DETROIT DIESEL
SECOND FLOOR RENOVATION
PHASE 2

13400 W. OUTER DRIVE, DETROIT MI

HOBBS + BLACK PROJECT #: 24-103

BIDS AND PERMITS
APRIL 18, 2025

OWNER AND CONSULTANTS:

OWNER
DETROIT DIESEL CORPORATION
13400 OUTER DRIVE WEST
DETROIT, MI, 48239
CONTACT: Elyse Finnegan
PHONE: (313) 655-6730
CONTACT: Anthony Podojil
PHONE: (313) 595-7107

ARCHITECT OF RECORD
HOBBS + BLACK ASSOCIATES, INC.
100 N. STATE STREET
ANN ARBOR, MI, 48104
CONTACT: Megan Hon
PHONE: (734) 663-4189

STRUCTURAL ENGINEER
JDH ENGINEERS
3000 IVANREST SW SUITE B
GRANDVILLE, MI, 49418
CONTACT: Tim DenHartigh, P.E., S.E., LEED AP
PHONE: (616) 531-6020

MECHANICAL / ELECTRICAL / PLUMBING ENGINEER
MA ENGINEERING
180 HIGH OAK ROAD
BLOOMFIELD HILLS, MI, 48304
CONTACT: John Richards, PE
PHONE: (248) 258-1610

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HOBBS + BLACK ARCHITECTS
100 N. State St.
Ann Arbor, MI 48104
P. 734.663.4189
www.hobbs-black.com

DETROIT DIESEL CORP.
DETROIT DIESEL SECOND FLOOR RENOVATION
13400 W. OUTER DR.
DETROIT MI

PROJECT

CONSULTANT

STATE OF MICHIGAN
THOMAS M. DILLENBECK
ARCHITECT
No. 1301057360
LICENSED ARCHITECT

COVER SHEET

SHEET TITLE

24-103

PROJECT NUMBER

A-000.2

SHEET NUMBER

MATERIAL LEGEND

SECTION

▨ ALUMINUM	▨ BATT INSULATION	▨ BLOCK	▨ BLOCKING	▨ BRICK	▨ CONCRETE/PRECAST
▨ COMPACTED FILL	▨ DIMENSIONAL LUMBER	▨ EARTH	▨ GYPSUM BOARD PLASTER	▨ PLYWOOD	▨ RIGID INSULATION
▨ SAND	▨ STEEL	▨ TILE	▨ WOOD		

SYMBOLS LEGEND

DETAIL SYMBOL :
B1 A-100 — DETAIL NUMBER — SHEET DETAIL IS REFERENCED ON

DRAWING TITLES :
B1 A-500 A-100 A-101 A-102 OR B1 A-500 TYPICAL TITLE SCALE - 1" = 1"

SECTION CUT SYMBOL :
X# A-100 — SECTION NUMBER — SHEET SECTION IS REFERENCED ON

REVISION :
A

BUILDING SECTIONS:
B10 A-500 — SECTION NUMBER — SHEET SECTION IS REFERENCED ON — B10 A-500

WINDOW TAG :
W1

ELEVATION SYMBOLS :
H5 A-800 — ELEVATION NUMBER — SHEET ELEVATION IS REFERENCED ON — B1 C1 A-800 B5 C5

LARGE SCALE PLAN or DETAIL:
B1 A-100 — ENLARGED PLAN OR DETAIL NUMBER — SHEET DETAIL IS REFERENCED ON

GRADE ELEVATIONS:
PROPOSED + 100.00 F.F.EL. EXISTING + 101.50 T.O.C.

ROOM NAME & NO. & FINISHES:
ROOM NAME ROOM NAME 100 ROOM NUMBER
ROOM NAME ROOM NAME 100 FLOOR BASE WALL CEILING FINISHES

DOOR NUMBER :
100 DOOR TYPE NUMBER

MATERIAL CHANGE :
CARPET VC TILE

PARTITION TYPE :
1

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH APPLICABLE REGULATIONS AND WITH THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
2. GENERAL NOTES APPLY TO ALL DRAWINGS.
3. ALL WORK SHALL BE DONE TO THE HIGHEST STANDARDS OF THE INDUSTRY.
4. ALL WORK DESCRIBED BY THESE CONSTRUCTION DOCUMENTS SHALL COMPLY WITH THE CODES LISTED UNDER "APPLICABLE CODES".
5. THE GENERAL CONTRACTOR DETERMINES THE DIVISION OF WORK BETWEEN TRADES. THE DESIGN DOCUMENTS ARE NOT TO BE USED FOR THIS PURPOSE. PLEASE REFER TO GENERAL CONTRACTOR'S PROJECT MANUAL ISSUED FOR BIDS & CONSTRUCTION.
6. THE BUILDING WILL BE EQUIPPED WITH AN AUTOMATIC SPRINKLER FIRE SUPPRESSION SYSTEM INSTALLED THROUGHOUT.
7. PRIOR TO SUBMITTING A BID PROPOSAL AND PRIOR TO THE START OF WORK, THE CONTRACTOR(S) SHALL EXAMINE COMPLETE SETS OF DESIGN DOCUMENTS AND NOTIFY THE GENERAL CONTRACTOR IMMEDIATELY OF ANY PROBLEMS OR DISCREPANCIES. PARTIAL SETS OF DOCUMENTS SHOULD NOT BE USED. A SEPARATE BOUND PROJECT MANUAL WITH STANDARD CSI DIVISIONS ACCOMPANIES THESE DRAWINGS. PLEASE REFER TO GENERAL CONTRACTOR'S PROJECT MANUAL ISSUED FOR BIDS & CONSTRUCTION.
8. PRIOR TO SUBMITTING A BID PROPOSAL AND PRIOR TO THE START OF WORK, THE CONTRACTOR(S) SHALL EXAMINE AND VERIFY ALL EXISTING CONDITIONS AT THE SITE AND NOTIFY THE GENERAL CONTRACTOR IMMEDIATELY OF ANY PROBLEMS OR DISCREPANCIES. PLEASE REFER TO GENERAL CONTRACTOR'S PROJECT MANUAL ISSUED FOR BIDS & CONSTRUCTION.
9. ALL WORK SHOWN IS TO BE INCLUDED IN THE SCOPE OF WORK UNLESS OTHERWISE NOTED AS NOT IN CONTRACT (N.I.C.), OR SPECIFICALLY NOTED "BY OWNER".
10. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS.
11. CONTRACTORS SHALL NOTIFY LOCAL UTILITY COMPANIES A MINIMUM OF 72 HOURS PRIOR TO ANY EXCAVATION.
12. ALL COMPONENTS REQUIRED FOR THE PROPER COMPLETION OF THE WORK ARE TO BE INCLUDED. THE GENERAL CONTRACTOR SHALL DETERMINE WHICH COMPONENTS ARE PROVIDED BY WHICH TRADE.
13. THE FACT THAT BIDS ARE COMPETITIVE WILL NOT BE ACCEPTED AS A LATER JUSTIFICATION FOR CHANGE ORDER REQUESTS.
14. ALL SHOP DRAWINGS ARE TO BE ORIGINAL DRAWINGS. ARCHITECTS AND ENGINEER'S DESIGN DRAWINGS ARE NOT TO BE REPRODUCED OR DUPLICATED FOR THIS PURPOSE.
15. OFF HOUR WORK SHALL BE COORDINATED AND VERIFIED IN ADVANCE WITH THE OWNER AND GENERAL CONTRACTOR AND SHALL BE INCLUDED IN ALL BID PROPOSALS.
16. NO ELECTRICAL CONDUIT SHALL BE LOCATED WITHIN THE UPPER LEVEL SLABS.
17. ALL TEMPORARY ENCLOSURES SHALL PROTECT THE ENCLOSED AND/OR ADJOINING USABLE SPACES FROM THE NATURAL ELEMENTS (SUCH AS RAIN, WIND, TEMPERATURE EXTREMES) AT ALL TIMES AND BE MAINTAINED ACCORDINGLY. PUMP WATER FROM EXPOSED CONSTRUCTION AREAS AS REQUIRED TO PROTECT ADJOINING PUBLIC AND PRIVATE SPACES AND AS REQUIRED TO MAINTAIN A SAFE WORK AREA. DO NOT LET WATER OR SOIL ACCUMULATE AGAINST TEMPORARY CONSTRUCTIONS. PROVIDE STORM WATER DISCHARGE SYSTEMS FOR ALL TEMPORARY CONSTRUCTION AND WORK AREAS. DO NOT ALLOW WATER INFILTRATION OR WATER STAINING TO OCCUR IN NEWLY CONSTRUCTED OR EXISTING BUILDING AREAS AT ALL PHASES OF CONSTRUCTION. SEE PROJECT MANUAL.
18. CONTRACTOR MUST VERIFY ACTUAL FIELD CONDITIONS PRIOR TO BEGINNING WORK.

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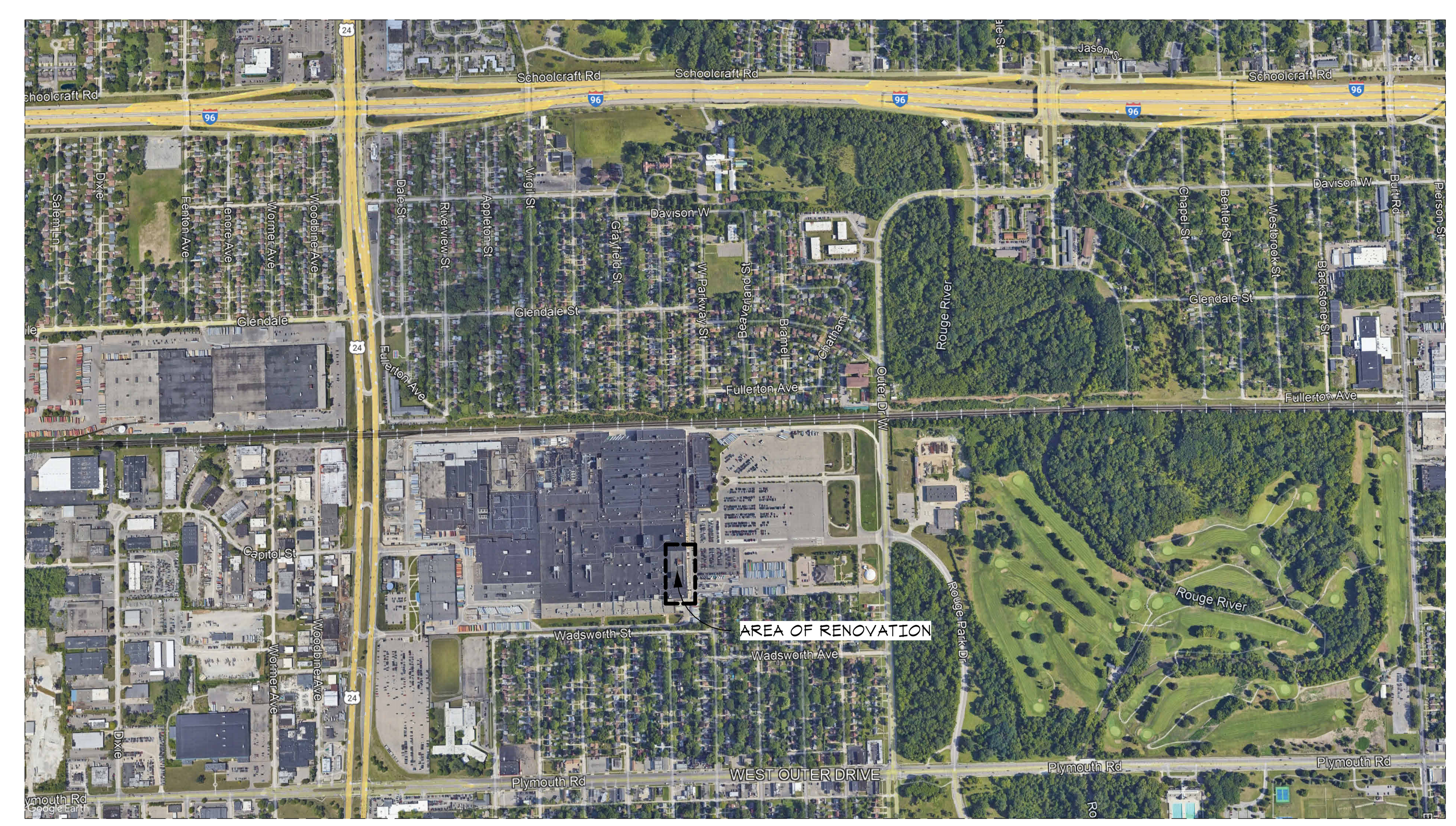
ABBREVIATIONS

ABOVE FINISHED FLOOR	A.F.F.	EACH	EA.	LIGHTING PANEL	L.P.	ROOF SUMP	R.S.
ACCESS DOOR	A.D.	EACH FACE	E.F.	LIGHTWEIGHT	LT'WT	ROOFING	RF'G
ACCESS PANEL	A.P.	EACH WAY	E.W.	LIVE LOAD	L.L.	ROOM	RM.
ACOUSTIC, ACOUSTICAL	ACOUS.	ELASTOMERIC WATERPROOFING	ELAS. W.P.	LONG LEG HORIZONTAL	L.L.H.	ROUGH OPENING	R.O.
ACOUSTIC CEILING TILE	A.C.T.	ELECTRIC, ELECTRICAL	ELEC.	LONG LEG VERTICAL	L.L.V.	ROUND	RND
ADDITION	ADD'N	ELECTRICAL PANEL	E.P.	LOUVER OPENING	L.O.	RUBBER TILE	R.T.
ADJUSTABLE	ADJ.	ELECTRIC WATER COOLER	EWC	LOW POINT	L.P.	SANITARY	SAN.
ALTERNATE	ALT.	ELEVATION (HEIGHT LEVEL)	EL.	MACHINE	MACH.	SANITARY NAPKIN DISPENSER	S.N.D.
ALUMINUM	ALUM.	ELEVATOR	ELEV.	MANHOLE	MH	SANITARY NAPKIN DISPOSAL	S.N. DISP.
ANCHOR, ANCHORAGE	ANCH.	ELIMINATE	ELIM.	MARBLE THRESHOLD	M.T.	SCHEDULE	SCHED.
ANCHOR BOLTS	A.B.	EMERGENCY	EMERG.	MASONRY	MAS.	SECRETARY	SEC.
AND	&	ENAMEL	ENAM.	MASONRY OPENING	M.O.	SECTION	SECT.
ANGLE	L	ENCLOSURE	ENCL.	MATERIAL	MAT'L	SERVICE SINK	S.S.
ANODIZED	ANOD.	ENVIRONMENT	ENVIR.	MAXIMUM	MAX.	SHEET	SHT.
APPROVED	APPR.	EQUAL	EQ.	MECHANICAL	MECH.	SHEET METAL	SHT. MET.
APPROXIMATE	APPROX.	EQUIPMENT	EQUIP.	MEDIUM	MED.	SHELVING	SHLV'G
ARCHITECT, ARCHITECTURAL	ARCH.	EXCAVATED	EXC.	METAL or METALLIC	MET.	SHOWER	SH'R
ASH TRAY	A.T.	EXISTING	EXIST.	METAL EDGE STRIP	M.E.S.	SIMILIAR	SIM.
ASPHALT	ASPH.	EXPANSION	EXP.	LEVEL 4	MEZZ.	SOAP DISPENSER	S. DISP.
ASSEMBLY	ASS'Y	EXPANSION BOLT	EXP. B.	MINIMUM	MIN.	SOLID CORE	SC.
ASSISTANT	ASS'T	EXPANSION JOINT	EJ	MIRROR	MIR.	SOUTH	S.
AT	@	EXTERIOR	EXT.	MISCELLANEOUS	MISC.	SPEAKER	SPK'R
AUTOMATIC	AUTO	FABRIC	FAB.	MISC. IRON CONTRACTOR	M.I.C.	SPECIFICATIONS	SPEC.
AUXILIARY	AUX.	FEET, FOOT	FT.	MOUNTED	MT'D	SQUARE	SQ.
BARRIER FREE	B.F.	FINISH, FINISHED	FIN.	MULLION	MULL.	SQUARE FEET (FOOT)	S.F.
BASE PLATE	B. PL.	FINISH FLOOR	F.F.	NATURAL	NATURAL.	STAGGERED	STAG'D
BASEMENT	BSM'T	FIRE ALARM	F.A.	NOMINAL	NOM.	STAINLESS STEEL	ST. ST'L
BEAM	BM	FIRE EXTINGUISHER CABINET	F.E.C.	NORTH	N	STANDARD	ST'D
BEARING	BR'G	FIRE HYDRANT	F.H.	NOT IN CONTRACT	N.I.C.	STEEL	ST'L
BENCH MARK	B.M.	FIRE HOSE CABINET	F.H.C.	NOT TO SCALE	N.T.S.	STORAGE	STOR.
BETWEEN	BET.	FIRE VALVE CABINET	F.V.C.	NUMBER	NO. or #	STREET	ST.
BITUMINOUS	BITUM.	FIREPROOFING	FPRF'G	OFFICE	OFF.	STRUCTURAL	STRUCT.
BLOCK	BL'K	FIXTURE	FIXT.	ON CENTER	O.C.	STRUCTURAL STEEL	S. ST'L
BLOCKING	BLK'G	FLASHING	FLASH.	OPENING	OPN'G	STRUCTURAL STEEL CONTRACTOR	S.S.C.
BOARD	BD.	FLOOR	FL'R	OPPOSITE	OPP.	SURFACE	SURF.
BOTTOM	BOTT.	FLOOR DRAIN	F.D.	OPPOSITE HAND	OPP. HD.	SUSPEND, SUSPENSION	SUSP.
BUILDING	BLD'G	FOOTING	FT'G	OUTSIDE DIAMETER	O.D.	TACKBOARD	TACK BD.
BUILT-UP ROOFING	B.U.R.	FOUNDATION	FD'N	OVERHEAD	O.H.	TELEPHONE	TEL.
CABINET	CAB.	FRAME	FR.	PAINTED	PT'D	TEMPERATURE	TEMP.
CAST IN PLACE	C.I.P.	FURNISH, FURNISHED	FURN.	PAIR	PR	TEMPERED GLASS	TEMP. GL.
CATCH BASIN	C.B.	FURRED, FURRING	FURR.	PAPER TOWEL DISPENSER	P.T.D.	THICK, THICKNESS	TH'K
CEILING	CL'G	GAS	G.	PAPER TOWEL RECEPTACLE	P.T.R.	THRESHOLD	THRES.
CENTER LINE	C.L.	GAUGE	GA.	PARTITION	PART'N	TOILET	TOIL.
CENTER TO CENTER	C/C	GALVANIZED	GALV.	PAVEMENT	PVM'T	TOILET PAPER DISPENSER	T.P.D.
CERAMIC	CER.	GALVANIZED IRON	G.I.	PAVING	PV'G	TOILET PAPER HOLDER	T.P.H.
CERAMIC TILE	C.T.	GENERAL	GEN.	PENTHOUSE	PENTHSE	TONGUE AND GROOVE	T & G
CHALKBOARD	CHALK BD.	GENERAL CONTRACTOR	G.C.	PERFORATED	PERF.	TOP AND BOTTOM	T & B
CHANNEL	C	GLASS	GL.	PERIMETER	PERIM.	TOP OF FOOTING	T.O.F.
CHECKERED PLATE	CHK'D PL.	GRADE	GR.	PHYSICALLY HANDICAPPED	P.H.	TOP OF MASONRY	T.O.M.
CLOSET	CLO.	GYPSUM	GYP.	PIECES	PC'S	TOP OF COVER or CURB	T/C
COLD WATER	CW	HARDWARE	HDWR	PLASTER	PLAS.	TOP OF STEEL	T.O.S.
COLUMN	COL.	HANDICAPPED	H.C.	PLASTIC LAMINATE	PL. LAM.	TOP OF WALL	T/W
COMPACTED	COMP.	HEATING, VENTILATION, AIR CONDITIONING	HVAC	PLATE	PL.	TOTAL LOAD	T.L.
CONCRETE	CONC.	HEIGHT	HG'T	PLYWOOD	PLY'WD	TREAD	T.
CONCRETE MASONRY UNIT	C.M.U.	HIGH POINT	H.P.	POINT	PT.	TYPICAL	TYP.
CONFERENCE	CONF.	HIGH PRESSURE LAMINATE	H.P.L.	POINTS	PT'S	UNDERWRITER'S LABORATORIES, INC.	UL
CONNECT, CONNECTION	CONN.	HOLLOW METAL	H.M.	POLISH, POLISHED	POL.	UNLESS NOTED OTHERWISE	U.N.O.
CONSTRUCTION	CONST.	HORIZONTAL, HORIZONTALLY	HORIZ.	POLYVINYL CHLORIDE	PVC	VENT THRU ROOF	V.T.R.
CONTROL or CONSTRUCTION JOINT	CJ	HOSE BIBB	H.B.	POUNDS	LBS	VERIFY IN FIELD	V.I.F.
CONTINUE, CONTINUOUS	CONT.	HOT WATER	HW	POUNDS PER SQUARE FOOT	P.S.F.	VERTICAL, VERTICALLY	VERT.
CONTRACTOR	CONTR.	HOT WATER HEATER	H.W.H.	POWER	PWR.	VESTIBULE	VEST.
CORRIDOR, CORRUGATED	CORR.	HYDRANT	HYD.	PRECAST	P.C.	VINYL COMPOSITION TILE	V.C.T.
COUNTER	CT'R	INCH or INCHES	IN. or "	PREFABRICATED	PREFAB.	VINYL TILE	V.T.
DAMPPROOFING	D.P.	INFORMATION	INFO.	PRESSURE TREATED	P.T.	VINYL WALL COVERING	V.W.C.
DEAD LOAD	D.L.	INSIDE DIAMETER	I.D.	PROJECT, PROJECTION	PROJ.	VOLT	V.
DEMOLITION	DEMO	INSTALL, INSTALLATION	INSTAL.	PROPERTY	PROP.	WATER RESISTANT	W.R.
DEPARTMENT	DEPT.	INSULATE, INSULATION	INSUL.	QUARRY TILE	Q.T.	WATERPROOFING	WP
DETAIL	DET.	INTERIOR	INT.	RAIN CONDUCTOR	R.C.	WEIGHT	ST
DIAMETER	DIA.	INVERT	INV.	RADIUS	RAD.	WELDED WIRE FABRIC	W.W.F.
DIFFUSER	DIFF	INVERT ELEVATION	I.E.	REFERENCE	REF.	WINDOW	WIN
DIMENSION	DIM.	JOINT	JT.	REFLECTED, REFLECTIVE	REFL.	WINDOW CONTRACTOR	WIN. CONTR.
DIRECTORY	DIR.	KICK PLATE	K.P.	REFRIGERATION or REFRIGERATOR	REFRIG.	WINDOW OPENING	W.O.
DITTO	DO.	KNOCK-OUT PANEL	K.O.P.	REINFORCE, REINFORCING or REINFORCEMENT	REINF.	WELDED WIRE MESH	W.W.M.
DOOR	DR.	LAMINATE, LAMINATED	LAM.	REQUIRED	REQ'D	WIRE MESH	W.M.
DOOR OPENING	D.O.	LEFT HAND	L.H.	RESILIENT	RESIL.	WITH	W/
DOUBLE	DB'L	LEFT HAND REVERSE	L.H.R.	REVISED, REVISION	REV.	WITHOUT	W/O
DOWN	DN	LIGHT	LT.	RIGHT HAND	R.H.	WOMEN	WOM.
DOWELS	DW'LS	LIGHTING	LT'G	RIGHT HAND REVERSE	R.H.R.	WOOD	WD.
DRAWING	DW'G			RIGHT OF WAY	R.O.W.	YARD	YD.
DRINKING FOUNTAIN	D.F.			RISER	R.		



SITE LOCATION MAP

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THOMAS M DILLENBECK
ARCHITECT
No. 1301057360
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GENERAL INFORMATION

A. GENERAL

I. CONFORM TO ALL GENERAL AND SPECIAL CONDITIONS OF CONTRACT AS SPECIFIED BY ARCHITECT AND OWNER.
1. SPECIFICATIDNS ARE APPLICABLE TD ALL CONTRACTDRS AND/DR SUBCDNTRACTORS.
2. CHECK OTHER PLANS AND SPECIFICATIONS AND FULLY CDORDINATE WITH OTHER SYSTEMS ON GRADES.
3. VISIT SITE, CHECK FACILITIES AND CONDITIONS, VERIFY ALL UTILITY CONNECTIONS, AND TAKE ALL ITEMS INTO CONSIDERATION IN BID.
4. SYSTEMS ARE TO BE COMPLETE AND WORKABLE IN ALL RESPECTS, PLACED IN OPERATION AND PROPERLY ADJUSTED.
5. EACH CONTRACTOR SHALL PROVIDE FOR HIS OWN CLEAN UP, REMOVAL AND LEGAL DISPOSAL OF ALL RUBBISH ON A

I. MINIMUM UNCOATED-STEEL THICKNESS: 0.0329 INCH.

2. MINIMUM FLANGE WIDTH: 1-1/4 INCHES.
1. OBTAIN PERMITS AND PAY ALL FEES. ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS.
2. REVIEW FOR THE GENERAL BUILDING PERMIT WILL BE OBTAINED BY THE ARCHITECT. PERMIT FEE IS BY THE CONTRACTOR.

A. BASE EQUIPMENT, MATERIALS AND SUBSTITUTIONS

a. ALL EQUIPMENT AND MATERIALS SHALL BE NEW UNLESS OTHERWISE NOTED. NEW MATERIALS SHALL BE FREE OF DEFECTS.
1. BASE EQUIPMENT MANUFACTURER, MODEL, AND CAPACITY OF EQUIPMENT ARE LISTED ON THE DRAWINGS OR IN THIS SPECIFICATION. ANY OTHER MANUFACTURER IS CONSIDERED A SUBSTITUTION.
2. SUBSTITUTIONS ARE SUBJECT TO THE APPROVAL OF THE OWNER. IF A SUBSTITUTION IS SUBMITTED, INCLUDE COMPLETE PERFORMANCE FACTS FOR EVALUATION.
3. IF SUBSTITUTIONS ARE APPROVED, NOTIFY ALL OTHER CONTRACTORS, SUBCONTRACTORS OF TRADES AFFECTED BY SUBSTITUTION AND FULLY COORDINATE. ANY COSTS RESULTING FROM SUBSTITUTION, WHETHER BY CONTRACTORS OR OTHERS, SHALL BE RESPONSIBILITY OF AND PAID FOR BY SUBSTITUTING CONTRACTOR.
4. ALL EQUIPMENT SHALL BE INSTALLED IN FULL ACCORDANCE WITH THE MANUFACTURER'S DATA AND INSTALLATION INSTRUCTIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK AND CONFORM TO THESE REQUIREMENTS PRIOR TO STARTING WORK.

C. CUTTING, PATCHING AND DRILLING

a. ALL CUTTING AND PATCHING OF THE BUILDING CONSTRUCTION AS REQUIRED SHALL BE IN A NEAT AND PROFESSIONAL MANNER.
1. NEATLY SAW CUT ALL RECTANGULAR OPENINGS, SET SLEEVE THROUGH OPENING, AND FINISH PATCH OR PROVIDE TRIM FLANGE AROUND OPENING.
2. CORE DRILL AND SLEEVE ALL ROUND OPENINGS.
3. DO NOT CUT ANY STRUCTURAL COMPONENTS WITHOUT ARCHITECT'S APPROVAL.
4. PATCH AND FINISH TO MATCH ADJACENT AREAS THAT HAVE BEEN CUT, DAMAGED OR MODIFIED AS A RESULT OF THE INSTALLATIONS OF THE MECHANICAL OR ELECTRICAL EQUIPMENT. FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER.

D. WARRANTY

a. PROVIDE FULL WARRANTY ON ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR ONE (I) YEAR FROM DATE OF ACCEPTANCE, UNLESS NOTED OTHERWISE.
1. EXTEND ALL MANUFACTURER'S WARRANTIES TO OWNER, INCLUDING FIVE (SJ YEAR HEAT EXCHANGER EXTENDED WARRANTY ON HVAC EQUIPMENT.
2. REPAIR OR REPLACE WITHOUT CHARGE TO THE OWNER ALL ITEMS FOUND DEFECTIVE DURING THE WARRANTY PERIOD.

