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(580) 931-9045 <u>CIVIL ENGINEER</u>



<u>CIVIL ENGINEER - WATER LINE</u>

CHEROKEE NATION TAG OFFICE

CONSTRUCTION DOCUMENTS

	INDEX OF DRAWINGS				
		41S			NTS
		É I			ų į
		۲, I			
		8			8
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		2			۲ ۲
		STI			STI
		Z			
		ŏ			ŏ
		g			50
		120			20
		/31			/31
Sheet Number	SHEET NAME	01	Sheet Number	SHEET NAME	07
			A1.00		
G0 00			A1.00	FINISH PLAN AND INFORMATION	
			A2.01	EXTERIOR ELEVATIONS	
CIVII			A3 00	BUILDING SECTIONS WALL SECTIONS	
C002	GENERAL NOTES		A3.01	EXTERIOR PLAN DETAILS / WALL SECTION DETAILS / PARTITION TYPES	
CS100	OVERALL EXISTING SITE PLAN		A4 00		
CS101			A4 10		
CE100			A5.00	SPECIFICATIONS	
CE500	EROSION CONTROL NOTES & DETAILS	╶╋┤	A5 01	SPECIFICATIONS	
CD100	EXISTING DRAINAGE MAP		A5 02	SPECIFICATIONS	
CD101	PROPOSED DRAINAGE MAP		710.02		
CD102	PROPOSED DRAINAGE TABLES		STRUCTURAL		
CI100	PROPOSED SITE PLAN		S0 1	STRUCTURAL NOTES	
CP100	PROPOSED PAVING PLAN		S1 1	FOUNDATION AND SLAB PLAN	
CP101	PROPOSED STRIPING PLAN		S2.1	WALL AND ROOF FRAMING PLAN	
CP102	PROPOSED JOINTING PLAN		S3 1	BUILDING SECTIONS	
CP500	TYPICAL PAVING DETAILS		S4.1	STRUCTURAL DETAILS	
CP501	TYPICAL JOINTING DETAILS				
CP502	TYPICAL STRIPING DETAILS		PLUMBING		
CP503	TYPICAL STRIPING DETAILS		P1.00	PLUMBING LEGENDS, NOTES, AND SCHEDULES	
CP504	TYPICAL DUMPSTER DETAILS		P1.01	PLUMBING DETAILS	
CG100	OVERALL GRADING KEY MAP		P2.00	PLUMBING DRAIN AND SUPPLY PLANS	
CG101	ENLARGED GRADING PLAN		P2.01	PLUMBING DRAIN/VENT ISOMETRIC	
CG102	ENLARGED GRADING PLAN		P3.00	PLUMBING SPECIFICATIONS	
CU100	WATER LINE A PLAN & PROFILE		P3.01	PLUMBING SPECIFICATIONS	
CU101	WATER LINE B PLAN & PROFILE				
CU102	SEWER LINE 1 PLAN & PROFILE		MECHANICAL		
CU103	STORM LINE 1 & 2 PLAN & PROFILE		M1.00	MECHANICAL LEGEND AND NOTES	
CU104	CULVERT 1, 2, 3 & 4 PLAN & PROFILE		M1.01	MECHANICAL DETAILS	
CU500	TYPICAL UTILITY DETAILS		M2.00	MECHANICAL HVAC PLAN AND RCP	
CU501	TYPICAL UTILITY DETAILS		M2.01	MECHANICAL ZONING PLAN	
CU502	TYPICAL UTILITY DETAILS		M3.00	MECHANICAL SCHEDULES	
			M4.00	MECHANICAL SPECIFICATIONS	
CIVIL - WATEI	RLINE		M4.01	MECHANICAL SPECIFICATIONS	
GE01	COVER SHEET				
GE02	GENERAL NOTES		ELECTRICAL		
WL01	WATER LINE PLAN AND PROFILE		E1.00	ELECTRICAL NOTES AND LEGENDS	
VVL02	WATER LINE PLAN AND PROFILE		E1.01		
			E1.02		↓ ■
			E1.03		 _
LS001			E1.04		
15002	I REE PLANTING DETAIL		E2.01		
	RAL		E2.02		
			E3.01	ELECTRICAL SCHEDULES AND RISER	
151.00			E4.00		
A5.00	AKUTI LEU I UKAL ƏHE PLAN		E4.01	ELEU I RIUAL SPEUIFIGATIONS	



MYERS-BEATTY ENGINEERING 2411 FAYETTEVILLE RD. #B VAN BUREN, AR 72956 (479) 474-4412

STRUCTURAL ENGINEER



HP ENGINEERING, INC. 5214 W. VILLAGE PARKWAY, SUITE 120 ROGERS, AR 72758 (479) 899-6370 MECHANICAL, ELECTRICAL, & PLUMBING ENGINEER



VICINITY MAP



GENERAL NOTES

- THE CONTRACTOR SHALL HAVE EXISTING UTILITIES LOCATED PRIOR TO CONSTRUCTION. CONTRACTOR SHALL CALL 1-800-522-6543 IN ADDITION TO DIRECT NOTIFICATION. CONTRACTOR SHALL BRACE UTILITY POLES AS NECESSARY. DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED TO THE UTILITY OWNER'S SPECIFICATIONS BY THE CONTRACTOR COST TO THE OWNER.
- 2. THE CONTRACTOR SHALL ESTABLISH, INSTALL, OPERATE, AND MAINTAIN COMPLETE AND ADEQUATE AND SAFE TRAF CONTROLS DURING THE ENTIRE CONSTRUCTION PERIOD. ALL TRAFFIC CONTROL DEVICES SHALL BE APPROVED BY ENGINEER.
- ALL DIMENSIONS OR ELEVATIONS WITH ± SHALL BE CONFIRMED BY THE CONTRACTOR. 3.
- ALL DIMENSIONS OF EXISTING STRUCTURES AND EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR. ANY DISCRI 4. SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER & OWNER.
- TOPSOIL IN THE DISTURBED AREAS SHALL BE REMOVED, STOCKPILED, AND RESTORED AFTER CONSTRUCTION OPER 5 ACCORDANCE WITH PROJECT SPECIFICATIONS. ALL EXCESS TOPSOIL SHALL BE CONSIDERED WASTE AND STOCKPIL BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.
- 6. ALL DISTURBED ROADWAY AND DRIVEWAY SURFACES SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITION
- FALL PROTECTION AROUND ALL OPENINGS AND EXCAVATION SHALL BE MAINTAINED AT ALL TIMES. 7.
- NORTH ARROWS SHOWN ON DRAWINGS INDICATE LOCAL COORDINATE SYSTEM ESTABLISHED BY THE SURVEYOR, U 8. OTHERWISE NOTED.
- TRENCH SAFETY AND SHORING IN ACCORDANCE WITH CURRENT OSHA REGULATIONS SHALL BE EMPLOYED BY CON 9 ALL TIMES.
- 10. IF AT ANY POINT CONSTRUCTION ACTIVITIES EXPOSE ARCHEOLOGICAL MATERIALS SUCH AS CHIPPED STONE, TOOLS BONE, HISTORIC CROCKERY, GLASS, METAL ITEMS OR BUILDING MATERIALS, THE STATE ARCHEOLOGIST SHALL BE C IMMEDIATELY.
- 11. ALL STATIONS SHOWN ON THE PLANS ARE CENTERLINE STATIONS UNLESS NOTED OTHERWISE.
- 12. THE TOPOGRAPHIC SURVEY WAS COMPLETED BY BENNETT SURVEYING INC. ALL EXISTING INFORMATION IS SHOWN ACCURATELY AS POSSIBLE BASE UPON FIELD RECONNAISSANCE AND RESEARCH. CONTRACTOR IS RESPONSIBLE F ALL EXISTING INFORMATION. IF CONTRACTOR BELIEVES EXISTING INFORMATION IS INACCURATE, THE CONTRACTOR NEW SURVEY COMPLETED AT NO ADDITIONAL COST TO THE OWNER, ARCHITECT, OR ENGINEER.
- 13. DIMENSIONS SHOWN ARE TO BACK OF CURB OR CENTERLINE OF PIPE UNLESS NOTED OTHERWISE. DIMENSIONS TO ARE TO EDGE OF FOUNDATION.
- 14. CONTRACTOR SHALL REVIEW AND COORDINATE W/ ARCH, MECH., ELEC., AND PLUMBING DISCIPLINES DRAWINGS, SP AND DETAILS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. IN THE EVENT THAT AND/OR CONTRACTOR DEVIATES CONSTRUCTION FROM THESE PLANS WITHOUT THE EXPRESS WRITTEN APPROVAL ENGINEER, THE ARCH. AND/OR CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR THOSE MODIFICATIONS.

EROSION CONTROL NOTES:

- CONTRACCTOR SHALL BE RESPONSIBLE FOR PREPARING STORM WATER POLLUTION PREVENTION PLAN & SU AUTHORITY HAVING JURISDICTION.
- 2. SILT FENCE SHALL BE MAINTAINED AND SEDIMENT BUILDUP REGULARLY REMOVED UNTIL PAVING OPERATIONS AF AND/OR SEEDING IS IN PLACE AND 75% VEGETATION STABILIZATION IS OBTAINED.
- 3. ALL TREES, BRUSH, AND OTHER DEBRIS THAT MIGHT INTERFERE WITH THE FLOW OF WATER IS TO BE CLEANED RIGHT-OF-WAY LINE AT EACH STRUCTURE, IN A MANNER APPROVED BY THE ENGINEER.
- 4. ALL FLOW LINES THAT ARE TO BE FILLED SHALL BE THOROUGHLY COMPACTED TO 95% STANDARD PROCTOR DEN CONSTRUCTION OR EXTENSION OF DRAINAGE STRUCTURES.
- IN ORDER TO ALLEVIATE DUST CONDITIONS DURING GRADING OPERATIONS, AND AFTER GRADING OPERATIONS ARE 5. BUT BEFORE PAVEMENT AND/OR PERMANENT EROSION CONTROL WORK IS COMPLETED, THE CONTRACTOR SHA GRADING AT INTERVALS APPROVED BY THE OWNERS REPRESENTATIVE.
- AT THE BEGINNING OF THE TURF OPERATIONS, ANY AREAS INCLUDED IN PLANNED QUANTITIES THAT HAV 6 SATISFACTORY VOLUNTEER TURF OF PERENNIAL GRASS AS DETERMINED BY THE OWNER'S REPRESENTATIV FERTILIZED AND WATERED BUT SHALL NOT BE SEEDED. SODDED OR SPRIGGED.
- VEGETATIVE MULCH AND SEEDING SHALL BE UTILIZED FOR TEMPORARY EROSION CONTROL. 7.
- 8. SEED: THE FOLLOWING KINDS OF SEEDS, AT ACRES-RATES INDICATED BELOW, SHALL BE PLANTED ON THE AREAS FOR SEEDING.

TEMPORARY SEEDING	
KINDS OF SEED TO BE FURNISHED	QUANTITY PER ACRI
COOL SEASON MIX-	
PERENNIAL RYEGRASS (LOLIUM PERENNE)	20 LBS. OF SEED
CRIMSOM CLOVER (TRIFOLIUM INCARNATUM)	12 LBS. OF SEED
WARM SEASON MIX-	
KOREAN LESPEDEZA (LESPEDEZA STRIATA)	12 LBS. OF SEED
CRIMSOM CLOVER (TRIFOLIUM INCARNATUM)	20 LBS. OF SEED
LITTLE BLUESTEM (ANDROPOGON SCOPARIUS)	12 LBS. OF SEED
COMMON BERMUDA (CYNODON DACYLON)	4 LBS. OF SEED

VEGETATIVE MULCHING: THE VEGETATIVE MULCH SHALL BE ANCHORED IN ACCORDANCE WITH THE "ADHESIVE SPRAY METHOD", AS SPECIFIED IN 233.04(b) OF THE ODOT STANDARD SPECIFICATIONS.

SEASONAL PLANTING RESTRICTIONS THE PLANTING OF SPRIGGING SHALL BE RESTRICTED TO THE PERIOD FROM APRIL 1ST TO JUNE 30TH.

THE PLANTING OF TEMPORARY SEEDS (COOL SEASON MIX) SHALL BE RESTRICTED TO THE PERIOD FROM SEPTEMBER 1ST TO NOVEMBER 15TH.

THE PLANTING OF TEMPORARY SEEDS (WARM SEASON MIX) SHALL BE RESTRICTED TO THE PERIOD FROM MARCH 15TH TO JUNE 30TH.

AREAS ON WHICH SALVAGED TOPSOIL IS TO BE REPLACED SHALL HAVE 0-46-0 FERTILIZER APPLIED, AT THE RATE OF 150 LBS. PER ACRE, JUST PRIOR TO THE REPLACEMENT OF SALVAGED TOPSOIL.

ABBREVIATION LEGEND:

THESE ABBREVIATIONS WILL BE FOUND ON THE PROPOSED GRADING SHEETS.

TG = TOP OF GRATE TR = TOP OF RIM TS = TOP OF SLAB TW = TOP OF WALL EL = PROPOSED ELEV. ME EL = MATCH EXISTING ELEV. TC = TOP OF CURB ELEV. FL = FLOW LINE ELEV. RE: = REFER FL = FLOW LINE TYP = TYPICAL € = CENTERLINE N: = NORTHING E: = EASTING STA. = STATION MIN. = MINIMUM

THESE ABBREVIATIONS WILL BE FOUND ON THE PROPOSED PAVING SHEETS

PRC = POINT REVERSE CURVATURE BOP = BEGIN POINT EOP = END POINT PC = POINT OF CURVATURE PT = POINT OF INTERSECTION

			UT	ILITY NOTES					
		SITE WORK NOTES:	1.	ALL SANITARY SEW	ER AND PUBLIC WATER SU	PPLY IMPROVEMENTS SHALL B	E CONSTRUCTED IN ACCORDAN	ICE WITH TH	
. "OKIE" JTILITIES	1.	ALL EARTHWORK & PAVING MATERIALS & METHODS SHALL CONFORM WITH OKLAHOMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST REVISION.	2	CURRENT OKLAHOI	A DEPARTMENT OF ENVIR	ONMENTAL QUALITY STANDAR	D CONSTRUCTION SPECIFICATIO	DNS.	
	2.	CONTRACTOR SHALL REVIEW THE FINAL GEOTECHNICAL REPORT PREPARED BY PALMERTON & PARRISH, INC, DATED MARCH 26, 2020. THIS REPORT SHALL BE CONSIDERED A PART OF THE CONSTRUCTION DOCUMENTS. ANY DISCREPANCIES BETWEEN PLANS	2.	AT ALL TIMES, AND	ANY DISRUPTION OF SERV	ICE SHALL BE AT THE CONTRAC	CTOR'S SOLE EXPENSE.		
FFIC THE	3.	AND GEOTECHNICAL REPORT SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER & ENGINEER FOR CLARIFICATION. ONLY REMOVE TREES THAT DIRECTLY INTERFERE WITH CONSTRUCTION. CONTRACTOR SHALL LIMIT CLEARING & GRUBBING TO	3.	ROCK UNLESS OTH	RWISE NOTED. SUCH BED	DING SHALL BE APPROVED PR	RIOR TO PLACEMENT.	MPACTED CR	
	4	BUILDING & DRIVEWAY AREA FOOTPRINT, AS MUCH AS POSSIBLE.	4.	CONTRACTOR SHAI UTILITIES. MINOR FI ENGINEER	L VERIFY PROPOSED WAT ELD ADJUSTMENTS NECES	ER LINE ELEVATIONS TO INSUR SARY TO AVOID CONFLICTS SH	RE NO CONFLICTS WITH EXISTING ALL BE COORDINATED WITH TH	3 OR PROPO E APPROVAL	
EPANCIES	т. Г		F						
RATIONS, IN LED ON-SITE	5.	ALL AREAS TO RECEIVE PAVING SHALL BE STRIPPED OF VEGETATION, TOPSOIL, SOFT OR OTHERWISE UNSUITABLE MATERIAL. UNSTABLE SUBGRADE CONDITIONS ARE ANTICIPATED WITHIN PAVEMENT AREAS. SUBGRADE SHALL BE SCARIFIED AND REWORKED MOISTURE CONDITIONED ABOVE OPTIMUM MOISTURE CONTENT AND COMPACTED TO STANDARD PROCTOR PER GEOTECHNICAL RECOMMENDATIONS. SUBGRADE SHALL BE PROOF ROLLED WITH A ROLLER OR TRUCK (GROSS WEIGHT OF 25	5. 6.	CONNECTION.	SS, SUCH AS BENDS, TEES,	ETC., SHALL BE BLOCKED FOR	THRUST, AS SHOWN ON THE ST	TANDARD DE	
ION.		TONS OR MORE). PROOF ROLLING SHALL BE WITNESSED BY OWNER'S REPRESENTATIVE. OWNER SHALL DETERMINE SUITABILITY OF AGGREGATE BASE.		DRAWING. THIS REC INCLUDED IN OTHE	QUIREMENT SHALL INCLUDI R ITEMS OF WORK.	E ALL PRESSURE PIPING AND L	OW HEAD (GRAVITY) PIPING. CO	ST SHALL BE	
	6.	SUBGRADE AREAS APPROVED AFTER PROOF-ROLLING SHOULD BE SCARIFIED TO A DEPTH OF AT LEAST 8 INCHES & SOIL MOISTURE ADJUSTED & COMPACTED TO COMPLY WITH PROJECT SPECIFICATIONS.	7. 8		COVER SHALL BE 36 INCH	ES UNLESS OTHERWISE NOTEI). APE SHALL BE BURIED 12" ABOVI		
INLESS	7.	REMOVE ANY STUMPS AND ROOTS LARGER THAN 2 INCHES IN DIAMETER TO FULL DEPTH, ROCKS LARGER THAN 3 INCHES AND ANY SMALL MATTED ROOTS, TO A DEPTH OF 18 INCHES BELOW ORIGINAL GROUND SURFACE.	0.	LINES.					
TRACTOR AT	8.	POSSIBLE UNDOCUMENTED FILL FROM PREVIOUS OR FOEMER BUILDING ELEMENTS ARE UNKNOWN. IF UNDOCUMENTED FILL IS	9.	WATER LINE SHALL	BE PRESSURE & LEAK TES	TED IN ACCORDANCE WITH SP	ECIFICATIONS.		
S POTTERY		NOTED IN THE BUILDING LOCATION, BUILDING FOUNDATION EXCAVATIONS SHOULD BE EXTENDED THROUGH THE UNDOCUMENTED FILL THEN REPLACED BACK WITH STRUCTURAL FILL WITH A MINIMUM 2FT OF LVC MATERIAL PLACED IMMEDIATELY BELOW THE FOOTING _ UNDOCUMENTED FILL IN FLOOR SLABS AND PAVEMENT AREAS SHOULD PASS A PROOF-ROLL	10. 11.	WATER LINE SHALL	BE DISINFECTED IN ACCOP	RDANCE WITH SPECIFICATIONS	PRIOR TO USE.		
CONTACTED		PRIOR TO PLACEMENT OF CONTROLLED FILL.	10						
	9.	FILL SHOULD BE PLACED IN LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS AND COMPACTED TO AT LEAST 95 PERCENT OF THE MATERIAL'S MAXIMUM CRY DENSITY. FILL SHOULD BE MOISTURE CONDITIONED WITHIN 2% BELOW TO 2% ABOVE THE	12.	WATERLINES AND S	CROSSINGS & TAPS SHALL	ALL MAINTAIN A MINIMUM SEPA	ARATION OF 10' HORIZONTAL AN	ID 2' VERTICA	
IAS		OPTIMUM MOISTURE AS DETERMINED BY ASTM D 698.	14.	GRAVITY PIPE LENG	THS MEASURED FROM CE	NTER OF MANHOLE TO CENTER	R OF MANHOLE.		
OR VERIFYING	10.	REFER TO GEOTECHINAL REPORT FOR SELECT FILL AND GENERAL FILL SPECIFICATIONS AND CHEMICAL STABILIZED AND	15	GRAVITY SEWER SH	IALL BE LEAK & DEFLECTIO	N TESTED IN ACCORDANCE W/	SPECIFICATIONS		
		LABORATORY TESTED TO CONFIRM THE APPARENT CLASSIFICATION OF THESE SOILS AND TO DETERMINE TARGET MOISTURE CONTENT AND DENSITY FOR THE DIFFERENT MATERIALS, PRIOR TO REUSE OR REWORKING IN PLACE. SEE GEOTECH REPORT FOR ADDITIONAL INFORMATION	16. ALL MANHOLE TOP OF RIM ELEVATIONS SHOWN SHALL BE VERIFIED BY CONTRACTOR IN THE FIELD TO FIT						
DUILDING		FOR ADDITIONAL INFORMATION.	17.	THE PLANS HAVE B	EEN PREPARED TO SHOW	THE APPROXIMATE LOCATION (OF EXISTING KNOWN UTILITIES.		
PECIFICATIONS THE ARCH.	11.	EARTHWORKS SHALL BE PERFORMED IN SUCH A MANNER TO MINIMIZE PONDING WATER ON THE SUBGRADE. SITE SHALL MAINTAIN DRAINAGE AT ALL TIMES. MOISTURE CONTENT OF SOIL SHOULD BE MAINTAINED NEAR OPTIMUM DURING CONSTRUCTION.		SHALL CONTACT OF UNDERGROUND UT SHALL BE MADE BY	LITIES PRIOR TO EXCAVAT	ITY COMPANY AND THE PROJE ION. ANY CHANGE IN ALIGNMEI COST TO THE OWNER AND THE	ECT OWNER TO DETERMINE THE NT OR GRADE CAUSED BY INTEF E ENGINEER NOTIFIED.	RERING UTI	
OFTHE	12.	ROADSIDE HAZARDS SHALL BE COMPLETELY BARRICADED AROUND THEIR PERIMETER FOR THE SAFETY OF PEDESTRIANS AND VEHICLES.	18.	DEPTHS OF ANY EX UNCOVER AND VER	ISTING UTILITIES SHOWN C IFY THE LOCATION AND ELI	N THE PLANS ARE APPROXIMA EVATION OF EXISTING UTILITIE	TE. CONTRACTOR SHALL AT HIS S IN ADVANCE OF THE CONSTRU	; OWN EXPEN	
	13.	ONLY THE AMOUNT OF TRENCH THAT CAN BE BACK FILLED OR SURFACED IN (2) DAYS SHALL BE ALLOWED OPEN UNLESS APPROVED BY OWNER'S REPRESENTATIVE.	19.	THE CONTRACTOR DISINFECT ALL NEW	SHALL PROVIDE ANY TAPS / LINES PRIOR TO BEING PL	, CROSS-OVERS, VALVES, ETC. ACED IN SERVICE.	AS REQUIRED TO FLUSH, HYDR	OSTATIC TES	
JBMITTING TO	14.	CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT EXISTING STRUCTURES/PAVEMENTS FROM DAMAGE DURING CONSTRUCTION AND PREVENT MIGRATION OF DEBRIS, TRASH, AND SEDIMENT.	20.	CONTRACTOR SHAI REPRESENTATIVE. METER TO A LOCAT	L COORDINATE ANY ACTIV CONTRACTOR SHALL CON ION TO CLEAR CONSTRUC	ITIES INVOLVING WATER & SAN TACT UTILITY TO COORDINATE FION.	NITARY SEWER SYSTEM WITH UT RELOCATION OR REPLACEMEN	'ILITY AND O' T OF EXISTIN	
RE COMPLETE	15.	CONTRACTOR SHALL TAKE PRECAUTION TO AVOID DAMAGE TO THE EXISTING STORM WATER DRAINAGE STRUCTURES AND SHOULD BE KEPT FUNCTIONAL.	21.	UTILITY TRENCH PE	NETRATIONS INTO OR UND	ER BUILDING FOUNDATION SH	ALL BE SEALED OR PLUGGED PE	ER DETAIL PF	
OUT TO THE	16.	TRAFFIC CONTROL & ADVANCED WARNING FOR WORK THAT AFFECTS THE LOCAL ROAD AND STATE HIGHWAYS ADJACENT TO THE SITE: CONTRACTOR SHALL EMPLOY THE SERVICES OF A QUALIFIED TRAFFIC CONTROL SUBCONTRACTOR, FAMILIAR WITH OKLAHOMA DEPARTMENT OF TRANSPORTATION REQUIREMENTS FOR ADVANCED WARNING SIGNAGE & LANE CLOSURES AS REQUIRED TO CONSTRUCT THE ELEMENTS OF THE PROJECT THAT ARE DIRECTLY CONNECTED TO THE HIGHWAYS. THIS SHOULD	22.	CONTRACTOR SHAI	L PROVIDE OR OTHERWISI L COORDINATE WITH RESP	E PAY ANY BUILDING PERMITS, PECTIVE UTILITY TO DETERMIN	TAP/METER FEES, CONNECTION E ANY SPECIFIC REQUIREMENTS	N FEES ETC. 3.	
SITY BEFORE		ALSO INCLUDE SIGNAGE OR ADVANCED WARNING DEVICES TO WARN THE TRAVELING PUBLIC OF CONSTRUCTION TRAFFIC ENTERING/EXITING THE SITE. COST FOR SAID ADVANCED WARNING AND SIGNAGE SHALL BE INCLUDE IN PRICE BID. CONSTRUCTION SIGNAGE DETAILS INCLUDED IN THIS SET ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHOULD							
ALL SPRINKLE		CONSULT WITH HIS TRAFFIC CONTROL SUBCONTRACTOR TO DETERMINE TRAFFIC CONTROL SCOPE OF WORK PRIOR TO BID.	UT	ILITY CONTACTS:					
/F GROWN A				POWER	AEP	BILLY WOOD	918-691-0959		
/E, SHALL BE	M	IATERIALS NOTES		SEWER	CITY OF TULSA	ALLEN HOLDMAN	918-596-2569		
	1.	ALL UTILITY MATERIALS & METHODS SHALL BE AS APPROVED BY CITY OF TULSA. MATERIALS LISTED BELOW ARE PROVIDED FOR REFERENCE PRIOR TO CITY OF TULSA REVIEW.		GAS	ONG	LOGAN	918-831-8385		
DESIGNATED	2.	ALL NEW WATER LINE PIPING SHALL BE DUCTILE IRON PIPE OR AWWA C900, DR14, CLASS 200 AS APPROVED AND PERMITTED BY CITY OF TULSA.		WATER	CITY OF TULSA	ALLEN HOLDMAN	918-596-2569		
	3.	GRAVITY SANITARY SEWER PIPE SHALL BE PVC SDR 26 ASTM D3034, PRESSURE SEWER PIPE SHALL BE PVC ASTM D2241 SDR 21 OR APPROVED EQUAL AND AS APPROVED BY CITY OF TULSA.							
	4.	ALL FITTINGS (TEES, BENDS, VALVES, ETC.) SHALL BE DUCTILE IRON MECHANICAL JOINTS (MJ) AND RESTRAINED (RJ). RESTRAINTS SHALL BE "MIDCO" AS MANUFACTURED BY MIDLAND MANUFACTURING COMPANY OR APPROVED EQUAL. THRUST BLOCKING SHALL ALSO BE REQUIRED. ALL FITTINGS TO BE POLY WRAPPED.		E	XISTING LEGEN	\square			
	5.	TAPPING SLEEVES SHALL BE SMITH-BLAIR 665 STAINLESS STEEL OR EQUAL. 200PSI.			BC BOTTOM OF CL BM BENCHMARK	IRB AFTAL PIPF			
	6.	STORM SEWER PIPING SHALL BE EITHER SDR 35 PVC PIPE (UP TO 15" DIAMETER) OR CORRUGATED HDPE UNLESS NOTED OTHERWISE ON PLANS. PIPES SHALL BE WATER & SOIL TIGHT.		D	CO CLEAN OUT DO DOOR OPENING DOOR OPENING DOOR OPENING DS DOWN SPOUT	-OVERHEAD	VOSED LEGEND: PROPOSED PROPOSED	WATER MET GATE VALVI	

BC BM CMP CO DO-OH DS EM ◆ FH FL GM ● ICV ☆ LP OE ● PP PVC RCP SD SS SS ● SSCO ● SSMH TC TPED TR UC UE ● WM ** ** ** ** ** ** ** ** ** ** ** ** **	BOTTOM OF CURB BENCHMARK CORRUGATED METAL PIPE CLEAN OUT DOOR OPENING DOOR OPENING-OVERHEAD DOWN SPOUT ELECTRIC METER FIRE HYDRANT FLOW LINE GAS METER IRRIGATION CONTROL VALVE LIGHT POLE OVERHEAD ELECTRIC POWER POLE POLYVINYL CHLORIDE PIPE REINFORCED CONCRETE PIPE STORM DRAIN SANITARY SEWER SANITARY SEWER SANITARY SEWER SANITARY SEWER SANITARY SEWER SANITARY SEWER SANITARY SEWER SANITARY SEWER DOP OF CURB TELEPHONE PEDESTAL TOP OF RIM UNDERGROUND CABLE UNDERGROUND CABLE UNDERGROUND ELECTRIC UTILITY MANHOLE WATER LINE WATER METER WATER VALVE ELECTRIC TRANSFORMER WATER LINE OVERHEAD ELECTRIC LINE UNDERGROUND ELECTRIC LINE TELEPHONE LINE SANITARY SEWER LINE
— OHE — OHE — — UGE UGE — UGE — — T — T — T — — SS — SS — SS — — SD — SD — SD —	OVERHEAD ELECTRIC LINE UNDERGROUND ELECTRIC LINE TELEPHONE LINE SANITARY SEWER LINE STORM LINE EASEMENT LINE
PL — — —	PROPERTY LINE MAJOR CONTOUR MINOR CONTOUR TREE LINE
	ASPHALT PAVING
	GRAVEL PAVING

CONCRETE PAVING

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------ SS ------ SS ------ PROPOSED SAN. SEWER LINE GAS — GAS — **PROPOSED GAS LINE**

METER LVE PROPOSED FIRE HYDRANT PROPOSED REMOTE FDC PROPOSED CLEAN OUT PROPOSED GAS METER

PROPOSED LIGHT POLES

— PROPOSED WATER LINE

SIDEWALK PAVING

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GENERAL NOTES

C002







James R. Ch Architect, 45 South 4th Str Fort Smith, AR 72 479-783-2480 www.childersarchite	ilders Inc.						
PROFESSIONAL SEAL:							
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CLIENT:	ATTION CHART						
CHEROKEE NATION TAG OFFICE	CATOOSA, OKLAHOMA						
KEY PLAN:							
PROJECT PHASE: CONSTRUCT DOCUMENT	ΊΟΝ ΓS						
REVISIONS # DATE DESC	RIPTION						
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GENERAL EROSION NOTES

- THE STORM WATER POLLUTION PREVENTION PLAN IS COMPRISED OF THIS DRAWING (SITE MAP), THE STANDARD DETAILS, PLUS THE PERMIT AND ALL SUBSEQUENT REPORTS AND RELATED DOCUMENTS.
- ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORM POLLUTION PREVENTION SHALL OBTAIN A COPY OF THE STORM WATER POLLUTION PREVENTION PLAN AND THE STATE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT (NPDES PERMIT) AND BECOME FAMILIAR WITH THEIR CONTENTS.
- CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES AS REQUIRED BY THE SWPPP. ADDITIONAL BEST MANAGEMENT PRACTICES SHALL BE IMPLEMENTED AS DICTATED BY CONDITIONS AT NO ADDITIONAL COST OF OWNER THROUGHOUT ALL PHASES OF CONSTRUCTION
- BEST MANAGE PRACTICES (BMP'S) AND CONTROLS SHALL CONFORM TO FEDERAL, STATE, OR LOCAL REQUIREMENTS OR MANUAL OF PRACTICE, AS APPLICABLE. CONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY PERMITTING AGENCY OR OWNER.
- SITE MAP MUST CLEARLY DELINEATE ALL STATE WATERS, PERMITS FOR ANY CONSTRUCTION ACTIVITY IMPACTING STATE WATER OR REGULATED WETLANDS MUST BE MAINTAINED ON SITE AT ALL TIMES.
- CONTRACTOR SHALL MINIMIZE CLEARING TO THE MAXIMUM EXTENT PRACTICAL OR AS REQUIRED BY THE GENERAL PERMIT. GENERAL CONTRACTOR SHALL DENOTE ON PLAN THE TEMPORARY PARKING AND STORAGE AREA WHICH SHALL ALSO BE USED AS THE
- EQUIPMENT MAINTENANCE AND CLEANING AREA, EMPLOYEE PARKING AREA, AND AREA FOR LOCATING PORTABLE FACILITIES, OFFICE TRAILERS, AND TOILET FACILITIES. CONTRACTOR SHALL CONSTRUCT TEMPORARY BERM ON DOWN STREAM SIDES.
- ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) SHALL BE DETAINED AND PROPERLY TREATED OR DISPOSED.
- SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS SHALL BE MAINTAINED ON SITE OR READILY AVAILABLE TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.
- 10. DUST ON THE SITE SHALL BE CONTROLLED. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
- 11. RUBBISH, TRASH, GARBAGE, LITTER, OR OTHER SUCH MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS, MATERIALS SHALL BE PREVENTED FROM LEAVING THE PREMISES THROUGH THE ACTION OF WIND OR STORM WATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
- 12. ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THIS SITE MAP, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE INITIATED AS SOON AS PRACTICABLE.
- 13. ALL DENUDED AREAS THAT WILL BE INACTIVE FOR 14 DAYS OR MORE, MUST BE STABILIZED TEMPORARY WITH THE USE OF FAST-GERMINATING ANNUAL GRASS/GRAIN VARIETIES, STRAW/HAY MULCH, WOOD CELLULOSE FIBERS, TACKIFIERS NETTING OR BLANKETS AS SHOWN ON SITE MAP.
- 14. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE PERMANENTLY STABILIZED AS SHOWN ON THE PLANS. THESE AREAS SHALL BE SEEDED. SODDED. AND/OR VEGETATED NO LATER THAN 14 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY OCCURRING IN THESE AREAS. REFER TO THE GRADING PLAN AND/OR LANDSCAPE PLAN.
- 15. IF THE ACTION OF VEHICLES TRAVELING OVER THE GRAVEL CONSTRUCTION ENTRANCES IS NOT SUFFICIENT TO REMOVE THE MAJORITY OF DIRT OR MUD. THEN THE TIRES MUST BE WASHED BEFORE THE VEHICLES ENTER A PUBLIC ROAD. IF WASHING IS USED. PROVISION MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE ONLY USE INGRESS/ENGRESS LOCATIONS AS PROVIDED.
- ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAY OR INTO STORM DRAINS MUST BE 16. REMOVED IMMEDIATELY.
- 17. CONTRACTORS OR SUBCONTRACTORS WILL BE RESPONSIBLE FOR REMOVING SEDIMENT IN DETENTION POND AND ANY SEDIMENT THAT MAY HAVE COLLECTED IN THE STORM SEWER DRAINAGE SYSTEMS IN CONJUNCTION WITH THE STABILIZATION OF THE SITE.
- 18. ON-SITE AND OFF-SITE SOIL STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION THROUGH IMPLEMENTATION OF BEST MANAGEMENT PRACTICES. STOCKPILE AND BORROW AREA LOCATIONS SHALL BE NOTED ON THE SITE MAP AND PERMITTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS.
- 19. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.
- 20. DUE TO THE GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION AND SEDIMENT CONTROL MEASURES (SILT FENCES, ETC.) TO PREVENT EROSION AND POLLUTANT DISCHARGE
- 21. GENERAL CONTRACTOR IS TO DESIGNATE/IDENTIFY AREAS ON THE SITE MAPS, INSIDE OF THE LIMITS OF DISTURBANCE, FOR WASTE DISPOSAL AND DELIVERY AND MATERIAL STORAGE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING & SUBMITTING NOTICE OF INTENT(N.O.I.) & NOTICE OF TERMINATION (N.O.T.). 22.
- 23. CONTRACTOR TO LIMIT DISTURBANCE OF SITE IN STRICT ACCORDANCE WITH EROSION CONTROL SEQUENCING SHOWN ON THIS PLAN. NO UNNECESSARY OR IMPROPERLY SEQUENCED CLEARING AND/OR GRADING SHALL BE PERMITTED.

BMP MAINTENANCE EROSION NOTES

ALL MEASURES STATED ON THIS SITE MAP, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON IN ACCORDANCE WITH THE CONTRACT DOCUMENTS OR THE APPLICABLE PERMIT, WHICHEVER IS MORE STRINGENT, AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:

- INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING OR DETERIORATION.
- ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEEDED AS NEEDED.
- SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL DE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-HALF THE HEIGHT OF THE SILT FENCE.
- THE CONSTRUCTION EXITS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHT-A-WAY. THIS MAY REQUIED PERIODIC TOP DRESSING OF THE CONSTRUCTION EXITS AS CONDITIONS DEMAND.
- THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AREA AS CONDITIONS DEMAND.
- OUTLET STRUCTURES IN THE SEDIMENTATION BASINS SHALL BE MAINTAINED IN OPERATIONAL CONDITIONS AT ALL TIMES. SEDIMENT SHALL BE REMOVED FROM SEDIMENT BASINS OR TRAPS WHEN THE DESIGN CAPACITY HAS BEEN REDUCED BY 50%.
- PRIOR TO LEAVING THE SITE, ALL VEHICLES SHALL BE CLEANED OF DEBRIS. ANY DEBRIS AND/OR SEDIMENT REACHING THE PUBLIC STREET SHALL BE 7 CLEANED IMMEDIATELY BY A METHOD OTHER THAN FLUSHING.











TRIANGULAR SILT DIKE INSTALLATION FOR ROADWAY DITCH OR DRAINAGE DITCH NOT TO SCALE

STABILIZED CONSTRUCTION EXIT SCALE: N.T.S.

12" MIN.

James R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2480 www.childersarchitect.com PROFESSIONAL SEAL: H. WAYNE BARKER 7-3/- 20 /18513 CONSULTANT LOGO:



CLIENT:

NATION ICE Z Ш ШО HEROKE Q Ŭ ▼ \mathbf{O} KEY PLAN:

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

DATE: JOB NUMBER 18-01.10 07/31/20 SHEET NUMBER: CE500

> **EROSION CONTROL** NOTES & DETAILS















	Summary Discharge								
		Flows Q=CiA							
		2 -YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR		
		c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.		
	Discharge Point								
Existing	1	10.780	12.990	15.090	18.210	19.500	21.710		
Existing	2	1.697	2.030	2.345	2.831	3.010	3.335		
Proposed	1	9.583	12.168	13.703	16.083	17.812	19.493		
roposed	2	1.648	2.097	2.365	2.776	3.082	3.374		

OVERALL DRAINAGE TOTALS SUMMARY												
		Flows Q=CiA										
	2 -YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR						
Dischargo	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.						
Point												
Existing	12.477	15.020	17.435	21.041	22.510	25.045						
Proposed	11.231	14.265	16.068	18.859	20.894	22.867						
Note: Existing site was mostly paved consisting mainly impervious area. Proposed site added												

green space and therefore impervious area is less then proposed condition reducing runoff.

LAND USAGE									
Exist	ing	Proposed							
Impervious	Pervious	Impervious	Pervious						
Acre	Acre Acre		Acre						
3.43	1.44	2.43	2.44						

ODOT RUNOFF COEFFICIENTS								
Type of Drainage Area	Runoff Coefficient (C)	Assumed						
Lawns								
Heavy Soil, (Average	0 10 0 22	0.0						
2-770)	0.18-0.22	0.2						
Streets								
Concrete	0.80-0.95	0.9						
Roofs	0.75-095	0.9						

Existing Drainage												
					CHEROKEE N	NATION TAG OF	FICE					
Total Rupoff Flows Q=CiA							Q=CiA					
	Area		Coefficent,		Slope	Тс	2 -YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR
Drainage Area Name	Acres	Land Use	C	(ft)	(%)	(min)	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.
EX - 1	4.21	Lawn; Concrete	0.71 ¹	839.78	1.68	17.12	10.780	12.990	15.090	18.210	19.500	21.710
EX - 2A	0.31	Lawn; Concrete	0.56 ²	254.73	1.72	12.95	0.712	0.854	0.989	1.194	1.273	1.413
EX - 2B	0.36	Lawn; Concrete	0.58 ³	242.34	2.96	10.15	0.985	1.176	1.356	1.637	1.737	1.922
Total	4.88						12.477	15.020	17.435	21.041	22.510	25.045
NOTE												
1. Composite Coefficent (A	Area/C) = [(3.0	80 x 0.90) + (1	1.120 x 0.20)]	/ 4.200								
2. Composite Coefficent (A	Area/C) = [(0.1	.55 x 0.90) + ((0.152 x 0.20)]	/ 0.310								
3. Composite Coefficent (A	Area/C) = [(0.1	.95 x 0.90) + ((D.168 x 0.20)]	/ 0.360								

					Propose	d Drainag	je					
	1	1	1	СН	EROKEE NA	TION TAG	OFFICE					
Runoff				Flow Length, Lo				I	Flows Q=CiA			
Drainage	Total Drainage Area	-	Coefficent,		Slope	Тс	2 -YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR
Area Name	Acres	Land Use		(ft)	(%)	(min)	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.
1-A	0.403	Lawn; Concrete	0.71 ¹	287.35	1.57	10.24	1.225	1.559	1.758	2.064	2.292	2.509
1-BE1	0.013	Roofs	0.9	43.64	25.00	0.81	0.080	0.099	0.108	0.127	0.134	0.147
1-BE2	0.019	Roofs	0.9	39.39	25.00	0.77	0.116	0.143	0.157	, 0.184	0.194	0.212
1-BE3	0.012	Roofs	0.9	47.61	25.00	0.85	0.073	0.089	0.098	0.115	0.121	0.133
1-BE4	0.012	Roofs	0.9	46.80	25.00	0.84	0.073	0.089	0.098	0.115	0.121	0.132
1-BE5	0.018	Roofs	0.9	38.63	25.00	0.77	0.111	0.137	0.150	0.176	0.186	0.203
1-BE6	0.013	Roofs	0.9	44.04	25.00	0.82	0.080	0.099	0.108	0.127	0.134	0.147
1-BW1	0.014	Roofs	0.9	44.99	25.00	0.83	0.087	0.107	0.118	0.138	0.145	0.159
1-BW2	0.021	Roofs	0.9	46.50	25.00	0.84	0.130	0.159	0.175	, 0.206	0.217	0.237
1-BW3	0.017	Roofs	0.9	46.46	25.00	0.84	0.103	0.126	0.139	0.163	0.171	0.187
1-BW4	0.002	Roofs	0.9	16.68	25.00	0.50	0.012	0.014	0.016	0.018	0.019	0.021
1-BW5	0.002	Roofs	0.9	17.09	25.00	0.51	0.012	0.015	0.017	0.020	0.021	0.023
1-BW6	0.010	Roofs	0.9	37.91	25.00	0.76	0.062	0.076	0.084	0.099	0.104	0.114
1-BW7	0.008	Roofs	0.9	37.64	25.00	0.76	0.080	0.099	0.108	0.127	0.134	0.147
1-C	0.057	Concrete	0.9	85.39	3.09	2.28	0.349	0.431	0.476	, 0.558	0.593	0.649
1-D	0.071	Concrete	0.85 ²	100.02	1.78	4.00	0.340	0.425	0.472	0.554	0.598	0.655
1-E	0.082	Concrete	0.84 ³	92.20	4.09	2.81	0.407	0.506	0.56	0.658	0.705	0.772
1-F	0.078	Lawn; Concrete	0.854	91.97	4.06	2.70	0.412	0.512	0.568	0.666	0.714	0.781
1-G	1.238	Concrete	0.74 ⁵	311.53	1.88	14.17	3.289	4.218	4.785	5.617	6.311	6.906
1-H	0.690	Lawn; Concrete	0.61 ⁶	241.53	1.55	14.99	1.198	1.539	1.748	3 2.052	2.310	2.528
1-I	0.279	Lawn	0.2	126.86	2.53	13.39	0.221	0.283	0.32	0.376	0.422	0.462
1-J	0.037	Concrete	0.9	45.82	2.14	1.89	0.215	0.266	0.293	0.344	0.366	0.400
1-К	1.129	Lawn; Concrete	0.28 ⁷	439.56	2.71	22.20	0.908	1.177	1.345	1.579	1.800	1.969
2-A	0.224	Concrete	0.5 ⁸	510.46	1.87	19.81	0.360	0.466	0.532	0.624	0.709	0.776
2-В	0.279	Concrete	0.65 ⁹	274.36	2.20	10.09	0.740	0.942	1.062	1.247	1.385	1.516
2-C	0.152	Lawn; Concrete	0.71 ¹⁰	164.05	3.05	6.20	0.548	0.689	0.77	0.905	0.988	1.082
Total	4.88						11.231	14.265	16.068	18.859	20.894	22.867
NOTE												
1. Composite	Coefficent (Area/C) = [((0.290 x 0.90) +	+ (0.110 x 0.20)] / 0.400								
2. Composite	Coefficent (Area/C) = [(0.065 x 0.90) -	+ (0.005 x 0.20)] / 0.070								
3. Composite	Coefficent (Area/C) = [(0.075 x 0.90) -	+ (0.008 x 0.20)] / 0.080								
4. Composite	Coefficent (Area/C) = [(0.072 x 0.90) -	+ (0.006 x 0.20)] / 0.080								
5. Composite	Coefficent (Area/C) = [(0.900x 0.90) +	(0.340 x 0.20)] / 1.240								
6. Composite	Coefficent (Area/C) = [(0.280 x 0.90) -	+ (0.410 x 0.20)] / 0.690								
7. Composite	Coefficent (Area/C) = [(0.108 x 0.90) -	+ (1.020 x 0.20)] / 1.130								
8. Composite	Coefficent (Area/C) = [(0.100 x 0.90) -	+ (0.130 x 0.20)] / 0.230								
9. Composite	Coefficent (Area/C) = [(0.170 x 0.90) -	+ (0.090 x 0.20)] / 0.260								
10. Composite	e Coefficent (Area/C) = [(0.111 x 0.90)	+ (0.041 x 0.2	0)] / 0.150								







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PLAN







CONSTRUCTION NOTES

Α.	JOINT SEALANT SHALL BE A ONE-PART POLYURETHANE SEALANT.
	SEALANT SHALL BE MANUFACTURED AND APPROVED FOR SEALING JOINTS
	IN CONCRETE, EXPOSURE TO WEATHER AND SUBJECT TO TRAFFIC.
	SEALANT SHALL MEET OR EXCEED ASTM C920 TYPE S, GRADE NS, CLASS
	25. SEALANT SHALL BE VULKEM 116 OR APPROVED EQUAL.

JOINT SEALANT SHALL BE PLACED OVER BACKER ROD AS REQUIRED AND RECOMMENDED BY MANUFACTURER.

JOINT SEALANT AND FILLER SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.

B. 5" AND LESS THICK PAVING - $\frac{5}{8}$ "Øx12" SMOOTH DOWEL BAR @ 12" O.C., $\frac{1}{2}$ GREASED $\frac{1}{2}$ PAINTED.

6" THICK PAVING - ³/₄"Øx14" SMOOTH DOWEL BAR @ 12" O.C., ¹/₂ GREASED $\frac{1}{2}$ PAINTED. 7" THICK PAVING -7/8"Øx14" SMOOTH DOWEL BAR @ 12' O.C., 1/2 GREASED

 $\frac{1}{2}$ PAINTED. 8" THICK PAVING - 1"Øx14" SMOOTH DOWEL BAR @ 12" O.C., $\frac{1}{2}$ GREASED $\frac{1}{2}$

PAINTED. 9" THICK PAVING -1¹/₈"Øx16" SMOOTH DOWEL BAR @ 12' O.C., $\frac{1}{2}$ GREASED $\frac{1}{2}$ PAINTED.

- NO. 4 DEFORMED BARS, 3'-0" LONG AT 2'-0" O.C. C.
- D. THICKNESS OF SLAB.
- E. PREFORMED BITUMINOUS JOINT MATERIAL.

GENE	RAL	NOTES
THICI DAILY	KNES (CO	SS OF SLAB SHAL NCRETE PLACEM
1.	EXP	ANSION JOINTS
	A.	FULL DEPTH ¹ / ₂ IN FILLER FLUSH W
	B.	EXPANSION JOIN AT THE START O
	C.	USE DOWEL BAS
2.	CON A.	NTRACTION JOINT MAKE JOINTS AT THICKNESS IF TH
	В.	PROVIDE A ¹ / ₂ INC
	C.	MAXIMUM LENGT 1.25 TO 1.



JOINTS THAT DO NOT INTERSECT A LONGITUDINAL OR TRANSVERSE JOINT





EXAMPLE 1

TYPICAL STREET FIXTURE ISOLATION JOINTS

	JOINT DIMENSIONS								
	TRANS. JOINTS						ONG. JOINTS	6	
D	A	В	С	D	E	F-MIN	F-MAX	G	
4 1/2"	1"	1 1/2"	1 1/2"	1"	1 3/4"	1/4 D	1/3 D	1/2 D	
5"	1"	1 3/4"	1 1/2"	1"	2"	1/4 D	1/3 D	1/2 D	
5 1/2"	1"	2"	1 1/2"	1"	2 1/4"	1/4 D	1/3 D	1/2 D	
6"	1"	2 1/4"	1 1/2"	1"	2 1/2"	1/4 D	1/3 D	1/2 D	
7"	1"	2 1/2"	2"	1 1/4"	2 7/8"	1/4 D	1/3 D	1/2 D	
8"	1"	3"	2"	1 1/2"	3 1/4"	1/4 D	1/3 D	1/2 D	

LAB SHALL BE AS INDICATED ON DRAWINGS. SEE TABLE BELOW. E PLACEMENT SHALL TERMINATE AT A JOINT.

EPTH $\frac{1}{2}$ INCH THICK JOINT FILLER MATERIAL. SET TOP OF FLUSH WITH SURFACE OF CONCRETE.

SION JOINTS ARE NOT REQUIRED IN SLIP FORMWORK EXCEPT START OR END OF THE INSTALLATION ACTIVITY.

OWEL BASKETS TO INSURE ALIGNMENT.

ION JOINTS: MAKE CONTRACTION JOINTS VERTICAL IOINTS AT LEAST $\frac{1}{8}$ INCH WIDE AND 1 INCH DEEP OR $\frac{1}{4}$ SLAB NESS IF THE SLAB IS GREATER THAN 4 INCHES THICK.

DE A $\frac{1}{2}$ INCH RADIUS TOOLED TOP. UM LENGTH TO WIDTH RATIO FOR NON-SQUARE PANELS IS

D. MAXIMUM PANEL LENGTH IS 10 FEET FOR PAVEMENT THICKNESS LESS THAN 5 INCHES AND 12 FEET FOR PAVEMENT THICKNESS 5 INCHES AND GREATER, UNLESS NOTED OTHERWISE.

3. FINE HAIR BROOM ON LONGITUDINAL GRADES UNDER 6% AND ROUGH HAIR BROOM ON LONGITUDINAL GRADES OVER 6%.



TYPE 1 SAWED JOINT / CONTRACTION (LONGITUDINAL OR TRANSVERSE)







TYPE 3

KEYED JOINT (LONGITUDINAL OR TRANSVERSE)



TYPE 4 TIED JOINT (CONTRACTION / CONSTRUCTION) (LONGITUDINAL OR TRANSVERSE) _<mark>→</mark>||◄ 1/2"



TYPE 5 EXPANSION JOINT



EXAMPLE 2

EXAMPLE 2



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GENERAL NOTES:

- ALL FEATURES OF TACTILE WARNING DEVICE DESIGN AND FINAL INSTALLATION SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT, ACCESSIBILITY GUIDELINES (ADAAG). WHERE SPATIAL LIMITATIONS OR EXISTING FEATURES WITHIN THE LIMITS OF THE PRÓJECT PREVENT FULL COMPLIANCE WITH THE ADAAG, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER UPON DISCOVERY OF SUCH FEATURE(S). THE CONTRACTOR SHALL NOT PROCEED WITH ANY ASPECT OF THE WORK WHICH IS NOT IN FULL COMPLIANCE WITH THE ADAAG WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. ANY WORK WHICH IS NOT PERFORMED WITHIN THE GUIDELINES OF THE ADAAG, FOR WHICH CONTRACTOR DOES NOT HAVE WRITTEN APPROVAL, SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- TACTILE WARNING SURFACE SHALL EXTEND FROM EDGE TO EDGE OF WALKWAY ENTERING THE CROSSWALK AT STREET LEVEL.
- TRUNCATED DOME SURFACE SHALL CONTRAST VISUALLY WITH THE ADJOINING WALKING SURFACES EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE TRUNCATED SURFACE.
- SURFACE BONDED TACTILE SYSTEMS MAY ONLY BE PLACED ON NEWLY POURED 4 CONCRETE AFTER AN APPROPRIATE PERIOD OF CURING, IN ACCORDANCE WITH MANUFACTURE'S SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.
- ROWS OF TACTILE DOME TREATMENT SHOULD BE ORIENTED PARALLEL WITH CENTERLINE OF SIDEWALK/RAMP OR TOWARD THE CENTERLINE OF MARKED CROSSWALK.
- TACTILE SYSTEMS, DOME PATTERNS OR FEATURES DIFFERING FROM THOSE SHOWN ON THIS DETAIL, BUT MEETING CURRENT ADAAG SPECIFICATIONS, SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER BEFORE INSTALLATION.
- THE SAME TACTILE DOME PATTERN AND COLOR SHALL BE USED THROUGHOUT ANY NEW OR RETROFIT PROJECT. DOME PATTERN & LOCATION OF EXISTING RAMPS TO BE RETROFIT WITH TACTILE DEVICES SHALL BE DESIGNATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- WET OR DRY STATIC COEFFICIENT OF FRICTION SHALL BE 0.7 FOR TACTILE SURFACES AND MEET ASTM 1028.
- TACTILE WARNING SURFACES MAY NOT BE STAMPED IN WET CONCRETE.
- TACTILE SYSTEMS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 200 PSI. 10. COMPRESSIVE TEST SHALL CONFIRM TO ASTM D695.





.19"

.19"

INTERNAL EMBEDMENT FLANGE 15 PER TILE





1. ALL SIGNS MOUNTED 7' TO BOTTOM OF SIGN

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ANCHOR TUBE & HEAVY DUTY ANCHOR TUBE DETAIL NOT TO SCALE

TYPICAL POST INSTALLATION NOT TO SCALE

NOTES

POST TUBE SHALL MEET ASTM A1011 GRADE 50. POST TUBE GALVANIZED AS PER ASTM A653 GRADE 90.

HEAVY DUTY ANCHOR TUBE SHALL MEET ASTM A500 GRADE B STRUCTURAL TUBE AND STEEL SHALL BE HOT DIP GALVANIZED PER

ASTM A123. THE UPPER SIGN POST SHALL TELESCOPE INSIDE THE ANCHOR TUBE A MINIMUM OF 12". ANCHOR TUBE SHALLBE MINIMUM OF 30" WITH IN 3" MAXIMUM AS SHOWN ON DETAIL.





BARRIER LINE NOT TO SCALE



TYPICAL STRIPING DETAILS



- 3. REFER TO MANUFACTURER'S WEBSITE FOR PRODUCT INFORMATION.
- 4. DRAWING NOT TO SCALE.

TREX SECLUSIONS FENCING EXPLODED VIEW NOT TO SCALE





- 1. INSTALLATION TO BE COMPLETED PER MANUFACTURER'S SPECIFICATION.
- 2. THIS DRAWING IS PROVIDED FOR PLANNING PURPOSES. REFER TO MANUFACTURER'S INSTALLATIONS FOR CONSTRUCTION DETAILS.
- 3. REFER TO MANUFACTURER'S WEBSITE FOR PRODUCT INFORMATION.
- 4. DRAWING NOT TO SCALE.





- 1. INSTALLATION TO BE COMPLETED PER MANUFACTURER'S SPECIFICATION.
- 2. THIS DRAWING IS PROVIDED FOR PLANNING PURPOSES. REFER TO MANUFACTURER'S INSTALLATIONS FOR
- CONSTRUCTION DETAILS. 3. REFER TO MANUFACTURER'S WEBSITE FOR PRODUCT INFORMATION.

GATE HANDLE

4. DRAWING NOT TO SCALE.

DROP ROD ASSEMBLY





OPTIONAL: ANTI-SAG CABLE













TREX SECLUSION FENCE DETAILS NOT TO SCALE

























LATCH GAP IDEAL: 7/8"

NOTES:

SPECIFICATION.

INFORMATION.

4. DRAWING NOT TO SCALE.

CONSTRUCTION DETAILS.

46<mark>1</mark>"_____ IDEAL

SINGLE GATE OPENING

1. INSTALLATION TO BE COMPLETED PER MANUFACTURER'S

2. THIS DRAWING IS PROVIDED FOR PLANNING PURPOSES.

REFER TO MANUFACTURER'S INSTALLATIONS FOR

MIN: $\frac{1}{2}$

MAX: 1 ¹/₂

448





DOUBLE GATE OPENING

 $130\frac{1}{2}"$ IDEAL

3. REFER TO MANUFACTURER'S WEBSITE FOR PRODUCT

TREX SECLUSIONS FENCING GATE DETAILS

















WATER LINE A PROFILE (STA. 0+00.00 TO STA. 5+16.52) NOTE: WATER PIPE SHALL BE DIP OR AS PERMITTED AND APPROVED BY THE CITY OF TULSA.





James R. Childers Architect, Inc.							
45 South 4th Stre Fort Smith, AR 729 479-783-2480 www.childersarchited	et 901 :t.com						
H. WAYNE BARKER 7-7/- 20 18513	ENGINEER C						
CONSULTANT LOGO:							
Barker & Asso 3902 UNIVERSI Durant, OK 7 580,931,90 OK. CA. 399 EXP. 06/30/20	riates TY BLVD 4701 045 08 022						
CLIENT:	AINTION CHI'S DE						
CHEROKEE NATION TAG OFFICE	CATOOSA, OKLAHOMA						
KEY PLAN:							
PROJECT PHASE: CONSTRUCTI DOCUMENT	ON S						
REVISIONS # DATE DESCR	RIPTION						
DATE: JOB NUMB 07/31/20 18	er: -01.10						
SHEET NILIMPED							

WATER LINE A PLAN & PROFILE







PLAN & PROFILE







SCALE IN FEET



STA. 3+20.80 CONNECT TO EXISTING SEWER







Pipe Table							
Pipe Name	Size	Length	Slope				
P-7	6"	21.14'	7.59%				
P-8	6"	25.42'	1.42%				
P-9	6"	21.79'	9.67%				
P-10	8"	27.00'	1.42%				
P-11	6"	7.50'	11.43%				
P-11 (1)	6"	14.33'	11.43%				
P-12	8"	17.16'	1.42%				
P-13	6"	7.51'	12.55%				
P-13 (1)	6"	14.35'	12.55%				
P-14	8"	9.51'	1.42%				
P-15	6"	21.88'	13.17%				
P-16	8"	22.31'	1.42%				
P-27	6"	1.77'	61.92%				
P-28	6"	1.99'	47.14%				





STORM LINE 2 PROFILE (STA. 1+71.27 TO STA. 2+95.96)





CULVERT 2 PROFILE (STA. 00+05.00 TO STA. 00+77.96)



CULVERT 4 PROFILE (STA. 00+05.00 TO STA. 00+60.96)





FIRE HYDRANT NOT TO SCALE



THRUST BLOCKS AND TRENCH CONDITIONS NOT TO SCALE

7-5/16"





TRENCH CROSS-SECTION

1. BEDDING SHALL BE SAND, PLACED IN THE TRENCH SIMULTANEOUSLY ON BOTH SIDES OF THE PIPE, AND HAND TAMPED TO ASSURE CONSOLIDATION.

2. FOR PAVED AREAS, SEE STANDARD DETAIL FOR PAVEMENT REMOVAL AND 3. CONTRACTOR SHALL BEAR ALL COSTS OF TESTING.

<u>RIGID PIPE:</u> 1. DUCTILE IRON - AWWA C151 2. PRESTRESSED CONCRETE - AWWA C301 3. REINFORCED CONCRETE SANITARY SEWER 4. VITRIFIED CLAY SANITARY SEWER

> **BEDDING DETAIL RIGID PIPE** NOT TO SCALE













	DIMENSIONS OF PRECAST END SECTION FOR PIPES										
SPAN	К	J	С	D	E	Т	R3	R4	R5	SLOPE	
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.		
18	9	27	46	73	36	2 1/2	3	3	6	3 TO 1	
24	8 1/2	43 1/2	30	73 1/2	48	3	3	3	7	3 TO 1	
30	12	54	19 3/4	73 3/4	60	3 1/2	3	3	8	3 TO 1	
36	15	63	34 3/4	73 3/4	72	4	3	3	10 1/2	3 TO 1	
42	21	63	35	98	78	4 1/2	3	3	10 1/2	3 TO 1	
48	24	72	26	98	84	5	6	6	14	3 TO 1	

	DIMENSIONS OF PRE-CAST END SECTIONS FOR ELLIPTICAL PIPES										
SPAN	RISE	R1	R2	R3	R4	R5	Т	К	J	С	
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	
23	14	6	20	3	3		2 3/4	8	27	45	
30	19	8 1/4	26 1/4	3	3	7	3 1/4	8 1/2	39	33	
34	22	9 1/4	29 17/32	3	3	8	3 1/2	9	46	26	
38	24	10 1/4	32 3/4	3	3	9	3 3/4	9 1/2	54	18	
42	27	11 7/16	36 3/16	3	3	10 1/2	3 3/4	10 3/8	57	15	
45	29	12 1/4	39 1/4	3	3	12	4 1/2	11 1/4	60	36	
49	32	13 9/16	42 21/32	3	3	12 1/2	4 3/4	12	60	36	
53	34	14 3/4	46	6	6	13	5	15 3/4	60	36	
60	38	16 1/2	51 3/4	6	6	14	5 1/2	21	60	36	
68	43	18 21/32	58 13/32	6	6	16	6	25 1/2	60	36	

	DIMENSIONS OF PRE-CAST END SECTION FOR ARCH-PIPES															
SPAN	RISE	A	В	R	R1	R2	R3	R4	R5	Т	К	J	С	D	E	
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	SLOPE
28 1/2	18	10 7/8	3 3/4	3	40 11/16	14 3/4	4 5/8	3	7	3 1/2	8 1/2	39	33	72	48	3 TO 1
36 1/4	22 1/2	13 5/8	3 13/16	3	51	18 3/4	6 1/8	3	8	4	9 1/2	50	46	96	60	3 TO 1
43 3/4	26 5/8	17 1/8	4 1/8	6	62	22 1/2	6 1/2	3	10 1/2	4 1/2	11 1/8	60	36	96	72	3 TO 1
51 1/8	31 1/16	20	5 1/16	6	73	26 1/4	7 3/4	3	12 1/2	4 1/2	15 13/16	60	36	96	78	3 TO 1
58 1/2	36	22 3/4	6	6	84	30	8 7/8	3	14	5	21	60	36	96	84	3 TO 1
65	40	25	6 3/4	6	92 1/2	33 1/2	10	6	16	5 1/2	25 1/2	60	36	96	90	3 TO 1
73	45	28 1/2	7 1/2	6	105	37 1/2	11 1/16	6		6	31	60	36	96	96	3 TO 1

END VIEW ARCH CONCRETE PIPE END SECTION NOT TO SCALE



UTILITY CONTACTS

OWNER

CALL OKIE

DAVID MOORE

ENGINEER

DANNY BALDWIN

BEING EXACT OR COMPLETE. THE CONTRACTOR

MUST CALL THE LOCAL UTILITY LOCATION CENTER

AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES

LEGEND

FENCE

UTILITY COORDINATION:	T	TELEPHONE OVERHEAD
CITY OF TULSA	·	POWER LINE OVERHEAD
175 E 2ND ST, 4TH FLOOR		GASTINE
TULSA, OK 74103	9	
918.596.9649		
GAS	PUG	
OKLAHOMA NATURAL GAS COMPANY		
ATTN: DONALD KAFER		
918.527.1089	W	
	SS	SANITARY SEWER LINE
TELEPHONE:	FM	FORCE MAIN
	\$	STORM SEWER LINE
ATAT COMMONICATION INC. ATTN: PAUL DESPAIN	° ° ° D	FLOW LINE DITCH
5305 EAST 71ST STREET	— — DD — —	DIVERSION DIKE
TULSA, OKLAHOMA 74146	SF	SILT FENCE
918.596.6810		PROPERTY BOUNDARY
CABLE TELEVISION		DRAINAGE AREA BOUNDARY
	PVT	PRIVATE
ATTN: GARY HAMILTON	D	PROPOSED MANHOLE
11811 E. 51ST STREET S.	d	PROPOSED INLET
TULSA, OKLAHOMA 74146		EXISTING MANHOLE
918.286.4666		EXISTING INLET LETTER
	D.L.	DRAINAGE LENGTH
ELECTRIC:	TR	TOP OF RIM
AEP/PUBLIC SERVICE COMPANY OF OKLAHO		FLOWLINE
ATTN: CHRIS THOMPSON		
212 EAST SIXTH STREET	LF	
TULSA, OKLAHOMA 74119	RCP	
918.599.6517	TYP	NORTHING
	N _	NORTHING
	E	EASTING
	HDPE	HIGH DENSITY POLYETHYLEI
	PVC	POLYVINYL CHLORIDE
	SPHD	SPRINKLER HEAD
ENGINEER STATEMENT	GTR	GUTTER
	CLSM	CONTROLLED LOW
1. BY MY SIGNATURE ON THESE CONSTRUCTION		STRENGTH MATERIAL
DOCUMENTS, I HEREBY CERTIFY THAT I AM FAMILIAR	Б	VALVE
WITH THE ADOPTED ORDINANCES AND REGULATIONS OF	Ō	GATE VALVE
THE CITY OF TULSA GOVERNING THE WORK IN THE	$\overline{\Delta}$	REDUCER
INFRASTRUCTURE DEVELOPMENT PERMIT DESCRIPTION;	0	DOUBLE CHECK DETECTOR
THAT THESE PLANS HAVE BEEN PREPARED UNDER MY	H	TEE
DIRECT SUPERVISION; AND ABOVE AND FOREGOING		PLUG VALVE
THE ADOPTED STANDARDS OF THE CITY OF TULSA TO	Н	11 1/4° ELBOW
THE BEST OF MY KNOWLEDGE AND BELIEF.	H	22 1/2° ELBOW
2. THIS PROJECT COMPLIES WITH ALL OKLAHOMA		45° ELBOW
DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ)	г Г	90° ELBOW
REQUIREMENTS.	=	TAPPING SLEEVE
	~	FIRE HYDRANT
	୍କୁ ଭ	WATER METER

0



REV	DESCRIPTION
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IDP 058063-2020





PHONE OVERHEAD R LINE OVERHEAD

OF RIM LINE R FEET ORCED CONCRETE PIPE

DENSITY POLYETHYLENE **VINYL CHLORIDE** IKLER HEAD

VALVE CER BLE CHECK DETECTOR



CITY OF TULSA WATERLINE NOTES: 1. ALL CONSTUCTION SHALL BE IN STRICT ACCORDANCE WITH THE CITY OF TULSA, OKLAHOMA STANDARDS AND SPECIFICATIONS. 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY WORK ORDERS AND PERMITS FROM THE CITY OF TULSA, INCLUDING PROVISIONS OF BONDS AND INSURANCE AS REQUIRED. 3. AFTER CONSTRUCTION IS COMPLETE, ALL DISTURBED AREAS SHALL BE RESEEDED ACCORDING TO CITY OF TULSA, OKLAHOMA SPECIFICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR SEEDED AREAS UNTIL GROWTH IS ESTABLISHED. 4. ALL FITTINGS AND VALVES SHALL BE POLYWRAPPED DUCTILE IRON OR CAST IRON. 5. THE CITY OF TULSA SHALL BE NOTIFIED 24 HOURS PRIOR TO TESTING OF ANY CHLORINATION. 6. TESTING, CHLORINATING AND FLUSHING NOTES PERFORMED IN ACCORDANCE WITH GENERAL SPECIFICATIONS, SECTION 109.3. 7. TESTING AND CHLORINATION TO BE PERFORMED BY CITY OF TULSA. 8. THE CENTER OF THE LOWEST OUTLET OF A FIRE HYDRANT SHALL NOT BE LESS THAN 18 INCHES ABOVE THE SURROUNDING GROUND. 9. STONES FOUND IN THE TRENCH SHALL BE REMOVED FOR A DEPTH OF 6 INCHES BELOW THE BOTTOM OF THE PIPE. 10. THERE WILL BE NO FIRE, IRRIGATION OR DOMESTIC SERVICE CONNECTIONS MADE ON THIS WATER MAIN LINE PRIOR TO BEING TESTED, CHLORINATED AND RELEASED BY THE WATER CONSTRUCTION INSPECTION SUPERVISOR. ALL SERVICE CONNECTION PERMIT FEES MUST BE PAID AND A PERMIT ISSUED FROM THE PERMIT SERVICE CENTER BEFORE THESE TYPE OF CONNECTIONS CAN BE MADE. 11.ALL SALVAGED WATERLINE PARTS AND FITTINGS SHALL BE RETURNED TO CITY OF TULSA PUBLIC WORKS WEST YARD AT 23RD AND JACKSON. 12.RESTRAINED JOINTS SHALL BE PROVIDED ON 4" & LARGER WATERLINES AT ALL BENDS, TEES AND FIRE HYDRANTS. 13. NO WATER SERVICE CONNECTIONS WILL BE ALLOWED UNDER IDP SCOPE OF WORK. 14.CITY CREWS ONLY ARE ALLOWED TO OPERATE VALVES. 15.WATER LINE TRENCH DETAIL FOR DUCTILE IRON PIPE: RE: COT STD 304. 16. VALVE BOX DETAIL RE: COT STD 313. 17. THIS PROJECT COMPLIES WITH ALL OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ) REQUIRMENTS. THE CONTRACTOR SHALL KEEP ON SITE A CURRENT SET OF THE APPROVED CONSTRUCTION WORKING DRAWINGS AT ALL TIMES. THE CONTRACTOR SHALL MARK (IN RED INK) ALL APPROVED CHANGES INCURRED FOLLOWING CITY OF TULSA APPROVAL OF THE INITIAL DRAWINGS. THESE CHANGES MAY BE INITIATED FROM FIELD CONDITIONS OR CHANGES MADE BY THE DESIGN ENGINEER. EXCEPT FOR MINOR FIELD ADJUSTMENTS, ALL CHANGES SHALL BE REVIEWED AND AGREED TO BY THE DESIGN ENGINEER PRIOR TO FINAL APPROVAL OF THE PROJECT. THE CONTRACTOR SHALL SUBMIT THE WORKING DRAWINGS TO THE ENGINEER OF RECORD (DESIGN ENGINEER) AFTER FINAL INSPECTION OF PROJECT TO SERVE AS A BASIS FOR DEVELOPMENT OF FINAL AS-BUILT RECORD DRAWINGS. BENCHMARK BENCHMARK BENCHMARK P-K NAIL IN ASPH. P-K NAIL IN ASPH. 60-D NAIL ELEVATION(NAVD88)=756.00 ELEVATION(NAVD88)=749.30 ELEVATION(NAVD88)=748.44 NORTHING=430723.573 NORTHING=431365.190 NORTHING=430951.409 EASTING=2618054.347 EASTING=2618492.942 EASTING=2618493.529 CAUTION DESCRIPTION NOTICE TO CONTRACTOR THE CONTRACTOR IS SPECIFICALLY CAUTIONED THE LOCATION AND ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER CALLOKIE AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES

1/8"

GENERAL:

CONDUCT SITE CLEARING OPERATIONS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS AND OTHER ADJACENT OCCUPIED OR USED FACILITIES. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM AUTHORITIES HAVING JURISDICTION. STREETS AND ROADWAYS SHALL BE THOROUGHLY CLEANED AND/OR SWEPT ON A DAILY BASIS OR MORE FREQUENTLY AS REQUIRED BY THE GOVERNING AUTHORITY. RESTORE DAMAGED IMPROVEMENTS TO ORIGINAL CONDITION AS ACCEPTABLE TO PARTIES HAVING JURISDICTION.

THE CONTRACTOR SHALL PROVIDE DUST CONTROL MEASURES IN ACCORDANCE WITH LOCAL AUTHORITIES.

ALL STREET SURFACES, DRIVEWAYS, CULVERTS, ROADSIDE DRAINAGE DITCHES AND OTHER STRUCTURES THAT ARE DISTURBED OR DAMAGED IN ANY MANNER AS A RESULT OF CONSTRUCTION SHALL BE REPLACED IN ACCORDANCE WITH THE SPECIFICATIONS.

UNLESS SPECIFIED OTHERWISE, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CITY OF TULSA STANDARDS, OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY STANDARDS AND OKLAHOMA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND/OR THE APPROPRIATE LOCAL AUTHORITIES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS, PERMIT FEES, LICENSES, LICENSE FEES, AND TAP FEES, ETC.

ALL ELEVATIONS IN PAVED AREAS ARE TOP OF FINISHED PAVEMENT UNLESS OTHERWISE NOTED.

RELOCATION OF ANY UTILITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF THE APPROPRIATE UTILITY COMPANY AND/OR REGULATORY AGENCY. CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM ENGINEER BEFORE ANY UTILITY RELOCATION.

NO DIMENSION MAY BE SCALED. REFER UNCLEAR ITEMS TO THE ENGINEER FOR INTERPRETATION.

OKIE:

ALL CONTRACTORS SHALL NOTIFY UTILITY COMPANIES AND GOVERNMENT AGENCIES IN WRITING OF THE INTENT TO EXCAVATE NO LESS THAN 72 HOURS PRIOR TO SUCH EXCAVATION (EXCLUSIVE OF SATURDAYS, SUNDAYS AND HOLIDAYS) AND CALL "OKIE" AT 1-800-522-6543.

EXISTING UTILITY LOCATIONS SHOWN SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. LOCATIONS OF UNDERGROUND UTILITIES ON THESE DRAWINGS ARE APPROXIMATE ONLY AND BASED ON ACTUAL FIELD LOCATIONS OF VISIBLE STRUCTURES AND PLAN COMPUTATIONS.

SITE WORK AND GRADING:

ALL FEATURES OF THIS PROJECT INCLUDING, BUT NOT LIMITED TO, SIDEWALKS AND CURB RAMPS SHALL COMPLY WITH THE AMERICAN DISABILITIES ACT (ADA) ACCESSIBILITY GUIDELINES, AND THE INTERIM FINAL RULES FOR PUBLIC RIGHT-OF-WAY, PUBLISHED IN THE FEDERAL REGISTER, SEPTEMBER 2010. WHERE SPATIAL LIMITATIONS OR EXISTING FEATURES WITHIN THE LIMITS OF THE PROJECT PREVENT FULL COMPLIANCE WITH THIS ACT, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER UPON DISCOVERY OF SUCH FEATURES. THE CONTRACTOR SHALL NOT PROCEED WITH ANY ASPECT OF THE WORK WHICH IS NOT IN FULL COMPLIANCE WITH THE ADA WITHOUT PRIOR, WRITTEN PERMISSION FROM THE ENGINEER. ANY WORK WHICH IS NOT PERFORMED WITHIN THE GUIDELINES OF THE ADA, FOR WHICH THE CONTRACTOR DOES NOT HAVE WRITTEN APPROVAL, SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

CROSS SLOPES FOR SIDEWALKS SHALL NOT EXCEED 1:50 RAMP SLOPES SHALL NOT EXCEED 1:12 GRADES EXCEEDING 5% WILL BE TREATED AS A RAMP SLOPE

FINISHED SUBGRADE SURFACE SHALL NOT BE MORE THAN 0.1 FEET ABOVE OR BELOW ESTABLISHED FINISHED SUBGRADE ELEVATIONS AND ALL GROUND SURFACES SHALL VARY UNIFORMLY BETWEEN INDICATED ELEVATIONS. FINISHED DITCHES SHALL BE GRADED TO ALLOW FOR PROPER DRAINAGE WITHOUT PONDING AND IN A MANNER THAT WILL MINIMIZE EROSION.

SURVEY:

EXISTING TOPOGRAPHY IS BASED ON AN ACTUAL FIELD SURVEY PERFORMED BY BENNETT SURVEYING, INC. DATED 11/12/19

DATE	OFESSIO, UD
	The second state
	BALDIAR SZ
	23671
	OKLAHOMA
	07/07/2020

EROSION CONTROL NOTES: CITY OF TULSA STANDARDS AND SPECIFICATIONS.

TEMPORARY EROSION CONTROL ALL DISTURBED EARTH SURFACES WHICH ARE NOT PAVED OR BUILDING PADS SHALL BE LANDSCAPED OR REVEGETATED WITH A TEMPORARY COVER, DEPENDING ON THE PLANTING SEASON, AS OUTLINED BELOW.

PLANT TYPE	PER ACRE	PER 1000 SQ. FT.	PLANTING DATE	DEPTH OF SEEDING
ANNUAL RYEGRASS ELBON RYE WHEAT OATS SORGHUMS SUDAN GRASS	40 LBS. 2 BU. 2 BU. 3 BU. 60 LBS. 60 LBS.	0.9 LBS. 3.0 LBS. 3.0 LBS. 2.5 LBS. 1.4 LBS. 1.4 LBS.	09/05-11/30 08/15-11/30 08/15-11/30 08/15-11/30 03/01-09/15 04/01-09/15	1/4 INCH 2 INCH 2 INCH 2 INCH 2 INCH 2 INCH 2 INCH

PRIOR TO SEEDING, NEEDED EROSION CONTROL PRACTICES SHALL BE INSTALLED.

THE SUBGRADE SHALL BE LOOSENED EVENLY TO A DEPTH OF 2 TO 3 INCHES AND 10-20-10 FERTILIZER (10 LBS. PER 1000 SQ. FT. OR 450 LBS. PER ACRE) SHALL BE MIXED WITH THE LOOSENED SOIL BY DISKING OR OTHER SUITABLE MEANS.

SOIL SHALL BE TESTED AND LIME TREATED IF REQUIRED BY TESTING FIRM.

SEEDS MAY BE DRILLED OR BROADCAST UNIFORMLY.

SEEDING IMPLEMENTS SHOULD BE USED AT RIGHT ANGLES TO THE SLOPE TO MINIMIZE EROSION.

MULCH SHALL BE USED ON ALL SLOPES GREATER THAN 5 PERCENT OR AS NEEDED.

THE AREA SHALL BE WATERED DAILY OR AS OFTEN AS NECESSARY TO MAINTAIN ADEQUATE SOIL MOISTURE UNTIL THE PLANTS EXCEED 1 INCH IN HEIGHT.

PERMANENT EROSION CONTROL PRACTICES: BERMUDA GRASS SOLID SLAB SOD SHALL BE USED ON THIS PROJECT IN ALL DISTURBED AREAS.

LAWN AREAS SHALL BE FERTILIZED ACCORDING TO TIME OF INSTALLATION

MAY 1 - AUGUST 31: APPLY 16-8-8 FERTILIZER AT A RATE OF SIX (6) POUNDS PER 1000 SQ FT TO LAWN AREAS

SEPTEMBER 1 - APRIL 30: APPLY 10-20-10 FERTILIZER AT A RATE OF TEN (10) POUNDS PER 1000 SQ FT TO LAWN AREAS

SHALL BE MIXED WITH THE LOOSENED SURFACE SOIL BY DISKING OR OTHER SUITABLE MEANS.

SOIL SHALL BE TESTED FOR pH AND SHALL BE TREATED WITH LIME AS REQUIRED.

THE AREA SHALL BE WATERED DAILY OR AS OFTEN AS NECESSARY TO MAINTAIN ADEQUATE SOIL MOISTURE UNTIL FINAL ACCEPTANCE OR ONE MONTH.

SODDED AREAS SHALL BE PREPARED AND PLACED IN ACCORDANCE WITH CITY OF TULSA SPECIFICATIONS. STAKE SOD ON SLOPES GREATER THAN 4:1.

