLES. MATCH COLOR SCHEMES WITH MARKING SYSTEM USED IN SUBMITTALS, CONTRACT DOCUMENTS, INDUSTRY STANDARDS, ETC. APPLY CABLE/CONDUCTOR IDENTIFICATION ON EACH CABLE IN EACH BOX/ENCLOSURE/CABINET FOR CABLES THAT ARE NOT AVAILABLE WITH COLOR CODED INSULATION OR JACKETS.
    - 2. USE THE FOLLOWING INSULATION COLOR CODE FOR POWER SYSTEM AND VOLTAGE IDENTIFICATION. THIS APPLIES TO BOTH FEEDER AND BRANCH CIRCUIT WIRING. DO NOT INTERCHANGE COLORS. THE USE OF SCOTCH COLOR CODING TAPES FOR PHASE IDENTIFICATION MAY BE USED ON FEEDER CABLES ONLY (#4 AWG AND LARGER).
      - a. 208Y/120V SYSTEM: BLACK, RED, BLUE & WHITE (NEUTRAL)
      - b. ELECTRONIC GROUND: GREEN WITH YELLOW TRACER (NEUTRAL)
      - c. EQUIPMENT GROUNDING: GREEN
  - C. RACEWAY IDENTIFICATION
    - 1. PROVIDE MANUFACTURER'S STANDARD SELF-ADHESIVE VINYL TAPE NOT LESS THAN 3 MILS THICK BY 1-1/2" WIDE, UNLESS OTHERWISE INDICATED OR REQUIRED BY GOVERNING REGULATIONS PROVIDE BLACK LETTERING ON ORANGE BASE WITH MINIMUM 1/2" HIGH LETTERING. AS A MINIMUM, NEATLY INSTALL MARKERS AT EACH AND EVERY ENTRY POINT TO ROOMS, JUNCTION BOXES, PULL BOXES, EQUIPMENT CONNECTIONS, ETC. DO NOT INSTALL THESE MARKERS ON EXPOSED RACEWAYS IN FINISHED AREAS THAT WILL BE OCCUPIED.
- END OF SECTION

## SECTION 26 05 19 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

### PART 1 - GENERAL

- 1.1 GENERAL
- D. PROVIDE WIRE AND CABLE SUITABLE FOR THE TEMPERATURE, CONDITIONS, AND LOCATION WHERE INSTALLED.

### 1.2 CONDUCTORS

- A. PROVIDE COPPER CONDUCTOR MATERIAL FOR WIRES AND CABLES UNLESS SPECIFICALLY INDICATED OTHERWISE ON SINGLE-LINE DIAGRAM ON DRAWINGS.
- B. CONDUCTOR SIZES INDICATED ARE BASED ON COPPER UNLESS SPECIFICALLY INDICATED OTHERWISE ON SINGLE-LINE DIAGRAM ON DRAWINGS.
- C. PROVIDE MINIMUM #12 AWG CONDUCTOR SIZE.
- D. STRANDED OR SOLID CONDUCTORS MAY BE USED FOR TYPE MC CABLE CONDUCTORS THAT ARE #10 AWG OR LESS WHERE PERMITTED BY PREVAILING CODES AND AUTHORITIES HAVING JURISDICTION. PROVIDE STRANDED CONDUCTORS FOR ALL OTHER APPLICATIONS.
- E. PROVIDE THE FOLLOWING MINIMUM WIRE SIZES BASED ON DISTANCES FROM PANEL TO FIRST DEVICE OF A 15 OR 20 AMPERE GENERAL LIGHTING OR RECEPTACLE BRANCH CIRCUIT. IN ADDITION TO UPSIZING CONDUCTORS AS REQUIRED FOR VOLTAGE DROP, PROVIDE MINIMUM #10 AWG CONDUCTORS TO THE LAST DEVICE FOR BRANCH CIRCUITS MORE THAN 150 FEET IN LENGTH.

SOURCE BREAKER/FUSE	EQUIPMENT GROUNDING	
	AWG WIRE SIZE	AWG WIRE SIZE
15 AMPERE	#14	#14
20 AMPERE	#12	#12
25 AMPERE	#10	#10
30 AMPERE	#10	#10
35 AMPERE	# 8	#10
40 AMPERE	# 8	#10
45 AMPERE	# 8	#10
50 AMPERE	# 6	#10
60 AMPERE	# 6	#10
70 AMPERE	# 4	#8
80 AMPERE	# 4	#8
90 AMPERE	# 2	#8
100 AMPERE	# 2	#8

- G. PROVIDE CONDUCTOR INSULATION RATED AT 600VAC AND 90 DEGREES C. PROVIDE THHN/THWN INSULATION FOR CONDUCTORS SIZE 500 KCMIL AND LARGER, AND FOR CONDUCTORS # 8 AWG AND SMALLER. PROVIDE THW OR THHN/THWN INSULATION FOR OTHER SIZES AS APPROPRIATE FOR THE LOCATIONS WHERE INSTALLED.
- H. PROVIDE XHHW-2 INSULATION FOR WIRING BELOW GRADE AND FOR WIRING SUBJECT TO MOISTURE CONDITIONS.
- I. PROVIDE DEDICATED PARITY SIZED GROUND (NEUTRAL) CONDUCTOR FOR EACH BRANCH CIRCUIT PHASE CONDUCTOR FED FROM 15 AMPERE AND 20 AMPERE BRANCH CIRCUIT BREAKERS.
- J. PROVIDE GROUNDED (NEUTRAL) CONDUCTOR(S) FOR ALL MULTI-POLE FEEDERS UNLESS INDICATED OTHERWISE ON POWER DISTRIBUTION SINGLE-LINE DIAGRAM.
- K. PROVIDE GROUNDED (NEUTRAL) CONDUCTOR(S) FOR ALL MULTI-POLE BRANCH CIRCUITS.

### 1.3 TYPE AC/MC CABLES

- A. PROVIDE TYPE AC/MC CABLES THAT ARE MINIMUM 90 DEGREES C RATED, WITH COMPONENTS AND FITTINGS LISTED FOR GROUNDING, AND COMPLIANT WITH THE FOLLOWING.
  - 1. UL STD. 4 AND UL STD. 83.
  - 2. ANSI E119 AND E814.
  - 3. NEC ARTICLES 250 AND 333.
- B. PROVIDE CABLE FORMED FROM CONTINUOUS LENGTH OF SPIRALLY WOUND, INTERLOCKED ZINC-COATED OR GALVANIZED (INSIDE & OUTSIDE) STRIP STEEL. PROVIDE CABLES WITH FULL PARITY SIZED GREEN INSULATED EQUIPMENT GROUND CONDUCTOR.
- C. PROVIDE COMPATIBLE STEEL FITTINGS WITH INTEGRAL RED PLASTIC INSULATED THROAT BUSHINGS, COMPLIANT WITH NEC 350-5.
- D. TYPE AC/MC CABLE MAY BE UTILIZED ONLY IF NEC APPROVED AND IF APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION AND IF INCLUDED IN THE LIMITED APPLICATIONS DEFINED BELOW.
  - 1. PROVIDE FOR NEW 15 THROUGH 20 AMPERE BRANCH CIRCUIT WORK. THIS APPLIES ONLY UNDER ALL OF THE FOLLOWING CIRCUMSTANCES AND CONDITIONS.
    - a. PROVIDE ONLY WHERE CONCEALED (INSTALL WIRING FOR EXPOSED APPLICATIONS IN RACEWAY).
    - b. ROUTE CABLES PERPENDICULAR AND PARALLEL TO THE BUILDING ARCHITECTURAL LINES, SURFACES, AND STRUCTURAL MEMBERS, KEEPING OFFSETS TO A MINIMUM AND FOLLOWING SURFACE CONTOURS WHERE POSSIBLE. MAINTAIN A UNIFORM ELEVATION FOR CABLE RUNS WHEREVER POSSIBLE. SUPPORT AND ANCHOR CABLES AT MAXIMUM 4 FOOT INTERVALS AND WITHIN 12" OF BOX OR OUTLET IN A MANNER THAT PREVENTS SAGGING. INSTALL CABLES IN A MANNER THAT PREVENTS OVERHEATING. FASTEN CABLES DIRECTLY TO THE STRUCTURE USING FACTORY CLAMPS AND CLIPS SPECIFICALLY DESIGNED FOR THE RESPECTIVE CABLE (CADDY OR EQUAL).
    - c. FOR EXPOSED RUNS OF CABLES DOWN WALLS TO SURFACE MOUNTED PANELBOARDS, PROVIDE PARTITION CHASE WALLS (CONSTRUCTED IN A MANNER APPROVED BY ARCHITECT), OR WITHIN APPROPRIATELY SIZED STEEL WIREWAY(S), OR WITHIN A CUSTOM FABRICATED HEAVY-GAGE PAINTED SHEETMETAL CHASE APPROVED IN ADVANCE BY THE ENGINEER. INSTALL IN A MANNER THAT FULLY CONCEALS CABLES, PREVENTS OVERHEATING OF CABLES, AND IS APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
    - d. PROVIDE ONLY WHERE INSTALLED FOR NORMAL UTILITY CIRCUITS. INSTALL WIRING FOR EMERGENCY SYSTEM CIRCUITS IN STEEL CONDUIT, NO EXCEPTIONS.