E. ALTERATION PROCEDURES

a. ALTERATION SCOPE: PERFORM ALL ALTERATION AND REMOVAL WORK, INCLUDING THE ALTERATION AND REMOVAL WORK INCIDENTAL TO THAT SHDWN DR SPECIFIED, TO COMPLETE THE ALTERATION AND REMOVAL WORK AS SHDWN ON THE DRAWINGS, AS SPECIFIED, OR TO COMPLETE CONTRACTUAL REQUIREMENTS.
1. COORDINATION: WORK IN CLOSE COORDINATION WITH THE OTHER CONTRACTORS ON THE PROJECT TO ACCOMPLISH THE ALTERATIONS FOR THE WHOLE PROJECT.
2. ADDITIONAL WORK: IN ADDITION TO WORK SHOWN:
   A. MODIFY EXISTING CONSTRUCTION THAT INTERFERES WITH NEW CONSTRUCTION, TO THE EXTENT OF THE INTERFERENCE.
   B. CUT AND LATER PATCH ALL HOLES AND OPENINGS IN EXISTING CONSTRUCTION NECESSARY FOR CONNECTION OF BUILDING WORK; FOR THE PASSAGE OR CONNECTION OF STRUCTURAL MEMBERS; AND FOR THE BUILDING ALTERATIONS IN CONNECTION WITH MECHANICAL AND ELECTRICAL WORK.
   C. PROPERLY REPAIR ALL SURFACES LEFT IN PLACE AND SCHEDULED TO BE EXPOSED, ALL SURFACES DAMAGED DUE TO ALTERATIONS, AND ALL DAMAGED SURFACES PREVIOUSLY CONCEALED THAT WILL BE LEFT EXPOSED DUE TO ALTERATIONS, EVEN THOUGH SUCH DAMAGE WAS NOT CAUSED BY WORK OF THIS CONTRACT.
   D. BE RESPONSIBLE FOR A COMPLETE JOB, WHETHER DONE AS WORK UNDER THIS SECTION OR ASSIGNED TO THE PARTICULAR TRADES INVOLVED.
3. SURVEY/TIE-INS: PRIOR TO SUBMITTING SHOP DRAWINGS OR BEGINNING SHOP FABRICATION OR FIELD CONSTRUCTION OF WORK IN CONNECTION WITH THE ALTERATIONS, SURVEY EXISTING CONSTRUCTION INCLUDING STRUCTURE, FINISH, AND EQUIPMENT ADJACENT TO CONSTRUCTION TO BE REMOVED. CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURATE TIE-IN OF THE NEW WORK TO THE EXISTING CONSTRUCTION.
4. CONDUCT OF OPERATIONS: CONDUCT OPERATIONS IN SUCH MANNER AS TO CREATE A MINIMUM OF NOISE, DUST, AND OTHER DISTURBANCE.
   A. DO NOT ALLOW REMOVED MATERIALS, RUBBISH AND DEBRIS TO ACCUMULATE. KEEP THE CONSTRUCTION AREAS AND ALL PUBLIC AND PRIVATE PROPERTY USED IN CONNECTION WITH THE WORK IN A NEAT ORDERLY CONDITION.
   B. PLAN AND COORDINATE ACTIVITIES WITH THE OWNER IN ORDER TO PROVIDE ALL NECESSARY CONTROLS FOR THE ABATEMENT OF DUST, NOISE, AND INCONVENIENCE TO OWNER'S PERSONNEL AND OPERATIONS DURING ALL PHASES OF THE WORK. DO NOT SHUT DOWN OR BLOCK OFF ANY AREAS WITHOUT PRIOR APPROVAL OF THE OWNER.
   C. DO NOT INTERRUPT EXISTING UTILITIES EXCEPT AS SPECIFIED OR WHEN APPROVED IN WRITING BY THE OWNER, AND THEN ONLY AFTER TEMPORARY UTILITY SERVICES HAVE BEEN PROVIDED BY THE CONTRACTOR AND APPROVED BY THE OWNER OR PROJECT SITE REPRESENTATIVE.
   D. CONDUCT ALTERATIONS AND DEBRIS REMOVAL IN SUCH A MANNER AS TO INSURE
   E. MINIMUM INTERFERENCE WITH STREETS, WALKS, PASSAGEWAYS AND OTHER FACILITIES OCCUPIED BY THE OWNER; SUCH FACILITIES SHALL NOT BE CLOSED OFF TO TRAFFIC OR IN ANY WAY OBSTRUCTED WITHOUT PRIOR WRITTEN PERMISSION.
   F. AT THE COMPLETION OF THE WORK, REMOVE ALL TEMPORARY ENCLOSURES AND PROTECTIVE DEVICES AND LEAVE THE PREMISES CLEAN.
5. SAFETY: METHODS SHALL BE SUCH AS TO ASSURE SAFE WORKING CONDITIONS IN ACCORDANCE WITH APPLICABLE SAFETY LAWS; TO PREVENT COLLAPSE OF ANY SECTION; AND TO PREVENT DAMAGE TO FACILITIES INDICATED TO REMAIN IN PLACE AND TO NEW CONSTRUCTION.
6. FIRE PROTECTION: PERFORM THERMAL AND FLAME-CUTTING OPERATIONS PER THE HAZARD PRECAUTION REQUIREMENTS OF THE OWNER'S SAFETY REQUIREMENTS OR THAT REQUIRED BY LAW.
   A. IF CUTTING TORCHES ARE USED, TAKE ALL PRECAUTIONS NECESSARY TO PREVENT SETTING OF FIRES, INCLUDING USE OF FIREPROOF TARPAULINS AND MAINTENANCE OF FIRE EXTINGUISHING APPARATUS ADJACENT TO CUTTING AREA.
   B. OBTAIN DAILY PERMIT FROM OWNERS PLANT PROTECTION DEPARTMENT FOR USING CUTTING TORCHES, PRIOR TO THEIR USE.
7. REMOVED MATERIALS: REMOVED MATERIALS NOT INDICATED FOR TURNING OVER TO THE OWNER OR INDICATED FOR REUSE, AS WELL AS RUBBLE AND DEBRIS RESULTING FROM SUCH OPERATIORNS, SHALL BECOME THE PROPOERTY OF THE CONSTRUCTOR ANS SHALL BE REMOVED DAILY FROM THE PROJECT SITE AND LEGALLY DISPOSED OF OFF THE PROJECT SITE
   A. IN REMOVING SALVAGEABLE ITEMS THAT ARE SCHEDULED OR SPECIFIED FOR REUSE OR THAT ARE TO BE TURNED OVER TO THE OWNER, EXERCISE CARE IN REMOVING SUCH ITEMS SO AS NOT TO DAMA.GE THEM.
   B. IF THE CONSTRUCTION SCHEDULE DOES NOT ALLOW IMMEDIATE REINSTALLATION OF REMOVED ITEMS TO BE REUSED, PROVIDE ADEQUATE STORAGE FACILITIES FOR SUCH ITEMS IN STORAGE AREA DESIGNATED BY OWNER, TRANSPORT SUCH ITEMS TO THE STORAGE AREA, STORE THEM, AND PROTECT THEM FROM DAMAGE DURING STORAGE.
   C. WHEN THE CONSTRUCTION SCHEDULE CALLS FOR INSTALLATION OF STORED ITEMS TO BE REUSED, REMOVE SUCH ITEMS FROM STORAGE, TRANSPORT THEM TO LOCATION(S) OF INSTALLATION, INSTALL THEM, AND CLEAN UP
   D. STORAGE AREA.
8. SUPPORT OF EXISTING STRUCTURE: PRIOR TO REMOVING EXISTING CONSTRUCTION, PROVIDE TEMPORARY SHEETING, UNDERPINNING, SHORING, AND BRACING TO CARRY THE LOADS AND STRESSES WITHSTOOD IN PLACE BY THE ITEMS TO BE REMOVED.
   A. SUCH TEMPORARY CONSTRUCTION SHALL BE PLACED SO AS NOTTO BLOCK FIRE EXITWAYS OF THE EXISTING BUILDING, SO AS NOT TO INTERFERE WITH OWNER'S OPERATIONS, AND SO AS TO ALLOW SPACE FOR PERFORMING THE REQUIRED ALTERATIONS.
   B. BE RESPONSIBLEFOR THE ADEQUACYOF TEMPORARYSUPPORT OF STRUCTURESAS WELL AS FOR DAMAGE TO THE EXISTING BUILDINGAND CONTENTS THEREOF RESULTINGFROM INADEQUATE SHEETINGUNDERPINNINGSHORING AND BRACING.
   C. AFTER MATERIALS AND EQUIPMENT ARE REMOVED, INSPECT THE STRUCTURE AND EQUIPMENT TO REMAIN IN PLACE AND NOTIFY THE ARCHITECT-ENGINEER OF DEFECTS UNCOVERED AND NOT PREVIOUSLY IDENTIFIED BY THE CONTRACT DOCUMENTS. REPAIR OF SUCH DEFECTS AND OTHER ADDITIONAL WORK REQUIRED BY THE ARCHITECT-ENGINEER WILL BE COMPENSATEDBYCONTRACTADJUSTMENTPER THE CONTRACT DOCUMENTS.PLACE TEMPORARY PARITIONS SO AS TO PROVIDE ADEQUATE SPACE TO CARRY ON THE ALTERATION OPERATIONS BUT SO AS NOT TO INTERFERE WITH OWNERS OPERATATIONS, AND SO AS NOT TO ENCOARCH ON FIRE EXITWAYS OF EXISTING BUILDINGS. PLACE PARTITIONS WHERE SHOWN WHERE APPROVED BY THE OWNER OR PROJECT SITE PREPRESENTATIVE.
9. TEMPORARYPARTITIONSAND CLOSURESPROVIDE WEATHERTIGHTPARTITIONSOR CLOSURESAT EXTERIOROPENINGS TO ISOLATE THE AREAS FROM THE REST OF THE BUILDING AND TO PROTECT THE BUILDING FROM THE ELEMENTS WHEREALTERATIONOPERATIONS WOULDEXPOSE THE INTERIORTO THE ELEMENTS.PROVIDE DUST-TIGHTPARTITIONS AROUND INTERIORAREAS TO ISOLATETHE AREAS FROM THE REST OF THE BUILDINGWHERE ALTERATIONOPERATIONS WOULD CREATE DUST CONDITIONS, INCLUDING DUST-TIGHT CLOSURES BELOW SUPPORTED FLOOR SLABS WHEN MAKINGNEW OPENINGSTHEREINAND WEATHERTIGHTCLOSURESOVER ROOFDECKSWHEN MAKINGNEW OPENINGS THEREIN.
   A. PROVIDE WEATHERPROOF PARTITIONS OF WOOD FRAMING AND PLYWOOD SHEATHING (TAPE JOINTS AND PAINT WOOD WITH EXTERIORTYPE PAINT)WHERE SHOWN OR DIRECTEDACCEPTABLE TO THE OWNER OR PROJECT SITE REPRESENTATIVE, PROVIDE ACCESS DOORSAS REQUIREDCOMPLETEWITH HARDWAREAND LOCKABLE WHERE REQUIRED FOR OWNER'S SECURITY.
   B. EXISTINGEXTERIORWALLS TO BE REMOVEDMAY BE LEFT IN PLACE (WHERE NOTEDAPPROVED)TO SERVE AS SEPARATION WALLS DURING CONSTRUCTION, AND THEN BE REMOVED WHEN APPROVED OR DIRECTED BY THE OWNER OR PROJECT SITE REPRESENTATIVE.
   C. WHERE OWNER'SOPERATIONSPERSONNELAND EQUIPMENTARE SUBJECT TO FLYINGDUST,DEBRIS, ETCFROM REMOVEAL OR CONSTRUCTION OPERATIONS, PROVIDE HEAVY DUTY VINYL SHEET SECURED TO THE CEILING AND FLOOR CONSTRUCTION IN MANNOER ACCEPTABLE TO THE OWNER OR PROJECT SITE REPRESENTATIVE; WHERE REQUIRED TO PERMIT PASSAGE OF MATERIALS AND PERSONNEL, SHEETS SHALL BE OVERLAPPED AND SECURED.
   D. PLACE TEMPORARY PARTITIONAS SO AS TO PROVIDE ADEQUATE SPACE TO CARRY ON THE ALTERTION OPERATIONS BUT SO AS NOT TO INTERFEERE WITH OWNERSOPERATATIONS, AND SO AS NOT TO ENCROACH ON FIRE EXITWAYSOF THE EXISTING BUILDING. PLACE PARTITIONS WHERE SHOWN ON DRAWINGS AND, IF NOT SHOWN, WHERE APPREOVED BY OWNER OR PROJECT SITE REPRESENTATIVE.
   E. TEMPORARY PARTITIONS SHALL BE OF FLAME-RESISTANT CONSTRUCTION. SUBMIT PROPOSED METHOD OF PARTITION CONSTRUCTION FOR APPROVAL.
   F. OPENINGS MADE IN EXTERIOR WALLS AND ROOF SHALL BE CLOSED THE SAME DAY THAT THEY ARE OPENED, EITHER BY PERMANENT CONSTRUCTION OR WITH VANDALPROOF, WEATHERPROOF, DUST-TIGHT TEMPORARY CLOSURES. NO OPENINGS IN EXTERIOR WALLS OR ROOF SHALL BE ALLOWED TO REMAIN OPEN; SECURITY OF THE BUILDING MUST BE MAINTAINED AT ALL TIMES.
10. PERSONNEL AND BUILDING PROTECTIONS: PROVIDE, AND LATER REMOVE, TEMPORARY BARRIERS, WARNING SIGNS, BLINKER LIGHTS, AND OTHER SAFETY MEASURES, AS REQUIRED FOR THE PROTECTION OF PERSONNEL, BOTH OWNER'S AND CONTRACTOR'S, AND THE PUBLIC PER THE CONTRACT DOCUMENTS.

   A. ADJACENT STRUCTURES: DURING THE ALTERATION OPERATIONS, PROTECT FROM DAMAGE, ADJACENT BUILDINGS, PAVEMENTS AND SURFACES WHICH ARE TO REMAIN. IF ADJACENT STRUCTURES ARE DAMAGED, REPAIR SUCH STRUCTURES AT NO COST TO THE OWNER.
   B. EXISTINGEXTERIORWALLS TO BE REMOVEDMAY BE LEFT IN PLACE (WHERE NOTEDAPPROVED)TO SERVE AS SEPARATION WALLS DURING CONSTRUCTION, AND THEN BE REMOVED WHEN APPROVED OR DIRECTED BY THE OWNER OR PROJECT SITE REPRESENTATIVE.
   C. WHERE OWNER'SOPERATIONSPERSONNELAND EQUIPMENTARE SUBJECT TO FLYINGDUST,DEBRIS, ETCFROM REMOVEAL OR CONSTRUCTION OPERATIONS, PROVIDE HEAVY DUTY VINYL SHEET SECURED TO THE CEILING AND FLOOR CONSTRUCTION IN MANNOER ACCEPTABLE TO THE OWNER OR PROJECT SITE REPRESENTATIVE; WHERE REQUIRED TO PERMIT PASSAGE OF MATERIALS AND PERSONNEL, SHEETS SHALL BE OVERLAPPED AND SECURED.
   D. PLACE TEMPORARY PARTITIONAS SO AS TO PROVIDE ADEQUATE SPACE TO CARRY ON THE ALTERTION OPERATIONS BUT SO AS NOT TO INTERFEERE WITH OWNERSOPERATATIONS, AND SO AS NOT TO ENCROACH ON FIRE EXITWAYSOF THE EXISTING BUILDING. PLACE PARTITIONS WHERE SHOWN ON DRAWINGS AND, IF NOT SHOWN, WHERE APPREOVED BY OWNER OR PROJECT SITE REPRESENTATIVE.
   E. TEMPORARY PARTITIONS SHALL BE OF FLAME-RESISTANT CONSTRUCTION. SUBMIT PROPOSED METHOD OF PARTITION CONSTRUCTION FOR APPROVAL.
   F. OPENINGS MADE IN EXTERIOR WALLS AND ROOF SHALL BE CLOSED THE SAME DAY THAT THEY ARE OPENED, EITHER BY PERMANENT CONSTRUCTION OR WITH VANDALPROOF, WEATHERPROOF, DUST-TIGHT TEMPORARY CLOSURES. NO OPENINGS IN EXTERIOR WALLS OR ROOF SHALL BE ALLOWED TO REMAIN OPEN; SECURITY OF THE BUILDING MUST BE MAINTAINED AT ALL TIMES.
2. PERSONNEL AND BUILDING PROTECTIONS: PROVIDE, AND LATER REMOVE, TEMPORARY BARRIERS, WARNING SIGNS, BLINKER LIGHTS, AND OTHER SAFETY MEASURES, AS REQUIRED FOR THE PROTECTION OF PERSONNEL, BOTH OWNER'S AND CONTRACTOR'S, AND THE PUBLIC PER THE CONTRACT DOCUMENTS.
   A. ADJACENT STRUCTURES: DURING THE ALTERATION OPERATIONS, PROTECT FROM DAMAGE, ADJACENT BUILDINGS, PAVEMENTS AND SURFACES WHICH ARE TO REMAIN. IF ADJACENT STRUCTURES ARE DAMAGED, REPAIR SUCH STRUCTURES AT NO COST TO THE OWNER.
   B. ROOF: PRIOR TO STARTING WORK OR ALLOWING TRAFFIC ON THE EXISTING ROOF, PROVIDE APPROVED TEMPORARY 3/4 INCH THICK PLYWOOD PROTECTION ON THE EXISTING BUILT-UP ROOFING SYSTEM DURING OPERATIONS ON THE ROOF. BE RESPONSIBLE FOR REPAIRING DAMAGE THAT OCCURS TO THE EXISTING BUILT-UP ROOFING SYSTEM DUE TO CONTRACT OPERATIONS.
   C. FACE OF BUILDING: METHODS FOR TRANSPORTING MATERIALS BETWEEN GROUND AND ROOF AND FOR REMOVING TRASH, RUBBISH AND DEBRIS SHALL BE SAFE METHODS WHICH WILL NOT DAMAGE EXTERIOR FACE OF BUILDING, ENDANGER PERSONS OR DAMAGE PROPERTY.
   D. UTILITIES: PROTECT EXISTING UTILITIES AND SERVICES, AS WELL AS OWNER'S SERVICE SYSTEMS, WITHIN AND ADJACENT TO THE ALTERATION OPERATIONS, FROM DAMAGE ON ACCOUNT OF SUCH OPERATIONS. IF UTILITIES OR SERVICES ARE UNCOVERED THAT ARE NOT SHOWN ON THE DRAWINGS, ADVISE THE OWNER OR PROJECT SITE REPRESENTATIVE AND DO NOT WORK IN THE IMMEDIATE AREAS UNTIL INSTRUCTED TO DO SO. DISCONNECT, CAP AND ABANDON EXISTING UTILITIES AND SERVICES EXPOSED AS A RESULT OF THE ALTERATION OPERATIONS THAT ARE NOT REQUIRED TO REMAIN IN USE; REMOVE EXISTING SERVICES AS PART OF THE DEMOLITION WHERE SO INDICATED OR REQUIRED; RELOCATE EXISTING SERVICES WHERE SO INDICATED OR REQUIRED.
   E. FLOORS: PROTECT THE FINISHED FLOORS WHICH ARE TO REMAIN, AND AREAS OVER WHICH MATERIALS OR EQUIPMENT SHALL BE MOVED, TO PRESERVE THE CONDITION OF THE EXISTING FLOOR. USE NOT LESS THAN I /4 INCH THICK PLYWOOD OR FLAKEBOARD LAID OVER HEAVY DUTY KRAFT OR RED ROSIN PAPER WITH JOINTS LAPPED.
   F. LIFTING PRECAUTIONS: WHENEVER MATERIALS OR EQUIPMENT NEED TO BE LIFTED OVER OR NEAR AN EXISTING, OCCUPIED BUILDING, GIVE ADVANCE NOTICE AND ARRANGE WITH THE OWNER OR PROJECT SITE REPRESENTATIVE TO HAVE ANY POTENTIALLY ENDANGERED SPACES VACATED. NO SUCH LIFTING SHALL BE DONE WITHOUT THE PERMISSION OF THE OWNER OR PROJECT SITE REPRESENTATIVE.
3. WORKMANSHIP: MAKE PROPER AND APPROVED CONNECTIONS OF NEW WORK TO EXISTING CONSTRUCTION AND ALL NECESSARY ADJUSTMENTS OF EITHER OR BOTH AS REQUIRED TO PRODUCE A COMPLETE AND FINISHED JOB. PATCHING AND NEW WORK SHALL MATCH EXISTING CONSTRUCTION, UNLESS OTHERWISE SHOWN OR SPECIFIED, AND SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE INDIVIDUAL TECHNICAL SECTIONS OF THE SPECIFICATIONS.
4. ALTERATIONS: CUT, PATCH, REPAIR, AND PERFORM OTHER ALTERATIONS USING MECHANICS SKILLED IN THE PARTICULAR TRADE OF WORK REQUIRED. WHERE REQUIRED TO PATCH OR EXTEND EXISTING CONSTRUCTION, OR BOTH, MATCH THE EXISTING EXPOSED SURFACE MATERIALS IN FINISH, COLOR, TEXTURE, AND PATTERNS.
5. CLEANING: CLEAN THE EXISTING SURFACES THAT ARE TO REMAIN IN THE AREAS OF WORK OF THIS CONTRACT. CLEAN PARTITIONS AFTER ALL WORK IS DONE IN THE AREA.
6. REPAIRING: REPAIR ALL DAMAGE CAUSED BY WORK OF THIS CONTRACT, AT NO ADDITIONAL COST TO THE OWNER.

05 - METALS

SECTION 054000 - COLD-FORMED METAL FRAMING
A. INSTALL FRAMING AND ACCESSORIES LEVEL, PLUMB, SQUARE, AND TRUE TO LINE, AND SECURELY FASTENED, ACCORDING TO ASTM C I 007. TEMPORARILY BRACE FRAMING UNTIL ENTIRE INTEGRATED SUPPORTING STRUCTURE HAS BEEN COMPLETED AND PERMANENT CONNECTIONS ARE SECURED.
I. CUT FRAMING MEMBERS BY SAWING OR SHEARING; DO NOT TORCH CUT.
2. FASTEN FRAMING MEMBERS BY WELDING OR SCREW FASTENING.
3. INSTALL INSULATION IN BUILT-UP EXTERIOR FRAMING MEMBERS.
4. FASTEN REINFORCEMENT PLATES OVER WEB PENETRATIONS LARGER THAN STANDARD PUNCHED OPENINGS.
B. ERECTION TOLERANCES: INSTALL COLD-FORMED METAL FRAMING WITH A MAXIMUM VARIATION OF 1/8 INCH IN I O FEET (1:960) AND WITH INDIVIDUAL FRAMING MEMBERS NO MORE THAN PLUS OR MINUS I /8 INCH (3 MM) FROM PLAN LOCATION. CUMULATIVE ERROR SHALL NOT EXCEED MINIMUM FASTENING REQUIREMENTS OF SHEATHING OR OTHER FINISHING MATERIALS.
C. STUDS INSTALL CONTINUOUS TOP AND BOTTOM TRACKS SECURELY ANCHORED AT CORNERS AND ENDS. SQUARELY SEAT STUDS AGAINST WEBS OF TOP AND BOTTOM TRACKS. SPACE STUDS AS INDICATED, SET PLUMB, ALIGN, AND FASTEN BOTH FLANGES OF STUDS TO TOP AND BOTTOM TRACKS.
I. INSTALL AND FASTEN HORIZONTAL BRIDGING IN STUD SYSTEM, SPACED IN ROWS NOT MORE THAN 48 INCHES (1219 MM) APART. DELETE FIRST SUBPARAGRAPH BELOW IF NOT REQUIRED; DIAGONAL BRACING IS USUALLY LIMITED TO SHEAR WALLS.
2. INSTALL STEEL-SHEET DIAGONAL BRACING STRAPS TO BOTH STUD FLANGES, TERMINATE AT AND FASTEN TO REINFORCED TOP AND BOTTOM TRACK AND ANCHOR TO STRUCTURE.
3. INSTALL MISCELLANEOUS FRAMING AND CONNECTIONS TO PROVIDE A COMPLETE AND STABLE WALL-FRAMING SYSTEM. DELETE SUBPARAGRAPH BELOW IF NON-LOAD-BEARING, CURTAIN-WALL FRAMING IS NOT REQUIRED.
4. ISOLATE NON-LOAD-BEARING, CURTAIN-WALL FRAMING FROM BUILDING STRUCTURE USING VERTICAL SLIDE CLIPS OR DEFLECTION TRACK TO PREVENT TRANSFER OF VERTICAL LOADS WHILE PROVIDING LATERAL SUPPORT.
D. JOISTS: INSTALL AND SECURELY ANCHOR PERIMETER JOIST TRACK SIZED TO MATCH JOISTS. INSTALL JOISTS BEARING ON SUPPORTING FRAMING, BRACE AND REINFORCE, AND FASTEN TO BOTH FLANGES OF JOIST TRACK.
B. STEEL TRACK. MANUFACTURER'S STANDARD U-SHAPED STEEL TRACK, OF WEB DEPTHS INDICATED, UNPUNCHED, WITH STRAIGHT FLANGES, COMPLYING WITH ASTM C 955, AND AS FOLLOWS

I. MINIMUM UNCOATED-STEEL THICKNESS: 0.0329 INCH.

2. MINIMUM FLANGE WIDTH: 1-1/4 INCHES.

2.2 ACCESSORIES
A. ACCESSORIES: FABRICATE FROM THE SAME MATERIAL AND FINISH USED FOR FRAMING MEMBERS, OF MANUFACTURER'S STANDARD THICKNESS AND CONFIGURATION, UNLESS OTHERWISE INDICATED.
B. CAST-IN-PLACE ANCHOR BOLTS: ASTM F I 554, GRADE 36, THREADED CARBON-STEEL HEX-HEADED BOLTS AND CARBON-STEEL NUTS; AND FLAT, HARDENED-STEEL WASHERS; ZINC COATED BY HOT-DIP PROCESS ACCORDING TO ASTM A 153/A 153M, CLASS C.
C. MECHANICAL FASTENERS: CORROSION-RESISTANT COATED, SELF-DRILLING, SELF-THREADING STEEL DRILL SCREWS.
D. INSULATION: ASTM C 665, TYPE I, UNFACED MINERAL-FIBER BLANKETS.
E. GALVANIZING REPAIR PAINT: SSPC-PAINT 20 OR DOD-P-21035.

PART 3 -

3.1 EXECUTION FRAMING

I. INSTALL BRIDGING AND FASTEN BRIDGING AT EACH JOIST INTERSECTION.

2. INSTALL MISCELLANEOUS JOIST FRAMING AND CONNECTIONS, INCLUDING WEB STIFFENERS, CLOSURE PIECES, CLIP ANGLES, CONTINUOUS ANGLES, HOLD-DOWN ANGLES, ANCHORS, AND FASTENERS.

07 - THERMAL AND MOISTURE PROTECTION

SECTION 076200 - SHEET METAL FLASHING AND TRIM

A. PROVIDE ALL LABOR, MATERIALS, SERVICES AND EQUIPMENT NECESSARY TO COMPLETE ALL WORK ASSOCIATED WITH FLASHING AND SHEET METAL TO INCLUDE, BUT NOT LIMITED TO:

I. METAL FLASHING AND COPINGS
2. METAL COUNTERFLASHINGS AND REG LETS.
3. GUTTERS, DOWNSPOUTS AND SCUPPER.
4. MISCELLANEOUS SHEET METAL ACCESSORIES.
B. METAL FLASHING AND COPINGS SHALL BE PREFINISHED G90 HOT DIPPED GALVANIZED STEEL, MINIMUM 22 GAUGE INTERLOCKING 2 PART TYPE CONSTRUCTION.
FINISH SHALL BE KYNAR 500 FLUOROCARBON COATING. COLOR AS NOTED ON THE DRAWINGS.

08 - OPENINGS

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

A. PROVIDE ALL LABOR AND MATERIALS, SERVICES AND EQUIPMENT NECESSARY TO COMPLETE ALL WORK ASSOCIATED WITH STEEL DOORS AND FRAMES.
B. HINGED DOOR AND FRAMES DESCRIBED HEREIN ARE FOR A MAX. OF 4 FT. WIDE AND 8 FT. HIGH DOORS, COMPLYING WITH STEEL DOOR INSTITUTE (SDI) RECOMMENDED SPECIFICATIONS.
C. WHERE FIRE RATED DOOR ASSEMBLIES ARE INDICATED OR REQUIRED PROVIDE DOOR AND FRAME ASSEMBLIES THAT COMPLY WITH NFPA 80.
D. PROVIDE METAL FRAME FOR DOORS, FABRICATED WITH MITERED CORNERS. FORM EXTERIOR FRAMES OF 16 GAUGE FOR 1-3/4" DOORS, FLUSH DOUBLE RABBETED TYPE WITH 5/8" DEEP STOPS IN 2" FACE. CORNERS TO BE WELDED. EXTERIOR FRAMES SHALL BE GALVANIZED. INTERIOR FRAMES SHALL BE 18 GAUGE WITH KNOCK - DOWN CONSTRUCTION.
E. FURNISH JAMB ANCHORS NOT LESS THAN 3 PER JAMB, AS REQUIRED TO SECURE FRAMES TO ADJACENT CONSTRUCTION. FORMED OF NOT LESS THAN 18 GAUGE GALVANIZED STEEL.
F. EXCEPT ON WEATHER-STRIPPED FRAMES, DRILL STOPS TO RECEIVE 3 SILENCERS ON JAMB STRIKES OF FRAMES FOR SINGLE DOORS, 2 SILENCERS ON HEADS OF FRAMES FOR PAIR OF DOORS. PROVIDE GLYNN-JOHNSON GJ-64 SILENCERS FOR FIELD APPLICATION AFTER PAINTING.
G. APPLY 3 MIL THICK BITUMINOUS COATING INSIDE OF BOTH INTERIOR AND EXTERIOR DOOR FRAMES WHICH WILL BE FILLED WITH MORTAR.
H. INSTALL FINISH HARDWARE AS SPECIFIED HEREIN.
I. HOLLOW METAL DOORS SHALL BE 18 GAUGE. EXTERIOR DOORS SHALL BE GALVANIZED FLUSH TYPE WITH INSULATION.

SECTION 081416 - FLUSH WOOD DOORS
A. PROVIDE ALL LABOR AND MATERIALS, SERVICES AND EQUIPMENT NECESSARY TO COMPLETE ALL WORK ASSOCIATED
WITH SPECIAL DOORS.

B. SOLID CORE WOOD DOORS SHALL HAVE BIRCH VENEER· STAIN GRADE WITH SOLID PARTICLE BOARD CORE PER ANSI A208.I, GRADE LD-1.

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS PART I - GENERAL
A. RELATED DOCUMENTS
I. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION I SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

B. SUMMARY
I. SECTION INCLUDES:
a. EXTERIOR AND INTERIOR STOREFRONT FRAMING.
2. RELATED REQUIREMENTS:
a. SECTION 08800 "GLAZING" FOR GLASS.
C. QUALITY ASSURANCE

I. INSTALLER QUALIFICATIONS: AN ENTITY THAT EMPLOYS INSTALLERS AND SUPERVISORS WHO ARE TRAINED AND APPROVED BY MANUFACTURER.

2. SOURCE LIMITATIONS: OBTAIN EACH TYPE OF STOREFRONT SYSTEM THROUGH ONE SOURCE FROM A SINGLE MANUFACTURER.
A. FIELD CONDITIONS

I. FIELD MEASUREMENTS: VERIFY DIMENSIONS BY FIELD MEASUREMENTS BEFORE FABRICATION AND INDICATE MEASUREMENTS ON SHOP DRAWINGS. COORDINATE FABRICATION SCHEDULE WITH CONSTRUCTION PROGRESS TO AVOID DELAYING THE WORK.

2. ESTABLISHED DIMENSIONS: WHERE FIELD MEASUREMENTS CANNOT BE MADE WITHOUT DELAYING THE WORK, ESTABLISH DIMENSIONS AND PROCEED WITH FABRICATING SYSTEMS WITHOUT FIELD MEASUREMENTS. COORDINATE CONSTRUCTION TO ENSURE ACTUAL DIMENSIONS CORRESPOND TO ESTABLISHED DIMENSIONS.
B. WARRANTY

I. GENERAL WARRANTY: THE SPECIAL WARRANTY SPECIFIED IN THIS ARTICLE SHALL NOT DEPRIVE THE OWNER OF OTHER RIGHTS THE OWNER MAY HAVE UNDER OTHER PROVISIONS OF THE CONTRACT DOCUMENTS AND SHALL BE IN ADDITION TO, AND RUN CONCURRENT WITH, OTHER WARRANTIES MADE BY THE CONTRACTOR UNDER REQUIREMENTS OF THE CONTRACT DOCUMENTS.

2. SPECIAL WARRANTY: MANUFACTURER AGREES TO REPAIR OR REPLACE COMPONENTS OF ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS THAT DO NOT COMPLY WITH REQUIREMENTS OR THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD. FAILURES INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

A. STRUCTURAL FAILURES INCLUDING, BUT NOT LIMITED TO, EXCESSIVE DEFLECTION.
B. FAILURE OF SYSTEM TO MEET PERFORMANCE REQUIREMENTS.
C. WATER LEAKAGE THROUGH FIXED GLAZING AND FRAME AREAS.
D. WARRANTY PERIOD: TWO (2) YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

3. SPECIAL FINISH WARRANTY: STANDARD FORM IN WHICH MANUFACTURER AGREES TO REPAIR FINISHES OR REPLACE ALUMINUM THAT SHOWS EVIDENCE OF DETERIORATION OF FACTORY-APPLIED FINISHES WITHIN SPECIFIED WARRANTY PERIOD.

A. WARRANTY PERIOD: FIVE (5) YEARS FROM DATE OF SUBSTANTIAL COMPLETION.
PART 2 - PRODUCTS
A. PERFORMANCE REQUIREMENTS

I. GENERAL PERFORMANCE: COMPLY WITH PERFORMANCE REQUIREMENTS SPECIFIED, AS DETERMINED BY TESTING OF
3A TEMPERED CLEAR FLOAT GLASS, 1/4 INCH (6 MM) THICK.
4A ANNEALED TINTED FLOAT GLASS, 1/4 INCH (6 MM) THICK.

PART 1 -GENERAL

I. I SECTION INCLUDES

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS REPRESENTING THOSE INDICATED FOR THIS PROJECT WITHOUT FAILURE DUE TO DEFECTIVE MANUFACTURE, FABRICATION, INSTALLATION, OR OTHER DEFECTS IN

4C TEMPERED TINTED FLOAT GLASS, 1/4 INCH (6 MM) THICK.
SA ANNEALED LOW·E CLEAR FLOAT GLASS, I/4 INCH (6 MM) THICK.
1. SECTION REQUIREMENTS
A. SUBMITTALS: PRODUCT DATA
B. COMPLY WITH AISI'S "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS" FOR CALCULATING STRUCTURAL CHARACTERISTICS OF COLD-FORMED METAL FRAMING.CONSIDER RETAINING FIRST PARAGRAPH BELOW IF PROJECT IS LIMITED TO ONE- AND TWO-FAMILY RESIDENTIAL CONSTRUCTION, FRAMING IS FULLY DETAILED, AND THIS HUD DOCUMENT IS ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION. IF RETAINING, DELETE PERFORMANCE REQUIREMENTS AND REFERENCES TO A QUALIFIED PROFESSIONAL ENGINEER ABOVE.
C. COMPLY WITH HUD'S "PRESCRIPTIVE METHOD FOR RESIDENTIAL COLD-FORMED METAL FRAMING."
D. COMPLY WITH AWS DI .3, "STRUCTURAL WELDING CODE - SHEET STEEL."
E. PROTECT COLD-FORMED METAL FRAMING FROM CORROSION, DEFORMATION, AND OTHER DAMAGE DURING

I. ASTM A 554 - STANDARD SPECIFICATION FOR WELDED STAINLESS STEEL MECHANICAL TUBING.
2. ASTM A 492 - STANDARD SPECIFICATION FOR STAINLESS STEEL ROPE WIRE.
1.4 SUBMITTALS
A. PRODUCT DATA: MANUFACTURER'S SPECIFICATIONS AND TECHNICAL DATA INCLUDING THE FOLLOWING:
I. DETAILED SPECIFICATION OF CONSTRUCTION AND FABRICATION.
2. MANUFACTURER'S INSTALLATION INSTRUCTIONS.
B. SHOP DRAWINGS: SUBMIT SHOP DRAWINGS FOR FABRICATION AND INSTALLATION. INCLUDE THE FOLLOWING:
I. PLANS, ELEVATIONS, AND DETAIL SECTIONS.
CONSTRUCTION.ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS SHALL WITHSTAND MOVEMENTS OF SUPPORTING STRUCTURE INCLUDING, BUT NOT LIMITED TO, STORY DRIFT, TWIST, COLUMN SHORTENING, LONG-TERM CREEP, AND DEFLECTION FROM UNIFORMLY DISTRIBUTED AND CONCENTRATED LIVE LOADS.

a. FAILURE ALSO INCLUDES THE FOLLOWING:
i. THERMAL STRESSES TRANSFERRING TO BUILDING STRUCTURE.
ii. GLASS BREAKAGE.
iii. NOISE OR VIBRATION CREATED BY WIND AND THERMAL AND STRUCTURAL MOVEMENTS.
iv. LOOSENING OR WEAKENING OF FASTENERS, ATTACHMENTS, AND OTHER COMPONENTS.
v. FAILURE OF OPERATING UNITS.