ALL EROSION CONTROL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE

SOIL SHALL BE LOOSENED EVENLY TO A DEPTH OF 2 TO 3 INCHES AND FERTILIZER

and and	Wallace Engineering Structural Consultants, Inc.	12" WATER MAIN EXTENSION					
7	Structural and Civil Consultants 123 N. Martin Luther King Jr. Blvd. Tulsa, Oklahoma 74103 918.584.5858, 800.364.5858	PROJECT NO	2040045			DATE	3/27/2020
	OKLAHOMA CA #1460		G	ENERAL NOTES	SHEET #	GE	02





FURNISHED BY CONTRACTOR - INSTALLED BY CONTRACTOR IDP WATER LINE QUANTITY TABLE:

04 LF	12" DIP C151 WATER LINE
9 LF	6" DIP C151 WATER LINE
) LF	2" DIP C151 WATER LINE
EA	12" X 12" X 6" TEE
EA	8" X 8" X 8" TEE
EA	8" X 8" X 6" TAPPING SLEEVE
EA	6" X 6" X 2" TEE
EA	12" 45° BEND
EA	2" DOMESTIC WATER METER*
ΞA	6" NEPTUNE PROSPECTUS III FIRE FLOW
ont.)	METER W/STRAINER (FS)
EA	6" TO 2" REDUCER
EA	12" GATE VALVE W/ VALVE BOX
EA	8" GATE VALVE W/ VALVE BOX
EA	6" GATE VALVE W/ VALVE BOX
EA	8" SOLID SLEEVE
EA	FIRE HYDRANT
9 LF	24" STEEL CASING
9 LF	18" STEEL CASING
53 LF	PAVEMENT CLEARING AND RESTORATION



*WATER SERVICE METERS NOT PART OF IDP SCOPE OF WORK. SEPARATE PERMITS ARE REQUIRED.

	wallace	161ST AND SKELLY DR.	
ANNE	Wallace Engineering Structural Consultants, Inc.	12" WATER MAIN EXTENSION	
Ĩ	Structural and Civil Consultants 123 N. Martin Luther King Jr. Blvd.	PROJECT NO 2040045	DATE 7/7/2020
	918:584:5858, 800:364:5858	WATER LINE PLAN AND PROFILE SHEFT #	WL01
	EXP DATE 6/30/21	UNLET #	















	AREA	OL FACTOR	OCCUPANT LOAD						
=)	2432 SF	15 SF	163						
	2342 SF	100 SF	25						
	354 SF	300 SF	3						
	5128 SF 191								
	IBC SECTION 1004.1.2								

EX	EXIT SUMMARY								
EXIT FACTOR	WIDTH PROVIDED IN INCHES	WIDTH REQUIRED IN INCHES	CAPACITY IN PERSONS						
0.2	70"	32"	350						
0.2	36"	32"	181						
0.2	36"	32"	181						
0.2	36"	32"	181						
893									
	IBC SECTION 1005.3.2								



CODE ANALYSIS

 \Box

l	ASSEMBLY <i>(GR</i> BUSINESS <i>(GR</i> (LOW - HAZARD	OUP A-3) OUP B) STORAGE (GRC	OUP S-2)	IBC SECTION 303.4 IBC SECTION 304 IBC SECTION 311.3
TYPE OF CONSTRUCTION:	TYPE VB (NON-I (NEW CONSTRU	PROTECTED) JCTION)		IBC SECTION 602.5
MIXED USE AND OCCUPANCY OCCUPANCY SEPARATION:	NON-SEPARATE	ED OCCUPANCI	ES	IBC SECTION 508 IBC SECTION 508.3
ASSOCIATED OCCUPANCIES:	ASSEMBLY (GR BUSINESS (GRO	OUP A-3) OUP B)		
	LOW - HAZARD	STORAGE (GRC	DUP S-2)	IBC SECTION 508.3.2
ALLOWABLE NUMBER OF STORIES:	1 STORY <i>(GROL</i>	JP A-3)		IBC TABLE 504.3
ALLOWABLE BUILDING AREA:	6,000 SQUARE	FEET		
BASE ALLOWABLE AREA:	6,000 SQUARE I	FEET (GROUP A	1- <i>3)</i>	IBC TABLE 506.2
FRONTAGE AREA INCREASE:	NOT APPLICABI	LE / NOT REQUI	RED	
ACTUAL BUILDING HEIGHT:	23 FEET (ABOV	E GRADE PLANE	E)	ACCEPTABLE
ACTUAL NUMBER OF STORIES:	1 STORY <i>(ABOV</i> 5,298 SQUARE I	<i>'E GRADE PLAN</i> FEET	E)	ACCEPTABLE ACCEPTABLE
SEPARATION REQUIRED:	NO SEPARATIO	N IS REQUIRED		IBC SECTION 508.3.3
AUTOMATIC SPRINKLER SYSTEM	NFPA 13			IBC SECTION 804
REQUIRED:	NOT REQUIRED	& NOT PROVID	ED	IBC SECTION 903
ALTERNATE AUTOMATIC FIRE- EXTINGUISHING SYSTEMS NONE				
PORTABLE FIRE EXTINGUISHERS				IBC TABLE 906.3(1)
MAXIMUM FLOOR AREA:	5,000 SF / EXTIN 75 FEET	NGUISHER		
NUMBER REQUIRED / PROVIDED:	1 REQUIRED (PI	ER FLOOR ARE	A) / 2 PROVIDED	
SIZE PROVIDED:	4A			
CLASSIFICATION:	CLASS ABC			
SMOKE CONTROL SYSTEM NOT REQUIRED:	NOT REQUIRED)		IBC SECTION 909
FIRE DEPARTMENT CONNECTIONS		IBC SECTION 912		
LOCATION:	SEE CIVIL DRAV REGARDING LO DETAILS	WINGS FOR MOI	RE INFORMATION ONNECTION	
MINIMUM EGRESS WIDTH FIRST FLOOR (EXISTING / NEW)	NCHES / OCC.	OCCUPANTS	EGRESS WIDTH	IBC SECTION 1005.3.
STAIRWAYS:	0.3 INCHES	N/A	N/A	
OTHER COMPONENTS:	0.2 INCHES	274 OCC.	54.8 INCHES	
EXIT AND EXIT ACCESS DOORWAYS			CPETDD	IBC TABLE 1006.2.1
BUSINESS (GROUP B):	49 OCCUPANTS	6 (MAXIMUM)	100 FEET	150 WIDEL 1000.2.1
ASSEMBLY (GROUP A): STORAGE (GROUP S):	49 OCCUPANTS 29 OCCUPANTS	5 (MAXIMUM) 5 (MAXIMUM)	75 FEET 100 FEET	
EXIT ACCESS TRAVEL DISTANCE BUSINESS (GROUP B): ASSEMBLY (GROUP A-2): STORAGE (GROUP S-2):	200 FEET (WITH 200 FEET (WITH 300 FEET (WITH	IOUT SPRINKLE IOUT SPRINKLE IOUT SPRINKLE	R SYSTEM) R SYSTEM) R SYSTEM)	IBC TABLE 1017.2
STAIRS (EGRESS STAIRS ONLY) REQUIRED WIDTH:	N/A			IBC SECTION 1011
RAMPS (EGRESS RAMPS ONLY)				
	N/A			IBC SECTION 1012
MINIMUM REQUIRED WIDTH:	44 INCHES			IBC TABLE 1020.2
FIRE - RESISTANCE RATING:	1 HOUR (WITHC	OUT SPRINKLER	SYSTEM)	IBC TABLE 1020.1
MAX. DEAD-END CORRIDOR: 2	20 FEET			IBC SECTION 1020.4
DOOR CLEAR WIDTH:	32 INCHES CLE	AR		IBC SECTION 1010.1.
FIRE - RESISTANCE RATING REQUIRE PRIMARY STRUCTURAL FRAME:	EMENTS 0 HOURS			IBC TABLE 601
BEARING WALLS				
INTERIOR:	0 HOURS			IBC TABLE 601
EXTERIOR:	0 HOURS			IBC TABLE 601
INTERIOR:	0 HOURS			IBC TABLE 601
EXTERIOR:	0 HOURS			IBC TABLE 602
	0 HOURS			IBC TABLE 602
FLOOR CONSTRUCTION AND SECONDARY MEMBERS:	(1 HOUR WHEN TO OTHER BUI 0 HOURS	RE FIRE SEPAR. ILDINGS IS LESS	ATION DISTANCE S THAN 10 FEET.)	IBC TABLE 601
ROOF CONSTRUCTION AND				
SMOKE COMPARTMENTS:	NONE REQUIR	ED		
	NONE REQUIR	ED		IBC SECTION 709
SMOKE BARRIERS:		ED (SEE IBC TA	BLE 601)	IBC SECTION 710

2015 INTERNATIONAL BUILDING CODE (IBC) - CONTINUED **COMPONENTS**

DESCRIPTIONS FIRE AND SMOKE PROTECTION FEATURES INSTALLED FIRE WALL SEPARATIONS FIRE WALL ASSEMBLY: N/A HORIZONTAL CONTINUITY: N/A VERTICAL CONTINUITY: N/A RATED ROOF ASSEMBLY: N/A MINIMUM NUMBER OF EXITS OCCUPANT LOAD (PER STORY) FIRST FLOOR: 2 EXITS (MINIMUM) WALL AND CEILING FINISHES INTERIOR EXIT STAIRWAYS & RAMPS & EXIT PASSAGEWAYS: CLASS "A" (NONSPRINKLERED) CORRIDORS & ENCLOSURE FOR EXIT ACCESS STAIRWAYS AND CLASS "A" (NONSPRINKLERED) RAMPS: ROOMS & ENCLOSED SPACES: CLASS "A" OR CLASS "B" (NONSPRINKLERED) INTERIOR FLOOR FINISH CLASS "I" OR CLASS "II" ALL FLOOR AREAS: **OPENING PROTECTIVES** <u>COMPONENTS</u> FIRE RATING FIRE DOOR & SHUTTER SSEMBLIES RAT FIRE WALLS / BARRIERS (> 1 HR): 4 HOURS 3 HOURS 3 HOURS 3 HOURS**** 2 HOURS 90 MIN. 90 MIN. 90 MIN. FIRE BARRIERS (1 HR.) SHAFT, EXIT ENCLOSURES & 1 HOUR 1 HOUR EXIT PASSAGEWAY WALLS: OTHER FIRE BARRIERS: 1 HOUR 45 MIN. FIRE PARTITIONS CORRIDOR WALLS: 1 HOUR 20 MIN. 30 MIN. 20 MIN. OTHERS FIRE PARTITIONS: 1 HOUR 45 MIN. 30 MIN. 20 MIN. EXTERIOR WALLS: 3 HOURS 2 HOURS 90 MIN. 90 MIN. 1 HOUR 45 MIN. SMOKE BARRIERS: 1 HOUR 20 MIN. MINIMUM REQUIRED PLUMBING FIXTURES OCCUPANCY TYPES BUSINESSASSEMBLYSTORAGE(B)(A-3)(S-2) FIXTURE TYPES WATER CLOSETS MEN: 1 PER 25 1 PER 125 1 PER 100 1 PER 65 1 PER 100 WOMEN: 1 PER 25 1 PER 200 1 PER 100 LAVATORIES: 1 PER 40

-

1

1 PER 100 1 PER 500 1 PER 1000

1

1

BATHTUBS/SHOWERS:

DRINKING FOUNTAINS:

SERVICE SINKS:

OTHER:

CODE REFERENCES **IBC SECTION 706**

IBC SECTION 706.5 IBC SECTION 706.6.1

IBC TABLE 1006.3.1

IBC TABLE 803.11

IBC SECTION 804

IBC TABLE 716.5 **** PAIR OF DOORS CAN BE 90 MIN. RATED (EACH).

IBC TABLE 2901.1

ICC / ANSI A117.1 - 2009

ACCESSIBLE FACILITIES **COMPONENTS** DRINKING FOUNTAINS SPOUT HEIGHT:

TOILET FACILITIES FLOOR SPACE (TURNING): WATER CLOSET LOCATION: SEAT HEIGHT:

> CLEAR FLOOR SPACE IN STALL: NO STALL:

GRAB BARS SIDE WALL BARS:

REAR WALL BAR: URINALS

LAVATORIES & SINKS CLEAR FLOOR SPACE:

WATER SUPPLY / DRAINS: INSULATED OR PROTECTED MIRRORS:

KITCHEN FACILITIES SINKS & LAVATORIES:

CLEAR FLOOR SPACE:

HEIGHTS / CLEARANCES:

FAUCETS:

BOWL DEPTH:

DESCRIPTIONS 50% ACCESSIBLE, NOT LESS THAN 1 36 INCHES A.F.F. (WHEELCHAIRS) 38 - 43 INCHES A.F.F. (STANDING)

60 INCH DIAMETER

16 - 18 INCHES TO CENTERLINE OF TOILET 17 - 19 INCHES A.F.F. (MAXIMUM)

48 INCHES (MIN.) - FRONT APPROACH 42 INCHES (MIN.) - SIDE APPROACH WALL MOUNTED 60 INCHES (MIN.) WIDTH

56 INCHES (MIN.) DEPTH FLOOR MOUNTED 60 INCHES (MIN.) WIDTH

59 INCHES (MIN.) DEPTH TOP AT 33 - 36 INCHES A.F.F.

HORIZONTAL 12 INCHES FROM BACK WALL & EXTEND TO 54 INCHES

VERTICAL 18 INCHES LONG (BOTTOM AT 39 - 41 INCHES) & LOCATED 39 - 41 INCHES FROM REAR WALL HORIZONTAL 24 INCHES (MIN.) CENTERED ON WATER CLOSET

WHERE PERMITTED, BAR SHALL BE 36 INCHES LONG CLEAR FLOOR SPACE: 30 INCHES (WIDE) X 48 INCHES (DEEP)

> RIM AT 34 INCHES (MAX.) A.F.F. CLEARANCE OF 29 INCHES (MIN.) A.F.F. BOTTOM OF APRON 30 INCHES (WIDE) X 48 INCHES (DEEP) EXTEND 19 INCHES (MAX.) UNDER LAVATORY OR SINK

BOTTOM AT 38 INCHES (MAX.) A.F.F. ABOVE LAVATORY BOTTOM AT 34 INCHES (MAX.) A.F.F. IF NO LAVATORY CABINETS AND COUNTERS 34 INCHES (MAX.) HEIGHT / 28 INCHES (MIN.) HEIGHT

> A CLEAR FLOOR SPACE COMPLYING WITH SECTION 305.3. POSITIONED FOR FORWARD APPROACH SHALL BE PROVIDED. KNEE AND TOE CLEARANCE COMPLYING WITH SECTION 306 SHALL BE PROVIDED. EXCEPTIONS: A PARALLEL APPROACH SHALL BE PERMITTED TO A KITCHEN SINK IN A SPACE WHERE A COOK TOP OR CONVENTIONAL RANGE IS NOT PROVIDED.

> THE FRONT OF LAVATORIES AND SINKS SHALL BE 34" MAX. ABOVE THE FLOOR OR GROUND, MEASURED TO THE HIGHER OF THE FIXTURE RIM OR COUNTER SURFACE. FAUCETS SHALL COMPLY WITH SECTION 309. HAND-OPERATED, SELF-CLOSING FAUCETS SHALL REMAIN OPEN FOR 10 SECONDS (MIN.). SINKS SHALL BE 6 1/2" DEEP MAX. MULTIPLE COMPARTMENT SINKS SHALL HAVE AT LEAST ONE COMPARTMENT COMPLYING WITH THIS REQUIREMENT.

PROJECT INFORMATION

CHEROKEE NATION TAG OFFICE PROJECT NAME: PROJECT LOCATION: CATOOSA, OKLAHOMA

BUILDING AREA

FIRST FLOOR NEW CONSTRUCTION: TOTAL:

5,298 SQUARE FEET 5,298 SQUARE FEET

GOVERNING CODES

(INCLUDING ALL MODIFICATIONS CATOOSA ZONING CODE ADOPTED BY THE OUBCC)








02 SIGN 1/2" = 1'-0"









INTERIOR FINISH SCHEDULE

FLOORS CARPET

- CPT: MANUFACTURER: SHAW CONTRACT GROUP PRODUCT TYPE: CARPET COLLECTION: SMART THINKING COLOR: LADY IN GRAY STYLE NUMBER: E9725 SIZE: 12' ROLL
- PORCELAIN FLOOR TILE PTF: MANUFACTURER: DALTILE COLLECTION: CONCRETE MASONRY COLOR: SCULPTURE GREY P035 SIZE: 16" X 32"
- THICKENESS: 0.39" FINISH: MATTE INSTALLATION: STRAIGHT BOND GROUT: G-1 (3/16" GROUT JOINT) HETERORGENEOUS SHEET FLOORING
- HSF-1: MANUFACTURER: TEKNOFLOR COLLECTION: FOREST PLANK HPD COLOR: AMBER 88076PLK FINISH: TBD SIZE: 4" X 36" THICKNESS: 0.098"
- HSF-2: MANUFACTURER: TEKNOFLOR COLLECTION: FOREST PLANK HPD COLOR: BRANDY 88058PLK FINISH: TBD SIZE: 4" X 36" THICKNESS: 0.098"

INSTALLATION: FULL SPREAD

- INSTALLATION: FULL SPREAD ENTRY MAT EM:
- MANUFACTURER: SHAW CONTRACT COLLECTION: WELCOME TILE II PRODUCT TYPE: CARPET TILE STYLE NUMBER: 5T031 COLOR: EBONY THICKNESS: .157" SIZE: 24" X 24"
- INSTALLATION: MONOLITHIC BASE RUBBER BASE RB:
- MANUFACTURER: ROPPE STYLE: PINNACLE COLOR: SMOKE SIZE: 4"

WALLS PORCELAIN TILE WALL

- PTW: MANUFACTURER: DALTILE COLLECTION: CONCRETE MASONRY COLOR: SCULPTURE GREY P035 SIZE: 16" X 32" THICKENESS: 0.39" FINISH: MATTE
- INSTALLATION: STRAIGHT BOND GROUT: G-1 (3/16" GROUT JOINT)

WALLS ACCENT TILE

- AT: MANUFACTURER: CROSSVILLE COLLECTION: GROOVE GLASS COLOR: CONGO SIZE: 2" X 2" MOSAIC THICKNESS: 6" FINISH: GLASS/NATURAL STONE
- GROUT: G-2 <u>CASEWORK</u>
- PLASTIC LAMINATE PL-1:
- MANUFACTURER: WILSONART COLLECTION: HIGH PRESSURE LAMINATE COLOR: WHITE BARN PRODUCT NUMBER: 7977K-12 FINISH: SOFT GRAIN FINISH INSTALLATION: VERTICAL GRAIN INSTALLATION EDGEBANDING: TBD
- PL-2: MANUFACTURER: WILSONART COLLECTION: HIGH PRESSURE LAMINATE COLOR: SILVER ALCHEMY PRODUCT NUMBER: 4860K-07 FINISH: TEXTURED GLOSS FINISH INSTALLATION: HORIZONAL GRAIN INSTALLATION
- <u>GROUT</u>
- G-1: MANUFACTURER: MAPEI COLOR: WARM GRAY 93 TYPE: KERACOLOR SANDED G-2:

EDGEBANDING: TBD

- -2: MANUFACTURER: MAPEI COLOR: WHITE TYPE: TYPE 1 ADHESIVE PAINT
- P-1: MANUFACTURER: SHERWIN WILLIAMS COLOR: PURE WHITE SW 7005 SHEEN: SATIN TYPE: LATEX
- P-2 MANUFACTURER: SHERWIN WILLIAMS COLOR: PEWTER GREEN SW6208 SHEEN: SATIN TYPE: LATEX
- P-3 MANUFACTURER: SHERWIN WILLIAMS COLOR: PEARL GRAY SW0052 SHEEN: SATIN TYPE: LATEX
- WALL PROTECTION
- CORNER GUARD: CG:
- MANUFACTURER: KOROGARD PRODUCT: CORNER GUARD SERIES: G100 COLOR: PEWTER INSTALLATION: SURFACE MOUNTED

FINISH TAG LEGEND

ROOM NAME ROOM ROOM # 000 FLOOR TYPE CPTX BASE TYPE RBX TYP WALL PXX CEILING ACT REMARK 1	RING DIRECTION INDICATOR
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REFER TO INTERIOR FINISH LEGEND FOR DEFINITION OF MATERIAL DESIGNATIONS

GENERAL NOTES - FINISH PLAN

- 1. ALL EXTERIOR DIMENSIONS ARE TO EXTERIOR FACE OF STUD, UNLESS NOTED OTHERWISE. 2. ALL INTERIOR DIMENSIONS ARE TO FACE OF STUD, UNLESS NOTED OTHERWISE.
- 3. REFER TO SHEET A2.01 FOR EXTERIOR ELEVATIONS. 4. REFER TO SHEET A4.00 FOR INTERIOR ELEVATIONS.
- 5. REFER TO SHEET A4.10 FOR TOILET INFORMATION. 6. REFER TO SHEET A4.11 FOR MILLWORK DETAILS AND INFORMATION.



FINISH MATERIALS LEGEND AT ACCENT THE

	ACCENTITIE
CG	CORNER GUARD
CPT	CARPET
DH	DOOR HARDWARE
ECS	EXPOSED CONCRETE - SEALED
EM	ENTRY MAT
G	GROUT
GYP	GYPSUM BOARD
HM	HOLLOW METAL
HSF	HETEROGENEOUS SHEET FLOORING
Р	PAINT
PL	PLASTIC LAMINATE
PTF	PORCELAIN FLOOR TILE
PTW	PORCELAIN WALL TILE
RB	RUBBER BASE
Т	TRANSITIONS
TH	THRESHHOLDS
WD	WOOD DOOR

FINISH PATTERN LEGEND						
СРТ		CARPET TILE				
ECS	Å	EXPOSED CONCRETE - SEALED				
EM		ENTRY MAT				
HSF		HETEROGENEOUS SHEET FLOORING				
PTF		PORCELAIN FLOOR TILE				

THRE	SHOLD & TRANSITION LEGEND	
T1	METAL TRANSITION	

T2	METAL TRANSITION
Т3	METAL TRANSITION
TH1	METAL THRESHOLD

















WEST ELEVATION 1/8" = 1'-0"



















WALL PARTITION TYPE "A"

LINE OF -

STRUCTURE

LINE OF _____ STRUCTURE

A3

FLOOR PLANSTUDPARTFIREULDESIGNATIONSIZEWIDTHRATINGLISTING

3 1/2" 4 3/4" NON-RATED

_ _ _ _

PARTITION TYPES

_ _ _ _ _ _ _

REFER TO SCHEDULE — BELOW FOR

PARTITION WIDTH

SIDE

SOUND TRANS CLASS

<u>34</u> 46 W/3" SAB

N/A

— 5/8" GYP BD EACH

REMARKS

- SOLE PLATE

SEALANT

SEALANT

— DOUBLE TOP PLATE

WALL PARTITION TYPE "B"

EXAMPLE COMMENTS A3(S)









10 WALL SECTION DETAIL 1/2" = 1'-0"



1 WALL SECTION DETAIL $\frac{1}{1}$



12 WALL SECTION DETAIL 1/2" = 1'-0"















04 EXTERIOR PLAN DETAIL 1 1/2" = 1'-0"



EXTERIOR SHEATHING W/ WEATHER BARRIER - SHEET METAL FLASHING - SEALANT - 2 1/2" x 3/4" FIBER CEMENT TRIM (TO MATCH SIDING) - BRICK VENEER

- BATT INSULATION

- FIBER CEMENT SIDING





		11	П			P-1 ·					cì cì
	///				///		///				
- e 2		5' - 6" TYP	k-	.99		- GLASS SERVICE WINDOW					
હ		TRANSACTION OPENING									
	n i L		И	\	La	П		и — Ц	1		

		07 A4.00	P	2		_ _		DNITOR		CJ CJ P-2
5'-6" TVP			GLASS SERVICE WINDOW							P-2
	0						///			
					e 3 3 3			TRANSACTION OPENING	ACCESSIBLE TRANSACTION COUNTER	

P1 1

05 $\frac{\text{TOILET ELEVATION}}{3/8" = 1'-0"}$

01 $\frac{T1}{3/8"} = 1'-0"$

DOORS AS REQUIRED.

INDICATED AS "NO SUBSTITUTE". THERE IS NO OPTION.

∞

MAINTAIN EXISTING FIRE PROTECTION PROVISIONS

SECTION 01 4200 - REFERENCES

INDICATED REFERS TO GRAPHIC REPRESENTATIONS, NOTES, OR SCHEDULES ON DRAWINGS PARAGRAPHS OR SCHEDULES IN SPECIFICATIONS, AND SIMILAR REQUIREMENTS IN CONTRACT DIRECTED, REQUESTED, AUTHORIZED, SELECTED, APPROVED, REQUIRED, AND PERMITTED MEAN DIRECTED BY ARCHITECT, REQUESTED BY ARCHITECT, AND SIMILAR PHRASES.

APPROVED, WHEN USED IN CONJUNCTION WITH ARCHITECT'S ACTION ON SUBMITTALS APPLICATIONS, AND REQUESTS, IS LIMITED TO ARCHITECT'S DUTIES AND RESPONSIBILITIES AS REGULATIONS INCLUDE LAWS, ORDINANCES, STATUTES, AND LAWFUL ORDERS ISSUED BY

AUTHORITIES HAVING JURISDICTION, AS WELL AS RULES, CONVENTIONS, AND AGREEMENTS WITHIN CONSTRUCTION INDUSTRY THAT CONTROL PERFORMANCE OF WORK. FURNISH MEANS SUPPLY AND DELIVER TO PROJECT SITE, READY FOR UNLOADING, UNPACKING ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS.

INSTALL DESCRIBES OPERATIONS AT PROJECT SITE INCLUDING UNLOADING. UNPACKING ASSEMBLY, ERECTING, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS. PROVIDE MEANS TO FURNISH AND INSTALL. COMPLETE AND READY FOR INTENDED USE

WHERE ACRONYMS OR ABBREVIATIONS ARE USED IN SPECIFICATIONS OR OTHER CONTRACT DOCUMENTS, THEY MEAN RECOGNIZED NAME OF TRADE ASSOCIATION, STANDARDS-GENERATING ORGANIZATION, AUTHORITIES HAVING JURISDICTION, OR OTHER ENTITY APPLICABLE TO CONTEXT OF EXCEPT WHERE CONTRACT DOCUMENTS INCLUDE MORE STRINGENT REQUIREMENTS

APPLICABLE CONSTRUCTION INDUSTRY STANDARDS HAVE SAME FORCE AND EFFECT AS IF BOUND OF COPIED DIRECTLY INTO CONTRACT DOCUMENTS TO EXTENT REFERENCED. SUCH STANDARDS ARE MADE A PART OF CONTRACT DOCUMENTS BY REFERENCE. COMPLY WITH STANDARDS IN EFFECT AS OF DATE OF CONTRACT DOCUMENTS. • WHERE COMPLIANCE WITH TWO OR MORE STANDARDS IS SPECIFIED REFER REQUIREMENTS TO ARCHITECT FOR DECISION BEFORE PROCEEDING. • QUANTITY OR QUALITY LEVEL SHOWN OR SPECIFIED SHALL BE MINIMUM PROVIDED OR

MAINTAIN QUALITY CONTROL OVER SUPPLIERS, MANUFACTURERS, PRODUCTS, SERVICES, SITI CONDITIONS, AND WORKMANSHIP, TO PRODUCE WORK OF SPECIFIED QUALITY, MATERIALS AND ORKMANSHIP NOT MEETING REQUIRED STANDARDS OR PERFORMANCE OBLIGATIONS SHALL BE

REMOVED AND REPLACED AT CONTRACTOR'S EXPENSE, INCLUDING SUBSEQUENT TESTING. PROVIDE INSPECTIONS AND TESTS SPECIFIED OR REQUIRED BY GOVERNING AUTHORITIES. XCEPT WHERE SPECIFIED TO BE OWNER'S RESPONSIBILITY. COSTS SHALL BE INCLUDED IN

OWNER MAY PROVIDE INSPECTIONS. TESTS AND SIMILAR QUALITY CONTROL SERVICES PERFORMED BY INDEPENDENT AGENCIES WHERE NOT SPECIFIEID TO BE CONTRACTOR'S

RESPONSIBILITY. COSTS FOR THESE SERVICES ARE NOT INCLUDED IN CONTRACT SUM. CONTRACTOR AND EACH AGENCY ENGAGED TO PERFORM INSPECTIONS AND TESTS SHAL OORDINATE SEQUENCE OF ACTIVITIES TO ACCOMMODATE SERVICES WITH A MINIMUM OF DELA CONTRACTOR AND EACH AGENCY SHALL COORDINATE ACTIVITIES TO AVOID REMOVING AND

REPLACING CONSTRUCTION TO ACCOMMODATE INSPECTIONS AND TESTS. ENGAGE INSPECTION AND TESTING AGENCIES WHICH ARE PREQUALIFIED AS COMPLYING WITH

"RECOMMENDED REQUIREMENTS FOR INDEPENDENT LABORATORY QUALIFICATION" BY AMERICAN COUNCIL OF INDEPENDENT LABORATORIES, AND SPECIALIZE IN TYPES OF INSPECTIONS AND TESTS UPON COMPLETION OF INSPECTION AND TESTING REPAIR DAMAGED CONSTRUCTION AND

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

COMPLY WITH APPLICABLE LAWS AND REGULATIONS.

KEEP FACILITIES CLEAN AND NEAT. OPERATE IN A SAFE AND EFFICIENT MANNER. TAK IECESSARY FIRE PREVENTION MEASURES. DO NOT OVERLOAD, OR PERMIT FACILITIES TO INTERFERE WITH PROGRESS. DO NOT ALLOW HAZARDOUS, DANGEROUS OR UNSANITARY CONDITIONS, OR PUBLIC NUISANCES TO DEVELOP OR PERSIST ON SITE.

PROVIDE NEW MATERIALS AND FOUIPMENT: OR UNDAMAGED PREVIOUSLY USED MATERIALS AND EQUIPMENT IN SERVICEABLE CONDITION. PROVIDE MATERIALS AND EQUIPMENT SUITABLE FOR

TEMPORARY HEAT. PROVIDE TEMPORARY HEAT FOR CURING OR DRVING OF COMPLETED INSTALLATIONS OR PROTECTION OF INSTALLED CONSTRUCTION FROM ADVERSE EFFECTS OF LOW

FIFLD OFFICES: PROVIDE INSULATED. WEATHERTIGHT FIELD OFFICES OF SIZE TO ACCOMMODATE PERSONNEL, PROVIDE HEATED AND AIR CONDITIONED, PREFABRICATED UNITS OR

SIMILAR CONSTRUCTION, ON ADEQUATE FOUNDATIONS, WITH LOCKABLE ENTRANCES, OPERABLE STORAGE AND FABRICATION SHEDS. INSTALL SHEDS FOURPED TO ACCOMMODATE

MATERIALS AND EQUIPMENT INVOLVED. SHEDS MAY BE OPEN SHELTERS OR ENCLOSED SPACES TEMPORARY TOILETS: INSTALL SELF CONTAINED SINGLE OCCUPANT TEMPORARY TOILE

FULLY ENCLOSED WITH A GLASS FIBER REINFORCED POLYESTER SHELL OR SIMILAR NONABSORBENT DRINKING WATER FACILITIES: PROVIDE CONTAINERIZED TAP_DISPENSER BOTTLED_WATER

TEMPORARY ENCLOSURES: PROVIDE TEMPORARY ENCLOSURE FOR PROTECTION OF

CONSTRUCTION FROM EXPOSURE, FOUL WEATHER, OTHER CONSTRUCTION OPERATIONS AND

TEMPORARY LIFTS AND HOISTS: PROVIDE FACILITIES FOR HOISTING MATERIALS MEETING

PROVIDE CONNECTIONS TO EXISTING UTILITIES, SIZE TO PROVIDE SERVICE REQUIRED; OWNER

OPERATE IN A SAFE AND EFFICIENT MANNER. TAKE NECESSARY FIRE PREVENTION MEASURES DO NOT ALLOW HAZARDOUS, DANGEROUS OR PUBLIC NUISANCES TO DEVELOP OR PERSIST ON SITE.

PROVIDE NEW MATERIALS AND EQUIPMENT: OR UNDAMAGED PREVIOUSLY USED MATERIALS AND EQUIPMENT IN SERVICEABLE CONDITION. PROVIDE MATERIALS AND EQUIPMENT SUITABLE FOR

ENGAGE LOCAL UTILITY COMPANY TO INSTALL TEMPORARY SERVICE OR CONNECT TO EXISTING SERVICE. ARRANGE FOR A TIME WHEN SERVICE CAN BE INTERRUPTED TO MAKE CONNECTIONS. PROVIDE ADEQUATE CAPACITY AT EACH STAGE OF CONSTRUCTION.

WATER SERVICE: INSTALL WATER SERVICE AND DISTRIBUTION PIPING OF SIZES AND PRESSURES ADEQUATE FOR CONSTRUCTION. STERILIZE WATER PIPING PRIOR TO USE.

ELECTRIC POWER SERVICE: PROVIDE WEATHERPROOF, GROUNDED ELECTRIC POWEF SERVICE AND DISTRIBUTION SYSTEM OF SUFFICIENT SIZE, CAPACITY, AND POWER CHARACTERISTICS.

REQUIREMENTS AND PROVIDE ILLUMINATION FOR CONSTRUCTION OPERATIONS AND TRAFFIC

SEWERS AND DRAINAGE: IF SEWERS ARE AVAILABLE. PROVIDE TEMPORARY CONNECTIONS TO REMOVE EFFLUENT. IF SEWERS ARE NOT AVAILABLE OR CANNOT BE USED, REMOVE FROM PREMISE

DELIVER, STORE AND HANDLE PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, USING METHODS THAT WILL PREVENT DAMAGE, DETERIORATION AND LOSS

 SCHEDULE DELIVERY TO MINIMIZE LONG TERM STORAGE AND PREVENT OVERCROWDING CONSTRUCTION SPACES. COORDINATE WITH INSTALLATION TO ENSURE MINIMUM HOLDING TIM DELIVER PRODUCTS IN MANUFACTURER'S ORIGINAL SEALED CONTAINER OR PACKAGING SYSTEM, COMPLETE WITH LABELS AND INSTRUCTIONS FOR HANDLING, STORING, PROTECTING • STORE PRODUCTS SUBJECT TO DAMAGE BY ELEMENTS ABOVE GROUND, UNDER COVER IN A WEATHERTIGHT ENCLOSURE, WITH VENTILATION ADEQUATE TO PREVENT CONDENSATION MAINTAIN TEMPERATURE AND HUMIDITY WITHIN RANGE REQUIRED BY MANUFACTURER'S

PROVIDE PRODUCTS COMPLETE WITH ACCESSORIES, TRIM, FINISH, SAFETY GUARDS AND OTHER DEVICES AND DETAILS NEEDED FOR A COMPLETE INSTALLATION AND FOR INTENDED USE AND

COMPLY WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS, TO EXTENT THAT THEY ARE MORE STRINGENT THAN REQUIREMENTS IN CONTRACT DOCUMENTS. INSPECT MATERIAL IMMEDIATELY UPON DELIVERY AND AGAIN PRIOR TO INSTALLATION

PROVIDE ATTACHMENT AND CONNECTION DEVICES AND METHODS NECESSARY FOR SECURING EACH CONSTRUCTION ELEMENT. SECURE EACH CONSTRUCTION ELEMENT TRUE TO LINE AND LEVEL. ALLOW FOR EXPANSION AND BUILDING MOVEMENT.

INSTALL EACH COMPONENT DURING WEATHER CONDITIONS AND PROJECT STATUS THAT WILL ENSURE BEST RESULTS. ISOLATE EACH PART FROM INCOMPATIBLE MATERIAL AS NECESSARY TO

HANDLE, INSTALL, CONNECT, CLEAN, CONDITION AND ADJUST PRODUCTS IN ACCORDANCE WITH SUCH INSTRUCTIONS AND IN CONFORMITY WITH SPECIFIED REQUIREMENTS. PERFORM WORK IN ACCORD WITH MANUFACTURER'S INSTRUCTIONS. DO NOT OMIT ANY PREPARATORY STEP OR INSTALLATION PROCEDURE UNLESS SPECIFICALLY MODIFIED OR EXEMPTED

PATCHING OPERATIONS.

DO NOT CUT AND PATCH STRUCTURAL ELEMENTS IN MANNER THAT WOULD REDUCE LOAD_CARRYING CAPACITY OR LOAD DEFLECTION RATIO. DO NOT CUT AND PATCH EXPOSED SURFACES, IN MANNER THAT WOULD REDUCE THE

BUILDING'S AESTHETIC QUALITIES, OR RESULT IN VISUAL EVIDENCE OF CUTTING AND PATCHING. REPLACE, PATCH, AND REPAIR MATERIAL AND SURFACES CUT OR DAMAGED IN SUCH MANNER AS NOT TO VOID EXISTING WARRANTIES.

USE MATERIALS IDENTICAL TO EXISTING MATERIALS. IF NOT AVAILABLE OR CANNOT BE USED. USE MATERIALS THAT MATCH EXISTING ADJACENT SURFACES TO FULLEST EXTENT POSSIBLE. USE MATERIALS WHOSE PERFORMANCE WILL EQUAL OR SURPASS THOSE OF EXISTING MATERIALS. PROTECT EXISTING CONSTRUCTION TO PREVENT DAMAGE. PROVIDE PROTECTION FROM ADVERSE WEATHER CONDITIONS FOR PORTIONS THAT MIGHT BE EXPOSED DURING CUTTING AND

AVOID CUTTING EXISTING PIPE, CONDUIT OR DUCTWORK SERVING THE BUILDING, BUT SCHEDULED TO BE REMOVED OR RELOCATED UNTIL PROVISIONS HAVE BEEN MADE TO BYPASS THEM CUT EXISTING CONSTRUCTION USING METHODS THAT WILL NOT DAMAGE ELEMENTS RETAINED OR ADJOINING CONSTRUCTION.

RESTORE EXPOSED FINISHES OF PATCHED AREAS AND EXTEND FINISH INTO AD IOINING CONSTRUCTION IN MANNER THAT WILL ELIMINATE EVIDENCE OF PATCHING AND REFINISHING.

WHERE REMOVAL OF WALLS OR PARTITIONS EXTENDS FROM ONE FINISHED AREA INT ANOTHER, PATCH AND REPAIR FLOOR AND WALL SURFACES IN NEW SPACE TO PROVIDE EVEN SURFACE OF UNIFORM COLOR AND APPEARANCE

WHERE PATCHING OCCURS IN SMOOTH PAINTED SURFACE, EXTEND FINAL PAINT COAT OVER ENTIRE UNBROKEN SURFACE CONTAINING PATCH, AFTER PATCHED AREA HAS RECEIVED PRIMER AND SECOND COAT.

PATCH, REPAIR OR REHANG EXISTING CEILINGS AS NECESSARY TO PROVIDE AN EVEN PLANE SURFACE OF UNIFORM APPEARANCE.

SECTION 01 7419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL IMPLEMENT A WASTE MANAGEMENT PLAN. PROVIDE HANDLING CONTAINERS, STORAGE SIGNAGE, TRANSPORTATION, AND OTHER ITEMS AS REQUIRED TO IMPLEMENT WASTE MANAGEMENT

PLAN DURING THE ENTIRE DURATION OF THE CONTRACT SITE ACCESS AND TEMPORARY CONTROLS: CONDUCT WASTE MANAGEMENT OPERATIONS T ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS, WALKWAYS, AND OTHER ADJACENT OCCUPIED AND USED FACILITIES.

• DESIGNATE AND LABEL SPECIFIC AREAS ON PROJECT SITE NECESSARY FOR SEPARATING MATERIALS THAT ARE TO BE SALVAGED, RECYCLED, REUSED, DONATED, AND SOLD.

PREPARATION OF WASTE: PREPARE AND MAINTAIN RECYCLABLE WASTE MATERIALS ACCORDING TO RECYCLING OR REUSE FACILITY REQUIREMENTS. MAINTAIN MATERIALS FREE OF DIRT, ADHESIVES, SOLVENTS, PETROLEUM CONTAMINATION, AND OTHER SUBSTANCES DELETERIOUS TO

THE RECYCLING PROCESS.

EXCEPT FOR ITEMS OR MATERIALS TO BE SALVAGED, RECYCLED, OR OTHERWISE REUSED, REMOVE WASTE MATERIALS FROM PROJECT SITE AND LEGALLY DISPOSE OF THEM IN A LANDFILL OR INCINERATOR ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION. EXCEPT AS OTHERWISE SPECIFIED, DO NOT ALLOW WASTE MATERIALS THAT ARE TO BE DISPOSED OF ACCUMULATE ON-SITE. REMOVE AND TRANSPORT DEBRIS IN A MANNER THAT WILL PREVENT SPILLAGE ON ADJACENT

SURFACES AND AREAS.

BURNING: DO NOT BURN WASTE MATERIALS. 6. DISPOSAL: TRANSPORT WASTE MATERIALS OFF OWNER'S PROPERTY AND LEGALLY DISPOSE

OF THEM. SECTION 01 7700 - CLOSEOUT PROCEDURES

ON RECEIPT OF A REQUEST FOR SUBSTANTIAL COMPLETION INSPECTION, ARCHITECT WILL PROCEED OR ADVISE CONTRACTOR OF UNFILLED REQUIREMENTS. ARCHITECT WILL PREPARE CERTIFICATE OF SUBSTANTIAL COMPLETION FOLLOWING INSPECTION, OR ADVISE CONTRACTOR OF CONSTRUCTION THAT MUST BE COMPLETED OR CORRECTED BEFORE CERTIFICATE WILL BE ISSUED.

MAINTAIN A CLEAN, UNDAMAGED SET OF REPRODUCIBLE PRINTS OF CONTRACT DRAWINGS MARK_UP THESE DRAWINGS TO SHOW ACTUAL INSTALLATION. MARK DRAWING SHOWING CONDITIONS ACCURATELY. GIVE PARTICULAR ATTENTION TO CONCEALED ELEMENTS THAT WOULD BE DIFFICULT

TO MEASURE AND RECORD AT A LATER DATE. MAINTAIN ONE COPY OF PROJECT MANUAL, INCLUDING ADDENDA, MARK TO SHOW VARIATIONS IN ACTUAL WORK PERFORMED IN COMPARISON WITH SPECIFICATIONS AND MODIFICATIONS. GIVE

PARTICULAR ATTENTION TO SUBSTITUTIONS, SELECTION OF OPTIONS AND SIMILAR INFORMATION ON ELEMENTS THAT ARE CONCEALED OR CANNOT BE READILY DISCERNED LATER BY DIRECT MAINTENANCE MANUALS: ORGANIZE MAINTENANCE DATA INTO SETS OF MANAGEABLE SIZE BIND IN INDIVIDUAL HEAVY DUTY 2 INCH, 3 RING VINYL COVERED BINDERS, WITH POCKET FOLDER

FOR FOLDED SHEET INFORMATION. MARK IDENTIFICATION ON FRONT AND SPINE OF EACH BINDER. OPERATING AND MAINTENANCE INSTRUCTIONS: ARRANGE FOR INSTALLER OF EQUIPMEN THAT REQUIRES REGULAR MAINTENANCE TO MEET WITH OWNER'S PERSONNEL TO PROVIDE

INSTRUCTION IN PROPER OPERATION AND MAINTENANCE. Electronic File of Project Record Documents: Provide Architect with an independent electronic archive of accepted project record documents using electronic project management software as defined in Section 01-310 "Project Management and Coordination", in addition to printed documents described elsewhere in this section

FINAL CLEANING: EMPLOY EXPERIENCED WORKERS FOR FINAL CLEANING. CLEAN EACH SURFACE TO CONDITION EXPECTED IN A COMMERCIAL BUILDING CLEANING AND MAINTENANCE PROGRAM. REMOVE TEMPORARY PROTECTION AND FACILITIES. COMPLY WITH REGULATIONS OF AUTHORITIES HAVING JURISDICTION AND SAFETY STANDARDS

FOR CLEANING. REMOVE WASTE MATERIALS FROM SITE AND DISPOSE OF IN A LAWFUL MANNER. SECTION 01 7836 - WARRANTIES

WARRANTIES: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and Subcontractors required to countersign special warranties with the Contractor. When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work

When Work covered by a warranty has failed and been corrected, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for

On determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through part of its useful service life.

Written warranties made to the Owner are in addition to implied warranties, and shall not limit dutie obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies,

Submit written warranties prior to the date certified for Substantial Completion. If the Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion, submit written warranties on request.

When a special warranty is to be executed by the Contractor, or the Contractor and a subcontractor. supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner for approval prior to final execution.

SECTION 01 8111 - SUSTAINABLE CONSTRUCTION SECTION INCLUDES GENERAL REQUIREMENTS AND PROCEDURES FOR COMPLIANCE WITH SUSTAINABLE CONSTRUCTION REQUIREMENTS DESIGNED TO EARN ENERGY STAR: THIS PROJECT IS DESIGNED TO ACHIEVE AN EPA RATING OF 75 OR HIGHER. THE DESIGNER HAS FILED A STATEMENT OF ENERGY DESIGN INTENT. GENERATED FROM TARGET FINDER, WITH THE U.S. ENVIRONMENTAL PROTECTION AGENCY. THE CONTRACTOR SHALL ADHERE TO THE DESIGN INTENT FOR PRODUCTS AND SYSTEMS INDICATED IN THE CONTRACT DOCUMENTS. SUBSTITUTIONS THAT MAY ALTER ENERGY PERFORMANCE GOALS WILL NOT BE APPROVED AND NO SUBSTITUTION SHALL BE PERMITTED WITHOUT APPROVAL OF THE DESIGN TEAM.

SUSTAINABLE CONSTRUCTION ACTION PLANS: PROVIDE ACTION PLAN WITHIN 30 DAYS OF DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK INDICATING HOW THE FOLLOWING REQUIREMENTS WILL BE MET: • CONSTRUCTION WASTE MANAGEMENT: WASTE MANAGEMENT PLAN COMPLYING WITH DIVISION 01 SECTION "CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL." RECYCLED CONTENT: LIST OF PROPOSED MATERIALS WITH RECYCLED CONTENT. INDICATE COST. POST-CONSUMER RECYCLED CONTENT, AND PRE-CONSUMER RECYCLED CONTENT FOR EACH PRODUCT HAVING RECYCLED CONTENT.

 CERTIFIED WOOD: LIST OF PROPOSED CERTIFIED WOOD PRODUCTS. INDICATE EACH PRODUCT CONTAINING CERTIFIED WOOD, INCLUDING ITS SOURCE AND COST OF CERTIFIED WOOD CONSTRUCTION INDOOR-AIR-QUALITY MANAGEMENT PLAN: PROVIDE PLAN INDICATING HOW REQUIREMENTS WILL BE MET DURING CONSTRUCTION. RECYCLED CONTENT: PROVIDE BUILDING MATERIALS WITH RECYCLED CONTENT SUCH THA POST-CONSUMER RECYCLED CONTENT PLUS ONE-HALF OF PRE-CONSUMER RECYCLED CONTENT

CONSTITUTES A MINIMUM OF 10 PERCENT OF COST OF MATERIALS USED FOR PROJECT. COST OF POST-CONSUMER RECYCLED CONTENT OF AN ITEM SHALL BE DETERMINED BY DIVIDING WEIGHT OF POST-CONSUMER RECYCLED CONTENT IN THE ITEM BY TOTAL WEIGHT OF THE ITEM AND MULTIPLYING BY COST OF THE ITEM. COST OF POST-CONSUMER RECYCLED CONTENT PLUS ONE-HALF OF PRE-CONSUMER RECYCLED CONTENT OF AN ITEM SHALL BE DETERMINED BY DIVIDING WEIGHT OF POST-CONSUMER RECYCLED CONTENT PLUS ONE-HALF OF PRE-CONSUMER RECYCLED CONTENT IN THE ITEM BY TOTAL WEIGHT OF THE ITEM AND MULTIPLYING BY COST OF THE ITEM

 DO NOT INCLUDE MECHANICAL AND ELECTRICAL COMPONENTS IN THE CALCULATION. CERTIFIED WOOD: PROVIDE A MINIMUM OF 50 PERCENT (BY COST) OF WOOD-BASED ATERIALS THAT ARE PRODUCED FROM WOOD OBTAINED FROM FORESTS CERTIFIED BY A SC-ACCREDITED CERTIFICATION BODY TO COMPLY WITH FSC STD-01-001, "FSC PRINCIPLES AND

CRITERIA FOR FOREST STEWARDSHIP." WOOD-BASED MATERIALS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING MATERIALS WHEN MADE FROM WOOD, ENGINEERED WOOD PRODUCTS, OR WOOD-BASED PANEL PRODUCTS: ROUGH CARPENTRY. SECTION 04 2100 - MASONRY VENEEI

SUBMITTALS: SHOW DETAILS OF CONSTRUCTION, INCLUDING DIMENSIONED DRAWINGS, PLANS, ELEVATIONS, SECTIONS, AND DETAILS OF COMPONENTS TO BE INCORPORATED INTO WORK. FACE BRICK MASONRY UNITS: ASTM C 216 OR ASTM C 652, GRADE SW, TYPE FBS. UNIT COMPRESSIVE STRENGTH: MINIMUM 3000 PSI (20.7 MPA) FOR AVERAGE OF 5 BRICKS, AND 2500 PSI (17.2 MPA) FOR INDIVIDUAL BRICK, GROSS AREA, ACCORDING TO ASTM C 67, SECTION 7

INITIAL RATE OF ABSORPTION: BETWEEN 5 AND 25 G/M PER 30 SQ IN (0.02 SQ M) ACCORDING TO ASTM C 67, SECTION 10. USE OF COATING TO ESTABLISH INITIAL RATE OF ABSORPTION IS NOT PERMITTED AND WILL NOT BE ALLOWED. • EFFLORESCENCE: RATED "NOT EFFLORESCED" ACCORDING TO ASTM C 67, SECTION 11

 SURFACE COLORING: BRICK WITH SURFACE COLORING. OTHER THAN FLASHED OF SAND-FINISHED BRICK, SHALL WITHSTAND 50 CYCLES OF FREEZING AND THAWING ACCORDING O ASTM C 67, SECTION 8, WITH NO OBSERVABLE DIFFERENCE IN APPLIED FINISH WHEN VIEWED FROM 10 FT (3 M) UNDER AN MINIMUM ILLUMINATION OF 50 FOOT-CANDLES (538 LUMEN/SQUARE BASIS OF DESIGN: MATCH EXISTING.

STEEL ANGLE LINTELS: MATERIALS COMPLYING WITH DIVISION 05 SECTION "METAL FABRICATIONS" FOR LOOSE MASONRY LINTELS (DESIGNATION MF), WITH SCHEDULE AS SHOWN ON THE DRAWINGS.

PORTLAND CEMENT • MATERIAL QUALITY STANDARD: ASTM C 150, TYPE I; EXCEPT TYPE III MAY BE USED FOR COLD-WEATHER CONSTRUCTION. • COLOR: NATURAL GRAY COLOR OR WHITE CEMENT AS REQUIRED TO PRODUCE MORTAR COLOR REQUIRED. HYDRATED LIME.

• MATERIAL QUALITY STANDARD: ASTM C 207, TYPE S. PORTLAND CEMENT-LIME MIX: PACKAGED BLEND OF PORTLAND CEMENT AND HYDRATED LIME ONTAINING NO OTHER INGREDIENTS. TYPES OF CEMENTS NOT PERMITTE MASONRY CEMENT: ASTM C 91.

MORTAR CEMENT: ASTM C 1329. AGGREGATE FOR COLORED MORTAR: NATURAL SAND OR GROUND MARBLE, GRANITE, OR THER SOUND STONE. AS REQUIRED TO MATCH APPROVED SAMPLE MORTAR PIGMENTS: NATURAL AND SYNTHETIC IRON OXIDES AND CHROMIUM OXIDES COMPOUNDED FOR USE IN MORTAR MIXES AND COMPLYING WITH ASTM C 979. USE ONLY PIGMENTS WITH A RECORD OF SATISFACTORY PERFORMANCE IN MASONRY MORTAR.

WATER: POTABLE, CLEAN AND FREE OF AMOUNTS OF OILS, ACIDS, ALKALIES, SALTS, ORGANIC MATERIALS, OR OTHER SUBSTANCES THAT ARE DELETERIOUS TO MORTAR OR ANY METAL WITHIN THE MASONRY JOINT REINFORCEMENT FOR MULTI-WYTHE MASONRY: AS SPECIFIED IN DIVISION 04 SECTION "CONCRETE UNIT MASONRY"

ADJUSTABLE ANCHORS FOR CONNECTING TO CONCRETE, CMU OR STRUCTURAL STEEL: TWO-PIECE ADJUSTABLE VENEER ANCHORING SYSTEM. • ANCHORS: ZINC ALLOY BARREL, FLANGED HEAD, SCREW AND EYE, WITH DRILLING THREADS SUITABLE FOR STRUCTURAL SUBSTRATE. TIES: HOT-DIP GALVANIZED CARBON-STEEL WIRE 3/16 IN (5 MM) PRE-COATED DIAMETER

TRIANGULAR SHAPED TIES, SIZE AS REQUIRED TO PROVIDE MAXIMUM BOND, NOT LESS THAN 2 IN (50 MM) WEEPS AND VENTS: PROVIDE ONE OF THE FOLLOWING: PLASTIC WEEP AND VENT: ONE-PIECE FLEXIBLE EXTRUSION MADE FROM ULTRAVIOLET LIGHT

RESISTANT POLYPROPYLENE COPOLYMER, CONSISTING OF HONEYCOMB MATRIX OF MULTIPLE CELLS, DESIGNED TO FILL HEAD JOINT WITH OUTSIDE FACE HELD BACK 1/8 IN (3 MM) FROM EXTERIOR FACE OF MASONRY VENEER. • MESH WEEP AND VENT: COMPRESSED, 200 DENIER POLYESTER WITH 90 PERCENT OPEN MESH AND BONDED WITH FLAME RETARDANT ADHESIVE. CAVITY DRAINAGE MATERIAL: COMPOSED OF EITHER RETICULATED, NONABSORBENT MESH

ADE FROM POLYETHYLENE STRANDS, OR, POLYMER CORE GEOMATRIX COMPOSED OF WOVEN

ENTIRE WIDTH OF CAVIT BOND BREAKER STRIPS: ASTM D 226, TYPE I. TERMINATION BARS: ASTM A 666, TYPE 304 FORMED STAINLESS STEEL FLAT BARS: 1 IN BY 1/8 IN (25 MM BY 3 MM) THICK; PREDRILLED AT 8 IN (200 MM) CENTERS. NO ALUMINUM OR PLASTIC BARS COMMERCIAL CLEANING COMPOUNDS: PRODUCTS AS RECOMMENDED AND APPROVED BY MASONRY VENEER AND MORTAR MANUFACTURERS MORTAR MIX: ASTM C 270, PROPORTION SPECIFICATION FOR PORTLAND CEMENT-LIME MORTARS, TYPE N COLORED PIGMENTED MORTAR: SELECT AND PROPORTION PIGMENTS WITH OTHE INGREDIENTS TO PRODUCE COLOR REQUIRED; LIMIT MINERAL OXIDE PIGMENTS TO MAXIMUM 10

VEEPS WITHOUT BEING CLOGGED BY MORTAR DROPPINGS, SIZE AS REQUIRED TO EXTEND ACROSS

PERCENT OF CEMENT CONTENT BY WEIGHT, AND MAXIMUM 2 PERCENT FOR CARBON BLACK COLORED AGGREGATE MORTAR: PRODUCE MORTAR OF COLOR REQUIRED BY USE OF COLORE AGGREGATES IN COMBINATION WITH SELECTED CEMENTITIOUS MATERIAL MATCH EXISTING MORTAR: WHEREVER "MATCH EXISTING" INDICATED. PROVIDE MASONR MORTAR OF MATCHING COLOR AND TEXTURE AS EXISTING ADJACENT MASONRY VENEER WORK INSTALLATION PERFORMANCE REQUIREMENTS: ENSURE MASONRY CAVITY IS PROPERLY SOLATED FROM BUILDING INTERIOR TO PREVENT WATER INFILTRATION FROM INFILTRATING OUT OF ASONRY CAVITY INTO OTHER COMPONENTS OF BUILDING SUCH AS WINDOW AND DOOR JAMBS AND

BUILDING INTERIORS. OPENINGS: LEAVE FOR EQUIPMENT TO BE INSTALLED BEFORE COMPLETION OF MASONRY /ENEER; AFTER INSTALLATION OF EQUIPMENT, COMPLETE MASONRY VENEER TO MATCH CONSTRUCTION IMMEDIATELY ADJACENT TO OPENING. CUTTING: USE FULL-SIZE UNITS WITHOUT CUTTING IF POSSIBLE. IF CUTTING IS REQUIRED TO

PROVIDE A CONTINUOUS PATTERN OR TO FIT ADJOINING CONSTRUCTION. CUT UNITS WITH MOTOR-DRIVEN SAWS; PROVIDE CLEAN, SHARP, UN-CHIPPED EDGES. INSTALL CUT UNITS WITH CUT SURFACES AND, WHERE POSSIBLE, CUT EDGES CONCEALED BLENDING OF MASONRY VENEER UNITS: SELECT AND ARRANGE UNITS FOR EXPOSED UNIT ASONRY TO PRODUCE A UNIFORM BLEND OF COLORS AND TEXTURES. MIX UNITS FROM SEVERAL PALLETS OR CUBES AS THEY ARE PLACED. IF COLOR BLENDING IS A CRITICAL ASPECT OF WORK, MANUFACTURER SHALL PROVIDE INSTRUCTIONS FOR BLENDING. MORTAR WORKABILITY: MAINTAIN BY REMIXING OR RETEMPERING: MORTAR WITH ADDED COLOR PIGMENTS SHALL NOT BE RE-TEMPERED. DISCARD MORTAR THAT HAS BEGUN TO STIFFEN OR

IS NOT USED WITHIN 2.5 HOURS AFTER INITIAL MIXING MATCH EXISTING MASONRY VENEER: MATCH COURSING AND BONDING OF EXISTING MASONRY MORTAR JOINT THICKNESS: MINIMUM 3/8 IN (10 MM) WIDE FOR HEAD AND BED JOINTS. HOLLOW MASONRY VENEER UNITS: LAY WITH FACE SHELLS FULLY BEDDED IN MORTAR AND WITH HEAD JOINTS OF DEPTH EQUAL TO BED JOINTS: WITH ENTIRE UNITS, INCLUDING AREAS UNDER

CELLS, FULLY BEDDED IN MORTAR AT STARTING COURSE ON FOOTINGS WHERE CELLS ARE NOT SOLID MASONRY VENEER UNITS: LAY WITH COMPLETELY FILLED BED AND HEAD JOINTS: JTTER ENDS WITH SUFFICIENT MORTAR TO FILL HEAD JOINTS AND PLACE INTO WALL CONSTRUCTION. DO NOT DEEPLY FURROW BED JOINTS OR SLUSH HEAD JOINTS. JOINT TOOLING: TOOL EXPOSED JOINTS SLIGHTLY CONCAVE WHEN THUMBPRINT HARD, USING

- A JOINTER LARGER THAN JOINT THICKNESS, UNLESS OTHERWISE INDICATED. • MAKE MORTAR JOINTS STRAIGHT, CLEAN, AND UNIFORM IN THICKNESS. TOOL JOINTS TO PRODUCE DENSE SURFACE WELL BONDED TO EDGES JOINTS WHICH ARE NOT TIGHT AT TIME OF TOOLING SHALL BE RAKED OUT, POINTED, AND THE
- TOOL WHEN MORTAR IS PARTIALLY SET BUT STILL SUFFICIENTLY PLASTIC TO BOND. • USE A TOOL WHICH COMPACTS MORTAR, PRESSING EXCESS MORTAR OUT OF JOINT RATHER THAN DRAGGING IT OUT

IN-PROGRESS CLEANING: AS SOON AS PRACTICAL, CLEAN MASONRY VENEER AS WORK

FINAL CLEANING: AFTER MORTAR IS THOROUGHLY SET AND CURED, CLEAN EXPOSED

ROGRESSES BY DRY BRUSHING TO REMOVE MORTAR FINS AND SMEARS PRIOR TO TOOLING JOINTS.

• PROTECT ADJACENT AND NEARBY MATERIALS, ESPECIALLY WINDOWS AND GLASS, TO AVOID

• REMOVE LARGE MORTAR PARTICLES BY HAND WITH WOODEN PADDLES AND NONMETALLIC

• TEST CLEANING METHODS ON MOCK-UPS; LEAVE ONE HALF OF PANEL UNCLEANED FO

CLEAN MASONRY VENEER BY MEANS RECOMMENDED BY CLEANING PRODUCT MANUFACTUREF

Unit Masonry Standard: Comply with recommendations of the Portland Cement Association "Cement

Joint Reinforcement: Galvanized carbon steel wire, ASTM A 641, Class 1, for interior walls; and ASTM A

53, Class B-2 for exterior walls. Welded_wire units prefabricated with deformed continuous side rods and plain

steel wire ties, hot_dipped galvanized per ASTM A 153, Class B3, size as required to provide maximum bond.

Compressible Filler: Premolded filler strips complying with ASTM D 1056, Type 2, Class A, Grade 1,

Preformed Control Joint Gaskets: Polyvinyl Chloride, ASTM D 2287, General Purpose Grade, Type

Mortar for Unit Masonry: ASTM C 270, Proportion Specification, type S. Limit cementitious materials in

Grout: ASTM C 476. Use grout of consistency to completely fill spaces intended to receive grout.

Bond Pattern: Lay exposed masonry in running bond pattern; do not use units with less than nominal

Tool exposed joints slightly concave when thumbprint hard, using jointer larger than joint thickness.

their entire length with minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcing

Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges and other obstructions

Provide continuous horizontal joint reinforcement 16 inches o.c. Install longitudinal side rods in mortar for

Anchor masonry to structural members where masonry abuts or faces structural members. Space anchors

Form control joints by installing preformed control joint gaskets designed to fit standard sash block. Locate

Fill with grout, vertical cells, bond beams, lintels and other structural members having reinforcement.

LUMBER GENERAL COMPLY WITH PS 20 AND WITH APPLICABLE GRADING RULES

FACTORY MARK WITH GRADE. SPECIES, MOISTURE CONTENT AT TIME OF SURFACING, AND MILL;

MOISTURE CONTENT: S_DRY, KD 19 OR MC 19 (19 PERCENT MAXIMUM MOISTURE CONTENT)

• MOISTURE CONTENT: S_DRY, KD 19 OR MC 19 (19 PERCENT MAXIMUM MOISTURE CONTENT).

FASTENERS: WHERE MISCELLANEOUS CARPENTRY IS EXPOSED TO WEATHER IN GROUND

PRESERVATIVE TREATMENT: OBTAIN PRESERVATIVE_TREATED LUMBER COMPLYING WITH

WPA STANDARD C2. MARK EACH TREATED ITEM WITH THE QUALITY MARK REQUIREMENTS OF AN

CUT AND FIT MISCELLANEOUS CARPENTRY ACCURATELY AND SECURELY FASTEN. INSTALL

INSTALL WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS WHERE SHOWN AND WHERE

SAMPLES: FOR PLASTIC DECKING, NOT LESS THAN 24 INCHES (600 MM) LONG, SHOWING THE

PLASTIC LUMBER, GENERAL: PRODUCTS ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION

AND FOR WHICH CURRENT MODEL CODE EVALUATION REPORTS EXIST THAT SHOW COMPLIANCE WITI

ALLOWABLE LOADS AND SPANS AS DOCUMENTED IN EVALUATION REPORTS OF IN INFORMATION

REFERENCED IN EVALUATION REPORTS, SHALL NOT BE LESS THAN DESIGN LOADS AND SPANS

COMPOSITE PLASTIC LUMBER: SOLID SHAPES MADE FROM A MIXTURE OF CELLULOSE FIBER

• BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE

CONFIGURATION: PROVIDE PRODUCT WITH GROOVED EDGES DESIGNED FOR FASTENING WITH

• PRODUCT QUALITY STANDARD: AWPA, USE CATEGORY UC4A, FOR SPECIES, PRODUCT

PRESERVATIVE, AND END USE. USE PRESERVATIVE TREATMENT THAT DOES NOT PROMOTE

• DESCRIPTION: WOOD PRODUCTS IMPREGNATED WITH CHEMICALS BY PRESSURE PROCESS

• FIELD PRESERVATIVE-TREATMENT FOR CUT SURFACES: APPLY ONE OF THE FOLLOWING

GENERAL: PROVIDE EASTENERS OF SIZE AND TYPE INDICATED THAT COMPLY WITH

• DECK CLIPS: BLACK OXIDE COATED STAINLESS-STEEL CLIPS DESIGNED TO BE FASTENED TO

DESCRIPTION: MANUFACTURER'S STANDARD PAVER SUPPORT PEDESTAL SYSTEM COMPONENTS

FABRICATED FROM STYRENE-BUTADIENE RUBBER (SBR), HIGH-DENSITY POLYETHYLENE (HDPE)

POLYLIRETHANE OR IN IECTION MOLDED POLYSTYRENE INCLUDING PEDESTALS BASES

EXTENDERS, SPACERS, REDUCERS, SHIMS, SPACER TABS FOR JOINT SPACING, BASE

PROTECTION AND BEARING PADS, AND OTHER ACCESSORIES AS NECESSARY FOR A COMPLI

PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE FOLLOWING:

DECK FRAMING WITH SCREWS, AND TO SECURE DECKING MATERIAL WITH TEETH THAT ALSO

REQUIREMENTS SPECIFIED IN THIS ARTICLE FOR MATERIAL AND MANUFACTURE. PROVIDE NAILS

OR SCREWS, IN SUFFICIENT LENGTH, TO PENETRATE NOT LESS THAN 1-1/2 INCHES (38 MM) INTO

ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, ACCORDING TO THE FOLLOWING:

DEPENDING UPON CONDITIONS LISTED BELOW, IN ACCORDANCE WITH AWPA M4:

NOT CONTINUOUSLY PROTECTED FROM LIQUID WATER: COPPER NAPHTHENATE.

CONTINUOUSLY PROTECTED FROM LIQUID WATER¹ INORGANIC BORON

• FOR PLASTIC DECKING, USE STAINLESS-STEEL FASTENERS.

WOOD SCREWS: ASME B18.6.1, STAINLESS STEEL.

PROVIDE UNIFORM SPACING OF DECKING MATERIAL

CONCEALED DECKING FASTENERS

TREX HIDDEN DECK FASTENERS.

PEDESTAL SYSTEMS

BUILDING CODE IN FEFECT FOR PROJECT FOR INDICATED OCCUPANCY AND TYPE OF CONSTRUCTION

• FOR PLASTIC DECKING AND FRAMING ANCHORS, INCLUDE INSTALLATION INSTRUCTIONS.

RANGE OF VARIATION TO BE EXPECTED IN APPEARANCE. INCLUDING SURFACE TEXTURE.

DECKING SIZE: 1-1/2 BY 6 NOMINAL, 1-1/4 BY 5-1/2 INCHES (32 BY 140 MM) ACTUAL.

INSPECTION AGENCY APPROVED BY ALSC'S BOARD OF REVIEW. COAT SURFACES CUT AFTER

CONTACT, OR IN AREA OF HIGH RELATIVE HUMIDITY, PROVIDE FASTENERS WITH A HOT_DIP ZINC

Secure in place and inspect reinforcing before grouting. Keep mortar droppings out of grout space and puddle or

Clean concrete masonry by means of cleaning method indicated in NCMA TEK 8-2 applicable to type of

PVC-65406. Designed to fit standard sash block and to maintain lateral stability in masonry wall.

USING MASONRY CLEANER COMPOUND AS RECOMMENDED AND APPROVED BY MASONR

PROCEEDING WITH CLEANING OF PERMANENT MASONRY VENEER.

Concrete Masonry Units: ASTM C 90, lightweight, Type I, moisture_controlled units

Steel Reinforcing Bars: Billet steel complying with ASTM A 615, Grade 60

COMPARISON PURPOSES. OBTAIN ARCHITECT'S APPROVAL OF SAMPLE CLEANING BEFORE

TOOL VERTICAL JOINT FIRST

MASONRY VENEER AS FOLLOWS:

SCRAPE HOES OR CHISELS.

VENEER AND MORTAR MANUFACTURERS

ection 04 2200 - CONCRETE UNIT MASONRY

Asonry Handbook" except as otherwise indicated

cross rods, with prefabricated corner and tee units.

4 inch horizontal face dimensions at corners or jambs.

o direct the downward flow of water in the wall to the exterio

6 inches o.c. vertically and 24 inches o.c. horizontally.

SECTION 06 1053 - MISCELLANEOUS ROUGH CARPENTRY

DRESSED LUMBER, S4S, UNLESS OTHERWISE INDICATED.

SPECIES: ANY WOOD SPECIES LISTED BY PS 20.

SPECIES: ANY WOOD SPECIES LISTED BY PS 20.

• GRADE: NO. 2, 2 COMMON, OR CONSTRUCTION BOARDS.

CONCEALED DIMENSION LUMBER:

GRADE: NO. 2 OR STANDARD GRADE.

CONCEALED BOARDS.

COATING PER ASTM A 153.

AND POLYETHYLENE.

TREX COMPANY, INC.

CONCEALED SPLINES.

SURFACE TEXTURE: WOODGRAIL

COLOR: AS SELECTED BY ARCHITECT

PRESERVATIVE-TREATED WOOD:

CORROSION OF METAL FASTENERS.

CONTAINING NO ARSENIC OR CHROMIUM

LISTED IN SECTION 4 OF AWPA I

FASTENERS

WOOD SUBSTRATE.

TREATMENT TO COMPLY WITH AWPA M4.

MEMBERS PLUMB AND TRUE TO LINE AND LEVEL.

SECTION 06 1063 - EXTERIOR ROUGH CARPENTRY

REQUIRED FOR SCREEDING OR ATTACHMENT OF OTHER WORK.

PRODUCT DATA: FOR PLASTIC DECKING AND ANCHORS

3/8 inch wide control joints as indicated but do not exceed 35 feet on centers.

compressible up to 35 percent

mortar to portland cement_lime.

minimum of 6 inches.

ibrate grout in place

stain present on exposed surfaces.

AVOID DRIFTING OF CLEANING SPRAY CAUSED BY WIND.

MANUFACTURERS AND PRODUCTS: HANOVER ARCHITECTURAL PRODUCTS, INC.; HIGH-TAB PEDESTAL AND LEVELING SHIMS OR EPDM PEDESTAL AND LEVELING SHIMS. WAUSAU TILE, INC.; TERRA-TABS WITH TERRA SHIM PLATES SET EXTERIOR ROUGH CARPENTRY TO REQUIRED LEVELS AND LINES, WITH MEMBERS PLUMB TRUE TO LINE, CUT, AND FITTED. FIT EXTERIOR ROUGH CARPENTRY TO OTHER CONSTRUCTION; SCRIBE AND COPE AS NEEDED FOR ACCURATE FIT

PRODUCT TYPE: STACKABLE PEDESTAL SYSTEMS USING 5/8 IN (15 MM) HIGH PEDESTALS WITH

STACKABLE CAPABILITIES AND SHIMS AT 1/8 IN (3 MM) INCREMENTS.

- INSTALL PLASTIC LUMBER TO COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS ACCURATELY INSTALL PEDESTALS AND OTHER ACCESSORIES TO ELEVATIONS REQUIRED ADJUST FOR FINAL LEVEL AND SLOPE WITH SHIMS. INSTALL SLEEPER SUPPORT FRAMING MEMBERS AS DETAILED. TO PROVIDE LEVEL SURFACE FOR DECKING. KERF BOTTOM SLEEPERS, AS REQUIRED, TO ALLOW DRAINAGE.
- SECURE DECKING TO FRAMING WITH CONCEALED DECKING FASTENERS. PROVIDE BLOCKING AND FRAMING AS INDICATED AND AS REQUIRED TO SUPPORT FACING MATERIALS, FIXTURES, SPECIALTY ITEMS, AND TRIM. 5. FOR EXPOSED WORK, ARRANGE FASTENERS IN STRAIGHT ROWS PARALLEL WITH EDGES OF
- MEMBERS, WITH FASTENERS EVENLY SPACED, AND WITH ADJACENT ROWS STAGGERED. 16. SCHEDULE OF APPLICATIONS: • PRESERVATIVE-TREATED WOOD: USE PRESERVATIVE-TREATED WOOD FOR THE FOLLOWING
- APPLICATIONS • WOOD SLEEPERS IN CONTACT WITH CONCRETE SUBSTRATES. SET CARPENTRY TO REQUIRED LEVELS AND LINES. WITH MEMBERS PLUMB, TRUE TO LINE, AN FIT CARPENTRY TO OTHER CONSTRUCTION; SCRIBE AND COPE AS NEEDED FOR ACCURATE FIT. LOCATE FURRING. NAILERS, BLOCKING, GROUNDS, AND SIMILAR SUPPORTS TO
- COMPLY WITH REQUIREMENTS FOR ATTACHING OTHER CONSTRUCTION. APPLY FIELD PRESERVATIVE-TREATMENT TO CUT SURFACES OF PRESERVATIVE-TREATED WOOD SECTION 06 4100 - CUSTOM CABINETS
- QUALITY STANDARD: COMPLY WITH APPLICABLE REQUIREMENTS OF AWI "QUALITY
- STANDARDS". SECTION 400, PREMIUM GRADE. SUBMITTALS: CABINET SHOP DRAWINGS: FINISHES SAMPLES: HARDWARE LITERATURE.
- PANEL PRODUCTS HARDBOARD: AHA A135.4, TEMPERED, SMOOTH TWO SIDES (VERTICAL DIVIDERS ONLY).
- MEDIUM-DENSITY FIBERBOARD: ANSI A208.2, GRADE MD, MADE WITH BINDER CONTAINING NO ADDED UREA FORMALDEHYDE. PARTICLEBOARD: ANSI A 208.1, GRADE M-2, EXTERIOR GLUE SOFTWOOD PLYWOOD: PS 1, MEDIUM DENSITY OVERLAY.
- HIGH-PRESSURE DECORATIVE LAMINATE: NEMA LD3.
- DOORS AND VERTICAL SURFACES: GENERAL PURPOSE VGS, 0.028 INCH THICK • CABINET SHELVES AND HORIZONTAL SURFACES: GENERAL PURPOSE HGL, 0.039 INCH THICK. COUNTERTOPS: GENERAL PURPOSE HGS, 0.048 INCH THICK.
- CABINET LINER: CABINET LINER CLS, 0.020 INCH THICK. BACKING SHEET: BKL. 0.020 INCH THICK.
- COLORS: AS SELECTED FROM MANUFACTURERS STANDARD COLORS
- SOLID SURFACING MATERIAL: REFER TO DIVISION 12 SECTION "SIMULATED STONE
- CABINET HARDWARE: SHELF SUPPORTS, DRAWER SLIDES, DOOR AND DRAWER LOCKS, CONCEALED DOOR HINGES, DOOR AND DRAWER WIRE PULLS, CABLE COVER GROMMETS.
- PLASTIC LAMINATE FACED CABINETS: EXPOSED SURFACES: FACE SHEET. • SEMI-EXPOSED SURFACES: CABINET LINER.
- CONCEALED SURFACES: BACKING SHEET. EDGES: 3MM PVC.
- INTERIOR DRAWER BOX: CLEAR POLYURETHANE WOOD SEALER. CABINET COMPONENTS:
- BODY MEMBERS: 3/4 INCH THICK VENEER CORE PLYWOOD OR PARTICLEBOARD. RAILS: 3/4 INCH THICK LUMBER OR VENEER CORE PLYWOOD.
- SHELVES: 3/4 INCH THICK VENEER CORE PLYWOOD FOR SPANS UP TO 32 INCHES: 1 INCH FOR SPANS UP TO 42 INCHES. • DRAWER SIDES, BACKS AND SEMI-EXPOSED FRONTS (SUB-FRONTS): 1/2 INCH THICK HARDWOOD LUMBER OR 7-PLY HARDWOOD VENEER CORE PLYWOOD WITH NO VOIDS.
- DRAWER BOTTOMS: 1/4 INCH THICK HARDWOOD FACED PLYWOOD (VENEER CORE). DRAWER FRONTS: 3/4 INCH THICK PARTICLE BOARD.
- DOORS: HINGED FLUSH TYPE, 3/4 INCH THICK PARTICLEBOARD
- TOPS AND BACK SPLASHES: EXTERIOR GRADE VENEER CORE PLYWOOD MINIMUM THICKNESS: 3/4 INCH TOPS AND 1/2 INCH BACK SPLASHES. FINISHES: FACE SHEET ON EXPOSED SURFACES. BACKING SHEET ON CONCEALED SURFACES. EINISHES: WHERE INDICATED, PROVIDE SOLID SUBFACING COUNTERTOPS PER REQUIREMENTS OF DIVISION 12 SECTION "SIMULATED STONE COUNTERTOPS
- 0. INSTALLATION: AWI SECTION 1700.
- SECTION 07 1416 COLD FLUID-APPLIED WATERPROOFING

SUBMIT PRODUCT DATA: MANUFACTURER'S TECHNICAL LITERATURE FOR EACH PRODUCT AND SYSTEM INDICATED. SUBMIT SHOP DRAWINGS: SHOW LOCATIONS AND EXTENT OF WATERPROOFING AND DETAIL FOR EACH CONDITION ENCOUNTERED IN WORK, INCLUDING, BUT NOT LIMITED TO, SUBSTRATE JOIN AND CRACK TREATMENTS, WATERPROOFING APPLICATIONS, FLASHINGS, PENETRATIONS, INSIDE AND OUTSIDE CORNERS, TIE-INS WITH ADJOINING WATERPROOFING, AND OTHER TERMINATION CONDITIONS.

- WARRANTY PERIOD: MANUFACTURER SHALL WARRANT THE PRODUCTS TO BE FREE FROM MATERIAL AND LABOR DEFECTS FOR A PERIOD OF 10 YEARS FROM DATE OF SUBSTANTIAL COMPLETION. COLD FLUID-APPLIED WATERPROOFING: ASTM C 836: TWO COMPONENT HIGH SOLIDS REINFORCED, COAL-TAR FREE, CHEMICALLY CURED, LATEX-RUBBER THAT WHEN COLD LIQUID APPLIED FORMS A SEAMLESS, IMPERVIOUS, ELASTOMERIC MEMBRANE BONDED TO SUBSTRATE. • MANUFACTURER AND PRODUCT: GRACE BUILDING PRODUCTS; PROCOR DECK SYSTEM 3R.
- ACCESSORY MATERIALS: FURNISH ACCESSORY MATERIALS RECOMMENDED BY WATERPROOFING SYSTEM MANUFACTURER FOR INTENDED USE AND COMPATIBLE WITH
- PRIMER: FACTORY-FORMULATED PRIMER PROVIDED BY WATERPROOFING MANUFACTURER SHEET FLASHING: 50 MILS (1.3 MM) MINIMUM THICKNESS, NON-STAINING, UNCURED SHEET NEOPRENE AND CONTACT ADHESIVE PROVIDED BY WATERPROOFING MANUFACTURER. MEMBRANE-REINFORCING FABRIC: NONWOVEN, NEEDLE-PUNCHED WHITE POLYESTER FABRIC. WEIGHT REQUIRED FOR APPLICATION, PROVIDED BY WATERPROOFING MANUFACTURER.
- JOINT REINFORCING STRIP: FIBERGLASS MESH OR POLYESTER FABRIC PROVIDED BY **TERPROOFING MANUFACTUREF** • JOINT SEALANT: PRODUCT PROVIDED BY OR RECOMMENDED BY WATERPROOFING MANUFACTURER FOR SUBSTRATE AND JOINT CONDITIONS
- SEALANT PRODUCT QUALITY STANDARD: ASTM C 920 TYPE M, CLASS 25, GRADE NS FOR SLOPING AND VERTICAL APPLICATIONS OR GRADE P FOR DECK APPLICATIONS, USE NT EXPOSURE. • SEALANT DESCRIPTION: MULTI-COMPONENT POLYURETHANE SEALANT COMPATIBLE WITH WATER-PROOFING BACKER ROD: CLOSED CELL POLYETHYLENE FOAM.
- MOISTURE-RETENTION MAT: ASSEMBLY MANUFACTURER'S STANDARD WATER-RETAINING FABRIC MANUFACTURED FROM SYNTHETIC FIBERS. • ROOT BARRIER: HIGH DENSITY POLYETHYLENE SHEET, 15 MIL THICKNESS, ROOT BARRIER DESIGNED TO PROVIDE TOTAL ROOT PROTECTION FOR WATERPROOFING MEMBRANE.
- BASIS OF DESIGN: AMERICAN HYDROTECH, INC., ROOT STOP WSF 40 MOLDED-SHEET DRAINAGE PANELS: HORIZONTAL APPLICATIONS DESCRIPTION: PRE-FABRICATED COMPOSITE WITH DRAINAGE CORE FACED WITH GEOTEXTILE FILTER FABRIC ON DIMPLED SIDE (FACING EARTH) AND PROTECTIVE COVERING ON FLAT SIDE (FACING WATERPROOFING
- PROTECTIVE COVERING: SMOOTH POLYMERIC FILM. DRAINAGE CORE: THREE-DIMENSIONAL, NON-BIODEGRADABLE, MOLDED POLYPROPYLENE OR POLYSTYRENE. FILTER FABRIC: NON-WOVEN NEEDLE-PUNCHED GEOTEXTILE. MANUFACTURED FOR SUBSURFACE DRAINAGE, MADE FROM POLYPROPYLENE, POLYOLEFIN, OR POLYESTER; COMPLYING WITH
- FOLLOWING PROPERTIES ACCORDING TO AASHTO M 288: MANUFACTURERS AND PRODUCTS: AMERICAN HYDROTECH, INC.: HYDRODRAIN 700
- AMERICAN WICK DRAIN CORPORATION: AMERIDRAIN 654 • CARLISLE COATINGS & WATERPROOFINGS; CCW MIRADRAIN 9800.
- CETCO; AQUADRAIN 18H. GRACE CONSTRUCTION PRODUCTS; HYDRODUCT 660 HENRY COMPANY: DB 650N WITH G100S/S BASE/PROTECTION SHEET
- POLYGUARD PRODUCTS, INC.: FLOW 18-H TREMCO COMMERCIAL SEALANTS & WATERPROOFING; TREMDRAIN 2000
- MOLDED-SHEET DRAINAGE PANELS; VERTICAL APPLICATIONS: DESCRIPTION: PRE-FABRICATED COMPOSITE WITH DRAINAGE CORE FACED WITH GEOTEXTILE FILTER FABRIC ON DIMPLED SIDE (FACING EARTH) AND PROTECTIVE COVERING ON FLAT SIDE (FACING WATERPROOFING)
- MANUFACTURERS AND PRODUCTS: AMERICAN HYDROTECH; HYDRODRAIN 420 • AMERICAN WICK DRAIN CORPORATION; AMERIDRAIN 520.
- CARLISLE COATINGS & WATERPROOFINGS; CCW MIRADRAIN 6200. CETCO: AQUADRAIN 15XP. GRACE CONSTRUCTION PRODUCTS; HYDRODUCT 220
- HENRY COMPANY; DB 520. JDR ENTERPRISES, INC.; J-DRAIN 420
- POLYGUARD PRODUCTS, INC.; FLOW 15P TREMCO COMMERCIAL SEALANTS & WATERPROOFING: TREMDRAIN 1000. ADHESIVE FOR BONDING DRAINAGE PANELS: PRODUCT COMPATIBLE WITH DRAINAGE PANELS
- BEING BONDED AND WITH DEMONSTRATED CAPABILITY TO BOND SECURELY TO SUBSTRATES INDICATED WITHOUT DAMAGING SUBSTRATES MISCELLANEOUS ACCESSORIES: AS REQUIRED BY MANUFACTURER FOR COMPLETE
- INSTALLATION ASSEMBLY, INCLUDING FLANGES AROUND PIPING PENETRATIONS AND EXPANDED BASE AND TIE-IN FITTINGS AS NECESSARY TO COORDINATION WITH DRAINAGE SYSTEM. CONCRETE SURFACE PREPARATION • VERIFY CONCRETE HAS CURED AND AGED FOR MINIMUM TIME PERIOD RECOMMENDED BY WATERPROOFING MANUFACTURER • VERIFY THAT SUBSTRATE IS VISIBLY DRY AND WITHIN THE MOISTURE LIMITS RECOMMENDED IN
- WRITING BY MANUFACTURER. TEST FOR CAPILLARY MOISTURE BY PLASTIC SHEET METHOD ACCORDING TO ASTM D 4263 OR AS RECOMMENDED BY ROOFING MANUFACTURER. REMOVE FINS, RIDGES, MORTAR, AND OTHER PROJECTIONS • VERIFY HONEYCOMB VOIDS, ROCK POCKETS, FORM TIE HOLES, AND OTHER DEFECTS ARE FILLED BY OTHER DIVISION 03 SECTIONS. REMOVE DUST AND DIRT FROM JOINTS AND CRACKS ACCORDING TO ASTM D 4258. REMOVE DEBRIS, OILY SUBSTANCES, MUD, GREASE, OIL, BITUMEN, FORM-RELEASE AGENTS,
- PAINTS, CURING COMPOUNDS, PENETRATING CONTAMINANTS OR FILM-FORMING COATINGS FROM CONCRETE, AND SIMILAR SUBSTANCE COLD FLUID-APPLIED WATERPROOFING INSTALLATION: INSTALL WATERPROOFING SYSTEM TO PREVENT PASSAGE OF LIQUID WATER UNDER HYDROSTATIC PRESSURE JOINT AND CRACK TREATMENT: PREPARE, TREAT, ROUT, AND FILL JOINTS AND CRACKS IN SUBSTRATE ACCORDING TO INSTALLATION QUALITY STANDARDS.
- PRIMER: APPLY TO SUBSTRATES AT REQUIRED RATE AND ALLOW TO DRY. LIMIT PRIMING TO AREAS THAT WILL BE COVERED BY FOR MORE THAN 24 HOURS. • WATERPROOFING TIE-INS: INSTALL WATERPROOFING AND ACCESSORIES TO TIE INTO ADJACENT WATERPROOFING TO ENSURE WATERTIGHT INSTALLATION. TERMINATION AND PENETRATION TREATMENT: PREPARE VERTICAL AND HORIZONTAL SURFACES AT TERMINATIONS AND PENETRATIONS THROUGH WATERPROOFING AND AT EXPANSION JOINTS.
- DRAINS, AND SLEEVES ACCORDING TO INSTALLATION QUALITY STANDARDS. REINFORCED WATERPROOFING APPLICATIONS: MIX MATERIALS AND APPLY WATERPROOFING B) ROLLER, NOTCHED SQUEEGEE, TROWEL, OR OTHER SUITABLE APPLICATION METHOD. APPLY FIRST COAT OF WATERPROOFING, EMBED MEMBRANE-REINFORCING FABRIC, AND APPLY SECOND COAT OF WATERPROOFING TO COMPLETELY SATURATE REINFORCING FABRIC AND TO DBTAIN A SEAMLESS REINFORCED MEMBRANE FREE OF ENTRAPPED GASES, WITH AN AVERAGE DRY FILM TOTAL THICKNESS REQUIRED BY MANUFACTURER.
- APPLY REINFORCED WATERPROOFING TO PREPARED WALL TERMINATIONS AND VERTICAL • VERIFY WET FILM THICKNESS OF WATERPROOFING EVERY 100 SF (9.3 SM). • CURING: CURE WATERPROOFING TAKING CARE TO PREVENT CONTAMINATION AND DAMAGE DURING APPLICATION STAGES AND CURING.
- DAMAGED WATERPROOFING: REPAIR WATERPROOFING NOT COMPLYING WITH REQUIREMENTS. 2. MOLDED-SHEET DRAINAGE PANEL INSTALLATION: PLACE AND SECURE MOLDED-SHEET DRAINAGE PANELS WITH ADHESIVE, WITH GEOTEXTILE FILTER FABRIC FACING AWAY FROM WATERPROOFING, LAP EDGES AND ENDS OF GEOTEXTILE FILTER FABRIC TO MAINTAIN CONTINUITY. PROTECT INSTALLED MOLDED-SHEET DRAINAGE PANELS DURING SUBSEQUENT CONSTRUCTION.

ROOT BARRIER: COVER DRAINAGE PANEL WITH ROOT BARRIER IN ACCORDANCE WITH

MANUFACTURER'S RECOMMENDATIONS TO PROVIDE TOTAL ROOT PROTECTION. LAP JOINTS 5 F

.5 M) TO PREVENT LATERAL ROOT GROWTH. IF RECOMMENDED BY MANUFACTURER. INSTAL

- LAYERS OF ROOT BARRIER FOR THIS APPLICATION FLOOD TESTING: FLOOD TEST EACH DECK AREA FOR LEAKS, ACCORDING TO RECOMMENDATIONS IN ASTM D 5957, AFTER COMPLETING WATERPROOFING AND FLASHING, BUT EFORE OVERLAYING CONSTRUCTION IS PLACED. INSTALL TEMPORARY CONTAINMENT ASSEMBLIES.
- PLUG OR DAM DRAINS, AND FLOOD WITH POTABLE WATER • FLOOD TO AN AVERAGE DEPTH OF 2-1/2 IN (65 MM) WITH A MINIMUM DEPTH OF 1 IN (25 MM) AND NOT EXCEEDING A DEPTH OF 4 IN (100 MM). MAINTAIN MINIMUM OF 2 IN (50 MM) OF CLEARANCE FROM TOP OF BASE FLASHING.

vind-resistance-test requirements of ASTM D 3161.

