STORAGE ELECTRIC WATER HEATER SCHEDULE

MARK	DESCRIPTION	STORAGE (GAL)	GPH AT 100 °F RISE	ELECTRICAL DATA KW	V	PH	HZ	SPECIFICATION	NOTES
WH1	ELECTRIC, VERTICAL STORAGE	80.0	74.0	18.0	480	3	60	BRADFORD WHITE ELECTRIFLEX MD MODEL NUMBER E32-80R-5	1, 2, 3

NOTES:
1. APPROVED MANUFACTURERS: A.O. SMITH, BRADFORD WHITE, RHEEM, STATE INDUSTRIES.
2. WATER HEATER SHALL MEET OR EXCEED THE REQUIREMENTS OF ASHRAE 90.1 AND THE NORTH CAROLINA ENERGY EFFICIENCY CODE.
3. SET WATER HEATER OUTLET TEMPERATURE TO 140 °F.

THERMAL EXPANSION TANK SCHEDULE

MARK	DESCRIPTION	TOTAL VOLUME (GAL)	ACCEPTANCE VOLUME (GAL)	WEIGHT (LB)	SPECIFICATION	NOTES
ET1	DIAPHRAGM, THERMAL EXPANSION	5.0	3.3	28.0	WESSELS TTA-12	1, 2, 3

NOTES:
1. APPROVED MANUFACTURERS: AMTROL, BELL & GOSSETT, WATTS, WESSELS.
2. PROVIDE WITH PRESSURE GAUGE, AIR-CHARGE FITTINGS, AND TANK DRAIN; PRECHARGE TO 40.0 PSI.
3. MOUNT SECURELY AND INDEPENDENTLY FROM STRUCTURE.

PUMP SCHEDULE

MARK	DESCRIPTION	CAPACITY GPM	FT-HD	ELECTRICAL DATA HP	V	PH	HZ	SPECIFICATION	NOTES
CP1	CIRCULATION PUMP FOR WH1	5.0	7.5	1/12	120	1	60	TACO 110S	1, 2, 3

NOTES:
1. APPROVED MANUFACTURERS: BELL & GOSSETT, GROUNDFOS, GOULDS, TACO.
2. PUMP SHALL BE ALL BRONZE OR STAINLESS STEEL CONSTRUCTION.
3. MOUNT SECURELY FROM STRUCTURE SUCH THAT THE CONNECTED PIPING BEARS NO WEIGHT OF THE PUMP.

INTERCEPTOR SCHEDULE

MARK	DESCRIPTION	INLET & OUTLET	CAPACITY TOTAL	GREASE	SOLIDS	SPECIFICATION	NOTES
GI1	GREASE INTERCEPTOR	4"	1,000.0 GAL	6,577.0 LB	102.0 GAL	MIFAB SUPERMAX SUPER-1000	1, 2

NOTES:
1. APPROVED MANUFACTURERS: MIFAB, SCHIER, ZURN.
2. INSTALL IN ACCORDANCE WITH DETAIL 4/P2.01.

PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	W	V	CW	HW	SPECIFICATION	NOTES
FS1	FLOOR SINK 12" x 12" x 6" STAINLESS STEEL BODY WITH ANCHOR FLANGE AND SUSPENDED STRAINER	SEE PLANS	2"	---	---	DRAIN: ZURN Z1750-TS-Y STRAINER: STAINLESS STEEL HALF GRATE P-TRAP: DEEP SEAL (MATCH DRAIN SIZE)	
HY1	INTERIOR WALL HYDRANT - KITCHEN ASSE 1052 HOSE THREAD BACKFLOW PREVENTER, METAL WHEEL HANDLE	---	---	3/4"	---	FIXTURE: WOODFORD 26-PC	1
FCO	FLOOR CLEANOUT CAST IRON BODY WITH ADJUSTABLE COVER, BRONZE PLUG	SEE PLANS	---	---	---	FIXTURE: ZURN ZN1400-BZ-BP-K-VP	
WCO	WALL CLEANOUT BRONZE PLUG WITH ROUND STAINLESS STEEL ACCESS COVER	SEE PLANS	---	---	---	FIXTURE: ZURN Z1441-BP-VP	1
FCO	FLOOR CLEANOUT CAST IRON BODY WITH ADJUSTABLE COVER, BRONZE PLUG	SEE PLANS	---	---	---	FIXTURE: ZURN ZN1400-BZ-BP-K-VP	
GCO	FLOOR CLEANOUT CAST IRON BODY WITH ADJUSTABLE COVER, BRONZE PLUG	SEE PLANS	---	---	---	FIXTURE: ZURN ZN1400-BZ-BP-K-VP	