2. AIR INFILTRATION: TEST ACCORDING TO ASTM E 283 FOR INFILTRATION AS FOLLOWS:
A. FIXED FRAMING AND GLASS AREA:

6. SOUND TRANSMISSION CLASS (STC) AND OUTDOOR-INDOOR TRANSMISSION CLAS (OITC): WHEN TESTESTED TO AAMA SPECIFICATION 1801 AND IN ACCORDANCE WITH ASTM EI425 AND ASTM E90, THE STC AND OITC RATING SHALL BE LESS THAN:
a. GLASS TO EXTERIOR - 38 (STC) AND 31 (OITC)
b. GLASS TO CENTER - 37 (STC) AND 30 (OITC)
c. GLASS TO INTERIOR - 38 (STC) AND 30 (OITC)
A. MANUFACTURERS
I. KAWNEER COMPANY, INC.
I)BASIS OF DESIGN:
a) TRI·FAB 45 I ·T SYSTEM FOR EXTERIOR
b) TRI-FAB 450 SYSTEM FOR INTERIOR.
c) TRI-FAB 601-T SYSTEM FOR EXTERIOR GLAZING ABOVE TRANSOM.
2. YKK AP AMERICA INC.
2) APPROVED ALTERNATE
a) CONTACT MANUFACTURER FOR PRODUCT CORRESPONDING TO ABOVE.
B. FRAMING
1. FRAMING MEMBERS: MANUFACTURER'S EXTRUDED- OR FORMED-ALUMINUM FRAMING MEMBERS OF THICKNESS REQUIRED AND REINFORCED AS REQUIRED TO SUPPORT IMPOSED LOADS.
a. NOT LESS THAN 0.070" (1.8mm) WALL THICKNESS.
b. CONSTRUCTION: THERMALLY BROKEN FOR EXTERIOR SYSTEM.
c. GLAZING SYSTEM: RETAINED MECHANICALLY WITH GASKETS ON FOUR SIDES.
d. GLAZING PLANE: CENTER.
e. FINISH: AS SPECIFIED ON DRAWINGS
f. FABRICATION METHOD: FIELD-FABRICATED STICK SYSTEM.
2. BACKER PLATES: MANUFACTURER'S STANDARD, CONTINUOUS BACKER PLATES FOR FRAMING MEMBERS, IF NOT INTEGRAL, WHERE FRAMING ABUTS ADJACENT CONSTRUCTION.
3. BRACKETS AND REINFORCEMENTS: MANUFACTURER'S STANDARD HIGH-STRENGTH ALUMINUM WITH NONSTAINING, NONFERROUS SHIMS FOR ALIGNING SYSTEM COMPONENTS.
4. FASTENERS: ALUMINUM, NON-MAGNETIC STAINLESS STEEL OR OTHER MATERIALS TO BE NONOCORROSIVE AND COMPATIBLE WITH ALUMINUM FRAMING MEMBER, TRIM HARDWARE, ANCHORS AND OTHER COMPONENTS.
5. MATERIALS:
ALUMINUM: ALLOY AND TEMPER RECOMMENDED BY MANUFACTURER FOR TYPE OF USE AND FINISH INDICATED.
a. SHEET AND PLATE: ASTM B 209.
b. EXTRUDED BARS, RODS, PROFILES, AND TUBES: ASTM B 221.
c. EXTRUDED STRUCTURAL PIPE AND TUBES: ASTM B 429/B 429M.
d. STRUCTURAL PROFILES: ASTM B 308/B 308M.
C. GLAZING
I. MANUFACTURERS
a. GLASS MANUFACTURERS: PPG, LOF, GUARDIAN INDUSTRIES, FORD GLASS, HORDIS BROTHERS INC., OR EQUAL. PROVIDE ALL TINTED AND LOW-E GLASS FROM THE SAME MANUFACTURER FOR THE ENTIRE PROJECT.
2. MATERIAL
a. GLASS TYPES, THICKNESSES AND FABRICATED ASSEMBLIES ARE SCHEDULED IN THE GLASS SCHEDULE INCLUDED IN PART 3. EXECUTION OF THIS SECTION. WHERE NO THICKNESS IS GIVEN, IT SHALL BE DETERMINED BY GLASS MANUFACTURER AS SPECIFIED IN ARTICLE 1.04 SYSTEM DESCRIPTION OF THIS SECTION. ADJACENT TINTED AND LOW·E GLASS SHALL HAVE THE SAME LIGHT TRANSMITTANCE.S
i. CLEAR ANNEALED FLOAT GLASS: CLEAR FLOAT GLASS CONFORMING TO ASTM C I 036, TYPE I, CLASS I, QUALITY Q3.
ii. TEMPERED CLEAR & TINTED FLOAT GLASS: AS SPECIFIED FOR CLEAR ANNEALED FLOAT GLASS EXCEPT FULLY TEMPERED TO CONFORM TO ASTM C I 048, KIND FT.
iii. TEMPERED TINTED FLOAT GLASS: AS SPECIFIED FOR ANNEALED TINTED FLOAT GLASS EXCEPT FULLY TEMPERED TO CONFORM TO ASTM CI 048, KIND FT.
iv. CLEAR FIRE RATED SAFETY GLASS CERAMIC, 20 - 90 MINUTE RATED: "FIRELITE PLUS", NO KNOWN EQUAL, WITH UL OR WARNOCK-HERSEY LABEL, MANUFACTURED BY NIPPON ELECTRIC GLASS CO., LTD., AND DISTRIBUTED BY TECHNICAL GLASS PRODUCTS, 2425 CARILLON POINT, KIRKLAND, WA 98003, TEL. 1-800-426-0279.
v. ANNEALED LOW-E CLEAR FLOAT GLASS: PPG "SUNGATE 500(2)", OR EQUAL, CLEAR FLOAT GLASS WITH TRANSPARENT REFLECTIVE COATING ON INBOARD (NO. 2) SURFACE, CONFORMING TO ASTM C I 036, TYPE I, CLASS 2, QUALITY Q3.
vi. TEMPERED LOW·E CLEAR FLOAT GLASS: PPG "SUNGATE 500(2) ", OR EQUAL, [CLEAR][TINTED] FLOAT GLASS WITH TRANSPARENT REFLECTIVE COATING ON INBOARD (NO. 2) SURFACE, TEMPERED TO CONFORM TO ASTM C I 048, KIND FT.
vii. INSULATING GLASS:
I. MANUFACTURER AND UNIT FABRICATION: BY A MEMBER OF THE SEALED INSULATING GLASS MANUFACTURERS ASSN. (SIGMA) AND FABRICATED IN ACCORDANCE WITH SIGMA RECOMMENDATIONS, EXCEPT WHERE MORE STRINGENT REQUIREMENTS ARE INDICATED.
2. CLASS: "CBA" AND CERTIFIED AS SUCH BY THE INSULATING GLASS CERTIFICATION COUNCIL (IGCC).
3. CONSTRUCTION: ASTM E 774 ORGANIC ELASTOMERIC SEALED EDGE (NO METAL EDGES PERMITTED) CONSISTING OF A POLYISOBUTYLENE PRIMARY SEAL AND A SILICONE SECONDARY SEAL, WITH THE INTERIOR AIR SPACE HERMETICALLY SEALED AND PROVIDED WITH A CONCEALED DESICCANT AGENT. SECONDARY SEALS OTHER THAN SILICONE SHALL NOT BE USED.
4. WHERE VISIBLE THROUGH THE GLASS, THE EXPOSED SURFACE OF THE METAL SPACER TUBE SHALL BE PAINTED WITH THERMOSETTING, SILICONIZED ACRYLIC PAINT, OR EQUAL, COLOR TO MATCH THE COLOR OF ALUMINUM FRAME AT THE INTERIOR OF THE BUILDING.
5. CONFIGURATION: AS PER GLASS SCHEDULE.

3. GLAZING MATERIALS AND ACCESSORIES:
a. GLAZING MATERIALS AND ACCESSORIES SHALL BE FULLY COMPATIBLE WITH THE MATERIALS AND FINISHES WITH WHICH THEY ARE IN CONTACT. NEOPRENE AND EPDM MATERIALS SHALL NOT COME IN CONTACT WITH
SILICONE SEALANT MATERIALS. SILICONE RUBBER SPACERS, SETTING AND EDGE BLOCKS AND GASKETS SHALL BE EITHER TYPE I (DESIGNED TO PREVENT ADHESION) OR TYPE II (DESIGNED FOR ADHESION) AS PER GLAZING
SYSTEM MANUFACTURER'S RECOMMENDATIONS FOR EACH CONDITION OF USE.
i. GLAZING TAPES: PREFORMED, PRESHIMMED POLYISOBUTYLENE-BUTYL TAPE, I /2 INCH (13 MM) WIDE X THICKNESS TO SUIT PROPER FACE CLEARANCE OF GLASS, BLACK COLOR; "PECORA BB-50 EXTRU-SEAL", PTI "606", TREMCO PRESHIMMED #440, OR "POLYSHIM" ("POLYSHIM" ONLY WHERE GLASS LITES EXCEED 150 UNITED INCHES), OR EQUAL.
ii. GLAZING SEALANTS: ONE COMPONENT, SILICONE BASED SEALANT, BLACK COLOR; DOW-CORNING "795" OR GENERAL ELECTRIC "SILPRUF 2000", OR EQUAL. SEALANTS SHALL BE RECOMMENDED BY THE MANUFACTURER FOR THE PARTICULAR CONDITION OF USE.
iii. GLAZING SEALANTS (BUTT GLAZING AND STEEL WINDOWS): ONE COMPONENT, SILICONE BASED SEALANT, BLACK COLOR EXCEPT CLEAR COLOR AT BUTT GLAZING; DOW-CORNING "795" OR "999· A", OR GENERAL ELECTRIC "GESIL N 2600", "SCS 100" OR "SCS 1200", OR EQUAL, AS PER MANUFACTURER'S RECOMMENDATIONS FOR THE PARTICULAR CONDITION OF USE.
iv. PRIMERS (IF REQUIRED FOR SEALANTS): NON-STAINING AND NON-ETCHING TYPE AS RECOMMENDED BY SEALANT MANUFACTURER.
v. SETTING BLOCKS: NEOPRENE, EPDM OR SILICONE RUBBER CONFORMING TO ASTM C 864, 80-90 SHORE A DUROMETER HARDNESS, AND WHICH WILL PERMIT PERMANENT MOUNTING. BLOCKS SHALL BE 0.1 INCH (2.5 MM) LONG FOR EACH SQUARE FOOT OF GLASS AREA (BUT NO LESS THAN 4 INCHES (100 MM)) X 1 /16 INCHES (I .6 MM) LESS THAN FULL CHANNEL WIDTH AND OF THICKNESS TO PROVIDE PROPER BITE AND MINIMUM EDGE CLEARANCE FOR GLASS. WHERE LENGTH OF BLOCK MAY BECOME EXCESSIVE, LEAD BLOCKS HAVING A LENGTH OF 0.05" FOR EACH SQUARE FOOT OF GLASS (4 INCHES (100 MM) MINIMUM) MAY BE USED. DO NOT USE LEAD BLOCKS FOR INSULATING, LAMINATED OR WIRE GLASS.
vi. EDGE BLOCKS: NEOPRENE, EPDM OR SILICONE RUBBER CONFORMING TO ASTM C 864, 60-70 SHORE A DUROMETER HARDNESS, AND WHICH WILL PERMIT PERMANENT MOUNTING. BLOCKS SHALL BE 3 INCHES (75 MM) MINIMUM LENGTH X FULL CHANNEL WIDTH AND OF THICKNESS OR CONFIGURATION TO PROVIDE 1 /8 INCH (3 M) (NOM.) CLEARANCE BETWEEN BLOCK AND GLASS EDGE.
vii. GLAZING SPACERS: NEOPRENE, EPDM OR SILICONE RUBBER CONFORMING TO ASTM C 864, 60-70 SHORE A DUROMETER HARDNESS, SIZE AS REQUIRED BY GLAZING CONDITIONS, CONTINUOUS (DO NOT USE INTERMITTENT SPACERS).
4. GLASS SCHEDULE
a. GLASS TYPES ARE INDICATED ON DRAWINGS.
IA ANNEALED CLEAR FLOAT GLASS, 1/4 INCH (6 MM) THICK.

4C TEMPERED TINTED FLOAT GLASS, 1/4 INCH (6 MM) THICK.
SA ANNEALED LOW·E CLEAR FLOAT GLASS, I/4 INCH (6 MM) THICK.
SB TEMPERED LOW·E CLEAR FLOAT GLASS, I/4 INCH (6 MM) THICK.
6B TEMPERED LOW·E TINTED FLOAT GLASS, 1/4 INCH (6 MM) THICK.
SA ANNEALED OBSCURE GLASS, I /4 INCH (6 MM) THICK.
8B TEMPERED OBSCURE GLASS, I/4 INCH (6 MM) THICK.
1 IACLEAR FIRE RATED SAFETY GLASS CERAMIC, 5/16 INCH (SMM) THICK.
12A INSULATING GLASS FABRICATED WITH I /4 INCH (6 MM) THICK TINTED LOW-E ANNEALED FLOAT GLASS OUTBOARD LIGHT, I /2 INCH (13 MM) AIR SPACE AND 1/4 INCH (6 MM) THICK CLEAR ANNEALED FLOAT GLASS INBOARD LIGHT.
12BINSULATING GLASS FABRICATED WITH I /4 INCH (6 MM) THICK TEMPERED TINTED LOW-E FLOAT GLASS OUTBOARD LIGHT, I/2 INCH (13 MM) AIR SPACE AND I/4 INCH (6 MM) THICK CLEAR TEMPERED FLOAT GLASS INBOARD LIGHT.
D.FABRICATION
I. FORM OR EXTRUDE ALUMINUM SHAPES BEFORE FINISHING.
2. WELD IN CONCEALED LOCATIONS TO GREATEST EXTENT POSSIBLE TO MINIMIZE DISTORTION OR DISCOLORATION OF FINISH. REMOVE WELD SPATTER AND WELDING OXIDES FROM EXPOSED SURFACES BY DESCALING OR GRINDING.
3. FABRICATE COMPONENTS THAT, WHEN ASSEMBLED, HAVE THE FOLLOWING CHARACTERISTICS:
a. PROFILES THAT ARE SHARP, STRAIGHT, AND FREE OF DEFECTS OR DEFORMATIONS.
b. ACCURATELY FITTED JOINTS WITH ENDS COPED OR MITERED.
c. PHYSICAL AND THERMAL ISOLATION OF GLAZING FROM FRAMING MEMBERS.
d. ACCOMMODATIONS FOR THERMAL AND MECHANICAL MOVEMENTS OF GLAZING AND FRAMING TO MAINTAIN REQUIRED GLAZING EDGE CLEARANCES.
e. PROVISIONS FOR FIELD REPLACEMENT OF GLAZING FROM EXTERIOR.
f. FASTENERS, ANCHORS, AND CONNECTION DEVICES THAT ARE CONCEALED FROM VIEW TO GREATEST EXTENT POSSIBLE.
4. MECHANICALLY GLAZED FRAMING MEMBERS: FABRICATE FOR FLUSH GLAZING WITHOUT PROJECTING STOPS.
5. AFTER FABRICATION, CLEARLY MARK COMPONENTS TO IDENTIFY THEIR LOCATIONS IN PROJECT ACCORDING TO SHOP DRAWINGS.
E. ALUMINUM FINISHES
1. EXTERIOR STOREFRONT FRAMING.
a. KAWNEER PERMANODIC"' AA-M10C21A44 / AA-M45C22A44, AAMA 611, ARCHITECTURAL CLASS COLOR ANODIC COATING (COLOR #40 - DARK BRONZE)_
2. INTERIOR STOREFRONT FRAMING.
a. KAWNEER PERMANODIC"' AA-M10C21A44 / AA-M45C22A44, AAMA 611, ARCHITECTURAL CLASS I COLOR ANODIC COATING (COLOR #29 - BLACK)_
PART 3 - EXECUTION
A. INSTALLATION
1. GENERAL:
a. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
b. DO NOT INSTALL DAMAGED COMPONENTS.
c. FIT JOINTS TO PRODUCE HAIRLINE JOINTS FREE OF BURRS AND DISTORTION.
d_ RIGIDLY SECURE NONMOVEMENT JOINTS_
e. INSTALL ANCHORS WITH SEPARATORS AND ISOLATORS TO PREVENT METAL CORROSION AND ELECTROLYTIC DETERIORATION AND TO PREVENT IMPEDING MOVEMENT OF MOVING JOINTS.
f. SEAL PERIMETER AND OTHER JOINTS WATERTIGHT UNLESS OTHERWISE INDICATED.
2. METAL PROTECTION:
a. WHERE ALUMINUM IS IN CONTACT WITH DISSIMILAR METALS, PROTECT AGAINST GALVANIC ACTION BY PAINTING
CONTACT SURFACES WITH MATERIALS RECOMMENDED BY MANUFACTURER FOR THIS PURPOSE OR BY INSTALLING NONCONDUCTIVE SPACERS.
b. WHERE ALUMINUM IS IN CONTACT WITH CONCRETE OR MASONRY, PROTECT AGAINST CORROSION BY PAINTING CONTACT SURFACES WITH BITUMINOUS PAINT.
3. SET CONTINUOUS SILL MEMBERS AND FLASHING IN FULL SEALANT BED AS SPECIFIED IN SECTION 07920 ' OINT SEALANTS" TO PRODUCE WEATHERTIGHT INSTALLATION.
4. INSTALL COMPONENTS PLUMB AND TRUE IN ALIGNMENT WITH ESTABLISHED LINES AND GRADES.
5. INSTALL GLAZING AS SPECIFIED IN SECTION 08800 "GLAZING."
6. ERECTION TOLERANCES: INSTALL ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS TO COMPLY WITH THE FOLLOWING MAXIMUM TOLERANCES:
a. PLUMB: I /8 INCH IN I O FEET_
b_ LEVEL: I /8 INCH IN 20 FEET.
c. ALIGNMENT:
i. WHERE SURFACES ABUT IN LINE OR ARE SEPARATED BY REVEAL OR PROTRUDING ELEMENT UPTO 1/2 INCH WIDE, LIMIT OFFSET FROM TRUE ALIGNMENT TO I /16 INCH.
ii. WHERE SURFACES ARE SEPARATED BY REVEAL OR PROTRUDING ELEMENT FROM 1/2 TO I INCH WIDE, LIMIT OFFSET FROM TRUE ALIGNMENT TO I/8 INCH.
iii. WHERE SURFACES ARE SEPARATED BY REVEAL OR PROTRUDING ELEMENT OF I INCH WIDE OR MORE, LIMIT
OFFSET FROM TRUE ALIGNMENT TO I/4 INCH.
d. LOCATION: LIMIT VARIATION FROM PLANE TO I /8 INCH IN 12 FEET; 1/2 INCH OVER TOTAL LENGTH

SECTION 087100 - DOOR HARDWARE

PART I GENERAL
I .REFERENCES REFER TO "GENERAL AND SPECIAL CONDITIONS", AND "INSTRUCTIONS TO BIDDERS", DIVISION I OF SPECIFICATIONS. REQUIREMENTS OF THESE SECTIONS AND THE PROJECT DRAWINGS SHALL GOVERN WORK IN THIS SECTION.
2. WORK INCLUDED:
A. FURNISH ALL ITEMS OF FINISH HARDWARE SPECIFIED, SCHEDULED, SHOWN OR REQUIRED HEREIN EXCEPT THOSE ITEMS SPECIFICALLY EXCLUDED FROM THIS SECTION OF THE SPECIFICATION.
B. RELATED WORK:
I. DIVISION 00 00 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS
2. DIVISION 01 00 00 - GENERAL REQUIREMENTS
3 DIVISION 06 00 00 - WOOD, PLASTICS, AND COMPOSITES
4. DIVISION 08 00 00 - OPENINGS
5. DIVISION I O 00 00 - SPECIALTIES
6. DIVISION 11 00 00 - EQUIPMENT
7. DIVISION 26 00 00 - ELECTRICAL
8. DIVISION 2 7 00 00 - COMMUNICATIONS
9_ DIVISION 28 00 00 - ELECTRONIC SAFETY AND SECURITY
C. SPECIFIC OMISSIONS: HARDWARE FOR THE FOLLOWING IS SPECIFIED OR INDICATED ELSEWHERE, UNLESS SPECIFICALLY LISTED IN THE HARDWARE SETS:
I _ CABINET HARDWARE.
l. SIGNS, EXCEPT AS NOTED.
m. FOLDING PARTITIONS, EXCEPT CYLINDERS WHERE DETAILED.
n. SLIDING ALUMINUM DOORS
o. CHAIN LINK AND WIRE MESH DOORS AND GATES
p. ACCESS DOORS AND PANELS
q. OVERHEAD AND COILING DOORS
3. QUALITY ASSURANCE
A. REQUIREMENTS OF REGULATORY AGENCIES:
I. FURNISH FINISH HARDWARE TO COMPLY WITH THE REQUIREMENTS OF LAWS, CODES, ORDINANCES, AND REGULATIONS OF THE GOVERNMENTAL AUTHORITIES HAVING JURISDICTION WHERE SUCH REQUIREMENTS EXCEED THE REQUIREMENTS OF THE SPECIFICATIONS.
2. FURNISH FINISH HARDWARE TO COMPLY WITH THE REQUIREMENTS OF THE REGULATIONS FOR PUBLIC BUILDING ACCOMMODATIONS FOR PHYSICALLY HANDICAPPED PERSONS OF THE GOVERNMENTAL AUTHORITY HAVING JURISDICTION AND TO COMPLY WITH AMERICANS WITH DISABILITIES ACT.
3_ PROVIDE HARDWARE FOR FIRE-RATED OPENINGS IN COMPLIANCE WITH NFPA 80 AND STATE AND LOCAL BUILDING CODE REQUIREMENTS. PROVIDE ONLY HARDWARE THAT HAS BEEN TESTED AND LISTED BY UL FOR TYPES AND SIZES OF DOORS REQUIRED AND COMPLIES WITH REQUIREMENTS OF DOOR AND DOOR FRAME LABELS.
B. HARDWARE SUPPLIER:
I. SHALL BE AN ESTABLISHED FIRM DEALING IN CONTRACT BUILDERS' HARDWARE. HE MUST HAVE ADEQUATE INVENTORY, QUALIFIED PERSONNEL ON STAFF AND BE LOCATED WITHIN I 00 MILES OF THE PROJECT_THE DISTRIBUTOR MUST BE A FACTORY-AUTHORIZED DEALER FOR ALL MATERIALS REQUIRED. THE SUPPLIER SHALL BE OR HAVE IN EMPLOYMENT AN ARCHITECTURAL HARDWARE CONSULTANT (AHC)_
C. ELECTRIFIED DOOR HARDWARE SUPPLIER:
I SHALL BE AN EXPERIENCED DOOR HARDWARE SUPPLIER WHO HAS COMPLETED PROJECTS WITH ELECTRIFIED DOOR HARDWARE SIMILAR IN MATERIAL, DESIGN, AND EXTENT TO THAT INDICATED FOR THIS PROJECT, WHOSE WORK HAS RESULTED IN CONSTRUCTION WITH A RECORD OF SUCCESSFUL IN-SERVICE PERFORMANCE, AND WHO IS ACCEPTABLE TO MANUFACTURER OF PRIMARY MATERIALS.
2. SHALL PREPARE DATA FOR ELECTRIFIED DOOR HARDWARE, INCLUDING SHOP DRAWINGS, BASED ON TESTING AND ENGINEERING ANALYSIS OF MANUFACTURER'S STANDARD UNITS IN ASSEMBLIES SIMILAR TO THOSE INDICATED FOR THIS PROJECT.
3. SHALL HAVE EXPERIENCE IN PROVIDING CONSULTING SERVICES FOR ELECTRIFIED DOOR HARDWARE INSTALLATIONS

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DETROIT DIESEL SECOND FLOOR RENOVATION
13400 W. OUTER DR, DETROIT MI
PROJECT

CONSULTANT

STATE OF MICHIGAN
THOMAS M DILLENBECK
ARCHITECT
No. 1301057360
LICENSED ARCHITECT

ARCHITECTURAL SPECIFCATIONS
SHEET TITLE

24-103
PROJECT NUMBER

A-020.2
SHEET NUMBER

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D. PRE-INSTALLATION MEETING:
I. BEFORE HARDWARE INSTALLATION, GENERAL CONTRACTOR/CONSTRUCTION MANAGER WILL REQUEST A HARDWARE INSTALLATION MEETING BE CONDUCTED ON THE INSTALLATION OF HARDWARE; SPECIFICALLY THAT OF LOCKSETS, CLOSERS, EXIT DEVICES, OVERHEAD STOPS AND COORDINATORS. MANUFACTURER'S REPRESENTATIVES OF THE ABOVE PRODUCTS, IN CONJUNCTION WITH THE HARDWARE SUPPLIER FOR THE PROJECT, SHALL CONDUCT THE MEETING. MEETING TO BE HELD AT JOB SITE AND ATTENDED BY INSTALLERS OF HARDWARE FOR ALUMINUM, HOLLOW METAL AND WOOD DOORS. MEETING TO ADDRESS PROPER COORDINATION AND INSTALLATION OF HARDWARE, PER FINISH HARDWARE SCHEDULE FOR THIS SPECIFIC PROJECT, BY USING INSTALLATION MANUALS, HARDWARE SCHEDULE, TEMPLATES, PHYSICAL PRODUCT SAMPLES AND INSTALLATION VIDEOS.
2. WHEN ANY ELECTRICAL OR PNEUMATIC HARDWARE IS SPECIFIED THIS MEETING SHALL ALSO INCLUDE THE FOLLOWING TRADES/INSTALLERS: ELECTRICAL, SECURITY, ALARM SYSTEMS AND ARCHITECT.
3. CONVENE ONE WEEK OR MORE PRIOR TO COMMENCING WORK OF THIS SECTION.
4. THE HARDWARE SUPPLIER SHALL INCLUDE THE COST OF THIS MEETING IN HIS PROPOSAL

E. MANUFACTURER:
I. OBTAIN EACH TYPE OF HARDWARE (LATCH AND LOCKSETS, HINGES, CLOSERS, ETC.) FROM A SINGLE MANUFACTURER, ALTHOUGH SEVERAL MAY BE INDICATED AS OFFERING PRODUCTS COMPLYING WITH REQUIREMENTS.
2. PROVIDE ELECTRIFIED DOOR HARDWARE FROM SAME MANUFACTURER AS MECHANICAL DOOR HARDWARE, UNLESS OTHERWISE INDICATED.

4. SUBMITTALS:
A. HARDWARE SCHEDULE
I. SUBMIT NUMBER OF HARDWARE SCHEDULES AS DIRECTED IN DIVISION I.
2. FOLLOW GUIDELINES ESTABLISHED IN DOOR & HARDWARE INSTITUTE HANDBOOK (DHI) SEQUENCE AND FORMAT FOR THE HARDWARE SCHEDULE UNLESS NOTED OTHERWISE.
3. SCHEDULE WILL INCLUDE THE FOLLOWING:
a. DOOR INDEX INCLUDING OPENING NUMBERS AND THE ASSIGNED FINISH HARDWARE SET.
b. PREFACE SHEET LISTING CATEGORY ONLY AND MANUFACTURER'S NAMES OF ITEMS BEING FURNISHED AS FOLLOWS:

2. CATEGORY	3. SPECIFIED	4. SCHEDULED
5. HINGES	6. MANUFACTURER A	7. MANUFACTURER B
8. LOCK SETS	9. MANUFACTURER X	10. MANUFACTURER X
11. KICK PLATES	12. OPEN	13. MANUFACTURER Z

c. HARDWARE LOCATIONS: REFER TO ARTICLE 3.1 B.2 LOCATIONS.
d. OPENING DESCRIPTION: SINGLE OR PAIR, NUMBER, ROOM LOCATIONS, HAND, ACTIVE LEAF, DEGREE OF SWING, SIZE, DOOR MATERIAL, FRAME MATERIAL, AND UL LISTING.
e. HARDWARE DESCRIPTION: QUANTITY, CATEGORY, PRODUCT NUMBER, FASTENERS, AND FINISH. f_ HEADINGS THAT REFER TO THE SPECIFIED HARDWARE SET NUMBERS_
g. SCHEDULING SEQUENCE SHOWN IN HARDWARE SETS.
h. PRODUCT DATA OF EACH HARDWARE ITEM, AND SHOP DRAWINGS WHERE REQUIRED, FOR SPECIAL CONDITIONS AND SPECIALTY HARDWARE_
i. ELECTRIFIED HARDWARE SYSTEM OPERATION DESCRIPTION.
j. "VERTICAL" SCHEDULING FORMAT ONLY. "HORIZONTAL" SCHEDULES WILL BE RETURNED "NOT APPROVED."
k. TYPED COPY_
I. DOUBLE-SPACING.
m. 8-1 /2 X 11 INCH SHEETS
n. U.S. STANDARD FINISH SYMBOLS OR BHMA FINISH SYMBOLS.

B. PRODUCT DATA:
I. SUBMIT, IN BOOKLET FORM MANUFACTURERS CATALOG CUT SHEETS OF SCHEDULED HARDWARE.
2. SUBMIT PRODUCT DATA WITH HARDWARE SCHEDULE.

C. SAMPLES:
I. PRIOR TO SUBMITTAL OF THE FINAL HARDWARE SCHEDULE AND PRIOR TO FINAL ORDERING OF FINISH HARDWARE, SUBMIT ONE SAMPLE, IF REQUIRED, OF EACH TYPE OF EXPOSED HARDWARE UNIT, FINISHED AS REQUIRED AND TAGGED WITH FULL DESCRIPTION FOR COORDINATION WITH SCHEDULE.
2. SAMPLES WILL BE RETURNED TO THE SUPPLIER. UNITS, WHICH ARE ACCEPTABLE AND REMAIN UNDAMAGED THROUGH SUBMITTAL, REVIEW AND FIELD COMPARISON PROCEDURES MAY, AFTER FINAL CHECK OF OPERATION, BE USED IN THE WORK, WITHIN LIMITATIONS OF KEYING COORDINATION REQUIREMENTS.

D. KEY SCHEDULE:
I _ SUBMIT DETAILED SCHEDULE INDICATING CLEARLY HOW THE OWNER'S FINAL KEYING INSTRUCTIONS HAVE BEEN FOLLOWED.
2_ SUBMIT AS A SEPARATE SCHEDULE.

E_ ELECTRIFIED HARDWARE DRAWINGS:
I. SUBMIT ELEVATION DRAWINGS SHOWING RELATIONSHIP OF ALL ELECTRICAL HARDWARE COMPONENTS TO DOOR AND FRAME. INDICATE NUMBER AND GAGE OF WIRES REQUIRED.
•- INCLUDE WIRING DRAWING SHOWING POINT TO POINT WIRE HOOK UP FOR ALL COMPONENTS.
b. INCLUDE SYSTEM OPERATIONS DESCRIPTIONS FOR EACH TYPE OF OPENING; DESCRIBE EACH POSSIBLE CONDITION.

