

[illegible]

PLUMBING FIXTURE SCHEDULE

PLUMBING FIXTURE SCHEDULE					
P-#	FIXTURES	SPECIFICATIONS	PIPING REQUIRED		
			WASTE	CW	HW
P-1	WATER CLOSET/ADA FLOOR MOUNTED TANK TYPE – 1.6 GPF	AMERICAN STANDARD "CADET RIGHT HEIGHT" MODEL 2298.012 VITREOUS CHINA TOILET WITH ELONGATED BOWL AND TANK WITH SIDE TRIP LEVER, 16 ½" RIM HEIGHT, 1.6 GPF, 12" ROUGH-IN, BOLT CAPS, COMPLIES WITH ANSI A112.19.2 & A117.1 SEAT : BEWIS/CHURCH DURAGUARD 2100 NSSC ANTI-MICROBIAL HEAVY DUTY WHITE ELONGATED OPEN FRONT SEAT WITH COVER. VALVE: McGUIRE NO. 2166 ¾"x12" FLEX CLOSET SUPPLY WITH STOP.	3"	1/2"	--
P-2	LAVATORY – WALL MTD. SINGLE LEVER FAUCET ADA	AMERICAN STANDARD "LUCERNE" Q355.012 WALL MTD. WHITE VITREOUS CHINA 20"x18" LAVATORY WITH 4" FAUCET CENTERS. FAUCET: AMERICAN STANDARD "RELIANT +" MODEL NO. 7385 SINGLE LEVER LAVATORY FAUCET WITH CERAMIC DISC CARTRIDGE, INDEXED METAL LEVER, VANDAL RESISTANT 0.5 GPM AERATOR, ¾"O.D. COPPER INLETS, ADJUSTABLE HOT LIMIT SAFETY STOP. SUPPLIES: McGUIRE NO. 165 ¾"x12" FLEX ANGLE SUPPLY WITH STOP STRAINER: McGUIRE NO. 155-A GRID STRAINER WITH 1 ¼" TAILPIECE. TRAP AND SUPPLY INSULATION: McGUIRE PREWRAPPED PROWRAP INSULATION KIT MODEL NO.2150	1-1/2"	1/2"	1/2"
FD	FLOOR DRAIN	FLUSH MOUNTED FLOOR DRAIN WITH STRAINER. COORDINATE WITH ARCHITECTURAL PLANS AND EQUIPMENT INSTALLER FOR EXACT POSITION.	3"	--	--

GENERAL PLUMBING SPECIFICATIONS
GENERAL: THE ENTIRE PLUMBING SYSTEM SHALL BE IN ACCORDANCE WITH THE NORTH CAROLINA BUILDING PLUMBING CODE. SUBMIT THREE (3) COPIES OF PLUMBING INSPECTION CERTIFICATES TO OWNER. PLUMBING CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS REQUIRED BY GOVERNING AUTHORITIES FOR WORK DONE UNDER THIS CONTRACT. PROVIDE AND INSTALL ALL SUPPORTS, BRACKETS, MATERIALS AND LABOR AS REQUIRED FOR A COMPLETE AND ACCEPTABLE PLUMBING SYSTEM. PLUMBING CONTRACTOR SHALL CLEAN ALL PLUMBING FIXTURES AFTER ALL CONSTRUCTION IS COMPLETE.

ALL PENETRATIONS THROUGH NON-COMBUSTIBLE CONSTRUCTION SHALL BE PACKED WITH NON-COMBUSTIBLE FIRE STOPPING MATERIAL.

GRADE WASTE AND VENT PIPING 1/4 INCH PER FOOT WHERE POSSIBLE BUT NOT LESS THAN 1/8 INCH PER FOOT, UNLESS SPECIFICALLY DIRECTED. MAINTAIN INVERTS WHERE INDICATED.

WATER HEATER. ALL FITTINGS SHALL BE SWEAT TYPE WROUGHT COPPER WITH WALL THICKNESS EQUAL TO PIPE WALL THICKNESS. ALL JOINTS SHALL BE MADE WITH 95-5 SOLDER OR SILVABRITE 100. NO SOLDER W/LEAD SHALL BE PERMITTED.

ALL ROUGHING-IN PIPING SHALL BE RUN CONCEALED. ALL EXPOSED WATER LINES, STOPS, TRAP AND WASTE PIPE AT THE FIXTURES SHALL BE CHROME PLATED BRASS, WHICH FOR THE MOST PART WILL BE FURNISHED WITH THE FIXTURES. CHROME PLATED ESCUTCHEON RINGS SHALL BE USED AT EACH POINT OF ENTRANCE OF CHROME PIPING INTO WALLS, FLOORS, OR CEILINGS. EXPOSED WORK SHALL BE UNIFORM IN HEIGHT AND LOCATION FOR EACH TYPE FIXTURE.

WATER PIPING UNDER GROUND OUTSIDE OF BUILDING SHALL BE AT LEAST 24 INCHES BELOW THE FINISHED GRADE SURFACE.

THERMAL INSULATION: ALL HOT AND COLD WATER PIPING INSIDE BUILDING AND IN CRAWL SPACE, ALL HOT WATER PIPING BELOW GRADE, AND COLD WATER PIPING BELOW GRADE WITHIN 3'-0" OF OUTSIDE SHALL BE INSULATED WITH 1" THICK "ARMAFLEX" OR IMCOA WITH SEALED JOINTS OR PREMOLDED FIBERGLASS WITH VAPOR BARRIER JACKET. IN LIEU OF INSULATING WATER PIPING IN HEATED WALLS PIPING MAY BE ENCASED IN BATT INSULATION WITHIN THE WALL OR FLOOR/CEILING.

WATER HEATERS: WATER HEATERS SHALL BE UL LISTED AND COMPLETE WITH ALL STANDARD FEATURES, FIVE (5) YEAR TANK WARRANTY, GLASS-LINED TANK, FOAM INSULATION ON THE TANK, ANODE ROD, AUTOMATIC TEMPERATURE CONTROL, AND AUTOMATIC HIGH-LIMIT SAFETY CUTOFF.

EACH WATER HEATER SHALL BE PROVIDED WITH AN ASME APPROVED PRESSURE AND TEMPERATURE RELIEF VALVE. UNITS NOT INSTALLED WITH VACUUM BREAKER ON COLD WATER SUPPLY LINE SHALL BE PROVIDED WITH AGA CERTIFIED VACUUM RELIEF VALVE PER ANSI Z21.22. A GATE VALVE SHALL BE INSTALLED ON SAME FLOOR AS UNIT AND NO FURTHER THAN 3 FEET ON THE COLD WATER SUPPLY.

EACH WATER HEATER AND ITS INSTALLATION SHALL COMPLY WITH THE LATEST ISSUE AND ALL ADDENDA THERETO OF THE STATE BOILER INSPECTION LAWS AND REGULATIONS. ALL WIRING AND CONTROLS ASSOCIATED WITH THE HEATERS SHALL BE U.L. APPROVED AND IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE.

EACH HEATER TANK SHALL BE FITTED WITH APPROVED "DIP" TUBE AND LABELED TO SHOW APPROVAL FOR INSTALLATION.

DISCHARGE RELIEF VALVE FROM EACH WATER HEATER SHALL BE PIPED FULL SIZE TO WITHIN SIX (6) INCHES OF THE FLOOR OVER A FLOOR DRAIN, DRIP PAN OR OTHER SAFE LOCATION. DISCHARGE PIPE SHALL BE SUPPORTED AND ANCHORED SO THAT IT WILL NOT PUT UNDUE STRAIN ON THE RELIEF VALVE BODY OR MOUNTING COUPLING.