### PART 2 - EXECUTION

- 2.1 INSTALLATION
- A. PROVIDE GROUNDED ("NEUTRAL") CONDUCTOR IN ALL LIGHTING CONTROL DEVICE (SWITCH, DIMMER, OCCUPANCY SENSOR, ETC.) WALL OUTLET BOXES, EVEN IF NOT IMMEDIATELY USED.
  - B. CONNECT WIRES #6 AWG AND LARGER TO PANELS AND APPARATUS BY MEANS OF APPROVED LUGS OR CONNECTORS LARGE ENOUGH TO ENCLOSE ALL STRANDS OF THE CONDUCTORS. PROVIDE SOLDERLESS TYPE CONNECTORS.
  - C. PROVIDE FACTORY SPLICE KITS (U.L. APPROVED FOR SUBMERSION IN WATER AND DIRECT BURIAL) FOR WIRE SPLICING IN OUTDOOR GRADE, OR SLAB ON GRADE, JUNCTION BOXES.

## SECTION 26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

### PART 1 - GENERAL

- 1.1 SECTION INCLUDES
- A. THIS SECTION INCLUDES GROUNDING AND BONDING REQUIREMENTS FOR ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS, CIRCUITS, AND EQUIPMENT.
  - B. PROVIDE THE FOLLOWING MINIMUM REQUIREMENTS FOR GROUNDING.
    - 1. NFPA - COMPONENTS AND INSTALLATION SHALL COMPLY WITH NFPA 70, "NATIONAL ELECTRICAL CODE" (NEC).
    - 2. UL - COMPLY WITH UL 467, "GROUNDING AND BONDING EQUIPMENT."
    - 3. ANSI/TIA/EIA-607, "COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS."

### PART 2 - PRODUCTS

- 2.1 MATERIALS
- A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE GROUNDING AND BONDING PRODUCT MANUFACTURERS OF THE INSTALLER'S CHOICE UNLESS NOTED OTHERWISE.
  - B. EXCEPT AS OTHERWISE INDICATED, PROVIDE COPPER ELECTRICAL GROUNDING AND BONDING SYSTEMS AND MATERIALS WITH ASSEMBLY OF MATERIALS INCLUDING BUT NOT LIMITED TO CABLES/WIRES, CONNECTORS, SOLDERLESS LUG TERMINALS, GROUNDING ELECTRODES AND PLATE ELECTRODES, BONDING JUMPER BRAID, AND ADDITIONAL ACCESSORIES NEEDED FOR A COMPLETE INSTALLATION. WHERE MATERIALS OR COMPONENTS ARE NOT INDICATED, PROVIDE PRODUCTS THAT COMPLY WITH NEC, UL, AND IEEE REQUIREMENTS, AND WITH ESTABLISHED INDUSTRY STANDARDS FOR THOSE APPLICATIONS INDICATED. UTILIZE COMPATIBLE METALLIC MATERIALS THROUGHOUT SYSTEM TO ELIMINATE GALVANIC ACTION.
  - C. PROVIDE STEEL GROUNDING ELECTRODES WITH COPPER WELDED EXTERIOR, AND 3/4" DIAMETER BY 10 FEET LENGTH. PROVIDE SHEET COPPER PLATE ELECTRODES THAT ARE 20-GAUGE BY 36" BY 36" WITH CABLE ATTACHMENTS (MINIMUM QUANTITY OF 2), SIZED FOR CABLES AS NECESSARY TO FULFILL PROJECT GROUNDING REQUIREMENTS. PROVIDE COPPER GROUND PLATES WHERE GROUND RODS CANNOT BE USED. PROVIDE CONNECTIONS TO GROUND ELECTRODES AT A POINT NOT LESS THAN 1 FOOT BELOW GRADE LEVEL, AND NOT LESS THAN 2 FEET AWAY FROM FOOTINGS AND FOUNDATIONS. WELD GROUNDING CONDUCTORS TO UNDERGROUND GROUNDING ELECTRODES WHERE MECHANICAL CONNECTIONS CAN NOT, OR SHOULD NOT, BE UTILIZED.

### PART 3 - EXECUTION

- 3.1 INSTALLATION
- A. TERMINATE FEEDER AND BRANCH CIRCUIT INSULATED EQUIPMENT GROUNDING CONDUCTORS WITH GROUNDING LUG, BUS, OR BUSHING. ROUTE GROUNDING CONNECTIONS AND CONDUCTORS TO GROUND AND PROTECTIVE DEVICES IN SHORTEST AND STRAIGHTEST PATHS AS POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES.
  - B. INSTALL CLAMP-ON CONNECTORS ON CLEAN METAL CONTACT SURFACES, TO ENSURE ELECTRICAL CONDUCTIVITY AND CIRCUIT INTEGRITY.
  - C. PROVIDE CORROSION-RESISTANT FINISH TO BURIED METALLIC GROUNDING AND BONDING PRODUCTS.
  - D. TERMINATE GROUND ELECTRODE CONDUCTORS WITH TWO-HOLE COMPRESSION LUGS. TERMINATE BONDING JUMPER CONDUCTORS WITH ONE-HOLE COMPRESSION LUGS.
  - E. INSTALL BRAIDED TYPE BONDING JUMPERS WITH GROUND CLAMPS ON VALVED WATER PIPING WHERE SUCH PIPING PENETRATES EXTERIOR WALLS AND FIRE WALLS. INSTALL WATER PIPE CONNECTOR FITTINGS SO THAT THEY MAKE CONTACT WITH THE WATER PIPE FOR A MINIMUM DISTANCE OF 1-1/2 INCHES (MEASURED ALONG THE AXIS), AND HAVE A MINIMUM CONTACT SURFACE AREA OF 3 SQUARE INCHES.
  - F. PROVIDE AND TEST A COMPLETE EARTHING (EARTH GROUND) SYSTEM FOR THE ENTIRE ELECTRICAL AND TELECOMMUNICATIONS INFRASTRUCTURE.
  - G. EQUALIZE (BOND TOGETHER) GROUND POTENTIALS ASSOCIATED WITH THE ELECTRICAL DISTRIBUTION SYSTEM, SEPARATELY DERIVED SYSTEMS, STEEL STRUCTURAL SYSTEMS, AND WATER SERVICES PER NEC AND AS APPLICABLE.
  - H. PROVIDE CORROSION-RESISTANT FINISH TO FIELD-CONNECTIONS, TO PLACES WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DAMAGED, AND WHERE SUBJECT TO CORROSIVE ACTION.
  - I. ROUTE GROUND CONDUCTORS USED FOR BONDING IN PROTECTIVE CONDUIT SLEEVES. PROVIDE BOTH ENDS OF THESE CONDUIT SLEEVES WITH GROUND BUSHINGS, AND BOND GROUND BUSHINGS TO ENCLOSURES AND GROUND TERMINATIONS AT BOTH ENDS USING JUMPERS. SIZE GROUND JUMPER CONDUCTORS THE SAME AS THE RESPECTIVE GROUND CONDUCTOR THAT IS BEING PROTECTED WITHIN

- J. PROVIDE CORROSION-RESISTANT FINISH TO BURIED METALLIC GROUNDING AND BONDING PRODUCTS.
- K. TERMINATE GROUND ELECTRODE CONDUCTORS WITH TWO-HOLE COMPRESSION LUGS. TERMINATE BONDING JUMPER CONDUCTORS WITH ONE-HOLE COMPRESSION LUGS.