NOTES:
1. INSTALL AT 12" ABOVE FINISH FLOOR.

APPROVED MANUFACTURERS	PRODUCT TYPE	APPROVED EQUALS
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE ONLY BY ANY OF THE MANUFACTURERS LISTED. ALL FIXTURES OF THE SAME TYPE AND/OR MATERIAL SHALL BE PROVIDED BY A SINGLE MANUFACTURER.	FLOOR DRAINS/SINKS	MIFAB, JAY R. SMITH, JOSAM, WADE, WATTS, ZURN
	CARRIERS, CLEANOUTS	MIFAB, JAY R. SMITH, JOSAM, WADE, WATTS, ZURN

DOMESTIC WATER PIPING

1. ABOVEGROUND PIPING AND JOINTS: PROVIDE TYPE 'L' HARD DRAWN SEAMLESS COPPER TUBING (ASTM B88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18). JOINTS SHALL BE LEAD FREE 95-5 TIN/SILVER SOLDER JOINTS (ASTM B32).
2. PROVIDE TWO-PIECE, BRONZE OR BRASS BODY, FULL-PORT, BALL SHUTOFF VALVES WITH BLOWOUT-PROOF STEMS AND ADJUSTABLE PACKING GLANDS. PROVIDE HANDLE EXTENSIONS ON INSULATED PIPING.
3. INSULATE PIPING ABOVE GRADE (EXCEPT EXPOSED CONNECTIONS TO PLUMBING FIXTURES) WITH GLASS FIBER INSULATION HAVING A VAPOR BARRIER AND JACKET. PIPE INSULATION SHALL HAVE A CONDUCTIVITY NOT EXCEEDING 0.27 BTU/H x SF. SEE LIST BELOW FOR INSULATION THICKNESS:
   - PROVIDE 1" THICK INSULATION FOR HOT WATER & CIRCULATION PIPING SIZES 1/2" THROUGH 1-1/4".
   - PROVIDE 1-1/2" THICK INSULATION FOR HOT WATER & CIRCULATON PIPING SIZES 1-1/2" THROUGH 4".
   - PROVIDE 1/2" THICK INSULATION FOR COLD WATER PIPING SIZES 1/2" THROUGH 1-1/4".
   - PROVIDE 1" THICK INSULATION FOR COLD WATER PIPING SIZES 1-1/2" THROUGH 4".
4. PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES SHALL MEET A FLAME-SPREAD RATING OF TWENTY-FIVE (25) OR LESS AND A SMOKE-DEVELOPED RATING OF FIFTY (50) OR LESS AS TESTED BY ASTM E84 (NFPA 255) METHOD AND SHALL BE PLENUM RATED. PROVIDE PVC INSULATION JACKET FOR EXPOSED PIPING IN FOOD SERVICE AREAS. INSTALL INSULATION CONTINUOUSLY THROUGH WALLS AND PIPE HANGERS. PROVIDE GALVANIZED STEEL SHIELDS BETWEEN PIPE HANGERS AND INSULATION.
5. PROTECT COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS AND CLIPS SHALL BE COPPER OR COPPER-PLATED. WHERE COPPER PIPING IS CARRIED ON TRAPEZE HANGERS WITH OTHER PIPING, PROVIDE A PERMANENT ELECTROLYTIC ISOLATION MATERIAL TO PREVENT CONTACT WITH DISSIMILAR OTHER METALS. ELECTRICAL TAPE OR SIMILAR ADHESIVE WRAPPING IS NOT AN APPROVED ISOLATION METHOD.
6. PROTECT COPPER PIPING AGAINST CONTACT WITH MASONRY. WHERE COPPER IS SLEEVED THROUGH MASONRY, PROVIDE COPPER OR RED BRASS SLEEVES. WHERE COPPER MUST BE CONCEALED IN OR AGAINST MASONRY PARTITIONS, PROVIDE A HEAVY COATING OF ASPHALTIC ENAMEL ON THE COPPER PIPING AND FIFTEEN (15) POUND ASPHALT SATURATED FELT BETWEEN THE PIPING AND THE MASONRY PARTITION.
7. PERFORM A PRESSURE TEST ON ALL WATER PIPING. FILL PIPING WITH POTABLE WATER, CAP AND SUBJECT PIPING TO A STATIC WATER PRESSURE OF FIFTY (50) PSI ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF THE PIPING SYSTEM MATERIALS OR PRESSURIZE PIPING WITH AIR TO AT LEAST ONE-HUNDRED (100) PSI. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR (4) HOURS. LEAKS OR LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED.
8. STERILIZE THE DOMESTIC WATER SYSTEM PER THE AMERICAN WATER WORKS ASSOCIATION'S SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.
9. SLOPE WATER PIPING FOR DRAINAGE WITH DRAIN VALVES INSTALLED AT LOW POINTS.

