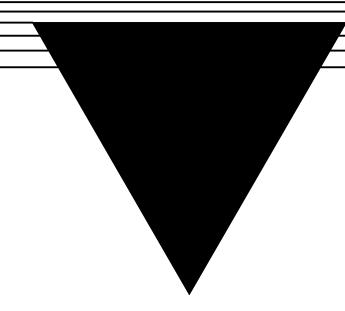
# NEW CONSTRUCTION FOR:

# PATEL LIQUOR STORE

# NORTH THIRD STREET BARDSTOWN, KENTUCKY 40004



# **ARCHITECT:**

KEYES ARCHITECTS AND ASSOCIATES

4717 PRESTON HIGHWAY

LOUISVILLE, KENTUCKY 40213

PH: (502) 636-5113

CONTACT: GARRETT HAMM

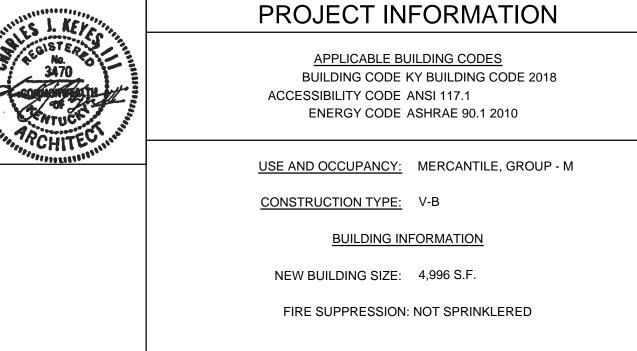
EMAIL: GHAMM@KEYESARCHITECTS.COM

ARCHITECT: CHARLES J. KEYES III

## **GENERAL CONTRACTOR:**

BCD INC.

1962 FILIATREAU LN
BARDSTOWN, KY 40004
PH: (502) 348-2305
CONTACT: JASON HARROD
EMAIL: JHARROD@BARDSTOWN.COM



OCCUPANCY ALLOWANCE					
	FUNCTION OF SPACE	ALLOWANCE	AREA	OCCUPANCY	
	MERCANTILE	60 GROSS	4996	83	
	TC	TAL OCCUPANCY ALL	OWANCE:	83	

RE	/ISIOI	NS:	NOTE SYMBOL

# Sheet Number Sheet T1.01 T1.02 T1.01 T1.01

Floor Plans	
A1.01	Floor Plan
A1.02	Dimension Floor Plan
Exterior Elevations	
A2.01	Exterior Elevations
Schedules and Standa	ards
A3.01	Commercial ADA-Ansi Guidelin
A3.02	Accessibility Site Details
Details & Sections	
A5.00	Building Sections
A5.01	Wall Sections
A5.02	Wall Sections
A5.03	Wall Sections
A5.04	Wall Details
A6.01	Door Details
A6.02	Door Details
A6.03	Window Details

Sheet List Table

Foundation Plan

Life Safety Plan

Roof Plan

Foundation Details

Roof Structural Plan

Mechanical	
M0.1	Mechanical Schedule And Details
M1.1	Mechanical Floor Plan
M2.1	Mechanical Specifications
M2.2	Mechanical Specifications
Electrical	
E0.1	Electrical Details, One- Line
⊏0.1	Diagram & Panel Schedules
E1.1	Electrical Power And Lighting
	Plans
E2.1	Electrical Specifications
Plumbing	
P0.1	Plumbing Details
P0.2	Domestic Water Riser
P1.1	Plumbing Domestic Water And
	Gas Plans
P1.2	Plumbing Sewer Plans
P2.1	Plumbing Specifications
Specifications	
SP1.01	Specifications
SP1.02	Specifications

1) ALL CONCRETE TO BE 4,000 P.S.I.

2) BUILDING FOUNDATIONS ARE DESIGNED FOR 2,000 P.S.F. SOIL BEARING CAPACITY. VERIFY BEFORE CONSTRUCTION.

3) FLOOR SLAB TO BE POURED THRU AT ALL DOORWAYS, SLOPE 2% TO OUTSIDE

4) FOOTING TO REST ON UNDISTURBED SOIL.

PROJECT NO:

21-4188 DRAWN BY:

2021-12-02

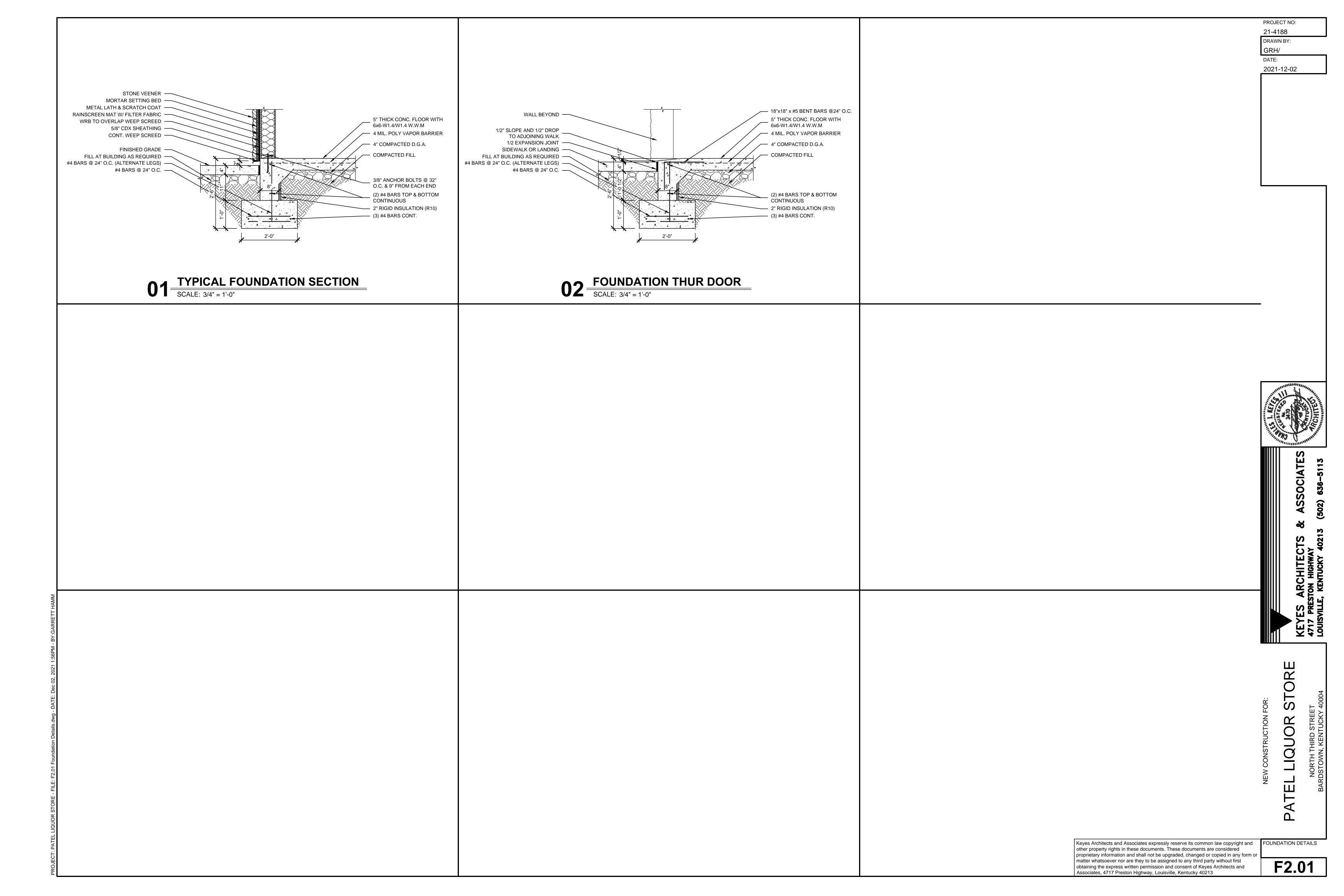
DATE:

**NOTE:** GENERAL CONTRACTOR RESPONSIBLE FOR COORDINATION OF ALL SUB TRADES AND REQUIREMENTS BY OWNER

**NOTE**: ELECTRICAL, HVAC AND PLUMBING TO BE RELOCATED PER FEDERAL, STATE AND LOCAL CODES. GENERAL CONTRACTOR TO COORDINATE.

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F1.01



PROJECT NO: 21-4188 DRAWN BY: DATE: 2021-12-02

TYPE	DESCRIPTION	MODEL#	BULBS
ER ▽	EMERGENCY REMOTE HEAD	LITHONIA #ELA-NX-H0606	INCLUDED
EM	EMERGENCY LIGHT W/ BATTERY PACK REMOTE HEAD WHERE SHOWN	LITHONIA #6ELM2P	INCLUDED
EXM	COMBINATION EXIT/EMERGENCY FIXTURE W/ BATTERY PACK	LITHONIA #LHQM-S-W-1-R-120/277-HO	INCLUDED

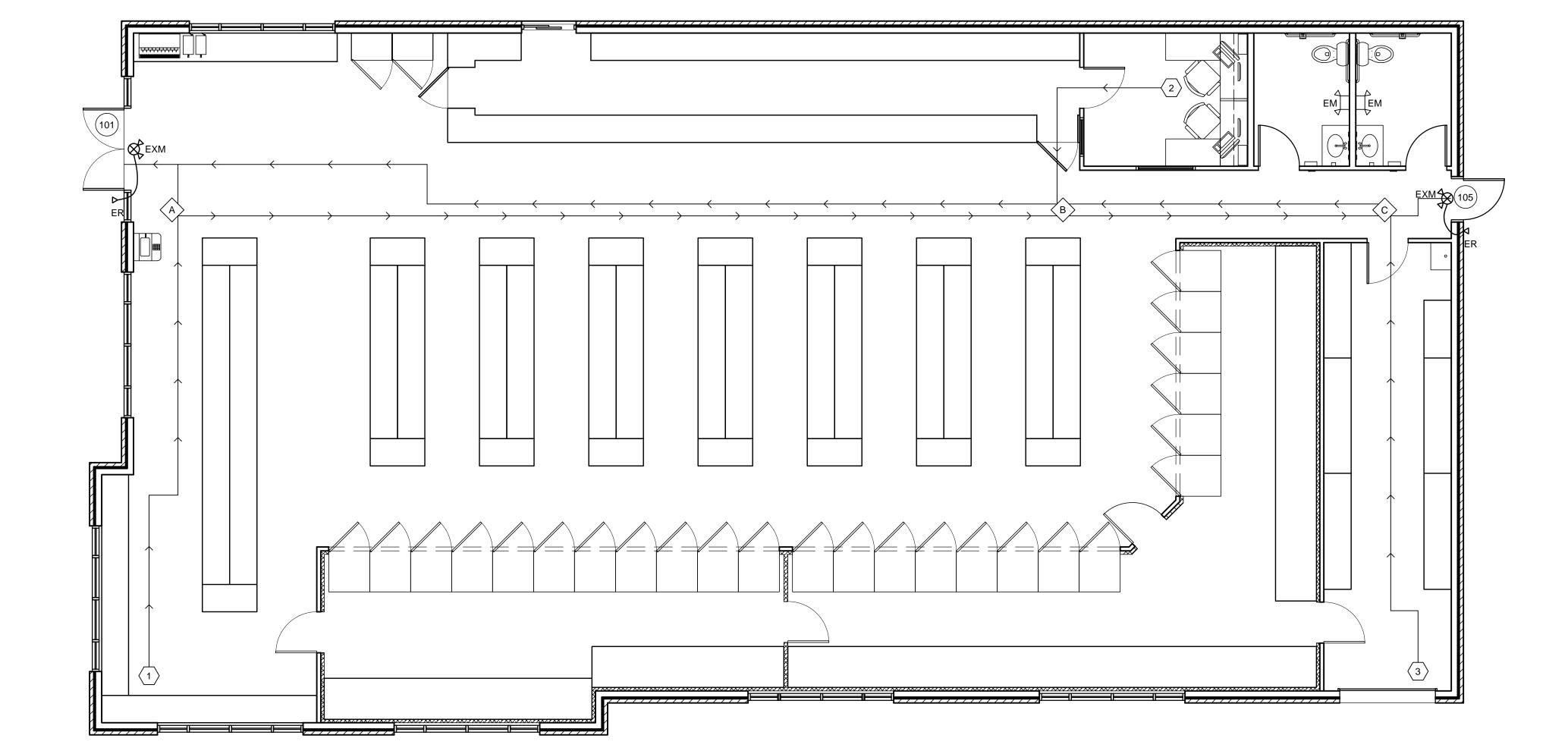
LIFE SAFETY PATHWAYS						
			TOTAL DISTA			
			DOOR NU	MBER		
LOCATION	С	OMMON PATH	EXIT 101	EXIT 10		
1	Α	34'-0"	40'-0"	130'-0'		
2	В	51'-0"	87'-3"	51'-0"		
3	С	35'-6"	132'-0"	41'-0"		
PATHWAY KE	THWAY KEY PLAN:					
	· TDAVEL	DATH W// DIDECTION				

<del></del>	: TRAVEL PATH W/ DIRECTION OF FLOW				
#	: TRAVEL PATH STARTING LOCATION, WHERE " = LOCATION COLUMN IN THIS TABLE.				
#	: COMMON PATH LOCATION, WHERE "#" = LOCATION COLUMN IN THIS TABLE.				
#	: EXIT DOOR LOCATION, WHERE "#" = DOOR IN THIS TABLE AND IN DOOR FINISH SCHEDULE.				



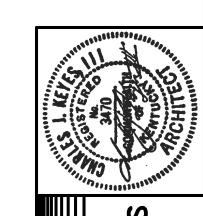


V-B MERCANTILE, GROUP - M 60 OCCUPANTS 60 OCCUPANTS 4,996 S.F. 75 FT SECTION 1017 TABLE 1017.2 250 FT

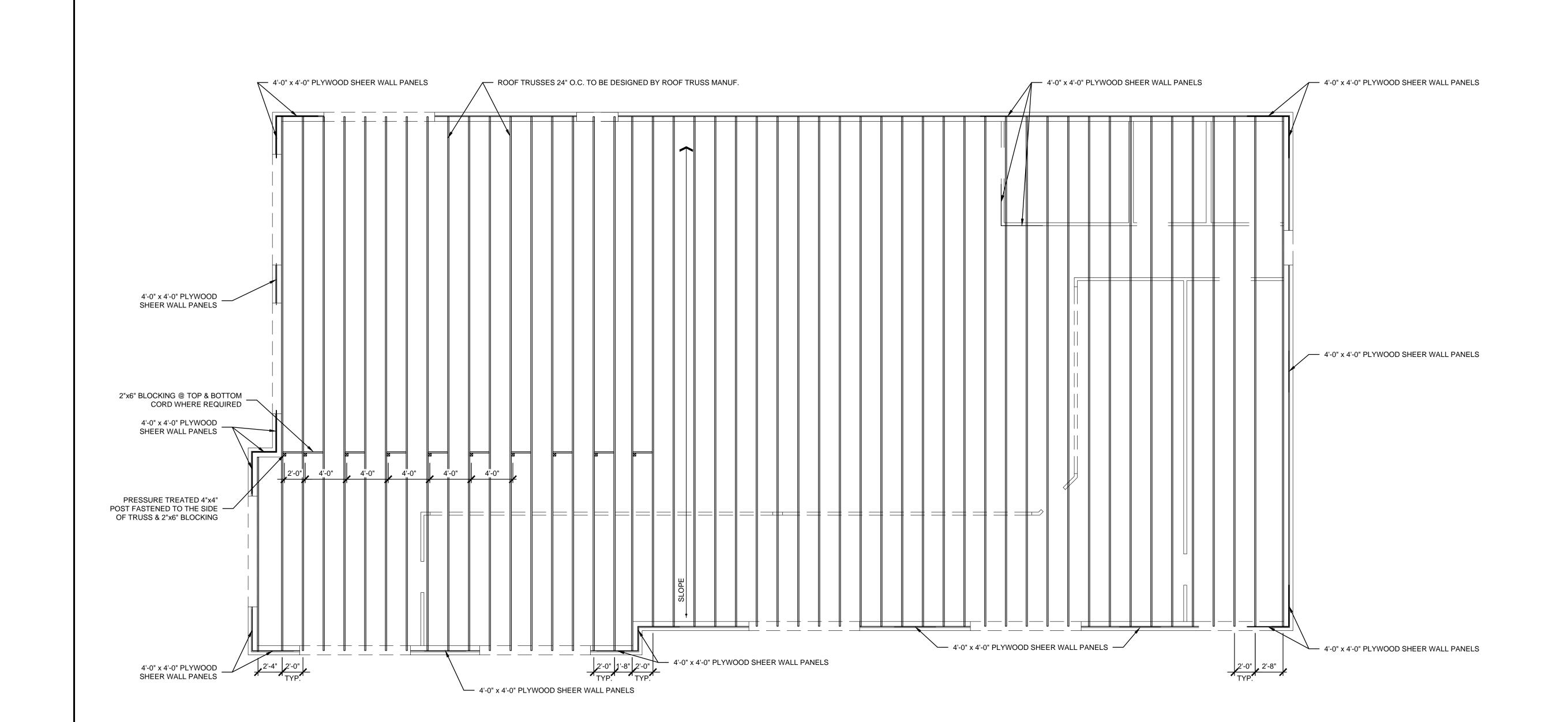




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 $\langle \mathsf{B} \rangle$ 

**BEER CAVE** 



CLEAR

ACCESS FEATURE

1 CLOSER W/ HOLD OPEN

6) HARDWARE BY MANUFACTURER

1 WEATHERSTRIP SET

1 STOREROOM SET 1 HINGE STOP

1 VERTICAL BAR

1 THRESHOLD

5) 1-1/2 PR. HINGES

#### WINDOW SCHEDULE REMARKS 1) PART OF THE STOREFRONT SYSTEM, SEE DOOR SCHEDULE.

09,10,11/A6.03

H.M.

3) VERIFY FINAL SIZE & SILL HEIGHT AFTER COORDINATING W/ CHECK-OUT

2) DRIVE-THRU WINDOW CASEWORK MANUF.

**NOTE**: ALL DIMENSIONS ARE TO FACE OF STUD

1) 2 PR. PIVOTS

2 CLOSERS

1 THRESHOLD

2) 1-1/2 PR. HINGES 1 OFFICE SET

1 WALL STOP

3) 1-1/2 PR. HINGES 1 PRIVACY SET 1 HINGE STOP

2 PR. PUSH/PULLS

1 PR. FLUSH BOLTS

1 WEATHERSTRIP SET

1 DEADBOLT (THUMB TURN INSIDE)

4'-4"x3'-8"

3'-6" A.F.F.

**NOTE**: GENERAL CONTRACTOR RESPONSIBLE FOR COORDINATION OF ALL SUB TRADES AND REQUIREMENTS BY OWNER NOTE: ELECTRICAL, HVAC AND PLUMBING TO BE

RELOCATED PER FEDERAL, STATE AND LOCAL CODES. GENERAL CONTRACTOR TO COORDINATE.

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2021-12-02

DATE:

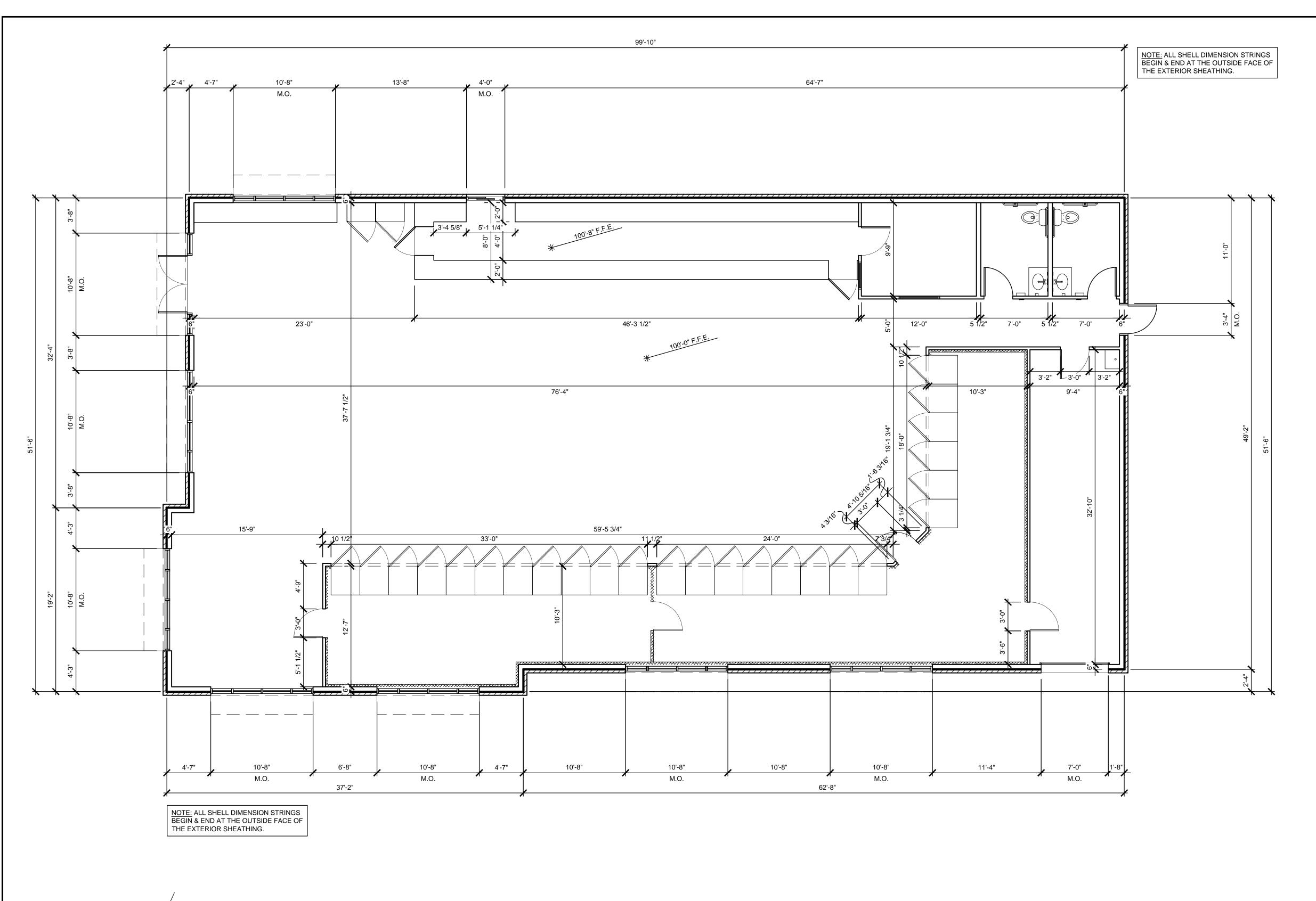
**REMARKS** 

1) DOOR PART OF ALUMINUM

SPECIFICATIONS)

STOREFRONT SYSTEM (SEE

A1.01



DIMENSION FLOOR PLAN

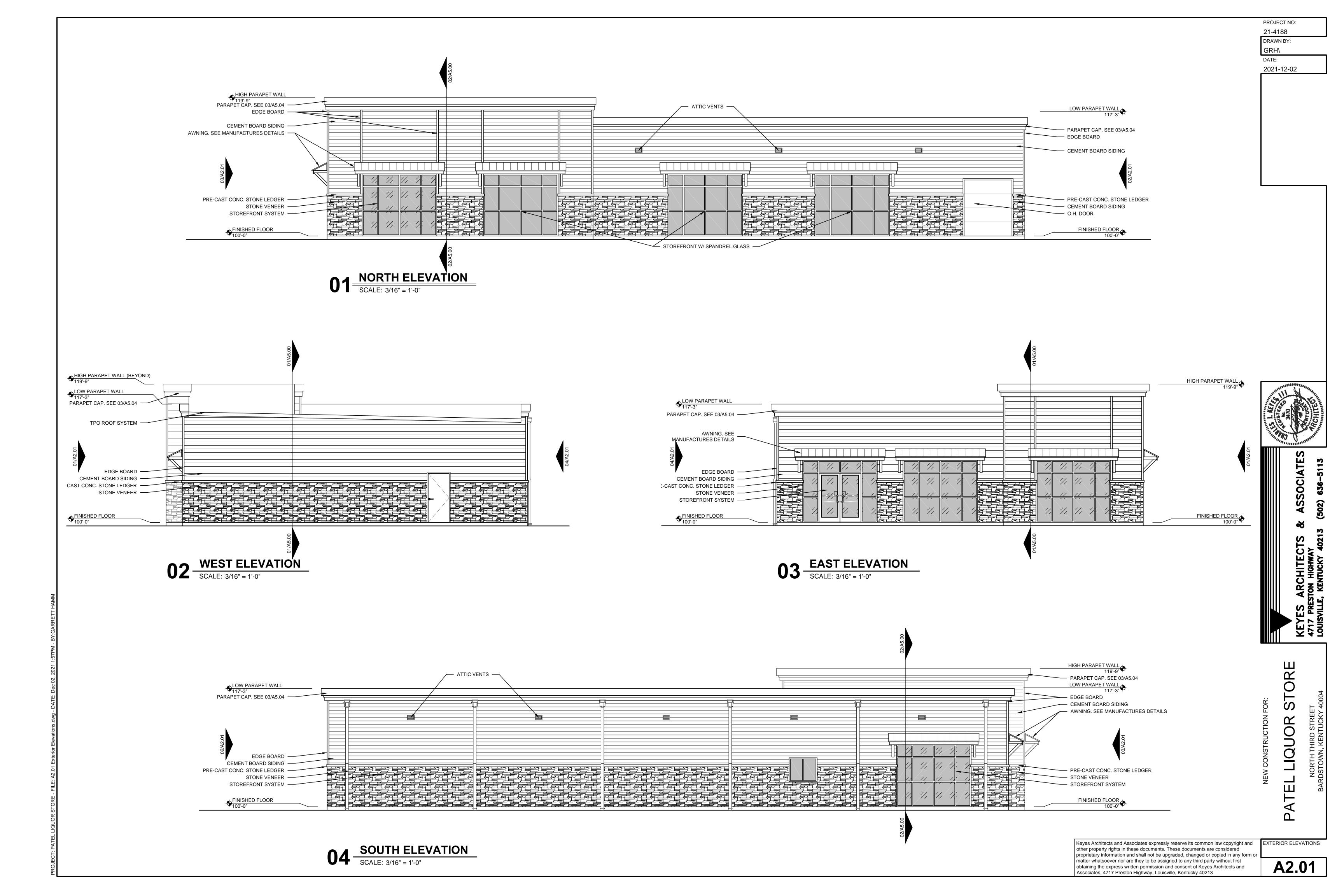
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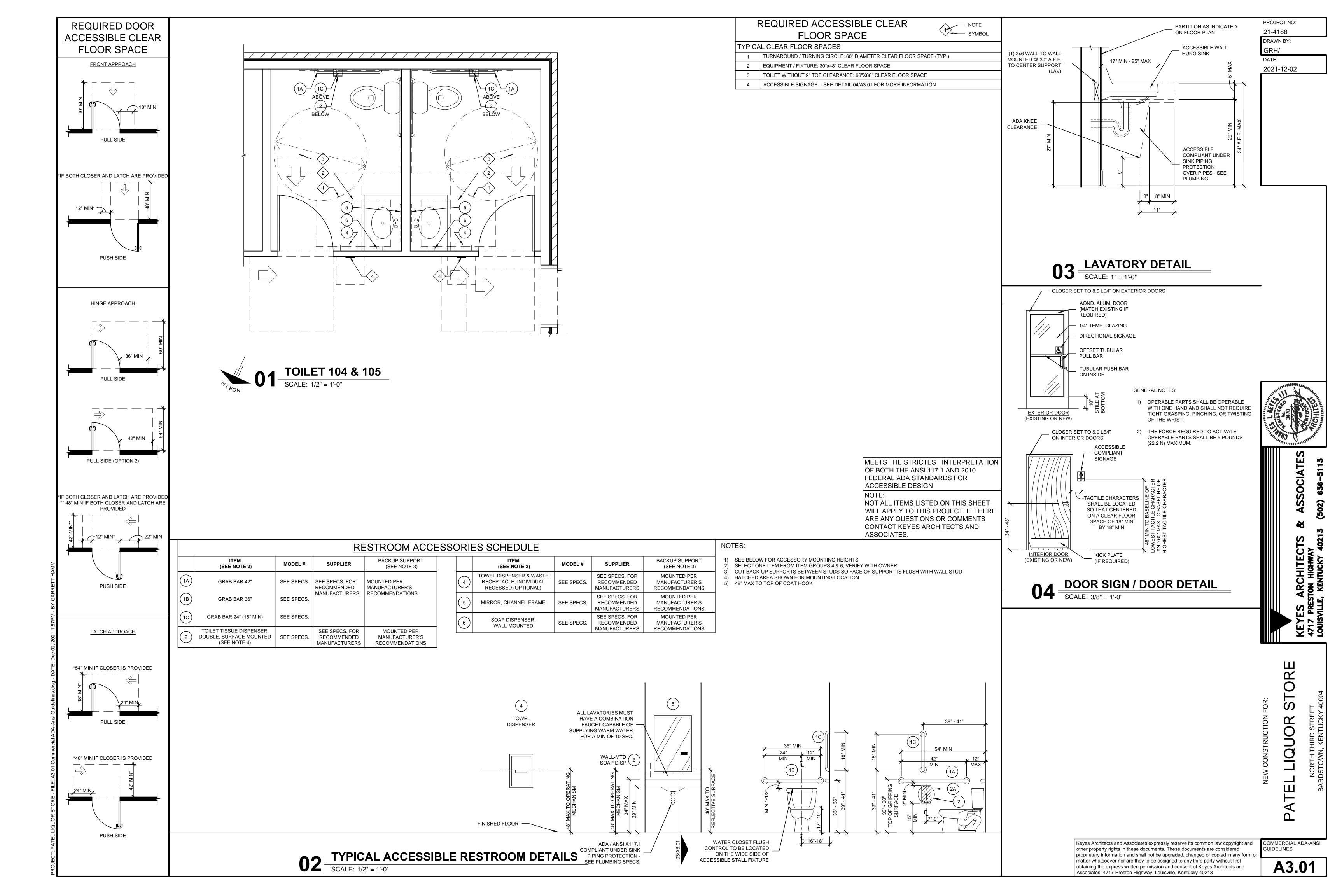
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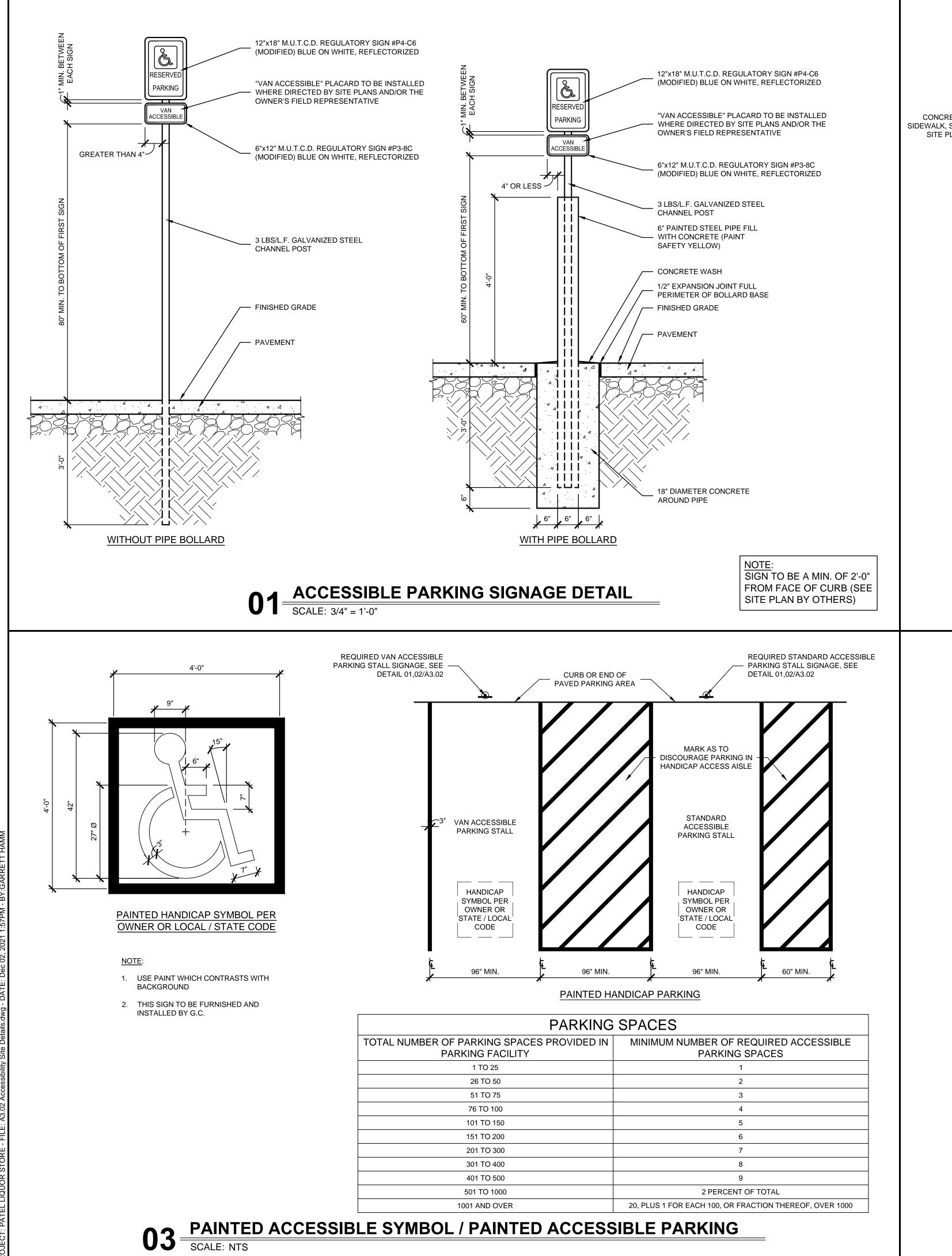
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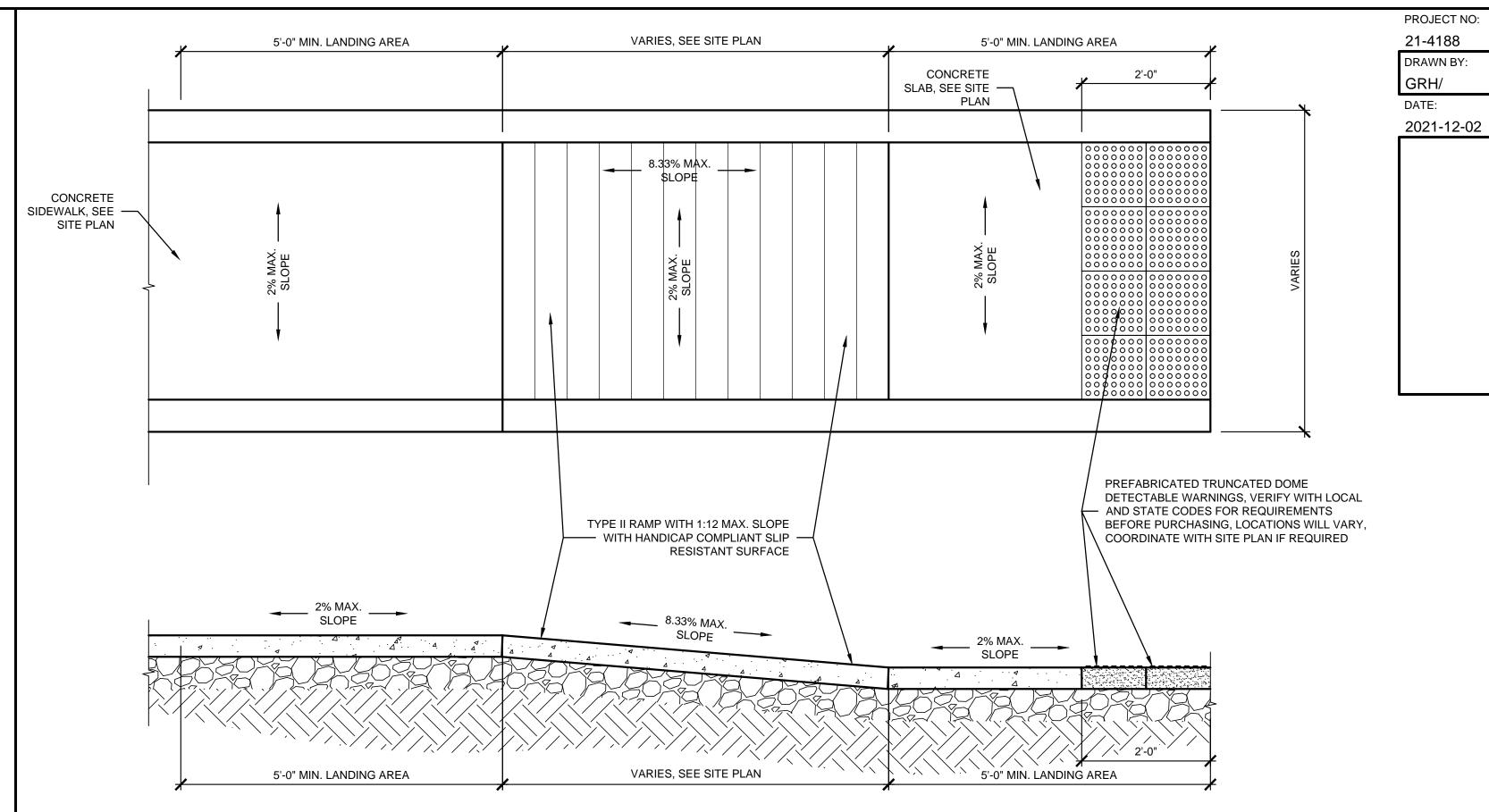
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O2 TYPE II ACCESSIBLE RAMP