F. SUBMIT TO GENERAL CONTRACTOR/CONSTRUCTION MANAGER, THE FACTORY ORDER ACKNOWLEDGEMENT NUMBERS FOR THE VARIOUS HARDWARE ITEMS TO BE USED ON THE PROJECT. THE FACTORY ORDER ACKNOWLEDGEMENT NUMBERS SHALL HELP TO FACILITATE AND EXPEDITE ANY SERVICE THAT MAY BE REQUIRED ON A PARTICULAR HARDWARE ITEM. GENERAL CONTRACTOR/CONSTRUCTION MANAGER SHALL KEEP THESE ORDER ACKNOWLEDGEMENT NUMBERS ON FILE IN THE CONSTRUCTION TRAILER.

5. PRODUCT DELIVERY, STORAGE, AND HANDLING:
A. LABEL EACH ITEM OF HARDWARE WITH THE APPROPRIATE DOOR NUMBER AND HARDWARE SCHEDULE HEADING NUMBER, AND DELIVER TO THE INSTALLER SO DESIGNATED BY THE CONTRACTOR.

6. EXISTING CONDITIONS:
A. WHERE EXISTING DOORS, FRAMES AND/OR HARDWARE ARE TO REMAIN, CONDITIONS, PREPARATIONS AND FUNCTIONS SHALL BE FIELD VERIFIED TO CONFIRM COMPATIBILITY WITH SPECIFIED HARDWARE_ WHERE ANY
INCOMPATIBILITY IS DISCOVERED, NOTIFY THE CONTRACTOR OR CONSTRUCTION MANAGER IMMEDIATELY AND PROVIDE A SUGGESTED SOLUTION BASED ON INDUSTRY STANDARD BUSINESS PRACTICES.

7. WARRANTIES:
A. REFER TO DIVISION I FOR WARRANTY REQUIREMENTS.
B. SPECIAL WARRANTY PERIODS:
I. CLOSERS SHALL CARRY MANUFACTURER'S 30-YEAR WARRANTY AGAINST MANUFACTURING DEFECTS AND WORKMANSHIP.
2. LOCKSETS SHALL CARRY MANUFACTURER'S 3-YEAR WARRANTY AGAINST MANUFACTURING DEFECTS AND WORKMANSHIP.

I. OVERHEAD HOLDERS AND STOPS:
I. TYPE, FUNCTION AND FASTENERS MUST BE SAME AS GLYNN-JOHNSON SPECIFIED. SIZE PER MANUFACTURER'S SELECTOR CHART. PLASTIC END CAPS, HOLD OPEN MECHANISMS AND SHOCK BLOCKS ARE NOT ALLOWED. END CAPS MUST BE FINISHED SAME AS BALANCE OF UNIT.
2. MANUFACTURE PRODUCTS USING BASE MATERIAL OF BRASS/BRONZE FOR US3, US4, & USI OB FINISHED PRODUCTS AND 300 STAINLESS STEEL FOR US32 & US32D FINISHED PRODUCTS.
3. TYPE, FUNCTION, AND FASTENERS MUST BE THE SAME AS GLYNN-JOHNSON SPECIFIED. SIZE PER MANUFACTURER'S SELECTOR CHART.
a. GLYNN-JOHNSON
J. KICK PLATES:

PART 2 PRODUCT

I. FURNISH EACH CATEGORY WITH THE PRODUCTS OF ONLY ONE MANUFACTURER UNLESS SPECIFIED OTHERWISE; THIS REQUIREMENT IS MANDATORY WHETHER VARIOUS MANUFACTURERS ARE LISTED OR NOT. INSTRUCTIONS. PROVIDE CHANGE KEYS, MASTER KEYS AND GRAND MASTER KEYS AS REQUIRED BY OWNER.
2. PROVIDE THE PRODUCTS OF MANUFACTURER DESIGNATED OR IF MORE THAN ONE MANUFACTURER IS LISTED, THE COMPARABLE PRODUCT OF ONE OF THE OTHER MANUFACTURERS LISTED. WHERE ONLY ONE MANUFACTURER OR PRODUCT IS LISTED, IT IS UNDERSTOOD THAT THIS IS THE OWNER'S BUILDING STANDARD AND "NO SUBSTITUTION" IS ALLOWED.

A. HINGES:
I. FURNISH HINGES OF CLASS AND SIZE AS LISTED IN SETS.
2. NUMBERS USED ARE IVES (IVE).
3. PRODUCTS OF A BHMA MEMBER ARE ACCEPTABLE.

B. CONTINUOUS GEAR HINGE:
I. 6063-T6 ALUMINUM ALLOY, ANODIZED FINISH (CAP ON ENTIRE HINGE PAINTED IF SPECIFIED). MANUFACTURE TO TEMPLATE, UNCUT HINGES NON-HANDED, PINLESS ASSEMBLY, THREE INTERLOCKING EXTRUSIONS, FULL HEIGHT OF DOOR AND FRAME, LUBRICATED POLYACETAL THRUST BEARING FASTENERS 410 STAINLESS STEEL PLATED AND HARDENED. ALL HINGE PROFILES TO BE MANUFACTURED TO TEMPLATE BEARING LOCATIONS, WITH STANDARD DUTY BEARING CONFIGURATIONS AT 5-1/8" SPACING WITH A MINIMUM OF 16 BEARINGS: AND HEAVY DUTY AT 2-9/16" SPACING WITH A MINIMUM OF 32 BEARINGS. ANODIZING OF MATERIAL SHALL BE DONE AFTER FABRICATION OF COMPONENTS SO THAT ALL BEARING SLOTS ARE ANODIZED.
2. LENGTH: I" LESS THAN DOOR OPENING HEIGHT. FASTENER 12-24 X I/2" #3 PHILLIPS KEEN FORM STAINLESS STEEL SELF-TAPPING AT ALUMINUM AND HOLLOW METAL DOORS, 12- I /2" #3 PHILIPS, FLATHEAD FULL THREAD AT WOOD DOORS.
3. FURNISH FIRE RATED HINGES "FR" AT LABELED OPENINGS.
4. NUMBERS USED ARE IVES.
a. FOR WOOD AND HOLLOW METAL FRAMES;
i. IVES 224HD
ii. EQUAL PRODUCTS BY HAGER & SELECT WILL ALSO BE ACCEPTED.
b. FOR ALUMINUM FRAMES;
i. IVES I I 2HD
ii. EQUAL PRODUCTS BY HAGER & SELECT WILL ALSO BE ACCEPTED.

C. FLUSH BOLTS:
I. CONSTANT LATCHING: METAL DOORS:
a. IVES FBSO SERIES
b. EQUAL PRODUCT OF ANY B.H.M.A. MEMBER.
2. CONSTANT LATCHING: WOOD DOORS:
a. IVES FB60 SERIES
b. EQUAL PRODUCT OF ANY B.H.M.A. MEMBER.
3. MANUAL - WOOD AND METAL DOORS:
a. IVES FB458 SERIES
b. EQUAL PRODUCT OF ANY B.H.M.A. MEMBER.
4. DUST PROOF STRIKES - FURNISH WITH ALL FLUSH BOLTS, EXCEPT AT OPENINGS HAVING THRESHOLDS:
a. IVES DP2
b. EQUAL PRODUCT OF ANY B.H.M.A. MEMBER.

D. LOCKSETS AND LATCHSETS - MORTISE TYPE:
I. LOCKSETS SHALL BE MANUFACTURED FROM HEAVY GAUGE STEEL, MINIMUM LOCKCASE THICKNESS 1/8", CONTAINING COMPONENTS OF STEEL WITH A ZINC DICHROMATE PLATING FOR CORROSION RESISTANCE.
2. LOCKS ARE TO HAVE A STANDARD 2 ¾" BACKSET WITH A FULL¾" THROW TWO-PIECE STAINLESS STEEL MECHANICAL ANTI-FRICTION LATCHBOLT. DEADBOLT SHALL BE A FULL I" THROW, CONSTRUCTED OF STAINLESS STEEL.
3. LOCKCASE SHALL BE EASILY HANDED WITHOUT CHASSIS DISASSEMBLY BY REMOVING HANDING SCREW ON LOCKCASE AND INSTALLING IN OPPOSITE LOCATION ON REVERSE SIDE. CHANGING OF DOOR HAND BEVEL FROM STANDARD TO REVERSE HAND SHALL BE DONE BY REMOVING THE LOCKCASE SCALP PLATE, AND PULLING AND ROTATING THE LATCHBOLT 180 DEGREES.
4. LOCK TRIM SHALL BE THROUGH-BOLTED TO THE DOOR TO ASSURE CORRECT ALIGNMENT AND PROPER OPERATION. LEVER TRIM SHALL HAVE EXTERNAL SPRING CAGE MECHANISM TO ASSIST IN SUPPORT OF THE LEVER WEIGHT. THUMB TURNS SHALL HAVE "EZ" THUMBTURN EQUAL TO SCHLAGE LS83-363.
5. FUNCTION NUMBERS ARE SCHLAGE.
a. SCHLAGE L9000
6. LOCKSET TRIM:
a. SCHLAGE O3N
7. PROVIDE STRIKES WITH EXTENDED LIPS WHERE REQUIRED TO PROTECT TRIM FROM BEING MARRED BY LATCH BOLT. PROVIDE STRIKE LIPS THAT DO NOT PROJECT MORE THAN I/8" BEYOND DOOR FRAME TRIM AT SINGLE DOORS AND HAVE 7/8" LIP TO CENTER AT PAIRS OF 1-3/4" DOORS.

E. EXIT DEVICES:
I. EXIT DEVICES SHALL BE TOUCHPAD STYLE, FABRICATED OF BRASS, BRONZE, STAINLESS STEEL, OR DOOR HARDWARE.
2. ALL EXIT DEVICES SHALL INCORPORATE A FLUID DAMPER, WHICH DECELERATES THE TOUCHPAD ON ITS RETURN STROKE AND ELIMINATES NOISE ASSOCIATED WITH EXIT DEVICE OPERATION. TOUCHPAD SHALL EXTEND A MINIMUM OF ONE HALF OF THE DOOR WIDTH. ALL LATCHBOLTS TO BE DEADLATCHING TYPE, WITH A SELF-LUBRICATING COATING TO REDUCE WEAR.
3. END-CAP WILL BE SLOPED TO DEFLECT ANY IMPACT FROM CARTS AND THEY SHALL BE FLUSH WITH THE EXTERNAL MECHANISM CASE. END CAPS THAT OVERLAP AND PROJECT ABOVE THE MECHANISM CASE ARE UNACCEPTABLE. END CAP SHALL UTILIZE A TWO-POINT ATTACHMENT TO THE MOUNTING BRACKET.
4. TOUCH PAD SHALL MATCH EXIT DEVICE FINISH, AND SHALL BE STAINLESS STEEL FOR US26, US26D, US28, US32, AND US32D FINISHES. ONLY COMPRESSION SPRINGS WILL BE USED IN DEVICES, LATCHES, AND OUTSIDE TRIMS OR CONTROLS.
5. PLASTIC TEMPLATES SHALL BE INCLUDED WITH EACH EXIT DEVICE TO FACILITATE A QUICK, EASY AND ACCURATE INSTALLATION.
6. STRIKES SHALL BE ROLLER TYPE AND COME COMPLETE WITH A LOCKING PLATE TO PREVENT MOVEMEN
7. ALL RIM AND VERTICAL ROD EXIT DEVICES SHALL HAVE PASSED A 5 MILLION (5,000,000) CYCLE TEST BASED ON ANSI AI 56.3, 1994, GRADE I TEST STANDARDS AND CERTIFIED BY AN INDEPENDENT TESTING LAB.
8. ALL MORTISE EXIT DEVICES SHALL HAVE PASSED AI O MILLION (I 0,000,000) CYCLE TEST BASED ON ANSI A156.3, 1994, GRADE I TEST STANDARDS AND CERTIFIED BY AN INDEPENDENT TESTING LAB.
9. PROVIDE CYLINDER DOGGING ON PANIC EXIT HARDWARE WHERE NOTED IN HARDWARE SETS.
I O. EXIT DEVICES SHALL BE UL LISTED PANIC EXIT HARDWARE. ALL EXIT DEVICES FOR FIRE RATED OPENINGS SHALL BE UL LABELED FIRE EXIT HARDWARE.
11. LEVER TRIM FOR EXIT DEVICES SHALL BE VANDAL-RESISTANT TYPE, WHICH WILL TRAVEL TO A 90-DEGREE DOWN POSITION WHEN MORE THAN 35 POUNDS OF TORQUE ARE APPLIED, AND WHICH CAN EASILY BE RE-SET.
12. VON DUPRIN 98 AND 35A SERIES. SERIES AND FUNCTION NUMBERS AS LISTED IN SETS.
13. TRIM:
a. AS SPECIFIED IN SETS.
b. LEVERS TO MATCH LOCKSET DESIGN WHERE SPECIFIED.

F. PUSH AND PULL HARDWARE:
I. PUSH PLATES: IVES 8200 SERIES 4 X 16 X .050 INCHES.
2. PUSH-PULL UNITS: ONE INCH ROUND ROD. PUSH: STRAIGHT PUSH BAR, PULL: 12 INCH CENTERS. ATTACH TOP POST OF PULL BACK TO BACK WITH LATCH STILE END OF PUSH BAR, BOTTOM POST OF PULL AND HINGE STILE END OF PUSH BAR WITH END CAPS.
3. PULLS: ONE INCH ROUND ROD, STRAIGHT 12 INCH CENTERS.
4. PULL PLATES: IVES 8302-8 4 X 16 X .050 INCHES. 8" CENTER.
5. MANUFACTURER: PROVIDE PUSH AND PULL HARDWARE FROM ANY MEMBER OF B.H.M.A.

G. COORDINATOR - FRAME STOP MOUNTED:
I. DOOR COORDINATOR SHALL PREVENT THE ACTIVE DOOR FROM CLOSING BEFORE INACTIVE DOOR. STOP MOUNTED CHANNEL 1-5/8" X 5/8" STEEL TUBING X LENGTH TO SUIT DOOR OPENING. COORDINATOR SHALL BE UL LISTED. FURNISH FILLER BARS TO FILL GAP BETWEEN END OF COORDINATOR AND INACTIVE DOOR FRAME. FURNISH MOUNTING BRACKETS FOR ALL STOP MOUNTED HARDWARE SUCH AS EXIT DEVICE STRIKES, DOOR CLOSER PA SHOES, ETC. COORDINATORS SHALL BE PREPARED (CUTOUT) AT THE FACTORY FOR SURFACE APPLIED OR CONCEALED VERTICAL ROD PANIC DEVICES IF REQUIRED.
2. FURNISH WITH CARRY BAR CBI WHEN REQUIRED FOR PROPER OPERATION.
a. IVES COR X LENGTH TO SUIT.
b. EQUAL PRODUCTS OF ANY BHMA MANUFACTURER

H. CLOSERS:
I. DOOR CLOSERS SHALL HAVE FULLY HYDRAULIC, FULL RACK AND PINION ACTION WITH A HIGH STRENGTH CAST IRON CYLINDER. CYLINDER BODY SHALL BE I ½" IN DIAMETER, AND DOUBLE HEAT TREATED PINION SHALL BE 11 /16" IN DIAMETER WITH DOUBLED SLAB DRIVE ARM CONNECTION.
2. HYDRAULIC FLUID SHALL BE OF A TYPE REQUIRING NO SEASONAL CLOSER ADJUSTMENT FOR TEMPERATURES RANGING FROM 120 DEGREES F TO -30 DEGREES F.
3. SPRING POWER SHALL BE CONTINUOUSLY ADJUSTABLE OVER THE FULL RANGE OF CLOSER SIZES, AND ALLOW FOR REDUCED OPENING FORCE FOR THE PHYSICALLY HANDICAPPED. HYDRAULIC REGULATION SHALL BE BY TAMPER-PROOF, NON-CRITICAL VALVES. CLOSERS SHALL HAVE SEPARATE ADJUSTMENT FOR LATCH SPEED, GENERAL SPEED, AND BACKCHECK.
4. ALL CLOSERS SHALL HAVE SOLID FORGED STEEL MAIN ARMS (AND FORGED FOREARMS FOR PARALLEL ARM CLOSERS).
5. ALL SURFACE MOUNTED MECHANICAL CLOSERS SHALL BE CERTIFIED TO EXCEED TEN MILLION (10,000,000) FULL LOAD CYCLES BY A RECOGNIZED INDEPENDENT TESTING LABORATORY.
6. CLOSERS WILL HAVE POWDER COATING FINISH CERTIFIED TO EXCEED I 00 HOURS SALT SPRAY TESTING BY ETL, AN INDEPENDENT TESTING LABORATORY USED BY BHMA FOR ANSI CERTIFICATION.
7. REFER TO DOOR AND FRAME DETAILS AND FURNISH ACCESSORIES SUCH AS DROP PLATES, PANEL ADAPTERS, SPACERS AND SUPPORTS AS REQUIRED TO CORRECTLY INSTALL DOOR CLOSERS. STATE DEGREE OF DOOR SWING IN THE HARDWARE SCHEDULE.
8. LCN SERIES AS LISTED IN SETS.

I. OVERHEAD HOLDERS AND STOPS:
I. TYPE, FUNCTION AND FASTENERS MUST BE SAME AS GLYNN-JOHNSON SPECIFIED. SIZE PER MANUFACTURER'S SELECTOR CHART. PLASTIC END CAPS, HOLD OPEN MECHANISMS AND SHOCK BLOCKS ARE NOT ALLOWED. END CAPS MUST BE FINISHED SAME AS BALANCE OF UNIT.
2. MANUFACTURE PRODUCTS USING BASE MATERIAL OF BRASS/BRONZE FOR US3, US4, & USI OB FINISHED PRODUCTS AND 300 STAINLESS STEEL FOR US32 & US32D FINISHED PRODUCTS.
3. TYPE, FUNCTION, AND FASTENERS MUST BE THE SAME AS GLYNN-JOHNSON SPECIFIED. SIZE PER MANUFACTURER'S SELECTOR CHART.
a. GLYNN-JOHNSON

J. KICK PLATES:
I. FURNISH .050 INCHES THICK, BEVELED FOUR SIDES, COUNTERSUNK FASTENERS, I O" HIGH X DOOR WIDTH LESS 2" AT SINGLE DOORS AND LESS I" AT PAIRS. WHERE GLASS OR LOUVERS PREVENT THIS HEIGHT, SUPPLY WITH HEIGHT EQUAL TO HEIGHT OF BOTTOM RAIL LESS 2".
2. ANY BHMA MANUFACTURING PRODUCT MEETING ABOVE IS ACCEPTABLE.

K. ARMOR PLATES:
I. PROVIDE .050 INCHES THICK, B4E, COUNTERSUNK FASTENERS, 36" X DOOR WIDTH LESS 2" AT SINGLE DOORS AND I" LESS DOOR WIDTH AT PAIRS. AT EXIT DEVICES PROVIDE HEIGHT TO BOTTOM OF EXIT DEVICE CASES. AT LOCKSETS, LATCHSETS, OR PUSH PULL LATCHES, CUT FOR ROSE OR ESCUTCHEON. BEVEL ALL EDGES OF ALL PLATES

L. WALL STOPS:
I. LENGTH TO EXCEED PROJECTION OF ALL OTHER HARDWARE. PROVIDE WITH THREADED STUDS AND EXPANSION SHIELDS FOR MASONRY WALL CONSTRUCTION.
a. IVES WS44 7
b. BHMA LI2011ORL12021

M. THRESHOLDS:
I. I/2" HIGH - 5" WIDE. COPE AT JAMBS.
2. FURNISH FULL WALL OPENING WIDTH WHEN FRAMES ARE RECESSED.
3. COPE IN FRONT OF MULLIONS IF THRESHOLDS PROJECT BEYOND DOOR FACES.
4. FURNISH WITH NON-FERROUS STAINLESS STEEL SCREWS AND LEAD ANCHORS.
a. ZERO AS LISTED IN SETS
b. EQUAL OF NGP OR REESE

N. DOOR SWEEPS:
I. SURFACE SWEEPS:
a. ZERO AS LISTED IN SETS
b. EQUAL OF NGP OR REESE

O. WEATHER-STRIPPING:
I. APPLY TO HEAD AND JAMB STOPS.
2. SOLID BAR STOCK ALL SIDES
a. ZERO AS LISTED IN SETS
b. EQUAL OF NGP OR REESE

P. MISCELLANEOUS:
I. FURNISH ITEMS NOT CATEGORIZED IN THE ABOVE DESCRIPTIONS BUT SPECIFIED BY MANUFACTURER'S NAMES IN HARDWARE SETS.

Q. FASTENERS:
I. FURNISH FASTENERS OF THE PROPER TYPE, SIZE, QUANTITY AND FINISH. USE MACHINE SCREWS AND EXPANSION SHIELDS FOR ATTACHING HARDWARE TO CONCRETE OR MASONRY, AND WALL GRIP INSERTS AT HOLLOW WALL CONSTRUCTION. FURNISH MACHINE SCREWS FOR ATTACHMENT TO REINFORCED HOLLOW METAL DOORS AND FRAMES AND REINFORCED ALUMINUM DOORS AND FRAMES. FURNISH FULL THREAD WOOD SCREWS FOR ATTACHMENT TO SOLID WOOD DOORS AND FRAMES. "TEK" TYPE SCREWS ARE NOT ACCEPTABLE.
2. SEX BOLTS WILL NOT BE PERMITTED ON REINFORCED METAL DOORS OR WOOD DOORS WHERE BLOCKING IS SPECIFIED.

FINISHES:
A. GENERALLY, DULL CHROME, US26D / BHMA 626. PROVIDE FINISH FOR EACH ITEM AS INDICATED IN SETS.
TEMPLATES AND HARDWARE LOCATION:
A. FURNISH HARDWARE MADE TO TEMPLATE. SUPPLY REQUIRED TEMPLATES AND HARDWARE LOCATIONS TO THE DOOR AND FRAME MANUFACTURERS.
B. FURNISH METAL TEMPLATE TO FRAME/DOOR SUPPLIER FOR CONTINUOUS HINGE.
C. REFER TO ARTICLE 3.1 B.2, LOCATIONS, AND COORDINATE WITH TEMPLATES.
CYLINDERS AND KEYING:
A. ALL CYLINDERS FOR THIS PROJECT WILL BE SUPPLIED BY ONE SUPPLIER REGARDLESS OF DOOR TYPE AND LOCATION.
B. THE FINISH HARDWARE SUPPLIER WILL MEET WITH ARCHITECT AND/OR OWNER TO FINALIZE KEYING REQUIREMENTS AND OBTAIN KEYING INSTRUCTIONS IN WRITING.
a. SUPPLIER SHALL INCLUDE THE COST OF THIS SERVICE IN HIS PROPOSAL.
C. PROVIDE A CYLINDER FOR ALL HARDWARE COMPONENTS CAPABLE OF BEING LOCKED.
D. PROVIDE CYLINDERS MASTER AND GRAND MASTER KEYED TO DESIGNATED SYSTEM ACCORDING TO OWNER'S
E. CYLINDER CORES PROVIDED BY THE OWNER.

PART 3 EXECUTION

INSTALLATION
A. GENERAL:
I. INSTALL HARDWARE ACCORDING TO MANUFACTURERS INSTALLATIONS AND TEMPLATE DIMENSIONS. ATTACH ALL ITEMS OF FINISH HARDWARE TO DOORS, FRAMES, WALLS, ETC. WITH FASTENERS FURNISHED AND REQUIRED BY THE MANUFACTURE OF THE ITEM.
2. PROVIDE BLOCKING/REINFORCEMENT FOR ALL WALL MOUNTED HARDWARE.
3. REINFORCED HOLLOW METAL DOORS AND FRAMES AND REINFORCED ALUMINUM DOOR AND FRAMES WILL BE DRILLED AND TAPPED FOR MACHINE SCREWS.
4. SOLID WOOD DOORS AND FRAMES: FULL THREAD WOOD SCREWS. DRILL PILOT HOLES BEFORE INSERTING SCREWS
5. CONTINUOUS GEAR HINGES ATTACHED TO HOLLOW METAL DOORS AND FRAMES AND ALUMINUM DOORS AND FRAMES: 12-24 X I /2" #3 PHILLIPS KEENFORM SELF-TAPPING. USE #13 OR 3/16 DRILL FOR PILOT.
6. CONTINUOUS GEAR HINGES REQUIRE CONTINUOUS MORTAR GUARDS OF FOAM OR CARDBOARD I/2" THICK X FRAME HEIGHT, APPLIED WITH CONSTRUCTION ADHESIVE.
7. INSTALL WEATHER-STRIP GASKET PRIOR TO PARALLEL ARM CLOSER BRACKET, RIM EXIT DEVICE OR ANY STOP MOUNTED HARDWARE. GASKET TO PROVIDE A CONTINUOUS SEAL AROUND PERIMETER OF DOOR OPENING. ALLOW FOR GASKET WHEN INSTALLING FINISH HARDWARE. DOOR CLOSERS WILL REQUIRE SPECIAL TEMPLATING. EXIT DEVICES WILL REQUIRE ADJUSTMENT IN BACKSET.
B. LOCATIONS:
I. DIMENSIONS ARE FROM FINISH FLOOR TO CENTER LINE OF ITEMS.
2. INCLUDE THIS LIST IN HARDWARE SCHEDULE.
CATEGORY

HINGES
FLUSH BOLT LEVERS LEVERS

DIMENSION

DOOR MANUFACTURER'S STANDARD 72" AND 12"
DOOR MANUFACTURER'S STANDARD
PUSH-PULL UNITS STRAIGHT PULLS PUSH PLATES
PULL PLATES

PER TEMPLATE
42" TO CENTERLINE OF PULL SUITABLE FOR EXIT DEVICES 52"
42" WALL STOPS/HOLDERS AT HEAD

C. FIELD QUALITY INSPECTION:
I. INSPECT MATERIAL FURNISHED, ITS INSTALLATION AND ADJUSTMENT, AND INSTRUCT THE OWNER'S PERSONNEL IN ADJUSTMENT, CARE AND MAINTENANCE OF HARDWARE.
2. LOCKSETS AND EXIT DEVICES SHALL BE INSPECTED AFTER INSTALLATION AND AFTER THE HVAC SYSTEM IS IN OPERATION AND BALANCED, TO INSURE CORRECT INSTALLATION AND PROPER OPERATION.
3. CLOSERS SHALL BE INSPECTED AND ADJUSTED AFTER THE HVAC SYSTEM IS IN OPERATION AND BALANCED, TO INSURE CORRECT INSTALLATION AND PROPER OPERATION.
4. A WRITTEN REPORT STATING COMPLIANCE, AND ALSO LOCATIONS AND KINDS OF NONCOMPLIANCE SHALL BE FORWARDED TO THE ARCHITECT WITH COPIES TO THE CONTRACTOR, HARDWARE DISTRIBUTOR, HARDWARE INSTALLER AND BUILDING OWNER.

D. TECHNICAL AND WARRANTY INFORMATION:
I. AT THE COMPLETION OF THE PROJECT, THE TECHNICAL AND WARRANTY INFORMATION COALESCED AND KEPT ON FILE BY THE GENERAL CONTRACTOR/CONSTRUCTION MANAGER SHALL BE GIVEN TO THE OWNER OR OWNER'S AGENT. IN ADDITION TO BOTH THE TECHNICAL AND WARRANTY INFORMATION, ALL FACTORY ORDER ACKNOWLEDGEMENT NUMBERS SUPPLIED TO THE GENERAL CONTRACTOR/CONSTRUCTION MANAGER DURING THE CONSTRUCTION PERIOD SHALL BE GIVEN TO THE OWNER OR OWNER'S AGENT. THE WARRANTY INFORMATION AND FACTORY ORDER ACKNOWLEDGEMENT NUMBERS SHALL SERVE TO BOTH EXPEDITE AND PROPERLY EXECUTE ANY WARRANTY WORK THAT MAY BE REQUIRED ON THE VARIOUS HARDWARE ITEMS SUPPLIED ON THE PROJECT.
2. SUBMIT TO GENERAL CONTRACTOR/CONSTRUCTION MANAGER, TWO COPIES EACH OF PARTS AND SERVICE MANUALS AND TWO EACH OF ANY SPECIAL INSTALLATION OR ADJUSTMENT TOOLS. INCLUDE FOR LOCKSETS, EXIT DEVICES, DOOR CLOSERS AND ANY ELECTRICAL PRODUCTS.

HARDWARE SETS:

HARDWARE SET NO. O I EACH TO HAVE:
' EXISTING HOWE TO REMAIN *

HARDWARE SET 03

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONTINUOUS HINGE	SL11HD/SL14HD	BK	SEL
1	EA	OFFICE/ENTRY LOCK	L9050BDC 03A 09-544	622	SCH
1	EA	PERMANENT CORE	7-PIN; KEY TO EXISTING SYSTEM		BES
1	EA	WALL STOP	WS443/447	BLK	IVE

HARDWARE SET 04

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONTINUOUS HINGE	SL11HD/SL14HD	BK	SEL
1	EA	PANIC HARDWARE	CD-98-NL-OP-110MD	711	VON
2	EA	PERMANENT CORE	7-PIN; KEY TO EXISTING SYSTEM		BES
1	EA	RIM CYL. HOUSING	1E72 - TAILPIECE & BLOCKING RING AS REQUIRED	BK	BES
1	EA	MORT. CYL. HOUSING	1E74 (MULLION) - CAM & BLOCKING RING AS REQUIRED	BK	BES
1	EA	90 DEG OFFSET PULL	8190EZHD 12" O	BLK	IVE
1	EA	SURFACE CLOSER	4111 SCUSH MC	693	LCN
1	EA	MOUNTING PLATE	4110-XX (AS REQ'D)	693	LCN
1	EA	CUSH SHOE SUPPORT	4110-30 (AS REQ'D)	693	LCN
1	EA	BLADE STOP SPACER	4110-61 (AS REQ'D)	693	LCN
1	EA	WEATHERSTRIPPING/GASKETING	BY DOOR/FRAME MANUFACTURER		B/O
1	EA	DOOR SWEEP	39BK	BK	ZER
1	EA	THRESHOLD	545A-E-V3-226	A	ZER
1	EA	DOOR CONTACT	679-05 (WD/HM AS REQ'D)	BLK	SCE

HARDWARE SET 06

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONTINUOUS HINGE	SL11HD/SL14HD	BK	SEL
1	EA	STOREROOM LOCK	L9080BDC 03A	622	SCH
1	EA	PERMANENT CORE	7-PIN; KEY TO EXISTING SYSTEM		BES
1	EA	SURFACE CLOSER	4011 MC	693	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	BLK	IVE
1	EA	WALL STOP	WS443/447	BLK	IVE

HARDWARE SET 10

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONTINUOUS HINGE	SL11HD/SL14HD	BK	SEL
1	EA	OFFICE W/SIM RETRACT W/ OUTSIDE INDICATOR	L9056BDC 03A 09-544 OS-OCC	622	SCH
1	EA	PERMANENT CORE	7-PIN; KEY TO EXISTING SYSTEM		BES
1	EA	SURFACE CLOSER	4011 MC	693	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	BLK	IVE
1	EA	WALL STOP	WS443/447	BLK	IVE
1	EA	GASKETING	488SBK	BK	ZER

HARDWARE SET 11

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONTINUOUS HINGE	SL11HD/SL14HD	BK	SEL
1	EA	PUSH PLATE	8200 6" X 16"	BLK	IVE
1	EA	PULL PLATE	8302 10" 4" X 16"	BLK	IVE
1	EA	SURFACE CLOSER	4111 EDA MC	693	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	BLK	IVE
1	EA	WALL STOP	WS443/447	BLK	IVE

HARDWARE SET 15

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONTINUOUS HINGE	SL11HD/SL14HD	BK	SEL
1	EA	PASSAGE SET	L9010 03A	622	SCH
1	EA	WALL STOP	WS443/447	BLK	IVE

09 - FINISH ES

SECTION 092900 - GYPSUM DRYWALL

I. PROVIDE AND INSTALL GYPSUM DRYWALL AS INDICATED ON THESE DRAWINGS, AND PER ASTM CI I OR GA-SOS BY THE GYPSUM ASSOCIATION.
a. PROVIDE 5/8" GYPSUM BOARD AS INDICATED ON THESE DRAWINGS.
2. GYPSUM BOARD INSTALLATION WILL BE ON METAL STUDS OR FURRING@ 16" ON CENTER UNLESS OTHERWISE NOTED. ADJUST GAUGE AS REQUIRED FOR UNSUPPORTED LENGTH PERS PSF. FOR LOADING REFER TO THE DRAWINGS FOR MINIUM GAUGE
3. PROVIDE MANUFACTURER'S STANDARD TRIM ACCESSORIES, INCLUDING BUT NOT LIMITED TO CORNER BEAD, L TYPE
EDGES, TRIM BEDS, U TYPE EDGE TRIM BEAD, SPECIAL L CURVED TYPE EDGE TRIM BEAD AND ONE PIECE CONTROL JOINT BEAD.
4. PROVIDE CONTROL JOINTS IN WALLS AT NOT MORE THAN 30' SPACING AND IN SOFFITS NOT EXCEEDING SO' SPACING, OR AS INDICATED ON THE DRAWINGS.
5. APPLY TREATMENT AT GYPSUM BOARD JOINTS, INCLUDING JOINT TAPE AT ALL JOINTS BETWEEN GYPSUM BOARDS AND MIN. 2 COATS GYPSUM JOINT COMPOUND (OMIT THIRD COAT AND SANDING ON CONCEALED DRYWALL WORK)
6. EXTERIOR GYPSUM SHEATHING - 5/8" DENS-GLASS GOLD PER ASTM. C79.