### END OF SECTION

## SECTION 26 05 33 - RACEWAYS FOR ELECTRICAL SYSTEMS

### PART 1 - GENERAL

- 1.1 RELATED WORK
- A. INSTALL WIRE IN RACEWAY/CONDUIT (SIZED PER NEC) UNLESS SPECIFICALLY PERMITTED OTHERWISE ELSEWHERE IN DIVISION 26 SECTIONS, OR ON DRAWINGS.
  - B. INSTALL WIRING FOR DIFFERENT POWER VOLTAGES IN RACEWAY SYSTEMS SEPARATE FROM EACH OTHER (I.E. 24V SEPARATE FROM 208Y/120V, SEPARATE FROM 480Y/277V, ETC.).
  - C. INSTALL WIRING, WITH THE EXCEPTION OF VOICE AND DATA, FOR THE VARIOUS ELECTRICAL SYSTEMS IN RACEWAY SYSTEMS, WHICH ARE SEPARATE FROM EACH OTHER (I.E. FIRE ALARM SEPARATE FROM VOICE/DATA SEPARATE FROM ETC.).
  - D. DO NOT INSTALL CONDUITS WITHIN SLABS UNLESS SPECIFICALLY NOTED ON DRAWINGS, OR UNLESS PART OF AN UNDERFLOOR DUCT RACEWAY SYSTEM.
  - E. DO NOT INSTALL CONDUITS BENEATH SLABS ON GRADE, EXCEPT IF WHERE SPECIFICALLY INDICATED OTHERWISE ON DRAWINGS, OR UNLESS SPECIAL CASE BY CASE PERMISSION IS OBTAINED FROM OWNER'S REPRESENTATIVE IN THE FIELD.
  - F. PROVIDE STEEL CONDUIT AND STEEL FITTINGS FOR INDOOR ABOVE-SLAB APPLICATIONS, AS SPECIFIED IN THIS SECTION.
  - G. PROVIDE CONDUIT FITTINGS WITH INSULATED THROATS, OR PLASTIC BUSHINGS FOR CONDUITS 2" AND LARGER WHERE INSULATED THROATS ARE NOT READILY AVAILABLE.
  - H. PROVIDE MAXIMUM OF 40 PERCENT FILL FOR RACEWAYS, OR A THRESHOLD OF LESS IF REQUIRED BY NEC.

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ELECTRICAL SPECIFICATIONS



SPECIFICATIONS - DIVISION 26 - ELECTRICAL (CONTINUED)

SECTION 26 05 33 - RACEWAYS FOR ELECTRICAL SYSTEMS (CONTINUED)

PART 2 - PRODUCTS

2.1 ELECTRICAL METALLIC TUBING (EMT)
A. PROVIDE GALVANIZED OR ZINC COATED STEEL EMT COMPLIANT WITH FS WW-C-563, ANSI C80.3 AND UL 797.
B. PROVIDE EMT FOR ABOVE-GRADE CONDUIT, EXCEPT WHERE INDICATED OTHERWISE HEREIN, UNDER OTHER DIVISION 26 SECTIONS, OR ON DRAWINGS.

2.2 STEEL RIGID METAL CONDUIT (RMC)

A. PROVIDE RIGID STEEL, HEAVY WALL, FULL WEIGHT, ZINC-COATED, THREADED TYPE (GALVANIZED AFTER CUTTING/THREADING) CONDUIT CONFORMING TO ANSI C80.1 AND UL 6. PROVIDE ZINC COATING FUSED TO INSIDE AND OUTSIDE WALLS OF CONDUIT.
B. PROVIDE GALVANIZED OR ZINC COATED STEEL THREADED FITTINGS.
C. PROVIDE FOR THE FOLLOWING APPLICATIONS.
1. CONDUIT INSTALLED EMBEDDED IN CONCRETE, OR MASONRY.
2. CONDUITS (GROUNDED) THAT TURN UP FROM BELOW GRADE OR BELOW SLAB, EXCLUDING THE 90 DEGREE FITTINGS THAT CONNECT TO HORIZONTAL CONDUITS BELOW GRADE OR SLAB.
3. OTHER APPLICATIONS AS INDICATED IN PROJECT MANUAL OR ON DRAWINGS, AS REQUIRED BY NEC, OR AS OTHERWISE REQUIRED FOR SPECIAL PHYSICAL PROTECTION (I.E. NEARBY VEHICULAR/EQUIPMENT TRAFFIC, SITE MAINTENANCE EQUIPMENT, ETC.).

2.3 PVC COATED STEEL RIGID METAL CONDUIT (PVC/RMC)

A. PROVIDE RIGID STEEL, HEAVY WALL, FULL WEIGHT, THREADED TYPE (GALVANIZED AFTER CUTTING/THREADING INSIDE AND OUT) PVC COATED CONDUIT CONFORMING TO UL 6 STANDARD FOR SAFETY, RIGID METAL CONDUIT, AND UL514B STANDARD FOR SAFETY, FITTINGS FOR CONDUIT AND OUTLET BOXES
B. THE PVC COATED GALVANIZED RIGID CONDUIT MUST BE ETL VERIFIED TO THE INTERTEK ETL SEMKO HIGH TEMPERATURE H2O PVC COATING ADHESION TEST PROCEDURE FOR 200 HOURS. THE PVC COATED GALVANIZED RIGID CONDUIT MUST BEAR THE ETL VERIFIED PVC-001 LABEL TO SIGNIFY COMPLIANCE TO THE ADHESION PERFORMANCE STANDARD.
C. PROVIDE FOR APPLICATIONS SPECIFICALLY DESIGNATED ON DRAWINGS.

2.4 FLEXIBLE METAL CONDUIT

A. PROVIDE FLEXIBLE METAL CONDUIT COMPLIANT WITH FS WW-C-566 AND UL 1, AND FORMED FROM CONTINUOUS LENGTH OF SPIRALLY WOUND, INTERLOCKED ZINC-COATED OR GALVANIZED (INSIDE & OUTSIDE) STRIP STEEL. PROVIDE CONDUIT FITTINGS FOR USE WITH FLEXIBLE METAL CONDUIT OF THREADED HINGED CLAMP TYPE, WITH INSULATED THROATS. PROVIDE STRAIGHT TERMINAL CONNECTORS CONSISTING OF ONE PIECE BODY, FEMALE END WITH CLAMP AND DEEP SLOTTED MACHINE SCREW FOR SECURING CONDUIT, AND MALE THREADED END WITH LOCKNUT. DO NOT USE 45 DEGREE OR 90 DEGREE TERMINAL ANGLE CONNECTORS FOR FLEXIBLE OR WATER-TIGHT FLEXIBLE METAL CONDUIT IN LOCATIONS THAT WILL NOT BE FULLY ACCESSIBLE AFTER COMPLETION OF CONSTRUCTION. PROVIDE FULL SIZE GREEN INSULATED GROUND WIRE FOR ALL APPLICATIONS, REGARDLESS OF LENGTH. PROVIDE FLEXIBLE METAL CONDUIT FOR THE FOLLOWING CONDITIONS AS APPLICABLE.
1. PROVIDE FOR FINAL 72 INCHES FROM OUTLET/JUNCTION BOXES TO RECESSED LUMINAIRES THAT ARE LOCATED IN ACCESSIBLE CEILING SYSTEMS. OPTIONALLY, TYPE AC/MC CABLE MAY BE USED FOR "FIXTURE WHIPS" (REFER TO SECTION 26 05 19).
2. PROVIDE FOR FINAL 24-72 INCHES OF CONNECTION TO INDOOR EQUIPMENT THAT IS SUBJECT TO MOVEMENT OR VIBRATION. LEAVE SUFFICIENT SLACK IN FLEXIBLE CONDUIT TO PERMIT MOVEMENT FROM VIBRATION WITHOUT ADVERSELY AFFECTING CONDUITS AND CONNECTIONS.