Acceptable Manufacturers

CertainTeed Corp.

. Georgia-Pacific Corp.

Material: Copper.

Material: Stainless steel.

Material: Aluminum sheets.

Material: Galvanized-steel shee

Material: Galvanized-steel sheets.

UNDERLAYMENT MATERIALS

Granular Surfaced:

. Rubberized Asphalt Underlaymen

Elk Corporation of America.

GAF Building Materials Corp

. Owens-Corning Fiberglas Corp

2.3 METAL TRIM AND FLASHING

Celotex Corp.

growth, which adversely affects the appearance of the roof, for at least 5 years.

A. Sheet Metal Materials: Furnish following sheet metal materials:

Metal Flashing: Job-cut to sizes and configurations required.

inches in each direction from centerline of valley.

of roof extending at least 4 inches from pipe onto roof.

a. Product Quality Standard: ASTM D 1970.

d. Acceptable Manufacturers and Products:

1) ALCO-NVC, Inc. - "ALCO Shield".

CertainTeed Corp. - "WinterGuard"

Owens Corning - "WeatherLock G"

a. Product Quality Standard: ASTM D 1970.

d. Acceptable Manufacturers and Products:

Henry Co. - "Blueskin RF200".

Rubberized Asphalt Underlayment:

Acceptable Manufacturers and Products:

CertainTeed Corp. - "WinterGuard H

b. Grace, W. R. & Co. - Grace Ultra".

c. Henry Co. - "Blueskin PE200H

designed to be installed under asphalt shingles at ridge.

Acceptable Manufacturers and Products:

a. Air Vent, Inc. - "Ridge Filter Shinglevent".

b. Air Vent, Inc. (for Class A) - "Ridge Filtervent".

Obdyke: Benjamin Obdyke, Inc. - "Roll Vent"

e. Trimline Roof Ventilation Systems - "Trimline

inches wide, complying with ASTM D 3909.

metal as that of the flashing.

PART 3 - EXECUTION

PREPARATION

conditions have been corrected.

are securely fastened against movement.

Apply primer if required by manufacturer

Apply over entire roof surface from eave to ridge.

of sheets not less than 6 inches.

inches between courses. Overlap sides not less than 3 inches.

Apply over entire roof surface from eave to ridge

Fasten asphalt shingles to roof sheathing with nails.

seal, and nail the same as the first strip.

straight coursing.

direction of prevailing wind.

lapped at least 9 inches and sealed with plastic asphalt cement.

Use fasteners at ridges of sufficient length to penetrate sheathing as specified.

Pattern: 1/2 shingle spacing offset at succeeding courses.

Pattern: 1/3 shingle spacing offset at succeeding courses.

G. Ridge Vents: Install ridge vents according to manufacturer's instructions.

Pattern: 5 inch offset at succeeding courses.

Pattern: 6 inch offset at succeeding courses.

Pattern: Random spacing offset at succeeding courses.

c. Rake edges for a distance of 18 inches.

Apply at locations indicated below and at locations indicated on Drawing

d. Hips and ridges for a distance on each side of 18 inches.

e. Roof to wall intersections for a distance from wall of 18 inches.

Cover underlayment with asphalt shingles within 14 days of application.

f. Around penetrating elements for a distance from element of 18 inches.

UNDERLAYMENT INSTALLATION

manufacturers instructions.

nails for installations at low temperatures.

manufacturers instructions.

underlayment at least 6 inches.

SHINGLE INSTALLATION

asphalt shingle installation

3.1 EXAMINATION

decking or at least 1/8 inch through plywood sheathing.

c. GAF Building Materials Corporation. - "Cobra Ridge Vent".

15) or ASTM D 4869

ACCESSORIES

release-paper backing.

6) Henry Co. - "Eaveguard".

Polyethylene Faced:

5) GAF Materials Corp. - "Weather Watch"

Johns Manville International, Inc. - "SureGrip".

8) NEI Advanced Composite Technology - "AC TopSeal".

1) Carlisle Coatings & Waterproofing Inc. - "CCP-WIP-400"

Surface Primer / Conditioner: Product as provided by underlayment manufacturer.

2) Grace, W. R. & Co. - "Ice and Water Shield".

4) Polyguard Products, Inc. - "Deck Guard".

Protecto Wrap Co. - "Rain-Proof TM"

2) Atlas Roofing Corp. - "StormMaster DG".

Carlisle Coatings & Waterproofing Inc., - "CCW-WIP-100"

G. Hip and Ridge Shingles: Job-fabricated units cut from actual asphalt shingles used

- FLOOD EACH AREA FOR 24 HOURS. AFTER FLOOD TESTING, REPAIR LEAKS, REPEAT FLOOD TESTS, AND MAKE FURTHER REPAIR UNTIL WATERPROOFING AND FLASHING INSTALLATION IS WATERTIGHT.
- CORRECTION OF DEFICIENCIES: CORRECT DEFICIENCIES IN OR REMOVE WATERPROOFING THAT DOES NOT COMPLY WITH REQUIREMENTS, REPAIR SUBSTRATES, REAPPLY WATERPROOFING,
- AND REPAIR FLASHING. AFTER TESTS, REPAIR LEAKS AND MAKE FURTHER REPAIRS UNTIL WATERPROOFING INSTALLATION IS WATERTIGHT
- FINAL INSPECTION: ARRANGE FOR WATERPROOFING SYSTEM MANUFACTURER'S QUALIFIE TECHNICAL REPRESENTATIVE TO INSPECT WATERPROOFING INSTALLATION ON COMPLETION OF WATERPROOFING MEMBRANE AND FLASHING. NOTIFY ARCHITECT AND OWNER 48 HOURS IN ADVANCE OF DATE AND TIME OF FINAL INSPECTION. PROTECT WATERPROOFING FROM DAMAGE AND WEAR DURING REMAINDER OF CONSTRUCTION
- SECTION 07 2100 THERMAL INSULATION
- SUBMIT PRODUCT DATA: MANUFACTURER'S TECHNICAL LITERATURE FOR EACH PRODUCT AND SYSTEM INDICATED
- UNFACED FIBERGLASS BATT INSULATION DESCRIPTION: ASTM C 665, TYPE I. UNFACED BLANKETS PRODUCED BY BONDING INORGANIC
- GLASS FIBERS WITH A THERMOSETTING BINDER; FREE OF FORMALDEHYDE. MANUFACTURERS AND PRODUCTS:
- CERTAINTEED CORPORATION; FIBER GLASS BUILDING INSULATION, UNFACED. • JOHNS MANVILLE; UNFACED BATTS FOR METAL FRAMING, FORMALDEHYDE FREE. SURFACE BURNING CHARACTERISTICS PER ASTM E 84:
- FLAME SPREAD: 25 OR LESS. SMOKE DEVELOPED:
- EXPOSED-TO-VIEW OR CONCEALED SPACES OTHER THAN RETURN AIR PLENUMS: 450 OR LESS. RETURN AIR PLENUMS: 50 OR LESS. THICKNESS: FULL DEPTH OF METAL STUD CAVITY
- FIBERGLASS SEMI-RIGID INSULATION • DESCRIPTION: ASTM C 612, TYPE IA OR TYPES IA AND IB. UNFACED, SEMI-RIGID BOARDS
- PRODUCED BY BONDING INORGANIC GLASS FIBERS WITH A THERMOSETTING BINDER; FREE OF FORMAL DEHYDE BASIS OF DESIGN: JOHNS MANVILLE: INSUL-SHIELD 300.
- NOMINAL DENSITY: 3 LB/CU FT (48 KG/CU M), THERMAL RESISTIVITY OF 4.3 DEG F X H X SQ FT/BTU X IN AT 75 DEG F (29.8 K X M/W AT 24 DEG C) • SURFACE-BURNING CHARACTERISTICS PER ASTM E 84:
- FLAME SPREAD: 25 OR LESS. SMOKE DEVELOPED:
- EXPOSED-TO-VIEW OR CONCEALED SPACES OTHER THAN RETURN AIR PLENUMS: 450 OR LESS. RETURN AIR PLENUMS: 50 OR LESS.
- THICKNESS: AS INDICATED. MINERAL WOOL SEMI-RIGID INSULATION
- EXTERIOR WALL CAVITY LOCATIONS: ASTM C 612, TYPE IVA OR IVB. UNFACED ROCK MINERAL wool board insulation, lightweight and water repellant, and intended for use in CAVITY WALL INSTALLATIONS; ATTACHED TO SUBSTRATE WITH MECHANICAL FASTENERS.
- SURFACE BURNING CHARACTERISTICS PER ASTM E 84: • FLAME SPREAD: 25 OR LESS. SMOKE DEVELOPED: 50 OR LESS.
- THICKNESS: AS INDICATED BUT NOT LESS THAN 2 IN (50 MM) R-VALUE: MINIMUM OF 4.3 PER IN (25 MM).
- FIBER COLOR: DARK BROWN. MANUFACTURERS AND PRODUCTS:
- ROXUL, INC.; CAVITYROCK MD THEMAFIBER, INC.; RAINBARRIER 45
- ADHESIVELY ATTACHED, SPINDLE-TYPE ANCHORS: DESCRIPTION: PLATE WELDED TO PROJECTING SPINDLE; CAPABLE OF HOLDING INSULATION OF THICKNESS INDICATED SECURELY IN POSITION INDICATED WITH SELF-LOCKING WASHER IN PLACE: AND COMPLYING WITH THE FOLLOWING REQUIREMENTS:
- PLATE: PERFORATED GALVANIZED CARBON-STEEL SHEET, 0.030 IN (0.75 MM) THICK BY 2 IN (50 MM) SQUARE.
- SPINDLE: COPPER-COATED, LOW CARBON STEEL; FULLY ANNEALED; 0.105 IN (2.62 MM) IN DIAMETER: LENGTH TO SUIT DEPTH OF INSULATION INDICATED. RETAINING WASHERS: SELE LOCKING WASHERS FORMED FROM 0.016 IN (0.4 MM) THICK
- GALVANIZED STEEL SHEET. WITH BEVELED EDGE FOR INCREASED STIFFNESS. SIZED A REQUIRED TO HOLD INSULATION SECURELY IN PLACE. BUT NOT LESS THAN 1-1/2 IN (38 MM) SQUARE OR IN DIAMETER.
- STANDOFF: SPACER FABRICATED FROM GALVANIZED MILD-STEEL SHEET FOR FITTING OVER SPINDLE OF INSULATION ANCHOR TO MAINTAIN AIR SPACE OF 1 IN (25 MM) BETWEEN FACE OF ATION AND SUBSTRATE TO WHICH ANCHO
- ANCHOR ADHESIVE: PRODUCT WITH DEMONSTRATED CAPABILITY TO BOND INSULATION ANCHORS SECURELY TO SUBSTRATES INDICATED WITHOUT DAMAGING INSULATION, FASTENERS, AND SUBSTRATES.
- UNFACED FIBERGLASS SEMI-RIGID AND BATT INSULATION: INSTALL INSULATION IN CAVITIES ORMED BY FRAMING MEMBERS ACCORDING TO FOLLOWING • USE INSULATION WIDTHS AND LENGTHS THAT FILL THE CAVITIES FORMED BY FRAMING
- MEMBERS. WHERE MORE THAN ONE LENGTH IS REQUIRED TO FILL CAVITY, PROVIDE LENGTHS THAT WILL PRODUCE A SNUG FIT BETWEEN ENDS. • PLACE INSULATION IN CAVITIES FORMED BY FRAMING MEMBERS TO PRODUCE A FRICTION FIT BETWEEN EDGES OF INSULATION AND ADJOINING FRAMING MEMBERS.
- WHERE PARTITION WILL BE COVERED BY GYPSUM BOARD ON ONLY ONE SIDE. APPLY ADHESIVE TO BACKSIDE OF GYPSUM BOARD THAT IS INSTALLED AND PRESS INSULATION IN PLACE TO FORM BOND TO PREVENT INSULATION FROM SAGGING WITHIN CAVITY
- UNFACED FIBERGLASS SEMI-RIGID AND BATT INSULATION OVER STRUCTURAL SUBSTRATES: INSTALL INSULATION ON SUBSTRATES BY USING INSULATION MOUNTING ANCHOR SYSTEM AS
- FASTEN ANCHORS TO SUBSTRATES WITH ANCHOR ADHESIVE ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS. SPACE ANCHORS ACCORDING TO INSULATION MANUFACTURER'S WRITTEN INSTRUCTIONS FOR INSULATION TYPE, THICKNESS, AND APPLICATION INDICATED.
- APPLY INSULATION STANDOFFS TO EACH SPINDLE TO CREATE CAVITY WIDTH INDICATED BETWEEN SUBSTRATE AND INSULATION.
- AFTER ADHESIVE HAS DRIED, INSTALL INSULATION BY PRESSING INTO POSITION OVER SPINDLES AND SECURING TIGHTLY IN PLACE WITH INSULATION RETAINING WASHERS, TAKING CARE NOT TO COMPRESS INSULATION BELOW INDICATED THICKNESS. WHERE INSULATION WILL NOT BE COVERED BY OTHER BUILDING MATERIALS, APPLY CAPPED
- WASHERS TO TIPS OF SPINDLES WHERE SPINDLES WILL BE EXPOSED TO HUMAN CONTACT AFTER INSTALLATION, PROTECT END WITH CAPPED SELF LOCKING WASHERS INCORPORATING A SPRING STEEL INSERT TO ENSURE PERMANENT RETENTION OF CAP.
- MINERAL WOOL SEMI-RIGID INSULATION: INSTALL IN CAVITIES FORMED BY FRAMING MEMBERS
- ACCORDING TO THE FOLLOWING REQUIREMENTS: CAVITY WALL INSTALLATIONS: USE INSULATION WIDTHS AND LENGTHS THAT FILL THE CAVITIES FORMED BY FRAMIN MEMBERS. IF MORE THAN ONE LENGTH IS REQUIRED TO FILL CAVITY, PROVIDE LENGTHS THAT WILL PRODUCE A SNUG FIT BETWEEN ENDS
- PLACE INSULATION IN CAVITIES FORMED BY FRAMING MEMBERS TO PRODUCE A FRICTION FIT BETWEEN EDGES OF INSULATION AND ADJOINING FRAMING MEMBERS. SECTION 07 3113 - ASPHALT SHINGLES

MAINTENANCE MATERIAL SUBMITTALS

Contractor shall provide structural support framework.

DELIVERY, STORAGE, AND HANDLING

requirements, and when substrate is completely dry.

PROJECT CONDITIONS

WARRANTY

PART 2 - PRODUCTS

ASPHALT SHINGLES

MANUFACTURERS AND PRODUCTS

shingles with following requirements:

Fire-Test-Response Classification: Class A.

As scheduled in the Exterior Finish Schedule on the drawings.".

shingles, complying with ASTM D 3018, Type I, and with following requirements:

Wind Resistance: Passes the wind-resistance-test requirements of ASTM D 3161.

Physical Requirements: Meet physical requirements of ASTM D 3462.

4 QUALITY ASSURANCE

and inspecting agency

completed Work.

for storage, and are identified with labels clearly describing contents.

- A. Work required for this Section includes asphalt shingles for steep roofs and supplementary items necessary to complete work required for their installation
- Refer to Division 6 Section "Wood Framing" for wood sheathing and framing . Refer to Division 7 Section "Flashing and Sheet Metal" for metal valley flashing, step flashing, drip edges, and other sheet metal work.
- Refer to Division 7 Section "Roof Accessories" for ridge vents, hatches, and roof penetrations.
- 2 ACTION SUBMITTALS A. Product Data: Submit for each type of product specified, including details of construction relative to
- materials, dimensions of individual components, profiles, textures, and colors. Samples for Initial Selection: Submit in the form of manufacturer's sample finishes showing the full range o colors and profiles available for each type of asphalt shingle indicated.
- Samples for Verification Purposes: Submit in the form of 2 full-size units of each type of asphalt shingle ndicated showing the full range of variations expected in these characteristic

Furnish extra materials described below that match products installed, are packaged with protective covering

Furnish 1 square coverage of asphalt shingles, identical to those to be installed, in unbroken bundles

A. Fire-Test-Response Classification: Where products with a fire-test-response classification are specified

provide asphalt shingles identical to those tested according to ASTM E 108 or UL 790 and listed by UL or

another testing and inspecting agency acceptable to authorities having jurisdiction. Identify each bundle o

Wind-Resistance-Test Characteristics: Where wind-resistant asphalt shingles are indicated, provide

Mock-ups: Prior to fabrication and installation, build mock-up for each form of construction and finis

gualities of materials and execution. Build mock-up using materials indicated for the completed Work.

a. Show typical components, attachments to building structure, and requirements of installation

Acceptance of mock-ups does not constitute acceptance of deviations from the Contract Documents

ontained in mock-ups unless such deviations are specifically noted by Contractor and accepted by Architect in

Demolish and remove mock-ups when directed by Architect unless accepted to become part of the

A. Deliver materials to Project site in manufacturer's unopened bundles or containers with labels intac

Handle and store materials at Project site to prevent water damage, staining, or other physical damage.

A. Weather Limitations: Proceed with installing asphalt shingles only when existing and forecasted weather

Store roll goods on end. Comply with manufacturer's recommendations for job-site storage, handling, and

conditions will permit work to be performed according to manufacturers' recommendations and warranty

. Special Warranty: Submit a written warranty signed by manufacturer agreeing to repair or replace asphalt

Warranty Period: Manufacturer's standard but not less than 25 years after date of Substantial Completion.

A. Acceptable Manufacturers and Products: Subject to compliance with requirements of Contract Documents

as judged by the Architect, provide product by one of manufacturers listed. If not listed, submit as

substitution according to the Conditions of the Contract and Division 01 Section "Substitution Procedures".

A. Colors, Blends, and Patterns: Where manufacturer's standard products are indicated, provide asphalt

Square-Tab, Fiberglass Strip Shingles: Mineral-surfaced, self-sealing, 3 tab, fiberglass-based, strip asphalt

Three-Dimensional, Fiberglass, Laminated Strip Shingles: Mineral-surfaced, self-sealing, laminate

not limited to, deformation or deterioration of apphalt shingles beyond normal weathering.

shingles that fail in materials or workmanship within the specified warranty period. Failures include, but are

Build mock-up in the location and of the size indicated or, if not indicated, as directed by Architect.

Notify Architect seven days in advance of the dates and times when mock-up will be installed.

Obtain Architect's acceptance of mock-ups before starting fabrication or installation.

required to verify selections made under sample Submittals and to demonstrate aesthetic effects and

asphalt shingles with appropriate markings of applicable testing and inspecting agency.

products identical to those tested according to ASTM D 3161 or UL 997 and passed. Identify each bundle of

asphalt shingles with appropriate markings indicating fire-test-response classification of applicable testing

SPECIFICATIONS

Fastener spacing, including distance from corners and distance from edges to be per manufacturers Fastener penetrations through air and water barriers a. Air and Water Barrier Sheet Good Substrate: Install a strip of barrier flashing tape behind through-wall attachments that penetrate air and water barrier. b. Asphalt Mastic Dampproofing Substrate: Apply a coating of liquid membrane behind through-wall attachments that penetrate asphalt mastic dampproofing. c. Modified Bituminous Sheet Membrane Substrate: Apply a coating of liquid membrane behir through-wall attachments that penetrate modified bituminous sheet membrane. Maintain clearance between siding and adjacent finished grade. Allow minimum vertical clearance between the edge of siding and any other material in strict accordance B. Install furring strips prior to siding installation. Comply with siding manufacturer's requirements for size and

Starting: Install a lath starter strip at the bottom course of the wall as per manufacturer's instructions. The tom edge of the first plank overlaps the starter strip. Align vertical joints of the planks over joint flashing and framing members. Use off-stud metal joiner in strict accordance with manufacturer's installation instructions. Locate splices at least 12 in (300 mm) away from window and door openings.

Block framing between studs where siding horizontal joints occur. Install metal Z flashing and provide a 1/4 in (6 mm) gap at horizontal panel joints. . Shingle Siding: Ensure vertical joints of overlapping shingle course do not align Starting: Install a minimum 1/4 in (6 mm) thick lath starter strip at the bottom course of the wall. Maintain clearance between siding and adjacent finished grade. Apply starter course of 10 in (250 mm) shingles or 9-1/2 in (231 mm) lap siding overlapping the starter strip Apply subsequent courses horizontally with a minimum 10 in (250 mm) overlap at the top and a minimum 2 (50 mm) side lap. The bottom edge of the first two courses overlaps the starter strip.

Fasten trim boards with exposed face fasteners or manufacturer's trim tab. Trim tab to be secured to back Fasten through trim or trim tabs into structural framing. Fasteners must penetrate minimum 3/4 in (19 mm). dditional fasteners may be required to ensure adequate security. Allow 1/8 in (3 mm) gap between trim and siding. Seal gap with high quality, paint-able caulk. When trim boards are installed around windows and openings with exposed fasteners. fill all fastener holes

Install soffit panels in moderate contact at joints

Install soffit panels with batten trim at joints Install soffit panels butt jointed with 1/8 in (3 mm) to 1/4 in (6 mm) joint. Seal joints and field paint panels and

. Install joint sealants as specified in Section 079200 "Joint Sealants" and to produce a weathertight J. Touch-up of factory-applied finish system to be per manufacturer's requirements. Utilize pre-packaged Apply touch up paint to cut edges in accordance with manufacturer's printed instructions. Touch-up nicks, scrapes, and nail heads in pre-finished siding using the manufacturer's touch-up kit pen. Touch-up of nails shall be performed after application, but before plastic protection wrap is removed to

If large areas require touch-up, replace the damaged area with new pre-finished siding. A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition

MANUFACTURER'S TECHNICAL LITERATURE FOR EACH PRODUCT AND SYSTEM INDICATED. SHOP DRAWINGS: SHOW DETAILS OF FABRICATION AND INSTALLATION, INCLUDING PLANS, ATIONS, SECTIONS, DETAILS OF COMPONENTS AND ATTACHMENTS TO OTHER WORK.

ZINC-COATED (GALVANIZED) STEEL SHEET: ASTM A 653 / A 653M, G90 (Z275) COATING ESIGNATION; STRUCTURAL QUALITY, MILL PHOSPHATIZED FOR FIELD PAINTING, NOT LESS THAN 0.025 IN (0.64 MM) NOMINAL THICKNESS, UNLESS OTHERWISE INDICATED. STAINLESS-STEEL SHEET: ASTM A 240/A 240M OR ASTM A 666, TYPE 304 , DEAD SOFT, FULLY ALUMINUM SHEET: ASTM B 209 (ASTM B 209M), ALLOY AS STANDARD WITH MANUFACTURER FO FINISH REQUIRED, WITH TEMPER AS REQUIRED TO SUIT FORMING OPERATIONS AND PERFORMANCE

TWO-COAT FLUOROPOLYMER: AAMA 2605. FLUOROPOLYMER FINISH CONTAINING NOT LESS HAN 70 PERCENT PVDF RESIN BY WEIGHT IN COLOR COAT. PREPARE, PRETREAT, AND APPL DATING TO EXPOSED METAL SURFACES TO COMPLY WITH COATING AND RESIN MANUFACTURERS' PROVIDE MATERIALS AND TYPES OF FASTENERS, SOLDER, WELDING RODS, PROTECTIVE OATINGS, SEPARATORS, SEALANTS, AND OTHER MISCELLANEOUS ITEMS REQUIRED BY

SELF-ADHERING, HIGH-TEMPERATURE RUBBERIZED ASPHALT UNDERLAYMENT SHEE MINIMUM 30 MILS TO 40 MILS (0.76 MM TO 1.0 MM) THICK, CONSISTING OF SLIP-RESISTING POLYETHYLENE-FILM TOP SURFACE LAMINATED TO LAYER OF BUTYL OR SBS-MODIFIED ASPHALT ADHESIVE, WITH RELEASE-PAPER BACKING; COLD APPLIED. PROVIDE PRIMER WHEN RECOMMENDED THERMAL STABILITY: ASTM D 1970; STABLE AFTER TESTING AT 240 DEG F (116 DEG C).

LOW-TEMPERATURE FLEXIBILITY: ASTM D 1970; PASSES AFTER TESTING AT MINUS 20 DEG F (29 CARLISLE COATINGS & WATERPROOFING; CCW WIP 300HT

METAL-FAB MANUFACTURING, LLC; METSHIELD. OWENS CORNING; WEATHERLOCK METAL HIGH TEMPERATURE UNDERLAYMENT. PRIMER: PROVIDED BY UNDERLAYMENT MANUFACTURER. UNDERLAYMENT SEALING TAPE: PROVIDED BY UNDERLAYMENT MANUFACTURER. FABRICATE TO CROSS SECTION INDICATED WITH CLIPS AND ACCESSORIES REQUIRED FOR

NOT-EXPOSED TO PUBLIC VIEW: FABRICATE FROM THE FOLLOWING MATERIALS: GALVANIZED STEEL: 0.028 IN (0.7 MM) THICK. CONCEALED FROM VIEW BY OTHER CONSTRUCTION: FABRICATE FROM THE FOLLOWING STAINLESS STEEL: 0.025 IN (0.64 MM) THICK.

JTLET TUBES, AND OTHER ACCESSORIES AS REQUIRED, FABRICATE IN MINIMUM 96 IN (2400 MM) LONG SECTIONS. FURNISH FLAT-STOCK GUTTER BRACKETS AND GUTTER SPACERS AND STRAPS RICATED FROM SAME METAL AS GUTTERS, OF SIZE RECOMMENDED BY CITED SHEET METAL TANDARD BUT WITH THICKNESS NOT LESS THAN TWICE THE GUTTER THICKNESS. FABRICATE EXPANSION JOINTS, EXPANSION-JOINT COVERS, GUTTER BEAD REINFORCING BARS, AND GUTTER CCESSORIES FROM SAME METAL AS GUTTERS. SHOP FABRICATE INTERIOR AND EXTERIOR GUTTER PROFILE: AS INDICATED ON DRAWINGS, ACCORDING TO CITED SHEET METAL ACCESSORIES: WIRE-BALL DOWNSPOUT STRAINER, VALLEY BAFFLES

GENERAL FABRICATION REQUIREMENTS: WHERE ALLOWED. CUSTOM SHOP-FABRICATE SHEET METAL FLASHING AND TRIM TO COMPLY WITH RECOMMENDATIONS IN SMACNA'S "ARCHITECTURAL SHEET METAL MANUAL" THAT APPLY TO DESIGN, DIMENSIONS, GEOMETRY, METAL THICKNESS, AND IER CHARACTERISTICS OF ITEM INDICATED. FABRICATE ITEMS AT THE SHOP TO GREATEST FABRICATE SHEET METAL FLASHING AND TRIM IN THICKNESS OR WEIGHT NEEDED TO COMPLY

WITH PERFORMANCE REQUIREMENTS, BUT NOT LESS THAN THAT SPECIFIED FOR EACH APPLICATION OBTAIN FIELD MEASUREMENTS FOR ACCURATE FIT BEFORE SHOP FABRICATION FORM SHEET METAL FLASHING AND TRIM WITHOUT EXCESSIVE OIL CANNING, BUCKLING, AND TOOL MARKS AND TRUE TO LINE AND LEVELS INDICATED, WITH EXPOSED EDGES FOLDED BACK TO CONCEAL FASTENERS AND EXPANSION PROVISIONS WHERE POSSIBLE. EXPOSED FASTENERS

SELF-ADHERING SHEET UNDERLAYMENT: INSTALL WRINKLE FREE. APPLY PRIMER IF REQUIRED BY UNDERLAYMENT MANUFACTURER. COMPLY WITH TEMPERATURE RESTRICTIONS OF UNDERLAYMENT MANUFACTURER FOR INSTALLATION: USE PRIMER RATHER THAN NAILS FOR INSTALLING UNDERLAYMENT AT LOW TEMPERATURES. APPLY IN SHINGLE FASHION TO SHED WATER. OVERLAP EDGES NOT LESS THAN 3-1/2 IN (87 MM). ROLL LAPS WITH ROLLER. COVER UNDERLAYMENT

FLASHING AND SHEET METAL INSTALLATION: GENERAL: ANCHOR SHEET METAL FLASHING MATERIALS AND FABRICATIONS SECURELY IN PLACE, WITH PROVISIONS FOR THERMAL AND STRUCTURAL MOVEMENT. USE FASTENERS, SOLDER, PROTECTIVE COATINGS, SEPARATORS, SEALANTS, AND OTHER MISCELLANEOUS ITEMS AS REQUIRED INSTALL SHEET METAL FLASHING MATERIALS AND FABRICATIONS LEVEL, PLUMB, TRUE TO LINE AND ELEVATION; WITH LIMITED OIL-CANNING AND WITHOUT WARPING, JOGS IN ALIGNMENT, BUCKLING, PROVIDE UNIFORM, NEAT SEAMS WITH MINIMUM EXPOSURE OF SOLDER AND SEALANT. INSTALL SHEET METAL FLASHING MATERIALS AND FABRICATIONS TO FIT SUBSTRATES AND TO

RESULT IN WATERTIGHT PERFORMANCE. VERIFY SHAPES AND DIMENSIONS OF SURFACES TO BE TORCH CUTTING OF SHEET METAL FLASHING MATERIALS AND FABRICATIONS IS NOT DO NOT USE GRAPHITE PENCILS TO MARK METAL SURFACES HANGING GUTTERS: JOIN SECTIONS WITH RIVETED AND SOLDERED JOINTS OR JOINTS SEALED

WITH SEALANT. PROVIDE FOR THERMAL EXPANSION. ATTACH GUTTERS AT EAVE OR FASCIA TO FIRML ANCHOR THEM IN POSITION. PROVIDE END CLOSURES AND SEAL WATERTIGHT WITH SEALANT. SLOPE FASTEN GUTTER SPACERS TO FRONT AND BACK OF GUTTER ANCHOR AND LOOSELY LOCK BACK EDGE OF GUTTER TO CONTINUOUS CLEAT

ANCHOR GUTTER WITH GUTTER BRACKETS OR STRAPS SPACED NOT MORE THAN 30 IN (750 MM)] APART TO ROOF DECK, UNLESS OTHERWISE INDICATED, AND LOOSELY LOCK TO FRONT GUTTER INSTALL GUTTER WITH EXPANSION JOINTS AT LOCATIONS INDICATED, BUT NOT EXCEEDING, 50 T (15.24 M) APART, INSTALL EXPANSION-JOINT CAPS.

REPLACE SHEET METAL FLASHING MATERIALS AND FABRICATIONS THAT HAVE BEEN DAMAGED OR THAT CANNOT BE SUCCESSFULLY REPAIRED BY FINISH TOUCHUP OR SIMILAR MINOR REPAIR

METALLIC-COATED STEEL SHEET: RESTRICTED FLATNESS STEEL SHEET METALLIC COATED BY HE HOT-DIP PROCESS AND PRE-PAINTED BY THE COIL-COATING PROCESS TO COMPLY WITH ASTM A ZINC-COATED (GALVANIZED) STEEL SHEET: ASTM A 653 / A 653M, G90 (Z275) COATING

PRODUCT DATA: MANUFACTURER'S TECHNICAL LITERATURE FOR EACH PRODUCT AND SYSTEM SHOP DRAWINGS: SHOW DETAILS OF FABRICATION AND INSTALLATION. INCLUDING PLANS. ELEVATIONS, SECTIONS, DETAILS OF COMPONENTS AND ATTACHMENTS TO OTHER WORK. ISTINGUISH BETWEEN SHOP AND FIELD-ASSEMBLED WORK. INDICATE DIMENSIONS, LOADINGS, AND SAMPLES FOR INITIAL SELECTION: SUBMIT FOR EACH EXPOSED PRODUCT WITH ACTORY-APPLIED COLOR FINISHES IN EACH COLOR AND TEXTURE SPECIFIED, PREPARED ON SAMPLES OF SIZE TO ADEQUATELY SHOW COLOR.

ZINC-COATED (GALVANIZED) STEEL SHEET: ASTM A 653 / A 653M, G90 (Z275) COATING

ALUMINUM-ZINC ALLOY-COATED STEEL SHEET: ASTM A 792 / A 792M, AZ50 (AZM150) COATED. STEEL TUBE: ASTM A 500, ROUND TUBE. GALVANIZED-STEEL TUBE: ASTM A 500, ROUND TUBE, HOT-DIP GALVANIZED ACCORDING TO ASTM A 123 / A 123M. GALVANIZED STEEL PIPE: ASTM A 53/A 53M, HOT-DIP GALVANIZED ACCORDING TO ASTM A 123 A 123M. MISCELLANEOUS MATERIALS

GENERAL: PROVIDE MATERIALS AND TYPES OF FASTENERS, PROTECTIVE COATINGS SEALANTS, AND OTHER MISCELLANEOUS ITEMS REQUIRED BY MANUFACTURER FOR A COMPLETE INSTALLATION. BITUMINOUS PAINT: COLD-APPLIED ASPHALT-MASTIC PAINT COMPLYING WITH SSPC-PAINT 12 REQUIREMENTS EXCEPT CONTAINING NO ASBESTOS, FORMULATED FOR 30 MILS (0.762 MM) THICKNESS PER COAT.

FASTENERS: ROOF ACCESSORY MANUFACTURER'S RECOMMENDED FASTENERS SUITABLE FOR APPLICATION AND METALS BEING FASTENED. MATCH FINISH OF EXPOSED FASTENERS WITH FINISH OF MATERIAL BEING FASTENED. PROVIDE NON-REMOVABLE FASTENER HEADS TO EXTERIOR EXPOSED FASTENERS. FURNISH THE FOLLOWING UNLESS OTHERWISE INDICATED: FASTENERS FOR ZINC-COATED OR ALUMINUM-ZINC ALLOY-COATED STEEL: SERIES 300 STAINLESS STEEL OR HOT-DIP ZINC-COATED STEEL ACCORDING TO ASTM A 153 / A 153M OR ASTM F GASKETS: MANUFACTURER'S STANDARD TUBULAR OR FINGERED DESIGN OF NEOPRENE EPDM, PVC, OR SILICONE OR A FLAT DESIGN OF FOAM RUBBER, SPONGE NEOPRENE, OR CORK. ELASTOMERIC SEALANT: ASTM C 920, ELASTOMERIC SILICONE POLYMER SEALANT AS

RECOMMENDED BY ROOF ACCESSORY MANUFACTURER FOR INSTALLATION INDICATED: LOW MODULUS; OF TYPE, GRADE, CLASS, AND USE CLASSIFICATIONS REQUIRED TO SEAL JOINTS AND BUTYL SEALANT: ASTM C 1311, SINGLE-COMPONENT, SOLVENT-RELEASE BUTYL RUBBER SEALANT; POLYISOBUTYLENE PLASTICIZED; HEAVY BODIED FOR EXPANSION JOINTS WITH LIMITED ASPHALT ROOFING CEMENT: ASTM D 4586, ASBESTOS FREE, OF CONSISTENCY REQUIRED FOR PRECAST CONCRETE SPLASH BLOCKS

PREFABRICATED UNITS OF REINFORCED PORTLAND CEMENT CONCRETE, AGGREGATES, ADMIXTURES, AND WATER: SHAPED TO DIVERT WATER AWAY FROM BUILDING. MINIMUM SIZE: 12 II (300 MM) BY 24 IN (600 MM) BY 3 IN (75 MM) HIGH. WEIGHT: 50 LBS (22.6 KG). PROVIDE PROTECTION LAYER BELOW SPLASH BLOCK TO PROTECT ROOFING SYSTEM. GALVANIZED STEEL SHEET FINISHES SURFACE PREPARATION: CLEAN SURFACES WITH NONPETROLEUM SOLVENT SO SURFACES

ARE FREE OF OIL AND OTHER CONTAMINANTS. AFTER CLEANING, APPLY A CONVERSION COATING SUITED TO THE ORGANIC COATING TO BE APPLIED OVER IT. CLEAN WELDS, MECHANICAL CONNECTIONS, AND ABRADED AREAS, AND APPLY GALVANIZING REPAIR PAINT SPECIFIED BELOW TO COMPLY WITH ASTM A 780. GALVANIZING REPAIR PAINT: HIGH-ZINC-DUST-CONTENT PAINT FOR REGALVANIZING WELDS IN STEEL, COMPLYING WITH SSPC-PAINT 20. BAKED-ENAMEL OR POWDER-COAT FINISH: IMMEDIATELY AFTER CLEANING AND PRETREATIN APPLY MANUFACTURER'S STANDARD TWO-COAT, BAKED-ON FINISH CONSISTING OF PRIME COAT AND THERMOSETTING TOPCOAT, WITH A MINIMUM DRY FILM THICKNESS OF 1 MIL (0.025 MM) FOR TOPCO COMPLY WITH COATING MANUFACTURER'S WRITTEN INSTRUCTIONS FOR APPLYING AND BAKING TO ACHIEVE A MINIMUM DRY FILM THICKNESS OF 2 MILS (0.05 MM). COLOR AND GLOSS: AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE.

PREPARATION GENERAL: COMPLY WITH MANUFACTURER'S INSTRUCTIONS, RECOMMENDATIONS, AND SPECIFICATIONS FOR CLEANING AND SURFACE PREPARATION. SURFACES SHALL HAVE NO DEFECT CONTAMINANTS, OR ERRORS WHICH WOULD RESULT IN POOR OR POTENTIALLY DEFECTIVE INSTALLATION OR WOULD CAUSE LATENT DEFECTS IN WORK. INSTALLATION OF ROOF ACCESSORIES

GENERAL: INSTALL AND SECURELY ANCHOR ROOF ACCESSORIES DIRECTLY TO STRUCTURA SUPPORTING DECK OR SUBSTRATE (NOT ON TOP OF WOOD BLOCKING) SO THEY ARE CAPABLE OF RESISTING INDICATED LOADS. INSTALL ROOF ACCESSORIES LEVEL, PLUMB, TRUE TO LINE AND ELEVATION, AND WITHOUT WARPING, JOGS IN ALIGNMENT, EXCESSIVE OIL CANNING, BUCKLING, OR TOOL MARKS. USE FASTENERS. SEPARATORS, SEALANTS, AND OTHER MISCELLANEOUS ITEMS AS REQUIRED TO COMPLETE INSTALLATION OF ROOF ACCESSORIES AND FIT THEM TO SUBSTRATES. INSTALL ROOF ACCESSORIES TO RESIST EXPOSURE TO WEATHER WITHOUT FAILING, RATTLING LEAKING, OR LOOSENING OF FASTENERS AND SEALS. METAL PROTECTION: PROTECT METALS AGAINST GALVANIC ACTION BY SEPARATING DISSIMILAR METALS FROM CONTACT WITH EACH OTHER OR WITH CORROSIVE SUBSTRATES BY PAINTING CONTACT SURFACES WITH BITUMINOUS PAINT OR BY OTHER PERMANENT SEPARATION AS

RECOMMENDED BY MANUFACTURER. UNDERLAYMENTS: WHERE INSTALLING ROOF ACCESSORIES DIRECTLY ON CEMENTITIOUS OR WOOD SUBSTRATES, INSTALL A COURSE OF FELT UNDERLAYMENT AND COVER WITH A SLIP SHEET, OR INSTALL A COURSE OF POLYETHYLENE SHEE BED FLANGES IN THICK COAT OF ASPHALT ROOFING CEMENT WHERE REQUIRED BY MANUFACTURERS OF ROOF ACCESSORIES FOR WATERPROOF PERFORMANCE ROOF CURB INSTALLATION: INSTALL EACH ROOF CURB SO TOP SURFACE IS LEVEL, UNLESS OTHERWISE INDICATED.

ROOF-HATCH INSTALLATION INSTALL ROOF HATCH SO TOP SURFACE OF HATCH CURB IS LEVEL, UNLESS OTHERWISE VERIFY THAT ROOF HATCH OPERATES PROPERLY. CLEAN, LUBRICATE, AND ADJUST OPERATING MECHANISM AND HARDWARE. ATTACH LADDER-ASSIST POST ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS

OPERATIONAL UNITS: TEST-OPERATE UNITS WITH OPERABLE COMPONENTS. CLEAN AND LUBRICATE JOINTS AND HARDWARE. ADJUST FOR PROPER OPERATION. PRECAST CONCRETE SPLASH BLOCKS: INSTALL SPLASH BLOCK AT OUTLET LOCATIONS OF OWNSPOUTS. SET SPLASH BLOCK OVER PROTECTION LAYER TO PROTECT ROOFING SYSTEM SECTION 07 8400 - FIRESTOPPING

PROVIDE FIRESTOP SYSTEMS WITH F RATINGS NOT LESS THAN THE FIRE_RESISTANCE RATING OF THE CONSTRUCTIONS PENETRATED. PROVIDE FIRESTOP SYSTEMS WITH T AND F RATINGS, AS DETERMINED PER ASTM E 814

PROVIDE JOINT SEALANTS WITH FIRE_RESISTANCE RATINGS AS DETERMINED PER ASTM E 119 PROVIDE PRODUCTS WITH FLAME_SPREAD VALUES OF LESS THAN 25 AND SMOKE_DEVELOPED VALUES OF LESS THAN 450, AS DETERMINED PER ASTM E 84.

SUBMITTALS: PRODUCT DATA FOR EACH PRODUCT PROPOSED FIRESTOPPING TESTS: PERFORMED BY QUALIFIED TESTING AND INSPECTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

THROUGH_PENETRATION FIRESTOP SYSTEMS: CLASSIFIED IN WARNOCK HERSEY OR UNDERWRITERS LABORATORIES (UL) FIRE RESISTANCE DIRETORY, "SECTION XHEZ - THROUGH PENETRATION FIRESTOP SYSTEMS", AND/OR "SECTION XHHW -FILL VOID OR CAVITY MATERIALS" FOR SPECIFIC PROJECT CONDITIONS: SURFACE BURNING CHARACTERISTICS (PER ASTM E84): 25 OR LESS.TESTED IN ACCORDANCE WITH UL 1479 OR ASTM E 814. FREE OF ASBESTOS AND IN COMPLIANCE WITH LOCAL VOC REGULATIONS. PAINTABLE MATERIALS IN THOSE AREAS WHICH ARE EXPOSED TO VIEW AND SCHEDULED TO RECEIVE PAINT FINISHES.

FIRE_RESISTIVE ELASTOMERIC JOINT SEALANTS: CHEMICALLY CURING, ELASTOMERIC SEALANTS COMPLYING WITH ASTM C 920. SEALANT COLORS: AS SELECTED FROM MANUFACTURER'S FULL RANGE OF STANDARD SINGLE_COMPONENT, NEUTRAL_CURING SILICONE SEALANT: TYPE S; GRADE NS; CLASS 25; WITH ADDITIONAL CAPABILITY, WHEN TESTED PER ASTM C 719, TO WITHSTAND 50 PERCENT

MOVEMENT IN BOTH EXTENSION AND COMPRESSION. INSTALLATION: COMPLY WITH FIRESTOP MANUFACTURER'S INSTALLATION INSTRUCTIONS AND DRAWINGS PERTAINING TO PRODUCTS AND APPLICATIONS INDICATED.

SECTION 07 9200 - JOINT SEALANTS EXTERIOR NON-SAG SILICONE SEALAN

PRODUCT QUALITY STANDARD: ASTM C 920, TYPE S, GRADE NS, CLASS 50 OR 100/50. DESCRIPTION: SINGLE COMPONENT, NON-SAG, NEUTRAL CURE, NON-STAINING AS DETERMINE BY PRE-CONSTRUCTION STAIN TESTING, AND NON-BLEEDING, SILICONE SEALANT. JOINT MOVEMENT CAPABILITY: CLASS 50: PLUS 50 PERCENT, MINUS 50 PERCENT MANUFACTURERS AND PRODUCTS: DOW CORNING; 795 SILICONE BUILDING SEALANT.

EXTERIOR POURABLE URETHANE SEALANT: ASTM C 920, TYPE M, GRADE P, CLASS 25, USE T

MULTI-COMPONENT, POURABLE, MOISTURE CURING, POLYURETHANE SEALANT; RATED FOR INCLINE WHEN USED ON SLOPED SURFACES. ACCEPTABLE MANUFACTURER AND PRODUCT: TREMCO COMMERCIAL SEALANTS & WATERPROOFING; THC-900/THC-901.

COLOR: AS SELECTED FROM MANUFACTURER'S STANDARD COLORS.

INTERIOR SILICONE MILDEW RESISTANT SEALANT: (WET AREAS) ASTM C 920, TYPE S, GRADE NS, CLASS 25, ONE_PART SILICONE RUBBER SEALANT FORMULATED FOR NON_POROUS APPLICATIONS. ACCEPTABLE MANUFACTURER AND PRODUCT: DOW CORNING; 786

COLOR: AS SELECTED FROM MANUFACTURER'S STANDARD COLORS.

ACRYLIC_LATEX CALKING: (INTERIOR JOINTS) ASTM C 834 ONE-PART, NON-SAG, GENERAL PURPOSE, PAINTABLE, SILICONIZED ACRYLIC LATEX CALK.

JOINT MOVEMENT CAPABILITY OF +7.5 PERCENT, -7.5 PERCENT ACCEPTABLE MANUFACTURERS AND PRODUCT: TREMCO - "TREMCO ACRYLIC LATEX" URETHANE CONSTRUCTION SEALANT

ASTM C 920, TYPE M, GRADE NS, CLASS 25, TWO-PART, NON-SAG, POLYURETHANE RUBBER SEALANT. JOINT MOVEMENT CAPABILITY OF +50 PERCENT, -50 PERCENT ACCEPTABLE MANUFACTURERS AND PRODUCT: TREMCO - "DYMERIC 511"

COLOR: AS SELECTED FROM MANUFACTURER'S STANDARD COLORS

PRIMER: AS RECOMMENDED BY SEALANT MANUFACTURER, HAVING BEEN TESTED FOR STAINING, COMPATIBILITY, PROPER FUNCTION AND ADHESION ON SAMPLES OF ACTUAL SURFACES TO

CLEANING AGENTS: CLEANING AGENTS RECOMMENDED BY SEALANT MANUFACTURER, WHICH WILL NOT DAMAGE OR STAIN BUILDING MATERIALS. BACKER ROD: PREFORMED OPEN CELL POLYURETHANE FOAM OR CLOSED CELL

POLYETHYLENE FOAM, COMPATIBLE WITH SEALANT AND PRIMER, AS RECOMMENDED BY SEALANT

BOND BREAKER: PRESSURE SENSITIVE ADHESIVE POLYETHYLENE TAPE OR OTHER TYPE RECOMMENDED BY SEALANT MANUFACTUREF EXAMINE SUBSTRATES SURFACES AND DO NOT PROCEED UNTIL UNSATISFACTORY

CONDITIONS HAVE BEEN CORRECTED. COMPLY WITH MANUFACTURER'S LATEST PUBLISHED REQUIREMENTS, RECOMMENDATIONS AND SPECIFICATION'S FOR CLEANING, SURFACE PREPARATION AND PRIMING.

12. PRIME JOINT SUBSTRATES WHERE RECOMMENDED BY JOINT SEALANT MANUFACTURER CONFINE PRIMERS TO AREAS OF JOINT SEALANT BOND. 3. INSTALL BACK-UP AND SEALANTS IN ACCORDANCE ASTM C 1193 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.

4. INSTALL SEALANTS BY PROVEN TECHNIQUES THAT RESULT IN SEALANTS DIRECTLY CONTACTING AND FULLY WETTING JOINT SUBSTRATES, COMPLETELY FILLING RECESSES PROVIDED FOR EACH JOINT CONFIGURATION, AND PROVIDING UNIFORM, CROSS-SECTIONAL SHAPES AND DEPTHS RELATIVE TO JOINT WIDTHS THAT ALLOW OPTIMUM SEALANT MOVEMENT CAPABILITY. 5. TOOL SEALANTS TO FORM SMOOTH, UNIFORM BEADS OF CONCAVE CONFIGURATION. REMOVE EXCESS SEALANTS FROM SURFACES ADJACENT TO JOINT. USE TOOLING AGENTS THAT ARE APPROVED BY SEALANT MANUFACTURER

SECTION 08 1114 - INTERIOR HOLLOW METAL FRAMES

SUBMIT SHOP DRAWINGS SHOWING DETAILS OF EACH FRAME, DETAILS OF CONSTRUCTION, LOCATION, AND INSTALLATION REQUIREMENTS OF FINISH HARDWARE AND REINFORCEMENTS.

FIRE RATED ASSEMBLIES: PROVIDE UNITS THAT COMPLY WITH NEPA 80, ASTM E 152, AND ARE LABELED AND LISTED BY UL, WARNOCK HERSEY, OR OTHER TESTING AND INSPECTING ORGANIZATION ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

CONFORM TO REQUIREMENTS OF HMMA 861 AND AS SUPPLEMENTED IN THIS SECTION. STEEL SHEET: STRETCHER LEVEL, COMMERCIAL QUALITY, CARBON STEEL.

COLD_ROLLED: ASTM A 1008. SHOP_APPLIED PAINT: RUST_INHIBITIVE PRIMER, EITHER AIR_DRIED OR BAKED-ON, SUITABLE

AS BASE FOR FINISH PAINT SPECIFIED. 48 INCHES WIDE OR LESS: 16 GAGE

MORE THAN 48 INCHES WIDE: 14 GAGE.

FINISH HARDWARE REINFORCEMEN HINGES: 7 GAGE.

CLOSERS: 12 GAGE.

JAMB ANCHORS: 18_GAGE GALVANIZED STEEL. WELDED TO BACK OF FRAMES. 4 ANCHORS UP TO 7' 6" JAMB HEIGHT; 5 ANCHORS UP TO 8' 0" JAMB HEIGHT FLOOR ANCHORS: 14 GAGE GALVANIZED STEEL SHEET

SPREADER BARS: REMOVABLE SPREADER BAR ACROSS BOTTOM OF FRAMES, TACK WELDED TO JAMBS AND MULLIONS. RUBBER DOOR SILENCERS: 3 SILENCERS ON SINGLE_DOOR FRAMES 4 SILENCERS ON DOUBLE_DOOR FRAMES.

COMPLY WITH ANSI A115 SERIES FOR FRAME PREPARATION FOR HARDWARE. LOCATE IN ACCORDANCE WITH "RECOMMENDED LOCATIONS FOR BUILDER'S HARDWARE FOR CUSTOM STEEL DOORS AND FRAMES," PUBLISHED BY DOOR AND HARDWARE INSTITUTE.

0. INSTALLATION: INSTALL FRAMES IN ACCORDANCE WITH NAAMM STANDARD HMMA 840 AND 86 SHOP DRAWINGS, AND MANUFACTURER'S INSTRUCTIONS. SECTION 08 1416 - FLUSH WOOD DOORS

SUBMIT PRODUCT DATA AND SHOP DRAWINGS INDICATING LOCATION. SIZE, ELEVATION DETAILS OF CONSTRUCTION, HARDWARE BLOCKING, FIRE RATINGS, AND OTHER PERTINENT DATA.

SUBMIT WARRANTY ON DOOR MANUFACTURER'S STANDARD FORM FOR LIFE OF INSTALLATION AFTER DATE OF SUBSTANTIAL COMPLETION.

QUALITY STANDARD: "ARCHITECTURAL WOODWORK QUALITY STANDARDS" OF THE ARCHITECTURAL WOODWORK INSTITUTE.

FIRE RATED WOOD DOORS: PROVIDE WOOD DOORS LABELED AND LISTED BY UL, WARNOCK HERSEY, OR ANOTHER TESTING AND INSPECTION AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

SOLID CORE DOORS (PARTICLEBOARD CORE): AWI 1300 CORE BONDED TO STILES AND RAILS PARTICLEBOARD: ANSI A208.1, GRADE LD-2 20 MINUTE UL OR WARNOCK HERSEY LABEL WHERE SCHEDULED

FIRE-RATED SOLID CORE DOORS (MINERAL CORE): AWI 1300 CORE BONDED TO STILES AND PROVIDE DOORS WITH SPECIAL REINFORCED INNER BLOCKING. 1_1/2 HOUR, ONE_HOUR AND 45 MINUTE UL OR WARNOCK HERSEY LABELED, AS SCHEDULED

DOORS FOR OPAQUE FINISH INTERIOR SOLID-CORE DOORS: GRADE: PREMIUM.

FACES: APPLY MEDIUM-DENSITY OVERLAY TO STANDARD-THICKNESS, CLOSED-GRAIN, HARDWOOD FACE VENEERS. COLOR SELECTION: AS SCHEDULED OR AS INDICATED IN DESIGN SELECTIONS. EXPOSED VERTICAL AND HORIZONTAL EDGES: ANY CLOSED-GRAIN HARDWOOD WITH SANDED

 CORE: PARTICLEBOARD. CONSTRUCTION: 5 PLIES. STILES AND RAILS BONDED TO CORE.

ENTIRE UNIT ABRASIVE PLANED BEFORE VENEERING. FACES BONDED TO CORE USING A HOT PRESS.

FABRICATION REQUIREMENT FACTORY FIT DOORS TO COMPLY WITH CLEARANCE REQUIREMENTS OF REFERENCED QUALI

COMPLY WITH REQUIREMENTS OF NFPA 80 FOR FIRE_RATED DOORS. EACTORY MACHINE DOORS FOR HARDWARE IN ACCORDANCE WITH DHI-WDHS-3 DOOR EDGES: MANUFACTURER'S STANDARD LAMINATED EDGE CONSTRUCTION WITH EDGE

TO MATCH FACE SHEETS. INSTALL WOOD DOORS TO COMPLY WITH MANUFACTURER'S INSTRUCTIONS AND REFERENCED QUALITY STANDARD.

). INSTALL FIRE_RATED DOORS ACCORDING TO REQUIREMENTS OF NFPA 80.

SECTION 08 3113 - ACCESS DOORS AND FRAMES PRODUCT DATA: MANUFACTURER'S TECHNICAL LITERATURE FOR EACH PRODUCT AND SYSTEM

INCLUDE MANUFACTURER'S SPECIFICATIONS FOR MATERIALS, FINISHES, CONSTRUCTION DETAILS, INSTALLATION INSTRUCTIONS, AND RECOMMENDATIONS FOR MAINTENANCE FIRE-RATED ACCESS DOORS AND FRAMES: UNITS COMPLYING WITH NFPA 80 THAT ARE

IDENTICAL TO ACCESS DOOR AND FRAME ASSEMBLIES TESTED FOR FIRE-TEST-RESPONSE CHARACTERISTICS PER THE FOLLOWING TEST METHOD AND THAT ARE LISTED AND LABELED BY UL OR ANOTHER TESTING AND INSPECTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION: NFPA 252 OR UL 10B FOR VERTICAL ACCESS DOORS AND FRAMES

ASTM E 119 OR UL 263 FOR HORIZONTAL ACCESS DOORS AND FRAMES MANUFACTURERS ACUDOR PRODUCTS, INC

BABCOCK-DAVIS. DUR-RED PRODUCTS

STEEL, COMPLYING WITH SSPC-PAINT 20.

MASONRY WALL SURFACES

STAINLESS-STEEL SHEET

HINGES: CONTINUOUS PIANO

WITH A MINIMUM THICKNESS OF 0.036 IN (0.9 MM

AUTOMATIC CLOSER: SPRING TYPE.

CERAMIC TILE WALL SURFACES.

METALLIC-COATED (GALVANIZED) STEEL SHEET

FIRE-RESISTANCE RATING: NOT LESS THAN 1-1/2 HOURS.

PRETREATING.

LOCATIONS:

STEEL SHEET.

SURFACE-MOUNTED TRIM.

LOCATIONS

STEEL SHEET.

BASIS OF DESIGN:

STAINLESS-STEEL SHEET

J. L. INDUSTRIES, INC KARP ASSOCIATES, INC LARSEN'S MANUFACTURING COMPANY.

MAXAM METAL PRODUCTS, LTD. MILCOR INC.

NYSTROM, INC. WILLIAMS BROTHERS CORPORATION OF AMERICA. STEEL MATERIALS

STEEL PLATES, SHAPES, AND BARS: ASTM A 36 / A 36M. ASTM A 123 / A 123M. FOR GALVANIZING STEEL AND IRON PRODUCTS

ASTM A 153 / A 153M, FOR GALVANIZING STEEL AND IRON HARDWARE. STEEL SHEET: UNCOATED COLD-ROLLED STEEL SHEET SUBSTRATE COMPLYING WITH ASTM A 1008 / A 1008M, COMMERCIAL STEEL (CS), EXPOSED.

SSPC-SP 5/NACE NO. 1, "WHITE METAL BLAST CLEANING", OR SSPC-SP 8, "PICKLING"

METALLIC-COATED (GALVANIZED) STEEL SHEET: ASTM A 653 / A 653M, COMMERCIAL STEEL (CS) WITH A60 (ZF180) ZINC-IRON-ALLOY (GALVANNEALED) COATING OR G60 (Z180) MILL-PHOSPHATIZED ZINC COATING; STRETCHER-LEVELED STANDARD OF FLATNESS; WITH MINIMUM THICKNESS INDICATED REPRESENTING SPECIFIED THICKNESS ACCORDING TO ASTM A 924 / A 924M. STEEL FINISHES: COMPLY WITH NAAMM'S "METAL FINISHES MANUAL FOR ARCHITECTURAL AND METAL PRODUCTS" FOR RECOMMENDATIONS FOR APPLYING AND DESIGNATING FINISHES. SURFACE PREPARATION FOR STEEL SHEET: CLEAN SURFACES TO COMPLY WITH SSPC-SP 1 SOLVENT CLEANING", TO REMOVE DIRT, OIL, GREASE, OR OTHER CONTAMINANTS THAT COULD IMPAIR PAINT BOND. REMOVE MILL SCALE AND RUST, IF PRESENT, FROM UNCOATED STEEL, COMPLYING WITH

SURFACE PREPARATION FOR METALLIC-COATED (GALVANIZED) STEEL SHEET: CLEAN

CONTAMINANTS. AFTER CLEANING, APPLY A CONVERSION COATING SUITED TO THE ORGANIC COATING TO BE APPLIED OVER IT. CLEAN WELDS, MECHANICAL CONNECTIONS, AND ABRADED AREAS

GALVANIZING REPAIR PAINT: HIGH-ZINC-DUST-CONTENT PAINT FOR REGALVANIZING WELDS IN

SURFACES WITH NONPETROLEUM SOLVENT SO SURFACES ARE FREE OF OIL AND OTHER

AND APPLY GALVANIZING REPAIR PAINT SPECIFIED BELOW TO COMPLY WITH ASTM A 780.

FACTORY-PRIMED FINISH: APPLY SHOP PRIMER IMMEDIATELY AFTER CLEANING AND

FORMED TO RECEIVE JOINT COMPOUND AND IN SIZE TO SUIT THICKNESS OF GYPSUM BOARD.

FIRE-RATED, INSULATED, FLUSH ACCESS DOORS AND FRAMES WITH EXPOSED TRIM:

TEMPERATURE RISE RATING: 250 DEG F (139 DEG C) AT THE END OF 30 MINUTES.

LATCH: SELF-LATCHING DEVICE OPERATED BY FLUSH KEY WITH INTERIOR RELEASE.

FABRICATED FROM ONE OF THE FOLLOWING AS SCHEDULED AT THE END OF THIS SECTION.

DOOR: FLUSH PANEL WITH A CORE OF MINERAL-FIBER INSULATION ENCLOSED IN SHEET METAL

TEMPERATURE RISE RATING: 250 DEG F (139 DEG C) AT THE END OF 30 MINUTES.

LATCH: SELF-LATCHING DEVICE OPERATED BY FLUSH KEY WITH INTERIOR RELEASE.

FRAMES WITH MASONRY ANCHORS: SET FRAMES ACCURATELY IN POSITION AND ATTACH

SECURELY TO SUPPORTS WITH PLANE OF FACE PANELS ALIGNED WITH ADJACENT FINISH SURFACES

INSTALL DOORS FLUSH WITH ADJACENT FINISH SURFACES OR RECESSED TO RECEIVE FINISH

PROVIDE ACCESS DOORS WHERE INDICATED ON THE DRAWINGS AND AS FOLLOWS:

MOTOR OPERATED DOORS AND GRILLES ABOVE NON-ACCESSIBLE CEILINGS.

CONCEALED VALVES AND CONTROLS FOR PLUMBING AND HVAC.

FRAME: MINIMUM 0.060 IN (1.5 MM) THICK SHEET METAL WITH DRYWALL BEAD.

SIZE: 12 IN BY 12 IN (300 MM BY 300 MM); UNLESS OTHERWISE INDICATED.

FRAME: MINIMUM 0.060 IN (1.5 MM) THICK SHEET METAL WITH 1 IN (25 MM) WIDE,

SIZE: 12 IN BY 12 IN (300 MM BY 300 MM); UNLESS OTHERWISE INDICATED.

FIRE-RATED, INSULATED, FLUSH ACCESS DOORS AND TRIMLESS FRAMES:

BASIS OF DESIGN: NYSTROM BUILDING PRODUCTS, MODEL IT.

GYPSUM BOARD WALL AND CEILING SURFACES.

METALLIC-COATED (GALVANIZED) STEEL SHEET

FIRE-RESISTANCE RATING: NOT LESS THAN 1-1/2 HOURS.

GYPSUM BOARD: NYSTROM BUILDING PRODUCTS, MODEL IW.

INSTALLATION OF ACCESS DOORS AND FRAMES

FIRE DAMPERS ABOVE NON-ACCESSIBLE CEILINGS.

METALLIC-COATED (GALVANIZED) STEEL ACCESS DOORS:

PLASTER WALL AND CEILING SURFACES.

WITH A MINIMUM THICKNESS OF 0.036 IN (0.9 MM)

AUTOMATIC CLOSER: SPRING TYPE

HINGES: CONTINUOUS PIANO.

CONTRACT DOCUMENTS.

ACCESS DOOR SCHEDULE

STEEL ACCESS DOORS:

FIRE-RATED STEEL ACCESS DOORS:

STAINLESS STEEL ACCESS DOORS

RATED WALLS AND CEILINGS.

EXTERIOR LOCATIONS.

DRYWALL BEADS: EDGE TRIM FORMED FROM 0.0299 IN (0.7 MM) ZINC-COATED STEEL SHEET

PLASTER BEADS: CASING BEAD FORMED FROM 0.0299 IN (0.7 MM) ZINC-COATED STEEL SHEE

WITH FLANGE FORMED OUT OF EXPANDED METAL LATH AND IN SIZE TO SUIT THICKNESS OF PLASTEF

FABRICATED FROM ONE OF THE FOLLOWING AS SCHEDULED AT THE END OF THIS SECTION.

DOOR: FLUSH PANEL WITH A CORE OF MINERAL-FIBER INSULATION ENCLOSED IN SHEET METAL

CERAMIC TILE AND OTHER DAMP LOCATIONS. SECTION 08 4120 - EXTERIOR STOREFRONT SUBMITTALS: PRODUCT DATA, SHOP DRAWINGS, AND COLOR SAMPLES. PRODUCT STANDARD: KAWNEER NORTH AMERICA: AN ALCOA COMPANY: TRIFAB VG 451 WITH H PERFORMANCE SILL FLASHING, 2 INCH FACE, 4-1/2 INCH DEPTH, GLASS IN CENTER. PERFORMANCE REQUIREMENTS: LIMIT DEFLECTION OF FRAMING MEMBERS NORMAL TO WALL PLANE TO 1/175 OF CLEAR SPAN OR SPANS UP TO 13 FEET 6 INCHES (4.1 M) AND TO 1/240 OF CLEAR SPAN PLUS 1/4 INCH (6.35 MM) FO SPANS GREATER THAN 13 FEET 6 INCHES (4.1 M)] OR AN AMOUNT THAT RESTRICTS EDGE DEFLECTION OF INDIVIDUAL GLAZING LITES TO 3/4 INCH (19 MM), WHICHEVER IS LESS LIMIT DEFLECTION OF FRAMING MEMBERS PARALLEL TO GLAZING PLANE TO L/360 OF CLEAR SPAN OR 1/8 INCH (3.2 MM), WHICHEVER IS SMALLER. WATER PENETRATION UNDER STATIC PRESSURE FOR STOREFRONT SYSTEM: NO EVIDENCE C WATER PENETRATION THROUGH FIXED GLAZING AND FRAMING AREAS WHEN TESTED ACCORDING T ASTM E 331 AT A MINIMUM STATIC-AIR-PRESSURE DIFFERENTIAL OF 20 PERCENT OF POSITIVE WIND-LOAD DESIGN PRESSURE, BUT NOT LESS THAN 10 LBF/SF (480 PA). ALUMINUM: ALLOY AND TEMPER RECOMMENDED BY MANUFACTURER FOR TYPE OF USE AND FINISH INDICATED; ASTM B 209 (ASTM B 209M) SHEET; ASTM B 221 (ASTM B 221M) EXTRUSIONS. GLAZING: AS SPECIFIED IN DIVISION 08 SECTION "GLAZING." FRAMING MEMBERS: MANUFACTURER'S STANDARD EXTRUDED-ALUMINUM FRAMING MEMBERS OF THICKNESS REQUIRED AND REINFORCED AS REQUIRED TO SUPPORT IMPOSED LOADS. FASTENERS AND ACCESSORIES: COMPATIBLE WITH ADJACENT MATERIALS. CORROSION RESISTANT, NONSTAINING, AND NONBLEEDING. USE CONCEALED FASTENERS EXCEPT FOR

APPLICATION OF DOOR HARDWARE. FABRICATION: FABRICATE FRAMING IN PROFILES INDICATED FOR FLUSH GLAZING (WITHOU PROJECTING STOPS). PROVIDE SUBFRAMES AND REINFORCING OF TYPES INDICATED OR, IF NOT INDICATED, AS REQUIRED FOR A COMPLETE SYSTEM. FACTORY-ASSEMBLE COMPONENTS TO EATEST EXTENT POSSIBLE. DISASSEMBLE COMPONENTS ONLY AS NECESSARY FOR SHIPMENT AND INSTALLATION. ALUMINUM FINISH: CLASS II, CLEAR ANODIC FINISH; AA-M12C22A31; COMPLYING WITH AAMA 611.

ISOLATION OF DISSIMILAR MATERIALS: ISOLATE METAL SURFACES IN CONTACT WITH NCOMPATIBLE MATERIALS, INCLUDING WOOD, BY PAINTING CONTACT SURFACES WITH BITUMINOUS COATING OR PRIMER, OR BY APPLYING SEALANT OR TAPE RECOMMENDED BY MANUFACTURER. INSTALLATION TOLERANCES: INSTALL FRAMING COMPONENTS TRUE IN ALIGNMENT WITH ESTABLISHED LINES AND GRADES TO THE FOLLOWING TOLERANCES:

VARIATION FROM PLANE: LIMIT TO 1/8 INCH IN 12 FEET (3 MM IN 3.7 M); 1/4 INCH (6 MM) OVER TAL LENGTH. ALIGNMENT: FOR SURFACES ABUTTING IN LINE, LIMIT OFFSET TO 1/16 INCH (1.5 MM), FOR SURFACES MEETING AT CORNERS, LIMIT OFFSET TO 1/32 INCH (0.8 MM). DIAGONAL MEASUREMENTS: LIMIT DIFFERENCE BETWEEN DIAGONAL MEASUREMENTS TO 1/8

SECTION 08 4213 - EXTERIOR ALUMINUM ENTRANCE DOORS SUBMITTALS: PRODUCT DATA, SHOP DRAWINGS, AND COLOR SAMPLES.

- DOORS: INCLUDE HARDWARE SCHEDULE. PRODUCT STANDARD: KAWNEER NORTH AMERICA; AN ALCOA COMPANY; 350 STANDARD ACCESSIBLE ENTRANCES (DOORS): COMPLY WITH ICC/ANSI A117.
- DESIGN LOADS: ENGINEER TO WITHSTAND DESIGN LOADS INCLUDING BUT NOT LIMITED TO RAVITY, WIND, SEISMIC, AND ERECTION DESIGN LOADS AND THERMAL MOVEMENTS ESTABLISHED B AUTHORITIES HAVING JURISDICTION, APPLICABLE LOCAL BUILDING CODES, AND AS INDICATED. ALUMINUM: ALLOY AND TEMPER RECOMMENDED BY MANUFACTURER FOR TYPE OF USE AND FINISH INDICATED; ASTM B 209 (ASTM B 209M) SHEET; ASTM B 221 (ASTM B 221M) EXTRUSIONS. GLAZING: AS SPECIFIED IN DIVISION 08 SECTION "GLAZING." FRAMING MEMBERS: MANUFACTURER'S STANDARD EXTRUDED-ALUMINUM FRAMING MEMBER
- OF THICKNESS REQUIRED AND REINFORCED AS REQUIRED TO SUPPORT IMPOSED LOADS. DOORS: 1-3/4-INCH- (44.5-MM-) THICK GLAZED DOORS WITH MINIMUM 0.125-INCH- (3.2-MM-ICK, EXTRUDED-ALUMINUM TUBULAR RAIL AND STILE MEMBERS. MECHANICALLY FASTEN CORNEF WITH REINFORCING BRACKETS THAT ARE DEEPLY PENETRATED AND FILLET WELDED OR THAT INCORPORATE CONCEALED TIE RODS. PROVIDE SNAP-ON EXTRUDED-ALUMINUM GLAZING STOPS, AN PREFORMED GASKETS. ACCESSIBLE DOORS: SMOOTH SURFACED FOR WIDTH OF DOOR IN AREA WITHIN 10 INCHES (25 MM) ABOVE FLOOR OR GROUND PLANE.

DOOR DESIGN: MEDIUM STILE: 3-1/2-INCH (88.9-MM) NOMINAL WIDTH. HARDWARE: AS SPECIFIED IN DIVISION 08 SECTION "DOOR HARDWARE."

FASTENERS AND ACCESSORIES: COMPATIBLE WITH ADJACENT MATERIALS, CORROSION RESISTANT, NONSTAINING, AND NONBLEEDING. USE CONCEALED FASTENERS EXCEPT FOR APPLICATION OF DOOR HARDWARE. FABRICATION: FABRICATE FRAMING IN PROFILES INDICATED FOR FLUSH GLAZING (WITHOU PROJECTING STOPS). PROVIDE SUBFRAMES AND REINFORCING OF TYPES INDICATED OR, IF NOT INDICATED, AS REQUIRED FOR A COMPLETE SYSTEM. FACTORY-ASSEMBLE COMPONENTS TO GREATEST EXTENT POSSIBLE. DISASSEMBLE COMPONENTS ONLY AS NECESSARY FOR SHIPMEN AND INSTALLATION. DOOR FRAMING: REINFORCE TO SUPPORT IMPOSED LOADS. FACTORY ASSEMBLE DOOR AND RAME UNITS AND FACTORY INSTALL HARDWARE TO GREATEST EXTENT POSSIBLE. REINFORCE DOOR AND FRAME UNITS FOR HARDWARE INDICATED. CUT, DRILL, AND TAP FOR FACTORY-INSTALLED HARDWARE BEFORE FINISHING COMPONENTS.

ALUMINUM FINISH: CLASS II. COLOR ANODIC FINISH: AA-M12C22A32/A34: COMPLYING WITH AAMA 611. TO MATCH BUILDING STANDARI ISOLATION OF DISSIMILAR MATERIALS: ISOLATE METAL SURFACES IN CONTACT WITH INCOMPATIBLE MATERIALS, INCLUDING WOOD, BY PAINTING CONTACT SURFACES WITH BITUMINOUS COATING OR PRIMER, OR BY APPLYING SEALANT OR TAPE RECOMMENDED BY MANUFACTURER. INSTALLATION TOLERANCES: INSTALL FRAMING COMPONENTS TRUE IN ALIGNMENT WITH

ESTABLISHED LINES AND GRADES TO THE FOLLOWING TOLERANCES: VARIATION FROM PLANE: LIMIT TO 1/8 INCH IN 12 FEET (3 MM IN 3.7 M); 1/4 INCH (6 MM) OVER TOTAL LENGTH. ALIGNMENT: FOR SURFACES ABUTTING IN LINE, LIMIT OFFSET TO 1/16 INCH (1.5 MM). FOR SURFACES MEETING AT CORNERS, LIMIT OFFSET TO 1/32 INCH (0.8 MM). DIAGONAL MEASUREMENTS: LIMIT DIFFERENCE BETWEEN DIAGONAL MEASUREMENTS TO 1/8 DOOR INSTALLATION: INSTALL DOORS WITHOUT WARP OR RACK. ADJUST DOORS AND HARDWARE TO PROVIDE TIGHT FIT AT CONTACT POINTS AND SMOOTH OPERATION

SECTION 08 4214 - INTERIOR ALUMINUM ENTRANCE DOORS SUBMITTALS: PRODUCT DATA, SHOP DRAWINGS, AND COLOR SAMPLES.

DOORS: INCLUDE HARDWARE SCHEDUL PRODUCT STANDARD: KAWNEER NORTH AMERICA; AN ALCOA COMPANY; 350 STANDARD ACCESSIBLE ENTRANCES (DOORS): COMPLY WITH ICC/ANSI A117. ALUMINUM: ALLOY AND TEMPER RECOMMENDED BY MANUFACTURER FOR TYPE OF USE AND FINISH INDICATED; ASTM B 209 (ASTM B 209M) SHEET; ASTM B 221 (ASTM B 221M) EXTRUSIONS.

GLAZING: AS SPECIFIED IN DIVISION 08 SECTION "GLAZING. FRAMING MEMBERS: MANUFACTURER'S STANDARD EXTRUDED-ALUMINUM FRAMING MEMBERS OF THICKNESS REQUIRED AND REINFORCED AS REQUIRED TO SUPPORT IMPOSED LOADS. DOORS: 1-3/4-INCH- (44.5-MM-) THICK GLAZED DOORS WITH MINIMUM 0.125-INCH- (3.2-MM-) THICK. EXTRUDED-ALUMINUM TUBULAR RAIL AND STILE MEMBERS. MECHANICALLY FASTEN CORNEF WITH REINFORCING BRACKETS THAT ARE DEEPLY PENETRATED AND FILLET WELDED OR THAT INCORPORATE CONCEALED TIE RODS. PROVIDE SNAP-ON EXTRUDED-ALUMINUM GLAZING STOPS, AND PREFORMED GASKETS.

ACCESSIBLE DOORS: SMOOTH SURFACED FOR WIDTH OF DOOR IN AREA WITHIN 10 INCHES (255 MM) ABOVE FLOOR OR GROUND PLANE. DOOR DESIGN: MEDIUM STILE; 3-1/2-INCH (88.9-MM) NOMINAL WIDTH.

HARDWARE: AS SPECIFIED IN DIVISION 08 SECTION "DOOR HARDWARE." FASTENERS AND ACCESSORIES: COMPATIBLE WITH ADJACENT MATERIALS. CORROSION RESISTANT, NONSTAINING, AND NONBLEEDING. USE CONCEALED FASTENERS EXCEPT FOR PPLICATION OF DOOR HARDWARE FABRICATION: FABRICATE FRAMING IN PROFILES INDICATED FOR FLUSH GLAZING (WITHOU ROJECTING STOPS). PROVIDE SUBFRAMES AND REINFORCING OF TYPES INDICATED OR, IF NOT INDICATED, AS REQUIRED FOR A COMPLETE SYSTEM. FACTORY-ASSEMBLE COMPONENTS TO GREATEST EXTENT POSSIBLE. DISASSEMBLE COMPONENTS ONLY AS NECESSARY FOR SHIPMENT AND INSTALLATION. DOOR FRAMING: REINFORCE TO SUPPORT IMPOSED LOADS. FACTORY ASSEMBLE DOOR AND

FRAME UNITS AND FACTORY INSTALL HARDWARE TO GREATEST EXTENT POSSIBLE. REINFORCE DOOI

AND FRAME UNITS FOR HARDWARE INDICATED. CUT, DRILL, AND TAP FOR FACTORY-INSTALLED HARDWARE BEFORE FINISHING COMPONENTS. ALUMINUM FINISH: CLASS II, COLOR ANODIC FINISH; AA-M12C22A32/A34; COMPLYING WITH AAMA 611. TO MATCH BUILDING STANDARD.

ISOLATION OF DISSIMILAR MATERIALS: ISOLATE METAL SURFACES IN CONTACT WITH INCOMPATIBLE MATERIALS, INCLUDING WOOD, BY PAINTING CONTACT SURFACES WITH BITUMINOUS COATING OR PRIMER, OR BY APPLYING SEALANT OR TAPE RECOMMENDED BY MANUFACTURER. INSTALLATION TOLERANCES: INSTALL FRAMING COMPONENTS TRUE IN ALIGNMENT WITH STABLISHED LINES AND GRADES TO THE FOLLOWING TOLERANCES: VARIATION FROM PLANE: LIMIT TO 1/8 INCH IN 12 FEET (3 MM IN 3.7 M); 1/4 INCH (6 MM) OVER TOTAL LENGTH. ALIGNMENT: FOR SURFACES ABUTTING IN LINE, LIMIT OFFSET TO 1/16 INCH (1.5 MM). FOR SURFACES MEETING AT CORNERS, LIMIT OFFSET TO 1/32 INCH (0.8 MM). DIAGONAL MEASUREMENTS: LIMIT DIFFERENCE BETWEEN DIAGONAL MEASUREMENTS TO 1/8 . DOOR INSTALLATION: INSTALL DOORS WITHOUT WARP OR RACK. ADJUST DOORS AND HARDWARE TO PROVIDE TIGHT FIT AT CONTACT POINTS AND SMOOTH OPERATION.

SECTION 08 7100 - DOOR HARDWARE

SUBMIT FINAL HARDWARE SCHEDULE ORGANIZED BY "HARDWARE SETS" AND PRODUCT DATA FOR EACH ITEM OF DOOR HARDWARE. FURNISH TEMPLATES TO EACH FABRICATOR OF DOORS AND FRAMES AS REQUIRED FOR HARDWARE PREPARATION.

FOR FIRE_RATED OPENINGS PROVIDE HARDWARE TESTED AND LISTED BY UL OR FM (NFPA

PROVIDE DOOR HARDWARE THAT COMPLIES WITH APPLICABLE REQUIREMENTS OF ADA, ANSI A117.1 AND STATE HANDICAP REQUIREMENTS.

BUTT HINGES: ANSI/BHMA A156.1, FULL MORTISE, SIZE AND NUMBER AS RECOMMENDED BY HINGE MANUFACTURER. BALL BEARING HINGES FOR DOORS WITH CLOSERS.

PIVOTS: ANSI/BHMA A 156.4, GRADE 1. FULL-MORTISE, SINGLE-ACTING OR DOUBLE-ACTING, CENTER OR OFFSET, MOUNTING, LEAD-LINED. TOP PIVOT: WALKING-BEAM TYPE WITH RETRACTABLE PIN AND OIL-IMPREGNATED BRONZE

STANDARD INTERMEDIATE PIVOT: OIL-IMPREGNATED BRONZE BEARING. BOTTOM PIVOT: THRUST BALL OR NEEDLE BEARING. DESIGN STANDARD: IVES 7226 PIVOT SET

KEYING: REVIEW KEYING SYSTEM WITH OWNER AND PROVIDE LOCKS MASTERKEYED T CYLINDERS: EQUIP LOCKS WITH MANUFACTURER'S STANDARD 6-PIN TUMBLER CYLINDERS

LOCKSETS - MORTISE TYPE LEVER HANDLE: AHSI/BHMA A156.13 HEAVY DUTY CONSTRUCTION WITH WROUGHT CASES. SUPPLY LOCKSETS UTILIZING DEADBOLTS WITH MINIMUM 1 INCH THROW. LEVER HANDLES: CAST OR FORGED BRASS, BRONZE OR STAINLESS STEEL SUPPORTED B

INTERNAL SPRING. SPINDLES: SQUARE, "SPLIT" (WITH ALL_THREAD CONNECTOR), SET_SCREW RECEIVER/RETAINER NOTCH. FURNISH LOCKS AND LATCHES WITH WROUGHT BOX STRIKES. PROVIDE LATCH STRIKE PLATES WITH MINIMUM LIP PROJECTION.

KNURLING: OUTSIDE TRIM OF LOCKSETS FOR EQUIPMENT ROOMS. TRIM ASSEMBLY STYLE SELECTION: MATCH EXISTING.

LOCKSETS - CYLINDRICAL TYPE _ LEVER HANDLE: ANSI/BHMA A 156.2, GRADE 1, EXCEPT CYCLE TESTING SHALL BE 2 MILLION CYCLES MINIMUM. LEVER HANDLES: CAST OR FORGED BRASS, BRONZE OR STAINLESS STEEL SUPPORTED BY INTERNAL SPRING. SPINDLES: SQUARE, "SPLIT" (WITH ALL_THREAD CONNECTOR), SET_SCREW

RECEIVER/RETAINER NOTCH. PROVIDE LATCH STRIKE PLATES WITH MINIMUM LIP PROJECTION. KNURLING: OUTSIDE TRIM OF LOCKSETS FOR EQUIPMENT ROOMS.

TRIM ASSEMBLY STYLE SELECTION: MATCH EXISTING.

1. PUSH/PULL UNITS: PROVIDE MANUFACTURER'S STANDARD FASTENERS, THRU-BOLTED FOR MATCHED PAIRS BUT NOT FOR SINGLE UNITS. TREGO P163/PP605

- EXIT/PANIC DEVICES: ANSI/BHMA A156.3. VON DUPRIN 99 SERIES. TOUCH BAR TYPE. PROVIDE CONCEALED TYPE VERTICAL ROD DEVICES ON PAIRS OF HOLLOW METAL DOORS. PROVIDE SURFACE MOUNTED VERTICAL ROD DEVICES ON EACH LEAF OF PAIRS OF WOOD
- PROVIDE RIM TYPE DEVICES ON SINGLE DOORS ONLY. PROVIDE OUTSIDE TRIM AS REQUIRED AND AS SCHEDULED.
- OVERHEAD CLOSERS: ANSI/BHMA A156.4. LCN 4010/4110 NON_SIZED, NON_HANDED WITH
- MINIMUM 1-1/2 INCH DIAMETER CYLINDER FULL COVER, FULL RACK AND PINION, INDEPENDENT SPE AND LATCHING REGULATING VALVES, ADJUSTABLE BACK, CHECK FEATURE, 180 DEG, DOOR OPENING
- 4. FLUSH BOLTS: ANSI/DHI A115.16. GLYNN_JOHNSON _ FB6/FB6W WITH DP2 (DP1 AT HRESHOLDS)

15. AUTOMATIC FLUSH BOLTS: ANSI/DHI A115.3. GLYNN_JOHNSON _ FB7/FB8 WITH DP2 (DP1 AT THRESHOLDS) UL LISTED.

16. COORDINATORS: GLYNN_JOHNSON _ SERIES COR UL LISTED.

WALL STOP: WROUGHT OR DIE CAST BRASS, BRONZE OR STAINLESS STEEL WITH GRAY CONVEX REPLACEABLE RUBBER. GLYNN_JOHNSON; 50W.

- 8. FLOOR STOPS: HEAVY DUTY CAST BRASS, BRONZE OR ALUMINUM WITH GRAY REPLACEABLE RUBBER. GLYNN_JOHNSON; FB13X/FB14X. 19. OVERHEAD STAYS: SURFACE MOUNTED, MEDIUM DUTY, BRONZE, STOP ONLY AT INTERIOR;
- HEAVY DUTY, BRONZE, WITH HOLDOPEN AT EXTERIOR. GLYNN JOHNSON: 360/90M.
- 20. DOOR SILENCERS: GRAY RUBBER. GLYNN_JOHNSON; 64/65. ELECTROMAGNETIC DOOR HOLDERS: LCN 850.
- 22. KICK, MOP AND ARMOR PLATES: 16 GAGE, NOMINAL WIDTH OF DOOR LESS 1-1/2 INCH ON PUS SIDE AND NOMINAL WIDTH OF DOOR LESS 1/2 INCH ON PULL SIDE.
- WEATHERSTRIPPING AND SEALS: EXTERIOR THRESHOLD: PEMKO #2005AV, 5 INCHES WIDE
- CARPET THRESHOLD: PEMKO #2364, 4 INCHES WIDE. SILL STRIP/SADDLE: ZERO #339, WITH ZERO #1672.
- JAMBS AND HEAD WEATHERSTRIP: ZERO #328A. RAIN DRIP: ZERO #11. ALUMINUM.
- MEETING RAIL WEATHERSTRIP: ZERO #328A. AUTOMATIC DOOR BOTTOMS: ZERO #360, (NON-RATED). #361 (RATED). ADJUSTABLE DOOR STOPS: ZERO #170 (NON-RATED), ZERO 475A (RATED).
- SOUND SEAL: ZERO #328. ALUMINUM WITH NEOPRENE GASKET SMOKE SEAL: PEMKO #S88, SILICONE RUBBER, UL CLASSIFIED.
- SMOKE ASTRAGAL: PEMKO #355AS, UL CLASSIFIED.