SECTION - 093013 - TILE

A. PROVIDE ALL TILE INSTALLATION INDICATED, SCHEDULED OR SPECIFIED, COMPLETE WITH ALL ACCESSORIES AND TRIM FOR A FINISHED INSTALLATION.
B. ENVIRONMENTAL REQUIREMENTS: INSTALL TILE WHEN AMBIENT AIR TEMPERATURE, AND TEMPERATURES OF ALL MATERIALS, IS 50 DEGF OR HIGHER. IN ADDITION, COMPLY WITH MINIMUM TEMPERATURE RECOMMENDATIONS OF MANUFACTURERS FOR BONDING AND GROUTING MATERIALS TO BE USED, AND FOR CURING OF SAME.
C. WALL AND FLOOR TILE: PROVIDE FIELD TILE AND TRIM/BASE UNITS AS SPECIFIED IN FINISH SCHEDULE
D. SETTING AND GROUTING MATERIALS:
I. PORTLAND CEMENT: PER ASTM C I 50, TYPE I.
2. SAND: NATURAL SAND PER ASTM C 144, WASHED CLEAN AND GRADED
3. HYDRATED LIME: PER ASTM C 206 OR C 207, TYPE 5.
4. WATER: CLEAN AND POTABLE
5. DRY-SET MORTAR: PER ANSI A118.1, OF PROPER FORMULATION RECOMMENDED BY THE MANUFACTURER FOR THE TYPE OF TILE AND SUBSTRATE (WALL OR FLOOR, AND SUBSTRATE MATERIAL) ON WHICH THE DRY-SET MORTAR IS TO BE USED. USE FACTORY-SANDED DRY-SET MORTAR.
6. EPOXY MORTAR AND GROUT: PER ANSI A118.3, NON-STAINING TYPE, FORMULATED IN COMPLIANCE WITH TCA FORMULA AAR-II, IN COLORS TO MATCH THOSE SPECIFIED IN FINISH SCHEDULE.
7. LATEX-PORTLAND CEMENT MORTAR AND GROUT: PER ANSI AI 18.4, CONSISTING OF A LIQUID LATEX ADDITIVE MIXED WITH A PREPACKAGED DRY-SET MORTAR RECOMMENDED BY OR MANUFACTURED BY THE LATEX ADDITIVE MANUFACTURER AND FORMULATED IN STRICT ACCORDANCE WITH THE ADDITIVE MANUFACTURER'S INSTRUCTIONS.
8. ELASTOMERIC WATERPROOF TILE-SETTING ADHESIVE:
a. BOSTIK CONSTRUCTION PRODUCTS "HYDROMENT ULTRA-SET MEMBRANE" AND "HYDROMENT 1900 MORTAR".
b.LATICRETE INTERNATIONAL, INC. "LATICRETE 9235 WATERPROOFING MEMBRANE" AND "LATICRETE TILE SETTING MORTAR 4237".
E. PREPARATION: INSPECT ALL SURFACES UPON WHICH MATERIALS WILL BE APPLIED, AND DETERMINE IF THERE ARE ANY CONDITIONS DETRIMENTAL TO A SUCCESSFUL TILE INSTALLATION, PRIOR TO PROCEEDING WITH THE WORK. THE INSTALLATION OF TILE WORK WILL BE CONSIDERED AN ACCEPTANCE OF THE SURFACES TO BE COVERED, AND CLAIMS FOR FAILURE OF TILE WORK BECAUSE OF UNSATISFACTORY SUB-SURFACES WILL NOT BE ALLOWED. PREPARE ALL SURFACES UPON WHICH THESE MATERIALS WILL BE APPLIED AS REQUIRED TO PROPERLY RECEIVE THEM. REMOVE FROM THE SUBSTRATE SURFACES ALL DIRT, GREASE, OIL, PAINT, AND OTHER SURFACE CONTAMINATIONS THAT WILL PREVENT PROPER BONDING. REMOVE ALL RIDGES, FINS, PROJECTIONS, HIGH SPOTS AND OTHER IRREGULARITIES THAT WOULD INTERFERE WITH PROPER INSTALLATION WORK. WET CONCRETE AND MASONRY SUBSTRATE SURFACES WITH WATER, AND ALLOW TO SURFACE DRY,JUST PRIOR TO INSTALLING SETTING BEDS.
I. DO NOT WET SURFACES TO RECEIVE EPOXY MORTAR.

F. INSTALLATION: INSTALL MORTAR BEDS OF THICKNESSES REQUIRED TO PROVIDE THE FINISH LINES, PLANES, SLOPES AND ELEVATIONS REQUIRED. WHERE FLOORS HAVE DRAINS, SLOPE MORTAR BEDS TO DRAINS; OTHERWISE FLOORS SHALL BE LEVEL AND FLAT. WALLS SHALL BE PLUMB AND FLAT. BOND MORTAR BEDS TO BACK-UP CONSTRUCTION AND TILE TO MORTAR BEDS.
I. WASH ALL FINISH SURFACES CLEAN, FREE FROM MORTAR, DIRT AND OTHER DEFACEMENTS.
2. NEATLY CUT AND ACCURATELY FIT ALL TILE WORK AROUND PIPING AND OTHER INSTALLATIONS WHICH PIERCE THE TILE WORK, AT IRREGULAR SHAPED PLACES, AND AT THE JUNCTION WITH OTHER MATERIALS. DO NOT CHIP OR OTHERWISE DAMAGE THE SURFACE OF THE TILE DURING CUTTING. GRIND CUT EDGES SMOOTH AND EVEN.
3. MIX AND USE PROPRIETARY OR TRADE-MARKED MATERIALS IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, UNLESS OTHERWISE SPECIFIED.
4. PROVIDE THIS WORK AND MATERIALS PER THE TILE COUNCIL OF AMERICA HANDBOOK FOR CERAMIC TILE INSTALLATION, GENERALLY AND SPECIFICALLY AS REFERENCED; THE REFERENCED AMERICAN NATIONAL STANDARDS INSTITUTE STANDARD SPECIFICATIONS; AND, TO THE FURTHER REQUIREMENTS SPECIFIED IN THIS SECTION.
G. SETTING BEDS: CONTRACTOR HAS THE CHOICE OF SETTING INTERIOR CERAMIC TILE WITH DRY-SET MORTAR OR LATEX PORTLAND CEMENT MORTAR WHERE THIN-SET MORTAR IS USED SUCH AS FOR ALL WALLS AND ALSO FOR FLOORS IN AREAS NOT HAVING HOLD-DOWN IN THE CONCRETE BASE SLAB.
I. DRY-SET MORTAR:
a. INTERIOR WALLS NOT OTHERWISE SPECIFIED: INSTALL TILE USING DRY-SET MORTAR PER ANSI A I 08.S AND TCA HANDBOOK METHOD W243 ON GYPSUM BOARD.
b. INTERIOR FLOORS NOT OTHERWISE SPECIFIED: INSTALL TILE USING DRY-SET MORTAR PER ANSI AI 08.5 AND TCA HANDBOOK METHOD FI 13.
2. LATEX-PORTLAND CEMENT MORTAR:
3. INTERIOR WALLS NOT OTHERWISE SPECIFIED: INSTALL TILE USING LATEX-PORTLAND CEMENT MORTAR PER ANSI
AI 08.5 AND TCA HANDBOOK METHOD W243 ON GYPSUM BOARD.
a. INTERIOR CEMENTITIOUS BACKER BOARD WALLS: INSTALL TILE ON CEMENTITIOUS BACKER BOARD SURFACES USING LATEX-PORTLAND CEMENT MORTAR PER ANSI AI 08.5 AND TCA HANDBOOK METHOD W244. BEFORE INSTALLING WALL TILE, TREAT ALL JOINTS AND CORNERS IN CEMENTITIOUS BACKER BOARD

ON LOCKCASE AND INSTALLING IN OPPOSITE LOCATION ON REVERSE SIDE. CHANGING OF DOOR HAND BEVEL FROM STANDARD TO REVERSE HAND SHALL BE DONE BY REMOVING THE LOCKCASE SCALP PLATE, AND PULLING AND ROTATING THE LATCHBOLT 180 DEGREES.

INSTALLATION
A. GENERAL:

HARDWARE SET NO. 12 EACH TO HAVE:

SUBSTRATE WITH 2INCH WIDE GLASS FIBER MESH TAPE EMBEDDED IN A SKIM COAT OF THE LATEX PORTLAND CEMENT MORTAR.
4. INTERIOR FLOORS NOT OTHERWISE SPECIFIED: INSTALL TILE USINGLATEX-PORTLAND CEMENT MORTAR PER ANSI AI 08.5 AND TCA HANDBOOK METHOD FI 13.
5. PORTLAND CEMENT MORTAR:
6. INTERIOR WALLS: INSTALL TILE USING PORTLAND CEMENT MORTAR PER ANSI A I 08. I AND TCA HANDBOOK METHOD W21 I.
a. INTERIOR FLOORS: INSTALL TILE IN FULL PORTLAND CEMENT MORTAR BED OF THICKNESS NECESSARY TO BRING FINISHED TILE FLOOR TO ELEVATIONS AND SLOPES SHOWN. FOLLOW ANSI AI 08. I AND TCA HANDBOOK METHOD FI 12 FOR DIRECT INSTALLATION ON SLAB OR FI 21 (WITH REINFORCING) FOR INSTALLATION OVER MEMBRANE WATERPROOFING.
b. EXTERIOR WALLS: INSTALL TILE USING PORTLAND CEMENT MORTAR PER ANSI AI 08. I AND TCA HANDBOOK METHOD W201.
7. EPOXY MORTAR, THIN-SET METHOD FOR FLOOR TILE: INSTALL TILE IN EPOXY MORTAR BED PER ANSI AI 08.6 AND
TCA HANDBOOK METHOD FI 3
8. ELASTOMERIC WATERPROOF TILE-SETTING ADHESIVE FOR FLOOR TILE:
9. MIX AND APPLY SYSTEM PER MANUFACTURER'S INSTRUCTIONS.
a. ALL ASPECTS OF SURFACE PREPARATION, MEMBRANE INSTALLATION AND SETTING OF TILE SHALL BE IN ACCORDANCE WITH THE INSTRUCTIONS OF THE MANUFACTURER OF THE APPROVED SYSTEM.
b. EXTEND MEMBRANE UP WALLS BEHIND TILE BASES TO HEIGHT OF TOP OF TILE BASES.
c. SET TILE ON WATERPROOF MEMBRANE ONLY IN THINSET-MORTAR/ADHESIVE SPECIFIED AS PART OF THE SYSTEM. DO NOT MIX THE PRODUCTS OF DIFFERENT MANUFACTURERS.
d. DETERMINE FROM THE MANUFACTURER OF THE ACCEPTED TILE-SETTING SYSTEM THAT THE SPECIFIC GROUT TO BE USED FOR GROUTING THE TILE IS COMPATIBLE WITH THE TILE-SETTING MORTAR/ADHESIVE TO BE PROVIDED. IF THE SPECIFIED GROUT IS NOT COMPATIBLE, PROPOSE ANOTHER GROUT PRODUCT FOR THE ARCHITECT'S ACCEPTANCE.
H. CONTROLJOINTS: CONSTRUCT CONTROL JOINTS IN TILE WORK PER TCA HANDBOOK METHOD EJI 71, COMPLETE WITH FILLER, BACK-UP AND BOND BREAKER AS REQUIRED, AND CALK WITH SEALANT. MATCH WIDTH OF CONTROL JOINTS WITH TILE JOINTS. FOR WALLS: PROVIDE DIRECTLY OVER MASONRY AND GYPSUM BOARD CONTROL JOINTS, AND 12 TO 16 FEET O.C. VERTICALLY AND HORIZONTALLY ELSEWHERE. FOR FLOORS: PROVIDE DIRECTLY OVER BUILDING EXPANSION JOINTS AND OTHER JOINTS IN CONCRETE SUBSLABS; AND AT 24 TO 36 FEET EACH WAY IN LARGE AREAS.

I. GROUTING: GROUT TILE PER TCA HANDBOOK AND MANUFACTURER RECOMMENDED STANDARDS FOR EACH APPLICATION. GROUT SHALL BE COMPATIBLE WITH TILE-SETTING MORTAR/ADHESIVE

J. ADJUSTING AND CLEANING: REMOVE ALL BROKEN, CHIPPED, LOOSE, STAINED, OR OTHERWISE UNSATISFACTORY WORK, AND PATCH AND RESTORE IMPERFECT MATERIALS AND WORKMANSHIP TO CONDITION COMPATIBLE WITH CONTRACT REQUIREMENTS. WHEN SO DIRECTED BY THE OWNER'S REPRESENTATIVE, AFTER OTHER ADJACENT WORK IS SUBSTANTIALLY COMPLETED, REMOVE AND DISPOSE OF PROTECTIVE COVERINGS AND THOROUGHLY CLEAN ALL TILE AND MARBLE WORK BY APPROVED MANNER, USING A NON-ACIDIC TYPE CLEANER.

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HOBBS + BLACK
ARCHITECTS
100 N. State St.
Ann Arbor, MI 48104
P. 734.663.4189
www.hobbs-black.com

DETROIT DIESEL CORP.
DETROIT DIESEL SECOND FLOOR RENOVATION
13400 W. OUTER DR,
DETROIT MI
PROJECT

CONSULTANT

STATE OF MICHIGAN
THOMAS M DILLENBECK
ARCHITECT
No. 1301057360
LICENSED ARCHITECT

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SECTION 095100 - ACOUSTICAL CEILINGS PART I - GENERAL

1.1 RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION I SPECIFICATION SECTIONS, APPLY TO THIS SECTION.
1.2 SUMMARY
A. THIS SECTION INCLUDES CEILINGS CONSISTING OF ACOUSTICAL PANELS AND EXPOSED SUSPENSION SYSTEMS.
1.4 QUALITY ASSURANCE
A. INSTALLER QUALIFICATIONS: ENGAGE AN EXPERIENCED INSTALLER WHO HAS COMPLETED ACOUSTICAL PANEL CEILINGS SIMILAR IN MATERIAL, DESIGN, AND EXTENT TO THAT INDICATED FOR THIS PROJECT AND WITH A RECORD OF SUCCESSFUL IN-SERVICE PERFORMANCE.
B. SOURCE LIMITATIONS FOR CEILING UNITS: OBTAIN EACH ACOUSTICAL CEILING PANEL FROM SOURCE SPECIFIED.
1. SOURCE LIMITATIONS FOR SUSPENSION SYSTEM: OBTAIN EACH SUSPENSION SYSTEM FROM SOURCE SPECIFIED

C. FIRE-TEST-RESPONSE CHARACTERISTICS: PROVIDE ACOUSTICAL PANEL CEILINGS THAT COMPLY WITH THE FOLLOWING REQUIREMENTS:
1. FIRE-RESPONSE TESTS WERE PERFORMED BY UL, ITS/WARNOCK HERSEY, OR ANOTHER INDEPENDENT TESTING AND INSPECTING AGENCY THAT IS ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION AND THAT PERFORMS TESTING AND FOLLOW-UP SERVICES.
2. SURFACE-BURNING CHARACTERISTICS OF ACOUSTICAL PANELS COMPLY WITH ASTM E 1264 FOR CLASS A MATERIALS AS DETERMINED BY TESTING IDENTICAL PRODUCTS PER ASTM E 84.
3. FIRE-RESISTANCE-RATED ASSEMBLIES, WHICH ARE INDICATED BY DESIGN DESIGNATIONS FROM UL'S "FIRE RESISTANCE DIRECTORY," FROM ITS/WARNOCK HERSEY'S "DIRECTORY OF LISTED PRODUCTS," OR FROM THE LISTINGS OF ANOTHER TESTING AND INSPECTING AGENCY, ARE IDENTICAL IN MATERIALS AND CONSTRUCTION TO THOSE TESTED IN ACCORDANCE WITH ASTM E 119.
4. PRODUCTS ARE IDENTIFIED WITH APPROPRIATE MARKINGS OF APPLICABLE TESTING AND INSPECTING AGENCY.
1.5 DELIVERY, STORAGE, AND HANDLING

A. DELIVER ACOUSTICAL PANELS AND SUSPENSION SYSTEM COMPONENTS TO PROJECT SITE IN ORIGINAL, UNOPENED PACKAGES AND STORE THEM IN A FULLY ENCLOSED SPACE WHERE THEY WILL BE PROTECTED AGAINST DAMAGE FROM MOISTURE, DIRECT SUNLIGHT, SURFACE CONTAMINATION, AND OTHER CAUSES_
B. BEFORE INSTALLING ACOUSTICAL PANELS, PERMIT THEM TO REACH ROOM TEMPERATURE AND A STABILIZED MOISTURE CONTENT.
C. HANDLE ACOUSTICAL PANELS CAREFULLY TO AVOID CHIPPING EDGES OR DAMAGING UNITS IN ANY WAY.
PROJECT CONDITIONS
A. ENVIRONMENTAL LIMITATIONS: DO NOT INSTALL ACOUSTICAL PANEL CEILINGS UNTIL SPACES ARE ENCLOSED AND WEATHERPROOF, WET-WORK IN SPACES IS COMPLETE AND DRY, WORK ABOVE CEILINGS IS COMPLETE, AND AMBIENT TEMPERATURE AND HUMIDITY CONDITIONS ARE MAINTAINED AT THE LEVELS INDICATED FOR PROJECT WHEN OCCUPIED FOR ITS INTENDED USE.
COORDINATION
A. COORDINATE LAYOUT AND INSTALLATION OF ACOUSTICAL PANELS AND SUSPENSION SYSTEM WITH OTHER

CONSTRUCTION THAT PENETRATES CEILINGS OR IS SUPPORTED BY THEM, INCLUDING LIGHT FIXTURES, HVAC EQUIPMENT, FIRE-SUPPRESSION SYSTEM, AND PARTITION ASSEMBLIES.
EXTRA MATERIALS
A. FURNISH EXTRA MATERIALS DESCRIBED BELOW THAT MATCH PRODUCTS INSTALLED, ARE PACKAGED WITH PROTECTIVE COVERING FOR STORAGE, AND ARE IDENTIFIED WITH LABELS DESCRIBING CONTENTS_
1. ACOUSTICAL CEILING UNITS: FULL-SIZE UNITS EQUAL TO 2.0 PERCENT OF AMOUNT INSTALLED.
2. SUSPENSION SYSTEM COMPONENTS: QUANTITY OF EACH EXPOSED COMPONENT EQUAL TO 2.0 PERCENT OF AMOUNT INSTALLED.
PRODUCTS MANUFACTURER
A_ PRODUCTS: SUI\JECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS INDICATED AS MANUFACTURED BY ARMSTRONG WORLD INDUSTRIES, INC.
ACOUSTICAL PANELS, GENERAL
A. ACOUSTICAL PANEL STANDARD: PROVIDE MANUFACTURER'S STANDARD PANELS OF CONFIGURATION INDICATED THAT COMPLY WITH ASTM E 1264 CLASSIFICATIONS AS DESIGNATED BY TYPES, PATTERNS, ACOUSTICAL RATINGS, AND LIGHT REFLECTANCES.
i. MOUNTING METHOD FOR MEASURING NOISE REDUCTION COEFFICIENT: TYPE E-400; PLENUM MOUNTING IN WHICH FACE OF TEST SPECIMEN IS 15-3/4 INCHES AWAY FROM TEST SURFACE IN ACCORDANCE WITH ASTM E 795.
B. ACOUSTICAL PANEL COLORS AND PATTERNS: AS SCHEDULED
METAL SUSPENSION SYSTEMS, GENERAL
A. METAL SUSPENSION SYSTEM STANDARD: PROVIDE MANUFACTURER'S STANDARD DIRECT-HUNG METAL SUSPENSION SYSTEMS INDICATED THAT COMPLY WITH APPLICABLE ASTM C 635/C 635M REQUIREMENTS.
B. FINISHES AND COLORS, GENERAL: COMPLY WITH NAAMM'S "METAL FINISHES MANUAL FOR ARCHITECTURAL AND METAL PRODUCTS" FOR RECOMMENDATIONS FOR APPLYING AND DESIGNATING FINISHES. PROVIDE MANUFACTURER'S STANDARD FACTORY-APPLIED WHITE FINISH FOR TYPE OF SYSTEM INDICATED: AS SCHEDULED
C. ATTACHMENT DEVICES: SIZE FOR FIVE TIMES DESIGN LOAD INDICATED IN ASTM C 635/C 635M, TABLE 1, DIRECT HUNG, UNLESS OTHERWISE INDICATED.
D. WIRE HANGERS, BRACES, AND TIES: PROVIDE WIRES COMPLYING WITH THE FOLLOWING REQUIREMENTS:
1. ZINC-COATED CARBON-STEEL WIRE: ASTM A 641 /A 641 M, CLASS 1 ZINC COATING, SOFT TEMPER.
2. SIZE: SELECT WIRE DIAMETER SO ITS STRESS AT THREE TIMES HANGER DESIGN LOAD (ASTM C 635/C 63 SM, TABLE 1, DIRECT HUNG) WILL BE LESS THAN YIELD STRESS OF WIRE, BUT PROVIDE NOT LESS THAN 0.1 06-INCH- DIAMETER WIRE.
E. EDGE MOLDINGS AND TRIM: MANUFACTURER'S STANDARD MOLDINGS FOR EDGES AND PENETRATIONS THAT FIT ACOUSTICAL PANEL EDGE DETAILS AND SUSPENSION SYSTEMS INDICATED; FORMED FROM SAME MATERIAL AND FINISH AS THAT USED FOR EXPOSED FLANGES OF SUSPENSION SYSTEM RUNNERS.
1. FOR CIRCULAR PENETRATIONS OF CEILING, PROVIDE EDGE MOLDINGS FABRICATED TO DIAMETER REQUIRED TO FIT PENETRATION EXACTLY.
F. HOLD-DOWN CLIPS FOR NON-FIRE-RESISTANCE-RATED CEILINGS: FOR INTERIOR CEILINGS CONSISTING OF ACOUSTICAL PANELS WEIGHING LESS THAN 1 LB/SQ. FT., PROVIDE HOLD-DOWN CLIPS SPACED 24 INCHES O_C. ON ALL CROSS TEES AS SPECIFIED BELOW:
I _ REGARDLESS OF PANEL WEIGHT, PLACE HOLD-DOWN CLIPS WITHIN TWENTY (20) FEET OF EXTERIOR DOORS.
2_ PROVIDE HOLD DOWN CLIPS AT ALL EXTERIOR CEILING PANEL APPLICATIONS_
ACOUSTICAL SEALANT
A. ACOUSTICAL SEALANT FOR EXPOSED AND CONCEALED JOINTS: MANUFACTURER'S STANDARD NONSAG, PAINTABLE, NONSTAINING LATEX SEALANT COMPLYING WITH ASTM C 834 AND THE FOLLOWING REQUIREMENTS:
1. PRODUCT IS EFFECTIVE IN REDUCING AIRBORNE SOUND TRANSMISSION THROUGH PERIMETER JOINTS AND OPENINGS IN BUILDING CONSTRUCTION AS DEMONSTRATED BY TESTING REPRESENTATIVE ASSEMBLIES ACCORDING TO ASTM E 90.
B. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
1. ACOUSTICAL SEALANT FOR EXPOSED AND CONCEALED JOINTS:
a. AC-20 FTR ACOUSTICAL AND INSULATION SEALANT; PECORA CORP.
b. SHEETROCK ACOUSTICAL SEALANT; UNITED STATES GYPSUM CO.
EXECUTION EXAMINATION
A. EXAMINE SUBSTRATES AND STRUCTURAL FRAMING TO WHICH ACOUSTICAL PANEL CEILINGS ATTACH OR ABUT, WITH INSTALLER PRESENT, FOR COMPLIANCE WITH REQUIREMENTS SPECIFIED IN THIS AND OTHER SECTIONS THAT AFFECT CEILING INSTALLATION AND ANCHORAGE, AND OTHER CONDITIONS AFFECTING PERFORMANCE OF ACOUSTICAL PANEL CEILINGS.
1. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
PREPARATION
A. COORDINATION: FURNISH LAYOUTS FOR CLIPS AND OTHER CEILING ANCHORS WHOSE INSTALLATION IS SPECIFIED IN OTHER SECTIONS.
1. FURNISH ANCHORAGE DEVICES TO OTHER TRADES FOR INSTALLATION WELL IN ADVANCE OF TIME NEEDED FOR COORDINATING OTHER WORK_
B. MEASURE EACH CEILING AREA AND ESTABLISH LAYOUT OF ACOUSTICAL PANELS TO BALANCE BORDER WIDTHS AT OPPOSITE EDGES OF EACH CEILING. AVOID USING LESS-THAN-HALF-WIDTH PANELS AT BORDERS, AND COMPLY WITH LAYOUT SHOWN ON REFLECTED CEILING PLANS.
INSTALLATION
A. GENERAL: INSTALL ACOUSTICAL PANEL CEILINGS TO COMPLY WITH PUBLICATIONS REFERENCED BELOW IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND CISCA'S "CEILING SYSTEMS HANDBOOK."
1. STANDARD FOR CEILING SUSPENSION SYSTEM INSTALLATIONS: COMPLY WITH ASTM C 636/C 636M.
2_ STANDARD FOR CEILING SUSPENSION SYSTEMS REQUIRING SEISMIC RESTRAINT: COMPLY WITH ASTM E 580.
B. SUSPEND CEILING HANGERS FROM BUILDING'S STRUCTURAL MEMBERS AND AS FOLLOWS:
I _ INSTALL HANGERS PLUMB AND FREE FROM CONTACT WITH INSULATION OR OTHER OBJECTS WITHIN CEILING PLENUM THAT ARE NOT PART OF SUPPORTING STRUCTURE OR OF CEILING SUSPENSION SYSTEM.
2_ SPLAY HANGERS ONLY WHERE REQUIRED AND, IF PERMITTED WITH FIRE-RESISTANCE-RATED CEILINGS, TO MISS OBSTRUCTIONS; OFFSET RESULTING HORIZONTAL FORCES BY BRACING, COUNTERSPLAYING, OR OTHER EQUALLY EFFECTIVE MEANS.
3_ WHERE WIDTH OF DUCTS AND OTHER CONSTRUCTION WITHIN CEILING PLENUM PRODUCES HANGER SPACINGS THAT INTERFERE WITH LOCATION OF HANGERS AT SPACINGS REQUIRED TO SUPPORT STANDARD SUSPENSION SYSTEM MEMBERS, INSTALL SUPPLEMENTAL SUSPENSION MEMBERS AND HANGERS IN FORM OF TRAPEZES OR EQUIVALENT DEVICES_ SIZE SUPPLEMENTAL SUSPENSION MEMBERS AND HANGERS TO SUPPORT CEILING LOADS WITHIN PERFORMANCE LIMITS ESTABLISHED BY REFERENCED STANDARDS AND PUBLICATIONS.
4. SECURE WIRE HANGERS TO CEILING SUSPENSION MEMBERS AND TO SUPPORTS ABOVE WITH A MINIMUM OF THREE TIGHT TURNS. CONNECT HANGERS DIRECTLY EITHER TO STRUCTURES OR TO INSERTS, EYE SCREWS, OR OTHER DEVICES THAT ARE SECURE; THAT ARE APPROPRIATE FOR SUBSTRATE; AND THAT WILL NOT DETERIORATE OR OTHERWISE FAIL DUE TO AGE, CORROSION, OR ELEVATED TEMPERATURES.
5. DO NOT ATTACH HANGERS TO STEEL DECK TABS.
6. DO NOT ATTACH HANGERS TO STEEL ROOF DECK. ATTACH HANGERS TO STRUCTURAL MEMBERS.
7. SPACE HANGERS NOT MORE THAN 48 INCHES O.C. ALONG EACH MEMBER SUPPORTED DIRECTLY FROM HANGERS, UNLESS OTHERWISE INDICATED; AND PROVIDE HANGERS NOT MORE THAN 8 INCHES FROM ENDS OF EACH MEMBER.
C. INSTALL EDGE MOLDINGS AND TRIM OF TYPE INDICATED AT PERIMETER OF ACOUSTICAL CEILING AREA AND WHERE NECESSARY TO CONCEAL EDGES OF ACOUSTICAL PANELS_
1. APPLY ACOUSTICAL SEALANT IN A CONTINUOUS RIBBON CONCEALED ON BACK OF VERTICAL LEGS OF MOLDINGS BEFORE THEY ARE INSTALLED.
2_ SCREW ATTACH MOLDINGS TO SUBSTRATE AT INTERVALS NOT MORE THAN 16 INCHES O.C. AND NOT MORE THAN 3 INCHES FROM ENDS, LEVELING WITH CEILING SUSPENSION SYSTEM TO A TOLERANCE OF 1/8 INCH IN 12 FEET_ MITER CORNERS ACCURATELY AND CONNECT SECURELY.
3. DO NOT USE EXPOSED FASTENERS, INCLUDING POP RIVETS, ON MOLDINGS AND TRIM.
D. INSTALL SUSPENSION SYSTEM RUNNERS SO THEY ARE SQUARE AND SECURELY INTERLOCKED WITH ONE ANOTHER. REMOVE AND REPLACE DENTED, BENT, OR KINKED MEMBERS.
E. INSTALL ACOUSTICAL PANELS WITH UNDAMAGED EDGES AND FITTED ACCURATELY INTO SUSPENSION SYSTEM RUNNERS AND EDGE MOLDINGS. SCRIBE AND CUT PANELS AT BORDERS AND PENETRATIONS TO PROVIDE A NEAT, PRECISE FIT.
1. ARRANGE DIRECTIONALLY PATTERNED ACOUSTICAL PANELS AS FOLLOWS:
a_ INSTALL PANELS WITH PATTERN RUNNING IN ONE DIRECTION PARALLEL TO LONG AXIS OF SPACE.
2. FOR SQUARE-EDGED PANELS, INSTALL PANELS WITH EDGES FULLY HIDDEN FROM VIEW BY FLANGES OF SUSPENSION SYSTEM RUNNERS AND MOLDINGS.
3. INSTALL HOLD-DOWN CLIPS IN AREAS INDICATED, IN AREAS REQUIRED BY AUTHORITIES HAVING JURISDICTION, AND FOR FIRE-RESISTANCE RATINGS; SPACE AS RECOMMENDED BY PANEL MANUFACTURER'S WRITTEN INSTRUCTIONS, UNLESS OTHERWISE INDICATED OR REQUIRED.