SANITARY AND GREASE WASTE AND VENT PIPING

1. UNDERGROUND PIPING AND JOINTS: PROVIDE SERVICE WEIGHT CAST IRON HUB AND SPIGOT PIPE (ASTM A74) WITH COMPRESSION JOINTS (CISPI HSN) AND NEOPRENE GASKETS (ASTM C564).
2. ABOVEGROUND PIPING AND JOINTS: PROVIDE SERVICE WEIGHT CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET AND STAINLESS STEEL CLAMP JOINTS (CISPI 310) WITH NEOPRENE GASKET / STAINLESS STEEL CLAMP JOINTS (ASTM C1540).
3. SLOPE WASTE AND VENT PIPING AT 1/4" PER FOOT MINIMUM FOR PIPING 2-1/2" AND SMALLER AND 1/8" PER FOOT MINIMUM FOR PIPING 3" AND LARGER UNLESS NOTED OTHERWISE. SLOPE ALL GREASE WASTE PIPING AT 1/4" PER FOOT.
4. PROVIDE CLEANOUTS AFTER EVERY FOUR HORIZONTAL 45° BENDS IN SERIES AND NO MORE THAN 100'-0" APART IN HORIZONTAL RUNS. INSTALL EACH CLEANOUT IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.
5. PROVIDE FLOOR CLEANOUTS WITH TOPS DESIGNED TO MATCH SPECIFIC FLOOR FINISHES SUCH AS CARPET, TILE, ETC. GRADE CLEANOUTS SHALL BE PROVIDED IN AN 18" BY 18" BY 6" CONCRETE PAD.
6. WASTE AND VENT SYSTEMS SHALL BE TESTED AND PROVED WATER TIGHT UNDER A HEAD PRESSURE OF NO LESS THAN TEN (10) FEET. THIS PRESSURE SHALL BE HELD FOR A PERIOD OF NO LESS THAN FIFTEEN (15) MINUTES.