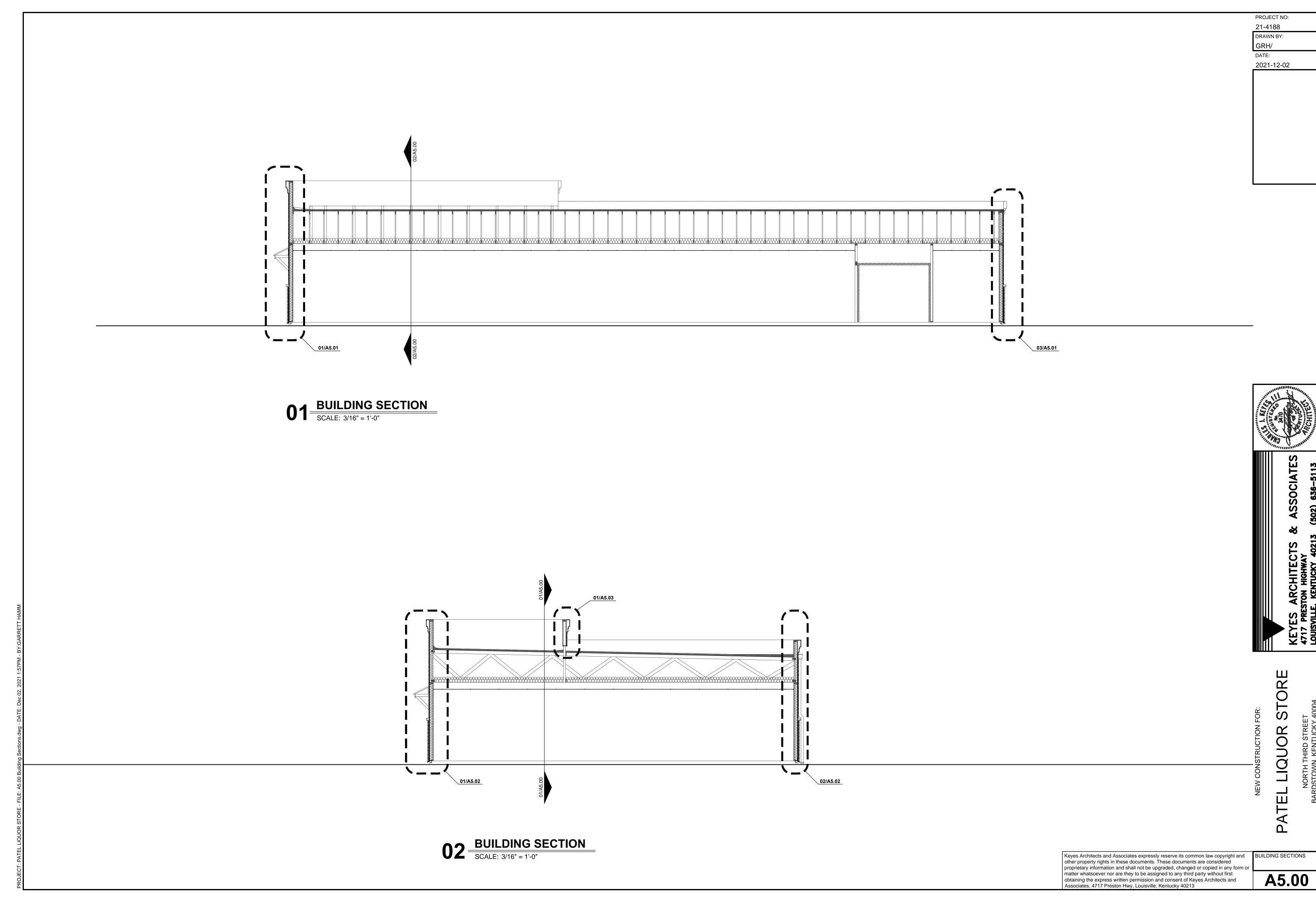
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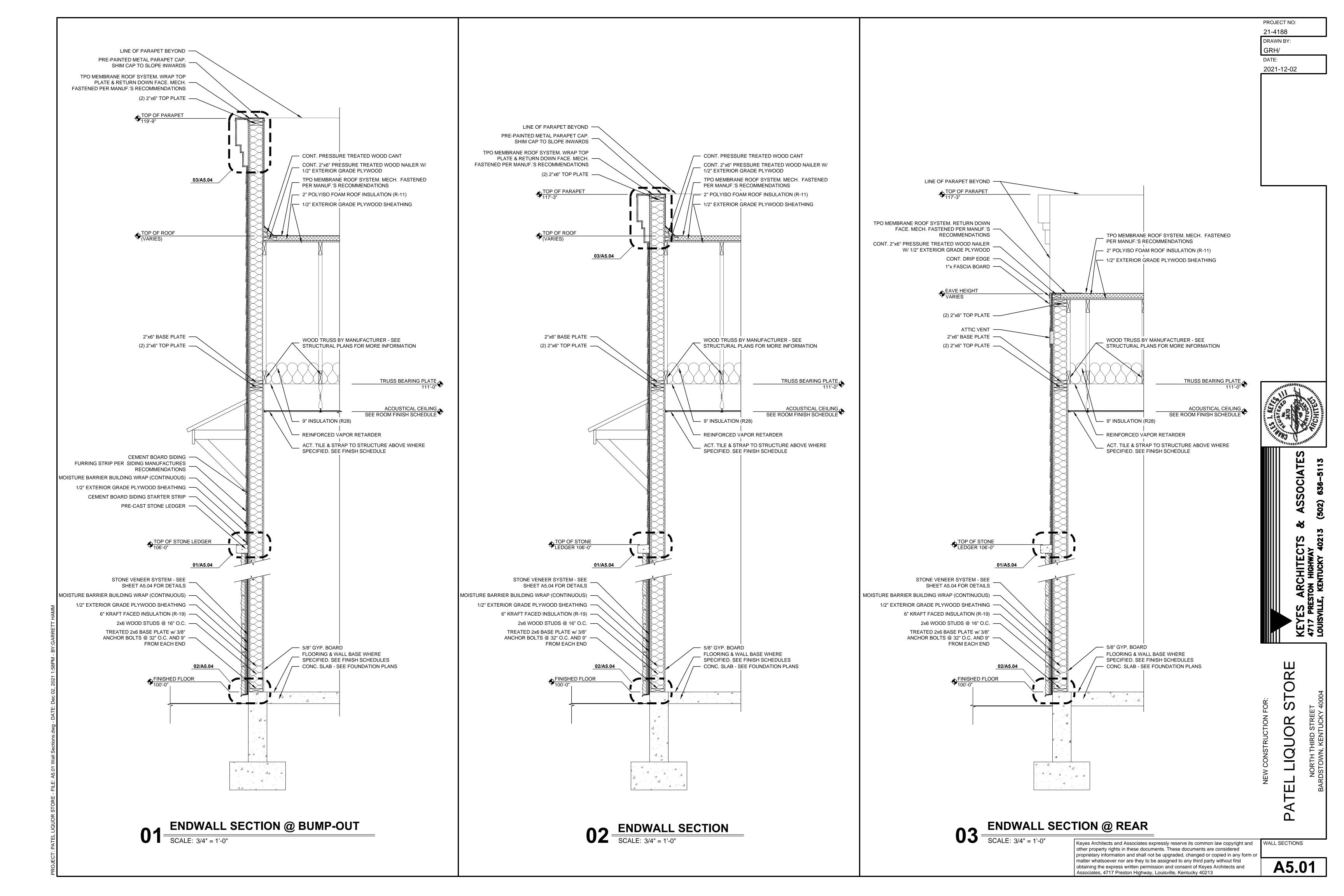


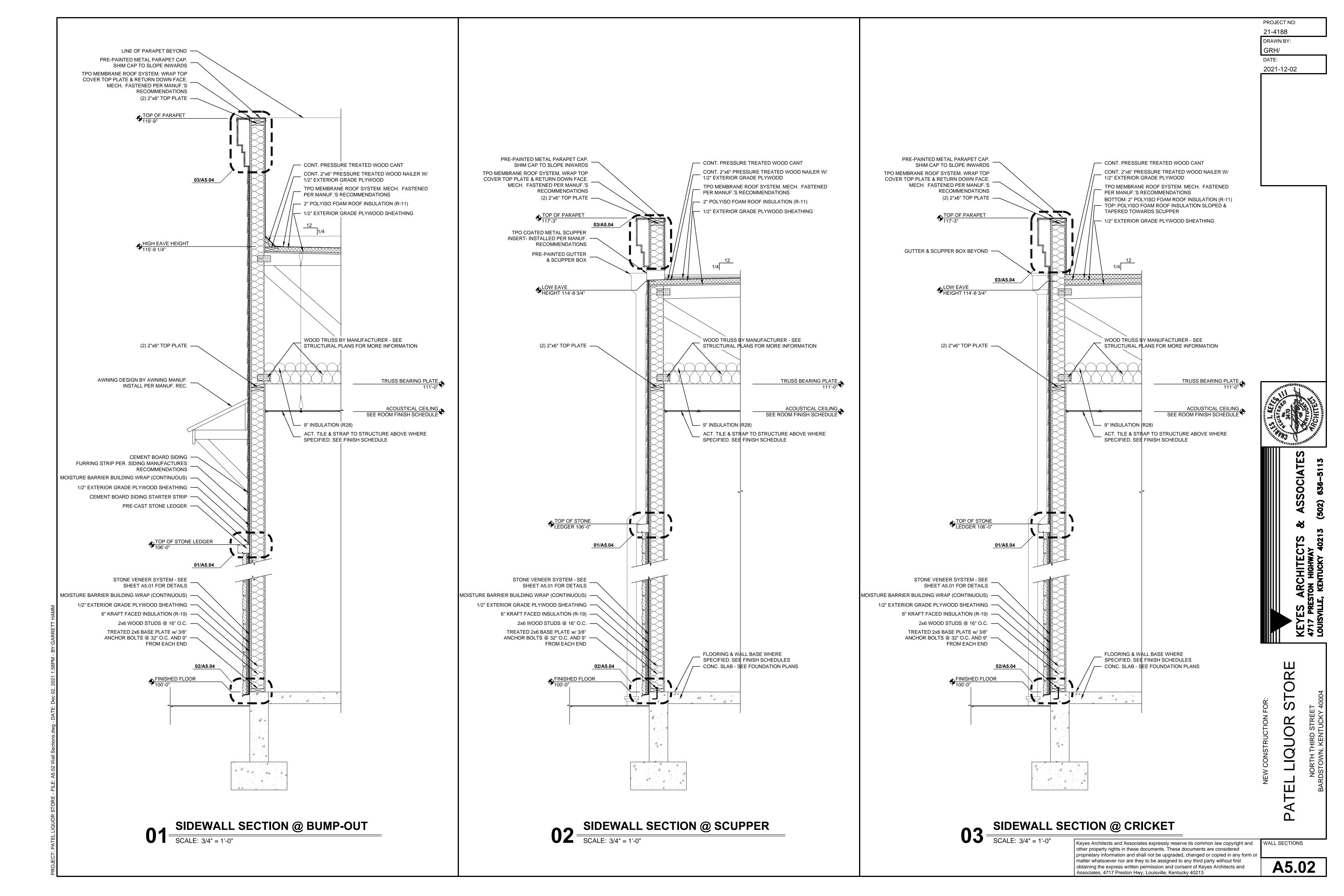
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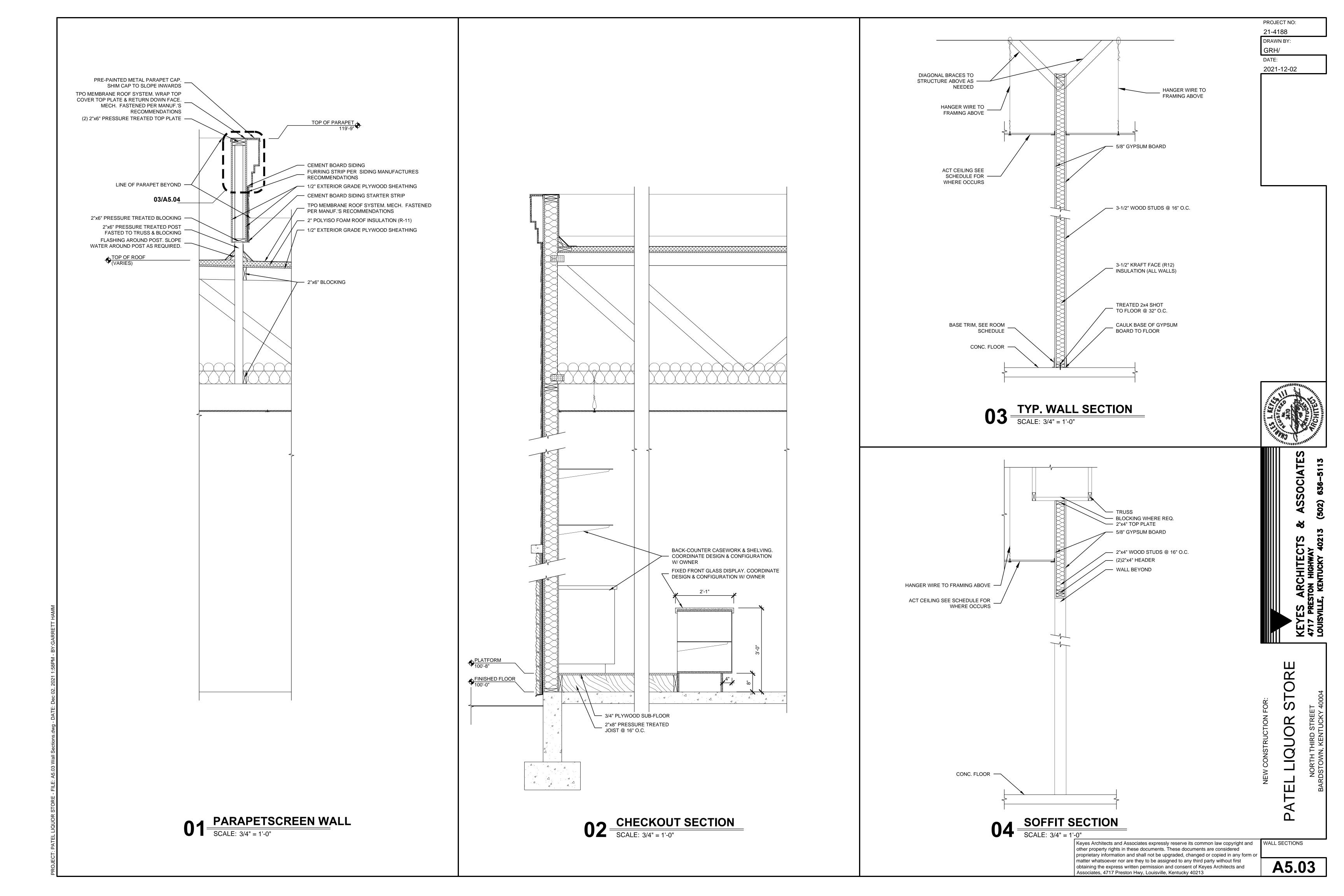
DETAILS

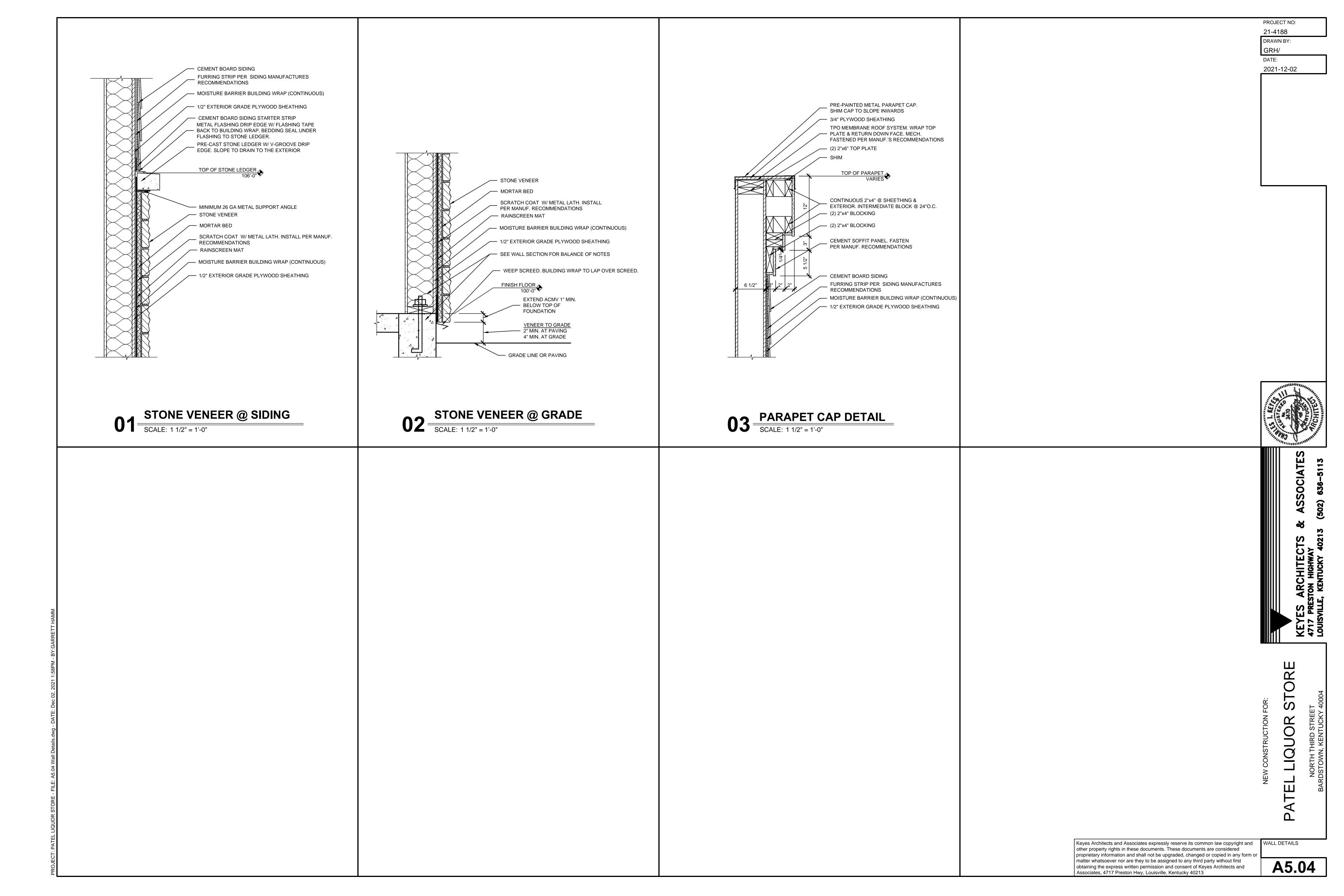
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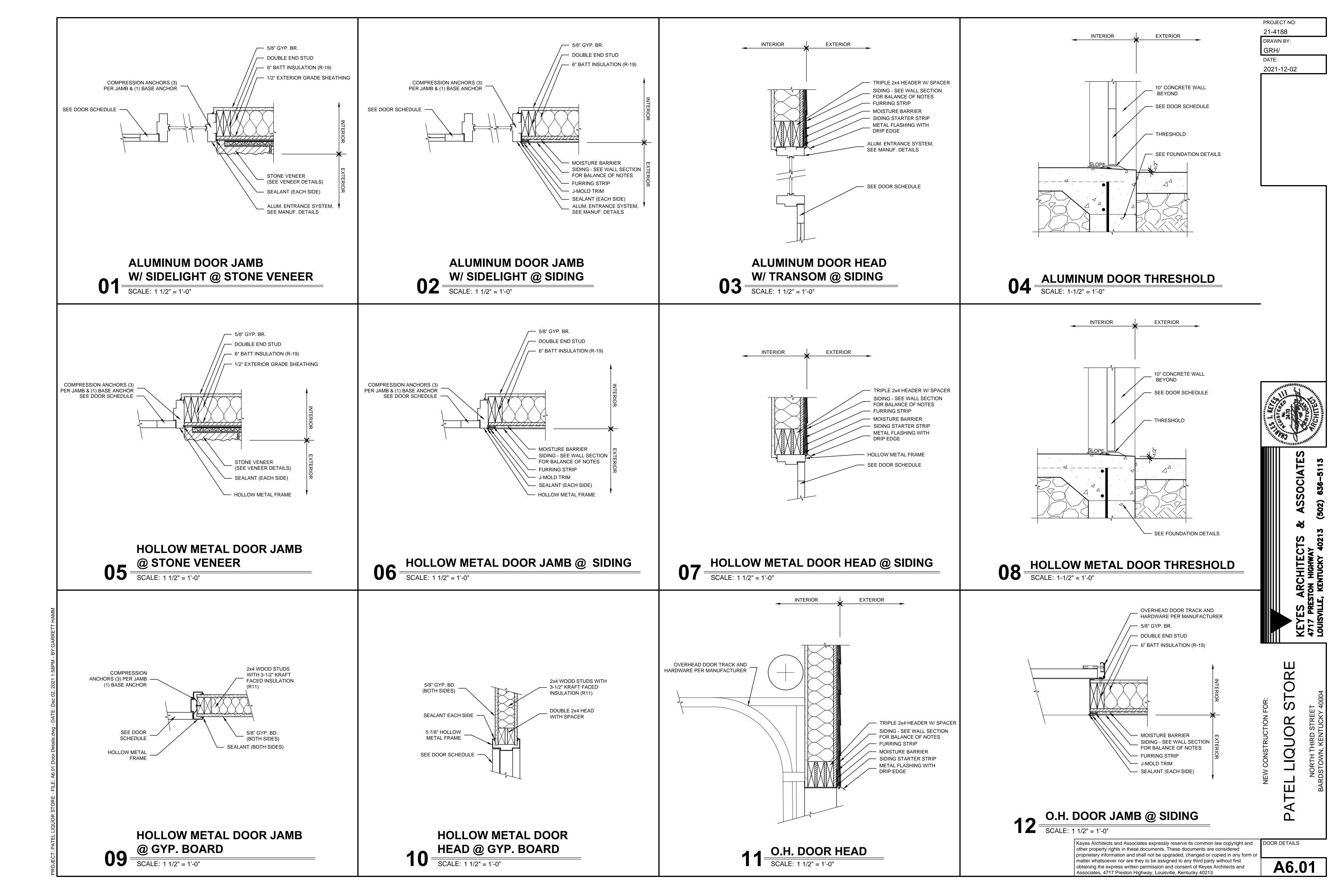


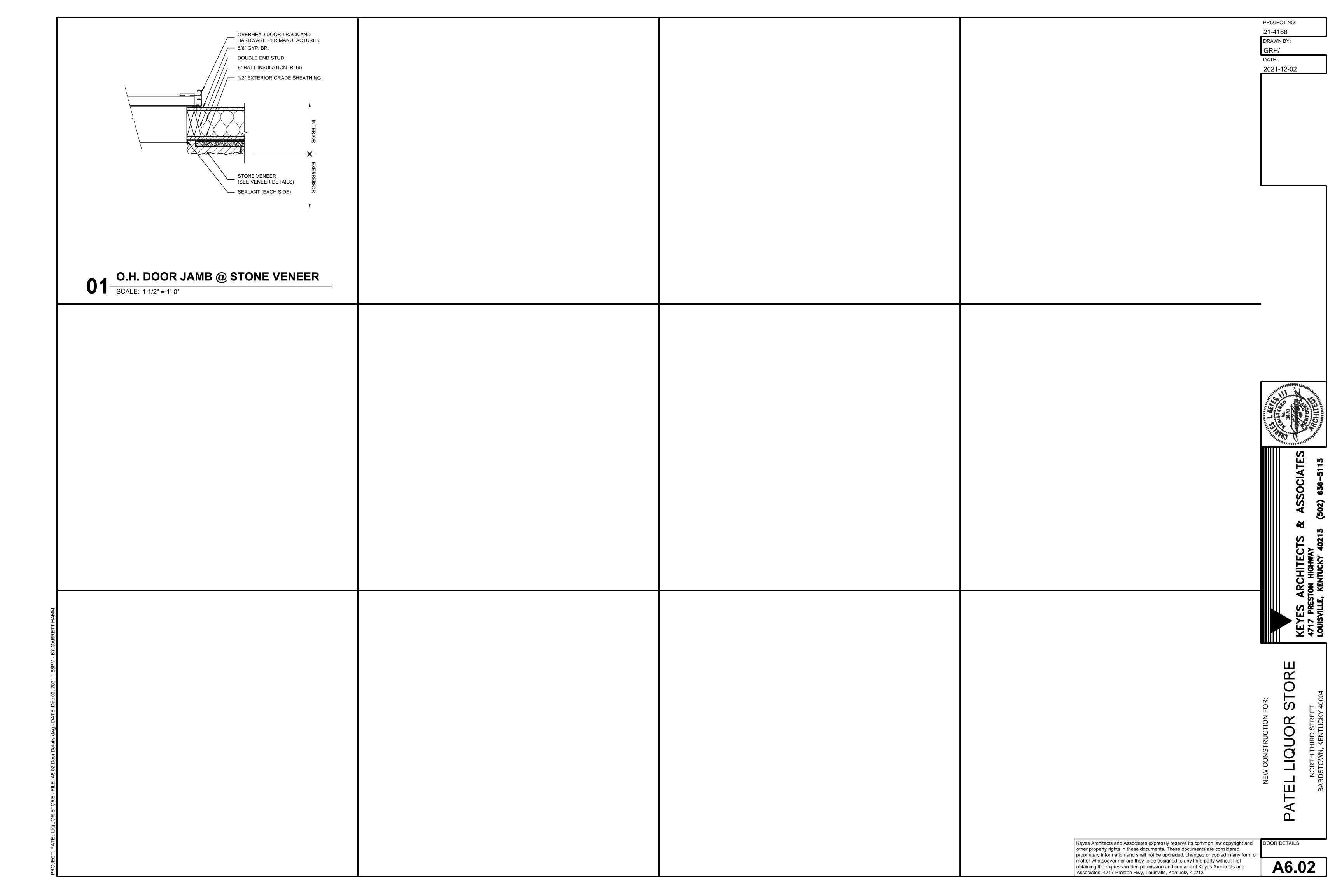


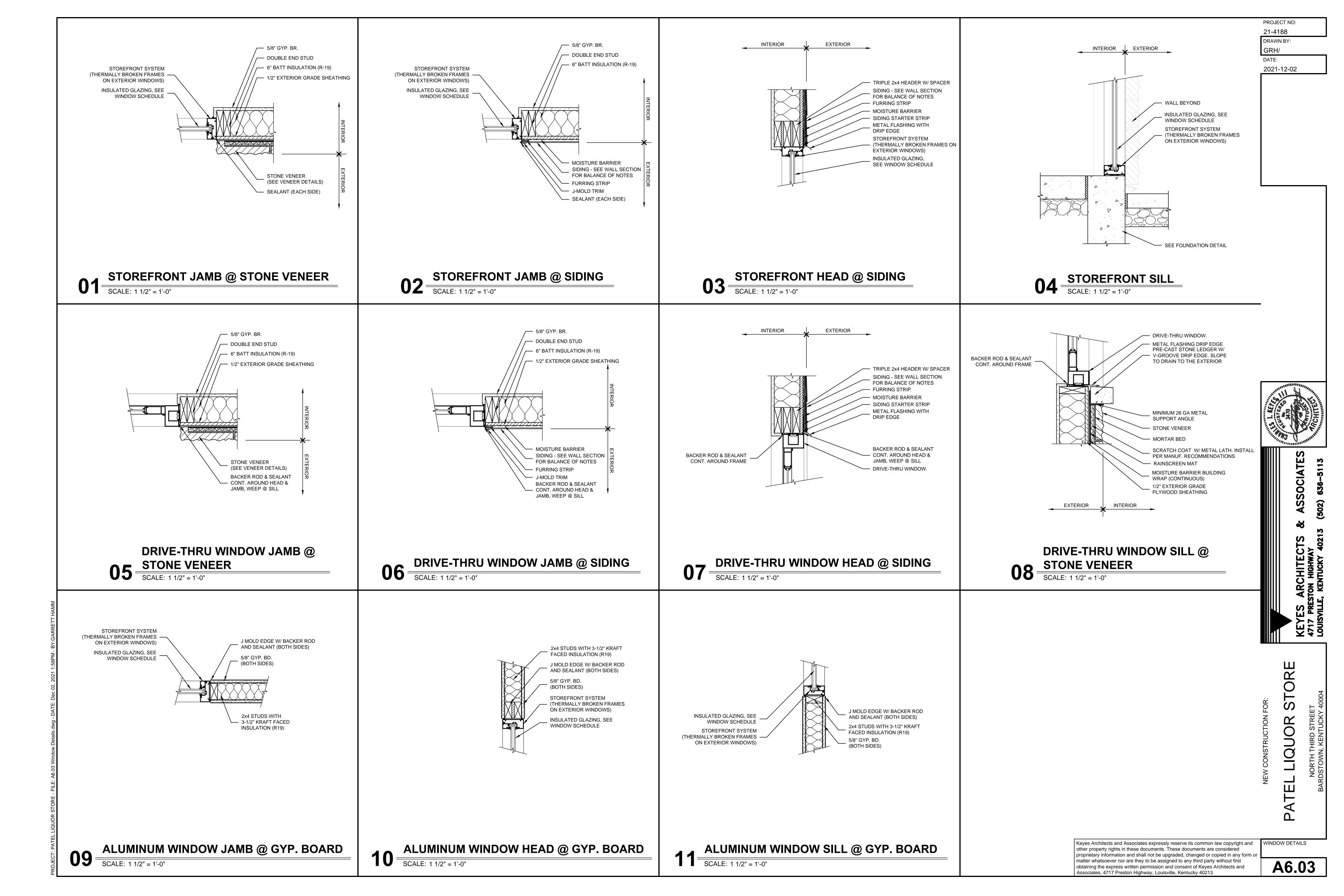


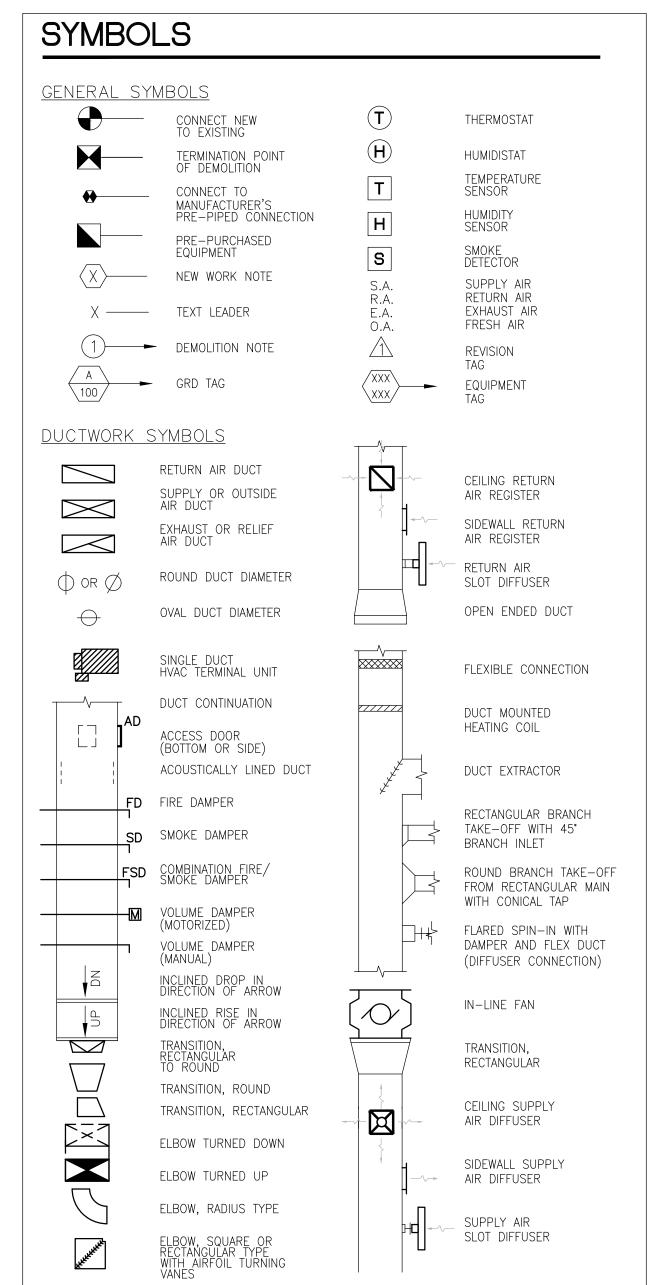


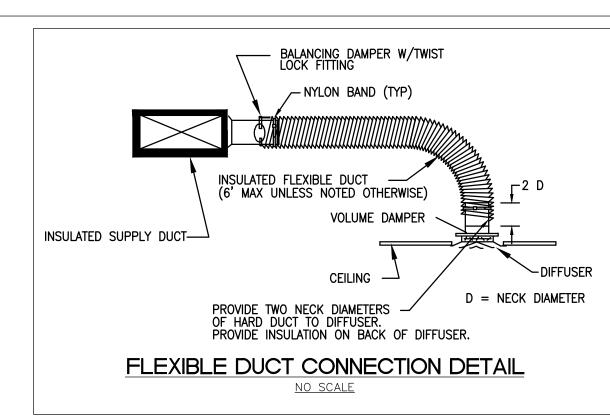




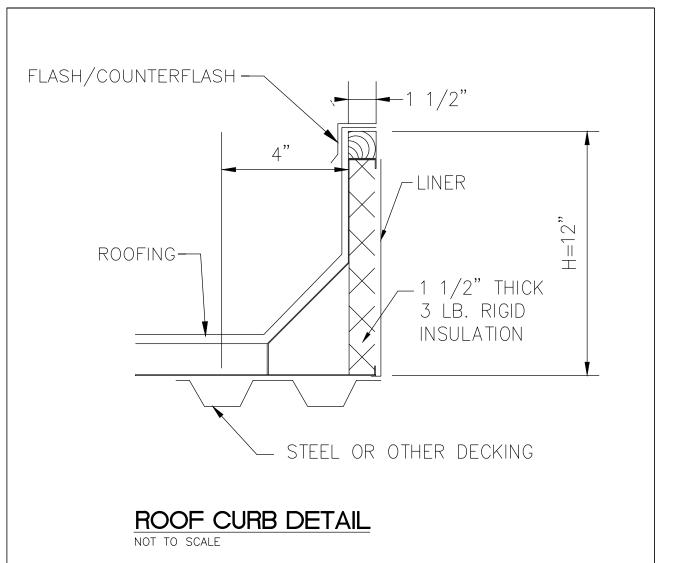


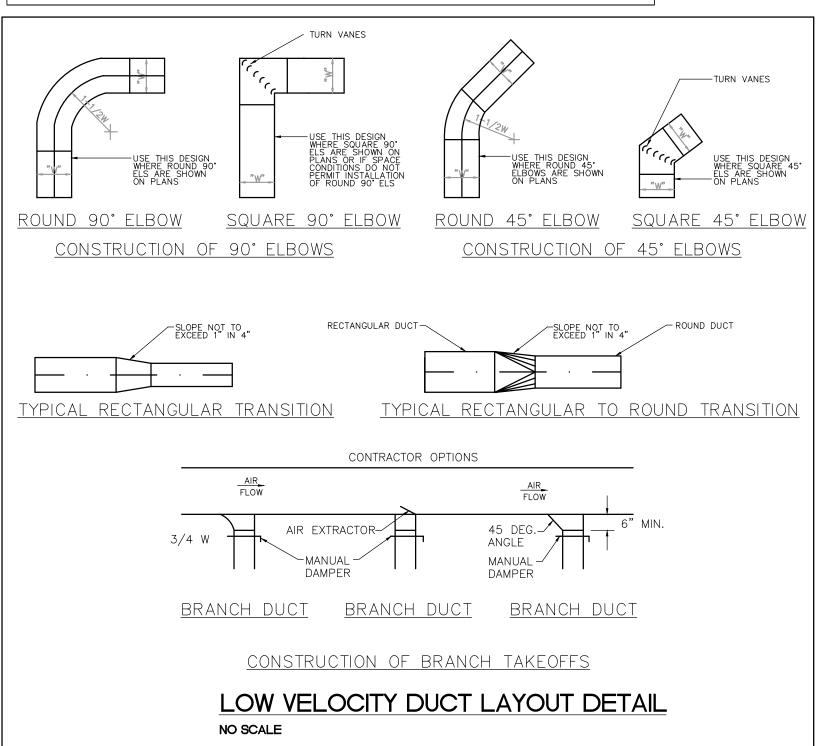






#### MECHANICAL ABBREVIATION LEGEND ABOVE AIR CONDITIONING GV - GATE VALVE GLV - GLOBE VALVE ACCESS DOOR HORSEPOWER HWR - HOT WATER RETURN HWS - HOT WATER SUPPLY HPCR - HIGH PRESSURE CONDENSATE RETURN ABOVE FINISHED FLOOR AIR HANDLING UNIT AIR SEPERATOR - HIGH PRESSURE STEAM (60 PSIG & UP) - HEATING, VENTILATING & AIR CONDITIONING UNIT AIR COMPRESSOR BRITISH THERMAL UNIT INVERT ÉLEVATION BUILDING CEILING RETURN REGISTER LOUVER LEAVING WATER TEMPERATURE CEILING SUPPLY REGISTER LOCATION CHILLED WATER CHILLED WATER RETURN MAKE-UP WATER MAXIMUM CHILLED WATER SUPPLY CHILLER MECHANICAL CONTRACTOR MEDIUM PRESSURE CONDENSATE RETURN MEDIUM PRESSURE STEAM (16 PSIG THRU 59 PSIG) CIRCULATING PUMP CLEAN OUT CONDENSATE DRAIN LINE - MINIMUM - OUT SIDE AIR DUCT CONDENSATE PUMP DISCHARGE PLUMBING CONTRACTOR CONNECT CONTINUATION PLUMBING/MECHANICAL/ELECTRICAL PRESSURE DROP (FEET OF WATER) COOLING TOWER PRESSURE REDUCING VAVLE REFERENCE REHEAT COIL CUBIC FEET PER MINUTE REFRIGERANT LIQUID REFRIGERANT SUCTION RETURN AIR DUCT RETURN AIR FAN ELECTRICAL CONTRACTOR EXPANSION TANK EXHAUST AIR DUCT ROOF TOP UNIT SUPPLY AIR DUCT SUPPLY AIR FAN SPLIT DAMPERSTATIC PRESSURE **EXISTING** EXTEND FAN COIL UNIT FEET FIRE DAMPER FLOOR THERMOSTAT UNIT HEATER - WITH NOTE: ALL SYMBOLS MAY NOT APPLY





# HVAC ECHIPMENT SCHEDIII E

	TVAC EQUIPMENT SCHEDULE												
UNIT	# BRAND	MODEL #	TONAGE	VOLTAGE	PHASE	HEATING INPUT	CFM	OUTSIDE AIR	HxWxL	WIGHT	MCA	M/F	ACCESSORIES
RTU-	-1 TRANE	YSC072H3RHA	6	208/230	3PH	120,000	2400	350	41X53X89	900 LBS	35	50	ALL
RTU-	-2 TRANE	YSC072H3RHA	6	208/230	3PH	120,000	2400	350	41X53X89	900 LBS	35	50	ALL

. NON-FUSED DISCONNECT

POWERED GFCI OUTLET THROUGH BASE GAS/ELECTRIC . MANUAL OUTSIDE AIR DAMPER 5. 0-100% FRESH AIR ECONOMIZER WITH COMPARATIVE ENTHALPY 6. 0-100% LOW LEAK ECONOMIZER WITH COMPARATIVE ENTHALPY 7. RETURN AIR SMOKE DETECTOR

8. T-STAT TO BE 7 DAY PROGRAMMABLE STAT WITH STANDER LOCKING

		EX	HAU	ST F	-AN	SC	HEDU	JLE	
unit #	BRAND	MODEL #	VOLTAGE	PHASE	CFM	ESP	DRIVE	WATTS / H.P.	REMARKS
EF-1	BROAN	L-150	120	1PH	150	.25	DIRECT	100 WATTS	ALL
EF-2	BROAN	L-150	120	1PH	150	.25	DIRECT	100 WATTS	ALL

<u>REMARKS:</u> . VIBRATION ISOLATORS

2. FLEXIBLE DUCT CONNECTION AT INLET AND/OR OUTLET

3. INSULATED CABINET 4. BACK-DRAFT DAMPER

# DIFFUSER, GRILLES, AND REGISTERS SCHEDULE

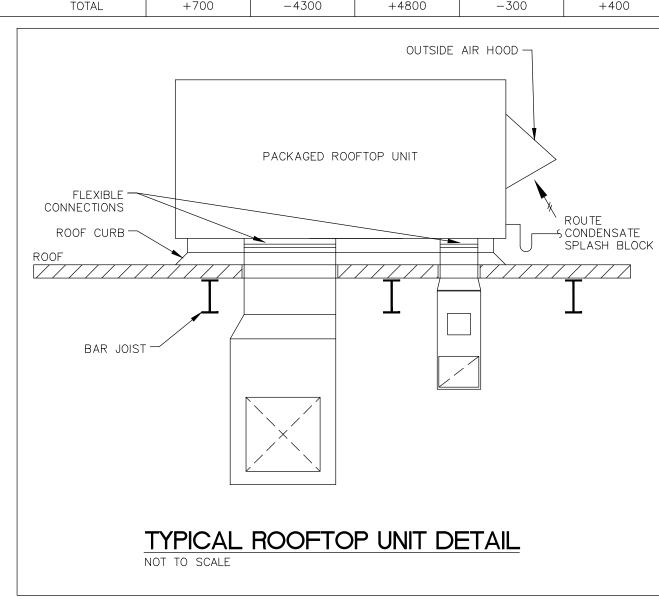
TAG	BRAND	MODEL #	DEFLECTION	VELOCITY	MAX. CFM	NC RATING	NECK SIZE	MAX. PD. IN WG.	ACCESSORIES
S-1	HART & COOLEY	FPD	4-WAY	500	300	<20	10"	.012	ALL
S-2	HART & COOLEY	FPD	4-WAY	500	100	<20	8"	.012	ALL
R-1	HART & COOLEY	FPD	4-WAY	500	600	<20	_	.012	ALL
R-2	HART & COOLEY	FPD	4-WAY	500	200	<20	10"	.012	ALL
	•		•		-		-		

<u> ACCESSORIES:</u> WHITE BAKED ENAMEL FINISH SILVER BAKED ENAMEL

LOUVER FACE OPPOSED BLADE DAMPER 5. STEEL CONSTRUCTION

# AIR BALANCE SCHEDULE CFM (OFFICE)

				•	
ITEM	OA	RA	SA	EA	PRESSURE
RTU-1	+350	-2150	+2400		+350
RTU-1	+350	-2150	+2400		+350
EF-1				-150	-150
EF-2				-150	-150
TOTAL	+700	-4300	+4800	-300	+400



PROJECT NO: DRAWN BY:

JMK DATE: 12-02-2021



STORE LIQUOR

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MECHANICAL SCHEDULE AND DETAILS

MECHANICAL FLOOR PLAN
SCALE: 3/16"=1'-0"

MECHANICAL KEY NOTES:

1. DUCT SMOKE DETECTOR. REFER TO ELECTRICAL DRAWINGS FOR MORE INFORMATION.

2. AREA T-STAT TO BE MOUNTED ON WALL 48" ABOVE FINISHED FLOOR.

3. ROOFTOP INTAKE TO BE A MINIMUM OF 10'-0" AWAY FROM ANY EXHAUST OR PLUMBING VENTS (TYPICAL).

4. EXHAUST DUCT THRU ROOF AND CONNECT TO HOOD PER MANUFACTURER'S RECOMMENDATIONS.

5. ROOFTOP TO BE A MINIMUM OF 10'-0" AWAY FROM EDGE OF BUILDING. IF ROOFTOP IS PLACED WITHIN 10'-0" THEN MAINTENANCE RAILS WILL NEED TO BE INSTALLED PER INTERNATIONAL MECHANICAL CODE.

