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A copy of the plans, as approved by the Durham City County Inspections Department, is required to be on site, at an approved location, for all requested inspections



INTERIOR UPGRADE FOR BREEZE BUILDING SERVICES

312 SOUTH MIAMI BLVD, DURHAM, NC 27703

OWNER: MR. JASON REKDAHL



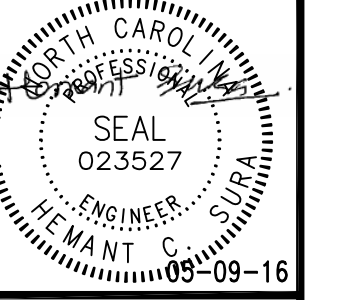
SITE LOCATION

VICINITY MAP

LIST OF DRAWINGS

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- G2 BUILDING DATA SHEET
- G3 LIFE SAFETY PLAN
- A1 BUILDING FLOOR PLAN
- A2 REFLECTED CEILING PLAN
- A3 TOILET ENLARGE PLANS AND DETAILS
- P1 PLUMBING COVERSHEET
- P2 PLUMBING WATER PLAN AND RISER
- P3 PLUMBING WASTE PLAN AND RISER
- M1 HVAC COVERSHEET
- M2 HVAC OVERALL PLAN
- M3 HVAC- OFFICE AREA PLAN
- E1 ELECTRICAL COVERSHEET & RISER DIAGRAM
- E2 ELECTRICAL POWER PLAN
- E3 LIGHTING PLAN
- E4 LIGHTING SCHEDULE AND SPECIFICATIONS
- E5 PANELBOARD SCHEDULES

REVISIONS	BY



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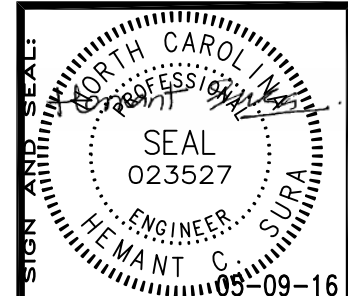
BREEZE BUILDING SERVICES
312 S. MIAMI BLVD, DURHAM, NC 27703
PROJECT COVERSHEET

DATE:	05-09-16
SCALE:	AS SHOWN
DRAWN:	HCS
JOB:	2014045
SHEET	G1
OF SHEETS	

16101877

MAY 09 2016

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BREEZE BUILDING SERVICES
 312 S. MIAMI BLVD, DURHAM, NC 27703
LIFE SAFETY PLAN

DATE: 05-09-16

SCALE: AS SHOWN

DRAWN: HCS

JOB: 2014045

SHEET
G3
 OF SHEETS



TOTAL OCCUPANT LOAD (BUSINESS)- 38
 EXIT REQUIRED-1, EXIT PROVIDED-2
 TOTAL OCCUPANT LOAD (FACTORY)- 90
 EXIT REQUIRED-2, EXIT PROVIDED-4

PATH OF EGRESS
BUSINESS
 MAX TRAVEL TO FRONT EGRESS = 52'
 MAX TRAVEL TO ANOTHER EXIT = 108'
FACTORY (F-2)
 MAX TRAVEL TO FRONT EGRESS = 199'
 MAX TRAVEL TO REAR EGRESS = 177'

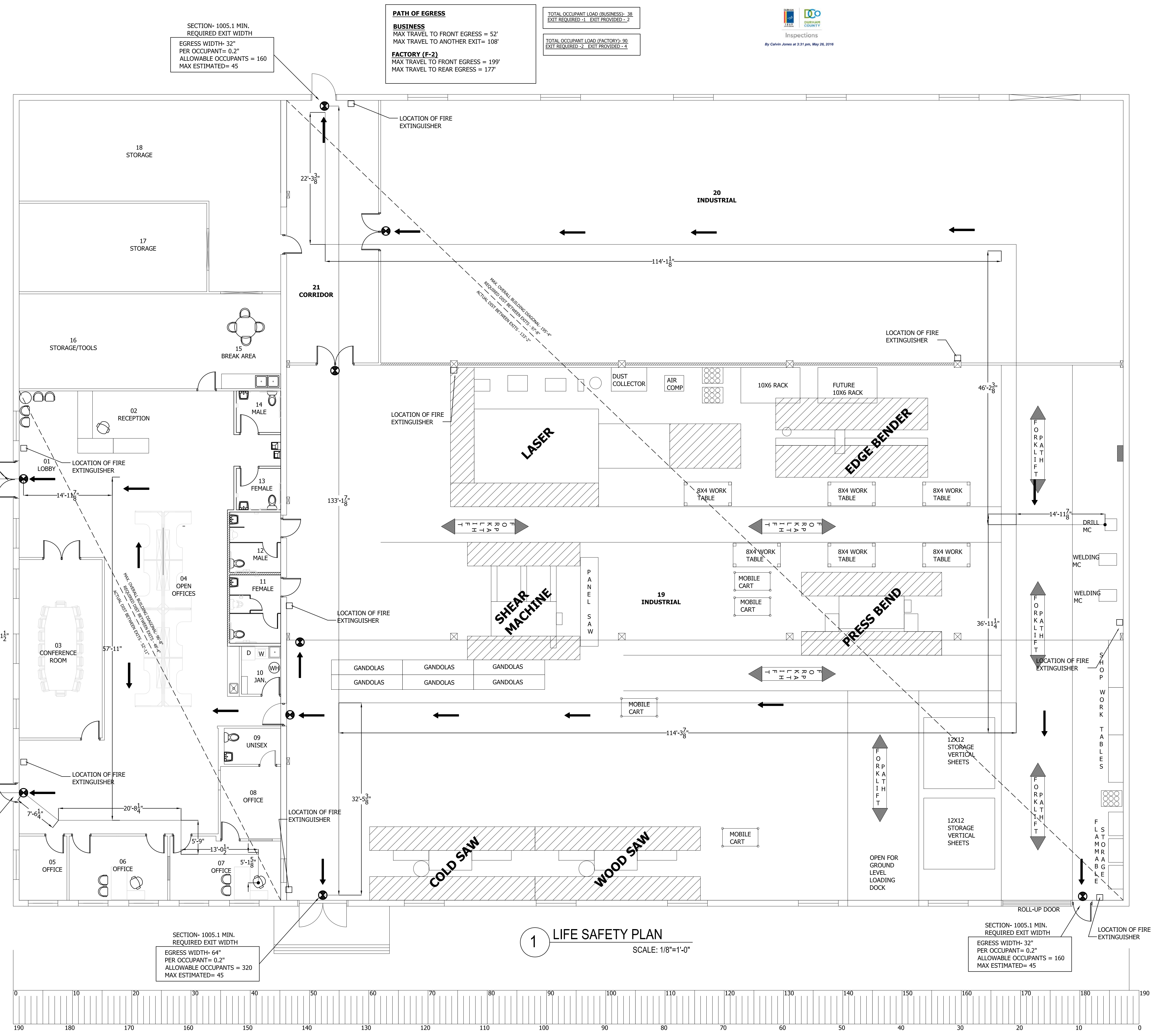
SECTION- 1005.1 MIN. REQUIRED EXIT WIDTH
 EGRESS WIDTH- 32"
 PER OCCUPANT= 0.2"
 ALLOWABLE OCCUPANTS = 160
 MAX ESTIMATED= 45

SECTION- 1005.1 MIN. REQUIRED EXIT WIDTH
 EGRESS WIDTH- 64"
 PER OCCUPANT= 0.2"
 ALLOWABLE OCCUPANTS = 320
 MAX ESTIMATED= 20

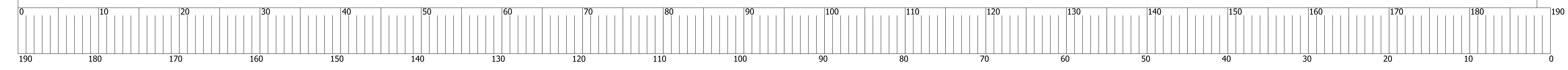
SECTION- 1005.1 MIN. REQUIRED EXIT WIDTH
 EGRESS WIDTH- 32"
 PER OCCUPANT= 0.2"
 ALLOWABLE OCCUPANTS = 160
 MAX ESTIMATED= 20

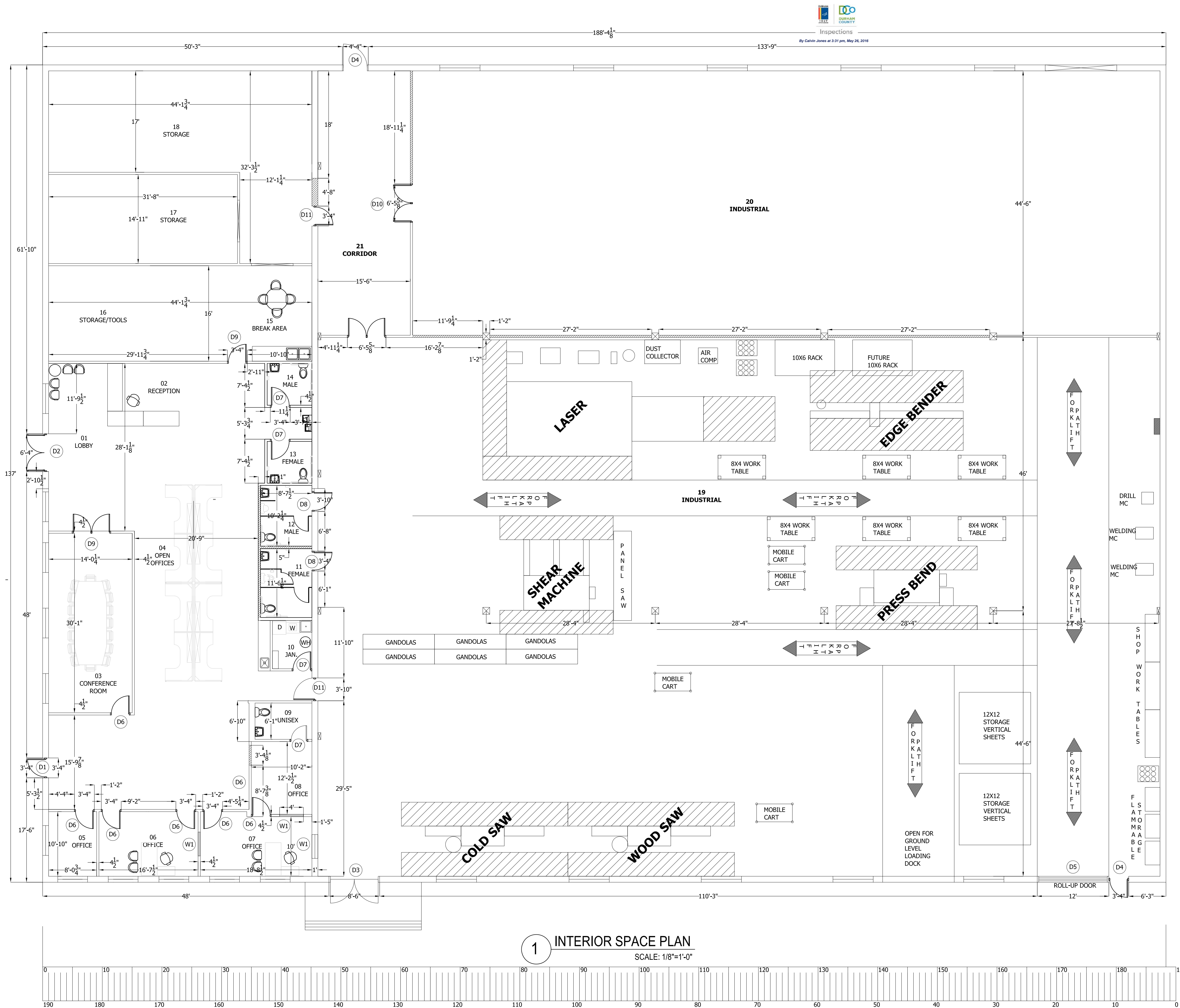
SECTION- 1005.1 MIN. REQUIRED EXIT WIDTH
 EGRESS WIDTH- 64"
 PER OCCUPANT= 0.2"
 ALLOWABLE OCCUPANTS = 320
 MAX ESTIMATED= 45

SECTION- 1005.1 MIN. REQUIRED EXIT WIDTH
 EGRESS WIDTH- 32"
 PER OCCUPANT= 0.2"
 ALLOWABLE OCCUPANTS = 160
 MAX ESTIMATED= 45

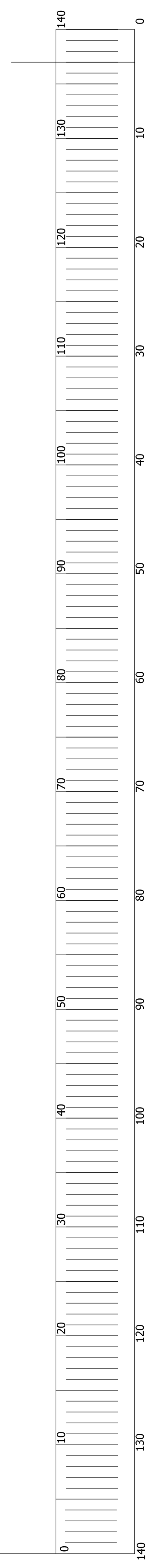
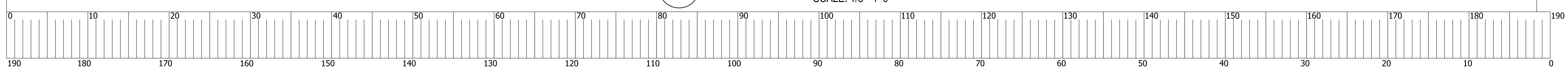


1 LIFE SAFETY PLAN
 SCALE: 1/8"=1'-0"





1 INTERIOR SPACE PLAN
SCALE: 1/8"=1'-0"



INSPECTIONS
By Calvin Jones at 3:31 pm, May 26, 2016







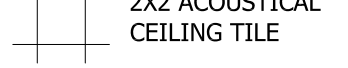
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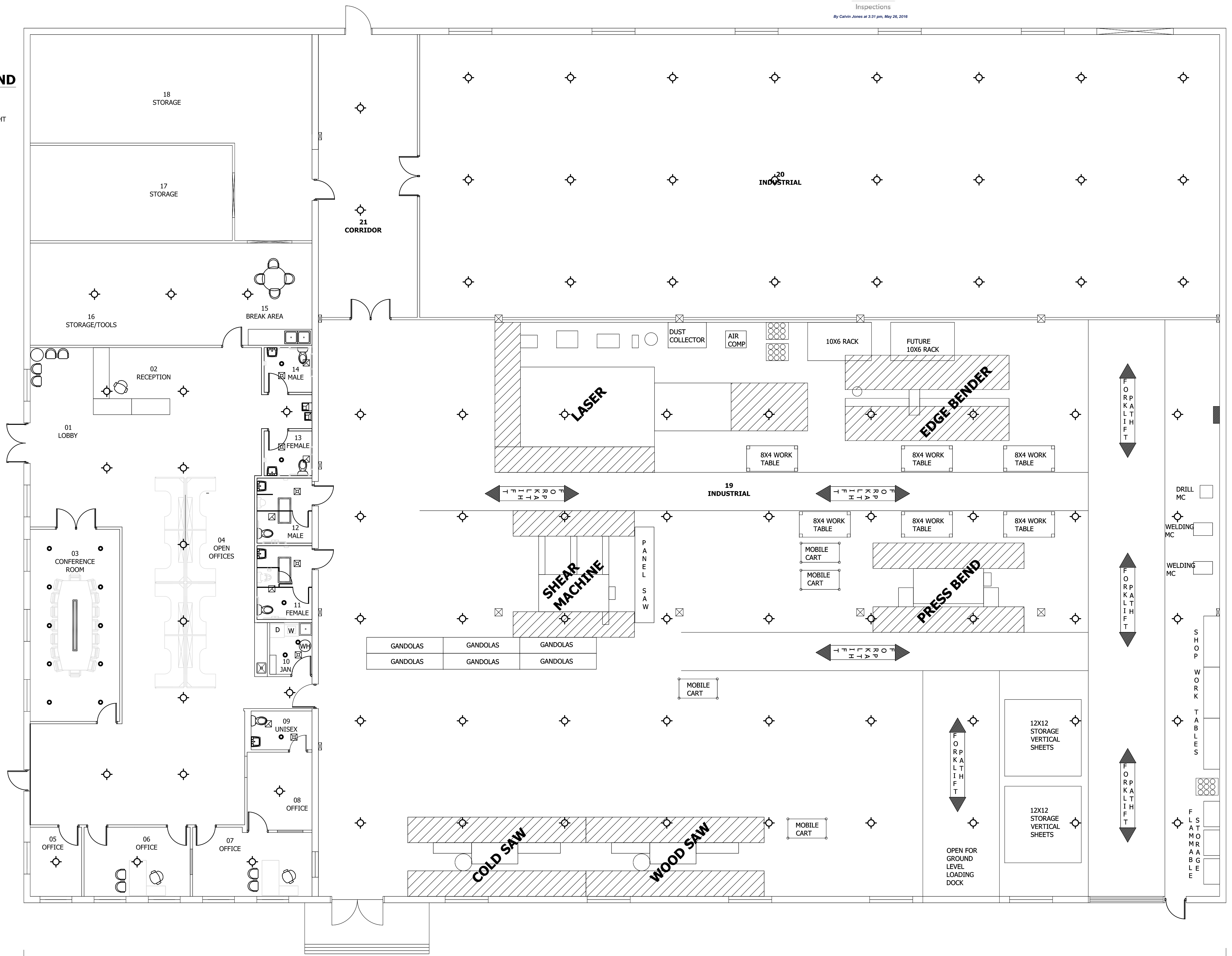
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BREEZE BUILDING SERVICES
 312 S. MIAMI BLVD, DURHAM, NC 27703
 INTERIOR SPACE PLAN

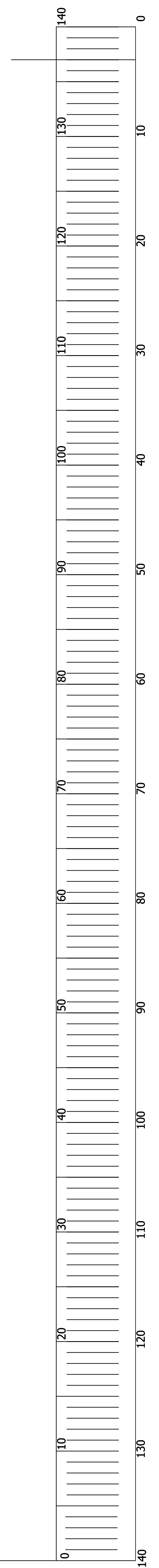
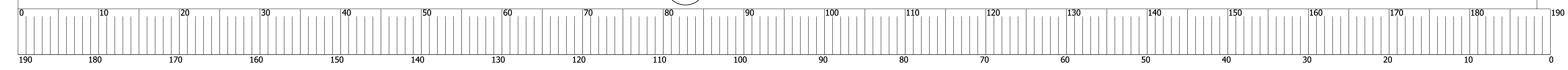
DATE: 05-09-16
 SCALE: AS SHOWN
 DRAWN: HCS
 JOB: 2014045
 SHEET **A1**
 OF SHEETS

CEILING LEGEND

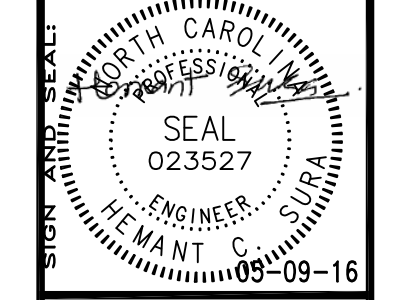
-  2X4 RECESSED LIGHT
-  PENDANT HIGH BAY LIGHT
-  RECESSED CAN LIGHT
-  SUPPLY DIFFUSER
-  RETURN DIFFUSER
-  EXHAUST GRILL
-  2X2 ACOUSTICAL CEILING TILE



1 REFLECTED CEILING PLAN
1/8"=1'-0"



REVISIONS	BY

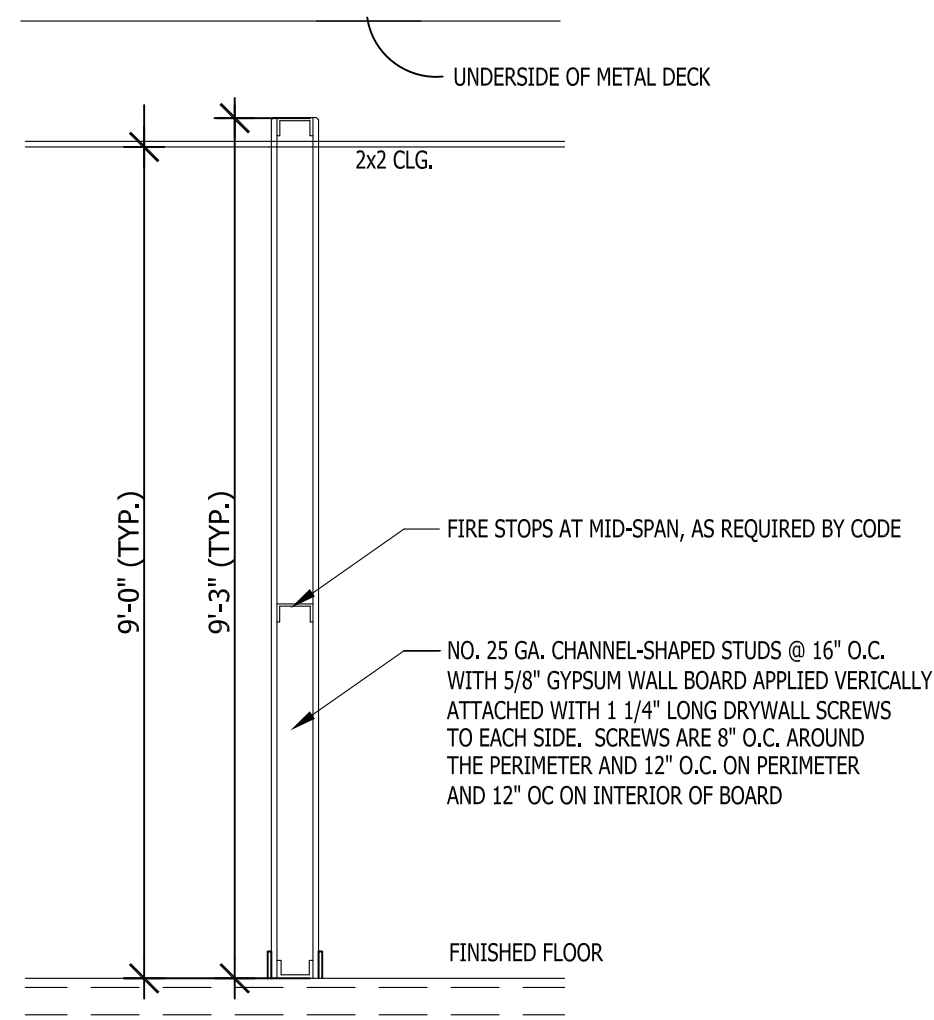
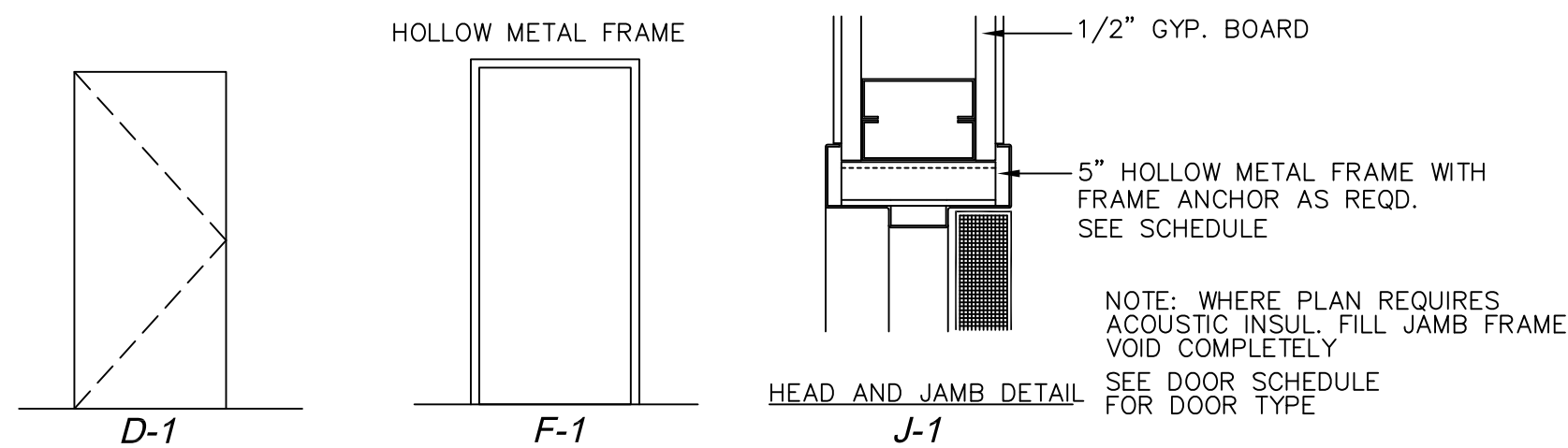