EMITTING FORMULATIONS THAT ARE SPECIFICALLY RECOMMENDED BY THE CARPET MANUFACTURER, AS VERIFIED THROUGH COMPATIBILITY AND ADHESION TESTING FOR THE INTENDED SUBSTRATE AND APPLICATION, AND THAT COMPLY WITH FLAMMABILITY REQUIREMENTS FOR INSTALLED CARPET.
C. CARPET EDGING: PROVIDE RUBBER COMPOSITION CARPET EDGING IN SINGLE LENGTHS WHEREVER POSSIBLE, KEEPING THE NUMBER OF JOINTS OR SPLICES TO A MINIMUM. PROVIDE IN QUANTITIES AND LOCATIONS AS JOB REQUIRED BASED UPON THE RECOMMENDED GOOD PRACTICE OF THE INDUSTRY; INCLUDE IN EVERY LOCATION WHERE CARPET TERMINATES AND OTHER FLOORING CONTINUES. COLOR TO MATCH ADJACENT CARPET TYPES_
D. FLOOR SEALER: TYPE AS RECOMMENDED AND MANUFACTURED BY THE CARPET TILE MANUFACTURER FOR THE APPLICATIONS INDICATED.

PART 3 - EXECUTION
3.1 PRE-INSTALLATION MEETING
A. PRIOR TO THE INSTALLATION, MEET AT THE PROJECT SITE TO REVIEW THE MATERIAL SELECTIONS, SUBSTRATE PREPARATIONS, INSTALLATION PROCEDURES, COORDINATION WITH OTHER TRADES, SPECIAL DETAILS AND CONDITIONS, STANDARD OF WORKMANSHIP, AND OTHER PERTINENT TOPICS RELATED TO PROTECT LIGHTING FIXTURES AND AIR DUCTS TO COMPLY WITH REQUIREMENTS INDICATED FOR FIRE-RESISTANCE-RATED ASSEMBLY_
3.4 CLEANING
A. CLEAN EXPOSED SURFACES OF ACOUSTICAL PANEL CEILINGS, INCLUDING TRIM, EDGE MOLDINGS, AND SUSPENSION SYSTEM MEMBERS. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS FOR CLEANING AND TOUCH UP OF MINOR FINISH DAMAGE. REMOVE AND REPLACE CEILING COMPONENTS THAT CANNOT BE SUCCESSFULLY CLEANED AND REPAIRED TO PERMANENTLY ELIMINATE EVIDENCE OF DAMAGE.

SECTION 096813 - TILE CARPETING PART 1 - GENERAL

1.1 SUMMARY
A. THIS SECTION INCLUDES CARPET TILE.
1.2 STANDARDS
A. EXCEPT AS MODIFIED BY GOVERNING CODES AND BY THE CONTRACT DOCUMENTS, COMPLY WITH THE APPLICABLE PROVISIONS AND RECOMMENDATIONS OF THE FOLLOWING:
a. THE CARPET AND RUG INSTITUTE "THE CARPET SPECIFIERS' HANDBOOK."
b. THE CARPET AND RUG INSTITUTE "CRI 104 COMMERCIAL CARPET INSTALLATION STANDARD."
1.3 SUBMITTALS
A. PRODUCT DATA: SUBMIT PRODUCT DATA, SPECIFICATIONS, AND INSTALLATION INSTRUCTIONS FOR MATERIALS SPECIFIED HEREIN AND OTHER DATA AS MAY BE REQUIRED TO SHOW COMPLIANCE WITH THE CONTRACT DOCUMENTS. INCLUDE INSTALLATION RECOMMENDATIONS FOR EACH TYPE OF SUBSTRATE REQUIRED.
B_ SHOP DRAWINGS: SUBMIT SHOP DRAWINGS SHOWING THE FOLLOWING:
a. EXISTING FLOOR MATERIALS TO BE REMOVED.
b. EXISTING FLOOR MATERIALS TO REMAIN.
c. COLUMNS, DOORWAYS, ENCLOSING WALLS OR PARTITIONS, BUILT-IN CABINETS, AND LOCATIONS WHERE CUTOUTS ARE REQUIRED IN CARPET TILES.
d. CARPET TILE TYPE, COLOR, AND DYE LOT.
e_ TYPE OF SUBFLOOR.
f. TYPE OF INSTALLATION.
g. PATTERN OF INSTALLATION, CARPET LOCATIONS, DIRECTION, AND STARTING POINTS PER FLOOR.
h. TYPE, COLOR, AND LOCATION OF INSETS AND BORDERS.
i. TYPE, COLOR, AND LOCATION OF EDGE, TRANSITION, AND OTHER ACCESSORY STRIPS.
j. PILE DIRECTION.
k. TRANSITION AND OTHER ACCESSORY STRIPS.
I. TRANSITION DETAILS TO OTHER FLOORING MATERIALS.
C. SAMPLES: SUBMIT SAMPLES SHOWING FULL RANGE OF COLOR, TEXTURE, AND PATTERN VARIATIONS EXPECTED. PREPARE SAMPLES FROM SAME MATERIAL TO BE USED FOR THE WORK. LABEL EACH SAMPLE WITH MANUFACTURER'S NAME, MATERIAL DESCRIPTION, COLOR, PATTERN, AND DESIGNATION INDICATED ON DRAWINGS AND IN SCHEDULES. SUBMIT THE FOLLOWING:
a. CARPET TILE: FULL-SIZE SAMPLES.
b. EXPOSED EDGE STRIPPING AND ACCESSORY: 12-INCH- (300-MM-) LONG SAMPLES.
D. MAINTENANCE DATA: SUBMIT COPIES OF INSTRUCTIONS FOR CARE, CLEANING, MAINTENANCE AND REPAIR OF CARPETING. TILE CARPETING ADDED 12/2010 09 68 13 - 2 FINISHES GUIDE SPECIFICATION
a. EACH CARPET MANUFACTURER SHALL MEET WITH THE AUTHORIZED LAWA PERSONNEL, TO REVIEW THE CHARACTERISTICS OF HIS PRODUCT AND TO RECOMMEND APPROPRIATE MAINTENANCE PROCEDURES, PRIOR TO OCCUPANCY OF THE FINISHED SPACES.
E. WARRANTY: SUBMIT SPECIAL WARRANTIES SPECIFIED IN THIS SECTION.
1.4 QUALITY ASSURANCE
A. INSTALLER QUALIFICATIONS: ENGAGE A CARPET INSTALLER, WHO HAS COMPLETED A MINIMUM OF THREE (3) PROJECTS OVER THE LAST 10 YEARS WHICH WERE SIMILAR IN MATERIAL, DESIGN AND EXTENT TO THAT INDICATED FOR THE PROJECT - AS DETERMINED BY THE LAWA - AND WHICH HAVE RESULTED IN CONSTRUCTION WITH A RECORD OF SUCCESSFUL IN SERVICE PERFORMANCE.
a. IN THE CASE WHERE THE INSTALLER IS ACTUALLY A DEALER, IT IS UNDERSTOOD THAT THE TERMS INSTALLER, DEALER, CARPETING CONTRACTOR AND CONTRACTOR SHALL BE ONE AND THE SAME FOR PURPOSES OF THIS CONTRACT. HE SHALL ASSUME RESPONSIBILITY FOR ALL OF THE WORK, INCLUDING ACQUISITION OF THE MATERIALS FROM THE MANUFACTURERS HEREIN SPECIFIED.
B_ MILL INSPECTION: THE CARPETING MAY BE INSPECTED TO DETERMINE COMPLIANCE WITH THE CONTRACT DOCUMENTS WITH RESPECT TO MANUFACTURE, MATERIALS, PATTERN AND COLORS. INSPECTION MAY BE MADE AT THE MILL BY A REPRESENTATIVE OF LAWA AT ANY TIME DURING THE PROCESS OF MANUFACTURE.
C. SAMPLE INSTALLATIONS: BEFORE INSTALLING CARPET, INSTALL SAMPLE INSTALLATION, FOR EACH TYPE OF CARPET INSTALLATION REQUIRED TO DEMONSTRATE AESTHETIC EFFECTS AND QUALITIES OF MATERIALS AND EXECUTION. INSTALL SAMPLE INSTALLATIONS TO COMPLY WITH THE FOLLOWING REQUIREMENTS, USING MATERIALS INDICATED FOR THE COMPLETED WORK:
a. SIZE AND LOCATION: PROVIDE 250 SQUARE FOOT (23.23 SQ.M) SAMPLE INSTALLATION IN LOCATION AS DIRECTED BY LAWA.
b. DEMONSTRATE THE PROPOSED RANGE OF AESTHETIC EFFECTS AND WORKMANSHIP.
c. OBTAIN LAWA'S APPROVAL OF SAMPLE INSTALLATIONS BEFORE STARTING WORK.
d. MAINTAIN SAMPLE INSTALLATIONS DURING CONSTRUCTION IN AN UNDISTURBED CONDITION AS A STANDARD FOR JUDGING THE COMPLETED WORK.
e. APPROVED SAMPLE INSTALLATIONS MAY BECOME PART OF THE COMPLETED WORK IF UNDAMAGED AT TIME OF SUBSTANTIAL COMPLETION.

1.5 DELIVERY, STORAGE, AND HANDLING

A. DELIVER CARPETING IN ORIGINAL MILL PROTECTIVE WRAPPING WITH MILL REGISTER NUMBERS AND TAGS ATTACHED.
B_ DELIVER OTHER MATERIALS IN MANUFACTURERS UNOPENED CONTAINERS IDENTIFIED WITH NAME' BRAND ' TYPE, GRADE, CLASS, AND OTHER QUALIFYING INFORMATION. C. STORE MATERIALS IN A DRY LOCATION, IN SUCH A MANNER AS TO PREVENT DAMAGE. NOTE: THE CONTRACTOR SHALL NOT PROCEED WITH INSTALLATION UNTIL THE REQUIRED MOCK UP HAS BEEN APPROVED BY LAWA. TILE CARPETING ADDED 12/2010 09 68 13 - 3 FINISHES GUIDE SPECIFICATION

1.6 PROJECT CONDITIONS
A. ENVIRONMENTAL LIMITATIONS: DO NOT INSTALL CARPET TILE UNTIL WET WORK IN SPACES IS COMPLETE AND DRY, AND AMBIENT TEMPERATURE AND HUMIDITY CONDITIONS ARE MAINTAINED AT THE LEVELS INDICATED FOR PROJECT WHEN OCCUPIED FOR ITS INTENDED USE.
B_ DO NOT INSTALL CARPET TILE OVER CONCRETE SLABS UNTIL SLABS HAVE CURED AND ARE SUFFICIENTLY DRY TO BOND WITH ADHESIVE AND CONCRETE SLABS HAVE PH RANGE RECOMMENDED BY CARPET TILE MANUFACTURER.
1.7 WARRANTY
A. CARPET MANUFACTURER'S WARRANTY: WRITTEN WARRANTY, SIGNED BY CARPET TILE MANUFACTURER AGREEING TO REPLACE CARPET TILE THAT DOES NOT COMPLY WITH REQUIREMENTS OR THAT FAILS WITHIN SPECIFIED WARRANTY PERIOD. WARRANTY DOES NOT INCLUDE DETERIORATION OR FAILURE OF CARPET TILE DUE TO UNUSUAL TRAFFIC, FAILURE OF SUBSTRATE, VANDALISM, OR ABUSE_ FAILURES INCLUDE, BUT ARE NOT LIMITED TO, MORE THAN 10 PERCENT LOSS OF FACE FIBER, WEAR, STATIC BUILDUP IN EXCESS OF 3.0 KV WHEN TESTED UNDER THE STANDARD SHUFFLE TEST AT 70 DEG. F (21 DEG. C) AND 20% RH, EDGE RAVELING WITHOUT SEAM SEALERS, TUFT BIND LOSS, ZIPPERING (WET OR DRY), SHRINKAGE, CURLING, DOMING, SNAGS, RUNS, AND DELAMINATION. WARRANTEES SHALL BE FULL TERM, NOT PRO RATED FOR THE SPECIFIED WARRANTY PERIOD.
a_ WARRANTY PERIOD: 10 YEARS.
1.8 EXTRA MATERIALS AND ATTIC STOCK
A. ATTIC STOCK: PACKAGE AND DELIVER USABLE REMNANTS OF CARPET TO LAWA AT THE CONCLUSION OF THE JOB. INCLUDE ANY UNCUT CARPET TILES.

PART 2 - PRODUCTS
2.1 CARPET TILE
A. CARPET TILE TYPES: PROVIDE MANUFACTURERS COMMERCIAL GRADE CARPET TILE FOR A 100% GLUE DOWN INSTALLATION.
B. PROVIDE CARPET TILE BY ONE OF THE FOLLOWING: 1. INTERFACE 2. LEES/ MOHAWK INDUSTRIES 3. MILLIKEN 4. MANNINGTON S. SHAW
C. FIBER CONTENT: NYLON 6,6. D. PILE CHARACTERISTICS: NO OVER-TUFTING. E. DYE PROCESS: SOLUTION DYE OR INJECTION-DYE IS REQUIRED. TILE CARPETING ADDED 12/2010 09 68 13 - 4 FINISHES GUIDE SPECIFICATION F. DENSITY: GREATER THAN 7000.
2.2 INSTALLATION ACCESSORIES
A. TROWELABLE LEVELING AND PATCHING COMPOUNDS: PORTLAND CEMENT-BASED FORMULATION PROVIDED BY OR RECOMMENDED BY CARPET TILE MANUFACTURER. DO NOT USE GYPSUM BASED COMPOUNDS.

B. CARPET ADHESIVES: WATER-RESISTANT, MILDEW RESISTANT, AND NONSTAINING, HIGH SOLIDS, LOW EMITTING FORMULATIONS THAT ARE SPECIFICALLY RECOMMENDED BY THE CARPET MANUFACTURER, AS VERIFIED THROUGH COMPATIBILITY AND ADHESION TESTING FOR THE INTENDED SUBSTRATE AND APPLICATION, AND THAT COMPLY WITH FLAMMABILITY REQUIREMENTS FOR INSTALLED CARPET.
C. CARPET EDGING: PROVIDE RUBBER COMPOSITION CARPET EDGING IN SINGLE LENGTHS WHEREVER POSSIBLE, KEEPING THE NUMBER OF JOINTS OR SPLICES TO A MINIMUM. PROVIDE IN QUANTITIES AND LOCATIONS AS JOB REQUIRED BASED UPON THE RECOMMENDED GOOD PRACTICE OF THE INDUSTRY; INCLUDE IN EVERY LOCATION WHERE CARPET TERMINATES AND OTHER FLOORING CONTINUES. COLOR TO MATCH ADJACENT CARPET TYPES_
D. FLOOR SEALER: TYPE AS RECOMMENDED AND MANUFACTURED BY THE CARPET TILE MANUFACTURER FOR THE APPLICATIONS INDICATED.
PART 3 - EXECUTION
3.1 PRE-INSTALLATION MEETING
A. PRIOR TO THE INSTALLATION, MEET AT THE PROJECT SITE TO REVIEW THE MATERIAL SELECTIONS, SUBSTRATE PREPARATIONS, INSTALLATION PROCEDURES, COORDINATION WITH OTHER TRADES, SPECIAL DETAILS AND CONDITIONS, STANDARD OF WORKMANSHIP, AND OTHER PERTINENT TOPICS RELATED TO THE WORK. THE MEETING SHALL INCLUDE LAWA, THE ARCHITECT OF RECORD, THE CONTRACTOR, THE INSTALLER, MATERIAL MANUFACTURER'S REPRESENTATIVES, AND REPRESENTATIVES OF OTHER TRADES OR SUBCONTRACTORS AFFECTED BY THE INSTALLATION.

3.2 PREPARATION
A_ COORDINATE THE INSTALLATION OF CARPET SO AS NOT TO DELAY THE OCCUPANCY OF THE SITE OR INTERFERE WITH THE COMPLETION OF CONSTRUCTION.
B. EXAMINE THE SUBSTRATES, ADJOINING CONSTRUCTION AND THE CONDITIONS UNDER WHICH THE WORK IS TO BE INSTALLED. VERIFY RECOMMENDED LIMITS FOR MOISTURE CONTENT AND ALKALINITY OF CONCRETE SUBSTRATES WITH CARPET MANUFACTURER.
a. MOISTURE CONTENT: VERIFY MOISTURE CONTENT USING A STANDARD CALCIUM CHLORIDE CRYSTAL TEST OR A 1 SQUARE YARD (0_84 SQ.M) CLEAR PLASTIC TEST_ PERFORM TESTING AT A FREQUENCY AS RECOMMENDED BY THE CARPET MANUFACTURER. PERFORM TESTING AT A FREQUENCY OF NOT LESS THAN ONCE EVERY 1,000 SQUARE FEET (93 SQ.M).
b. ALKALINITY TEST: VERIFY ALKALINITY OF CONCRETE SUBSTRATES BY DRILLING A 3/8 INCH (9.5 MM) DIAMETER HOLE APPROXIMATELY 1 /4 INCH (6.35 MM) DEEP, REMOVE ALL RESIDUE; FILL WITH DISTILLED WATER, ALLOW WATER TO STAND 3 MINUTES AND TEST WITH A CALIBRATED ELECTRONIC METER TILE CARPETING ADDED 12/2010 09 68 13 - 5 FINISHES GUIDE SPECIFICATION OR PH PAPER. PERFORM TESTING AT A FREQUENCY OF NOT LESS THAN ONCE EVERY 1,000 SQUARE FEET (93 SQ.M.). 3. ALTERNATIVE TEST PROCEDURES FOR MOISTURE CONTENT AND ALKALINITY MAY BE ACCEPTABLE SUBJECT TO THE CARPET MANUFACTURER'S REVIEW AND WRITTEN ACCEPTANCE_
C. CONCRETE SUBFLOORS: VERIFY THAT CONCRETE SLABS COMPLY WITH THE FOLLOWING:
a. REMOVE COATINGS, INCLUDING CURING COMPOUNDS, EXISTING FLOOR COVERING ADHESIVE RESIDUES, AND OTHER SUBSTANCES THAT ARE INCOMPATIBLE WITH ADHESIVES AND THAT CONTAIN SOAP, WAX, OIL, OR SILICONE, WITHOUT USING SOLVENTS. USE MECHANICAL METHODS RECOMMENDED IN WRITING BY THE CARPET MANUFACTURER.
b. SLAB SUBSTRATES ARE DRY AND FREE OF CURING COMPOUNDS, SEALERS, HARDENERS, AND OTHER MATERIALS THAT MAY INTERFERE WITH ADHESIVE BOND. DETERMINE ADHESION AND DRYNESS CHARACTERISTICS BY PERFORMING BOND AND MOISTURE TESTS RECOMMENDED BY THE CARPET MANUFACTURER. 3. USE LEVELING AND PATCHING COMPOUNDS RECOMMENDED BY FLOORING MANUFACTURER FOR FILLING CRACKS, HOLES AND DEPRESSIONS IN THE SUBSTRATE. SURFACE SHALL BE SMOOTH, LEVEL AND AT PROPER ELEVATION. REMOVE RIDGES, ROUGHNESS AND PROTRUSIONS FROM CONCRETE SURFACES BY GRINDING. D. BROOM AND VACUUM CLEAN SUBSTRATES TO BE COVERED IMMEDIATELY BEFORE INSTALLING CARPET.
D. CARPET INSTALLATION SHALL NOT COMMENCE UNTIL PAINTING AND FINISHING WORK ARE COMPLETE AND CEILING AND OVERHEAD WORK IS TESTED, APPROVED, AND COMPLETED. F. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED

3.3 INSTALLATION
A. GENERAL: COMPLY WITH THE MANUFACTURER'S INSTRUCTIONS, SPECIFIED INDUSTRY STANDARDS AND RECOMMENDATIONS, AND AS REQUIRED TO MATCH THE ACCEPTED SAMPLE INSTALLATIONS. APPLY ADHESIVE IN ACCORDANCE WITH ADHESIVE MANUFACTURER'S DIRECTIONS.
B. ADHERE ALL FULL SIZE, PERIMETER TILES, AND CUT TILES, WITH A FULL SPREAD OF ADHESIVE. DRY FIT CUT TILES AND APPLY ADHESIVE TO TILE BACK AFTER TILE HAS BEEN CUT. USE FULL UNCUT TILES DOWN THE CENTER OF CORRIDORS AND, WHERE NECESSARY, CUT PERIMETER TILES TO BUTT WALLS.
a. CUT AND FIT CARPET TILE TO BUTT TIGHTLY TO VERTICAL SURFACES, PERMANENT FIXTURES, AND BUILT-IN FURNITURE INCLUDING CABINETS, PIPES, OUTLETS, EDGINGS, THRESHOLDS, AND NOSINGS. BIND OR SEAL CUT EDGES AS RECOMMENDED BY CARPET TILE MANUFACTURER.
b. CUT OPENINGS IN CARPET FOR ELECTRICAL OUTLETS, PIPING AND OTHER PENETRATIONS. MAINTAIN CLOSE TOLERANCES SO THAT EDGES OF CARPET WILL BE COVERED BY PLATES AND ESCUTCHEONS.
c. EXTEND CARPET TILE INTO TOE SPACES, DOOR REVEALS, CLOSETS, OPEN-BOTTOMED OBSTRUCTIONS, REMOVABLE FLANGES, ALCOVES, AND SIMILAR OPENINGS.
C. BUTT CARPET TILE TIGHTLY TOGETHER TO FORM SEAMS WITHOUT GAPS OR ENTRAPPED PILE YARNS AND ALIGNED WITH ADJOINING TILES. TILE CARPETING ADDED 12/2010 09 68 13 - 6 FINISHES GUIDE SPECIFICATION D. EDGE STRIP INSTALLATION: INSTALL EDGE STRIP AT EVERY LOCATION WHERE EDGE OF CARPET IS EXPOSED TO TRAFFIC, UNLESS OTHERWISE INDICATED. UNLESS OTHERWISE DIRECTED BY THE ARCHITECT OF RECORD, INSTALL IN SINGLE LENGTHS AND SECURE IN ACCORDANCE WITH MANUFACTURER'S DIRECTIONS. E. TRAFFIC OVER ADHESIVE INSTALLATIONS SHALL BE RESTRICTED UNTIL ADHESIVE HAS - PROPERLY CURED IN ACCORDANCE WITH THE ADHESIVE MANUFACTURERS RECOMMENDATIONS.
3.4 CLEANING AND PROTECTION
A. CLEANING: AS THE CARPETING IS INSTALLED, REMOVE AND DISPOSE OF ALL TRIMMINGS, EXCESS PIECES OF CARPETING AND LAYING MATERIALS FROM EACH AREA AS IT IS COMPLETED. VACUUM CARPETING WITH A COMMERCIAL VACUUM, HAVING A CYLINDRICAL BRUSH OR BEATER BAR AND HIGH SUCTION. REMOVE ADHESIVES, STAINS, AND SOIL SPOTS IN ACCORDANCE WITH THE CARPET MANUFACTURER'S RECOMMENDATIONS.
B. PROTECTION: PROTECT CARPETING AGAINST DAMAGE OF EVERY KIND AS DAMAGED CARPETING SHALL BE REJECTED. USE NON-STAINING COVER MATERIAL FOR PROTECTION. TAPE JOINTS OF PROTECTIVE COVERING.
a. PLASTIC AND POLYETHYLENE SHEET PROTECTIVE COVERINGS SHALL NOT BE PERMITTED.
b. REMOVE AND REPLACE REJECTED CARPETING WITH NEW CARPETING. AT THE COMPLETION OF THE WORK, REMOVE COVERING, VACUUM CLEAN CARPETING AND REMOVE SOILING AND STAINS (IF ANY) TO THE SATISFACTION OF LAWA.

SECTION 099000 - PAINTING PART 1 GENERAL

1.01SUBMITTALS

A. PRODUCT DATA: PROVIDE COMPLETE LIST OF PRODUCTS TO BE USED, WITH THE FOLLOWING INFORMATION FOR EACH:
a. MANUFACTURER'S NAME, PRODUCT NAME AND/OR CATALOG NUMBER, AND GENERAL PRODUCT CATEGORY (E_G_ "ALKYD ENAMEL").
b. MPI PRODUCT NUMBER (E.G. MPI #47).
c. CROSS-REFERENCE TO SPECIFIED PAINT SYSTEM(S) PRODUCT IS TO BE USED IN; INCLUDE DESCRIPTION OF EACH SYSTEM_
B. SAMPLES: SUBMIT TWO PAINTED SAMPLES, ILLUSTRATING SELECTED COLORS AND TEXTURES FOR EACH COLOR AND SYSTEM SELECTED WITH SPECIFIED COATS CASCADED. SUBMIT ON CONCRETE CHIP, 4X4X1 /4 INCH IN SIZE_
PART 2 PRODUCTS
2.01 MANUFACTURERS
A_ PROVIDE PAINTS AND FINISHES FROM THE SAME MANUFACTURER TO THE GREATEST EXTENT POSSIBLE.
2.02 PAINTS AND FINISHES – GENERAL A_ PAINTS AND FINISHES: READY MIXED, UNLESS REQUIRED TO BE A FIELD-CATALYZED PAINT:
a. PROVIDE PAINTS AND FINISHES OF A SOFT PASTE CONSISTENCY, CAPABLE OF BEING READILY AND UNIFORMLY DISPERSED TO A HOMOGENEOUS COATING, WITH GOOD FLOW AND BRUSHING PROPERTIES, AND CAPABLE OF DRYING OR CURING FREE OF STREAKS OR SAGS.
b. SUPPLY EACH PAINT MATERIAL IN QUANTITY REQUIRED TO COMPLETE ENTIRE PROJECT'S WORK FROM A SINGLE PRODUCTION RUN.
c. DO NOT REDUCE, THIN, OR DILUTE PAINT OR FINISHES OR ADD MATERIALS UNLESS SUCH PROCEDURE IS SPECIFICALLY DESCRIBED IN MANUFACTURER'S PRODUCT INSTRUCTIONS.
PART 3 EXECUTION
3.01 EXAMINATION
A. MEASURE MOISTURE CONTENT OF SURFACES USING AN ELECTRONIC MOISTURE METER. DO NOT APPLY FINISHES UNLESS MOISTURE CONTENT OF SURFACES ARE BELOW THE FOLLOWING MAXIMUMS:
1. MASONRY, CONCRETE, AND CONCRETE MASONRY UNITS: 12 PERCENT.
3.02 PREPARATION
A. CLEAN SURFACES THOROUGHLY AND CORRECT DEFECTS PRIOR TO APPLICATION.
B_ PREPARE SURFACES USING THE METHODS RECOMMENDED BY THE MANUFACTURER FOR ACHIEVING THE BEST RESULT FOR THE SUBSTRATE UNDER THE PROJECT CONDITIONS.
3.03 APPLICATION
A APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND RECOMMENDATIONS IN "MPI ARCHITECTURAL PAINTING SPECIFICATION MANUAL".
B_ DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY. ALLOW APPLIED COATS TO DRY BEFORE NEXT COAT IS APPLIED_

SECTION 102113-13 METAL TOILET COMPARTMENTS

PART 1 -
1.1 GENERAL SUMMARY

A. SECTION INCLUDES:
_I STEEL TOILET COMPARTMENT PARTITIONS FOR FOLLOWING APPLICATIONS:
a_TOILET ENCLOSURES.
b. PRIVACY SCREENS.
c. URINAL SCREENS.
B. RELATED REQUIREMENTS:
I DIVISION 03 SECTION "CAST IN PLACE CONCRETE" FOR COMPARTMENT ANCHORAGE TO CONCRETE SUBSTRATES_
3 DIVISION 05 SECTION "METAL FABRICATIONS" FOR MISCELLANEOUS STRUCTURAL AND SUPPORT METAL COMPONENTS REQUIRED TO SECURE COMPARTMENTS.
4_ DIVISION 06 SECTION "ROUGH CARPENTRY" FOR COMPARTMENT ANCHORAGE TO FRAME WALLS

1 _2 REFERENCES
A. ASTM INTERNATIONAL (ASTM):
I _ ASTM A 653/A 653M - STANDARD SPECIFICATION FOR STEEL SHEET, ZINC-COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT-DIP PROCESS.
2_ ASTM A 666 - STANDARD SPECIFICATION FOR ANNEALED OR COLD-WORKED AUSTENITIC STAINLESS STEEL SHEET, STRIP, PLATE, AND FLAT BAR.
3_ ASTM A 743/A 743M - STANDARD SPECIFICATION FOR CASTINGS, IRON-CHROMIUM, IRON-CHROMIUM-NICKEL, CORROSION RESISTANT, FOR GENERAL APPLICATION_
4_ ASTM B 86 - STANDARD SPECIFICATION FOR ZINC AND ZINC-ALUMINUM (ZA) ALLOY FOUNDRY AND DIE CASTINGS.
6_ ASTM E 84 - STANDARD TEST METHOD FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS.
B. INTERNATIONAL CODE COUNCIL (ICC)/AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI): I _ICC/ANSI AI 17.1 - ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES, AS APPLICABLE TO TOILET COMPARTMENTS DESIGNATED AS ACCESSIBLE.
C. UNITED STATES DEPARTMENT OF JUSTICE:
_I ADA - AMERICANS WITH DISABILITIES ACT
a_ EXCERPT FROM 28CFR PART 36 - ADA STANDARDS FOR ACCESSIBLE DESIGN.
D. GREENGUARD ENVIRONMENTAL INSTITUTE (GREENGUARD):
I GREENGUARD CERTIFIED LOW EMITTING PRODUCTS

1 _3 ACTION SUBMITTALS
A. PRODUCT DATA: MANUFACTURER'S DATA SHEETS FOR EACH TYPE OF PRODUCT INDICATED. INCLUDE FABRICATION DETAILS, DESCRIPTION OF MATERIALS AND FINISHES_
I _ PRODUCT TEST REPORTS: WHEN REQUESTED BY ARCHITECT, SUBMIT DOCUMENTATION BY QUALIFIED INDEPENDENT TESTING AGENCY INDICATING COMPLIANCE OF PRODUCTS WITH REQUIREMENTS_
B. SHOP DRAWINGS: INCLUDE OVERALL PRODUCT DIMENSIONS, FLOOR PLAN, ELEVATIONS, SECTIONS, DETAILS, AND ATTACHMENTS TO OTHER WORK. INCLUDE CHOICE OF OPTIONS WITH DETAILS.
C. SAMPLES FOR SELECTION: FURNISH SAMPLES OF MANUFACTURER'S FULL RANGE OF COLORS FOR INITIAL SELECTION_
D. SAMPLES FOR VERIFICATION: FURNISH PHYSICAL SAMPLE OF MATERIAL IN SELECTED COLOR_ I _SIZE: 2 BY 2 INCH (52 BY 52 MM) MINIMUM, IN TYPE OF FINISH SPECIFIED.
1-4 INFORMATIONAL SUBMITTALS
A. WARRANTY: SAMPLE OF SPECIAL WARRANTY. 1 _5CLOSEOUT SUBMITTALS
A. MAINTENANCE AND CLEANING INSTRUCTIONS.
1.6 QUALITY ASSURANCE
A. MANUFACTURER QUALIFICATIONS: APPROVED MANUFACTURER LISTED IN THIS SECTION, WITH MINIMUM [5] YEARS EXPERIENCE IN THE MANUFACTURE OF TOILET COMPARTMENTS.
B. MANUFACTURER QUALIFICATIONS: APPROVED MANUFACTURER LISTED IN THIS SECTION, WITH MINIMUM [5] YEARS EXPERIENCE IN THE MANUFACTURE OF TOILET COMPARTMENTS_ MANUFACTURERS SEEKING APPROVAL MUST SUBMIT THE FOLLOWING REQUIREMENTS:
I _ PRODUCT DATA, INCLUDING TEST DATA FROM QUALIFIED INDEPENDENT TESTING AGENCY INDICATING COMPLIANCE WITH REQUIREMENTS.
2_ SAMPLES OF EACH COMPONENT OF PRODUCT SPECIFIED.
3_ LIST OF SUCCESSFUL INSTALLATIONS OF SIMILAR PRODUCTS AVAILABLE FOR EVALUATION BY ARCHITECT.
C. INSTALLERS QUALIFICATIONS: EXPERIENCED INSTALLER REGULARLY ENGAGED IN INSTALLATION OF TOILET COMPARTMENTS FOR MINIMUM 3 YEARS_
D. SOURCE LIMITATIONS: OBTAIN TOILET COMPARTMENT COMPONENTS AND ACCESSORIES FROM SINGLE MANUFACTURER.
L ACCESSIBILITY REQUIREMENTS: COMPLY WITH REQUIREMENTS OF ICC/ANSI 117-1, AND WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION_
F. SURFACE-BURNING CHARACTERISTICS: AS DETERMINED BY TESTING IDENTICAL PRODUCTS ACCORDING TO ASTM E 84 BY QUALIFIED TESTING AGENCY_ IDENTIFY PRODUCTS WITH APPROPRIATE MARKINGS OF APPLICABLE TESTING AGENCY_
I FLAME-SPREAD INDEX: O.
2_ SMOKE-DEVELOPED INDEX: O_
1-7 DELIVERY, STORAGE, AND HANDLING
A. DO NOT DELIVER TOILET COMPARTMENTS TO SITE UNTIL BUILDING IS ENCLOSED AND HVAC SYSTEMS ARE IN OPERATION.
I_ DELIVER TOILET COMPARTMENTS IN MANUFACTURER'S ORIGINAL PACKAGING.
2_ STORE IN AN UPRIGHT CONDITION.
1 _8 WARRANTY
A. SPECIAL MANUFACTURER'S WARRANTY: PROVIDE MANUFACTURER'S STANDARD FORM IN WHICH MANUFACTURER AGREES TO REPAIR OR REPLACE PRODUCTS THAT FAIL IN MATERIALS OR WORKMANSHIP DURING THE FOLLOWING PERIOD AFTER SUBSTANTIAL COMPLETION:
I _ POWDER COATED STEEL TOILET PARTITIONS: AGAINST RUST-OUT: 15 YEARS

PART 2 -
2_ 1 PRODUCTS MANUFACTURERS

A. BASIS-OF-DESIGN MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS OF

SECTION 102800 - WASHROOM ACCESSORIES

PART 1 GENERAL
1.1 SECTION INCLUDES
A_ WASHROOM ACCESSORIES AS SCHEDULED IN THIS SECTION AND AS INDICATED ON THE DRAWINGS_ I _2 RELATED REQUIREMENTS
A. SECTION 061000 - ROUGH CARPENTRY, COORDINATION WITH BLOCKING_
B. SECTION 093000 -TILING, COORDINATION WITH LAYOUT AND INSTALLATION.
C. SECTION 102113 -TOILET COMPARTMENTS, COORDINATION WITH ACCESSORIES_
1 _3 SUBMITTALS
A. PRODUCT DATA: SUBMIT MANUFACTURER'S DATA SHEETS FOR EACH PRODUCT SPECIFIED INCLUDING THE FOLLOWING: ,
I INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS.
2 STORAGE AND HANDLING REQUIREMENTS AND RECOMMENDATIONS_
3 CLEANING AND MAINTENANCE INSTRUCTIONS.
4_ REPLACEMENT PARTS INFORMATION_
B. SCHEDULE: SUBMIT A TOILET ACCESSORY SCHEDULE, INDICATING THE TYPE AND QUANTITY TO BE INSTALLED IN EACH WASHROOM_ USE ROOM NUMBERS AS INDICATED ON THE DRAWINGS.