FINISHES: MATCH EXISTING.

25 MOUNT HARDWARE UNITS AT HEIGHTS INDICATED IN DOOR AND HARDWARE INSTITUTE APPLICABLE PUBLICATIONS, EXCEPT AS SPECIFICALLY INDICATED OR REQUIRED TO COMPLY WITH GOVERNING REGULATIONS.

26 INSTALL EACH HARDWARE ITEM IN COMPLIANCE WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. DO NOT INSTALL SURFACE-MOUNTED ITEMS UNTIL FINISHES HAVE BEEN COMPLETED ON SUBSTRATES INVOLVED.

DOOR HARDWARE SCHEDULE Hardware items are referenced in the following hardware. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.

Hardware Group No. 103 EACH TO HAVE: QTYDESCRIPTIONCATALOG NUMBERFINISHMFR3EAHINGE5BB1 4.5 X 4.5652IVE1EAOFFICE/ENTRY

LOCKL9050T 17A L583-363626SCH1EAFSIC CORE23-030626SCH1EAWALL STOPWS406/407CCV630IVE1EAGASKETING488S PSA H & J (USE SILENCERS @ NON-RATED DOORS)BKZER Hardware Group No. 201 EACH TO HAVE:

QTYDESCRIPTIONCATALOG NUMBERFINISHMFR3EAHINGE5BB1 4.5 X 4.5652IVE1EASTOREROOM LOCKI 9080T 17A626SCH1EAFSIC CORE23-030626SCH1EASURFACE CLOSER4040XP RW/PA X MTG BRK SPCR & PLATE AS REQ689LCN1EAKICK PLATE8400 10" X 2" LDW B-CS630IVE1EAWALL STOPWS406/407CCV630IVE1EAGASKETING488S PSA H & J (USE SILENCERS @ NON-RATED

Hardware Group No. 201C EACH TO HAVE: QTYDESCRIPTIONCATALOG NUMBERFINISHMFR3EAHINGE5BB1 4.5 X 4.5652IVE1EASTOREROOM OCKL9080T 17A626SCH1EAFSIC CORE23-030626SCH1EASURFACE CLOSER4040XP SCUSH X MTG B SPCR & PLATE AS REQ689LCN1EAKICK PLATE8400 10" X 2" LDW B-CS630IVE1EAGASKETING488S PSA H & J (USE SILENCERS @ NON-RATED DOORS)BKZER

Hardware Group No. 341 EACH TO HAVE: QTYDESCRIPTIONCATALOG NUMBERFINISHMFR3EAHINGE5BB1 4.5 X 4.5652IVE1EAPRIVACY LOCKL904

17A L583-363 L283-722 - INDICATOR626SCH1EASURFACE CLOSER4040XP RW/PA X MTG BRKT, SPCR & PLATE AS REQ689LCN1EAKICK PLATE8400 10" X 2" LDW B-CS630IVE1EAW OPWS406/407CCV630IVE1EAGASKETING488S PSA H & J (USE SILENCERS @ NON-RATED DOORS)BKZER-Locked/Unlocked Indicator on outside of door

Hardware Group No. 503 EACH TO HAVE: QTYDESCRIPTIONCATALOG NUMBERFINISHMFR3EAHINGE5BB1 4.5 X 4.5652IVE1EACLASSROOM LOCKL9070T 17A626SCH1EAFSIC CORE23-030626SCH1EAW

STOPWS406/407CCV630IVE1EAGASKETING488S PSA H & J (USE SILENCERS @ NON-RATED Hardware Group No. 715A EACH TO HAVE:

QTYDESCRIPTIONCATALOG NUMBERFINISHMFR1EACONT, HINGE112XY HEIGHT AS REQ628IVE1EAPA HARDWARE33A-NL-OP LENGTH AS REQ626VON1EARIM CYLINDER20-057 ICX W/CONST. CORE626SCH1EAFSIC CORE23-030626SCH1EA90 DEG OFFSET PULL8190-O 10"630IVE1EASURFAC CLOSER4040XP SCUSH X MTG BRKT, SPCR & PLATE AS REQ689LCN1SETSEALPERIMETER SEAL BY FRAME MANUFACTURER1EADOOR SWEEP8198AA LENGTH AS REQAAZER1EATHRESHOLD65A LENGTH AS REQAZER Hardware Group No. 800AV

EACH TO HAVE: QTYDESCRIPTIONCATALOG NUMBERFINISHMFR2EACONT. HINGE112XY HEIGHT AS REQ628IVE2EADUMMY PUSH BAR330 LENGTH AS REQ626VON2EA90 DEG OFFSET PULL8190-O 10"630IVE2EASURFACE CLOSER4040XP SCUSH X MTG BRKT, SPCR & PLATE AS REQ689LCN1SETSEALPERIMETER SEAL BY FRAME MANUFACTURER1SETASTRAGALMEETING STILE SEAL BY DOOR MANUFACTURER

Hardware Group No. C711A EACH TO HAVE:

QTYDESCRIPTIONCATALOG NUMBERFINISHMFR1EACONT. HINGE112XY EPT HEIGHT A REQ628IVE1EAPOWER TRANSFEREPT10 CON689VON1EAELEC HARDWARERX-QEL-33A-NL-OP-CON LENGTH AS REQ626VON1EARIM CYLINDER20-057 ICX W/CONST CORE626SCH1EAFSIC CORE23-030626SCH1EA90 DEG OFFSET PULL8190-O 10"630IVE1EASURFA CLOSER4040XP RW/PA X MTG BRKT, SPCR & PLATE AS REQ689LCN1EAWA STOPWS406/407CCV630IVE1SETSEALPERIMETER SEAL BY FRAME MANUFACTURER1EAHARNESS (II DOOR)ALLEGION CONNECT TYPE & LENGTH AS REQSCH1EAHARNESS (TO POWER SUPPLY)CON-6W CONNECTION LEADSSCH1EACREDENTIAL READERCREDENTIAL READER BY ANOTHER ECTION1EADOOR CONTACT679-05 TYPE AS REQWHTSCE1EAPOWER SUPPLYPOWER SUPPLY FOR CARD READER BY ANOTHER SECTION1EAPOWER SUPPLYPS902 120/240 VAC (COORDINATE PS WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)LGRSCE-INGRESS BY THE ARD READER OR KEY OVERRIDE. -FREE EGRESS BY THE PUSH PAD.

Hardware Group No. C714A

EACH TO HAVE: QTYDESCRIPTIONCATALOG NUMBERFINISHMFR2EACONT. HINGE112XY EPT HEIGHT REQ628IVE2EAPOWER TRANSFEREPT10 CON689VON1EAELEC PANIC HARDWARERX-QEL-3347A-EO-COI LENGTH & HEIGHT AS REQ626VON1EAELEC PANIC HARDWARERX-QEL-3347A-NL-OP-CON LENGTH & HEIGHT AS REQ626VON1EARIM CYLINDER20-057 ICX W/CONST. CORE626SCH1EAFS CORE23-030626SCH2EA90 DEG OFFSET PULL8190-O 10"630IVE2EASURFACE CLOSER4040XP SCUSH 3 MTG BRKT, SPCR & PLATE AS REQ689LCN1SETSEALPERIMETER SEAL BY FRAM MANUFACTURER1SETASTRAGALMEETING STILE SEAL BY DOOR MANUFACTURER2EADOOR SWEEP8198AA LENGTH AS REQAAZER1EATHRESHOLD65A LENGTH AS REQAZER2EAHARNESS (II DOOR)ALLEGION CONNECT TYPE & LENGTH AS REQSCH2EAHARNESS (TO POWER SUPPLY)CON-6W -CONNECTION LEADSSCH1EACREDENTIAL READERCREDENTIAL READER BY ANOTHE SECTION2EADOOR CONTACT679-05 TYPE AS REQWHTSCE1EAPOWER SUPPLYPOWER SUPPLY FOR CARD READER BY ANOTHER SECTION1EAPOWER SUPPLYPS902 900-2RS 120/240 VAC (COORDINATE PS WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)VON-INGRESS BY THE CARD READER OR KEY OVERRIDE.

-FREE EGRESS BY THE PUSH PADS Hardware Group No. C715A

EACH TO HAVE: QTYDESCRIPTIONCATALOG NUMBERFINISHMFR1EACONT. HINGE112XY EPT HEIGHT AS TRANSFEREPT10 CON689VON1EAELEC REQ628IVE1EAPOWER HARDWARERX-QEL-33A-NL-OP-CON LENGTH AS REQ626VON1EARIM CYLINDER20-057 ICX W/CONST. DRE626SCH1EAFSIC CORE23-030626SCH1EA90 DEG OFFSET PULL8190-O 10"630IVE1EASURFA CLOSER4040XP SCUSH X MTG BRKT, SPCR & PLATE AS REQ689LCN1SETSEALPERIMETER SEAL B' FRAME MANUFACTURER1EADOOR SWEEP8198AA LENGTH AS REQAAZER1EATHRESHOLD65A LENGTH AS REQAZER1EAHARNESS (IN DOOR)ALLEGION CONNECT TYPE & LENGTH AS REQSCH1EAHARNESS (TO POWER SUPPLY)CON-6W - CONNECTION LEADSSCH1EACREDENTIAL READERCREDENTIAL READER BY ANOTHER SECTION1EADOOR CONTACT679-05 TYPE AS REQWHTSCE1EAPOWER SUPPLYPOWER SUPPLY FOR CARD READER BY ANOTHER SECTION1EAPOWER SUPPLYPS902 120/240 VAC

(COORDINATE PS WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)LGRSCE-INGRESS BY THE CARD READER OR KEY OVERRIDE. -FREE EGRESS BY THE PUSH PAD.

SECTION 08 7121 - INTERIOR AUTOMATIC DOOR OPERATORS PRODUCT DATA: MANUFACTURER'S TECHNICAL LITERATURE FOR EACH PRODUCT AND SYSTEM . SHOP DRAWINGS: SHOW DETAILS OF FABRICATION AND INSTALLATION, INCLUDING PLANS,

ELEVATIONS, SECTIONS, DETAILS OF COMPONENTS AND ATTACHMENTS TO OTHER WORK. DISTINGUISH BETWEEN SHOP AND FIELD-ASSEMBLED WORK WARRANTY PERIOD: TWO YEARS FROM DATE OF SUBSTANTIAL COMPLETION INITIAL MAINTENANCE SERVICE: BEGINNING AT SUBSTANTIAL COMPLETION, PROVIDE 12

- MONTHS' FULL MAINTENANCE BY SKILLED EMPLOYEES OF AUTOMATIC DOOR OPERATOR INSTALLER. INCLUDE QUARTERLY PLANNED AND PREVENTIVE MAINTENANCE, REPAIR OR REPLACEMENT OF WORN OR DEFECTIVE COMPONENTS, LUBRICATION, CLEANING, AND ADJUSTING AS REQUIRED FOR PROPER DOOR OPERATION. PROVIDE PARTS AND SUPPLIES THE SAME AS THOSE USED IN THE MANUFACTURE AND INSTALLATION OF ORIGINAL EQUIPMENT.
- ENGAGE A CERTIFIED INSPECTOR TO PERFORM SAFETY INSPECTION AFTER EACH DJUSTMENT OR REPAIR, AND AT END OF MAINTENANCE PERIOD. FURNISH COMPLETED INSPECTION REPORTS TO OWNER. INCLUDE 24-HOUR-PER-DAY, SEVEN-DAY-PER-WEEK EMERGENCY CALLBACK SERVICE.
- MANUFACTURERS AND PRODUCTS BESAM. DIV OF ASSA ABLOY ENTRANCE SYSTEMS: SW200 SERIES LCN CLOSERS; DIV OF ALLEGION PLC (FORMERLY INGERSOLL-RAND); SENIOR SWING SERIES
- RECORD USA: 8100 SERIES STANLEY ACCESS TECHNOLOGIES, LLC; MAGIC-FORCE SERIES. STANDARD: BHMA A156.19.
- PERFORMANCE REQUIREMENTS: OPENING FORCE IF POWER FAILS: NOT MORE THAN 15 LBF (67 N) REQUIRED TO RELEASE A TCH IF PROVIDED, NOT MORE THAN 30 LBF (133 N) REQUIRED TO MANUALLY SET DOOR IN MOTION, D NOT MORE THAN 15 LBF (67 N) REQUIRED TO FULLY OPEN DOOR. ENTRAPMENT PROTECTION: NOT MORE THAN 15 LBF (67 N) REQUIRED FOR PREVENTING
- PPED DOOR FROM CLOSING OR OPENING CONFIGURATION: OPERATOR TO CONTROL SINGLE OR PAIR OF SWINGING DOORS AND AS TRAFFIC PATTERN: TWO WAY TRAFFIC AND DOOR CONFIGURATION AS INDICATED ON OPERATOR MOUNTING: SURFACE.
- OPERATION: POWER OPENING AND SPRING CLOSING. PROVIDE TIME DELAY FOR DOOR TO REMAIN OPEN BEFORE INITIATING CLOSING CYCLE AS REQUIRED BY BHMA A156.19. WHEN NOT IN

AUTOMATIC MODE, DOOR OPERATOR SHALL FUNCTION AS MANUAL DOOR CLOSER, WITH OR WITH ELECTRICAL POWER. 9. ELECTROMECHANICAL OPERATING SYSTEM: SELF-CONTAINED UNIT POWERED B' PERMANENT-MAGNET DC MOTOR: WITH CLOSING SPEED CONTROLLED MECHANICALLY BY GEAR T AND DYNAMICALLY BY BRAKING ACTION OF ELECTRIC MOTOR. CONNECTIONS FOR POWER AND ACTIVATION- AND SAFETY-DEVICE WIRING, AND MANUAL OPERATION INCLUDING SPRING CLOSING WHEN POWER IS OFF. 10. MICROPROCESSOR CONTROL UNIT: SOLID-STATE CONTROLS. FEATURES: ADJUSTABLE OPENING AND CLOSING SPEED. ADJUSTABLE OPENING AND CLOSING FORCE. ADJUSTABLE BACKCHECK. ADJUSTABLE HOLD-OPEN TIME FROM ZERO TO 30 SECONDS. ADJUSTABLE TIME DELAY. ADJUSTABLE ACCELERATION OBSTRUCTIONS RECYCLE. EXPOSED FINISH: CLEAR ANODIC FINISH: AAMA 611, AA-M12C22A31, CLASS II, 0.010 MM OR 11. GENERAL: PROVIDE ACTIVATION DEVICES IN ACCORDANCE WITH BHMA STANDARDS, FOR CONDITION OF EXPOSURE AND FOR LONG-TERM, MAINTENANCE-FREE OPERATION UNDER NORM TRAFFIC LOAD FOR TYPE OF OCCUPANCY INDICATED. COORDINATE ACTIVATION AND SAFETY DEVIC WITH DOOR OPERATION AND DOOR OPERATOR MECHANISMS. 12. PUSH-PLATE SWITCH: MOMENTARY-CONTACT DOOR CONTROL SWITCH WITH FLAT PUSH-PLAT ACTUATOR • CONFIGURATION: SQUARE PUSH PLATE WITH 4 BY 4 IN (100 BY 100 MM) JUNCTION BOX. MOUNTING: RECESS-MOUNTED, SEMI-FLUSH IN WALL. PUSH-PLATE MATERIAL: STAINLESS STEEL AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE. MESSAGE: "PUSH TO OPEN. LOCATION: LOCATE AS INDICATED ON DRAWINGS, BUT A MINIMUM OF 4 FT. (1.2 M) FROM DOC 13. GENERAL: INSTALL COMPLETE AUTOMATIC DOOR OPERATORS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS, INCLUDING ACTIVATION AND SAFETY DEVICES, CONTRO WIRING, AND REMOTE POWER UNITS IF ANY; CONNECTION TO THE BUILDING'S POWER SUPPLY; ANI SIGNAGE DO NOT INSTALL DAMAGED COMPONENTS. FIT JOINTS TO PRODUCE HAIRLINE JOINTS FREE BURRS AND DISTORTION. INSTALL OPERATORS TRUE IN ALIGNMENT WITH ESTABLISHED LINES AND DOOR GEOMETRY WITHOUT WARP OR RACK. ANCHOR SECURELY IN PLACE. LOW-ENERGY DOOR OPERATOR INSTALLATION STANDARD: BHMA A156.19.

FOR TYPE OF DOOR OPERATOR AND DIRECTION OF PEDESTRIAN TRAVEL. 16. ADJUST AUTOMATIC DOOR OPERATORS TO FUNCTION SMOOTHLY, AND LUBRICATE AS RECOMMENDED BY MANUFACTURER; COMPLY WITH REQUIREMENTS OF APPLICABLE BHMA 17. AFTER COMPLETING INSTALLATION OF EXPOSED, FACTORY-FINISHED AUTOMATIC DOOR OPERATORS, INSPECT EXPOSED FINISHES ON DOORS AND OPERATORS. REPAIR DAMAGED FINISH MATCH ORIGINAL FINISH. 18. READJUST AUTOMATIC DOOR OPERATORS AFTER REPEATED OPERATION OF COMPLETED INSTALLATION EQUIVALENT TO THREE DAYS' USE BY NORMAL TRAFFIC (100 TO 300 CYCLES). 19. OCCUPANCY ADJUSTMENT: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTAN COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTING SYSTEM TO SUIT ACTUAL OCCUPIED CONDITIONS. PROVIDE UP TO TWO VISITS TO PROJECT DURING OTHER-THAN-NORMAL OCCUPAN HOURS FOR THIS PURPOSE. 20. ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE, AND MAINTAIN AUTOMATIC DOOR OPERATORS

LOW-VOLTAGE SECTION.

14. ACTIVATION DEVICES: INSTALL DEVICES AND WIRING ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS AND CITED BHMA STANDARD FOR TYPE OF OPERATOR AND DIRECTION OF PEDESTRIAN TRAVEL. CONNECT ACTIVATION-DEVICE WIRING ACCORDING TO DIVISION 26 15. SIGNAGE: APPLY ON BOTH SIDES OF EACH DOOR AS REQUIRED BY CITED BHMA STANDAR

SPECIFICATIONS

SECTION 08 8030 - GLAZING	EDGES, NON-VITREOUS BODY.
1. QUALITY STANDARDS: COMPLY WITH PUBLISHED RECOMMENDATIONS OF GLASS PRODUCT MANUFACTURERS, "GANA GLAZING MANUAL," AAMA, AND IGMA AS APPLICABLE TO PRODUCTS INDICATED, EXCEPT WHERE MORE STRINGENT REQUIREMENTS ARE INDICATED.	 CERAMIC MOSAIC TILE: ANSI A 137.1, DOMESTIC, FORMED BY DUST-PRESSED METHOD, PORCELAIN, IMPERVIOUS (ABSORPTION LESS THAN 0.5 PERCENT), 1/4 INCH THICK, CUSHION EDGES, FACTORY MOUNTED.
2. SAFETY GLASS: PRODUCTS COMPLYING WITH ANSI Z97.1 AND TESTING REQUIREMENTS OF 16 CFR PART 1201 FOR CATEGORY II MATERIALS.	6. MARBLE THRESHOLDS: ASTM C 503 WHITE, HONED MARBLE COMPLYING WITH MIA GROUP "A" REQUIREMENTS FOR SOUNDNESS.
 FLOAT GLASS: ASTM C 1036, TYPE I, CLASS 1 (CLEAR) QUALITY Q3: HEAT_TREATED FLOAT GLASS: UNCOATED, CLEAR, HEAT_TREATED FLOAT GLASS: ASTM C 1048. CONDITION A. TYPE I, CLASS 1, QUALITY Q3, KIND HS OR FT AS INDICATED. OR REQUIRED FOR 	SETTING MATERIALS: PROVIDE SETTING MATERIALS AS FOLLOWS: PORTLAND CEMENT MORTAR: MATERIALS COMPLYING WITH ANSI A 108.1
SAFETY GLAZING.REFLECTIVE-COATED VISION GLASS: ASTM C 1376, COATED BY PYROLYTIC PROCESS OR	 ACRYLIC LATEX ADDITIVE (WATER EMULSION) REPLACING PART OR ALL OF GAUGING WATER. LATEX_PORTLAND CEMENT MORTAR: MATERIALS COMPLYING WITH ANSI A118.4, AND DRY_SET PORTLAND CEMENT MORTAR COMPLYING WITH ANSI A118.1.
VACUUM DEPOSITION (SPUTTER-COATING) PROCESS, STANDARD OF MANUFACTURER, AND COMPLYING WITH OTHER REQUIREMENTS AS SPECIFIED.	ORGANIC TILE ADHESIVE: ANSI A136.1, TYPE I. GROUTING MATERIALS: PROVIDE GROUTING MATERIALS AS FOLLOWS: LITER DODULT OF VEHICLE OF
 INSUEATING-GLASS UNITS. PACTORT-ASSEMBLED UNITS CONSISTING OF SEALED LITES OF GLASS SEPARATED BY A DEHYDRATED INTERSPACE, AND COMPLYING WITH ASTM E 774 FOR CLASS CBA UNITS. PROVIDE EDGE SPACER OF ANODIZED OR MILL-FINISHED ALUMINUM, CONTINUOUSLY BENT AND 	LATEX_PORTLAND CEMENT GROUT: ANSI A118.6 WITH ACYLIC LATEX ADDITIVE. CHEMICAL_RESISTANT EPOXY GROUT: ANSI A118.3.
MECHANICALLY JOINTED. PROVIDE DESICCANT TO ENSURE MAXIMUM ABSORPTION OF MOISTURE AND HYDROCARBONS LIBERATED FROM THE EDGE SEALANT DURING THE CURING CYCLE.	 ELASTOMERIC SEALANTS: WALL JOINTS: ONE_PART MILDEW_RESISTANT SILICONE SEALANTS: ASTM C 920, TYPE S, GRADE NS, CLASS 25. FLOOR JOINTS: MULTIPART URETHANE SEALANTS: ASTM C 920, TYPE M, GRADE P, CLASS 25.
PROVIDE DUAL SEAL CONSISTING OF POLYISOBUTYL (BUTYL) PRIMARY SEAL AND SECONDARY SEAL OF SILICONE. LAMINATED GLASS: ASTM C 1172, AND COMPLYING WITH TESTING REQUIREMENTS IN 16 CFR	11. WATERPROOFING MEMBRANE: THE NOBLE COMPANY; CHLORALOY 240.
1201 FOR CATEGORY II MATERIALS, AND WITH OTHER REQUIREMENTS SPECIFIED. USE MATERIALS THAT HAVE A PROVEN RECORD OF NO TENDENCY TO BUBBLE, DISCOLOR, OR LOSE PHYSICAL AND MECHANICAL PROPERTIES AFTER FABRICATION AND INSTALLATION. CONSTRUCTION: LAMINATE GLASS WITH POLYVINYL BUTYRAL (PVB) INTERLAYER OR CAST-IN-PLACE AND CURED-TRANSPARENT-RESIN INTERLAYER TO COMPLY WITH INTERLAYER MANUFACTURER'S WRITTEN RECOMMENDATIONS.	INSTALLATION: COMPLY WITH ANSI A108.1 AND 108.4 THROUGH A108.10, AS APPLICABLE FOR TYPE OF TILE, SETTING MATERIALS, GROUT, AND METHODS OF INSTALLATION INDICATED. COMPLY WITH MANUFACTURER'S INSTRUCTIONS FOR APPLICATION OF PROPRIETARY MATERIALS SECTION 09 5113 - ACOUSTICAL PANEL CEILINGS
 INTERLAYER THICKNESS: MINIMUM 0.030 IN (0.75 MM) UNLESS OTHERWISE INDICATED. SLOPED GLAZING: 0.030 IN (0.75 MM) TO 0.060 IN (1.5 MM); AS NEEDED TO COMPLY WITH PERFORMANCE REQUIREMENTS. 	1. SUBMIT PRODUCT DATA FOR EACH TYPE OF ACOUSTICAL PANEL AND SUSPENSION SYSTEM REQUIRED.
WIND BORNE DEBRIS IMPACT RESISTANCE: 0.000 IN (1.5 MM) TO 0.090 IN (2.2 MM); AS NEEDED TO COMPLY WITH PERFORMANCE REQUIREMENTS. HEAT STRENGTHENED AND FULLY TEMPERED GLAZING: 0.060 IN (1.5 MM) MINIMUM. INTERLAYER COLOR: CLEAR UNLESS OTHERWISE INDICATED.	 FIRE_TEST_RESPONSE CHARACTERISTICS: ASTM E 1264, CLASS A. STANDARD FOR SEIGNIC RESTRAINT: COMPLY WITH ASTM E 590 UNLESS MORE STRINGENT
TYPICAL INTERLAYER - MANUFACTURERS AND PRODUCTS: A. DUPONT; BUTACITE. B. SOLUTIA INC.; SAFLEX.	ACOUSTICAL PANEL: PROVIDE MANUFACTURERS' STANDARD UNITS THAT COMPLY WITH ASTM
 TINTED FLOAT GLASS: CLASS 2, COMPLYING WITH OTHER REQUIREMENTS SPECIFIED. BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PPG INDUSTRIES, INC. "OPTIBLUE" TINT COLOR: BLUE. 	 E 1264 CLASSIFICATIONS INDICATED. FED. SPEC. SS_S_118B, CLASS A. SURFACE BURNING CHARACTERISTICS (PER ASTM E 84/NFPA 255/UL723): FLAME SPREAD 25 OR LESS; SMOKE DEVELOPED 50 OR LESS. SELECTION:
VISIBLE LIGHT TRANSMITTANCE: 64 PERCENT MINIMUM. ELASTOMERIC GLAZING SEALANTS: ASTM C 920, TYPE S, GRADE NS, CLASS 25, SILICONE, COLOR AS SELECTED FROM STANDARDS COLORS	5. WIRE FOR HANGERS, BRACES AND TIES: ASTM A 641, CLASS 1 ZINC COATING, SOFT TEMPER, 12 GAGE DIAMETER.
 DENSE COMPRESSION GASKETS: ASTM C 864 OR C 1115, MOLDED OR EXTRUDED GASKETS OF EPDM, SILICONE, THERMOPLASTIC POLYOLEFIN RUBBER AND OF PROFILE AND HARDNESS REQUIRED 	 EDGE MOLDINGS AND TRIM: MANUFACTURER'S STANDARD MOLDINGS. WIDE_FACE CAPPED DOUBLE_WEB STEEL SUSPENSION SYSTEM: MAIN AND CROSS_RUNNERS
TO MAINTAIN WATERTIGHT SEAL AND COMPATIBLE WITH SEALANTS. 11. SOFT COMPRESSION GASKETS: EXTRUDED OR MOLDED CLOSED_CELL, INTEGRAL_SKINNED GASKETS OF EPDM, SILICONE, OR THERMOPLASTIC POLYOLEFIN RUBBER, COMPLYING WITH ASTM C 509, TYPE II, BLACK, AND OF PROFILE AND HARDNESS REQUIRED TO MAINTAIN WATERTIGHT SEAL AND COMPATIBLE WITH SEALANTS.	 ROLL_FORMED FROM PREPAINTED OR ELECTROLYTIC ZINC_COATED COLD_ROLLED STEEL SHEET, WITH PREFINISHED 15/16_INCH_WIDE METAL CAPS ON FLANGES: STRUCTURAL CLASSIFICATION: INTERMEDIATE_DUTY SYSTEM. END CONDITION OF CROSS_RUNNERS: OVERRIDE (STEPPED) TYPE. CAP MATERIAL AND FINISH: STEEL SHEET PAINTED WHITE. ACCEPTABLE MANUECCTURERS AND PRODUCT: APRAFDONIC WORLD INDUSTRIES INC :
12. GLAZING TAPE: AAMA 800 PREFORMED, BUTYL_BASED ELASTOMERIC TAPE, WITH OR WITHOUT SPACER ROD AS RECOMMENDED BY TAPE AND GLASS MANUFACTURERS FOR APPLICATION	ACCEPTABLE MANUFACTURER'S AND PRODUCT. ARMSTRONG WORLD INDUSTRIES, INC., PRELUDE. SEISMIC STRUTS: MANUFACTURER'S STANDARD COMPRESSION STRUTS DESIGNED TO
INDICATED. 13. MISCELLANEOUS GLAZING MATERIALS: PRODUCTS COMPLYING WITH REFERENCED GLAZING	ACCOMMODATE SEISMIC FORCES AND COMPLYING WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
GLAZING APPLICATION INDICATED.	 SEISMIC CLIPS: MANUFACTURER'S STANDARD SEISMIC CLIPS DESIGNED AND SPACED TO SECURE ACOUSTICAL PANELS IN-PLACE AND COMPLYING WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
LITES IN A MANNER THAT PRODUCES SQUARE EDGES WITH SLIGHT KERFS AT JUNCTIONS WITH INDOOR AND OUTDOOR FACES. GRIND SMOOTH AND POLISH EXPOSED GLASS EDGES.	 INSTALL ACOUSTICAL CEILING SYSTEMS TO COMPLY WITH ASTM C636 MANUFACTURER'S INSTRUCTIONS AND CISCA "CEILING SYSTEMS HANDBOOK." SPACE STEEL MAIN RUNNERS AT 4'-0" ON CENTER.
 15. INSTALLATION: COMPLY WITH COMBINED RECOMMENDATIONS OF REFERENCED STANDARDS, MANUFACTURERS OF GLASS, FILM, SEALANTS, GASKETS, AND OTHER GLAZING MATERIALS, EXCEPT WHERE MORE STRINGENT REQUIREMENTS ARE INDICATED. 16. GLASS TYPES: 	 LAY OUT SYSTEM IN REGULAR PATTERN PARALLEL OR PERPENDICULAR TO SURROUNDING WALLS. ARRANGE SYSTEM SYMMETRICALLY ABOUT ROOM CENTERLINES IN BOTH DIRECTIONS. MAKE NO BORDER LESS THAN ONE-HALF THE TILE WIDTH.
 17. INSULATING LAMINATED GLASS - SKYLIGHTS OVERALL THICKNESS: AS REQUIRED BY DESIGN. OUTROARD LITE: CLEAR HS: 1/4 IN (6 MM) THICK GLASS 	11. INSTALL HANGERS PLUMB AND FREE FROM CONTACT WITH OBJECTS WITHIN CEILING PLENUM THAT ARE NOT PART OF SUPPORTING STRUCTURAL OR CEILING SUSPENSION SYSTEM.
 AIR SPACE: 1 IN (24 MM); SILVER SPACER; SILVER SEALANT. INBOARD LITE: TWO PLIES CLEAR HS; 1/4 IN (6 MM) THICK GLASS PLIES; LAMINATED. SUNGATE 500 #3 SURFACE. 	12. SPACE HANGERS NOT MORE THAN 4'_0" O.C. ALONG EACH MEMBER, AND PROVIDE HANGERS NOT MORE THAN 8 INCHES FROM ENDS OF EACH MEMBER. 13. INSTALL EDGE MOLDINGS AT PERIMETER OF ACOUSTICAL CEILING AREA AND WHERE
 INTERLAYER090 CLEAR PVB. GLASS TYPE GL-1: LOW-E-COATED, CLEAR INSULATING GLASS. 	NECESSARY TO CONCEAL EDGES OF ACOUSTICAL UNITS. 14. INSTALL ACOUSTICAL PANELS IN COORDINATION WITH SUSPENSION SYSTEM, WITH EDGES
 OVERALL UNIT THICKNESS: 1 INCH (25 MM). THICKNESS OF EACH GLASS LITE: 6.0 MM MINIMUM. OUTDOOR LITE: FULLY TEMPERED CLEAR FLOAT GLASS. 	CONCEALED BY SUPPORT OF SUSPENSION MEMBERS. SCRIBE AND CUT PANELS TO FIT ACCURATELY AT BORDERS AND AT PENETRATIONS.
INTERSPACE CONTENT: AIR. INDOOR LITE: HEAT-STRENGTHENED CLEAR FLOAT GLASS. LOW-E COATING: SECOND SURFACE. VIVIE E LICHT TRANSMITANCE: 70 PERCENT MINIMUM	1. SUBMITTALS: PRODUCT DATA, FOR EACH TYPE, COLOR, AND PATTERN OF RESILIENT FLOOR TILE.
VISIBLE LIGHT TRANSUITTAINCE. // PERCENT MINIMUM. WINTER NIGHTTIME U-FACTOR: 0.29 MAXIMUM. SUMMER DAYTIME U-FACTOR: 0.27 MAXIMUM. SOLAR HEAT GAIN COEFFICIENT: 0.38 MAXIMUM	2. FIRE PERFORMANCE CHARACTERISTICS: CRITICAL RADIANT FLUX: 0.45 WATTS PER SQ. CM OR MORE PER ASTM E 648. SMOKE DENSITY: LESS THAN 450 PER ASTM E 662.
 SHADING COEFFICIENT: 0.44 PROVIDE SAFETY GLAZING LABELING. 	3. VINYL COMPOSITION FLOOR TILE: ASTM F 1066, CLASS 2, THROUGH-PATTERN TILE, 12 INCHES X 12 INCHES X 1/8 INCH.
 GLASS TYPE GL-2: TINTED LOW-E-COATED, INSULATING GLASS. OVERALL UNIT THICKNESS: 1 INCH (25 MM). THICKNESS OF EACH GLASS LITE: 6.0 MM MINIMUM. OUTDOOR LITE: BLUE TINTED FULLY TEMPERED FLOAT GLASS. INTERSPACE CONTENT: AIR. 	 4. SHEET VINYL FLOOR COVERINGS: PRODUCTS COMPLYING WITH ASTM F 1303, TYPE II, GRADE 1, BACKED AND UNBACKED AS SELECTED, CLASS A IF BACKED. MANUFACTURER: SEE INTERIOR FINISH SCHEDULE STYLE: SEE INTERIOR FINISH SCHEDULE COLOR: SEE INTERIOR FINISH SCHEDULE
 INDOOR LITE: CLEAR HEAT-STRENGTHENED CLEAR FLOAT GLASS. LOW-E COATING: SECOND SURFACE. VISIBLE LIGHT TRANSMITTANCE: 51 PERCENT MINIMUM. 	 5. RESILIENT BASE: FS SS-W-40, TYPE 1, 0.125 INCH THICK. MATERIAL: RUBBER
WINTER NIGHTTIME U-FACTOR: 0.29 MAXIMUM. SUMMER DAYTIME U-FACTOR: 0.27 MAXIMUM. SOLAR HEAT GAIN COEFFICIENT: 0.31 MAXIMUM. SUMMER DEFERIENT: 0.32	 HEIGHT: 2_1/2" TYPE: COVED COLOR SELECTION: SEE INTERIOR FINISH SCHEDULE
SHADING COEFFICIEN 1: 0.36 PROVIDE SAFETY GLAZING LABELING. SECTION 09 2000, CYDSUM BOADD ASSEMBLIES	6. CONCRETE SLAB PRIMER: NONSTAINING TYPE RECOMMENDED BY FLOORING MANUFACTURER.
SOUND TRANSMISSION CHARACTERISTICS: PROVIDE ASSEMBLIES WHOSE STC RATINGS WERE DETERMINED PER ASTM E 90 AND CLASSIFIED PER ASTM E 413.	 TROWELABLE UNDERLAYMENTS AND PATCHING COMPOUNDS: LATEX_MODIFIED, PORTLAND_CEMENT_BASED FORMULATION PROVIDED OR APPROVED BY FLOORING MANUFACTURER FOR APPLICATIONS INDICATED.
2. FIRE_TEST_RESPONSE CHARACTERISTICS: PROVIDE ASSEMBLIES TESTED FOR FIRE RESISTANCE PER ASTM E 119.	 ADHESIVES: WATER_RESISTANT TYPE RECOMMENDED BY FLOORING MANUFACTURER TO SUIT RESILIENT FLOOR PRODUCTS AND SUBSTRATE CONDITIONS INDICATED. VOC LIMIT: 50 G/L.
 CEILING GRID SUSPENSION SYSTEM: ASTM C 645, HEAVY DUTY WITH INTERLOCKING MAIN BEAMS AND CROSS FURRING MEMBERS. MAIN BEAMS: .024 INCH SINGLE WEB OR .020 INCH DOUBLE WEB 1-1/2" WEB AND 1-3/8" FLANGE. CROSS TEES: .020 INCH, SINGLE OR DOUBLE WEB, 1-1/2" WEB AND 1-3/8" FLANGE. ACCESSORIES: DESIGNED AS AN INTEGRAL PART OF GRID SYSTEM. 	 EXAMINE AREAS TO VERIFY THAT SUBSTRATES AND CONDITIONS ARE SATISFACTORY FOR INSTALLATION AND COMPLY WITH MANUFACTURER'S REQUIREMENTS. VERIFY THAT CONCRETE SLABS COMPLY WITH ASTM F 710 BEFORE BEGINNING INSTALLATION. MOISTURE TESTING: PERFORM EITHER ANHYDROUS CALCIUM CHLORIDE TEST (3 LB MAX) OR
 WIRE: ASTM A 641, CLASS 1, 12 GAGE GALVANIZED, SOFT ANNEALED, MILD STEEL WIRE. STEEL FRAMING FOR WALLS AND PARTITIONS: SIZES AND SPACINGS: ASTM C 754 UNDER MAXIMUM DEFLECTION AND LATERAL LOADING CONDITIONS OF L/240 AT 5 LBF PER SQ. FT. 16 INCH O.C. SPACING. 	RELATIVE HUMIDITY TEST (75% MAX) ON SLAB PRIOR TO INSTALLATION. DO NOT PROCEED WITHOUT ACCEPTABLE TEST RESULTS ACCEPTABLE TO FLOORING MANUFACTURER. IF TEST RESULTS ARE UNSATISFACTORY, THEN INSTALL MOISTURE FLOOR TREATMENT (BOSTIK; EMC) ACCORDING TO MOISTURE FLOOR TREATMENT MANUFACTURER'S INSTRUCTIONS.
 PROTECTIVE COATING: G40 HOT_DIF GALVANIZED PER ASTM A 525. METAL STUDS AND RUNNERS: ASTM C 645, 22 GAGE, UNLESS OTHERWISE INDICATED. METAL FURRING CHANNELS: ASTM C 645, 22 GAGE, HAT_SHAPED. GYPSUM BOARD: ASTM C 36, TYPE X, TAPERED EDGE, 5/8 INCH THICK. 	 SUBSTRATES INDICATED TO RECEIVE FLOORING. GRIND DOWN HIGH POINTS WITH SANDER. FILL LOW POINTS WITH UNDERLAYMENT. REMOVE COATINGS AND COMPOUNDS INCOMPATIBLE WITH ADHESIVES.
6. MOISTURE RESISTANT PAPERLESS GLASS-MAT GYPSUM BOARD: ASTM C 1177, TYPE X, 5/8 INCH THICK. GEORGIA-PACIFIC GYPSUM LLC; DENSARMOR PLUS FIREGUARD INTERIOR GUARD.	 12. TILE INSTALLATION: COMPLY WITH TILE MANUFACTURER'S INSTALLATION DIRECTIONS AND OTHER REQUIREMENTS INDICATED. LAY OUT TILES FROM ROOM CENTER LINES SO TILE WIDTHS AT OPPOSITE EDGES ARE EQUAL AND NOT LESS THAN ONE HALE THE
7. MOISTURE RESISTANT COATED GLASS-MAT GYPSUM BOARD: ASTM C 1178, TYPE X, 5/8 INCH THICK. GEORGIA-PACIFIC GYPSUM LLC; DENSSHIELD TILE BACKER.	MATCH TILES FOR COLOR AND PATTERN IN SAME SEQUENCE AS MANUFACTURED AND PACKAGED. LAY TILES IN BASKET WEAVE PATTERN WITH GRAIN DIRECTION ALTERNATING RETWEEN
8. MOISTURE_RESISTANT PAPER-FACED SHAFT-LINER GYPSUM BOARD: ASTM C 1396/C 1396/K, TYPE X. BASIS OF DESIGN: NATIONAL GYPSUM CO.; GOLD BOND 1" FIRE-SHIELD SHAFTLINER XP.	ADJACENT TILES. • SCRIBE, CUT, AND FIT TILES TO BUTT TIGHTLY TO VERTICAL SURFACES, PERMANENT FIXTURES, BUILT-IN FURNITURE INCLUDING CABINETS, PIPES, OUTLETS, EDGING, THRESHOLDS, AND NOSINGS.
ACCESSIONES. ASTMIC 1047, ZING COATED SHEET STEEL CORNER BEADS, EDGE TRIM, AND CONTROL JOINTS. JOINT TREATMENT MATERIALS: ASTMIC 475 AND ASTMIC 840 PAPER REINFORCING TAPE AND	 EXTEND TILES INTO TOE SPACES, DOOR REVEALS, CLOSETS, AND SIMILAR OPENINGS. HAND ROLL TILES WHERE REQUIRED BY TILE MANUFACTURER.
ALL_PURPOSE COMPOUND FORMULATED AS BOTH TAPING AND TOPPING COMPOUND. 11. MISCELLANEOUS MATERIALS:	 STEEL VINYL INSTALLATION: COMPLY WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND OTHER REQUIREMENTS INDICATED. MAINTAIN UNIFORMITY OF SHEET VINYL FLOOR COVERING DIRECTION. ARRANGE FOR MINIMUM NUMBER OF SEAMS AND PLACE IN INCONSPICTOUS AND LOWER TRAFETOR
 LAMINATING ADHESIVES: PRODUCT RECOMMENDED BY GYPSUM BOARD MANUFACTURER. STEEL DRILL SCREWS ASTM C 1002 ACOUSTICAL SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT: ASTM C 834 MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINUS LATEY SEALANT. 	AREAS. AVOID CROSS SEAMS. MATCH EDGES OF FLOOR COVERING FOR COLOR SHADING AND PATTERN AT SEAMS. CHEMICALLY BOND SEAMS.
SOUND ATTENUATION BLANKETS: ASTM C 665, TYPE I, UNFACED MINERAL_FIBER BLANKET INSULATION, 3 INCH THICK.	COVE SHEET VINYL UP VERTICAL SURFACES TO FORM 6 INCH INTEGRAL BASE OVER COVE SUPPORT STRIP WITH TOP EDGE COVERED BY CAP MOLDING. SEAM INSIDE AND OUTSIDE CORNERS. SECTION 09 6513 - DESILIENT BASE AND ACCESSORIES.
12. INSTALL METAL FRAMING TO COMPLY WITH ASTM C 754, ASTM C 840 AND MANUFACTURERS INSTRUCTIONS. SPACE STUDS AT 16 INCHES ON CENTER.	ЭССТИОН ОУ 0013 - REGILIENT BASE AND ACCESSORIES 1. SUBMITTALS: PRODUCT DATA, FOR EACH TYPE, COLOR, AND PATTERN OF RESILIENT FLOOR MATERIAL.
 INSTALL GYPSUM BOARD TO COMPLY WITH ASTM C 840 AND AS FOLLOWS: PROVIDE EDGE TRIM AND ACOUSTICAL SEALANT AS RECOMMENDED BY MANUFACTURER. INSTALL SOUND ATTENUATION BLANKETS WITHOUT GAPS, AND SUPPORT WHERE NECESSARY. INSTALL WATER_RESISTANT PAPERLESS GLASS-MAT BACKING BOARD WHERE INDICATED TO RECEIVE PAINT IN WET USE AREAS. 	 FIRE PERFORMANCE CHARACTERISTICS: CRITICAL RADIANT FLUX: 0.45 WATTS PER SQ. CM OR MORE PER ASTM E 648. SMOKE DENSITY: LESS THAN 450 PER ASTM E 662. RESILIENT BASE: FS SS-W-40, TYPE 1, 0.125 INCH THICK.
INSTALL WATER_RESISTANT COATED GLASS-MAT BACKING BOARD WHERE INDICATED TO RECEIVE THIN_SET TILE. SCREW GYPSUM BOARD TO METAL SUPPORTS.	 MATERIAL: RUBBER TYPE: AS INDICATED ON DRAWINGS. COLOR SELECTION: AS INDICATED ON DRAWINGS.
14. FINISHING: APPLY JOINT TREATMENT AT GYPSUM BOARD JOINTS, ACCESSORIES SURFACE DEFECTS, AND AS REQUIRED, TO PREPARE SURFACES FOR DECORATION AND LEVELS OF GYPSUM BOARD FINISH INDICATED.	 4. RESILIENT MOLDING ACCESSORIES: CARPETING ACCESSORIES: CARPET COVE CAP, CARPET STEP-OFF, CARPET REDUCER, CARPET EDGE BAR
15. LEVELS OF FINISH: GA_214, LEVEL 4 UNLESS OTHERWISE INDICATED. SECTION 09 3000 - TILING	 RESILIENT FLOORING ACCESSORIES: REDUCER STRIP AND OTHERS AS REQUIRED. MATERIAL: RUBBER. COLOR AND FINISH AS SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD COLORS.
1. TILE STANDARDS: COMPLY WITH ANSI A137.1 STANDARD SPECIFICATION FOR CERAMIC TILE AND ANSI 108 SERIES OF TILE INSTALLATION STANDARDS INCLUDED UNDER "AMERICAN NATIONAL STANDARD SPECIFICATIONS FOR THE INSTALLATION OF CERAMIC TILE."	 Difference of the second strate conditions indicated. VOC LIMIT: 50 G/L.
2. INSTALLATION GUIDELINES: TCA "HANDBOOK FOR CERAMIC TILE INSTALLATION"; COMPLY WITH TCA INSTALLATION METHODS INDICATED.	6. EXAMINE AREAS TO VERIFY THAT SUBSTRATES AND CONDITIONS ARE SATISFACTORY FOR INSTALLATION AND COMPLY WITH MANUFACTURER'S REQUIREMENTS. VERIFY THAT CONCRETE SLABS COMPLY WITH ASTM F 710 BEFORE BEGINNING INSTALLATION.

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SPACES, AND OTHER PERMANENT FIXTURES IN ROOMS AND AREAS WHERE BASE IS REQUIRED. INSTALL WALL BASE IN LENGTHS AS LONG AS PRACTICABLE WITHOUT GAPS AT SEAMS AND WITH TOPS OF ADJACENT PIECES ALIGNED. TIGHTLY ADHERE WALL BASE TO SUBSTRATE THROUGHOUT LENGTH OF EACH PIECE, WITH BASE IN CONTINUOUS CONTACT WITH HORIZONTAL AND VERTICAL SUBSTRATES. DO NOT STRETCH WALL BASE DURING INSTALLATION. MASONRY WALL SURFACES: ON MASONRY SURFACES OR OTHER SIMILAR IRREGULAR SUBSTRATES, FILL VOIDS ALONG TOP EDGE OF WALL BASE WITH MANUFACTURER'S RECOMMENDED ADHESIVE FILLER MATERIAL. • JOB-FORMED CORNERS: USE STRAIGHT PIECES OF MAXIMUM LENGTHS POSSIBLE. • OUTSIDE CORNERS: FORM WITHOUT PRODUCING DISCOLORATION (WHITENING) AT BENDS. SHAVE BACK OF BASE AT POINTS WHERE BENDS OCCUR AND REMOVE STRIPS PERPENDICULAR TO LENGTH OF BASE THAT ARE ONLY DEEP ENOUGH TO PRODUCE A SNUG FIT WITHOUT REMOVING MORE THAN HALF THE WALL BASE THICKNESS. INSIDE CORNERS: FORM BY CUTTING AN INVERTED V-SHAPED NOTCH IN TOE OF WALL BASE

AT THE POINT WHERE CORNER IS FORMED. SHAVE BACK OF BASE WHERE NECESSARY TO PRODUCE A SNUG FIT TO SUBSTRATE. 3. RESILIENT MOLDING ACCESSORIES: BUTT TO ADJACENT MATERIALS AND TIGHTLY ADHERE TO SUBSTRATES THROUGHOUT LENGTH OF EACH PIECE. INSTALL REDUCER STRIPS AT EDGES OF FLOOR COVERINGS THAT WOULD OTHERWISE BE EXPOSED. SECTION 09 6800 - CARPETING

FIRE-TEST-RESPONSE CHARACTERISTICS: CRITICAL RADIANT FLUX (PER ASTM E 648): CLASS I (MINIMUM 0.45 WATTS PER SQUARE • FLAME SPREAD: 25 OR LESS PER ASTM E 84. SMOKE DENSITY: 450 OR LESS PER ASTM E 662.

EMISSIONS: PROVIDE CARPET THAT COMPLIES WITH TESTING AND PRODUCT REQUIREMENTS OF CRI'S "GREEN LABEL PLUS" PROGRAM 4. SHEET CARPETING:

 MANUFACTURER: SEE INTERIOR FINISH SCHEDULE YARN WEIGHT: 28 OZ./SQ.YD. COLOR: SEE INTERIOR FINISH SCHEDULE

CENTIMETER).

PILE: CUT

MANUFACTURER.

VOC LIMIT: 50 G/L.

18. INSTALLATION; TILE CARPETING:

GALVANIZED METAL.

OTHERWISE INDICATED.

INDICATED:

INTERIOR (GLOSS LEVEL AS INDICATED).

SUBMITTALS:

PRIME AND FINISH COATS.

INSTALL COATING SYSTEM.

GLIDDEN COMPANY "GLIDDEN"

CARBOLINE

TNEMEC

SUBMITTALS: PRODUCT DATA FOR EACH TYPE OF CARPET AND CARPET ACCESSORY.

5. CUSHION: OLIN CORPORATION "OMALON", SPEC 2, 265 THICKNESS, 4.0 LBS./CU. FT. ASTM E 84 FLAME SPREAD LESS THAN 75. 6. TACKLESS STRIPPING: WATER_RESISTANT PLYWOOD STRIPS, WITH ANGULAR PINS, DESIGNED TO GRIP AND HOLD STRETCHED CARPET AT BACKING.

CARPET EDGE GUARD FOR STRETCH-IN: ANODIZED ALUMINUM WITH 5/8 INCH WIDE FOLD_DOWN EDGE WITH CONCEALED GRIPPER TEETH; MINIMUM 1_1/2_INCH_WIDE PUNCHED ANCHORAGE FLANGE; HAMMERED TEXTURE FINISH. 8. CARPET EDGE GUARD FOR GLUE DOWN: EXTRUDED OR MOLDED HEAVY_DUTY VINYL OR

RUBBER; MINIMUM 2_INCH_WIDE ANCHORAGE FLANGE; MANUFACTURER'S STANDARD COLORS. 9. CONCRETE-SLAB PRIMER: NONSTAINING TYPE RECOMMENDED BY THE CARPET

0. CARPET ADHESIVE: WATER-RESISTANT, MILDEW-RESISTANT, NONSTAINING TYPE TO SUIT PRODUCTS AND SUBFLOOR CONDITIONS AND TO COMPLY WITH FLAMMABILITY REQUIREMENTS, RECOMMENDED BY THE CARPET MANUFACTURER.

1. SEAMING CEMENT: HOT-MELT ADHESIVE TAPE RECOMMENDED BY CARPET MANUFACTURER. MOISTURE TESTING: PERFORM EITHER ANHYDROUS CALCIUM CHLORIDE TEST (3 LB MAX) OR RELATIVE HUMIDITY TEST (75% MAX) ON SLAB PRIOR TO INSTALLATION. DO NOT PROCEED WITHOUT ACCEPTABLE TEST RESULTS ACCEPTABLE TO FLOORING MANUFACTURER. IF TEST RESULTS ARE UNSATISFACTORY, THEN INSTALL MOISTURE FLOOR TREATMENT (BOSTIK; EMC) ACCORDING TO MOISTURE FLOOR TREATMENT MANUFACTURER'S INSTRUCTIONS.

3. LEVEL SUBFLOOR WITHIN 1/4 INCH IN 10 FEET (6 MM IN 3 M), NONCUMULATIVE, IN ALL DIRECTIONS. USE LEVELING AND PATCHING COMPOUNDS TO FILL CRACKS, HOLES, AND DEPRESSIONS IN SUBFLOOR AS RECOMMENDED BY THE CARPET MANUFACTURER. 4. REMOVE SUBFLOOR COATINGS, INCLUDING CURING COMPOUNDS, AND OTHER SUBSTANCES THAT ARE INCOMPATIBLE WITH ADHESIVES.

5. BROOM OR VACUUM CLEAN SUBFLOORS TO BE COVERED WITH CARPET. FOLLOWING CLEANING, EXAMINE SUBFLOORS FOR MOISTURE, ALKALINE SALTS, CARBONATION, OR DUST. 6. APPLY CONCRETE-SLAB PRIMER, ACCORDING TO MANUFACTURER'S DIRECTIONS, WHERE RECOMMENDED BY THE CARPET MANUFACTURER.

17. INSTALLATION; SHEET CARPETING: DIRECT GLUE-DOWN: CRI 104, SECTION 8 "DIRECT GLUE-DOWN." STRETCH-IN: CRI 104, SECTION 11 "STRETCH-IN UTILIZING TACKLESS STRIP."

 COMPLY WITH CRI 104, SECTION 13: "CARPET MODULES (TILES)" AND MANUFACTURER OF CARPET TILE RECOMMENDATIONS. 19. COMPLY WITH CARPET MANUFACTURER'S RECOMMENDATIONS FOR SEAM LOCATIONS AND DIRECTION OF CARPET; MAINTAIN UNIFORMITY OF CARPET DIRECTION AND LAY OF PILE. AT DOORWAYS, CENTER SEAMS UNDER DOOR IN CLOSED POSITION. BIND OR SEAL CUT EDGES AS RECOMMENDED BY CARPET MANUFACTURER.

SECTION 09 9100 - PAINTING PAINT EXPOSED SURFACES EXCEPT WHERE A SURFACE OR MATERIAL IS SPECIFICALLY INDICATED NOT TO BE PAINTED. WHERE AN ITEM OR SURFACE IS NOT SPECIFICALLY MENTIONED, PAINT THE SAME AS SIMILAR ADJACENT MATERIALS OR SURFACES. SUBMITTALS: SUBMIT PRODUCT DATA FOR EACH PAINT SYSTEM SPECIFIED, INCLUDING

PAINT MATERIALS: PROVIDE BLOCK FILLERS, PRIMERS, FINISH COAT MATERIALS, AND RELATED MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER AND THE SUBSTRATES UNDER CONDITIONS OF SERVICE AND APPLICATION, AS RECOMMENDED BY THE MANUFACTURER. • INTERIOR LATEX BLOCK FILLER: MPI #4; FOR INTERIOR CONCRETE MASONRY UNITS. • INTERIOR LATEX PRIMER/SEALER: MPI #50; FOR INTERIOR CONCRETE, PLASTER AND GYPSUM • RUST-INHIBITIVE PRIMER (WATER BASED): MPI #107; FOR INTERIOR FERROUS METAL.

 WATERBORNE GALVANIZED-METAL PRIMER: MPI #134; FOR EXTERIOR AND INTERIOR SEMIGLOSS, WATER-BASED, LIGHT-INDUSTRIAL COATING, EXTERIOR: MPI #163 (MPI GLOSS LEVEL 5); FOR EXTERIOR METAL SURFACES UNLESS OTHERWISE INDICATED. LOW-ODOR/VOC LATEX (FLAT): MPI #143 (GLOSS LEVEL 1); FOR INTERIOR SURFACES UNLESS LOW-ODOR/VOC LATEX (EGGSHELL): MPI #145 (GLOSS LEVEL 3); FOR INTERIOR SURFACES UNLESS OTHERWISE INDICATED. LOW-ODOR/VOC LATEX (SEMIGLOSS): MPI #147 (GLOSS LEVEL 5); FOR INTERIOR SURFACES UNLESS OTHERWISE INDICATED.

• INTERIOR LATEX-BASED WOOD PRIMER: MPI #39; FOR INTERIOR WOOD.

• EPOXY-MODIFIED LATEX, INTERIOR (SEMIGLOSS): MPI #215 (MPI GLOSS LEVEL 5); FOR INTERIOR CONCRETE, CONCRETE MASONRY UNITS AND GYPSUM BOARD. EXAMINATION: EXAMINE SUBSTRATES AND CONDITIONS UNDER WHICH PAINTING WILL BE PERFORMED FOR COMPLIANCE WITH REQUIREMENTS. DO NOT BEGIN APPLICATION UNTIL

UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. SURFACE PREPARATION: CLEAN AND PREPARE SURFACES TO BE PAINTED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS FOR EACH PARTICULAR SUBSTRATE CONDITION AND AS SPECIFIED. APPLICATION: APPLY PAINT ACCORDING TO MANUFACTURER'S DIRECTIONS. USE APPLICATORS AND TECHNIQUES BEST SUITED FOR SUBSTRATE AND TYPE OF MATERIAL BEING

APPLIED. DO NOT PAINT OVER DIRT, RUST, SCALE, GREASE, MOISTURE, SCUFFED SURFACES, OR CONDITIONS DETRIMENTAL TO FORMATION OF A DURABLE PAINT FILM. MINIMUM COATING THICKNESS: APPLY MATERIALS AT THE MANUFACTURER'S RECOMMENDED SPREADING RATE. PROVIDE THE TOTAL DRY FILM THICKNESS OF THE ENTIRE SYSTEM AS RECOMMENDED BY THE MANUFACTURER. PAINT SCHEDULE: PROVIDE THE FOLLOWING PAINT SYSTEMS FOR THE VARIOUS SUBSTRATES

 FERROUS METAL: METAL PRIMER, TWO COATS SEMI_GLOSS ACRYLIC COATING GYPSUM BOARD: LATEX PRIMER, TWO COATS ENAMEL (GLOSS LEVEL AS INDICATED). • PAINTED WOOD: LATEX WOOD PRIMER, TWO COATS ENAMEL (GLOSS LEVEL AS INDICATED). CMU SUBSTRATES: PRIME COAT INTERIOR LATEX BLOCK FILLER, TWO COATS MULTICOLOERD COATING IN ACCORDANCE WITH DIVISION 09 SECTION "MULTICOLORED INTERIOR COATINGS". • EXTERIOR GALVANIZED METAL: WATERBORNE GALVANIZED-METAL PRIMER. TWO COATS WATER-BASED, LIGHT-INDUSTRIAL COATING.

• WATER-BASED EPOXY COATING SYSTEM, LATEX PRIMER, TWO COATS EPOXY-MODIFIED LATEX,

SECTION 09 9713 - COATINGS FOR STEEL PRODUCT DATA: SUBMIT MANUFACTURER'S SPECIFICATIONS TO EVIDENCE COMPLIANCE WITH THESE SPECIFICATIONS. INCLUDE LABEL ANALYSIS OF FINISH COATING. SAMPLES: PRIOR TO BEGINNING WORK, THE ARCHITECT WILL FURNISH COLOR CHIPS FOR SURFACES TO BE COATED. USE EXACT COLORS WHEN PREPARING SAMPLES FOR REVIEW. SUBMIT SAMPLES FOR REVIEW OF COLOR AND TEXTURE ONLY. PROVIDE A LIST OF MATERIAL AND APPLICATION PROCEDURES FOR EACH COAT OF EACH FINISH SAMPLE. RESUBMIT SAMPLES AS REQUESTED UNTIL THE REQUIRED SHEEN, COLOR AND TEXTURE IS ACHIEVED. PROVIDE TWO 8" SQUARE SAMPLES OF SOLID METAL FOR EACH COLOR SELECTED. DEFINE

 CERTIFICATIONS: SUBMIT CERTIFICATION FROM SUPPLIER THAT APPLICATOR IS LICENSED TO 2. SINGLE SOURCE RESPONSIBILITY: PROVIDE PRIMER MATERIAL PRODUCED BY THE SAME MANUFACTURER AS THE FINISH COATS. USE ONLY THINNERS RECOMMENDED BY THE MANUFACTURER, AND ONLY WITHIN RECOMMENDED LIMITS. ACCEPTABLE MANUFACTURERS: CORONADO PAINT COMPANY "CORONADO"

 PORTER INTERNATIONAL SHERWIN_WILLIAMS COMPANY "SHERWIN-WILLIAMS" 4. BASIS OF DESIGN MATERIALS:

 PRIMER: ORGANIC ZINC RICH PRIMER. PROVIDE FACTORY FORMULATED PRIME COAT MATERIAL COMPATIBLE WITH THE SUBSTRATE AND FINISH COATS INDICATED. PRIMER SHALL BE A TWO OR THREE COMPONENT POLYAMIDE EPOXY ZINC-RICH COATING. PRIMERS SHALL CONTAIN NO LEAD. SHERWIN-WILLIAMS: ZINC CLAD IV. INTERMEDIATE COAT: HIGH BUILD EPOXY. PROVIDE FACTORY FORMULATED POLYAMIDE OXY INTERMEDIATE COAT COMPATIBLE WITH PRIME COAT AND TOPCOAT INDICATED. SHERWIN-WILLIAMS: "RECOATABLE EPOXY PRIMER", B67 SERIES. • TOPCOAT: ACRYLIC. PROVIDE FACTORY FORMULATED SINGLE COMPONENT, WATER-BASED 100 PERCENT ACRYLIC. MATERIAL SHALL BE COMPATIBLE WITH INTERMEDIATE COAT INDICATED. ACRYLIC USED IN COATING SHALL BE EQUAL TO ROHM & HAAS HG-54 INDUSTRIAL ACRYLIC RESIN. SHEEN SHALL BE SEMI-GLOSS, SHERWIN-WILLIAMS; DTM ACRYLIC COATING, B66 SERIES, TOPCOAT (ALTERNATE): POLYURETHANE, PROVIDE FACTORY FORMULATED POLYURETHANE. MATERIAL SHALL BE COMPATIBLE WITH THE INTERMEDIATE COAT INDICATED. SHEEN SHALL BE

GLOSS. SHERWIN-WILLIAMS: "HIGH SOLIDS POLYURETHANE", B65 SERIES. 5. COLOR OF TOPCOAT: CUSTOM COLOR AS SELECTED BY ARCHITECT. 5. EXAMINE SUBSTRATE SURFACES TO RECEIVE SPECIAL COATINGS SYSTEM AND ASSOCIATED. WORK AND CONDITIONS UNDER WHICH WORK WILL BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN A MANNER ACCEPTABLE TO INSTALLER. STARTING WORK WITHIN A PARTICULAR AREA WILL BE CONSTRUED AS APPLICATOR'S ACCEPTANCE OF SURFACE CONDITIONS PREPARE SUBSTRATE SURFACES TO INSURE PROPER AND ADEQUATE INSTALLATION, IN

SECTION 10 2613 - WALL AND CORNER GUARDS SUBMITTALS: MANUFACTURER'S PRODUCT DATA AND INSTALLATION INSTRUCTIONS. SHOP RAWINGS FOR FABRICATION AND ERECTION INCLUDING ANCHORAGE DEVICES BUILT INTO OTHER CRASH RAIL: NOMINAL 8_INCH_HIGH BY 1_INCH_DEEP HEAVY DUTY ASSEMBLY WITH SNAP_ON PLASTIC COVER INSTALLED OVER CONTINUOUS ALUMINUM RETAINER AND REQUIRED ACCESSORIES. CONSTRUCTION SPECIALTIES INC., MODEL SCR-64. BUMPER RAIL: NOMINAL 4-INCH HIGH BY 1-INCH DEEP ASSEMBLY WITH SNAP_ON COVER NSTALLED OVER CONTINUOUS ALUMINUM RETAINER, AND REQUIRED ACCESSORIES. CONSTRUCTION SPECIALTIES INC., MODEL SCR-40. BUMPER RAIL HANDRAILS: ASSEMBLY WITH SNAPP_ON COVER OVER CONTINUOUS ALUMINUM RETAINER AND REQUIRED ACCESSORIES. CONSTRUCTION SPECIALTIES INC., MODEL HRB-4C. SURFACE_MOUNTED CORNER GUARDS: NOMINAL 3 INCH BY 3 INCH ASSEMBLY WITH SNAP_ON COVER OVER CONTINUOUS ALUMINUM RETAINER AND REQUIRED ACCESSORIES. CONSTRUCTION SPECIALTIES INC., MODEL SM-20. STAINLESS STEEL CORNER GUARDS: MANUFACTURER'S STANDARD PAPER_COVERED SATIN FINISH 0.059 INCH (16 GAUGE) STAINLESS STEEL SHEET CORNER GUARDS. PROVIDE 90 DEGREE TURN, AND FORMED EDGES. 3_1/2_INCH BY 3_1/2_INCH WINGS, 4 FEET HIGH. SHEET WALL COVERING: 0.060 INCH THICK CHEMICAL AND STAIN RESISTANT. SEMIRIGID. EMBOSSED, FIBER BACKED, IMPACT RESISTANT PLASTIC SHEETS WITH CLASS I FIRE RATING. PROVIDE MATCHING MOLDINGS AND TRIM. CONSTRUCTION SPECIALTIES INC. "ACROVYN" SECTION 10 2813 - TOILET ACCESSORIES SUBMITTALS: MANUFACTURER'S PRODUCT DATA FOR EACH TOILET ACCESSORY ITEM SPECIFIED, INCLUDING DETAILS OF CONSTRUCTION RELATIVE TO MATERIALS, DIMENSIONS, GAGES, PROFILES, MOUNTING METHODS, SPECIFIED OPTIONS, AND FINISHES. 2. MATERIALS: FABRICATE TOILET ACCESSORY ITEMS FROM THE FOLLOWING MATERIALS AND ACCORDING TO REQUIREMENTS SPECIFIED FOR INDIVIDUAL ACCESSORY ITEMS: STAINLESS STEEL: ASTM A 666, TYPE 302/304, WITH POLISHED NO. 4 FINISH, 0.034_INCH (22 GAGE) MINIMUM THICKNESS, UNLESS OTHERWISE INDICATED. SHEET STEEL: COLD ROLLED, COMMERCIAL QUALITY ASTM A 366, 0.04 INCH (20 GAGE) MINIMUM THICKNESS, UNLESS OTHERWISE INDICATED. SURFACE PREPARATION AND METAL PRETREATMENT AS REQUIRED FOR APPLIED FINISH.

ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPROVED SHOP DRAWINGS, OR

APPLY SPECIAL COATINGS BY BRUSH, ROLLER, SPRAY, OR OTHER APPLICATORS IN CCORDANCE WITH MANUFACTURER'S DIRECTIONS. USE BRUSHES BEST SUITED FOR THE MATERIAL

REQUIRED TO BE COATED OR FINISHED, AND WHICH HAS NOT BEEN PRIME COATED BY OTHERS.

PROVIDE THE FOLLOWING COATING SYSTEMS FOR SUBSTRATES INDICATED. APPLY

UNTIL THE CURED FILM IS OF UNIFORM COATING FINISH, COLOR AND APPEARANCE.

MILS AND TWELVE (12) MILS WITH NINE (9) MILS BEING A MINIMUM.

ADDITIONAL COATS WHEN UNDERCOATS OR OTHER CONDITIONS SHOW THROUGH THE FINAL COAT,

ACRYLIC TOPCOAT: PROVIDE INTERMEDIATE COAT OF EPOXY AND FINISH COAT OF ACRYLIC OVER ORGANIC ZINC-RICH METAL PRIMER WITH A TOTAL DRY FILM THICKNESS OF BETWEEN NINE (9)

POLYURETHANE TOPCOAT (ALTERNATE): PROVIDE INTERMEDIATE COAT OF EPOXY AND

OPCOAT OF POLYURETHANE OVER ORGANIC ZINC-RICH METAL PRIMER WITH A TOTAL DRY FILM THICKNESS OF BETWEEN TEN (10) MILS AND FOURTEEN (14) MILS WITH 10 MILS BEING A MINIMUM.

RECOMMENDED BY THE MANUFACTURER. APPLY INTERMEDIATE COAT WITHIN 30 DAYS.

MATERIAL PREPARATION: CAREFULLY MIX AND PREPARE MATERIALS IN COMPLIANCE WITH THE

). PRIMER: SHOP APPLY PRIME COAT AS RECOMMENDED BY THE MANUFACTURER, TO MATERIAL

INTERMEDIATE COAT: SHOP APPLIED OR FIELD APPLIED AT CONTRACTOR'S OPTION AND AS

TOPCOAT: SHALL BE FIELD APPLIED AND AS RECOMMENDED BY THE MANUFACTURER. MATCH

AT COMPLETION OF CONSTRUCTION ACTIVITIES OF OTHER TRADES, TOUCH_UP AND RESTORE

APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE, REFINISH OR RE-COAT WORK

ANUFACTURER'S REQUIREMENTS.

BEING APPLIED.

COATING MANUFACTURER'S DIRECTIONS.

NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

DAMAGED OR DEFACED COATED SURFACES.

EXPOSED STEEL:

 GALVANIZED STEEL SHEET: ASTM A 527, G60. GALVANIZED STEEL MOUNTING DEVICES: ASTM A 153, HOT_DIP GALVANIZED AFTER FABRICATION. FASTENERS: SCREWS, BOLTS, AND OTHER DEVICES OF SAME MATERIAL AS ACCESSORY UNIT, OR OF GALVANIZED STEEL WHERE CONCEALED. KEYS: PROVIDE UNIVERSAL KEYS FOR ACCESS TO TOILET ACCESSORY UNITS REQUIRING INTERNAL ACCESS FOR SERVICING, RESUPPLY, ETC. PROVIDE A MINIMUM OF SIX KEYS TO OWNER'S REPRESENTATIVE. SURFACE_MOUNTED TOILET ACCESSORIES, GENERAL: FABRICATE UNITS WITH TIGHT SEAMS

AND JOINTS, EXPOSED EDGES ROLLED. HANG DOORS OR ACCESS PANELS WITH CONTINUOUS STAINLESS STEEL PIANO HINGE. PROVIDE CONCEALED ANCHORAGE WHEREVER POSSIBLE. INSTALLATION: INSTALL TOILET ACCESSORY UNITS ACCORDING TO MANUFACTURERS' PRINTED INSTALLATION INSTRUCTIONS, USING FASTENERS APPROPRIATE TO SUBSTRATE AS RECOMMENDED BY MANUFACTURER. INSTALL UNITS PLUMB AND LEVEL, FIRMLY ANCHORED IN LOCATIONS AND AT

SCHEDULE OF ACCESSORIES: FOLLOWING CATALOG NUMBERS REFER TO PRODUCTS OF THE BOBRICK COMPANY, EXCEPT WHERE OTHERWISE INDICATED, AND THESE SCHEDULED PRODUCTS SERVICE AS STANDARD OF QUALITY REQUIRED FOR THIS PROJECT. PROVIDE THESE OR COMPARABLE PRODUCTS FROM SPECIFIED MANUFACTURERS IF THEY MEET OR EXCEED THIS STANDARD OF

• A1: SURFACE-MOUNTED PAPER TOWEL DISPENSER: B-262. • B1: SURFACE MOUNTED TOILET TISSUE DISPENSER: B-288. D1: SURFACE-MOUNTED WASTE RECEPTACIE: B-275

G6: STRAIGHT SURFACE-MOUNTED SATIN FINISH GRAB BAR WITH SLIP-RESISTANT GRIPPING G7: CONFIGURED SURFACE-MOUNTED GRAB BAR: B-6897.99, 42 IN X 54 IN (1050 MM X 1350 MM) E1: SURFACE MOUNTED SANITARY NAPKIN DISPOSAL: B-254. • J1: SURFACE-MOUNTED SOAP DISPENSER: B-2112.

• P1: SURFACE-MOUNTED STAINLESS STEEL FRAMED MIRROR (WITHOUT SHELF): B-290 2436. • R2: SURFACE-MOUNTED DOUBLE ROBE HOOK: B-76727. SECTION 10 4116 - EMERGENCY KEY CABINETS

SUBMITTALS: MANUFACTURER'S PRODUCT DATA, INSTALLATION INSTRUCTIONS, AND RECOMMENDATIONS FOR MAINTENANCE.

EMERGENCY KEY CABINETS: • KNOX COMPANY; KNOX-BOX 3200 SERIES HINGED OR LIFT-OFF DOOR MODEL, AS REQUIRED BY LOCAL JURISDICTION. • 1/4 IN (6 MM) THICK STEEL PLATE HOUSING, 1/2 IN (12 MM) THICK STEEL DOOR WITH INTERIOR GASKET SEAL AND STAINLESS STEEL DOOR HINGE. BOX AND LOCK SHALL BE UL LISTED. LOCK SHALL HAVE 1/8 IN (3 MM) THICK STAINLESS STEEL DUST COVER WITH TAMPER SEAL

MOUNTING CAPABILITY. LOCK SHALL HAVE DOUBLE-ACTION ROTATING TUMBLERS AND HARDENED STEEL PINS ACCESSED BY A BIASED CUT KEY. COORDINATE OTHER NECESSARY REQUIREMENTS WITH LOCAL FIRE DEPARTMENT.

PROVIDE UL LISTED ALARM TAMPER SWITCHES AS REQUIRED BY LOCAL FIRE DEPARTMENT. COLOR: AS SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD COLORS. INSTALL IN ACCORDANCE WITH MANUFACTURER'S LATEST PUBLISHED REQUIREMENTS.

SECTION 10 4400 - FIRE PROTECTION SPECIALTIES

SUBMITTALS: MANUFACTURER'S PRODUCT DATA AND INSTALLATION INSTRUCTIONS. SHOP DRAWINGS FOR FABRICATION AND ERECTION INCLUDING ANCHORAGE DEVICES BUILT INTO OTHER WORK

FIRE EXTINGUISHER/CABINETS: FIRE EXTINGUISHER: J.L. INDUSTRIES "COSMIC 5E", 2A-10BC UL RATING, 5 LB. CAPACITY, DRY CABINET: J.L. INDUSTRIES "AMBASSADOR" 1015V10 RECESSED WITH FLAT TRIM.

SECTION 11 3100 - RESIDENTIAL APPLIANCES PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED. INCLUDE RATED CAPACITIES. OPERATING CHARACTERISTICS, DIMENSIONS, FURNISHED ACCESSORIES, AND FINISHES FOR EACH

APPLIANCE. OPERATION AND MAINTENANCE DATA: FOR EACH RESIDENTIAL APPLIANCE TO INCLUDE IN OPERATION AND MAINTENANCE MANUALS. REGULATORY REQUIREMENTS: COMPLY WITH THE FOLLOWING: NFPA: PROVIDE ELECTRICAL APPLIANCES LISTED AND LABELED AS DEFINED IN NFPA 70, BY A

QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION. FREESTANDING EQUIPMENT: PLACE UNITS IN FINAL LOCATIONS AFTER FINISHES HAVE BEEN COMPLETED IN EACH AREA. VERIFY THAT CLEARANCES ARE ADEQUATE TO PROPERLY OPERATE

UTILITIES: SEE DIVISIONS 22 AND 26 FOR PLUMBING AND ELECTRICAL REQUIREMENTS. THE FOLLOWING ARE BASIS OF DESIGN PRODUCTS:

REFRIGERATOR (REFR-1): U-LINE, MODEL 29R, COLOR: BLACK. REFRIGERATOR (REFR-2): GE, MODEL GTH21KBXBB, COLOR: BLACK. ICE MAKER/ DISPENSER (ICE-1): U-LINE. MODEL B198, COLOR: BLACK.

MICROWAVE OVEN (M/W-1): GE, MODEL JEB1860DMBB, COLOR: BLACK. DISHWASHERS (D.W.-1): ASKO, MODEL D5122ADA, COLOR: BLACK.

SECTION 32 1715 - PARKING ACCESSORIES

PRODUCT DATA: MANUFACTURER'S TECHNICAL DATA, SPECIFICATIONS, AND INSTALLATION INSTRUCTIONS FOR EACH PRODUCT SPECIFIED. SHOP DRAWINGS: INDICATE PAVEMENT MARKINGS, LANE SEPARATIONS, AND DEFINED PARKING SPACES. INDICATE, WITH INTERNATIONAL GRAPHICS SYMBOL, SPACES DEDICATED TO PEOPLE WITH DISABILITIES. DO NOT APPLY MARKING PAINT WHEN WEATHER IS FOGGY OR RAINY, OR AMBIENT OR PAVEMENT TEMPERATURES ARE BELOW 40 DEG. F., NOR WHEN SUCH CONDITIONS ARE ANTICIPATED DURING EIGHT HOURS AFTER APPLICATION. MARKING PAINT: LATEX WATER BASED EMULSION TRAFFIC MARKING PAINT, READY MIXED, COMPLYING WITH FS-TT-P-1952, WITH DRYING TIME OF LESS THAN 45 MINUTES.

• WHITE COLOR FOR STALLS AND DIRECTION MARKINGS. YELLOW FOR PEDESTRIAN CROSS WALKS RED FOR FIRE LANES.

BLUE AND WHITE FOR HANDICAPPED PARKING SYMBOLS. INSTALLATION PAVEMENT MARKINGS: APPLY IN ACCORDANCE WITH MANUFACTURER'S LATEST PUBLISHED REQUIREMENTS,

SPECIFICATIONS AND DETAILS. DO NOT APPLY PAVEMENT-MARKING PAINT UNTIL LAYOUT, COLORS, AND PLACEMENT HAVE BEEN VERIFIED WITH ARCHITECT. ALLOW CONCRETE PAVEMENT TO CURE FOR 28 DAYS AND BE DRY BEFORE STARTING

AVEMENT MARKING APPLY PAINT WITH MECHANICAL EQUIPMENT TO PRODUCE PAVEMENT MARKINGS 4 INCHES APPLY AT MANUFACTURER'S RECOMMENDED RATES TO PROVIDE A MINIMUM WET FILM

THICKNESS OF 15 MILS. APPLY MARKING PAINT STRAIGHT AND UNIFORM APPLY HANDICAP PARKING SYMBOLS AT HANDICAP PARKING STALLS.

APPLY FIRE LANE MARKINGS IN ACCORDANCE WITH LOCAL FIRE MARSHALL REQUIREMENTS. USE APPROVED STENCILS FOR LETTERING. APPLY REQUIRED APPROPRIATE DESIGNATIONS WITH APPROVED STENCILS AT SMALL OR

COMPACT CAR STALLS.