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BREEZE BUILDING SERVICES
 312 S. MIAMI BLVD, DURHAM, NC 27703
 REFLECTED CEILING PLAN

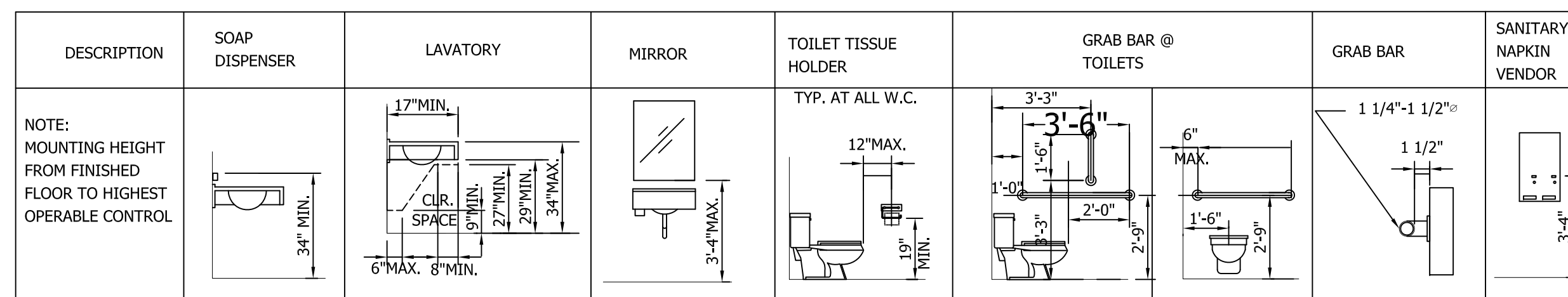
DATE: 05-09-16
 SCALE: AS SHOWN
 DRAWN: HCS
 JOB: 2014045
 SHEET
A2
 OF SHEETS

DOOR SCHEDULE							
NO.	DTL.	FRM.	JAMB	SIZE	MATERIAL	NOTES	
D1				3'-6"X6'-8"	METAL	EXISTING EXTERIOR 3' DOOR	
D2				6'-0"X6'-8"	METAL	EXISTING EXTERIOR DOUBLE DOOR	
D3				8'-0"X9'-0"	METAL	EXISTING EXTERIOR DOUBLE DOOR	
D4				3'-6"X6'-8"	METAL	EXISTING EXTERIOR 3' DOOR	
D5				11'-6"X10'-0"	METAL	NEW ROLL UP DOOR 11'-6" X 10'	
D6	D1	F1	J1	3'-0"X7'-0"	WOOD	H.C.S.C. STAINED DOOR AND MTL. FRAME W/ SIDE LIT/ KEYED LOCK	
D7	D1	F1	J1	3'-0"X7'-0"	WOOD	H.C.S.C. STAINED DOOR AND MTL. FRAME W/ PUSH LOCK	AUTO CLOSER
D8	D1	F1	J1	3'-0" X 7'-0"	METAL	METAL DOOR WITH KICK PLATE/ WITH KEYED LOCK	AUTO CLOSER
D9	D1	F1	J1	6'-0" X 7'-0"	WOOD	H.C.S.C. STAINED DOUBLE DOOR AND MTL. FRAME W/ SIDE LIT/ KEYED LOCK	
D10	D1	F1	J1	6'-0" X 7'-0"	METAL	METAL DOUBLE DOOR AND MTL. FRAME ; KICK PLATE HALF THE WAY	AUTO CLOSER
D11	D1	F1	J1	3'-0" X 7'-0"	METAL	METAL DOOR WITH KICK PLATE/ WITH KEYED LOCK	

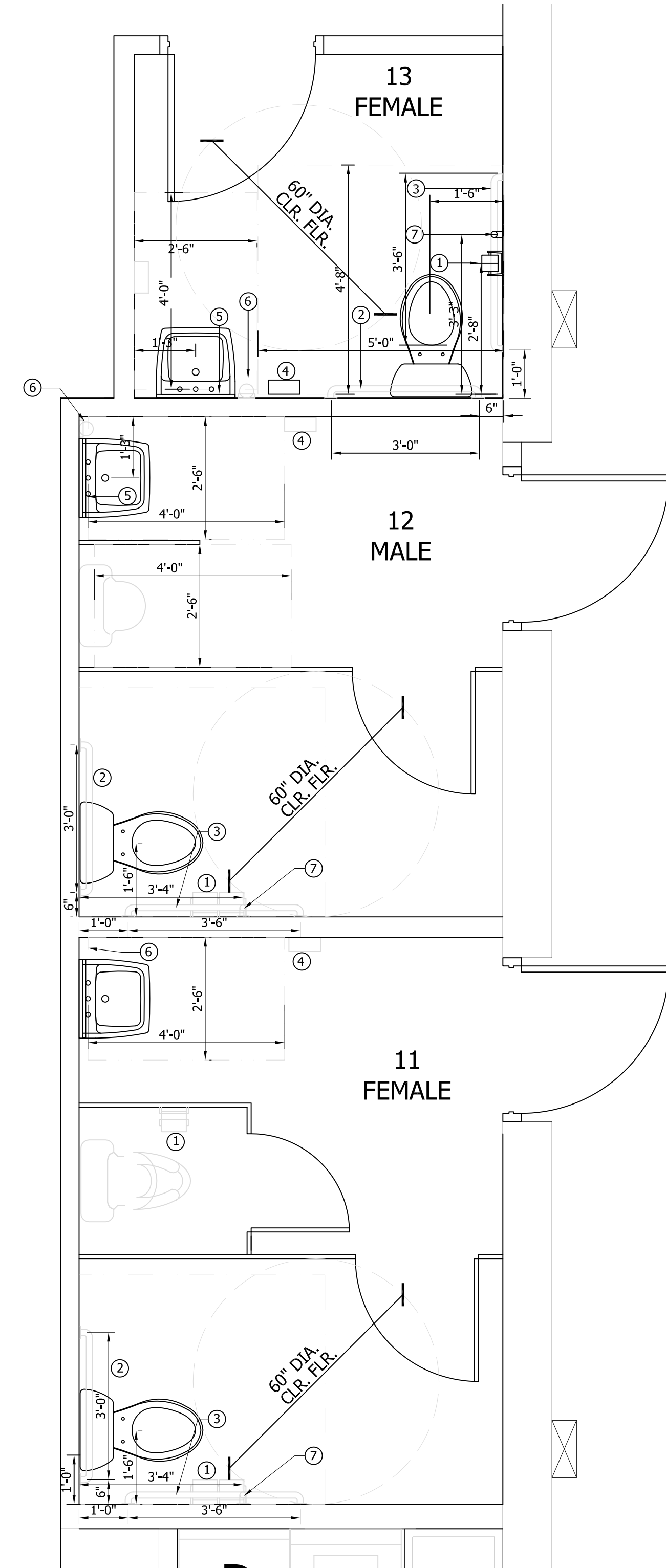
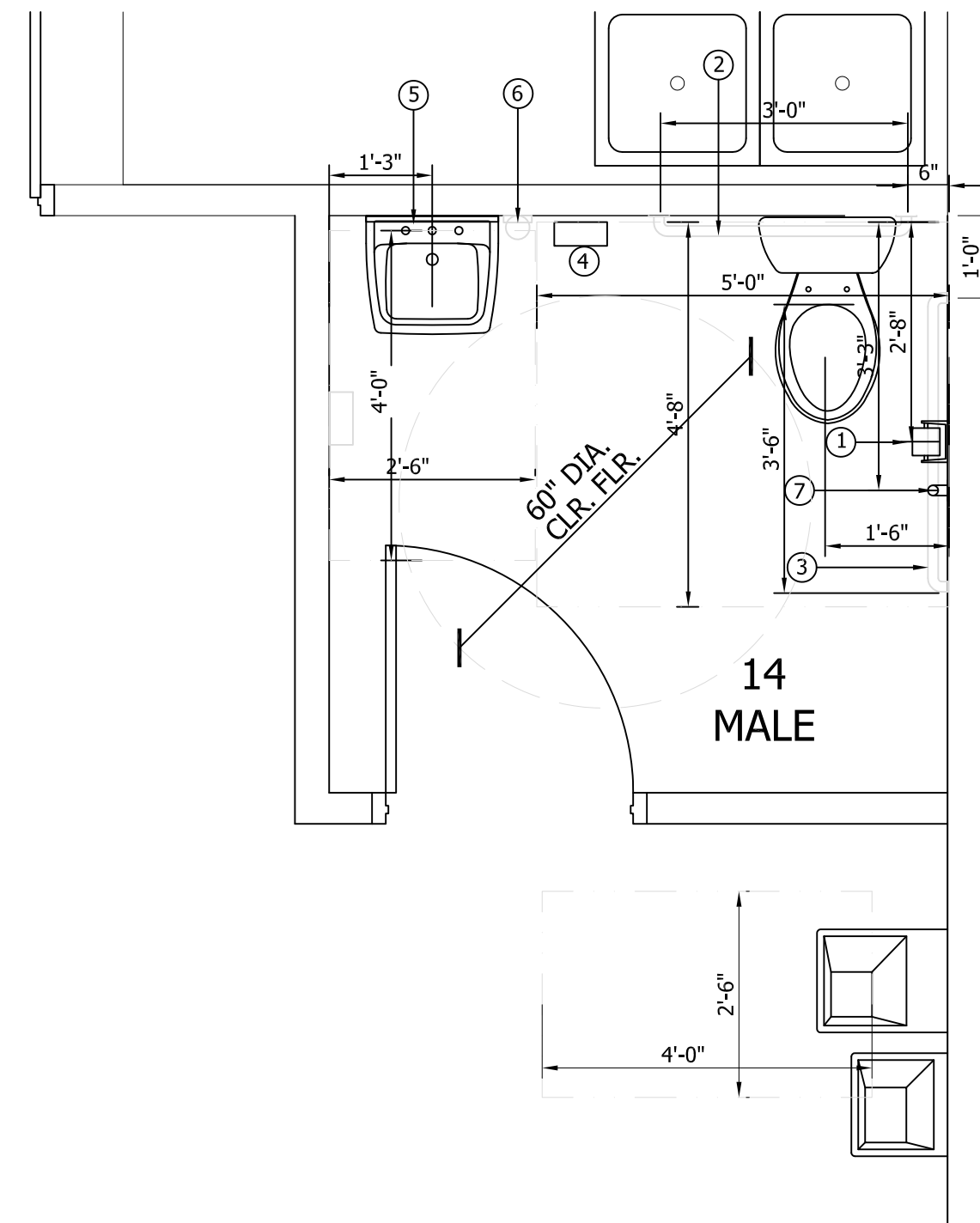


2 INTERIOR PARTITION WALL DETAIL
SCALE: 1/4"=1'-0"

TOILET ROOM ACCESSORIES				
ITEM	QUANTITY	MANUFACTURER / MODEL	MOUNTING HEIGHT	
1 H.C. PAPER HOLDER	1	KIMBERLY-CLARK CORP.-JRT JUNIOR (9597)	2'-6" A.F.F.	
2 36" GRAB BAR	1	BRADLEY #817-00136	2'-9" A.F.F. TO TOP OF BAR	
3 42" GRAB BAR	1	BRADLEY #817-00142	2'-9" A.F.F. TO TOP OF BAR	
4 H.C. TOWEL DISP.	1	KIMBERLY-CLARK- SCOTT FOLD (9.4" towel)	OF TOWEL LOCATION 3'-8" A.F.F.	
5 H.C. MIRROR	1	14X36 GC TO SELECT	ALIGN W/ TOP OF BACK SPLASH	
6 SOAP DISPENSER	1	BRADLEY #6542	ALIGN W/ TOP OF BACK SPLASH	
7 18" VERT. GRAB BAR	1	BRADLEY #817-00136	3'-6" A.F.F. TO BOTTOM OF BAR	



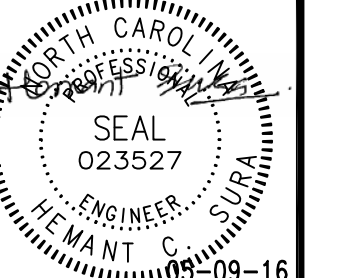
NOTE: G.C. TO PROVIDE BLOCKING IN WALLS FOR ALL WALL MOUNTED GRAB BARS, HAND RAILS, ETC. FOR MIN. 400LB. FORCES



1 TOILET ENLARGE PLAN
SCALE: 1/2"=1'-0"

Inspections
By Calvin Jones at 3:31 pm, May 28, 2016

REVISIONS	BY
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BREEZE BUILDING SERVICES
 312 S. MIAMI BLVD, DURHAM, NC 27703
 TOILET ENLARGED PLAN & DETAILS

DATE:	05-09-16
SCALE:	AS SHOWN
DRAWN:	HCS
JOB:	2014045
SHEET	A3
OF	SHEETS

GENERAL NOTES:

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE CODE, ALL LOCAL AND OTHER APPLICABLE CODES AND CITY OF DURHAM'S REQUIREMENTS.
- ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND SKILLED CRAFTSMEN. THE PLUMBING CONTRACTOR (P.C.) SHALL COORDINATE ALL OF HIS WORK WITH ALL OTHER CONTRACTORS.
- THE PLUMBING PLANS AND SPECIFICATIONS SHALL BE THOROUGHLY REVIEWED PRIOR TO PURCHASING MATERIALS AND INSTALLATION. ALL DISCREPANCIES OR INTERFERENCE SHALL BE BROUGHT TO THE ENGINEERS ATTENTION.
- THESE PLANS ARE DIAGRAMMATIC AND MAY NOT SHOW MINOR DETAILS AND LOCATIONS. FOR DIMENSIONS, REFER TO THE ARCHITECTURAL PLANS.
- THE P.C. SHALL PROVIDE ALL OPENINGS REQUIRED FOR THE PLUMBING WORK. THE PATCHING SHALL BE BY THE P.C. AND FINISHING BY GENERAL CONTRACTOR (G.C.).
- WATER LINES BELOW GRADE SHALL BE TYPE "K" COPPER AND ABOVE GRADE TYPE "L", HARD DRAWN COPPER, SUPPORTED AS REQUIRED, AND SHALL BE HYDROSTATICALLY TESTED FOR TWO HOURS AT 125 PSI. TEST TO COMPLY WITH ALL EPA STANDARDS. THE ENTIRE WATER DISTRIBUTION SYSTEM SHALL BE DISINFECTED PRIOR TO PLACING IN SERVICE. "CPVC" PIPES ARE ACCEPTED IN NON PLENUM AREA SUBJECT TO AHJ APPROVAL.
- COLD WATER PIPING SHALL BE INSULATED WITH 1" GLASS FIBER. HOT WATER PIPING SHALL BE INSULATED WITH 1" GLASS FIBER.
- IF THE WATER PRESSURE EXCEEDS 60 PSI, A PRESSURE REDUCING VALVE SHALL BE INSTALLED WHERE THE WATER ENTERS THE BUILDING AND SHALL BE SET AT 50 PSI.
- THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ELECTRICAL AND CONTROL CONNECTIONS TO THE EQUIPMENT FURNISHED UNDER THE PLUMBING CONTRACT.
- SANITARY SEWER AND VENT LINES SHALL BE P.V.C. WASTE AND VENT PIPE UNDER SLAB AND DWV NO-HUB CI AND /OR DWV COPPER ABOVE SLAB. EXCEPTS FOR CONNECTIONS TO FIXTURES. MINIMUM DRAIN & VENT SIZES ABOVE SLAB SHALL BE 2".
- THE P.C. SHALL COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION OF ANY WORK.
- VERIFY THE LOCATION OF ALL EQUIPMENT SUPPLIED BY OTHERS.
- THE PLUMBING CONTRACTOR SHALL PROVIDE A DIELECTRIC UNION WHEN CONNECTING DISSIMILAR METALS.
- ALL ELECTRICAL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICIAN.
- IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSURE THAT ITEMS TO BE FURNISHED UNDER THIS CONTRACT WILL FIT THE SPACE AVAILABLE. THEY SHALL MAKE NECESSARY FIELD MEASUREMENTS TO ASCERTAIN SPACE REQUIREMENTS, INCLUDING THOSE FOR CONNECTIONS, AND SHALL FURNISH AND INSTALL SUCH SIZES AND SHAPES OF EQUIPMENT THAT ARE THE TRUE INTENT AND MEANING OF THE DRAWINGS AND SPECIFICATIONS.
- LAYOUT ALL UNDERGROUND PLUMBING AND SET GRADES TO AVOID FOOTING CONFLICTS.
- THE CONTRACTOR SHALL PROVIDE AND INSTALL HIS OWN SUPPORT DEVICES. ALL LOCATIONS SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND OTHER PRIME CONTRACTORS PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL USE FIRE RATED SLEEVES IN ALL LOCATIONS WHERE PENETRATIONS OF RATED WALLS AND FLOORS ARE MADE. ALL OPENINGS WILL BE MADE FIREPROOF.
- ALL NEW UNDERGROUND WATER PIPING SHALL BE INSTALLED BELOW THE FROST LINE BUT NOT LESS THAN 24" BELOW FINISHED GRADE TO PIPE CROWN.
- ALL VENT LINES SHALL SLOPE UP TO VENT THROUGH ROOF. VENT THROUGH ROOF SHALL BE 10'-0" MINIMUM FROM ANY FRESH AIR INTAKES.
- ALL WASTE STACKS & VENT SHALL HAVE A CLEANOUT AT THE BASE OF THE STACK. COORDINATE LOCATION OF CLEANOUTS WITH CASEWORK.
- HORIZONTAL DRAINAGE AND WASTE PIPING SHALL HAVE A MINIMUM SLOPE OR FALL OF 1/8" PER FOOT FOR SIZES GREATER THAN OR EQUAL TO 3" AND A MINIMUM SLOPE OF FALL OF 1/4" PER FOOT FOR SIZES LESS THAN 3".
- PROVIDE MANUAL SHUTOFF VALVES AT EACH BRANCH LINE OF ALL WATER PIPING.
- PROVIDE ISOLATION VALVES AT ALL FIXTURES.
- SEE ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHTS OF PLUMBING FIXTURES.
- CONTRACTOR SHALL BE REQUIRED TO COMPLETELY ROD AND FLUSH OUT ALL SANITARY WASTE LINES AFTER BUILDING IS COMPLETED.
- PROVIDE CHROME ESCUTCHEON RINGS AT ALL EXPOSED CEILING AND WALL PENETRATION.
- PROVIDE THERMOSTATIC MIXING VALVE FOR ALL WATER HEATERS SERVING BATHROOM GROUPS.

PLUMBING FIXTURE SCHEDULE

- P-1 Water Closet floor mounted
 a. Type: Floor Mounted, vitreous china, Dual Flush, 1.6/1.0 gpf, Tank Type, Standard Height
 b. Mfg: American Standard Model No. 2887.216
 c. Seat: Elongated, closed front toilet seat cover, stainless steel hinge
 d. Mtg height: 15" measured to the top of seat above finished floor.
- P-1A Water Closet floor mounted (ADA)
 a. Type: Floor Mounted, vitreous china, Dual Flush, 1.6/1.0 gpf, Tank Type, ADA Height
 b. Mfg: American Standard Model No. 2886.216
 c. Seat: Elongated, closed front toilet seat cover, stainless steel hinge
 d. Mtg height: 17" measured to the top of seat above finished floor.
- P-2 Wall Lavatory
 a. Type: Wall Hung, 4" centers, oval, 20" x 18", vitreous china, self rimming
 b. Mfg: Zurn type-Z5344
 c. Faucet: Zurn AquaSpecs Z86300 0.25 GPC polished chrome-plated, slow closing metering faucet with 4" long integral cast spout, and vandal resistance ADA compliant color coded brass handles and easy adjustable cycle time.
 d. Drain: Chrome plated grid strainer with 1 1/4" tailpiece. Sloan model No. ETF-460-A.
 e. Trap: Zurn series 8700; 1 1/4" x 1 1/2" 17 ga. Tubular adjustable p-rap, polished chrome.
 f. Supplies: 2" x 3/8" polished chrome wheel handle stops with 3/8" O.D. chrome plated flex riser and escutcheon.
 g. Mtg. Height: Coordinate with Architect prior to rough in
 h. Furnish with Handi-Lav-Guard Kit No. 102, p-trap insulation, cold and hot water angle stop insulation and fasteners.
- P-2A Wall Lavatory
 a. Type: Wall Hung, 4" centers, oval, 20" x 18", vitreous china, self rimming
 b. Mfg: Zurn type-Z5344
 c. Faucet: Zurn AquaSpecs Z86300 0.25 GPC polished chrome-plated, slow closing metering faucet with 4" long integral cast spout, and vandal resistance ADA compliant color coded brass handles and easy adjustable cycle time.
 d. Drain: Chrome plated grid strainer with 1 1/4" tailpiece. Sloan model No. ETF-460-A.
 e. Trap: Zurn series 8700; 1 1/4" x 1 1/2" 17 ga. Tubular adjustable p-rap, polished chrome.
 f. Supplies: 2" x 3/8" polished chrome wheel handle stops with 3/8" O.D. chrome plated flex riser and escutcheon.
 g. Mtg. Height: Coordinate with Architect prior to rough in (for ADA 34" AFF)
 h. Furnish with Handi-Lav-Guard Kit No. 102, p-trap insulation, cold and hot water angle stop insulation and fasteners.
- P-3A Urinal
 a. Type: Wall hung, flushometer valve, vitreous china, ADA Compliant, top spud outlet, 1/8 gpf
 b. Mfg: Zurn Commercial Brass type: Z5708.234.00
 c. Flush Valve: Manual
 e. Provide alternate price for battery operated valve.
- P-4 Janitor Sink
 a. Type: Floor mounted, pre cast terrazzo, 24"x24", 3" strainer, stainless steel caps on all curbs.
 b. Mfg: Flat No. TSB-200 OR Muteeje-63M
 c. Faucet: Polished Chrome, wall mounted pull hook, wall brace, vacuum breaker, integral stops, 1.0 gpm
 d. Mfg: T & S Brass model No. B-665 B5TP
 e. Trap: 3" cast iron p-trap
 f. Accessories: Bumper Guard Flat No. E77-AA, hose and hose bracket No. 832-AAP-8 or equal by Muteeje
- P-5 Washer
 By the Owner. Furnish and install recessed 20 Gauge Box and 20 gauge Faceplate Guy Gray washing machine outlet box. Washing Machine outlet box shall be furnished with 2 1/2" MIP/Sweat, Pex or CPVC connection valves and a 1 1/2" or 2" Threaded drain fitting and locknut as mfr; by Guy Gray model: B200T5 or equal. Provide with water hammer arrester.
- P-6 Water Fountain (Electric Water Cooler)
 a. Type: Wall hung, high/low unit with 8.0 gpd capacity of 50°F water with inlet temperature of 80°F and room temperature of 90°F, 370 watts, 4.0A, 115V air cooled condenser
 b. Mfg: Elkay Model: EZ5TL8C
 c. Supply: 2" x 3/8" O.D. sweat angle stop
 d. Trap: 1 1/4" x 1 1/2" 17 ga. Tubular adjustable p-rap, polished chrome.
 e. Mtg. Height: Coordinate with Architect prior to rough in.
 f. Carrier: furnish with mounting bracket
- P-7 Hose Bib (exterior application)
 a. Type: Non Freeze, exposed, self draining, wall faucet, anti contamination, 3/4" male hose connection, anti-siphon vacuum breaker, brass construction, chrome plated, inlet connection 3/4".
 b. Mfg: MIFAB MHY-10P-5
- P-8 Emergency Eye Wash Station
 Mfr: Haw Model : 7360BTWC
 Barrier free emergency eye/face wash head assembly equipped with 50x50 mesh water strainer and pop off dust cover. Pre-built assembly, fully water pressure tested.
- P-9 Countertop Lavatory (1 Bowl)
 a. Type: Stainless steel, undermount, 4 hole faucet punching, single bowl, 19 5/8" x 19 5/8" x 9 3/4"
 b. Mfr: Kohler type- Undertone K-3335
 c. Faucet: Delta model 978, Ieland kitchen pull down, chrome finish, 1.0 gpm
 d. Spout type: high Arc pull down swivel 360 deg.
 e. Strainer: Delta model 720110
- P-10 Countertop Lavatory (2 Bowls)
 a. Type: Countertop, 4" centers, oval, 20" x 18", vitreous china, self rimming
 b. Mfg: Zurn type-Z5220
 c. Faucet: Zurn AquaSpecs Z86300 0.25 GPC polished chrome-plated, slow closing metering faucet with 4" long integral cast spout, and vandal resistance ADA compliant color coded brass handles and easy adjustable cycle time.
 d. Drain: Chrome plated grid strainer with 1 1/4" tailpiece. Sloan model No. ETF-460-A.
 e. Trap: Zurn series 8700; 1 1/4" x 1 1/2" 17 ga. Tubular adjustable p-rap, polished chrome.
 f. Supplies: 2" x 3/8" polished chrome wheel handle stops with 3/8" O.D. chrome plated flex riser and escutcheon.
 g. Mtg. Height: Coordinate with Architect prior to rough in (for ADA 34" AFF)
 h. Furnish with Handi-Lav-Guard Kit No. 102, p-trap insulation, cold and hot water angle stop insulation and fasteners.
- P-11 Refrigerator
 By the Owner. Furnish and install ice machine box as mfr. by Guy Gray model: B1M875.
- Dryer
 By the Owner. Furnish and provide dryer exhaust box, 22G, Aluminum steel, as mfr by Guy Gray model 425.
- Wall Cleanout
 a. Type: Cast iron clean out tee with brass plug and round vandal proof access cover.
 b. Mfg: Wade series 8400