SUBMITTAL: THE CONTRACTOR SHALL WITHIN (15) DAYS OF RECEIPT OF PROPERLY SIGNED CONTRACT SUBMIT TO THE ARCHITECT/ENGINEER FOR APPROVAL (5) COPIES OF A LIST OF SUPPLIES AND MANUFACTURER'S MATERIAL AND EQUIPMENT TO BE USED ON THIS PROJECT.

SUBSTITUTION OF MATERIALS AND/OR EQUIPMENT FOR THAT SPECIFIED WILL NOT BE ACCEPTED WITHOUT PRIOR WRITTEN APPROVAL BY THE ARCHITECT/ENGINEER PRIOR TO RECEIPT OF BIDS.

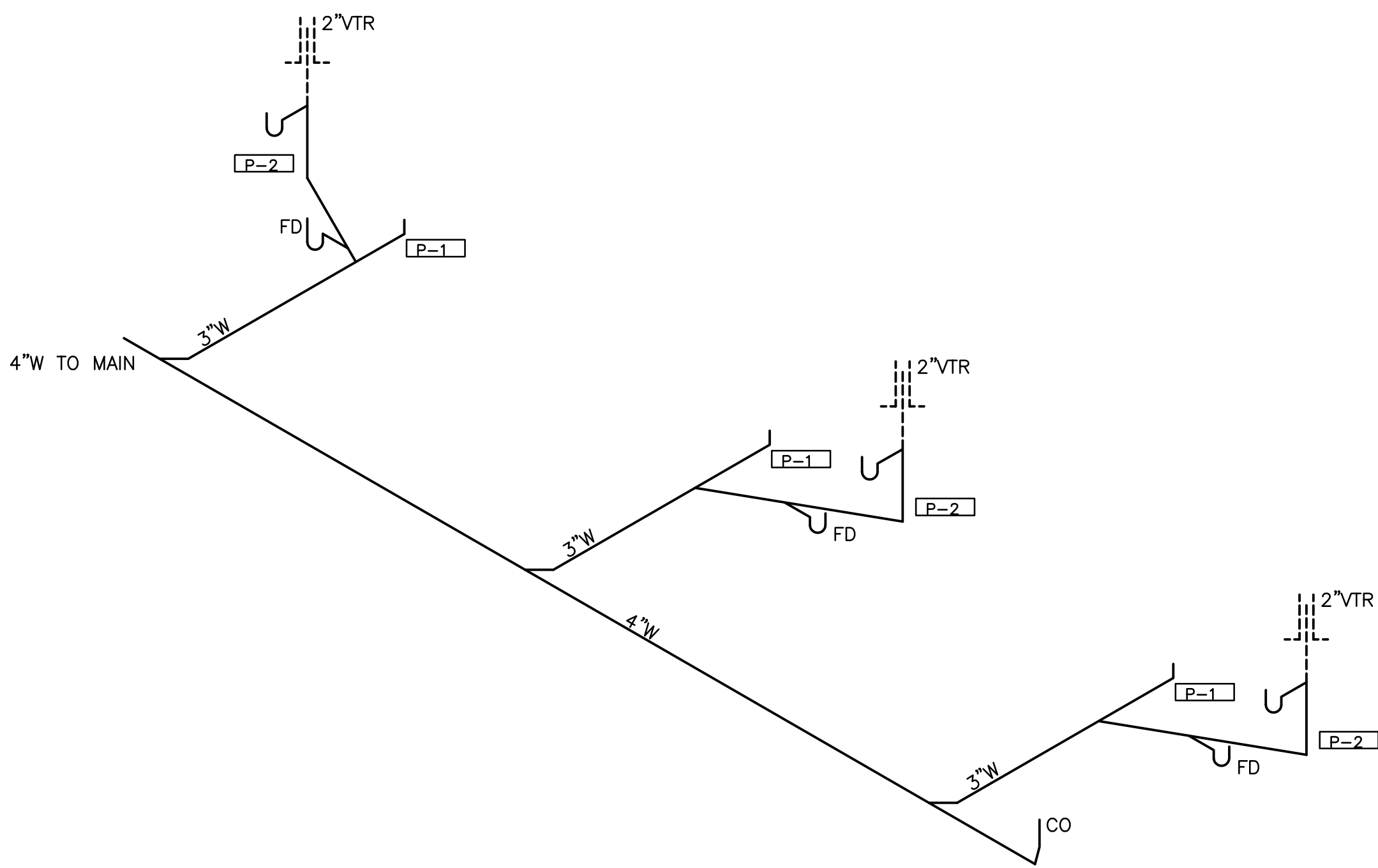
GUARANTEE: THE PLUMBING CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE BY OWNER STATING THE DAY THE GUARANTEE BEGINS AND ENDS.

WATER HEATER (EWH): EEMAX MOD. SP 2412, 2.4 KW INSTANTANEOUS WATER HEATER BELOW SINK.

NOTE: PLANS SHOULD NOT BE SCALED FOR DIMENSIONS. COORDINATE ALL ROUGH IN DIMENSIONS WITH EQUIPMENT TO BE INSTALLED AND DIMENSIONED DRAWINGS INCLUDING KITCHEN EQUIPMENT PLANS IF AVAILABLE. CONTACT ENGINEER BEFORE CONSTRUCTION WITH ANY CONFLICTS.

PLUMBING GENERAL NOTES:
BASIS OF DESIGN: UNLESS OTHERWISE NOTED THE PURPOSE OF THESE DRAWINGS IS TO PROVIDE DIRECTION AND BASIS OF DESIGN TO A COMPETENT CONTRACTOR FAMILIAR WITH THE TYPE OF SYSTEMS BEING INSTALLED SUFFICIENT TO INDICATE OWNERS REQUESTS AND CODE REQUIREMENTS. IT IS THE CONTRACTORS RESPONSIBILITY, WHETHER OTHERWISE UNDIRECTED, TO FOLLOW STANDARD INDUSTRY PRACTICES AND TO PROVIDE ALL MATERIALS, INCLUDING, BUT NOT LIMITED TO, PROVIDING MATCHING REQUIRED ACCESSORIES TO THE SYSTEMS INDICATED, COORDINATING EXACT ROUTINGS AND LOCATIONS WITH OTHER TRADES AND THE OWNER, SELECTING CODE APPROVED MATERIALS, AND MAKING MINOR OFFSETS/ADJUSTMENTS BASED ON FIELD COORDINATION AND OWNER'S FIELD REQUESTS. CHANGE OF MANUFACTURER TO EQUIVALENT SYSTEMS, WITH OWNER'S APPROVAL, IS ACCEPTABLE. CONTACT ENGINEER WITH ANY CONFLICTS NOT COVERED BY THE ABOVE INSTRUCTIONS.