KITCHEN CONNECTION NOTES

1. REFER TO THE FOOD SERVICE EQUIPMENT PLANS, SCHEDULES, AND SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING THE ROUGH-IN LOCATIONS, ELEVATIONS, QUANTITIES, AND PIPE SIZES.
2. ALL PLUMBING SCOPE OF WORK AND CONNECTIONS SHALL BE COORDINATED WITH THE FOOD SERVICE EQUIPMENT VENDOR PRIOR TO ORDERING AND INSTALLATION OF ANY PLUMBING WORK.
3. PROVIDE AN ADJUSTABLE, POINT-OF-USE THERMOSTATIC MIXING VALVE ON THE SUPPLY TO EACH HAND-WASHING SINK.
4. THE PLUMBING CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS TO FOOD SERVICE EQUIPMENT.
5. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF THE DOMESTIC WATER SYSTEM AGAINST BACKFLOW AND BACK SIPHONAGE WHEN A DIRECT CONNECTION IS MADE TO ANY KITCHEN EQUIPMENT OR APPLIANCE. PER NORTH CAROLINA PLUMBING CODE 608.3, ALL DEVICES, APPURTENANCES,APPLIANCES, AND APPARATUS INTENDED TO SERVE SPECIAL FUNCTIONS SUCH AS PROCESSING, COOKING, HEATING, OR STORAGE OF ICE THAT ARE CONNECTED TO THE WATER SUPPLY SHALL BE PROVIDED WITH PROTECTION AGAINST BACKFLOW CONTAMINATION OF THE WATER SUPPLY SYSTEM.
6. WATER FILTERS, SOFTENERS, AND HOLDING TANKS OF POTABLE WATER SHALL BE PROTECTED AGAINST CONTAMINATION. THE PLUMBING CONTRACTOR SHALL COORDINATE WITH THE KITCHEN EQUIPMENT VENDOR AND SHALL VERIFY THE PROTECTION REQUIRED. ANY APPROVED DEVICE EITHER EXTERNAL TO OR BUILT INTO THE APPLIANCE SHALL BE ACCEPTABLE.

Storage Tank Water Heater Sizing Calculator

Developed by the Plan Review Unit of the Environmental Health Section
NC Division of Public Health

Establishment Name:	NCSU Jordan Hall Library
Address:	2800 Faucette Drive, Raleigh, NC 27695

EQUIPMENT	Description	Number of compartments	Length (inches)	Width	Depth	GPH CALCULATED Gallons Per Hour (GPH)
Enter the description, and number and size of compartments for each sink						
Manual warewashing sink	Item #A41	3	16	20	12	38
Sink #2	N/A	0	0	0	0	0
Sink #3	N/A	0	0	0	0	0
Bar sink	N/A	0	0	0	0	0
Sinks are calculated at 75% capacity					Total	38

Enter type of prep sink and number of sink compartments for each sink	Type of prep sink (vegetable, meat, seafood)	Number of compartments	Gallons Per Hour (GPH)
Prep sink #1	N/A	0	0
Prep sink #2	N/A	0	0
Prep sink #3	N/A	0	0
Prep sinks are calculated at 5 gallons per compartment		Total	0

Enter the quantity of equipment	Quantity	Gallons Per Hour (GPH)
Handwashing sinks	3	15
Service sink	1	5
Hose reel	0	0
Clothes washer	0	0

Enter a description and estimated gallon per hour (GPH) usage for other equipment	Description	Estimated gallons per hour (GPH) usage	
Other equipment	N/A	0	0
Other equipment	N/A	0	0
Other equipment	N/A	0	0
Handwashing sinks and service sinks are calculated at 5 GPH each. Hose reels are calculated at 5 GPH, clothes washers at 15 GPH, other equipment at the usage entered.		Total	20

Enter make, model, and Final Rinse Usage gallons per hour (GPH) for the warewashing machine	Make	Model	Final Rinse Usage (GPH) Found in "Warewashing Machine Specs" list below or on manufacturer's spec sheet	Gallons Per Hour (GPH)
Warewashing machine	Jackson WWS	DishStar HT-E	18	12.6
Enter the quantity of pre-rinse units	Quantity			Gallons Per Hour (GPH)
Pre-rinse	0			0
Warewashing machines are calculated at 70% of the final rinse usage specified by the manufacturer. Pre-rinses are calculated at 45 GPH.			Total	12.6

Recovery Rate Needed (GPH): 70

Water Heater Input (BTU or kW) Needed:

Gas Water Heater	Electric Water Heater
54 ,000 BTU at 70°F rise	12 kW at 70°F rise
61 ,000 BTU at 80°F rise	14 kW at 80°F rise
69 ,000 BTU at 90°F rise	15 kW at 90°F rise
77 ,000 BTU at 100°F rise	17 kW at 100°F rise

PLUMBING GENERAL NOTES

1. GENERAL AND SPECIAL CONDITIONS OF THE CONTRACT APPLY TO THE PLUMBING SCOPE OF WORK. THE PLUMBING DRAWINGS AND SPECIFICATIONS SHALL NOT BE INTERPRETED AS WAIVING OR OVERRULING ANY REQUIREMENTS EXPRESSED IN GENERAL CONDITIONS.
2. PLUMBING WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE NORTH CAROLINA STATE PLUMBING CODE AND WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
3. PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL PLUMBING SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE CODES.
4. WARRANT THE SYSTEM LABOR, MATERIALS AND EQUIPMENT FOR THE TIME PERIOD SPECIFIED IN THE PROJECT MANUAL. IF NO WARRANTY SECTION IS PROVIDED, THEN WARRANT THE SYSTEM LABOR, MATERIAL AND EQUIPMENT FOR A MINIMUM OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE.
5. COORDINATE ALL PLUMBING PIPING LOCATIONS, ROUGH-IN LOCATIONS AND EQUIPMENT LOCATIONS WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES. FINAL PIPING AND EQUIPMENT LOCATIONS SHALL BE A CODE COMPLIANT INSTALLATION FOR ALL TRADES.
6. PLUMBING PLANS SHALL NOT BE SCALED. REFERENCE THE ARCHITECTURAL PLANS FOR DIMENSIONS OF ALL LOCATIONS OF PLUMBING FIXTURES, FLOOR DRAINS, COLUMNS, WALLS, DOORS, ETC.
7. WHERE DISCREPANCIES ARE FOUND IN THE DRAWINGS AND SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. CONTACT ENGINEER FOR CLARIFICATION.
8. ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
9. ALL VALVES, BACKFLOW PREVENTERS, BOOSTER PUMPS, ETC. SERVING THE DOMESTIC WATER SYSTEM SHALL MEET LEAD FREE STANDARDS PER ANSI/NSF 372 AND NSF 61, ANNEX G.
10. PROVIDE COMPLETE PLUMBING FIXTURES AND EQUIPMENT. INCLUDE SUPPLIES, STOPS, VALVES, FAUCETS, DRAINS, TRAPS, TAILPIECES, ESCUTCHEONS, ETC. AND INSTALL PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
11. CUT WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF PLUMBING WORK. ALL CUTTING SHALL BE HELD TO A MINIMUM. PATCH AND FINISH SURFACES TO MATCH ADJOINING SURFACES.
12. PIPING AND SPECIALTIES SHALL BE LOCATED CONCEALED IN WALLS, PARTITIONS OR ABOVE CEILINGS UNLESS NOTED OTHERWISE. PIPING IN EXPOSED AREAS SHALL BE RUN TIGHT TO STRUCTURAL ELEMENTS.
13. PROVIDE ACCESS DOORS FOR ALL SPECIALTIES, VALVES, WATER HAMMER ARRESTERS, TRAP PRIMERS, ETC., CONCEALED BEHIND WALLS OR CEILINGS THAT REQUIRE MAINTENANCE ACCESS.
14. DO NOT INSTALL PIPING IN AREAS SUBJECT TO FREEZING TEMPERATURES. INSTALL PIPING SHOWN IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.
15. PIPING, VENTS, ETC. EXTENDING THROUGH EXTERIOR WALLS AND/OR THE ROOF SHALL BE FLASHED AND COUNTER-FLASHED IN A WATERPROOF MANNER. COORDINATE FLASHING WITH THE GENERAL CONTRACTOR.
16. PROVIDE A CHROME FINISH FOR ALL EXPOSED PIPING IN RESTROOMS AND OTHER FINISHED AREAS.
17. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
18. ATTACH HANGERS TO STRUCTURE. HANGERS SHALL NOT ATTACH TO THE ROOF OR FLOOR DECK. SUPPORT PIPING IN ACCORDANCE WITH SECTION 308 OF THE NORTH CAROLINA PLUMBING CODE.
19. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCE AROUND ALL EQUIPMENT FOR MAINTENANCE.
20. VALVES AND OTHER PIPING ACCESSORIES REQUIRING ACCESS SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS NO MORE THAN EIGHTEEN (18) INCHES ABOVE THE CEILING. PROVIDE OFFSETS IN PIPING AS NECESSARY TO ACCOMMODATE THIS REQUIREMENT.
21. FIRESTOP ALL PENETRATIONS OF FIRE-RATED WALLS, FLOORS AND PARTITIONS. PROVIDE A DEVICE(S) OR SYSTEM(S) WHICH HAS BEEN TESTED AND LISTED AS COMPLYING WITH ASTM E-814 AND INSTALL IN ACCORDANCE WITH THE CONDITIONS OF THE LISTING. PROVIDE A DEVICE(S) OR SYSTEM(S) WITH AN F-RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED. REFER TO ARCHITECTURAL PLANS FOR WALL AND FLOOR TYPES.
22. PROVIDE PIPING LABELS FOR ALL PLUMBING PIPING. PIPING LABELS SHALL BE ACRYLIC FACED, WRAP-AROUND TYPE. EACH LABEL SHALL INDICATE THE PIPING CONTENTS, DIRECTION OF FLOW AND SHALL BEAR THE OWNER'S STANDARD COLOR AND NOMENCLATURE FOR THE SERVICE INDICATED.