WATER HEATER SCHEDULE

TANK TYPE LOW BAY WATER HEATER (WH-1)
 Electric, 4500W dual element, simultaneous, 208V, 1 phase, UL listed, complete w/ expansion tank, T&P valve, drain etc., recovery capacity-45 GPH @ 80 degree F temp. rise, 50 U.S. Gallon tank capacity, wall hung with structural supports, provide drain pan, mounting brackets and accessories for complete installation.
 Mfg: A.O.Smith Model: DEN-52

PLUMBING FIXTURE CONNECTION SCHEDULE

SYMBOL	FIXTURE	CW	HW	WASTE	VENT	REMARKS
P-1	WATER CLOSET	1"	-	3"	2"	
P-1A	WATER CLOSET (ADA)	1"	-	3"	2"	
P-2, P-2A	LAVATORY	1/2"	1/2"	2"	1 1/4"	
P-3A	URINAL (ADA)	1/2"	-	3"	1 1/4"	
P-4	JANITOR (MOP) SINK	1/2"	1/2"	2"	2"	
P-5	WASHER	1/2"	1/2"	2"	1 1/4"	
P-6	WATER FOUNTAIN	1/2"	-	2"	1 1/4"	
P-7	HOSE BIB (EXTERIOR)	3/4"	-	-	-	
P-8	EYE WASH	1/2"	1/2"	-	-	
P-9	COFFEE SINK	1/2"	1/2"	2"	1 1/4"	
P-10	KITCHEN 2-COMP SINK	1/2"	1/2"	2"	1 1/4"	
P-11	REFRIGERATOR	3/8"	-	-	-	
P-12	COFFEE MAKER	3/8"	-	-	-	

LEGEND

	SANITARY SEWER PIPING
	VENT PIPING
	COLD WATER PIPING
	HOT WATER PIPING
	GATE VALVE

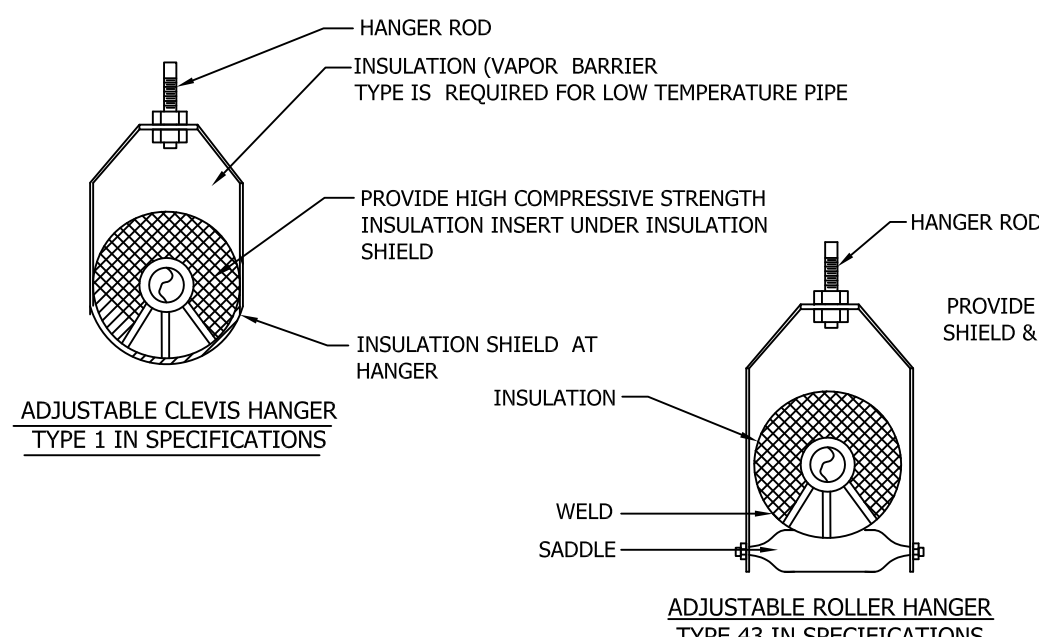
ABBREVIATIONS

VTR	VENT THRU ROOF
W	WASTE
V	VENT
HW	HOT WATER
CW	COLD WATER
P (X)	PLUMBING FIXTURE
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FS	FLOOR SINK
GW	GREASE WASTE
GPM	GALLONS PER MINUTE
PSI	POUNDS PER SQUARE INCH
KW	KILOWATTS
V	VOLTS
W	WATTS

PLUMBING LOAD CALCULATIONS

Fixture Designation	Fixture	Occupancy	Type of Supply Control	Quantity	F.U. Cold	F.U. Cold Total	F.U. Hot	F.U. Hot Total	Water F.U./FIX	Water F.U. Total	F.U. Waste	F.U. Waste Total
P-1, P-1A	Water closet-ADA	Public	Flush Tank	6.00	5.00	30.00	0.00	0.00	5.00	30.00	4.00	24.00
P-2, P-2A	Lavatory-ADA	Public	Faucet	3.00	0.50	1.50	0.50	1.50	0.75	2.25	1.00	3.00
P-3A	Urinal	Public	1/4" Flush Valve	1.00	5.00	5.00	0.00	0.00	5.00	5.00	2.00	2.00
P-4	Service Sink	Private	Mixing valve	1.00	2.25	2.25	2.25	3.00	3.00	2.00	2.00	2.00
P-5	Washer	Private	Automatic	1.00	1.00	1.00	1.00	1.00	1.40	1.40	2.00	2.00
P-6	Water Cooler	Public	Mixing valve	1.00	0.50	0.50	0.50	0.50	1.40	1.40	1.00	1.00
P-9	Coffee Sink	Private	Faucet	1.00	0.50	0.50	0.50	0.50	0.75	0.75	1.00	1.00
P-10	Kitchen Sink	Private	Faucet	1.00	0.50	0.50	0.50	0.50	0.75	0.75	1.00	1.00
F.U. Cold Sub-Total					41							
F.U. Hot Sub-Total					6							
F.U. Water Sub-Total								45			WFU	
F.U. Waste Sub-Total											36	FU

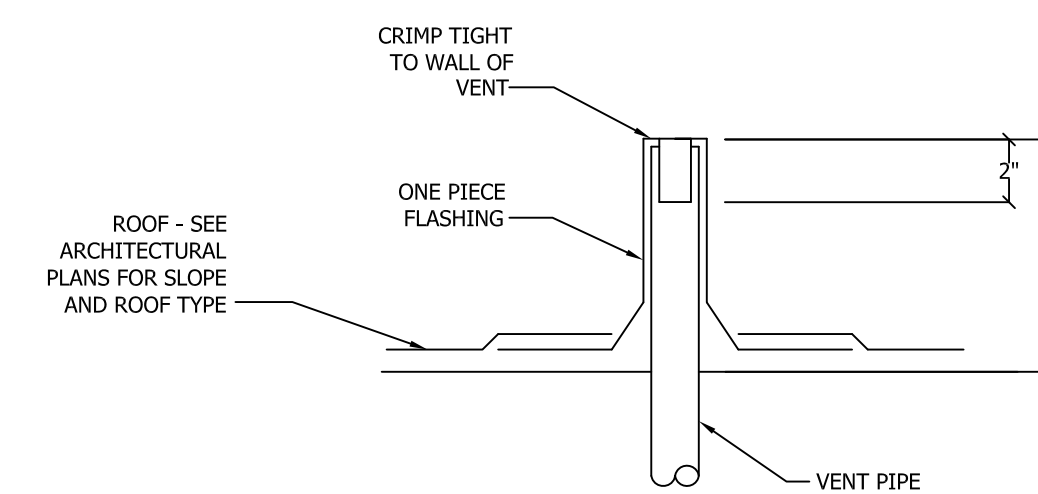
WATER DEMAND IN GPM/(FLUSH TANK) = 27.7 GPM
 MINIMUM WATER PIPE SIZE (AT SERVICE ENTRANCE) = 1 1/4"
 EXISTING WATER SERVICE IS 2" (WELL PUMP)
 MINIMUM WASTE PIPE = 4" (EXISTING SEPTIC SYSTEM)
 BASED ON 1/8" SLOPE PER FOOT



NOTE:
 ALL PIPING INSTALLATION SUPPORTS, HANGERS AND GUIDES MUST CONFORM TO VOLUME I - GENERAL CONSTRUCTION, SECTION 1607.6 OF THE NORTH CAROLINA STATE BUILDING CODE FOR EARTHQUAKE LOAD RESISTANCE.

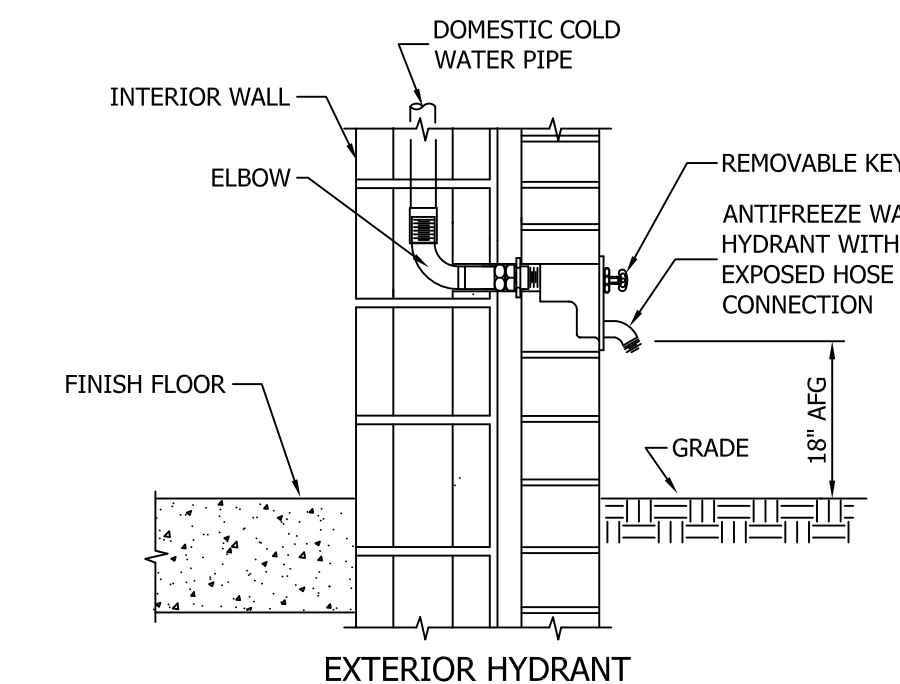
5 PIPING HANGERS DETAIL

SCALE: NTS



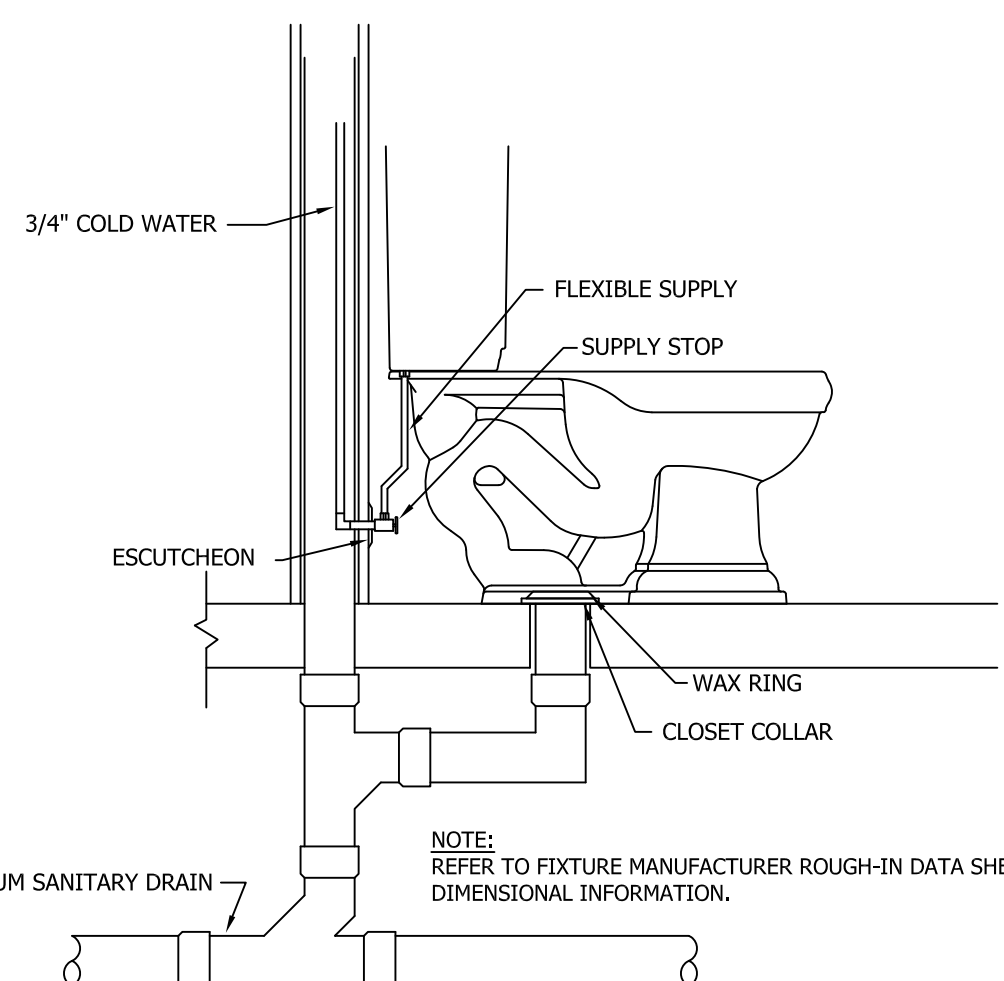
6 VENT THRU ROOF DETAIL

SCALE: NTS



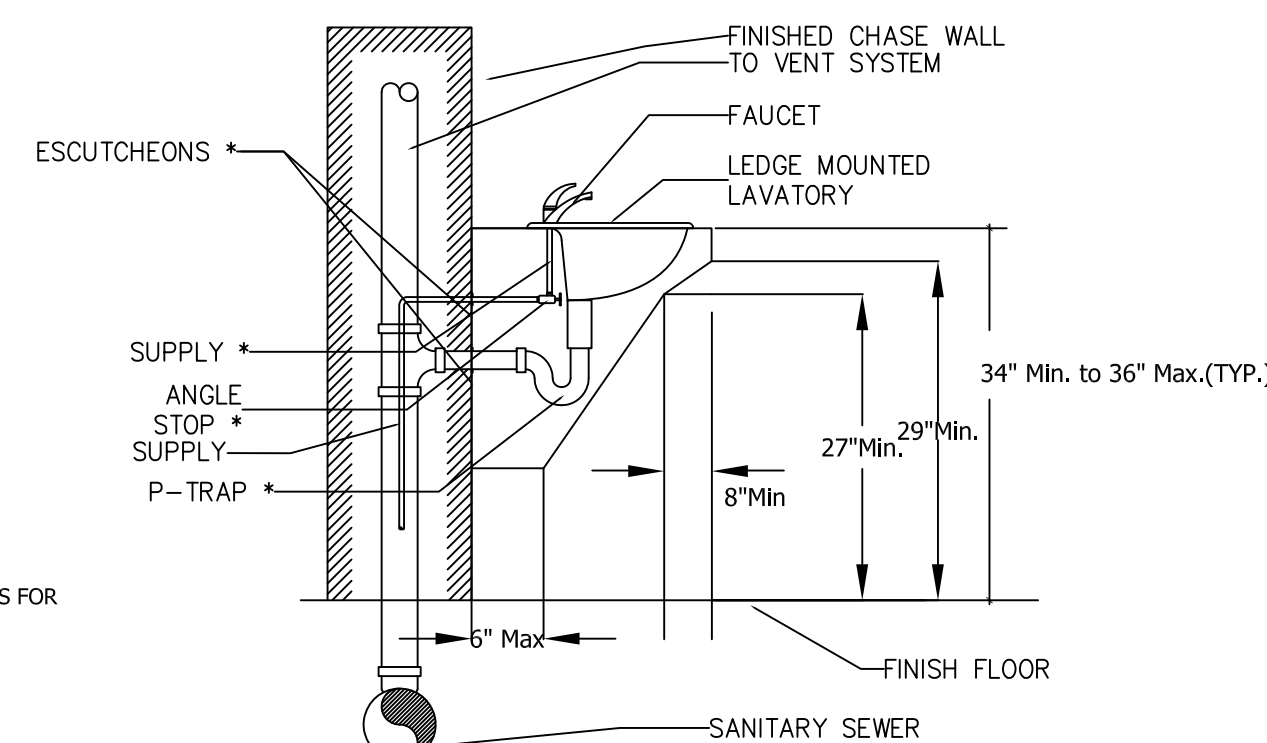
7 RECESSED WALL HYDRANT DETAIL

SCALE: NTS



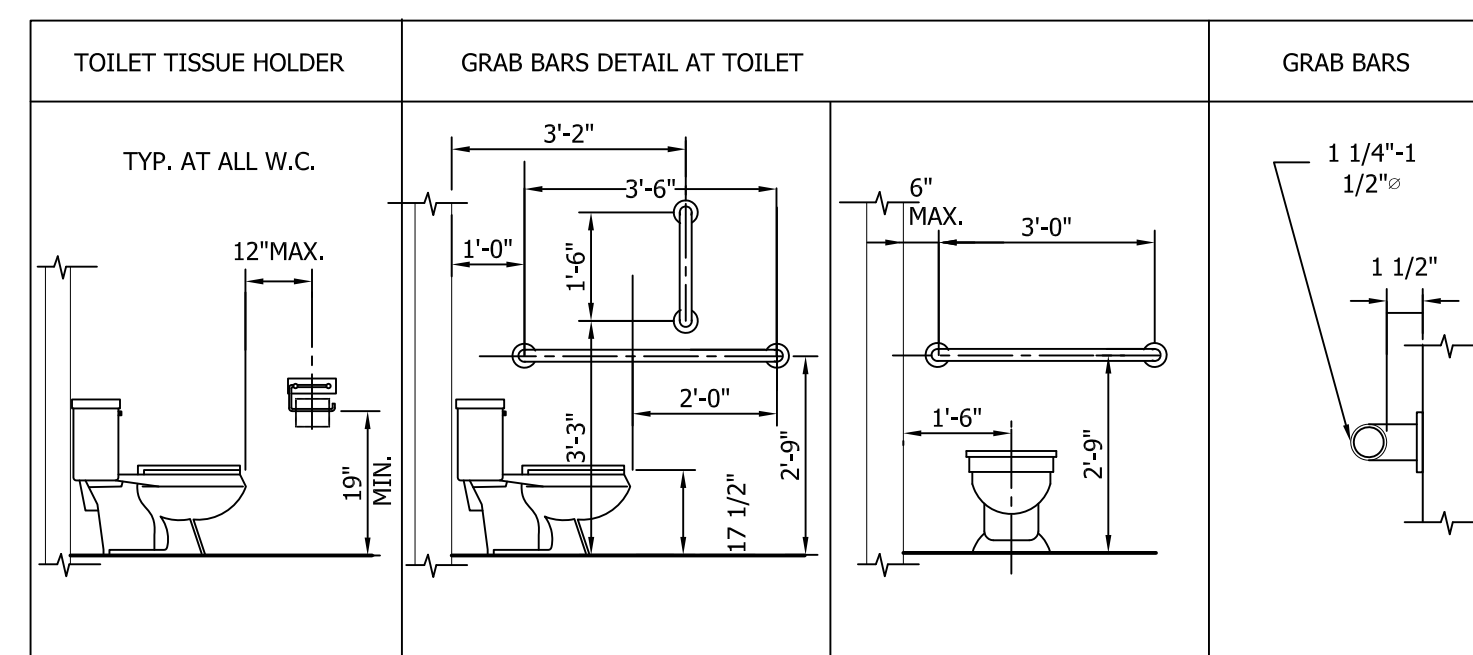
1 FLOOR MTD. WATER CLOSET DETAIL

SCALE: NTS



2 LAVATORY DETAIL

SCALE: NTS

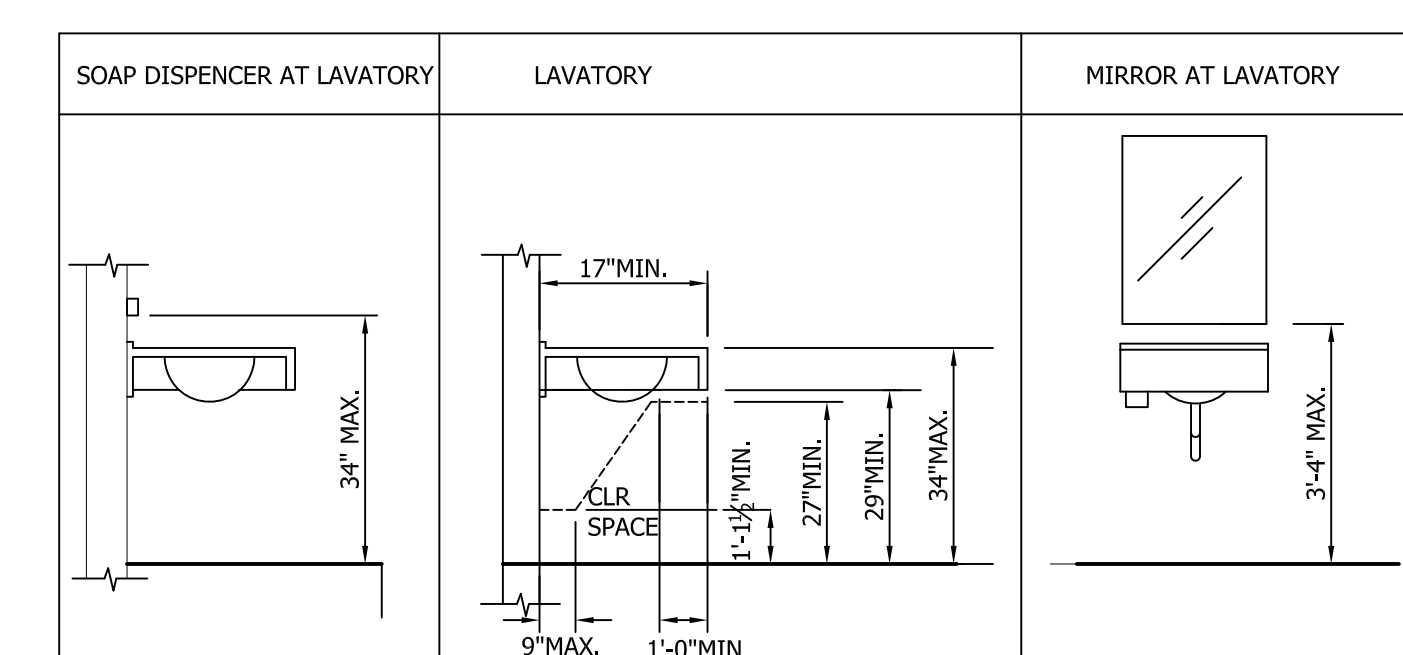


NOTE:
 MOUNTING HEIGHT FROM FINISHED FLOOR TO HIGHEST OPERABLE CONTROL

3 WATER CLOSET ACCESSORY MOUNTING DETAIL

SCALE: NTS

(TYPICAL FOR HANDICAP UNIT)