1. PROVIDE ALL MATERIALS, LABOR NECESSARY FOR COMPLETE AND PROPERLY FUNCTIONING PLUMBING SYSTEMS. WARRANTY ALL WORK AND ALL MATERIALS, EQUIPMENT AND DEVICES FOR A PERIOD OF ONE YEAR AFTER OWNER'S ACCEPTANCE.
2. WORK SHALL CONFORM TO OR MEET THE REQUIREMENTS OF THE MOST CURRENT EDITION OF:
 - A. NORTH CAROLINA PLUMBING CODE
 - B. ASPE
 - C. UL
 - D. ANSI
 - E. ALL FEDERAL, STATE AND LOCAL CODES AND ORDINANCES
3. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO BE SCALED FOR DIMENSIONS, UNLESS DIMENSIONED.
4. ALL MATERIALS, EQUIPMENT AND DEVICES SHALL, AS A MINIMUM, MEET THE REQUIREMENTS OF UL WHERE UL STANDARDS ARE ESTABLISHED FOR THOSE ITEMS. ALL ITEMS SHALL BE CLASSIFIED BY UL AS SATISFACTORY FOR THE PURPOSE USED.
5. ALL ITEMS SHALL BE NEW, UNLESS NOTED OTHERWISE.
6. ALL MATERIALS AND EQUIPMENT SHALL BE CURRENT PRODUCTS BY MANUFACTURERS REGULARLY ENGAGED IN THE PRODUCTION OF SUCH PRODUCTS.
7. COORDINATE LOCATION OF PLUMBING WORK WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES.
8. INSTALL ALL EQUIPMENT AND MATERIAL IN ACCORDANCE WITH MANUFACTURER'S WRITTEN PRINTED INSTRUCTIONS AND RECOMMENDATIONS.
9. COORDINATE WITH AND OBTAIN PERMITS AND INSPECTIONS FROM AUTHORITY HAVING JURISDICTION AND INCLUDE ALL FEES IN BID.
10. PROVIDE OWNER WITH CERTIFICATES OF FINAL INSPECTION AND ACCEPTANCE FROM AUTHORITY HAVING JURISDICTION.
11. ALL EQUIPMENT AND PIPE ABOVE CEILING SHALL BE SUPPORTED FROM BUILDING STRUCTURE ABOVE, UNO.
12. WHERE PIPES PENETRATE FIRE RATED BARRIERS (WALLS, FLOORS AND CEILINGS) SEAL OPENING AROUND PIPES AND DUCTWORK WITH U.L. LISTED FIRE STOPPING MATERIAL TO MAINTAIN THE FIRE RATING OF THE BARRIER. PER NC BUILDING CODE VOLUME 1, PENETRATIONS OF NONRATED WALLS, PARTITIONS AND FLOORS OF NONCOMBUSTIBLE CONSTRUCTION SHALL BE FIRE-STOPPED WITH NONCOMBUSTIBLE MATERIAL.
13. PROVIDE EXPANSION-DEFLECTION JOINTS WHERE PIPE CROSSES BUILDING EXPANSION OR SEISMIC JOINTS.
14. PRIOR TO BIDDING, THE CONTRACTOR AND HIS SUBCONTRACTORS SHALL VISIT THE JOBSITE AND SHALL FAMILIARIZE THEMSELVES WITH ALL CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED AND SHALL INCLUDE IN HIS BID ALL LABOR, MATERIAL AND OPERATIONS REQUIRED FOR A COMPLETE JOB. (NOTIFY OWNER AND ENGINEER OF ANY DISCREPANCIES PRIOR TO BID.)
15. CLEANOUTS, LINE SIZE, UNO.
16. FLOOR DRAINS, LINE SIZE, UNO.
17. FLOOR DRAINS WITH SUBSCRIPT CO TO HAVE INTEGRAL CLEANOUT AND SHALL BE SIMILAR TO REGULAR FLOOR DRAIN SPECIFIED, UNO.
18. FLOOR DRAINS AND FLOOR SINKS SHALL BE PROVIDED WITH TRAP PRIMERS OR ALTERNATE METHODS AS APPROVED BY AUTHORITY HAVING JURISDICTION.



WASTE RISER

SCALE: NONE


PLUMBING LEGEND

- | | |
|---|------------------------------|
|  | FIXTURE NUMBER, SEE SCHEDULE |
|  | WATER BALANCE/SHUTOFF VALVE |
|  | VENT THRU ROOF |
|  | NEW COLD WATER PIPE |
|  | NEW HOT WATER PIPE |
|  | NEW WASTE PIPE |
|  | NEW VENT PIPE |

THIS SHEET SHOWS BASIC DRAFTING STANDARDS

BE SUBJECT TO LEGAL ACTION.

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Design Elements

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Proposed Lease Space "Building Shell" for:

T.A. Woods Business Center

6713 Netherlands Drive
Wilmington, North Carolina 28405

PLUMBING SCHEDULES, NOTES & DETAILS

job status **Construction Document - Issued for Construction**

date	22 AUG, 2019
job no.	TAWOOD/FLEX/19
drawn by	KSG
checked by	SE
drawing no.	P100
revision no.	

no.	date	revision

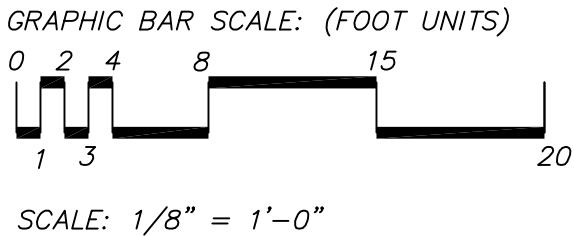
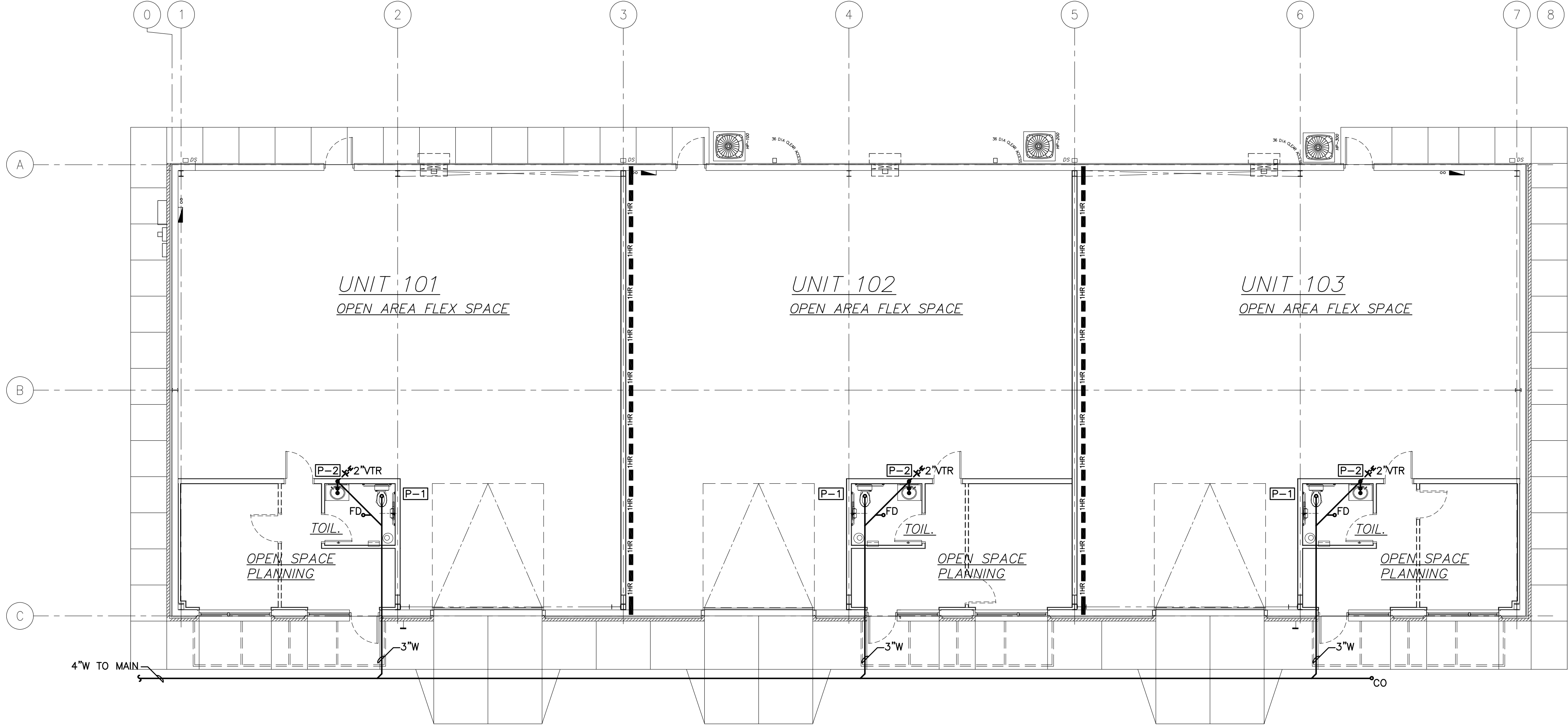
SITE NORTH