6. VENT UP THRU ROOF AND TERMINATE. GC TO COORDINATE WITH LAND LANDLORD.

7. M.C. SHALL EXTEND ROOFTOP DRAIN TO ROOF AND SPILL. VERIFY EXACT ROUTING ON SITE.

8. M.C. SHALL REFER TO TYPICAL ROOFTOP UNIT DETAIL ON SHEET MO.1 FOR DUCTWORK INSTALLATION.

CONDENSING UNIT ON ROOF FOR BEER COOLER. UNIT TO BE PLACED ON 4"X4" TRADED WOOD. COORDINATE WITH GC FOR MOUNTING ON ROOF.

10. MC CONTRACTOR SHALL INSTALL COMPRESSOR AND EVAPORATOR AND MAKE FINAL CONNECTIONS. 11. DASHED LINES INDICATES EQUIPMENT TO BE PLACED ON ROOF.

PROJECT NO:

21-4188 DRAWN BY:

JMK

DATE: 12-02-2021



SOCIATES
) 636-5113

FOR: STORE W CONSTRUCTION F. LIQUOR (

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DIVISION 15 - MECHANICAL 15000 - HEATING & VENTILATING, AND AIR CONDITIONING, GENERAL

15005 - OPERATION AND MAINTENANCE MANUALS 15112 - HVAC PIPING, CONDENSATE DRAIN 15305 - DUCTWORK, LOW PRESSURE, GALVANIZED STEEL 15319 - DUCTWORK, LOW PRESSURE, FLEXIBLE

15450 - AIR DISTRIBUTION EQUIPMENT 15525 - AIR DISTRIBUTION EQUIPMENT, GAS FIRED HEATING 15802 - HVAC INSULATION, GENERAL

15841 - INSULATION, LOW PRESSURE DUCT 15885 - CONTROLS, ELECTRIC 15890 - TESTING, ADJUSTING AND BALANCING

HEATING, VENTILATING, AND AIR CONDITIONING, GENERAL

#### PART 1 — GENERAL

1.01 DESCRIPTION

A. SECTIONS 15000 THROUGH 15899 PERTAIN TO HEATING, VENTILATING AND AIR CONDITIONING (HVAC) WORK. THIS SECTION APPLIES TO AND GOVERNS ALL HVAC SECTIONS.

B. REFER TO OTHER DIVISIONS FOR CONTINUATION OF EXTERIOR AND ALLIED WORK.

C. FIELD PAINTING IS SPECIFIED IN DIVISION 9.

1.02 PERMITS, FEES, CODES, ORDINANCES AND REGULATIONS

A. OBTAIN AND PAY FOR ALL PERMITS. INSPECTIONS AND CONNECTION FEES REQUIRED BY GOVERNING BODIES IN CONNECTION WITH THE WORK. DELIVER CERTIFICATES OF INSPECTION TO THE ARCHITECT-ENGINEER.

B. ALL WORK SHALL COMPLY WITH GOVERNING CODES, ORDINANCES, AND REGULATIONS OF CITY, COUNTY AND STATE HAVING JURISDICTION, AND THE NATIONAL ELECTRICAL CODE, MECHANICAL CODE, AND REQUIREMENTS OF BOARD OF HEALTH.

#### 1.03 QUALITY ASSURANCE

A. INDUSTRY STANDARDS AND CODES: UNLESS MODIFIED BY THESE SPECIFICATIONS, THE DESIGN, MANUFACTURE, TESTING AND METHOD OF INSTALLING ALL MATERIALS, APPARATUS AND EQUIPMENT SHALL CONFORM TO THE FOLLOWING:

ARI CODE FOR REFRIGERATION APPARATUS ANSI B9.1 SAFETY CODE FOR MECHANICAL REFRIGERATION

STANDARDS OF NATIONAL FIRE PROTECTION ASSOCIATION ASHRAE

B. SUBSTITUTIONS: SEE GENERAL CONDITIONS

1.04 SUBMITTALS

A. SHOP DRAWINGS: SUBMIT ON ALL MATERIALS, PRODUCTS, EQUIPMENT AND SYSTEMS AS SPECIFIED UNDER HVAC SECTION IN THIS DIVISION IN ACCORDANCE WITH THE GENERAL

B. PRODUCT DATA: SUBMIT ON ALL MATERIALS, PRODUCTS AND EQUIPMENT UNLESS OTHERWISE SPECIFIED OR ACKNOWLEDGED IN WRITING.

C. SAMPLES: SUBMIT WHEN SPECIFIED OR REQUESTED

D. TEST AND BALANCE REPORT: SUBMIT AT FINAL INSPECTION

E. OPERATION AND MAINTENANCE MANUALS: SUBMIT COPIES IN COMPLIANCE WITH SECTION, OPERATION AND MAINTENANCE MANUALS.

1.05 JOB CONDITIONS

A. PROTECT MATERIALS, APPARATUS AND EQUIPMENT FROM DAMAGE, MOISTURE, DIRT, DEBRIS AND

B. USE OF PAPER, CARDBOARD OR OTHER FLIMSY MATERIAL WILL NOT BE PERMITTED. REPLACE DAMAGED PROTECTIVE MATERIALS IMMEDIATELY. DO NOT INSTALL DAMAGED MATERIALS AND FOUIPMENT: REMOVE FROM THE SITE.

#### 1.06 RECORD DOCUMENTS

A. REFER TO GENERAL CONDITIONS AND DIVISION 1 FOR REQUIREMENTS CONCERNING RECORD

B. FURNISH ARCHITECT-ENGINEER WITH ONE SET OF ACCURATELY MARKED BLUE-LINE COPIES OF THE DRAWINGS, INDICATING ALL CHANGES FROM THE CONTRACT DRAWINGS AND ALL HVAC WORK AND CONTROLS AS INSTALLED.

1.07 GUARANTEE AND SERVICE

A. REFER TO GENERAL CONDITIONS FOR GUARANTEE.

B. WHERE EXTENDED GUARANTEES ARE CALLED FOR HEREIN, FURNISH THREE COPIES TO BE INSERTED IN OPERATION AND MAINTENANCE MANUALS.

C. ALL PREVENTATIVE MAINTENANCE AND NORMAL SERVICE WILL BE PERFORMED BY THE OWNER'S MAINTENANCE PERSONNEL AFTER FINAL ACCEPTANCE OF THE WORK. THIS SHALL NOT ALTER THE CONTRACTOR'S GUARANTEE OF THE WORK IN ANY WAY.

D. ALL LABELS SHALL BE SECURELY AFFIXED. PART 2 - PRODUCTS

A. ALL MATERIALS AND EQUIPMENT SHALL BE NEW. SYSTEMS SHALL BE PROVIDED COMPLETE, AND EACH SYSTEM AS A WHOLE, AND IN ALL ITS PARTS, SHALL FUNCTION CORRECTLY UP TO THE SPECIFIED CAPACITY. SHOULD A SYSTEM, OR ANY PART THEREOF FAIL TO MEET PERFORMANCE REQUIREMENTS, NECESSARY REPLACEMENTS, ALTERATIONS OR REPAIRS, AS REQUIRED BY THE ARCHITECT-ENGINEER, SHALL BE MADE TO BRING PERFORMANCE UP TO SPECIFIED REQUIREMENTS OF BUILDING CONSTRUCTION AND FINISHED DAMAGED OR MARRED BY SUCH REPLACEMENTS, ALTERATIONS OR REPAIRS SHALL BE RESTORED TO PRIOR CONDITIONS, AT NO ADDITIONAL COST TO THE

B. WHERE MULTIPLE ITEMS OF EQUIPMENT OF MATERIALS ARE REQUIRED, THEY SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER.

C. BEFORE ORDERING ANY EQUIPMENT, THE SIZE OF ALL EQUIPMENT SHALL BE CHECKED TO EASILY FIT

SPACES ALLOTTED ON THE DRAWINGS D. INSERTS PIPE SLEEVES. SUPPORTS AND ANCHORAGE OF AIR CONDITIONING EQUIPMENT SHALL BE PROVIDED IS SPECIFIED HEREIN. WHERE SUCH ITEMS ARE TO SET OR EMBEDDED IN CONCRETE MASONRY OR SIMILAR WORK, THE ITEMS SHALL BE FURNISHED AND LAYOUT MADE AT THE PROPER

TIME FOR THE SETTING OR EMBEDMENT THEREOF SO AS TO CAUSE NO DELAY IN THE WORK.

E. PIPING ASSEMBLIES OF EQUIPMENT SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC. ALL PIPING AND APPURTENANCES REQUIRED FOR THE PROPER OPERATION OF ALL EQUIPMENT SHALL BE

2.02 MANUFACTURER'S NAMES AND CATALOG NUMBERS

A. SPECIFIC REFERENCES HAVE BEEN MADE TO ONE OR MORE MANUFACTURER'S NAMES AND MODEL B. THIS DOES NOT INDICATE THAT THE MATERIAL AND EQUIPMENT SPECIFIED IS NECESSARILY AN "OFF THE SHELF" ITEM; REQUIREMENTS FOR SPECIFIC FINISHES, MATERIALS OR OTHER MODIFICATIONS MAY INTRODUCE VARIANCES FROM MANUFACTURER'S STANDARDS. CONTRACTOR SHALL ASCERTAIN

THAT SUCH MODIFICATIONS ARE FULLY CONSIDERED. 2.03 DIAGRAMS. NAMEPLATES AND LABELS

A. EACH MAJOR COMPONENT OF EQUIPMENT SHALL HAVE THE MANUFACTURER'S NAME, ADDRESS AND CATALOG NUMBER ON A PLATE SECURELY AFFIXED IN A CONSPICUOUS PLACE. THE NAMEPLATE OF A DISTRIBUTING AGENT WILL NOT BE ACCEPTED.

B. ALL PIECES OF EQUIPMENT, VALVES, STARTERS, DISCONNECTS, AND ALL PNEUMATIC AND ELECTRIC CONTROL INSTRUMENTS AND APPARATUS SHALL BE IDENTIFIED WITH 1/16" THICK BLACK LAMINATED PLASTIC NAMEPLATES, WITH 3/16" HIGH WHITE LAMINATED LETTERS. SIMILAR AND LIKE EQUIPMENT SHALL BE DESIGNATED WITH NUMERICAL SUFFIX (EXAMPLE: THERMOSTAT, T-1) THE NAMEPLATE IDENTIFICATIONS SHALL COINCIDE WITH ITEMS APPEARING ON DIAGRAMS.

C. PROVIDE A LABEL FOR THE MECHANICAL SYSTEM STATING:

" INSTALLATION BY (NAME, ADDRESS AND PHONE NUMBER OF CONTRACTOR)

D. LETTERS SHALL BE 1/4" HIGH AND LOCATED IN A CONSPICUOUS PLACE IN THE MECHANICAL ROOM.

PART 3 — EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. THE WORK SHALL BE PERFORMED BY QUALIFIED MECHANICS AND ALL MATERIALS, APPARATUS AND EQUIPMENT SHALL BE INSTALLED IN NEAT, WORKMANLIKE MANNER. ANY MATERIAL, APPARATUS OR EQUIPMENT WHICH, IN THE OPINION OF THE ARCHITECT-ENGINEER, IS IMPROPERLY INSTALLED SHALL BE REMOVED AND REINSTALLED IN AN APPROVED MANNER AT NO ADDITIONAL COST TO THE

B. THE WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES. WHERE THE WORK IS DEPENDENT UPON WORK OF OTHER TRADES OR WORK ALREADY IN PLACE, SUCH OTHER WORK AND WORK IN PLACE SHALL BE EXAMINED AND SHALL. BE IN PROPER CONDITION AND STATE OF COMPLETION BEFORE CONTINUING THE INSTALLATION.

C. THE INSTALLATION OF THE SYSTEM SHALL, IN GENERAL, BE ACCORDANCE WITH THE DRAWINGS WITH REGARDS TO LOCATION OF EQUIPMENT, DUCTS, PIPES, AND THE LIKE. PIPING DUCTWORK INDICATED SHALL BE FOLLOWED AS ACCURATELY AS ACTUAL CONSTRUCTION WILL PERMIT AND ANY DEVIATIONS THEREFROM SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT—ENGINEER. WHERE NECESSARY, AS DETERMINED BY THE ARCHITECT-ENGINEER, CONTRACTOR SHALL FURNISH DRAWINGS SHOWING PROPOSED CHANGES.

#### 3.02 EARTHWORK AND DEWATERING

A. PERFORM IN ACCORDANCE WITH DIVISION 2.

3.03 CUTTING AND PATCHING

A. LAYOUT OPENINGS FOR CUTTING BY OTHER TRADES AS REQUIRED.

B. CUTTING OF STEEL. CONCRETE OR ANY OTHER STRUCTURAL PART MUST BE APPROVED IN WRITING BY ARCHITECT-ENGINEER PRIOR TO CUTTING. 3.04 WATERPROOFING

A. DO NOT CUT OR PENETRATE WATERPROOFED SURFACES, OR WATERPROOFING MEMBRANES. WITHOUT FIRST MAKING ARRANGEMENTS FOR REPAIR BY A METHOD APPROVED BY ARCHITECT-ENGINEER. 3.05 ELECTRICAL WORK

A. POWER WIRING FROM PANELS TO MOTOR CONTROLLERS AND FROM CONTROLLERS TO MOTORS IS SPECIFIED IN DIVISION 16.

B MOTOR STARTERS NOT SPECIFIED TO BE PROVIDED WITH THE MOTORS AT THE FACTORY ARE SPECIFIED

C. SUBMIT WIRING DIAGRAMS FOR APPROVAL AND PROVIDE APPROVED DIAGRAMS SO THAT THE ELECTRICAL WORK MAY BE PROPERLY ACCOMPLISHED.

D. ELECTRICAL CONTROL WIRING FOR CONNECTION OF TEMPERATURE CONTROLLERS, PUSH BUTTONS, INTERLOCKS IN MOTOR CONTROLLERS, AND LIKE ITEMS IS SPECIFIED IN THE CONTROL SECTIONS(S) IN THIS DIVISION. FURNISH ALL EQUIPMENT WITH COMPLETE INTERNAL CONTROL WIRING.

E. ELECTRICAL WORK SPECIFIED IN THIS DIVISION SHALL CONFORM TO APPLICABLE PROVISIONS OF DIVISION 16. ALL CONTROL WIRING SHALL BE IN CONDUIT.

F. PROVIDE MOTORS CONFORMING TO CHARACTERISTICS SHOWN ON ELECTRICAL DRAWINGS.

3.06 SUPPORTS FOR PIPING AND EQUIPMENT A. SUPPORT FOR PIPING AND EQUIPMENT SHALL BE SUPPORTED FROM STRUCTURAL MEMBERS AND NOT FROM METAL DECK AND SLAB ASSEMBLIES.

3.07 ACCESS DOORS (ACCESS PANELS)

A. PROVIDE ACCESS REQUIRED FOR MAINTENANCE, ADJUSTMENT, REMOVAL AND REPAIR OF VALVES, CONTROLS, DAMPERS, EQUIPMENT AND LIKE ITEMS FURNISHED HERE-UNDER.

B. PROVIDE ACCESS DOORS CONFORMING TO REQUIREMENTS OF SECTION ACCESS DOORS (ACCESS PANELS), IN DIVISION 8. PANELS SHALL BE LOCATED TO MAKE ALL ITEMS EASILY ACCESSIBLE. 3.08 CLEAN UP

A. REFER TO GENERAL CONDITIONS FOR CLEANING-UP.

B. CLEAN ALL MATERIALS AND EQUIPMENT OF DIRT, DUST, PAINT, SPOTS AND STAINS, SOIL MARKS AND OTHER FOREIGN MATTER.

A. NOTICE TO THE ARCHITECT-ENGINEER THAT THE WORK IS READY FOR FINAL INSPECTION. THE CONTRACTOR SHALL:

SUBMIT TEST AND BALANCE REPORT AND COMPLETE REQUIREMENTS AS NOTED. SUBMIT LETTER FROM CONTROL MANUFACTURER CERTIFYING THAT CONTROLS HAVE BEEN CHECKED FOR OPERATION AND CALIBRATION, AND THAT SYSTEM IS OPERATING AS INTENDED.

B. CONTRACTOR SHALL FURNISH NECESSARY MECHANICS TO OPERATE SYSTEM, MAKE NECESSARY ADJUSTMENTS AND ASSIST WITH FINAL INSPECTION.

3.10 INSTRUCTION OF OWNER'S OPERATING PERSONNEL

A. THE CONTRACTOR SHALL INCLUDE THE COST OF THE SERVICES OF QUALIFIED INSTRUCTOR(S) TO INSTRUCT THE OWNER'S OPERATING PERSONNEL IN THE OPERATION, ADJUSTMENT, CARE AND MAINTENANCE OF ALL HVAC EQUIPMENT AND SYSTEMS.

B. INSTRUCTION SHALL BE PERFORMED AT A TIME APPROVED BY THE OWNER AND AFTER ALL HVAC EQUIPMENT AND SYSTEMS ARE INSTALLED, COMPLETE, ADJUSTED AND OPERATING TO SPECIFIED REQUIREMENTS. CONTRACTOR SHALL NOTIFY THE ARCHITECT-ENGINEER WHEN INSTRUCTIONS WILL BE

C. QUALIFICATIONS OF INSTRUCTORS SHALL BE SUBJECT TO APPROVAL OF THE OWNER AND EQUIPMENT

D. ADDITIONAL REQUIREMENTS CONCERNING OPERATION AND MAINTENANCE OF MECHANICAL EQUIPMENT AND SYSTEMS MAY BE SPECIFIED IN OTHER SECTIONS.

E. TWO COPIES OF ACKNOWLEDGMENT OF ALL REQUIRED INSTRUCTIONS TO OWNER'S OPERATING PERSONNEL SIGNED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE, SHALL BE SUBMITTED TO THE ARCHITECT-ENGINEER PRIOR TO SUBMITTING APPLICATION FOR FINAL PAYMENT. AN ADDITIONAL COPY OF THIS ACKNOWLEDGEMENT IS REQUIRED IN EACH COPY OF OPERATION AND MAINTENANCE MANUALS REQUIRED IN THE SECTION, OPERATION AND MAINTENANCE MANUALS.

#### END OF SECTION

SECTION 15005

OPERATION AND MAINTENANCE MANUALS

PART 1 - GENERAL

1.01 DESCRIPTION

A. FURNISH THREE COPIES OF COMPLETE OPERATION AND MAINTENANCE MANUALS TO THE ARCHITECT-ENGINEER, FOR APPROVAL AND FOR THE OWNER, ON ALL EQUIPMENT AND SYSTEMS. THE MANUALS SHALL BE BOUND IN HARD-BACK, THREE RING LOOSE-LEAF BINDERS.

PART 2 - PRODUCTS

2.01 MANUAL CONTENTS

A. TITLE SHEET WITH JOB NAME, AND THE NAMES, ADDRESSES AND PHONE NUMBERS OF THE CONTRACTOR, SUBCONTRACTOR, CONTROL SUBCONTRACTOR, RELATED CONTRACTORS AND MATERIAL AND EQUIPMENT SUPPLIERS.

B. TABLE OF CONTENTS.

C. A COPY OF ACKNOWLEDGEMENT OF INSTRUCTION TO THE OWNER'S OPERATING PERSONNEL IN THE OPERATION OF ALL MECHANICAL EQUIPMENT AND SYSTEMS, SIGNED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE.

D. TYPEWRITTEN OPERATING INSTRUCTIONS FOR THE OWNER'S PERSONNEL DESCRIBING HOW TO STOP AND START EACH PIECE OF EQUIPMENT; HOW TO SET THE TEMPERATURE CONTROL SYSTEM FOR NORMAL OPERATION AND NORMAL RESTARTING PROCEDURES, CAUTION AND WARNING NOTICES.

E. APPROVED SHOP DRAWINGS, PRODUCT DATA AND PARTS AND MAINTENANCE BOOKLET FOR EACH ITEM OF MATERIAL AND EQUIPMENT FURNISHED UNDER DIVISION 15000.

F. RECORD DRAWINGS OF ALL SYSTEMS INCLUDING ELECTRICAL AND CONTROL DIAGRAMS.

G. TEST AND BALANCE REPORT.

H. COPIES OF CERTIFICATES OF INSPECTION.

J. GUARANTEES, INCLUDING EXTENDED GUARANTEES. PART 3 - EXECUTION

A. DELIVER THE MANUALS TO THE OWNER PRIOR TO SUBMITTING APPLICATION FOR FINAL PAYMENT. 3.02 OPERATION AND MAINTENANCE MANUALS

END OF SECTION

SECTION 15112

HVAC PIPING, CONDENSATE DRAIN

PART 1 — GENERAL

1.01 DESCRIPTION

A. PROVIDE CONDENSATE DRAIN PIPING SHOWN ON DRAWINGS AND SPECIFIED HEREIN.

PART 2 - PRODUCTS

2.01 MATERIALS

A. PIPING SHALL BE PVC: ASTM D2665.

B. FITTINGS SHALL BE PVC: ASTM D2466-902.

C. PVC SOLVENT CEMENT; ASTM D2564 FOR PVC.

PART 3 - EXECUTION 3.01 INSTALLATION

A. PROVIDE CONDENSATE DRAINS FOR ALL AIR CONDITIONING UNITS AND PIPE AS DENOTED ON

CONDENSATE DRAIN PIPING SHALL BE INSTALLED WITH TRAP AT THE COIL CONNECTION AND SHALL HAVE A MINIMUM SEAL DEPTH EQUAL TO THE RESPECTIVE AIR HANDLING UNIT FAN STATIC PRESSURE. DEPTH SHALL BE A MINIMUM OF 2".

END OF SECTION

DUCTWORK, LOW PRESSURE, GALVANIZED STEEL

PART 1 - GENERAL

.01 QUALITY ASSURANCE A. DUCTS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH "HVAC DUCT CONSTRUCTION STANDARDS" PUBLISHED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. (SMACNA).

1.02 JOB CONDITIONS A. INSPECT THE DRAWINGS AND VERIFY EXISTING CONDITIONS IN THE FIELD. REPORT CONFLICTS BEFORE STARTING FABRICATION.

PART 2 - PRODUCTS

2.01 DUCT MATERIAL

A. WEIGHTS AND GAGES SHALL BE IN ACCORDANCE WITH TABLE 1 OF "HVAC DUCT CONSTRUCTION STANDARDS" PUBLISHED BY SMACNA. DUCT MATERIAL SHALL BE GALVANIZED STEEL B. DOUBLE-WALLED, ROUND DUCT: DUCTWORK TO BE SIMILAR TO MCGILL UNI-RIB K27 OR EQUAL. DUCT

AND HAVE A MAXIMUM THERMAL CONDUCTANCE OF 0.27 BTU/HR/FT2/DEGREE F. C. RECTANGULAR DUCT SMACNA STANDARDS: COMPLY WITH SMACNA "LOW PRESSURE DUCT CONSTRUCTION STANDARDS" FOR FABRICATION AND INSTALLATION OF LOW PRESSURE DUCTWORK.

HAVE SPIRAL LOCK SEAM CONSTRUCTION WITH INTERLOCKING HELICAL SEAM RUNNING THE LENGTH OF THE

DUCTS OUTER PRESSURE SHELL. INSULATION SHALL HAVE A DENSITY OF 1.0 PCF. INSULATION SHALL BE 1"

2. SHEETMETAL: EXCEPT AS OTHERWISE INDICATED, FABRICATE DUCTWORK FROM GALVANIZED SHEET STEEL COMPLYING WITH ANSI/ASTM A 527, LOCK FORMING QUALITY, WITH ANSI/ASTM A 525, G90 ZINC COATING; MILL PHOSPHATIZED FOR EXPOSED LOCATIONS. 3. DUCT SEALANT: NON-HARDENING, NON-MIGRATING MASTIC OR LIQUID ELASTIC SEALANT (TYPE

APPLICABLE FOR FABRICATION/INSTALLATION DETAIL) AS COMPOUNDED AND RECOMMENDED BY MANUFACTURER SPECIFICALLY FOR SEALING JOINTS AND SEAMS IN DUCTWORK. DUCT CEMENT: NON-HARDENING, NON-MIGRATING MASTIC OR LIQUID NEOPRENE BASED CEMENT (TYPE APPLICABLE FOR FABRICATION/INSTALLATION DETAIL) AS COMPOUNDED AND RECOMMENDED BY

MANUFACTURER SPECIFICALLY FOR CEMENTING FITTING COMPONENTS OR LONGITUDINAL SEAMS IN

SPLITTERS SHALL BE OF 18 GAGE GALVANIZED STELL WITH HORIZONTAL AND VERTICAL DIMENSIONS

B. PROVIDE VENTLOK NO. 607 END BEARINGS AND VENTLOK NO. 690 DAMPER ASSEMBLY.

A. VOLUME DAMPERS SHALL BE 18 GAGE STEEL; SINGLE BLADE UP TO 8-INCH X 8-INCH. OPPOSED BLADE ON

ALL DUCTS OVER 8-INCH X 8-INCH. . PROVIDE VENTLOK NO. 607 END BEARINGS AND VENTLIK NO. 641 SELF-LOCKING REGULATOR. DAMPER RODS SHALL BE 1/2-INCH SQUARE BARS WITH BLADES SECURELY RIVETED TO BAR.

A. ALL SQUARE AND RECTANGULAR ELBOWS SHALL CONTAIN TITUS NO. AG-225 TURNING VANES.

2.05 HANGERS A. ALL HANGERS SHALL BE IN ACCORDANCE WITH CHAPTER IV OF SMACNA.

DUCTWORK.

SUFFICIENT TO CLOSE OFF AIR TO BRANCH.

A. FLEXIBLE CONNECTIONS SHALL BE PROVIDED FOR EACH AIR HANDLING DEVICE TO PREVENT TRANSMISSION OF VIBRATIONS. B. MAKE FLEXIBLE CONNECTION A MINIMUM OF 4-INCH WIDE OF VENTGLAS AS MADE BY VENTAFABRICS, INC. BRAIDED COPPER BRIDGE STRAP FOR INSTALLATION ACROSS FLEXIBLE CONNECTIONS SHALL BE THOMPSON LIGHTING PROTECTION, INC. NO. 288.

PART 3 - EXECUTION

A. GFNFRAL: SPLIT. DIVIDE OR TURN DUCTS AS NECESSARY TO AVOID OBSTRUCTIONS AND, IN SUCH CASES, PROVIDE AIR STREAM DEFLECTORS AND INCREASE SIZE OF DUCT TO AN EQUIVALENT AREA. 3. SPLITTERS: RIGIDLY ATTACH SPLITTERS TO PIVOT ROD AND OPERATING LINKAGE. SET DAMPER ASSEMBLY ON

RAISED INSULATED BASE ON INSULATED DUCTWORK. VOLUME DAMPERS: SUPPLY AND MAKE-UP AIR DUCTWORK IN CONCEALED SPACES, SET REGULATOR ON RAISED BASE ON INSULATED DUCTWORK. MARK END OF DAMPER ROD TO SHOW DAMPER POSITION. FLEXIBLE CONNECTIONS: SECURE FLEXIBLE CONNECTIONS TO DUCT AND UNIT WITH GALVANIZED STEEL

STRAPS HOLDING THE MATERIAL IN FORMED GALVANIZED STEEL CHANNELS. INSTALL BRAIDED COPPER BRIDGE STRAP ACROSS ALL FLEXIBLE CONNECTIONS. TEST PLUGS: PROVIDE SQUARE HEAD TYPE TEST PLUGS AS REQUIRED FOR INSERTION OF TEST APPARATUS. PROVIDE A RING AND A REMOVABLE INSULATION PLUG WHERE DUCTS ARE INSULATED.

PAINTING: PAINT INTERIOR OF DUCTWORK FLAT BLACK WHERE VISIBLE THROUGH GRILLES AND REGISTERS.

G. SEALING: DUCTWORK SHALL BE SEALED IN ACCORDANCE WITH TABLE 1-2 FOR "SEAL CLASS B". A. REMOVE ALL DUCTWORK FOUND TO VIBRATE, CHATTER OR PULSATE AND REPLACE WITH NEW DUCTWORK

SECTION 15525 ROOFTOP HVAC UNITS

END OF SECTION.

1.05 CRANKCASE HEATERS

PART 1 - GENERAL

A. THE OPERATING RANGE SHALL BE BETWEEN 115'F AND O'F IN COOLING AS STANDARD FROM THE FACTORY FOR ALL UNITS. COOLING PERFORMANCE SHALL BE RATED IN ACCORDANCE WITH ARI TESTING PROCEDURES. ALL UNITS SHALL BE FACTORY ASSEMBLED, INTERNALLY WIRED, FULLY CHARGED WITH R-410A, AND 100 PERCENT RUN TESTED TO CHECK COOLING OPERATION, FAN AND BLOWER ROTATION AND CONTROL SFOUFNCE, BEFORE LEAVING THE FACTORY, WIRING INTERNAL TO THE UNIT SHALL BE COLORED AND NUMBERED FOR SIMPLIFIED IDENTIFICATION. UNITS SHALL BE UL LISTED AND LABELED, CLASSIFIED IN

ACCORDANCE TO UL 1995/C 22.2, 236-05 3RD EDITION. PACKAGED ROOFTOP UNITS COOLING, HEATING CAPACITIES, AND EFFICIENCIES ARE AHRI CERTIFIED WITHIN SCOPE OF AHRI STANDARD 340/360 (I-P) AND ANSIZ21.47 AND 10 CFR PART 431 PERTAINING TO COMMERCIAL WARM AIR FURNACES (GAS HEATING UNITS).

A. UNIT CASING SHALL BE CONSTRUCTED OF ZINC COATED, HEAVY GAUGE, GALVANIZED STEEL. EXTERIOR SURFACES SHALL BE CLEANED, PHOSPHATIZED, AND FINISHED WITH A WEATHER-RESISTANT BAKED ENAMEL FINISH. UNIT'S SURFACE SHALL BE TESTED 672 HOURS IN A SALT SPRAY TEST IN COMPLIANCE WITH ASTM B117. CABINET CONSTRUCTION SHALL ALLOW FOR ALL MAINTENANCE ON ONE SIDE OF THE UNIT. IN ORDER O ENSURE A WATER AND AIR TIGHT SEAL, SERVICE PANELS SHALL HAVE LIFTING HANDLES. ALL EXPOSED VERTICAL PANELS AND TOP COVERS IN THE INDOOR AIR SECTION SHALL BE INSULATED WITH A 1/2-INCH, 1-POUND DENSITY FOIL-FACED, FIRE-RESISTANT, PERMANENT, ODORLESS, GLASS FIBER MATERIAL. THE BASE OF THE DOWNFLOW UNIT SHALL BE INSULATED WITH 1/2-INCH, 1-POUND DENSITY FOIL-FACED, CLOSED-CELL MATERIAL. THE BASE OF THE UNIT SHALL HAVE PROVISIONS FOR FORKLIFT AND CRANE

A. ALL UNITS SHALL HAVE DIRECT-DRIVE, HERMETIC, SCROLL TYPE COMPRESSORS WITH CENTRIFUGAL TYPE OIL PUMPS. MOTOR SHALL BE SUCTION GAS-COOLED AND SHALL HAVE A VOLTAGE UTILIZATION RANGE OF PLUS OR MINUS 10 PERCENT OF NAMEPLATE VOLTAGE. INTERNAL OVERLOADS SHALL BE PROVIDED WITH THE SCROLL COMPRESSORS. UNIT SHALL HAVE CRANKCASE HEATERS, PHASE MONITORS AND LOW AND HIGH PRESSURE CONTROL AS STANDARD.

A. UNIT SHALL BE COMPLETELY FACTORY WIRED WITH NECESSARY CONTROLS AND CONTRACTOR PRESSURE LUGS OR TERMINAL BLOCK FOR POWER WIRING, UNIT SHALL PROVIDE AN EXTERNAL LOCATION FOR MOUNTING A FUSED DISCONNECT DEVICE. THE RESIDENT CONTROL ALGORITHMS SHALL MAKE ALL HEATING. COOLING. AND/OR VENTILATING DECISIONS IN RESPONSE TO ELECTRONIC SIGNALS FROM SENSORS MEASURING INDOOR AND OUTDOOR TEMPERATURES. A CENTRALIZED CONTROL SHALL PROVIDE ANTI-SHORT CYCLE TIMING AND TIME DELAY BETWEEN COMPRESSORS TO PROVIDE A HIGHER LEVEL OF MACHINE

A. THESE BAND HEATERS PROVIDE IMPROVED COMPRESSOR RELIABILITY BY WARMING THE OIL TO PREVENT MIGRATION DURING OFF-CYCLES OR LOW AMBIENT CONDITIONS.