PART 2 PRODUCTS
2_1 MANUFACTURER
A. BASIS OF DESIGN PRODUCTS: BASED ON THE QUALITY AND PERFORMANCE REQUIREMENTS OF THE PROJECT, SPECIFICATIONS ARE BASED SOLELY ON THE PRODUCTS OF BRADLEY CORPORATION, MENOMONEE FALLS, WI, WWW.BRADLEYCORP.COM. LOCATION OF MANUFACTURING SHALL BE THE UNITED STATES_

PART 3 EXECUTION
3_ 1 INSTALLATION
A. INSTALL PRODUCTS IN STRICT COMPLIANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND RECOMMENDATIONS, INCLUDING THE FOLLOWING:
1. VERIFY BLOCKING HAS BEEN INSTALLED PROPERLY.
2_ VERIFY LOCATION DOES NOT INTERFERE WITH DOOR SWINGS OR USE OF FIXTURES.
3_ COMPLY WITH MANUFACTURER'S RECOMMENDATIONS FOR BACKING AND PROPER SUPPORT_
4_ USE FASTENERS AND ANCHORS SUITABLE FOR SUBSTRATE AND PROJECT CONDITIONS
5_ INSTALL UNITS RIGID, STRAIGHT, PLUMB, AND LEVEL, IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND APPROVED SHOP DRAWINGS.
6_ CONCEAL EVIDENCE OF DRILLING, CUTTING, AND FITTING TO ROOM FINISH.
7_ TEST FOR PROPER OPERATION.

BIDS & PERMITS 04/18/2025
DATE ISSUED
TV
DRAWN BY
MVW
CHECKED BY

HOBBS + BLACK
ARCHITECTS
100 N. State St.
Ann Arbor, MI 48104
P. 734.663.4189
www.hobbs-black.com

DETROIT DIESEL CORP.
DETROIT DIESEL SECOND FLOOR RENOVATION
13400 W. OUTER DR, DETROIT MI
PROJECT

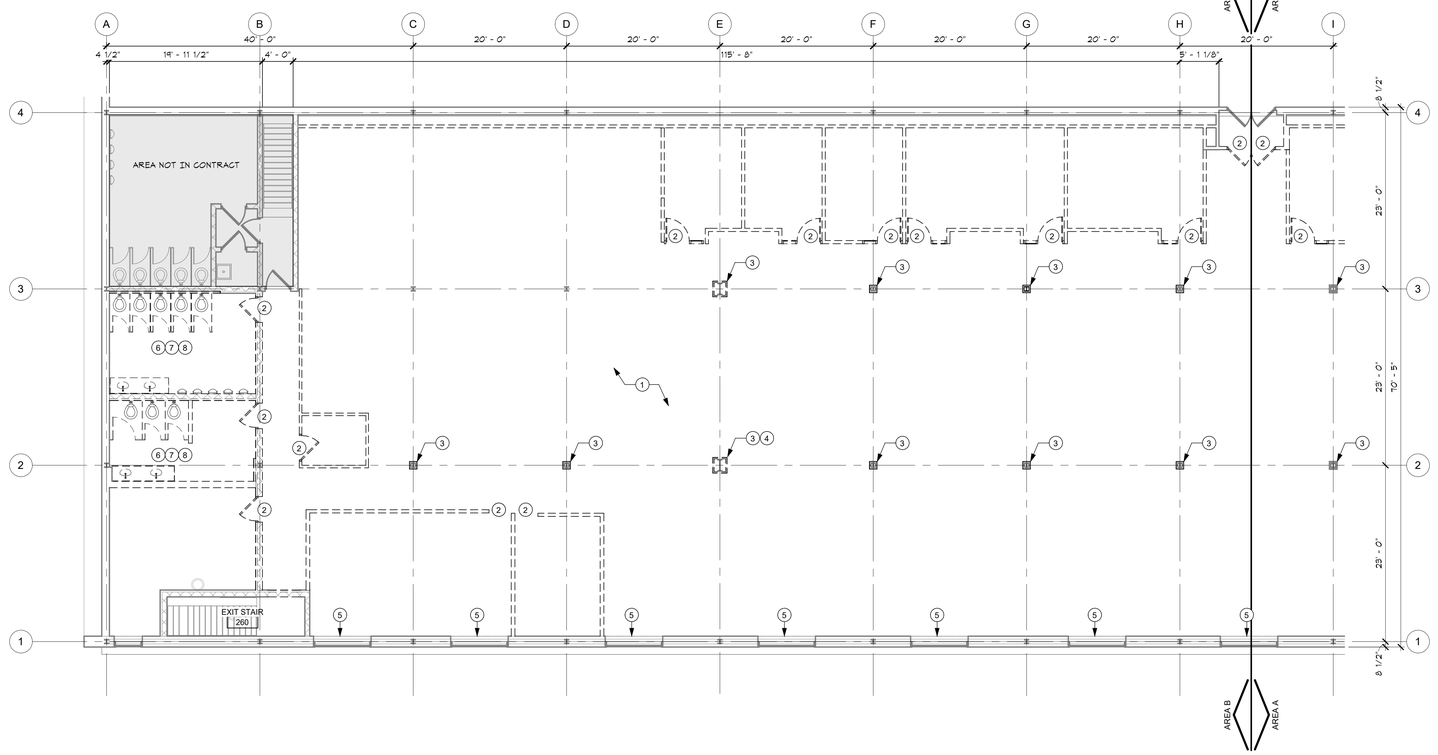
CONSULTANT

STATE OF MICHIGAN
THOMAS M DILLENBECK
ARCHITECT
No. 1301057360
LICENSED ARCHITECT

ARCHITECTURAL SPECIFCATIONS
SHEET TITLE

24-103
PROJECT NUMBER

A-022.2
SHEET NUMBER

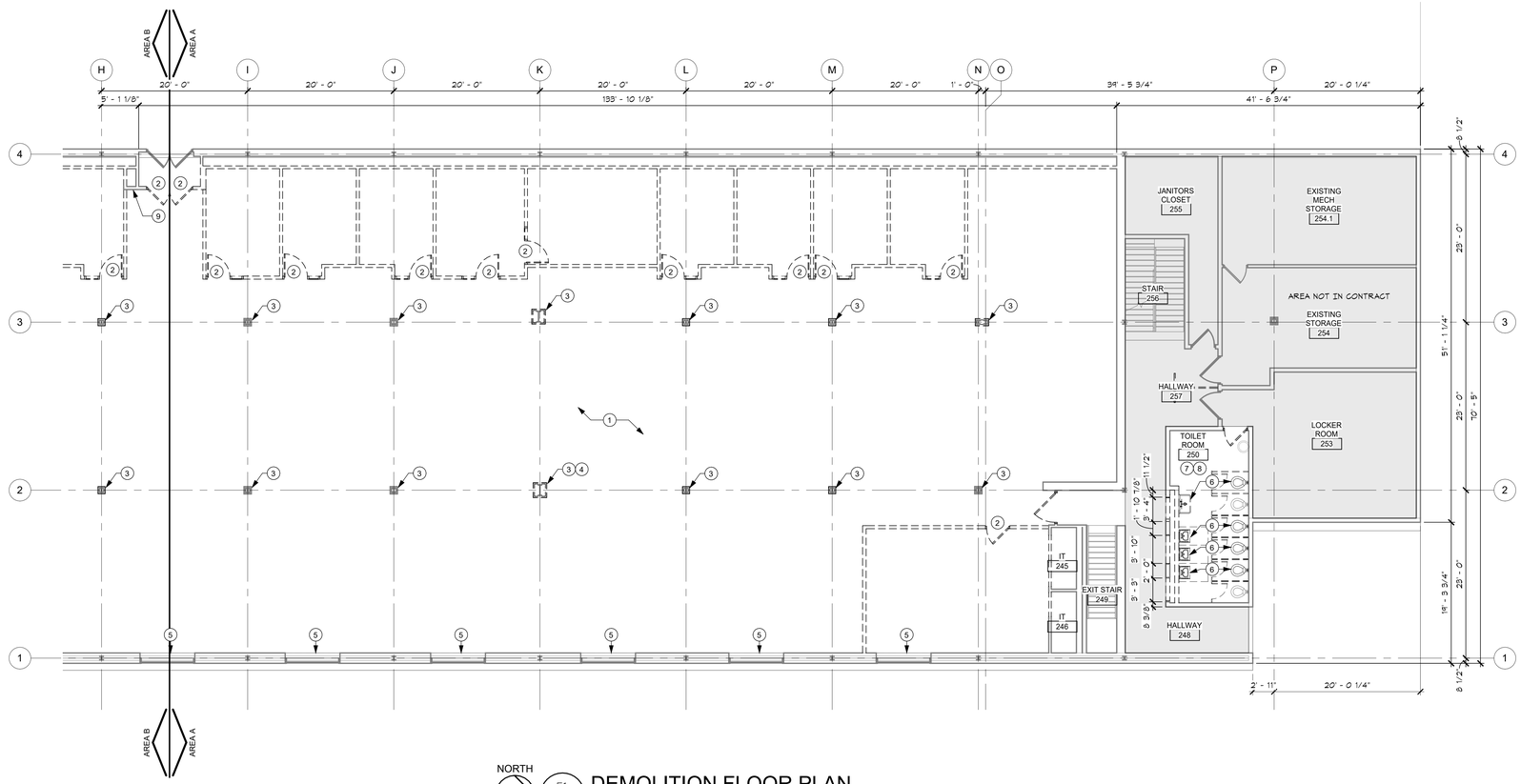


NORTH

F5 / D-120.2

DEMOLITION FLOOR PLAN

SCALE - 1/8" = 1'-0"

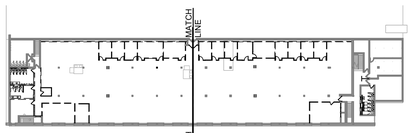


NORTH

F1 / D-120.2

DEMOLITION FLOOR PLAN

SCALE - 1/8" = 1'-0"



LEVEL 2 KEY PLAN

GENERAL NOTES

1. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL OF ALL ITEMS REMOVED.
2. CONTRACTOR SHALL NOT ALTER THE STRUCTURAL INTEGRITY OF THE BUILDING WITHOUT WRITTEN APPROVAL OF THE ARCHITECT.
3. CONTRACTOR SHALL MAINTAIN ALL EXITS CLEAR OF ANY OBSTRUCTIONS.
4. (*)THE BUILDING WILL BE PARTIALLY OCCUPIED DURING DEMOLITION AND RENOVATION OPERATIONS. THE CONTRACTOR SHALL CLEAN ALL CONSTRUCTION AREAS AND REMOVE ALL DEBRIS DAILY.
5. REMOVE ITEMS SHOWN FOR DEMOLITION, INCLUDING ALL ASSOCIATED COMPONENTS, EQUIPMENT AND PARTS WHETHER IT HAS BEEN SPECIFICALLY CALLED OUT OR NOT.
6. FILL OPENINGS IN SURFACES THAT REMAIN. ALL SURFACES THAT REMAIN, THAT ARE ADJACENT TO REMOVED WORK, SHALL BE PATCHED TO MATCH EXISTING CONDITION.
7. CONTRACTOR SHALL DISCONNECT MECHANICAL AND ELECTRICAL COMPONENTS IN WALLS, CEILINGS AND FLOORS REQUIRED TO BE DEMOLISHED. REMOVE UTILITIES CONNECTED TO SUCH COMPONENTS BACK TO THE SOURCE, I.E. REMOVE ELECTRICAL BACK TO PANEL OR TO FIRST SHARED ELECTRICAL BOX, AND REMOVE PIPING BACK TO BRANCH LINE SERVING OTHER COMPONENTS. CAP AND SUPPORT AS NECESSARY PORTIONS OF WORK REMAINING.
8. FURNITURE AND EQUIPMENT TO BE REMOVED BY OWNER/NBS

KEYNOTES

1. DEMO WALLS AS SHOWN
2. DEMO DOORS AS SHOWN
3. DEMO COLUMN ENCLOSURE
4. SALVAGE BOTTLE FILLERS
5. REMOVE EXISTING WINDOW TREATMENT - PACKAGE AND STORAGE IN SAFE LOCATION TO BE DETERMINED BY OWNER
6. DEMO PLUMBING FIXTURES REFER TO PLUMBING DRAWINGS FOR ADDITIONAL SCOPE.
7. DEMO TOILET PARTITIONS AS SHOWN
8. DEMO EXISTING MUDD BED AND TILE FLOOR FINISH
9. RETAIN WALLS AND EXISTING ELECTRICAL PANEL

FLOOR PLAN LEGEND

- EXISTING WALL CONSTRUCTION
- NEW WALL CONSTRUCTION
- RATED WALL CONSTRUCTION
- EXISTING DOOR - SEE SCHEDULE
- NEW DOOR - SEE SCHEDULE
- CR — CARD READER
- FEC — FIRE EXTINGUISHER CABINET
- FEH — FIRE EXTINGUISHER HOOK
- NOT IN CONTRACT

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DETROIT MI

PROJECT

CONSULTANT

STATE OF MICHIGAN
THOMAS M DILLENBECK
ARCHITECT
NO. 1301057360
LICENSED ARCHITECT

DEMOLITION FLOOR PLAN

SHEET TITLE

24-103

PROJECT NUMBER

D-120.2

SHEET NUMBER

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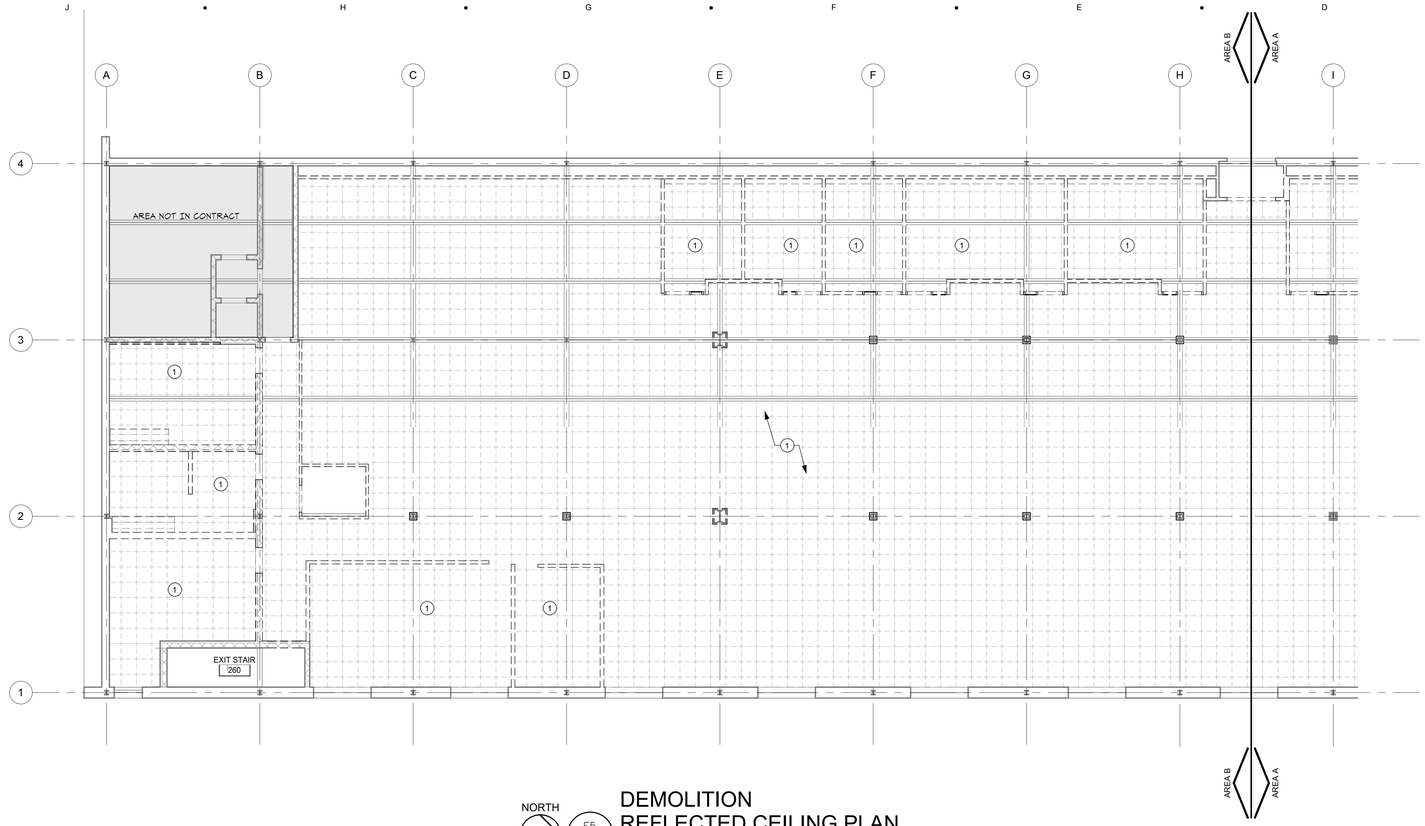
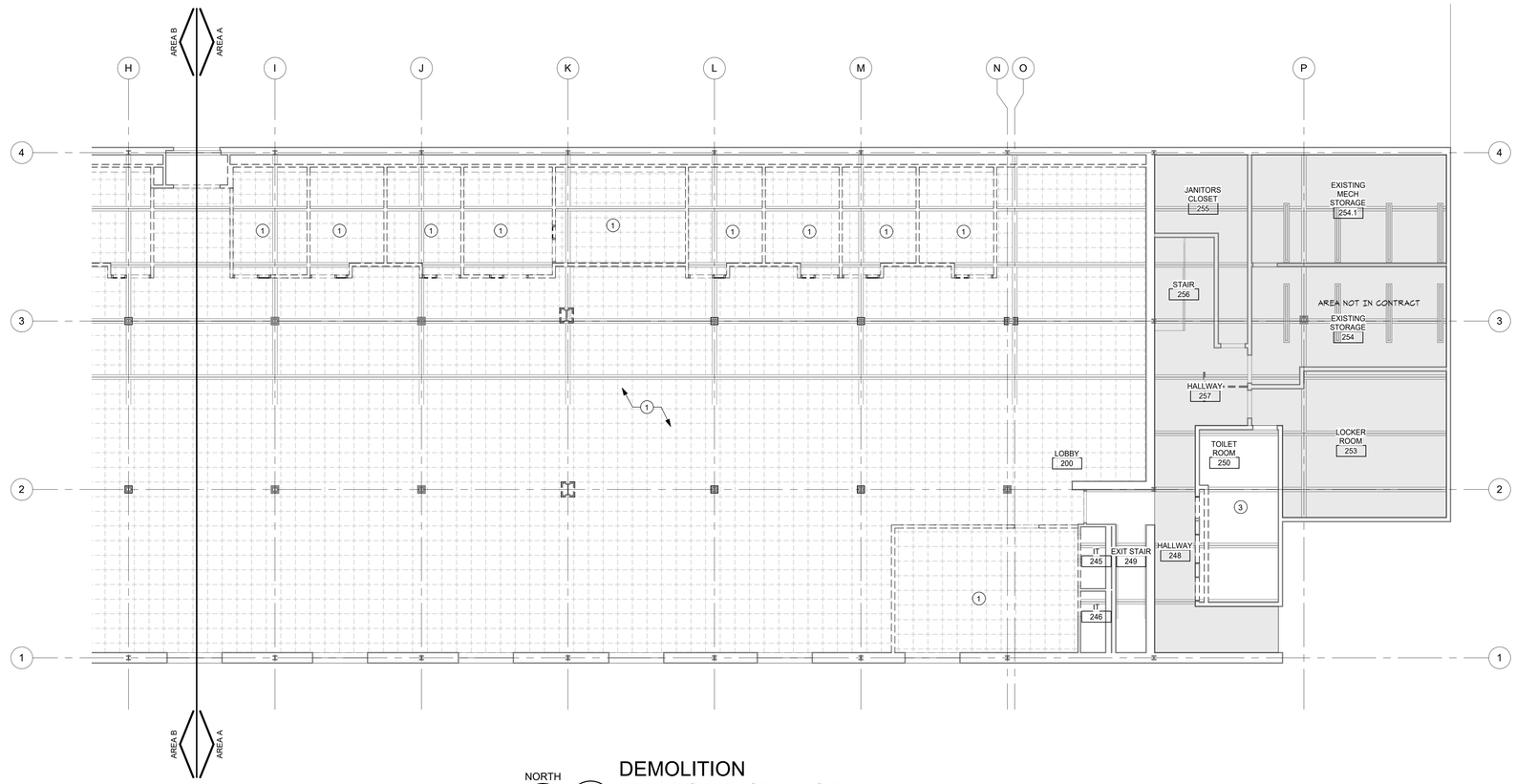


NORTH

F5
D-720.2

DEMOLITION REFLECTED CEILING PLAN

SCALE - 1/8" = 1'-0"



NORTH

F1
D-720.2

DEMOLITION REFLECTED CEILING PLAN

SCALE - 1/8" = 1'-0"

LEVEL 2 KEY PLAN

GENERAL NOTES

1. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL OF ALL ITEMS REMOVED.
2. EXISTING LAY-IN CEILING SYSTEM TO BE COMPLETELY REMOVED, U.N.O.
3. ALL LIGHT FIXTURES IN LAY-IN CEILING SYSTEM TO BE REMOVED.
4. COORDINATE LOCATION AND/OR RELOCATION OF EXISTING FIRE SPRINKLER SYSTEM.

KEYNOTES

1. DEMOLISH EXISTING LAY-IN CEILING
2. DEMOLISH EXISTING GYPSUM BOARD CEILING
3. EXISTING OPEN TO DECK

FLOOR PLAN LEGEND

- EXISTING WALL CONSTRUCTION
- NEW WALL CONSTRUCTION
- RATED WALL CONSTRUCTION
- EXISTING DOOR - SEE SCHEDULE
- NEW DOOR - SEE SCHEDULE
- CR — CARD READER
- FEC — FIRE EXTINGUISHER CABINET
- FEH — FIRE EXTINGUISHER HOOK
- NOT IN CONTRACT

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DEMOLITION REFLECTED CEILING PLAN

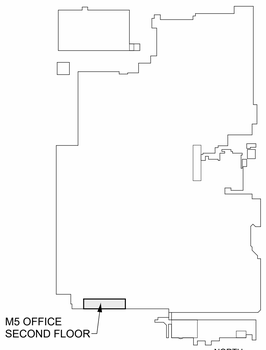
SHEET TITLE

24-103

PROJECT NUMBER

D-720.2

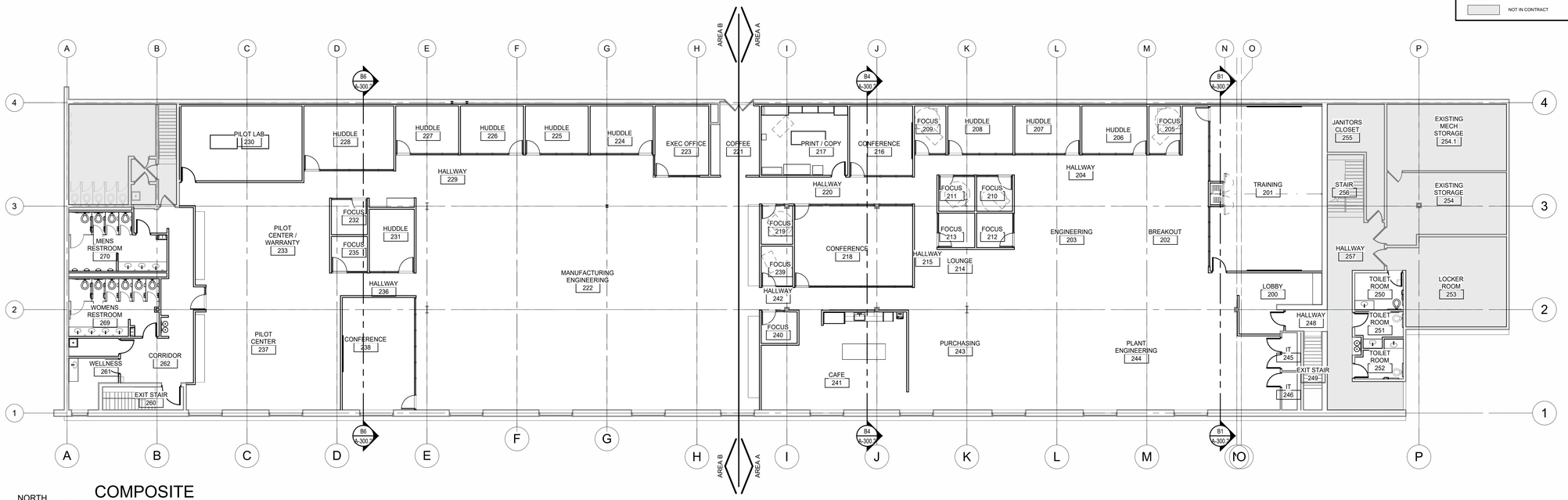
SHEET NUMBER



KEY PLAN
NOT TO SCALE

FLOOR PLAN LEGEND

- EXISTING WALL CONSTRUCTION
- NEW WALL CONSTRUCTION
- RATED WALL CONSTRUCTION
- EXISTING DOOR - SEE SCHEDULE
- NEW DOOR - SEE SCHEDULE
- CR — CARD READER
- FEC — FIRE EXTINGUISHER CABINET
- FEH — FIRE EXTINGUISHER HOOK
- NOT IN CONTRACT



NORTH
A1
A-111.2

COMPOSITE SECOND FLOOR PLAN

SCALE - 3/32" = 1'-0"

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THOMAS M. DILLENBECK
ARCHITECT
No. 1301057360
LICENSED ARCHITECT

COMPOSITE LEVEL 2 FLOOR PLAN

SHEET TITLE

24-103

PROJECT NUMBER

A-111.2

SHEET NUMBER

GENERAL NOTES

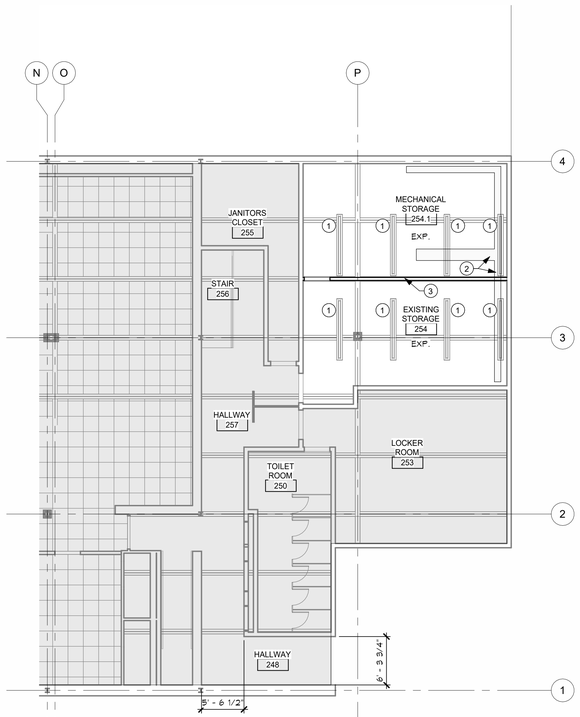
1. DIMENSIONS SHOWN ARE TO FACE OF MASONRY, FACE OF GYPSUM BOARD, OR CENTER LINE OF STRUCTURAL GRID UNLESS NOTED OTHERWISE.
2. PLAN SYMBOL 'V' INDICATES PARTITION TYPES. PARTITION TYPES ARE INDICATED ON THE SECTOR PLANS. REFER TO PARTITION LEGEND FOR ADDITIONAL INFORMATION.
3. ALL MATERIALS ARE NEW UNLESS LABELED AS EXISTING.
4. ALL DETAILS ARE TYPICAL UNLESS NOTED OTHERWISE.
5. ALL PIPE AND CONDUIT PENETRATIONS THRU ANY FLOOR OR WALL SHALL BE SLEEVED. AT FLOOR PENETRATIONS SLEEVES SHALL EXTEND 2" MINIMUM ABOVE THE FLOOR LEVEL. (TYPICAL FOR MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION ITEMS. SLEEVES SHALL BE SUPPLIED BY MECHANICAL AND ELECTRICAL TRADES).
6. PROVIDE FIRE-RATED FIRESTOPPING AT ALL PENETRATIONS THROUGH SUPPORTED FLOORS AND FIRE-RATED PARTITIONS/ WALLS. PROVIDE FIRESTOPPING SYSTEMS UTILIZING FM APPROVED MATERIALS.
7. THE CONTRACTOR SHALL PROVIDE SOLID FIRE RETARDANT TREATED (F.R.T.) WOOD OR SHEET METAL BACKING WHERE REQUIRED FOR ANCHORAGE OF ARCHITECTURAL, MECHANICAL, OR ELECTRICAL ITEMS.
8. PROVIDE CONTROL JOINTS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AT ALL MATERIALS, AND AS ACCEPTABLE TO ARCHITECT. CONTRACTOR TO NOTIFY ARCHITECT IF CONTROL JOINTS ARE LOCATED IN ADDITION TO WHAT IS SHOWN ON THE DRAWINGS PRIOR TO INSTALLATION.
9. FIRST LEVEL = 100'-0" AS SHOWN ON DRAWINGS

KEYNOTES

1. EXISTING LIGHTS TO REMAIN. MOVE AS REQUIRED FOR NEW PARTITION.
2. MECHANICAL DUCT
3. NEW WALL CENTERED ON BEAM ABOVE TO RECIEVE BASE AND PAINT TO DECK ABOVE. MATCH EXISTING FINISHES - BOTH SIDES.