SUBMITTALS:

1. PROVIDE SUBMITTALS BEARING THE CONTRACTOR'S REVIEW STAMP FOR ALL PLUMBING FIXTURES, PIPING, EQUIPMENT AND ACCESSORIES IN ELECTRONIC FORMAT (PDF).
2. NO PRIVATELY LABELED MATERIALS WILL BE ACCEPTED AS EQUALS TO PRODUCTS SPECIFIED HEREIN.
3. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SUBSTITUTIONS TO SPECIFIED PLUMBING FIXTURES AND EQUIPMENT INCLUDING BUT NOT LIMITED TO; PROVIDING MAINTENANCE ACCESS CLEARANCE, PIPING, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC. AND ANY MODIFICATIONS TO ASSOCIATED MECHANICAL, ELECTRICAL OR PLUMBING SYSTEMS REQUIRED BY THE EQUIPMENT'S INSTALLATION INSTRUCTIONS. ALL COSTS ASSOCIATED WITH SUBSTITUTIONS SHALL BE INCLUDED IN THE ORIGINAL BASE BID.

PLUMBING DEMOLITION NOTES

1. THE PLUMBING CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING THE PROJECT TO VERIFY EXISTING CONDITIONS AND DETERMINE THE LEVEL OF DEMOLITION REQUIRED AND INCLUDE ALL NECESSARY PRICING IN THEIR BID. ANY DISCREPANCIES NOTED BETWEEN THE DOCUMENTS AND EXISTING CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO BIDDING.
2. THE PLUMBING CONTRACTOR SHALL REMOVE EXISTING PLUMBING FIXTURES AND EQUIPMENT AS INDICATED, INCLUDING ASSOCIATED HOT WATER, COLD WATER, WASTE AND VENT PIPING, UNLESS NOTED OTHERWISE. SEE ARCHITECTURAL DEMOLITION PLAN FOR LOCATIONS.
3. THE PLUMBING CONTRACTOR SHALL REMOVE UNUSED HOT WATER AND COLD WATER BRANCH PIPING BACK TO WITHIN TWELVE INCHES OF THE MAIN TO WHICH IT CONNECTS AND TERMINATE WITH A SHUTOFF VALVE AND CAP.
4. THE PLUMBING CONTRACTOR SHALL TERMINATE UNUSED BRANCH WASTE PIPING WITH A CLEANOUT AT THE MOST REMOTE END OR CAP WITHIN TWELVE INCHES OF THE MAIN TO WHICH IT CONNECTS. DEAD-END PIPING IS PROHIBITED.
5. THE PLUMBING CONTRACTOR SHALL REMOVE UNUSED VENT BRANCH PIPING BACK TO WITHIN TWELVE INCHES OF THE MAIN TO WHICH IT CONNECTS THEN CAP.
6. THE PLUMBING CONTRACTOR SHALL VERIFY PROPER OPERATION OF ALL EXISTING EQUIPMENT PRIOR TO BEGINNING WORK. ANY PROBLEMS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
7. WITH THE REMOVAL OF EXISTING WALLS, SOME EXISTING WASTE, VENT, STORM DRAIN, OR DOMESTIC WATER PIPING MAY BE DISCOVERED. ANY EXISTING PIPING DISCOVERED THAT IS ACTIVE SHALL BE OFFSET BY THE PLUMBING CONTRACTOR TO NEW WALLS. ANY EXISTING PIPING DISCOVERED THAT IS ABANDONED SHALL BE REMOVED.