1.06 DEFROST CONTROLS A. ADAPTIVE DEMAND DEFROST SHALL BE PROVIDED TO PERMIT DEFROST WHEREVER COIL ICING CONDITIONS BEGIN TO SIGNIFICANTLY REDUCE UNIT CAPACITY

1.07 DISCHARGE LINE THERMOSTAT A. A BI-METAL ELEMENT DISCHARGE LINE THERMOSTAT SHALL BE INSTALLED AS A STANDARD OPTION ON THE DISCHARGE LINE. LINE THERMOSTAT SHALL PROVIDE EXTRA PROTECTION TO THE COMPRESSOR AGAINST HIGH DISCHARGE TEMPERATURES IN CASE OF LOSS OF CHARGE, EXTREMELY HIGH AMBIENT AND OTHER CONDITIONS. DISCHARGE LINE THERMOSTAT IS WIRED IN SERIES WITH HIGH PRESSURE CONTROL. WHEN THE DISCHARGE TEMPERATURE RISES ABOVE THE PROTECTION LIMIT, THE BI-METAL DISC IN THE THERMOSTAT SWITCHES TO THE OFF POSITION, OPENING THE 24 VAC CIRCUIT. WHEN THE TEMPERATURE ON THE DISCHARGE LINE COOLS DOWN, THE BI-METAL DISC CLOSES THE CONTRACTOR CIRCUIT, PROVIDING POWER

A. MICROCHANNEL COILS WILL BE BURST TESTED BY THE MANUFACTURER. INTERNALLY FINNED, 5/16" COPPER TUBES MECHANICALLY BONDED TO A CONFIGURED ALUMINUM PLATE FIN. MICROCHANNEL CONDENSER COILS SHALL BE STANDARD ON ALL UNITS. COILS SHALL BE LEAK TESTED TO ENSURE THE PRESSURE INTEGRITY THE EVAPORATOR COIL AND CONDENSER COIL SHALL BE LEAK TESTED TO 225 PSIG AND PRESSURE TESTED

A. TWO INCH STANDARD FILTERS SHALL BE FACTORY SUPPLIED ON ALL UNITS.

1.10 GAS HEATING SECTION

TO THE COMPRESSOR.

1.08 EVAPORATOR AND CONDENSER COILS

A. THE HEATING SECTION SHALL HAVE A DRUM AND TUBE HEAT EXCHANGER DESIGN USING CORROSION RESISTANT STEEL COMPONENTS, A FORCED COMBUSTION BLOWER SHALL SUPPLY PREMIXED FUEL TO A SINGLE BURNER IGNITED BY A PILOTLESS HOT SURFACE IGNITION SURFACE

B. A NEGATIVE PRESSURE GAS VALVE SHALL BE USED AND A PRESSURE SWITCH ON FURNACES WITH MODULATING HEAT THAT REQUIRES BLOWER OPERATION TO IGNITE GAS FLOW. ON AN INITIAL CALL FOR HEAT. THE COMBUSTION BLOWER SHALL PURGE THE HEAT EXCHANGER 45 SECONDS BEFORE IGNITION. C. AFTER THREE UNSUCCESSFUL IGNITION ATTEMPTS, THE ENTIRE HEATING SYSTEM SHALL BE LOCKED OUT UNTIL MANUALLY RESET AT THE THERMOSTAT. UNITS SHALL BE SUITABLE FOR USE WITH NATURAL GAS AND SHALL ALSO COMPLY WITH CALIFORNIA REQUIREMENTS FOR LOW NOX EMISSIONS.

1.11 INDOOR FAN

SECTION 15319 DUCTWORK, LOW PRESSURE, FLEXIBLE

PART 1 - GENERAL

1.01 DESCRIPTION

A. PROVIDE WHERE INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN, FACTORY FABRICATED AND PREINSULATED FLEXIBLE DUCTS.

B. PERFORMANCE DATA SHALL BE BASED ON TEST PERFORMED IN ACCORDANCE WITH

1.02 QUALITY ASSURANCE

A. FLEXIBLE DUCTS, INCLUDING INSULATION AND SEALANTS, SHALL CONFORM TO THE REQUIREMENTS OF NFPA 90A AND UL STANDARD 181 FOR CLASS 1 DUCTS.

AIR DIFFUSION COUNCIL FLEXIBLE AIR DUCT TEST CODE FD72.

SUBMIT SHOP DRAWINGS AND MANUFACTURER'S PRODUCT DATA. INCLUDE COMPLETE ENGINEERING AND TEST DATA AND CLEARLY INDICATE ALL CONSTRUCTION FEATURES AND ACCESSORY ITEMS.

PART 2 - PRODUCTS 2.01 LOW PRESSURE FLEXIBLE DUCTWORK

A. LOW PRESSURE FLEXIBLE DUCTWORK SHALL CONSIST OF CORROSION RESISTANT SPRING STEEL HELIX BONDED TO A GLASS REINFORCED NEOPRENE SLEEVE INSULATED WITH A MINIMUM OF 1 INCH THICK, 1 POUND DENSITY FIBERGLASS INSULATION WHICH IS IN TURN COVERED WITH AN OUTER VAPOR BARRIER OF FIBER REINFORCED FOIL-SCRIM-KRAFT LAMINATE.

B. INSULATION SHALL HAVE A THERMAL CONDUCTIVITY (K) NO GREATER THAN 0.25 AT 75 DEGREES F. C. DUCT FOR LOW VELOCITY SYSTEM CONNECTORS SHALL HAVE A WORKING PRESSURE OF NOT LESS THAN 1-1/2 INCHES OF WATER GAGE AND A MAXIMUM OPERATING TEMPERATURE OF NOT LESS

2.02 DUCT CONNECTORS

OR DEVICES.

THAN 250 DEGREES F

WHERE FLEXIBLE DUCTS CONNECT TO LOW PRESSURE DUCTS TO FORM RUNOUTS TO INDIVIDUAL OUTLETS, PLENUMS OR LOW PRESSURE TERMINALS, PROVIDE FACTORY FABRICATED FITTINGS COMPLETE WITH AND MANUALS BALANCING DAMPERS HAVING LOCKING QUADRANTS. WHERE LOW PRESSURE DUCTS ARE INTERNALLY INSULATED THE CONNECTOR SHALL BE FURNISHED WITH AIR EXTENSION TO PROJECT THROUGH AND PROTECT THE INSULATION, FOR CONNECTION TO FOUIPMENT. AUXILIARY SLEEVES SHALL BE PROVIDED TO ALLOW AT LEAST 2 INCHES OF SURFACE FOR CLAMPING OF FLEXIBLE DUCTWORK. SLEEVES SHALL BE SCREWED OR BOLTED TO

2.03 CLAMPS A. PROVIDE GALVANIZED SPRING STEEL CLAMPS OR PANDUIT STRAPS AT CONNECTIONS TO DUCT FITTINGS

A. FLEXIBLE DUCTWORK AND COMPONENTS SHALL BE AS MANUFACTURED BY GENERAL ENVIRONMENTAL CORPORATION OR APPROVED EQUAL.

DIAMETER OF THE DUCT.

END OF SECTION

PART 1 - GENERAL

1.02 SUBMITTALS

PART 3 - EXECUTION 3.01 INSTALLATION

HOLES AND SECURE THE CONNECTOR WITH SHEET METAL SCREWS HAVING FIRST APPLIED FOSTER'S 30-02 DUCT SEALANT TO THE ADJOINING SURFACES. DO NOT PRESSURIZE THE SYSTEM FOR 48

A. INSTALL DUCT CONNECTORS TO LOW PRESSURE DUCTS USING MANUFACTURER' TEMPLATE FOR ALL

B. STRETCH NEW DUCT WHEN REMOVING IT FROM CARTONS WHERE IT MAY HAVE BEEN SHIPPED IN A COMPRESSED STATE. C. USE THE MINIMUM LENGTH OF FLEXIBLE DUCT REQUIRED TO MAKE THE SPECIFIC CONNECTION

UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS. THE MAXIMUM DEVELOP LENGTH OF

AVOID SHARP BENDS. USE A MINIMUM INSIDE BEND RADIUS EQUAL TO (1) TIMES THE INSIDE

E. SUPPORT HORIZONTAL DUCT RUNS AS DETAILED IN THE CONSTRUCTION DOCUMENTS. F. ALLOW THE FLEXIBLE DUCT TO EXTEND STRAIGHT AWAY FROM CONNECTORS FOR A FEW INCHES PRIOR

G. MAKE ALL CONNECTIONS OF FLEXIBLE DUCT TO RIGID DUCT OR TERMINALS AS FOLLOWS: 1. APPLY FOSTER'S 30-02 SEALANT TO THE INSIDE OF THE FLEXIBLE DUCT TO DEPTH OF 3 2. SLIDE THE FLEXIBLE DUCT OVER THE CONNECTOR AND WRAP WITH MINIMUM OF TWO

REVOLUTIONS OF REINFORCED FOIL DUCT TAPE STARTING ABOUT 2 INCHES BACK FROM END OF FLEXIBLE DUCT AND SEALING OVERLAP WITH LAST WRAP. 3. PLACE A CLAMP OR STRAP OVER THE TAPED END AND SECURE FIRMLY 4. REPAIR ALL DAMAGE TO VAPOR BARRIER WITH FOSTER'S 35-00 REINFORCED WITH 4 INCH

WIDE GLASS FABRIC AND A SECOND COAT OF FOSTER'S 35-00.

AIR DISTRIBUTION EQUIPMENT

AIR DISTRIBUTION DEVICES SHALL BE PROVIDED TO DELIVER THE INDICATED VOLUME OF SUPPLY AIR WITHOUT EXCEEDING THE AVAILABLE THROW AND WITH NC RATING AS FOLLOWS:

A. SHOP DRAWINGS: INDICATE LOCATIONS, SPACING AIR VOLUME AND TYPE OF EACH DEVICE.

PRODUCT DATA: MANUFACTURERS CATALOG CUTS AND PRODUCT DESCRIPTION INCLUDING AIR

1. KITCHEN: NC-35 2. DINING AND CUSTOMER LOBBY AREA: NC-30

QUANTITY, PATTER, THROW, PRESSURE DROP, NC RATINGS, FINISH, DIMENSIONS AND COMPLETE CONSTRUCTION DETAILS AND MATERIALS.

2.01 DIFFUSERS. GRILLES AND REGISTERS

PART 2 — PRODUCTS

A. DIFFUSERS, GRILLES AND REGISTERS SHALL BE AS MANUFACTURED SCHEDULED ON DRAWING NO EXCEPTIONS B. FOR MODEL NUMBERS AND TYPES SEE AIR DISTRIBUTION SCHEDULE ON DRAWING C. DIFFUSERS, GRILLES, AND REGISTERS SHALL BE OF THE SURFACE, FLUSH OR LAY-IN TYPE, COLOR CORRESPONDING TO THE CEILING IN WHICH THEY ARE LOCATED.

D. THE FINISH OF THE DIFFUSERS, GRILLE, OR REGISTER FACE PANEL SHALL BE BAKED ENAMEL, OFF

2.02 MOUNTING SCREWS

A. WHERE MOUNTING SCREWS ARE REQUIRED IN AIR DISTRIBUTION DEVICES, THEY SHALL BE FINISHED TO MATCH THE ADJACENT SURFACE OF THE DEVICES.

A. SUPPLY AND RETURN GRILLES AND REGISTERS WHICH ARE SURFACE MOUNTED SHALL BE PROVIDED

WITH SPONGE RUBBER GASKETED FRAMES TO PREVENT SMUDGING. PART 3 - PRODUCTS

3.01 INSTALLATION A. INSTALL WHERE SHOWN ON DRAWINGS.

B. DIFFUSERS, REGISTERS AND FITTINGS SHALL BE SECURELY ATTACHED TO FINISH SURFACES, OR STRUCTURAL MEMBERS BEHIND FINISH SURFACES.

C. LAY-IN DIFFUSERS MOUNTED IN ACOUSTICAL TILE CEILINGS SHALL BE RIGIDLY MOUNTED, ABOVE THE FACE PANEL, TO THE CEILING SUSPENSION SYSTEM.

END OF SECTION

SECTION 15525 AIR DISTRIBUTION EQUIPMENT, GAS FIRED HEATING

SHALL BE LISTED BY UNDERWRITER'S LABORATORIES.

PART 1 — GENERAL 1.01 DESCRIPTION

A. INSTALL AIR CONDITIONING UNITS OF THE CAPACITIES INDICATED, COMPLETE WITH GAS-FIRED HEATING SYSTEM, WHERE INDICATED ON THE DRAWINGS.

UNIT SHALL BE RATED IN ACCORDANCE WITH THE LATEST ARI STANDARD 21. WHERE SPECIFIED OPERATING CONDITIONS ARE OTHER THAN ARI STANDARD CONDITIONS, CAPACITIES SHALL BE INTERPOLATED FROM ARI CONDITIONS 1.02 SUBMITTALS

B. UNIT SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPLICABLE ASME AND ANSI CODES AND

A. SHOP DRAWINGS: SUBMIT COMPLETE ENGINEERING DATA WITH ALL SPECIFIED CONSTRUCTION FEATURES AND CAPACITIES CLEARLY INDICATED WITH COMPLETE POWER AND CONTROL WIRING DIAGRAMS. DATA SHALL BE CLEARLY MARKED TO INDICATE SELECTIONS AND MODIFICATIONS REQUIRED TO UNIT OR WIRING IN ORDER TO MEET THESE SPECIFICATIONS AND TO PROVIDE SATISFACTORY PERFORMANCE OPERATION IN THIS APPLICATION. CALCULATIONS OF INTERPOLATED ARI CONDITIONS SHALL BE SUBMITTED.

B. OPERATING AND MAINTENANCE DATA: PROVIDE OPERATION AND SERVICE INSTRUCTIONS, IN ILLUSTRATED FORM, FOR MANUALS AS SPECIFIED IN SECTION HVAC INSTRUCTIONS AND MAINTENANCE MANUALS.

WARRANTY: THE ENTIRE UNIT SHALL BE WARRANTED FOR ONE YEAR, AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP. THE REFRIGERATION, COMPRESSOR SHALL HAVE AN ADDITIONAL FOUR YEAR WARRANTY. HEAT EXCHANGERS SHALL HAVE A LIMITED WARRANTY FOR A FULL TEN YEARS. 1.03 MANUFACTURE

A. UNITS SHALL BE LENNOX, PROVIDED BY OWNER. SECTION 15802

HVAC INSULATION, GENERAL PART 1 — GENERAL

A. THIS SECTION GOVERNS ALL HVAC INSULATION. 1.02 SUBMITTALS A. SUBMIT PRODUCT DATA COVERING THERMAL, PERMEABILITY AND FIRE PERFORMANCE CHARACTERISTICS OF ALL INSULATION MATERIAL, ADHESIVES AND FINISHES. DATA SHALL BE CLEARLY

MARKED TO SHOW INTENDED USE, THICKNESS, FINISHES, ADHESIVES AND APPLICATION

**TECHNIQUES** PART 2 — EXECUTION

1.01 DESCRIPTION

2.01 INSTALLATION A. INSULATION SHALL NOT BE INSTALLED UNTIL TESTING PROCEDURES HAVE BEEN COMPLIED WITH ALL

C. REMOVE ALL EXCESS MATERIALS AND DEBRIS FROM BOTH EXPOSED AND CONCEALED AREAS SO

SURFACES AND HAVE BEEN CLEANED FREE OF DIRT AND GREASE AND ARE COMPLETELY DRIED.

B. PROTECT ADJACENT SURFACES, EQUIPMENT AND PREMISES FROM DROPPING OF COATINGS ADHESIVES AND FINISHES.

THAT THESE AREAS ARE COMPLETELY CLEAN. PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 15841

INSULATION, LOW PRESSURE DUCT

PART 2 - PRODUCTS

2.01 INSULATION

PART 1 — GENERAL 1.01 DESCRIPTION A. ALL LOW PRESSURE DUCT SYSTEMS, 2 INCHES WATER GAGE OR LESS, SHALL BE INSULATED.

B. ALL APPLICABLE REQUIREMENTS OF THE SECTION, HVAC-INSULATION, GENERAL, SHALL APPLY TO THIS SECTION. 1.02 EQUIVALENT MATERIALS A. MATERIALS OTHER THAN THOSE SPECIFIED WILL BE CONSIDERED FOR APPROVAL EQUAL.

A. EXTERNAL INSULATION SHALL BE 1-1/2 INCH THICK, 3/4 POUND DENSITY, SCHULLER TYPE SMALLLITE, FSK SPIN-GLAS OR APPROVED EQUAL WITH AN EMBOSSED ALUMINUM FOIL FACING.

1. ALL AIR SUPPLY DIFFUSERS BACKS AND NECKS, SHALL BE INSULATED WITH 1-1/2 INCH

THICK, 3/4 POUND DENSITY, MANVILLE R-SERIES SMALLLITE, OR APPROVED EQUAL

FIBERGLASS BLANKET INSULATION, HAVING A CONDUCTANCE (K) NO GREATER THAN .31.

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A. ADHESIVE SHALL BE FOSTER'S 85-20. STUDWELD PINS SHALL BE SEALED WITH FOSTER'S 30-36 B. ALL JOINTS, SEAMS AND BREAKS IN THE VAPOR BARRIER SHALL BE SEALED WITH FOSTER'S 35-00,

PART 3 - EXECUTION 3.01 INSTALLATION A. ALL SUPPLY AND RETURN AIR DUCTWORK.

B. AIR SUPPLY DIFFUSER BACKS AND NECKS:

REINFORCED WITH 4 INCH WIDE GLASS FABRIC.

ADHERE INSULATION TO THE DUCT AS SPECIFIED BELOW. END OF SECTION

PROJECT NO: 21-4188

DRAWN BY: JMK

DATE: 12-02-2021

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SPECIFICATIONS

proprietary information and shall not be upgraded, changed or copied in any form of

**MECHANICAL** 

SECTION 15885 SEQUENCE OF OPERATION

PART 1 - GENERAL

1.01 DESCRIPTION A. THE HEATING AND COOLING OF THE SPACE IS ACCOMPLISHED BY (1) GAS/ELECTRIC ROOFTOP UNIT. A. THE ROOFTOP UNIT SHALL BE CONTROLLED BY A 7-DAY PROGRAMMABLE THERMOSTAT WITH CLEAR LOCKABLE

COVER SAME MAKE AS AIR CONDITIONING SYSTEM COMPONENTS.

END OF SECTION.

SECTION 15890 TESTING, ADJUSTING AND BALANCING

PART 1 - GENERAL

- A. A BALANCED HVAC SYSTEM REPORT SHALL BE SUBMITTED TO THE ENGINEER OR RECORD PRIOR TO COMMISSIONING AND FINAL ACCEPTANCE. BALANCE CONTRACTOR SHALL BE AABC OR NEBB CERTIFIED AND SHALL SUBMIT A COPY OF CERTIFICATION WITH THE BALANCE REPORT.
- 1.02 WORK BY TAB AGENCY A. THE WORK INCLUDED IN THE REMAINDER OF THIS SECTION CONSISTS OF FURNISHING LABOR, INSTRUMENTS, AND TOOLS REQUIRED IN TESTING, ADJUSTING AND BALANCING THE HVAC SYSTEMS, AS DESCRIBED IN THESE SPECIFICATIONS OR SHOWN ON ACCOMPANYING DRAWINGS. SERVICES SHALL INCLUDE CHECKING EQUIPMENT PERFORMANCE, TAKING THE SPECIFIED MEASUREMENTS, AND RECORDING AND REPORTING THE RESULTS. THIS WORK SHALL BE PERFORMED BY THE TAB AGENCY.
- B. THE ITEMS REQUIRING TESTING, ADJUSTING, AND BALANCING INCLUDE THE FOLLOWING: AIR SYSTEMS:
- a. SUPPLY FANS b. EXHAUST FANS
- c. ZONE BRANCH AND MAIN DUCTS d. DIFFUSERS, REGISTERS AND GRILLES
- e. COILS (AIR TEMPERATURES)
- A. FINAL TAB REPORT THE TAB AGENCY SHALL SUBMIT THE FINAL TAB REPORT FOR REVIEW BY THE ENGINEER. ALL OUTLETS, DEVICES, HVAC EQUIPMENT, ETC., SHALL BE IDENTIFIED, ALONG WITH A NUMBERING SYSTEM CORRESPONDING TO REPORT UNIT IDENTIFICATION. THE TAB AGENCY SHALL SUBMIT A "NATIONAL PROJECT PERFORMANCE GUARANTY" ASSURING THAT THE PROJECT SYSTEMS WERE TESTED, ADJUSTED AND BALANCED IN
- ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND NATIONAL STANDARDS.
  B. SUBMIT 3 COPIES OF THE FINAL TAB REPORT.

- A. ANY DEFICIENCIES IN THE INSTALLATION OR PERFORMANCE OF A SYSTEM OR COMPONENT OBSERVED BY THE TAB AGENCY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND CONTRACTOR.
- B. THE WORK NECESSARY TO CORRECT ITEMS ON THE DEFICIENCY LISTING SHALL BE PERFORMED AND VERIFIED BY THE AFFECTED CONTRACTOR BEFORE THE TAB AGENCY RETURNS TO RETEST. UNRESOLVED DEFICIENCIES SHALL
- BE NOTED IN THE FINAL REPORT. C. THE SPECIFIC SYSTEM SHALL BE REVIEWED AND INSPECTED FOR CONFORMANCE TO DESIGN DOCUMENTS. TESTING, ADJUSTING AND BALANCING ON EACH IDENTIFIED SYSTEM SHALL BE PERFORMED. THE ACCURACY OF MEASURÉMENTS SHALL BE IN ACCORDANCE WITH NATIONAL STANDARDS. ADJUSTMENT TOLERANCES SHALL BE + OR - 10% UNLESS OTHERWISE STATED.

PART 2 - SYSTEM REPORT & TESTING

- 2.01 DUCT PRESSURE TESTING A. DUCTWORK AIR LEAKAGE TESTING SHALL BE PERFORMED BY THE TAB AGENCY.
- B. THE DUCTWORK/SHEETMETAL SUBCONTRACTOR SHALL PROMPTLY CORRECT ANY RELATED PROBLEMS DISCOVERED C. ALL COSTS ASSOCIATED WITH RETESTING AND/OR DELAYS OR OTHER PROBLEMS WHICH IMPEDE THE TAB
- AGENCY FROM PERFORMING SUCH TESTING SHALL BE PAID BY THE CONTRACTOR AND ANY SUBCONTRACTOR(S) FOR DUCTWORK.
- A. THE TAB AGENCY SHALL VERIFY THAT ALL DUCTWORK, DAMPERS, GRILLES, REGISTERS, AND DIFFUSERS HAVE BEEN INSTALLED PER DESIGN AND SET IN THE FULL OPEN POSITION. THE TAB AGENCY SHALL PERFORM THE FOLLOWING TAB PROCEDURES IN ACCORDANCE WITH THE NATIONAL STANDARDS:
- SUPPLY FANS: a. FAN SPEEDS - TEST AND ADJUST FAN RPM TO ACHIEVE MAXIMUM OR DESIGN CFM. CONFIRM PROPER ROTATION DIRECTION.
- b. CURRENT AND VOLTAGE TEST AND RECORD MOTOR VOLTAGE AND AMPERAGE, AND COMPARE DATA WITH THE NAMEPLATE LIMITS TO ENSURE FAN MOTOR IS NOT IN OR ABOVE THE SERVICE FACTOR. c. PITOT-TUBE TRAVERSE - PERFORM A PITOT-TUBE TRAVERSE OF MAIN SUPPLY AND RETURN DUCTS, AS APPLICABLE TO OBTAIN TOTAL CFM.

  d. OUTSIDE AIR — TEST AND ADJUST THE OUTSIDE AIR ON APPLICABLE EQUIPMENT USING A PITOT—TUBE
- TRAVERSE. IF A TRAVERSE IS NOT PRACTICAL, USE THE MIXED—AIR TEMPERATURE METHOD IF THE INSIDE AND OUTSIDE TEMPERATURE DIFFERENCE IS AT LEAST 20 DEGREES FAHRENHEIT OR USE THE DIFFERENCE BETWEEN PITOT-TUBE TRAVERSES OF THE SUPPLY AND RETURN AIR DUCTS. STATIC PRESSURE - TEST AND RECORD SYSTEM STATIC PROFILE OF EACH SUPPLY FAN.
- a. FAN SPEEDS TEST AND ADJUST FAN RPM TO ACHIEVE MAXIMUM AND DESIGN CFM. CONFIRM PROPER
- b. CURRENT AND VOLTAGE TEST AND RECORD MOTOR VOLTAGE AND AMPERAGE, AND COMPARE DATA WITH THE NAMEPLATE LIMITS TO ENSURE MOTOR IS NOT IN OR ABOVE THE SERVICE FACTOR. c. PITOT-TUBE TRAVERSE - PERFORM A PITOT-TUBE TRAVERSE OF MAIN EXHAUST DUCTS TO OBTAIN
- 3. ZONE, BRANCH AND MAIN DUCTS:
- a. ADJUST DUCTS TO WITHIN DESIGN CFM REQUIREMENTS. AS APPLICABLE, AT LEAST ONE ZONE BALANCING DAMPER SHALL BE COMPLETELY OPEN. MULTI-DIFFUSER BRANCH DUCTS SHALL HAVE AT LEAST ONE OUTLET OR INLET VOLUME DAMPER COMPLETELY OPEN. 4. DIFFUSERS, REGISTERS AND GRILLES:
- a. TOLERANCES TEST, ADJUST, AND BALANCE EACH DIFFUSER, GRILLE, AND REGISTER TO WITHIN 10% OF DESIGN REQUIREMENTS. MINIMIZE DRAFTS. b. IDENTIFICATION - IDENTIFY THE TYPE, LOCATION, AND SIZE OF EACH GRILLE, DIFFUSER, AND REGISTER. THIS INFORMATION SHALL BE RECORDED ON AIR OUTLET DATA SHEETS.
- B. AIR TEMPERATURE ONCE AIR FLOWS ARE SET TO ACCEPTABLE LIMITS, TAKE WET BULB AND DRY BULB AIR TEMPERATURES ON THE ENTERING AND LEAVING SIDE OF EACH COOLING COIL. DRY—BULB TEMPERATURE SHALL BE TAKEN ON THE ENTERING AND LEAVING SIDE OF EACH HEATING COIL.

END OF SECTION

PROJECT NO: 21-4188

DRAWN BY: JMK

DATE: 12-02-2021



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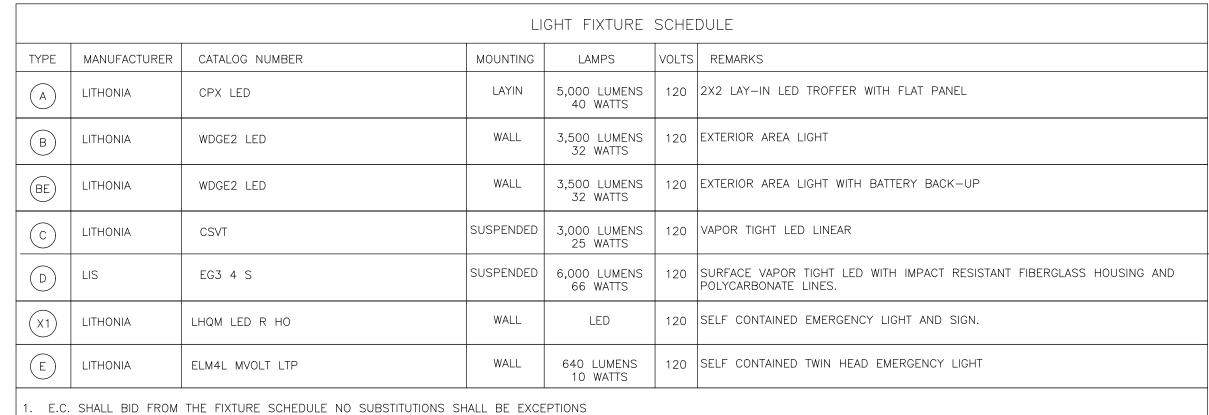
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MECHANICAL SPECIFICATIONS

[	ELECTRICAL POWER LEGEND
SYMBOL	DESCRIPTION
$\Rightarrow$	DUPLEX WALL OUTLET
<del> </del>	QUADRAPLEX WALL OUTLET
$\Leftrightarrow$	SPECIFIC 2 POLE BREAKER OUTLET. VERIFY WITH WITH EQUIPMENT FOR EXACT TYPE OF PLUG
$\bigcirc$	DUPLEX CEILING OUTLET
•	DATA OUTLET
J	JUNCTION BOX
X	PANEL BOX
	DISCONNECT SWITCH

- A. OUTLETS WITH A "GFI" DESIGNATION NEXT TO THEM ARE GROUND FAULT INTERRUPTER CIRCUITS.
- B. OUTLETS WITH A "WP" DESIGNATION NEXT TO THEM ARE WEATHERPROOF OUTLET WITH COVERS.
- C. ALL OTHER OUTLETS SHALL BE MOUNTED AT 18" ABOVE FINISHED FLOOR. UNLESS NOTED OTHERWISE.
- D. TELEPHONE OUTLETS SHALL HAVE A 1/2" CONDUIT WITH PULL WIRE RUN FROM THE OUTLET BOX TO A JUNCTION BOX LOCATED 6" ABOVE THE CEILING.

			- /						EDULE							
ANE	L:		A (NEW) 22,000	VOLT	AGE:	120 NOT		208	AMP:	400	A	PHASE:	3		WIRE:	4
IC: YPE	OF MAIN:		MLO					SURFA	CE							
			LIGHTING [L] RECEPTACLE [R] EQU	IPMENT [EQ	] KIT	CHE		. HEAT [EI CE/SPARE		юц	NG [E	] HEATI	NG & COOLING [HC] CONTINUOUS [C	L]		
KT. NO.	BRKR OPTIONS	TYPE	SERVICE DESCRIPTION	CIR WATTS	BR A	KR P	A	LOAD B	С	B P	RKR	CIR WATTS	SERVICE DESCRIPTION	ТҮРЕ	BRKR OPTIONS	CKT. NO.
1	N	EQ	COOLER EVAPORATOR	2400	25	2	6600			3	50	4200	RTU-1 (NEW 6 TON)	EC	N	2
3	N	EQ		2400	-	-		6600		-	-	4200		EC	N	4
5	N	EQ	COOLER EVAPORATOR	2400	25	2			6600	-	-	4200		EC	N	6
7	N	EQ		2400	-	-	6600			3	25	4200	RTU-2 (NEW 6 TON)	EC	N	8
9	N	EQ	COOLER EVAPORATOR	2400	25	2		6600		-	-	4200		EC	N	10
11	N	EQ		2400	-	-			6600	-	-	4200		EC	N	12
13	N	EQ	COOLER COMPRESSOR	4500	50	3	5220			1	20	720	RECEPT-GENERAL	R	N	14
15	N	EQ		4500	-	-		5580		1	20	1080	OFFICE	R	N	16
17	N	EQ		4500	-	-			5040	1	20	540	RECEPT-GENERAL	R	N	18
19	N	EQ	АТМ	1200	20	1	1560			1	20	360	RECEPT-RESTROOM	R	N	20
21	N	L	STORE SIGN	1200	20	1		2460		1	20	1260	SPARE	SP	N	22
23	N	EQ	SAFE	600	20	1			1320	1	20	720	RECSPT-GENERAL	R	N	24
25	N	R	RECEPT-GENERAL	540	20	1	720			1	20	180	RECSPT-OUTDOOR	R	N	26
27	N	R	SODA	1200	20	1		1380		1	20	180	RECEPT-OUTDOOR	R	N	28
29	N	R	RECEPT-WINDOW SIGNS	540	20	1			1440	1	20	900	LIGHTING		N	30
31	N	R	RECEPT-GENERAL	360	20	1	1160			1	20	800	LIGHTING	L	N	32
33	N	R	BEVERAGE CASE	1500	20	1		2200		1	20	700	LIGHTING	L	N	34
35	N	R	BEVERAGE CASE	1500	20	1			1900	1	20	400	LIGHTING		N	36
37	N		J-BOXES	1080	20	1	2190			2	30	1110	OUTDOOR LIGHTING	<u> </u>	N	38
39	N	R	WATER HEATER	400	20	2		1400		-	<del> </del>	1000	COOLER LIGHTING	L	N	40
41	N	EQ	COOLER COMPRESSOR	4500	50	3			5580	1	20	1080	HEAT TAPE	R	N	42
43	N	EQ		4500	_	-	4860			1	20	360	6 GLASS DOORS - LIGHTS	R	N	44
45	N	EQ		4500	_	-		4980		1	20	480	8 GLASS DOORS - LIGHTS	R	N	46
47	N	EQ	COOLER EVAPORATOR	2400	25	2			3120	1	20	720	11 GLASS DOORS - LIGHTS	EC	N	48
49	N	EQ		2400	-	-	2400			1	20		SPARE	SP		50
51		SP	SPARE	- 155	20	1				1	20		SPARE	SP		52
53		SP	SPARE		20	1				1	<del>                                     </del>		SPACE	SP		54
55		SP	SPACE			Ė				1			SPACE	SP		56
57		SP	SPACE							1			SPACE	SP		58
59			SPACE							1			SPACE	SP		60
						<u> </u>	31310	31200	31600	<u> </u>	<u> </u>					
GH EN. QUI ITCI LEC. LEC.	ND CALCU TING [L] REC. [R] PMENT [EQ HEN [K] HEAT [EH] COOL [EC]	2] ] ]	6110W x 125% (12820W -10KW)/2+10KW 48000W x 100% 25920W x 100%	o = 7638 W V = 11410 V o = 48000 W	V	LS:	31310	TOTAL LO	AD WATTS FED LOAD:			94110 W 92968 W		D:	261.22 A 258.05 A	
HEAT & COOL [HC]  CONTINUOUS [CL]  AS - POWERLINK AS BREAKER  LO - HANDLE LOCK-ON DEVICE  ST - SHUNT TRIP TYPE  AUX - AUXILIARY CONTACTS						BREAKER OPTIONS:				GFCI - GROUND FAULT CIRCUIT INTERUPTER HACR - HEATING, A/C & REFRIGERATION SF - SUBFEED ACF - ARC FAULT BREAKER						



1. PROVIDE SPECIFIED COVER PLATE – 4"x 4" STD. OUTLET BOX FOR TELECOMMUNICATIONS WITH STD PLASTER RING. PROVIDE BLANK
STAINLESS STEEL COVER └ 4"x 4" WITH PLASTER RING STD. BOX 120V. DUPLEX LINE OF CARPET OR FLOOR OR QUAD. SEE PLANS SUB-FLOOR STANDARD OUTLET DETAIL

G.C. TO SUPPLY AND INSTALL PROTECTIVE CANOPIES FOR LAY—IN TYPE FIXTURE INSTALLED

IN BATT INSULATION. REFER TO

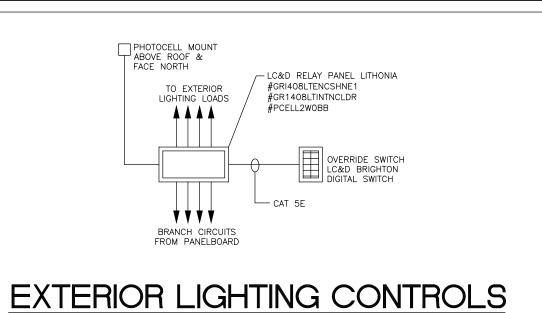
DRAWINGS. CANOPY TO PREVENT UNIT FROM OVERHEATING.

> — EARTHQUAKE CLIPS AS REQUIRED

- INDICATES 2' X 2'

CEILING GRID BY G.C.

ARCH. SPECIFICATIONS AND





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PROJECT NO:

21-4188

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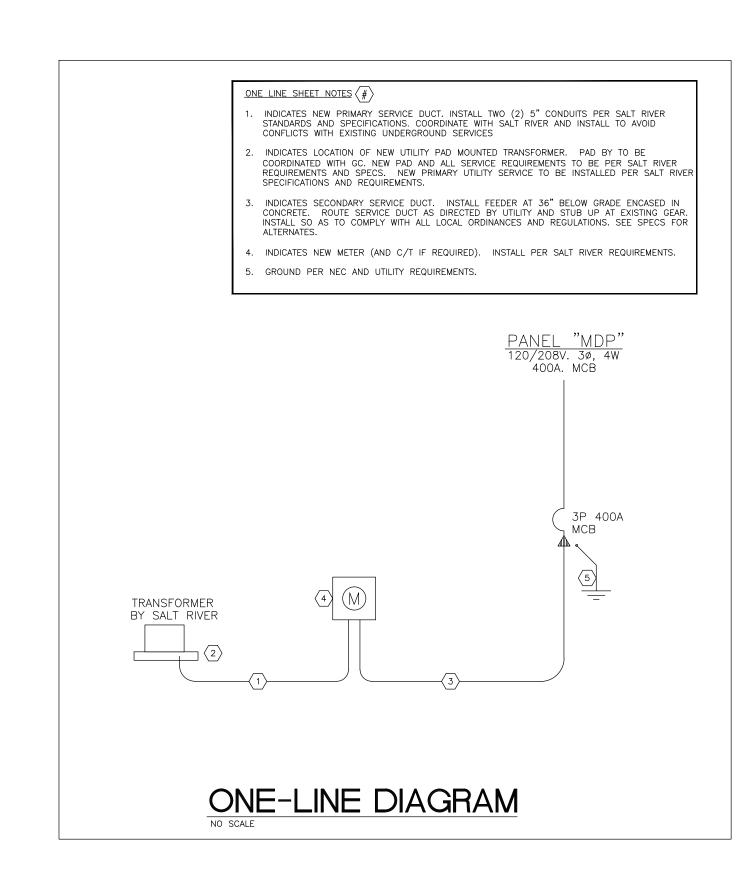
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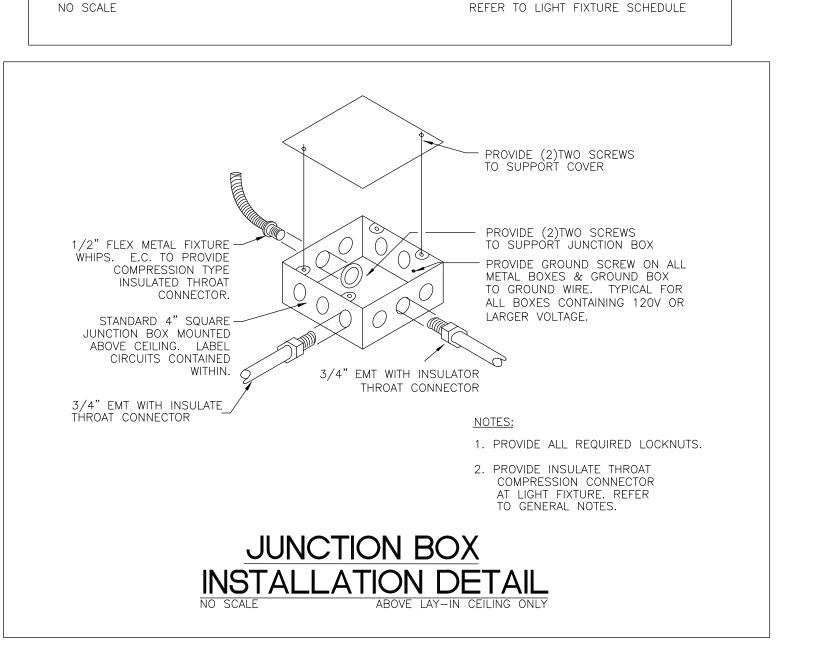
12-02-2021

LOCATED TOGETHER **EMERGENCY** VISUAL ALARM FACE OF DOOR FRAME PULL STATION TOP OF COUNTER/SPLASH 6'-8" 4"MAX. -CARD GANGED OUTLETS READER

NOTE: ALL DIMENSIONS SHALL MEET LOCAL ACCESSIBILITY CODE AND MATCH EXISTING HEIGHTS WHERE REQUIRED. CONTACT A.S.D. WITH ANY QUESTIONS OR CONFLICTS REGARDING MOUNTING HEIGHTS.