PART 3 - EXECUTION

A. GENERAL
1. PROVIDE CONDUIT, TUBING AND FITTINGS OF TYPES, GRADES, SIZES AND WEIGHTS (WALL THICKNESSES) FOR APPLICATIONS AS NEEDED TO RENDER ELECTRICAL WORK FULLY OPERATIONAL..
2. PROPERLY SUPPORT AND ANCHOR RACEWAYS FOR THEIR ENTIRE LENGTH USING STRUCTURAL MATERIALS. DO NOT SPAN ANY SPACE UNSUPPORTED.

END OF SECTION

SECTION 26 05 34 - BOXES AND FITTINGS FOR ELECTRICAL SYSTEMS

PART 1 - PRODUCTS

1.1 INDOOR BOXES
A. PROVIDE MINIMUM SIZE OF 4 INCHES SQUARE BY 1-1/2 INCHES DEEP FOR OUTLET BOXES AND JUNCTION BOXES. PROVIDE OUTLET BOX ACCESSORIES AS REQUIRED FOR EACH INSTALLATION, INCLUDING BOX SUPPORTS, MOUNTING EARS AND BRACKETS, WALLBOARD HANGERS, BOX EXTENSION RINGS, FIXTURE STUDS, CABLE CLAMPS, AND METAL STRAPS FOR SUPPORTING OUTLET BOXES, WHICH ARE COMPATIBLE WITH OUTLET BOXES BEING USED TO FULFILL INSTALLATION REQUIREMENTS FOR INDIVIDUAL WIRING SITUATIONS. PROVIDE WITH STAINLESS STEEL NUTS, BOLTS, SCREWS AND WASHERS.

1.2 DAMP AND WET LOCATION OUTLET BOXES AND COVERS

A. PROVIDE CORROSION-RESISTANT WEATHERTIGHT/RAINTIGHT OUTLET WIRING BOXES, OF TYPES, SHAPES AND SIZES, INCLUDING DEPTH OF BOXES, WITH THREADED CONDUIT HOLES FOR FASTENING ELECTRICAL CONDUIT, SUITABLY CONFIGURED FOR EACH APPLICATION, INCLUDING FACE PLATE GASKETS AND CORROSION-RESISTANT PLUGS AND FASTENERS. PROVIDE WEATHERTIGHT OUTLETS FOR INTERIOR AND EXTERIOR LOCATIONS EXPOSED TO WEATHER OR MOISTURE, I.E. IN DAMP OR WET LOCATIONS.
B. PROVIDE MINIMAL PROFILE ASSEMBLIES THAT ARE RATED NEMA 3R WHILE IN USE AND THAT EMPLOY RECESSED BOX AND COVER DESIGN, EQUAL TO THOMAS & BETTS "RED DOT" SERIES. PROVIDE TRIM COLORS) AS DIRECTED BY ARCHITECT.

PART 2 - EXECUTION

2.1 INSTALLATION
A. INSTALL ELECTRICAL BOXES IN THOSE LOCATIONS THAT ENSURE ACCESSIBILITY TO ENCLOSED ELECTRICAL WIRING.
B. DO NOT INSTALL ALUMINUM PRODUCTS IN CONCRETE.
C. CONSIDER THE OUTLET, JUNCTION, AND PULL BOX LOCATIONS INDICATED ON DRAWINGS APPROXIMATE. STUDY THE GENERAL CONSTRUCTION WITH RELATION TO SPACES AND EQUIPMENT SURROUNDING EACH OUTLET, AND NEATLY INSTALL OUTLETS ACCORDINGLY.

END OF SECTION

SECTION 26 05 80 - MECHANICAL EQUIPMENT

PART 1 - GENERAL

1.1 RELATED WORK
A. PROVIDE ALL NECESSARY ELECTRICAL RELATED WORK AS REQUIRED TO RENDER ALL MECHANICAL EQUIPMENT (INCLUDING PLUMBING, HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT) FULLY OPERATIONAL AND FULLY COMPLIANT WITH NEC. THIS INCLUDES, PRIOR TO ORDERING MATERIALS OR COMMENCING WITH ROUGH-IN, REVIEWING EQUIPMENT SUBMITTAL DATA AND COORDINATING WITH INSTALLING CONTRACTORS TO ENSURE THE CORRECT SIZE, RATING AND QUANTITY OF CONDUCTORS ARE PROVIDED.

PART 2 - EXECUTION

2.1 INSTALLATION

A. GENERAL

1. PROVIDE DISCONNECT SWITCH AHEAD OF ALL EQUIPMENT, INCLUDING CONTROLS, UNLESS THE MECHANICAL EQUIPMENT COMES WITH INTEGRAL NEC-COMPLIANT DISCONNECT(S). PROVIDE NEMA 3R ENCLOSURES WHERE INSTALLED OUTDOORS AND WHERE INSTALLED INDOORS IN AREAS SUBJECT TO MOISTURE. GROUND METAL FRAMES OF EQUIPMENT BY CONNECTING FRAMES TO THE GROUNDED METAL RACEWAY OR TO A FULL SIZE GREEN GROUND CONDUCTOR OR BOTH. PROVIDE THE NECESSARY ELECTRICAL CONNECTIONS BETWEEN THE SPECIFIED EQUIPMENT AND THE JUNCTION BOX NEAR EQUIPMENT WITH FLEXIBLE METALLIC CONDUIT (LIQUID-TIGHT OUTDOORS) AND MATCHED CONNECTORS (SEE SECTION 26 05 33). WHERE MECHANICAL EQUIPMENT LUGS CANNOT ACCOMMODATE CONDUCTOR SIZES SHOWN ON DRAWINGS, PROVIDE ILSICO CLEARTAP INSULATED MULTI-TAP CONNECTORS.
2. SIZES, ELECTRICAL RATINGS, ETC. OF EQUIPMENT AND WIRING SHOWN ON DRAWINGS ARE BASED ON THE RESPECTIVE EQUIPMENT DESIGN BASE MANUFACTURERS. IF DIFFERENT MANUFACTURER(S) OR MODEL(S) ARE ACTUALLY SUPPLIED, PROVIDE NECESSARY COORDINATION IN FIELD (PRIOR TO ORDERING MATERIALS AND PRIOR TO ROUGH-IN) AND PROVIDE THE NECESSARY SIZE OF RELATED ELECTRICAL EQUIPMENT, WIRING, CONDUIT, ETC.
3. PRIOR TO FURNISHING SUBMITTALS AND PRIOR TO ROUGH-IN, DETERMINE EXACT ELECTRICALLY RELATED CHARACTERISTICS, LOADS, VOLTAGES, DISCONNECT AND STARTER REQUIREMENTS, LOCATIONS, MOUNTING HEIGHTS, CONNECTION POINTS, ETC. OF MECHANICAL EQUIPMENT.

B. HACR BREAKERS

1. COORDINATE IN FIELD WITH THE RESPECTIVE TRADES AND DETERMINE CASE BY CASE, WHICH EQUIPMENT IS FACTORY LISTED FOR USE WITH HEATING AND AIR CONDITIONING RATED (HACR) BREAKERS. IN AN EFFORT TO MINIMIZE REQUIREMENTS FOR STOCKING OF FUSES BY THE OWNER, UTILIZE HACR BREAKERS AT THE SOURCE PANELBOARDS AS THE NEC REQUIRED OVERCURRENT PROTECTION WHEREVER POSSIBLE (IN LIEU OF FUSING LOCAL DISCONNECT SWITCHES).