Grease Interceptor Calculator

Description	Quantity	Capacity (Gallons)	% Full	Drainage Fixture Unit Value	Drainage Flow (GPM)	Drainage Period (Minutes)	Total Flow (GPM)	Notes
Item #A7/A8, Blender Rinser / Coffee Machine (IW to 3" FS1)	1			5	2.5	Cont.	2.5	1,3
Item #A14: Dump Sink (IW to 3" FS1)	1			5	2.5	Cont.	2.5	1,4
Item #A44: Dishwasher (IW to 4" FS1)	1			6	3.0	Cont.	3.0	1,3
Item #A41: Three-Compartment Sink (IW to 4" FS1)	1	49.9	75%		37.4	2	18.7	2
Total Flow to Grease Interceptor							26.7	GPM
Minimum Retention Time							30.0	MIN
Minimum Grease Interceptor Size							801.4	GAL

Notes:
1. Reference NC Plumbing Code, 2018 Edition - Sections 709.2, 709.3, and 709.4.1.
2. Flow rate determined by anticipated full volume of fixture divided by the allowable drainage time of fixture.
3. Flow rate determined by fixture unit value.

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	CW	COLD WATER PIPING
	HW	HOT WATER PIPING
	HWR	HOT WATER RETURN PIPING
	W	SANITARY WASTE PIPING
	V	SANITARY VENT PIPING
—GW—	GW	GREASE WASTE PIPING
	-	PIPING ELBOW DOWN
	-	PIPING ELBOW UP
	-	PIPING CONTINUES
	-	BALL VALVE
	-	CHECK VALVE
	-	INLINE PUMP
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
	FD	FLOOR DRAIN
	FS	FLOOR SINK
	HY	WALL HYDRANT
	WHA-#	WATER HAMMER ARRESTER - SUFFIX INDICATES PDI SIZE

ADDITIONAL ABBREVIATIONS

AFC	ABOVE FINISH CEILING	HP	HORSEPOWER
AFF	ABOVE FINISH FLOOR	"	INCH(ES)
AFG	ABOVE FINISH GRADE	KW	KILOWATT
BFC	BELOW FINISH CEILING	MAX	MAXIMUM
BFF	BELOW FINISH FLOOR	MIN	MINIMUM
BFG	BELOW FINISH GRADE	PSI	POUNDS PER SQUARE INCH
BFP	BACKFLOW PREVENTER	RPZ	REDUCED PRESSURE ZONE
BTU/H	BRITISH THERMAL UNITS PER HOUR	SF	SQUARE FEET
°	DEGREE	T&P	TEMPERATURE AND PRESSURE
°F	DEGREES FAHRENHEIT	TYP	TYPICAL
DIA	DIAMETER	WSFU	WATER SUPPLY FIXTURE UNIT
DFU	DRAINAGE FIXTURE UNIT		
'	FOOT OR FEET	EC	ELECTRICAL CONTRACTOR
FT-HD	FEET OF HEAD	FC	FIRE ALARM CONTRACTOR
GAL	GALLONS	GC	GENERAL CONTRACTOR
GPF	GALLONS PER FLUSH	MC	MECHANICAL CONTRACTOR
GPH	GALLONS PER HOUR	PC	PLUMBING CONTRACTOR
GPM	GALLONS PER MINUTE	SC	SPRINKLER CONTRACTOR