TYPICAL DEVICE MOUNTING HEIGHT





E.C. TO PROVIDE SUPPORT

INSTALLATION DETAIL - LAY-IN FIXTURE

NDICATES LAMPING AS REQUIRED, REFER TO

LIGHT FIXTURE SCHEDULE.

WIRE @ EACH CORNER

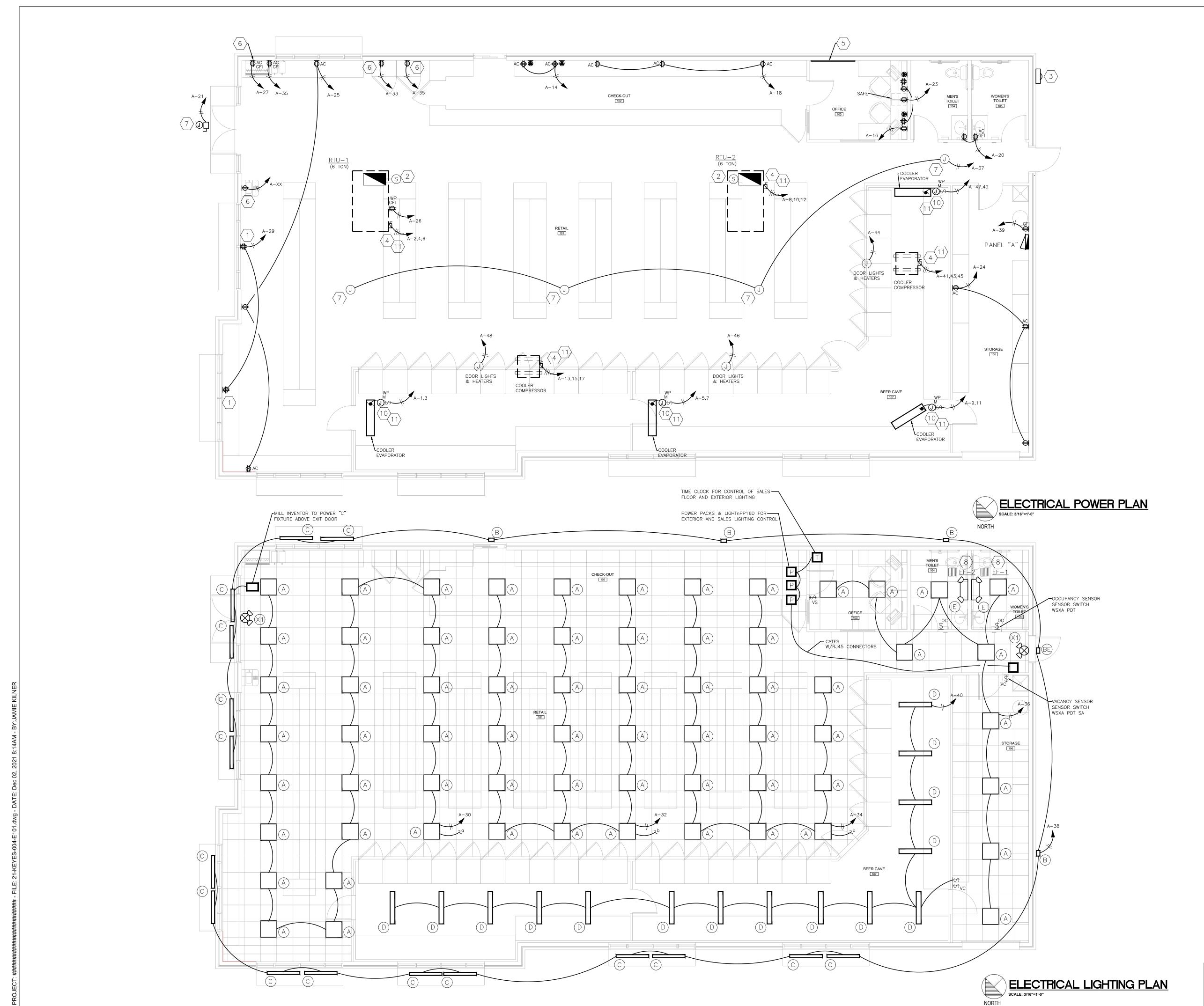
INDICATES ACRYLIC LENS -

AS SPECIFIED.

TORE LIQUOR

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ELECTRICAL DETAILS, ONE-LINE DIAGRAM & PANEL SCHEDULES



**ELECTRICAL KEY NOTES:** 

RECEPTACLE TO BE INSTALLED HIGH ON WALL ABOVE WINDOW FOR WINDOW SIGNS. COORDINATE EXACT LOCATION WITH GC.

2. ELECTRICAL SHALL PROVIDE AND INSTALL SMOKE DETECTOR IN RETURN AIR DUCT AS SHOWN AND INTERLOCK WITH SUPPLY FAN TO SHUTOFF FAN UPON SMOKE DETECTION.

4. 3 POLE, 60AMP, 250VOLT, NEMA 3R DISCONNECT SWITCH FUSED PER UNIT NAMEPLATE. FINAL CONNECTION WITH SEAL-TITE

3. INDICATES NEW 200 AMP 3 PH METER.

5. PROVIDE LOW VOLTAGE BOARD PER OWNER SPECIFICATIONS.

6. EC TO PROVIDE AND INSTALL A DEDICATED CIRCUIT.

7. JUNCTION BOX IN CEILING SPACE FOR DISPLAY SIGNS ETC. EC TO COORDINATE WITH GENERAL CONTRACTOR FOR EXACT

8. EXHAUST FAN TO BE INTERLOCKED WITH LIGHT SWITCH.

9. 2P, 30AMP, 240V NEMA 3R FUSIBLE DISCONNECT SWITCH FOR CONNECTION TO COOLER COMPRESSOR.

10. JUNCTION BOX WITH MOTOR RATED TOGGLE SWITCH IN WEATHER PROOF ENCLOSURE, FOR CONNECTION TO EVAPORATOR.

11. MOUNT TO UNIT.

#### LOW VOLTAGE CABLING NOTES

- A. EC TO INSTALL ONE CAT 6 CABLE TO EACH DATA LOCATION FROM LOW VOLTAGE BOARD. TERMINATION ON EACH END BY
- B. EC TO INSTALL ONE CAT 6 CABLE TO EACH CCTV LOCATION FROM LOW VOLTAGE BORD. TERMINATION ON EACH END BY OTHERS.
- C. EC TO INSTALL ONE RG6 AND ONE CAT 6 FROM DMARC TO LOW VOLTAGE BORD. TERMINATION ON EACH END BY OTHERS.

D. ELEVATION OF CCTV TO BE VEERED ON SITE.

PROJECT NO:

21-4188 DRAWN BY:

JMK DATE: 12-02-2021



ES SOCIA

PATEL LIQUOR STORE

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ELECTRICAL POWER AND LIGHTING PLANS ELECTRICAL SPECIFICATIONS

SCOPE OF WORK

- A. Work includes furnishing all labor, materials, equipment, tools, transportation, superintendence and services required to construct and completely install a fully operative electrical system as specified herein and as elsewhere required.
- B. Contractor is advised to visit and to acquaint himself with the working conditions. Contractor shall accept conditions at the site as they exist on the bid date.
- C. Materials and equipment shall be new unless indicated otherwise.

  Material shall bear U.L. label where such standards have been established and listed by U.L. Materials and equipment shall conform with the latest issues of applicable technical standards.
- D. Contractor shall cooperate with trades to obtain the most practical arrangement of work failure of the contractor to make known his needs and to determine the requirements of others shall not be cause of additional compensation to correct interference.
- E. Review the drawings and specifications of all trades, particularly those sections describing electrically operated equipment and become familiar with work called upon in those sections. At the conclusion of the work, be responsible for the proper wiring and functioning of all electrically operated equipment furnished and or installed under this contract.
- F. Contractor shall clean all equipment and conduit systems and test complete electrical systems for grounds and short circuits before final acceptance in accordance with NEC requirements. All test equipment shall be furnished by the contractor.
- G. Contractor shall guarantee all labor and materials entering into contract for a period of one (1) year from date of acceptance.
- H. Contractor shall provide necessary cutting and patching to install and finish work, correct all faulty work and repair installations that do not comply with code and practice. Patching shall be done by craftsmen skilled in their work. All openings shall be filled and matched to conform with fire regulations.
- All work shall be governed by the latest edition of the National Electrical Code (NEC) supplements and all state and local codes.
- J. Unless specifically stated otherwise, references to any device in the specifications or on the drawings by name, manufacturer or catalog number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. However, any substitutions for equipment specified by manufacturer shall be submitted to engineer for approval prior to bid.
- K. Equipment and accessories not specifically described or identified by catalog number shall be designed in accordance with applicable standards.
- L. Provide workmanship that is "first class" neatly and accurately performed by mechanics experience in their trade.
- M. The contractor shall obtain and pay for all permits and inspections from legally authorized agencies governing the work and be responsible for all notice to the inspection authorities. Furnish the owner with all certificates of inspections.
- N. Scale of the drawings is approximate. Exact locations, elevations and dimensions shall be governed by field conditions.
- O. Contractor shall furnish a temporary service for the use of all trades during construction as required by the general contractor. Remove all temporary equipment as permanent services become available.
- P. All outlets, fixtures and equipment shall be fully connected to proper sources of power supply and left ready to use.
- Q. Sequence, coordinate and integrate installations of electrical materials and equipment for efficient flow of the work.
- R. No work of any kind shall be covered up before it has been examined and approved.
- S. Arrange for chases, slots and openings in other building components to allow for electrical installations.

  ELECTRICAL SUBMITTALS:

Submittal of shop drawings, product data and samples will be accepted only when submitted by the contractor. Place a permanent label of title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label of title block. Include the following information on the label for processing and recording action taken. Provide seven (7) hard copies or electronic copies of the submittals are acceptable.

- Project Name. Date.
- Name and Address of Contractor.
  Name and Address of SubContractor.
- Name and Address of Supplier.
  Name of Manufacturer.

#### OPERATION AND MAINTENANCE DATA:

Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy—duty 2—inch, 3—ring vinyl—covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder.

#### Provide the following information for all equipment:

Copy of Product Data and Shop Drawing submittals. Copy of manufacturer's

Description of function, normal operating characteristics and limitations, performance cures, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.

Manufacturer's printed operating procedures to include start—up, break—in, routine and normal operating instructions; regulation, control, stopping, shut—down and emergency instructions.

Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions. Servicing instructions and lubrication charts and schedules.

Record Drawings:

Maintain a clean, undamaged set of blue line white—prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross—reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.

Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.

Note related Change Order number where applicable.

Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

Mark Drawings to indicate revisions to the work, including sizes and locations of both exterior and interior work; including locations of units requiring periodic maintenance or repair; actual equipment locations, dimensioned to column lines; concealed equipment, dimensioned to column lines; Change Orders.

SERVICES AND DISTRIBUTION:

A. Electric service will be 120/208 volts, 3 phase 4 wire.

Westinghouse Electric Corporation.

B. Furnish and install circuit breaker lighting and power panelboards as indicated in the panelboard schedule and where shown on the plans. Subject to compliance with requirements, provide panelboard products of one of the following:

General Electric Company. Square D Company.

- C. Panelboards shall be a dead—lock safety type, surface or recessed mounted as shown, equipped with thermal—magnetic molded case circuit
- D. Circuit breakers shall be quick—make, quick—break, thermal—magnetic, trip indicating and have common trip on all multi—pole breakers.

  Branch circuit breakers feeding convenience outlets shall have sensitive instantaneous trip settings of not more than 10 times the trip rating of breaker to prevent repeated arcing shorts resulting from frayed appliance cords.

breakers with frame and trip ratings as shown on the schedule.

- E. Connections to the bus shall be bolt—on.
- F. Bus bar connections to the branch circuit breakers shall be the "distributed phase" or "phase sequence" trip.
- G. Terminals for feeder conductors to the panelboard mains and neutral shall be U.L. listed as suitable for the type of conductor specified.

  Terminals for branch circuit wiring, both breaker and neutral, shall be U.L. listed as connectors shall be of the full compression type.
- H. Panelboard circuit numbering shall be such that starting at the top, odd numbers shall be used in sequence down the left—hand side and even numbers shall be used in sequence down the right—hand side.
- The panelboard bus assembly shall be enclosed in a steel cabinet. The size of the wiring gutters and gauge of steel shall be in accordance with NEMA Standard Publication No. PB-1971 and U.L. Standards No. 67 for panelboards. Cabinet shall be fabricated from galvanized steel or equivalent rust—resistant steel. Fronts shall include doors and have flush, brushed stainless steel, cylinder tumbler—type locks with catches and spring loaded door pulls. The flush lock shall not protrude beyond the front door. All panelboard locks shall be keyed alike. Fronts shall have adjustable indicating trip clamps which shall be concealed when the doors are closed. Doors shall be mounted by completely concealed steel hinges. Fronts shall not be removable with door in the located position. A circuit directory frame and type written card with a clear plastic covering shall be provided on the inside of the door. The directory card shall provide a space at least 1/4" high X 3" long or equivalent for each circuit. Provide copper busing for all panel assemblies.

Fronts shall be of code gauge, full finished steel with rust—inhibiting primer factory finished enamel paint.

- J. Contractor to obtain maximum Fault Current Available from the utility. Calculate the fault current available at the panel. Panel to be braced to exceed maximum available fault current and circuit breakers are to be capable of interrupting fault current available.
- K. Disconnect switches shall be general duty, NEMA Type 1 for indoor service and NEMA Type 3R for outdoor service, suitable for padlocking, number of poles, ratings, fuses (if required) shall be as indicated on the drawings; ITE or equivalent.
- L. <u>FUSES</u>: Except as otherwise indicated, provide fuses of types, sizes and ratings and electrical characteristics indicated, which comply with manufacturer's standard design, materials and construction in accordance with published product information and with industry standards and configurations.
- <u>Class R:</u> Provide U.L. listed Class R dual—element, time—delay fuses rated at 250 volts as required. Bussman LPN—R or LPS—R LOW—PEAK Dual—element or equivalent.
- <u>Class J:</u> Provide U.L listed and C.S.A. certified Class J current—limiting dual—element fuses rated at 600 volts in switchboard distribution sections.

#### CONDUIT AND WIRE:

- A. All wiring (power, lighting, telephone, thermostat, etc.) shall be installed in conduit. Electrical Contractor shall be responsible for all conduit work.
- B. Install wiring concealed in conduit. Conduit shall be 3/4" minimum type EMT and shall be installed in compliance with NEC. Exposed and above accessible ceiling conduits shall be run parallel and perpendicular to building lines. Swab clean all conduit before pulling cable.
- C. All conduit couplings and connections shall be set screw type and made to ensure positive grounding continuity. Make connections to equipment subject to vibration with 18 inches of flexible watertight conduit with watertight fittings. Provide for support and securing of all conduit and equipment. Connections to recessed lighting fixtures shall be made with six (6) feet of flexible conduit from a box within two (2) feet of the fixture.
- D. All cable shall be new wire of recent manufacture and in accordance with the latest standards of IPCEA and NEMA as a minimum.
- E. All lighting and branch circuit wiring shall be solid copper conductor, 600V insulation, 75 Degrees C. temperature rating, type THW or THWN, not less than #12AWG.
- F. All wire serving as feeds to distribution panelboards or integral horsepower motors shall be stranded copper conductor, 600V insulation, 75 Degrees C. maximum temperature rating, THW or THWN, not less than #10 AWG.
- G. All wiring from outlet boxes to lighting fixtures shall be in accordance with NEC requirements.
- H. Splice wire only in accessible boxes.
- I. Fixture whips to be flexible metal conduit 1/2" minimum size with compression connectors with insulated throats. Whips not to exceed 6'. Fixture whips to be supported from building structure.
- J. Seal around conduits where it passes through walls and floors to prevent passage of air. Where conduit passes through fire walls and floors, seal with 3M brand fire barrier putty 303 or equal.
- Compression fittings only for EMT connectors and couplings with insulated throats.
- M. Utilize the following conductor insulation color codes for this project.

  208/120
  A Black
  B Red
  C Blue
  Neutral White
  Ground Green

#### DEVICES:

- A. Convenience receptacles shall be mounted 18" above finished floor (A.F.F.) to bottom unless noted otherwise, switches and pushbuttons shall be 42" A.F.F. to bottom unless specified otherwise on the drawings.
- Install all devices parallel and perpendicular to adjacent wall and ceiling, flush with surrounding surfaces and free from all obstructions.

  Reworking of equipment installed improperly shall be at the contractor's expense.
- Switches, boxes, etc., shall be NEMA Type 1 construction for indoor applications and NEMA Type 3R construction for outdoor applications.

D. Switches shall meet NEMA standards, be ivory and equal to Hubbell #1221, 20 amperes, single pole, 125/277V. Multi-pole or special switching shall be as noted on the drawings.

- E. Receptacles shall meet NEMA standards, be ivory, 125 volt, 20 amperes, duplex, grounded Hubbell #5252. Special receptacles shall be as noted on the drawings.
- on the drawings.

  F. Matching nylon cover plates shall be provided for all receptacles and switches. Also furnish and install cover plates for all telephone, outlet

# boxes, and wall outlets. LIGHTING FIXTURES:

Contractor shall be responsible for verifying fixtures— model numbers, quantity and location between lighting fixture schedule and floor plans.

General: Provide lighting fixtures of sizes, types and ratings indicated, complete with, but not necessarily limited to, housings, lamps, lamp holders, reflectors, ballasts, starters and wiring.

Lenses shall be as specified in the fixture schedule.

INSTALLATION OF LIGHTING FIXTURES:

Install lighting fixtures at locations and heights as indicated, in accordance with fixture manufacturer's written instructions, applicable requirements of NEC, NECA's "Standard of Installation", NEMA Standards, and with recognized industry practices to ensure that lighting fixtures fulfill requirements.

Coordinate with other electrical work as appropriate to properly interface installation of interior lighting fixtures with other work.

EC to fasten fixtures securely directly to building structural system. Light troffers shall be supported at each corner of fixture by wires of same gauge as hanger wire for ceiling grid. Attach earthquake clips to grid as recommended by light manufacturer. Use screws if required by manufacturer. Attach the wire to the steel structure or expansion bolts in the slab above. Lights shall not be supported in anyway by lay—in ceiling.

Fixture locations shall be at approximate locations as shown on the drawings free from all obstructions. Clean all lighting equipment after lighting installation and general construction is complete. Repair any fixtures damaged during constructions.

Provide necessary mounting frames, supports and related items required to properly install fixtures. Support fixtures independently of piping and ductwork. Make modifications to the structure as required to install fixtures. Any modifications to the structure shall not impair the structural integrity of the building.

#### EQUIPMENT CONNECTIONS

- A. All devices and equipment shall be solidly grounded in accordance with NEC requirements.
- B. All solid conductor wires may be terminated under screw heads. Stranded wires may be terminated by using push—in clamp type connectors furnished with devices or terminated with compression type terminal lugs. Set screw type terminations are not permitted.
- C. No motors are to be supplied under this contract unless items requiring a motor are furnished by this contractor. The contractor shall furnish all starters for all motors requiring a starter. The contractor shall connect all power equipment if & where shown on plans unless other—wise specified & assure owner the motors are in good running order.

#### TELEPHONE

A. All telephone cable shall be run in conduit. Contractor shall install a minimum 1" conduit from each telephone set location to the telephone board or to accessible ceiling space or to tray as indicated.

#### FIRE ALARM SYSTEM

- A. Electrical contractor to supply and install all indicated devices shown. Field verify with existing fire alarm manufacture exact requirements to have a complete and fully operational fire alarm system.
- B. Provide and install required cabling to match existing. except all new cabling shall meet applicable national, state and local code requirements regardless of existing.

C. System shall be capable to call out to an owner approved fire alarm monitoring agency. The electrical contractor shall coordinate with the owner to provide a dedicated phone line for the fire alarm monitoring system.

#### IDENTIFY RACEWAYS OF CERTAIN SYSTEMS WITH COLOR BANDING:

Band exposed or accessible raceways of the following systems for identification. Bands shall be pretensioned, snap—around colored plastic sleeves, colored adhesive marking tape, or a combination of the two. Make each color band 2 inches wide, completely encircling conduit and place adjacent bands of two—color markings in contact, side by side. Install bands at changes in direction, at penetrations of walls and floors and at 40 foot maximum intervals in straight runs. Apply the following colors:

Fire Alarm System: Red Telephone System: Green

Identify Junction, Pull and Connection Boxes:

Label Power and Lighting Circuit Boxes with black marker pen to indicate system voltage and identity of contained circuits (function and circuit number).

Spray Paint Fire Alarm Telephone Boxes color indicated above and label system identification with black marker pen.

END OF SECTION

#### SPECIFICATION NOTES

• WHERE PERMITTED BY CODE AND LOCAL AUTHORITY MC CABLE IS ACCEPTABLE FOR THIS PROJECT.

PROJECT NO: 21-4188 DRAWN BY:

JMK
DATE:
12-02-2021

JMK DESIGN & DRAFTING, LLC 172 KEVIN PLACE MOUNT WASHINGTON, KY 40047 PHONE: 502.387.9049

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YES ARCHITECTS
7 PRESTON HIGHWAY
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L LIQUOR STOF

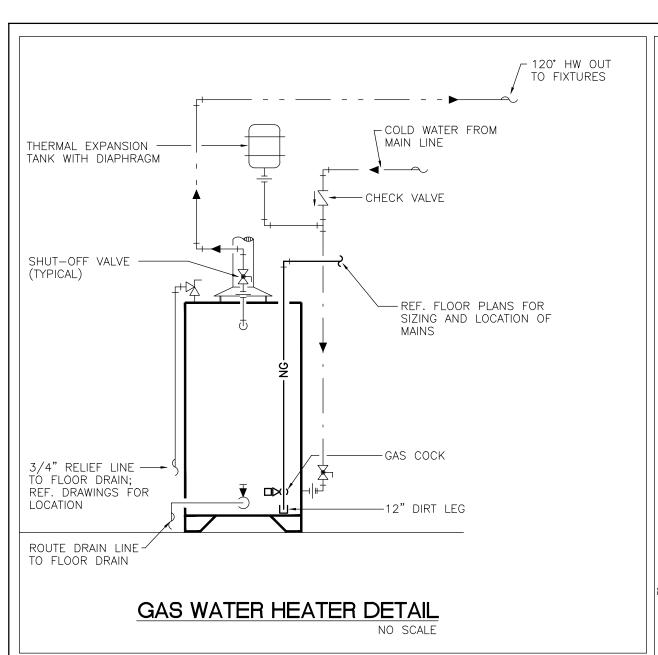
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ELECTRICAL SPECIFICATIONS

E2.1



## GENERAL NOTES:

- ARE APPROXIMATE & BASED ON INFORMATION OBTAINED FROM AS-BUILTS. ARCHITECTURAL PLANS, VENDOR & MANUFACTURER INFORMATION OBTAINED DURING DESIGN. CONTRACTOR SHALL VERIFY EXACT REQUIREMENTS, ROUGH-INS, CONNECTIONS, & LOCATIONS OF ACTUAL MANUFACTURER'S EQUIPMENT PROVIDED. EQUIPMENT PROVIDED MAY DEVIATE FROM THAT OF BASIS OF DESIGN AND THEREFORE ENGINEER/ARCHITECT SHALL BE NOTIFIED IMMEDIATELY (PRIOR TO CONSTRUCTION/ROUGH-IN) OF ANY SUCH DEVIATIONS FROM WHAT IS INDICATED OR IMPLIED BY THE CONSTRUCTION DOCUMENTS. FAILURE OF CONTRACTOR TO VERIFY LOCATION/ROUGH-IN, ETC. REQUIREMENTS WITH EQUIPMENT SHALL PLACE SUCH RESPONSIBILITY ON THE CONTRACTOR AND ALL NECESSARY REMEDIES INCLUDING REMOVAL, RELOCATION, REPLACEMENT, ETC. SHALL BE BORN BY THE
- CONTRACTOR SHALL NOT DEVIATE FROM CONSTRUCTION DOCUMENTS WITHOUT APPROVAL. REQUEST TO DEVIATE FROM DRAWINGS SHALL BE PERFORMED PER PROJECT FRONT FND REQUIREMENTS & AT A MINIMUM SHALL CONSIST OF WRITTEN REQUEST WITH REASON FOR DEVIATION & PROPOSED CHANGE, INCLUDING ALL COST, LABOR, MATERIALS, ETC. IMPACT ON PROJECT. ANY CHANGES MADE WITHOUT THE ENGINEER'S REVIEW AND APPROVAL WITH EXPRESS
- WRITTEN CONSENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE PURPOSE AND INTENT OF ALL DOCUMENTS PERTAINING TO THIS PROJECT IS TO PROVIDE A COMPLETE, FUNCTIONAL, SAFE, LIKE NEW FACILITY. ANYTHING IFSS SHALL BE UNACCEPTABLE.
- EACH CONTRACTOR, SUPPLIER AND/OR MANUFACTURER SHALL REFER TO ALL DOCUMENTS PERTAINING TO THIS PROJECT AND COORDINATE ACCORDINGLY SO AS TO ENSURE ADEQUACY OF FIT. COMPLY WITH SPECIFICATIONS AND AVOID CONFLICT WITH ANY OTHER BUILDINGS SYSTEMS. VERIFY SAME WITH SHOP DRAWINGS
- SCALE FROM DRAWINGS AT YOUR OWN RISK. PRINTING DISTORTS SCALE. WORK SHALL BE LAID OUT FROM DIMENSIONED DRAWINGS, OR DIMENSIONS SUPPLIED TO THE CONTRACTOR.
- DEVIATION FROM SPECIFICATIONS OR PLANS REQUIRES PRIOR WRITTEN APPROVAL MUST BE SUBMITTED IN WRITING NO LATER THAN TEN DAYS PRIOR TO BID DATE
- DEVIATIONS IN SIZE, CAPACITY, FIT. AND FINISH OF EQUIPMENT FROM THAT SPECIFIED HEREIN MAY REQUIRE ALTERATIONS OF THE DESIGN. DESIGN CHANGES OR CONSTRUCTION PROVISIONS REQUIRED TO ACCOMMODATE ALTERNATIVE EQUIPMENT SELECTIONS WILL BE THE RESPONSIBILITY OF THE PURCHASER, FURTHERMORE ANY DEVIATIONS MUST BE APPROVED.
- PROVIDE A COMPLETE SCHEDULE OF SHUTDOWNS THAT AFFECT UTILITIES AND PORTIONS OF THE BUILDING THAT MUST REMAIN IN OPERATION. CONSULT WITH OWNER TO OBTAIN WRITTEN APPROVAL FOR SHUTDOWN OF EXISTING SYSTEMS OR UTILITIES. CRITICAL SYSTEMS SHALL BE MAINTAINED IN OPERATIONAL STATUS AT ALL TIMES UNLESS A SUITABLE SUBSTITUTE SYSTEM IS PROVIDED FOR TEMPORARY SERVICE AND APPROVED.

DESCRIPTION

ADA REQUIREMENTS.

YOKE WALL - MOUNTED UTILITY FAUCET.

OPERATING RAMG IS 20 TO 80 PSIG

ZURN MODEL CO1 ADJUSTABLE FLOOR CLEANOUT.

CHECK STOPS TO SUPPLY TEMPERED WATER SET AT 110°F.

FIXTURE TYPE

WATER CLOSET

LAVATOR'

MOP SINK

FLOOR DRAIN

CLEANOUT

FREEZE PROOF

WALL HYDRANT

PREVENTER

TEMPERING VALVE

CONNECT TO TOP OF COLD WATER LINE

TO PREVENT FOREIGN MATTER

FROM ENTERING DIRECTLY

☐ INTO PRIMER

16-1/2" OR PER

MFGR'S. RECOMMENDATIONS

FINISHED FLOOR-

CW SUPPLY MAIN

ASSEMBLY

-ROUTE PIPING

CONCEALED IN WALL

TRAP PRIMER DETAIL

-TRAP PRIMER

ASSEMBLY ON

MULTIPLE CONNECTIONS

FPWH

PLUMBING FIXTURE AND ACCESSORIES SCHEDULE

AMERICAN STANDARD 221AA.104 FLOOR SET, ELONGATED BOWL, 1.28 GPF, TANK TYPE AMERICAN

STANDARD OPEN FRONT SEAT MODEL 5901.100 TO COMPLY WITH ADA REQUIREMENTS.

AMERICAN STANDARD 0355.012 WALL MOUNTED LAVATORY WITH HANGERS, SINGLE CONTROL CENTERSET MODEL 7385.003 4" CENTER SET, BELOW DECK MIXING VALVE, CHROME PLATED

PROFLO PFMB2424 PREFABICATED MOP SINK, AMERICAN STANDARD 8344.212 EXPOSED

CLAMP WITH ADJUSTABLE COLLAR, DIAMETER NICKEL BRONZE STRAINER WITH TRAP PRIMER

PROFLO MODEL PFPR500 AUTOMATICALLY ACTIVATES WITH A PRESSURE DROP OF 10 PSIG,

WATTS HY-725 NON-FREEZE WALL HYDRANT WITH NB BOX AND INTEGRAL VACUUM

POWERS LFe480 HYDROGUARD SERIES, ROUGH BRASS FINISH, LOW LEAD COMPLIANT WITH

2. PROVIDE FACTORY MOUNTED T&P RELIEF VALVE.

3. ENERGY EFFICIENCY TO MEET OR EXCEED ASHRAE 90.1 RATINGS.

EXPANSION TANK SCHEDULE

WATTS MODEL 3LF009, 1" BACFLOW PREVENTER WITH AIR GAP AND STRAINER

ROOM AREA FLOOR DRAIN. WATTS - FD-320-Y-4-7, 4" OUTLET. MEMBRANE

SUPPLIES, STOPS AND 1-1/2" P-TRAP. PROVIDE TRAP AND SUPPLY WRAP TO COMPLY WITH

- EQUIPMENT ROUGH—IN ITEMS & INDICATED LOCATIONS FOR ALL CONNECTIONS \_\_\_\_\_10. COORDINATE WORK WITH OTHER BUILDING FEATURES AND AVOID INTERFERENCES WITH PIPING, DUCTWORK, EQUIPMENT, PLUMBING, AND MECHANICAL COMPONENTS REFER TO ALL DOCUMENTS PERTAINING TO THE PROJECT FOR COORDINATION WITH OTHER TRADES TO ENSURE ADEQUACY OF FIT, COMPLIANCE WITH SPECIFICATIONS, PROPER ELECTRICAL SERVICE CHARACTERISTICS, AND PROPER SERVICE CLEARANCES.
  - VIBRATING, OSCILLATING AND OTHER NOISE PRODUCING EQUIPMENT SHALL BE ISOLATED FROM SYSTEMS AND SURROUNDING STRUCTURE IN AN APPROVED MANNER. NOISY OR STRUCTURALLY DAMAGING INSTALLATIONS SHALL BE REPLACED OR REPAIRED AT MECHANICAL CONTRACTOR'S EXPENSE. FINAL APPROVAL OF THE INSTALLATION SHALL BE THAT OF THE ENGINEER.
  - ALL OFFSETS, TURNS, FITTINGS, TRIM, DETAIL, AND ACCESSORIES MAY NOT BE INDICATED ON THE DRAWINGS, BUT SHALL BE PROVIDED AS REQUIRED TO COMPLETE INSTALLATION. ADDITIONAL ALLOWANCES SHALL BE INCLUDED FOR SAME AT EACH PROPOSER'S DISCRETION. 13. WHERE PENETRATING ROOFING MEMBRANE OR OTHER MATERIALS USED FOR
  - WEATHERPROOFING THE BUILDING, MAKE SUCH PENETRATIONS IN A MANNER THAT WILL NOT VOID OR DIMINISH THE WARRANTY OF THE MATERIAL PENETRATED. COORDINATE ALL SUCH PENETRATIONS WITH THE ROOFING OR MATERIAL INSTALLER. WHERE CONDUIT, CABLES, DUCTWORK, OR PIPING PASSES THROUGH FIRE RATED
  - FLOORS OR WALLS, SLEEVES SHALL BE COMPLETELY SEALED WITH FIRE STOP MATERIAL THAT IS U.L. LISTED. MAINTAIN THE FIRE RATING OF THE PENETRATED 15. VALVES, BALANCING DAMPERS, AND MECHANICAL EQUIPMENT SHALL NOT BE LOCATED ABOVE A HARD CEILING. IF THIS IS NOT POSSIBLE, THEN AN
  - APPROPRIATELY SIZED ACCESS PANEL SHALL BE PLACED UNDER THE ITEM TO ALLOW FOR MAINTENANCE AND ADJUSTMENT.
  - 16. EQUIPMENT SHALL BE 60 HZ UNLESS OTHERWISE INDICATED. 17. CONTRACTOR SHALL INCLUDE ALL COSTS ASSOCIATED WITH DRAINING AND
  - FILLING PIPING SYSTEMS AS REQUIRED TO INSTALL THEIR NEW WORK. 18. EXISTING MATERIALS THAT ARE REMOVED SHALL NOT BE RE-USED IN THE NEW WORK, EXCEPT WHERE RELOCATION OR RE-USE IS INDICATED.

#### PLUMBING ABBREVIATION LEGEND 3CS — THREE COMPARTMENT SINK GRS — SANITARY GREASE — HOSE BIBB ABV — ABOVE — HUB DRAIN C/HC — WATER CLOSET/ADA WATER CLOSET HW — HOT WATER CLG — CEILING HWH — HOT WATER HEATER CO — CLEANOUT — INVERT ELEVATION COND — CONDENSATE — ICE MACHINE CONN — CONNECT/CONNECTION — ICE MACHINE CONNECTION CONT — CONTINUATION — INDIRECT WASTE CP — CIRCULATING PUMP L/HL — LAVATORY/ADA LAVATORY CW — COLD WATER MC — MECHANICAL CONTRACTOR CWE — EXISTING COLD WATER NG — NATURAL GAS DISP — DISPOSAL PLUMBING CONTRACTOR DN — DOWN PME — PLUMBING/MECHANICAL/ELECTRICAL DRWG — DRAWING — ROOF DRAIN D.W. — DIRECT WASTE REF — REFER/REFERENCE SAN — SANITARY WASTE EA — EACH EC — ELECTRICAL CONTRACTOR — SINK ESAN — EXISTING SANITARY WASTE — SUMP PUMP T&P — TEMPERATURE AND PRESSURE EX. — EXISTING EXT — EXTEND — TEMPERED WATER FCO — FLOOR CLEANOUT UR — URINAL FD — FFD — ROOF

FD	_	FLOOR DRAIN	V		VENT
FFD	_	FUNNEL FLOOR DRAIN	V	TR —	VENT THROUGH RO
FIXT	_	FIXTURE	W	·/ —	WITH
FL	_	FLOOR	W	′M —	WATER METER
FS	_	FLOOR SINK	Y	co —	YARD CLEANOUT
GC	_	GENERAL CONTRACTOR			

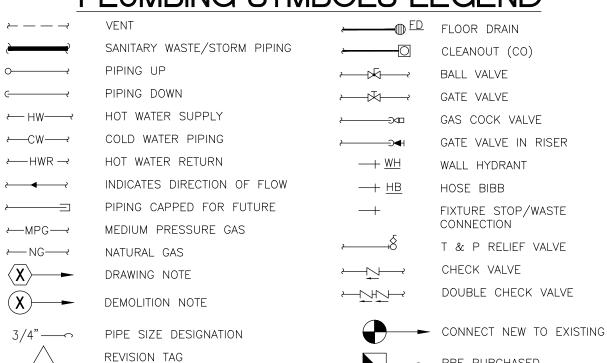
NOTE: ALL ABBREVIATIONS

MAY NOT APPLY

IMBING ROUGH-IN SCHEDULE									
FIXTURE	HW CONN.	CW CONN.	WASTE CONN.	VENT CONN.					