PLAN NORTH

1

P101

OVERALL FLOOR PLAN — PLUMBING — WASTE



copyright; design elements 2019	date	22 AUG, 2019
	job no.	TAWOOD/FLEX/19
	drawn by	KSG
	checked by	SE
	drawing no.	P101
	revision no.	

Proposed Lease Space "Building Shell" for:

T.A. Woods Business Center

6713 Netherlands Drive
Wilmington, North Carolina 28405

OVERALL FLOOR PLANS — PLUMBING — WASTE

job status

Construction Document - Issued for Construction

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THIS SHEET SHOWS BASIC DRAFTING STANDARDS

PROJECT NO. 11105

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TEL (910) 270-3747 FAX 270-3779
NC LICENSE NO. C-2546

no.	date	revision

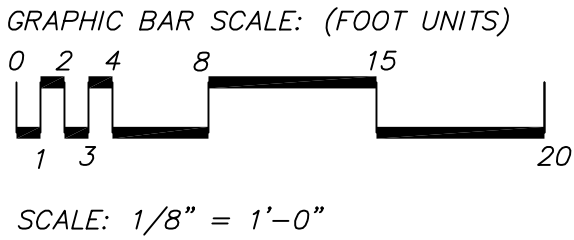
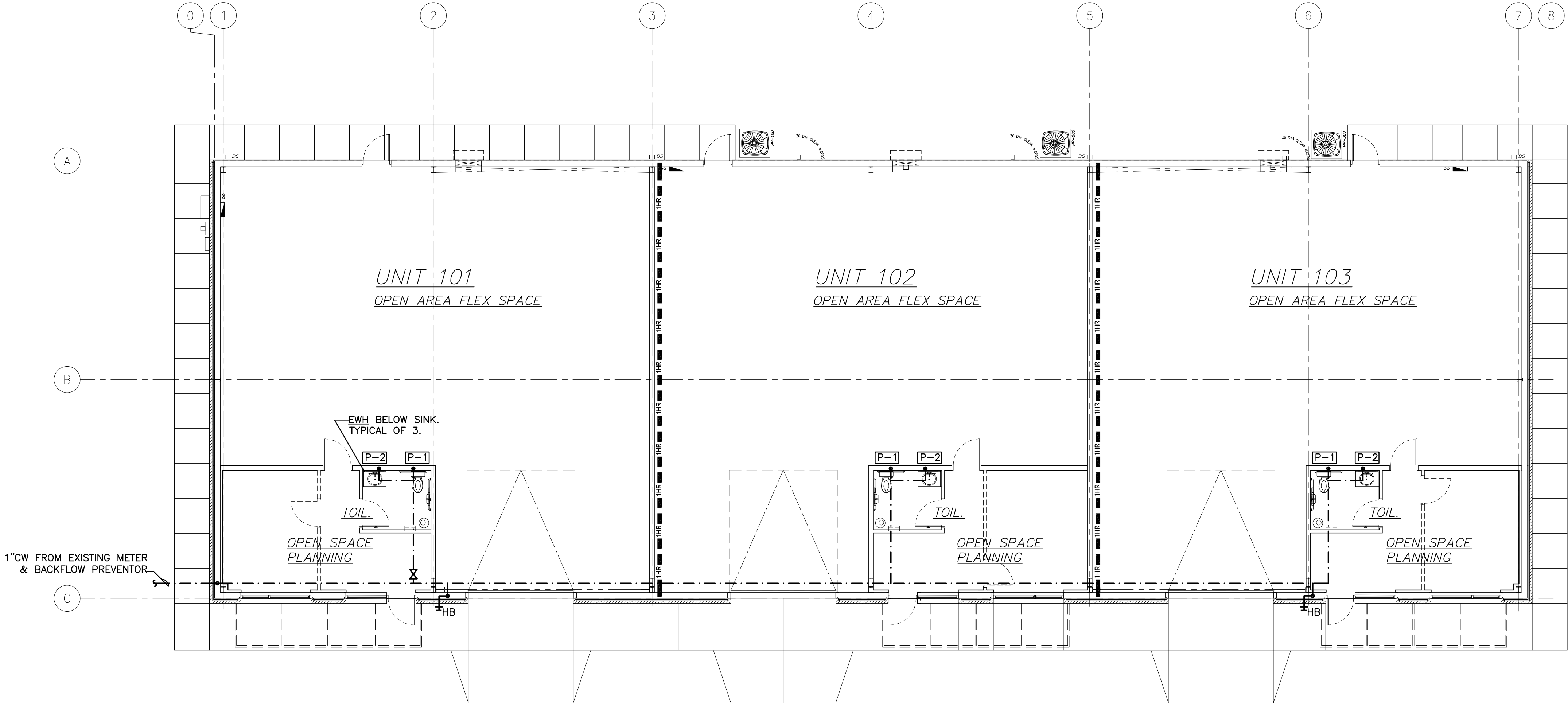
SITE NORTH

PLAN NORTH

1

P102

OVERALL FLOOR PLAN — PLUMBING — WATER



no.	date
	22 AUG, 2019

Proposed

Lease Space "Building Shell" for:

T.A. Woods Business Center

6713 Netherlands Drive

Wilmington, North Carolina 28405

OVERALL FLOOR PLANS — PLUMBING — WATER

job status

Construction Document - Issued for Construction

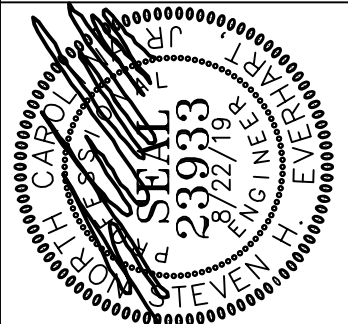
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THIS SHEET SHOWS BASIC DRAFTING STANDARDS

no.	date	revision

SPLIT SYSTEM HEAT PUMP SCHEDULE		
UNIT NUMBER	AHU-2TON	
AREA SERVED		
MANUFACTURER	TRANE	
MODEL NUMBER	TAM7A0A24	
UNIT WEIGHT (LBS)	111	
FAN	TOTAL AIR CFM	800
	OUTSIDE AIR CFM	80
	FAN H.P.	1/3
	EXT. S.P. (IN. H2O)	0.4
	POWER SUPPLY	208/230/60/1
COOLING CAPACITY	TOTAL CAPACITY COOLING (BTUH)	23,200
	SENSIBLE CAPACITY COOLING (BTUH)	16,600
	ENTERING AIR TEMP.	80/67
HEATING CAPACITY	ENTERING AIR TEMP.	70 °F
	HIGH TEMPERATURE (BTUH) 47 F DB	22,400
	LOW TEMPERATURE (BTUH) 17 F DB	13,600
	AUXILIARY COIL CAPACITY	3.6/4.8 KW @ 208/240
	POWER SUPPLY	208/230/60/1
	MINIMUM AMPACITY	25/29
AIR COOLED HEAT PUMP	MAX. OVERCURRENT PROTECTION	25/30
	UNIT NUMBER	HP-2TON
	MODEL NUMBER	4TWR024
	UNIT WEIGHT	196
	ENTERING AIR TEMP.	95°F
	FAN TYPE	PROPELLER
	FAN H.P.	1/8
	COMPRESSOR	RECIP
	POWER SUPPLY	208/230/60/1
	MINIMUM AMPACITY	15
	MAX. OVERCURRENT PROTECTION	25
ACCESSORIES		(1), (2), (3), (4)