2018 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - PLUMBING SUMMARY

C401 METHOD OF COMPLIANCE
- ■ 2018 NCECC CHAPTER 4
- ☐ ASHRAE 90.1-2013 PRESCRIPTIVE
- ☐ ASHRAE 90.1-2013 PERFORMANCE
- ☐ COMCHECK PROVIDED (2018 NCECC)
- ☐ COMCHECK PROVIDED (90.1-2013)
- ☐ ENERGY MODELING DATA PROVIDED
- ☐ N/A (EXISTING LIGHTING, HVAC, AND DOM. WATER HEATING SYSTEMS TO REMAIN)

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS
- ☐ C406.2 EFFICIENT MECH EQUIPMENT
- ■ C406.3 REDUCED LTG DENSITY
- ☐ C406.4 ENHANCED LTG CONTROLS
- ☐ C406.5 ON-SITE RENEWABLE ENERGY
- ☐ C406.6 DEDICATED OA SYSTEM
- ☐ C406.7 SERVICE WATER HEATING

TABLE C404.2 - MINIMUM PERFORMANCE OF WATER HEATING EQUIPMENT c

EQUIPMENT TYPE	SIZE CATEGORY (INPUT)	SUB CATEGORY OR RATING CONDITION	PERFORMANCE REQUIRED a,b	REQ'D EFFICIENCY	SPECIFIED EQPM
WATER HEATER ELECTRIC	> 12 kW	RESISTANCE	(1.73xV + 155), SL	293.4	281.7

a. ENERGY FACTOR (EF) AND THERMAL EFFICIENCY (E_t) ARE MINIMUM REQUIREMENTS. IN THE ENERGY FACTOR EQUATION V IS THE VOLUME IN GALLONS.
b. STANDBY LOSS (SL) IS THE MAXIMUM BTU/H BASED ON A NOMINAL 70° TEMPERATURE DIFFERENCE BETWEEN STORED WATER AND AMBIENT REQUIREMENTS. IN THE STANDBY LOSS EQUATION Q IS THE NAMEPLATE INPUT RATE IN BTU/H. IN THE EQUATIONS FOR ELECTRIC WATER HEATERS, V IS THE RATED VOLUME IN GALLONS AND V_m IS THE MEASURED VOLUME IN GALLONS. IN THE STANDBY LOSS EQUATION FOR GAS WATER HEATERS AND BOILERS, V IS THE RATED VOLUME IN GALLONS.
c. REFER TO WATER HEATER SCHEDULES FOR SPECIFIED WATER HEATING EQUIPMENT TYPES, CAPACITIES (STORAGE VOLUME) AND ENERGY INPUTS (ELECTRIC AND/OR GAS).

C408 - SYSTEM COMMISSIONING
- ■ PROJECT AREA IS LESS THAN 10,000 SQUARE FEET AND IS EXEMPT FROM THE SYSTEM COMMISSIONING REQUIREMENTS OF SECTION C408.
- ☐ PROJECT AREA IS GREATER THAN 10,000 SQUARE FEET AND REQUIRES SYSTEM COMMISSIONING PER SECTION C408.

PLUMBING SHEET INDEX

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PLUMBING LEGEND, DESIGN DATA, & SPECIFICATIONS

19244 A/E PROJECT NO.
P0.01 SHEET
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