	REQUIRED SPECIAL INSPECTIONS - BY TEST In addition to the regular inspections required 110, the following items require Special Inspe accordance with Section 1704 and 1705 of th	FING AGENCY by Section action in e 2012 IBC.	
	SECTION 1704.2.5 FABRICATORS Verify fabrication / guality control proced	lures.	
	TABLE 1705.3		
	REQUIRED VERIFICATION AND INSPECTION OF CONC		N
	VERIFICATION AND INSPECTION TASK	CONTINUOUS (C) OR PERIODIC (P)	REQUIREI
1.	Inspection of reinforcing steel, including prestressing tendons, and placement.	Р	Ν
2.	Inspection of reinforcing steel welding in accordance with Table 1705.2.2, Item 2b.	-	Ν
3.	Inspection of anchors cast in concrete where allowable loads have been increased or where strength design is used.	Р	Ν
4.	Inspection of anchors post-installed in hardened concrete members.	Р	Y
5.	Verifying use of required mix design.	Р	Y
6.	At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	С	Y
7.	Inspection of concrete and shotcrete placement for proper application techniques.	С	N
8.	Inspection for maintenance of specified curing temperature and techniques.	Р	N
9.	Inspection of prestressed concrete:	_	
	 a. Application of prestressing force. b. Grouting of bonded prestressing tendons in the seismic force-resisting system 	C C	N N
10.	Erection of precast concrete members.	Р	N
11.	Verification of in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs	Р	Ν
12.	Inspect formwork for shape, location and dimensions of the concrete member being formed.	Р	N
	TABLE 1705.5 REQUIRED VERIFICATION AND INSPECTION OF WO	OD CONSTRUCTION	
	VERIFICATION AND INSPECTION TASK	CONTINUOUS (C) OR PERIODIC (P)	REQUIREI
1.	Special inspections of the fabrication process of prefabricated wood structural elements and assemblies shall be in accordance with Section 1704.2.5. Special inspections of site-built assemblies shall be in accordance with the requirements that follow:	Р	Ν
2.	1705.5.1 High-load diaphragms. High-load diaphragms designed in accordance with Section 2306.2 shall be installed	Р	N
	with special inspections as indicated in Section 1704.2. The special inspector shall inspect the wood structural panel sheathing to ascertain whether it is of the grade and thickness shown on the approved building plans. Additionally, the special inspector must verify the nominal size of framing members at adjoining panel edges, the nail or staple diameter and length, the number of fastener lines and that the spacing between fasteners in each line and at edge margins agrees with the approved building plans.		
3.	 with special inspections as indicated in Section 1704.2. The special inspector shall inspect the wood structural panel sheathing to ascertain whether it is of the grade and thickness shown on the approved building plans. Additionally, the special inspector must verify the nominal size of framing members at adjoining panel edges, the nail or staple diameter and length, the number of fastener lines and that the spacing between fasteners in each line and at edge margins agrees with the approved building plans. 1705.5.2 Metal-plate-connected wood trusses spanning 60 feet or greater. Where a truss clear span is 60 feet (18 288 mm) or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package. 	Ρ	N
3.	with special inspections as indicated in Section 1704.2. The special inspector shall inspect the wood structural panel sheathing to ascertain whether it is of the grade and thickness shown on the approved building plans. Additionally, the special inspector must verify the nominal size of framing members at adjoining panel edges, the nail or staple diameter and length, the number of fastener lines and that the spacing between fasteners in each line and at edge margins agrees with the approved building plans. 1705.5.2 Metal-plate-connected wood trusses spanning 60 feet or greater. Where a truss clear span is 60 feet (18 288 mm) or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package. TABLE 1705.6	P	N
3.	with special inspections as indicated in Section 1704.2. The special inspector shall inspect the wood structural panel sheathing to ascertain whether it is of the grade and thickness shown on the approved building plans. Additionally, the special inspector must verify the nominal size of framing members at adjoining panel edges, the nail or staple diameter and length, the number of fastener lines and that the spacing between fasteners in each line and at edge margins agrees with the approved building plans. 1705.5.2 Metal-plate-connected wood trusses spanning 60 feet or greater. Where a truss clear span is 60 feet (18 288 mm) or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package. TABLE 1705.6 REQUIRED VERIFICATION AND INSPECTIO VERIFICATION AND INSPECTION TASK	P N OF SOILS CONTINUOUS (C) OR PERIODIC (P)	N
3.	with special inspections as indicated in Section 1704.2. The special inspector shall inspect the wood structural panel sheathing to ascertain whether it is of the grade and thickness shown on the approved building plans. Additionally, the special inspector must verify the nominal size of framing members at adjoining panel edges, the nail or staple diameter and length, the number of fastener lines and that the spacing between fasteners in each line and at edge margins agrees with the approved building plans. 1705.5.2 Metal-plate-connected wood trusses spanning 60 feet or greater. Where a truss clear span is 60 feet (18 288 mm) or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package. TABLE 1705.6 REQUIRED VERIFICATION AND INSPECTIO VERIFICATION AND INSPECTION TASK	P N OF SOILS CONTINUOUS (C) OR PERIODIC (P) P	N
3.	with special inspections as indicated in Section 1704.2. The special inspector shall inspect the wood structural panel sheathing to ascertain whether it is of the grade and thickness shown on the approved building plans. Additionally, the special inspector must verify the nominal size of framing members at adjoining panel edges, the nail or staple diameter and length, the number of fastener lines and that the spacing between fasteners in each line and at edge margins agrees with the approved building plans. 1705.5.2 Metal-plate-connected wood trusses spanning 60 feet or greater. Where a truss clear span is 60 feet (18 288 mm) or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package. TABLE 1705.6 REQUIRED VERIFICATION AND INSPECTION VERIFICATION AND INSPECTION TASK Verify materials below shallow foundations are adequate to achieve the design bearing capacity. Verify excavations are extended to proper depth and have reached proper material.	P N OF SOILS CONTINUOUS (C) OR PERIODIC (P) P P	N REQUIRED Y Y
3.	with special inspections as indicated in Section 1704.2. The special inspector shall inspect the wood structural panel sheathing to ascertain whether it is of the grade and thickness shown on the approved building plans. Additionally, the special inspector must verify the nominal size of framing members at adjoining panel edges, the nail or staple diameter and length, the number of fastener lines and that the spacing between fasteners in each line and at edge margins agrees with the approved building plans. 1705.5.2 Metal-plate-connected wood trusses spanning 60 feet or greater. Where a truss clear span is 60 feet (18 288 mm) or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package. TABLE 1705.6 REQUIRED VERIFICATION AND INSPECTION TASK Verify materials below shallow foundations are adequate to achieve the design bearing capacity. Verify excavations are extended to proper depth and have reached proper material. Perform classification and testing of compacted fill materials.	P N OF SOILS CONTINUOUS (C) OR PERIODIC (P) P P P	N REQUIREI Y Y
3. 1. 2. 3. 4.	with special inspections as indicated in Section 1704.2. The special inspector shall inspect the wood structural panel sheathing to ascertain whether it is of the grade and thickness shown on the approved building plans. Additionally, the special inspector must verify the nominal size of framing members at adjoining panel edges, the nail or staple diameter and length, the number of fastener lines and that the spacing between fasteners in each line and at edge margins agrees with the approved building plans. 1705.5.2 Metal-plate-connected wood trusses spanning 60 feet or greater. Where a truss clear span is 60 feet (18 288 mm) or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package. TABLE 1705.6 REQUIRED VERIFICATION AND INSPECTION TASK Verify materials below shallow foundations are adequate to achieve the design bearing capacity. Verify excavations are extended to proper depth and have reached proper material. Perform classification and testing of compacted fill materials. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	P N OF SOILS CONTINUOUS (C) OR PERIODIC (P) P P P C	N REQUIREI Y Y Y Y

	ABBREVIATIONS		
	ANCHOR BOLT	LL	LIVE LOAD
	ABOVE FINISH FLOOR	LLH	LONG LEG HORIZONTAL
:Н.	ARCHITECT	LLV	LONG LEG VERTICAL
D.	BOTTOM OF DECK	LONG.	LONGITUDINAL
S.	BOTTOM OF STEEL	LW	LIGHTWEIGHT
	BELOW FINISH FLOOR	MANUF.	MANUFACTURER
G.	BUILDING	MAX.	MAXIMUM
	BOTTOM	MIN.	MINIMUM
	CONSTRUCTION JOINT	MISC.	MISCELLANEOUS
	CENTERLINE	NW	NORMAL WEIGHT
	CLEAR	O.C.	ON CENTER
J	CONCRETE MASONRY UNIT	O.H.D.	OVER HEAD DOOR
	COLUMN	OH	OPPOSITE HAND
IC.	CONCRETE	PEMB	PRE-ENGINEERED METAL BUILDING
IT.	CONTINUOUS	PCF	POUNDS PER CUBIC FOOT
	DECK BEARING	PCI	POUNDS PER CUBIC INCH
A.	DEFORMED BAR ANCHOR	PLF	POUNDS PER LINEAR FOOT
	DIAMETER	PSF	POUNDS PER SQUARE FOOT
	EACH END	PSI	POUNDS PER SQUARE INCH
	EACH FACE	QTY.	QUANTITY
•	EACH WAY	RE:	REFER
V.	ELEVATION	REINF.	REINFORCEMENT
D.	EDGE OF DECK	REQ'D.	REQUIRED
	FINISH FLOOR ELEVATION	S.C.	SAW CUT
	FOUNDATION	SCHED.	SCHEDULE
•	FOOTING	SIM.	SIMILAR
	GRADE BEAM	SID.	STANDARD
.,	GAUGE	1&B	TOP AND BOTTOM
ν.	GALVANIZED		TOP OF FOOTING
	HORIZONTAL	IGB	TOP OF GRADE BEAM
RIΖ.			
		T.U.S.	
JL.			
		U.N.U.	
		V. VEDT	
т		VERI.	VERHUAL
1	LIGHT GAGE STEEL TRUSS		

A.B

AFI

B.C

B.C

CM

COL

COI

COI

F.C

FFE

FN

CONCRETE MATERIAL

SHEETS. ROLLED FABRIC WILL NOT BE ACCEPTED). WIRE FABRIC SHALL BE PLACED AT THE MID-
DEPTH OF THE SLAB. WIRE FABRIC SHALL BE SUP	PORTED ON CONTINUOUS HIGH CHAIRS
SPACED NOT MORE THAN 4 FEET O.C.	
ALL REINFORCING SHALL BE DETAILED, FABRICAT	ED, AND PLACED IN ACCORDANCE WITH THE
LATEST EDITION OF THE AMERICAN CONCRETE IN	ISTITUTE DETAILING MANUAL. ALL DOWELS ARE
TO BE TIED IN PLACE. IF ANY DOWELS ARE 'STABE	BED' AFTER THE CONCRETE HAS BEEN PLACED
THE CONCRETE SHALL BE REMOVED AND REPLACE	CED.
ALL REINFORCING SHALL BE SUPPORTED IN FORM	MS, SPACED WITH NECESSARY ACCESSORIES
AND SHALL BE SECURELY WIRED TOGETHER, IN A	CCORDANCE WITH THE LATEST EDITION OF
THE CRSI "MANUAL OF STANDARD PRACTICE".	
MINIMUM CONCRETE COVER, UNLESS NOTED OTH	HERWISE:
UNFORMED SURFACE IN CONTACT WITH THE	GROUND 3 IN.
FORMED SURFACES EXPOSED TO EARTH OR	WEATHER:
#6 BARS AND LARGER	2 IN.
#5 BARS AND SMALLER	1½ IN.
FORMED SURFACES NOT EXPOSED TO EARTH	I OR WEATHER:
BEAMS, GIRDERS AND COLUMNS	1½ IN.
SLABS, WALLS AND JOISTS:	
#11 BARS AND SMALLER	³ ⁄ ₄ IN.
#14 AND #18 BARS	11⁄2IN.
ALL DAGE DIATED ANOLIOD DOLTO OLIDDODT AND	

6. ALL BASE PLATES, ANCHOR BOLTS, SUPPORT ANGLES, ETC., WHICH ARE BELOW GRADE SHALL BE COVERED WITH A MINIMUM OF 4" OF CONCRETE. 7. PROVIDE CORNER BARS AT ALL CORNERS AND INTERSECTIONS OF CONCRETE WALLS, CONCRETE BEAMS, CONTINUOUS FOOTINGS, THICKENED SLABS AND TURNDOWNS, CORNER BAR SIZE SHALL MATCH HORIZONTAL BAR SIZE. CORNER BARS ARE TO BE LAPPED 40 BAR DIAMETERS. 8. ALL LAP SPLICES SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE, UNLESS NOTED OTHERWISE. WHERE CLASSES ARE NOT CALLED OUT ON DRAWINGS, USE CLASS "B" SPLICES

	TEN				
BAR	TOF	BARS	OTHE	R BARS	COMPRESSION
SIZE	CLASS A	CLASS B	CLASS A	CLASS B	SPLICES (IN.)
#3	16	21	12	16	12
#4	21	28	16	21	15
#5	27	35	21	27	19
#6	32	42	25	32	23
#7	47	61	36	47	26
#8	53	69	41	53	30
#9	60	78	46	60	34
#10	68	88	52	68	38
#11	75	98	58	75	42

FOUNDATION, SLAB-ON-GRADE - GENERAL

1. FOUNDATION DESIGN IS BASED ON THE INFORMATION AND RECOMMENDATIONS IN THE GEOTECHNICAL REPORT PREPARED BY PPI, INC. DATED MARCH 26, 2020.

. THE FOUNDATIONS HAVE BEEN DESIGNED FOR A NET ALLOWABLE BEARING PRESSURE OF 2,000 PSF. 3. ALL BEARING MATERIAL SHALL BE INSPECTED BY THE INDEPENDENT TESTING AGENCY PRIOR TO CONCRETE PLACEMENT. THE INDEPENDENT TESTING AGENCY SHALL BE THE SOLE JUDGE AS TO THE SUITABILITY OF THE BEARING MATERIAL. FOOTING ELEVATIONS SHALL BE ADJUSTED AS REQUIRED. FOOTINGS MAY BE POURED INTO AN EARTHEN FORMED TRENCH IF SOIL CONDITIONS PERMIT 5. FOUNDATION WALLS THAT RETAIN EARTH SHALL BE BRACED AGAINST BACK FILLING PRESSURES UNTIL FLOOR

SLABS AT TOP AND BOTTOM ARE IN PLACE OR UNTIL THE CONCRETE HAS ATTAINED ITS FULL COMPRESSIVE STRENGTH FOR CANTILEVER WALLS. 6. WHERE FOUNDATION WALLS ARE TO HAVE EARTH PLACED ON EACH SIDE, PLACE FILL SIMULTANEOUSLY SO AS TO MAINTAIN A COMMON ELEVATION ON EACH SIDE OF THE WALL

7. VERIFY THE USE AND EXTENT OF PERIMETER INSULATION WITH ARCHITECTURAL DRAWINGS PRIOR TO THE INSTALLATION OF FOUNDATIONS. INSTALL PERIMETER INSULATION AS REQUIRED. 3. UNDER-SLAB DRAINAGE FILL TO BE A MINIMUM 4-INCH COMPACTED LAYER OF WASHED ASTM No. 57 STONE 9. NO BUILDING FOUNDATIONS, INCLUDING GRADE BEAMS, ARE TO BE PENETRATED WITH CONDUITS, PIPES, ETC.

UNLESS SPECIFICALLY SHOWN ON THE STRUCTURAL PLANS OR EXPRESS CONSENT IS GIVEN BY THE E.O.R.

POST-INSTALLED ANCHORS

1. ANCHOR CAPACITY USED IN DESIGN SHALL BE BASED ON THE TECHNICAL DATA PUBLISHED BY HILTI OR SUCH OTHER METHOD AS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE AND INSTALLATION TEMPERATURE. 2. INSTALL ANCHORS PER THE MANUFACTURER INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING. 3. OVERHEAD ADHESIVE ANCHORS MUST BE INSTALLED USING THE HILTI PROFI SYSTEM.

4. THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS. 5. ANCHOR CAPACITY IS DEPENDANT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS

6. EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS. UNLESS NOTED ON THE DRAWINGS THAT THE BARS CAN BE CUT, THE CONTRACTOR SHALL REVIEW THE EXISTING STRUCTURAL DRAWINGS AND SHALL UNDERTAKE TO LOCATE THE POSITION OF THE REINFORCING BARS AT THE LOCATIONS OF THE CONCRETE ANCHORS, BY HILTI FERROSCAN, GPR, X-RAY, CHIPPING OR OTHER MEANS. MECHANICAL ANCHORS FOR USE IN CONCRETE TO BE HILTI KWIK BOLT-TZ EXPANSION ANCHORS PER ICC ESR-1917. 8. MECHANICAL ANCHORS FOR USE IN GROUTED MASONRY TO BE HILTI KWIK BOLT 3 EXPANSION ANCHORS PER ICC ESR-1385. 9. POST-INSTALLED EPOXY FOR CONCRETE TO BE HILTI HIT-RE 500v3, U.N.O. PER ICC ESR-3814

10. POST-INSTALLED EPOXY FOR MASONRY TO BE HILTI HIT-HY 270, U.N.O. PER ICC ESR-4143.

WORKINGS STRESS DESIGN METHOD. HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 2000PSI. IN ALL MASONRY WALLS. VERTICAL CONTROL JOINTS. 5. ALL REINFORCED CELLS AND ALL CELLS BELOW GRADE SHALL BE GROUTED SOLID. COURSE BELOW THE TOP OF EACH GROUT LIFT. MINIMUM OF TOTAL MASONRY COVER OF 2". CELL AREA NOT LESS THAN 3"X4". 13. GROUTING OF MASONRY BEAMS OVER OPENINGS SHALL BE DONE IN A CONTINUOUS OPERATION. 14. MAXIMUM GROUT LIFT SHALL BE 60 INCHES. 15. ALL BOLTS, ANCHORS, ETC. INSERTED IN THE WALLS, SHALL BE GROUTED SOLID INTO POSITION. 16. ALL CMU IS TO BE LAID IN RUNNING BOND, UNLESS NOTED OTHERWISE. W1.7 LADDER REINF (1) VERT. BAR @ END OF WALL (TYP) END OF WALL DETAIL SASH BLOCK W/ PREFORMED GASKET

REINFORCED CONCRETE MASONRY

CONTROL JOINT W/ BACKER ROD AND SEALANT EACH SIDE *CMU CONTROL JOINTS TO ALIGN WITH FACE BRICK JOINTS*

> (2) VERT. BARS @ T-JOINT (TYP)

CONTROL JOINT

ENGINEERED WOOD TRUSS NOTES

- 5. ALL ROOF TRUSSES TO BE TIED DOWN WITH SIMPSON H1 AT EACH BEARING POINT.
- 7. END WALL TRUSSES SHALL HAVE VERTICAL MEMBERS SPACED 16" O.C. MAX. MEMBERS SHALL BE ROTATED WITH STRONG AXIS PERPENDICULAR TO SPAN.

WOOD NOTES

- NATIONAL DESIGN SPECIFICATION (LATEST EDITION).
- ON A 6/12 PATTERN.
- EACH WALL. MINIMUM 2 PER WALL. O.C. IN THE FIELD. SHEATHING TO SPAN OVER AT LEAST 2 SUPPORTS.

SHEATHING

STRUCTURAL STEEL

3-3/4"

1. THE REINFORCED CONCRETE MASONRY FOR THIS PROJECT HAS BEEN DESIGNED AND DETAILED IN ACCORDANCE WITH 2. REINFORCED CONCRETE MASONRY SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH, Fm=1500PSI. MASONRY UNITS SHALL BE LIGHTWEIGHT BLOCK CONFORMING TO ASTM C90, GRADE N, TYPE 1, AND SHALL HAVE A MINIMUM NET AREA COMPRESSIVE STRENGTH OF 1900 PSI. MORTAR SHALL CONFORM TO ASTM C270, TYPE S. GROUT SHALL CONFORM TO ASTM C476 AND SHALL 3. CONTINUOUS WIRE REINFORCING (JOINT REINFORCING) SHALL BE GALVANIZED TRUSS OR LADDER TYPE FORMED FROM 9 GAUGE COLD-DRAWN STEEL WIRE COMPLYING WITH ASTM A82. JOINT REINFORCING SHALL BE SPACED AT 16" O.C. VERTICALLY

4. PROVIDE VERTICAL CONTROL JOINTS IN MASONRY WALLS AT A MAXIMUM SPACING OF 15 FEET, AND IN ONE WALL AT INTERSECTING WALLS AT A MAXIMUM OF 4 FEET FROM THE WALL CORNER. HORIZONTAL BOND BEAM AND LINTEL REINFORCING SHALL BE CONTINUOUS ACROSS VERTICAL CONTROL JOINTS. JOINT REINFORCING SHALL BE STOPPED EITHER SIDE OF

6. WHEN A FOUNDATION DOWEL DOES NOT LINE UP WITH A VERTICAL BLOCK CORE, IT SHALL NOT BE SLOPED MORE THAN ONE HORIZONTAL IN SIX VERTICAL. DOWELS MAY BE GROUTED INTO A CELL IN VERTICAL ALIGNMENT, EVEN THOUGH IT IS IN AN ADJACENT CELL TO THE VERTICAL WALL REINFORCING. GROUT THE CELL FOR THE FULL HEIGHT OF THE DOWEL 7. REINFORCING BAR POSITIONERS SHALL BE USED FOR ALL VERTICAL REINFORCING TO SECURE THE BAR IN THE CENTER OF THE CELL BEFORE GROUTING STARTS. REBAR POSITIONERS SHALL BE LOCATED ONE COURSE ABOVE THE BOTTOM AND ONE

8. ALL SPLICED REINFORCING SHALL BE LAPPED 48 BAR DIAMETERS OR 24 INCHES, WHICHEVER IS GREATER. SPLICED BARS SHALL BE WIRED TOGETHER. LAP SPLICES BETWEEN ADJACENT BARS SHALL BE STAGGERED A MINIMUM OF 24 BAR DIAMETERS. 9. ALL REINFORCING BARS SHALL HAVE A MINIMUM GROUT COVER OF ½ OF AN INCH TO THE INSIDE FACE OF THE MASONRY UNIT, A

10. ALL REINFORCING BARS IN WALLS SHALL HAVE NOT LESS THAN ONE BAR DIAMETER NOR 1" CLEAR BETWEEN BARS. 11. VERTICAL CELLS THAT WILL BE GROUTED SHALL HAVE A VERTICAL ALIGNMENT TO MAINTAIN A CONTINUOUS UNOBSTRUCTED 12. GROUTING SHALL BE STOPPED 11/2" BELOW THE TOP OF A COURSE SO AS TO FORM A KEY AT THE POUR JOINT.

LADDER REINF./ WIRE MESH IS NOT AN ACCEPTABLE DEBONDED SHEAR ANCHOR <u>T-JOINT</u>

1. TRUSS MANUFACTURER TO DESIGN ALL TEMPORARY AND PERMANENT TRUSS BRACING TO PROVIDE A POSITIVE LOAD PATH TO THE SHEAR WALLS. 2. PROVIDE EAVE BLOCKING AT ALL SHEAR WALLS. EAVE BLOCKING SHALL CONSIST OF THE FOLLOWING: A. AT HEEL HEIGHTS LESS THAN 11", PROVIDE SOLID 2x BLOCKING AT EVERY OTHER SPACE. SLOPE TOP TO MATCH ROOF SLOPE. B. AT HEEL HEIGHTS GREATER THEN 11", PROVIDE TRUSS BLOCKING AT EVERY SPACE. SLOPE TOP TO MATCH ROOF SLOPE.

PROVIDE RIDGE BLOCKING AT ALL RIDGES. RIDGE BLOCKING SHALL CONSIST OF TWO ROWS OF 2x4 BLOCKING AT EACH TRUSS SPACE. EACH ROW OF BLOCKING SHALL BE SEPARATED TO ALLOW FOR CONTINUOUS RIDGE VENT. 4. ROOF SHEATHING TO BE ATTACHED TO EAVE BLOCKING AND RIDGE BLOCKING WITH BOUNDARY NAILING PATTERN.

6. ALL SIMPSON STRONG-TIE FASTENERS SHALL BE INSTALLED PER THE MANUFACTURERS DIRECTIONS.

1. ALL SAWN LUMBER SHALL BE NO. 1/NO. 2 DFL OR EQUIVALENT. ALL DESIGN VALUES ARE IN ACCORDANCE WITH THE NFoPA

2. LVL'S ARE TO BE LP SOLIDSTART 2900Fb-2.0E AS MANUFACTURED BY LOUISIANA-PACIFIC CORPORATION, OR EQUAL 3. EXTERIOR SHEATHING TO BE 15/32" APA RATED PLYWOOD SHEATHING OR 7/16" APA RATED OSB. ATTACH SHEATHING W/ 8d NAILS

4. EXTERIOR STUD WALLS TO BE ANCHORED TO THE FOUNDATION WITH SIMPSON MASA @ 48" O.C. MAX. AND AT THE ENDS OF

5. ROOF SHEATHING TO BE 19/32" PLYWOOD, 40/20 SPAN RATING, WITH 8D NAILS @ 6" O.C. AT EDGES AND BOUNDARIES AND 12"

6. ALL SIMPSON STRONG-TIE FASTENERS SHALL BE INSTALLED PER THE MANUFACTURERS DIRECTIONS 7. PLYWOOD FLOOR DECKING SHALL BE GLUED AND NAILED TO THE FLOOR SUPPORTS. A LINE OF GLUE SHALL BE APPLIED TO EACH FLOOR JOIST. APPLY TWO LINES OF GLUE WHERE PANEL ENDS MEET OVER A JOSIT. THE ADHESIVE SHALL CONFORM TO APA SPECIFICATION AFG-01, AND BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE FLOOR

DECKING SHALL BE NAILED WITH 8D NAILS @ 12" O.C. AT ALL SUPPORTS. FRAMING PANEL BLOCKING @ EA. BOUNDARY AS REQUIRED

> <u>NOTE</u>: SHEATHING PANELS MAY BE HORIZONTAL OR VERTICAL. VERTICAL PANEL JOINTS ARE TO BE STAGGERED

A36 A992 (FY=50 KSI) A500, GRADE B (FY=46 KSI) A53 (FY-35 KSI) F1554, GRADE 55 A325-N (UNLESS NOTED OTHERWISE) F70XX 2. ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE (LATEST EDITION), EXCEPT AS MODIFIED IN THESE NOTES AND THE PROJECT SPECIFICATIONS. UNLESS DESIGNED AND DETAILED ON THE STRUCTURAL DRAWINGS, ALL STRUCTURAL STEEL STAIRS SHALL BE DESIGNED AND PROVIDED BY THE STEEL FABRICATOR. COORDINATE STAIR LAYOUT WITH THE ARCHITECTURAL DRAWINGS. 4. THE STEEL STRUCTURE IS A NON-SELF-SUPPORTING STEEL FRAME AND IS DEPENDENT UPON DIAPHRAGM ACTION OF THE ROOF DECK, FLOOR SLABS AND ATTACHMENT TO THE WALL SYSTEM FOR STABILITY AND FOR RESISTANCE TO WIND AND SEISMIC FORCES PROVIDE ALL TEMPORARY SUPPORTS REQUIRED FOR STABILITY AND FOR RESISTANCE TO WIND AND SEISMIC FORCES UNTIL THESE WHERE A325 BOLTS OF ANY DIAMETER OR A490 EQUAL TO OR LESS THAN 1 INCH IN DIAMETER ARE TO BE INSTALLED AND TIGHTENED IN AN OVERSIZE OR SHORT SLOTTED HOLE IN AN OUTER PLY, A HARDENED WASHER CONFORMING TO ASTM F436 SHALL BE USED. 6. ALL STRUCTURAL STEEL SHALL BE PAINTED WITH RED OR GRAY PRIMER. DO NOT PAINT TOP OF BEAMS WHERE HEADED STUD 7. AFTER ANCHOR RODS HAVE BEEN SET, AND BEFORE CONCRETE IS PLACED, IT IS STRONGLY SUGGESTED THAT THE CONTRACTOR ENGAGE A SURVEYOR TO VERIEV THE PROPER LOCATION AND FLEVATION OF THE ANCHOR RODS. 8. PER THE AISC MANUAL OF STEEL CONSTRUCTION, ANCHOR ROD HOLES IN BASE PLATES AND WASHERS SHALL BE THE FOLLOWING MAX HOLE SIZE IN WASHER WASHER SIZE MIN. WASHER THICK. 13/16 5/16" 15/16"

3/8" 1-1/16" 1-5/16" 1-9/16" 1-13/16" 5/8 2-1/16" 2-9/16" 51/2"

GENERAL NOTES

BASIC SEISMIC-FORCE-RESISTING SYSTEM: LIGHT FRAMED SHEAR WALLS ANALYSIS PROCEDURE: EQUIVALENT LATERAL-FORCE PROCEDURE

SEISMIC DESIGN CATEGORY:

<u>MISCELLANEOUS</u>

1. THESE GENERAL NOTES SUPPLEMENT THE PROJECT SPECIFICATIONS. REFER TO THE PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. 2. THE STRUCTURAL DRAWINGS ARE INTENDED TO BE USED WITH ARCHITECTURAL AND

 $S_S = 0.131$ $F_a = 1.6$ $S_{MS} = 0.210$ $S_{DS} = 0.140$

 $S_1 = 0.071$ $F_v = 2.4$ $S_{M1} = 0.170$ $S_{D1} = 0.113$

- MECHANICAL DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING REQUIREMENTS FROM SUCH DRAWINGS INTO THEIR SHOP DRAWINGS AND WORK. 3. ANY DETAIL TITLED AS A TYPICAL DETAIL IS APPLICABLE THROUGHOUT THE DESIGN
- DRAWINGS. THESE DETAILS ARE DEFINED AS GENERAL STANDARDS THAT ARE USUALLY IDENTIFIED BY SPECIFIC REFERENCE WITHIN THE DRAWINGS.
- 4. NO OPENINGS SHALL BE MADE IN ANY STRUCTURAL MEMBER WITHOUT THE WRITTEN APPROVAL OF THE PROFESSIONAL-OF-RECORD. 5. NO CHANGE IN SIZE OR DIMENSION OF STRUCTURAL MEMBERS SHALL BE MADE
- WITHOUT WRITTEN APPROVAL OF THE PROFESSIONAL-OF-RECORD. 6. OPENINGS IN WALLS AND DECK, WHICH ARE 1'-4" AND LESS ON A SIDE, ARE GENERALLY NOT SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO THE ARCHITECTURAL AND
- MECHANICAL DRAWINGS FOR SUCH OPENINGS. 7. THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOAD IMPOSED ON THE STRUCTURAL FRAMING. CONSTRUCTION LOADS SHALL NOT EXCEED THE DESIGN CAPACITY OF THE FRAMING AT THE TIME THE LOADS ARE IMPOSED. 8. THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION. THE
- CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL TEMPORARY BRACING AND/OR SUPPORT THAT MAY BE REQUIRED AS THE RESULT OF THE CONTRACTOR'S CONSTRUCTION METHODS AND/OR SEQUENCES. 9. DO NOT SCALE THESE DRAWINGS. USE SPECIFIED DIMENSIONS.
- 10. CONTRACTORS CONSTRUCTION AND/OR ERECTION SEQUENCES SHALL RECOGNIZE AND CONSIDER THE EFFECTS OF THERMAL MOVEMENTS OF STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PERIOD. 11. THE CONTRACTOR SHALL INFORM THE PROFESSIONAL-OF-RECORD IN WRITING OF ANY DEVIATION FROM THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL NOT BE RELIEVED OF THE RESPONSIBILITY OF SUCH DEVIATION BY THE PROFESSIONAL-OF-
- RECORD'S REVIEW OF SHOP DRAWINGS, PRODUCT DATA, ETC., UNLESS THE CONTRACTOR HAS SPECIFICALLY INFORMED THE PROFESSIONAL-OF-RECORD OF SUCH DEVIATION AT THE TIME OF SUBMISSION, AND THE PROFESSIONAL-OF-RECORD HAS GIVEN WRITTEN APPROVAL TO THE SPECIFIC DEVIATION.

SUBMITTAL PROCEDURES

- 1. SHOP DRAWINGS SHALL BE PRODUCED FROM SCRATCH. THE SHOP DRAWINGS SHALL NOT BE PRODUCED FROM DIGITAL COPIES OR SCANS OF THE E.O.R. DRAWINGS. IF THE E.O.R. DRAWINGS ARE DIGITALLY REPRODUCED AND USED IN SUBMITTED SHOP DRAWINGS, THE SHOP DRAWINGS SHALL BE REJECTED IN WHOLE. 2. TRANSMIT SUBMITTALS SUFFICIENTLY IN ADVANCE OF RELATED CONSTRUCTION ACTIVITIES
- TO AVOID UNNECESSARY DELAY. THE STRUCTURAL ENGINEER FOR THIS PROJECT MAY WITHHOLD ACTION ON A SUBMITTAL REQUIRING COORDINATION WITH OTHER SUBMITTALS UNTIL ALL RELATED SUBMITTALS ARE RECEIVED. 3. SHOP DRAWINGS SHALL BE SUBMITTED IN AN UNLOCKED 'PDF' ELECTRONIC FORMAT.
- LOCKED 'PDF' FILES WILL NOT BE ACCEPTED. THE SHOP DRAWINGS WILL BE REVIEWED, MARKED UP, AND RETURNED IN 'PDF' ELECTRONIC FORMAT.

S0.1

STRUCTURAL NOTES

↔ (4)

 3/16"Ø WIRE EACH FACE
 @ 18" O.C. VERT. FOR
 BRICK TIE ATTACHMENT PROVIDE BITUMINOUS PAINT BELOW FINISHED FLOOR ON COL. & BASE PL

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CHEROKEE NATION	CHEROKEE NATION TAG OFFICE	CATOOSA, OKLAHOMA
KEY PLAN:		
CONSTRUC	TION DO	CUMENTS
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07-31-2020 SHEET NUMBER:	18	-01.10
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	COMPRESSED AIR	- - - -
 	COLD WATER	
	FILTERED WATER	
 	FIRE	
 	FORCED MAIN	
 	GAS GREASE	
 	HOT WATER	
 	HOT WATER RETURN	
 	MEDICAL NITROUS	
 	MEDICAL OXYGEN	
	MEDICAL VACUUM	
	OVERFLOW DRAIN	
· · · · · · · · · · · · · · · · · · · ·	ROWATER	
	SANITARY SEWER	
	VENT	
	CONNECT TO EXISTING	
M	WATER/GAS METER	
R	REGULATOR	
	PRESSURE REDUCING VALVE	
-++1	DISCONNECT	
	UNION	
	BALL VALVE	
	MIXING VALVE	
	CALIBRATED MIXING VALVE	
UB-1/ SB-1	UTILITY BOX/ SUPPLY BOX	
	CIRCULATION PUMP	
	FROST PROOF HOSE BIBB (FPHB-1)	
-+	HOSE BIBB (HB-1)	
	ROOF DRAIN	
	ROOF OVERFLOW DRAIN	
	DOWNSPOUT	
► FD-1	FLOOR DRAIN	
SWD-1	SAFE WASTE DRAIN	
	FLOOR SINK	·
Gu WCO-1/ SCO-1	WALL CLEAN OUT/ STACK CLEAN OUT	·
FCO	FLOOR CLEANOUT	1
© COTG-1/ TWCO-1	CLEAN OUT TO GRADE/ TWO-WAY CLEAN OUT	1
		r I
	INDICATES DETAIL NUMBER	
	INDICATES DETAIL NUMBER INDICATES SHEET NUMBER BACKFLOW PREVENTER (RP7-1)	
X X HOR. OR VERT.	INDICATES DETAIL NUMBER INDICATES SHEET NUMBER BACKFLOW PREVENTER (RPZ-1)	

GENERAL PLUMBING NOTES

1	THE ENTIRE PLUMBING SYSTEM SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE INTERNATIONAL PLUMBING CODE REGULATIONS AND LOCAL PLUMBING INSPECTOR.
2	THE PIPING INDICATED ON THESE PLANS ARE DIAGRAMMATICAL. ALL WORK SHALL BE COORDINATED WITH ALL OTHER TRADES PRIOR TO INSTALLATION. CONTRACTOR SHALL COORDINATE ROUTING OF ALL PIPING WITH EXISTING CONDITIONS AND SHALL PROVIDE ANY NECESSARY OFFSETS, REROUTING, TEES, ELBOWS, ETC. REQUIRED FOR A COMPLETE AND COORDINATED INSTALLATION.
3	THE CONTRACTOR SHALL OBTAIN AND PAY ALL FEES RELATED TO PERMITTING, INSPECTIONS, TAP-ON FEES, ETC.
4	THE CONTRACTOR SHALL COORDINATE ANY PLUMBING OR PIPING SYSTEM SHUTDOWN WITH THE OWNER 48 HOURS IN ADVANCE.
5	ALL DOMESTIC WATER PIPING SHOWN IS ABOVE CEILING, EXPOSED OVERHEAD, AND WITHIN WALLS UNLESS OTHERWISE NOTED. WATER HAMMER ARRESTORS SHALL BE INSTALLED AT DISHWASHERS, WASHING MACHINES, SUPPLY BOXES, AND QUICK CLOSING VALVES NOT LISTED. INSTALL WHA-1 AS CLOSE TO QUICK CLOSING VALVE AS POSSIBLE PER MANUFACTURER'S RECOMMENDATIONS. ISOLATION VALVES SHALL BE INSTALLED ON ALL SUPPLY FIXTURE GROUPS AND HOT WATER BALANCING VALVES.
6	FROST PROOF HOSE BIBBS AND SUPPLY PIPING SHALL BE INSTALLED ON THE INSIDE OF THE INSULATION. SEAL SHEATHING PENETRATION TO PREVENT AIR FROM REACHING THE VALVE.
7	ALL SANITARY WASTE PIPING SHOWN IS BELOW SLAB, BELOW FLOOR, OR WITHIN WALLS UNLESS OTHERWISE NOTED. ALL SANITARY VENT PIPING SHOWN IS ABOVE CEILING, EXPOSED OVERHEAD, OR WITHIN WALLS UNLESS OTHERWISE NOTED.
8	FLOOR DRAIN CONNECTION SIZE TO BE THE SAME SIZE AS THE DRAIN LINE IT CONNECTS UNLESS NOTED OTHERWISE. IF SIZE IS NOT INDICATED ON DRAWINGS REFER TO PLUMBING ROUGH-IN SCHEDULE FOR PROPER SIZE.
9	FLUSH CONTROLS FOR HANDICAPPED WATER CLOSETS ARE TO BE MOUNTED TO THE OPEN SIDE OF THE TOILET AREAS.
10	CONTRACTOR SHALL COORDINATE AND PROVIDE ALL NECESSARY PIPING & PLUMBING FITTINGS, PIPING, MISCELLANEOUS ITEMS REQUIRED FOR A COMPLETE INSTALLATION OF ALL PLUMBING RELATED ITEMS.
11	THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL UNDER SLAB PIPING WITH EXISTING STRUCTURAL FOUNDATIONS. UNDERGROUND UTILITY LOCATIONS SHALL BE VERIFIED PRIOR TO ANY WORK BEING PERFORMED. CONTRACTOR SHALL REPAIR OR REPLACE ALL PIPING NOT IN PROPER WORKING ORDER OR DAMAGED DURING INSTALLATION OF THE NEW UNDERGROUND PIPING.
12	ALL PIPING PENETRATIONS THROUGH NEW, EXISTING WALL, OR FLOOR SHALL BE SEALED TO EQUAL THE RATING OF THE NEW, EXISTING WALL OR FLOOR.
13	THE PLUMBING SYSTEM SHALL BE TESTED AS REQUIRED BY LOCAL CODE OR BY THE REQUIREMENTS OF THE LOCAL PLUMBING INSPECTOR.
14	THE ENTIRE DOMESTIC WATER SYSTEM (EXISTING/NEW) SHALL BE DISINFECTED IN ACCORDANCE TO THE LOCAL CODE & HEALTH DEPARTMENT REQUIREMENTS.
15	DOMESTIC WATER AND SEWER LOCATED OUTSIDE OF FOOTING SHALL MAINTAIN A MINIMUM OF 10' SEPARATION UNLESS WRITTEN PERMISSION IS OBTAINED FROM LOCAL AUTHORITIES AND/OR PROPER CONTAMINATION PROVISIONS PER LOCAL CODE HAVE BEEN MET.
16	FINISHED FLOOR ELEVATION (F.F.E.) SHALL BE 0.00' FOR CALCULATION PURPOSES ONLY, UNLESS NOTED OTHERWISE.
17	THE BACKFLOW PREVENTION DEVICE SHALL BE INSTALLED PER LOCAL CODE & PER AUTHORITY HAVING JURISDICTION REQUIREMENTS. NON-LEAD TYPE ONLY.
18	ALL VENT THRU ROOF (VTR'S) PENETRATIONS INDICATED ON PLANS ARE PRELIMINARY. FINAL LOCATIONS SHALL BE COORDINATED WITH ALL TRADES. ALL VTR'S SHALL BE A MINIMUM OF 10'-0" FROM ALL FRESH AIR INTAKE OPENINGS.
19	ANY PVC PIPE PENETRATING A FIRE RATED ASSEMBLY SHALL BE EXTERNALLY SLEEVED WITH STEEL, FERROUS, OR COPPER MATERIALS, SECURELY FASTENED TO THE FIRE RATED ASSEMBLY. ANY SPACE BETWEEN THE SLEEVE AND THE FIRE RATED ASSEMBLY PENETRATED SHALL BE PROTECTED USING MATERIAL THAT CONFORMS TO ASTM E 814 OR UL 1479, SUCH AS FIRE STOP FS-1900 OR FLAME STOPPER 5000.
20	CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS FOR DISHWASHER, WASHING MACHINE, REFRIGERATOR, ETC.
21	PROVIDE SHUT-OFF VALVES FOR PROPER OPERATION AND SERVICING OF DOMESTIC WATER DISTRIBUTION SYSTEM. LOCATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: AT EACH FIXTURE GROUP, AT EACH BRANCH TAKE-OFF FROM MAINS AND AT THE BASE OF EACH RISER. COORDINATE WITH ARCHITECTURAL PLAN FOR ACCESS DOOR LOCATIONS.
22	VALVES SHALL BE LOCATED 6" ABOVE ACCESSIBLE CEILING WHEN AT ALL POSSIBLE AND SHALL BE CLEAR OF ANY OBSTRUCTIONS FROM OTHER TRADES. MAINTENANCE SHALL BE ABLE TO ACCESS VALVES WITH STANDARD LADDER. SHOULD LOCATION NOT BE APPLICABLE CONTRACTOR SHALL PROVIDE A CONTROL CHAIN AND/OR ARM
23	TEMPERED WATER, NOT EXCEEDING A MAXIMUM OF 110° F, SHALL BE DELIVERED FROM PUBLIC HANDWASHING FACILITIES THROUGH AN APPROVED WATER TEMPERATURE LIMITING DEVICE THAT CONFORMS TO ASSE 1070.
24	IT IS THE PLUMBING CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE SITE CONTRACTOR TO CONFIRM THAT THE INVERTS AND LOCATIONS OF THE BUILDING UTILITIES ARE COMPATABLE WITH THE SITE UTILITIES PRIOR TO BEGINNING WORK.
25	CONTRACTOR SHALL PROVIDE A PRESSURE REDUCING VALVE (PRV-1) SHOULD THE WATER PRESSURE EXCEED 75 PSI. CONTRACTOR SHALL CONFIRM WITH ON SITE CONDITIONS AND LOCAL UTILITY.
26	PROVIDE BALANCING VALVES FOR PROPER OPERATION AND PRESSURE OF DOMESTIC WATER DISTRIBUTION SYSTEM. LOCATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: AT EACH FIXTURE GROUP, AT EACH BRANCH TAKE-OFF FROM MAINS AND AT THE EACH RISER. INSTALL PER MANUFACTURE'S REQUIREMENTS.
27	ANY LINE VOLTAGE WIRING THAT IS RUN BY THE PLUMBING CONTRACTOR SHALL BE INSTALLED IN ACCORDANCE WITH THE ELECTRICAL PLANS, NOTES, AND SPECIFICATIONS.

28 INSULATION JACKET SHALL BE PROVIDED WHEN PIPING INSULATION IS EXPOSED.

PIPING MATERIAL SCHEDULE

	DESCRIPTION	MATERIAL									
ABOVE GRO VENT	OUND SANITARY SEWER AND	PVC SCHEDULE 40 PIPE AND FITTINGS EXCEPT IN RETURN AREAS. IN PLENUM RETURN AREAS WRA FIRE WRAP.	PLENUM P PVC WITH 1"			WASTE	VENT	WATER	WATER		
UNDERGROUND SANITARY SEWER AND PVC SCHEDULE 40 PIPE AND FITTINGS.					1-1/2"	1-1/2"	1/2"		ADA 36" TO TOP OF ORIFICE		
BUILDING			FLOOR DRAI	NS/SINKS	2"	1-1/2"	0.(4)				
WATER DISTRIBUTION PIPE WATER DISTRIBUTION PIPE SHALL CONFORM TO N		NSF 61 AND	HUSE BIBB	NK	3"	1_1/2"	3/4"	1/2"	18" ABOVE GRADE OUTSIDE, 1	B" A.F.F. INSIDE	
		SHALL BE PEX AND CONFORM TO THE STANDARD	S LISTED IN	LAVATORIES	AND SINKS, COUNTER MOUNTED	1-1/2"	1-1/2	1/2"	1/2"		
		AQUAPEX OR EQUIVALENT. PEX FITTINGS SHALL BE FULL-DIAMETER FITTINGS.	BE LAVATORIES		AND SINKS, WALL MOUNTED	1-1/2"	1-1/4"	1/2"	1/2"	NON-ADA 31" TO TOP OF RIM ADA 34" TO TOP OF RIM	
WATER SEI	RVICE PIPE	WATER SERVICE PIPE SHALL CONFORM TO NSF 6	1 AND SHALL BE	SUPPLY BOX				1/2"		12" TO BOTTOM OF BOX	
		COPPER AND CONFORM TO THE STANDARDS LIST 605.3 OF THE I.P.C	ED IN TABLE	WATER CLOS	SET FLUSH VALVE WALL MOUNTED	3"	1-1/2"	1-1/4"		NON-ADA 15" TO TOP OF BOWL ADA 17" TO TOP OF BOWL	-
			PLUMB	ING EQL	JIPMENT SCHEDUL	E					
FIXTURE											ELECTRICAL
TAG		DESCRIPTION	MANUFAC	TURER			TR	IM			REQUIREMENTS
3V-1	BALL VALVE		APOLLO INTERNATIO	ONAL	LEAD FREE BALL VALVE, FULL POR	T, BLOWOUT-	-PROOF, I	PRESSURE R	ETAINING, AI	DJUSTABLE STEM PACKING	
COTG-1	CLEANOUT TO GRADE, SPEED	-SET OUTLET	J. R. SMITH 4237		UNFINISHED FLOOR CLEANOUT WIT CLEANOUT WITH ROUND ADJUSTAE	TH ADJUSTAE BLE SCORIAT	BLE ROUN ED SECU	ID CAST IROI RED CAST IR	N TRACTOR (ON TOP, TAF	COVER TOP, DUCO CAST IRON PERED THREAD BRONZE PLUG,	
CP-1	CIRCULATING PUMP		ARMSTRONG ASTRO 280 SS		THREE SPEED, BRONZE BODY WITH HEAD-FEET	H BRASS IMPI	ELLER, W	ITH AQUAST	AT AND AUTC	DMATIC TIMER KIT, 5 GPM @ 25	230V, 1PH, 218 WATTS
T-1	EXPANSION TANK		WATTS PLT-5		BRASS CONNECTION, WELDED STE	EL CONSTRU AIR CHARGE	JCTION, F	OLYPROPYL	ENE LINER, E	BUTYL DIAPHRAGM, GROOVED	
WC-1	C-1 ELECTRIC WATER COOLER, SINGLE LEVEL, WALL MOUNTED, HANDICAPPED, NO				ADA APPROVED, W/ TOUCH PADS C	DN FRONT, FI	LEXIBLES	SAFETY BUBE	BLER, P-TRAF	P, WATER VALVE, MLP100	115V, 1PH, 370W
WC-2	ELECTRIC WATER COOLER, SINGLE LEVEL, WALL MOUNTED, STANDARD, NO LEAD DESIGN, ONE PIECE, STAINLESS STEEL BASIN. FLEXIBLE SAFETY BUBBLER				STANDARD, W/ TOUCH PADS ON FF	RONT, FLEXIE	BLE SAFE	TY BUBBLER	, P-TRAP, WA	TER VALVE, MLP100 CARRIER	115V, 1PH, 370W
EWH-1	ELECTRIC WATER HEATER, LO	WBOY 30 GALLON	BRADFORD WHITE LE130L3-3		BRASS DRAIN VALVE, ANODE ROD, & DRAIN, MIXING VALVE	AUTOMATIC	THERMO	STAT, HEAT 1	FRAP, EXPAN	ISION TANK (ET-1), CATCH PAN	208V, 4.5KW, 1PH
D-1	FLOOR DRAIN-ROUND	DRAIN-ROUND MIFAB F1000			CAST IRON BODY, ANCHOR FLANGE GRATE AND SEDIMENT BUCKETS, M	E, SECURED F 11FAB TRAP G	ROUND A GUARD, R	DJUSTABLE S	STRAINER HE	EAD WITH HOLE GRATE, LOOSE	
PHB-1	FROST PROOF HOSE BIBB - BOX				1/4 TURN NON-FREEZE WALL HYDR. VALVE AND STAINLESS STEEL BOX,	ANT WITH AU PROVIDE SH	JTOMATIC	DRAINING IN ALVE FOR S	NTEGRAL VA	CUUM BREAKER, DUAL CHECK N AN ACCESSIBLE LOCATION	
S-1	FLOOR SINK 12-1/2" CAST IRON RECEPTOR,	8" DEEP	J. R. SMITH 3150		CAST IRON FLANGED RECEPTOR, S LOOSE GRATE, ALUMINUM DOME B	EEPAGE HOL OTTOM STRA	LES, ACID AINER, GR	RESISTANT	COATED INT TRAP GUARD	ERIOR, NICKEL BRONZE RIM,	
IL-1	HANDICAPPED LAVATORY, WAI	LL MOUNT, VITREOUS CHINA	ZURN Z5314		ZURN Z6915-XL BATTERY SENSOR F STRAINER, ZURN Z8700 SERIES P-T ZURN Z8946-1-NT ADA TRAP, STOP CONNECTIONS, CONSEALED ARM C	AUCET WITH RAP, ZURN Z AND SUPPLY ARRIER SYS	H THERMO 8800 SER PROTEC TEM, THF	DSTATIC MIX IES STOP WI TOR PVC TYP REE HOLES C	ING VALVE, T TH FLEXIBLE PE INSULATIO IN DECK 4" CI	MV-1, ZURN Z8743-PC GRID SUPPLIES AND TURN KEY, ON AROUND "P" TRAP & IPS ENTERS	
IWC-1	HANDICAPPED WATER CLOSET MOUNTED, ELONGATED RIM, 12	T, VITREOUS CHINA, FLUSH VALVE, FLOOR 2" ROUGH-IN, SIPHON JET BOWL, 1.28 GPF	ZURN Z5665-BWL1		EZ-FLO 65913 OPEN FRONT SEAT, Z Z5972-COMB CLOSET BOLT/WAX RII	URN ZTR620 NG KIT	0EV-LL 1.2	28 GPF SENS	OR FLUSH V	ALVE BATTERY POWERED,	
S-1	JANITOR'S SINK, FLOOR MOUNTED		FIATS BC6010		PROVIDE SERVICE FAUCET MUSTEE #63.600A CHROME PLATED BRASS ON 8" CENTER W/ VACUUM BREAM HOSE & BRACKET 832AA, MOP HANGER MUSTEE #65.600, WALL GUARDS 2 PANELS MSG, SUPPLIED W/ CA			TER W/ VACUUM BREAKER, S MSG. SUPPLIED W/ CAST			
	24"x 24", TERRAZZO NEO-CORN CURBS	ER SERIS WITH STAINLESS STEEL CAPS ON ALL			BRASS DRAIN, PROVIDE CHECK VAI	_VES ON HOT	T AND CO	LD WATER L	INES IN AN AG	CCESSIBLE LOCATION	
RPZ-1	REDUCE PRESSURE PRINCIPLE	EBACKFLOW PREVENTER, FOR DOMESTIC WATER	WATTS LF009M2 QT		PROVIDE SAME SIZE AS WATER LIN APPROVAL BY FOUNDATION FOR CI UNIVERSITY OF SOUTHERN CALIFO	E FROM MET ROSS CONNE RNIA	ER, WAT ECTION C	TS BALL VAL ONTROL AND	VES AND "Y" :) HYDRAULIC	STRAINER, SHALL MEET CRESEARCH AT THE	
S-1	SINK DOUBLE COMPARTMENT, COUI	NTER MOUNT	ELKAY LRAD332255	PFISTER G136-5000(C) DUAL LEVER FAUCET WITH SPRAY, 12" HIGH SWING SPOUT, 8" REACH, 0.5GPM AERAT(32255 3-1/2" OPENING DRAIN. McGUIRE 151M HEAVY DUTY BRASS BASKET & STRAINER, 1 1/2", CHROME PLATED TAILPIECE. McGUIRE 8912 1 1/2" x 1 1/2" HEAVY DUTY CHROME PLATED CAST BRASS P-TRAP W/ CLEANOUT PI McGUIRE 170LK CHROME PLATED SOLID BRASS ANGLE STOPS W/ 5" CHROME PLATED COPPER EXTENSION & LOOSE KEYS, FLEXIBLE CHROME PLATED COPPER RISERS, McGUIRE 111C SERIES 1 1/2" END OUTLET CONTINUOUS WASTE, PROVIDE THREE FAUCET HOLES ON DECK				, 8" REACH, 0.5GPM AERATOR, I 1/2", CHROME PLATED SS P-TRAP W/ CLEANOUT PLUG, TED COPPER EXTENSION TUBE ES 1 1/2" END OUTLET			
SB-1	SUPPLY BOX		GUY GRAY BIM-875		(1) 1/2" SUPPLY, PROVIDE WHA-1 (W	ATER HAMM	ER ARRE	STOR)			
MV-1	THERMOSTATIC MIXING VALVE	- POINT OF USE	LEONARD 270-LF		LEAD FREE, INTEGRAL CHECK VALV	/E AND STRA	NNER, PF	ROVIDE, TEMI	PERATURE C	CONTROL SET AT 110°	
WCO-1	TWO WAY CLEANOUT, SPEEDI-	SET OUTLET	J. R. SMITH 4237		UNFINISHED FLOOR DUCO CAST IR TOP, TAPERED THREAD BRONZE PL	ON CLEANOU UG, REFER 1	JT WITH F TO PLANS	OUND ADJU	STABLE SCO	RIATED SECURED CAST IRON	
VCO-1	WALL CLEANOUT		J. R. SMITH 4510		DUCO CAST IRON CLEANOUT TEE, E SIZE, PROVIDE ROUND OR SQUARE	BRONZE PLU	G, REMO	ABLE STAIN	LESS STEEL D, REFER TO	COVER. REFER TO PLANS FOR ARCHITECT	
VHA-1	WATER HAMMER ARRESTOR		SIOUX CHIEF 650&660 HYDRARESTER		VACURESTER VACUUM BREAKER A CONTACT THE ARCHITECT	RRESTER, Tי	YPE L CO	PPER CONST	RUCTION, IF	AN ACCESS DOOR IS NEEDED	

COPPER TO PE>	SIZING CHART
PLAN SIZE (COPPER)	PLAN SIZE (PEX)
1/2"	1/2"
3/4"	1"
1"	1-1/4"
1-1/4"	1-1/2"
1-1/2"	2"
2"	N/A
2-1/2"	N/A
3"	N/A
4"	N/A

PLUMBING PIPING INSULATION SCHEDULE

			INSU	LATION THICKN	ESS	
DESCRIPTION	INSULATION TYPE	<1	1 TO <1-1/2	1-1/2 TO <4	4 TO <8	≥8
DOMESTIC COLD WATER PIPING BELOW GRADE	PVC OR HDPE JACKET ONLY, NO INSULATION	1	1	1.5	1.5	1.5
CONDENSATE PIPING ABOVE GRADE	ELASTOMERIC, ADD ASTM E84 COMPLIANT JACKET IN AIR PLENUM SPACES	0.5	1	1	1	1.5
PVC WASTE VENT AND WASTE DRAIN IN AIR PLENUM SPACE	COMPRESSED FIBERGLASS OR ELASTOMERIC WITH ASTM E84 COMPLIANT JACKET	0.5	0.5	0.5	0.5	0.5
PVC AND CAST IRON ROOF DRAINS IN ALL AREAS ABOVE GRADE	COMPRESSED FIBERGLASS OR ELASTOMERIC WITH ASTM E84 COMPLIANT JACKET	1	1	1.5	1.5	1.5
WATER COOLER TRAPS, ALL EXPOSED LAVATORY AND SINK TRAPS, TAILPIECES, HOT AND COLD WATER SUPPLY LINES/ANGLE VALVES TO THESE DEVICES	EQUIVALENT TO TRUEBRO 102 E-Z PIPE COVER	0.125	0.125	0.125	0.125	0.12
DOMESTIC HOT WATER AND HOT WATER RETURN PIPING BELOW GRADE	ELASTOMERIC OR FOAM. ENCAPSULATE WITH PVC OR HDPE JACKET	1	1	1.5	1.5	1.5
DOMESTIC COLD WATER, HOT WATER, AND HOT WATER RETURN PIPING ABOVE GRADE	ELASTOMERIC, ADD ASTM E84 COMPLIANT JACKET IN AIR PLENUM SPACES	1	1	1.5	1.5	1.5

ROUGH-IN AND MOUNTING HEIGHT SCHEDULE

NOTES: 1. ALL VENT LINE SIZES SHOWN ARE MINIMUM UNLESS SHOWN LARGER ON RISER DIAGRAMS. 2. SIZES SHOWN FOR WASTE ARE FOR RISERS ONLY. 3. ALL DRAIN AND VENT LINES BELOW SLAB SHALL BE 2" OR LARGER. 4. VENT LINES SHALL RISE 6" ABOVE FLOOD LEVEL RIM BEFORE OFFSETTING HORIZONTALLY, EXCEPT FOR INTERCEPTORS LOCATED OUTDOORS. 5. SIZES SHOWN APPLY UNLESS NOTED DIFFERENTLY ON PLANS.

FIXTURE	WASTE	VENT	COLD WATER	HOT WATER	HEIGHT OF INSTALLATION
DRINKING FOUNTAIN	1-1/2"	1-1/2"	1/2"		NON-ADA 40" TO TOP OF ORIFICE ADA 36" TO TOP OF ORIFICE
FLOOR DRAINS/SINKS	2"	1-1/2"			
HOSE BIBB			3/4"		18" ABOVE GRADE OUTSIDE, 18" A.F.F. INSIDE
JANITOR'S SINK	3"	1-1/2"	1/2"	1/2"	
LAVATORIES AND SINKS, COUNTER MOUNTED	1-1/2"	1-1/4"	1/2"	1/2"	
LAVATORIES AND SINKS, WALL MOUNTED	1-1/2"	1-1/4"	1/2"	1/2"	NON-ADA 31" TO TOP OF RIM ADA 34" TO TOP OF RIM
SUPPLY BOX			1/2"		12" TO BOTTOM OF BOX
WATER CLOSET FLUSH VALVE WALL MOUNTED	3"	1-1/2"	1-1/4"		NON-ADA 15" TO TOP OF BOWL ADA 17" TO TOP OF BOWL

PLUMBING DRAIN PLAN 1/8" = 1'-0"

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OPPER-TO-PEX R PEX PIPING S USED.	
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ACTOR'S INATE WITH THE FIRM THAT COMPATABLE IOR TO LOCATION OF PRIOR TO BID.	

PLUMBING WASTE/VENT ISOMETRIC

KEYNOTES 22.13 CIRCUIT VENT. ALL WASTE PIPING CONNECTIONS TO MAIN SHALL BE HORIZONTAL.

22A PLUMBING rev – 20150529

22A 1 GENERAL INSTRUCTIONS

22A 1-1 GENERAL REQUIREMENTS

Requirements under Division 1 and the general and supplementary conditions of these specifications apply division. Where the requirements of this section and division exceed those of Division 1, this section and div precedence. Become thoroughly familiar with all their contents as to requirements that affect this division, se work required under this section includes material, equipment, appliances, transportation, services, and labor complete the entire system as required by the drawings and specifications, or reasonably inferred to be neces each system's functioning as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and portions of the work described in one as if described in both. In the event of discrepancies, notify the engineer and request clarification prior to pro work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials relationship to one another, including sizes, shapes, locations, and connections. They also convey the scope the intended general arrangement of the equipment and other materials without showing all of the exact deta offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the w materials and equipment will fit into the designated spaces, and which, when installed per manufacturers' req ensure a complete, coordinated, satisfactory and properly operating system. Determine exact locations by jo

checking the requirements of other trades, and by reviewing all contract documents. Correct errors that could avoided by proper checking and inspection, at no additional cost to the owner.

Specifications define the qualitative requirements for products, materials, and workmanship upon which the 22A 1-2 DEFINITIONS

Whenever used in these specifications or drawings, the following terms shall have the indicated meanings:

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembling, installing, and Install: "to perform all operations at the project site, including, but not limited to, and as required: unloading, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleanir

commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install complete, and ready for the intended use."

Furnished by owner (or owner-furnished) or furnished by others: "an item furnished by the owner or under oth contracts, and installed under the requirements of this division, complete, and ready for the intended use, inc services incidental to the work necessary for proper installation and operation. Include the installation under required by this division.

Engineer: where referenced in this division, "engineer" is the engineer of record and the design professional t this division, and is a consultant to, and an authorized representative of, the architect, as defined in the gene supplementary conditions. When used in this division, it means increased involvement by, and obligations to addition to involvement by, and obligations to, the "architect".

AHJ: the local code and/or inspection agency (authority) having jurisdiction over the work

NRTL: nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL acceptable to the AHJ over this project.

The terms "equivalent", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acce engineer as equivalent to the item or manufacturer specified". The term "approved" shall mean labeled, lister three, by an NRTL, and acceptable to the AHJ over this project.

22A 1-3 PRE-BID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under to be done. Failure to do so will not be considered sufficient justification to request or obtain extra compensa the contract price. 22A 1-4 MATERIAL AND WORKMANSHIP

Provide all material and equipment new and in first class condition. Provide markings or a nameplate for all r equipment identifying the manufacturer and providing sufficient reference to establish quality, size and capac

provide the following quality grade(s) for all materials and equipment: Commercial Specification Grade Pipe, pipe fittings, pipe specialties and valves shall be manufactured in plants located in the United States.

Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the architect and engineer. Workmanship shall be the finest possible by experienced mechanics of the properties

The complete installation shall function as designed and intended with respect to efficiency, capacity, noise or excessive noise from equipment, devices or other system components will not be acceptable. Remove from the premises waste material present as a result of work. Clean equipment installed under this

Repair or replace public and private property damaged as a result of work performed under this contract to the authorities and regulations having jurisdiction.

a neat and clean installation at the termination of the work.

22A 1-5 MANUFACTURERS In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide the manufacturers specified

Where a list is provided, manufacturers listed are not in accordance with any ranking or preference Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers

been actively involved in manufacturing the specified product for no less than 5 years. 22A 1-6 COORDINATION

Coordinate all work with other divisions and trades so that the various components of the systems will be inst time, fit the available space, and will allow proper service access to those items requiring maintenance. Refe division's drawings, and to relevant equipment submittals and shop drawings to determine the extent of clear Components which are installed without regard to the above shall be relocated at no additional cost to the ow

Unless otherwise indicated, the general contractor will provide chases and openings in building construction installation of the systems specified herein. Contractor shall furnish the general contractor with information v openings are required. Make all offsets required to clear equipment, beams and other structural members, a concealing system components in the manner anticipated in the design. Keep informed as to the work of oth in the construction of the project, and execute work in a manner as to not interfere with or delay the work of c

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measure building, as variations may occur. Contractor will be held responsible for errors that could have been avoided and inspection

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Mo in the construction documents are not necessarily intended to designate the required trim. 22A 1-7 ORDINANCES, CODES, AND STANDARDS

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state an having jurisdiction. Equipment furnished and associated installation work performed under this contract shall compliance with current applicable codes adopted by the local AHJ including any amendments and standards National Fire Protection Association (NFPA), Underwriters Laboratories (UL), Occupational Safety and Health (OSHA), American Society of Mechanical Engineers (ASME), American Society of Heating, Refrigeration, and Engineers (ASHRAE), American National Standards Institute (ANSI), American Society of Testing Materials (national standards and codes where applicable. Additionally, comply with rules and regulations of public utili departments affected by connection of services. Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract take precedence.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, a to the engineer's attention for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Whe pay for and furnish certificates of inspection to owner. Contractor will be held responsible for violations of the

22A 1-8 PROTECTION OF EQUIPMENT AND MATERIAL Store and protect from damage equipment and materials delivered to job site, in accordance with manufactur

recommendations. For materials and equipment susceptible to changing weather conditions, dampness, or t variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditio waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, wa damage. Equipment and material that has been damaged by construction activities will be rejected, and connew equipment and material as required at no additional cost to the owner.

Keep premises broom clean from foreign material created during work performed under this contract. Piping, shall have a neat and clean appearance at the termination of the work.

Plug or cap open ends of piping systems while stored and installed during construction when not in use to preof debris into the systems. Keep the manufacturer-provided protective coverings on floor drains, floor sinks a during construction. Remove coverings at the termination of the work and polish exposed surfaces 22A 1-9 SUBSTITUTIONS

Include in the base bid the products specifically named in these specifications or on the drawings. Submit, in alternates, with bid, products of any other manufacturers for similar use, provided the differences in cost, if ar each proposed alternate.

No substitutions will be considered with receipt of Bids, unless the Architect and Engineer have received from the Bidder a written request for approval to bid a substitution at least ten calendar days prior to the date for receipt of Bids, and have approved the substitution request. Include, with each such request, the name of the material or equipment for which substitution is being requested, and a complete description of the proposed substitution, including drawings, cut sheets, performance and test data, and all other information necessary for an evaluation. Include also a statement setting forth changes in other materials, equipment or other work that would be required to incorporate the substitution. The burden of proof of the merit of the proposed substitute is upon the proposer. The proposer of any substitutions shall compensate the Engineer at a rate of \$150.00 per hour for time spent evaluating proposed substitutions and or the subsequent revisions to the design required to utilize the substitution

The Architect's or Engineer's decision to approve or disapprove a substitution in a Bid is final.

If the proposed substitution is approved prior to receipt of Bids, such approval will be stated in an Addendum. Bidders shall not rely upon approvals made in any other manner, including verbal.

No substitutions will be considered after the Contract is awarded unless specifically provided in the Contract Documents.

No substitutions will be considered after receipt of Bids and before award of the Contract.

∞ _____

Assemble and submit to the architect, for engineer's review, manufacturers' product literature for material and equipment to be

	furnished, installed, or both, under this division, including shop drawings, manufacturers' product data and performance sheets, samples, and other submittals required by this division. Highlight, mark, list or indicate the materials, performance criteria and accessories that are being proposed. Provide the number of submittals required by division 1; however, at a minimum, submit	required for core drilled holes in existing sleeves 6" and smaller. Provide galvaniz installation in areas without return air ple
to this section and vision take	two (2) sets. Before submitting, verify that all materials and equipment submitted are mutually compatible and suitable for the intended use, fit the available spaces, and allow ample and code-required room for access and maintenance. Submittals shall contain the following information. Submittals not so identified will be returned to the contractor without action:	Seal elevated floor, exterior wall and roo sealant. Pack with mineral wool and sea
ection or both. The or required to essary to facilitate	The project name. The applicable specification section and paragraph. The submittal date.	Seal around penetrations of fire rated as architectural specifications for fire stoppin installation drawing for each penetration
e, shall be provided oceeding with the	drawings and specifications, and have been coordinated with other trades. Submittals and shop drawings shall not contain HP Engineering's firm name or logo, nor shall it contain the HP Engineering's	Extend pipe insulation for insulated pipe barrier shall be maintained. Size sleeve insulation.
s and their e of work, indicating	engineers' seal and signature. They shall not be copies of HP Engineering's work product. Transmit submittals as early as required to support the project schedule. Allow for two weeks engineer review time, plus mailing	Seal concrete or masonry exterior wall po iron "wall pipes" with integral waterstop ri
alls as to elevations, vork and to verify that quirements, will bb measurements, by ld have been	time, plus a duplication of this time for re-submittals, if required. The engineer's submittal reviews will not relieve the contractor from responsibility for errors in dimensions, details, size of members, or quantities; or for omitting components or fittings; or for not coordinating items with actual building conditions. Refer to division 1 for acceptance of electronic submittals for this project. For electronic submittals, contractor shall submit the	Seal elevated concrete slab with water p waterproof membrane flashing between ' waterstop ring manufactured by Josam, .
contract is based.	documents in accordance with the procedures specified in division 1. Contractor shall notify the architect and engineer that the shop drawings have been posted. If electronic submittal procedures are not defined in division 1, contractor shall include the website, user name and password information needed to access the submittals. For submittals sent by e-mail, contractor shall copy the architect and engineer's designated representatives. Contractor shall allow the engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal and shall clearly indicate the materials, performance criteria and accessories being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.	Provide sleeves for horizontal pipe passi sizes larger than the pipe served. Provide Schedule 40 PVC pipe sleeves t nominal pipe size larger than the pipe se rods. Seal water-tight with silicone caulk
l similar operations."	22A 1-11 ELECTRONIC DRAWINGS	Provide 1/2" thick cellular foam insulatior shall extend to 2" above and below the c
unpacking, ing, testing, her divisions or	In preparation of shop drawings or record drawings, contractor may, as an option, obtain electronic drawing files in Revit, AutoCAD, or DXF format from the engineer for a fee of \$200 for the first sheet and \$100 per sheet for each additional sheet. Contact the architect for written authorization; and, contact the engineer to obtain the necessary release agreement form and to indicate the desired shipping method and drawing format. In addition to payment, architect's written authorization and engineer's release agreement form must be received before electronic drawing files will be sent. 22A 1-12 OPERATION AND MAINTENANCE INSTRUCTIONS	22A 1-24 ELECTRICAL WIRING Line Voltage control and interlock wiring provided by the Division 23 contractor. F Division 26 contractor. Furnish wiring dia Coordinate with the Division 26 contractor
for the work under	Submit to the architect, for engineer's review, copies each of operations and maintenance instruction manuals, appropriately bound into manual form including approved copies of the following, revised if necessary to show system and equipment as actually installed. Paper clips, staples, rubber bands, and mailing envelopes are not considered approved binders. Provide the number of submittals required by Division 1; however, at a minimum, submit two (2) sets, and include, at a minimum, the	ensure proper installation. 22A 1-25 EQUIPMENT FURNISHED B Furnish and install roughed-in wastes, ve
eral and/or o, the engineer, in	following information: Cover sheet that lists the project name, date, owner, architect, consulting engineer, general contractor, sub-contractor, and an index of contents.	others, in locations as indicated on the d equipment, including traps, stop valves, required for the proper operation of the c
ETL, CSA), and	Wanufacturers catalogs and product data sneets Wiring diagrams Operation and Maintenance instructions Parts lists Approved shop drawings	Contractor shall be responsible for corre- prior to service installations. 22A 1-26 ALTERNATES
eptable to the ed, certified, or all	Test reports as defined for the systems and equipment provided or furnished or installed under this contract. Names, addresses, telephone numbers, and e-mail addresses of local contacts for warranty services and spare parts. Submit manuals prior to requesting the final punch list and before any requests for substantial completion. Final approval of this	Refer to the architectural portion of the s apply to all work required by the alternate work. Include labor, materials, equipmer under each particular alternate. Furnish deducted from the base bid.
der which the work is ation over and above	division's systems installed under this contract will be withheld until this equipment brochure is received and deemed complete by the architect and engineer. Provide "as-built" drawings (see Division 1 and general conditions).	22A 1-27 EXTERIOR UTILITY CONNEC Terminate domestic water, storm, and se drawings. Make connection to the variou engineer. Verify that installation will tie in
material and	22A 1-13 TRAINING At a time mutually agreed upon between the owner and contractor, provide the services of a factory trained and authorized representative to train owner's designated personnel on the operation and maintenance of the equipment provided for this	installation. If the installation will not tie i civil engineer so that an alternative may Provide service piping and accessories r
city. In general,	project. Provide training to include but not be limited to an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.	Coordinate with the local gas service cor as indicated on the drawings. Installation company. 22A 1-29 BUILDING OPERATION
the satisfaction of er trade. level. etc. Abnormal	Submit a certification letter to the architect stating that the owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The contractor and the owner's representative shall sign the certification letter indicating agreement that the training has been provided.	Comply with the schedule of operations a continuous operation. Accomplish work operation, and only with written approval owner and/or tenant a minimum of 7 day
contract to present	Schedule owner training with at least 7 days' advance notice.	22A 1-30 SYSTEM TESTING AND ADJ
he satisfaction of	Warrant each system and each element thereof against all defects due to faulty workmanship, design or material for a period of 12 months from date of substantial completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds this duration. Warranties shall include labor and material. Remedy all	Upon completion of each phase of the in below. Furnish labor and equipment req making the tests, and repairing and/or re Notify the architect and the authority hav
de products by one of	the owner. Perform any required remedial work promptly, upon written notice from the engineer or owner.	concealed work uncovered until the requiportions of the work may be made, and v and before backfill. Pipes, joints, flanges materials. Caulking of defective joints, c
cturers that have	At the time of substantial completion, deliver to the owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the required period, each warranty instrument being addressed to the owner and stating the commencement date and term. 22A 1-15 EXCAVATION AND BACKFILLING	Upon completion of the systems installat to demonstrate that equipment and syste drawings and specifications. As a part o
stalled at the proper er to all other r spaces.	Perform excavation and backfill required for installation of underground work under this contract. Trenches shall be of sufficient width. Crib or brace trenches to prevent cave-in or settlement. Do not excavate trenches close to columns and walls of building without prior consultation with the architect. Use pumping equipment if required to keep trenches free of water. Backfill trenches in maximum 6" layers of well-tamped dry earth in a manner to prevent future settlement.	demonstrate proper functioning. Test the drainage and vent system by plu with water; test results will be satisfactor
wner. required for where chases and and to facilitate	Excavation as herein specified shall be classified as common excavation. Common excavation shall comprise the satisfactory removal and disposition of material of whatever substances and of every description encountered, including rock, if any, within the limits of the work as specified and shown on the drawings. Excavation shall be performed to the lines and grades indicated on the drawings. Excavated materials which are considered unsuitable for backfill, and surplus of excavated material which is premised for be defined and for the disposition of the disposition of the sector of th	Test the domestic water system by filling period of twenty-four hours, with no fixtur Test water piping to a 125 psi hydrostatio
her trades engaged other trades. rements at the	 architect. 22A 1-16 COINCIDENTAL DAMAGE 	For low pressure natural gas systems, su differential for this period shall be 0 psig. 22A 2 PLUMBING PIPING
odel numbers listed	Repair all streets, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of this work. Repair materials shall match existing construction. All backfilling and repairing shall meet all requirements of the owner, city and others having jurisdiction. Repair work shall be thoroughly first class. Conform to all requirements of Division 2 of these specifications. 22A 1-17 CUTTING AND PATCHING	22A 2-1 PIPING MATERIALS Materials specified or noted on the drawi
nd local codes Il be in strict ds as set forth by the b Administration	Following the requirements in Division 1, cut walls, floors, ceilings, and other portions of the facility as required to perform work under this division. Obtain permission of the architect, owner, or both, before doing any cutting. Cut all holes as small as possible. Patch walls, floors, and other portions of the facility as required by work under this division. All patching shall be thoroughly first class and shall match the original material and construction, including fire ratings if applicable in a manner satisfactory to the architect.	installing any material or joining method. Domestic Water (cold, hot and hot water shall be type "L" hard temper copper tub Brazed mechanically formed tee connec made with brazed silver solder (Silfos) jo
Air Conditioning (ASTM) and other ities and municipal	Coordinate without delay all roughing-in with other divisions. Conceal all piping and rough-in except in unfinished areas and where otherwise indicated in the construction documents. 22A 1-19 CONCRETE BASES	Underground domestic water piping 2" and and connections, or type "K" hard tempe Install as few underground copper piping within 5 feet of the building. Install dome
act documents shall	Provide concrete bases for equipment where indicated on the drawings. Concrete bases shall have chamfered edges. Size of pad shall be a minimum of 4" greater than the footprint of the equipment that it is supporting.	Underground domestic water piping 3" and Standard C151/A21.51. Piping shall be shall have mechanical joints. At contract feet of the building slab may be push-on
ere required, obtain, e law.	Construct equipment bases and housekeeping pads of a minimum 28 day, 4000 psi concrete conforming to American Concrete Institute standard building code for reinforced concrete (ACI 318-99) and the latest applicable recommendations of the ACI standard practice manual. Concrete shall be composed of cement conforming to ASTM C 150 Type I, aggregate conforming to ASTM C33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment.	Interior Waste and Vent Below Slab: Wa with hub and spigot fittings with neopren Pipe and bearing the trademark of the C
irers' temperature ons, cover with	Unless otherwise specified or shown on the structural drawings, reinforce equipment bases and housekeeping pads with No. 4 reinforcing bars conforming to ASTM A 615 or 6x6 – W2.9 x W2.9 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24" on center with a minimum of two bars each direction.	fittings with solvent weld joints is also pe Interior Waste and Vent Above Slab: Wa fittings, meeting ASTM A888 and CISPI
ater, or physical ntractor shall furnish	Frovide gaivanized anchor bolts for equipment placed on concrete equipment bases and housekeeping pads or on concrete slabs. Anchor bolts size, number and placement shall be as recommended by the manufacturer of the equipment. Concrete equipment bases shall have minimum heights in accordance with the following: for water heaters, water softeners and	of the CISPI and NSF. PVC Schedule 4 12454-B with ASTM 2665 socket fittings (Note: PVC piping is not allowed in ceiling)
, equipment, etc. revent the entrance	other equipment not listed, minimum height is 4". For water heaters over 200 gallons capacity and domestic water booster pumps, minimum height is 6". Height of equipment bases applies to equipment installed on slab-on-grade. For equipment installed on floors above grade and on the roof, refer to the drawings.	Interior Storm: Inside building shall be sa Natural Gas: Gas piping above ground s fittings.
and trench drains	Structural steel used for pipe supports, equipment supports, etc., shall be new and clean, and shall conform to ASTM designation A-36.	where indicated on the drawings, gas pip Omegaflex, Inc., Tracpipe or Titeflex Cor polyethylene jacket meeting ASTM E-84 Gas piping below slab shall be semi-rigio
n the form of iny, are included for	Support plumbing equipment and piping from the building structure. Do not support plumbing equipment and piping from ceilings, other mechanical or electrical components, and other non-structural elements. 22A 1-21 ACCESS DOORS	smoke rating, encased in a polyethylene Underground gas piping shall be welded gas piping at least 30" below grade. and

under this section. Provide concealed hinges, screwdriver-type lock, anchor straps; manufactured by Milcor, Zurn, Titus, or equal. Obtain architect's approval of type, size, location, and color before ordering.

Provide access doors in ceilings and walls where indicated or required for access to concealed valves and equipment installed

connections and threaded joints at connections to cast iron pipe. 1-1/4" and larger Install cleanouts at elbows greater than 45 degrees.

> shown drawings. Install cleanouts at elbows greater than 45 degrees. 22A 2-2 PIPING AND EQUIPMENT INSULATION Domestic cold water, hot water, hot water recirculation, indirect and condensate drain pipe (within building)

Provide sleeves for pipes passing through above grade concrete or masonry walls, concrete floor or roof slabs. Sleeves are not masonry walls, concrete floors or roofs. Provide 10 gauge galvanized steel sleeves for zed sheet metal sleeves for larger than 6". Schedule 40 PVC sleeves are acceptable for

22A 1-22 PENETRATIONS

f penetrations watertight and weathertight with non-shrink, non-hardening commercial I both ends with minimum of $\frac{1}{2}$ of sealant. semblies. Coordinate fire ratings and locations with the architectural drawings. Refer to ngs. Provide a product schedule for UL listing, location, wall or floor rating and fire stop system.

through floor, wall and roof penetrations, including fire rated walls and floors. The vapor for a minimum of 1" annular clear space between inside of sleeve and outside of

enetrations below grade with "wall pipes" and mechanical sleeve seals. Provide cast ing manufactured by Josam, Jay R. Smith, Wade, Watts or Zurn. Provide modular by Thunderline / Link Seal, Calpico, Inc., and Metraflex.

proof membrane penetrations with "wall pipes" and water proof sealant. Secure wall pipe" clamping flange and clamping ring. Provide cast iron "wall pipes" with integral Jay R. Smith, Wade, Watts or Zurn. sing through or under foundation. Sleeves shall be cast iron soil pipe two nominal pipe

for vertical pressure pipe passing through concrete slab on grade. Sleeves shall be one erved and two pipe sizes larger than pipe served for ductile iron pipes with restraining

n around perimeter of non-pressure pipe passing thru concrete slab on grade. Insulation oncrete slab.

shall be provided by the Division 26 contractor. Low Voltage control wiring shall be Required conduit and rough-ins for low Voltage control wiring shall be provided by the agrams to the Division 26 contractor as required for proper equipment hookup. ctor the actual wire sizing amps for the equipment (from the equipment nameplate) to Y OTHERS

ents and water services. Provide final connection to kitchen equipment, furnished by rawings. Provide accessory items that are required but not furnished with the PRV's, indirect drain from equipment to floor drains, and accessory items indicated or omplete system at the termination of the work. ect rough-in dimensions, and shall verify same with architect and/or equipment supplier

pecification for list of alternates. Applicable sections of the base specifications shall e unless otherwise specified. Determine whether or not and how each alternate affects ent and transportation services necessary for and incidental to the completion of work separate bid for each alternate applicable to work, stating the amount to be added or

CTIONS ewer lines at a point approximately five feet from the building wall, or as shown on the bus services provided by others and coordinate connection requirements with civil into the various services provided by others at the indicated invert elevation point prior to into the indicated invert elevation point while maintaining proper fall, notify architect and be determined.

required to complete utility connections that are not furnished by the serving utility. mpany to provide a new gas service, including gas meter, shut-off valves, and regulator shall be in complete conformance with the requirements of the local gas service

as outlined in the architectural portions of this specification. Building shall be in that requires interruption of building operation at a time when the building is not in l of building owner and/or tenant. Coordinate interruption of building operation with the /s in advance of work JUSTING

stallation, test each system in conformance with local code requirements and as noted uired to test plumbing work installed under this contract, and assume costs involved in eplacing damage resulting therefrom.

ring jurisdiction, three (3) working days prior to making plumbing system tests. Leave ired tests have been completed, but if necessary due to construction procedure, tests on when satisfactory, the work may be concealed. Test piping before insulation is installed, s, valve stems, etc., shall be leak tight. Repair or replace system defects with new cracks or holes will not be permitted. Repeat tests after defects have been eliminated. istrative authority and/or the owner's authorized representative.

tion, and prior to acceptance by the architect and engineer, make general operating tests ems are in proper working order, and are functioning in conformance with the intent of the of these tests, open every water outlet to ensure complete system flushing, remove and ight pilot lights, and operate every piece of equipment furnished under this contract to

ugging openings with test plugs, except those at the top of the stacks. Fill the system y if the water level remains stationary for not less than one (1) hour. Subject the of at least ten (10) feet of water. If leaks develop, repair them and repeat the test.

it with water and then isolating the system from its source. Keep the system closed for a re being used. The pressure differential for this test period shall not exceed 10 psig. pressure.

bject the pipe to 10 psig air pressure for a period of one hour. The resultant pressure Test per gas company requirements where required.

ngs are subject to the approval of local code authorities. Verify approval before

recirculation): Domestic water piping installed above the floor slab inside the building e with wrought copper fittings and soldered connections made up with 95/5 solder. tions (T-drill) may be used in copper lines where approved by code; connection shall be pints in conformance with manufacturer's instructions.

nd smaller shall be type "K" soft temper copper tubing with flared copper alloy fittings er copper tubing with conventional wrought copper fittings and silver solder (Silfos) joints. joints as possible. At building service entrance, no joints shall be installed under or stic water piping below grade outside building at adequate depth to prevent freezing. nd larger shall be Class 52 ductile iron meeting the requirements of ANSI / AWWA

double cement lined in accordance with ANSI / AWWA Standard C104/A21.4. Fittings tor's option, pipe joints in straight runs (not at fittings) and not installed under or within 5 joints. Joints shall conform to the requirements of ANSI 21.11. aste and vent pipe below slab inside building shall be service weight cast iron soil pipe

e gasket joints, meeting ASTM A74, manufactured by AB & I Foundry, Charlotte or Tyler ISPI and NSF. Hubless waste and vent pipe is not permitted below base slab. PVC vith PVC meeting ASTM B1784, "solid wall" cell Class 12454-B with ASTM 2665 socket rmitted where approved by code.

aste and vent pipe above slab inside building shall be hubless cast iron soil pipe and 301, manufactured by AB & I Foundry, Charlotte or Tyler Pipe and bearing the trademark DDWV ASTM D2665 pipe with PVC meeting ASTM B1784, "solid wall" cell class with solvent weld joints is also permitted where approved by code, ing return air plenums)

same as specified for interior waste and vent pipe. shall be Schedule 40 black steel with malleable iron screwed fittings, or standard welded

feet of vent through the roof. Provide insulation on domestic cold and hot water pipes installed in walls and chases.

ping above slab shall be semi-rigid corrugated stainless steel tubing (CSST) by p., "Gastite", Type 304 stainless tubing meeting ASTM A240, with UV resistant

flame and smoke rating, and yellow brass auto-flare ends with stainless steel inserts. l corrugated stainless steel tubing (CSST) by Omegaflex, Inc., Tracpipe or Titeflex Corp. eting ASTM A240, with UV resistant polyethylene jacket meeting ASTM E-84 flame and ventable sleeve and yellow brass auto-flare ends with stainless steel inserts. , coated, and wrapped with coal tar enamel and 15 pound felt. Install underground steel gas piping at least 30" below grade, and provide with cathodic protection per gas company details. Underground gas piping shall be high density or ultrahigh density polyethylene pipe as required by the gas utility company. Polyethylene pipe shall conform to ASTM D1248, D3350 and D2513, as appropriate. Polyethylene pipe shall be Phillips Driscopipe Series 6800 or 8000, Omega Engineering, Pepco, or equivalent. Installation shall be in conformance with utility company rules. Provide polyethylene to steel pipe transition fittings by Perfection Corporation, R W Lvall or Central Plastics at transitions from below grade to above grade. Factory assembled and pressure tested one piece design, with steel half of Schedule 40 steel pipe with beveled edge for welding and polyethylene half shall be of ample length for making welds. Steel pipe shall have epoxy protective coating. Connections To Plumbing Fixtures And Equipment: 1-1/4" and larger waste connections from fixture traps to cast iron pipe shall be "DWV" copper with wrought copper drainage pattern fittings with copper sweat or compression joints at fixture tra

Indirect and Condensate Drain Inside Building: Indirect and condensate drain pipe installed inside the building shall be Type "M" hard copper with wrought copper fittings for 1" and smaller and "DWV" copper with wrought copper drainage pattern fittings for Indirect and Condensate Drain Outside Building: Indirect and condensate drain pipe installed outside the building above ground

shall be Type "M" for 1" and smaller and "DWV" for 1-1/4" and larger Terminate at nearest roof drain, gutter or other location as

Refer to pipe insulation schedule on drawings for insulation details. Provide with self-sealing lap to provide a continuous vapor barrier by Certainteed, Owens-Corning or Armstrong. For hot piping, provide pipe hangers and riser clamps sized for the outside diameter of piping. Butt insulation to hanger or riser clamp for vertical pipe. Seal exposed insulation with insulation sealer. Exception for vertical piping: provide clamps sized for the outside diameter of the vertical pipe and extend clamp through insulation. Seal penetrations of insulation and vapor barrier with wet coat of vapor barrier lap cement. For cold piping at hangers provide 8" long sections of high density, high temperature calcium silicate by Johns-Manville, fiberglass by Knauf, or 8" long styrofoam billets by Dow or flexible unicellular piping insulation meeting ASTM C 534-01, Type I with integral high density pipe supports and encased in steel insulation shield by Cooper B-Line / Armacell or equivalent. Insulation shall be continuous along the pipe surface, except at valves, unions, and where piping is exposed at fixtures. Provide insulation on vent piping within six

Provide insulation protection shield at each hanger for insulated piping.

Cover fittings with Zeston, Knauf, or equal one-piece PVC pre-molded insulating covers. Fitting covers, jackets and adhesives shall not exceed flame spread rating of 25 and smoke development rating of 50 per ASTM E84. At all elbows and tees, fill voids between covers and piping with fiberglass insulation and tape joints. Install pipe insulation in compliance with manufacturer's recommendations. Where pre-molded insulating fittings are not approved by local authorities, miter insulation at fittings. Provide 2" fiberglass thick insulation for water, sanitary, waste or grease waste piping in unheated spaces where indicated on the drawing For hot and cold water piping installed inside masonry units of walls, provide 1/2" flexible unicellular insulation by Armacell. 22A 2-3 PIPING JOINTS

Copper Tubing: Joints in hard temper tubing shall be soldered joints using lead-free 95/5 solder except where tubing is installed below grade or below the base slab, in which case joints shall be soldered with silver solder (Silfos). Joints in soft temper copper tubing shall be of the flared type installed in compliance with the fitting manufacturer's recommendations.

Threaded Steel Pipe: Threaded joints shall be full and clean, cut with not more than three (3) threads exposed beyond the fittings. Make joints tight with graphite base pipe joint compound and paint exposed threads of ferrous pipe with acid-resisting paint after piping has been tested and proven tight. No caulking, lamp-wick or other material will be permitted for correction of defective ioints.

Welded Steel Pipe: Welded joints shall be of the butt welded single "vee" type. Bevel pipe at a 45 degree angle to within 1/16" of the inside wall, and build up the weld to one fourth greater depth than the pipe wall thickness. Welding shall be either electric or oxy-acetylene, performed in conformance with the ASME code for pressure pipe welding, and only by experienced certified welders.