- (1) PROVIDE WALL MOUNTED, PROGRAMMABLE ELECTRONIC THERMOSTAT WITH AUTO CHANGEOVER.
- (2) PROVIDE RETURN DUCT SMOKE DETECTOR MOUNTED UPSTREAM OF O.A. INTAKE TO SHUTDOWN UNIT AND ACTIVATE VISUAL AND AUDIBLE SIGNAL AS REQUIRED.
- (3) PROVIDE STRIP HEAT SHUTOFF PER 403.2.4.1.1
- (4) SYSTEMS SELECTED MEET REQUIREMENTS UNDER SECTION 406 OF THE NORTH CAROLINA STATE BUILDING CODE: ENERGY CONSERVATION CODE.

AIR DISTRIBUTION DEVICE SCHEDULE					
TAG	SERVICE	NECK SIZE	OVERALL SIZE	MODEL NUMBER	DESCRIPTION & ACCESSORIES
A	SUPPLY	8"ø	24 X 24	ASCD	1, 2, 3, 7, 8
B	RETURN	14"ø	24 X 24	80	1, 2, 3, 5
<div><div>(1) PRICE AIR DISTRIBUTION; OR APPROVED EQUAL.</div><div>(2) ALUMINUM CONSTRUCTION, STANDARD WHITE FINISH.</div><div>(3) T-BAR LAY-IN PANEL</div><div>(4) SURFACE MOUNT BORDER.</div><div>(5) CFM SHOWN IN GRILLE TAG IS MAXIMUM POSSIBLE WITH EXHAUST AND OUTSIDE AIR AT 0.</div><div>(6) DOUBLE DEFLECTION GRILLE.</div><div>(7) SQUARE FACE, ROUND NECK DIFFUSER</div><div>(8) BUTTERFLY STYLE VOLUME CONTROL DAMPER.</div></div> <div>NOTE: FLEXIBLE DUCTWORK SHALL MATCH DIFFUSER NECK SIZE UNLESS OTHERWISE NOTED.</div>					

EXHAUST FAN SCHEDULE								
TAG	CFM	RPM	S.P. IN. W.G.	WATTS/HP	SONES	ELECTRIC	CONTROL	MANUFACTURER MODEL NUMBER
EF-1	75	700	.25	50 WATTS	3.0	120–1–60	WIRED WITH LIGHT	GREENHECK SP-B90
EF-2	3199	1750	.25	1/3 HP	22	120–1–60	SWITCHED	GREENHECK S2-18-415-A3
<div>(1) CABINET CEILING FAN, DIRECT DRIVE, CENTRIFUGAL, SPRING LOADED ALUMINUM BACKDRAFT DAMPER.</div> <div>(2) ALUMINUM, WHITE ENAMEL CEILING GRILLE.</div> <div>(3) ALUMINUM HOODED WALL CAP WITH BUILT-IN BIRDSCREEN AND DAMPER.</div> <div>(4) SIDEWALL PROPELLER EXHAUST FAN WITH MANUFACTURER'S WALL BOX INCLUDING BACKDRAFT DAMPER AND ALL REQUIRED GUARDS.</div>								

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

METHOD OF COMPLIANCE

Prescriptive ☒ Energy Cost Budget _____

Thermal Zone 3A

Exterior design conditions 26° F
winter dry bulb 92° F DB/76° F WB
summer dry bulb

Interior design conditions 70° F
winter dry bulb 75° F
summer dry bulb 50%
relative humidity

Building heating load 11 MBTU/H
Building cooling load 1.8 TONS

Mechanical Spacing Conditioning System

Unitary

description of unit 9.0 HSPF
heating efficiency 15.0 SEER AVG.
cooling efficiency SEE SCHEDULES
heat output of unit SEE SCHEDULES

boiler

cooling output of unit SEE SCHEDULES
total boiler output. If oversized, state reason. N/A

chiller

total chiller capacity. If oversized, state reason. N/A

List equipment efficiencies N/A

Equipment schedules with motors (mechanical systems)

motor horsepower SEE SCHEDULES
number of phases SEE SCHEDULES
minimum efficiency SEE SCHEDULES
motor type ODP
of poles 4

Additional prescriptive compliance method : 506.2.1 More Eff. Mech Equip.

DESIGNER STATEMENT:

To the best of my knowledge and belief, the design of this building complies with the mechanical systems, service systems and equipments of the 2018 North Carolina State Energy Code.

SIGNED: STEVEN L. EVERHART JR., P.E.

NAME: STEVEN L. EVERHART JR., P.E.

TITLE: PROFESSIONAL ENGINEER

GENERAL MECHANICAL SPECIFICATIONS

ALL WORK SHALL COMPLY WITH THE REQUIRMENTS OF THE LATEST EDITION OF THE NC MECHANICAL CODE.

BASIS OF DESIGN: UNLESS OTHERWISE NOTED THE PURPOSE OF THESE DRAWINGS IS TO PROVIDE DIRECTION AND BASIS OF DESIGN TO A COMPETENT CONTRACTOR FAMILIAR WITH THE TYPE OF SYSTEMS BEING INSTALLED SUFFICIENT TO INDICATE OWNERS REQUESTS AND CODE REQUIREMENTS. IT IS THE CONTRACTORS RESPONSIBILITY, WHEN OTHERWISE UNDIRECTED, TO FOLLOW STANDARD INDUSTRY PRACTICES AND BASIC CODE COMPLIANCE INCLUDING, BUT NOT LIMITED TO, PROVIDING MATCHING REQUIRED ACCESSORIES TO THE SYSTEMS INDICATED, COORDINATING EXACT ROUTINGS AND LOCATIONS WITH OTHER TRADES AND THE OWNER, SELECTING CODE APPROVED MATERIALS, AND MAKING MINOR OFFSETS/ADJUSTMENTS BASED ON FIELD COORDINATION AND OWNER'S FIELD REQUESTS. CHANGE OF MANUFACTURER TO EQUIVALENT SYSTEMS, WITH OWNER'S APPROVAL, IS ACCEPTABLE. CONTACT ENGINEER WITH ANY CONFLICTS NOT COVERED BY THE ABOVE INSTRUCTIONS.

SHEET METAL WORK: THIS CONTRACTOR SHALL FURNISH ALL DUCTWORK AND ASSOCIATED SHEET METAL WORK AS CALLED FOR ON THE DRAWINGS AND REQUIRED FOR A COMPLETE DUCTED AIR DISTRIBUTION SYSTEM.

DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH BEST PRACTICES OF SHEET METAL WORK AND SMACNA STANDARDS.

ALL DUCTWORK SHALL BE GALVANIZED SHEET IRON THROUGHOUT EXCEPT WHERE OTHERWISE SHOWN AND FABRICATED IN ACCORDANCE WITH THE FOLLOWING TABLE (ALL DUCT SIZES ON CONTRACT DRAWINGS ARE SHEET METAL FABRICATION SIZES):

MAXIMUM DIMENSION OF DUCT	GAUGE U.S. STD.	TRANSVERSE JOINT	BRACING
UP TO 12"	26	DRIVE SLIPS 7"-10" CENTERS	NONE
13" TO 30"	24	DRIVE SLIPS 7"-10" CENTERS	1"x1"x1/8" ANGLES 4 FEET FROM JOINT

DUCTS 25 INCHES OR SMALLER IN MAXIMUM DIMENSION SHALL BE SUPPORTED WITH 1 INCH FLAT BAND HANGERS; DUCTS 25 INCHES AND LARGER SHALL BE SUPPORTED BY 3/4 INCH X 1-1/2 INCH ANGLE IRON AND ROUND ROD. SUPPORTS SHALL BE NOT MORE THAN 8 FEET ON CENTERS, PROPERLY FASTENED AND PLACED TO BUILDING STRUCTURES AND SHALL EXTEND AND BE RIVETED TO THE BOTTOM OF DUCTS.

UNLESS OTHERWISE SPECIFIED, FURNISH AND INSTALL ALL NECESSARY LINTELS, PROPERLY SIZED, SHEET METAL SLEEVES AND ESCUTCHEON COLLARS WHERE DUCTWORK RISES THROUGH FLOORS OR PASSES THROUGH WALLS OR CEILINGS.

FURNISH AND INSTALL FLEXIBLE COLLARS IN THE DUCTWORK CONNECTIONS TO AIR HANDLING FANS TO PREVENT NOISE TRANSMISSION BETWEEN SECTIONS.

ALL CHANGES IN DUCT DIRECTION SHALL BE LONG RADIUS ELBOWS OR SHALL BE FITTED WITH TURNING VANES. IT IS ACCEPTABLE TO CHANGE RECTANGULAR DUCTWORK TO THE EQUIVALENT SIZE IN ROUND PROVIDED THE CONTRACTOR COORDINATES ALL CLEARANCE ISSUES.

DUCT INSULATION: ALL CONCEALED DUCTWORK SHALL BE INSULATED ON THE OUTSIDE WITH TWO INCH (2") THICK, 3/4 POUND DENSITY FIBERGLASS BLANKET INSULATION HAVING AN ALUMINUM FOIL-SCRIM VAPOR BARRIER JACKET.

EDGES OF INSULATION SHALL BE CUT STRAIGHT AND TRUE AND SHALL BE TIGHTLY BUTTED. THE VAPOR BARRIER JACKET SHALL OVERLAP THE BLANKET JOINT A MINIMUM OF THREE INCHES (3") THE JACKET LAP SHALL BE FASTENED WITH MOISTURE RESISTANT ADHESIVE AND ALSO OUTWARD CLINCHING STAPLES SPACED TEN INCHES (10") C/C. THE VAPOR BARRIER EDGE AND STAPLES SHALL THEN BE COVERED WITH A THREE INCH (3") WIDE TAPE OF THE SAME MATERIAL AS THE JACKET AND SHALL BE FASTENED WITH MOISTURE RESISTANT ADHESIVE.

ALL CUTS, TEARS AND PENETRATIONS IN THE VAPOR BARRIER JACKET SHALL BE SEALED WITH JOINT TAPE. ALL EDGES OF INSULATING BLANKET SHALL BE SEALED FROM THE JACKET TO DUCT SURFACE WITH TAPE.

INSULATING BLANKET ON THE BOTTOM OF SURFACES IN EXCESS OF 24 INCHES WIDE SHALL BE SECURED AGAINST THE DUCT WITH ADHESIVE OVER THE ENTIRE AREA, MECHANICAL CLIPS ON 24 INCH CENTER OR BY WIRE TIES AROUND THE DUCT SPACED 24 INCHES C/C.

CONTRACTOR MAY USE FLEXIBLE DUCTWORK (MAXIMUM LENGTHS 15'-0") FOR FINAL CONNECTIONS TO DIFFUSERS/GRILLES. FLEXIBLE DUCTWORK SHALL BE CERTAFLEX 25 AS MANUFACTURED BY THE CERTANTEED CORPORATION.

REGISTERS AND GRILLES: ALL REGISTERS AND GRILLES SHALL BE OF SIZE, STYLE AND CAPACITY CALLED FOR ON PLANS AND IN THE GRILLE SCHEDULE. PROVIDE RUBBER OR EXPANDED FOAM GASKETS COMPLETELY AROUND ALL REGISTER AND GRILLE FRAMES TO PREVENT AIR LEAKAGE BETWEEN GRILLE FRAME AND DUCT OR BETWEEN GRILLE FRAME AND SURROUNDING FINISHED SURFACE. ACCEPTABLE MGFS: PRICE, CARNES, METALAIR, KRUGER. REGISTERS AND GRILLES SHALL BE BALANCED TO CFM SHOWN AND RECORD MADE OF ACTUAL FLOW AND BALANCE METHOD.

EQUIPMENT: MECHANICAL AND ELECTRICAL CONTRACTORS SHALL COORDINATE PRIOR TO ORDERING EQUIPMENT TO VERIFY CONSISTANT VOLTAGES. PRIOR TO EQUIPMENT BEING ENERGIZED, VOLTAGE TO EQUIPMENT CIRCUITS SHALL BE VERIFIED AS INSTALLED TO MATCH EQUIPMENT NAMEPLATE.

OPERATING INSTRUCTIONS, CERTIFICATES AND WARRANTIES: THE ORIGINAL OF ALL INSPECTION CERTIFICATES SHALL BE DELIVERED TO THE OWNER AND ONE (1) COPY EACH TO THE ENGINEER PRIOR TO REQUEST FOR FINAL PAYMENT.

THREE (3) COPIES OF OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUFACTURER'S WARRANTIES FOR ALL EQUIPMENT PROVIDED UNDER THIS CONTRACT SHALL BE PROVIDED TO THE OWNER PRIOR TO SUBMITTING REQUEST FOR FINAL PAYMENT.

PRIOR TO FINAL PAYMENT TO THE CONTRACT, THE CONTRACTOR SHALL BE RESPONSIBLE TO TRAIN THE AUTHORIZED PERSONNEL ON HOW TO SERVICE, START-UP AND SHUT-DOWN THE VARIOUS SECTIONS OF THE SYSTEM. UPON COMPLETION OF THIS PHASE OF THE CONTRACT, THE CONTRACTOR SHALL SECURE A LETTER OF ACCEPTANCE FROM THE OWNER THAT HE IS SATISFIED WITH THE CONDITIONS STIPULATED HEREIN. UPON ACCEPTANCE OF THIS LETTER AND AT THE DISCRETION OF THE ENGINEER, THE FINAL PAYMENT WILL BE MADE.

THE CONTRACTOR SHALL PROVIDE A WRITTEN GUARANTEE OF ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM DATE OF SYSTEM ACCEPTANCE.

THE WORK UNDER THIS CONTRACT WILL BE ACCEPTED ONLY AS AN ENTIRE SYSTEM UPON SATISFACTORY COMPLETION OF THE REQUIRED TESTS. NO PARTIAL ACCEPTANCE OF ANY PART OR PORTION OF APPARATUS WILL BE MADE.