TAG	FIXTURE	CONN.	CONN.	CONN.	CONN.
HC	ADA WATER CLOSET	_	1/2"	4"	2"
HL	ADA LAVATORY	1/2"	1/2"	1-1/2"	1-1/2"
MS	MOP SINK	3/4"	3/4"	1-1/2"	1-1/2"
		•		•	

# PLUMBING SYMBOLS LEGEND



NOTE: ALL SYMBOLS MAY NOT APPLY

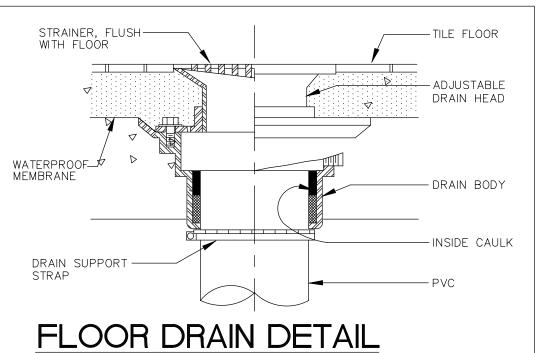
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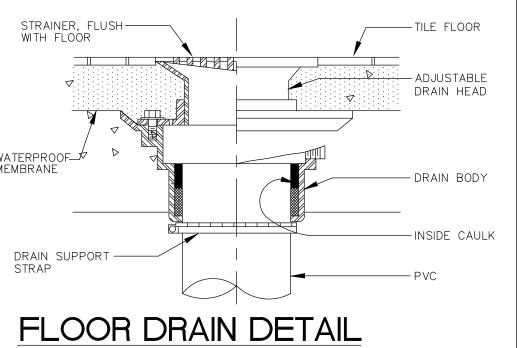
- GRADE OR PAVING

→ PRE PURCHASED

→ TERMINATION POINT

OF DEMOLITION







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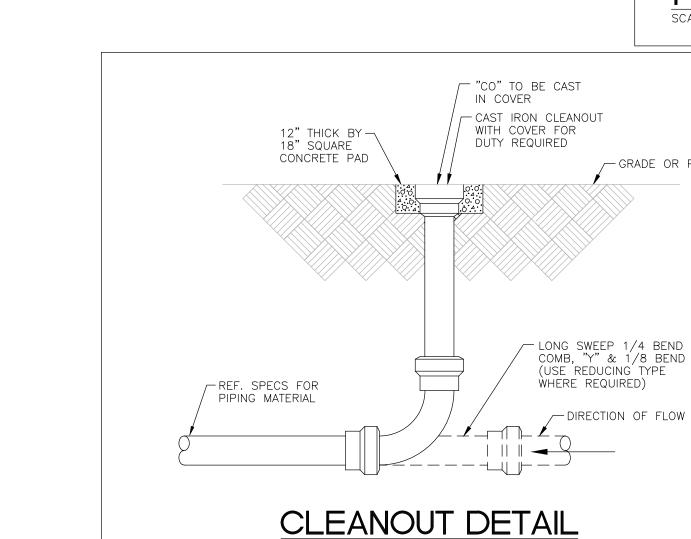
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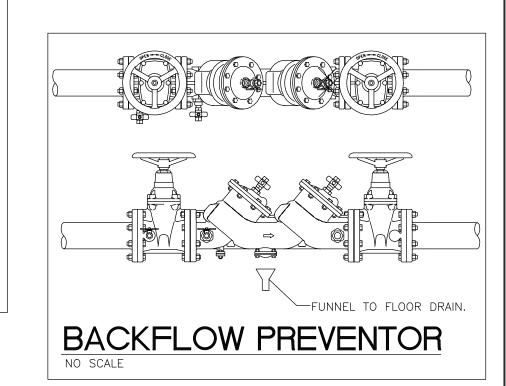
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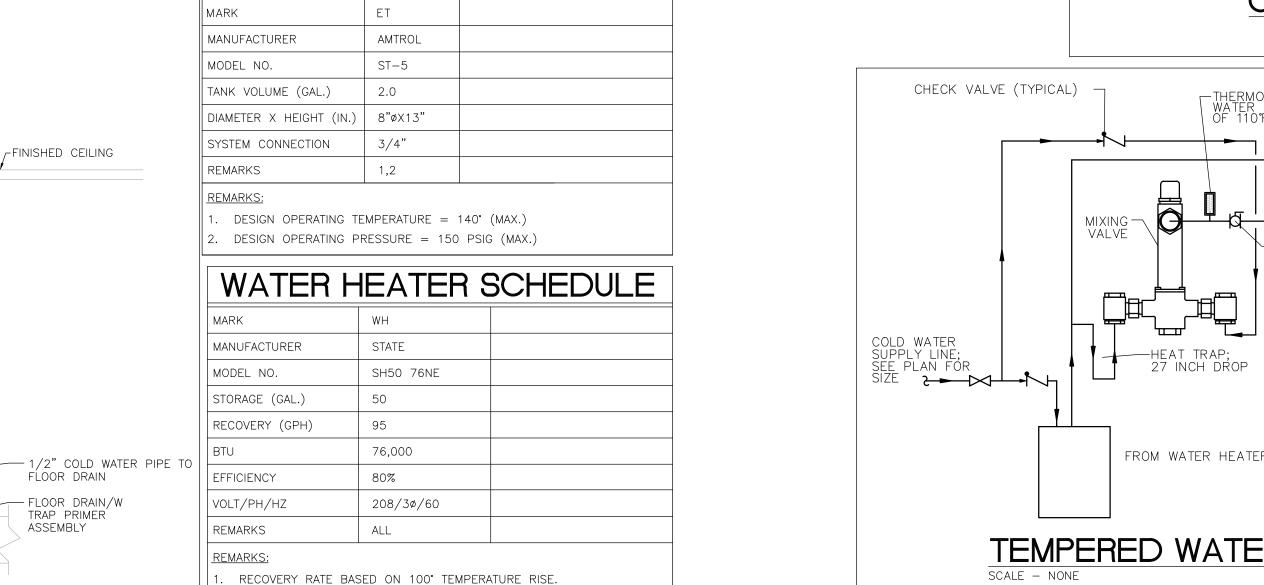
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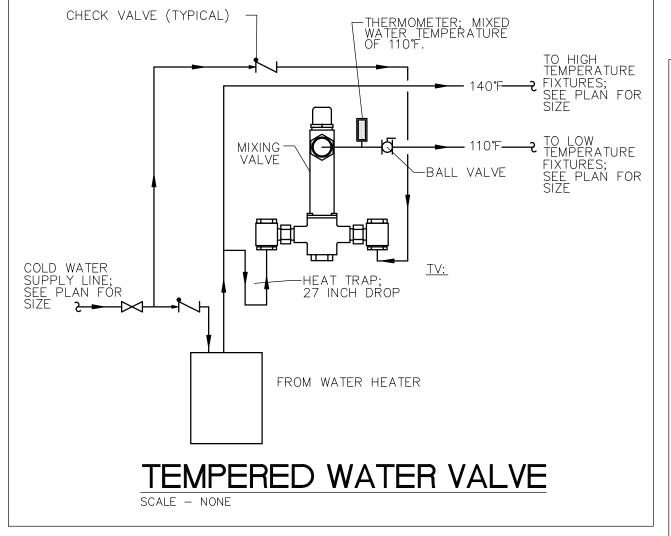
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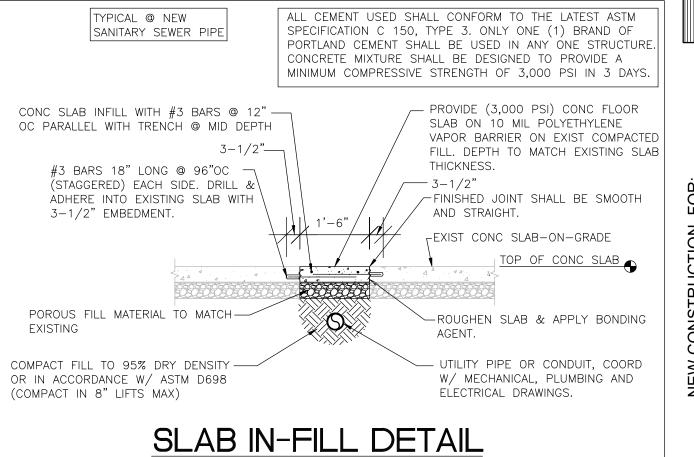
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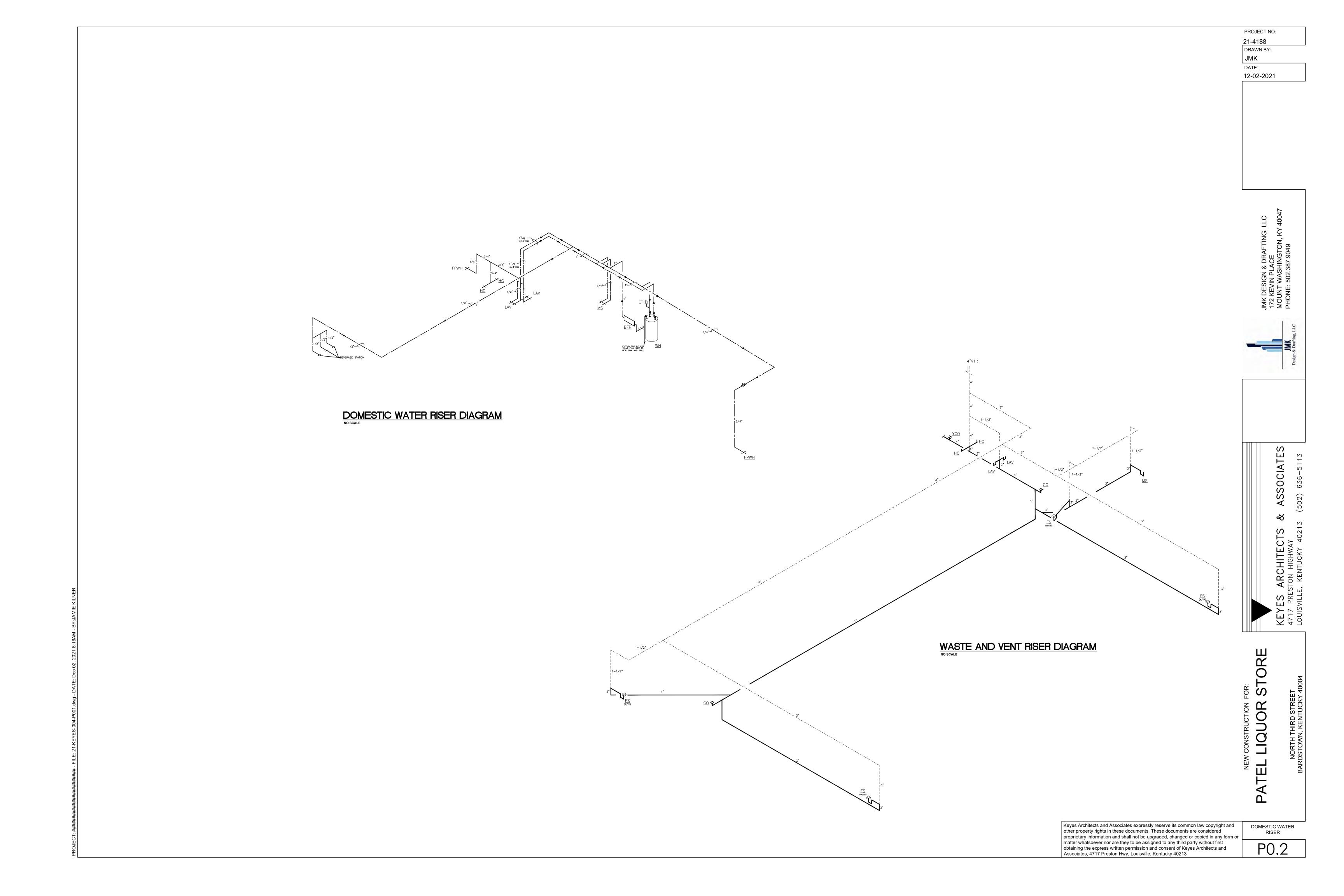
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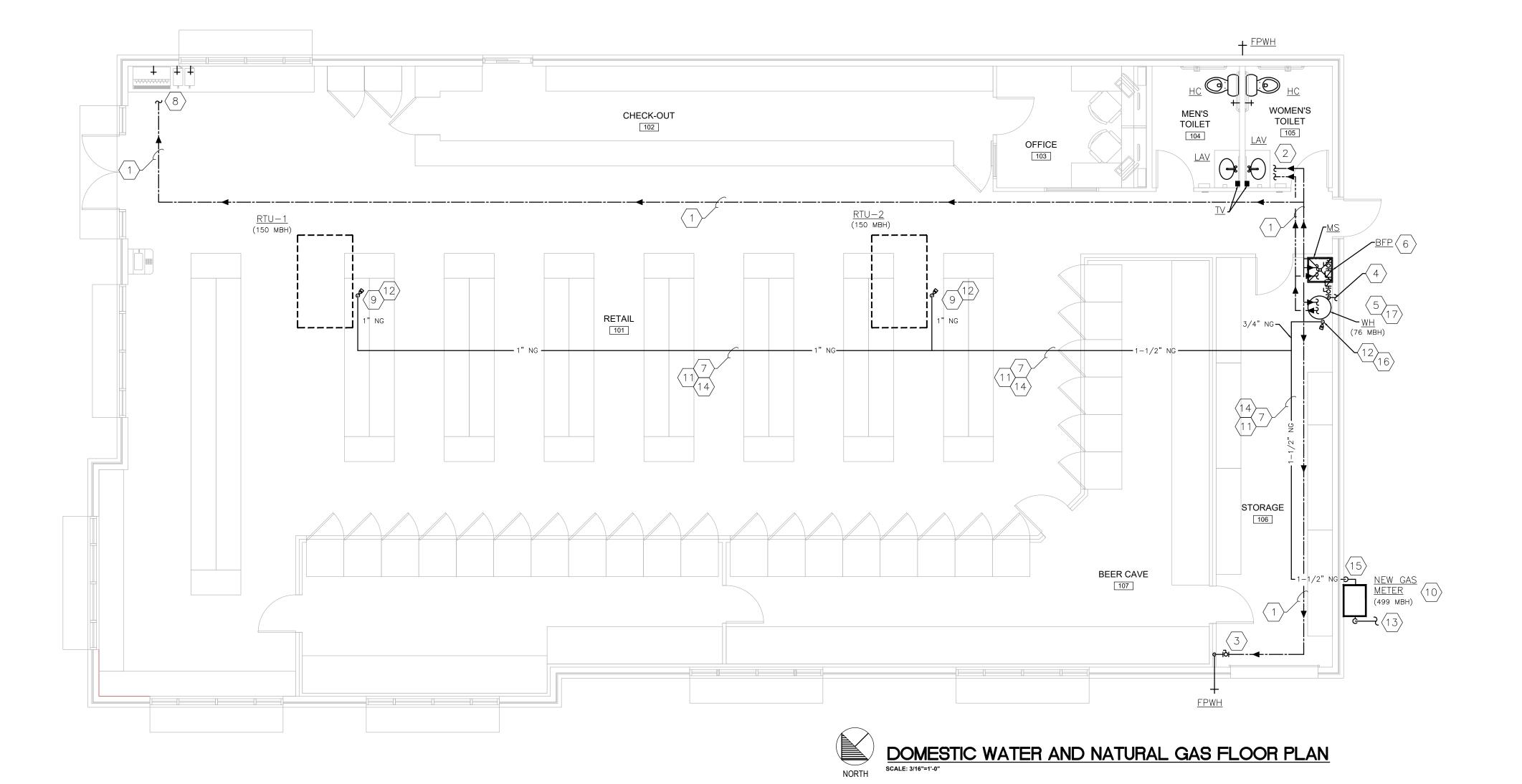
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#### PLUMBING KEY NOTES:

- . REFER TO RISER DIAGRAMS FOR ALL PIPE SIZES. (TYPICAL)
- 2. CW/HW LINES DOWN IN WALL AND CONNECT TO FIXTURE.
- 3. SHUT-OFF VALVES IN AN ACCESSIBLE LOCATION.
- 4. EXTEND NEW 1" CW TO EXISTING WATER AND CONNECT. . REFER TO DOMESTIC WATER RISER DIAGRAM ON SHEET P.02 AND GAS WATER HEATER DETAIL ON SHEET P.01 FOR CONNECTION TO WATER HEATER.
- 6. NEW 1" WATER SERVICE AND BACKFLOW PREVENTER P.C. TO COORDINATE WITH G.C. FOR EXACT LOCATION PRIOR TO BEGINNING OF WORK.
- 7. P.C. TO ROUTE GAS PIPING HIGH IN CEILING SPACE.
- 8. 1/2" CW LINE DOWN IN WALL AND CONNECT TO BEVERAGE
- 9. GAS PIPING UP THRU ROOF CURB AND CONNECT TO ROOFTOP EQUIPMENT.
- 10. GAS METER FURNISHED AND INSTALLED BY LG&E/KU. 11. GAS PIPING IS SIZED BASED UPON GAS PRESSURE LESS THAN 2PSI WITH 0.5" C.W. PRESSURE DROP AND 150'-0" OF TOTAL PIPE LINK AFTER NATURAL GAS REGULATOR.

12. P.C. SHALL INSTALL GAS SHUT—OFF WITH A 6" DIRT LEG.

- 13. EXTEND NEW GAS LINE TO CONNECT ON SITE. PC TO VERIFY EXACT LOCATION ON SITE. COORDINATE WITH SITE
- 14. PLUMBING CONTRACTOR SHALL COORDINATE ROUTING OF GAS PIPING WITH MECHANICAL CONTRACTOR AND MECHANICAL DRAWINGS TO AVOID CONFLICT. 15. ALL EXPOSED GAS PIPING TO BE PAINTED WITH TWO COATS
- OF "RUSTOLEUM" PAINT. COLOR TO BE SELECTED BY 16. 3/4" GAS DOWN TO WH AND CONNECT. GAS TO BE INSTALLED
- 17. EXTEND T&P RELIEF VALVE DISCHARGE FULL SIZE TO MOP SINK AND SPILL.

PER MANUFACTURER'S RECOMMENDATIONS.

MARK	GAS LOADS (MBH)
RTU-1	120
RTU-2	120
TLWH	76
TOTAL:	316
•	



PROJECT NO:

21-4188 DRAWN BY:

JMK

DATE:

12-02-2021

ES

PATEL LIQUOR STORE

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PLUMBING DOMESTIC WATER AND GAS PLANS

12-02-2021

# 21-4188

## PLUMBING KEY NOTES:

- . REFER TO RISER DIAGRAMS FOR ALL PIPE SIZES. (TYPICAL)
- 2. PC SHALL COORDINATE CUTTING, BACKFILLING AND PATCHING EXISTING FLOOR AFTER UNDER GROUND PIPING IS INSTALLED WITH G.C.
- 3. PC SHALL COORDINATE WITH GENERAL CONTRACTOR TO USE THE LANDLORD ROOFING CONTRACTOR FOR VTR.
- 4. EXTEND NEW WASTE LINE AND CONNECT TO EXISTING. VERIFY EXACT LOCATION ON SITE AND INVERT ELEVATION OF EXISTING AND FLOW DIRECTION OF WASTE PIPING.
- . EXTEND CONDENSATE DRAIN FROM COOLER TO FLOOR SINK SPILL. COORDINATE LOCATION OF DRAIN CONNECTION WITH COOLER SUPPLIER AND OR GC.
- 6. EXTEND BEVERAGE DRAIN TO FLOOR SINK AND SPILL. COORDINATE LOCATION OF DRAIN ON SITE.

MEN'S TOILET

COOLER EVAPORATOR

BEER CAVE

EVAPORATOR

OFFICE 103

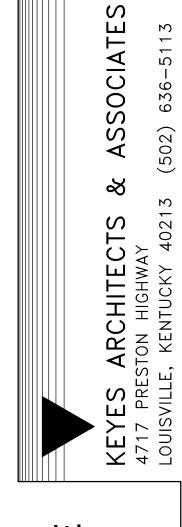
WOMEN'S

TOILET

105

STORAGE 106





NEW CONSTRUCTION FOR:
PATEL LIQUOR STORE

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PLUMBING SEWER PLANS

SANITARY SEWER FLOOR PLAN

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

CHECK-OUT

102

101

COOLER EVAPORATOR

DIVISION 15A - PLUMBING

15000 - PLUMBING - GENERAL

15005 - OPERATION AND MAINTENANCE MANUALS 15190 - MECHANICAL IDENTIFICATION 15250 - PLUMBING INSULATION 15350 - NATURAL GAS PIPING

15405 - SOIL, WASTE & VENT PIPING

15401 - DOMESTIC WATER PIPING AND VALVES

#### SECTION 1500 - PLUMBING-GENERAL

#### PART 1 - GENERAL

A. SECTIONS 15000 THROUGH 15899 PERTAIN TO PLUMBING WORK. THIS SECTION APPLIES TO AND GOVERNS ALL

REFER TO OTHER DIVISIONS FOR CONTINUATION OF EXTERIOR AND ALLIED WORK.

FIELD PAINTING IS SPECIFIED IN DIVISION 9.

1.02 PERMITS, FEES, CODES, ORDINANCES AND REGULATIONS A. OBTAIN AND PAY FOR ALL PERMITS, INSPECTIONS AND CONNECTION FEES REQUIRED BY GOVERNING BODIES IN CONNECTION WITH THE WORK. DELIVER CERTIFICATES OF INSPECTION TO THE ARCHITECT/ENGINEER. ALL WORK SHALL COMPLY WITH GOVERNING CODES, ORDINANCES, AND REGULATIONS OF CITY, COUNTY, AND STATE HAVING JURISDICTION, AND THE NATIONAL ELECTRICAL CODE, MECHANICAL CODE, AND REQUIREMENTS OF

INDUSTRY STANDARDS AND CODES: UNLESS MODIFIED BY THESE SPECIFICATIONS, THE DESIGN, MANUFACTURE, TESTING, AND METHOD OF INSTALLING ALL MATERIALS, APPARATUS, AND EQUIPMENT SHALL CONFORM TO THE

1. KENTUCKY PLUMBING CODE SUBSTITUTIONS: SEE GENERAL CONDITIONS. EQUIPMENT ROUGH-IN ITEMS & INDICATED LOCATIONS FOR ALL CONNECTIONS ARE APPROXIMATE & BASED ON INFORMATION OBTAINED FROM AS-BUILTS, ARCHITECTURAL PLANS, VENDOR & MANUFACTURER INFORMATION OBTAINED DURING DESIGN. CONTRACTOR SHALL VERIFY EXACT REQUIREMENTS. ROUGH-INS. CONNECTIONS. & LOCATIONS OF ACTUAL MANUFACTURER'S EQUIPMENT PROVIDED. EQUIPMENT PROVIDED MAY DEVIATE FROM THAT OF BASIS OF DESIGN AND THEREFORE ENGINEER/ARCHITECT SHALL BE NOTIFIED IMMEDIATELY (PRIOR TO CONSTRUCTION/ROUGH-IN) OF ANY SUCH DEVIATIONS FROM WHAT IS INDICATED OR IMPLIED BY THE CONSTRUCTION DOCUMENTS. FAILURE OF CONTRACTOR TO VERIFY LOCATION/ROUGH-IN. ETC. REQUIREMENTS WITH EQUIPMENT SHALL PLACE SUCH RESPONSIBILITY ON THE CONTRACTOR AND ALL NECESSARY REMEDIES INCLUDING REMOVAL, RELOCATION, REPLACEMENT, ETC. SHALL BE BORN BY THE CONTRACTOR.

CONTRACTOR SHALL NOT DEVIATE FROM CONSTRUCTION DOCUMENTS WITHOUT ENGINEER'S APPROVAL. REQUEST TO DEVIATE FROM ENGINEERED DRAWINGS SHALL BE PERFORMED PER PROJECT FRONT FND REQUIREMENTS & AT A MINIMUM SHALL CONSIST OF WRITTEN REQUEST WITH REASON FOR DEVIATION & PROPOSED CHANGE INCLUDING ALL COST, LABOR, MATERIALS, ETC. IMPACT ON PROJECT. ANY CHANGES MADE WITHOUT THE ENGINEER'S REVIEW AND APPROVAL WITH EXPRESS WRITTEN CONSENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR

SHOP DRAWINGS: SUBMIT ON ALL MATERIALS, PRODUCTS, EQUIPMENT, AND SYSTEMS AS SPECIFIED UNDER

PLUMBING SECTION IN THIS DIVISION IN ACCORDANCE WITH THE GENERAL CONDITIONS. PRODUCT DATA: SUBMIT ON ALL MATERIALS, PRODUCTS, AND EQUIPMENT UNLESS OTHERWISE SPECIFIED OR ACKNOWLEDGED IN WRITING

SAMPLES: SUBMIT WHEN SPECIFIED OR REQUESTED. OPERATION AND MAINTENANCE MANUALS: SUBMIT COPIES IN COMPLIANCE WITH SECTION, OPERATIONS AND MAINTENANCE MANUALS.

PROTECT MATERIALS, APPARATUS, AND EQUIPMENT FROM DAMAGE, MOISTURE, DIRT, DEBRIS, AND WORK OF OTHER TRADES.

USE OF PAPER, CARDBOARD, OR OTHER FLIMSY MATERIAL WILL NOT BE PERMITTED. REPLACE DAMAGED PROTECTIVE MATERIALS IMMEDIATELY. DO NOT INSTALL DAMAGED MATERIALS AND EQUIPMENT. REMOVE FROM THE

REFER TO GENERAL CONDITIONS AND DIVISION 1 FOR REQUIREMENTS CONCERNING RECORD DOCUMENTS. FURNISH ARCHITECT/ENGINEER WITH ONE SET OF ACCURATELY MARKED BLUE LINE COPES OF THE DRAWINGS, INDICATING ALL CHANGES FROM THE CONTRACT DRAWINGS AND ALL PLUMBING WORK AS INSTALLED.

#### 1.07 GUARANTEE AND SERVICE REFER TO GENERAL CONDITIONS FOR GUARANTEE.

ALL PREVENTATIVE MAINTENANCE AND NORMAL SERVICE WILL BE PERFORMED BY THE OWNER'S MAINTENANCE PERSONNEL AFTER FINAL ACCEPTANCE OF THE WORK, THIS SHALL NOT ALTER THE CONTRACTOR'S GUARANTEE OF THE WORK IN ANY WAY

#### PART 2 - PRODUCTS

2.01 GENERAL L MATERIALS AND EQUIPMENT SHALL BE NEW. SYSTEMS SHALL BE PROVIDED COMPLETE, AND EACH SYSTEM A A WHOLE, AND IN ALL ITS PARTS, SHALL FUNCTION CORRECTLY UP TO THE SPECIFIED CAPACITY. SHOULD A SYSTEM, OR ANY PARTS THEREOF, FAIL TO MEET PERFORMANCE REQUIREMENTS, NECESSARY REPLACEMENTS, ALTERATIONS OR REPAIRS, AS REQUIRED BY THE ARCHITECT/ENGINEER, SHALL BE MADE TO BRING PERFORMANCE UP TO SPECIFIED REQUIREMENTS OF BUILDING CONSTRUCTION AND FINISHED DAMAGED OR MARRED BY SUCH REPLACEMENTS, ALTERATIONS OR REPAIRS SHALL BE RESTORED TO PRIOR CONDITIONS, AT NO ADDITIONAL COST

WHERE MULTIPLE ITEMS OF EQUIPMENT OF MATERIALS ARE REQUIRED, THEY SHALL BE THE PRODUCT OF A

SINGLE MANUFACTURER. BEFORE ORDERING ANY EQUIPMENT, THE SIZE OF ALL EQUIPMENT SHALL BE CHECKED TO EASILY FIT IN THE SPACES ALLOTTED ON THE DRAWINGS.

INSERTS, PIPE SLEEVES, SUPPORTS, AND ANCHORAGE OR PLUMBING EQUIPMENT SHALL BE PROVIDED AS SPECIFIED HEREIN. WHERE SUCH ITEMS ARE TO SET OR BE EMBEDDED IN CONCRETE MASONRY OR SIMILAR WORK, THE ITEMS SHALL BE FURNISHED AND LAYOUT MADE AT THE PROPER TIME FOR THE SETTING OR EMBEDMENT THEREOF SO AS TO CAUSE NO DELAY IN THE WORK.

PIPING ASSEMBLIES OF EQUIPMENT SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC. ALL PIPING AND APPURTENANCES REQUIRED FOR THE PROPER OPERATION OF ALL EQUIPMENT SHALL BE PROVIDED.

2.02 MANUFACTURER'S NAMES AND CATALOG NUMBERS A. SPECIFIC REFERENCES HAVE BEEN MADE TO ONE OR MORE MANUFACTURER'S NAMES AND MODEL OR CATALOG

B. THIS DOES NOT INDICATE THAT THE MATERIAL AND EQUIPMENT SPECIFIED IS NECESSARILY AN "OFF THE SHELF" ITEM. REQUIREMENTS FOR SPECIFIC FINISHES, MATERIALS, OR OTHER MODIFICATIONS MAY INTRODUCE VARIANCES FROM MANUFACTURER'S STANDARDS. CONTRACTOR SHALL ASCERTAIN THAT SUCH MODIFICATIONS ARE FULLY

EACH MAJOR COMPONENT OF EQUIPMENT SHALL HAVE THE MANUFACTURER'S NAME, ADDRESS, AND CATALOG NUMBER ON THE PLACE SECURELY AFFIXED IN A CONSPICUOUS PLACE. THE NAMEPLATE OF A DISTRIBUTING

AGENT WILL NOT BE ACCEPTED. ALL PIECES OF EQUIPMENT, VALVES, STARTERS, DISCONNECTIONS, AND ALL PNEUMATIC AND ELECTRICAL CONTROL INSTRUMENTS AND APPARATUS SHALL BE IDENTIFIED WITH 1/16-INCH THICK BLACK LAMINATED PLASTIC NAMEPLATES, WITH 3/16-INCHE HIGH WHITE LAMINATED LETTERS. SIMILAR AND LIKE EQUIPMENT SHALL BE

DESIGNATED WITH NUMERICAL SUFFIX (EXAMPLE: HOT WATER HEATER, HWH-1). THE NAMEPLATE IDENTIFICATION

SHALL COINCIDE WITH ITEMS APPEARING ON DIAGRAMS PROVIDE A LABEL FOR THE MECHANICAL SYSTEM STATING "INSTALLATION BY"

(NAME, ADDRESS, AND PHONE NUMBER OF CONTRACTOR) D. LETTERS SHALL BE 1/4-INCHES HIGH AND LOCATED IN A CONSPICUOUS PLACE IN THE MECHANICAL ROOM.

PART 3 - EXECUTION

INSTALL ATION

3.01 INSTALLATION AND WORKMANSHIP THE WORK SHALL BE PERFORMED BY QUALIFIED MECHANICS AND ALL MATERIALS, APPARATUS, AND EQUIPMENT SHALL BE INSTALLED IN NEAT, WORKMANLIKE MANNER. ANY MATERIALS, APPARATUS, OR EQUIPMENT WHICH, IN THE OPINION OF THE ARCHITECT/ENGINEER, IN IMPROPERLY INSTALLED SHALL BE REMOVED AND REINSTALLED IN

AN APPROVED MANNER AT NO ADDITIONAL COST TO THE OWNER. THE WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES. WHERE THE WORK IS DEPENDENT UPON WORK OF OTHER TRADES OR WORK ALREADY IN PLACE, SUCH OTHER WORK AND WORK IN PLACE SHALL BE EXAMINED AND SHALL BE IN PROPER CONDITION AND STATE OF COMPLETION BEFORE CONTINUING THE

THE INSTALLATION OF THE SYSTEM SHALL, IN GENERAL, BE IN ACCORDANCE WITH THE DRAWINGS WITH REGARDS TO LOCATION OF EQUIPMENT, PIPES, DUCTS, AND THE LIKE. PIPING AND DUCTWORK INDICATED SHALL BE FOLLOWED AS ACCURATELY AS ACTUAL CONSTRUCTION WILL PERMIT AND ANY DEVIATIONS THEREFROM SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT/ENGINEER. WHERE NECESSARY, AS DETERMINED BY THE ARCHITECT/ENGINEER, CONTRACTOR SHALL FURNISH DRAWINGS SHOWING PROPOSED CHANGES.

02 EARTHWORK AND DEWATERING PERFORM IN ACCORDANCE WITH DIVISION 2.

3.03 CUTTING AND PATCHING A. LAYOUT OPENINGS FOR CUTTING BY OTHER TRADES AS REQUIRED. CUTTING OF STEEL, CONCRETE OR ANY OTHER STRUCTURAL PART MUST BE APPROVED IN WRITING BY ARCHITECT/ENGINEER PRIOR TO CUTTING.

A. DO NOT CUT OR PENETRATE WATERPROOFED SURFACES OR WATERPROOFING MEMBRANES WITHOUT FIRST MAKING ARRANGEMENTS FOR REPAIR BY A METHOD APPROVED BY ARCHITECT/ENGINEER.

A. POWER WIRING FROM PANEL TO MOTOR CONTROLLERS AND FROM CONTROLLERS TO MOTORS IS SPECIFIED IN MOTOR STARTERS NOT SPECIFIED TO BE PROVIDED WITH THE MOTORS AT THE FACTORY ARE SPECIFIED IN

SUBMIT WIRING DIAGRAMS FOR APPROVAL AND PROVIDE APPROVED DIAGRAMS SO THAT THE ELECTRICAL WORK MAY BE PROPERLY ACCOMPLISHED. PROVIDE MOTORS CONFORMING TO CHARACTERISTICS SHOWN ON ELECTRICAL DRAWINGS.

3.06 SUPPORTS FOR PIPING AND EQUIPMENT SUPPORT FOR PIPING AND EQUIPMENT SHALL BE SUPPORTED FROM STRUCTURAL MEMBERS AND NOT FROM DECK AND SLAB ASSEMBLIES.

3.07 ACCESS DOORS (ACCESS PANELS) PROVIDE ACCESS REQUIRED FOR MAINTENANCE, ADJUSTMENT, REMOVAL, AND REPAIR OF VALVES, CONTROLS, EQUIPMENT AND THE LIKE ITEMS FURNISHED HERE-UNDER. PROVIDE ACCESS DOORS CONFORMING TO REQUIREMENTS OF SECTION ACCESS DOORS (ACCESS PANELS), IN DIVISION 8. PANELS SHALL BE LOCATED TO MAKE ALL ITEMS EASILY ACCESSIBLE.

3.08 CLEAN UP A. REFER TO GENERAL CONDITIONS FOR CLEANING-UP. B. CLEAN ALL MATERIALS AND EQUIPMENT OF DIRT, DUST, PAINT, SPOTS AND STAINS, SOIL MARKS, AND OTHER FOREIGN MATTER.

3.09 FINAL INSPECTION A. NOTICE TO THE ARCHITECT/ENGINEER THAT THE WORK IS READY FOR FINAL INSPECTION. 3. CONTRACTOR SHALL FURNISH NECESSARY MECHANICS TO OPERATE SYSTEM, MAKE NECESSARY ADJUSTMENTS AND

ASSIST WITH FINAL INSPECTION. 3.10 INSTRUCTION OF OWNER'S OPERATING PERSONNEL

A. THE CONTRACTOR SHALL INCLUDE THE COST OF THE SERVICES OF QUALIFIED INSTRUCTOR(S) TO INSTRUCT THE OWNER'S OPERATING PERSONNEL IN THE OPERATION, ADJUSTMENT, CARE AND MAINTENANCE OF ALL PL; UMBING EQUIPMENT AND SYSTEMS. INSTRUCTION SHALL BE PERFORMED AT A TIME APPROVED BY THE OWNER AND AFTER ALL PLUMBING EQUIPMENT

AND SYSTEMS ARE INSTALLED, COMPLETE, ADJUSTED AND OPERATING TO SPECIFIED REQUIREMENTS. CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER WHEN INSTRUCTIONS WILL BE GIVEN. QUALIFICATIONS OF INSTRUCTORS SHALL BE SUBJECT TO APPROVAL OF THE OWNER AND EQUIPMENT

MANUFACTURER ADDITIONAL REQUIREMENTS CONCERNING OPERATION AND MAINTENANCE OF MECHANICAL EQUIPMENT AND SYSTEMS MAY BE SPECIFIED IN OTHER SECTIONS. TWO COPIES OF ACKNOWLEDGEMENT OF ALL REQUIRED INSTRUCTIONS TO OWNER'S OPERATING PERSONNEL, SIGNED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE, SHALL BE SUBMITTED TO THE ARCTITECT/ENGINEER PRIOR TO SUBMITTING APPLICATION FOR FINAL PAYMENT. AN ADDITIONAL COPY OF THIE ACKNOWLEDGMENT IS REQUIRED | PART 2 - MATERIALS IN EACH COPY OF OPERATION AND MAINTENANCE MANUALS REQUIRED IN THE SECTION OPERATION AND

A BALANCED HVAC SYSTEM REPORT SHALL BE SUBMITTED TO THE ENGINEER OF RECORD PRIOR TO COMMISSIONING AND FINAL ACCEPTANCE. BALANCE CONTRACTOR SHALL BE AABC OR NEBB CERTIFIED AND SHALL SUBMIT COPY OF CERTIFICATION WITH THE BALANCE REPORT.

A. ALL PENETRATIONS THRU FLOORS AND WALLS SHALL BE PROVIDED WITH FIRE STOPPING MEASURES.

END OF SECTION

MAINTENANCE MANUALS.

SECTION 15005 - OPERATION AND MAINTENANCE MANUALS

A. FURNISH THREE COPIES OF COMPLETE OPERATION AND MAINTENANCE MANUALS TO THE ARCHITECT/ENGINEER FOR APPROVAL AND FOR THE OWNER, ON ALL EQUIPMENT AND SYSTEMS. THE MANUALS SHALL BE BOUND IN HARD-BACK, THREE-RING LOOSE-LEAF BINDERS.

PART 2 - PRODUCTS

01 MANUAL CONTENTS . TITLE SHEET WITH JOB NAME, AND THE NAMES, ADDRESSES AND PHONE NUMBERS OF THE CONTRACTOR, SUBCONTRACTOR, CONTROL SUBCONTRACTOR, RELATED CONTRACTORS AND MATERIAL AND EQUIPMENT SUPPLIERS. TABLE OF CONTENTS.

A COPY OF ACKNOWLEDGEMENT OF INSTRUCTION TO THE OWNER'S OPERATING PERSONNEL IN THE OPERATION OF ALL MECHANICAL EQUIPMENT AND SYSTEMS, SIGNED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE. TYPEWRITTEN OPERATING INSTRUCTIONS FOR THE OWNER'S PERSONNEL DESCRIBING HOW TO STOP AND START EACH PIECE OF EQUIPMENT; HOW TO SET THE TEMPERATURE CONTROL SYSTEM FOR NORMAL OPERATION AND

NORMAL RESTARTING PROCEDURES, CAUTION AND WARNING NOTICES APPROVED SHOP DRAWINGS, PRODUCT DATA AND PARTS AND MAINTENANCE BOOKLET FOR EACH ITEM OF MATERIAL AND EQUIPMENT FURNISHED UNDER DIVISION 15000 RECORDS OF DRAWINGS OF ALL SYSTEMS INCLUDING ELECTRICAL AND CONTROL DIAGRAMS.