NOTE:
 MOUNTING HEIGHT FROM FINISHED FLOOR TO HIGHEST OPERABLE CONTROL

4 LAVATORY ACCESSORY MOUNTING DETAIL

SCALE: NTS

REVISIONS	BY
R1	06-16-14

SEAL	023527
REGISTERED PROFESSIONAL ENGINEER	
STATE OF NORTH CAROLINA	
EXPIRES 09-09-16	

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BREEZE BUILDING SERVICES

312 S. MIAMI BLVD, DURHAM, NC 27703

PLUMBING COVERSHEET

DATE: 05-09-16

SCALE: AS SHOWN

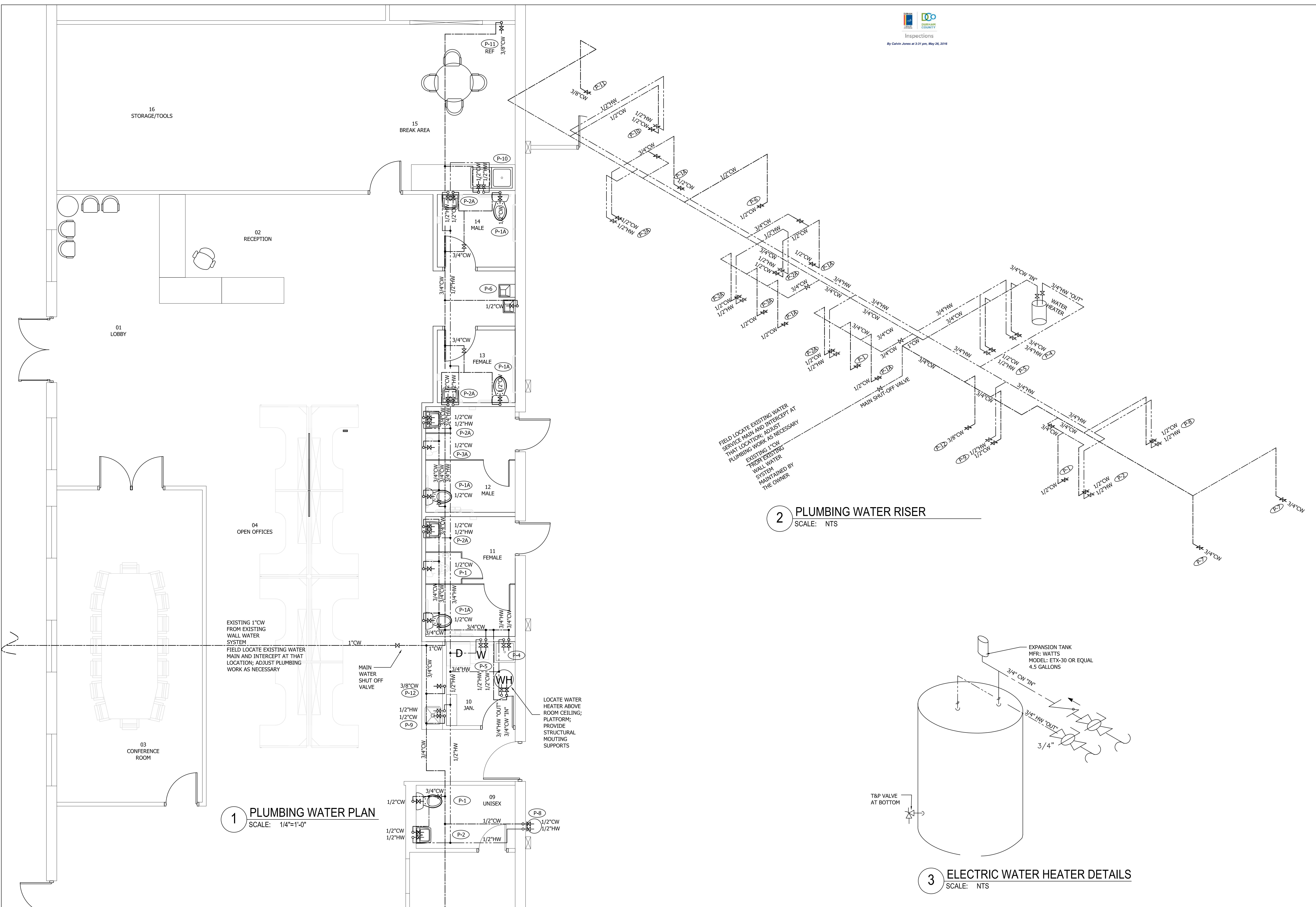
DRAWN: HCS

JOB: 2014045

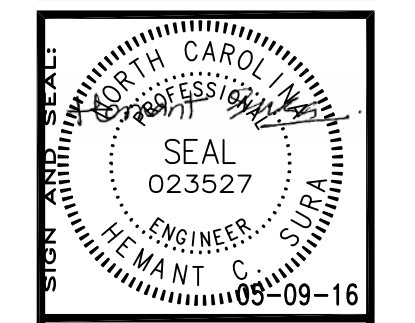
SHEET

P1

OF SHEETS



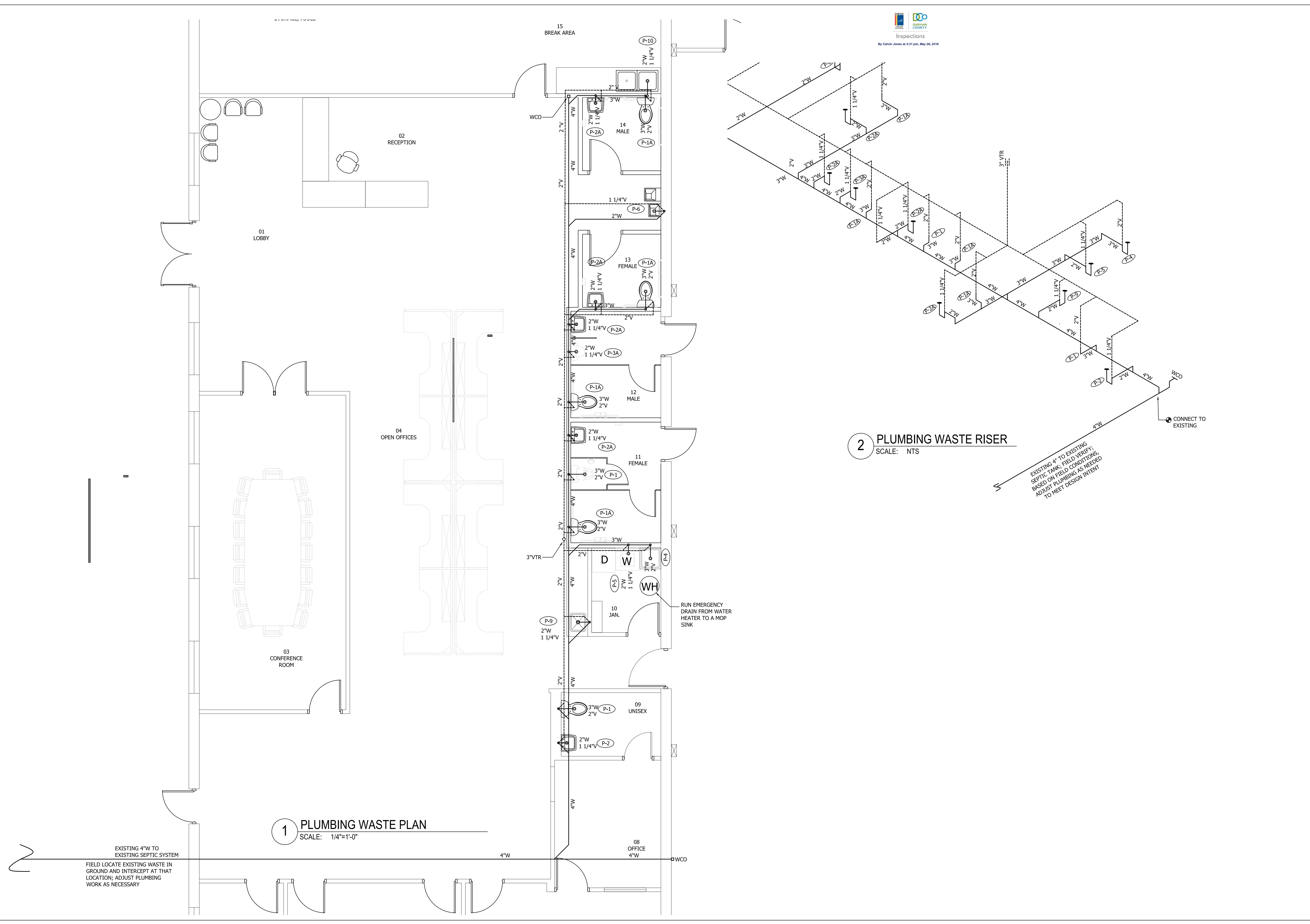
REVISIONS	BY
R1 06-16-14	HS



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BREEZE BUILDING SERVICES
 312 S. MIAMI BLVD, DURHAM, NC 27703
 PLUMBING WATER PLAN & RISER

DATE:	05-09-16
SCALE:	AS SHOWN
DRAWN:	HCS
JOB:	2014045
SHEET	P2
OF	SHEETS



1 PLUMBING WASTE PLAN
SCALE: 1/4"=1'-0"

2 PLUMBING WASTE RISER
SCALE: NTS

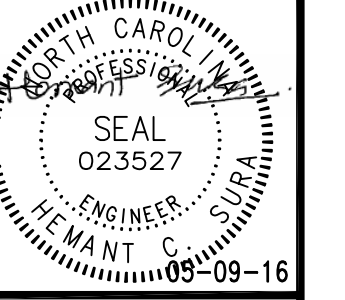
EXISTING 4"W TO
EXISTING SEPTIC SYSTEM
FIELD LOCATE EXISTING WASTE IN
GROUND AND INTERCEPT AT THAT
LOCATION; ADJUST PLUMBING
WORK AS NECESSARY

EXISTING 4" TO EXISTING
SEPTIC TANK; FIELD VERIFY;
BASED ON FIELD CONDITIONS,
ADJUST PLUMBING AS NEEDED
TO MEET DESIGN INTENT

RUN EMERGENCY
DRAIN FROM WATER
HEATER TO A MOP
SINK

Inspections
By Calvin Jones at 3:31 pm, May 26, 2016

REVISIONS	BY
R1 06-16-14	HS



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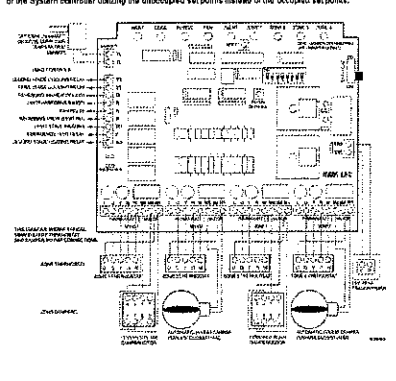
BREEZE BUILDING SERVICES
312 S. MIAMI BLVD, DURHAM, NC 27703
PLUMBING WASTE PLAN & RISER

DATE:	05-09-16
SCALE:	AS SHOWN
DRAWN:	HCS
JOB:	2014045
SHEET	P3
OF	SHEETS

AHU-2 SEQUENCE OF OPERATION

- Sequence of Operation**
- A. Occupied Mode:**
- Fan Operation:** If the fan mode is configured to "ON", the system will operate continuously. If the fan mode is configured to "AUTO", the fan will start with a call for fresh air supply or heating and continue to operate for up to 30 seconds after the mode has been satisfied.
 - Cooling Operation Staging Control:** The Monitor will receive most all associated zone temperature demand. System mode shall be determined by zones with cooling demands. 1°F above the cooling setpoint. The Monitor shall request a system cooling mode and all zones requiring cooling shall remain in a stand alone mode. All zones requiring heating shall be closed. Minimum outdoor air shall remain in a stand alone mode. If a system cooling demand greater than heat, the Monitor shall engage a stage on cooling. All zones requiring heating shall operate their zone dampers, corresponding to their space temperature demand.
 - Changover Operation:** The Monitor shall stage a standard heating and cooling thermostat for each zone to identify zone in call for heating or cooling. When opposite calls (heat/cool) are made from different zones, the Monitor shall stage the first call. Once the first call is satisfied, or a maximum of 30 minutes elapses from the start of an opposite call, the Monitor shall allow to operate opposite call. Automatic changeover thermostats can also be used to provide automatic zone changeover.
 - Heating Operation Staging Control:** The Monitor will receive most all associated zone temperature demand. System mode shall be determined by zones with heating demands. 1°F above the heating setpoint. The Monitor shall request a system heating mode and all zones requiring heating shall remain in a stand alone mode. All zones requiring cooling shall be closed. Minimum outdoor air shall remain in a stand alone mode. If a system heating demand greater than cooling, the Monitor shall engage a stage on heating. All zones requiring heating shall operate their zone dampers, corresponding to their space temperature demand.
 - Unoccupied Mode:**
 - The system shall operate in a system auto pressure set point by operation of a bypass damper. The bypass damper shall be operated automatically to maintain the required outdoor air.
 - The system shall operate in a system auto pressure set point by operation of a bypass damper. The bypass damper shall be operated automatically to maintain the required outdoor air.
- B. Unoccupied Mode:**
- Fan Operation:** If the fan mode is configured to "ON" or "AUTO" the system fan will be staged on with first stage cooling or heating calls. If the fan mode is configured to "OFF", the system fan will be released when the system demand has been satisfied.
 - Cooling Operation Staging Control:**
 - Heating Operation Staging Control:**

All control of HVAC equipment will follow the same operation as in the occupied mode with the exception of the system fan which will follow the unoccupied mode unless otherwise noted.



SPLIT SYSTEM HEAT PUMP SCHEDULE

UNIT DESIGNATION	HP-1/AHU-1		HP-2/AHU-2	
	7.5 TON	5.0 TON	7.5 TON	5.0 TON
DESIGN CONDITIONS	BASIS OF DESIGN FRAME MODEL	TW500D3	TW500D3	TW500D3
	SWAMMER OUTSIDE DRY BULB	95°F	95°F	95°F
	SWAMMER OUTSIDE WET BULB	75°F	75°F	75°F
	Cooling EAT DB (F)	80°F	80°F	80°F
	Cooling EAT WB (F)	67°F	67°F	67°F
COOLING DATA	TOTAL COOLING MBH	97.4	57.5	
	SENSIBLE MBH	89.4	44.9	
	SEER RATING	13	13	
	FEER RATING	11	11	
	EFFICIENCY	0.96	0.96	
HEATING DATA	EAT (F)	68°F	68°F	
	LAT (F)	112°F	112°F	
	HEATING MBH	82	55	
	ELECTRIC HEAT MODEL #	BAVHTRL325A	BAVHTRL315A	
	SUPPLEMENTAL HEAT	18.72 KW	38.35 KW	
FAN DATA	MAX. SUPPLY FAN CFM	3000	2000	
	E.S.P. INCHES OF H2O	0.3	0.3	
	DESIGN SUPPLY CFM	2890	1800	
	DESIGN OUTSIDE AIR CFM	500	250	
	ELECTRICAL DATA	FAN FLA	5.3	2.5
HEATER FLA		81.96	38.2	
MINIMUM CIRCUIT AMPS (MCA)		71.5	42.2	
MVCP		80	45	
SYSTEM VOLTAGE		208	208	
PHYSICAL DATA	HEIGHT IN INCHES	54.0625	61.71875	
	WIDTH IN INCHES	45.125	23.5	
	DEPTH IN INCHES	25.5	21.8125	
	WEIGHT IN LBS	323	159	
	GENERAL DATA	MODEL #	TW409D3	TW407D3
REFRIGERANT		R410A	R410A	
GAS LINE SIZE		1 3/8"	7/8"	
LIQUID LINE SIZE		1/2"	3/8"	
CONDENSATE DRAIN		1"	1"	
ELECTRICAL DATA	COMPRESSOR FLA	25	22.4	
	OUTDOOR FAN FLA	3.1	3.1	
	MINIMUM CIRCUIT AMPS (MCA)	34.4	31.1	
	MVCP	45	40	
	SYSTEM VOLTAGE	208	208	
PHYSICAL DATA	HEIGHT IN INCHES	39.1875	39.1875	
	WIDTH IN INCHES	42.125	42.125	
	DEPTH IN INCHES	33.8125	33.8125	
	WEIGHT IN LBS	328	248	

MATERIALS AND EQUIPMENT

- DUCTWORK:**
ALL SHEET-METAL DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED STEEL SHEETS IN ACCORDANCE WITH SMACNA GAGES AND STANDARDS. DUCT SHALL BE CONSTRUCTED FOR 1" STATIC PRESSURE AND SEALED TO SMACNA CLASSIFICATION "B". INSULATE ALL CONCEALED DUCTWORK UNLESS OTHERWISE NOTED WITH FOIL-FACED 1/2" DENSITY FIBERGLASS DUCT WRAP. INSULATION R-VALUE SHALL BE PER 2012 NC ENERGY CODE.
- SPIRAL DUCT:**
ALL SPIRAL DUCT AND FITTINGS SHALL BE MANUFACTURED FROM G-60 GALVANIZED STEEL MEETING ASTM A924 AND A653 REQUIREMENTS.
ALL SPIRAL DUCT AND FITTINGS SHALL BE PAINT REDDY.
SPIRAL DUCT SHALL BE DOUBLE WALL WITH INNER LINES A PERFORATED METAL. DOUBLE WALL DUCT SHALL BE CONSTRUCTED OF AN OUTER SHELL, A 1" THICK LAYER OF FIBERGLASS INSULATION AND AN INNER METAL LINER.
- FLEXIBLE DUCT:**
SHALL BE INSULATED, SOUND ATTENUATING, LOW VELOCITY TYPE AND SHALL COMPLY WITH NEPA 90A AND 90B. FLEXIBLE DUCT SHALL BEAR THE UL CLASS 1 AIR DUCT LABEL AS TESTED UNDER UL 181. FLEXIBLE DUCT SHALL BE FACTORY-FORMED, COMPOSED OF SPIRAL WOUND CORROSION RESISTANT WIRE BONDED TO AN INNER FABRIC LINER. DUCT SHALL BE FACTORY INSULATED WITH A FOIL VAPOR BARRIER JACKET. INSULATION R-VALUE SHALL BE PER 2012 NC ENERGY CODE.
THE INSTALLATION OF FLEX DUCT SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 3 OF THE SMACNA HANGING DUCT CONSTRUCTION STANDARDS, SECOND EDITION (1996). BENDS IN FLEXIBLE DUCT SHALL NOT BE LESS THAN TWO DUCT DIAMETERS CENTERLINE RADIUS AND BENDS SHALL NOT BEGIN WITHIN THREE INCHES OF A SHEET METAL CONNECTION. DUCT SHALL NOT BE COMPRESSED, SUPPORT DUCT FROM STRUCTURE AT INTERVALS NOT TO EXCEED TEN FEET. MAXIMUM PERMISSIBLE SAG IS 1/2 INCH PER FOOT OF SPACING BETWEEN SUPPORTS. HANGER OR SADDLE MATERIAL IN CONTACT WITH THE DUCT SHALL BE WIDE ENOUGH SO THAT IT DOES NOT REDUCE THE INTERNAL DIAMETER OF THE DUCT WHEN THE SUPPORTED SECTION RESTS ON THE SUPPORT AND IN NO CASE SHALL BE LESS THAN 1" WIDE.
- DUCT ELBOWS:**
USE FULL-RADIUS ELBOWS OR SQUARE WITH TURNING VANES.
- SYSTEM BALANCING:**
PROVIDE LOCKING QUADRANT TYPE MANUAL VOLUME DAMPER AT EACH FLEXIBLE DUCT RUNOUT. PROVIDE SPLATTER DAMPERS AT SUPPLY TEES AND EXTRACTORS AT ALL SUPPLY AIR BRANCHES. PROVIDE BALANCING DAMPERS IN ALL DUCTS WHERE REQUIRED FOR SYSTEM BALANCING AS SHOWN OR AS REQUIRED.
- AIR DISTRIBUTION:**
PROVIDE ALL GRILLES, REGISTERS, AND DIFFUSERS PER THE SCHEDULE ON THE DRAWINGS.
- FLEXIBLE DUCT CONNECTIONS:**
FURNISH AND INSTALL FLEXIBLE DUCT CONNECTORS ON SUPPLY AND RETURN CONNECTIONS OF ALL AIR HANDLING UNIT.
- HVAC EQUIPMENT:**
ALL EQUIPMENT SHALL BEAR THE UL, CSA, MET OR OTHER ACCREDITED TESTING LABORATORY LABEL WHERE APPROPRIATE. ALL EQUIPMENT SHALL CONFORM TO THE TYPE, SIZE, RATING, AND PERFORMANCE OF THAT LISTED ON THE DRAWING UNDER THIS CONTRACT. SUBMIT SHOP DRAWING PER THE SPECIFICATIONS.
- CONDENSATE LINES:**
PROVIDE CONDENSATE DRAIN FROM HVAC UNIT TO OUTSIDE. PROVIDE ALL PIPING AND FITTINGS NECESSARY. CONDENSATE DRAIN SHALL BE A MINIMUM OF 1" DIA. PVC. A P-TRAP SHALL BE INSTALLED IN ALL CONDENSATE DRAIN LINES FOR ALL AIR HANDLING UNITS. PROVIDE CONDENSATE LINES RUN ALONG ABOVE CEILING AND DROP DOWN AND TIE TO THE BUILDING ROOF LEADERS.
- REFRIGERANT LINES:**
PROVIDE REFRIGERANT LIQUID LINES AS RECOMMENDED BY THE MANUFACTURER. PROVIDE 1" WALL THICKNESS INSULATION, ARMSTRONG ARMAFLEX FOR REFRIGERANT PIPES.