Cast Iron Pipe Below Grade: Joints in bell and spigot cast iron waste and vent pipe shall be neoprene compression gaskets, Tvseal or equal. Cast Iron Pipe Above Grade: Joints in hubless pipe shall be standard CISPI 310 domestically manufactured by Anaco, AB & I

Foundry, Charlotte, Husky, Ideal, Tyler, Mission or Fernco. PVC Pipe: Clean joints free from debris and moisture. Apply PVC primer meeting ASTM F656 to each joint. Apply solvent cement meeting ASTM D2564 and make joint while wet and in accordance with ASTM D2855.

Pipe Adapters: Make connection of new waste pipe to new or existing dissimilar waste pipe using adapter couplings. Provide Fernco, Proflex 3000 series or Mission Flexseal MR56 series with neoprene adapter gasket with stainless steel shield and hose clamps for connecting dissimilar pipes above grade. Provide Fernco, 1056 series or Mission sewer couplings with neoprene adapter gasket and hose clamps for connecting dissimilar pipes below grade and coat stainless steel bands with mastic 22A 2-4 PIPING INSTALLATION

General: Clean pipe thoroughly prior to installation. Ream ends of pipe to remove burrs. Cut pipe accurately to measurements taken on the job. Install with adequate clearance for installation of coverings where required. Pipe shall not be sprung or bent. Neatly align pipe, connect it securely, and support it from the building structure with hangers as specified below. Provide chrome-plated escutcheons on pipes passing through ceilings, floors or walls of finished spaces. Run pipes freely through floor and wall penetrations using pipe sleeves. Do not grout in place unless required for structural fire integrity. Install pipe concealed in finished spaces wherever possible. Use a dielectric union where ferrous and copper pipe connect. Dielectric union shall have a zinc-plated steel body, a threaded nylon insert, and insulating pressure gasket. No ferrous metal-to-copper connection made without insulating unions will be allowed.

Hanger & Supports: Pipe hangers shall be as described in the specifications by B-Line or equal by Anvil, Michigan, Truscon, or Unistrut. Connect hangers to the structure with side beam connectors and all thread hanger rods. Provide engineered support struts between joists and other structural members as required to provide a rigid hanging installation. Do not hang pipes from other pipes, conduit or ductwork. Provide hanger rods and space hangers at intervals as specified in "hanger spacing". Provide support within 1' of each elbow and tee. Provide supports within 1' of each equipment connection. Provide two nuts on threaded supports to securely fasten the support. Install hanger types or supports for various piping as follows:

Copper Tube: Adjustable band hangers for bare copper tube 3" and smaller shall be B-Line #B3170 CT copper plated adjustable band swivel ring type. Adjustable band hangers for insulated copper tube and 3" smaller shall be B-Line #B3170 NF adjustable band swivel ring type. Clevis hangers for insulated copper tube 4" and larger shall be B-Line #B3100 galvanized steel clevis type. Support exposed copper tube 2" and smaller to walls or in chases with B-Line #B3198 RCT copper coated extension split ring pipe clamps, 3/8" threaded rod and B-Line #B3199 CT ceiling flanges. Support copper tube in chases and walls at plumbing fixtures with plastic or copper brackets secured to structure and u-bolts sized to bare on the pipe. Riser clamps to support vertical copper tube shall be B-Line #B3373 CT copper coated steel, cut insulation, seal vapor barrier, and attach to bare tube.

Steel Pipe: Adjustable band hangers for 2" and smaller shall be B-Line #B3170 NF adjustable band swivel ring type. Clevis hangers for 2-1/2" and larger shall be B-Line #B3100 galvanized steel clevis type. Riser clamps to support vertical pipe shall be B-Line #B3373 galvanized steel.

Cast Iron Pipe: Adjustable band hangers for 2" and smaller shall be B-Line #B3170 NF adjustable band swivel ring type. Clevis hangers for 3" and larger shall be B-Line #B3100 galvanized steel clevis type. Riser clamps to support vertical pipe shall be B-Line #B3373 galvanized steel.

PVC Pipe: Adjustable band hangers for 3" and smaller shall be B-Line #B3170 NF adjustable band swivel ring type. Clevis hangers for 4" and larger shall be B-Line #B3100 galvanized steel clevis type. Riser clamps to support vertical pipe shall be B-Line #B3373 galvanized steel.

sulation Protection Shields: B-Line #B3151 of 18 gauge galvanized sheet metal. Shield shall cover half of the circumference of the pipe and shall be of length indicated by manufacturer for pipe size and thickness of insulation. Hanger Spacing, Rod Sizes & Connectors: Connect rods to steel beams or joists with B-Line #B3031 or #B3033 beam clamps

as required. Connect rods to concrete with B-Line #B3014 malleable iron single type inserts with malleable iron nut. Connect rods in wood construction with B-Line #B3058 side beam connectors. Hang and support piping with spacing and rod sizes as

Copper Tube: 1-1/2" and smaller - every 6' with 3/8"hanger rods; 2" every 10' with 3/8"hanger rods; 2-1/2" every 10' with 3/8" hanger rods; 3" every 10' with ¹/₂" rods; 4" every 10' with 5/8" hanger rods. Support vertical copper tube every 10'. Steel Pipe: 1" and smaller - every 8' with 3/8" hanger rods; 1-1/4" to 2" every 10' with 3/8" hanger rods; 2-1/2" and 3" every 10'

with $\frac{1}{2}$ " hanger rods; 4" every 10' with 5/8" hanger rods. Support vertical steel pipe every 10'. Cast Iron Pipe: Every 10' and within 1' of each joint. 2" and smaller with 3/8" hanger rods; 3" with 1/2" hanger rods; 4" with 5/8" hanger rods; 6" with 3/4" hanger rods; 8" and larger with 7/8" hanger rods. Support vertical cast iron pipe every 15'.

PVC Pipe: Support all pipes sizes every 4'. 1-1/2" and smaller with 3/8" hanger rods; 2" with 1/2" hanger rods; 2-1/2" and 3" with 1/2" hanger rods; 4" and larger with 5/8" hanger rods. Support vertical PVC pipe every 4'.

Supports On Floor: Support piping from the floor where required for ferrous pipe or insulated copper tube, shall be B-Line #B3093 galvanized steel with pipe saddle, threaded shank for height adjustment and floor stand secured to the floor. Below Ground Installation For Soil, Waste And Storm: Install soil and waste piping to a uniform slope of not less than 1/8" per foot for piping 3" or larger, and not less than 1/4" per foot for piping 2-1/2" or smaller. Slope storm piping at 1/4" per foot. Lay pipe at uniform slope, free from sags, with hub end upstream. Make changes in

direction from horizontal to vertical, at fixture branches and other branch connections with sanitary "tees" or short sweep "ells". Make changes in direction from vertical to horizontal or horizontal to horizontal with long radius fittings, long sweeping "ells", combination "y and 1/8 bend" fittings, or 45 degree "ells" (1/8 bend fittings), 1/6 bend or 1/16 bend and "y" fittings. Install pipe with the barrel of the pipe on firm, solid earth for its entire length, and excavate holes for the pipe bells. Lay pipe in a straight line and install with uniform grade to line with batten boards set not more than 24'-0" apart. Close open ends of pipe with a stopper when pipe laying is not in progress. Center spigots accurately in bells for uniform caulking. Provide a smooth and uniform invert in the system. Drilling or tapping of soil and waste lines, and saddle hubs and bands are not permitted. Locate and install soil and waste lines as indicated on the drawings. Determine exact locations in such a manner as to maintain proper clearance. Prior to installation of any building drain pipe, verify elevation of connection point of existing sewer, service line or existing tenant connections indicated on the drawings. If the installation will not tie into the indicated invert elevation point while maintaining proper fall, notify architect so that an alternative may be determined.

Above Ground Installation For Soil, Waste And Storm: Install piping to a uniform slope of not less than 1/8" per foot for piping 3" or larger, and not less than 1/4" per foot for piping 2-1/2" or smaller. Lay pipe at uniform slope free from sags. Support pipe within 12" of each joint. Make changes in direction from horizontal to vertical, at fixture branches and other branch connections with sanitary "tees" or short sweep "ells". Make changes in direction from vertical to horizontal or horizontal to horizontal with long radius fittings, long sweeping "ells", combination "y and 1/8 bend" fittings, or 45 degree "ells" (1/8 bend fittings), 1/6 bend or 1/16 bend and "y" fittings. Provide a smooth and uniform invert in the system. Drilling or tapping of soil and waste lines, and saddle hubs and bands are not permitted. Locate and install soil and waste lines as indicated on the drawings. Determine exact locations in such a manner as to maintain proper clearance.

PLUMBING VENT: Connect plumbing vent pipes to fixture drain pipes as indicated on the drawings or as required by the installation practices adopted and enforced by local codes official, and extend vent pipes full size through the roof line. Grade pipe to a uniform slope so as to drain back by gravity to the drainage piping system. Vents passing through the roof shall be minimum 3" size except in tropical climates, per local codes. Turn flashing down into stacks at least 2", and extend flashing 24" in all directions from the pipe at the roof line. Apply white lead pipe dope on male steel pipe threads. Vent lines shall be air and water tight. Vent floor drains individually or connect them to a horizontally vented line as shown on the drawings.

DOMESTIC WATER: Arrange cold, hot, and hot water recirculation piping to drain at the lowest point in each system. Install at least one pipe union adjacent to all shutoff valves, at connection points of each piece of equipment, and elsewhere in the system where required to allow proper maintenance. Provide unions of the ground joint type. Make allowance for expansion and contraction where required by the installation. Where water piping occurs in exterior walls, hold pipe as close as possible to the interior face of wall and install insulation batt or other insulation (minimum R-8) between piping and the exterior wall face.

NATURAL GAS: Pitch natural gas piping, and provide accessible dirt legs at the low points. Take branch pipes off the top or sides of main pipes, to prevent accumulation of water in the branches. Install gas piping valves and unions only in accessible locations. Do not install gas pipe below the base slab. 22A 2-5 PIPING SANITIZATION

Sanitize the entire domestic water piping system (cold, hot, and hot water return) with a solution containing not less than 50 ppm available chlorine. Keep solution in the system for a minimum of 24 hours, with each valve being operated several times during the period. After completion, flush system with city water until chlorine residual is lowered to incoming city water level. 22A 2-6 PIPE AND VALVE MARKERS

Provide manufacturer's standard pre-printed, semi-rigid snap-on or permanent adhesive, pressure-sensitive vinyl pipe markers. Pipe markers shall be color-coded complying with ANSI A13.1. Install pipe markers on each plumbing piping system and include arrows to show normal direction of flow.

Locate pipe markers and color bands wherever piping is exposed to view in occupied spaces, machine rooms, accessible

maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations. Provide plastic laminate or brass valve tag on every valve, cock and control device in each plumbing piping system; exclude check valves, valves within factory-fabricated equipment units, plumbing fixture faucets, convenience and lawn-watering hose

bibbs, and shut-off valves at plumbing fixtures and similar rough-in connections of end-use fixtures and units.

22A 2-8 HEAT TRACE

Provide heat trace system as indicated on the drawings manufactured by Raychem, Chromalox, Nextron, Nelson or equivalent. Heat trace cables: Pair of parallel no. 16 AWH tinned-copper bus wires embedded in cross linked conductor polymer core, which varies power output in response to temperature along its length; line Voltage as indicated on the drawings. Provide outer jacket material as indicated on the drawings. Cable shall be capable of crossing over itself without overheating. Cable shall be capable of a heat output of 90% of rating over a temperature range of 40°f to 150°f pipe temperature. Provide field-applied power connection kits, end seal kits and any tee kits as required.

Heat trace control panel: For "on-off" control of heat tape circuit with NEMA 4x fiberglass reinforced plastic enclosure for outdoor installation with hinged access door with window and furnished with the following: microprocessor based controller with LED display with keypad interface and non-volatile memory. Ground fault circuit protection capable of checking heating cable circuit faults. LED indicator lights: current mode, heater on, alarm conditions and receive / transmit data. Alarm conditions: RTD failure, high/low temperature, high/low current, hi/low resistance and high/low Voltage, ground fault alarm, trip, loss of programmed values and electromechanical relay failure. Alarm contacts: one single pole single throw rated at 0.75 Amp 120 to 277 Volt relay and one dry pilot duty only relay rated at 48 VAC / DC 50 mA, 10VA maximum resistive switching. Power strip for connecting 277 Volt single phase at 30 Amps maximum. Temperature control sensors: total of two three wire 100 Ohm RTD's with 10 foot long stainless steel sheath, ambient temperature range of -76 deg. F to 1058 deg. F with an accuracy of +/- 3 deg. F and a repeatability of +/- 3 deg. F.

Thermostats: shall be as scheduled on the drawings and of the same manufacturer as the heat trace cable. 22A 2-9 AIR ADMITTANCE VALVES

applicable by Studor or equal, by Oatey, Proset, or Rectorseal. Install per code and manufacturer requirements. 22A 2-10 HEAT TEMPERATURE MAINTENANCE SYSTEM

traced" every fifteen feet.

Heat trace control panel: For control of heat tape circuit with integrated function that lowers the maintenance temperature during low use hours, nine customizable predefined programs and capable of operating as a master for up to 8 slave controllers. NEMA 12 ABS plastic enclosure for indoor installation with hinged access door with window and furnished with the following: microprocessor based controller with LED display with keypad interface and non-volatile memory. 30 mA equipment ground fault circuit protection. LED indicator lights: power on, power to heating cable, heat-up cycle, water heater alarm and alarm. Alarm conditions: loss of power, controller reinitialized, high internal controller temperature, high water temperature, low water temperature and master / slave error. Alarm contacts: one single pole single throw rated at 1 Amp 24VAC or VDC. Power strip for connecting 240 Volt single phase at 30 Amps maximum. Temperature control sensor: thermistor with 13'-3" long lead. 22A 3 PLUMBING SPECIALTIES

acceptable as a substitute for water hammer arrestors. spaces shall be chrome-plated brass.

where indicated on the drawings.

Cleanouts, floor drains and roof drains shall be by one manufacturer if possible. Acceptable manufacturers are Josam, Jay R. Smith, Wade, Watts, Mifab, and Zurn.

Mifab, Jay R. Smith – ACO or NDS.

Mifab, Jay R. Smith – ACO or NDS.

WALL CLEANOUTS: Shall be as scheduled on the drawings. Install wall cleanouts at points as noted on the drawings; at the foot of each soil, waste or interior downspout stack; at horizontal soil and waste branches longer than five feet not served by a floor cleanout; consult local codes for installation at specific fixture types. Install wall cleanouts above the flood rim of the fixture served within four feet of the floor and install extensions from the cleanout tee to the wall to locate the plug within 2" of the wall where required. Install cleanouts on urinals and sinks where required by code.

ROOF DRAINS: Shall be as scheduled on the drawings. Provide with roof sump receiver, extension, secondary flashing clamps and underdeck clamp as required; provide expansion joints where required. Provide overflow roof drains where indicated on the drawings with inlet flow line 2" above the primary roof drain inlet.

BACKWATER VALVES – removable flapper type: Shall be as scheduled on the drawings by Cleancheck or equal, by Mainline Backflow Products or Spears.

Plumbing system valves shall be Crane Company or Nibco of models herein specified, or equivalent by Hammond, Milwaukee, Stockham or Mueller Valves. Valves shall be of the best quality, designed for 125 psi steam working pressure. Install valves on the hot and cold water lines at the water heater connections and other items of equipment, at branches from mains serving groups of fixtures, and at other places indicated or required by the installation to allow ease of future maintenance GATE VALVES: Class 125, size 2" and smaller shall be Nibco #S-113-LF non-rising stem, soldered lead free bronze body and parts, with wedge disc. Gate valves 2-1/2" and larger shall be Crane #465-1/2 or Nibco #617-0, OS&Y, iron body flanged wedge gate with brass seats and stem.

BALL VALVES (may be used in lieu of gate valves up to 2"): 2" and smaller, Nibco #S-685-80-LF; two piece lead free bronze GLOBE VALVES: Globe valves shall be Class 125. Globe valves 2" and smaller shall be Milwaukee #UP1502, screwed lead

free bronze body and brass disc. Globe valves 2-1/2" and larger shall be Crane #351 iron body flanged valve with brass trim. CHECK VALVES: Check valves shall be Class 125. Check valves for installation in horizontal pipe runs shall be of the "swing disc" design. Horizontal check valves 2" and smaller shall be Milwaukee #UP1509 or Nibco #S-413-Y-LF with soldered lead free bronze body and bronze disc. Horizontal check valves 2-1/2" and larger shall be Crane #373 or Nibco F-918 iron body flanged valve with brass trim. Check valves for installation in vertical pipe runs shall be of the "vertical lift" spring loaded design. Vertical check valves 2" and smaller shall be Milwaukee #UP1548T or Nibco #S-480-Y-LF with soldered lead free bronze body and

bronze disc. Vertical check valves 3" and larger shall be center guided. Flowserve-Nordstrom or RM Energy Systems "Hercules".

washing.

GAS LINE PRESSURE REGULATORS: Gas line pressure regulators shall be by American Meter Company, Fisher, Itron, Maxitrol or Sensus with capacities as scheduled on the drawings. Regulators shall be single stage, steel jacketed, corrosion-resistant type with interstitial relief valve with atmospheric vent, elevation compensator; with threaded ends, for inlet and outlet.

STRAINERS: Strainers 2" and smaller shall be Watts #S777SI or Watts #LFS777SI with soldered lead free bronze, brass cap and Monel 40 mesh screen. Strainers 2-1/2" and larger shall be Watts #77F-DI-FDA-125 with flanged iron body with fused FDA epoxy coating, bolted iron cap and stainless steel screen with 1/16" perforations. Strainers size 2-1/2" and larger shall have a 1" blow-off line with a 1" gate valve connected to the blow-off connection and shall be extended to the nearest floor drain. DRAIN VALVES & INTERIOR HOSE BIBBS: Woodford #24P, equivalent by Watts, Zurn, or J.R. Smith with rough brass body, 1/2" screwed inlet, with 3/4" hose thread outlet, integral vacuum breaker, wheel handle and composition disc.

EXPOSED INTERIOR HOSE BIBBS: Chicago #952, equivalent by Watts, Zurn, or J.R. Smith with chrome plated brass body, 3/4" screwed inlet, 3/4" hose thread outlet, integral vacuum breaker, wheel handle and composition disc.

breaker, stops in shanks with integral checks, and 3/4" hose thread outlet. hammer arrestor inside building.

ASSE #1057.

SANITARY ROOF HYDRANTS: As scheduled on the drawings, by Mapa, Woodford, Watts, Zurn, or J.R. Smith. UNIONS: Ferrous unions shall be Crane or equal, combination iron and brass, ground joint with screwed ends. Copper unions shall be Streamline or equal, cast bronze sweat type with ground joint. Ferrous to copper unions shall be Universal Controls or equal, dielectric type with threaded nylon insert.

FLOW CONTROL VALVES: For installation in hot water recirculation lines, shall be Bell & Gossett #RF-1/2S "circuit setter" or equal by Armstrong or Nibco with bronze body, brass ball, TFE seat rings, calibrated orifice, memory stop, readout valves with internal check valves, drain port and sweat connections. Provide ball valve, strainer and check valve upstream and union and ball valve downstream of each flow control valve. Set the flow control valves to the flows as indicated on the drawings.

PRESSURE REDUCING VALVES: Self-contained type shall be of the type as scheduled and indicated on the drawings by Watts or equal by Cash-Acme or Wilkins. PRESSURE REDUCING VALVES: Pilot operated type shall be as scheduled on the drawings by Watts or equal by Clay-Val, OCV or Wilkins. BACKFLOW PREVENTERS: Shall be of the type as scheduled and indicated on the drawings by Watts, Conbraco, Febco or Wilkins.

Provide air admittance valves where indicated on drawings. Air admittance valves shall meet ASSE 1050 or 1051 where

Provide heat trace system as indicated on the drawings manufactured by Raychem with no substitutions accepted.

Heat trace cables: Pair of parallel No. 16 AWG tinned-copper bus wires embedded in cross linked conductor polymer core, which varies power output in response to temperature along its length; line voltage as indicated on the drawings. Provide with polyolephin outer jacket material. Cable shall be capable of crossing over itself without overheating. Cable shall capable of a heat output of 90% of rating over a temperature range as indicated on the drawings pipe temperature. Provide field-applied power connection kits, end seal kits and any tee kits as required. Provide pipe identification markers stating "electrically heat

22A 3-1 WATER HAMMER ARRESTORS, AND TRAPSProvide water hammer arrestors at valves or batteries of fixtures as indicated on the drawings to prevent water hammer. Arrestors shall be Josam, Jay R. Smith, Precision Plumbing Products, Proflo, Sioux Chief, Wade, Watts, or Zurn, stainless steel bellows type, or o-ring sealed and lubricated acetal piston. Install water hammer arrestors per the Plumbing and Drainage Institute PDI WH-201 installation instructions. Installation of arrestors at batteries of fixtures precludes the requirement for individual air chambers at each battery fixture. Air chambers are not

Provide water-seal traps on floor drains, fixtures and equipment with drain connections, including traps not furnished in combination with fixtures and equipment. Place trap as close to the fixture or drain as possible. Exposed traps in finished

Provide conventional "p" type trap, water-sealed self-cleaning design. Full "s" traps or trap standards shall be used only where specifically called for on the drawings or elsewhere in this specification. Trap water seals shall not be less than 2", and deep seal traps shall be provided where specified or indicated. Each trap not integral with the fixture or floor drain or installed below the base slab shall be provided with an accessible cleanout of adequate size. Provide trap primers where required by code and

22A 3-2 CLEANOUTS, FLOOR DRAINS AND ROOF DRAINS

Provide long sweep fittings for cleanout extensions; short sweeps at start of runs or change in direction and combination wye and eighth bend fittings in horizontal runs. Install cleanouts with a minimum of 18" clear all around, consult local codes for other requirements, for easy system maintenance. Install plug with teflon joint compound.

FLOOR DRAINS: Shall be as scheduled on the drawings, manufactured by Zurn or equivalent by ABT, Inc., Polydrain, Quazite, TRENCH DRAINS: Shall be as scheduled on the drawings, manufactured by Zurn or equivalent by ABT, Inc., Polydrain, Quazite,

FLOOR CLEANOUTS: Shall be as scheduled on the drawings. Install cleanouts at points as noted on the drawings, at the building exit; at a minimum of every 50 feet in horizontal soil and waste lines; and at turns of pipe greater than 45 degrees

cleanouts shall be full size of the pipe up to 4", and 4" size for pipes larger than 4". Determine the type of floor covering to be used at each floor cleanout location and provide top with variations suitable for floor covering (carpet markers, recessed for tile and scoriated for unfinished floor). Rough-in and install each floor cleanout flush with the finished floor construction.

EXTERIOR CLEANOUTS: Shall be as scheduled on the drawings. Install cleanouts at points as noted on the drawings, at the building exit; at a minimum of every 100 feet in horizontal soil, waste and storm service lines. Embed each exterior cleanout in a block of concrete, flush with finished grade. Coordinate size of block with construction documents.

22A 3-3 VALVES, STRAINERS, HOSE BIBBS, AND UNIONS

body, with soldered ends, chrome plated bronze ball with conventional port, 600 psi, blow-out proof stem.

GAS COCKS: Gas cocks 2" and smaller shall be Homestead #611, screwed iron body with brass trim and flat head. Gas cocks 2-1/2" and larger shall be Homestead #612 flanged semi-steel body with iron trim and square head. Equivalent are

THERMOSTATIC MIXING VALVES: Thermostatic mixing valves shall be Powers as described on the drawings or equal Armstrong, Bradley, Leonard, Lawler, Symmons or Watts meeting ASSE 1070 with brass body, non-corrosive internal parts. tamper resistant temperature adjustment, union inlets and check stops with strainers. Set temperature at 110 deg. F for hand

HOT & COLD WATER MIXING HOSE BIBBS: Chicago #897-CP-HC, equivalent by Watts, Zurn, or J.R. Smith with vacuum WALL HYDRANTS: Jay R. Smith #5609-QT "non-freeze" surface type with cast bronze satin nickel plated face, with integral

vacuum breaker, 3/4" hose connection, adjustable wall clamp, removable key handle operator; or equal by Woodford, Josam, Prier, Wade, Watts or Zurn. Provide accessible shut off valve and water hammer arrestor inside building. MILD CLIMATE WALL HYDRANTS: Mifab #MY-25 surface type with top or bottom feed close coupled connection for installation in a 4" nominal wall, cast bronze satin nickel plated face, with integral vacuum breaker, 3/4" hose connection, adjustable wall clamp, removable key handle operator; or equal by Woodford, Josam, or Zurn. Provide accessible stop valve and water

SANITARY POST HYDRANTS: Hoeptner "freeze-flow executive" or equal by Woodford, Watts, Zurn, or J.R. Smith meeting

22A 3-5 WATER SERVICE ENTRANCE: PRESSURE REDUCING VALVE AND BACKFLOW PREVENTER Provide a backflow preventer (BFP) of type required by local code, and a pressure reducing valve (PRV) if required by water pressure greater than 80 psi, on the domestic water service immediately downstream of the BFP at the water service entry. Set the PRV as indicated on the drawings. Provide a pressure gauge and hose bibb with isolation valve downstream of the BFP and/or PRV for system drain down. For water services 2" and smaller provide a Type "K" soft copper tube that runs continuously from five feet outside the building with sweeping bend to 12" above the floor slab. Provide a shutoff valve at 12" above the floor. There shall be no fittings under the floor slab. Provide a PVC sleeve two pipe sizes larger than the water pipe served and seal with caulk. For water services 3" and larger provide ductile iron pipe and fittings from five feet outside the building to 12" above the floor. Provide a shutoff valve at 12" above the floor. Provide a PVC sleeve two pipe sizes larger than the water pipe served and seal with caulk.

22A 3-6 SYSTEM ACCESSORIES

Thermometers shall be American 3" bi-metal dial type with separable socket, and shall be installed where indicated or required. Pressure gauges shall be Ashcroft 3" dial type with shut-off cock, and shall be installed where indicated or required. Ice maker connection boxes shall be as specified on the drawings, Guy Gray #BIM875 or equivalent, with 20 gauge steel body, wall flange and water connection.

Trap guards shall be by Proset Systems of molded PVC elastomer that allows the flow of waste water and closes upon termination of flow. Install per manufacturer's installation instructions. Do not touch elastomeric plug or allow contact with primer or solvent cement. 22A 4 PLUMBING FIXTURES AND EQUIPMENT

22A 4-1 PLUMBING FIXTURES

Provide china fixtures as scheduled by American-Standard or equivalent by Crane, Eljer, Gerber, Kohler, Toto-kiki or Zurn. Provide stainless steel sinks as scheduled by Elkay or equal by Just. Provide electric water coolers as scheduled by Elkay or equivalent by Acorn / Aqua, Halsey Taylor or Haws. Provide mop sinks as scheduled by Stern-Williams or equal by Acorn Engineering Co., Fiat or Florestone. Provide fixtures of same manufacturer where possible.

Fixtures shown on the drawings or specified herein shall be furnished and installed, set firm and true, connected to required piping services, thoroughly cleaned, left clean and ready for use. Exposed fittings and piping at the fixtures shall be chrome-plated, and water supply piping shall be valved at each fixture.

Vitreous china fixtures shall be of the best grade vitreous ware, without pit holes or blemishes, and the outlines shall be generally true. The engineer reserves the right to reject any pieces which, in his opinion, are faulty. Fixtures set against walls shall have ground backs and shall be caulked with silicone sealant of a matching color.

22A 4-2 PLUMBING FIXTURE TRIM Faucets and trim in contact with drinking water shall meet or exceed the safe water drinking act (SWDA) lead-free standards of ANSI/NSF Standard 61. Section 9. Provide faucets as scheduled on drawings.

Provide single lever handle faucets as scheduled on drawings.

Fixture p-traps shall be 17 gauge brass body with cleanout, 17 gauge seamless tubular wall bend with cast brass slip nut, shallow steel flange, all chrome plated.

Lavatory, sink and water closet supplies shall be solid brass angle or straight type with full turn brass stem, wheel handle or loose key types as noted on drawings, shallow steel flange, 3/8" copper riser flange, all chrome plated, final connection as required. Lavatory drains shall be grid type chrome plated 17 gauge brass open grid with 1-1/4" x 6" long seamless brass tailpiece and brass locknut with heavy rubber basin washer and fiber friction washer.

Provide shower valves as scheduled on drawings.

Sink drains shall be basket type with chrome plated forged brass basket strainer and strainer body with 1-1/2" x 4" long seamless brass tailpiece and cast brass lock and coupling nuts.

Provide handicap insulation kits for lavatories and sinks on exposed water and waste pipes and fittings, including offset drain and continuous waste covers where required.

Provide flush valves as specified on drawings: Sloan or equivalent with chrome plated brass body, chloramine resistant diaphragm with protected orifice, screw driver angle stop, non-hold open feature and sweat adapter kit. Provide ADA handles on ADA compliant fixtures. Provide solid pipe ring supports for urinal flush tubes anchored securely to wall where indicated on the drawings. Provide low consumption type valves with 1.28 gallons per flush for water closets and 0.125 gallons per flush for

Furnish to the owner, with receipt, the spare parts to include faucet washers and o-rings, flushometer repair kits and water closet tank repair kits for the fixtures furnished under the construction documents for this project. 22A 4-3 WATER HEATER

Water heater shall be by A.O. Smith, Bradford-White, Lochinvar, State, Rheem, Ruud, or equivalent with capacity as scheduled on the drawings. Unit shall be electric glasslined tank type complete with steel jacket, fiberglass insulation, magnesium anode, integral thermostats and controls, and temperature & pressure relief valve. Water heater shall be UL listed and meet ASHRAE 90.1B standards for thermal efficiency and standby heat loss.

Relief valve: Water heater relief valve shall be of the test lever type, with automatic reset, combination temperature and pressure relief, and shall be ASME and AGA stamped and approved. It shall be installed directly on the heater tank, or in the hot water outlet, not more than 3" from the tank. The temperature shall be normally set to relieve at 210 deg. F and the pressure relief shall be at 125 psi. The relief valve discharge line shall be piped down and terminate 6" above a floor drain.

Vacuum relief valve: Watts #N36 or Wilkins #VR-10 with bronze body and silicon disc. Valve shall open at 0.5" Hg vacuum and be rated for 200 psig working pressure and 250 deg. F temperature. Install in cold water supply to each water heater downstream of the shutoff and check valves.

Recirculation pump: Shall be by Taco as scheduled on the drawings, or equal by Armstrong, Grundfos, or Bell & Gossett, of all bronze construction with aquastat and/or timer. Expansion tank: Expansion tank shall be Amtrol "Therm-X-Trol" as scheduled on the drawings or equal by Armstrong, Bell &

Gossett, Proflo, Taco, or Watts. Unit shall be constructed of welded carbon steel listed for ASME labeled for 125 psig working pressure, with a FDA approved butyl rubber diaphragm, taps for pressure gage, air charging fitting, and drain fitting. Support as detailed on the drawings. Charge tank with air pressure equal to the static water pressure.

Storage tank: Hot water storage tank shall be as scheduled; by Lochinvar or equivalent welded carbon steel, vertical glass-lined type as noted on the drawings, listed for ASME labeled for 125 psig working pressure, magnesium anodes, threaded leg sockets on one head for vertical mounting, and pressure and temperature relief valve. Provide external insulation for tank if not factory insulated END OF SECTION 22A

XHAUST GRILLE (CEILING OUNTED)	
UPPLY DIFFUSER (CEILING OUNTED)	
ETURN GRILLE (CEILING OUNTED)	
UCT MOUNTED SMOKE ETECTOR	
ECTANGULAR DUCT (FIRST	
UCT	
UCT CONTINUATION SYMBOLS	
HERMOSTAT (MOUNTED AT 48" FF)	
EMPERATURE SENSOR IOUNTED AT 48" AFF)	
QUIPMENT OR EVICE TAG	
IR FLOW ARROW	
EMOTE MANUAL PULL STATION IOUNTED AT 48" A.F.F.)	
IFFUSER CALLOUT TAG	
OLATION VALVE	
RESSURE RELIEF VALVE	
ALL VALVE	
ALIBRATED BALANCING VALVE	
ANUAL SYSTEM BYPASS VALVE	
RESSURE GAUGE PORT	
RESSURE GAUGE	
ONTINUATION SYMBOL	
ERMINAL UNIT, ARIABLE/CONSTANT AIR OLUME WITH ELECTRIC HEAT	
ERMINAL UNIT, ARIABLE/CONSTANT AIRVOLUME /ITH ELECTRIC HEAT	
ERMINAL UNIT, ARIABLE/CONSTANT AIR VOLUME	,
AN POWERED	
ERMINAL UNIT, ARIABLE/CONSTANT AIR OLUME, FAN POWERED, WITH	-
LECTRIC HEAT	-
LECTRIC DUCT HEATER	-
V/ PANEL CLEARANCE)	-
YDRONIC REHEAT COIL	
ILINE CENTRIFUGAL FAN	-
ACKAGED TERMINAL AIR	f
ONDITIONER (PTAC)	
HANGE OF ELEVATION	
LEXIBLE DUCT	
RANSITION, CONCENTRIC	
RANSITION, ECCENTRIC	
RANSITION, SQUARE TO OUND	
QUARE THROAT TEE	
ADIUS TEE	

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CONDENSER WATER SUPPLY
CONDENSER WATER RETURN
CHILLED WATER SUPPLY
CHILLED WATER RETURN
CONDENSATE
CONDENSATE RETURN
PUMPED CONDENSATE
HOT WATER RETURN
HOT WATER SUPPLY
HIGH PRESSURE STEAM SUPPLY
MEDIUM PRESSURE STEAM SUPPLY
LOW PRESSURE STEAM SUPPLY
HIGH PRESSURE STEAM RETURN
MEDIUM PRESSURE STEAM RETUR
LOW PRESSURE STEAM RETURN
REFRIGERANT LIQUID
REFRIGERANT SUCTION
FLOW DIRECTION
GATE VALVE
BALL VALVE
CALIBRATING BALANCING VALVE
BUTTERFLY VALVE
GAS COCK
UNION
STRAINER
CONTROL VALVE
SOLENOID VALVE
PSI REG.
CHECK VALVE
SLOPE DIRECTION (DOWN)
FLEX CONNECTION
O.S.&Y. GATE VALVE
STEAM TRAP
THREE-WAY CONTROL VALVE

THERMOMETER

RADIUS ELBOW

RECTANGULAR/ROUND BRANCH TAKE-OFF OR ROUND/ROUND BRANCH TAKE-OFF

RECTANGLE-TO-ROUND TAKE-

STANDARD BRANCH TAKE-

SPIN-IN TAKE-OFF

SQUARE THROAT ELBOW W/TURNING VANES

P-TRAP

OFF

TWO-WAY CHECK VALVE

MANUAL VENT

PRESSURE GAUGE

RELIEF VALVE

FLOW METER WATER METER

INLINE PUMP

INLINE PUMP

VALVE ON RISER CAP

CONNECTION, BOTTOM

CONNECTION, TOP COUPLING

ELBOW, 90°

ELBOW, 45° ELBOW, TURNED DOWN

ELBOW, TURNED UP

CEILING DIFFUSER, ROUND NECK (CEILING DIFFUSERS ARE 4-WAY THROW UNO)

ROUND DIFFUSER

CEILING RETURN CEILING EXHAUST

CEILING DIFFUSER, RECTANGULAR OR SQUARE

NECK (CEILING DIFFUSERS ARE 4-WAY THROW UNO)

SUPPLY REGISTER OR GRILLE (VERTICAL MOUNT, SIDEWALL)

RETURN/EXHAUST REGISTER OR GRILLE (VERTICAL MOUNT, SIDEWALL) REVISION REFERENCE

DETAIL REFERENCE: TOP-DETAIL#, BOTTOM-DRAWING# SHOWN ON

THERMOSTAT/TEMPERATURE SENSOR

HUMIDISTAT/HUMIDITY SENSOR DUCT SMOKE DETECTOR CONNECT TO EXISTING DEMOLISH TO POINT INDICATED MOTORIZED CONTROL DAMPER TEMPERATURE SENSOR PRESSURE SENSOR BACKDRAFT DAMPER SHEET NOTE CALLOUT

FIRE DAMPER (WITH ACCESS PANEL)

FIRE & SMOKE DAMPER (WITH ACCESS PANEL)

EXISTING FIRE DAMPER TO REMAIN

EXISTING FIRE & SMOKE DAMPER TO REMAIN

SOUND ATTENUATOR

MOTOR OPERATED CONTROL DAMPER (MOD)

AIR FLOW MEASURING STATION

MANUAL BALANCING DAMPER

DOOR GRILLE

UNDERCUT DOOR

ACCESS DOORS, VERTICAL OR HORIZONTAL

STAINLESS STEEL DUCTWORK

FLEXIBLE CONNECTION

FLAT OVAL DUCT

POINTING

NEW DUCTWORK, FIRST DIMENSION IS SIDE SHOWN

EXISTING DUCTWORK TO REMAIN

EXISTING DUCTWORK TO BE REMOVED

DUCT ELBOW, POSITIVE PRESSURE (SUPPLY), FIRST DIMENSION INDICATES SIDE TO WHICH ARROW IS

DUCT ELBOW, EXHAUST

DUCT ELBOW, NEGATIVE PRESSURE, RETURN DUCT ELBOW UP THROUGH ROOF OR SLAB ABOVE

RECTANGULAR DUCT SECTION UP, POSITIVE PRESSURE, SUPPLY OR OUTSIDE AIR RECTANGULAR DUCT SECTION UP, NEGATIVE PRESSURE, RETURN

RECTANGULAR DUCT SECTION UP, EXHAUST ROUND DUCT SECTION UP

FLAT OVAL DUCT SECTION UP

TEE, OUTLET DOWN

TEE, OUTLET UP

45° PIPE RISE (R) / DROP (D)

PIPE ANCHORS

CONCENTRIC REDUCER

ECCENTRIC REDUCER

AFF - ABOVE FINISHED FLOOR AFG - ABOVE FINISHED GRADE AL - ALUMINUM AMB - AMBIENT AMP - AMPERE ARR - ARRANGEMENT ATC - AUTOMATIC TEMPERATURE CONTROL, AT CEILING ATM - ATMOSPHERE AUTO - AUTOMATIC AUX - AUXILIARY AVG - AVERAGE **BBD - BOILER BLOWDOWN** BF - BOILER FEED BHP - BOILER HORSEPOWER, BRAKE HORSEPOWER BOB - BOTTOM OF BEAM BOD - BOTTOM OF DUCT **BOP - BOTTOM OF PIPE** BOT - BOTTOM **BP - BACK PRESSURE** B & S - BELL-AND-SPIGOT BSMT - BASEMENT **BTU - BRITISH THERMAL UNIT BV - BUTTERFLY VALVE OC - DEGREES CELSIUS** C - CONDENSATE LINE C TO C - CENTER TO CENTER CA - COMPRESSED AIR CAL - CALORIE CAP - CAPACITY CD - CONDENSATE DRAIN CF - CHEMICAL FEED, CUBIC FOOT CFH - CUBIC FEET PER HOUR CFM - CUBIC FEET PER MINUTE CI - CAST IRON CIRC - CIRCULAR **CL - CENTER LINE** CM - CENTIMETRE CM2 - SQUARE CENTIMETRE CO - CLEAN OUT COL - COLUMN CONC - CONCRETE, CONCENTRIC CONN - CONNECT, CONNECTION CONT - CONTINUATION CPVC - CHLORINATED POLYVINYL CHLORIDE CR - CONDENSER RETURN **CRW - CHEMICAL RESISTANT WASTE** CS - CONDENSER SUPPLY CTR - CENTER CU - CUBIC CU FT. - CUBIC FEET CU IN. - CUBIC INCHES CV - CHECK VALVE CW - COLD WATER CWR - COLD WATER RISER D - DRAIN, DEEP DB - DRY BULB DDC - DIRECT DIGITAL CONTROL DEG - DEGREE **DELTAT - TEMPERATURE DIFFERENCE** DET - DETAIL DIA - DIAMETER DISC - DISCONNECT DN - DOWN DP - DEW POINT TEMPERATURE DR - DRAIN DWG - DRAWING EA - EXHAUST AIR, EACH EAT - ENTERING TEMPERATURE EATR – EXHAUST AIR TRANSFER RATIO EER - ENERGY EFFICIENT RATIO EFF - EFFICIENCY **EJ - EXPANSION JOINT** EL - ELEVATION ELB - ELBOW ELEC - ELECTRICAL ENT - ENTERING **ERV – ENERGY RECOVERY VENTILATOR** ESP - EXTERNAL STATIC PRESSURE **ET - EXPANSION TANK EVAP - EVAPORATOR EWT - ENTERING WATER TEMPERATURE** EXH - EXHAUST **EXP - EXPANSION** EXST - EXISTING EXT - EXTERNAL **OF - DEGREES FAHRENHEIT** F - FAHRENHEIT FC - FLEXIBLE CONNECTOR, FLEXIBLE CONNECTION FCO - FLOOR CLEAN OUT FD - FIRE DAMPER FDW - FEED WATER FEC - FIRE EXTINGUISHER CABINET FF - FINISH FLOOR FG - FINISH GRADE FHC - FIRE HOSE CABINE FLA - FULL LOAD AMPS FLR - FLOOR FM - FLOW METER FO - FUEL OIL FOV - FLUSH OUT VALVE FPM - FEET PER MINUTE FPS - FEET PER SECOND FS - FLOW SWITCH, FEDERAL SPECS FT - FOOT, FEET FTG - FITTING FU - FIXTURE UNIT FV - FLUSH VALVE G - GRAM, GAS LINE GA - GAUGE GAL - GALLONS GALV - GALVANIZED GL.V - GLOBE VALVE GND - GROUND GPD - GALLONS PER DAY **GPH - GALLONS PER HOUR GPM - GALLONS PER MINUTE GPS - GALLONS PER SECOND** GR - GRAIN GV - GATE VALVE **GWH - GAS WATER HEATER** H2O - WATER HB - HOSE BIBB HD - HEAD HG - MERCURY HGT - HEIGHT HMD - HUMIDITY HORIZ - HORIZONTAL HP - HORSEPOWER HR - HOUR HRV – HEAT RECOVERY VENTILATOR HTD - HEATED HTR - HEATER HW - HOT WATER HWH - HOT WATER HEATER

HWR - HOT WATER RETURN

A - COMPRESSED AIR LINE OR AREA

AC - AIR CHAMBER, ALTERNATING CURRENT

ABC - ABOVE CEILING

ADJ - ADJUSTABLE

A/C - AIR CONDITIONING

HWS - HOT WATER SUPPLY VAC - VACUUM HWT - HOT WATER TANK **VAV - VARIABLE AIR VOLUME** HZ - HERTS VB - VACUUM BREAKER **ID - INSIDE DIAMETER** VCI - VACUUM CLEANING INLET IN. - INCH VCL - VACUUM CLEANING LINE **INHG - INCHES OF MERCURY** VEL - VELOCITY **INSUL - INSULATION VERT - VERTICAL INT - INTERNATIONAL** VIB - VIBRATION INTL - INTERNAL VOL - VOLUME **IPS - IRON PIPE SIZE VSD - VARIABLE SPEED DRIVE** IV - INDIRECT VENT **VP - VELOCITY PRESSURE** IW - INDIRECT WASTE **VTR - VENT THRU ROOF** J - JOULE W - WATT, WIDTH, WIDE K - KELVIN WB - WET BULB WCO - WALL CLEAN OUT KG - KILOGRAM KM - KILOMETRE WG - WATER GAUGE KM2 - SQUARE KILOMETRE WH - WATER HEATER **KPA - KILO PASCAL** KS - KITCHEN SINK KW - KILOWATT L - LENGTH, LITER LAT - LEAVING AIR TEMPERATURE LB. - POUND LBF - POUND-FORCE LIQ - LIQUID LP - LOW PRESSURE LRA - LOCKED ROTOR AMPS LVL - LEVEL LVR - LOUVER LWT - LEAVING WATER TEMPERATURE M - METER M2 - SQUARE METER M TYPE - LIGHTEST TYPE OF RIGID COPPER PIPE MAN - MANUAL MAT - MIXED AIR TEMPERATURE MAX - MAXIMUM MBH - THOUSAND BRITISH THERMAL UNITS PER HOUR MFR - MANUFACTURER MG - MILLIGRAM MGD - MILLIONS GALLONS PER DAY MIN - MINIMUM OR MINUTE ML - MILLILITER MM - MILLIMETRE MM3 - CUBIC MILLIMETRE MPT - MALE PIPE THREAD MTD - MOUNTED MU - MAKE UP NA - NOT APPLICABLE NC - NORMALLY CLOSED NEG - NEGATIVE NIC - NOT IN CONTACT **NO - NORMALLY OPEN** NPHP - NAME PLATE HORSEPOWER NPS - NOMINAL PIPE SIZE NPSH - NET POSITIVE SUCTION HEAD NTS - NOT TO SCALE O - OXYGEN OA - OUTSIDE AIR OAT - OUTSIDE TEMPERATURE OC - ON CENTER **OD - OUTSIDE DIAMETER** OED - OPEN END DUCT OF - OVERFLOW **OV - OUTLET VELOCITY** OZ. - OUNCE PA - PASCAL PC - PLUMBING CONTRACTOR PCR - PUMPED CONDENSATE RETURN PD - PRESSURE DROP PF - POWER FACTOR PG - PRESSURE GAUGE PL - PLATE PNEU - PNEUMATIC PRESS - PRESSURE PROP - PROPELLER PRV - PRESSURE REDUCING VALVE PSI - POUNDS PER SQUARE INCH PSIA - POUND PER SQUARE INCH ABSOLUTE PSIG - POUND PER SQUARE INCH GAUGE PV - PLUG VALVE QTY - QUANTITY RA - RETURN AIR RAD - RADIUS RAT - RETURN AIR TEMPERATURE RD - ROOF DRAIN **R/E - RETURN AND EXHAUST RECOV - RECOVERY** RED - REDUCER **REF - REFERENCE RH - RELATIVE HUMIDIT** REQD - REQUIRED **REV - REVISION RL - REFRIGERANT LIQUID RLA - RATED LOAD AMPERES** RM - ROOM

RS - REFRIGERANT SUCTION RTN - RETURN RV - RELIEF VALVE S - SWITCH

SA - SHOCK ABSORBER, SUPPLY AIR SAT - SUPPLY AIR TEMPERATURE

SCH - SCHEDULE SDT - SATURATED DISCHARGE TEMPERATURE SEC - SECONDS, SECONDARY

SENS - SENSIBLE SEP - SEPARATE **SEQ - SEQUENCE**

SER - SERIES SERV - SERVICE SF - SERVICE FACTOR

SHT - SHEET SI - INTERNATIONAL SYSTEMS OF UNITS SOL - SOLENOID

SP - STATIC PRESSURE SPEC - SPECIFICATION SQ. - SQUARE

SQ.FT. - SQUARE FEET SS - STAINLESS STEEL SSH - STATIC SUCTION HEAD SST - SATURATED SUCTION TEMPERATURE

STD - STANDARD STH - STATIC TOTAL HEAD STL - STEEL

SUCT - SUCTION SPLY - SUPPLY SV - SERVICE

SVH - STATIC VELOCITY HEAD SW - SERVICE WEIGHT SWS - SERVICE WATER **TD - TEMPERATURE DIFFERENCE**

TDH - TOTAL DYNAMIC HEAD **TEMP - TEMPERATURE TH - THERMOMETER** THK - THICK

TP - TOTAL PRESSURE TSP - TOTAL STATIC PRESSURE UF - UNDER FLOOR

UH - UNIT HEATER V - VENT, VOLT, VOLUME

OPERATE SHOULD HE BE AWARDED THE WORK UNDER THIS CONTRACT. NO EXTRA CHARGE WILL BE ALLOWED FOR FAILURE OF ANY BIDDER TO EXAMINE THE SITE PRIOR TO BID ALL DUCT SIZES SHOWN ARE THE AIRFLOW DIMENSIONS. DUCT DIMENSIONS DO NOT HAVE ALLOWANCES FOR INSULATION LINER, WHERE APPLICABLE, INSIDE THE DUCTS, OR DUAL WALL DIMENSIONS. DUCTS SHALL BE CONSTRUCTED TO INCLUDE INSULATION REQUIREMENTS AND MAINTAIN AIRFLOW DIMENSIONS INDICATED ON PI ANS ALL WORK SHALL CONFORM TO STATE AND LOCAL CODES, RULES, REGULATIONS, AND ORDINANCES, WHICH SHALL TAKE PRECEDENCE OVER THE PLANS IF CONFLICTS EXIST BETWEEN THEM. THE DRAWINGS INDICATE THE GENERAL LAYOUT REQUIREMENTS FOR EQUIPMENT, FIXTURES, PIPING, DUCTWORK, ETC. FINAL LAYOUT SHALL BE MODIFIED AS NECESSARY TO FIT ACTUAL SITE CONDITIONS. ALL REQUIRED REVISIONS SHALL BE RECORDED ON A DESIGNATED HARD COPY SET OF RED-LINE PLANS TO BE KEPT CURRENT TO JOBSITE PROGRESS. AT MINIMUM, THIS DOCUMENT SHALL BE UPDATED WEEKLY, AND READILY AVAILABLE FOR REVIEW AND REFERENCE. COORDINATE ALL WORK WITH THE OWNER AND ALL OTHER CONTRACTORS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RIGGING, HANDLING, AND PROTECTION OF MATERIALS. PROVIDE LABOR TO RECEIVE, UNLOAD, STORE, PROTECT, AND TRANSFER TO POINT OF INSTALLATION OF ANY OWNER FURNISHED ITEMS IN CASES OF EQUIPMENT SUBSTITUTION, CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT ALL SYSTEMS AND COMPONENTS WILL FIT PROPERLY PRIOR TO FABRICATION OR ODERING. INSTALLED DUCTS MAY BE RESIZED BY THE CONTRACTOR TO FIT FIELD CONDITIONS AS LONG AS THE INSTALLED DUCTS SHALL HAVE EQUAL FRICTION LOSS TO THOSE SHOWN. RECTANGULAR DUCTS SHALL NOT BE CHANGED TO ROUND DUCTS. PROVIDE COMPLETE SHEET METAL SHOP DRAWINGS TO ENGINEER SHOWING ACTUAL DUCT SIZES, ARRANGEMENTS, AND UNIT LOCATIONS TO BE INSTALLED. THIS SHALL BE DONE PRIOR TO FABRICATION OR INSTALLATION. INSTALL ACOUSTIC TURNING VANES IN ELBOWS IN RECTANGULAR DUCTS 20" AND LARGER. INSTALL RADIUS TYPE ELBOWS IN RECTANGULAR DUCTS SMALLER THAN 20". USE 45 DEGREE TAKE-OFF FITTINGS AT ALL ROUND SUPPLY BRANCH TAKEOFFS. PROVIDE BALANCE DAMPERS AT ALL SUPPLY DUCT RUNOUTS TO GRILLES. LOCATE AS FAR AS POSSIBLE FROM GRILLES IN AN ACCESSIBLE LOCATION. PROVIDE ACCESS PANELS IN SOLID WALLS AND CEILINGS FOR BALANCING DAMPERS. USE FLEX DUCTS FOR FINAL CONNECTION TO ALL CEILING DIFFUSERS, AND WHERE

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SPECIFICATIONS.

NECESSARY, SIDEWALL DIFFUSERS, AND LIMIT TO 6' MAX. LENGTHS. PROVIDE A COMPLETE AND OPERATING MECHANICAL SYSTEM, INCLUDING ALL INCIDENTAL ITEMS AND CONNECTIONS NECESSARY FOR PROPER OPERATION OR CUSTOMARILY INCLUDED, EVEN THOUGH EACH AND EVERY ITEM MAY NOT BE INDICATED. THE MECHANICAL INSTALLATION SHALL BE SAFE, RELIABLE, ENERGY EFFICIENT AND EASILY MAINTAINED WITH ADEQUATE PROVISIONS ALLOWED FOR ACCESS TO EQUIPMENT THE MECHANICAL SYSTEM SHALL OPERATE QUIETLY WITH NOISE LEVELS BELOW THE CRITERIA RECOMMENDED FOR THE APPLICATION BY ASHRAE. PROVIDE CORRECTIVE ACTION AS REQUIRED TO REDUCE OBJECTIONABLE NOISE OR VIBRATION. UNDERCUT DOORS 3/4 INCH WHERE NO RETURN NOR EXHAUST GRILLE IS SHOWN TO ALLOW FOR AIR TRANSFER (DO NOT UNDERCUT FIREDOORS). REFER TO ARCH. PLANS AND DETAILS FOR EXACT LOCATION OF ALL WALL AND CEILING MOUNTED DEVICES. ADJUST LOCATION OF SIDEWALL DEVICES AS NECESSARY TO AVOID INTERFERENCE WITH MOLDING OR OTHER ELECTRICAL DEVICES.

WHERE CONDUIT, CABLES, DUCTWORK OR PIPING PASSES THROUGH FIRE RATED FLOORS OR WALLS, THE SLEEEVES SHALL BE COMPLETELY SEALED WITH A FIRE STOP MATETERIAL THAT IS UL LISTED AND ACCCEPTED BY LOCAL AUTHORITIES HAVING JURISDICTION (AHJ) AS BEING SUITABLE FOR THIS SERVICE SUCH AS DOWN CORNING CORP "SILICONE ELASTOMER, RTV FOAM, OR SIMILAR MATERIAL TO MAINTAIN FIRE RATING OF THE WALL OR FLOOR. CONTRACTOR SHALL BE RESPONSIBLE FOR THOROUGHLY COORDINATING PRIOR TO PERFORMING ALL CORING, BEAM, AND FLOOR PENETRATIONS AS IT RELATES TO HIS

WORK IF A CENTRAL FIRE ALARM SYSTEM IS REQUIRED FOR THIS PROJECT. MECHANICAL CONTRACTOR SHALL INSTALL DUCT MOUNTED SMOKE DETECTORS PROVIDED BY FIRE ALARM CONTRACTOR. REFER TO ELECTRICAL NOTES FOR EXACT REQUIREMENTS. MECHANICAL CONTRACTOR SHALL IDENTIFY A SET OF TERMINALS FOR EQUIPMENT SHUTDOWN ON ALL FAN POWERED EQUIPMENT REQUIRING SHUTDOWN CONTROLS. FIRE ALARM CONTRACTOR SHALL WIRE FROM DUCT MOUNTED SMOKE DETECTOR TO

SHUTDOWN TERMINALS TO SHUT DOWN FAN OPERATION WHEN SMOKE IS DETECTED. CONTRACTOR SHALL NOT INSTALL ANY MAINTENANCE ITEMS ABOVE HARD CEILINGS. THIS SHALL INCLUDE VALVES, DAMPERS, OR ANY OTHER ITEMS THAT REQUIRE ACCESS AFTER CONSTRUCTION IS COMPLETED. IF INSTALLATION ABOVE A HARD CEILING OF THESE ITEMS CANNOT BE AVOIDED, PROVIDE CEILING ACCESS DOORS EQUAL TO ACUDOR MODEL FW-505 WHERE REQUIRED. AT FIRE-RATED WALLS, USE EQUIVALENT OF ACUDOR MODEL FB-5060. MINIMUM SIZE SHALL BE 12"x12". USE 18"x18" WHEN PERSONNEL ACCESS IS REQUIRED.

PROVIDE AN INSULATED BACK ON ALL THERMOSTATS AND TEMPERATURE SENSORS THAT ARE MOUNTED ON CMU, HOLLOW, OR EXTERIOR WALLS. PROVIDE SHALLOW DEVICE EXTENSION BOX BEHIND T-STATS AND SENSORS ON MASONRY WALLS IN COMMERCIAL/RETAIL SPACES. PROVIDE FIRE DAMPERS AT ALL FIRE-RATED WALLS AND FLOOR PENETRATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE BARRIER WALLS AND CEILINGS. REFER TO ELECTRICAL DRAWINGS FOR SMOKE DAMPER AND FIRE/SMOKE DAMPER DETAIL. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL DAMPERS WITH

MOTORIZED ACTUATORS AND INSTALL SMOKE DETECTORS AND PROVIDE WIRING FOR FAN SHUTDOWN CONTROLS. COORDINATE WITH ELECTRICAL CONTRACTOR AND PROVIDE DAMPER ACTUATOR COMPATIBLE WITH ELECTRICAL WIRING PROVIDED. PROVIDE ANY WIRING OR COMPONENTS NOT PROVIDED BY THE ELECTRICAL CONTRACTOR THAT ARE REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL LINE VOLTAGE WIRING INSTALLED BY MECHANICAL CONTRACTOR SHALL BE

ACCOMPLISHED ACCORDING TO ELECTRICAL DRAWINGS, NOTES, AND

* DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT ALL SYMBOLS AND ABBREVIATIONS MAY BE USED ON THIS PROJECT.

2 HVAC CEILING PLAN 1/8" = 1'-0"

4 —

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<u>9</u>

0 4 1/8" = 1'-0"

GENERAL NOTE:

23.29 ACCESS HATCH: 80 x40 ; COORDINATE WITH STRUCTURAL. 23.30 PROVIDE REMOTE DAMPER OPERATOR FOR ALL BALANCING DAMPERS ABOVE HARD LID CEILINGS. REFER TO REMOTE DAMPER OPERATOR DETAIL.

HVAC ZONING PLAN 1/4" = 1'-0"

AIR DEVICE SCHEDULE

TAGDESCRIPTIONMFRMODELSIZESIZEFINISHCD-1ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA20x208ALUMINUM / WHITECD-2ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA20x2010ALUMINUM / WHITECD-3ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA12x126ALUMINUM / WHITECD-4ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x246ALUMINUM / WHITECD-5ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x248ALUMINUM / WHITECD-6ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x2412ALUMINUM / WHITEEG-1EGGCRATE EXHAUST GRILLETITUSTMSA24x2412ALUMINUM / WHITEEG-2EGGCRATE EXHAUST GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITERG-1EGGCRATE RETURN GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITERG-2EGGCRATE RETURN GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITESR-1SIDE-WALL SUPPLY GRILLETITUS272-RL12x6-ALUMINUM / WHITEGENERAL NOTES APPLICABLE TO ALL UNITS:ITUS272-RL12x6-ALUMINUM / WHITEGENERAL NOTES APPLICABLE TO ALL UNITS:ITUS272-RL12x6-ALUMINUM / WHITEGENERAL NOTES APPLICABLE TO ALL UNITS:ITUS272-RL12x6 <th></th> <th></th> <th></th> <th></th> <th>FACE</th> <th>NECK</th> <th>MATERIAL/</th>					FACE	NECK	MATERIAL/					
CD-1 ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER TITUS TMSA 20x20 8 ALUMINUM / WHITE CD-2 ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER TITUS TMSA 20x20 10 ALUMINUM / WHITE CD-3 ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER TITUS TMSA 12x12 6 ALUMINUM / WHITE CD-4 ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER TITUS TMSA 24x24 6 ALUMINUM / WHITE CD-5 ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER TITUS TMSA 24x24 8 ALUMINUM / WHITE CD-6 ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER TITUS TMSA 24x24 8 ALUMINUM / WHITE EG-1 EGGCRATE EXHAUST GRILLE TITUS TMSA 24x24 12 ALUMINUM / WHITE EG-2 EGGCRATE RETURN GRILLE TITUS 50-F 12x12 PER PLANS ALUMINUM / WHITE RG-1 EGGCRATE RETURN GRILLE TITUS 50-F 24x24 PER PLANS ALUMINUM / WHITE RG-2 EGGCRATE RETURN GRILLE TITUS 50-F 24x24 PER PLANS ALUMINUM / WHITE	TAG	DESCRIPTION	MFR	MODEL	SIZE	SIZE	FINISH					
CD-2ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA20x2010ALUMINUM / WHITECD-3ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA12x126ALUMINUM / WHITECD-4ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x246ALUMINUM / WHITECD-5ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x248ALUMINUM / WHITECD-6ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x248ALUMINUM / WHITECD-6ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x2412ALUMINUM / WHITEEG-6ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x2412ALUMINUM / WHITEEG-7EGGCRATE EXHAUST GRILLETITUS50-F12x12PER PLANSALUMINUM / WHITEEG-2EGGCRATE RETURN GRILLETITUS50-F20x20PER PLANSALUMINUM / WHITERG-1EGGCRATE RETURN GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITERG-2EGGCRATE RETURN GRILLETITUS272-RL12x6-ALUMINUM / WHITESR-1SIDE-WALL SUPPLY GRILLETITUS272-RL12x6-ALUMINUM / WHITESR-1SIDE-WALL SUPPLY GRILLETITUS272-RL12x6-ALUMINUM / WHITEGENERAL NOTES APPLICABLE TO ALL UNITS:ALUMINUM / WHITE1. COORDINATE AIR DEVICE DEFLECT	CD-1	ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER	TITUS	TMSA	20x20	8	ALUMINUM / WHITE					
CD-3ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA12x126ALUMINUM / WHITECD-4ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x246ALUMINUM / WHITECD-5ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x248ALUMINUM / WHITECD-6ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x2412ALUMINUM / WHITEEG-1EGGCRATE EXHAUST GRILLETITUS50-F12x12PER PLANSALUMINUM / WHITEEG-2EGGCRATE EXHAUST GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITERG-1EGGCRATE RETURN GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITERG-2EGGCRATE RETURN GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITESR-1SIDE-WALL SUPPLY GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITEGENERAL NOTES APPLICABLE TO ALL UNITS:1COORDINATE AIR DEVICE DEFLECTION ADJUSTMENTS WITH THE MECHANICAL ENGINEER DURING AIR BALANCE.2PROVIDE 2" FACTORY FIBERGLASS WRAP ON ALL SUPPLY DIFFUSERS WITH BACKSIDE NOT EXPOSED TO SPACE.3FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.4. ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS.5. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES.6. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHEREDUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE	CD-2	ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER	TITUS	TMSA	20x20	10	ALUMINUM / WHITE					
CD-4ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x246ALUMINUM / WHITECD-5ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x248ALUMINUM / WHITECD-6ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x2412ALUMINUM / WHITEEG-1EGGCRATE EXHAUST GRILLETITUS50-F12x12PER PLANSALUMINUM / WHITEEG-2EGGCRATE EXHAUST GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITERG-1EGGCRATE RETURN GRILLETITUS50-F20x20PER PLANSALUMINUM / WHITERG-2EGGCRATE RETURN GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITESR-1SIDE-WALL SUPPLY GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITEGENERAL NOTES APPLICABLE TO ALL UNITS:1COORDINATE AIR DEVICE DEFLECTION ADJUSTMENTS WITH THE MECHANICAL ENGINEER DURING AIR BALANCE.2. PROVIDE 2" FACTORY FIBERGLASS WRAP ON ALL SUPPLY DIFFUSERS WITH BACKSIDE NOT EXPOSED TO SPACE.3. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.4. ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS.5. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES.6. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHEREDUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHEREDUCT SIZE DIFFERS FROM NECK SIZE.7. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED	CD-3	ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER	TITUS	TMSA	12x12	6	ALUMINUM / WHITE					
CD-5ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x248ALUMINUM / WHITECD-6ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x2412ALUMINUM / WHITEEG-1EGGCRATE EXHAUST GRILLETITUS50-F12x12PER PLANSALUMINUM / WHITEEG-2EGGCRATE EXHAUST GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITERG-1EGGCRATE RETURN GRILLETITUS50-F20x20PER PLANSALUMINUM / WHITERG-2EGGCRATE RETURN GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITESR-1SIDE-WALL SUPPLY GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITEGENERAL NOTES APPLICABLE TO ALL UNITS:1.COORDINATE AIR DEVICE DEFLECTION ADJUSTMENTS WITH THE MECHANICAL ENGINEER DURING AIR BALANCE.2. PROVIDE 2" FACTORY FIBERGLASS WRAP ON ALL SUPPLY DIFFUSERS WITH BACKSIDE NOT EXPOSED TO SPACE.3. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.4. ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS.5. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES.6. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHEREDUCT SIZE DIFFERS FROM NECK SIZE.7. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER, THIS CONTRACTOR SHALL PROVIDE A COLOR	CD-4	ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER	TITUS	TMSA	24x24	6	ALUMINUM / WHITE					
CD-6ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSERTITUSTMSA24x2412ALUMINUM / WHITEEG-1EGGCRATE EXHAUST GRILLETITUS50-F12x12PER PLANSALUMINUM / WHITEEG-2EGGCRATE EXHAUST GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITERG-1EGGCRATE RETURN GRILLETITUS50-F20x20PER PLANSALUMINUM / WHITERG-2EGGCRATE RETURN GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITESR-1SIDE-WALL SUPPLY GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITEGENERAL NOTES APPLICABLE TO ALL UNITS:1Stop-F24x24PER PLANSALUMINUM / WHITE1. COORDINATE AIR DEVICE DEFLECTION ADJUSTMENTS WITH THE MECHANICAL ENGINEER DURING AIR BALANCE.2PROVIDE 2" FACTORY FIBERGLASS WRAP ON ALL SUPPLY DIFFUSERS WITH BACKSIDE NOT EXPOSED TO SPACE.3. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.4.ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS.5. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES.6.BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHEREDUCT SIZE DIFFERS FROM NECK SIZE.7.WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER. THIS CONTRACTOR SHALL PROVIDE A COLOR	CD-5	ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER	TITUS	TMSA	24x24	8	ALUMINUM / WHITE					
EG-1EGGCRATE EXHAUST GRILLETITUS50-F12x12PER PLANSALUMINUM / WHITEEG-2EGGCRATE EXHAUST GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITERG-1EGGCRATE RETURN GRILLETITUS50-F20x20PER PLANSALUMINUM / WHITERG-2EGGCRATE RETURN GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITESR-1SIDE-WALL SUPPLY GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITEGENERAL NOTES APPLICABLE TO ALL UNITS:1. COORDINATE AIR DEVICE DEFLECTION ADJUSTMENTS WITH THE MECHANICAL ENGINEER DURING AIR BALANCE.2. PROVIDE 2" FACTORY FIBERGLASS WRAP ON ALL SUPPLY DIFFUSERS WITH BACKSIDE NOT EXPOSED TO SPACE.3. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.4. ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS.5. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES.6. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHEREDUCT SIZE DIFFERS FROM NECK SIZE.7. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER, THIS CONTRACTOR SHALL PROVIDE A COLOR	CD-6	ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER	TITUS	TMSA	24x24	12	ALUMINUM / WHITE					
EG-2EGGCRATE EXHAUST GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITERG-1EGGCRATE RETURN GRILLETITUS50-F20x20PER PLANSALUMINUM / WHITERG-2EGGCRATE RETURN GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITESR-1SIDE-WALL SUPPLY GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITEGENERAL NOTES APPLICABLE TO ALL UNITS:1. COORDINATE AIR DEVICE DEFLECTION ADJUSTMENTS WITH THE MECHANICAL ENGINEER DURING AIR BALANCE.2. PROVIDE 2" FACTORY FIBERGLASS WRAP ON ALL SUPPLY DIFFUSERS WITH BACKSIDE NOT EXPOSED TO SPACE.3. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.4. ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS.5. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES.6. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHEREDUCT SIZE DIFFERS FROM NECK SIZE.7. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER. THIS CONTRACTOR SHALL PROVIDE A COLOR	EG-1	EGGCRATE EXHAUST GRILLE	TITUS	50-F	12x12	PER PLANS	ALUMINUM / WHITE					
RG-1EGGCRATE RETURN GRILLETITUS50-F20x20PER PLANSALUMINUM / WHITERG-2EGGCRATE RETURN GRILLETITUS50-F24x24PER PLANSALUMINUM / WHITESR-1SIDE-WALL SUPPLY GRILLETITUS272-RL12x6-ALUMINUM / WHITEGENERAL NOTES APPLICABLE TO ALL UNITS:1. COORDINATE AIR DEVICE DEFLECTION ADJUSTMENTS WITH THE MECHANICAL ENGINEER DURING AIR BALANCE.2. PROVIDE 2" FACTORY FIBERGLASS WRAP ON ALL SUPPLY DIFFUSERS WITH BACKSIDE NOT EXPOSED TO SPACE.3. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.4. ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS.5. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES.6. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHEREDUCT SIZE DIFFERS FROM NECK SIZE.7. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER, THIS CONTRACTOR SHALL PROVIDE A COLOR	EG-2	EGGCRATE EXHAUST GRILLE	TITUS	50-F	24x24	PER PLANS	ALUMINUM / WHITE					
RG-2 EGGCRATE RETURN GRILLE TITUS 50-F 24x24 PER PLANS ALUMINUM / WHITE SR-1 SIDE-WALL SUPPLY GRILLE TITUS 272-RL 12x6 - ALUMINUM / WHITE GENERAL NOTES APPLICABLE TO ALL UNITS: 1. COORDINATE AIR DEVICE DEFLECTION ADJUSTMENTS WITH THE MECHANICAL ENGINEER DURING AIR BALANCE. 2. PROVIDE 2" FACTORY FIBERGLASS WRAP ON ALL SUPPLY DIFFUSERS WITH BACKSIDE NOT EXPOSED TO SPACE. 3. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR. 4. ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS. 5. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES. 6. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHERE DUCT SIZE DIFFERS FROM NECK SIZE. 7. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER, THIS CONTRACTOR SHALL PROVIDE A COLOR	RG-1	EGGCRATE RETURN GRILLE	TITUS	50-F	20x20	PER PLANS	ALUMINUM / WHITE					
SR-1SIDE-WALL SUPPLY GRILLETITUS272-RL12x6-ALUMINUM / WHITEGENERAL NOTES APPLICABLE TO ALL UNITS:1. COORDINATE AIR DEVICE DEFLECTION ADJUSTMENTS WITH THE MECHANICAL ENGINEER DURING AIR BALANCE.2. PROVIDE 2" FACTORY FIBERGLASS WRAP ON ALL SUPPLY DIFFUSERS WITH BACKSIDE NOT EXPOSED TO SPACE.3. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.4. ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS.5. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES.6. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHERE DUCT SIZE DIFFERS FROM NECK SIZE.7. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER. THIS CONTRACTOR SHALL PROVIDE A COLOR	RG-2	EGGCRATE RETURN GRILLE	TITUS	50-F	24x24	PER PLANS	ALUMINUM / WHITE					
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 FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR. ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHERE DUCT SIZE DIFFERS FROM NECK SIZE. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER. THIS CONTRACTOR SHALL PROVIDE A COLOR 	2. PROVIE	DE 2" FACTORY FIBERGLASS WRAP ON ALL SUPPLY DIFI	FUSERS W	ITH BACKSIDE	NOT EXPO	SED TO SPAC	E.					
 ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHERE DUCT SIZE DIFFERS FROM NECK SIZE. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER, THIS CONTRACTOR SHALL PROVIDE A COLOR 	3. FURNIS	SHED AND INSTALLED BY MECHANICAL CONTRACTOR.										
5. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES. 6. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHERE DUCT SIZE DIFFERS FROM NECK SIZE. 7. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER, THIS CONTRACTOR SHALL PROVIDE A COLOR	4. ALL AIF	4. ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS.										
DUCT SIZE DIFFERS FROM NECK SIZE. 7. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER, THIS CONTRACTOR SHALL PROVIDE A COLOR	5. KEFEK TU SPECIFICATIONS FOR APPROVED ALTERNATES. 6. RRANCH DUCT SIZE SHALL BE SAME AS NOTED DIEFUSED NECK SIZE LINI ESS NOTED OTHEDWISE, DROVIDE TRANSITION WHEDE											
7. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER, THIS CONTRACTOR SHALL PROVIDE A COLOR	DUCT SIZE DIFFERS FROM NECK SIZE.											
PALETTE SAMPLE FOR FINAL APPROVAL WITH THE SUBMITTALS.	PALETTE	SAMPLE FOR FINAL APPROVAL WITH THE SUBMITTALS.										
8. COORDINATE WITH ARCHITECT'S REFLECTED CEILING PLAN TO PROVIDE APPROPRIATE FRAME TYPE AND MOUNTING ACCESSORIES.	8. COORE											

	ROOF VENT SCHEDULE											
					MAX PRESSURE DROP							
TAG	TAGSERVICEMFRMODELCFM(IN W.G.)MATERIALSIZE											
GRV-1	GRAVITY RELIEF	LOREN COOK , CO.	TR	1800	0.05	ALUMINUM	24					
GRV-2	GRAVITY RELIEF	LOREN COOK , CO.	TR	1800	0.05	ALUMINUM	24					
GRV-3	GRAVITY RELIEF	LOREN COOK , CO.	TR	1800	0.05	ALUMINUM	24					
GRV-4	GRAVITY RELIEF	LOREN COOK , CO.	TR	1800	0.05	ALUMINUM	24					
GRV-5												
IV-1	OUTSIDE AIR INTAKE	LOREN COOK , CO.	TR	2400	0.1	ALUMINUM	20					
IV-2	OUTSIDE AIR INTAKE	LOREN COOK , CO.	TR	2400	0.1	ALUMINUM	20					
IV-3	OUTSIDE AIR INTAKE	LOREN COOK , CO.	TR	2400	0.1	ALUMINUM	20					
GENERA 1. FLATT 2. PROV	GENERAL NOTES APPLICABLE TO ALL UNITS: 1. FLATTENED ALUMINUM BIRD SCREEN. 2. PROVIDE WITH ROOF CURB: COORDINATE WITH ROOFING CONTRACTOR FOR ROOF CONSTRUCTION AND PITCH											

3. PROVIDE COUTERBALANCED BACKDRAFT DAMPER ON RELIEF VENTS. DAMPER TO BE FULLY OPEN AT 0.01" PRESSURE.

9. EQUALS PER SPECIFICATIONS.

	MINI SPLIT AIR CONDITIONER SCHEDULE											
PAIR						COOLING CAPACITY						
WITH	DESCRIPTION	MANUF.	MODEL	CFM	SEER	(BUT/H)	VOLTS / PH	MCA	MOCP			
MCU-1	WALL-MOUNTED AC UNIT	DAIKIN	PKA-A42KA7	-	18.8	36,000	POWERED BY OUTDOOR UNIT	0 A	0 A			
MAC-1	GROUND-MOUNTED CONDENSING UNIT	DAIKIN	PUY-A42NKA7	830	18.8	36,000	208-230 / 3	25 A	30 A			

1. MAC & MCU COMPRISE A SINGLE AIR-CONDITIONING SPLIT SYSTEM AND INCLUDE MICROPROCESSOR CONTROLS, PROVIDE WALL MOUNT FOR WIRELESS REMOTE. ON/OFF 24-HOUR TIMER AND WASHABLE AIR FILTER. 2. PROVIDE LOW-AMBIENT PACKAGE ENABLING 100% SCHEDULED COOLING OPERATION DOWN TO 0F AND PARTIAL COOLING TO -20F. 3. PROVIDE CONTINUOUS OPERATON CONDENSATE PUMP AT 120V / 1-PHASE FOR MAC.

A PROVIDE WITH PROGRAMMABLE THERMOSTAT.

	AIR HANDLING UNIT (INDOOR UNIT) SCHEDULE																						
								MIXED	MIXED	MAXIMUM						HEAT							
						NET		AIR	AIR	LEAVING						OUTPUT AT							
						TOTAL	NET SENS	TEMP -	TEMP -	UNIT AIR	SUPPLY	OUTSIDE				17-DEGREES							
		PAIR			NOM.	COOLING	COOLING	DB	WB	TEMP	AIRFLOW	AIRFLOW	ESP			F						WEIGHT	
MARK	DESCRIPTION	WITH	MANUF	MODEL	TONS	(BTU/H)	(BTU/H)	(F)	(F)	(F)	(CFM)	(CFM)	(IN WG)	ARI EER	FAN STAGES	(BTU/H)	VOLTS	PH	DISCONNECT	MCA	MOCP	(lbs.)	NOTES
AHU-1	HORIZONTAL AIR HANDLING UNIT	HP-1	LENNOX	ELA090S4D	7.5	84152	57881	78	66	55.2	2400	340	1	11	2	50000	208 V	3	BY DIV. 26	10 A	15 A	431	В
AHU-2	HORIZONTAL AIR HANDLING UNIT	HP-2	LENNOX	ELA090S4D	7.5	82777	60490	78	65	54.2	2400	190	1	11	2	50000	208 V	3	BY DIV. 26	10 A	15 A	431	В
AHU-3	HORIZONTAL AIR HANDLING UNIT	HP-3	LENNOX	ELA090S4D	7.5	85527	57466	79	67	56.3	2400	340	1	11	2	50000	208 V	3	BY DIV. 26	10 A	15 A	431	A

GENERAL NOTES APPLICABLE TO ALL UNITS: 1. PROVIDE METAL RAIL SUPPORTS FOR HORIZONTAL CEILING-HUNG MOUNTED UNITS. 2. PROVIDE COOLING COIL TO MATCH ORIENTATION OF FURNACE OR AIR-HANDLING UNIT, AND THE SPECIFIED TARGET EFFICIENCY OF THE SPLIT SYSTEM. 3. PROVIDE WITH 7-DAY PROGRAMMABLE THERMOSTAT OR COMBINATION THERMOSTAT + CO2 SENSOR, AS INDICATED ON DRAWINGS. PROVIDE STAT WITH AUXILIARY CONTACTS TO CONTROL OUTSIDE AIR CONTROL DAMPER. 4. FILTER: 2" PLEATED THROW-AWAY. MERV 8. COORDINATE FILTER BOX ACCESS DOOR ORIENTATION WITH SITE CONDITIONS TO ENSURE FULL FILTER ACCESS CLEARANCE IS ALLOTTED PRIOR TO ORDERING. MAX PRESSURE DROP 0.1" WC. 5. PROVIDE WITH FULLY-ASSEMBLED INLINE ECONOMIZER BY MCDANIEL METALS, PLENUMS OF FLORIDA, OR EQUAL. 20-GA GALVANIZED STEEL, FULLY INSULATED WITH BRONZE BUSHINGS, AND FILTER RACK. ECONOMIZER CONTROLLER (HONEYWELL W7220), MIXED AIR SENSOR (HONEWELL C7250), ENTHALPY SENSOR (HONEYWELL C7400) AND ACTUATORS (HONEWELL MS3105K3052). ENTHALPY SENSOR TO SHIP LOOSE FOR FIELD INSTALLATION BY CONTROLS CONTRACTOR. ECONOMIZER CONTROLLER TO BE CAPABLE OF OPERATING AT 100% RETURN AIR, MINIMUM OUTSIDE AIR, AND FULL ECONOMIZER. A. OUTSIDE AIR DAMPER TO BE NORMALLY-CLOSED AND TO OPEN TO MINIMUM OUTSIDE AIR POSITION UPON CALL FROM ASSOCIATED CO2 SENSOR. B. OUTSIDE AIR DAMPER TO FULLY CLOSE DURING UNOCCUPIED MODE AS DEFINED BY ASSOCIATED PROGRAMMABLE THERMOSTAT.

ACCEPTABLE MANUFACTURERS: i. LENNOX / DAIKIN NORTH AMERICA

ii. YORK-A JOHNSON CONTROL COMPANY iii. TRANE

iv. TEMPMASTER

ANY SUBSTITUTIONS OR VARIATIONS FROM SCHEDULED EQUIPMENT MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL A MINIMUM OF TWO WEEKS PRIOR TO BID DATE.

F G	PROVIDE ISOL PROVIDE MAN
MARK	DESC
HP-1	GROUND-MOL
HP-2	GROUND-MOL
HP-3	GROUND-MOL
GENERA 1. PROV 2. PROV	L NOTES APPLI IDE ANTI-RECY(IDE 6" CONCRE
ACCEPT/ A. LENNO B. YORK- C. TRANE D. TEMPI	ABLE MANUFAC DX/DAIKIN NORT A JOHNSON CC E MASTER
ANY SUE	STITUTIONS OF

MARK

NOTES

GENERAL NOTE: ALL DUCT SIZES SHOWN ARE THE INSIDE CLEAR DIMENSIONS.

MECHANICAL DUCTWORK & INSULATION SCHEDULE													
SERVICE	DUCT TYPE	INSULATION TYPE	INSULATION THICKNESS										
ALL LOW PRESSURE CONSTANT VOLUME SUPPLY AIR DUCT FROM AIR HANDLER OR PACKAGED UNIT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0										
ALL RUNOUTS TO SUPPLY DIFFUSERS AND RETURN GRILLES CONCEALED ABOVE CEILINGS	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0										
ALL SUPPLY AIR DIFFUSERS (BACKSIDE, NOT EXPOSED TO SPACE)	N/A	FIBERGLASS WRAP	2" WRAP, R VALUE=6.0										
FRESH AIR SUPPLY DUCT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER. N/A IF IN UNCONDITIONED SPACE	2" WRAP OR 1-1/2" LINER, R VALUE=6.0										
RESTROOM EXHAUST DUCT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0										
ALL LOW PRESSURE RETURN AIR DUCT FROM AIR HANDLER OR PACKAGED UNIT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0										

MECHANICAL PIPING & INSULATION SCHEDULE

INSULATION THICKNESS

JACKET.			NOMINAL PIPE SIZE							
		INSULA	TION		1 TO	1-1/2	4 TO			
SERVICE	PIPING TYPE	TYPI	Ε	<1	<1-1/2	TO <4	<8	≥8		
EQUIPMENT DRAINS, COOLING CONDENSATE LINES, AND OVERFLOWS	TYPE "L" HARD COPPER	ELASTOME	RIC	0.5	0.5	1.0	1.0	1.0		
REFRIGERANT PIPING	COPPER REFRIGERANT PIPING	ELASTOME	RIC	0.5	1.0	1.0	1.0	1.5		
ALL OUTDOOR INSULATED PIPING	PROVIDE WITH EMBOSSED ALUMINUM JACKET OVER SCHEDULED INSULATION	PER SCHE	DULE							

NATURAL GAS DUCT FURNACE SCHEDULE

NOTE: ALL EXTERIOR INSULATED PIPING TO BE PROVIDED WITH ALUMINUM

					MAX PRESURE DROP		MBH	MBH	GAS	VOI TS		
MARK	DESCRIPTION	MFR	MODEL	CFM	(IN W.G.)	FUEL	INPUT	OUTPUT	VALVE	/ PH	WEIGHT	CONTROL TYPE
DHG-1	INDOOR GRAVITY-VENTED	REZNOR	X-100	2400	0.5	NAT. GAS	95	80	2-STAGE	208 / 1	150 lb	2-STAGE T-STAT
DHG-2	INDOOR GRAVITY-VENTED	REZNOR	X-100	2400	0.5	NAT. GAS	95	80	2-STAGE	208 / 1	150 lb	2-STAGE T-STAT
DHG-3	INDOOR GRAVITY-VENTED	REZNOR	X-100	2400	0.5	NAT. GAS	95	80	2-STAGE	208 / 1	150 lb	2-STAGE T-STAT

GENERAL NOTES APPLICABLE TO ALL UNITS: 1. FACTORY MOUNTED INTEGRAL 30A, 240V NONFUSABLE DISCONNECT DEVICE.

2. THERMAL OVERLOAD PROTECTION. 3. PROVIDE THERMOSTAT CAPABLE OF 2-STAGE FURNACE CONTROL. 4. PROVIDE BLOCKED VENT SHUT-OFF SYSTEM.

5. 24V 2-STAGE GAS VALVE. 6. ENERGY CUT-OFF (ECO).

9. MOTORIZED VENT DAMPER.

7. REMOVAVLE AIR BÀFFLÉS FOR HIGHER AIR FLOWS - BAFFLES TO BE REMOVED IN ALL UNITS. 8. INSTALL PER MANUFACTURER'S RECOMMENDED STRAIGHT DUCT LENGTHS UPSTREAM AND DOWNSTREAM OF HEATER.

10. DAT SENSOR. 11. PROVIDE THYMBOL THRU ROOF APPROVED FOR ZERO CLEARANCE TO COMBUSTIBLES.

12. TERMINATE EXHAUST FLUE WITH UL-LISTED AND -APPROVED VENT CAP. 13. VENT PIPE TO BE MINIMUM 26-GAUGE GALVANIZED STEEL. 14. PROVIDE DOUBLE-WALL TYPE 'B' VENT PIPE (METALBESTOS OR AMERIVENT).

15. MAINTAIN ALL MANUFACTURER'S RECOMMENDED CLEARANCES TO COMBUSTIBLES. 16. SUPPORT FLUE AT MANUF. RECOMMENDED DISTANCES OF NON-COMBUSTIBLE SUPPORTS.