COPIED OF CERTIFICATES OF INSPECTION H. GUARANTEES, INCLUDING EXTENDED GUARANTEES.

PART 3 - EXECUTION

A. DELIVER THE MANUALS TO THE OWNER PRIOR TO SUBMITTING APPLICATION FOR FINAL PAYMENT. END OF SECTION.

WHERE EXTENDED GUARANTEES ARE CALLED FOR HEREIN, FURNISH THREE COPIES TO BE INSERTED IN OPERATION SECTION 15190 - MECHANICAL IDENTIFICATION MATERIALS

#### PART 1 - GENERAL

. PROVIDE MANUFACTURE'S STANDARD PRODUCTS OF CATEGORIES AND TYPES REQUIRED FOR EACH APPLICATION AS REFERENCED IN OTHER DIVISION 15 SECTIONS. ALL DOMESTIC HOT AND COLD WATER SHALL BE IDENTIFIED AS

A. PRESSURE SENSITIVE TYPE: PROVIDE MANUFACTURER'S STANDARD PRE—PRINTED PERMANENT ADHESIVES, COLOR-CODED, PRESSURE SENSITIVE VINYL PIPE MARKERS, COMPLYING WITH ANSI A13.1. PIPES: FOR EXTERNAL DIAMETERS LESS THAN 6-INCHES (INCLUDING INSULATION IF ANY) PROVIDE FULL-BAND PIPE MARKER, 360 DEGREES AROUND EACH PIPE AT EACH LOCATION. FASTENED BY ADHESIVE LAP JOINT IN PIPE

END OF SECTION.

MARKER OVERLAP.

SECTION 15250 - PLUMBING INSULATION

PART 1 - GENERAL

.01 DESCRIPTION DOMESTIC HOT AND COLD WATER SHALL BE INSULATED AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN. INSULATION SHALL BE 1-INCH FIBERGLASS INSULATION WITH PREMOLDED FITTINGS TAPED AND SEALED.

A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS,PROFIVE PRODUCTS OF ONE OF THE FOLLOWING:

. OWENS-CORNING FIBERGLASS CORPORATION CERTAINTEED CORPORATION

PART 3 — EXECUTION

.01 INSTALLATION INSTALL INSULATION PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT INSULATION SERVES ITS INTENDED

INSTALL INSULATION ON PIPE SYSTEMS SUBSEQUENT TO TESTING AND ACCEPTANCE OF TEST. INSTALL INSULATION MATERIALS WITH SMOOTH AND EVEN SURFACES. INSULATE EACH CONTINUOUS RUN OF PIPING WITH FULL-LENGTH UNITS OF INSULATION, WITH A SINGLE CUT PIECE TO COMPLETE RUN. DO NOT USE CUT PIECES OR SCRAPS ABUTTING EACH OTHER.

CLEAN AND DRY PIPE SURFACES PRIOR TO INSULATION. BUTT INSULATION JOINTS FIRMLY TOGETHER TO ENSURE COMPLETE AND TIGHT FIT OVER SURFACES TO BE COVERED. MAINTAIN INTEGRITY OF VAPOR-BARRIER JACKETS ON PIPE INSULATION AND PROTECT TO PREVENT PUNCTURE OF

OTHER DAMAGE EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS, AND SIMILAR PIPING PENETRATIONS. INSTALL PROTECTIVE METAL SHIELDS AND INSULATED INSERTS WHEREVER NEEDED TO PREVENT COMPRESSION OF INSULATION.

END OF SECTION.

SECTION 15350 NATURAL GAS PIPING

1.01 DESCRIPTION A. FURNISH AND INSTALL GAS AND OIL PIPING AS SHOWN ON DRAWINGS AND SPECIFIED HEREIN. ROUGH CONNECT ALL EQUIPMENT AS NOTED "SUPPLIED BY OWNER". . APPLICATIONS FOR NATURAL GAS PIPING SYSTEMS INCLUDE THE FOLLOWING: BUILDING DISTRIBUTION SYSTEM FROM

CONNECTION TO GAS MAIN FOR EACH GAS FIRED EQUIPMENT. APPLICATION FOR WASTE OIL PIPING INCLUDES THE FOLLOWING: WASTE OIL STORAGE TANK TO WASTE OIL BURNING UNIT HEATERS

1. BUILDING DISTRIBUTION SYSTEM

A. PIPING TO COMPLY WITH ANSI CODE AND APPLICABLE PROVISIONS OF ANSI 31.2 "FUEL GAS PIPING." B. NATIONAL FUEL GAS CODE COMPLIANCE: COMPLY WITH APPLICABLE PROVISIONS OF NFPA 54 "NATIONAL FUEL GAS CODE", ANSI Z223.LA "SUPPLEMENT TO NATIONAL FUEL GAS CODE."

PROVIDE PIPING MATERIALS AND FACTORY-FABRICATED PIPING PRODUCTS OF SIZES, TYPES, PRESSURE RATINGS, AND CAPACITIES AS INDICATED. WHERE NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH INSTALLATION REQUIREMENTS. PROVIDE MATERIALS AND PRODUCTS COMPLYING WITH ANSI B31.2 WHERE APPLICABLE, BASE PRESSURE RATING ON NATURAL GAS PIPING SYSTEM MAXIMUM DESIGN PRESSURES. PROVIDE SIZES AND TYPES MATCHING PIPING AND EQUIPMENT CONNECTIONS; PROVIDE FITTINGS MATERIALS, WHICH MATCH PIPE MATERIALS USED IN NATURAL GAS PIPING SYSTEMS BASIC GAS PIPE, TUBE AND FITTINGS

a. PIPE SIZE 2-INCHES AND SMALLER TO BE BLACK STEEL SCHEDULE 40 WITH 150 POUND SECTION 15500 MALLEABLE IRON THREADED FITTINGS. b. PIPE SIZES 2-1/2 INCHES AND LARGER TO BE BLACK STEEL SCHEDULE 40 WROUGHT

STEEL BUTT WELDING 2. SITE DISTRIBUTION SYSTEM a. PIPING SHALL BE PLASTIC AS RECOMMENDED AND APPROVED BY LOCAL GAS COMPANY

. PROVIDE GAS COCKS AT ALL CONNECTIONS TO GAS TRAINS FOR EACH GAS—FIRED EQUIPMENT. LOCATE GAS COCKS WHERE EASILY ACCESSIBLE AND IN AREAS SO AS TO PROTECT THE VALVES PART 2 - PRODUCTS

PAINTED WITH TWO COATS OF RESISTANT PAINT. COLOR TO BE ORANGE.

ALL GAS PIPING SHALL BE TESTED IN ACCORDANCE WITH ANSI B31.2 AND LOCAL UTILITY COMPANY REQUIREMENTS. PROVIDE OWNER WITH 2 VALVE WRENCHES FOR EACH TYPE OF VALVE INSTALLED. PIPING INSTALLED IN MECHANICAL ROOMS AND BELOW CEILINGS IN OCCUPIED SPACES SHALL BE

END OF SECTION.

SECTION 15401 DOMESTIC WATER PIPING AND VALVES

PART 1 - GENERAL

1.01 DESCRIPTION A. PROVIDE AND INSTALL POTABLE WATER SYSTEMS AS SHOWN ON DRAWINGS AND SPECIFIED

. ALL POTABLE WATER PIPING ABOVE GROUND SHALL BE TYPE "L" HARD DRAWN COPPER. B. ALL POTABLE WATER PIPING BELOW GROUND SHALL BE TYPE "K" COPPER.

FITTINGS SHALL BE COPPER THE SAME TYPE AS ADJACENT PIPING. BRANCH SUPPLY PIPES AND FITTINGS NEAR PLUMBING FIXTURES SHALL BE N.P. BRASS OR BRAIDED FLEX. D. PLUMBING CONTRACTOR SHALL PROVIDE & INSTALL SIZE OF WATER METER & SIZE & TYPE "K" COPPER WATER SUPPLY PIPE FROM CITY SERVICE LINE AS SHOWN ON DRAWINGS. PLUMBER SHALL PAY FOR ALL LABOR & MATERIAL NEEDED FOR WORK IN R/W, INCLUDING: PIPING, REPAIRING OF STREET, & TESTING OF WATER METER. PLACE GATE VALVE WITH UNION ON EACH SIDE OF METER AS REQUIRED BY LOCAL WATER COMPANY. PROVISIONS SHALL BE MADE FOR DRAINING OF ENTIRE SYSTEM. ALL BRANCHES TO FIXTURES SHALL BE AT LEAST ONE SIZE LARGER PIPE THAN SUPPLY TO FIXTURES. PROVIDE HOT AND COLD WATER SERVICE TO ALL FIXTURES REQUIRING BOTH SUPPLIES OR AS SHOWN ON DRAWINGS. TAP FEES ARE BY OWNER,

ENTIRE HOT & COLD WATER SUPPLY SYSTEM FOR BUILDING SHALL BE EQUIPPED WITH VALVES SO THAT THE MAIN LINES AND EACH BRANCH AND GROUP OF FIXTURES MAY BE CUT OFF. GATE VALVES SHALL BE CRANE NO 1320, OR EQUAL BRONZE, NON-RISING STEM, WEDGE DISC. SOLDER JOINT

BALL VALVES SHALL BE APOLLO NO 70-102-01 OR EQUAL. CHECK VALVES SHALL BE BALL-CONE TYPE APOLLO NO 61-102-02, CAST BRONZE BODY WITH THREADED ENDS, BRASS TAIL PIECE, BRASS GUIDE ROD AND STAINLESS STEEL SPRING.

SECTION 15405 — SOIL, WASTE & VENT PIPING

END OF SECTION.

A. PROVIDE AND INSTALL SOIL, WASTE & VENT AS SHOWN ON DRAWINGS AND SPECIFIED HEREIN.

. ABOVE GROUND PIPING WITHIN BUILDINGS SHALL BE ONE OF THE FOLLOWING AS REQUIRED BY STATE PLUMBING CODE FOR TUBE SIZE 8" AND SMALLER: COPPER TUBE

I. PIPE CLASS: SERVICE WEIGHT II. FITTINGS: WORM GEAR SOIL PIPE FITTINGS COMPRESSION GASKET JOINTS. COMPLYING WITH ASTM A88(2). 2. HUBI ESS CAST IRÔN SOIL PIPE:

I. PIPE CLASS: SERVICE WEIGHT II. FITTINGS: HUBLESS CAST-IRON SOIL PIPE FITTINGS, NO-HUB JOINTS. COMPLYING WITH CISP1-310

I. PIPE CLASS: DWV SCHEDULE 40, TYPE 1, GRADE 1, ASTM D 1784-75 II. FITTINGS: SCHEDULE 40 PVC CONFORMING TO ASTM D2466-902, GLUED WITH COLORED RESIN (GREEN) B. PVC: PIPING IS RESTRICTED TO BUILDINGS THAT DO NOT EXCEED FORTY-FIVE FEET IN HEIGHT VERTICAL DISTANCE FROM THE BASE OF THE STACK TO ITS TERMINATION THROUGH THE ROOF OF

THE BUILDING; AND BUILDING THAT ARE NOT DESIGNED WITH A RETURN AIR PLENUM.

PART 3 — EXECUTION

END OF SECTION

GENERAL: INSTALL PIPE, TUBE & FITTINGS IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES WHICH WILL ACHIEVE PERMANENTLY LEAK-PROOF PIPING SYSTEMS, CAPABLE OF PERFORMING EACH INDICATED SERVICE WITHOUT PIPING FAILURE. INSTALL EACH RUN WITH MINIMUM JOINTS & COUPLINGS, BUT WITH ADEQUATE AND ACCESSIBLE UNIONS FOR DISASSEMBLY AND MAINTENANCE/REPLACEMENT OF VALVES AND EQUIPMENT. REDUCE SIZES (WHERE INDICATED) BY USE OF REDUCING FITTINGS

. COMPLY WITH ANSI B31 CODE FOR PRESSURE PIPING LOCATE PIPING RUNS, EXCEPT AS OTHERWISE INDICATED, VERTICALLY AND HORIZONTALLY (PITCHED TO DRAIN) & TO AVOID DIAGONAL RUNS WHEREVER POSSIBLE. ORIENT HORIZONTAL RUNS PARALLEL WITH WALLS & COLUMN LINES. LOCATE RUNS AS SHOWN OR DESCRIBED BY DIAGRAMS, DETAILS & NOTATIONS OR, IF NOT OTHERWISE INDICATED, RUN PIPING IN SHORTEST ROUTE WHICH DOES NOT OBSTRUCT USABLE SPACE OR BLOCK ACCESS FOR SERVICING BUILDING & ITS EQUIPMENT. HOLD PIPING CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS & OTHER STRUCTURAL & PERMANENT ENCLOSURE ELEMENTS OF BUILDING; LIMIT CLEARANCE TO WHERE FURRING IS SHOWN FOR ENCLOSURE OR CONCEALMENT OF PIPING, BUT ALLOW FOR INSULATION THICKNESS, IF ANY. WHERE POSSIBLE, LOCATE INSULATED PIPING FOR 1.0" CLEARANCE OUTSIDE INSULATION. WHEREVER POSSIBLE IN FINISHED AND OCCUPIED SPACES, CONCEAL PIPING FROM VIEW, BY LOCATION IN COLUMN ENCLOSURES, IN HOLLOW WALL

CONSTRUCTION OR ABOVE SUSPENDED CEILINGS; DO NOT ENCASE HORIZONTAL RUNS IN SOLID PARTITIONS, EXCEPT AS INDICATED. THREAD PIPE IN ACCORDANCE WITH ANSI B2.1; CUT THREADS FULL & CLEAN USING SHARP DIE REAM THREADED ENDS TO REMOVE BURRS & RESTORE FULL INSIDE DIAMETER. APPLY PIPE JOINT COMPOUND, OR POIP JOINT TAPE (TEFLON) WHERE RECOMMENDED BY PIPE/FITTING MANUFACTURER, ON MALE THREADS AT EACH JOINT AND TIGHTEN JOINTS TO LEAVE NO MORE

THAN THREE (3) THREADS EXPOSED. BRAZE COPPER TUBE AND FITTING JOINTS WHERE INDICATED, IN ACCORDANCE WITH ANSI B31. SOLDER COPPER TUBE & FITTING JOINTS WHERE INDICATED, IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICE. CUT TUBE ENDS SQUARELY, REAM TO FULL INSIDE DIAMETER, & CLEAN OUTSIDE OF TUBE ENDS & INSIDE OF FITTINGS. APPLY SOLDER FLUX TO JOINT AREAS OF BOTH TUBES & FITTINGS. INSERT TUBE FULL DEPTH INTO FITTING, & SOLDER IN MANNER WHICH WILL DRAW SOLDER FULL DEPTH & CIRCUMFERENCE OF JOINT. WIPE EXCESS SOLDER FORM JOINT

BEFORE IT HARDENS WELD PIPE JOINTS IN ACCORDANCE WITH ANSI B31 WELD PIPE JOINTS IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICE AND ONLY WHEN AMBIENT TEMPERATURE IS ABOVE OF (-18C) WHERE POSSIBLE BEVEL PIPE ENDS AT A 37.5 DEGREE ANGLE WHERE POSSIBLE, SMOOTH ROUGH CUTS, AND CLEAN TO REMOVE SLAG. METAL PARTICLES AND DIRT

INSTALL WELDING RINGS FOR BUTT-WELDED JOINTS. K. USE PIPE CLAMPS OR TACKWELD JOINTS WITH 1" RING WELDS; 4 WELDS FOR PIPE SIZES TO 10", 8 WELDS FOR PIPE SIZES 12" TO 20 BUILD UP WELDS WITH STRINGER BEAD PASS, FOLLOWED BY HOT PASS, FOLLOWED BY COVER OR FILLER PASS. ELIMINATE VALLEYS AT CENTER AND EDGES OF EACH WELD.

WELD BY PROCEDURES WHICH WILL ENSURE ELIMINATION OF UNSOUND OR UNFUSED METAL, CRACKS, OXIDATION, BLOW HOLES AND NON-METALLIC INCLUSION. DO NOT WELD OUT PIPING SYSTEM IMPERFECTIONS BY TACK WELDING PROCEDURES; REFABRICATE TO COMPLY WITH REQUIREMENTS.

HUBLESS CAST IRON JOINTS: COMPLY WITH CISPI 310. UNDERGROUND INSTALLATION IS TO BE A MINIMUM 3'-0" BELOW GROUND. ALL OF THE ABOVE PIPE SHALL BE OF UNIFORM THICKNESS FREE FROM CRACKS, FLAWS, BLISTERS, SAND HOLES OR OTHER IMPERFECTIONS.

FIRE PROTECTION SYSTEMS

a. INTERIOR PIPING:

SLEEVE SEALS.

PART 1 - General

A. PROVIDE AND INSTALL FIRE PROTECTION DISTRIBUTION PIPING FROM STREET TAP TO SPRINKLER HEADS AND HOSE CABINETS INSIDE BUILDING TO COMPLY WITH SPRINKLER CODE AND A LAYOUT.

A. FIRE PROTECTION PIPING MATERIALS AND PRODUCTS 1. GENERAL: PROVIDE PIPING MATERIALS AND FACTORY FABRICATED PIPING PRODUCTS OF SIZES, TYPES, PRESSURE RATINGS, TEMPERATURE RATINGS, AND CAPACITIES AS INDICATED. WHERE NOT INDICATED. PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH INSTALLATION REQUIREMENTS. PROVIDE SIZES AND TYPES MATCHING PIPING AND EQUIPMENT CONNECTIONS: PROVIDE FITTINGS OF MATERIALS WHICH MATCH PIPE MATERIALS USED IN FIRE PROTECTION PIPING SYSTEMS. WHERE MORE THAN ONE TYPE OF MATERIALS OR PRODUCTS ARE INDICATED, SELECTION IS INSTALLER'S OPTION.

1. GENERAL: PROVIDE IDENTIFICATION COMPLYING WITH DIVISION\_15 BASIC MATERIALS AND METHODS SECTION "MECHANICAL IDENTIFICATION" IN ACCORDANCE WITH THE FOLLOWING

a. FIRE PROTECTION PIPING: PLASTIC PIPE MARKERS. BASIC PIPE, TUBE, AND FITTINGS GENERAL: PROVIDE PIPE, TUBE, AND FITTINGS COMPLYING WITH DIVISION\_15 BASIC MATERIALS AND METHODS SECTION "PIPE, TUBE, AND FITTINGS", IN ACCORDANCE WITH THE

1. PIPE WEIGHT: SCHEDULE 40 UP TO 8"; SCHEDULE 30 FOR 8" AND LARGER. 2. FITTINGS: CLASS 125, CAST\_IRON THREADED. 3. FITTINGS: MECHANICAL GROOVED PIPE COUPLINGS AND FITTINGS; CUT GROOVE TYPE. b. BLACK STEEL PIPE:

1. PIPE WEIGHT: SCHEDULE 10 FOR 5" AND SMALLER; 0.134" WALL THICKNESS FOR 6"; AND 0.188" WALL THICKNESS FOR 8" AND 10". 2. FITTINGS: WROUGHT STEEL BUTT WELDING. 3. FITTINGS: MECHANICAL GROOVED PIPE COUPLINGS AND FITTINGS; ROLL GROOVE OR MECHANICAL LOCKING TYPE.

BASIC PIPING SPECIALTIES . GENERAL: PROVIDE PIPING SPECIALTIES COMPLYING WITH DIVISION\_15 BASIC MATERIALS AND METHODS SECTION "PIPING SPECIALTIES", IN ACCORDANCE WITH THE FOLLOWING LISTING: a. PIPE ESCUTCHEONS. DIELECTRIC UNIONS.

BASIC SUPPORTS, ANCHORS, AND SEALS: GENERAL: PROVIDE SUPPORTS, ANCHORS, AND SEALS COMPLYING WITH DIVISION\_15 BASIC MATERIALS AND METHODS SECTION "SUPPORTS, ANCHORS, AND SEALS", IN ACCORDANCE WITH THE FOLLOWING LISTING:

HANGERS, FOR HORIZONTAL PIPING HANGERS AND SUPPORTS.

TWO\_BOLT RISER CLAMPS FOR VERTICAL PIPING SUPPORTS. STEEL TURN BUCKLES, AND MALLEABLE IRON SOCKETS FOR HANGER\_ROD ATTACHMENT%. CONCRETE INSERTS, TOP\_BEAM C\_CLAMPS, SIDE BEAM OR CHANNEL CLAMPS, AND CENTER BEAM CLAMPS FOR BUILDING ATTACHMENTS. COPPER FLASHINGS FOR PIPING PENETRATIONS, AUTOMATIC SPRINKLERS: PROVIDE AUTOMATIC SPRINKLERS OF TYPE INDICATED ON DRAWINGS, AND IN ACCORDANCE WITH THE FOLLOWING LISTING. PROVIDE FUSIBLE LINKS FOR 165 DEGREES F. (74 DEGREES C) UNLESS OTHERWISE INDICATED OR REQUIRED. ALL SPRINKLERS TO BE CENTERED IN

ADJUSTABLE STEEL CLEVISES, ADJUSTABLE STEEL BAND HANGERS, ADJUSTABLE BAND

CEILING TILES. PENDENT. FINISH: CHROME PLATE FOR OCCUPIED AREAS, CASTE BRASS FOR UNOCCUPIED AREAS. HOSE CABINETS SHALL BE POTTER\_ROEMER INC. 1004\_F OR EQUAL, INSTITUTIONA DOOR WITH KEY LOCK. HOSE ASSEMBLY SHALL BE NO. 2510 WITH 100 FOOT HOSE CABINET SHALL BE 24" X 36" HIGH RECESSED TYPE. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE FIRE

PROTECTION SPECIALTIES OF ONE OF THE FOLLOWING: ALLEN (W.D.) MFG., J.W. MOON INC. AUTOMATIC SPRINKLER CORP. OF AMERICA.

CHEMETRON CORP. ELKHART BRASS MFG. CO. GRINNELL FIRE PROTECTION SYSTEMS CO. INC.

VIKING CORP.

ADDITIONAL COST TO THE OWNER.

WESTERN FIRE EQUIPMENT CO. PART 3 - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP A. THE WORK SHALL BE PERFORMED BY QUALIFIED MECHANICS AND ALL MATERIALS, APPARATUS, AND EQUIPMENT SHALL BE INSTALLED IN NEAT, WORKMANLIKE MANNER, ANY MATERIALS, APPARATUS, OR EQUIPMENT WHICH, IN THE OPINION OF THE ARCHITECT/ENGINEER, IN IMPROPERLY INSTALLED SHALL BE REMOVED AND REINSTALLED IN AN APPROVED MANNER AT NO

THE WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES. WHERE THE WORK IS EDENIDENT LIDON WORK OF OTHER TRADES AND WORK IN PLACE SHALL BE EXAMINED AND SHALL BE IN PROPER CONDITION AND STATE OF COMPLETION BEFORE CONTINUING THE INSTALLATION THE INSTALLATION OF THE SYSTEM SHALL, IN GENERAL, BE IN ACCORDANCE WITH THE DRAWINGS WITH REGARDS TO LOCATION OF EQUIPMENT, PIPES, DUCTS, AND THE LIKE. PIPING AND DUCTWORK INDICATED SHALL BE FOLLOWED AS ACCURATELY AS ACTUAL CONSTRUCTION WILL PERMIT AND ANY DEVIATIONS THEREFROM SHALL BE CALLED TO THE ATTENTION OF THE

CONTRACTOR SHALL FURNISH DRAWINGS SHOWING PROPOSED CHANGES. PART 3 - EXECUTION

01 INSTALLATION OF BASIC IDENTIFICATION A. GENERAL: INSTALL MECHANICAL IDENTIFICATION IN ACCORDANCE WITH DIVISION\_15 BASIC

INSTALL FIRE PROTECTION SIGNS ON PIPING IN ACCORDANCE WITH ANSI/NFPA 13 AND

ARCHITECT/ENGINEER. WHERE NECESSARY, AS DETERMINED BY THE ARCHITECT/ENGINEER,

ANSI/NFPA 14 REQUIREMENTS.

AROUND THE ITEM TO BE WRAPPED.

MATERIALS AND METHODS SECTION "MECHANICAL IDENTIFICATION".

3.02 INSTALLATION OF PIPE, TUBE, AND FITTINGS: A. G ENERAL: COMPLY WITH REQUIREMENTS OF ANSI/NFPA 13 FOR INSTALLATION OF FIRE PIPING MATERIALS. INSTALL FIRE PIPING WHERE INDICATED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT FIRE PIPING COMPLIES WITH REQUIREMENTS AND SERVES INTENDED PURPOSES. COORDINATE WITH OTHER WORK, INCLUDING PLUMBING PIPING, AS NECESSARY TO INTERFACE

COMPONENTS OF SPRINKLER PIPING PROPERLY WITH OTHER WORK. 3.03 INSTALLATION OF PIPING SPECIALTIES: INSTALL PIPING SPECIALTIES IN ACCORDANCE WITH DIVISION\_15 BASIC MATERIALS AND METHODS SECTION "PIPING SPECIALTIES".

3.04 INSTALLATION OF SUPPORTS, ANCHORS, AND SEALS: INSTALL SUPPORTS, ANCHORS, AND SEALS IN ACCORDANCE WITH DIVISION 15 BASIC MATERIALS AND METHODS SECTION "SUPPORTS, ANCHORS, AND SEALS".

3.05 INSTALLATION OF FIRE PROTECTION SPECIALTIES: A. GENERAL: INSTALL FIRE PROTECTION SPECIALTIES AS INDICATED, AND IN ACCORDANCE WITH

ANSI/NFPA 13 AND 14. POLYETHYLENE WRAP FOR DUCTILE IRON FITTINGS: POLYETHYLENE WRAP SHALL BE INSTALLED IN ACCORDANCE WITH AMERICAN WATER WORKS ASSOCIATION STANDARD SPECIFICATIONS C1\_5\_72 (ANSI A21.5\_1972) FOR AMERICAN NATIONAL STANDARD FOR POLYETHELENE ENCASEMENT. ODD SHAPED APPURTENANCES, SUCH AS VALVES, TEES, FITTINGS AND OTHER FERROUS STEEL PIPELINE APPURTENANCES, SHALL BE WRAPPED BY USING A FLAT SHEET OF POLYETHYLENE WRAPPING SHALL BE DONE BY PLACING THE SHEET UNDER THE APPLIANCE AND BRINGING IT UP

CARE WILL BE TAKEN FROM BACKFILLING TO PREVENT DAMAGE TO THE POLYETHYLENE AWWA STANDARDS FOR INSTALLING POLYETHYLENE WRAP AND MANUFACTURERS RECOMMENDED METHODS FOR INSTALLING POLYETHYLENE WRAP ARE AVAILABLE FOR REVIEW AT THE OFFICE IF THE LOUISVILLE WATER COMPANY.

CAST IRON FRAMES AND LIDS: THE CONTRACTOR SHALL SET ALL CAST IRON FRAMES AND LIDS FOR VALVES. THESE FRAMES AND LIDS SHALL BE SET TO GRADE FROM MAINTAINED IN THE PROPER POSITION FOR THE DURATION OF THE PERIOD COVERED BY THIS CONTRACT. CAST IRON FRAMES AND LIDS SHALL BE REMOVED ON ALL DISCONTINUED SERVICES AND THE VOID SHALL BE FILLED TO EXISTING GRADE WITH PIT RUN SAND BACKFILL. IN SIDEWALKS OR OTHER PAVED AREAS, THE BACKFILL SHALL BE DENSE GRADED AGGREGATE

AND REPAVED TO MATCH THE ORIGINAL PAVING. STANDARD VALVE BOXES CONSISTING OF KEY TUBES, EXTENSION PIECES AND ROUND TOPS SHALL BE FURNISHED BY THE CONTRACTOR AND INSTALLATION ALL GATE VALVES BY THE CONTRACTOR. VALVES BOX AND TOP DESCRIPTIONS ARE AVAILABLE FOR REVIEW AT THE OFFICE OF THE LOUISVILLE WATER COMPANY. THESE BOXES SHALL BE CENTERED ABOUT THE OPERATING NUTS, SHALL BE VERTICAL, SHALL BE SET TO GRADE, SHALL BE PLACED AND MAINTAINED IN THE PROPER POSITION AND SHALL BE OF DIRT OR OTHER MATTER FOR THE DURATION OF THE PERIOD COVERED BY THIS CONTRACT. STYROFOAM COLLARS SHALL BE PLACED AROUND EACH VALVE BOX BEFORE PLACEMENT OF CONCRETE 2. VALVES BOXES ON ALL VALVES THAT ARE TO BE ABANDONED SHALL BE REMOVED AND THE

PLUGGING ENDS OF PIPE WHEN WORK IS STOPPED AT THE END OF A DAY, A CAST IRON PLUG SHALL BE BOLTED IN PLACE IN THE OPEN END OF THE PIPE TO REVENT ANY FOREIGN MATTER OR TRENCH WATER FROM ENTERING THE LINE. IF IT IS DESIRED TO FILL A SECTION OF THE MAIN BEFORE THE ENTIRE LINE IS COMPLETED, AT LEAST TWO LENGTHS OF PIPE SHALL BE INSTALLED AND

THE THRUST ANCHOR SCHEDULE ON THE DETAIL SHEET IN THE CONTRACT DRAWINGS.

VOID SHALL BE FILLED IN EXISTING GRADE WITH PIT RUN SAND BACKFILL. IN SIDEWALKS OR

OTHER PAVED AREA, THE BACKFILL SHALL BE DENSE GRADED AGGREGATE AND REPAVED T

BACKFILLED BEYOND A GATE VALVE FORMING THE CLOSURE AT THE END OF THE LINE, AND

SAID GATE VALVE SHALL BE SECURELY BRACED. THRUST ANCHORS. COUNTERWEIGHTS: THIS CONTRACTOR WILL INSTALL CONCRETE THRUST ANCHORS AT EACH BEND IN THE PIPELINE OF FIVE (5) DEGREES OR GREATER TO WITHSTAND MAXIMUM TEST PRESSURE. THE CONTRACTOR WILL PROVIDE ALL LABOR AND MATERIAL TO CONSTRUCT THE THRUST ANCHORS, PIERS, AND COUNTERWEIGHTS, FOR ALL BENDS, ELBOWS, BOTH HORIZONTAL AND THRUST. THE CONCRETE THRUST ANCHORS WILL BE MINIMUM DIMENSIONS AND SIZE AS INDICATED ON

AFTER THE WATER MAIN OR ANY SECTION THEREOF HAS BEEN COMPLETED. THE AIR WITH THE HYDROSTATIC TEST, A LEAKAGE TEST SHALL BE CONDUCTED AT THE SAME

60.5780.76121.15161.53 \* AVG. TEST PRESSURE = 200 PSI (WITH DUCTILE IRON)

K. THE CONTRACTOR SHALL BACKFILL ALL PIPE, PROVIDE ALL REACTION ANCHOR BLOCKING AND PROVIDE TAPS RELEASING AIR AT ALL POINTS OF HIGHEST ELEVATION WHERE NO FIRE HYDRANT FILISHING CONNECTION HAS BEEN INSTALLED BEFORE THE HYDROSTATIC TEST. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND REPAIR ANY AND ALL LEAKS THAT MAY DEVELOP ALL PIPE, FITTINGS, AND OTHER MATERIALS FOUND TO BE DEFECTIVE UNDER TEST SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. THESE TESTS SHALL BE REPEATED UNTIL SATISFACTORY TO THE ENGINEER.

IF SERVICE CONNECTIONS ARE INSTALLED AS PART OF THE MAIN INSTALLATION. THE

M. THE FIRE HYDRANT ASSEMBLY SHALL CONSIST OF THE FOLLOWING ITEMS: 1. THE CAST IRON FIVE HYDRANT ANCHOR TEE AND GATE VALVE SHALL BE INSTALLED AS THE MAIN IS LAID. IN ALL CASES, THE HYDRANT GATE VALVE MUST BE SECURED TO THE MAIN. THE HYDRANT SHALL BE SET PLUMB AND BRACED FIRMLY DURING INSTALLATION WHILE CRADIES ARE POURED AND CURVED. 3. THE HYDRANT SHALL HAVE THE PUMPER NOZZLE AT RIGHT ANGLES TO THE CURB, EXCEPT

EACH NOZZLE FACING THE CURB AT AN ANGLE OF 62 DEGREES. THE HYDRANT SHALL BE SET TO ESTABLISHED GRADE, CHECKED BY THE ENGINEER, WITH THE CENTER OF THE BARREL EIGHTEEN INCHES (24") BACK OF THE FACE OF THE CURB LINE AND THE CENTER NOZZLE EIGHTEEN INCHES (18") ABOVE FINISHED GRADE. THROUGH BOLTS BETWEEN THE GATE VALVE AND THE HYDRANT WILL BE SUPPLIED BY THE COMPANY AND SHALL BE INSTALLED AS SHOWN. THE DETAIL DRAWING SHOWING HYDRANT INSTALLATION SHALL BE SHOWN ON THE DETAIL SHEET OF THE PLANS. 4. W HENEVER A HYDRANT IS SET IN SOIL THAT IS PERMEABLE, DRAINAGE SHALL BE PROVIDED AT THE BASE OF THE HYDRANT BY PLACING CRUSHED STONE FROM THE BOTTOM OF THE

OR INSPECTOR IN ORDER THAT EACH DRAINAGE SYSTEM MAY BE INSPECTED. 3.06 NOTIFICATION OF CUSTOMERS

WATER COMPANY APPROVAL ALLOWING SUFFICIENT TIME FOR CUSTOMER TO DRAW RESERVE AND AMPLE SUPPLY OF WATER. NOTICE FORMS FOR NOTIFICATION ARE AVAILABLE FROM THE LOUISVILLE WATER COMPANY. 3.07 ADJUST AND CLEAN A. SPRINKLER PIPING FLUSHING: PRIOR TO CONNECTING SPRINKLER RISERS FOR FLUSHING, FLUSH WATER FEED MAINS, LEAD\_IN CONNECTIONS AND CONTROL PORTIONS OF SPRINKLER PIPING.

A. HYDROSTATIC TESTING: AFTER FLUSHING SYSTEM, TEST FIRE PIPING HYDROSTATICALLY, FOR

ANSI/NFPA STANDARDS FOR "LITTLE OR NO LEAKAGE," AND RETEST AS SPECIFIED TO DEMONSTRATE COMPLIANCE. 3.08 SIAMESE CONNECTION:

A. ALARM VALVES WITH ELECTRIC FLOW SWITCHES SHALL BE FURNISHED AND INSTALLED UNDER THIS DIVISION OF THE CONTRACT.

B. ALARMS SHALL BE LOCATED AS REQUIRED BY AUTHORITIES OR AGENCIES HAVING JURISDICTION.

A. THIS CONTRACTOR SHALL BE RESPONSIBLE DURING THE INSTALLATION AND TESTING PERIODS OF THE SPRINKLER SYSTEM FOR ANY DAMAGE TO THE WORK OF OTHERS, TO THE BUILDING, ITS

EXPELLED, FILLED WITH WATER AND PROPERLY VALVED OFF, IT SHALL BE SUBJECT TO A HYDROSTATIC PRESSURE OF 200 PSI, IF DUCTILE FITTINGS ARE USED, AT THE LOWEST POINT ALONG THE SECTION BEING TESTED FOR A PERIOD OF TWO (2) HOURS. IN CONJUNCTION PRESSURE AND FOR THE SAME PERIOD OF TIME. THE LEAKAGE ALLOWED WILL BE PER THE FOLLOWING TABLE. ALL OF THIS TESTING SHALL BE ACCOMPLISHED IN THE PRESENCE OF THE ENGINEER.

ALLOWABLE LEAKAGE NOMINAL PIPE DIAMETER (INCHES) ALLOWABLE LEAKAGE PER 1000 FT. OF PIPELINE (GPH)

CORPORATION COCK AND CURB STOP SHOULD BE LEFT UNCOVERED DURING THE TESTING FOR VISUAL INSPECTION OF ANY POSSIBLE LEAKAGE.

THAT HYDRANTS HAVING TWO PUMPER NOZZLES 124 DEGREES APART SHALL BE SET WITH

TRENCH TO AT LEAST SIX INCHES (6") ABOVE THE WASTE OPENING IN THE HYDRANT AND TO A DISTANCE OF AT LEAST FIFTEEN INCHES (15") FROM THE ELBOW. IN EITHER CASE, NO LESS THAN ONE CUBIC YARD OF CRUSHED STONE SHALL BE USED AROUND THE BOTTOM OF THE HYDRANT AND IN NO CASE SHALL THERE BE A CONNECTION TO A SEWER. BEFORE THIS DRY WELL IS COVERED WITH BACKFILL, THE CONTRACTOR SHALL NOTIFY THE ENGINEER

A. IT IS THE INTENT OF THE LOUISVILLE FIRE DEPARTMENT NOT TO INTERRUPT SERVICE TO EXISTING CUSTOMERS, UNLESS ABSOLUTELY NECESSARY. WHEN IT IS NECESSARY TO INTERRUPT SERVICE. ALL CUSTOMERS CANNOT BE CONTACTED, BE A NOTE ATTACHED TO THE FRONT DOOR OF THEIR PREMISES. SUCH NOTIFICATION SHALL BE MADE PRIOR TO SHUT\_OFF, AND WITH THE LOUISVILLE

AFTER FIRE SPRINKLER PIPING INSTALLATION HAS BEEN COMPLETED AND BEFORE PIPING IS PLACED IN SERVICE, FLUSH ENTIRE SPRINKLER SYSTEM, AS REQUIRED TO REMOVE FOREIGN SUBSTANCES, UNDER PRESSURE AS SPECIFIED IN ANSI/NFPA 13. CONTINUE FLUSHING UNTIL WATER IS CLEAR, AND CHECK TO ENSURE THAT DEBRIS HAS NOT CLOGGED SPRINKLERS.

PERIOD OF TWO (2) HOURS, AT NOT LESS THAN 20 PSI OR AT 50 PSI IN EXCESS OF MAXIMUM STATIC PRESSURE WHEN MAXIMUM STATIC PRESSURE IS IN EXCESS OF 150 PSI. CHECK SYSTEM FOR LEAKAGE OF JOINTS. MEASURE HYDROSTATIC PRESSURE AT LOW POINT OF EACH SYSTEM OR ZONE BEING TESTED. 3. REPAIR OR REPLACE PIPING SYSTEM AS REQUIRED TO ELIMINATE LEAKAGE IN ACCORDANCE WITH

A. EQUAL TO POTTER\_ROEMER SERIES 5021, 4" X 2\_1/2" X 2\_1/2", "AUTO. SPKR." LETTERING. THREAD TYPE SHALL BE THAT AS REQUIRED BY LOCAL FIRE DEPARTMENT.