OUTDOOR AIR VENTILATION REQUIREMENTS

BASED ON NORTH CAROLINA MECHANICAL CODE TABLE 403.3 FOR MINIMUM OUTDOOR VENTILATION AIR

HVAC UNIT	AREA SERVED	SQUARE FOOT	TYPE OF OCCUPANCY	OCCUPANT LOAD	PER SQ. FT.	OCCUPANTS	CFM REQ. PER PERSON	CFM REQ. PER SQ. FT.	TOTAL OUTSIDE AIR CFM REQ.
AHU-1	OPEN OFFICES	1500	BUSINESS	5	1000	8	10	0.09	165
	BREAK ROOM	700		50	1000	35	5	0.06	217
	RECEPTION	350		30	1000	11	5	0.06	74
									TOTAL CFM REQUIRED: 456
									TOTAL CFM PROVIDED: 600
AHU-2	CONFERENCE ROOM	440	BUSINESS	50	1000	22	5	0.08	190
	OFFICES	500		5	1000	3	10	0.06	66
									TOTAL CFM REQUIRED: 256
									TOTAL CFM PROVIDED: 300

EXHAUST FAN SCHEDULE

TAG	LOCATION	TYPE	FAN TYPE	CFM	E.S.P. IN. WG.	RPM	DRIVE	HP / WATTS	VOLTS	PHASE	REMARKS
EF-1	BATHROOM CEILING	GREENHECK SP-A110 OR EQUAL	CEILING IN LINE CABINET	75	0.25	950	DIRECT	49W	120	1	①②
EF-2	BATHROOM CEILING	GREENHECK SP-A110 OR EQUAL	CEILING IN LINE CABINET	75	0.25	950	DIRECT	49W	120	1	①②
EF-3	BATHROOM CEILING	GREENHECK SP-A190 OR EQUAL	CEILING IN LINE CABINET	150	0.25	1400	DIRECT	113W	120	1	①②
EF-4	BATHROOM CEILING	GREENHECK SP-A110 OR EQUAL	CEILING IN LINE CABINET	75	0.25	950	DIRECT	49W	120	1	①②
EF-5	BATHROOM CEILING	GREENHECK SP-A190 OR EQUAL	CEILING IN LINE CABINET	150	0.25	1400	DIRECT	113W	120	1	①②

- NOTES: ① FAN SHALL BE UL-705 CERTIFIED.
② PROVIDE WITH INTEGRAL DISCONNECT AND GRILLE, BACKDRAFT DAMPER AND SPEED CONTROLLER. CONTROL BY WALL SWITCH PROVIDED BY E.C.

ENERGY CODE DATA

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT
OFFICE SPACE ONLY

METHOD OF COMPLIANCE
Prescriptive Performance Energy Cost Budget

Thermal Zone Zone 4A - DURHAM COUNTY

Exterior design conditions
Winter Dry Bulb 16°F
Summer Dry Bulb 95°F

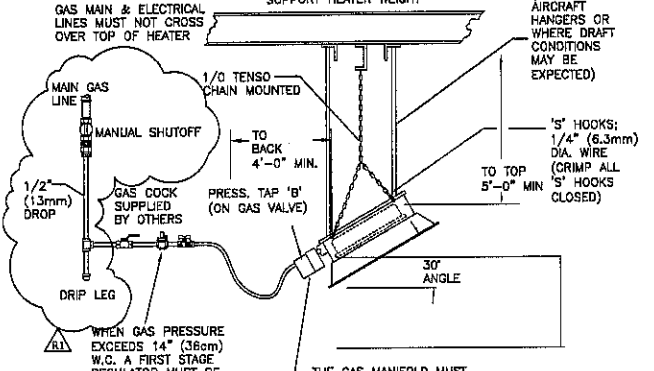
Interior design conditions
Winter Dry Bulb 70°F
Summer Dry Bulb 74°F
Relative Humidity 50%

Building Heating Load 80.0 MBH
Building Cooling Load 113.0 MBH
Mechanical Spacing Conditioning System

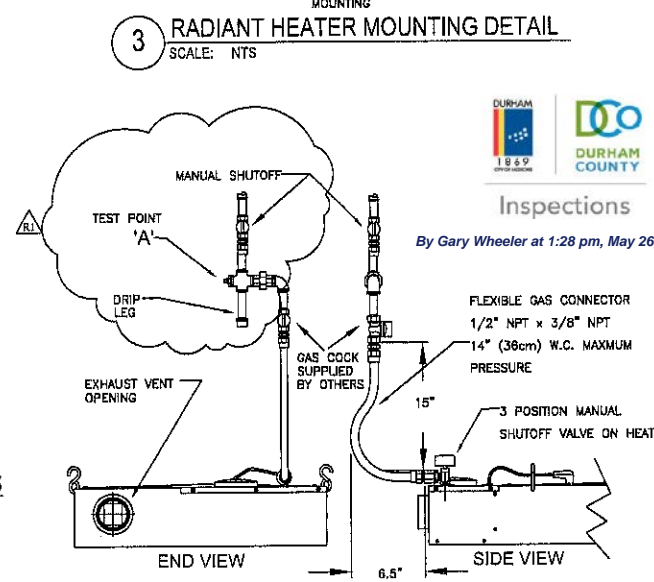
SPLIT SYSTEM HEAT PUMP
HEATING EFFICIENCY 96%
COOLING EFFICIENCY 13 SEER
HEATING OUTPUT 137.0 MBH Heating
COOLING OUTPUT 154.9 MBH cooling

Equipment Efficiencies N.A.
Equipment Schedule for Motors (Mechanical Systems): N.A.

RADIANT HEATER MOUNTING DETAIL

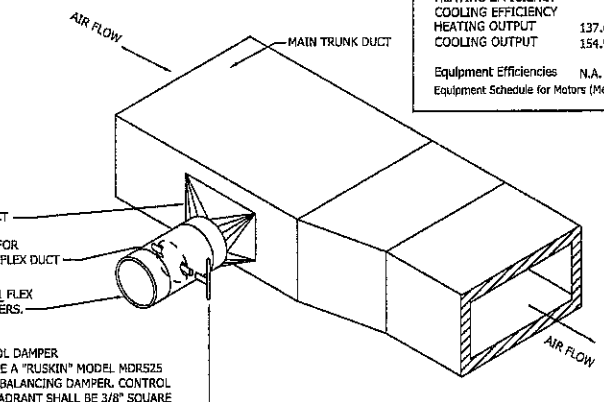


RADIANT HEATER GAS CONNECTION DETAIL

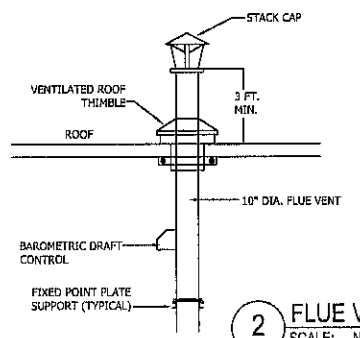


INFRARED HEATER SPECIFICATIONS

HTR-1, HTR-2 & HTR-3
HIGH INTENSITY GAS-FIRED INFRA-RED HEATERS, TWO STAGE AS MANUFACTURED BY SOLARONICS STK-SERIES-120/80, PROPANE GAS 120/80 MBTUH, 115V, 319 SQFT OF RADIATING SURFACE, MOUNTED AT 14-10° AFF WITH 30° ANGLE. INLET LP GAS PRESSURE 11" W.C., 1/2" FIT GAS INLET, (3)-BURNERS, PROTECTIVE SCREEN FOR REFLECTOR



1 BRANCH DUCT DETAIL
SCALE: NTS

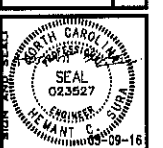


2 FLUE VENT DETAIL
SCALE: NTS

GENERAL NOTES

- THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH THAT OF THE OTHER TRADES PRIOR TO INSTALLATION OF ANY PIPING, DUCTWORK, OR EQUIPMENT.
- ALL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES AND RECOMMENDATION OF THE MANUFACTURERS. IF THERE IS A CONFLICT IN THE ABOVE REQUIREMENTS, THE MORE STRINGENT SHALL BE USED.
- THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, FEES AND INSPECTIONS NECESSARY TO COMPLETE HIS WORK UNDER THIS CONTRACT.
- THE MECHANICAL CONTRACTOR SHALL MAKE A COMPLETE REVIEW OF THE MECHANICAL PLANS, SCHEDULES, AND DETAILS PRIOR TO INSTALLATION OF THE MECHANICAL SYSTEMS AND REVIEW ANY CONFLICTS THAT ARE NOTED WITH THE ENGINEER.
- IT WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO ENSURE THAT ITEMS TO BE FURNISHED UNDER HIS CONTRACT WILL FIT THE SPACE AVAILABLE. HE SHALL MAKE NECESSARY FIELD MEASUREMENTS TO ASCERTAIN SPACE REQUIREMENTS, INCLUDING THOSE FOR CONNECTIONS, AND SHALL FURNISH AND INSTALL SUCH SIZES AND SHAPES OF EQUIPMENT THAT ARE THE TRUE INTENT AND MEANING OF THE PLANS AND SPECIFICATIONS.
- ALL EQUIPMENT SHALL BE LOCATED AND INSTALLED TO PROVIDE MAXIMUM SPACE FOR PROPER INSTALLATION, MAINTENANCE, AND SERVICE.
- ALL DUCTWORK, PIPING AND EQUIPMENT LAYOUTS AND LOCATIONS SHOWN ARE DIAGRAMMATIC. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE PROJECT AND COORDINATE THE DUCT AND PIPING LAYOUTS WITH ALL CONTRACTORS PRIOR TO INSTALLATION. THIS CONTRACTOR SHALL PROVIDE, AT NO ADDITIONAL COST TO THE OWNER, ALL DUCT AND PIPING OFFSETS PROVIDED WHETHER OR NOT THOSE OFFSETS ARE INDICATED ON THE PLANS.
- ALL DISCONNECT, POWER WIRING AND ASSOCIATED CONDUIT SHALL BE PROVIDED TO HVAC EQUIPMENT BY THE ELECTRICAL CONTRACTOR.
- THE MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL HIS OWN SUPPORT DEVICES. ALL LOCATIONS SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND OTHER PRIME CONTRACTORS PRIOR TO INSTALLATION. DO NOT SUPPORT PIPING FROM BAR JOIST BRIDGING. MECHANICAL CONTRACTOR SHALL REINFORCE BAR JOISTS WHEN HANGERS FOR MECHANICAL PIPING ARE NOT LOCATED WITHIN 6" OF BAR JOIST PANEL POINTS.
- THE MECHANICAL CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR FLOOR PLAN DIMENSIONS. DO NOT SCALE THESE DRAWINGS.
- INSTALL DUCTWORK IN CEILING HIGH ENOUGH TO AVOID LIGHTS, CONDUIT, & MISCELLANEOUS PIPING, BUT LOW ENOUGH TO ALLOW EASY ACCESS TO SYSTEM BALANCING DAMPERS.
- THE CONTRACTOR SHALL FURNISH OPERATING AND MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT TO THE OWNER UPON COMPLETION OF PROJECT.
- CONTRACTORS AND SUBCONTRACTORS SHALL CAREFULLY REVIEW THE CONSTRUCTION DOCUMENTS. INFORMATION REGARDING THE COMPLETE WORK IS DISPERSED THROUGHOUT THE DOCUMENT SET AND CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE COMPLETE DOCUMENT SETS.

REVISIONS	BY
R1 05-24-16	HS



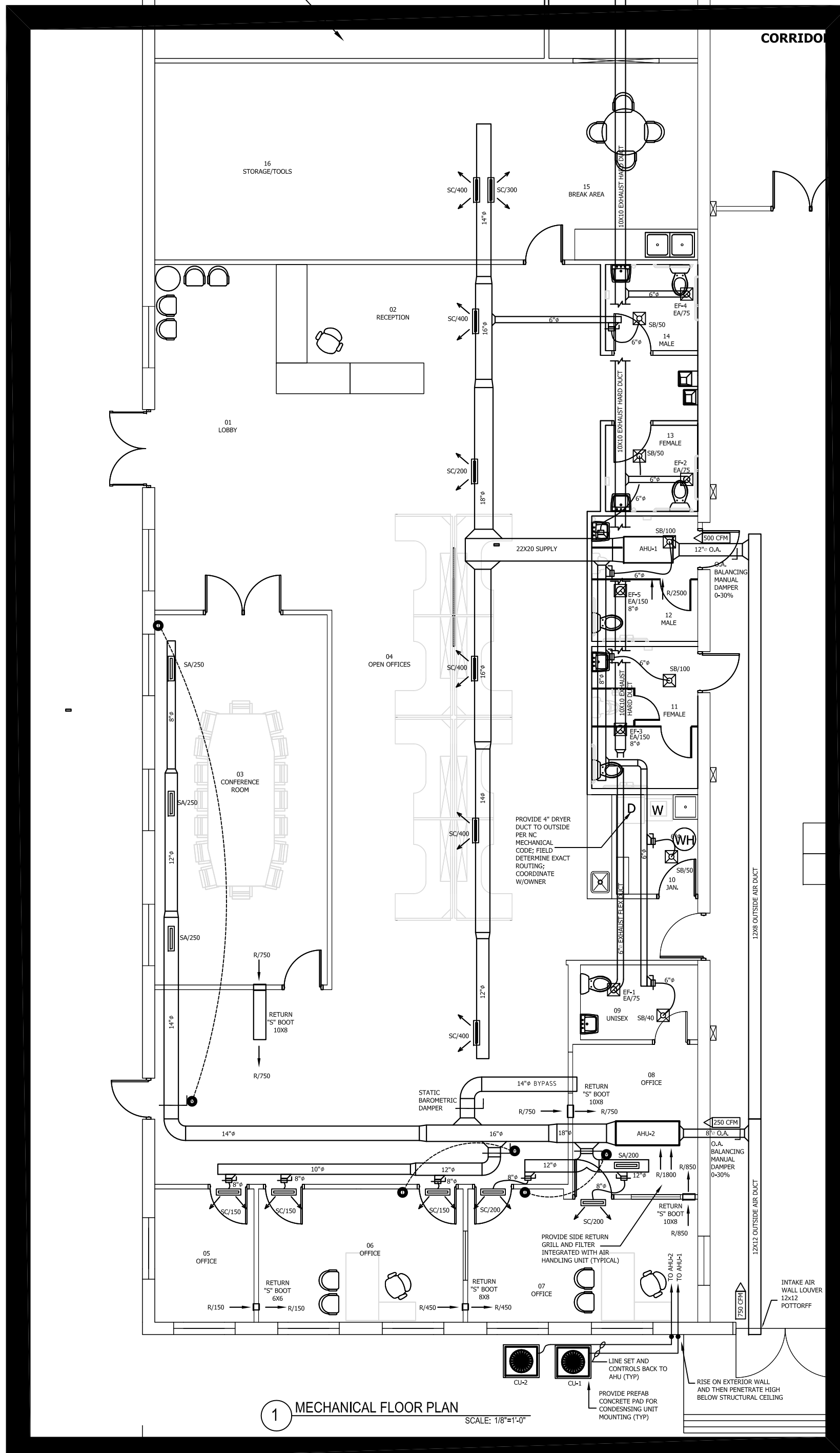
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BREEZE BUILDING SERVICES
312 S. MIAMI BLVD, DURHAM, NC 27703
HVAC COVERSHEET

DATE: 05-09-16
SCALE: AS SHOWN
DRAWN: HCS
JOB: 2014045
SHEET **M1** OF SHEETS

Inspections
By Gary Wheeler at 1:28 pm, May 26, 2016

REFER SHEET M3 FOR 1/4" SCALE PLAN FOR THIS AREA

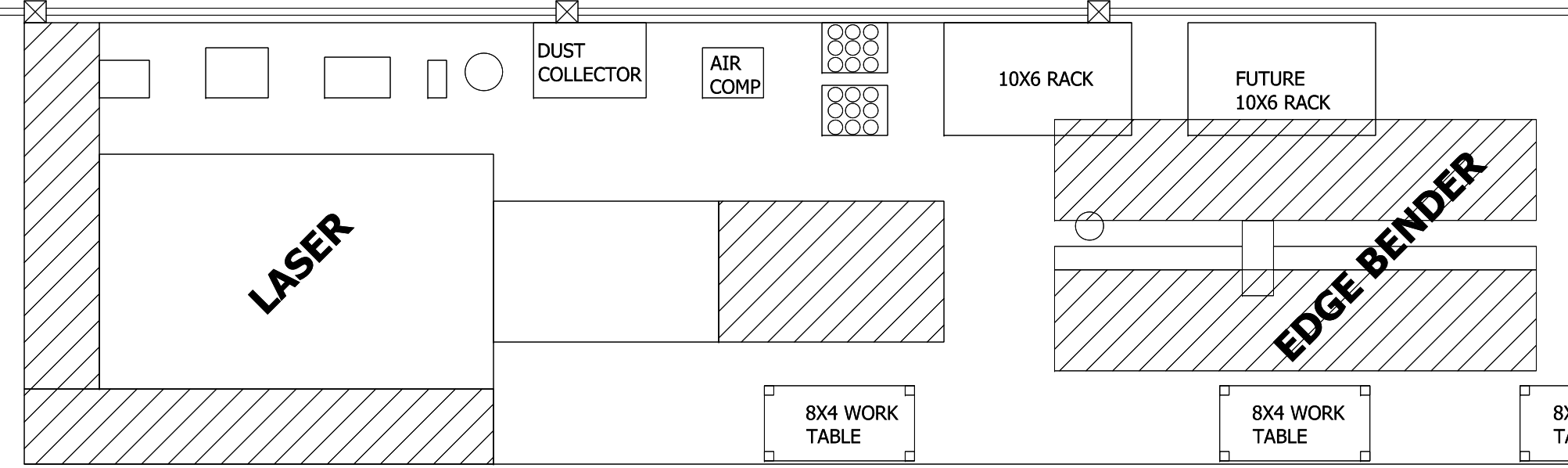


1 MECHANICAL FLOOR PLAN
SCALE: 1/8" = 1'-0"

20 INDUSTRIAL

GAS LOAD CALCULATION
PROPANE TANK WITH INLET PRESSURE 2.0 PSI

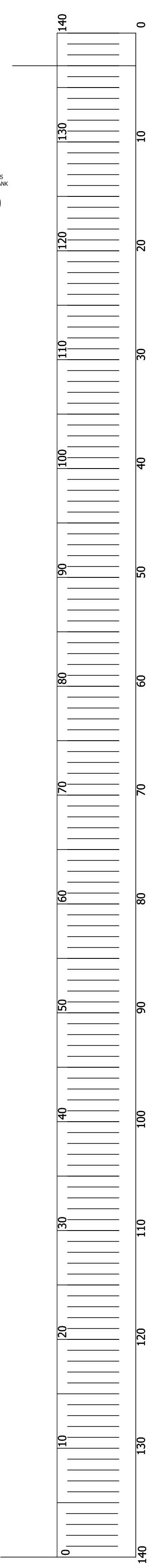
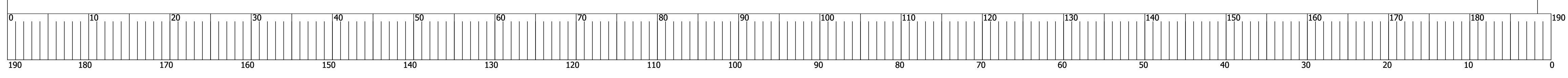
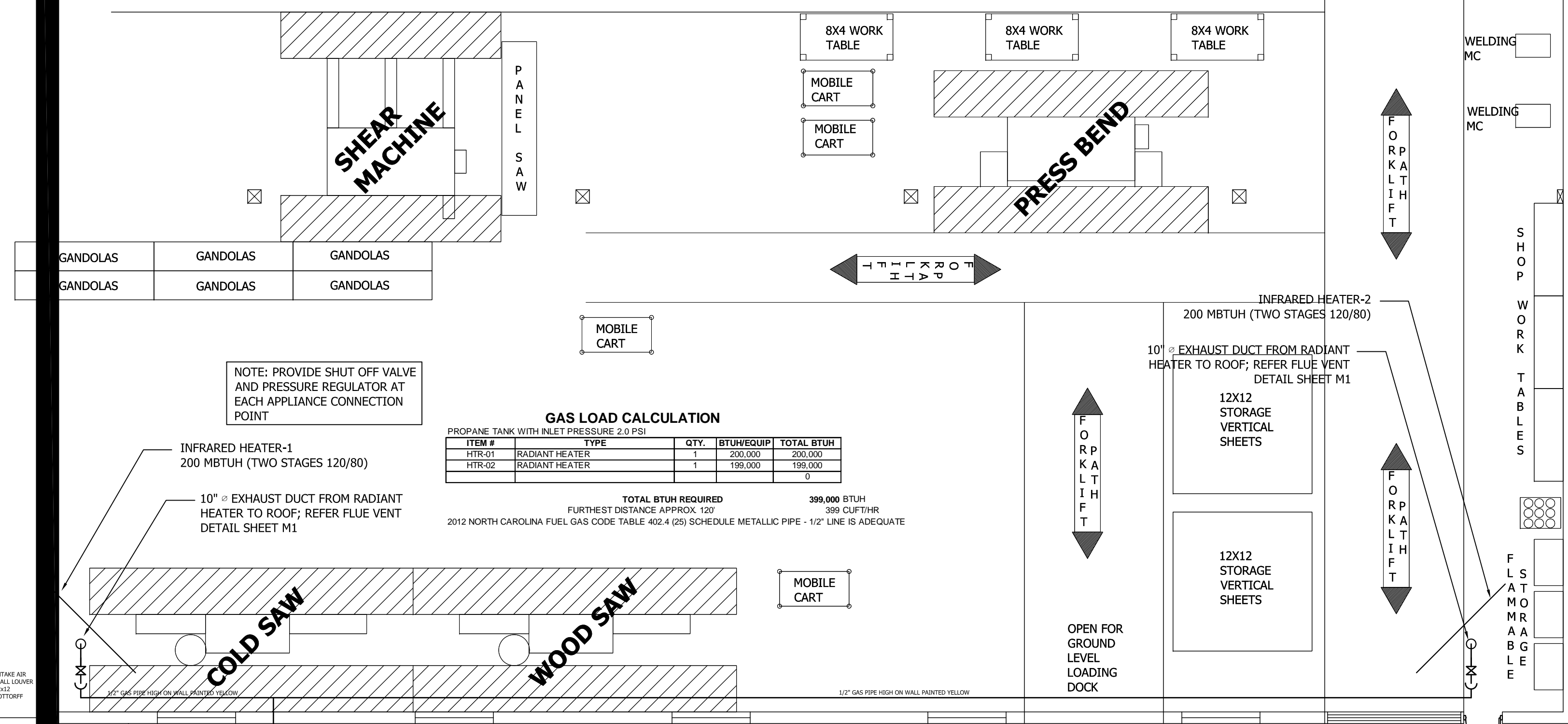
ITEM #	TYPE	QTY.	BTU/EQUIP	TOTAL BTUH
HTR-03	RADIANT HEATER	1	200,000	200,000
				0
TOTAL BTUH REQUIRED			200,000 BTUH	
FURTHEST DISTANCE APPROX. 30'			200 CU/HR	
2012 NORTH CAROLINA FUEL GAS CODE TABLE 402.4 (2) SCHEDULE METALLIC PIPE - 1/2" LINE IS ADEQUATE				