C. DISCONNECT SWITCH AND STARTER LOCATIONS

1. LOCATIONS OF DISCONNECTS AND STARTERS SHOWN ON DRAWINGS ARE INDICATED FOR SCHEMATIC PURPOSES ONLY. DETERMINE EXACT LOCATIONS IN FIELD SO THAT THEY ARE COMPLIANT WITH NEC ARTICLE 110 REQUIREMENTS FOR PANELBOARDS.
2. COMMERCIAL KITCHEN EXHAUST HOODS AND RELATED FAN EQUIPMENT
3. SEE DETAILS ON DRAWINGS.
a. REFER TO FOOD SERVICE DRAWINGS, FOOD SERVICE SPECIFICATIONS AND MANUFACTURER'S SUBMITTALS FOR SPECIFIC INFORMATION. FIELD COORDINATE WORK WITH AFFECTED ENTITIES.
b. PROVIDE INTERLOCK WIRING AND CONNECTIONS TO AND FROM THE VARIOUS EQUIPMENT AND CONTROLS.
c. PROVIDE CONTROL WIRING FROM THE FAN UNITS TO RESPECTIVE REMOTE DUCT STATS.
d. PROVIDE AUXILIARY CONTROL CIRCUIT WIRINGS FROM THE FACTORY MICRO-SWITCH IN THE HOOD FIRE SUPPRESSION SYSTEMS TO RESPECTIVE DEDICATED FIRE ALARM SYSTEM MONITOR MODULES TO INITIATE ALARM SIGNAL WHEN RESPECTIVE HOOD FIRE PROTECTION SYSTEM IS ACTIVATED.
e. PROVIDE AUXILIARY CONTROL CIRCUIT WIRING FROM THE FACTORY MICRO-SWITCH IN THE HOOD FIRE SUPPRESSION SYSTEM TO CONTACTOR CONTROL COILS).
f. PROVIDE EMPTY OCTAGON BOX FOR MECHANICAL MANUAL PULL STATION (AND INSTALL PULL STATION) FOR EACH HOOD FIRE PROTECTION SYSTEM (MOUNTED AT 48" ABOVE FINISHED FLOOR TO TOP OF OUTLET BOX) WITH (1) 1/2" EMPTY CONDUIT ROUTED UP AND OVER TO HOOD AS DIRECTED BY HOOD INSTALLER IN FIELD (W/SWEEP 90'S). FIELD VERIFY LOCATION.
g. PROVIDE INTERLOCK CONTROL WIRING BETWEEN GAS SOLENOID SHUT OFF VALVES AND RESPECTIVE KITCHEN HOOD FIRE SUPPRESSION SYSTEM. COORDINATE WITH AFFECTED INSTALLERS.

END OF SECTION

SECTION 26 05 90 - MISCELLANEOUS SPECIALTIES

PART 1 - GENERAL

1.1 RELATED WORK
A. TIME BASED CONTROL - MULTI-PURPOSE TIME CLOCK (365 DAY)
1. PROVIDE INTERMATIC #ET90415CR SERIES MULTI-PURPOSE TIME CLOCK (OR EQUAL BY TORK), WHICH IS PROGRAMMABLE 365-DAY/24-HOUR WITH OVERRIDE CONTROLS. PROVIDE FOUR-CHANNEL UNIT. PROVIDE REQUIRED EXTERNAL CONTACTORS, RELAYS, ETC. TO RENDER THE CONTROL SYSTEMS FULLY OPERATIONAL. VERIFY ZONE CONTROL REQUIREMENTS IN FIELD PRIOR TO ROUGH-IN. PROVIDE 100-HOUR CARRYOVER.
2. REFER TO SECTION 26 27 40 FOR DEFINITION OF LIGHTING CONTACTORS. NOTE THAT ANY GIVEN LIGHTING CONTACTOR DESIGNATION MAY ACTUALLY INCLUDE MULTIPLE CONTACTORS DEPENDING ON HOW MANY CIRCUITS ARE CONTROLLED BY THE RESPECTIVE CONTACTOR DESIGNATION.

END OF SECTION

SECTION 26 09 23 - OCCUPANCY SENSORS

PART 1 - GENERAL

1.1 RELATED WORK
A. PROVIDE LABOR, MATERIALS, TOOLS, APPLIANCES, CONTROL HARDWARE, SENSOR WIRE, JUNCTION BOXES AND EQUIPMENT NECESSARY FOR AND INCIDENTAL TO THE DELIVERY, INSTALLATION AND FURNISHING OF COMPLETELY OPERATIONAL OCCUPANCY SENSOR LIGHTING CONTROLS, AS DESCRIBED HEREIN.
B. PROVIDE PRODUCTS SUPPLIED FROM A SINGLE MANUFACTURER THAT HAS BEEN CONTINUOUSLY INVOLVED IN MANUFACTURING OF OCCUPANCY SENSORS FOR A MINIMUM OF FIVE (5) YEARS.
C. PROVIDE OCCUPANCY SENSORS FOR ENTIRE PROJECT THAT ARE ALL MADE BY THE SAME MANUFACTURER, REGARDLESS OF WHERE THE MATERIALS ARE SPECIFIED IN DIVISION 26 DOCUMENTS. PROVIDE COMPONENTS THAT ARE ALL MADE BY THE SAME MANUFACTURER IN CASES WHERE OCCUPANCY SENSOR COMPONENTS ARE ALSO CONNECTED TO A BUILDING LIGHTING CONTROL SYSTEM, REGARDLESS OF WHERE THE MATERIALS ARE SPECIFIED IN DIVISION 26 DOCUMENTS.
D. PROVIDE COMPONENTS THAT ARE U.L. LISTED, OFFER A FIVE (5) YEAR WARRANTY AND MEET STATE AND LOCAL APPLICABLE CODE REQUIREMENTS.
E. PROVIDE PRODUCTS MANUFACTURED BY AN ISO 9002 CERTIFIED MANUFACTURING FACILITY WITH A DEFECT RATE OF LESS THAN ONE-THIRD OF ONE PERCENT.

PART 2 - SPECIFIC REQUIREMENTS

2.1 ACCEPTABLE MANUFACTURERS
A. BASIS OF DESIGN MANUFACTURER IS WATSTOPPER. OTHER ACCEPTABLE MANUFACTURERS ARE HUBBELL, SENSOR SWITCH, LEVITON, LUTRON, LC&D AND COOPER GREENGATE CA IN AS MUCH THE SYSTEMS MEET THE INTENT AND FUNCTIONALITY AND SUSTAINABILITY OF THE DESIGN.

2.2 PRODUCTS

A. CEILING SENSORS
1. PROVIDE STANDARD OF QUALITY EQUAL TO WATSTOPPER: WT-605, WT-600, WT-1105, WT-1100, WT-2205, WT-2200, WT-2250, WT-2255, WP-605, WP-1105, WP-2255, WP-2205, W-500A, W-1000A, W-2000A, W-2000H, UT-300, UT-305, UT-355, WPIR, HB-100, HB-150, DT-200, DT-205, DT-300, DT-305, DT-355, CX-100, CX-105, CI-200, CI-205, CI-300, CI-305, CI-355, CI-12 OR CI-24 SERIES.
B. POWER AND AUXILIARY PACKS
1. PROVIDE STANDARD OF QUALITY EQUAL TO WATSTOPPER: B120E-P, B277E-P, BZ-100, LC-100, C120E-P, C277E-P, S120/277-P, AT-120 OR AT-277 SERIES.
C. DUAL TECHNOLOGY SENSORS
1. PROVIDE SENSORS THAT ARE EITHER WALL MOUNTED, CORNER MOUNTED OR CEILING MOUNTED IN SUCH A WAY AS TO MINIMIZE COVERAGE IN UNWANTED AREAS. PROVIDE PASSIVE INFRARED AND ULTRASONIC TECHNOLOGIES FOR OCCUPANCY DETECTION.
D. GENERAL STANDARDS
1. PROVIDE SENSORS CAPABLE OF OPERATING NORMALLY WITH ELECTRONIC BALLASTS, PL LAMP SYSTEMS AND RATED MOTOR LOADS.

2. PROVIDE SENSORS WITH COVERAGE THAT REMAINS CONSTANT AFTER SENSITIVITY CONTROL HAS BEEN SET. AUTOMATIC REDUCTION IN COVERAGE DUE TO THE CYCLING OF AIR CONDITIONER OR HEATING FANS IS NOT PERMITTED.
3. PROVIDE SENSORS WITH READILY ACCESSIBLE, USER ADJUSTABLE SETTINGS FOR TIME DELAY AND SENSITIVITY. LOCATE SETTINGS ON THE SENSOR (NOT THE CONTROL UNIT) AND RECESS TO LIMIT TAMPERING.
4. PROVIDE BYPASS MANUAL OVERRIDE ON EACH SENSOR TO ACCOMMODATE FAILURES. CONFIGURE SO THAT WHEN BYPASS IS UTILIZED, LIGHTING REMAINS ON CONSTANTLY OR CONTROL DIVERTS TO A WALL SWITCH UNTIL SENSOR IS REPLACED. RECESS THIS CONTROL TO PREVENT TAMPERING.
5. PROVIDE SENSORS WITH AN LED AS A VISUAL MEANS OF INDICATION AT ALL TIMES TO VERIFY THAT MOTION IS BEING DETECTED DURING BOTH TESTING AND NORMAL OPERATION.
6. WHERE SPECIFIED, PROVIDE SENSOR WITH INTERNAL ADDITIONAL ISOLATED RELAY WITH NORMALLY OPEN, NORMALLY CLOSED AND COMMON OUTPUTS FOR USE WITH HVAC CONTROL, DATA LOGGING AND OTHER CONTROL OPTIONS. DO NOT USE SENSORS THAT UTILIZE SEPARATE COMPONENTS OR SPECIALLY MODIFIED UNITS TO ACHIEVE THIS FUNCTION.
7. PROVIDE SENSORS WITH UL RATED, 94V-0 PLASTIC ENCLOSURES.