3.10 ALARMS: TYPE AND LOCATION: A. THE ALARM TYPE SHALL BE WATER MOTOR GONG AS REQUIRED BY THE AUTHORITIES AND/OR AGENCIES HAVING JURISDICTION.

A. SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR THE PAINTING OF ALL EXPOSED PIPES IN FINISHED AND UNFINISHED ROOMS. B. PIPES TO BE PAINTED WITH ONE COAT OF PRIMER AND TWO COATS ENAMEL. COLOR: RED.

END OF SECTION 15500

CONTENTS, ETC., OR BY OVERFLOW AND SHALL PAY FOR NECESSARY REPLACEMENT OR REPAIRS.

PROJECT NO:

21-4188

JMK

DATE:

DRAWN BY:

12-02-2021

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#### 01000 GENERAL

- A. These drawings and specifications are for general guidance, with the understanding that the Owner will negotiate directly with a contractor for proper execution of work to assure completeness and code compliance.
- B. All contractors are to guarantee their work for a minimum of one year from date of acceptance and turnover of a completed project. Longer guarantees are required where specified elsewhere in these documents.
- C. Contractor to verify the information contained in these plans in field (V.I.F.) and immediately notify the Architect of any discrepancies.
- D. The Contractor shall carefully study and compare these contract documents and shall at once report and discovered items to the Owner and Architect any errors, inconsistency, or omissions that cannot be resolved by standard industry practices. Do not proceed with work until clarifications have been made by the Architect and notification has been given to proceed.
- E. Keyes Architects & Associates has a set number of drawing sets that we have guaranteed the owner / client by contract. These documents are the owner's / client's to use as they see fit but it was intended for their use to create additional documents and for permitting purposes. In addition, Keyes will supply at no additional charge a PDF set of the supplied paper set of drawings to the owner / client. Any additional sets beyond the sets supplied will be considered extras and will be billed accordingly by Keyes Architects & Associates current rates table. It is the responsibility of the General Contractor to acquire this PDF set from the owner for the purposes of making additional sets and to pay for all needed construction sets.
- F. Before bidding, General Contractor and all Subcontractors are responsible for obtaining all bid documents including but not limited to construction documents and specifications. Contractor is responsible for reviewing other trades work that directly affects their trade, to ensure that no conflict is present. Should a conflict arise as a result of design difference with other trades, subcontractor should use industry standard practices to bid and create a product to accomplish the design intent of the construction documents and include it as part of their bid. Then the General Contractor shall be notified of the intended changes in order that these changes can be discussed with the architect and coordinated with other trades that are affected.
- G. Where drawings do not specifically show how work is to be executed, the subcontractor responsible for the work will be responsible for figuring out and bidding an acceptable industry standard method of completing the work.
- H. Where plans and specifications conflict, specifications shall supersede plans. Where plans and details conflict, the more detailed (larger scaled) item will take precedence. If it is unclear as to the intent of the work due to the conflict, notify the Architect immediately before proceeding.
- Contractors are not to scale the plans for missing or unclear information. Where plans are unclear, verify with architect before proceeding.
- J. Contractor's bids are to be complete and to include all material, labor, and facilities required to complete the work shown on drawings and specified herein.
- K. All Subcontractor questions concerning bidding, the drawings, or site visits shall be directed to the General Contractor.
- L. All Subcontractors shall obtain any specific permits and code review for their trade. General Contractor will obtain overall construction permit.
- M. The Owners may have other contractors, workers and suppliers engaged on this project. Verify exact limits of responsibility during bidding and coordinate with all work being conducted under other contracts.
- N. Payment of Monthly Draws for work completed to date is based upon receipt of lien releases and site inspections. Items listed as complete on the draw but not completed to the owner's and architect's satisfaction, must be completed or removed from the draw before payment will be made. All outstanding invoices for this project from all subcontractors and suppliers will be paid and a lien release issued from the general contractor in charge before payment will be made.
- O. Final Payment of all portions of this project is based upon receipt of lien releases, warranties and maintenance/operations manuals for all items.
- P. For all sections in these documents where multiple colors, finishes, and/or material choices occur and where the owner can only make these choices after the contract has been awarded, this contract is to include the most restrictive and/or expensive of the choices given so the owner can make a choice at a later time without change orders. Should the owner make a choice that is less expensive than what were bid, then the owner is to be credited back the difference between what was specified and what was selected.
- Q. Value engineered items and/or approved equals are to be submitted as part of the bid package for approval by the owner and architect. Due to limited bidding time, owner and architect cannot/will not review products during bidding for equality or equivalency to these documents. Owner and architect will approve these items as part of the bid review and may ask for proof of product equality, product specification and clarification, resubmittal of original items, or other requirements as a condition of acceptance of any and all bids. Items not listed on bid forms and submitted as part of bid package are assumed to be as specified in these documents and any item not meeting these documents can be asked to be replaced or a change order applied to the project in the amount of the difference of the original item specified at the owner's and architect's discretion.

#### 02000 SITE-WORK/FOUNDATIONS

- A. Perform all excavations, backfilling and grading, as well as paving, required to complete work shown. Contractors shall take this data and submit in their bid any changes necessary for completion of the project. Provide positive drainage throughout the site from the parking areas and away from the building.
- B. Protect against damage to any lawns, shrubs, trees, roads, walks, signs, underground tanks, etc., and other work that is to remain in place.
- C. Materials to be excavated are assumed to be earth or other materials that can be removed by power shovel or other normal excavating equipment, but not requiring the use of explosives or drills. If other conditions are encountered within the limits of the excavation, notify Architect immediately.
- D. All building and column footings shall bear directly on undisturbed soil, unless specifically designed otherwise herein to bear on other subsurface.
- E. Assumed bearing capacity as indicated by Owner is 2,000 lbs. s.f., unless otherwise note on the plans or by Geotechnical reporting. If this bearing capacity is not encountered at the depth shown on drawings, the site contractor shall notify the general contractor. The general contractor, architect, engineer, and other parties will then establish an additional volume of excavation.
- F. Building slab areas, drives, walks and parking areas that require undercutting or fill are to be backfilled with lean clay or granular fill, uniformly compacted to at least 95% standard proctor (ASTM D698). Periodic field density testing to be performed during construction if required and paid for by the Owner.
- G. General Contractor to include additional cost breakout in their initial bid for either the trench excavation or mass excavation of rock if it is determined to be necessary. Bids are to include all markup, overhead, disposal, and grading at lower areas of this site.
- H. Furnish and install all site items as shown on the drawings or list herein .
- I. Furnish and install sod within 3' of all concrete walks and building areas. Seed and straw all other disturbed earth areas.

- J. Contractor to include all erosion control measures necessary. Erosion control measures are to follow those policies, standards and practices as set forth by the civil plan and/or all federal, state, and local requirements. The contractor will be responsible for maintaining all erosion control measures and maintaining all documentation as required. Any penalties occurred as a result of failure to maintain these controls shall be the responsibility of the contractor and the owner shall bare no responsibility for these penalties unless there is documented proof that these penalties were as a result of neglect from the owner or his representatives.
- K. If a landscaping plan has not been provided as part of these documents and a cost determination cannot be made, an allowance of \$10,000.00 is to be included in the bid to furnish and install landscaping as to be determined by the owner.
- L. All existing excavated material that cannot be used as fill will be wasted on site in areas as directed by owner. The material will be spread, compacted, smoothed and disced. The excavated material will then be seed and straw as indicated above.

#### M.Foundation excavation

- 1. Follow OSHA and local requirements for determining the angle of repose. No angle of repose can be assumed when soil is under adverse moisture conditions. Use forms where concrete surfaces are shown vertical or steeper than the angle of repose.
- 2. Cut earth neatly for grade beams and footings, excavate by hand if necessary, to remove all loose material and disturbed earth.
- 3. Replace disturbed earth and over-excavated locations with fill concrete.
- 4. Keep excavations constantly shored and dewatered.
- 5. Pour footings only after excavations have been individually inspected and approved.
- 6. After inspection and approval, place concrete promptly before any change in excavation conditions
- N. Trenching and backfilling for drain pipes
- 1. Commence from low point so excavation and pipe can be kept drained at all times.
- 2. Width to be sufficient to make joints and compact backfill under pipe.
- 3. Final excavation to be done by hand so pipe rests continuously on solid earth except where backfilled with cement stabilized sand.
- 4. After placing pipe, immediately place some backfill to hold the pipe; compact sufficient backfill under the pipe to hold it securely against any possible movement: do not cover until inspected.

#### 02741 ASPHALT PAVING

- A. If paving details are not specified on the site plan, then new paved areas shall have a minimum 6" thick DGA with a minimum 2" layer of asphalt binder course and 1" layer of asphalt surface course rolled separately. All new paving heights to be adjusted as required in order to match the existing pavement height.
- B. Existing paved areas to be repaved, shall have all damaged areas removed and then be reconstructed to match the above. Install minimum 1" thick topping over existing paved areas to remain.
- C. All paving shall conform to State Highway specifications for material and installation.
- D. If Paving is anticipated in winter, the surface coat may have to wait until spring. Cost of paving to be completed may be held by the owner (if necessary) until final completion.

#### 03000 CONCRETE

- A. Concrete to be dimensions shown on drawings and reinforced as detailed.
- B. Concrete shall develop a minimum compressive strength of 4000 psi at 28 days.
- C. Contractor to make (3) concrete cylinder samples for every 150 cubic yards (or fraction thereof) of concrete placed per day. Concrete cylinders are to follow the practices set forth in ASTM C31 for Standard Practice for Making and Curing Concrete Test Specimens in the Field and ASTM C172 for Standard Practices for Sampling Freshly Mixed Concrete. Samples are to be taken from the middle of a truck load and not the beginning or ending portions. All cylinders are to be labeled, dated and stored on site in the same environment as the concrete placed. Owner, architect or construction manager may call for testing of these samples at any time. Owner will pay for testing as needed.
- D. Interior floor slabs are to receive smooth trowel finish.
- E. Exterior concrete drives, walks and stoops are to be light broom finished in the direction of water flow, unless noted otherwise.
- F. Concrete Curing and Sealing Compounds are to be surface applied solvent which cures, seals, hardens, and dustproofs.
- Unfinished Exposed Interior Concrete Floors are to receive "Intraseal" by Comspec or approved equal.
   Verify existing conditions before starting work. Apply product per manufacturer's requirements and
   recommendations.
- 2. All other concrete slabs to receive "Cure 'N Seal" by Sakrete, "Seal Cure-25" by W. R. Meadows or approved equal. Verify existing conditions before starting work. Apply product per manufacturer's requirements and recommendations. Before starting work, verify that selected cure and seal product is compatible with the anticipated finished floor and sub finishes.
- G. All concrete floors are to have a vapor retarder installed before the concrete is placed. Vapor retarder is to be as specified in the latest ASTM E 1745 and have the following properties: a minimum of 0.03 permeability, 5lb puncture resistance, and 45.0 lb./in tensile strength. Retarder to be installed per manufacturer's recommendations and specifications.
- H. Materials and construction methods shall conform to the latest requirements of ACI 318-83.
- I. All exposed 90-degree edges of vertical and horizontal corners of concrete shall have tooled edges, unless indicated otherwise.
- J. Reinforcing steel shall be A615-83 Grade 60. Contractor may use Fibermesh equivalent reinforcing in 4" slabs on grade, but elevated slabs must have wire reinforcing as shown.
- K. Welding of or to reinforcing bars without prior approval of engineer is prohibited except where specified on the drawings.
- L. All reinforcing bars are to be supported in the form and spaced with wire bars supports meeting the requirements of the ACI "Manual of Standard Practice for Detailing Reinforced Concrete Structures" (ACI 315-latest edition).
- M. All detailing, fabrication and erection of reinforcing bars, unless otherwise noted, must follow the ACI "Manual of Standard Practice for Detailing Reinforced Concrete Structures" (ACI 315-latest edition).
- O. Control joints (C.J.) shall be saw-cut a minimum of 1/4 of slab thickness and with a maximum spacing as

N. Concrete walks shall have molded expansion joint material as shown. Final joint layout to be approved

- P. Isolation joints (I.J.) if required shall receive 1/2" thick expansion joint filler extending from bottom of slab to 1/2" below top of slab and the top 1/2" filled with Polyurethane joint sealant, unless otherwise noted.
- Q. Construction joints (Const. J.), if required, shall be formed using "Key-Loc Joint System" manufactured

- by Form-A-Key.
- R. All dimensions and grades shall be verified in the field (V.I.F.) by the contractor and any discrepancies or interferences shall be reported to the Architect before proceeding with affected work.
- S. Where shown, all junctions of walls, piers and floors to have 1/2" wide expansion joints, filled with elastic expansion joint material.
- T. Exposed foundation walls to have rubbed finish. Any honeycombing that occurs that is less than 4" in diameter is to be filled and finished with a non-expanding grout. Contact the architect immediately for any honeycombing that is 4" or greater in diameter, for review of the concrete and resolution of the issue.
- U. Concrete Contractor to place all exterior equipment pads unless otherwise directed during bidding. Coordinate final size, details and locations with the applicable sub-trades.

#### 04000 MASONRY

- A. Masonry subcontractor to be responsible for water-tightness of his work.
- B. Workmanship, including joint reinforcement and cold weather installation shall comply with National Masonry Associations applicable recommendations.
- C. Masonry contractor to brush clean final surfaces and prepare exterior faces for paint or sealer as called out.
- D. Provide control joints as indicated on elevations, with backer rod and paintable elastomeric caulk.

#### 04700 SIMULATED MASONRY - MANUFACTURED STONE

- A. Manufactured lightweight stone veneer to be installed over moisture barrier approved for stucco type installations, with metal lath and fasteners as required by manufacturer's specifications.
- B. Moisture barrier is to be Tyvek Stucco Wrap by DuPont or approved equal.
- C. Metal lath to meet ASTM C847, 18ga. woven wire or approved equal.
- D. Mortar and grout to be type S mortar meeting ASTM C270 standards, with additional bonding agents as per manufacturer's specifications.
- E. Stone is to be by Coronado Stone, Eldorado Stone or approved equal. Style and color is to be selected by owner from a standard line of products. Provide samples for owner to choose from.
- F. Before installation of product, the mason is to supply a sample wall for owner's approval.

#### **05000 METALS**

- A. Provide structural and miscellaneous metal items as shown on drawings, and as required to complete the project.
- B. Furnish shop drawings to satisfy local code requirements, fabricate materials and install all metal work as needed. This shall include structural steel and miscellaneous steel items.
- C. Take field measurements prior to fabrication. Subcontractor shall be responsible for the accuracy of all such measurements and the precise fitting and assembly of the finished products.
- D. Use materials of size and thickness indicated or, if not indicated, as required to develop the maximum loads in the member. Weld corners and seams continuously, complying with AWS recommendations. Provide for anchorage of type shown, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
- E. Clean and Shop paint miscellaneous metal work, except members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded unless otherwise indicated.
- F. Furnish bent or otherwise custom fabricated, plates, anchors, hangers, dowels and other miscellaneous steel shapes as required.
- G. Provide loose bearing and leveling plates for steel items bearing on masonry, concrete construction, or other portions of the structure as indicated.

H. Provide miscellaneous steel elements, framing and supports that are not a part of structural steel

- framework, as required to complete work.

  Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications
- through-bolts, lag bolts, wood screws and other connectors as required.

  J. Provide A-325 bolts as shown on the plans or as required to develop the maximum capacity of the

to in-place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts,

- K. Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications.
- L. Field Welding shall comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.
- M. Touch-Up Painting immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

#### N. Miscellaneous Items:

connection shown.

 Zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade and class required.

#### 06000 CARPENTRY

- A. All wood in contact with concrete or masonry or to be exposed on the exterior to be pressure treated against decay and insects.
- B. Carpenter shall furnish all necessary blocking and grounds for all tops, cabinetry items, handrails, casework and other miscellaneous items as needed.
- C. Provide small areas of wood framing where shown for shelves or equipment by owner.
- D. Carpenter to furnish & install all moldings, trim work and finish hardware (at windows, doors, handrails, and platform areas). Also, shelving, brackets, rods and hangers as shown. Exposed wood trim and moldings to be paint grade spruce or fir, (finger joints allowed).
- E. Furnish and install all rough & finish carpentry including rough hardware, form work indicated and required to complete the project.
- F. Wood framing is to follow good practice and code requirements for fire blocking and wood blocking. Verify fire blocking requirements with the building inspector before completing the frame work.G. Provide bridging at all exterior walls and interior load bearing walls, at midpoint of walls for walls up to
- 9'-4" high, at 1/3 points for walls 9' 12' high, and at 1/4 points for walls up to 13'-4" high. The bridging shall be 2 x 6 or 2 x 4 as appropriate, matching the studs used in the remainder of the wall.

  H. Framing contractor is responsible for bracing required to resist seismic, wind, and live loads specified
- I. Remove all wood including form lumber, scrap lumber, shavings, and sawdust in contact with the ground. Leave no wood buried in any fill.
- J. All lumber and plywood shall be graded and marked in accordance with the latest grading rules of the

and required by I.B.C. Provide let-in and G.W.B. bracing as noted on Sheet Set.

- Manufacturer's Association having jurisdiction. Plywood decking shall be tongue and groove or to be blocked at all joints, and to be glued to all supporting members.
- K. All materials shall be delivered and stored to insure proper protection from damage. All material shall be
- well seasoned.
- L. Framing lumber to be stress graded lumber (1250 f. Minimum) #2 yellow pine or approved equal of other species of the following minimum unit strengths in #'s per SQ. IN: FB = 1,200; H = 105; C (perpendicular) = 390; (compression parallel to grain) C= 900; and E = 1,760,000.
- M. Studs & Plates to be furnish and install as specified, detailed and required. Materials shall be straight and without defects that will impair the strength or alignment. Double studs at openings, triple at corners.
- N. Double top plates to have (2) 16d through at each stud through plate. Secure upper member of top plate with (2) 10d at each end and 16d at 16" o.c. staggered. Double members secured with 16d at 12" o.c. staggered.
- O.Exterior O.S.B. sheathing to be nailed to stude at 12" o.c. staggered.
- P. Install all joists with crown up. Double jousts at openings, unless noted to be greater. Double members secured with 16 d at 6" on center, staggered. Laps over supports secured with a minimum of (4) 10d, (3) 20d through header into joists ends. Block solidly at plywood joints.
- Q. Header beams for openings in wood framed walls are to be double members with 1/2" plywood between as follows: (2) 2 x 4's for openings 30" wide or smaller, (2) 2 x 6's from 30" up to 48" wide, (2) 2 x 8's from 48" up to 72" wide, and (2) 2 x 10's from 72" up to 96" wide. Framing for openings wider than 96" must be coordinated with the architects.
- R. On exterior framing use galvanized, electroplated 16d nails. Interior nails are to be common coated 16d nails unless otherwise notes.

#### 06175 PRE-ENGINEERED WOOD TRUSSES AND PRE-ENGINEERED JOISTS

- A. Before bidding, supplier / designer of the trusses and joists is responsible for obtaining all bid documents including but not limited to construction documents and specifications. Supplier / designer is responsible for coordinating final design of this product with all other trades, including but not limited to all roof top loads, spacing for ductwork and other miscellaneous design loads. Should a conflict arise as a result of design difference with other trades, this designer should use industry standard practices to bid and create a product to accomplish the design intent of the construction documents and as part of this bid, then notify General Contractor of the intended changes.
- B. Trusses or pre-engineered joists are to be of profile shown on building sections and details.
- C. Number of panels points, member sizing, grade, and species as designed by the truss manufacturer.
- D. The design is to be the responsibility of the manufacturer, who is responsible for meeting all requirements of I.B.C. This includes the truss girders required at spans as shown on Sheet Set.
- E. The scissors trusses shall be designed with a pinned connection at one end of the trusses and a roller connection at the other end support condition.
- F. Proper installation and anchoring of all members and anchoring of the trusses for adequate strength are the responsibility of the framing contractor. Anchoring to be an appropriate strap or tie as recommended by manufacturer, and federal, state and local code requirements. System to be by Simpson Strong-Tie or equal.
- G. Design of all trusses and joists are to be based on maximum deflection of L/360.
- H. Bearing web members of floor trusses are to be designed to carry the axial load of the stud wall above.
- I. The manufacturer is to provide shop drawings and structural calculations stamped by a state registered structural engineer of the state work to be performed in, before fabricating the trusses.
- J. Design of trusses and handling and erection of trusses, including temporary and permanent bracing, is to follow the latest edition of the specifications of the Truss Plate Institute. Refer to Section 1000 item B of these specifications with regards to inconsistencies.
- K. Design is to include sizing and spacing of bracing members.
- L. Trusses are to be designed to the following minimum loads:

equipment as directed by the Contractor.

(NOTE: Greater snow loads required at valleys, roof level changes, etc. per I.B.C. Code requirements supersedes these loads.)

#### Roof Trusses

- Wind Load 15 ps
- Snow Load 20 psf plus snow load build-up at valleys and roof level changes per I.B.C. plus roof top
- Top Chord D.L.10 psf
- Bottom Chord D.L. 5 psf
- Uplift 12 psf (9 in excess of D.L.)

selected by owner from standard lines.

#### 06410 WOOD CASEWORK

- A. Furnish and install a complete system for cabinets and casework following the standards set forth by AWI and millwork best practices.
- B. Cabinets to be oak finish MDF board with overlay doors, wire pulls and fully adjustable plywood shelves, by "Merillat" or approved equal.C. Tops to be square edge, plastic laminate covered with 4" splash at all walls, scribe fit. Colors to be
- D. Provide elevations and shop drawings for review by owner.

#### 07000 MOISTURE PROTECTION

#### A. Insulation:

- Roll glass fiber insulation to be thickness and type shown on drawings for specific uses, to be "Fiberglass" or "Celotex".
- 2. Rigid below grade insulation at foundation and basement walls to be extruded, expanded polystyrene 2" thick (R-value: 5), unless otherwise noted on the plans.

#### B. Caulking:

- Use Sherwin Williams 950A siliconized acrylic latex caulk, GE Silicone II or approved equal. Color to match surrounding area being caulked. Caulk all exterior joints and both sides of all door and window frames.
- All Equipment, Mechanical, Plumbing and Electrical Contractors shall supply all flashings and curbs for roof or wall penetrations to the General Contractor. General Contractor shall install and flash all building penetrations as part of their bid project.
- All exterior basement walls to receive exterior rubberized asphaltic damp proofing system. Acceptable systems to be by Hydrotech, Hydro-Shur, Grace, Mar-Flex or approved equal. Entire system to be installed per manufacturers recommendations.
- 4. Where called out on the drawings, fire caulk to meet all ASTM requirements for fire and smoke barrier. Product to be 3M Fire Barrier Sealant CP 25WB+ or approved equal.

DATE: 2021-12-02

PROJECT NO:

21-4188

DRAWN BY:

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ASSOCIATES

KEYES ARCHITECTS & 1717 PRESTON HIGHWAY

CONSTRUCTION FOR:

SPECIFICATIONS

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#### 07222 POLYISOCYANURATE ROOF INSULATION

- A. Contractor shall field verify all conditions and submit shop drawings for all details and materials before ordering roof insulation.
- B. Comply with manufacturer's recommendations for handling, storage and protection during installation.

C. Install roof insulation according to the manufacturer's details and recommendations for system, installation guide, and contract drawings details.

D. For tapered roof insulation indicating location of roof drains, cants and tapered edge strips. Verify roof drain locations with mechanical trades.

E. Do not allow insulation materials to become wet or soiled and do not install insulation on roof deck when water of any type is present. Do not install insulation or roofing materials when substrate is damp or wet or when proper adhesive temperature cannot be maintained.

F. Examine roof deck for suitability to receive insulation. Verify that substrate is dry, clean, and free of foreign material that will damage insulation installation and that the deck is structurally sound to support installers, materials, and equipment without damaging or deforming work.

G. Attach product using mechanical fasteners per manufacturer recommended when possible. Adhesives are to be used per manufacturer's recommendations only when mechanical fasteners are not possible.

H. Rigid roof system to be FlintBoard ISO by CertainTeed, InsulBase Polyiso by Carlisle Syntec Systems, H-Shield by Hunter, or an approved equal. Thickness of roof panels to be as shown on drawings.

I. Tapered rigid roof systems to be FlintBoard ISO-T by CertainTeed, InsulBase Tapered Polyiso by Carlisle Syntec Systems, Tapered H-Shield by Hunter, or an approved equal. Thickness and slope of roof panels to be as shown on drawings.

#### 07250 WEATHER BARRIER - VAPOR BARRIER

A. Building vapor barrier to be commercial grade weather barrier Tyvek CommercialWrap by DuPont or approved equal.

B. All joints are to be lapped minimum 3" and taped as specified by manufacturer.

#### C. All penetrations are to be taped around entire perimeter.

D. Tape to be 3" wide Tyvek Tape for commercial applications by DuPont or approved equal.

E. Barrier to be anchored in wood with 1" plastic caps fasteners with min 5/8" penetration.

F. Barrier to be anchored in metal with 1-5/8" rust resistant screw with 2" plastic cap.

#### 07260 REINFORCED VAPOR RETARDER

A. Reinforced vapor retarders for suspended insulation applications are to be Griffolyn Type-65 by Reef Industries or Approved Equal.

B. Retarder to be installed on the underside of all roof trusses or floor joists where exposed to the elements above and conditioned below.

C. Retarder only required when insulation is not suspended by Gypsum Board or other approved vapor

D. All joints are to be lapped minimum 3" and taped as specified by manufacturer.

E. All penetrations are to be taped around entire perimeter.

F. Tape to be 3" wide Griffolyn Fab Tape for commercial applications by DuPont or approved equal.

G. Barrier to be anchored in wood with 1" plastic caps fasteners with min 5/8" penetration.

#### 07540 TPO SINGLE-PLY ROOFING SYSTEM

A. Contractors shall field verify all conditions and submit shop drawings for all details and material before ordering the roof components.

B. System to be Firestone ULTRAPLY TPO Single-Ply Mechanically Fastened Roof System, or approved

C. System and application shall exceed all State Building Codes, local ordinances and these construction

D. Provide written 10 year Manufacturer's and Installer's Warranties/Guarantees from the date of the owner's written final acceptance of the installation.

E. Install additional blocking and nailers as required, Grade #2 or better lumber, pressure treated for fire and rot resistance with a salt-based preservative (Wolmanized). Creosote and asphaltic-based preservatives are not acceptable.

F. System to be installed over Polyisocyanurate Roof Insulation, Dimensionally stable and manufactured for the purpose of roof insulation, compatible with deck structure and substrate.

G. Install with manufacturer recommended adhesives and mechanical fasteners.

H. Install roof membrane according to the manufacturer's details for system, installation guide and contract drawing details.

I. Install flashing as required by the manufacturer's details and contract drawing details.

#### 08000 DOORS AND WINDOWS

A. Doors, frames, windows and glazing to be as shown on drawings. Finish hardware to comply with building code.

B. All door and window glazing to conform to section 08800 Glazing.

C. Egress doors shall be able to be opened from inside without a key or special knowledge.

D. All exterior outward swinging hinged doors are to have Non-Removable Pin (NRP) hinges, unless otherwise specified on the drawings.

E. Hollow metal frames shall be standard profile, 16ga. shop primed. Three (3) anchors each side, one (1) at head. Use wrap around frames at Gypsum board partitions.

F. Hollow metal doors shall be flush, 18 GA., 1 3/4" thick, exterior doors to be insulated with rigid bd. insulation. Head of doors to be solid and flush. Doors to be shop primed.

G. Finish hardware shall be medium grade commercial products by Stanley, Schlage, Von Duprin, Yale or an approved equal. Finish to be selected by owner. U.L. rated and Handicapped accessible hardware as required. See door schedule.

H. Exterior clad windows to be fixed, double hung or double casement units as shown on plans. Windows to be by Anderson, Pella, Marvin, or approved equal. All units to have clear insulated glazing with Low-E coating. Install per manufacturer's instructions and recommendations.

#### 08380 SECTIONAL OVERHEAD DOOR SYSTEM

A. Sectional overhead doors (upward acting) to be by Crawford, Overhead Door, or approved equal. Install door per manufacturer's instructions and recommendations.

B. Door to have an electronic operated with chain hoist backup.

C. Operator to be medium duty, commercial grade, 3/4 h.p motor, unless otherwise noted on the plans. See door schedule for final sizes.

D. Provide (1) wired 3-button (open, close and stop) controller station to be located by owner.

E. Panels to be insulated section, 2" compressed fiberglass blanket, 24 GA galvanized front and back panels. Use standard stiles and rails.

F. Tracks to be 2" galvanized steel with standard hardware.

G. Verify lift clearance before ordering.

H. Provide neoprene or vinyl weather stripping on entire perimeter

I. Door to have electrically controlled photo eye that stops and reverses if senses an obstruction.

J. All doors and accessories not galvanized shall be factory primed. Interior and exterior door paint shall be selected later.

K. Glazing to as specified on construction documents, where listed and to conform to section 08800 Glazing.

#### 08410 ALUMINUM STOREFRONT SYSTEM

A. Exterior frame are to be thermally broken aluminum frames.

B. Frames to be black, bronze, white or clear anodized (as selected by owner)

C. Aluminum storefront system to be "Kawneer 451T" or approved equal

D. Glazing contractor shall be responsible to securely anchor units to framing or masonry as needed to transfer loads to the building.

E. All glazing to conform to section 08800 Glazing.

#### 08800 GLAZING

A. Unless specified herein, all glazing is per door and window schedules located on the construction

B. All glazing to comply with safety glazing laws. Installer to verify requirements before ordering and installing all glazing.

C. All insulated glazing units, Low-E finishing and glaze tinting are to carry a minimum of a 10 year warranty from date of acceptance of project.

D. Where glazing is specified to be Low-E and Tinted, glazing is to be tempered as per glazing types below.

E. All glazing to follow Standard Specifications for ASTM C 1036, ASTM C 1048 and ASTM E 774.

F. Glazing to be by PPG, LOF, Guardian Industries, Ford Glass, Hordis Brothers Inc., or equal. Provide all tinted and Low-E glass from the same manufacturer for the entire project.

#### G. Glazing:

1. Exterior glazing to be 1", double layer insulated glazing.

2. Interior glazing to be 1/4", single layer.

#### H. Glazing Types:

1. Annealed: Clear float glass conforming to ASTM C 1036, Type I, Class 1, quality q3.

2. Tempered: As specified for clear annealed except fully tempered to conform to ASTM C 1048, Kind

I. Glazing Finish Types:

1. Obscure: Conforming to ASTM C 1036, Type II, Class I, Form 3, Finish 1, pattern p3 "hammered" texture glass.

2. Low-E: PPG "Sungate 500(2)" or equal, clear float glass with transparent reflective coating on inboard (No. 2) surface, conforming to glass type.

3. Low-E Tinted: PPG "Sungate 1000(2)" or equal, tinted float glass with transparent reflective coating on inboard (No. 2) surface, conforming to tempered glass type.

4. Spandrel: Tempered spandrel glass conforming to DD-G-1403, Grade B, Style II, color as shown or

J. Tint Finish Types - Glare reducing float glass to be: PPG "Solargray", gray color, PPG "Solarbronze", bronze color, or equal.

K. Configuration to be per Window Schedule located in the Construction Documents.

L. Glazing materials and accessories shall be fully compatible with the materials and finishes with which they are in contact. Neoprene and EPDM materials shall not come in contact with silicone sealant materials. Silicone rubber spacers, setting and edge blocks and gaskets shall be either Type I (designed to prevent adhesion) or Type II (designed for adhesion) as per glazing system manufacturer's recommendations for each condition of use.

#### 09000 FINISHES

A. All finishes shall be as called for and specified on drawings.

B. Inspection of finished surfaces for blemishes and defect at the end of the project shall follow the generally accepted standard - PDCA (P1-09) Industry Standards for reviewing finished surfaces. "Viewing and inspection of finished surfaces shall be at a distance of thirty-nine (39) inches from the surface under finished lighting or natural lighting without the use of any optic magnifications or enhanced lighting. Any blemishes or defects detected at this range shall be removed or repaired and patched to match the surrounding."

C. Gypsum Board:

1. All gypsum board to be 5/8" thick and installed per U.S. Gypsum association standards and best industry practices.

2. Use mold / moisture-resistant gypsum board ("Green" Board or equal) in all toilet rooms and within 4'-0" of all plumbing fixtures such as sinks, drinking fountains, washing machines or any other equipment not listed here in.

3. Where indicated on plans all fire rated assemblies are to use 5/8" Type 'X' gypsum board, installed per details and best industry practices.

4. Furnish and install metal or plastic corner bead at all outside corners and "J" mold at all exposed

5. Control Joints: All walls are to follow the latest ASTM C840-08 and GA-216 as it pertains to control joint placement. Unless shown on the plans differently, all walls and ceilings greater than (30) linear feet in any direction are to have a control joint every 30'-0" O.C. All control joints are to receive a metal or plastic control joint strip, installed per manufacturer's recommendations.

D. Vinyl base to be 4" high, 1/8" thick by Tarkett, Roppe, or approved equal. Use coved at vinyl floor tile and coveless at carpet. Stairs shall receive Vinyl treads and backs, treads shall have replaceable slip resistant strip at nosing. Colors as selected by Owner from standard architectural line. Installed per manufacturer's instructions

E. Floor transitions shall be vinyl as recommended for the specific material transitions. Material shall be by Tarkett, Roppe or approved equal selected from full architectural color lines.

F. Coating Schedule:

1. Surfaces not to be painted are floor coverings, items with factory applied final finish, concealed ducts, pipes and conduit, acoustical ceiling tiles, items with pre-finished surfaces, aluminum windows and door frames, and all items called not to be painted on plans.

2. Surfaces to be painted:

Note: consult with Owner for final colors and finishes.

a) Exposed interior Drywall:

1st coat: Latex Wall Primer. 2nd coat: Latex eggshell or Alkyd based enamel as called for. 3rd coat: Latex eggshell or Alkyd based enamel as called for.

b) Interior Drywall Ceilings:

1st coat: Latex Wall Primer 2nd coat: Alkyd Flat Ceiling Paint

c) Interior Metal:

1st coat: Metal Primer 2nd coat: Semi-Gloss Alkyd Enamel 3rd coat: Semi-Gloss Alkyd Enamel

d) Exterior Metal:

1st coat: Metal Primer 2nd coat: Semi-Gloss Alkyd Enamel 3rd coat: Semi-Gloss Alkyd Enamel

e) Asphalt Striping:

Install 4" wide Bright White stripes at all shown parking spaces. Install 4" wide Safety Yellow stripes at Handicapped parking and loading areas. Directional arrows where shown, to be Safety Yellow. All Striping and marking to be straight, perpendicular and uniform.

#### 09511 ACOUSTICAL CEILING TILES

A. Ceiling grids to be standard 2'x2' by Donn, Armstrong, or approved equal.

B. Ceiling tiles to be 2'x2' vinyl faced square edge, standard fissured square edge, or standard fissured tegular panels by Armstrong, U.S.G., or approved equal

C. Wet areas such as kitchens, restrooms, and wash rooms are to receive a smooth texture 2'x4' washable, scratch resistant, and anti-microbial acoustical tile. Tile to be Kitchen Zone - 672 by Armstrong or approved equal.

D. Grid and panels are to be white unless otherwise noted on the finish schedule.

#### 10000 SPECIALTIES

A. Storage shelving, where shown on drawings shall be plastic coated wire systems by ClosetMaid, Schulte, K&V, or approved equal. Each location shall have a fully adjustable track system with a minimum of six shelves. Final styles of the supplied shelves to be selected (Some areas may receive only a rod and

B. Fire extinguisher and cabinets to be by owner as required by code and by the fire inspector.

C. Toilet accessories: The following list of new items shall be furnished and installed: (2) Fixed standard mirror(s) 24"x36" - Bobrick B-165 B 2436

(2) 18" vertical grab bar(s) - Bobrick B-6806x18

(2) 36" horizontal grab bar(s) - Bobrick B-6806x36

(2) 42" horizontal grab bar(s) - Bobrick B-6806x42 (2) Toilet paper holder(s) - Bobrick B-2888

(2) Paper towel dispenser(s) - Bobrick B-262 (2) Wall mounted soap dispenser(s) - Bobrick B-5050

#### 11000 EQUIPMENT

A. General contractor to install all equipment so listed on drawings, verify and coordinate requirements with suppliers during bidding.

B. Owner to supply and install all equipment not required or listed herein. See equipment schedules.

#### 12000 FURNISHINGS

A. Owner to furnish and install all furnishings not required or listed herein.

#### **SPECIAL NOTE:**

A. Final detailed layout of Plumbing, Mechanical, Fire Suppression and Electrical systems are by separate Engineers or installers, it is the responsibility of the owner and General Contractor to coordinate all work with affected other trades to assure completeness and code compliance.

B. It is the responsibility of the General Contractor and the Mechanical, Electrical, and Plumbing Contractors to ensure that all parts of their work is to be accessible as per Federal ADAAG Guidelines and all State / Local Guidelines. This includes but is not limited to Electrical Controls such as Thermostats or Lighting Controls, Light Switches, Outlet Plugs, Hand Dryers, and Faucet Controls. If there are concerns about how to determine reach ranges, equipment clearance or other accessibility items, contact the architect immediately before work begins for guidance.

#### **END OF SPECIFICATIONS**

**ABBREVIATIONS** 

for reference only.

CJ - Control Joint

MAX - Maximum

MIN - Minimum

ACT - Acoustical Ceiling Tile

AFF - Above Finished Floor

Gyp. Bd. - Gypsum Board

NRP - Non-Removable Pin

VCT - Vinyl Composite Tile

VET - Vinyl Enhanced Tile

V.I.F. - Verify In Field

O.C. - On Center

E.I.F.S. - Exterior Insulation and Finish System

FRP - Fiberglass Reinforced Panels

I.B.C. - International Building Code

21-4188 These are abbreviations used on the plans and in these specifications. Not all items may be use and are

DRAWN BY:

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SPECIFICATIONS

**SP1.02**