INSTALL AND CONNECT ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND DO ALL WORK IN A NEAT AND WORKMANLIKE MANNER AND IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE AS JUDGED BY THE ENGINEER.

ALL EQUIPMENT AND PIPING SHALL BE SO INSTALLED THAT NO OBJECTIONABLE NOISES FROM EQUIPMENT, PIPING OR AIR DISTRIBUTION ARE AUDIBLE IN THE FINISHED AREAS.

GUARANTEE: THIS CONTRACTOR SHALL GUARANTEE ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR ONE (1) YEAR FOLLOWING FINAL INSPECTION AND ACCEPTANCE OF THE BUILDING BY THE ENGINEER AND OWNER. THIS APPLIES TO ALL MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT, REGARDLESS OF SOURCE.

THE ONE (1) YEAR GUARANTEE PERIOD WILL START ON THE DAY OF FINAL INSPECTION AND ACCEPTANCE BY THE OWNER. THE CONTRACTOR SHALL PROVIDE THE ENGINEER A LETTER WITH TWO (2) COPIES STATING THE BEGINNING AND ENDING DATES OF THE GUARANTEE BASED ON THE AFOREMENTIONED STARTING DATES.

EXTENDED GUARANTEE: PROVIDE AN ADDITIONAL FOUR (4) YEAR GUARANTEE ON ALL COMPRESSORS BEYOND THE ABOVE MENTIONED ONE (1) YEAR GUARANTEE PERIOD.

AIR BALANCE: ALL SYSTEMS SHALL BE BALANCED BY THE CONTRACTOR PER THE REQUIREMENTS OF SECTION 408.2.2.1 OF THE NORTH CAROLINA STATE BUILDING CODE: ENERGY CONSERVATION CODE.

ENERGY CODE COMPLIANCE: HVAC EQUIPMENT SELECTED MEETS PERFORMANCE REQUIREMENTS OF THE NORTH CAROLINA STATE BUILDING CODE: ENERGY CONSERVATION CODE SECTION 406.2 ANY SUBSTITUTIONS MUST MEET THIS STANDARD AS WELL. UPON FINAL INSPECTION THE CONTRACTOR SHALL PROVIDE TO OWNER MANUALS AND EVIDENCE OF AIR BALANCE. CONTRACTOR SHALL SCHEDULE DESIGN PROFESSIONAL AND ASSIST TO COMPLETE SYSTEM INSTALLATION STATEMENT IN ACCORDANCE WITH THE NORTH CAROLINA STATE BUILDING CODE: ENERGY CONSERVATION CODE SECTION 408.1.

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PROJECT NO. 11105

McDOWELL CONSULTING ENGINEERS, INC.
1000 BARKER BLVD., SUITE 300
FARMINGTON, NC 28443
TEL (910) 270-3747 FAX (270)-3779

NC LICENSE NO. C-2546

Design Elements

Michael L. Shaed, Jr., AIA, AIBD

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Wilmington, North Carolina 28405
910.599.3131

Proposed Lease Space "Building Shell" for:
T.A. Woods Business Center

6713 Netherlands Drive
Wilmington, North Carolina 28405

MECHANICAL SCHEDULES, NOTES & DETAILS

Construction Document - Issued for Construction

date 22 AUG, 2019

job no. TAWOOD/FLEX/19

drawn by KSG

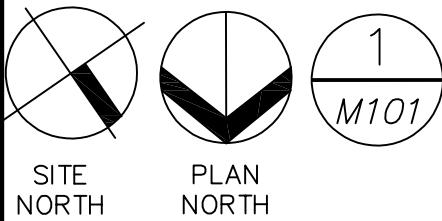
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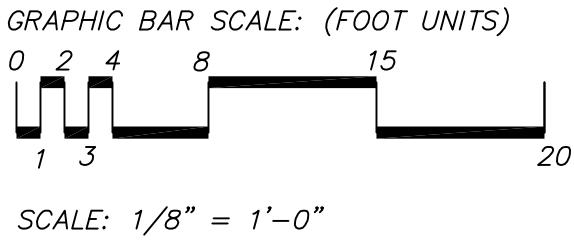
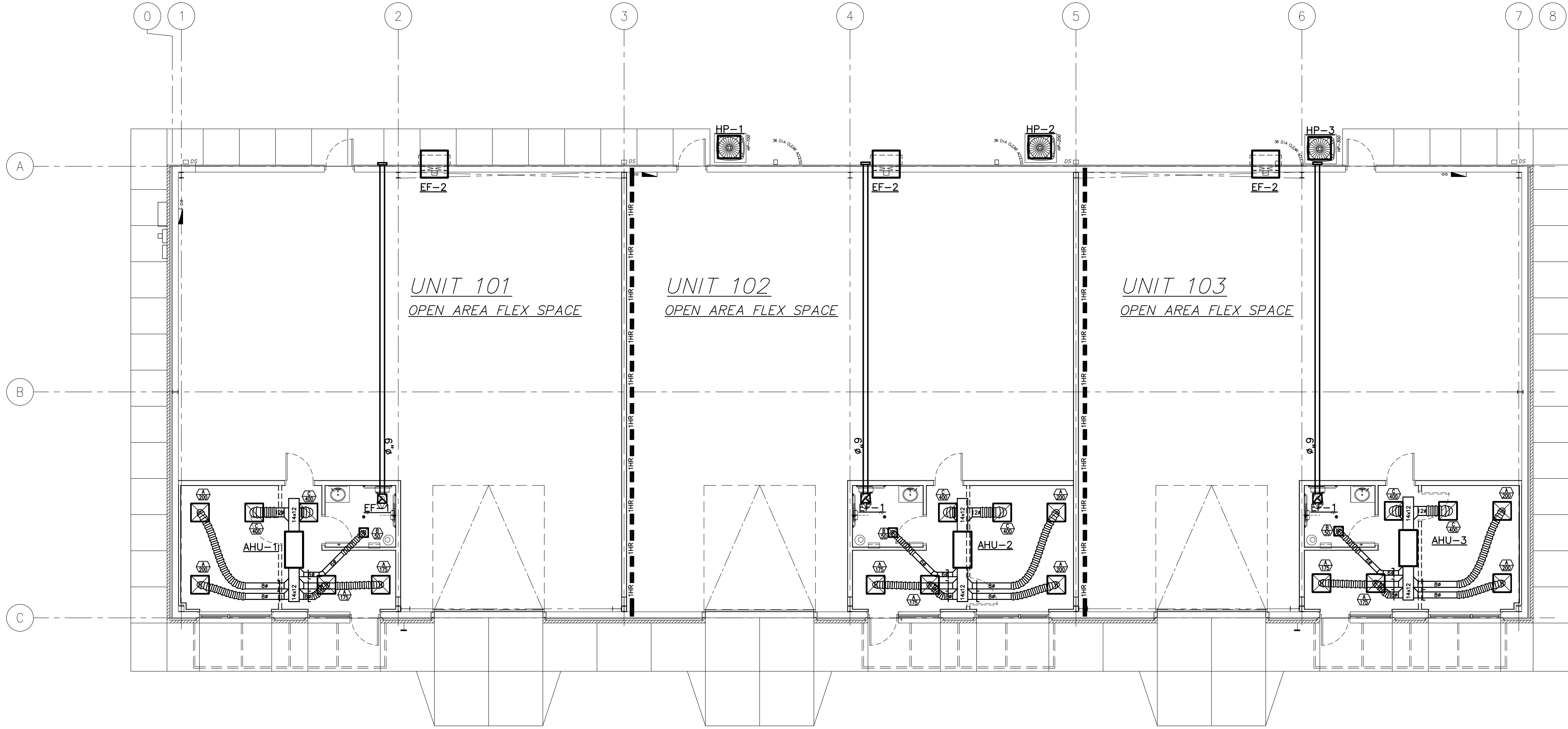
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revision no.