19 INDUSTRIAL

GAS LOAD CALCULATION
PROPANE TANK WITH INLET PRESSURE 2.0 PSI

ITEM #	TYPE	QTY.	BTU/EQUIP	TOTAL BTUH
HTR-01	RADIANT HEATER	1	200,000	200,000
HTR-02	RADIANT HEATER	1	199,000	199,000
				0
TOTAL BTUH REQUIRED			399,000 BTUH	
FURTHEST DISTANCE APPROX. 120'			399 CU/HR	
2012 NORTH CAROLINA FUEL GAS CODE TABLE 402.4 (2) SCHEDULE METALLIC PIPE - 1/2" LINE IS ADEQUATE				

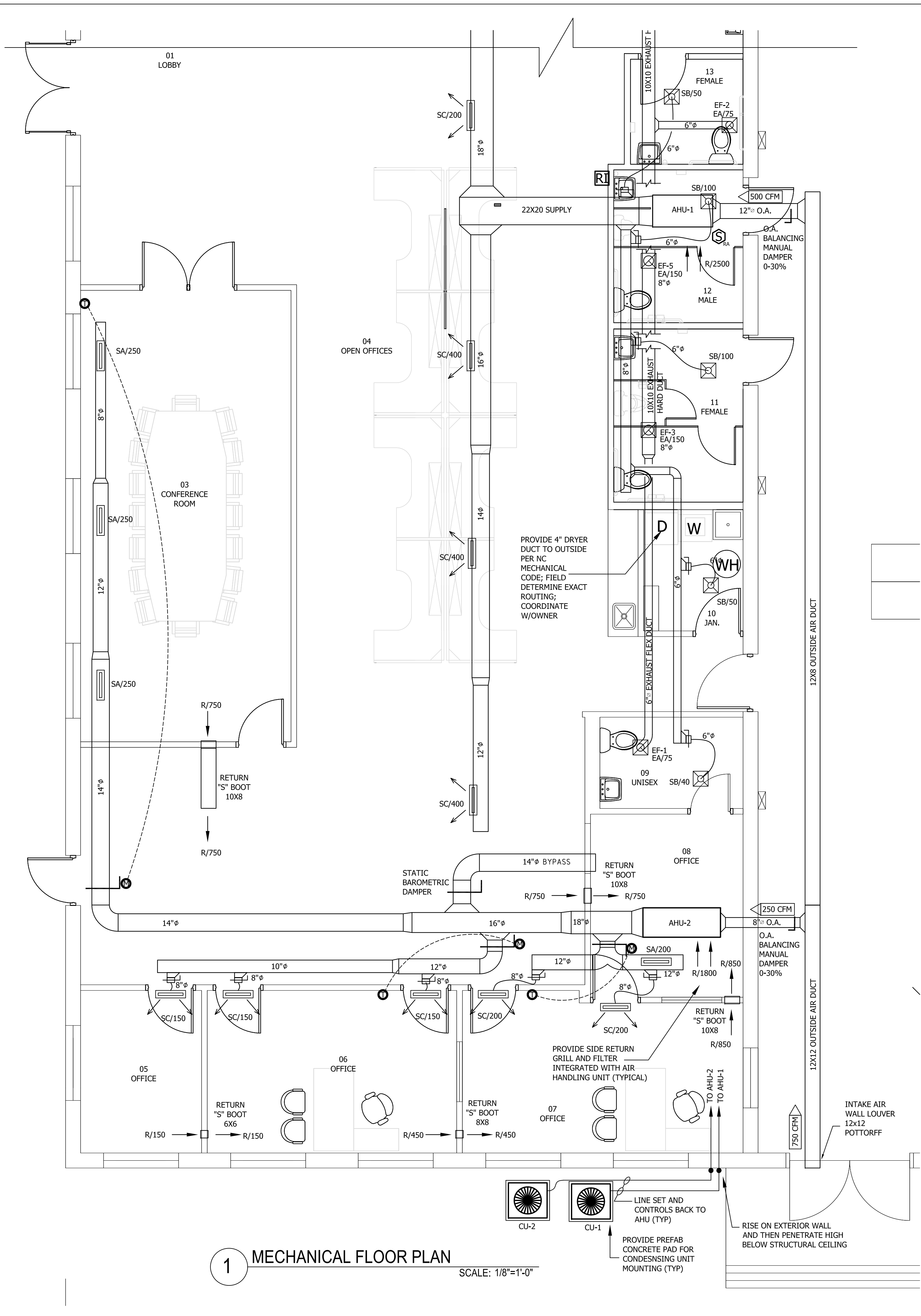


REVISIONS	BY

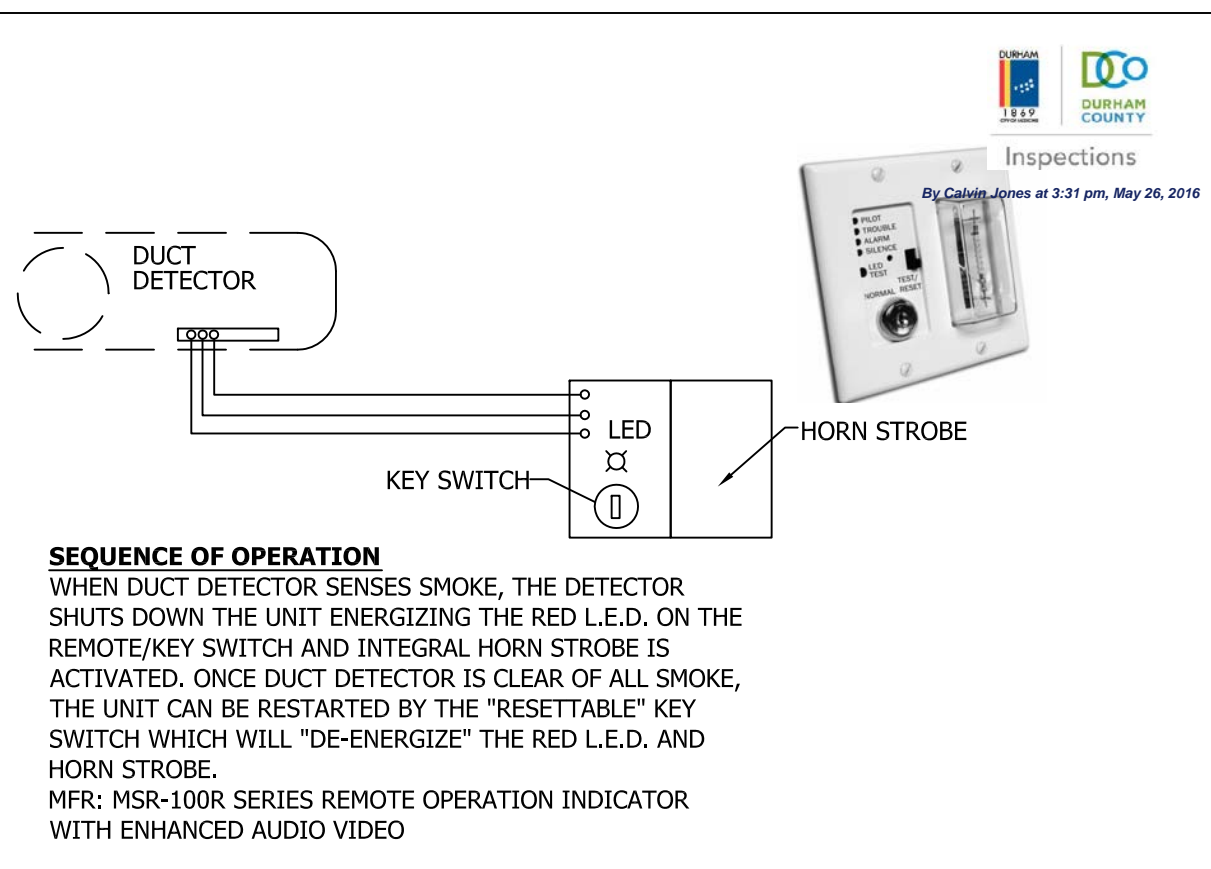
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BREEZE BUILDING SERVICES
312 S. MIAMI BLVD, DURHAM, NC 27703
HVAC OVERALL PLAN

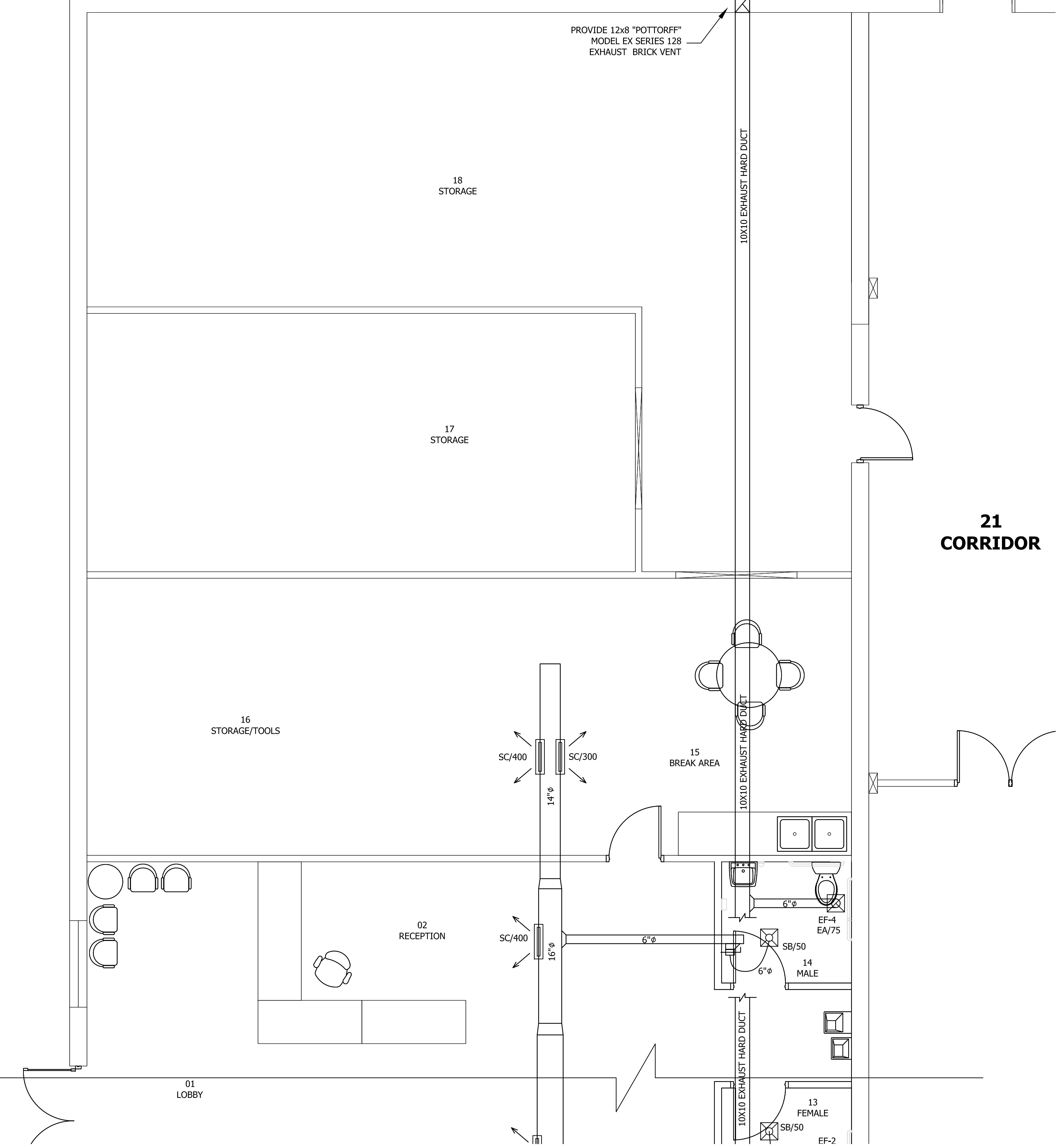
DATE: 05-09-16
SCALE: AS SHOWN
DRAWN: HCS
JOB: 2014045
SHEET **M2**
OF SHEETS



1 MECHANICAL FLOOR PLAN
SCALE: 1/8"=1'-0"



2 DUCT DETECTOR DETAIL
SCALE: NTS



REVISIONS	BY

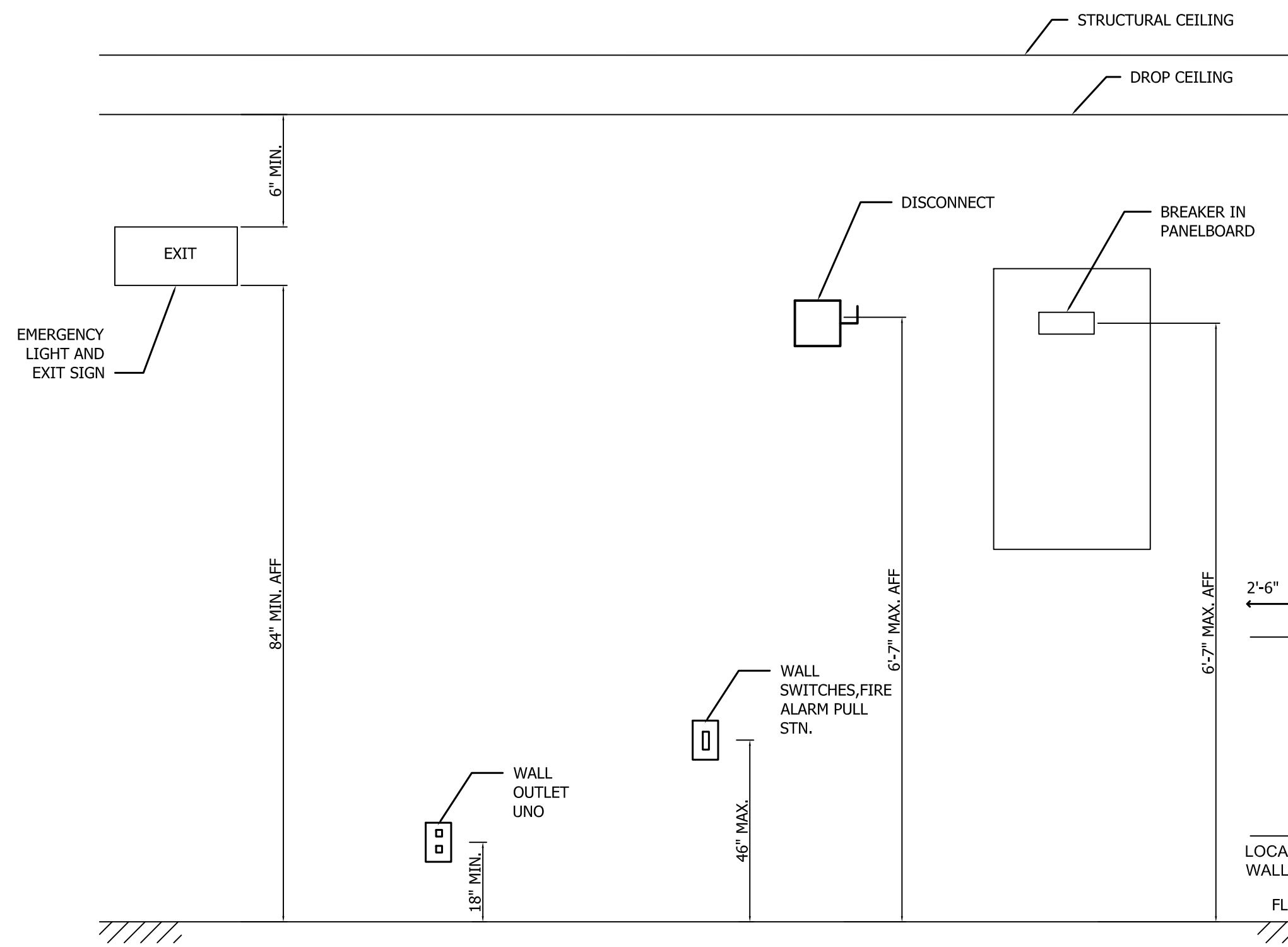
GreenTech Consulting, Inc.
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BREEZE BUILDING SERVICES
 312 S. MIAMI BLVD, DURHAM, NC 27703
HVAC PLAN - OFFICES

DATE:	05-09-16
SCALE:	AS SHOWN
DRAWN:	HCS
JOB:	2014045
SHEET	M3
OF	SHEETS

GENERAL NOTES

- ALL WORK SHALL CONFORM TO THE LATEST NATIONAL ELECTRICAL CODE, STATE CODE, & LOCAL AUTHORITY REQUIREMENTS.
- THE CONTRACTOR SHALL VISIT THE PREMISES AND THOROUGHLY FAMILIARIZE HIMSELF WITH ALL DETAILS OF THE WORK AND WORKING CONDITIONS. VERIFY ALL FIELD CONDITIONS INCLUDING LOCATION OF UTILITY LINES, STRUCTURES, AND ADVISE THE ENGINEER OF ANY DISCREPANCY THAT MAY PREVENT OR HINDER THE SPECIFIED WORK FROM BEING COMPLETED.
- THE CONTRACTOR SHALL STUDY THE STRUCTURE AND FINISH CONDITIONS AFFECTING HIS WORK AND SHALL COORDINATE HIS WORK ACCORDINGLY. THE CONTRACTOR SHALL PROVIDE ALL ACCESSORIES, HANGERS, AND ANCHORS AS NECESSARY TO MEET SUCH CONDITIONS WITHOUT ANY ADDITIONAL COST TO THE OWNER.
- PRIOR TO ACCOMPLISHING ANY WORK IN ANY AREA, ALL WORK SHALL BE PLANNED AND COORDINATED WITH OTHER TRADES AND THE OWNER. THE CONDUIT ROUTING SHALL BE COORDINATED WITH DUCT WORK, AND OTHER OBSTACLES SO AS TO PROVIDE THE MOST EFFICIENT AND AESTHETICALLY PLEASING INSTALLATION.
- THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS AND ARRANGE INSPECTIONS NECESSARY FOR THE INSTALLATION OF HIS WORK AND FURNISH THE ENGINEER WITH CERTIFICATES OF INSPECTIONS FROM ALL AUTHORITIES HAVING JURISDICTION.
- PROPERLY SUPPORT ALL WORK AND EQUIPMENT INSTALLED UNDER THIS CONTRACT. STUDY ALL DRAWINGS, MANUFACTURER'S INSTRUCTIONS, AND CATALOG DATA TO DETERMINE HOW EQUIPMENT ACCESSORIES, AND RELATED ITEMS ARE TO BE SUPPORTED, MOUNTED, OR SUSPENDED. PROVIDE ALL BOLTS, INSERTS, BRACKETS, STRUCTURAL SUPPORTS, AND ACCESSORIES FOR PROPER SUPPORT OF EQUIPMENT FURNISHED UNDER THIS CONTRACT.
- PROVIDE GREEN EQUIPMENT GROUNDING CONDUCTOR WITH ALL FEEDER AND BRANCH CIRCUITS.
- MOUNTING HEIGHTS INDICATED ARE TO THE CENTER OF THE DEVICE, OR EQUIPMENT UNLESS NOTED OTHERWISE. RECEPTACLE AND DATA/TELEPHONE OUTLET SHOWN ADJACENT ON DRAWING SHALL BE MOUNTED 6" APART ON CENTER HORIZONTALLY.
- COORDINATE ALL DEVICES AND OUTLETS ABOVE, OR BELOW WITH CASEWORK INSTALLATION AND THE ARCHITECT IN ORDER TO POSITION AT THE PROPER LOCATION AND THE HEIGHT.
- THE CONTRACTOR SHALL USE THE ARCHITECTURAL PLANS FOR EXACT DIMENSIONS. DO NOT SCALE THESE PLANS.
- ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR.
- ALL ELECTRICAL EQUIPMENT SHALL BE UL LABELED WHERE CATEGORY EXISTS FOR SUCH EQUIPMENT. OTHER THIRD PARTY LABELS ACCEPTABLE TO THE LOCAL INSPECTOR MAY BE USED.



2 MOUNTING HEIGHT REQUIREMENT FOR ELECTRICAL DEVICES
SCALE: NTS

ELECTRICAL LOAD SUMMARY

TYPE OF LOAD	NEC CODE REFERENCE	CONNECTED LOAD IN VA	NEC CODE REFERENCE	DEMAND FACTOR	DEMAND LOAD IN VA
LIGHTING	NEC 220.12 2 VA/SQFT	51336	NEC 220.42 100%	51336	51336
OR ACTUAL WHICHEVER IS GREATER					
GENERAL PURPOSE RECEPTACLES	NEC 220.14(1) 180 VA/RECE.	13140	NEC 220.44 FIRST 100VA @ 100% REMAINDER OVER 100VA @ 50%	13140	13140
COMPUTER		0		100%	0
HVAC LOAD		29814	NEC 430.24 125% OF LARGEST MOTOR 100% OF OTHERS	9008	11260.0
OTHER LOADS		148815	WATER HTR OTHER	4500 144315	5625 144315
TOTAL CONNECTED LOAD IN VA			SYSTEM VOLTAGE		246,482
			480		296

SERVICE 1 OF 2 600A, 480Y/277V, 3 PHASE, 4 WIRES SERVICE IS ADEQUATE.
SERVICE 2 OF 2 1000A, 208Y/120V, 3 PHASE, 4 WIRES SERVICE IS ADEQUATE.