END OF SECTION

SECTION 26 24 16 - PANELBOARDS

PART 1 - GENERAL

1.1 RELATED WORK
A. TYPES OF PANELBOARDS AND ENCLOSURES REQUIRED FOR THE PROJECT INCLUDE THE FOLLOWING.
1. POWER-DISTRIBUTION PANELBOARDS.
2. GENERAL USE PANELBOARDS.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PANELBOARD PRODUCTS OF ONE OF THE FOLLOWING (FOR EACH TYPE AND RATING OF PANELBOARD AND ENCLOSURE):
1. SQUARE D COMPANY.
2. GENERAL ELECTRIC COMPANY.
3. SIEMENS/ITE.
4. EATON.
2.2 GENERAL REQUIREMENTS

A. EXCEPT AS OTHERWISE INDICATED, PROVIDE PANELBOARDS, ENCLOSURES AND ANCILLARY COMPONENTS, OF TYPES, SIZES, AND RATINGS INDICATED, WHICH COMPLY WITH MANUFACTURER'S STANDARD MATERIALS; WITH THE DESIGN AND CONSTRUCTION IN ACCORDANCE WITH PUBLISHED PRODUCT INFORMATION.
B. PROVIDE PANELBOARDS WITH PROPER NUMBER OF UNIT PANELBOARD DEVICES AS REQUIRED FOR COMPLETE INSTALLATION, WHERE TYPES, SIZES, OR RATINGS ARE NOT INDICATED, COMPLY WITH NEC, UL AND ESTABLISHED INDUSTRY STANDARDS FOR THOSE APPLICATIONS INDICATED.
C. PROVIDE PANELBOARDS THAT ARE NEW AND MANUFACTURER'S LATEST STANDARD CATALOG DESIGN.
D. PROVIDE PANELBOARDS THAT BEAR UL LABELS FOR THEIR SPECIFIC APPLICATIONS.
E. PROVIDE PANELBOARDS SUITABLE FOR SERVICE VOLTAGE WITH NUMBER OF BRANCH CIRCUITS OF CAPACITY SCHEDULED.
F. PROVIDE PANELBOARDS, AND SECTIONS THEREOF IF APPLICABLE, WITH MAIN-LUGS-ONLY OF CAPACITY EQUAL TO, OR GREATER THAN, THE RATING OR SETTING OF THE OVERCURRENT PROTECTIVE DEVICE NEXT BACK ON THE LINE.
G. PROVIDE PANELBOARD BRANCHES AS SCHEDULED ON THE DRAWINGS.
H. PROVIDE CIRCUIT BREAKER PANELBOARD BUS ASSEMBLIES WITH DISTRIBUTED (SEQUENCE) TYPE BUSSING THROUGHOUT, SO THAT ANY TWO ADJACENT SINGLE-POLE BREAKERS, OR SPACES, ARE REPLACEABLE BY A TWO-POLE INTERNAL COMMON TRIP BREAKER, AND SO THAT ANY THREE ADJACENT SINGLE-POLE BREAKERS, OR SPACES, ARE REPLACEABLE BY A THREE-POLE INTERNAL COMMON TRIP BREAKER. THIS APPLIES FOR BRANCH BREAKERS SIZED 15 AMP THROUGH 70 AMP INCLUSIVE, WITHOUT DISTURBING ANY OTHER BREAKER.
J. PROVIDE DEAD-FRONT SAFETY TYPE PANELBOARDS AS INDICATED, WITH PANELBOARD SWITCHING AND PROTECTIVE DEVICES IN QUANTITIES, RATINGS, TYPES, AND WITH ARRANGEMENT SHOWN. PROVIDE WITH ANTI-TURN SOLDERLESS PRESSURE TYPE MAIN LUG CONNECTORS APPROVED FOR USE WITH COPPER OR ALUMINUM CONDUCTORS.
K. PROVIDE FULL-SIZED (100 PERCENT) NEUTRAL BUS. PROVIDE SUITABLE LUGS ON NEUTRAL BUS FOR OUTGOING FEEDERS REQUIRING NEUTRAL CONNECTIONS.
L. PROVIDE PANELBOARDS WITH BARE UNSULATED GROUNDING BARS SUITABLE FOR BOLTING TO ENCLOSURES.

2.3 GENERAL USE CIRCUIT BREAKER PANELBOARDS

A. GENERAL BRANCH PANELS PROVIDE 208Y/120V THREE-PHASE GENERAL USE PANELBOARDS EQUAL TO SQUARE D HOOD WITH BOLT-ON BRANCH BREAKERS.
B. MAIN SERVICE DISTRIBUTION PANEL PROVIDE 208Y/120V THREE-PHASE PANELBOARD EQUAL TO SQUARE D I-LINE WITH BOLT-ON BRANCH BREAKERS AND BREAKER CAPACITY FOR UP TO 200-AMP, THREE-PHASE BRANCH BREAKER(S).

2.4 BUSSING

A. PROVIDE COPPER BUSSING.
2.5 CIRCUIT BREAKER PANELBOARD ENCLOSURES

A. PROVIDE GALVANIZED SHEET STEEL CABINET TYPE ENCLOSURES, IN SIZES AND NEMA TYPES AS INDICATED, CODE-GAGE, MINIMUM 16-GAGE THICKNESS.
B. PROVIDE BOXES WITH CODE-COMPLIANT SIDE AND END GUTTERS (MINIMUM 4 INCHES), AND OF CODE GAUGE GALVANIZED STEEL. PROVIDE BOXES THAT ARE 20 INCHES WIDE MINIMUM, AND 5-3/4 INCHES DEEP MINIMUM. PROVIDE BOXES WITH MULTIPLE KNOCKOUTS AND WIRING GUTTERS.
C. PROVIDE PANELBOARD TRIMS THAT ARE FLUSH OR SURFACE AS REQUIRED FOR RESPECTIVE APPLICATION, THAT ARE CONSTRUCTED OF CODE GAUGE STEEL, THAT ARE FINISHED WITH RUST INHIBITING PRIME COAT AND THEN FACTORY APPLIED HOT SPRAY LACQUER OR BAKED-ON ENAMEL, AND THAT ARE FACTORY PAINTED MANUFACTURER'S STANDARD LIGHT GRAY. PROVIDE TRIMS COMPLETE WITH CONCEALED HINGES AND CONCEALED TRIM CLAMPS. PROVIDE DOORS WITH FLUSH CHROMIUM PLATED COMBINATION CYLINDER LOCK AND CATCH, AND WITH DIRECTORY SUITABLE FOR CLEAR PLASTIC. PROVIDE LOCKS THAT ARE KEVED ALIKE.
D. PROVIDE ENCLOSURES THAT ARE FABRICATED BY SAME MANUFACTURER AS PANELBOARDS, WHICH MATE AND MATCH PROPERLY WITH PANELBOARDS TO BE ENCLOSED.
2.6 MOLDED CASE CIRCUIT BREAKERS