no.	date	revision



OVERALL FLOOR PLAN — MECHANICAL

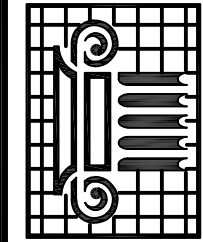


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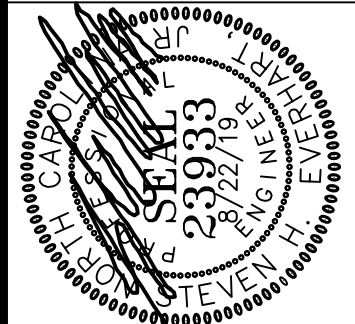
Proposed Lease Space "Building Shell" for:
T.A. Woods Business Center
6713 Netherlands Drive
Wilmington, North Carolina 28405

OVERALL FLOOR PLANS — MECHANICAL
job status

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PROJECT NO. 11105
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1001 W. 36th Street, Suite 200
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NC LICENSE NO. C-2546

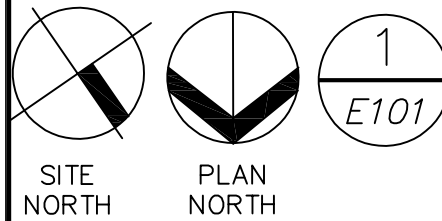
BACK TO BACK
IN RATED WALLS.

1
E101

OVERALL FLOOR PLAN — ELECTRICAL — POWER

SITE
NORTH

PLAN
NORTH



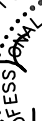
Proposed Lease Space "Building Shell" for:
T.A. Woods Business Center
6713 Netherlands Drive
Wilmington, North Carolina 28405

OVERALL FLOOR PLANS – ELECTRICAL – POWER
job status **Construction Document - Issued for Construction**

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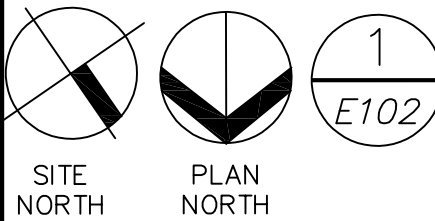
**MCDOWELL CONSULTING
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H. CAROL WEAVER
SEAL
018518
8/22/19
CRECITY, L.

BE SUBJECT TO LEGAL ACTION.

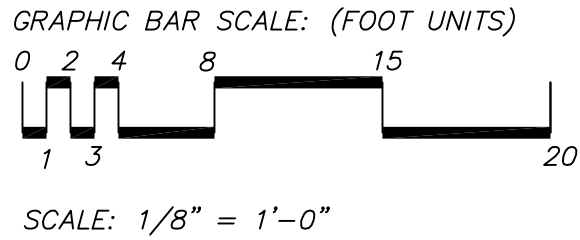
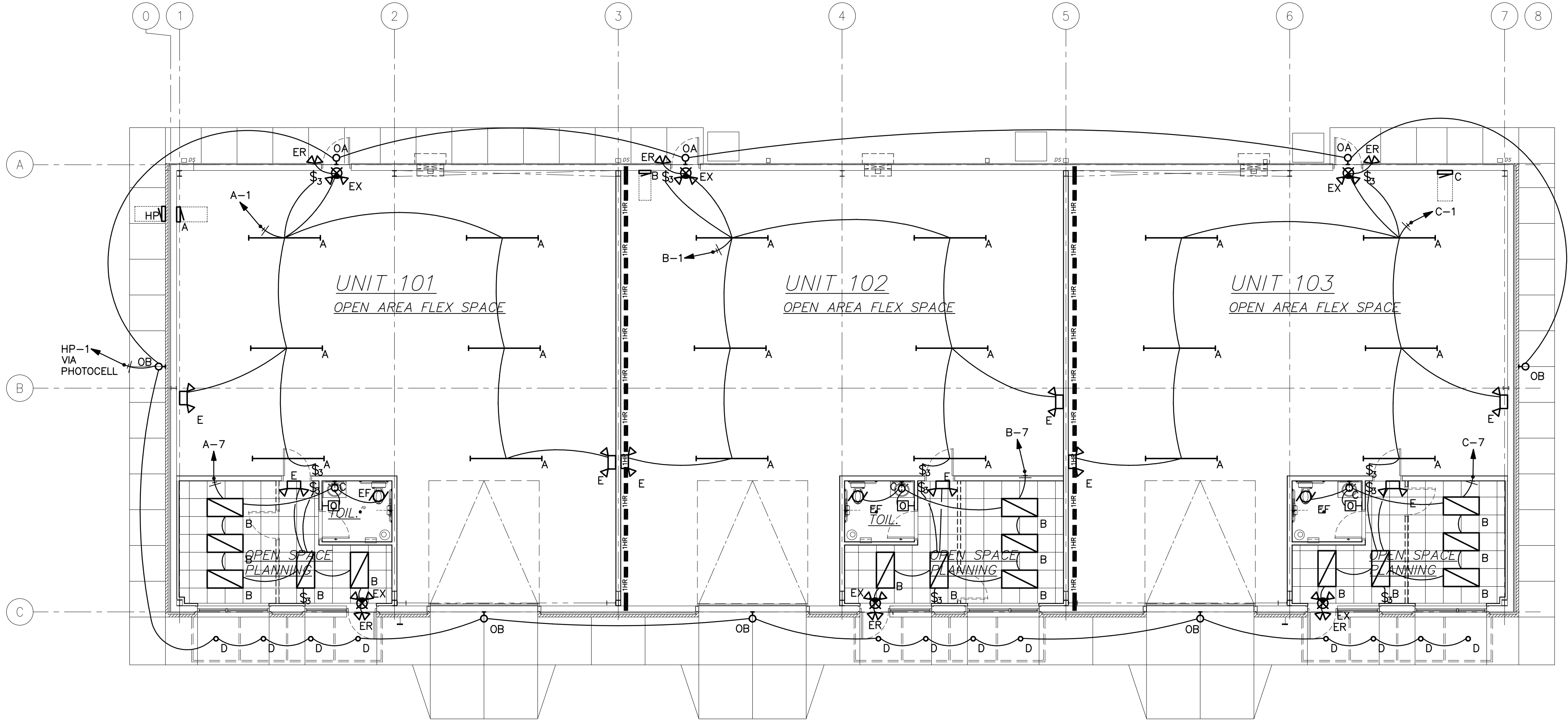
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OVERALL FLOOR PLAN — ELECTRICAL — LIGHTING

OCCUPANCY SENSOR LEGEND	
SYMBOL	DESCRIPTION
	WALL BOX OCCUPANCY SENSOR GREENGATE ONW-P-1001-MV-W

NOTE: PROVIDE SWITCHPACKS AS REQUIRED



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	job no.	TAWOOD/FLEX/19
	drawn by	RSQ
	checked by	GLM
	drawing no.	E102
	revision no.	

Proposed Lease Space "Building Shell" for:
T.A. Woods Business Center
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OVERALL FLOOR PLANS — ELECTRICAL — LIGHTING
job status
Construction Document - Issued for Construction

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