ENERGY CODE SUMMARY

ELECTRICAL SYSTEM & EQUIPMENT

METHOD OF COMPLIANCE

PRESCRIPTIVE PERFORMANCE ENERGY COST BUDGET

LIGHTING SCHEDULE REFER TO LUMINAIRE SCHEDULE
LAMP TYPE REQUIRED IN FIXTURE REFER TO LUMINAIRE SCHEDULE
NUMBER OF LAMPS IN FIXTURE REFER TO LUMINAIRE SCHEDULE
BALLAST TYPE USED IN THE FIXTURE REFER TO LUMINAIRE SCHEDULE
NUMBER OF BALLASTS IN FIXTURE REFER TO LUMINAIRE SCHEDULE
TOTAL WATTAGE PER FIXTURE REFER TO LUMINAIRE SCHEDULE
TOTAL INTERIOR WATTAGE SPECIFIED VS ALLOWED (PER 2012 NCEC TABLE 505.5.2 & NOTE-"c") **16.78 KW SPECIFIED VS 41.34 KW ALLOWED**

TOTAL EXTERIOR WATTAGE SPECIFIED VS ALLOWED **0.286 KW SPECIFIED VS 1.020 KW ALLOWED**

EQUIPMENT SCHEDULES WITH MOTORS (NOT USED FOR MECHANICAL SYSTEMS) NOT APPLICABLE

MOTOR HORSEPOWER NOT APPLICABLE
NUMBER FOR PHASES NOT APPLICABLE
MINIMUM EFFICIENCY NOT APPLICABLE
MOTOR TYPE NOT APPLICABLE
OF POLES NOT APPLICABLE

SECTION 506 ADDITIONAL PRESCRIPTIVE COMPLIANCE

COMPLIES WITH 506.2.2 REDUCED LIGHTING DENSITY
LIGHTING POWER DENSITY COMPLY WITH VALUES 10 PERCENT LESS THAN THOSE IN TABLE 505.5.2

LIGHTING LEGEND:

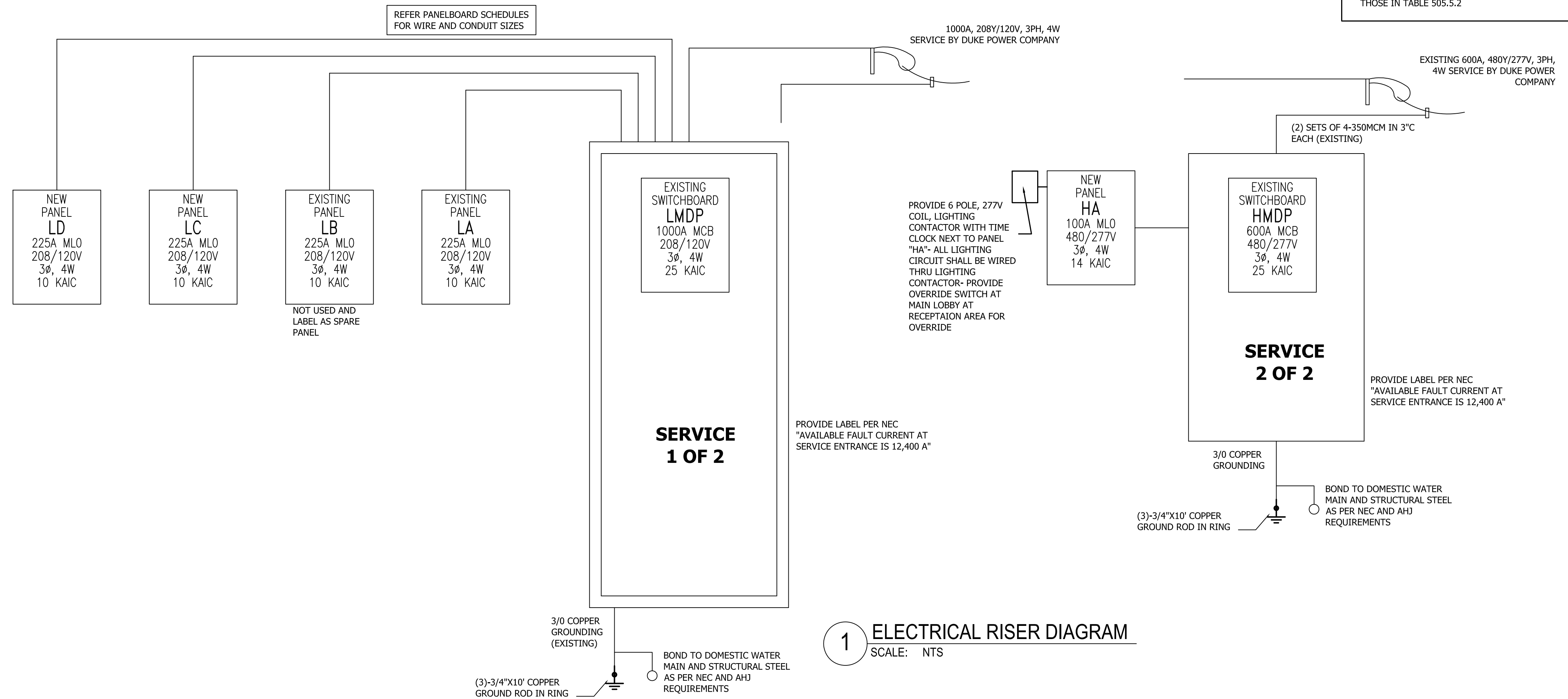
	2X4 LED RECESSED LIGHT
	INDUSTRIAL PENDANT CHAIN HUNG LED LIGHT
	RECESSED CAN LIGHT
	EXTERIOR WALL MOUNT, FULL CUT-OFF, LED
	EMERGENCY LIGHT @96" AFF TO TOP
	EMERGENCY EXIT COMBINATION LIGHT @96" AFF
	EXIT LIGHT
	EXIT LIGHT WITH ARROW SHOWING PATH OF EGRESS
	PHOTO CELL RELAY
	1 P TOGGLE SWITCH, MOUNT @ 46" AFF TO CENTER OF DEVICE UNO SUFFIX "OS" - OCCUPANCY SENSOR, "D" - DIMMER, "3" MEANS 3-WAY SWITCH
	EXTERIOR EMERGENCY LIGHT @96" AFF TO TOP

POWER LEGEND

	JUNCTION BOX
	DUPLEX RECEPTACLE, 120 VOLT, MOUNT @ 18" AFF TO THE CENTER, UNO
AS SUFFIX TO RECEPTACLES: (X)" MOUNT (X)" ABOVE FINISHED FLOOR WP WEATHER PROOF G GROUND FAULT USB- OUTLET W/ USB PORT	
	PANELBOARD, SEE PANELBOARD SCHEDULE
	DISCONNECT SWITCH
	BRANCH CIRCUIT, OR FEEDER WIRING, RUN MC CABLE TO PANELBOARD INDICATED. SINGLE PHASE CIRCUIT SHALL CONTAIN 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR AND 1 #12 GROUNDING CONDUCTOR MINIMUM. CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED. CONTRACTOR SHALL PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS, AS REQUIRED TO ACHIEVE FIXTURE CONTROL INDICATED ON PLANS. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED IN ACCORDANCE WITH AND AS ALLOWED BY THE NEC. INCREASE WIRE SIZE BASED ON FIELD RUN AND VOLTAGE DROP PER NEC.
	MOTOR SENTINEL SWITCH
	EXHAUST FAN

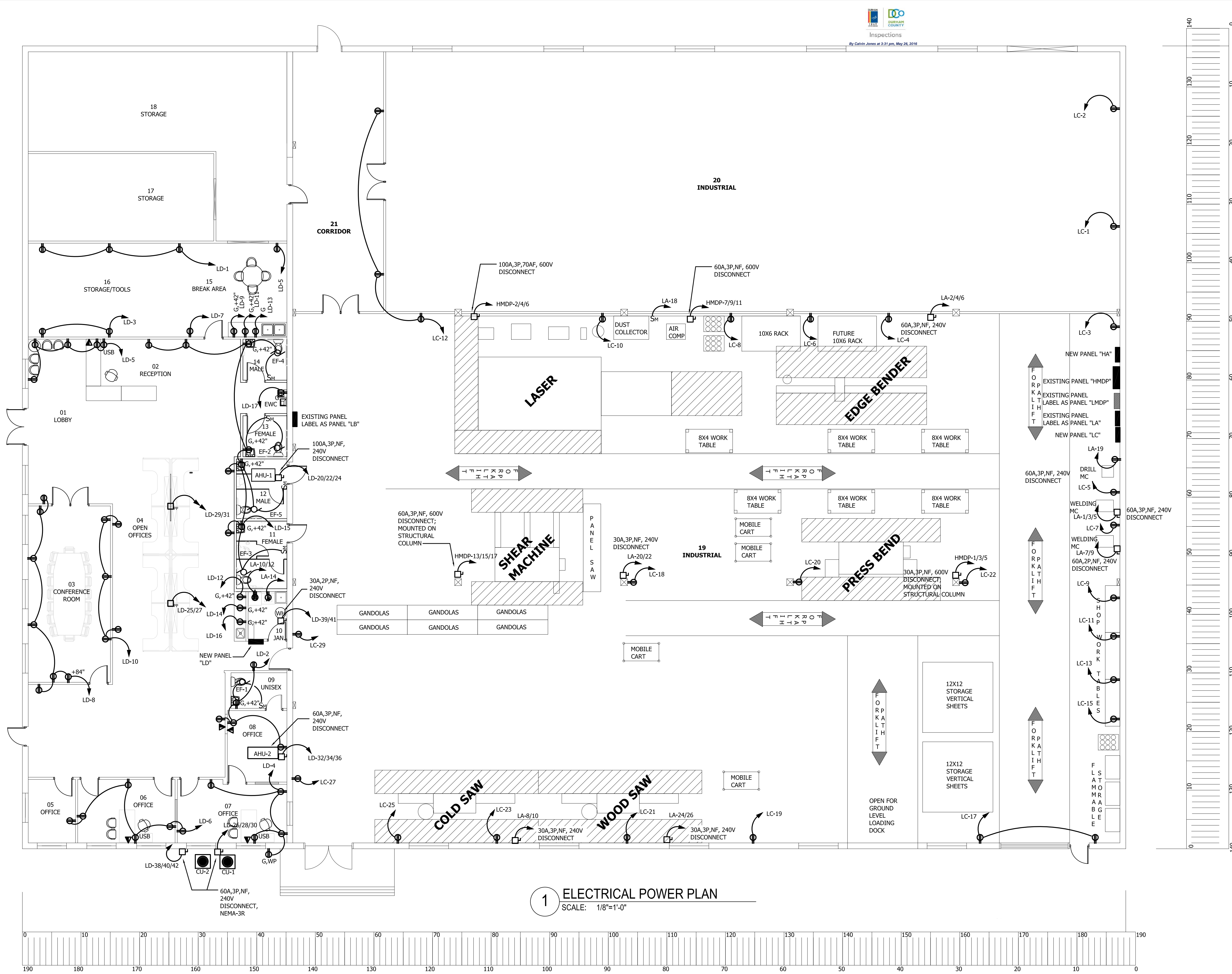
STANDARD ABBREVIATIONS

A	- AMPERES OR ABOVE COUNTER
AF	- ABOVE FINISHED FLOOR
AFG	- ABOVE FINISHED GROUND
C	- CONDUIT
E	- EXISTING
EC	- ELECTRICAL CONTRACTOR
G	- EQUIPMENT GROUNDING CONDUCTOR OR GROUND FAULT CIRCUIT INTERRUPTER
GFCI	- GROUND FAULT CIRCUIT INTERRUPTER
GC	- GENERAL CONTRACTOR
MC	- MECHANICAL CONTRACTOR
N	- NEUTRAL CONDUCTOR
P	- POLE
PC	- PLUMBING CONTRACTOR
PH	- PHASE
PNL	- PANELBOARD
REC	- RECEPTACLE
TTB	- TELEPHONE TERMINAL BACKBOARD
TYP	- TYPICAL
UNO	- UNLESS NOTED OTHERWISE
V	- VOLTS
W	- WATTS, WIRES



1 ELECTRICAL RISER DIAGRAM
SCALE: NTS

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BREEZE BUILDING SERVICES 312 S. MIAMI BLVD., DURHAM, NC 27703 ELECTRICAL COVERSHEET	
DATE:	05-09-16
SCALE:	AS SHOWN
DRAWN:	HCS
JOB:	2014045
SHEET	E1
OF	SHEETS



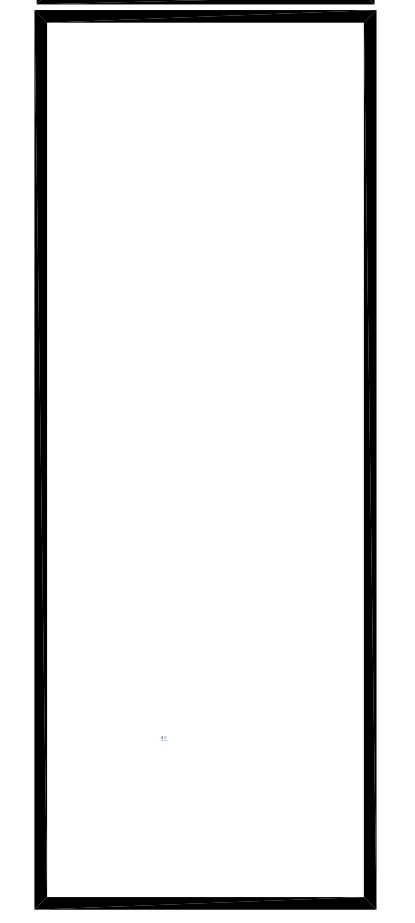
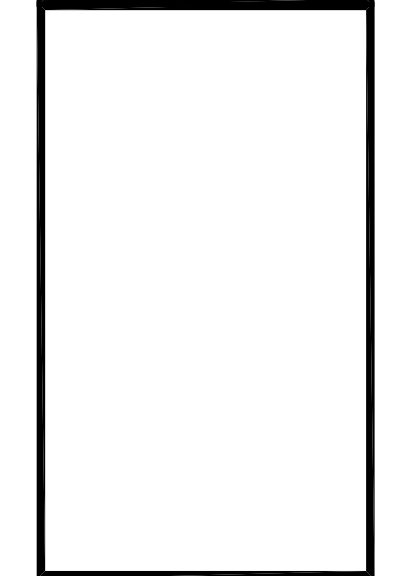
1 ELECTRICAL POWER PLAN
SCALE: 1/8"=1'-0"



By Larry Vaughan on 8/27 pm, May 16, 2016

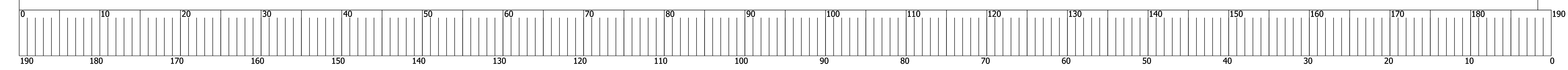
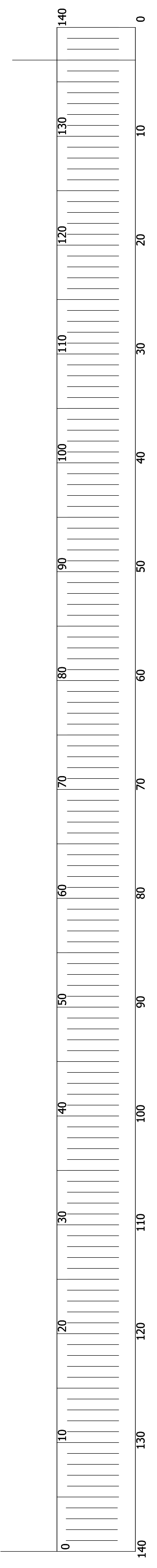
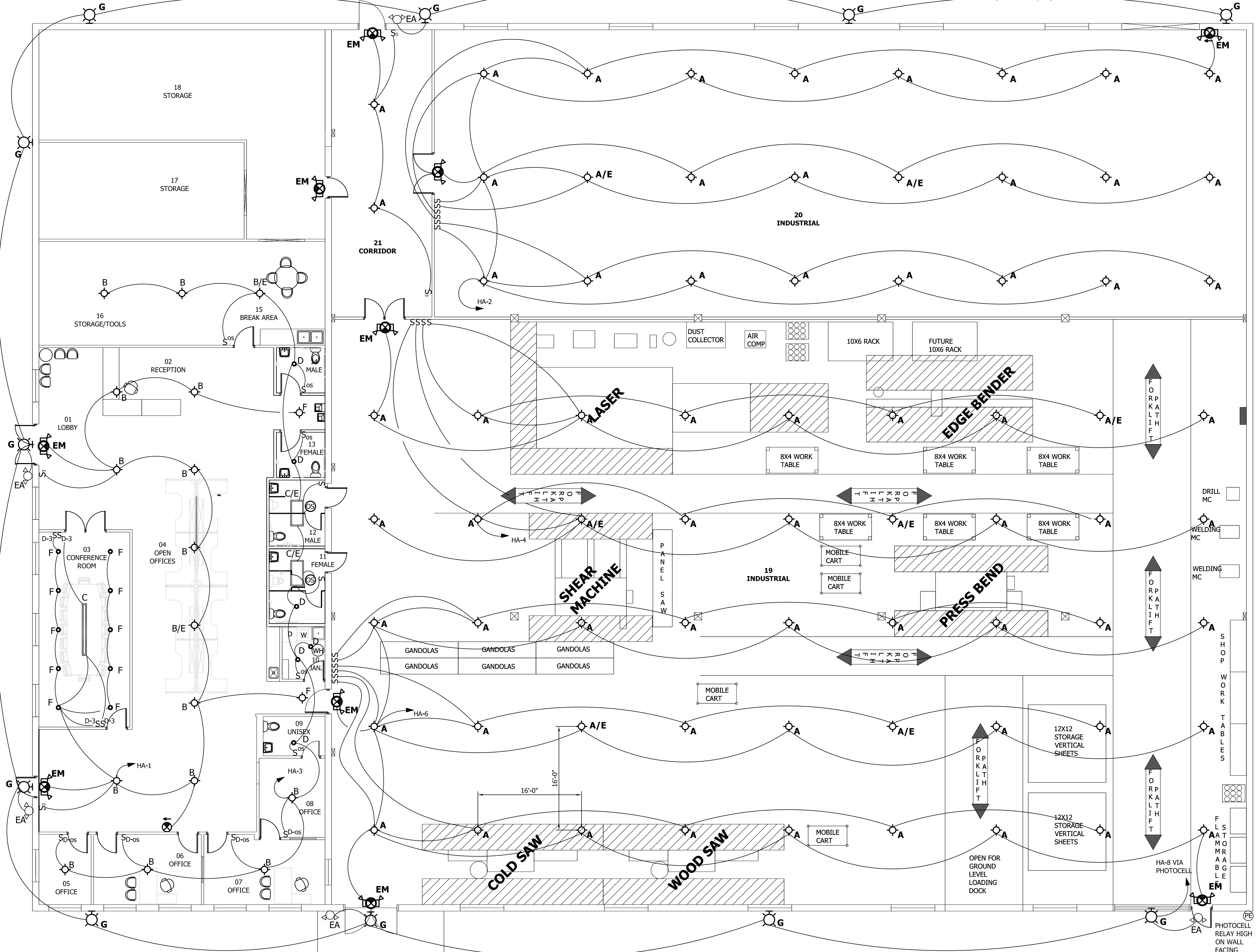
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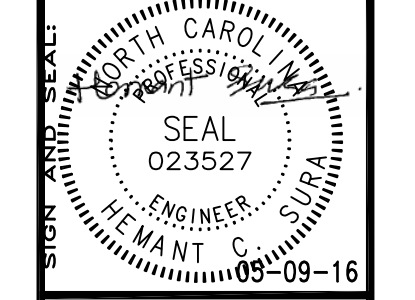
BREEZE BUILDING SERVICES
 312 S. MIAMI BLVD, DURHAM, NC 27703
ELECTRICAL POWER PLAN

DATE:	05-09-16
SCALE:	AS SHOWN
DRAWN:	HCS
JOB:	2014045
SHEET	E2
OF	SHEETS



1 ELECTRICAL LIGHTING PLAN
SCALE: 1/8"=1'-0"

REVISIONS	BY



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Inspections
By Larry Vaughan at 3:27 pm, May 16, 2016

BREEZE BUILDING SERVICES
 312 S. MIAMI BLVD, DURHAM, NC 27703
LIGHTING PLAN

DATE:	05-09-16
SCALE:	AS SHOWN
DRAWN:	HCS
JOB:	2014045
SHEET	E3
OF	SHEETS

LIGHTING FIXTURE SCHEDULE

DRAWING SYMBOL	MANUFACTURER	MODEL NUMBER	MOUNTING	MOUNTING ACCESSORIES	LAMP TYPE	TOTAL WATTAGE PER FIXTURE	VOLTAGE	DESCRIPTION
A	LTECH EFFICIENCY CORP.	AE-L-HOHB-150	PENDANT 10'-0 AFF	AS PER MFR. REQUIREMENTS	LED	160	277	LED LOW BAY/HIGH BAY INDUSTRIAL TYPE, 16" ACRYLIC CLEAR PRISMATIC DROP LENS WITH ACRYLIC REFLECTOR, 15,000 LUMENS, 5500 K TEMP, 5' GALVANIZED SAFETY CABLE
A/E	LTECH EFFICIENCY CORP.	AE-L-HOHB-150 WITH EMERGENCY BATTERY OPTION	PENDANT 10'-0 AFF	AS PER MFR. REQUIREMENTS	LED	160	277	LED LOW BAY/HIGH BAY INDUSTRIAL TYPE, 16" ACRYLIC CLEAR PRISMATIC DROP LENS WITH ACRYLIC REFLECTOR, 15,000 LUMENS, 5500 K TEMP, 5' GALVANIZED SAFETY CABLE; ADD EMERGENCY BATTERY OPTION
B	LTECH EFFICIENCY CORP.	AE-L-HOHB-100	PENDANT 10'-0 AFF	AS PER MFR. REQUIREMENTS	LED	160	277	LED LOW BAY/HIGH BAY INDUSTRIAL TYPE, 16" ACRYLIC CLEAR PRISMATIC DROP LENS WITH ACRYLIC REFLECTOR, 10,000 LUMENS, 5500 K TEMP, 5' GALVANIZED SAFETY CABLE
B/E	LTECH EFFICIENCY CORP.	AE-L-HOHB-100 WITH EMERGENCY BATTERY OPTION	PENDANT 10'-0 AFF	AS PER MFR. REQUIREMENTS	LED	160	277	LED LOW BAY/HIGH BAY INDUSTRIAL TYPE, 16" ACRYLIC CLEAR PRISMATIC DROP LENS WITH ACRYLIC REFLECTOR, 10,000 LUMENS, 5500 K TEMP, 5' GALVANIZED SAFETY CABLE; ADD EMERGENCY BATTERY OPTION
C	OWNER SELECTION		INDIRECT PENDANT 8'-0 AFF	AS PER MFR. REQUIREMENTS	LED	30	277	8" PENDANT, INDIRECT, LED LAMP, WARM WHITE, DIMMABLE (SELECTION BY THE OWNER)
C/E	LITHONIA	2GTL-4-30L-RN-LP850-EL14L	RECESSED	AS PER MFR. REQUIREMENTS	LED	30	277	2X4 RECESSED PRISMATIC, LED LAMP, COOL WHITE 3000+ LUMENS, REGRESSED ALUMINUM DOOR FRAME, WITH BATTERY OPTION
D	LITHONIA	DOM8R LED-1500L-40K-277-D08AZ	RECESSED	AS PER MFR. REQUIREMENTS	LED	36	277	8" RECESSED LED LIGHT
F	OWNER SELECTION		INDIRECT PENDANT 8'-0 AFF	AS PER MFR. REQUIREMENTS	LED	11	277	ROUND PENDANT, LED LAMP, WARM WHITE, DIMMABLE (SELECTION BY THE OWNER)
G	RAB LIGHTING	WPLED26	WALL @10'-0" AFF TO TOP	AS PER MFR. REQUIREMENTS	LED	26	277	EXTERIOR WALL MOUNT, DOWN LIGHT, FORWARD THROW, LED, FLAT CLEAR TEMPERED GLASS, BLACK FINISH
EM	LITHONIA	ECG LED M6	WALL/CEILING	AS PER MFR. REQUIREMENTS	LED	14	277	EMERGENCY BATTERY PACK WITH 90 MINUTE 6 VOLT LEAD ACID BATTERY, SELF DIAGNOSTICS, CHARGE INDICATOR, TEST SWITCH, UL LISTED, 277V, LED EXIT LIGHT, LED LAMP HEADS
EA	LITHONIA	AFN-B	WALL	AS PER MFR. REQUIREMENTS	XENON	2.2	277	EXTERIOR EMERGENCY BATTERY WALL PACK WITH 90 MINUTE 6 VOLTS LEAD ACID BATTERY, SELF DIAGNOSTICS, CHARGE INDICATOR, TEST SWITCH, UL LISTED, 277V
X	LITHONIA	EXGLD M6	WALL/CEILING	UNIVERSAL	LED	2	277	LED LIGHTED EXIT SIGN, HIGH IMPACT THERMOPLASTIC HOUSING, 90 MINUTES NI-CAD BATTERY, TEST SWITCH, CHARGE INDICATOR, UL LISTED

ELECTRICAL SPECIFICATIONS



GENERAL PROVISIONS

PART 1 - GENERAL

1.1 Codes and standards - the latest effective publications of all applicable standards, codes, etc., as they apply, form part of these specifications as if they were written fully herein and constitute minimum requirements. The following will be referred to throughout in abbreviated forms.

- A. National Electrical Code, (NFPA 70) (NEC).
- B. Institute of Electrical and Electronic Engineers (IEEE).
- C. Rules and regulations of local electric utility company.
- D. National Electrical Manufacturer's Association (NEMA).
- E. American National Standards Institute (ANSI).
- F. Applicable local codes.
- G. Underwriter's Laboratories, Inc. (UL).