17. CONDENSATE DRAIN FLANGE IN BOTTOM OF HEATER - PIPE TO GRAVITY DRAIN PER PLAN NOTES.

NOTES A HANGING BRACKET

D SPARK PILOT

B 24V CONTROL TRANSFORMER C AIRFLOW PROVING SWITCH

E INTEGRAL FAN CONTROL F HIGHT LIMIT SAFETY CUT-OUT

G SIDE-ACCESS FOR BURNER AND CONTROLS

EXHAUST FAN SCHEDULE

					FLOW	ESP					MAX	CONTROL	WEIGHT	
MARK	DESCRIPTION	MFR	MODEL	DRIVE	(CFM)	(IN W.G.)	RPM	VOLTS	PH	POWER	SONES	TYPE	(LBS)	NOTES
EF-1	INLINE EXHAUST FAN	LOREN COOK	70SQN17DEC	DIRECT - ECM	100	0.3	1600	120 V	1	29 VA	4.7	TIMECLOCK	65	A, C, E, F
TEF-1	CEILING MOUNTED EXHAUST FAN	LOREN COOK	GC-146	DIRECT - FSC	70	0.3	820	120 V	1	31 VA	1.3	LIGHT SWITCH	21	A, B, D, E, F
TEF-2	CEILING MOUNTED EXHAUST FAN	LOREN COOK	GC-146	DIRECT - FSC	70	0.3	820	120 V	1	31 VA	1.3	LIGHT SWITCH	21	A, B, D, E, F
TEF-3	CEILING MOUNTED EXHAUST FAN	LOREN COOK	GC-146	DIRECT - FSC	70	0.3	820	120 V	1	31 VA	1.3	LIGHT SWITCH	21	A, B, D, E, F
TEF-4	CEILING MOUNTED EXHAUST FAN	LOREN COOK	GC-146	DIRECT - FSC	70	0.3	820	120 V	1	31 VA	1.3	LIGHT SWITCH	21	A, B, D, E, F

PROVIDE PRE-WIRED FACTORY MOUNTED INTEGRAL DISCONNECT DEVICE (NEMA 3R FOR EXTERIOR).
 PROVIDE VARIABLE SPEED CONTROLLER (FACTORY INSTALLED IF AVAILABLE) ON ALL DIRECT DRIVE FANS FOR FAN BALANCING.
 MOUNT FAN SPEED CONTROLLER IN ACCESSIBLE LOCATION ABOVE CEILING UNLESS OTHERWISE NOTED.

A PROVIDE BACKDRAFT DAMPER.

GENERAL NOTES APPLICABLE TO ALL UNITS:

B PROVIDE ROOF JACK COOK RJ200 OR EQUIVALENT WITH ROOF JACK TRANSITION.

C PROVIDE COOK MODEL 'PR' ROOFTOP GRAVITY RELIEF HOOD WITH CURB. COORDINATE CURB HEIGHT AND SLOPE WITH ROOFING CONTRACTOR. D PROVIDE MANUFACTURER'S WHITE ALUMINUM GRILLE.

E PROVIDE BIRD SCREEN. LATOR KIT. NUFACTURER'S WALL CAP.

AIR COOLED HEAT PUMP (OUTDOOR UNIT) SCHEDULE

					DESIGN								MAX	
					OUTDOOR								SOUND	
	PAIR			NOM.	AIR TEMP	ARI	COMPRESSOR						RATING	WEIGH
RIPTION	WITH	MFR	MODEL	TONS	(F)	EER	STAGES	VOLTS	PH	DISCONNECT	MCA	MOCP	(dBA)	(LBS)
NTED HEAT PUMP	AHU-1	LENNOX	ELP090S4S	7.5	97	11	2	208 V	3	BY DIV. 26	37 A	60 A	85	425
NTED HEAT PUMP	AHU-2	LENNOX	ELP090S4S	7.5	97	11	2	208 V	3	BY DIV. 26	37 A	60 A	85	425
NTED HEAT PUMP	AHU-3	LENNOX	ELP090S4S	7.5	97	11	2	208 V	3	BY DIV. 26	37 A	60 A	85	425

ICABLE TO ALL UNITS: CLE TIMERS, LOW AMBIENT CONTROLS, TXV AND COIL HAIL GUARDS. ETE PAD AND 'STAND-OFF' SPACERS FOR GROUND MOUNTED UNITS.

CTURERS: RTH AMERICA ONTROL COMPANY

R VARIATIONS FROM SCHEDULED EQUIPMENT MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL A MINIMUM OF TWO WEEKS PRIOR TO BID DATE.

James R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2480 www.childersarchitect.com PROFESSIONAL SEAL Shane/ Wells 28910 KLAHOMP CA5338(PE) 07/31/2020 CONSULTANT LOGO: HP ENGINEERING PROJECT NO. 190258R 100 % COMPLETE HP ENGINEERING INC. 5214 W. VILLAGE PARKWAY SUITE 120 ROGERS, AR 72758 (479) 899-6370 www.hpengineeringinc.com NATION FICE ₹ Ο Ο ЦО HEROKEI TAG OI C Ο AT0(A Ö \bigcirc KEY PLAN: PROJECT PHASE: CONSTRUCTION DOCUMENTS REVISIONS DESCRIPTION DATE DATE: JOB NUMBER: 07-31-2020 18-01.10 SHEET NUMBER: M3.00 MECHANICAL SCHEDULES

23A HEATING, VENTILATING, AND AIR CONDITIONING rev – 20150529

23A 1 GENERAL INSTRUCTIONS

23A 1-1 GENERAL REQUIREMENTS

Requirements under Division 1 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 1, this section and division take precedence. Become thoroughly familiar with all their contents as to requirements that affect this division, section or both. The work required under this section includes material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate

each system's functioning as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and portions of the work described in one, shall be provided as if described in both. In the event of discrepancies, notify the engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They also convey the scope of work, indicating the intended general arrangement of the equipment and other materials without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which, when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory and properly operating system. Determine exact locations by job measurements, by checking the requirements of other trades, and by reviewing all contract documents. Correct errors that could have been avoided by proper checking and inspection, at no additional cost to the owner.

23A 1-2 DEFINITIONS

Whenever used in these specifications or drawings, the following terms shall have the indicated meanings: Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembling, installing, and similar operations."

Install: "to perform all operations at the project site, including, but not limited to, and as required: unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install complete, and ready for the intended use."

Furnished by owner (or owner-furnished) or furnished by others: "an item furnished by the owner or under other divisions or contracts. and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division.

Engineer: where referenced in this division, "engineer" is the engineer of record and the design professional for the work under this division, and is a consultant to, and an authorized representative of, the architect, as defined in the general and/or supplementary conditions. When used in this division, it means increased involvement by, and obligations to, the engineer, in addition to involvement by, and obligations to, the "architect".

AHJ: the local code and/or inspection agency (authority) having jurisdiction over the work.

NRTL: nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project

The terms "approved equal", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the engineer as equivalent to the item or manufacturer specified". The term "approved" shall mean labeled, listed, certified, or all three, by an NRTL, and acceptable to the AHJ over this project.

23A 1-3 PRE-BID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to do so will not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

23A 1-4 MATERIAL AND WORKMANSHIP

Provide all material and equipment new and in first class condition. Provide markings or a nameplate for all material and equipment identifying the manufacturer and providing sufficient reference to establish quality, size and capacity. In general, provide the following quality grade(s) for all materials and equipment: Commercial Specification Grade

Pipe, pipe fittings, pipe specialties and valves shall be manufactured in plants located in the United States. Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the architect and engineer. Workmanship shall be the finest possible by experienced mechanics of the proper trade.

The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal or excessive noise from equipment, devices or other system components will not be acceptable.

Remove from the premises waste material present as a result of work. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction.

23A 1-5 MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers listed are not in accordance with any ranking or preference. Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years. 23A 1-6 COORDINATION

Coordinate all work with other divisions and trades so that the various components of the systems will be installed at the proper time, fit the available space, and will allow proper service access to those items requiring maintenance. Refer to all other division's drawings, and to relevant equipment submittals and shop drawings to determine the extent of clear spaces. Components which are installed without regard to the above shall be relocated at no additional cost to the owner.

Unless otherwise indicated, the general contractor will provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the general contractor with information where chases and openings are required. Make all offsets required to clear equipment, beams and other structural members, and to facilitate concealing system components in the manner anticipated in the design. Keep informed as to the work of other trades engaged in the construction of the project, and execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor will be held responsible for errors that could have been avoided by proper checking and inspection

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the construction documents are not necessarily intended to designate the required trim. 23A 1-7 ORDINANCES, CODES, AND STANDARDS

take precedence.

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Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ including any amendments and standards as set forth by the National Fire Protection Association (NFPA), Underwriters Laboratories (UL), Occupational Safety and Health Administration (OSHA), American Society of Mechanical Engineers (ASME), American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), American National Standards Institute (ANSI), American Society of Testing Materials (ASTM) and other national standards and codes where applicable. Additionally, comply with rules and regulations of public utilities and municipal departments affected by connection of services. Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the engineer's attention for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for and furnish certificates of inspection to owner. Contractor will be held responsible for violations of the law. 23A 1-8 PROTECTION OF EQUIPMENT AND MATERIALS

Store and protect from damage equipment and materials delivered to job site, in accordance with manufacturers' recommendations. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material that has been damaged by construction activities will be rejected, and contractor shall furnish new equipment and material as required at no additional cost to the owner.

Keep premises broom clean from foreign material created during work performed under this contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Plug or cap open ends of ductwork and piping systems while stored and installed during construction when not in use to prevent the entrance of debris into the systems. 23A 1-9 SUBSTITUTIONS

Include in the base bid the products specifically named in these specifications or on the drawings. Submit, in the form of alternates, with bid, products of any other manufacturers for similar use, provided the differences in cost, if any, are included for each proposed alternate.

No substitutions will be considered with receipt of Bids, unless the Architect and Engineer have received from the Bidder a written request for approval to bid a substitution at least ten calendar days prior to the date for receipt of Bids, and have approved the substitution request. Include, with each such request, the name of the material or equipment for which substitution is being requested, and a complete description of the proposed substitution, including drawings, cut sheets, performance and test data, and all other information necessary for an evaluation. Include also a statement setting forth changes in other materials, equipment or other work that would be required to incorporate the substitution. The burden of proof of the merit of the proposed substitute is upon the proposer. The proposer of any substitutions shall compensate the Engineer at a rate of \$150.00 per hour for time spent evaluating proposed substitutions and or the subsequent revisions to the design required to utilize the substitution.

The Architect's or Engineer's decision to approve or disapprove a substitution in a Bid is final. If the proposed substitution is approved prior to receipt of Bids, such approval will be stated in an Addendum. Bidders shall not rely upon approvals made in any other manner, including verbal.

No substitutions will be considered after receipt of Bids and before award of the Contract.

No substitutions will be considered after the Contract is awarded unless specifically provided in the Contract Documents.

accessories that are being proposed. Provide the number of submittals required by division 1; however, at a minimum, submit two (2) sets. Before submitting, verify that all materials and equipment submitted are mutually compatible and suitable for the intended use, fit the available spaces, and allow ample and code-required room for access and maintenance. Submittals shall contain the following information. Submittals not so identified will be returned to the contractor without action: The project name. The applicable specification section and paragraph. The submittal date. The contractor's stamp, which shall certify that the stamped drawings have been checked by the contractor, comply with the drawings and specifications, and have been coordinated with other trades. Submittals and shop drawings shall not contain HP Engineering's firm name or logo, nor shall it contain the HP Engineering's engineers' seal and signature. They shall not be copies of HP Engineering's work product. Transmit submittals as early as required to support the project schedule. Allow for two weeks engineer review time, plus mailing time, plus a duplication of this time for re-submittals, if required. The engineer's submittal reviews will not relieve the contractor from responsibility for errors in dimensions, details, size of members, or quantities; or for omitting components or fittings; or for not coordinating items with actual building conditions. Refer to division 1 for acceptance of electronic submittals for this project. For electronic submittals, contractor shall submit the documents in accordance with the procedures specified in division 1. Contractor shall notify the architect and engineer that the shop drawings have been posted. If electronic submittal procedures are not defined in division 1, contractor shall include the Specifications define the qualitative requirements for products, materials, and workmanship upon which the contract is based. website, user name and password information needed to access the submittals. For submittals sent by e-mail, contractor shall copy the architect and engineer's designated representatives. Contractor shall allow the engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal and shall clearly indicate the materials, performance criteria and accessories being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review. 23A 1-11 ELECTRONIC DRAWING FILES In preparation of shop drawings or record drawings, contractor may, as an option, obtain electronic drawing files in Revit, AutoCAD, or DXF format from the engineer for a fee of \$200 for the first sheet and \$100 per sheet for each additional sheet. Contact the architect for written authorization; and, contact the engineer to obtain the necessary release agreement form and to indicate the desired shipping method and drawing format. In addition to payment, architect's written authorization and engineer's release agreement form must be received before electronic drawing files will be sent. 23A 1-12 OPERATION AND MAINTENANCE MANUALS Submit to the architect, for engineer's review, copies each of operations and maintenance instruction manuals, appropriately bound into manual form including approved copies of the following, revised if necessary to show system and equipment as actually installed. Paper clips, staples, rubber bands, and mailing envelopes are not considered approved binders. Provide the number of submittals required by Division 1; however, at a minimum, submit two (2) sets, and include, at a minimum, the following information: Cover sheet that lists the project name, date, owner, architect, consulting engineer, general contractor, sub-contractor, and an index of contents. Manufacturers' catalogs and product data sheets Wiring diagrams Operation and Maintenance instructions Parts lists Approved shop drawings Test reports as defined for the systems and equipment provided or furnished or installed under this contract. Names, addresses, telephone numbers, and e-mail addresses of local contacts for warranty services and spare parts. Submit manuals prior to requesting the final punch list and before any requests for substantial completion. Final approval of this division's systems installed under this contract will be withheld until this equipment brochure is received and deemed complete by the architect and engineer. Provide "as-built" drawings (see Division 1 and general conditions). 23A 1-13 TRAINING At a time mutually agreed upon between the owner and contractor, provide the services of a factory trained and authorized representative to train owner's designated personnel on the operation and maintenance of the equipment provided for this Provide training to include but not be limited to an overview of the system and/or equipment as it relates to the facility as a whole; ce procedures and schedules related to startup and shutdown trop maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals. Submit a certification letter to the architect stating that the owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The contractor and the owner's representative shall sign the certification letter indicating agreement that the training has been provided. Schedule owner training with at least 7 days' advance notice. 23A 1-14 WARRANTIES Warrant each system and each element thereof against all defects due to faulty workmanship, design or material for a period of 12 months from date of substantial completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds this duration. Warranties shall include labor and material. Remedy all defects, occurring within the warranty period(s), as stated in the general conditions and Division 1 without any additional costs to the owner. Perform any required remedial work promptly, upon written notice from the engineer or owner. At the time of substantial completion, deliver to the owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the required period, each warranty instrument being addressed to the owner and stating the commencement date and term. 23A 1-15 CUTTING AND PATCHING Perform cutting of walls, floors, ceilings, etc. as required to install work under this section. Obtain permission from the architect prior to cutting. Do not cut or disturb structural members without prior approval from the architect. Cut holes as small as possible. General contractor shall patch walls, floors, etc. as required by work under this section. Patching shall match the original material and construction. Repair and refinish areas disturbed by work to the condition of adjoining surfaces in a manner satisfactory to the architect. 23A 1-16 ROUGH-IN Coordinate without delay roughing-in with general construction. Conceal piping and conduit rough-in except in unfinished areas and where otherwise shown. 23A 1-17 CONCRETE BASES Provide concrete bases for equipment where indicated on the drawings and as specified herein. Concrete bases shall have chamfered edges. Size of pad shall be a minimum of 4" greater than the footprint of the equipment that it is supporting and shall have a minimum height of 3-1/2". Construct equipment bases and housekeeping pads shall be of a minimum 28 day, 4000 psi concrete conforming to American Concrete Institute standard building code for reinforced concrete (ACI 318-99) and the latest applicable recommendations of the ACI standard practice manual. Concrete shall be composed of cement conforming to ASTM C 150 Type I, aggregate conforming to ASTM C33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment. Unless otherwise specified or shown on the structural drawings, reinforce equipment bases and housekeeping pads with No. 4 reinforcing bars conforming to ASTM A 615 or 6x6 - W2.9 x W2.9 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24" on center with a minimum of two bars each direction. Provide galvanized anchor bolts for equipment placed on concrete equipment bases and housekeeping pads or on concrete slabs. Anchor bolts size, number and placement shall be as recommended by the manufacturer of the equipment. 23A 1-18 STRUCTURAL STEEL Structural steel used for support of equipment, ductwork and piping shall be new, clean, and conform to ASTM designation A-36. Support mechanical components from the building structure. Do not support mechanical components from ceilings, other mechanical or electrical components, and other non-structural elements. 23A 1-19 ACCESS DOORS Provide access doors in ceilings, walls, etc. where indicated or required for access or maintenance to concealed valves and equipment installed under this section. Provide concealed hinges, screwdriver-type lock, anchor straps; manufactured by Milcor, Zurn, Titus, or equal. Obtain architect's approval of type, size, location and color before ordering. 23A 1-20 PENETRATIONS Provide sleeves for pipes passing through above grade concrete or masonry walls, concrete floor or roof slabs. Sleeves are not required for core drilled holes in existing masonry walls, concrete floors or roofs. Provide 10 gauge galvanized steel sleeves for sleeves 6" and smaller. Provide galvanized sheet metal sleeves for larger than 6". Schedule 40 PVC sleeves are acceptable for installation in areas without return air plenums. Seal elevated floor, exterior wall and roof penetrations watertight and weathertight with non-shrink, non-hardening commercial sealant. Pack with mineral wool and seal both ends with minimum of 1/2" of sealant. Seal around penetrations of fire rated assemblies. Coordinate fire ratings and locations with the architectural drawings. Refer to architectural specifications for fire stoppings. Provide a product schedule for UL listing, location, wall or floor rating and installation drawing for each penetration fire stop system. Extend pipe insulation for insulated pipe through floor, wall and roof penetrations, including fire rated walls and floors. The vapor barrier shall be maintained. Size sleeve for a minimum of 1" annular clear space between inside of sleeve and outside of insulation. Provide prefabricated roof curbs manufactured by Custom Curb, Inc., Pate Company, Thycurb or approved equal. Provide roof curb with factory installed wood nailer; welded, 18 gauge galvanized steel shell, base plate and flashing; 1-1/2" thick, 3 pound rigid insulation; fully mitered 3-inch raised cant; cover of weather-resistant, weather-proof material and pipe collar of weather-resistant material with stainless steel pipe clamps. Provide box frames for rectangular openings welded 12 gauge galvanized steel attached to forms and of a maximum dimension established by the architect. Notify the general contractor or architect before installing any box openings not shown on the architectural or structural drawings. Seal concrete or masonry exterior wall penetrations below grade with "wall pipes" and mechanical sleeve seals. Provide cast iron "wall pipes" with integral waterstop ring manufactured by Josam, Jay R. Smith, Wade, Watts or Zurn. Provide modular mechanical sleeve seals, manufactured by Thunderline / Link Seal, Calpico, Inc. and Metraflex. Seal elevated concrete slab with water proof membrane penetrations with "wall pipes" and water proof sealant. Secure

waterproof membrane flashing between "wall pipe" clamping flange and clamping ring. Provide cast iron "wall pipes" with integral waterstop ring manufactured by Josam, Jay R. Smith, Wade, Watts or Zurn. Provide sleeves for horizontal pipe passing through or under foundation. Sleeves shall be cast iron soil pipe two nominal pipe sizes larger than the pipe served.

Provide Schedule 40 PVC pipe sleeves for vertical pressure pipe passing through concrete slab on grade. Sleeves shall be one nominal pipe size larger than the pipe served and two pipe sizes larger than pipe served for ductile iron pipes with restraining rods. Seal water-tight with silicone caulk.

Provide 1/2" thick cellular foam insulation around perimeter of non-pressure pipe passing thru concrete slab on grade. Insulation shall extend to 2" above and below the concrete slab.

samples, and other submittals required by this division. Highlight, mark, list or indicate the materials, performance criteria and

23A 1-21 AIR FILTERS

Provide MERV 8 pleated, throwaway type filters, unless otherwise indicated. Air units shall have new filters installed when they are operated before final acceptance. Filters shall be manufactured by American Air Filter, Farr, Flanders, or approved equal. If HVAC equipment is used during the construction period, contractor shall provide one set of filters when the unit is started and replace filters when needed, but not less than every month. Install new filters prior to testing, adjusting, and balancing work. On the day of substantial completion, the contractor shall clean the unit and provide a new set of filters in the unit before turning system over to owner.

23A 1-22 MOTORS AND STARTERS

Provide motors and starting equipment where not furnished with the equipment package. Motors shall have copper windings Class B insulation, and be standard squirrel cage with starting torque characteristics suitable for the equipment served. Motors for air handling equipment shall be selected for quiet operation. Each motor shall be checked for proper rotation after electrical connection has been completed. Provide drip-proof enclosure for locations protected from weather and not in air stream of fan; and totally enclosed fan cooled enclosure for motors exposed to weather. Motors shall be manufactured by Century, General Electric, Westinghouse, Louis Allis, or approved equal.

Furnish to owner, with receipt, one complete set of belts for each relative motor utilizing a belt drive. 23A 1-23 ELECTRICAL WIRING

ensure proper installation. 23A 1-24 REFRIGERANT AND OIL

23A 1-25 FINAL TESTING AND ADJUSTMENTS Perform test readings on fans, units, coils, etc. and adjust equipment to deliver specified amounts of air.

sequencing of interlock systems, and operation of safety controls. 23A 1-26 EQUIPMENT FURNISHED BY OTHERS

Provide necessary equipment and accessories that are not provided by the equipment supplier or owner to complete installation of cooking equipment, washing equipment, etc., furnished by others, in locations as indicated on the drawings and/or described in the general notes to this contractor. Equipment and accessories not provided by the equipment supplier may include flues, vents, intakes, associated roof jacks and caps to outdoors, dampers, in-line fans, roof fans, control interlocks, etc. as required for proper operation of the complete system in accordance with the manufacturer's instructions. Contractor shall be responsible for correct rough-in dimensions, and shall verify same with architect and/or equipment supplier

prior to service installations. 23A 1-28 BUILDING OPERATION

and/or tenant a minimum of seven days in advance of work. 23A 1-29 VIBRATION ISOLATION

Manufacturers: Provide vibration isolation equipment and materials by a single manufacturer. Approved manufacturers provided their systems are in compliance with the specified design and performance requirements include Amber Booth, Kinetics Noise Control, Mason Industries, Inc., Vibration Eliminator Co., Inc., and Vibration Mounting and Controls.

General requirements: Select vibration isolators by the weight distribution to produce uniform deflection. Vibration isolators shall instructions.

Isolator types:

Type WP (waffle pads): Provide 5/16" thick neoprene pads ribbed or waffled on both sides. Manufacture pads with bridge bearing quality neoprene, and select for a maximum durometer of 50 and designed for 15 percent strain. Incorporate steel load-spreading plates where required between the equipment and the neoprene pad. If the isolator is bolted to the structure, install a neoprene vibration isolation washer and sleeve (Uniroyal Type 620/660 or as approved) shall be installed under the bolt head between the steel washer and the base plate. Provide Mason Industries Type W or equal.

Type SPNH (spring and neoprene hangers): Provide a steel spring in series with a neoprene isolating element. The spring shall have a minimum additional travel to solid equal to 50 percent of the specified deflection. The neoprene element shall have a static deflection of not less than 0.3" with a strain not exceeding 15 percent. Unless otherwise specified, the static deflection of SPNH hangers shall be 2". Spring diameter and hanger box hole size shall be large enough to permit the hanger rod to swing through a 30 degree arc. Provide neoprene sleeve where the lower hanger rod passes through the steel hanger box, such that the hanger rod cannot contact the steel hanger. The diameter of the clear hole in the hanger box shall be at least 3/4 inch larger than the diameter of the hanger rod. When installed, do not cock the spring element and do not allow the hanger box to rotate through a full 360 degree arc without encountering obstructions. Provide Mason Industries Type 30N or equal.

Type SPNM (spring and neoprene mounts): Provide free-standing and laterally stable steel spring without a housing. Design springs so the ratio of the horizontal to vertical spring constant is between one and two. The spring diameter shall be not less than 80% of the compressed height of the spring at rated load. Loaded springs shall have a minimum additional travel to solid equal to 50% of the specified static deflection. Unless otherwise specified, the minimum static deflection of SPNM isolators for equipment mounted on grade slabs shall be 1", and the minimum static deflection for equipment mounted above grade level shall be 2". Bond two Type WP isolation pads sandwiching a 16 gauge stainless or galvanized steel separator plate to the isolator baseplate. Unless otherwise specified, isolators need not be bolted to the floor for indoor installations. If the base plates are bolted to the structure, install a neoprene vibration isolation washer and sleeve (Uniroyal Type 620/660 or as approved) under the bolt head between the steel washer and the base plate. Provide Mason Industries Type SLFH or equal.

Type CMB (curb mounted base): Curb mounted base for roof-mounted equipment shall be a structural steel base mounted directly to the structure with an upper floating section on adjustable steel springs. The upper frame shall provide continuous support for the equipment. Steel springs shall rest on 1/4" min. thickness neoprene pads and shall have a minimum static deflection of 2" unless otherwise specified. All-directional snubber bushings shall be 1/4" minimum thickness neoprene. All hardware shall be cadmium or zinc electroplated to provide a rust resistant finish. Weather proofing shall consist of a continuous galvanized flexible counterflashing nailed over the lower curb's waterproofing and joined at the corners by EPDM bellows. All spring locations shall have access ports with removable waterproof covers to allow for adjustment or replacement of springs. Lower curbs shall have provision for 2" insulation. Duct connections shall be made using a length of flexible duct dimensioned to match the equipment opening, using a foam rubber gasket to seal against the unit bottom. Provide Mason Industries Type RSC or equal.

23A 1-30 MECHANICAL IDENTIFICATION Provide manufacturer's standard pre-printed, semi-rigid snap-on or permanent adhesive, pressure-sensitive vinyl pipe markers Color code pipe markers to comply with ANSI A13.1.

Install pipe markers on each HVAC piping system and include arrows to show normal direction of flow. Locate pipe markers and color bands wherever piping is exposed to view in occupied spaces, machine rooms, accessible

Provide plastic laminate or brass valve tag on every valve, cock and control device in each HVAC piping system; exclude check

connections of end-use fixtures and units. equipment types. Conform to ANSI A13.1 for hazardous equipment.

required for long distance identification, white or black color for best contrast. Provide duct markers or provide stenciled signs and arrows indicating ductwork service and flow direction in black or white all control and balancing dampers or branch ducts more than 25 feet length and within 5 feet on each side of wall, floor, and ceiling penetrations. Provide additional markers in congested areas or at multiple duct runs as required for clarity.

lettering for best contrast with duct or insulation color. Locate markers maximum 50 feet along each duct side and within 5 feet of 23A 2 INSULATION AND SHEET METAL WORK

23A 2-1 DUCT INSULATION foil-scrim-kraft facing, and with joints taped with 3" wide foil tape. Where contractor has the option to provide duct liner, in lieu of duct wrap, in rectangular supply and return air ductwork. Liner

allowances for the insulation thickness. ASTM E 84. Containers for mastics and adhesives shall have UL label.

minimum 20 gauge aluminum jacket sealed with approved weatherproof sealant.

Furnish to owner, with receipt, One set of spare filters of each type required for each unit.

Provide every motor, except fractional horsepower single phase motors with an approved type of "built-in" thermal overload protection, with a motor starter. Each starter shall be provided with overload heaters sized to the motor rating, and every three phase motor starter shall have overload heaters in each phase. Ambient compensated heaters shall be installed wherever necessary. Unless noted otherwise, motor starters shall be furnished by this Divisions contractor for installation and connection by the Division 26 contractor. Starters shall be Allen-Bradley, Clark, Furnas, Square D, or approved equal.

Line Voltage control and interlock wiring shall be provided by the Division 26 contractor. Low Voltage control wiring shall be provided by the Division 23 contractor. Required conduit and rough-ins for low Voltage control wiring shall be provided by the Division 26 contractor. Furnish wiring diagrams to the Division 26 contractor as required for proper equipment hookup. Coordinate with the Division 26 contractor the actual wire sizing amps for the equipment (from the equipment nameplate) to

Provide full refrigerant and oil charge in new air conditioning refrigeration systems, and maintain it for full term of the guarantee Final system testing, balancing and adjustments shall be performed by a contractor certified by the National Environmental Balancing Bureau (NEBB), Associated Air Balance Council (AABC) or other approved agency.

Prepare testing and balancing report log showing air supply quantities, air entering and leaving temperatures and pressures, fan and unit test readings, motor voltage and amp draws, etc., and submit six copies of the final compilation of data to the architect for evaluation and approval before final inspection of the project. Balance air systems to within plus or minus 10 percent for terminal devices and branch lines and plus or minus 5 percent for main ducts and air handling equipment of the amount of air shown on the drawings. Further adjustments shall be made to obtain uniform temperature in spaces. Adjust equipment to operate as intended by the specification. Align bearings and replace bearings that have dirt or foreign material in them with new bearings without additional cost to the owner. Balance contractor shall include in the report any improperly installed or missing balancing devices that would negatively impact the system operation.

Adjust thermostats and control devices to operate as intended. Adjust burners, pumps, fans, etc. for proper and efficient operation. Certify to architect that adjustments have been made and that system is operating satisfactorily. Further adjustments shall be made to obtain uniform temperature in spaces. Calibrate, set, and adjust automatic temperature controls. Check proper

Comply with the schedule of operations as outlined in the architectural portions of this specification. Building shall be in continuous operation. Accomplish work requiring interruption of building operation at a time when the building is not in operation. and only with written approval of building owner and/or tenant. Coordinate interruption of building operation with the owner

have either known un-deflected heights or calibration markings so that, after adjustment, the static deflection can be verified, thus determining that the load is within the proper range of the isolator. Isolators shall operate in the linear portion of their load versus deflection curves. Spring isolators shall have 50 percent excess capacity without becoming coil bound. Coat vibration isolators with factory-applied paint. Coat vibration isolators exposed to weather and other corrosive environments with factory-applied corrosion resistance protection. Install and adjust vibration isolators in accordance with manufacturers written

Pipe connections: Provide flexible connectors for piping system connections on equipment side of shutoff valves for all pumps mechanical equipment supported or suspended by spring isolators, and where indicated on drawings. Fabricate flexible piping connectors from stainless steel, bronze or rubber materials as suitable for system fluid. Flexible piping connectors shall be bellows, spherical or braided hose type as recommended by the manufacturer for the application.

maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.

valves, valves within factory fabricated equipment units, and shut-off valves at HVAC terminal devices and similar rough-in

Provide manufacturer's standard laminated plastic, color coded equipment markers. Conform to the following color code: green for cooling; yellow for heating; yellow/green for combination cooling and heating; brown for energy reclamation; blue for other

Provide stenciled signs for equipment identification at contractor's option or where distance of required identification requires lettering larger than 1" height. Stencil paint shall be exterior type, oil-based, alkyd enamel, minimum 1-1/4" height or greater as

Cover concealed rigid round supply and return air ductwork, round and rectangular outside air ductwork, and round and rectangular exhaust and relief air ductwork in unconditioned spaces and within 10 feet of exterior discharge outlets with 2 1/4" thick, 3/4 pound density, minimum R-6.0 duct wrap, Certainteed or equivalent Owens-Corning or Knauf with heavy-duty

shall be 2 pound density fiberglass, minimum R-6.0 Certainteed Corp. "toughgard" or equivalent Owens-Corning or Knauf long textile fiber duct liner. Liner surface shall serve as a barrier against infiltration of dust and dirt, shall meet ASTM C 1338 for fungi resistance and shall be cleanable using duct cleaning methods and equipment outlined by North American Insulation Manufacturers Association (NAIMA) duct cleaning guide. Install with liner adhesive and mechanical fasteners in accordance with manufacturer's instructions and recommendations. Duct dimensions already have allowances for the insulation liner where applicable in the rectangular ducts. At dual wall ducts, the dimension shown is the outside metal duct size and already has

Insulating materials, adhesives, coatings, etc., shall not exceed flame spread rating of 25 and smoke developed rating of 50 per

For ductwork that is located exterior to the building, insulate with 2" (minimum R-8.0) thick fibrous board insulation and provide

23A 2-2 DUCTWORK

Provide galvanized steel ductwork and housings as shown on drawings. Construct ductwork including fittings and transitions in conformance with current SMACNA standards relative to gauge, bracing, joints, etc. Minimum thickness of duct shall be 26-gauge sheet metal. Reinforce housings and ductwork over 30" with 1-1/4" angles not less than 5'-6" on centers, and closer if required for sufficient rigidity to prevent vibration. Support horizontal runs of duct from strap iron hangers on centers not to exceed 8'-0". Do not support ceiling grid, conduits, pipes, equipment, etc. from ductwork. Coordinate routing of ductwork with other contractors such that piping, electrical conduit, and associated supports are not routed through the ductwork. Construct supply ducts to meet SMACNA positive pressure of 2" w.g. Construct return, outdoor and exhaust ductwork upstream of fans to meet SMACNA negative pressure of 1" w.g. Construct exhaust ductwork downstream of fans to meet SMACNA positive pressure of 1" w.g.

Provide mill phosphatized or galvanealed finish for exposed ductwork to be field painted. Shop treated sheet metal shall have galvanized metal primer applied in the shop after fabrication and prior to shipping.

Seal ductwork with heavy liquid sealant, Hardcast Irongrip 601, Design Polymer DP 1010, United McGill duct sealer or approved equal, applied according to sealant manufacturer's instructions. For ducts with pressure classification of 2" w.g. and greater seal longitudinal and transverse ductwork joints airtight to meet SMACNA Class B. For ducts with pressure classification less than 2" w.g. seal transverse joints airtight to meet SMACNA Class C. Tapes and mastics shall be listed and labeled in accordance with UL 181A.

Provide radius elbows, turns, and offsets with a minimum centerline radius of 1-1/2 times the duct width. Where space does not permit full radius elbows, provide short radius elbows with a minimum of two continuous splitter vanes. Vanes shall be the entire length of the bend. Provide mitered elbows where space does not permit radius elbows, where shown on the drawings, or at the option of the contractor with the engineer's approval. Mitered elbows less than 45 degrees shall not require turning vanes. Mitered elbows 45-degrees and greater shall have single thickness turning vanes of same gauge as ductwork, rigidly fastened with guide strips in ductwork. Vanes for mitered elbows shall be provided in all supply and exhaust ductwork and in return and outside air ductwork that has an air velocity exceeding 1000 fpm. Do not install vanes in grease ductwork.

Ducts shall be connected to fans, fan casings and fan plenums by means of flexible connectors. Flexible connectors shall be neoprene coated glass cloth canvas connections, Duro-Dyne, Elgen, Ventfabric or equal. Flexible connectors shall have a flame spread of 25 or less and smoke developed rating not higher than 50. Make airtight joints and install with minimum 1-1/2" slack.

Provide balancing dampers, manufactured by Ruskin, Greenheck, Nailor Industries, Cesco, Louvers & Dampers, Pottorff or approved equal, where shown on drawings and wherever necessary for complete control of air flow. Splitter dampers shall be controlled by locking quadrants; provide Young's Regulator or Ventlok end bearings for the damper rod. Rectangular volume dampers shall be opposed blade interlocking type. Round volume dampers shall be butterfly type consisting of circular blade mounted to a solid shaft. Damper leakage for outside air dampers shall not exceed 6.5 cfm/square foot in full closed position at 4" wg pressure differential across damper. Reference manufacturer and model number for outside air dampers is Ruskin model

Provide Flexmaster model STO or equal 45 degree rectangular/round side takeoff fitting with model SLBO double bearing damper with insulation build out for round ductwork branch takeoffs to individual air devices. Omit damper at takeoff fitting when damper is located downstream of takeoff.

Where access to dampers through a hard ceiling is required, provide a Metropolitan Air Technology model RT-250 or equal by Young's Regulator concealed, cable operated volume damper with remote operator. Damper shall be adjustable through the diffuser face or frame with standard 1/4" nutdriver or flat screwdriver. Cable assembly shall attach to damper as one piece with no linkage adjustment. Positive, direct, two-way damper control shall be provided with no sleeves, springs or screw adjustments to come loose after installation. Support cable assembly to avoid bends and kinks in cable. Where approved by architect, a ceiling cup with cover plate can be used for access to cable operator.

Lindab Spirosafe, Lewis & Lambert or approved equal factory manufactured round ductwork and fittings may be substituted for specified round branch ductwork, at contractor's option. Heavy liquid joint sealant may be omitted on factory-manufactured round ductwork.

Low pressure (duct pressure class up to and including 2" w.g.) fittings 24" in diameter and less shall be prefabricated, spotwelded and internally sealed. Continuously weld fittings larger than 24" in diameter. Fitting gauge shall be 22 gauge for 36" fittings and under, 20 gauge for larger sizes. 90 degree tee's shall be conical type. Seal longitudinal and transverse ductwork joints airtight with heavy liquid sealant applied according to manufacturer's instructions. Provide gauge thickness in medium pressure (duct pressure class 3" to 6" w.g.) Ductwork as recommended by SMACNA.

At contractor's option, provide Ductmate, Gripple, or approved equal wire rope duct hanging system. Provide Ductmate WR10 through WR40 or gripple No. 1 through No. 5 wire rope using 7x7 or 7x19 aircraft quality zinc coated cable or galvanized steel wire rope. Secure wire rope to duct using Ductmate Clutcher or Gripple Hang Fast adjustable rope attachment. Where applicable for upper attachment, provide Ductmate EZ-Lock wire rope beam clamp with locking nut adjustment or Gripple ceiling, beam, or purlin clips. Wire rope, adjustable duct attachment, and upper attachment to structure shall each have minimum 5 to 1 load safety factor.

23A 2-3 FLEXIBLE DUCT

Low pressure (duct pressure class up to and including 2" w.g.) and medium pressure (duct pressure class 3" to 6" w.g.) flexible duct shall be Flexmaster Type 8B, Thermaflex Type G-KM, M-KE, or equal (fire retardant polyethylene) protective vapor barrier, UL181 Class 1. acoustical insulated duct, R-6.0 fiberglass insulation. Provide CPE liner with steel wire helix mechanically locked or permanently

bonded to the liner Flexible duct runs shall not exceed 5 feet in length, and shall be installed fully extended and straight as possible avoiding tight turns. Install flexible duct in accordance with manufacturer's instructions. Support flexible duct at maximum 5 feet on center and within 6 inches of bends. Bends shall not exceed a centerline radius of one duct diameter. Duct sag shall not exceed 1/2". Supporting material in direct contact with the duct shall not be less than 1-1/2" in width.

Connect flexible duct to rigid metal duct or air devices as recommended by the manufacturer. At a minimum, install two wraps of duct tape around the inner core connection and a metallic or non-metallic clamp over the tape and two wraps of duct tape or a clamp over the outer jacket. Duct clamps shall be labeled in accordance with UL-181b and marked 181b-c. Duct tape shall be labeled in accordance with UL 181b and marked 181b-fx. 23A 2-4 FLUES

Where flues are indicated on the drawings, provide Selkirk Metalbestos model QC or RV or equal by Metal-Fab, Simpson or Van-Packer, Type "B" double wall gas vent flues from the various items of gas-fired equipment up to flue caps above the roof. Single wall flues are unacceptable. Flues shall be complete with necessary fittings, connectors, flashing cone, storm collar, thimble supports, guy wires, and other accessories, and shall be installed as recommended by the manufacturer, and in conformance with applicable codes. Flash flues watertight at the roof line.

Vents and combustion air ducts for condensing type appliances shall be Schedule 40 PVC, DWV, meeting ASTM D1784 Grade 1, Type 1, with dimensions meeting ASTM D2665. Fittings shall be DWV, PVC meeting ASTM D2665 with solvent cement socket joints. Solvent used for joints shall meet ASTM D2564. 23A 2-7 AIR DEVICES

Provide air devices as scheduled on drawings, manufactured by Carnes, Price, Krueger, Nailor Industries, Titus, or Tuttle & Bailey. Select air devices to limit room noise level to no higher than NC-30 unless otherwise shown. Provide devices with a soft plastic gasket to make an airtight seal against the mounting surface. Coordinate final location, frame, and mounting type of air devices with architectural reflected ceiling plans.

Submit complete shop drawings including information on noise level, pressure drop, throw, cfm for each air device, styles, borders, etc. clearly marked with specified equipment number. Submit samples of each air device as requested by the engineer. Provide wall supply air registers with double deflection blades and opposed blade dampers unless indicated otherwise. Provide

wall return air grilles and exhaust air registers with horizontal 35 or 45 degree angle vision-proof bars. Provide concealed fasteners for wall mounted registers and grilles. Provide ceiling supply air registers of aluminum curved blade type with blades parallel to long dimension and with throw pattern

as indicated on drawings. Provide opposed blade dampers for supply air registers and exhaust air registers unless indicated otherwise.

Provide ceiling supply air diffusers and return air grilles of lay-in or surface mounted type as required to be compatible with ceiling construction. Provide ceiling diffusers and grilles with white enamel finish unless noted otherwise. Provide linear slot diffusers of standard one-piece lengths up to 6-feet and furnish in multiple sections greater than 6-feet. Join multiple sections together end-to-end with alignment pins to form a continuous slot appearance. Provide alignment components by the manufacturer. Provide plenums by the slot diffuser manufacturer. 23A 2-10 LOUVERS, PLENUMS, SCREENS

Provide intake and exhaust air louvers by Ruskin model ELF375DX or equal Greenheck, American Warming & Ventilating, Cesco, Industrial Louvers or Louvers & Dampers as scheduled on the drawings. Coordinate exact size and location with architectural drawings. Louvers shall be stationary, with mill finish. Louvers shall have extruded aluminum blades, 0.080" wall thickness, 45 degree blade angle, blades on 5" centers; frame shall be extruded aluminum, 0.080" wall thickness; with expanded flattened aluminum insect screen. Provide louvers with a minimum free area of 45 percent, with a maximum air pressure drop of 0.1" at scheduled airflow.

Construct plenums with galvanized steel framing members and galvanized sheetmetal, braced with galvanized angles. Gauges and bracing shall conform to SMACNA recommendations for ductwork of like sizes. Where access doors are shown, provide hinged doors with #202 Ventlok latch. Make watertight connections to louvers, sloping bottom of plenum to drain water to weepholes in bottom of louver.

Provide screens on louvers, ducts, hoods, fans, and openings to the outdoors as scheduled and/or noted on the drawings. Insect screens shall be 0.009 thickness, 1/4" mesh, stainless steel wire. Bird screens shall be 0.047-inch, 1/2" mesh stainless steel wire.

23A 2-12 ROOF MOUNTED INTAKE AIR AND RELIEF AIR HOODS

23A 2-6 CONDENSING GAS FURNACE AND APPLIANCE VENT

Provide air intake and relief hoods as scheduled on drawings. Hoods shall be low silhouette, aluminum, square curb cap, with birdscreen, roof curb, and barometric or motorized backdraft damper as scheduled. Manufactured by Cook, Greenheck, Acme, Carnes, Cesco or equal.

23A 2-13 EXHAUST AIR SYSTEMS

Provide roof mounted exhaust fans as scheduled on the drawings, or equal manufactured by Cook, Greenheck, Carnes, Twin City Fans, Acme or Penn-Barry complete with aluminum housing, aluminum centrifugal wheel, motor with integral thermal overload protection, disconnect switch mounted inside the housing, birdscreen, backdraft damper, and pate prefabricated roof curb with minimum height of 12" inches for roofs with no insulation, 15" for roofs with insulation or as scheduled on the drawings. Three phase fans shall be furnished with magnetic starters with push button station.

Provide roof mounted upblast exhaust fans as scheduled on the drawings, or equal manufactured by Cook, Greenheck, Carnes, Twin City Fans, Acme or Penn-Barry complete with aluminum housing, aluminum centrifugal wheel, motor with integral thermal overload protection, disconnect switch mounted inside the housing, drain trough, birdscreen and pate prefabricated roof curb with minimum height of 12" inches for roofs with no insulation, 15" for roofs with insulation or as scheduled on the drawings. Exhaust fans serving Type I kitchen exhaust hoods shall discharge a minimum of 40" above the roof surface, shall have hinge access including access for blade inspection and cleaning per NFPA 96, grease drain trough with cup and insulated curb, and shall be installed in accordance with NFPA 96 and local codes.

Provide wall mounted exhaust fans as scheduled on the drawings, or equal manufactured by Cook, Greenheck, Carnes, Twin City Fans, Acme or Penn-Barry heavy-duty wall-mounted propeller fans, complete with belt drive with minimum of two belts, ball bearing supported fan shaft, ball bearing motor, magnetic starter, inlet screen, and motor-operated shutter. Inlet louvers shall be Ruskin ELF81 with heavy duty motor operated damper, Ruskin CD35 with parallel blades and Honeywell M-445 damper motor. Provide transformer for damper motors if different voltage.

Provide ceiling mounted exhaust fans as scheduled on the drawings, or equal manufactured by Cook, Greenheck, Carnes, Twin City Fans, Acme or Penn-Barry complete with isolated blower unit and ceiling grille. Provide disconnect switch, backdraft damper, discharge duct,

wall louver, and neoprene vibration isolators with all-thread hanging rods. Provide in-line (duct) mounted exhaust fans as scheduled on the drawings, or equal manufactured by Cook, Greenheck, Carnes,

wall louver, and vibration isolation as scheduled or shown on the drawings.

Ductwork above roof or otherwise exterior to building shall be minimum #18 gauge with longitudinal and transverse joints welded. Twin City Fans, Acme or Penn-Barry complete with isolated blower unit and ceiling grille. Provide backdraft damper, discharge

23A 3 HVAC EQUIPMENT 23A 3-5 CONDENSING UNITS 7.5-20 TONS

Provide split system, air cooled condensing units as scheduled on the drawings, manufactured by Trane, Carrier, McQuay, Lennox or York, complete with factory installed hermetic or semi-hermetic motor/compressor assembly with internal spring vibration isolation, built-in thermal overload protection, and crankcase heater; top discharge condenser fan and motor; low ambient head pressure controls for operation to

40 degrees Fahrenheit; anti-short cycle timers; time delay relays; external high and low pressure cutout devices; full refrigerant holding charge; factory installed condenser coil guards (PVC coated metal); and weathertight housing constructed of zinc coated, heavy gauge, galvanized steel with weather-resistant baked enamel finish. Provide liquid line drier and refrigerant sight glass. Provide a five year guarantee on the compressor and refrigerant circuit, and a one year guarantee on the remaining components. Provide refrigerant piping sized as recommended by equipment manufacturer with foamed plastic insulation on the suction line as specified in this section.

For heat pump units provide reversing valve, suction line accumulator, flow control check valve, and solid state defrost/timed-off control. Provide 3-1/2" thick concrete slabs for condensing units located on grade.

23A 3-7 FAN COIL UNITS (DIRECT EXPANSION, 6-20 TONS)

Provide split system, fan coil units as scheduled on the drawings, manufactured by Trane, Carrier, McQuay, Lennox or York, horizontal configuration complete with zinc coated, heavy gauge, galvanized steel cabinet with weather-resistant baked enamel finish; internally insulated; access doors; direct expansion cooling coil section of aluminum/copper construction; condensate drain pan; statically and dynamically balanced centrifugal fan section with built-in motor thermal overload protection; factory installed and wired controls including evaporator defrost control and single point electrical power connection; magnetic motor starters and contactors as required; air filter rack with

2" (15 & 20 ton units only) thick throwaway filters; factory installed electric heating coil with code required integral safety features and controls. Provide Honeywell or equal electronic programmable type thermostat, seven-day model, manual changeover, switching subbase, multi-stage as required to match unit cooling/heating staging.
Division 28 contractor shall provide and wire UL listed duct type smoke detectors as required by code to shut down fan coil unit upon detection of smoke.

Provide spring vibration isolators and all-thread hanging rods for horizontal installations. Provide an auxiliary drain pan for suspended units with auxiliary condensate drain provided by plumbing contractor.

float switch to shut off unit when water is detected in auxiliary drain pan. Float switch shall be Aquahub #FLT231 or equal by Cole-Palmer, Flowline, Omega or SMD Micro float switch with polypropylene body and float with 1/2" NPT pipe connection and normally closed contact. Contact shall close when float raises due to water present in drain pan minimum 1" above bottom of

23A 3-11 DUCT FURNACES

pan.

Provide where indicated on the drawings, natural gas-fired duct heater, each having an AGA rated output capacity of no less than that indicated on the drawings. Provide high cfm model, manufactured by Hastings, Reznor, Trane, or Modine, complete with Type 321 stainless steel heat exchanger, stainless steel drain pan below the burner, draft diverter, aluminized steel casing, high limit control, automatic pilot, main and pilot shutoff cocks, electric gas valve, gas pressure regulator, and provide with a 100 percent automatic gas shutoff control.

Hang duct furnaces from supporting angles connecting to the structure above with 1/2" steel all-thread rod, in an approved manner. Locate each duct furnace so there will be vertical clearance of not less than 18" from the top of the unit to a combustible material, and if possible, a run of at least 3 feet measured along the centerline of the vent pipe, from the duct furnace to the point where the vent pipe pierces or passes through combustible material.

Provide electronic programmable type thermostat, Honeywell seven-day model or approved equal, auto changeover type, multi-stage, if required to match unit heating staging. Provide relays as required to interface duct furnace with thermostat control sequence and provide wiring diagrams showing power and control connections. 23A 3-19 SPLIT DUCTLESS AIR-CONDITIONING SYSTEMS

Provide split ductless system consisting of evaporator section for wall or ceiling mounting as indicated and remote condensing section similar to Mitsubishi, Fujitsu, Friedrich, or Daikin. Evaporator cabinet shall be factory assembled pre-wired consisting of furniture-grade steel with baked-enamel finish, front access, with direct-drive centrifugal fans, 2-speed motor, and cleanable foam filter. Evaporator coil shall be direct expansion cooling coil of seamless copper tubes expanded into aluminum fins, with thermal-expansion valve with external equalizer. Air-cooled condenser shall be of corrosion-resistant cabinet containing compressor, copper-tube aluminum-fin coils, direct-drive propeller fans with motors with internal overload protection; capacity control to 0 degrees Fahrenheit.

Provide refrigerant piping sized as recommended by equipment manufacturer with foamed plastic insulation on the suction line as specified in this section.

Control system: Unit-mounted panel with contactors, control transformer with circuit breaker, solid-state temperature- and humidity-control modules. Provide solid-state, unit-mounted control panel with start-stop switch, adjustable humidity set point, and adjustable temperature set point. Refer to sequence of operation.

23A 3-20 REFRIGERANT PIPING AND INSULATION

Provide ASTM B 88, Type I or ASTM B 280, Type ACR hard drawn copper refrigerant piping, cleaned and sealed at the factory, and specifically designed for refrigerant. Fittings shall be hard drawn and have long radius turns. Solder joints with "silfos" (15 percent silver, 5 percent phosphorus, 80 percent copper, 1300 degrees Fahrenheit flow temperature). Solder joints with a slow stream of dry nitrogen passing through the piping.

Insulate suction lines with foamed plastic insulation, Armaflex or equal. Piping insulation shall have a flame spread of 25 or less, and a smoke developed rating of 50 or less when tested in accordance with ASTM E84. Coat insulation that is exposed to the elements with a protective sealer. Install and support piping to keep noise and vibration to a minimum. Support and secure piping to Unistrut type supports so that no vibration passes to the building structure. Pipe attachments shall be copper-plated or have nonmetallic coating for electrolytic protection where attachments are in direct contact with copper tubing. Install a support within one foot of each change of direction. Mount pipe hangers around the outside of the insulation with saddles to prevent hangers from rupturing the insulation. Replace insulation that is cut or broken by the hangers.

Run refrigerant lines parallel and perpendicular to wall and floor lines and to appear straight and in good order. Pitch suction lines down slightly (1" in 20') towards the compressor. Provide oil traps at the base of vertical suction risers over 6 feet high.

Install liquid line sight glasses in liquid lines nearest the expansion valve. Factory mount expansion valves with the sensing bulbs shipped loose. Field mount expansion valve bulb after refrigerant piping is complete (damage may occur if bulbs come in contact with heat).

For systems of 5 ton capacity and smaller, the contractor shall have the option to provide copper refrigerant tubing line set sized as recommended by equipment manufacturer and of length as required for the installation. Provide foamed plastic insulation, Armaflex or equal, on the suction line. Provide quick-connect flare tubing compression fittings or solder connections as required to match the connections of the condensing unit and evaporator coil. 23A 3-21 SYSTEM EVACUATION AND CHARGING

Blow out refrigeration lines with dry nitrogen at a suitable pressure before making final connection at the condensing unit or coil to ensure against dirt, scale, or other foreign material being in the lines. Draw a vacuum to 29" of mercury. Break this vacuum by charging dry refrigerant gas into the system, raising the pressure to 0 psig. Repeat the latter two steps for a triple evacuation before the final evacuation is started. Make final evacuation by reducing the system absolute pressure to a maximum of 0.5 millimeters (500 microns) and allowing the pump to run at this pressure for a minimum of two hours.

Repeat with the proper amount of refrigerant charge per the manufacturer's recommendations. Record the amount of refrigerant by weight charged into the system for each circuit recorded to the nearest 1/4 pound on tags and attach tags to the liquid line near the condensing unit. Refrigerant shall be supplied by the HVAC contractor. 23A 4 TEMPERATURE CONTROLS

23A 4-1 GENERAL REQUIREMENTS

Provide a system of temperature controls including thermostats, control panels, time switches, override timers, damper motors, and relays required to provide the desired sequence of operation. Contract with Building Owner's Building Automation System

contractor for new devices, programming, and interconnection with the existing BAS system. Provide integrated wiring diagrams showing interconnections between field installed equipment and package wiring furnished with the HVAC equipment. Provide supervision and on-job checkout service as required to ensure that installation meets requirements of the specification.

The system shall be guaranteed for a period of one year following the acceptance of the system by the architect/engineer. Correct defects occurring during this period at no additional cost to the owner. 23A 4-2 EQUIPMENT

Manufacturers and model numbers are listed for reference as to quality and features required for the control devices. Provide control devices by Barber-Colman, Alerton, Honeywell, Johnson Controls, Carrier, Trane or White Rodgers with quality and features as indicated. Low voltage type non-programmable heating and cooling thermostats shall be Honeywell series T FocusPro 5000 or equal with

integral subbase. Smoke detectors furnished and installed as indicated in section 23A Part 3 or as scheduled on the plans (or heat detectors, if permitted by code) shall shut down each associated unit supply fan upon activation where required by code. Provide remote visual and audible alarm device in an approved location if smoke detectors are not connected to a fire alarm panel and label device as "Air Duct Detector Trouble".

23A 5-7 DX HEAT PUMP UNIT CONTROL

During occupied hours, operate heat pump unit supply fan continuously and open outdoor air damper to maintain minimum ventilation. Cycle DX heat pump refrigeration system stage(s) in cooling or heating mode with supplemental electric heat as required to maintain room thermostat set point (72 degrees Fahrenheit cooling, 70 degrees Fahrenheit heating). Duct mounted smoke detectors shall shutdown unit upon alarm.

23A 5-11 CONTROL DAMPER CONTROL

Thermostat shall modulate automatic control damper with automatic changeover between cooling and heating mode to maintain space temperature set point. When RTU or AHU is in cooling mode, damper shall modulate open on call for cooling and close on call for heating. When RTU or AHU is in heating mode, damper shall modulate open on call for heating and close on call for cooling.

23A 5-13 TENANT RESTROOM EXHAUST FAN CONTROL

Exhaust fan shall be interlocked with respective restroom light switch and be energized when light switch is 'on' and de-energized when light switch is 'off'. 23A 6 ALTERNATES

23A 6-1 DESCRIPTION

Provide all work contemplated under the different alternates to include labor, materials, equipment and services necessary for and incidental to the completion of work under each particular alternate. Furnish separate bids for each alternate applicable to contractor's proposal, stating the amount to be added or deducted from the base bid in case the alternate is accepted. Comply with applicable sections of the base specifications for work required by the alternate unless otherwise specified. Refer to the architectural portion of the specification. END OF SECTION 23A

	GENERAL POWER NOTES		GENERAL ELE
1	ALL RECEPTACIES SHALL BE GROUNDING TYPE	1	DRAWINGS ARE DIAGRAMMATIC ONLY AND REPR
2	ALL RECEPTACLES INSTALLED IN BATHROOMS, OUTDOORS AND KITCHENS SHALL HAVE GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION AS REQUIRED BY THE NATIONAL ELECTRIC CODE.		GENERAL NOTES, SPECIFICATIONS AND PLANS F SPECIFICALLY CALLED OUT IN THIS PORTION OF
3	COORDINATE MECHANICAL EQUIPMENT CONNECTION REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. LOCATE FEEDERS, DISCONNECTS AND MAINTENANCE RECEPTACLES SO THAT THEY WILL NOT INTERFERE WITH OPERATION OR MAINTENANCE OF MECHANICAL EQUIPMENT.	2	SPECIAL ATTENTION SHALL BE GIVEN TO ALL RAC EXPOSED TO STRUCTURE. IN GENERAL, ALL RAC STRUCTURE FINISH, OR BELOW FLOOR SLABS WI
4	PROVIDE POWER TO MECHANICAL, PLUMBING, AND ALL OTHER EQUIPMENT AS REQUIRED FOR PROPER OPERATION, COORDINATE AND VERIFY EACH PIECE OF EQUIPMENTS POWER/CONTROL REQUIRMENTS PRIOR TO ORDERING RELATED ELECTRICAL EQUIPMENT. REFER TO RELATED MECHANICAL, PLUMBING, AND OTHER RELATED DOCUMENTS FOR LOCATIONS OF EQUIPMENT AND REQUIRED CLEARANCES AROUND EQUIPMENT.		NECESSARY OR UNAVOIDABLE DUE TO OTHER CO MEANS TO MINIMIZE THE AMOUNT OF SURFACE M ALL EXPOSED RACEWAY AND BOX CONDITIONS V ROOF DECK, OR FLOOR SLABS. ATTACHMENT TO MAINTAIN A MINIMUM SPACING OF 1-1/2" FROM CO
5 6	COORDINATE EXACT MOUNTING HEIGHT OF EACH ABOVE COUNTER RECEPTACLE WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. ALL OUTLETS LOCATED IN AREAS REQUIRING GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION PER		RACEWAYS ARE REQUIRED, INSTALL SYSTEMS S THE STRUCTURE PER ARCHITECT AND/OR OWNE THE ROUTING OF EXPOSED RACEWAYS MAY RES
	NEC-210 SHALL CONSIST OF A GFCI PROTECTED DEVICE, EVEN IF NOT SPECIFICALLY INDICATED IN THE DRAWINGS. THE GROUND-FAULT CIRCUIT INTERRUPTER SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION AS DEFINED IN THE NEC. ALL RECEPTACLES SUPPLIED THROUGH A GROUND-FAULT CIRCUIT INTERRUPTER SHALL BE MARKED "GFCI PROTECTED."	3	ADDITIONAL COST TO THE OWNER. OPENINGS AROUND ELECTRICAL PENETRATIONS FLOORS OR CEILINGS SHALL BE FIRESTOPPED U RESISTANCE RATING. PROVIDE PENETRATION FIR
	GENERAL LIGHTING NOTES		OR UL 1479. FIRE STOPPING SHALL NOT BE LESS PENETRATIONS.
1	WHERE RECESSED LIGHTING FIXTURES ARE INDICATED IN A FIRE RATED CEILING, PROVIDE A ONE HOUR RATED "TENT" FOR FIXTURE PROVIDE ALL MOUNTING AND SUPPORT HARDWARE FOR LIGHT FIXTURES TO MEET SPECIFIED MOUNTING	4	FIELD MOUNTED DEVICES SUCH AS SWITCHES, M THEIR APPROXIMATE LOCATION. SWITCH MOUNT RECEPTACLE MOUNTING HEIGHT SHALL BE 18" A
2	HEIGHTS, REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT MOUNTING HEIGHTS OF FIXTURES.	5	MOUNTING HEIGHT DETAIL. INSTALL EQUIPMENT IN A MANNER TO REMAIN AC
4	EMERGENCY LIGHT, AND ANY FIXTURE DESIGNATED AS NIGHT LIGHT SERVING THE SPACE. COORDINATE ALL DEVICES AND WALL-MOUNTED LIGHT FIXTURE LOCATIONS WITH THE ARCHITECTURAL WALL		FOLLOWING COMPLETION OF WORK. SPECIAL AT AREAS OF THE BUILDING WHERE THE CEILING AN ELEVATIONS. EQUIPMENT REQUIRING POSSIBLE
	FINISHES AND ELEVATIONS. SPECIAL ATTENTION AND COORDINATION OF WALL TYPES AND FINISHES IS REQUIRED PRIOR TO ROUGH-IN. EXACT LOCATION OF DEVICES SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN TO AVOID INSTALLATION ON SPECIAL ARCHITCTURAL WALL FINISHES.		BE SAFELY ACCESSED FROM A STANDARD STEP AND CEILING HEIGHT, WITHOUT REMOVING OR D
	DEVICES NOT PROPERLY COORDINATED WITH THE SPECIAL WALL FINISHES INDICATED IN THE CONSTRUCTION DOCUMENTS PRIOR TO ROUGH-IN SHALL BE RELOCATED AT NO ADDITIONAL COST TO THE	6	COORDINATE ALL CEILING MOUNTED ELECTRICAL STRUCTURE. REFER TO ARCHITECTURAL REFLEC
5	OWNER. ELECTRICAL CONTRACTOR SHALL VERIFY CHEVRON DIRECTIONS OF ALL EXIT SIGNS PRIOR TO ORDERING. FOR PATTERY FED EMERCENCY LICHTS: DROVIDE EMERCENCY RALLAST, DROVIDE "HOT" WIRE TO	/	PEDESTALS, OVERHEAD AND UNDERGROUND FE COORDINATION WITH EXISTING EQUIPMENT.
7	EMERGENCY BALLAST. SWITCH FIXTURE AS INDICATED ON PLANS. COORDINATE AND PROVIDE DIMMER SWITCHES RATED FOR AND COMPATABLE WITH INTENDED LIGHT	8	ROOM NAMES/NUMBERS SHOWN IN PANELBOARD CONTRACTOR SHALL PROVIDE FINALIZED PANEL OWNER PROVIDED ROOM NAMES/NUMBERS.
	FIXTURE(S) TO BE CONTROLLED. CIRCUITS CONTROLLED WITH LINE-VOLTAGE DIMMER SWITCHES SHALL NOT SHARE NEUTRAL CONDUCTORS.	9	CONDUCTORS FOR BRANCH CIRCUITS AS DEFINE VOLTAGE DROP EXCEEDING 3% AT THE FARTHES
	GENERAL LOW VOLTAGE NOTES	10	ALL WORK IS TO BE PERFORMED IN STRICT COM
1	PROVIDE 4'WIDE X 4'TALL X 3/4" FIRE RATED, PAINTED CDX PLYWOOD BACKBOARD WHERE SHOWN ON DRAWINGS OR AS REQUIRED FOR TELEPHONE, CATV, ALARM SYSTEM EQUIPMENT, ECT. COORDINATE EXACT LOCATION(S) WITH RESPONSIBLE CONTRACTOR(S).	11	NATURE. THE CONTRACTOR IS RESPONSIBLE FOR ALL WO
2	PROVIDE (1) 1/2" CONDUIT, AND 4" SQUARE BOX WITH SINGLE GANG DEVICE RING FOR ALL THERMOSTAT LOCATIONS INDICATED ON THE MECHANICAL DRAWINGS. ROUTE CONDUIT FROM BOX TO ACCESSIBLE	12	WORKING SYSTEM WHETHER SPECIFIED OR IMPL CONTRACTOR TO CONFIRM EXACT LOCATION OF
	CEILING CAVITY. PROVIDE PLASTIC BUSHINGS ON EXPOSED CONDUIT ENDS. PROVIDE PULL STRING IN ALL EMPTY CONDUIT SYSTEMS. COORDINATE EXACT LOCATIONS AND MOUNTING HEIGHTS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.	13	THE CONTRACTOR SHALL FURNISH AND INSTALL ACCORDANCE WITH THE NATIONAL ELECTRIC CC
3	PROVIDE ROUGH-IN OF ALL BACK BOXES, CONDUITS (WITH BUSHINGS AND PULL STRINGS) AND OTHER WIRE WAYS AS REQUIRED FOR LOW VOLTAGE SYSTEMS, COORDINATE ALL REQUIRED LOCATIONS WITH OWNER	14	SUBMIT TO THE OWNER CERTIFICATES OF INSPE AGENCY UPON COMPLETION.
4	AND RESPONSIBLE CONTRACTOR(S). FURNISH AND INSTALL A TELEPHONE SERVICE CONDUIT(S) PER TELEPHONE SERVICE PROVIDER SPECIFICATIONS, STUBUR AT DESIGNATED FOURMENT BOARD	16	THE CONTRACTOR SHALL SECURE ALL PERMITS REQUIRED,
5	PROVIDE ONE #6 COPPER INSULATED GROUND WIRE FROM THE ELECTRICAL SERVICE GROUND TO THE TELEPHONE FOUIPMENT BOARD I FAVE 36" EXTRA WIRE AT FREE FND	17	THE CONTRACTOR SHALL FURNISH ALL INSTRUM ALL REQUIRED TESTS.
6	FURNISH AND INSTALL A CABLE TV SERVICE CONDUIT(S) PER CABLE TV PROVIDER SPECIFICATIONS. STUB UP AT SERVICE POINT.	18	NO EQUIPMENT SHALL BE ENERGIZED UNTIL ALL COPIES OF ALL TEST RESULTS SHALL BE DELIVER
7	REFER TO SITE UTILITIES PLAN AND COORDINATE ENTIRE INSTALLATION WITH CABLE TV SERVICE PROVIDER.	19	ALL ELECTRICAL WORK SHALL BE COORDINATED MECHANICAL SPECIFICATIONS AND PLANS.
8 9	REFER TO SITE UTILITIES PLAN AND COORDINATE ENTIRE INSTALLATION WITH PHONE SERVICE PROVIDER. PROVIDE BACK BOX AND CONDUIT TO ABOVE THE ACCESSIBLE CEILING AS REQUIRED FOR THE HVAC	20	JUNCTION BOXES LOCATED ABOVE GRID CEILING THE CEILING IN A LOCATION ACCESSIBLE VIA A L/
	RELATIVE MEP DRAWINGS AND THE CONTROLS COORDINATE EXACT LOCATIONS AND OTHER REQUIREMENTS WITH RELATIVE MEP DRAWINGS AND THE CONTROLS CONTRACTOR PRIOR TO ROUGH-IN. THERMOSTATS, TEMPERATURE SENSORS, STATIC PRESSURE SENSORS, HUMIDISTATS, ETC. SHALL BE INSTALLED AT THE SAME ELEVATION AS THE LIGHT SWITCHES UNLESS REQUIRED OTHERWISE.	21	ALL WIRING DEVICE COVERPLATES SHALL INDICA UTILIZE CLEAR VINYL (BLACK LETTERING) IDENTI APPROVED EQUIVALENT).
		22	THE TYPE OF CONDUIT SHALL BE AS FOLLOWS FOUND FO
			APPLICATION - TYPE OF CONDUIT

GENERAL ELECTRICAL NOTES								
	DRAWINGS ARE DIAGRAMMATIC ONLY AND REPRESENT THE GENERAL SCOPE OF THE WORK. REVIEW ALL GENERAL NOTES, SPECIFICATIONS AND PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS.							
	SPECIAL ATTENTION SHALL BE GIVEN TO ALL RACEWAYS WITHIN FINISHED AREAS WITHOUT CEILINGS AND EXPOSED TO STRUCTURE. IN GENERAL, ALL RACEWAYS SHALL BE CONCEALED WITHIN WALLS, ABOVE STRUCTURE FINISH, OR BELOW FLOOR SLABS WHEN SPECIFIED. WHERE EXPOSED CONDITIONS ARE NECESSARY OR UNAVOIDABLE DUE TO OTHER CONDITIONS, THE BID SHALL INCLUDE ANY REASONABLE MEANS TO MINIMIZE THE AMOUNT OF SURFACE MOUNTED EQUIPMENT. PRIOR TO ROUGH-IN, COORDINATE ALL EXPOSED RACEWAY AND BOX CONDITIONS WITH ARCHITECT PRIOR TO CONSTRUCTION OF WALLS, ROOF DECK, OR FLOOR SLABS. ATTACHMENT TO ROOF DECK OR JOIST WEBBINGS IS NOT ALLOWED, MAINTAIN A MINIMUM SPACING OF 1-1/2" FROM CONDUIT TO ROOF DECK. IN AREAS WHERE EXPOSED RACEWAYS ARE REQUIRED, INSTALL SYSTEMS SQUARE AND TIGHT TO STRUCTURE AND PAINT TO MATCH THE STRUCTURE PER ARCHITECT AND/OR OWNER SPECIFICATIONS. FAILURE TO PROPERLY COORDINATE THE ROUTING OF EXPOSED RACEWAYS MAY RESULT IN RELOCATION OF SUCH RACEWAYS AT NO ADDITIONAL COST TO THE OWNER.							
	OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE-RESISTANT-RATED WALLS, PARTITIONS, FLOORS OR CEILINGS SHALL BE FIRESTOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING. PROVIDE PENETRATION FIRE STOPPING WITH RATINGS DETERMINED PER ASTM E 814 OR UL 1479. FIRE STOPPING SHALL NOT BE LESS THAN FIRE RESISTANCE RATING OF CONSTRUCTED PENETRATIONS.							
	FIELD MOUNTED DEVICES SUCH AS SWITCHES, MOTOR STARTERS, RECEPTACLES, ETC., ARE SHOWN IN THEIR APPROXIMATE LOCATION. SWITCH MOUNTING HEIGHT SHALL BE 48" ABOVE FINISHED FLOOR AND RECEPTACLE MOUNTING HEIGHT SHALL BE 18" ABOVE FINISHED FLOOR UON. REFER TO THE TYPICAL MOUNTING HEIGHT DETAIL.							
	INSTALL EQUIPMENT IN A MANNER TO REMAIN ACCESSIBLE WITH REASONABLE MEANS BY THE OWNER FOLLOWING COMPLETION OF WORK. SPECIAL ATTENTION AND ADDITIONAL COORDINATION IS EXPECTED IN AREAS OF THE BUILDING WHERE THE CEILING AND STRUCTURE HEIGHTS HAVE SIGNIFICANT DIFFERENT ELEVATIONS. EQUIPMENT REQUIRING POSSIBLE FUTURE ACCESS SHALL BE INSTALLED SUCH THAT IT MAY BE SAFELY ACCESSED FROM A STANDARD STEP LADDER OR PERSONNEL LIFT SUITABLE FOR THE LOCATION AND CEILING HEIGHT, WITHOUT REMOVING OR DAMAGING THE CEILING GRID STRUCTURE.							
	COORDINATE ALL CEILING MOUNTED ELECTRICAL ITEMS WITH OTHER DISCIPLINES, WITH CEILING, AND STRUCTURE. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN.							
	FIELD VERIFY LOCATIONS OF EXISTING ELECTRICAL EQUIPMENT, INCLUDING POWER POLES, TELEPHONE PEDESTALS, OVERHEAD AND UNDERGROUND FEEDERS, METERS, PANELS, DEVICES, ETC. PROVIDE FOR COORDINATION WITH EXISTING FOURPMENT							
	ROOM NAMES/NUMBERS SHOWN IN PANELBOARD SCHEDULES ARE PER ARCHITECTURAL FLOOR PLANS. CONTRACTOR SHALL PROVIDE FINALIZED PANELBOARD SCHEDULES AT COMPLETION OF PROJECT WITH OWNER PROVIDED ROOM NAMES/NUMBERS.							
	CONDUCTORS FOR BRANCH CIRCUITS AS DEFINED IN ARTICLE 100, SHALL BE SIZED TO PREVENT A VOLTAGE DROP EXCEEDING 3% AT THE FARTHEST LOAD, AND WHERE THE MAXIMUM TOTAL VOLTAGE DROP ON BOTH FEEDERS AND BRANCH CIRCUITS TO THE FARTHEST LOAD DOES NOT EXCEED 5%.							
	ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE, STATE LAWS, ALL AUTHORITIES HAVING JUISDICTION, AND ALL OTHER REGULATIONS GOVERNING WORK OF THIS NATURE.							
	THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIAL, AND LABOR TO SATISFY A COMPLETE AND WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.							
	CONTRACTOR TO CONFIRM EXACT LOCATION OF EXISTING AND NEW EQUIPMENT.							
	ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.							
	ALL ELECTRIC MATERIALS AND EQUIPMENT FOR THE PROJECT SHALL BE NEW AND U.L. OR EQUALLY LISTED.							
	AGENCY UPON COMPLETION.							
	THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES AS REQUIRED,							
	THE CONTRACTOR SHALL FURNISH ALL INSTRUMENTS AND QUALIFIED PERSONNEL OR FIRM TO PERFORM ALL REQUIRED TESTS.							
	NO EQUIPMENT SHALL BE ENERGIZED UNTIL ALL TEST AND ADJUSTMENTS HAVE BEEN MADE. THREE COPIES OF ALL TEST RESULTS SHALL BE DELIVERED TO THE OWNER							
	ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE MECHANICAL WORK AS CALLED FOR IN MECHANICAL SPECIFICATIONS AND PLANS.							
	JUNCTION BOXES LOCATED ABOVE GRID CEILINGS SHALL BE LOCATED NO GREATER THAN 4-FEET ABOVE THE CEILING IN A LOCATION ACCESSIBLE VIA A LADDER FROM THE ROOM BELOW.							
	ALL WIRING DEVICE COVERPLATES SHALL INDICATE PANELBOARD AND CIRCUIT SERVING THE DEVICE. UTILIZE CLEAR VINYL (BLACK LETTERING) IDENTIFICATION LABLES MANUFACTURED BY 3M COMPANY (OR APPROVED EQUIVALENT).							
	THE TYPE OF CONDUIT SHALL BE AS FOLLOWS FOR ALL FEEDERS AND DISTRIBUTION CIRCUITS, UNLESS OTHERWISE SPECIFIED.							
	APPLICATION - TYPE OF CONDUIT							
	BURIED IN CONCRETE OR OUTDOORS - PVC WITH RIGID GALVANIZED STEEL ELBOWS							
	SERVICE ENTRANCE - GALVANIZED RIGID STEEL OR SERVICE UTILITY SPECIFICATIONS.							
	UNLESS NOTED OTHERWISE PROVIDE MINIMUM #8 AWG CONDUCTORS IN 1" CONDUIT(S) FOR ALL UNDERGROUND SITE POWER AND LIGHTING CIRCUITS. INCREASE CONDUCTOR AND RELATED CONDUIT SIZE AS NOTED OR OTHERWISE REQUIRED TO LIMIT VOLTAGE DROP TO LESS THAN 5% FOR THE ENTIRE LENGTH OF SYSTEM.							
	UNDERGROUND UTILITIES/FEEDERS/BRANCH CIRCUITS/ETC. SHALL NOT BE ROUTED THROUGH OR WITHIN 25 FEET OF ANY AREAS DEDICATED FOR FUTURE BUILDING ADDITION.							
	DESIGNATED SPARE CIRCUIT BREAKERS SHALL BE PLACED IN THE OFF POSITION							

PROVIDE SPD AS REQUIRED FOR OWNER PROVIDED EQUIPMENT, INCLUDING BUT NOT LIMITED TO THE FOLLOWING: ACCESS CONTROL SYSTEM, COMMUNICATION SYSTEM, DATA SYSTEM, SECURITY SYSTEM.

ABBREVIATIONS ISOLATED GROUND AC ABOVE COUNTER IG AFF ABOVE FINISHED FLOOR MCC MOTOR CONTROL CENTER CB CIRCUIT BREAKER NEC NATIONAL ELECTRICAL CODE NEMA NATIONAL ELECTRICAL E EXISTING EC ELECTRICAL CONTRACTOR MANUFACTURERS ASSOC. EP EXPLOSION PROOF NIC NOT IN CONTRACT GFI GROUND FAULT CIRCUIT INTERRUPTER NL NIGHT LIGHT GR GROUND UNDERGROUND UG HP HORSE POWER UON UNLESS OTHERWISE NOTED WP WEATHERPROOF WR WEATHER RESISTANT WIRING WIRING CONCEALED IN CEILING OR WALLS UON. ALL WIRE IS NUMBER #12 AWG MINIMUM. EXPOSED RACEWAY. − − − → UNDERGROUND RACEWAY; TYPE, SIZE, CONDUCTORS, AND ARRANGEMENT BY NOTATION OR SCHEDULE. SWITCHES \$* SWITCH MOUNTED AT +48"; SINGLE POLE UON. LOWER CASE LETTER, WHEN PRESENT, INDICATES FIXTURES CONTROLLED. * ABBREVIATIONS FOR SWITCH 2 DOUBLE POLE SWITCH 3-WAY SWITCH 4-WAY SWITCH DIMMER SWITCH (SHALL BE COMPATABLE WITH FIXTURE BEING DIMMED) FAN SWITCH: DUAL OPERATION WITH DIMMER K KEYED SWITCH M MOTOR RATED SWITCH OS DUAL TECHNOLOGY OCCUPANCY SENSOR V VOLUME CONTROL SWITCH CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR WITH SPARE \diamond_{OS} DRY CONTACTS. HUBBELL OMNIDIARP SERIES RECEPTACLES Φ DUPLEX RECEPTACLE (NEMA 5-20R) DUPLEX RECEPTACLE (NEMA 5-20R); MOUNTED 8" ABOVE COUNTERTOP. Φ_{U} (ALL RECEPTACLE TYPES) WITH USB CHARGING PORTS GFI DUPLEX RECEPTACLE (NEMA 5-20R), SELF-TEST TYPE GFI DUPLEX RECEPTACLE (NEMA 5-20R), SELF-TEST TYPE; MOUNTED 8" ABOVE COUNTERTOP. QUADRUPLEX RECEPTACLE (TWO NEMA 5-20R) SPECIAL RECEPTACLE: VERIFY NEMA TYPE WITH MANUFACTURER FLOOR BOX WITH DATA: LEGRAND WIREMOLD SERIES RFB4E-OG OR RFB6E-OG WITH EVOLUTION COVER. ROUTE (2)1" FOR DATA FROM FLOOR BOX TO NEAREST ACCESSIBLE CEILING SPACE. ON FLOOR LEVELS WITH ACCESSIBLE SPACE BELOW, USE POKE-THRU STYLE FLOOR BOXES: LEGRAND 6AT SERIES. SEE ARCHITECTURAL PLANS FOR LOCATION UON. ₩ TELEVISION: PROVIDE HUBBELL NSAV62M JUNCTION BOX (OR EQUAL) WITH 1/2 CONDUIT FOR POWER AND 1" CONDUIT (WITH PULL STRINGS) FOR A/V ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE CONNECTIONS FOR POWER, DATA, COAX, AND HDMI. MOUNT AT +60" AFF UNO. CONFRIM HEIGHTS WITH ARCHITECT PRIOR TO ROUGH-IN. Φ SINGLE RECEPTACLE (NEMA 5-20R) SPLIT WIRED DUPLEX RECEPTACLE (NEMA 5-20R) DIRECT EQUIPMENT CONNECTION: VERIFY CONNECTION DETAILS WITH MANUFACTURER FLOOR BOX: HUBBEL 3SFBSS WITH 3SFBC COVER. EC SHALL ROUTE A 1"C FOR Φ FLOOR BOX TO NEAREST ACCESSIBLE CEILING SPACE. ON FLOOR LEVELS WITH ACCESSIBLE SPACE BELOW, USE POKE-THRU STYLE FLOOR BOXES: HUBBELL PT2X2 SERIES. SEE ARCHITECTURAL PLANS FOR LOCATION UON. CEILING MOUNTED RECEPTACLE(NEMA 5-20R) PANELS AND MISC. LIGHT OR POWER PANEL (J) 4x4 JUNCTION BOX. EQUIPMENT DISCONNECT: INTERIOR DISCONNECTS SHALL BE NEMA 1 TYPE. EXTERIOR DISCONNECTS SHALL BE NEMA 3R TYPE. SIZE AS INDICATED IN THE PLANS AND PER NAMEPLATE RATING. PHONE/DATA: PROVIDE 4"X4", 30-1/4 CUBIC INCH OUTLET BOX AT 8" ABOVE 円 COUNTER (UON) WITH (2) 3/4" CONDUITS (WITH PULL STRINGS) ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. PROVIDE PLASTIC BUSHINGS ON EXPOSED CONDUIT ENDS. WIRING BY OTHERS. PHONE/DATA: PROVIDE 4"X4", 30-1/4 CUBIC INCH OUTLET BOX AT +18" (UON) ∇ WITH (2) 3/4" CONDUITS (WITH PULL STRINGS) ROUTED TO ACCESSIBLE CEILING SPACÈ. PROVIDE SINGLÈ GANG MUD RING WITH BLANK COVER. PROVIDE PLASTIC BUSHINGS ON EXPOSED CONDUIT ENDS. WIRING BY OTHERS. PHONE/DATA: PROVIDE 4"X4", 30-1/4 CUBIC INCH OUTLET BOX IN CEILING. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. WIRING BY OTHERS. TV TELEVISION: PROVIDE 4X4 JUNCTION BOX WITH (2) 3/4" CONDUITS (WITH PULL STRINGS) ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE SINGLE GANG MU STRINGS) ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. CONFRIM HEIGHTS WITH ARCHITECT PRIOR TO ROUGH-IN. S CEILING MOUNTED SPEAKER CR CARD READER: REFER TO SYSTEM PLANS AND SPECIFICATIONS. AT EACH DOOR WITH A CARD READER PROVIDE ALL ELECTRICAL CONNECTIONS FOR DOOR HARDWARE SYSTEMS AS REQUIRED TO MAKE A COMPLETE OPERATIONAL SYSTEM. WHERE REQUIRED, BACK TO BACK 2"X4" BOXES ARE ALLOWED FOR CARD READER AND PUSH TO EXIT SWITCH. PROVIDE POWER TO THE LOCK SYSTEM IN THE I.T. ROOM WHERE NEEDED BY CONTRACTOR INSTALLING SYSTEM. APK WIRELESS ACCESS POINT

James R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2480 www.childersarchitect.com PROFESSIONAL SEAL: OFESSION ~ Danie!/ un Miles II & The 25652 OKLAHOMA CA5338(PE) 07/31/2020 CONSULTANT LOGO: HP ENGINEERING PROJECT NO. 190258R 100 % COMPLETE HP ENGINEERING INC. 5214 W. VILLAGE PARKWAY SUITE 120 ROGERS, AR 72758 (479) 899-6370 www.hpengineeringinc.com EICE ٩ Ο AH $\mathbf{\Sigma}$ IEROKEE TAG OFI 0 Þ Ś ATOO: Ö Т \bigcirc KEY PLAN: PROJECT PHASE: CONSTRUCTION DOCUMENTS REVISIONS DESCRIPTION DATE DATE: JOB NUMBER: 07-31-2020 18-01.10 SHEET NUMBER: E1.00 ELECTRICAL NOTES AND LEGENDS

POWER PLAN NOTES COORDINATE MOUNTING HEIGHTS FOR POWER ASSOCIATED WITH TV OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.

KEYNOTES

26.02 KNOX REMOTE POWER BOX SERIES #4500 (OR EQUAL) FOR OPERATION OF SERVICE DISCONNECTING MEANS SHUNT TRIP. COORDINATE KEYING AND LOCATION WITH AHJ AND FIRE DEPARTMENT PRIOR TO ROUGH-IN. CIRCUIT AND INSTALL PER MANUFACTURER'S INSTRUCTIONS.

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 REVISIONS

 #
 DATE
 DESCRIPTION
 DATE: JOB NUMBER: 07-31-2020 18-01.10 SHEET NUMBER: E1.01 POWER PLAN

MECHANICAL POWER PLAN NOTES MAKE CONNECTIONS TO AUTOMATIC FLUSH TOILETS/URINAL AND AUTOMATIC SINKS PER MANUFACTURER SPECIFICATIONS. EXHAUST FANS SHALL BE CIRCUITED WITH LIGHTS UNLESS SHOWN OTHERWISE. REFER TO MECHANICAL PLANS FOR CONTROLS OF EXHAUST FANS.

KEYNOTES 26.03 COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR AND MANUFACTURER INSTRUCTIONS.