A. PROVIDE FACTORY-ASSEMBLED, MOLDED-CASE CIRCUIT BREAKERS OF FRAME SIZES, CHARACTERISTICS, AND RATINGS INCLUDING RMS SYMMETRICAL INTERRUPTING RATINGS REQUIRED FOR EACH APPLICATION. PROVIDE BREAKERS WITH PERMANENT THERMAL AND INSTANTANEOUS MAGNETIC TRIP, WITH FAULT-CURRENT LIMITING PROTECTION, AND WITH AMPERE RATINGS AS INDICATED.
B. PROVIDE COORDINATED SERIES-RATED CIRCUIT BREAKERS AS APPLICABLE THROUGHOUT, ACCOMMODATING RESPECTIVE AVAILABLE FAULT CURRENT.
C. PROVIDE BREAKERS THAT ARE DESIGNED TO BE MOUNTED AND OPERATED IN ANY PHYSICAL POSITION, AND TO BE OPERATED IN A MINIMUM AMBIENT TEMPERATURE OF 40 DEGREES C. PROVIDE BREAKERS WITH MECHANICAL SCREW TYPE REMOVABLE CONNECTOR LUGS, AL/CU RATED.
D. PROVIDE BRANCH CIRCUIT BREAKERS THAT ARE FULL AMBIENT COMPENSATED THERMAL MAGNETIC MOLDED CASE TYPE, WITH QUICK-MAKE AND QUICK-BREAK ACTION, AND WITH POSITIVE HANDLE TRIP INDICATION (ON BOTH MANUAL AND AUTOMATIC OPERATION). PROVIDE BREAKERS OF THE OVER-THE-CENTER TOGGLE OPERATING TYPE WITH THE HANDLE GOING TO A POSITION BETWEEN "ON" AND "OFF" TO INDICATE AUTOMATIC TRIPPING.
E. PROVIDE BOLT-ON BRANCH BREAKERS. PROVIDE FULL SIZE CIRCUIT BREAKERS. DO NOT PROVIDE "TANDEM" OR "SPLIT" BREAKERS

2.7 FAULT CURRENT RATINGS

A. PROVIDE ELECTRICAL DISTRIBUTION RELATED EQUIPMENT WITH APPROPRIATELY BRACED BUSSING AND PROPERLY RATED BREAKERS, FUSES, ETC. FOR THE AVAILABLE FAULT CURRENTS.

2.8 SERIES COORDINATION

A. PROVIDE FACTORY SERIES COORDINATION FOR ALL CIRCUIT BREAKERS (INCLUDING BRANCH BREAKERS), RELATIVE TO UPSTREAM BREAKERS, SO THAT ONLY THE BREAKER CLOSEST IN THE CIRCUIT TO THE LOAD TRIPS UPON AN OVERLOAD OR FAULT CONDITION.

PART 3 - EXECUTION

3.1 INSTALLATION
A. PROVIDE ENCLOSURES FASTENED FIRMLY TO WALLS AND STRUCTURAL SURFACES, ENSURING THAT THEY ARE PERMANENTLY AND MECHANICALLY ANCHORED.
B. PROVIDE NEATLY TYPEWRITTEN CIRCUIT DIRECTORY CARD FOR EACH PANELBOARD UPON COMPLETION OF INSTALLATION WORK. INCLUDE THE ACTUAL ROOM NAMES/NUMBERS THAT ARE SELECTED FOR INTERIOR SIGNAGE/DESIGNATION.
C. SCHEDULING SHOWN ON DRAWINGS IS SHOWN TO INDICATE FEEDER AND BRANCH CIRCUITING REQUIREMENTS. DETERMINE EXACT NUMBERING SEQUENCE OF CIRCUITS IN FIELD AFTER PERFORMING FINAL BALANCING

END OF SECTION

SECTION 26 27 26 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY
A. PROVIDE WIRING DEVICES, IN TYPES, CHARACTERISTICS, GRADES, COLORS, AND ELECTRICAL RATINGS FOR APPLICATIONS INDICATED WHICH ARE UL LISTED AND WHICH COMPLY WITH NEMA WD 1 AND OTHER APPLICABLE UL AND NEMA STANDARDS. VERIFY COLOR SELECTIONS WITH OWNER'S REPRESENTATIVE.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING.
SWITCHES: LEVITON, HUBBELL, BRYANT, PASS & SEYMOUR, COOPER
DIMMERS: LUTRON
RECEPTACLES: LEVITON, HUBBELL, BRYANT, PASS & SEYMOUR, COOPER
WALL PLATES: LEVITON, HUBBELL, BRYANT, PASS & SEYMOUR, COOPER

2.2 WIRING DEVICE COLORS

A. UNLESS SPECIFICALLY INDICATED OTHERWISE, OR DIRECTED OTHERWISE IN FIELD, PROVIDE WHITE COLOR FOR NORMAL UTILITY WIRING DEVICES.

2.3 SPECIFICATION GRADE RECEPTACLES

A. STANDARD SPECIFICATION GRADE DUPLEX/SINGLE RECEPTACLES
1. PROVIDE DUPLEX RECEPTACLES EQUAL TO LEVITON #5362 SERIES. FOR RECEPTACLE CIRCUITS PROTECTED WITH 15A BREAKERS. PROVIDE NEMA 5-15R EQUIVALENTS. PROVIDE RECEPTACLES EQUAL TO LEVITON #5361 SERIES FOR SIMPLEX (SINGLE) APPLICATIONS.
B. GROUND-FAULT INTERRUPTER SPECIFICATION GRADE RECEPTACLES
1. PROVIDE GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLES EQUAL TO LEVITON #8898 SERIES. FOR RECEPTACLE CIRCUITS PROTECTED WITH 15A BREAKERS, PROVIDE NEMA 5-15R EQUIVALENTS.
2. RECEPTACLES INDICATED AS GFI MAY BE GFI-PROTECTED BY AN UPSTREAM GFI RECEPTACLE ON THE SAME CIRCUIT ONLY IF LOCATED IN THE SAME ROOM. OTHERWISE PROVIDE A SEPARATE GFI RECEPTACLE FOR EACH ONE SHOWN.
C. ISOLATED GROUND SPECIFICATION GRADE RECEPTACLES
1. PROVIDE DUPLEX ISOLATED GROUND RECEPTACLES EQUAL TO LEVITON #5362-IG. PROVIDE SIMPLEX (SINGLE) ISOLATED GROUND RECEPTACLES EQUAL TO LEVITON #5361-IG. FOR RECEPTACLE CIRCUITS PROTECTED WITH 15A BREAKERS, PROVIDE NEMA 5-15R EQUIVALENTS. PROVIDE DEDICATED INSULATED ISOLATED GROUND CONDUCTORS (GREEN WITH YELLOW TRACER) FOR EACH APPLICATION.
D. WEATHER RESISTANT GFCI RECEPTACLES
1. PROVIDE DUPLEX WEATHER RESISTANT RECEPTACLES EQUAL TO LEVITON # W7899 SERIES. FOR RECEPTACLE CIRCUITS PROTECTED WITH 15A BREAKERS, PROVIDE NEMA 5-15R EQUIVALENTS.

2.4 WIRING DEVICE ACCESSORIES

A. WALL PLATES
1. PROVIDE SINGLE AND COMBINATION, OF TYPES, SIZES, AND WITH GANGING AND CUTOUPS AS REQUIRED TO ACCOMMODATE EACH APPLICATION. PROVIDE PLATES WHICH MATE AND MATCH WITH WIRING DEVICES TO WHICH ATTACHED. PROVIDE METAL SCREWS FOR SECURING PLATES TO DEVICES WITH SCREW HEADS COLORED TO MATCH FINISH OF PLATES. PROVIDE WALL PLATE COLOR TO MATCH WIRING DEVICES UNLESS SPECIFICALLY INDICATED OTHERWISE.
2. PROVIDE STANDARD SIZE WALL PLATES. DO NOT PROVIDE "MIDWAY", "OVERSIZED" ("JUMBO") OR "EXTRA DEEP" WALL PLATES.
3. PROVIDE GALVANIZED STEEL WALL PLATES IN UNFINISHED EXPOSED-CONDUIT AREAS.
4. PROVIDE COMMERCIAL GRADE, SATIN FINISH STAINLESS STEEL WALL PLATES IN FINISHED AREAS, WITH BEVELED EDGES, EQUAL TO LEVITON TYPE 302 SERIES.
5. PROVIDE COMMERCIAL SPECIFICATION GRADE THERMOPLASTIC WALL PLATES IN FINISHED AREAS.