1.2 Scope of work - provide all work required for this division including all labor, materials, equipment, appurtenances and services to provide complete electrical systems as shown on the drawings and specified in this division of the specifications. The word "provide" shall mean "furnish and install complete and ready for use".

1.3 The contractor shall visit the site prior to bid to determine the extent of the work. Lack of knowledge of existing conditions will not be considered a basis for change orders. Prior to ordering equipment, verify that equipment to be provided under this contract is acceptable and can fit into bldg. and room. Expense incurred by the contractor, which in the Engineer's opinion could have been avoided by this step, shall not be a basis for change orders.

1.4 Drawings and specifications - the drawings are diagrammatic and indicate the general extent, character and arrangement of equipment, fixtures and conduit and wiring systems. It is the intention of these specifications and drawings to fully cover all work and materials for a complete, first-class electrical installation, and any devices such as pull boxes and disconnect switches, usually employed in this class of work, though not specifically mentioned or shown on the drawings or in this specification, but which may be necessary for the satisfactory completion of the work, shall be furnished and installed by the contractor as a part of his total work under this Division. Consult the specifications and drawings of all other trades and perform all electrical work required therein. Cooperate with all other contractors or subcontractors to furnish complete workable systems.

1.5 During construction, keep an accurate record of all deviations between the work as shown on the contract drawings and that which is actually installed on a set of blue line prints of the electrical drawings, and note changes thereon with red marks, in a neat and accurate manner. When all revisions have been shown on these prints to indicate the work as finally installed, the prints shall be delivered to the engineer, before final payment.

1.6 Permits, inspection and tests - the right is reserved to inspect and test any portion of the installation/equipment during the progress of its erection. This contractor shall test all wiring for continuity and grounds before connecting any fixtures or devices. This contractor shall test the entire system when the work is finally completed to insure that all portions are free from short circuits and grounds.

1.7 Secure and pay for all required permits and inspections. Inspection certificates from local authorities having jurisdiction shall be delivered to the owner before final payment.

PART 2 - PRODUCTS

2.1 Manufacturing standards - materials shall be new and approved and labeled by UL wherever standards have been established by that agency. Defective equipment or equipment damaged in the course of installation or test shall be replaced or repaired in a manner meeting the approval of the owner. All items of the same type and rating shall be identical.

2.2 Trade names - unless specifically identified otherwise, manufacturers' names and catalog numbers indicated herein and on the drawings are not intended to be proprietary designations. They are to indicate general type and quality of materials and equipment required. Equipment and materials by other manufacturers which in the opinion of the engineer are of equal quality and which will produce the same results will be considered acceptable.

2.3 Motors - motors shall have disconnecting means and controllers. Controllers shall have thermal overload protection and phase outage protection relays.

2.4 Disconnect switches and power wiring up to and including motor connections for all equipment provided under other divisions of this specification shall be included in this division. Where manual motor control switches for single phase motors are indicated, they shall be provided and wired complete under this division. Motor controllers and motor starters furnished under other divisions shall be set in place and connected to source and load under this division. In general, motors will be provided with the equipment they drive and are not part of this work under this division, except that they shall be connected hereunder.

2.5 Obtain approved shop drawings showing wiring diagrams, connection diagrams, roughing-in and hookup details, from other involved contractors for all equipment and comply therewith.

2.6 Control, interlock, and internal equipment wiring regardless of voltage will be provided by others unless specifically shown here.

2.7 Grounding - the entire electrical system, including equipment frames, conduit, switches, controllers, wireways, neutral conductors, and all other such equipment shall be permanently and effectively grounded in accordance with the NEC. Ground rods shall be copper clad steel, 3/4" diameter by 10'-0" long. Grounding of each transformer secondary shall be provided and each shall be considered as a separate service ground. Provide a separate ground conductor in all branch circuit conduits sized in accordance with the NEC.

2.8 Schedule of work - the schedule of the electrical work shall be arranged to suit the progress of work by the other trades and shall in no way retard progress of construction of the project.

2.9 Work under this division shall proceed in advance of the work of others whenever possible, eliminating all cutting and patching. When such procedure is impossible, cutting and patching shall be done in an approved manner. Cutting shall not endanger structural integrity in any way. Patching shall exactly match contiguous work. Actual work of cutting and patching of existing surfaces shall be performed by the subcontractor who originally prepared these surfaces, e.g., cutting and patching of masonry wall will be performed by the masonry subcontractor. Costs of such cutting and patching shall be borne by the electrical subcontractor. Cutting shall be carefully done and damage to building, piping, wiring or equipment as a result of cutting shall be repaired by skilled mechanics of trade involved.

2.10 Labeling of equipment - all panelboards, cabinets, safety switches, motor disconnect switches, and motor controllers shall be identified by machine engraved laminated plastic designation plates permanently attached thereto with self-tapping screws or rivets. All component parts of each item of equipment or device shall bear the manufacturer's nameplate, giving name of manufacturer, description, size, type, serial and model number and electrical characteristics in order to facilitate maintenance or replacement.

2.11 Coordination - cooperate and coordinate efforts with all contractors on the project. This is especially important in determining exact locations of all switches, receptacles and lighting fixtures. Arrange lighting fixtures in accordance with the architectural reflected ceiling plans unless otherwise indicated. Coordinate lighting fixture locations with grilles, diffusers, access panels, etc. Verify ceiling and wall construction and material prior to ordering lighting fixtures or other devices to ensure proper fixture or device is furnished to match construction. This verification must be executed regardless of information placed on the drawings. Any cost incurred which in the opinion of the owner, could have been avoided by this step shall be the responsibility of the electrical contractor.

2.12 Guarantee of work - contractor guarantees by his acceptance of the contract that all work installed is free from any and all defects in workmanship and/or materials, and that the apparatus will develop capacities and characteristics specified, and that if, during the period of one year or as otherwise specified, from date of certificate of completion and acceptance of the work any such defects in workmanship, material or performance appear, he will, without cost to the owner, remedy such defects within a reasonable time to be specified in notice. In default thereof, the owner may have such work done and charge cost to Contractor. Equipment guarantees from date of "start-up" will not be recognized.

RACEWAY, FITTINGS AND BOXES

A. Raceways - conduit shall be hot-dipped, zinc coated or sherardized rigid steel (RS), intermediate metal conduit (IMC), electrical metallic tubing (EMT), or Schedule 40 PolyVinyl Chloride (PVC).

B. Flexible conduit shall be galvanized, continuous spiral, single strip type. Flexible conduit shall be covered with PVC jacket in wet or damp locations. Provide suitable fittings with ground connector.

C. Fittings - all conduit entering or leaving outlet, junction or pull boxes, and cabinets and all conduit stubs shall have bushings. Provide insulating bushings where required by NEC. Provide expansion fittings with bonding jumper where conduits cross expansion joints.
 1. Fittings for RS and IMC shall be threaded type.
 2. Fittings for EMT shall be threadless, approved for the conditions encountered and may be cast setscrew type or compression type.

D. Fittings for PVC shall be PVC, primed and glued.

E. Outlet boxes and junction boxes - outlet boxes shall be pressed steel, electro-galvanized or cadmium plated with clean cut, easily removable knockouts. Except as noted hereinafter minimum size outlet box shall be 4" square, 1 1/2" deep, and shall be increased in dimensions to accommodate conductors, conduits, and devices as required by the NEC. Shallower boxes may be used where required by structural conditions. Provide suitable plaster-rings to match wall construction and device. Ceiling and bracket outlet boxes shall be not less than 4" octagonal, 1 1/2" deep except that smaller boxes may be used where required by particular fixture to be installed.

F. Non metallic outlet boxes may be provided in PVC raceway systems. Outlet boxes in wet or damp locations shall be cast-metal, threaded hub-type with gaskets.

G. Junction or pull boxes not over 100 cubic inches in volume shall be standard outlet boxes. Junction boxes over 100 cubic inches in volume shall be constructed of code gage, galvanized sheet steel. Junction boxes shall have removable covers and shall be accessible after completion of work.

H. Raceway and fitting installation - run conduits concealed within walls, above ceilings and within or below floors. Conduit shall be supported at intervals of not more than 8'. Run exposed conduit parallel or perpendicular to walls, structural members, or intersections of vertical planes and ceiling.

I. Support conduits by pipe straps, wall brackets, strap hangers, or ceiling trapeze.

J. Run all Conduits together as possible in a neatly manner.

K. Do not install PVC in or through fire rated assemblies, in or through any walls, in or through any ceilings, in hazardous areas, in areas subject to severe physical damage, or exposed anywhere in the project.

CONDUCTORS

A. Conductors and insulation - wire and cable shall be soft drawn, annealed copper with 600 volt color coded insulation. Minimum wire size shall be #12 awg. Insulation for conductor sizes #12 and #10 shall be type THW or RHW for installation in ordinary dry locations and type THWN for installation in wet locations. Wet locations will include service conduits, conduit underground, raceways installed in concrete floor slabs in direct contact with the earth and raceways regularly subject to moisture or condensation. Conductors sizes larger than #10 shall have type XHHW-2 insulated. Conductors No. 8 AWG and larger diameter shall be stranded. Conductors No. 10 AWG and smaller diameter shall be solid, except that conductors for remote-control and signal circuits, classes 1, 2, and 3, may be stranded.

B. Branch circuit conductors in fluorescent fixture raceways and drops to single fluorescent fixtures shall be type THHN or XHHW.

C. Metal clad (MC) cable shall be allowed for branch circuiting 20A, 120V or less.

D. Provide a separate ground conductor in all raceways sized in accordance with the NEC.

E. Joints and terminations - for conductors #12 and #10 all fixture and branch circuits joints in junction and outlet boxes shall be made with UL listed pressure type connectors rated at 600 volts and 105 degrees C. Connectors shall be Ideal Industries "Wing-Nut" or Buchanan "B-Cap", 3M "Scotch-Lok" connectors or equal. Wire #8 and larger shall be joined or terminated with solderless pressure connectors properly taped in layers to form a moisture-tight joint.

WIRING DEVICES

A. Wiring devices shall be "specification grade" as manufactured by General Electric, Slater (Medalist), Arrow-Hart, Bryant, Hubbell or Pass & Seymour.

B. Duplex convenience receptacles shall be stainless steel, 20 ampere, 125 volts, 2 pole, 3 wire NEMA and ASA standard, grouping type.

C. Ground fault circuit interrupting receptacles shall conform to NEC, shall be UL listed, ivory plastic, shall have a "push-to-test" button and visible indication of a tripped condition.

D. On finished walls, plates shall be satin finished type 302, alloy 18-8 stainless steel with beveled edges.

SAFETY SWITCHES

A. Safety switches - safety switches shall be rated at 240 volts with number of poles and current rating as indicated. Switches shall be fused or non-fused type as indicated, NEMA type GD or HD as required, with full cover interlocks and quick-make, quick-break mechanisms.

PANELBOARDS

A. Panelboards - Provide as per schedule.

B. Provide typewritten directory card, card holder, transparent protection and complete identifying data on inside of door.

LIGHTING FIXTURES

A. Fixtures - fixtures shall be as indicated in schedule.

B. Lamps - unless otherwise noted, lamps shall be 130 volts inside frosted for incandescent and energy saving cool white rapid start for fluorescent.

C. Ballasts - fluorescent ballasts shall be ETL and UL approved and shall be energy saving electronic type compatible with lamps specified. Fixtures shall be designed for use with these electronic ballasts and shall have thermal characteristics that will minimize operation of ballast over-heat devices under all normally expected operation conditions. Ballasts shall have a class A sound rating.

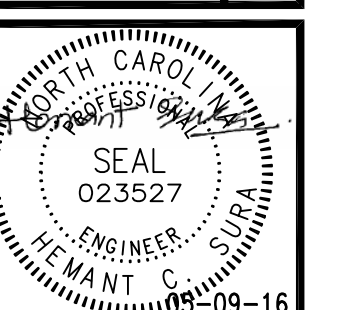
D. Ballasts which are not quiet and hum-free will be rejected and shall be replaced.

F. No fixtures shall be hung with zip3-clips.

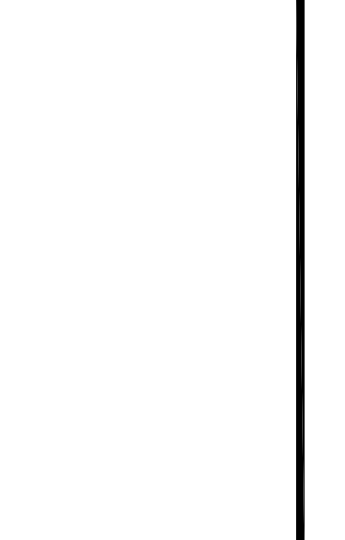
TELEPHONE CONDUIT SYSTEMS

A. Provide complete system of empty conduit, outlets, fittings, appurtenances, equipment backboards and equipment cabinets for installation of the telephone and other communication systems. Provide outlets, fittings and minimum 1" conduit in all runs. Provide 3/4" thick plywood backboards secured to walls where shown for mounting of telephone terminals and equipment. Provide #14 awg galvanized steel pull wire in each conduit run. Install telephone conduits, outlet boxes, cabinets and backboards, including point of service in accordance with requirements of local telephone company.

REVISIONS	BY

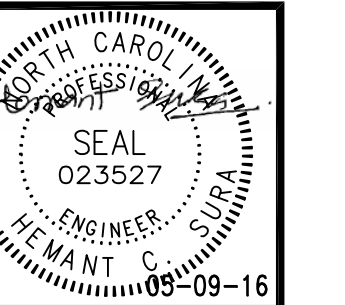


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 htsara@greentech.com



BREEZE BUILDING SERVICES
 312 S. MIAMI BLVD, DURHAM, NC 27703
LIGHTING SCHEDULE & SPECIFICATIONS

DATE:	05-09-16
SCALE:	AS SHOWN
DRAWN:	HCS
JOB:	2014045
SHEET	E4
OF	



GreenTech Consulting, Inc.
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EXISTING PANELBOARD "HMDP"										600 A MAIN BUS RATING									
VOLTAGE : 480 Y/277V 3PH 4W										MOUNTING: SURFACE				TYPE: SQ-D TYPE I-LINE					
BRANCH CIRCUIT		DEVICE		PHASE LOADS			DEVICE			BRANCH CIRCUIT									
LOAD	WIRE SIZE	VA	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	VA	WIRE SIZE	LOAD					
PRESS 11.0 HP	3#12 1#12G IN 3/4"	2734	20	3	1	17734			2			15000	3#4	FIBER LASER MACHINE					
AIR COMPRESSOR 20 HP	3#8 1#10G IN 3/4"	7170	40	3	3	17734			4			15000	1#8G IN 1 1/4"	TO NEW PANEL "HA"					
SHEAR MACHINE 27.0 A.F.L.A. RATING	3#8 1#10G IN 3/4"	7170	40	3	7	12018			8			4848	4#3						
		7170			9	10826			10			3656	1#8G 1 1/4"						
		7170			11		11220		12			4050							
		7170			13	7170			14			0							
		7170			15		7170		16			0							
		7170			17		7170		18			0							
		0			19	0			20			0							
		0			21	0			22			0							
		0			23	0			24			0							
		0			25	0			26			0							
		0			27	0			28			0							
		0			29	0			30			0							
KVA LOAD		108.78	LOAD PER PH IN VA		36922	35730	36124					25,000 AMPS							
AMPERE LOAD		130.84	LOAD PER PH IN AMPS		133.3	129.0	130.4					MIN. INTERRUPTING CAP. (RMS SYM. AMPS)							
DEMAND LOAD PER PH IN AMPS		139.3	134.8	136.3															
CONNECTED		DEMAND		1. WIRESIZES ARE MINIMUM AND BASED ON 75deg CONDUCTORS. INCREASE IN CASE OF VOLTAGE DROP.															
LIGHTING	12554	15693																	
RECEPTACLES	0	0																	
COMPUTERS	0	0																	
HVAC	0	0																	
OTHER	96222	98015		LARGEST MOTOR AT 125%															
TOTAL DEMAND LOAD		113.71	KVA		DEMAND FACTOR =		1.05												
DEMAND AMPS		137		AMPS															

EXISTING PANELBOARD "LMDP"										1000 A MAIN BUS RATING									
VOLTAGE : 208 Y/120V 3PH 4W										MOUNTING: SURFACE				TYPE: SQ-D TYPE I-LINE					
BRANCH CIRCUIT		DEVICE		PHASE LOADS			DEVICE			BRANCH CIRCUIT									
LOAD	WIRE SIZE	VA	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	VA	WIRE SIZE	LOAD					
TO EXISTING PANEL "LA"		17951			1	19571			2			1620	4-4/0	NEW PANEL "LC"					
		15401	225	3	3	16841			4			225	14-0						
		10341			5			12141	6			1800	IN 2 1/2"						
TO EXISTING PANEL "LB"		0			7	13598			8			13558	4-4/0	NEW PANEL "LD"					
		0			9			17348	10			17348	1#4G						
SPARE PANEL		0			11			16048	12			16048	IN 2 1/2"						
EXISTING		0			13	0			14			0							
LABEL AS SPARE		0			17	0			18			0							
EXISTING		0			19	0			20			0							
LABEL AS SPARE		0			21	0			22			0							
EXISTING		0			23	0			24			0							
LABEL AS SPARE		0			25	0			26			0							
EXISTING		0			27	0			28			0							
LABEL AS SPARE		0			29	0			30			0							
SPACE		0			3	27	0		28			0							
SPACE		0			3	29	0		30			0							
KVA LOAD		95.55	LOAD PER PH IN VA		33169	34189	28189					25,000 AMPS							
AMPERE LOAD		265.21	LOAD PER PH IN AMPS		276.4	284.9	234.9					MIN. INTERRUPTING CAP. (RMS SYM. AMPS)							
DEMAND LOAD PER PH IN AMPS		281.6	290.3	239.4															
CONNECTED		DEMAND		1. WIRESIZES ARE MINIMUM AND BASED ON 75deg CONDUCTORS. INCREASE IN CASE OF VOLTAGE DROP.															
LIGHTING	0	0																	
RECEPTACLES	13140	11570																	
COMPUTERS	0	0																	
HVAC	29814	32066																	
OTHER	52593	53718		LARGEST MOTOR AT 125%															
TOTAL DEMAND LOAD		97.35	KVA		DEMAND FACTOR =		1.02												
DEMAND AMPS		270		AMPS															

EXISTING PANELBOARD "LA"										225 A MAIN BUS RATING									
VOLTAGE : 208 Y/120V 3PH 4W										MOUNTING: SURFACE				TYPE: SQ-D TYPE NOOD					
BRANCH CIRCUIT		DEVICE		PHASE LOADS			DEVICE			BRANCH CIRCUIT									
LOAD	WIRE SIZE	VA	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	VA	WIRE SIZE	LOAD					
WELDING MC 11.5 KW	3#8 1#10G IN 3/4"	3834	35	3	1	6401			2			2567	3#8	EDGE BENDER					
		3834			3			6401	4			2567	1#10G IN 3/4"	7.7 KW					
		5600			5			6401	6			2567							
WELDING MC	2#6, 1#10G IN 3/4"	5600	50	2	7	6700			8			1100	2#12, 1#12G IN 3/4"	COLD SAW					
		5600			9			6700	10			1100	IN 3/4"	3 HP					
SPARE		0			11			2500	12			2500	3#10, 1#10G IN 3/4"	RECE. DRYER					
		0			13	2500			14			2500							
SPARE		0			15			1200	16			1200	2#12, 1#12G IN 3/4"	RECE. WASHER					
		0			17			1440	18			1440	2#12, 1#12G IN 3/4"	DUST COLLECTOR					
DRILL MC	2#12, 1#12G IN 3/4"	1250	20	1	19	2350			20			1100	3#12, 1#12G IN 3/4"	PANEL SAW					
		0			21			1100	22			1100	IN 3/4"	3HP					
SPACE		0			23			0	24			0							
SPACE		0			25	0			26			0							
SPACE		0			27	0			28			0							
SPACE		0			29	0			30			0							
KVA LOAD		43.69	LOAD PER PH IN VA		17951	15401	10341					10,000 AMPS							
AMPERE LOAD		121.28	LOAD PER PH IN AMPS		149.6	128.3	86.2					MIN. INTERRUPTING CAP. (RMS SYM. AMPS)							
DEMAND LOAD PER PH IN AMPS		149.6	128.3	86.2															
CONNECTED		DEMAND		1. WIRESIZES ARE MINIMUM AND BASED ON 75deg CONDUCTORS. INCREASE IN CASE OF VOLTAGE DROP.															
LIGHTING	0	0																	
RECEPTACLES	0	0																	
COMPUTERS	0	0																	
HVAC	0	0		LARGEST MOTOR AT 125%															
OTHER	43693	43693																	
TOTAL DEMAND LOAD		43.69	KVA		DEMAND FACTOR =		1.00												
DEMAND AMPS		121		AMPS															

NEW PANELBOARD "HA"										100 A MAIN BUS RATING									
VOLTAGE : 480 Y/277V 3PH 4W										MOUNTING: SURFACE				TYPE: SQ-D TYPE NF					
BRANCH CIRCUIT		DEVICE		PHASE LOADS			DEVICE			BRANCH CIRCUIT									
LOAD	WIRE SIZE	VA	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	VA	WIRE SIZE	LOAD					
LIGHTING	2#12, 1#12G IN 3/4"	962	20	1	1	4562			2			3600	2#12, 1#12G IN 3/4"	LIGHTING					
LIGHTING	2#12, 1#12G IN 3/4"	956	20	1	3		3656		4			2700	2#12, 1#12G IN 3/4"	LIGHTING					
SPARE		0	20	1	5			4050	6			4050	2#12, 1#12G IN 3/4"	LIGHTING					
SPARE		0	20	1	7	286			8			286	2#12, 1#12G IN 3/4"	EXTERIOR LIGHTING					
SPARE		0	20	1	9				10			0							
SPARE		0	20	1	11				12			0							
SPARE		0	20	1	13	0			14			0							
SPARE		0	20	1	15				16			0							
SPARE		0	20	1	17				18			0							
SPACE		0			19	0			20			0							
SPACE		0			21	0			22			0							
SPACE		0			23	0			24			0							
SPACE		0			25	0			26			0							
SPACE		0			27	0			28			0							
SPACE		0			29	0			30			0							
KVA LOAD		12.55	LOAD PER PH IN VA		4848	3656	4050					14,000 AMPS							
AMPERE LOAD		15.10	LOAD PER PH IN AMPS		17.5	13.2	14.6					MIN. INTERRUPTING CAP. (RMS SYM. AMPS)							
DEMAND LOAD PER PH IN AMPS		21.9	16.5	18.3															
CONNECTED		DEMAND		1. WIRESIZES ARE MINIMUM AND BASED ON 75deg CONDUCTORS. INCREASE IN CASE OF VOLTAGE DROP.															
LIGHTING	12554	15693																	
RECEPTACLES	0	0																	
COMPUTERS	0	0																	
HVAC	0	0																	
OTHER	0	0																	
TOTAL DEMAND LOAD		15.69	KVA		DEMAND FACTOR =		1.25												
DEMAND AMPS		19		AMPS															

NEW PANELBOARD "LC"										225 A MAIN BUS RATING								
VOLTAGE : 208 Y/120V 3PH 4W										MOUNTING: SURFACE				TYPE: SQ-D TYPE I-LINE				
BRANCH CIRCUIT		DEVICE		PHASE LOADS			DEVICE			BRANCH CIRCUIT								
LOAD	WIRE SIZE	VA	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	VA	WIRE SIZE	LOAD				
RECEPACLE	2#12, 1#12G IN 3/4"	180	20	1	1	360			2			180	2#12, 1#12G IN 3/4"	RECEPTACLES				
RECEPACLE	2#12, 1#12G IN 3/4"	180	20	1	3		360		4			180	2#12, 1#12					