MECHANICAL POWER PLAN 1/8" = 1'-0"

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 # DATE
 DESCRIPTION
 DATE: JOB NUMBER: 07-31-2020 18-01.10 SHEET NUMBER: E1.02 MECHANICAL POWER PLAN

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 REVISIONS

 # DATE
 DESCRIPTION
 DATE: JOB NUMBER: 07-31-2020 18-01.10 SHEET NUMBER: E1.03 SYSTEMS PLAN

FIRE ALARM PLAN

	FIRE ALARM INSTALLATION NOTES	
1	SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 72 AND LOCAL CODES AND REGULATIONS. ALL EQUIPMENT AND MATERIALS SHALL BE UL LISTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION	1
2	INTERFACE WITH AND MONITOR ALL FIRE SUPPRESSION SYSTEM DEVICES INCLUDING (BUT NOT LIMITED TO) SPRINKLER FLOW AND TAMPER SWITCHE	s
3	WIRE AND CABLE SHALL BE UL LISTED AND LABELED AS COMPLYING WITH NFPA 70, ARTICLE 760. SIGNALING LINE CIRCUITS TO BE TWISTED, SHIELDED PAIR, SIZED AS RECOMMENDED BY SYSTEM MANUFACTURER. NON-POWER-LIMITED CIRCUITS TO BE SOLID-COPPER CONDUCTORS WITH 600-V RATED, 75 DEG C, COLOR-CODED INSULATION. 9.1 LOW-VOLTAGE CIRCUITS: NO. 16 AWG, MINIMUM	2
4	INSTALL AND TEST SYSTEMS ACCORDING TO NFPA 72. COMPLY WITH NECA	
5	TEST ALL SYSTEM DEVICES FOR PROPER OPERATION IN THE PRESENCE OF THE AHJ AND OTHER OFFICIALS INSPECTING THE FIRE ALARM SYSTEM	4
6	IF REQUIRED BY THE LOCAL AHJ, EQUIPMENT DATA SHEETS AND BATTERY CALCULATIONS IN ACCEPTANCE WITH NFPA 72 SHALL BE PERFORMED BY THE FIRE ALARM SYSTEM MANUFACTURER/INSTALLER TO MATCH EQUIPMENT TO BE INSTALLED	5
7	SYSTEM INSTALLER SHALL BE A LICENSED FIRE ALARM CONTRACTOR IN THE RESPECTIVE STATE OF THIS PROJECT	6
8	FIRE ALARM CONTROL PANEL SHALL BE MODULAR, POWER-LIMITED DESIGN WITH ELECTRONIC MODULES, UL 864 LISTED, AND DESIGNED TO TRANSMIT ALARM, TROUBLE, AND SUPERVISORY SIGNALS TO A UL LISTED CENTRAL STATION THROUGH A DIGITAL ALARM COMMUNICATOR TRANSMITTER WITH (1) ETHERNET PORT CONNECTION AND (1) DEDICATED TELEPHONE LINE	7 8 9
9	PROVIDE 120VAC POWER THROUGH DEDICATED LOCKING BREAKER AT POWER PANEL	
10	GROUND THE FACP AND ALL ASSOCIATED CIRCUITS	10
11	INSTALL A #6 AWG GROUND WIRE FROM THE TELE-COMMUNICATIONS EQUIPMENT GROUNDING POINT TO THE FACP	11
12	SYSTEM SHALL INCLUDE 24V DC POWER SYSTEM WITH SEALED LEAD CALCIUM BATTERIES AND AUTOMATIC BATTERY CHARGER IN ACCORDANCE WITH NFPA 72	12
13	PROVIDE (1) IP CONNECTION TO CUSTOMERS INTERNET NETWORK AND (1) DEDICATED TELEPHONE LINE TERMINATED WITH (1) RJ-31X MODULAR OUTLET AT DACT LOCATION	13

FIRE ALARM GENERAL NOTES

FIRE ALARM SYSTEM DESIGN, INSTALLATION AND MATERIALS SHALL BE IN ACCORDANCE WITH NFPA 70 AND NFPA 72. SYSTEM SHALL ALSO MEET ALL APPLICABLE BUILDING CODES, FIRE CODES AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER. VERIFY REQUIREMENTS PRIOR TO BID SUBMITTAL INFORMATION ON CONTRACT DOCUMENTS IS GENERAL INFORMATION AND FOR BID PURPOSES ONLY. PERFORM REQUIRED CALCULATIONS AND COORDINATE WITH OTHER TRADES. DEVIATIONS FROM ENGINEERS LAYOUT WILL NOT BE CONSIDERED UNLESS A FORMALLY SUBMITTED RFI IS RECEIVED AND APPROVED PROVIDE ADDITIONAL MATERIALS AND LABOR REQUIRED DUE TO LACK OF COORDINATION OR TO MEET AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER PROVIDE ALL EQUIPMENT AND LABOR REQUIRED FOR A COMPLETE AND OPERATIONAL FIRE ALARM SYSTEM AUDIBLE NOTIFICATION DEVICES SHALL SOUND UNTIL SILENCED AT THE CONTROL PANEL OR REMOTE ANNUNCIATOR AS REQUIRED. VISUAL ALARM IS DISPLAYED UNTIL DEVICE IS RETURNED TO ITS NORMAL POSITION OR

SUPERVISORY CONDITION IS CLEARED FORWARD COMPLETED FIRE ALARM CERTIFICATE OF COMPLETION TO THE OWNER REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION PROVIDE CONNECTION TO EXTERIOR WATERFLOW ALARM BELL AS REQUIRED

PROVIDE NOTIFICATION, INITIATING AND MONITORING DEVICES AS INDICATED ON THE DRAWINGS. FIRE ALARM DEVICES SHALL BE OF ONE MANUFACTURER AND SHALL BE LISTED FOR USE WITH THE FIRE ALARM

CONTROL PANEL PROVIDE NOTIFICATION APPLIANCE CIRCUIT PANEL(S) TO POWER NOTIFICATION DEVICES AS REQUIRED. CONNECT TO FIRE ALARM SYSTEM THE FIRE ALARM CONTROL PANEL AND REMOTE ANNUNCIATOR LOCATIONS SHOWN SHALL BE COORDINATED WITH THE FIRE DEPARTMENT AND AHJ PRIOR TO INSTALLATION PROVIDE DEDICATED CONNECTION OF THE FIRE ALARM SYSTEM TO A UL

LISTED CENTRAL STATION PROVIDE KNOX BOX FOR FIRE DEPARTMENT ACCESS. CONNECT TAMPER SWITCH TO FIRE ALARM SYSTEM AS REQUIRED 14 AIR HANDLING SYSTEMS THAT ARE MONITORED SHALL SHUTDOWN AND

REMAIN DOWN UNTIL MANUALLY RESET 15 ROOF TOP AIR DISTRIBUTION SYSTEMS EXCEEDING 2,000 CFM: PROVIDE DUCT MOUNTED SMOKE DETECTORS FOR AIR HANDLING UNIT SHUTDOWN AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE MONITOR MODULE FOR SUPPLY AIR DUCT DETECTOR AND RELAY/MONITOR

MODULE FOR RETURN AIR DUCT DETECTOR. REFER TO MECHANICAL SHEETS FOR AIR HANDLING UNIT AND DUCTWORK LAYOUT AND DETAILS 16 DUCT SMOKE DETECTION SHALL TRANSMIT A SUPERVISORY SIGNAL TO THE FACP

FIRE ALARM LEGEND

(2)	SMOKE DETECTOR				
\bigcirc	HEAT DETECTOR				
	DUCT DETECTOR				
Ø<	WALL MOUNT HORN STROBE				
$\bigcirc \bigcirc$	CEILING MOUNT HORN STROBE				
Ø	WALL MOUNT STROBE				
\bigcirc	CEILING MOUNT STROBE				
F	PULL STATION				
ANN	FIRE ALARM ANNUNCIATOR PANEL				
FACP	FIRE ALARM CONTROL PANEL				
FS	SPRINKLER FLOW SWITCH				
TS	SPRINKLER TAMPER SWITCH				
MM	FIRE ALARM MONITOR MODULE				
СМ	FIRE ALARM CONTROL MODULE				

James R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2480 www.childersarchitect.com PROFESSIONAL SEAL: OFESSIONA Danieł Miles M & 25652 OKLAHOMP CA5338(PE) 07/31/2020 CONSULTANT LOGO: HP ENGINEERING PROJECT NO. 190258R 100 % COMPLETE HP ENGINEERING INC. 5214 W. VILLAGE PARKWAY SUITE 120 ROGERS, AR 72758 (479) 899-6370 www.hpengineeringinc.com NATION MA Q Ο CHEROKE ATOO(A. Q KEY PLAN: PROJECT PHASE: CONSTRUCTION DOCUMENTS REVISIONS DESCRIPTION # DATE DATE: JOB NUMBER: 07-31-2020 18-01.10 SHEET NUMBER: E1.04 FIRE ALARM PLAN

LUMINAIRE SCHEDULE

NOTES

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1/4" -

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0 4 1/8" =1'-0"

1. EC SHALL FROVIDE A SUDIVILITAL FACINGE INCLUDING CUTSHEETS FOR EACH FIATURE. 2. EC SHALL PROVIDE ALL ACCESSORIES FOR A COMPLETE ASSEMBLY INCLUDING MOUNTING HARDWARE.													
3. THE MC	3. THE MOUNTING TYPE OF FACH FIXTURE SHALL BE COMPATIBLE WITH INSTALLATION SURFACE OF FACH FIXTURE.												
4. ALL FINISHES SHALL BE COORDINATED WITH ARCHITECT AND DOCUMENTED ON SUBMITTALS.													
TYPE	LAMP	DIMMING	COLOR TEMPERATURE	VOLTS	WATTS	DESCRIPTION	MANUFACTURER						
A1	LED	0-10V	3500K	120/277	30 W	2X2, FLAT PANEL, 2953LM	LS1 SFP22						
A2	LED	0-10V	3500K	120/277	50 W	2X4, FLAT PANEL, 5000LM	LS1 SFP24						
A2E	LED	0-10V	3500K	120/277	50 W	2X4, FLAT PANEL, 5000LM, EMERGENCY, INTEGRAL TEST SWITCH	LS1 SFP24						
A3	LED	0-10V	3500K	120/277	50 W	2X4, FLAT PANEL, 5000LM, PROVIDE WITH DRYWALL FLANGE KIT	LS1 SFP24						
C1	LED	0-10V	3500K	120/277	14 W	6", RECESSED, DOWNLIGHT, WHITE, 1400LM	CONTECH R6NC						
C1E	LED	0-10V	3500K	120/277	14 W	6", RECESSED, DOWNLIGHT, WHITE, 1400LM, EMERGENCY	CONTECH R6NC						
F1	LED	0-10V	4000K	120/277	18 W	4' SURFACE DIRECT, SILVER, 500 LM/FT	LUX EOS 4.0-S						
G1	LED	0-10V	4000K	120/277	30 W	4' SURFACE STRIP, 4000LM	LSI LCL4						
G1E	LED	0-10V	4000K	120/277	30 W	4' SURFACE STRIP, 4000LM, EMERGENCY	LSI LCL4						
L1	LED	0-10V	4000K	120/277	8 W	* SEE ADDITIONAL NOTES BELOW LIGHT FIXTURE SCHEDULE	BM-LC-LUM-0123						
L1E	LED	0-10V	4000K	120/277	8 W	* SEE ADDITIONAL NOTES BELOW LIGHT FIXTURE SCHEDULE	BM-LC-LUM-0123 EM						
S1	LED	NA	4000K	120/277	250 W	25' POLE LIGHT, FORWARD THROW, 30000LM, 70CRI, BLACK	LSI MRM-LED-30L						
S2	LED	NA	4000K	120/277	250 W	25' POLE LIGHT, FORWARD THROW, 30000LM, 70CRI, BLACK	LSI MRM-LED-30L						
S3	LED	NA	4000K	120/277	250 W	25' POLE LIGHT, FORWARD THROW, 30000LM, 70CRI, BLACK	LSI MRM-LED-30L						
S4	LED	NA	4000K	120/277	500 W	25' POLE LIGHT, 2-HEADED, FORWARD THROW, 30000LM, 70CRI, BLACK	LSI MRM-LED-30L						
W1	LED	NA	4000K	120/277	30 W	WALL PACK, 4000LM, BLACK	LSI XWM						
W1E	LED	NA	4000K	120/277	30 W	WALL PACK, 4000LM, BLACK, EMERGENCY	LSI XWM						
X1	LED	NA	NA	120/277	5 W	EXIT SIGN, EDGELIT, SELF DIAGNOSTIC, RED LETTERS, WHITE, EMERGENCY	LSI ELX						
Z1	LED	0-10V	4000K	120/277	13 W	4' SURFACE STRIP, 2024LM, SP FINISH (TO MATCH SW9090 CARAIBE TRUSS COLOR)	ADVANTAGE LDL24SMSW						
Z1E	LED	0-10V	4000K	120/277	13 W	4' SURFACE STRIP, 2024LM, SP FINISH (TO MATCH SW9090 CARAIBE TRUSS COLOR), EMERGENCY	ADVANTAGE LDL24SMSW						

*EMAIL KENDELL STUCKI AT kstucki@bellandmccoy.com FOR INFORMATION ON TYPE L1 AND L1E FIXTURES.

LIGHTING PLAN NOTES VERIFY MOUNTING HEIGHT OF ALL PENDANT FIXTURES PRIOR TO ROUGH-IN.

James R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2480 www.childersarchitect.com PROFESSIONAL SEAL: Danieł/ un Miles M 25652 SALAHOMA CA5338(PE) 07/31/2020 CONSULTANT LOGO: HP ENGINEERING PROJECT NO. 190258R 100 % COMPLETE HP ENGINEERING INC. 5214 W. VILLAGE PARKWAY SUITE 120 ROGERS, AR 72758 (479) 899-6370 www.hpengineeringinc.com E NATION FICE MA AHOI OKI CHEROKEE TAG OFF CATOOSA, KEY PLAN: PROJECT PHASE: CONSTRUCTION DOCUMENTS
 REVISIONS

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 DATE
 DESCRIPTION
 DATE: JOB NUMBER: 07-31-2020 18-01.10 SHEET NUMBER: E2.01 LIGHTING PLAN

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 REVISIONS

 #
 DATE
 DESCRIPTION
 DATE: JOB NUMBER: 07-31-2020 18-01.10 SHEET NUMBER: E2.02 SITE LIGHTING PLAN
	Branch Panel: L1A							NE/	N							
Location: MECHANICA Supply From: UTILITY TRA Mounting: SURFACE Enclosure: NEMA 1 Notes: 54 POLES PER SECTION			AL/ELECTRICAL 111				1 Volts: 120/208 Phases: 3 Wires: 4				8 Wye			A.I.C. Rating: FULLY RATED (7) Mains Type: MCB WITH SHUNT Mains Rating: 400 A		
скт	Load Name	СВ	P	Wire		4		В		с	Wire	P	СВ	Load	Name	
1	OFFICE 106 HEATER RECEPTACLE	20	1		1200	1200	900	900				1	20	OFFICE 107 HEATE	R RECEPTA	
5	OFFICE 108 HEATER RECEPTACLE	20	1						1200	1200		1	20	VAULT 109 HEATER	RECEPTA	
7	OFFICE 108 RECEPTACLES	20	1		720	540	540	1200				1	20	VAULT 109 RECEPT		
9 11	EXTERIOR RECEPTACLES	20	1				540	1200	540	900		1	20	WORK AREA 105 R	ECEPTACLI	
13	WORK AREA 105 RECEPTACLES	20	1		1200	1440						1	20	WORKSTATION RE	CEPTACLE	
15	WORKSTATION RECEPTACLES	20	1				1440	1440	-			1	20	WORKSTATION RE	CEPTACLE	
17	STAFF TOILET 113 & 114 RECEPTACLE	S 20	1		1110				360	1080	-	1	20	WAITING AREA 102	A RECEPTA	
<u>19</u> 21	WAITING AREA 102A VENDING (4)	20	1		1440	900	600	600				1	20	WAITING AREA 102 WAITING AREA 102	B RECEPTA B W C. (4)	
23	WAITING AREA 102B TV	20	1				000	000	360	1440		1	20	WAITING AREA 102	B VENDING	
25	WAITING AREA 102A TV	20	1		360	1000						1	20	REFRIGERATOR (4)	
27	GARBAGE DISPOSAL (4)	20	1				864	360	0	260		1	20	KITCHEN RECEPTA		
<u>29</u> 31	SPARE	20	1		0	360			0	300		1	20	DATA RACK	ICLES	
33	DATA RACK	20	1		-		360	1000				1	20	PRINTER		
35	PRINTER	20	1		1001	107			1000	1500		1	20	MICROWAVE		
37		15	2		1201	167	1201	167			-	2	15			
41	A110-2	15	5				1201	107	1201	167		5		A110-5		
43					4443	1201										
45	HP-3	60	3	#6			4443	1201				3	15	AHU-1		
47					1113	1113			4443	1201						
49 51	HP-1	60	3	#6	4443	4443	4443	4443			#6	3	60	HP-2		
53			Ū				1110		4443	4443		Ŭ				
55	MAINTENANCE RECEPTACLES	20	1		540	500	0.50	0050				1	20	EF-1		
5/	DHG-2	15	2				250	2250	250	2250	#10	2	30	EWH-1		
61		45			250	250			2.50	2230			45			
63		15	2				250	250	-			2	15	DHG-1		
65	DHG-3	15	2		050	540			250	1473		1	20	BACK OF HOUSE L	GHTING	
67 69		20	1		250	519	91	1500			#10	1	20	SITE LIGHTING (6)		
71	SITE LIGHTING (6)	20	1	#10				1000	1750	1750	#10	1	20	SITE LIGHTING (6)		
73	MCB SHUNT TRÌP (3)	20	1		180	180						1	20	TELEPHONE BACK	BOARD	
75	FIRE ALARM CONTROL PANEL (3)	20	1				180	180	2002	1500		1	20	MCB SHUNT TRIP (3)	
79	MCU-1	30	3	#10	3002	0			3002	1500		1	20	SPARE		
81			Ŭ	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0002		3002	0				1	20	SPARE		
83	SPARE	20	1						0	0				SPACE		
85	SPARE	20	1		0	0	0	0						SPACE		
89	SPACE						0	0	0	0				SPACE		
91	SPACE				0	0								SPACE		
93	SPACE						0	0						SPACE		
95	SPACE SPACE				0	0			0	0				SPACE		
99	SPACE				0	0	0	0						SPACE		
101	SPACE								0	0				SPACE		
103	SPACE				0	0	0							SPACE		
105	SPACE						0	0	0	0				SPACE		
		ר ד	lota otal	Load: Amps:	3192 26	29 VA 6 A	3408 28	55 VA 7 A	3806 32	63 VA 60 A			1			
Load Classification		Co	Connected Load			Demand Factor			Estimated Demand			nd		Panel	Totals	
HVA	<u> </u>	58701 VA				100.00%			58701 VA							
LIGH	TING		7083 VA			125.00%			8854 VA					Total Conn. Load:	104048 VA	
REC	EPTACLE		17120 VA			79.21%		13560 VA				Total Est. Demand:	98709 VA			
HEA	TING		4800 VA			0.00%		0 VA				Total Conn. Current:	289 A			
CON	INUOUS	5000 VA				125.00%		6250 VA				Total Est. Demand	274 A			
VIISC	ELLANEUUS		11:	544 VA		1	UU.00 ⁰	/0		11344	· VA	_				
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	ELECTRICAL SERVICE NOTES		Ε
1	THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL SERVICE AND METERING REQUIREMENTS WITH THE UTILTY COMPANY PRIOR TO BID AND SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AS REQUIRED BY THE SERVING UTILITY AS WELL AS COST INCURRED BY SERVING UTILITY.	400-4-S	
2	THE ELECTRICAL CONTRACTOR SHALL VERIFY THE FAULT CURRENT AT THE SECONDARY OF THE TRANSFORMER WITH THE UTILITY COMPANY AND ADJUST THE ELECTRICAL PANEL AIC RATINGS TO THE NEXT HIGHER STANDARD RATING.	1.001	יוויס
3	ALUMINUM SERVICE CONDUCTORS ARE NOT RECOMMENDED AND SHOULD ONLY BE USED WHERE ABSOLUTELY NECESSARY OR REQUIRED BY THE OWNER. CONTRACTOR TO CONTACT ENGINEER FOR SIZING. WHERE ALUMINUM CONDUCTORS ARE USED, THE OWNER SHALL PROVIDE ANNUAL MAINTENANCE OF ALL TERMINATIONS TO ENSURE SECURE CONNECTIONS. ALUMINUM WIRE WILL EXPAND AND CONTRACT AND OVER TIME MAY BECOME BRITTLE. THE OWNER SHALL ASSUME RESPONSIBILITY FOR USING ALUMINUM CONDUCTORS WITHOUT PROPER INSTALLATION, CARE, AND MAINTENANCE.	1. CONL LIST TAE CH/ COI SUCH 2. GRO	JUI TEC 3LE APT NDI AS
4	COORDINATE ALL SERVICE AND METERING DETAILS INCLUDING ANY RELOCATION OF EXISTING UTILITY LINES WITH POWER COMPANY.	CO	
5	CONTRACTOR TO CONFIRM EXACT LOCATION OF METERS WITH ELECTRIC UTILITY.	3. CON	IDU
6	PAY ANY POWER COMPANY FEES CHARGED TO OWNER FOR SERVICE AND UTILITY LINE WORK ASSOCIATED WITH THIS PROJECT. THESE COSTS SHALL BE INCLUDED IN BIDS.	CO	PPE
7	FURNISH AND INSTALL MATERIALS FOR A TEMPORARY CONSTRUCTION SERVICE AS REQUIRED.		
8	FURNISH AND/OR INSTALL ALL REQUIRED MATERIAL AND LABOR IN COMPLIANCE WITH POWER COMPANY REQUIREMENTS TO PROVIDE A COMPLETE ELECTRICAL SERVICE, INCLUDING TRENCHING AND BACK FILLING, PRIMARY CONDUIT, CONCRETE TRANSFORMER PAD, SECONDARY CONDUITS AND CABLES, C.T. CABINET, METERING AND GROUNDING SYSTEM.		

EQUIPMENT GROUNDING BUS

 # 6 CU TO TELEPHONE BACKBOARD. - PROVIDE GROUND BUS AT TELEPHONE BACKBOARD. GROUNDING ELECTRODES SIZE PER NEC 250.66 - (2)GROUND RODS AT 6' SPACING. BOND AND CADWELD AT EACH CONNECTION - CONCRETE ENCASED ELECTRODE PER NEC

FAULT CURRENT SCHEDULE EQUIPMENT NAME FAULT CURRENT AT EQUIPMENT 9262 L1A

PANELBOARD NOTES (#)

- TERMINATE GROUND ON ISOLATED GROUND BUS. INSTALL LOCKING DEVICE FURNISHED WITH
- PANELBOARD (LOCK-OFF FOR MAINTENANCE). . INSTALL LOCKING DEVICE FURNISHED WITH
- PANELBOARD (LOCK-ON FOR CRITICAL LOAD). 4. GFI BREAKER FOR PERSONNEL PROTECTION (5
- mA). 6. GFÍ BREAKER FOR EQUIPMENT PROTECTION
- (30mA). CONDUCTOR SIZE SHOWN IN PANEL SCHEDULE HAS BEEN INCREASED FOR VOLTAGE DROP. SIZE EQUIPMENT GROUND PROPORTIONALLY PER NEC. REFERENCE GROUND WIRE SIZING CHART.
- . REFER TO FAULT CURRENT SCHEDULE FOR AVAILABLE FAULT CURRENT INTERRUPT RATINGS. 8. REFER TO ONE-LINE DIAGRAM FOR WIRE SIZES.
- 9. FACTORY WIRED TO LOAD. 10. THRU CONTROLLER. REFER TO LIGHTING
- CONTROLLER DETAIL. 11. ADD NEW CIRCUIT BREAKER TO EXISTING PANEL.

NEW CIRCUIT BREAKER SHALL MATCH AIC RATING, MANUFACTURER, AND TYPE OF EXISTING CIRCUIT BREAKERS. 12. MATCH AIC RATING OF SERVICING DEVICE.

EQUIPMENT GROUNDING CONDUCTOR SIZING CHART

BRKR AMPS			WIF	RE SIZE		
15-20	PHASE	12	10	8	6	4
	GROUND	12	10	8	6	4
25-30	PHASE	10	8	6	4	3
	GROUND	10	8	6	4	3
35-50	PHASE	8	6	4	3	2
	GROUND	10	8	4	4	4
60	PHASE	6	4	3	2	1
	GROUND	10	6	6	4	4
70	PHASE	6	4	3	2	1
	GROUND	8	4	4	3	2
80-90	PHASE	4	3	2	1	1/0
	GROUND	8	6	4	4	3
100	PHASE	3	2	1	1/0	2/0
	GROUND	8	6	4	4	3
PER NEC 250.122(B)						



ELECTRICAL/MECHANICAL 111

1 RISER DIAGRAM

James R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2480 www.childersarchitect.com PROFESSIONAL SEAL: NFESSIONA Danie!/ Miles hi 👫 25652 WALAHOMA CA5338(PE) 07/31/2020 CONSULTANT LOGO: HP ENGINEERING PROJECT NO. 190258R 100 <u>%</u> COMPLETE HP ENGINEERING INC. 5214 W. VILLAGE PARKWAY SUITE 120 ROGERS, AR 72758 (479) 899-6370 www.hpengineeringinc.com NATION FICE MA AHO Y CHEROKEE TAG OFI Ш 0 ഗ് AT00 ́ Ч , Ũ \mathbf{O} KEY PLAN: PROJECT PHASE: CONSTRUCTION DOCUMENTS REVISIONS DESCRIPTION # DATE DATE: JOB NUMBER: 07-31-2020 18-01.10 SHEET NUMBER: E3.00 ELECTRICAL SCHEDULES AND RISER

SECTION 26A GENERAL ELECTRICAL REQUIREMENTS Rev - 20150422

26A 1 GENERAL INSTRUCTIONS

26A 1-1 GENERAL REQUIREMENTS

Requirements under Division 1 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 1, this section and division take precedence. Become thoroughly familiar with all their contents as to requirements that affect this division, section or both. The work required under this section includes material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate each system's functioning as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and portions of the work described in one, shall be provided as if described in both. In the event of discrepancies, notify the engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They also convey the scope of work, indicating the intended general arrangement of the equipment and other materials without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which, when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory and properly operating system. Determine exact locations by job measurements, by checking the requirements of other trades, and by reviewing all contract documents. Correct errors that could have been avoided by proper checking and inspection, at no additional cost to the owner.

26A 1-2 DEFINITIONS

Whenever used in these specifications or drawings, the following terms shall have the indicated meanings:

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembling, installing, and similar operations. Install: "to perform all operations at the project site, including, but not limited to, and as required: unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing,

Specifications define the qualitative requirements for products, materials, and workmanship upon which the contract is based.

Provide: "to furnish and install complete, and ready for the intended use."

commissioning, starting up and similar operations, complete, and ready for the intended use."

Furnished by owner (or owner-furnished) or furnished by others: "an item furnished by the owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division.

Engineer: where referenced in this division, "engineer" is the engineer of record and the design professional for the work under this division, and is a consultant to, and an authorized representative of, the architect, as defined in the general and/or supplementary conditions. When used in this division, it means increased involvement by, and obligations to, the engineer, in addition to involvement by, and obligations to, the "architect". AHJ: the local code and/or inspection agency (authority) having jurisdiction over the work.

NRTL: nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project.

The terms "approved equal", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the engineer as equivalent to the item or manufacturer specified". The term "approved" shall mean labeled, listed, certified, or all three, by an NRTL, and acceptable to the AHJ over this project. 26A 1-3 PRE-BID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to do so will not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

26A 1-4 MATERIAL AND WORKMANSHIP

Provide all material and equipment new and in first class condition. Provide markings or a nameplate for all material and equipment identifying the manufacturer and providing sufficient reference to establish quality, size and capacity. In general, provide the following quality grade(s) for all materials and equipment:

Commercial Specification Grade Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the architect and engineer. Workmanship shall be the finest possible by experienced mechanics of the proper trade The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal

or excessive noise from equipment, devices or other system components will not be acceptable. Remove from the premises waste material present as a result of work. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction.

26A 1-5 MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers listed are not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years. 26A 1-6 COORDINATION

Coordinate all work with other divisions and trades so that the various components of the systems will be installed at the proper time, fit the available space, and will allow proper service access to those items requiring maintenance. Refer to all other division's drawings, and to relevant equipment submittals and shop drawings to determine the extent of clear spaces. Components which are installed without regard to the above shall be relocated at no additional cost to the owner.

Unless otherwise indicated, the general contractor will provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the general contractor with information where chases and openings are required. Make all offsets required to clear equipment, beams and other structural members, and to facilitate concealing system components in the manner anticipated in the design. Keep informed as to the work of other trades engaged in the construction of the project, and execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor will be held responsible for errors that could have been avoided by proper checking and inspection

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the construction documents are not necessarily intended to designate the required trim. 26A 1-7 ORDINANCES, CODES, AND STANDARDS

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ including any amendments and standards as set forth by the National Fire Protection Association (NFPA), Underwriters Laboratories (UL), Occupational Safety and Health Administration (OSHA), American Society of Mechanical Engineers (ASME), American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), American National Standards Institute (ANSI), American Society of Testing Materials (ASTM) and other national standards and codes where applicable. Additionally, comply with rules and regulations of public utilities and municipal departments affected by connection of services. Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the engineer's attention for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for and furnish certificates of inspection to owner. Contractor will be held responsible for violations of the law.

new equipment and material as required at no additional cost to the owner.

Plug or cap open ends of conduits while stored and installed during construction when not in use to prevent the entrance of debris into the systems.

26A 1-9 SUBSTITUTIONS

each proposed alternate.

No substitutions will be considered with receipt of Bids, unless the Architect and Engineer have received from the Bidder a written request for approval to bid a substitution at least ten calendar days prior to the date for receipt of Bids, and have approved the substitution request. Include, with each such request, the name of the material or equipment for which substitution is being requested, and a complete description of the proposed substitution, including drawings, cut sheets, performance and test data, and all other information necessary for an evaluation. Include also a statement setting forth changes in other materials, equipment or other work that would be required to incorporate the substitution. The burden of proof of the merit of the proposed substitute is upon the proposer. The proposer of any substitutions shall compensate the Engineer at a rate of \$150.00 per hour for time spent evaluating proposed substitutions and or the subsequent revisions to the design required to utilize the substitution.

26A 1-10 SUBMITTALS

The project name. The applicable specification section and paragraph. The submittal date

Transmit submittals as early as required to support the project schedule. Allow for two weeks engineer review time, plus mailing time, plus a duplication of this time for re-submittals, if required. The engineer's submittal reviews will not relieve the contractor from responsibility for errors in dimensions, details, size of members, or quantities; or for omitting components or fittings; or for not coordinating items with actual building conditions.

Refer to division 1 for acceptance of electronic submittals for this project. For electronic submittals, contractor shall submit the documents in accordance with the procedures specified in division 1. Contractor shall notify the architect and engineer that the shop drawings have been posted. If electronic submittal procedures are not defined in division 1, contractor shall include the website, user name and password information needed to access the submittals. For submittals sent by e-mail, contractor shall copy the architect and engineer's designated representatives. Contractor shall allow the engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal and shall clearly indicate the materials, performance criteria and accessories being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

26A 1-11 ELECTRONIC DRAWING FILES In preparation of shop drawings or record drawings, contractor may, as an option, obtain electronic drawing files in Revit. AutoCAD, or DXF format from the engineer for a fee of \$200 for the first sheet and \$100 per sheet for each additional sheet. Contact the architect for written authorization; and, contact the engineer to obtain the necessary release agreement form and to indicate the desired shipping method and drawing format. In addition to payment, architect's written authorization and engineer's release agreement form must be received before electronic drawing files will be sent. 26A 1-12 OPERATION AND MAINTENANCE MANUALS

Submit to the architect, for engineer's review, copies each of operations and maintenance instruction manuals, appropriately bound into manual form including approved copies of the following, revised if necessary to show system and equipment as actually installed. Paper clips, staples, rubber bands, and mailing envelopes are not considered approved binders. Provide the number of submittals required by Division 1; however, at a minimum, submit two (2) sets, and include, at a minimum, the following information:

index of contents. Manufacturers' catalogs and product data sheets Wiring diagrams Operation and Maintenance instructions Parts lists

Approved shop drawings Test reports as defined in NETA ATS for the systems and equipment provided or furnished or installed under this contract. Names, addresses, telephone numbers, and e-mail addresses of local contacts for warranty services and spare parts. Submit manuals prior to requesting the final punch list and before any requests for substantial completion. Final approval of this

division's systems installed under this contract will be withheld until this equipment brochure is received and deemed complete by the architect and engineer.

26A 1-13 TRAINING

the owner.

commencement date and term.

At a time mutually agreed upon between the owner and contractor, provide the services of a factory trained and authorized representative to train owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include but not be limited to an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals. Submit a certification letter to the architect stating that the owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The contractor and the owner's representative shall

sign the certification letter indicating agreement that the training has been provided.

26A 1-14 WARRANTIES Warrant each system and each element thereof against all defects due to faulty workmanship, design or material for a period of 12 months from date of substantial completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds this duration. Warranties shall include labor and material. Remedy all defects, occurring within the warranty period(s), as stated in the general conditions and Division 1 without any additional costs to

Perform any required remedial work promptly, upon written notice from the engineer or owner. At the time of substantial completion, deliver to the owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the required period, each warranty instrument being addressed to the owner and stating the



26A 1-8 PROTECTION OF EQUIPMENT AND MATERIALS

Store and protect from damage equipment and materials delivered to job site, in accordance with manufacturers' recommendations. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material that has been damaged by construction activities will be rejected, and contractor shall furnish

Keep premises broom clean from foreign material created during work performed under this contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Include in the base bid the products specifically named in these specifications or on the drawings. Submit, in the form of alternates, with bid, products of any other manufacturers for similar use, provided the differences in cost, if any, are included for

The Architect's or Engineer's decision to approve or disapprove a substitution in a Bid is final.

If the proposed substitution is approved prior to receipt of Bids, such approval will be stated in an Addendum. Bidders shall not rely upon approvals made in any other manner, including verbal.

No substitutions will be considered after receipt of Bids and before award of the Contract.

No substitutions will be considered after the Contract is awarded unless specifically provided in the Contract Documents.

Assemble and submit to the architect, for engineer's review, manufacturers' product literature for material and equipment to be furnished, installed, or both, under this division, including shop drawings, manufacturers' product data and performance sheets, samples, and other submittals required by this division. Highlight, mark, list or indicate the materials, performance criteria and accessories that are being proposed. Provide the number of submittals required by division 1; however, at a minimum, submit two (2) sets. Before submitting, verify that all materials and equipment submitted are mutually compatible and suitable for the intended use, fit the available spaces, and allow ample and code-required room for access and maintenance. Submittals shall contain the following information. Submittals not so identified will be returned to the contractor without action:

The contractor's stamp, which shall certify that the stamped drawings have been checked by the contractor, comply with the drawings and specifications, and have been coordinated with other trades.

Submittals and shop drawings shall not contain HP Engineering's firm name or logo, nor shall it contain the HP Engineering's engineers' seal and signature. They shall not be copies of HP Engineering's work product.

Cover sheet that lists the project name, date, owner, architect, consulting engineer, general contractor, sub-contractor, and an

Provide "as-built" drawings (see Division 1 and general conditions).

Schedule training with owner with at least 7 days advance notice.

26A 2 ELECTRICAL WORK

26A 2-1 BUILDING OPERATION

Comply with the schedule of operations as outlined in the architectural portions of this specification. Building continuous operation. Accomplish work that requires interruption of building operation at a time when the building operation, and only with written approval of building owner and/or tenant. Coordinate interruption of building op owner and/or tenant a minimum of 7 days in advance of work.

26A 2-2 EXCAVATION AND BACKFILLING

Perform excavation and backfill required for installation of underground work under this contract. Trenches sha width. Crib or brace trenches to prevent cave-in or settlement. Do not excavate trenches close to columns and without prior consultation with the architect. Use pumping equipment if required to keep trenches free of water. in maximum 6" layers of well-tamped dry earth in a manner to prevent future settlement.

Excavation as herein specified shall be classified as common excavation. Common excavation shall comprise removal and disposition of material of whatever substances and of every description encountered, including roc the limits of the work as specified and shown on the drawings. Excavation shall be performed to the lines and g on the drawings. Excavated materials which are considered unsuitable for backfill, and surplus of excavated m not required for backfill, shall be disposed of by the contractor at his own expense and responsibility, and to the architect

26A 2-3 COINCIDENTAL DAMAGE

Repair all streets, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of this wo materials shall match existing construction and or conform to all requirement identified in other divisions. All ba repairing shall meet all requirements of the owner, city and others having jurisdiction. Repair work shall be thor 26A 2-4 CUTTING AND PATCHING

Following the requirements in Division 1, cut walls, floors, ceilings, and other portions of the facility as required under this division. Obtain permission of the architect, owner, or both, before doing any cutting. Cut all holes a possible. Patch walls, floors, and other portions of the facility as required by work under this division. All patch thoroughly first class and shall match the original material and construction, including fire ratings if applicable in satisfactory to the architect.

Coordinate without delay all roughing-in with other divisions. Conceal all piping and rough-in except in unfinished where otherwise indicated in the construction documents. 26A 2-6 SUPPORT SYSTEMS

1.Steel slotted support systems (slotted channel): comply with MFMA-3, factory-fabricated components for fie 12-gauge, 1-5/8-inch by 1-5/8-inch; Cooper B-Line, Erico International Corporation, Hilti, Inc., Power-Strut, Tho Corporation, Unistrut.

Finishes:

26A 2-5 ROUGH-IN

A.Metallic coatings: hot-dip galvanized after fabrication and applied according to MFMA-3 B.Nonmetallic coatings: manufacturer's standard PVC, polyurethane or polyester coating applied according t

C.Painted coatings: manufacturer's standard painted coating applied according to MFMA-3. D. Stainless steel: type 304, per ASTM A240. 2.Aluminum slotted support systems (slotted channel): comply with MFMA-3, type 6063-T6, per ASTM B221;

components for field assembly; 12-gauge, 1-5/8-inch by 1-5/8-inch; Cooper B-Line, Erico International Corporat Power-Strut, Thomas & Betts Corporation, Unistrut.

Field Fabrication:

Where field cutting of standard lengths of channel are required, make cuts straight and perpendicular to manufa For field-cut or damaged surfaces of coated channels, dress cut ends, damaged surfaces, or both, with an abra (e.g., file, grinding stone, or similar) and cleanser to remove oils, rust, sharp edges and shards.

For channel with a factory-applied coating, re-finish cut edges with a coating compatible with the factory finish a recommended by the manufacturer (e.g., manufacturer's touch-up paint or zinc-rich cold-galvanizing compound

26A 2-7 PENETRATIONS

Coordinate sleeve selection and application with selection and application of fire-stopping specified in Division "through-penetration firestop systems."

Division's work.

Walls and Floors:

Coordinate all roof penetrations with engineer, owner, and as applicable, the roofing contractor providing a roof Keep all raceway penetrations within mechanical equipment curbs wherever possible. Coordinate with all other

Flash and counterflash all openings through roof, and/or provide pre-fabricated molded seals compatible with t construction installed, or as required by the engineer, owner, or roofing contractor. All roof penetrations shall be termination of the work and shall not void any new or existing roof warranties.

Sleeves for raceways and cables

Steel pipe sleeves: ASTM A 53/A 53M, type E, grade B, schedule 40, galvanized steel, plain ends and drip rings. Cast-iron pipe sleeves: cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

Sleeves for rectangular openings: galvanized sheet steel with minimum 0.138 inch thickness and of width and length to suit application.

26A 2-8 FIRE-STOPPING THROUGH PENETRATIONS

Fire-resistant through penetration sealants: two-part, foamed-in-place, silicone sealant formulated for use in through-penetration fire-stopping around cables, raceways, and cable tray penetrations through fire-rated walls and floors. Sealants and accessories shall have fire-resistance ratings indicated, as established by testing identical assemblies in accordance with ASTM E 814, by underwriters' laboratories, inc., or other NRTL acceptable to AHJ.

Acceptable manufacturers: Hilti, Ind

3m Corp. Rectorsea

Specify Technology Inc. United States Gypsum Company.

Submittals

Submit product data, manufacturer's specifications and technical data for each material including the composition and limitations, documentation of UL firestop systems to be used and manufacturer's installation instructions to comply with Division 1.

Manufacturer's engineering judgment identification number and drawing details when no UL system is available for an application. Engineering judgment shall include both project name and contractor's name who will install firestop system as described in drawings.

Submit material safety data sheets provided with product delivered to job-site.

26A 2-9 CONCRETE BASES

Provide concrete bases (e.g., housekeeping pads) for equipment where indicated on the drawings and as specified herein. Concrete bases shall have chamfered edges. Size of base shall be a minimum of 2 inches greater than the footprint of the equipment that it is supporting.

Construct equipment bases of a minimum 28-day, 4000-psi concrete conforming to American Concrete Institute standard building code for reinforced concrete (ACI 318-99) and the latest applicable recommendations of the ACI standard practice manual. Concrete shall be composed of cement conforming to ASTM C 150 type I, aggregate conforming to ASTM C33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment.

Unless otherwise specified or shown on the structural drawings, reinforce equipment bases with no. 4 reinforcing bars conforming to ASTM A 615 or 6x6 – w2.9 x w2.9 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24 inches on center with a minimum of two bars each direction.

Provide galvanized anchor bolts for equipment placed on concrete bases or on concrete slabs. Anchor bolts size, number and placement shall be as recommended by the manufacturer of the equipment. Concrete equipment bases shall have a minimum height of 4 inches and shall be poured-in-place.

	26A 2-10 ACCESS DOORS								
hall ha in	Provide access doors in ceilings and walls, where indicated or required for access or maintenance to concealed equipment installed under this section. Provide concealed hinges, screwdriver-type lock, and anchor straps.								
nall be in ling is not in peration with the	Manufactured by Milcor, Zurn, Titus, or equal. Obtain architect's approval of type, size, location and color before ordering. 26A 2-11 EQUIPMENT FURNISHED BY OTHERS								
all be of sufficient d walls of building ∵ Backfill trenches	Provide necessary equipment and accessories that are not provided by the equipment supplier or owner to complete installation of equipment furnished by others, in locations as indicated on the drawings, specified herein, or both. Equipment and accessories not provided by the equipment supplier may include such items as flexible cords and plugs, as required for proper operation of the complete system, in accordance with the manufacturers' instructions.								
the satisfactory	Be responsible for correct rough-in dimensions, and verify them with engineer, owner's representative, equipment supplier, or all three, prior to rough-in and service installations.								
ck, if any, within grades indicated	26A 2-12 CLEANING								
naterial which is e satisfaction of the	In addition to the requirements of Division 1, remove from the premises dirt and refuse resulting from the performance of the electrical work, as required, to prevent accumulation. Cooperate in maintaining reasonably clean premises at all times. Immediately prior to final inspection, make a final cleanup of dirt and refuse resulting from the work. Clean all material and equipment installed under this division. Remove dirt, dust, plaster, stains and foreign matter from all surfaces. Touch up and restore all damaged finishes to their original condition.								
/ork. Repair ackfilling and	26A 2-13 ADJUSTING, ALIGNING AND TESTING								
roughly first class.	Adjust, align, and test all electrical equipment on this project provided under this division and all electrical equipment furnished by others for installation or wiring under this division, for proper operation.								
to perform work as small as	Test all systems and equipment according to the requirements in NETA ATS (latest edition) and all additional requirements specified in following sections.								
n a manner	Maintain the following on the project premises at all times: a true RMS reading voltmeter, a true RMS reading ammeter, and a megohmmeter insulation resistance tester. Provide test data readings as requested or as required by the engineer.								
	26A 2-14 EQUIPMENT IDENTIFICATION								
ned areas and	Provide equipment identification nameplates:								
	-On all panelboards, switches, starters, dimmers, switches in distribution panelboards and switchboards as well as where indicated elsewhere in the construction documents.								
eld assembly; omas & Betts	Nameplates:								
	Engraved, contrasting color, three-layer, laminated plastic indicating the name of the equipment, load, or circuit as designated on the drawings and in the specifications:								
to MFMA-3.	-Field-applied permanent epoxy adhesive, compatible with the equipment finish. -Attachment method shall be acceptable to the manufacturers of the equipment to which the nameplates are being applied. Color: black background with white letters for normal power; red background with white letters for emergency power. Letter height: ½ -inch minimum.								
; factory-fabricated	26A 2-15 SYSTEM START UP								
	Prior to starting up the electrical systems:								
	Check all components and devices.								
factured surfaces.	Lubricate items accordingly.								
asive material	Tighten screws and bolts for connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486a and UL 486b.								
and as	Adjust taps on each transformer for rated secondary voltage when the transformer is at minimum load.								
d, as applicable).	Check and record building's service entrance voltage, grounding conditions, grounding resistance, and proper phasing.								
Zaation	Replace all burned-out lamps and lamps used for temporary construction lighting in permanent light fixtures.								
rsection	After all systems have been inspected and adjusted, confirm all operating features required by the drawings and specifications and make final adjustments as necessary.								
	26A 4 ALTERNATES								
t warranty.	Provide all work contemplated under the different alternates to include labor, materials, equipment and services necessary for								
er applicable	and incidental to the completion of work under each particular alternate. Furnish separate bids for each alternate applicable to contractor's proposal, stating the amount to be added or deducted from the base bid in case the alternate is accepted. Comply with applicable sections of the base specifications for work required by the alternate unless otherwise specified. Refer to the								
he roof be leak-tight at the	architectural portion of the specification.								

END OF SECTION 26A

lames R. Childer Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2480 www.childersarchitect.com PROFESSIONAL SEAL Daniel ₄Miles∕≀ 25652 CA5338(PE) 07/31/2020 CONSULTANT LOGO: HP ENGINEERING PROJECT NO. 190258R 100<u>%</u> COMPLETE HP ENGINEERING INC. 5214 W. VILLAGE PARKWAY **ROGERS**, AR 72758 (479) 899-6370 www.hpengineeringinc.com Ο AT \mathbf{O} Ο Ο ()KEY PLAN: PROJECT PHASE: CONSTRUCTION DOCUMENTS REVISIONS DESCRIPTIO 07-31-2020 18-01.10 SHEET NUMBER E4.00 ELECTRICAL **SPECIFICATIONS**



26B BASIC ELECTRICAL MATERIALS AND METHODS rev - 20150520

26B 1 METHODS

26B 1-1 RACEWAYS

Metallic Conduit And Tubing:

Electrical Metallic Tubing and fittings (EMT): ANSI C80.3, UL 797.

Reduced wall EMT is not allowed. Flexible Metal Conduit (FMC): zinc-coated steel or aluminum, UL 1.

Reduced-wall FMC is not allowed. Intermediate Metal Conduit (IMC): hot-dip galvanized rigid steel conduit: ANSI C80.6, UL 1242.

Liquidtight Flexible Metal Conduit (LFMC): flexible steel conduit with PVC jacket: UL 360

Rigid Metal Conduit (RMC): hot-dip Galvanized Rigid Steel conduit (GRS): ANSI C80.1, UL 6. Plastic-coated IMC, RMC, and fittings: NEMA RN 1, UL listed.

IMC and RMC fittings: NEMA FB 1; compatible with conduit type and material, UL listed

Non-Metallic Conduit And Tubing:

Rigid Nonmetallic Conduit (RNC): schedule 40 PVC, 90 deg C rated, NEMA TC-2, UL 651; fittings: NEMA TC 3, TC 6; UL 514, compatible with conduit/tubing type and material, UL listed.

Electrical Nonmetallic Tubing (ENT): NEMA TC 13, UL listed. Liquidtight Flexible Nonmetallic Conduit (LFNC): UL 1660.

ENT and LFNC fittings: Compatible with conduit/tubing type and material, UL listed. 26B 1-2 RACEWAY INSTALLATION

Install raceways parallel and perpendicular to building lines.

depressions, pipes, ducts, reinforcing steel, and other immovable obstacles.

Above Ground Use:

Install all circular raceways concealed above suspended ceilings or concealed in walls or floors wherever possible except where otherwise indicated.

Provide GRS for all conduits run exposed to weather, or exposed to other hazardous conditions. All other raceway may be EMT where approved by local code. Use compression type fittings for EMT, with all fittings UL listed for the environment in which they are used.

Underground use: Provide GRS installed below grade with a corrosion resistant bonded-plastic or approved mastic coating. This shall include the 90-degree elbow below grade and the entire vertical transition to above grade. RNC conduit may be used underground where permitted by local code and where not specifically restricted by these documents. When used, provide coated GRS, as specified above, for all bends greater than 30 degrees, including the 90-degree elbows below grade and the entire vertical risers for transitions from below to above grade or above-slab. Equipment Connections:

Use FMC for final connection to each motor and transformer, and to any device that would otherwise transmit motion, vibration, or noise. Use LFMC where exposed to liquids, vapors or sunlight, and to connect to kitchen and food service equipment. Provide all FMC and LFMC with an insulated bonding conductor.

Use only metal raceways for all power wiring from the output of variable frequency drives to their respective motors. All feeders to variable frequency drives (VFDs) shall be in EMT or other metallic conduit. PVC or fiberglass is not allowed for feeders to VFDs. General Raceway Installation Requirements:

Install raceways to requirements of structure and to requirements of all other work on the project; to clear all openings,

Install raceways set in forms for concrete structure in such a manner that installation will not affect the strength of the structure. Except where approved in writing by the engineer, install no raceway in a slab-on-grade. Locate raceway in granular fill below slabs-on-grade.

Install raceways continuous between connections to outlets, boxes and cabinets with a minimum possible number of bends and not more than the equivalent of four 90-degree bends between connections. Use manufactured elbows for all 45- and 90-degree bends, unless approved by the engineer in advance. Make other bends smooth and even and without flattening raceway or flaking galvanizing or enamel. Radii of bends shall be as long as possible and never shorter than the corresponding trade elbow. Use long radius elbows for all underground installations, where necessary or indicated.

Securely fasten raceways in place with approved straps, hangers and steel supports as required. Attach raceway supports to the building structure. Hang single raceways for feeders with malleable split ring hangers with rod and turnbuckle suspension from inserts spaced not over 10 feet apart in construction above. Clamp groups of horizontal feeder raceways to steel channels that are suspended from inserts spaced not over 10 feet apart in construction above. Securely clamp vertical feeder raceways to structural steel members attached to structure. Install cable clamps for support of vertical feeders where required. Add raceway supports within 12 inches of all bends, on both sides of the bends. Do not support raceways from suspended ceiling

components. Ream raceway ends, thoroughly clean raceways before installation, and keep clean after installation. Plug or cover openings and boxes as required to keep raceways clean during construction and fish all raceways clear of obstructions before pulling conductors. Provide raceways of ample size for pulling of wire and not smaller than code requirements and not less than

1/2-inch in size, unless indicated otherwise on drawings. Protect all raceway installations against damage during construction. Repair all raceways damaged or moved out of line after roughing-in to meet engineer's approval without additional cost to the owner.

Align and install true and plumb all raceway terminations at panelboards, switchboards, motor control equipment and junction

Install approved expansion/deflection fittings where raceways pass through (if embedded) or across (if exposed) expansion joints. Also when using RNC or RAC in exposed environments in accordance with the NEC and expansion/contraction properties of RNC or RAC.

Install a pull wire in each empty raceway that is left for installation of conductors or cables under other divisions or contracts. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 24 inches of slack at each end of pull wire.

Make all joints and connections in a manner that will ensure mechanical strength and electrical continuity.

26B 1-3 BUSHINGS AND LOCKNUTS

Rigidly terminate conduits entering sheet metal enclosures to the enclosure with a bushing and locknut on the inside and a locknut or an approved hub on the outside. Conduit shall enter the enclosure squarely. Provide bushings and locknuts made of galvanized malleable iron with sharp, clean-cut threads.

Where EMT enters a box, provide approved EMT compression connectors.

Use insulated, grounding, or combination, bushings wherever connection is subject to vibration or moisture, when required by NFPA 70, or both.

26B 1-4 CONDUCTORS AND CABLES

Conductor Material: Annealed (soft) copper complying with ICEA S-95-658/NEMA WC70;

All feeder and branch circuit conductors no. 8 AWG and larger: stranded. All conductors, no. 10 AWG and smaller: solid copper

All branch circuit wiring: not smaller than no. 12 AWG. If no conductor size is indicated on the drawings for a branch circuit, provide conductors and conduit sized per NFPA 70 and based on the indicated branch circuit overcurrent protective device (OCPD) rating and number of poles. Where no circuit size (i.e., conductors and OCPD) is indicated on the drawings for a branch circuit, provide three no. 12 AWG conductors, in 1/2-inch raceway, and a 20a circuit breaker.

Control wiring: stranded copper conductors, 600v insulation, of the proper type, size and number as required to accomplish specified function. Minimum size: no. 14 AWG, unless noted otherwise.

Stranded for all flexible cords and cables, or as otherwise indicated. Unless indicated otherwise, special purpose conductors and cables, such as low voltage control and shielded instrument wiring,

shall be as recommended by the system equipment manufacturer. Type MC cable: 600v, unjacketed; ANSI E119 and E814, UL standards 44 or 83 (as applicable), and 1569, NFPA 70 article 330; aluminum or galvanized steel interlocked armor; THHN- or XHHW-insulated conductors; color code: ICEA method 1, with green insulated grounding conductor 26B 1-5 INSTALLATION OF CONDUCTORS AND CABLES

Install all wiring in approved raceway and enclosures , except where specified or indicated, for low-voltage wiring or direct-buried cables; or, where type MC cable is indicated, specified as acceptable, or both. Support all conductors and cables in vertical installations, as required by NFPA 70, by installing cable supports or plug-type

conduit riser supports, or wire-mesh safety grips.

minimum required. Insulate all splices, taps, and joints as required by codes.

recommended tools.

minimum 3-foot "pigtail" at the box, tape the ends of the conductors, and cover the box.

runs" were indicated in their entirety.

examples. When multiple home runs are combined into a single raceway such that the number of conductors exceeds four (conductor count is made up of any combination of phase and neutral conductors), the following restrictions apply, which are in addition to those in NFPA 70:

NORMAL or NON-ESSENTIAL CIRCUITS:

Maximum of 16 conductors in a single raceway. For up to eight conductors in a raceway, minimum raceway size: 3/4-inch. For greater than eight conductors, minimum raceway size: 1-inch. Do not install any other type of circuit in this raceway. The minimum wire size for all conductors in this raceway: no. 10 AWG.

Only 15a and 20a branch circuit homeruns may be combined into one raceway. ISOLATED GROUND (IG) CIRCUITS:

IG circuits shall be provided with dedicated neutrals, equipment grounds, and isolated grounds and routed in separate conduits from other circuits.

GFCI CIRCUITS:

Do not use multi-conductor circuits, with a shared neutral, for any GFCI circuit breaker or receptacle circuit. For branch circuits fed from GFCI circuit breakers, limit the one-way conductor length to 100 feet between the panelboard and the most remote receptacle or load on the GFCI circuit

Properly identify all terminal blocks and wire terminals for control wiring with vinyl stick-on markers or equivalent. Provide engineer with a list of proposed identifying numbers for review prior to installing markers.

Provide an equipment-grounding conductor, or bonding jumper, as applicable, in all feeders and branch circuits, sized in accordance with NFPA 70 tables 250.66 or 250.122, as applicable, unless indicated as larger on the drawings.

junction and pull boxes

System Voltage 240v and under – 208y/120, 120/240, 120/208, 240d/120 Phase A – black, phase B – red, phase C – blue, neutral – white, equipment ground green, isolated ground – green w/yellow stripe

480v and 480v/277v Use of MC Cable, May Only Be Used:

In lieu of flexible conduit and wiring from light fixtures in accessible ceilings to junction boxes (attached to building structure) above the ceiling. Provide cable whips of sufficient lengths to allow for relocating each light fixture within a 5-foot radius of its installed location, but not exceeding 6 feet in unsupported lengths.

For vertical drops in stud walls.

Homeruns to panelboards.

Where exposed to view.

Where exposed to damage. Hazardous locations.

Wet locations.

Circuits that can be supplied by an emergency or standby power source.

Provide junction boxes, pull boxes, cabinets and wireways wherever necessary for proper installation of various electrical systems according to NFPA 70 and where indicated on the drawings. Size as required for the specific function or as required by NFPA 70, whichever is larger. Construction shall be of a NEMA design suitable for the environment installed. Junction boxes installed behind wall cases, and in or on other display fixtures, except where otherwise specified, shall be 4-inch square or larger, with galvanized covers.



Conductor insulation types: 90-degree C-rated, type THHN/THWN-2 or XHHW-2 complying with ICEA S-95-658/NEMA WC70. Sizes of conductors and cables indicated or specified are in American Wire Gage (AWG - brown and sharpe).

Install all conductors and cable in raceways continuous without taps or splices. Splice or tap only in approved boxes and enclosures with approved solderless connectors, or crimp connectors and terminal blocks for control wiring, and keep to the

All materials used to terminate, splice or tap conductors: designed for, properly sized for, and UL listed for the specific application and conductors involved, and installed in strict accordance with the manufacturer's recommendations, using the manufacturer's

Where wiring is indicated as installed, but the connection is indicated "future" or "by other division, trades, or contracts", leave a

The number of conductors in a specific raceway "home run" is typically indicated with cross lines (tick marks) on each "circuit run" on the drawings. In general, the direction of branch circuit "home run" routing is indicated on the drawings, complete with circuit numbers and panelboard designation. Continue all such "home run" wiring to the designated panelboard, as though "circuit

Multi-wire branch circuits (i.e., shared neutral) shall be provided with a means that will simultaneously disconnect all ungrounded conductors at the point the branch circuit originates. Multi-pole breakers or 3 single pole breakers with a handle tie are two

The Isolated Ground conductor of each IG circuit shall be continuous (no splices) the entire length of the circuit.

Voltage drop in branch circuits shall not exceed 3 percent.

Wiring shall have insulation of the proper color to match color code system in the table below unless there is a color system currently in use by the facility, in which case the colors are to match the existing system. In larger sizes, where properly colored insulation is not available, use vinyl plastic electrical tape of the appropriate color around each conductor at all termination points,

Phase A – brown, phase B – orange, phase C – yellow, neutral – gray, equipment ground – green.

In lieu of EMT, only for 15a and 20a branch circuits (with up to four (4) conductors, not including ground conductor), and only in dry concealed locations above grade, except where specifically not permitted by NFPA 70. Do Not Use MC Cable For The Following:

When restricted otherwise above, and when specifically disallowed by the local AHJ, landlord, or both.

26B 1-6 JUNCTION BOXES, PULL BOXES, CABINETS AND WIREWAYS

26B 1-7 OUTLET BOXES

All outlets including light fixture, switch, receptacle, and similar outlets: National Electrical, Appleton, Steel City, Raco, approved equal, galvanized steel knockout boxes, suitable in design to the purpose they serve and the space they occ as required for the specific function or as required by NFPA 70, whichever is larger. Set all outlet boxes in walls, colur or ceilings so they are flush with the finished surface, accurately set, and rigidly secured in position. Provide plaster r extension rings and/or masonry rings as required for flush mounting. Provide approved cast outlet boxes, with hubs a weatherproof covers, in all areas subject to damp, wet, or harsh conditions. 26B 1-8 OUTLET LOCATIONS

Coordinate locations of outlet boxes. Outlets are only approximately located on the small scale drawings. Use great of actual location by consulting the various large scale detailed drawings used by other division trades, and by securing of locations from the architect and/or engineer. 26B 1-9 MOUNTING HEIGHTS

Unless noted otherwise, install wiring devices as indicated below (note: all dimensions are to the bottom of the outlet below (note: all dimensions are to the bottom of the b noted otherwise):

Receptacles:

Vertically aligned with the ground slot mounted at the bottom: 16 inches above finished floor. Horizontally aligned, with neutral slot mounted at the top: 16 inches above finished floor.

For above counters: 6 inches above top of counter or as specified by others.

Mechanical and electrical equipment rooms and janitors closets: 44 inches above finished floor, vertically aligned. Garages: 24 inches above finished floor, vertically aligned Weatherproof exterior receptacles: 24 inches above finished grade or as indicated on drawings, vertically aligned.

GFCI receptacles: same as general receptacles Isolated ground receptacles: same as general receptacles

SPD receptacles: same as general receptacles

Clock receptacles: 84 inches above finished floor or as specified by others. Concrete block walls: dimensions above may be adjusted slightly, as required to compensate for variable joint dimen

that bottom or top of boxes, as applicable, are at block joints. Switches:

General: 46 inches above finished floor.

Above counters: same as for receptacles

Concrete block walls: 40 inches above finished floor (dimension may be adjusted slightly, as required to compensate joint dimensions, such that bottom of boxes are at block joints). Walls with wainscoting: 6 inches minimum above wainscoting, but not exceeding 48 inches above finished floor. Telephone/Data Outlet Boxes:

General: match mounting height of adjacent wiring device listed above.

Wall-mounted telephone: 40 inches above finished floor.

For other than wiring devices, refer to paragraphs, articles, sections, divisions, or drawings to obtain mounting height equipment or systems.

26B 1-10 WIRING DEVICES

Unless noted otherwise on the drawings wiring devices are 20a rated devices. Where 15a rated devices are indicated drawings or required for circuit rating limitations, provide wiring devices equivalent to those specified for 20a, but rated

Provide the following wiring devices where shown on drawings or required. Minor changes relative to the location of e equipment may be made to comply with structural and building requirements as determined in the course of construction Provide all wiring devices of the same manufacturer and not mixed on the project, to the maximum extent possible. color of toggles and receptacles as requested by the engineer:

Duplex convenience receptacles: Specification grade, NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled face, side and back wired, self grounding, manufactured by Leviton or approved equivalent. Hospital Grade straight blade receptacles: NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face back wired, self-grounding, manufactured by Leviton or approved equivalent. Hospital Grade straight blade safety type, tamper-resistant receptacles: NEMA 5-20R, 125V, 20A, grounding type, UL labeled, nylon face, side and back wired, self-grounding, manufactured by Leviton or approved equivalent Twist-Locking type receptacles: NEMA L5-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face, side and wired, self-grounding, Leviton 2310 or approved equivalent.

Ground fault circuit interrupter type receptacles: Specification Grade, Self-Test type UL listed and labeled complying with UL 943. Class A and NEMA WD-1-1,10, 125V, 20A, trip at 4-6mA within 0.25 se feed-thru type with integral heavy duty NEMA 5-20R receptacle arranged to protect receptacles downstream on the s manufactured by Leviton or approved equivalent

Isolated ground receptacles: Specification Grade NEMA 5-20R NEMA L5-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face, side and back wired, furnished with a green pigtail con the grounding contact, and grounding contacts electrically isolated from the mounting strap, manufactured by Leviton approved equivalent.

TVSS receptacles Specification Grade for 125V (150V maximum continuous operating voltage) service: NEMA 5-20R, 125V, 20A, self-grounding type, RFI/EMI noise filtering, UL listed 1449 Second Editior 489; equipped with LED indicator(s) and audible alarm, manufactured by Leviton or approved equivalent. Suppression module shall protect normal and common modes, with the following mode characteristics, and be suitable ANSI/IEEE C62.41-1991 A, B installations:

Peak Energy240 joules minimum Peak Current 13 000A minimum UL 3000A Test400V minimum

Response Time5 nano-seconds

Special Warranty: Manufacturer agrees to repair or replace TVSS receptacles, or replaceable surge modules (if remo that fail in materials or workmanship within 5 years from date of Substantial Completion. Special purpose receptacles: Grounding type, UL listed with NEMA configurations as implied on the Drawings, manufa Leviton or approved equivalent Switches: Specification grade, rated for 120/277V, 20A, back and side wired, and UL listed and labeled, manufactured

or approved equivalent Pilot Light switches: 20A, 1-pole, 2-pole, 3-way switch with red neon lighted handle. Toggle shall be illuminated when is in the "ON" position, manufactured by Leviton or approved equivalent

Lighted Handle switches: 20A, 1-pole, 3-way switch with clear neon lighted handle. Toggle shall be illuminated when t is in the "OFF" position. Manufactured by Leviton or approved equivalent. Key operated light switches: Same as standard light switches except toggle handle shall be operated by a factory prov manufactured by Leviton or approved equivalent.

Switches for use with mechanically-held, electrically-operated lighting contactors: Single pole, double throw, momentary, center off switch, rated for 120/277V, and UL listed and labeled, manufactured by Leviton or approved equivalent. Wall box dimmers: Specification grade slider type wall box dimmers, UL listed and labeled, with Radio Frequency Interference (RFI) filters to avoid interference with electronic equipment, and a minimum wattage as indicated on the Drawings or as required

for the load, manufactured by Leviton or approved equivalent. Dual Voltage Switch Relay; A normally-open, electrically-held relay that allows a single-pole switch to control loads operating at two different voltages (e.g., 120V and 277V); listed to UL Standard 916; installed in a 2-gang outlet box, with a voltage-separating barrier and plaster ring manufactured by Lighting Controls and Designs (GR 2001 DV) or approved

equivalent. Wall switch occupancy sensors: Passive Infrared type, wall box switch, 120/277V, up to 20-minute time delay, light level sensor, 180-degree field of view, square-foot coverage as required for minimum coverage of the space per the manufacturer, UL listed and labeled, and conforms to California Title 24 Energy Code, manufactured by Leviton or approved equivalent. Wall switch occupancy sensors: Adaptive technology type, wall box switch, 120/277V, up to 20-minute time delay, light level sensor, 180-degree field of view, square-foot coverage as required for minimum coverage of the space per the manufacturer, UL listed and labeled, and conforms to California Title 24 Energy Code, manufactured by Leviton or approved equivalent. Ceiling mounted occupancy sensors: Passive Infrared type, 120/277V, up to 20-minute time delay, light level sensor, 360-degree field of view, square-foot coverage as required for minimum coverage of the space per the manufacturer, UL listed and labeled, and conforms to California Title 24 Energy Code, manufactured by Leviton or approved equivalent.

Ceiling mounted occupancy sensors: Dual technology type, 120/277V, up to 20-minute time delay, light level sensor, 360-degree field of view, square-foot coverage as required for minimum coverage of the space per the manufacturer, UL listed and labeled, and conforms to California Title 24 Energy Code, manufactured by Leviton or approved equivalent. 26B 1-11 SWITCH AND OUTLET COVER PLATES

Switch and outlet plates: colored, smooth nylon; by the same manufacturer as the wiring devices, wherever possible. Verify desired materials and colors with architect and/or engineer before installation. Switch plates in unfinished rooms and spaces: stamped steel, cadmium plated. Install groups of switches under one ganged-plate, usually horizontally; or, where required by details, vertically. Set all cover plates plumb, parallel, and finished flush with the wall.

	26B 1-12 WEATHERPROOF COVER PLATES
o, or ccupy. Size umns, floors, rings, and	For exterior unattended, wet locations or other locations as indicated: in-use NEMA 3R recessed or flush mount, UL-labeled plates molded from a clear high impact ultraviolet stabilized polycarbonate material for easy verification that cords are plugged in and that the GFCI is functioning. Back box must be suitable for conduit connecting. Coordinate back box with wall depth. Intermatic WP1000RC/HRC or equal.
	For attended wet or damp locations: weatherproof cover plates, UL-listed for wet locations with cover(s) closed; die-cast aluminum or type 302 stainless steel; single-cover for switches and vertically mounted receptacles; double-cover for horizontally mounted receptacles; self-closing covers.
care in the definite	Cover plates: by the same manufacturer as the wiring devices; complying with NFPA 70 406.8 (A) or (B) requirements for attended or unattended use as applicable.
box unless	See drawings for type, size, voltage, phase, and other requirements
	Provide, or arrange with the serving utility for installation to provide, a recording voltmeter at the service point, on the first day the facility is open for business, for a 24-hour voltage test. If voltage and regulation are not within acceptable limits, arrange with the utility for proper voltage. Submit to the owner a report of maximum and minimum voltage and a copy of the recording voltmeter chart.
	26B 2-2 CONNECTION TO SERVING UTILITIES
	Provide raceways, terminations, metering provisions, and miscellaneous equipment, as required, for electrical and telephone services for connection by the serving utility, in strict compliance with the requirements of all applicable codes and of the serving utility involved. Verify all service terminations and connection points in the field and work in conjunction with the utility involved in the installation of all services. Provide all materials and equipment required for complete utility connection but not furnished by the serving utility. Notify the utility companies involved within two weeks after notice to proceed, of all required information necessary for the utility to supply the project without delay. Pay all charges of the serving utility for the electrical service(s). 26B 2-3 GROUNDING
sions, such	Permanently and effectively ground and bond the electrical installation in a thorough and efficient manner, and in conformance, at a minimum, with NFPA 70, or these documents, where they exceed code requirements. Use bare or insulated conductors, as specified herein, and other materials indicated on the drawings. 26B 3 DISTRIBUTION AND CONTROL EQUIPMENT 26B 3-7 GENERAL PURPOSE PANELBOARDS
for variable	Panelboards: Square D type NQOD or NF, as applicable, based on voltage and ampere ratings and required short-circuit interrupting ratings as required unless otherwise indicated on the drawings, or approved equal by Siemens, Cutler Hammer, or General Electric; complete with bolt-on thermal magnetic, molded case circuit breakers assembled in a dead-front finished cabinet containing a typewritten card directory indicating exactly what each circuit breaker controls; main circuit breaker shall be rated at 100% of the ampere size indicated, fully-rated and with the integrated short circuit current ratings as required. Plug-in type breakers will not be acceptable. All two and three pole breakers: common trip type. Breakers used as switches for 120v or 277v lighting circuits: approved for the purpose and marked "SWD". Breakers used for the protection of HVAC and refrigeration equipment: HACR type.
s for specific	26B 3-11 DISCONNECT (SAFETY) SWITCHES
ed on the	Disconnect (safety) switches: Square D, Siemens, Cutler Hammer, or General Electric fused or non-fused (as indicated on drawings or required) NEMA KS1, heavy duty, externally operated, visible-blade safety switches; NEMA enclosure type indicated on the drawings or suitable for the environment in which installed. Based on fusible switch and fuse sizes indicated, include class R, J, or I fuse provisions as applicable.
ed for 15a. electrical ction.	Where indicated, provide fusible switches permanently labeled as suitable for use as service entrance equipment, with integral and separate neutral and ground assemblies, suitable for the sizes of conductors indicated. Do not double-lug any terminations not specifically listed as suitable for more than one conductor.
Provide	Provide switches where not furnished with the starting equipment, at all other points required by NFPA 70, and where indicated on the drawings.
ea, nyion	26B 3-12 SURGE-PROTECTIVE DEVICES (SPD)
ce, side and L listed and	Provide SPD labeled in accordance with the latest editions of UL 1283 and 1449, including the highest fault current of section 37.3 (UL recognized for integral).
nd back	SPD shall meet or exceed the following criteria:
econd, and	UL 1449 ratings: the system performance ratings shall be based on the UL 1449 listing ratings for IEEE C62.41 category C3 impulse waveforms of 6kv 1.2 x 50 microseconds, 3ka, 8 x 20 microsecond waveshapes. The maximum UL 1449 listed surge rating for each and/or all of the specified protection modes shall not be exceeded.
same circuit,	Maximum surge current capability (single pulse rated) per phase shall be:
nected to	Service entrance switchboards, switchgear: 240ka.
ı or	Distribution panelboards, panelboards used for service entrance & MCC: 120ka.
m (1000) 8	Branch panelboards: 80ka (non-modular is acceptable).
on (1996) &	UL 1449 listed and recognized component suppression voltage ratings shall not exceed the following:
	VOLTAGE L-N L-G N-G 208y/120 330v 330v 330v 480y/277 700v 700v 700v
	SPD shall have a minimum EMI/RFI filtering of –50db at 100khz.
iovable), factured by	Indicators: the SPD shall use LED indicators that provide indication of suppression component failure in all protection modes including N-G, as well as optically isolated N/C dry contacts for remote monitoring.
ed by Leviton	Transient counter: a transient voltage surge counter shall be included to totalize transient voltage surges which deviate from the sine wave envelope by more than 125v. The readout shall be at least a six digit LCD located on the unit's hinged front cover. The counter shall be equipped with a battery back-up to retain memory when power is not present. A push-button switch on the
n the switch	display's face-plate shall be provided for manual counter reset.
the switch	Switchboard switchgear papelboard and MCC internally mounted SDD: factory installed LIL laboled by and at the facility of the
ovided key,	electrical distribution equipment manufacturer.
	EXEMPTIVE TO THE PARTY AND A MOMENT AND A MOMENT AND A MOMENTAL

u only allowed where noted on the construction documents): Install with conductors as short and straight as possible. Twist the SPD input conductors together to reduce input conductor inductance. Follow the SPD manufacturer's recommended installation practices and comply with all applicable codes.

Warranty: the manufacturer shall provide a minimum full five year parts, labor, travel warranty from date of substantial completion against any part failure, excluding breakers, when installed in compliance with manufacturer's written instructions, UL listing requirements, and all applicable national or local electrical codes. Manufacturer shall make available local, national field engineering service support. Where direct factory employed service engineers are not locally available, travel time from the factory or nearest dispatch center shall be stated.

Thoroughly factory test the specified system before shipment. Testing of each system shall include, but shall not be limited to, quality control checks, dielectric voltage withstand tests at twice rated voltage plus 1000v per UL requirements, and operational and calibration tests.

James R. Childer Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2480 www.childersarchitect.com PROFESSIONAL SEAL Miles 25652 CA5338(PE) 07/31/2020 CONSULTANT LOGO: HP ENGINEERING PROJECT NO. 190258R 100<u>%</u> COMPLETE HP ENGINEERING INC. 5214 W. VILLAGE PARKWAY **ROGERS**, AR 72758 (479) 899-6370 www.hpengineeringinc.com Ο \mathbf{O} Ο Ο 1 ()KEY PLAN: PROJECT PHASE: CONSTRUCTION DOCUMENTS REVISIONS DESCRIPTIO 07-31-2020 18-01.10 SHEET NUMBER E4.01 ELECTRICAL **SPECIFICATIONS**



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26B 4-1 LIGHT FIXTURE LOCATIONS

Light fixtures shown on the electrical drawings represent general arrangements only. Refer to architectural drawings for more exact locations. Coordinate location with all other trades before installation to avoid conflicts. Coordinate light fixture locations in mechanical rooms with final installed piping and ductwork layouts.

26B 4-2 LIGHT FIXTURES

Provide light fixtures as scheduled on drawings, including all lamps, all necessary accessories, material and labor to securely hang, clean, and make light fixtures completely ready for use. Provide: all hangers, supports, and miscellaneous hardware required to install light fixtures; proper trim to fit each ceiling condition actually encountered; additional tie wires connected to structure to conform to seismic requirements where required by the applicable building code.

Packaging of light fixtures will not be allowed. Only those luminares listed in the light fixture schedule, or approved in accordance with substitutions of these specifications, will be accepted. Where the light fixture schedule indicates an allowance for a specific light fixture, the price is a contractor price. Include all additional costs for freight, lamps, and installation of light fixture and lamps.

Install all linear light fixtures located in areas without ceilings immediately below the roof-framing members, or suspended from chain hangers suitable in length to provide the indicated mounting height.

Through wiring of recessed light fixtures, in suspended ceilings, is not permitted. Connect each light fixture by a whip to a junction box. Provide cable whips of sufficient lengths to allow for relocating each light fixture within a 5-foot radius of its installed location, but not exceeding 6 feet in unsupported lengths. 26B 4-3 EMERGENCY LIGHTING UNITS AND EXIT SIGNS

Description: self-contained units complying with UL 924.

Battery: sealed, maintenance-free, lead-acid type. The batteries shall be of suitable rating and capacity to supply and maintain at not less than 87 1/2 percent of the nominal battery voltage for the total lamp load associated with the unit for a period of at least 1 1/2 hours, or the unit equipment shall supply and maintain not less than 60 percent of the initial emergency illumination for a period of at least 1 1/ 2 hours.

Charger: fully automatic, solid-state type with sealed transfer relay.

Operation: relay automatically turns lamp on when power supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger. Test push button: push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability. LED indicator light: indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

Wire guard: heavy-chrome-plated wire guard protects lamp heads or fixtures.

Integral time-delay relay: holds unit on for fixed interval of 15 minutes when power is restored after an outage Remote test: switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response

Integral self-test: factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and flashing red LED. 26B 4-6 PARKING LOT LIGHTING

Provide all components of the outdoor lighting system, including pole assemblies as detailed on the drawings and described below. All material furnished shall be of the best quality and workmanship, and the manufacturer may be required to furnish satisfactory evidence of the ability to supply the material in accordance with the drawings and specifications.

Poles and light fixtures shall be as noted on the drawings. If contractor desires to substitute other than the specified manufacturer(s), refer to article "substitutions" in this division, for requirements. No alternate manufacturers will be considered for approval without this prior submittal.

Furnish all poles with hand holes and no less than four high-strength steel anchor bolts for pole mounting. Each anchor bolt shall be threaded at the top, fitted with hexagon nuts, and shall have an "I" bend on the bottom of the bolt. All anchor bolts and nuts shall be hot-dip galvanized. All other small hardware required (bolts, nuts, washers, shims, etc.) Shall be galvanized. Provide pole finishes as noted on the drawings.

26B 5 MISCELLANEOUS ELECTRICAL

26B 5-1 WIRING OF EQUIPMENT

Provide all raceways and power wiring for all applicable Divisions equipment requiring electrical connections, including, but not limited to, pumps, water heaters, and HVAC equipment, and all line-voltage control and interlock wiring not provided under other Divisions. Connect per manufacturers' wiring diagrams. Coordinate with applicable Divisions for disconnects furnished with equipment, and provide all disconnect switches as required. After installing wiring, verify that each motor load has the correct phase rotation.

Verify the actual "maximum overcurrent protection" (MOCP) device ratings and "minimum circuit ampacity" (MCA) conductor sizing for mechanical equipment from the equipment nameplate. Base electrical installations on actual required amperages, which may vary somewhat from the conductor and equipment sizes shown on the drawings; however, in no case, reduce the size of conductors indicated on the drawings without authorization from the engineer. Provide properly sized electrical wiring and equipment without extra cost to the owner. Notify the engineer of all changes required in the electrical installation due to equipment variances so that the effects on feeders, branch circuits, panelboards, fuses and circuit breakers can be checked prior to purchasing and installation. Be responsible for coordinating with applicable Divisions to verify the actual ampacities and correct sizes of all conductors and overcurrent protective devices for all equipment, and correct overload heaters for all motors, when starters are provided under Division 26.

26B 5-2 WIRING OF THERMOSTATS, TIME AND TEMPERATURE CONTROLS

Provide all raceways, power wiring, and line-voltage control and interlock wiring not provided under other Divisions, for all thermostats, temperature control devices, and controls, including, but not limited to, night-stats, water heater interlocks, time switches and override timers. See mechanical drawings for locations and temperature control diagrams. Low-voltage conductors for thermostats and temperature control system may be run exposed above finished accessible ceilings, if approved and listed for this purpose, but shall be installed in conduit within walls and where exposed in the work areas. 26B 5-3 TELEPHONE SYSTEM PROVISIONS

Provide incoming telephone service raceways as indicated on drawings or as required by the serving telephone company. Provide 3/4-inch thick plywood board, fire-retardant-treated and stamped FRT, securely anchored to the wall, at the location and of the size as indicated on the drawings.

Provide flush mounted telephone outlet boxes with ³/₄ -inch EMT stub-up concealed to accessible ceiling space at locations as indicated on the drawings.

26B 5-4 DATA SYSTEM PROVISIONS Provide flush mounted data outlet boxes with ³/₄ -inch conduit stub-up concealed to accessible ceiling space at locations as indicated on the drawings. 26B 5-5 TIME SWITCHES

Time switches: electronic digital astronomical, type as indicated, with manual bypass switch, NEMA enclosure suitable for the environment installed; number and types of contacts, sequence, and voltage as indicated on the drawings, or as required, based on the time switch function and the number of branch circuits or contactors controlled. Provide wiring to photocells, contactors, relays or other control points as required. Manufacturers: Intermatic, Paragon or Tork. 26B 5-6 PHOTO CONTROL

The Photo Control Shall:

Provide automatic switching for lighting loads using a thermal design with built in delay to ensure that the controlled lighting does not switch off due to ambient light or lightning striking the photocell.

Have a rating based on UL testing at 50% power factor for ballast loads, be UL listed, and meet all applicable agency requirements

Be stem-mounting type with all necessary mounting hardware and instructions; have a housing constructed of high impact poly-carbonate; photo control components consisting of a metal film resistor, dual temperature compensating bi metal blades, snap action contact blades, chemically treated/polymer encapsulated cadmium sulfide photocell and silver alloy contacts to ensure reliable 5 year manufacturer warranted operation. Photo control shall be 100% factory tested for function within manufacturer's specified light levels.

Be from the same manufacturer of and totally compatible with the time switches specified above.

22,000a at 240v maximum 14,000a at 480v maximum as indicated on the drawings

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100,000a

Enclosures: NEMA rated for environment installed in or as indicated on the drawings. Coil voltage: 120v AC or as indicated on the drawings. General Electric, Siemens, Cutler Hammer or Asco.

Accessories: On-Off-Auto (OOA) selector switch Hand-Off-Auto (HOA) selector switch Auxiliary contacts (one two form-c) 26B 5-8 SIGNALING SYSTEM

walls and where exposed in the work areas.

button shall be Edwards 1786-C with solid brass cap.

Customer signal units shall consist of an Edwards 620-B pushbutton in a 5/8-inch id chrome plated pipe or conduit with an Edwards C-75 "cadet" two-note chime and transformer contained in a weatherproof enclosure as required, as located on the drawings.

26B 5-9 MISCELLANEOUS EQUIPMENT AND CONNECTIONS and wiring as required by refrigeration wiring diagrams. Provide all wiring and connections to illuminated cases.

All wiring and connections of exit door alarms. END OF SECTION 26B

Division 23.

Mechanically-held type, control interface shall be 2-wire input module with 3-wire output or as indicated on the drawings; Square D class 8903 LX or equivalent of General Electric, Siemens, Cutler Hammer or Asco. Mechanically-held type, control interface shall be 3-wire or as indicated on the drawings; Square D class 8903 LX or equivalent of Electrically-held type, control interface shall be 2-wire or as indicated on the drawings; Square D class 8903 I, or equivalent of General Electric, Cutler Hammer, Siemens or Asco.

Provide a complete and functioning 24v signaling system for loading door signals, and others as indicated on the drawings. Low-voltage conductors for signaling system may be run exposed above finished ceilings, but shall be installed in conduit within

Signal bell units shall be 4-inch, single-stroke type, Edwards Signaling & Security Systems (Edwards) no. 332-4G5, or equal, for 24v ac operation, installed on a standard single-gang box. Transformers shall be Edwards 590 series, or equal,, having adequate capacity for the connected load, plus 10-percent at 24v AC, and mounted in a standard two-gang box. Exterior push

Provide wiring of fire extinguishing system for exhaust hoods, including, but not limited to, electrical interlock of automatic fuel shut-off valves and/or provision of shunt trip breakers for shut-off of electrical equipment under hoods. Provide all wiring and connections for refrigerated cases and boxes, including lighting, superstructure lighting, and control cable

Provide all wiring and connections to equipment furnished by others, including, but not limited to, bakery equipment, deli equipment, meat room equipment, kitchen equipment, checkstand and scanners, exhaust hood fire extinguishing system, etc.

Install scan system electronic communication cable in underfloor duct (cable provided by others). Provide all raceways, wiring and related connections of devices to energy management system that are not the responsibility of

James R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2480 www.childersarchitect.com PROFESSIONAL SEAL Daniel ∉Miles∕ 25652 KI AHO CA5338(PE) 07/31/2020 CONSULTANT LOGO: HP ENGINEERING PROJECT NO. 190258R 100 % COMPLETE HP ENGINEERING INC. 5214 W. VILLAGE PARKWAY ROGERS, AR 72758 (479) 899-6370 www.hpengineeringinc.com NO NATIO ICE Ο Ζ OKE Ο C Ο 0 С, . Ш \mathbf{O} Т ()KEY PLAN: PROJECT PHASE: CONSTRUCTION DOCUMENTS REVISIONS DESCRIPTION # DATE DATE: JOB NUMBER 07-31-2020 18-01.10 SHEET NUMBER: E4.02 ELECTRICAL SPECIFICATIONS