PART 3 - EXECUTION

3.1 INSTALLATION
A. PROVIDE GROUNDED ("NEUTRAL") CONDUCTOR IN ALL LIGHTING CONTROL DEVICE (SWITCH, DIMMER, OCCUPANCY SENSOR, ETC.) WALL OUTLET BOXES, EVEN IF NOT IMMEDIATELY USED.
B. INSTALL RECEPTACLES SO THAT THE GROUND PIN IS ORIENTED IN A CONSISTENT MANNER THROUGHOUT THE FACILITY, SO THAT THE ORIENTATION IS COMPLIANT WITH ALL PREVAILING CODES AND REGULATIONS, AND SO THAT THE ORIENTATION IS ACCEPTABLE TO THE ELECTRICAL INSPECTOR.

END OF SECTION

REGISTRATION SEAL

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E702



# SPECIFICATIONS - DIVISION 26 - ELECTRICAL (CONTINUED)

## SECTION 26 27 40 - DISCONNECTS, STARTERS, CONTACTORS

### PART 1 - GENERAL

#### 1.1 RELATED WORK

- A. PROVIDE NEMA STANDARD EQUIPMENT, INCLUDING THOSE INCORPORATED AS AN INTEGRAL PART OF A FACTORY/SHOP PRE-FABRICATED PIECE OF EQUIPMENT. DO NOT USE IEC STANDARDS FOR EQUIPMENT.

### PART 2 - PRODUCTS

#### 2.1 ACCEPTABLE MANUFACTURERS

- A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE EQUIPMENT OF ONE OF THE FOLLOWING (FOR EACH TYPE AND RATING):
  1. ALLEN-BRADLEY CO.
  2. GENERAL ELECTRIC CO.
  3. SIEMANS/ITE
  4. SQUARE D CO.
  5. EATON

#### 2.2 MATERIALS

- A. DISCONNECT SWITCHES
  1. PROVIDE DISCONNECT SWITCHES EQUAL TO SQUARE D TYPE HD, HEAVY DUTY, SAFETY TYPE, QUICK MAKE AND QUICK BREAK AND EXTERNALLY OPERATED.
  2. PROVIDE FUSIBLE DISCONNECTS UNLESS NOTED OTHERWISE ON DRAWINGS OR DIRECTED OTHERWISE IN FIELD.
  3. PROVIDE DISCONNECT SWITCHES BRACED FOR 200,000 A.I.C.
  4. PROVIDE UNITS WITH FUSES OF CLASSES AND CURRENT RATINGS INDICATED, AND UL LISTED FOR USE AS SERVICE EQUIPMENT UNDER UL STANDARD 98 OR 869. SEE SECTION "FUSES" FOR FUSE SPECIFICATIONS. WHERE CURRENT LIMITING FUSES ARE INDICATED, PROVIDE SWITCHES WITH NON-INTERCHANGEABLE FEATURE SUITABLE ONLY FOR CURRENT LIMITING TYPE FUSES.
  5. INSTALL DISCONNECT SWITCHES WITHIN SIGHT OF CONTROLLER POSITION UNLESS OTHERWISE INDICATED.
- B. CONTACTORS
  1. PROVIDE CONTACTORS EQUIPPED WITH EXTERNAL PILOT LIGHTS IN COVER, AND EXTERNAL HOA SELECTOR SWITCHES IN COVER.
  2. WIRE CONTACTORS FOR LIGHTING APPLICATIONS SO THAT THE "AUTO" POSITION IS THE NORMAL ACTIVATED CONDITION (I.E. PHOTOCELL CONTROLLED, PHOTOCELL/TIME-CLOCK CONTROLLED, REMOTE SWITCH CONTROLLED, BAS CONTROLLED, ETC.); SO THAT THE "OFF" POSITION IS MANUAL OVERRIDE TO TURN LIGHTING OFF; AND SO THAT THE "HAND" POSITION IS MANUAL OVERRIDE TO TURN LIGHTING ON.
  3. PROVIDE CONTACTORS WITH FIELD CONVERTIBLE N.O./N.C. CONTACTS AND DESCRIPTIVE NAMEPLATES.
  4. PROVIDE CONTACTORS EQUAL TO SQUARE D CLASS 8903 (OR ALLEN-BRADLEY BUL. 500L-BA\*94 SERIES) FOR TUNGSTEN LIGHTING LOADS, BALLAST LIGHTING LOADS, AND SMALL RESISTANCE HEATING LOADS. PROVIDE CONTACTORS THAT ARE ELECTRICALLY OPERATED AND ELECTRICALLY HELD (EOEH). PROVIDE CONTACTORS IN FACTORY NEMA 1 ENCLOSURES, WITH 120V COILS (UNLESS INDICATED OTHERWISE ELSEWHERE OR OTHERWISE REQUIRED TO RENDER CONTROLS FULLY OPERABLE).
  5. PROVIDE "DRY" CONTACTS RATED AT 30A, MINIMUM 250V (600V IF REQUIRED BY APPLICATION). PROVIDE NUMBER OF POLES (MINIMUM OF THREE POLES) AND NUMBER OF CONTACTORS AS REQUIRED FOR EACH APPLICATION. FIELD VERIFY COIL VOLTAGE RATINGS.
  6. PROVIDE MAGNETIC (MECHANICALLY LATCHED) CONTACTORS EQUAL TO SQUARE D CLASS 8502 (OR ALLEN-BRADLEY BUL. 500-BA\*930 SERIES) FOR HEATING LOADS, CAPACITOR LOADS, TRANSFORMER LOADS, MOTOR LOADS, AND SIMILAR LOADS. PROVIDE CONTACTORS WITH FACTORY NEMA 1 ENCLOSURES, WITH 120V COILS (UNLESS INDICATED OTHERWISE ELSEWHERE OR OTHERWISE REQUIRED TO RENDER CONTROLS FULLY OPERABLE). PROVIDE STARTERS WITH HOLDING CIRCUIT CONTACTS (PROVIDE RELATED INTERLOCK WIRING). PROVIDE MAGNETIC CONTACTORS THAT ARE NEMA SIZE 1 MINIMUM. PROVIDE "DRY" CONTACTS RATED AT 30A, MINIMUM 250V (600V IF REQUIRED BY APPLICATION). PROVIDE NUMBER OF POLES (MINIMUM OF THREE POLES) AND NUMBER OF CONTACTORS AS REQUIRED FOR EACH APPLICATION. FIELD VERIFY COIL VOLTAGE RATINGS.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. PROVIDE UNITS WITH HORSEPOWER RATINGS SUITABLE TO THE LOADS. SIZE UNITS ACCORDING TO LOAD BEING SERVED OR AS NOTED ON DRAWINGS, WHICHEVER REQUIREMENT IS LARGER. INSTALL OVERLOADS AND FUSES AS NECESSARY TO FULFILL REQUIREMENTS OF EACH APPLICATION.
- B. FURNISH ADDITIONAL FUSES/OVERLOADS AMOUNTING TO 10 PERCENT OF FUSES PROVIDED, BUT NOT LESS THAN ONE SET OF 3 OF EACH KIND, FOR REQUIRED TYPES AND RATINGS.
- C. PROVIDE NEMA 3R ENCLOSURES FOR UNITS THAT ARE INSTALLED OUTDOORS, IN MOIST AREAS, AND IN OTHER ATMOSPHERES SUBJECT TO SIMILAR MOISTURE OR EXPOSURE.
- D. INSPECT OPERATING MECHANISMS FOR MALFUNCTIONING AND, WHERE NECESSARY, ADJUST UNITS FOR FREE MECHANICAL MOVEMENT. SUBSEQUENT TO COMPLETION OF INSTALLATION OF EQUIPMENT, ENERGIZE CIRCUITS AND DEMONSTRATE CAPABILITY AND COMPLIANCE WITH REQUIREMENTS. BEGIN BY DEMONSTRATING SWITCH OPERATION THROUGH SIX OPENING/CLOSING CYCLES WITH CIRCUIT UNLOADED. OPEN EACH SWITCH ENCLOSURE AND INSPECT INTERIORS. INSPECT MECHANICAL AND ELECTRICAL CONNECTIONS, INSPECT FUSE/OVERLOAD INSTALLATIONS, AND VERIFY ACCURACY OF TYPE AND RATING OF FUSES/OVERLOADS INSTALLED. CORRECT DEFICIENCIES THEN RETEST TO DEMONSTRATE COMPLIANCE. REMOVE AND REPLACE DEFECTIVE UNITS WITH NEW UNITS AND RETEST.

END OF SECTION

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ELECTRICAL SPECIFICATIONS

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