FLOOR PLAN LEGEND

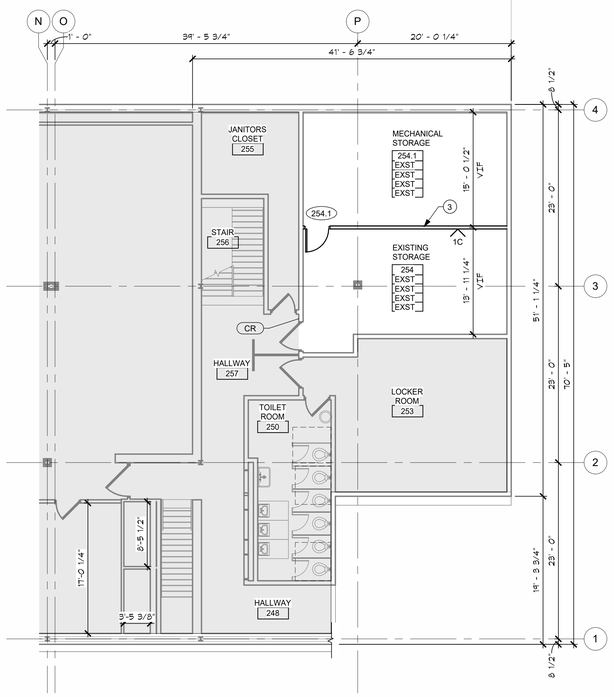
- EXISTING WALL CONSTRUCTION
- NEW WALL CONSTRUCTION
- RATED WALL CONSTRUCTION
- EXISTING DOOR - SEE SCHEDULE
- NEW DOOR - SEE SCHEDULE
- CR — CARD READER
- FEC — FIRE EXTINGUISHER CABINET
- FEH — FIRE EXTINGUISHER HOOK
- NOT IN CONTRACT



NORTH — D5 / A–120.1

REFLECTED CEILING PLAN

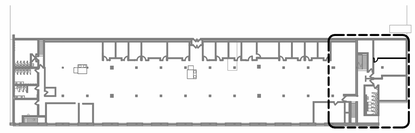
SCALE - 1/8" = 1'-0"



NORTH — D1 / A–120.1

SECOND FLOOR PLAN

SCALE - 1/8" = 1'-0"



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CONSULTANT

STATE OF MICHIGAN
THOMAS M DILLENBECK
ARCHITECT
No. 1301057360
LICENSED ARCHITECT

LEVEL 2 FLOOR PLAN & REFLECTED CEILING PLAN
SHEET TITLE

24-103
PROJECT NUMBER

A-120.1
SHEET NUMBER

GENERAL NOTES

1. DIMENSIONS SHOWN ARE TO FACE OF MASONRY, FACE OF GYPSUM BOARD, OR CENTER LINE OF STRUCTURAL GRID UNLESS NOTED OTHERWISE.
2. PLAN SYMBOL "/" INDICATES PARTITION TYPES. PARTITION TYPES ARE INDICATED ON THE SECTOR PLANS. REFER TO PARTITION LEGEND FOR ADDITIONAL INFORMATION.
3. ALL MATERIALS ARE NEW UNLESS LABELED AS EXISTING.
4. ALL DETAILS ARE TYPICAL UNLESS NOTED OTHERWISE.
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6. PROVIDE FIRE-RATED FIRESTOPPING AT ALL PENETRATIONS THROUGH SUPPORTED FLOORS AND FIRE-RATED PARTITIONS/ WALLS. PROVIDE FIRESTOPPING SYSTEMS UTILIZING FM APPROVED MATERIALS.
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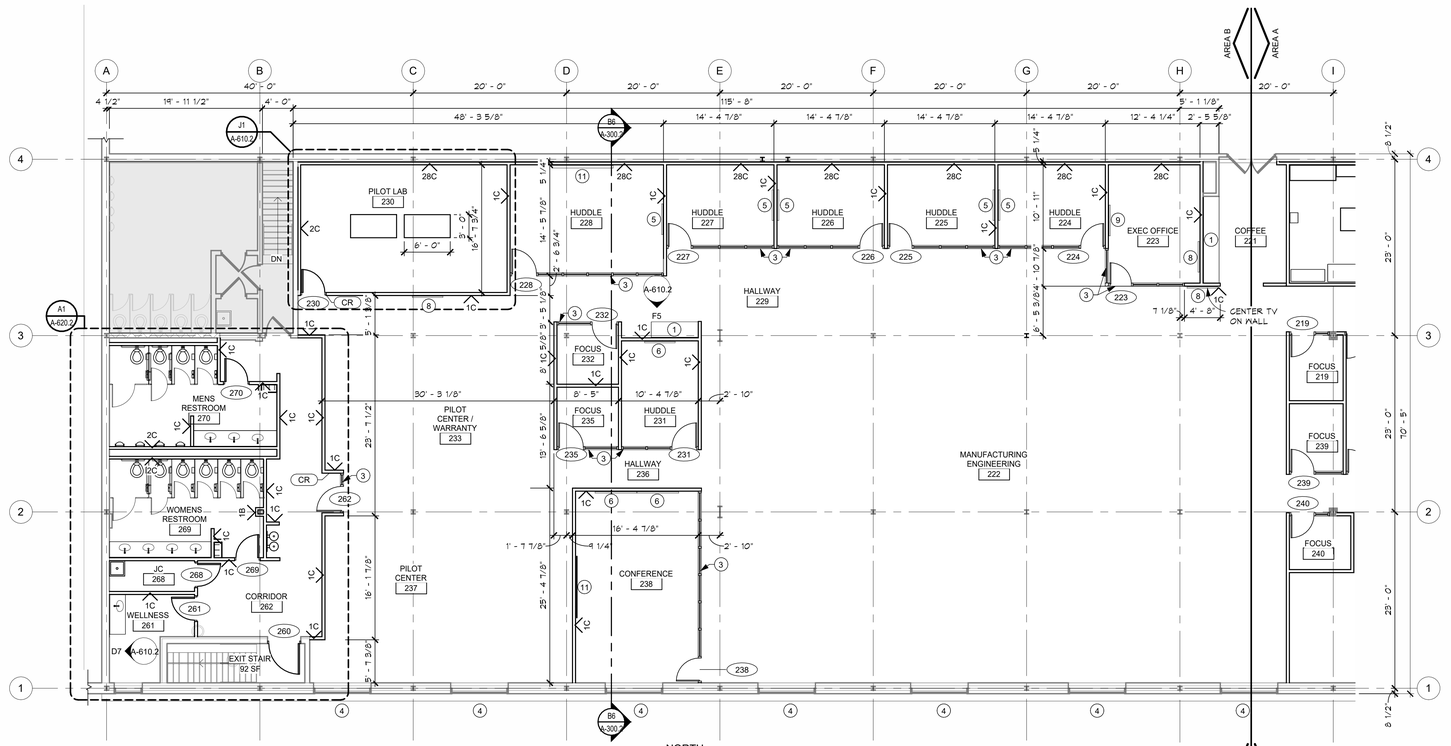
8. PROVIDE CONTROL JOINTS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AT ALL MATERIALS, AND AS ACCEPTABLE TO ARCHITECT. CONTRACTOR TO NOTIFY ARCHITECT IF CONTROL JOINTS ARE LOCATED IN ADDITION TO WHAT IS SHOWN ON THE DRAWINGS PRIOR TO INSTALLATION.
9. FIRST LEVEL = 100'-0" AS SHOWN ON DRAWINGS

KEYNOTES

1. MILLWORK
2. OPERABLE PARTITION
3. INTERIOR STOREFRONT, SEE FINISH FLOOR PLANS FOR MATERIAL SURROUNDING GLAZING. PROVIDE EQUAL SPACING OF MULLIONS FOR THE NUMBER OF GLASS PANELS SHOWN IN PLAN. REFER TO A020.2 FOR 4C TEMPERED GLASS
4. INSTALL SALVAGED ROLLER SHADES AND NEW FASCIA
5. PROVIDE BACKING IN WALL FOR 50" MONITOR, OFCI. COORDINATE INSTALLATION HEIGHT W/ OWNER / ARCHITECT
6. PROVIDE BACKING FOR A 75" MONITOR, OFCI. SEE TYPICAL MOUNTING HEIGHT DETAIL. COORDINATE INSTALLATION HEIGHT W/ OWNER / ARCHITECT
7. PROVIDE BACKING FOR A 65" MONITOR, OFCI. SEE TYPICAL MOUNTING HEIGHT DETAIL. COORDINATE INSTALLATION HEIGHT W/ OWNER / ARCHITECT
8. PROVIDE BACKING FOR A 60" MONITOR, OFCI. SEE TYPICAL MOUNTING HEIGHT DETAIL. COORDINATE INSTALLATION HEIGHT W/ OWNER / ARCHITECT
9. PROVIDE BACKING FOR 48" X 48" GLASS BOARD PROVIDED BY OTHERS INSTALLED BY CONTRACTOR
10. PROVIDE BACKING FOR 48" X 72" GLASS BOARD (HORIZONTAL INSTALLATION) PROVIDED BY OTHERS INSTALLED BY CONTRACTOR
11. PROVIDE BACKING FOR 48" X 96" GLASS BOARD (HORIZONTAL INSTALLATION) PROVIDED BY OTHER INSTALLED BY CONTRACTOR

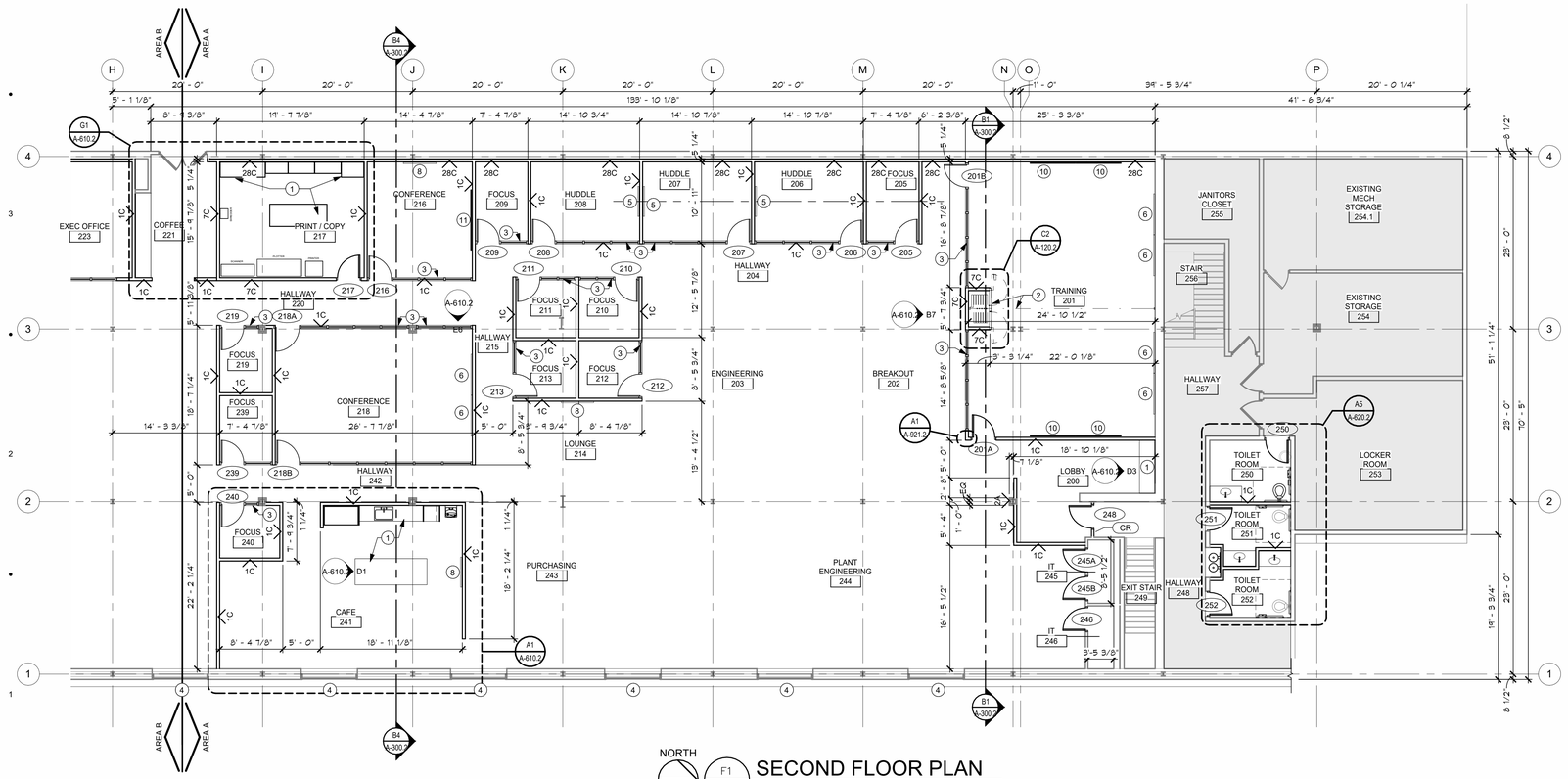


NORTH

F5 / A-120.2

SECOND FLOOR PLAN

SCALE - 1/8" = 1'-0"

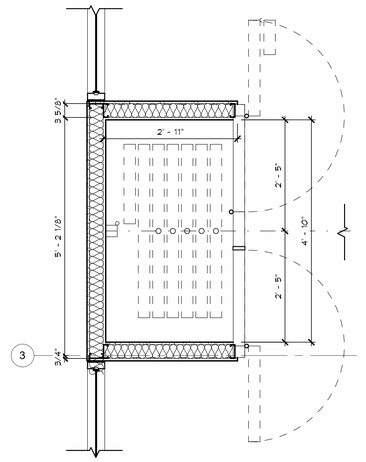


NORTH

F1 / A-120.2

SECOND FLOOR PLAN

SCALE - 1/8" = 1'-0"



NORTH

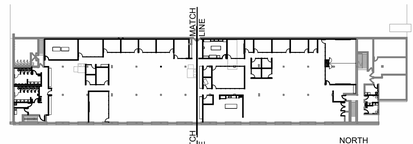
C.2 / A-120.2 / A-120.2

OPERABLE PARTITION POCKET DETAIL

SCALE - 3/4" = 1'-0"

FLOOR PLAN LEGEND

- EXISTING WALL CONSTRUCTION
- NEW WALL CONSTRUCTION
- RATED WALL CONSTRUCTION
- EXISTING DOOR - SEE SCHEDULE
- NEW DOOR - SEE SCHEDULE
- CR — CARD READER
- FEC — FIRE EXTINGUISHER CABINET
- FEH — FIRE EXTINGUISHER HOOK
- NOT IN CONTRACT



LEVEL 2 KEY PLAN

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LEVEL 2 FLOOR PLAN

SHEET TITLE

24-103

PROJECT NUMBER

A-120.2

SHEET NUMBER

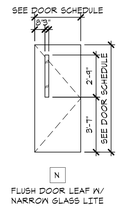
DOOR & FRAME SCHEDULE PHASE 1

DOOR NO.	DOOR / OPENING SIZE W x H	DOOR MATERIAL	DOOR TYPE	DOOR FINISH	HDWR. SET	FRAME MATERIAL	FRAME TYPE	FRAME FINISH	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	LABEL	REMARKS
LEVEL 2													
254.1	3'-0" x 7'-0"	H.M.	N	PT'D	15	H.M.	1	PT'D	B4/A-510	C4/A-510	-/-		2

GENERAL NOTES:
1. FIELD VERIFY OPENINGS OF ALL DOORS PRIOR TO FABRICATION, TYP.
2. DOOR RATINGS PER MBC, TABLE 716.5.
3. REFER TO WRITTEN SPECIFICATIONS FOR HARDWARE GROUPS.
4. HOLLOW METAL FRAME TO BE PRIME COATED - SEE FINISH SCHEDULE FOR FINISH PAINT SELECTION.
5. THE DOOR SWING INDICATED ON THE FLOOR PLAN INDICATES THE HAND OF THE DOOR ONLY. DOORS SHALL SWING TO THE MAXIMUM EXTENT (BEYOND 90°) WHERE NOT OBSTRUCTED BY ADJACENT WALLS.
6. COORDINATE ELECTRICAL REQUIREMENTS FOR POWER TO POWER SUPPLY AND OTHER ELECTRICAL DEVICES. THE DOOR HARDWARE / DOOR OPERATOR(S) TO FIRE ALARM / SMOKE DETECTION SYSTEM. PROVIDE WIRING DIAGRAMS AS REQUIRED & COORDINATE INSTALLATION W/ FIRE ALARM CONTRACTOR. REFER TO DOOR HARDWARE SET FOR ADDITIONAL INFORMATION.
7. PRE-FIN: PRE-FINISHED DARK ANODIZED ALUMINUM, SEE SPEC.

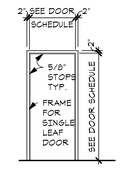
REMARKS:
1. INCLUDE PANIC HARDWARE
2. PAINT DOOR & FRAME:
   MANUFACTURER: SHERWIN WILLIAMS
   COLOR: TRECORN BLACK
   COLOR NO.: SW6258
   FINISH: SEMI-GLOSS

DOOR TYPES



N
FLUSH DOOR LEAF W/ NARROW GLASS LITE

DOOR FRAME TYPES



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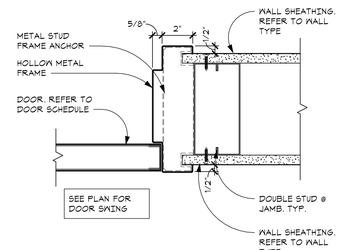
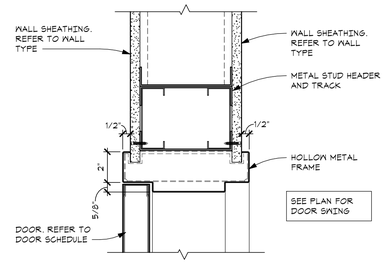


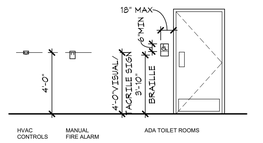
JAMB DETAIL
HM DOOR - STUD WALL

C4 / A-500.1
SCALE - 3" = 1'-0"

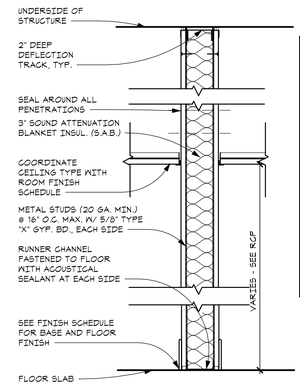


HEAD DETAIL
HM DOOR - STUD WALL

B4 / A-500.1
SCALE - 3" = 1'-0"



TYP. MOUNTING HEIGHTS



STC 50 OR GREATER
TYPE 1 - FULL HEIGHT
ACOUSTIC & SMOKE PARTITION

PARTITION TYPE GENERAL NOTES
WALL FRAMING MEMBER WIDTH
WOOD STUD - NOMINAL
METAL STUD - ACTUAL
A - 1 5/8"
B - 2 1/2"
C - 3 5/8"
D - 4"
E - 6"
F - 8"
G - 10"
H - 12"

WALL MASONRY MEMBER WIDTH
MASONRY UNIT - NOMINAL
D - 4"
E - 6"
F - 8"
G - 10"
H - 12"

1A 1 5/8" MTL. STUDS
1B 2 1/2" MTL. STUDS
1C 3 5/8" MTL. STUDS
1D 4" MTL. STUDS
1E 6" MTL. STUDS
1F 8" MTL. STUDS
1G 10" MTL. STUDS
1H 12" MTL. STUDS

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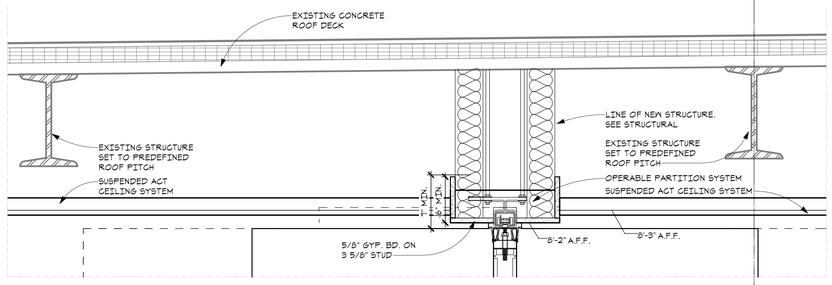
STATE OF MICHIGAN
THOMAS M. DILLENBECK
ARCHITECT
No. 1301057360
LICENSED ARCHITECT

DOOR SCHEDULE & INTERIOR PARTITIONS
SHEET TITLE

24-103
PROJECT NUMBER

A-500.1
SHEET NUMBER

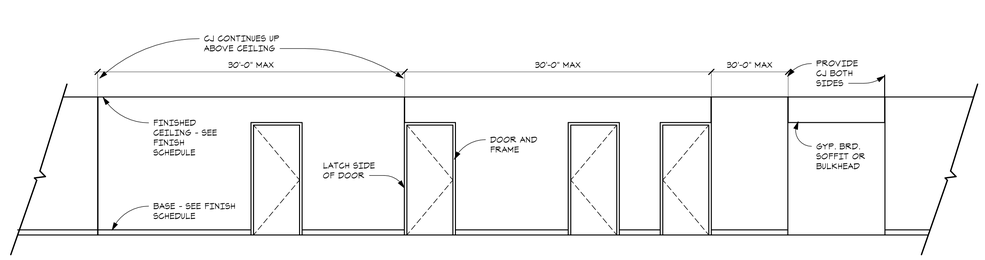


3
3

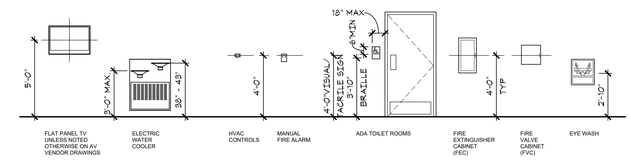
OPERABLE PARTITION CEILING DETAIL

B5 / A-500.2 | A-720.2

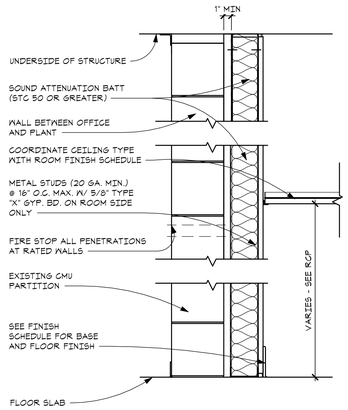
SCALE - 1 1/2" = 1'-0"



TYPICAL CONTROL JOINTS

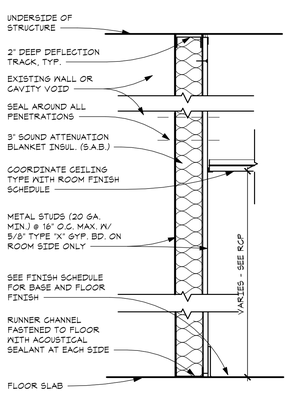


TYP. MOUNTING HEIGHTS



TYPE 28 - CMU PARTITION W/ METAL STUD FURRING

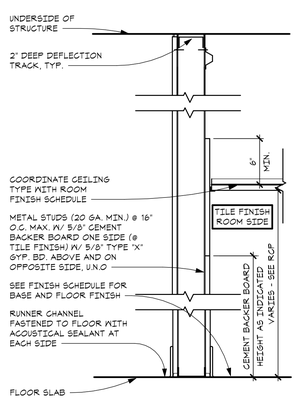
28AA	7/8" MTL. FURRING	28AB	1 1/2" MTL. FURRING
28A	1 5/8" MTL. STUDS	28E	6" MTL. STUDS
28B	2 1/2" MTL. STUDS	28F	8" MTL. STUDS
28C	3 5/8" MTL. STUDS	28G	10" MTL. STUDS
28D	4" MTL. STUDS	28H	12" MTL. STUDS



STC 45-49

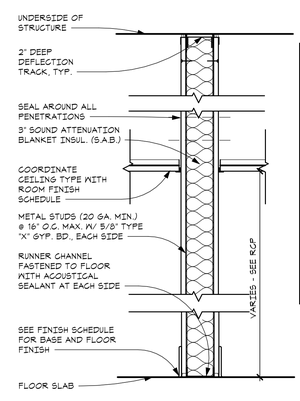
TYPE 2 - FULL HEIGHT ACOUSTIC & SMOKE PARTITION

2A	1 5/8" MTL. STUDS	2E	6" MTL. STUDS
2B	2 1/2" MTL. STUDS	2F	8" MTL. STUDS
2C	3 5/8" MTL. STUDS	2G	10" MTL. STUDS
2D	4" MTL. STUDS	2H	12" MTL. STUDS



TYPE 7 - 6" ABOVE CEILING PARTITION W/ CEMENT BD.

7A	1 5/8" MTL. STUDS	7E	6" MTL. STUDS
7B	2 1/2" MTL. STUDS	7F	8" MTL. STUDS
7C	3 5/8" MTL. STUDS	7G	10" MTL. STUDS
7D	4" MTL. STUDS	7H	12" MTL. STUDS



STC 50 OR GREATER

TYPE 1 - FULL HEIGHT ACOUSTIC & SMOKE PARTITION

1A	1 5/8" MTL. STUDS	1E	6" MTL. STUDS
1B	2 1/2" MTL. STUDS	1F	8" MTL. STUDS
1C	3 5/8" MTL. STUDS	1G	10" MTL. STUDS
1D	4" MTL. STUDS	1H	12" MTL. STUDS

PARTITION TYPE GENERAL NOTES

WALL FRAMING MEMBER WIDTH
WOOD STUD - NOMINAL
METAL STUD - ACTUAL
A - 1 5/8"
B - 2 1/2"
C - 3 5/8"
D - 4"
E - 6"
F - 8"
G - 10"
H - 12"

WALL MASONRY MEMBER WIDTH
MASONRY UNIT - NOMINAL
D - 4"
E - 6"
F - 8"
G - 10"
H - 12"

BIDS & PERMITS 04/18/2025
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DETROIT DIESEL SECOND FLOOR RENOVATION
13400 W. OUTER DR.
DETROIT MI

PROJECT

CONSULTANT

STATE OF MICHIGAN
THOMAS M. DILLENBECK
ARCHITECT
No. 1301057360
LICENSED ARCHITECT

INTERIOR DETAILS & PARTITION

SHEET TITLE

24-103
PROJECT NUMBER

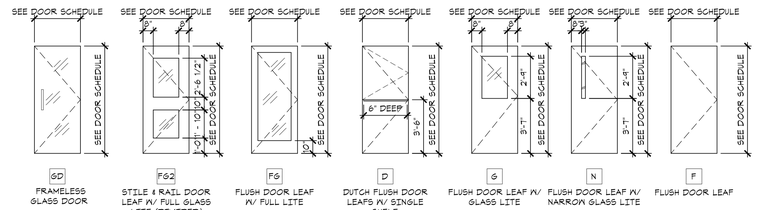
A-500.2
SHEET NUMBER

DOOR NO.	DOOR / OPENING SIZE W X H	DOOR MATERIAL	DOOR TYPE	DOOR FINISH	HDWR. SET	FRAME MATERIAL	FRAME TYPE	FRAME FINISH	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	LABEL	REMARKS
LEVEL 2													
201A	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	F6/A-510	-/-		
201B	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
205	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
206	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
207	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
208	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
209	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
210	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
211	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
212	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
213	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
216	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
217	3'-0" x 8'-0"	SC	F	WD	15	H.M.	1	PTD	F1/A-510	G1/A-510	-/-		
218A	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
218B	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
219	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
223	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	03	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
224	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
225	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
226	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
227	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
228	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
230	3'-0" x 8'-0"	SC	F	WD	06	H.M.	1	PTD	F1/A-510	G1/A-510	-/-		
231	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
232	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
235	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
236	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
238	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
240	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	15	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
245A	3'-0" x 7'-0"	SC	F	WD	06	WD	1	PTD	F1/A-510	G1/A-510	-/-		
245B	3'-0" x 7'-0"	SC	F	WD	06	WD	1	PTD	F1/A-510	G1/A-510	-/-		
246	3'-0" x 7'-0"	SC	F	WD	06	WD	1	PTD	F1/A-510	G1/A-510	-/-		
248	3'-0" x 7'-0"	ALUM/GL	F	PRE-FIN	04	ALUM/GL	1	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
250	3'-0" x 7'-0"	SC	F	WD	10	H.M.	1	PTD	F3/A-510	G3/A-510	-/-		
251	3'-0" x 7'-0"	SC	F	WD	10	H.M.	1	PTD	F3/A-510	G3/A-510	-/-		
252	3'-0" x 7'-0"	SC	F	WD	10	H.M.	1	PTD	F3/A-510	G3/A-510	-/-		
260	4'-0" x 7'-0"	H.M.	F	PTD	06	H.M.	1	PTD	F1/A-510	G1/A-510	-/-		
261	3'-0" x 7'-0"	SC	F	WD	10	H.M.	1	PTD	F1/A-510	G1/A-510	-/-		
262	3'-0" x 8'-0"	ALUM/GL	FG	PRE-FIN	04	ALUM/GL	3	PRE-FIN	F4/A-510	G4, F6/A-510	-/-		
268	3'-0" x 7'-0"	H.M.	F	PTD	11	H.M.	1	PTD	F1/A-510	G1/A-510	-/-		
269	3'-0" x 7'-0"	SC	F	WD	11	H.M.	1	PTD	F1/A-510	G1/A-510	-/-		
270	3'-0" x 7'-0"	SC	F	WD	11	H.M.	1	PTD	F1/A-510	G1/A-510	-/-		

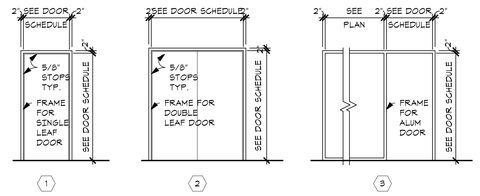
GENERAL NOTES:
1. FIELD VERIFY OPENINGS OF ALL DOORS PRIOR TO FABRICATION. TYP.
2. DOOR RATINGS PER MBC, TABLE 716.5.
3. REFER TO WRITTEN SPECIFICATIONS FOR HARDWARE GROUPS.
4. HOLLOW METAL FRAME TO BE PRIME COATED - SEE FINISH SCHEDULE FOR FINISH PAINT SELECTION.
5. THE DOOR SWING INDICATED ON THE FLOOR PLAN INDICATES THE HAND OF THE DOOR ONLY. DOORS SHALL SWING TO THE MAXIMUM EXTENT (BEYOND 90°) WHERE NOT OBSTRUCTED BY ADJACENT WALLS.
6. COORDINATE ELECTRICAL REQUIREMENTS FOR POWER TO POWER SUPPLY AND OTHER ELECTRICAL DEVICES. THE DOOR HARDWARE / DOOR OPERATOR(S) TO FIRE ALARM / SMOKE DETECTION SYSTEM. PROVIDE WIRING DIAGRAMS AS REQUIRED & COORDINATE INSTALLATION W/ FIRE ALARM CONTRACTOR. REFER TO DOOR HARDWARE SET FOR ADDITIONAL INFORMATION.
7. PRE-FIN: PRE-FINISHED DARK ANODIZED ALUMINUM, SEE SPEC.

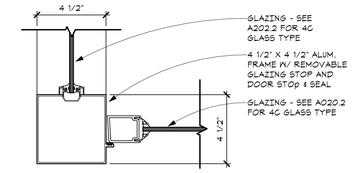
REMARKS:
1. INCLUDE PANIC HARDWARE

DOOR TYPES

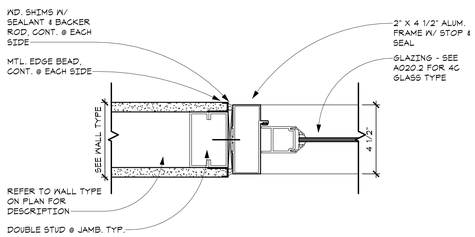


DOOR FRAME TYPES

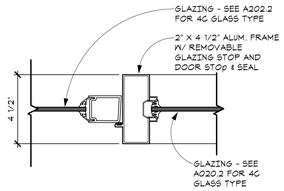




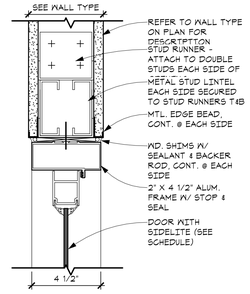
G6 / A-510.2
JAMB DETAIL
ALUM DOOR - STUD WALL
SCALE - 3" = 1'-0"



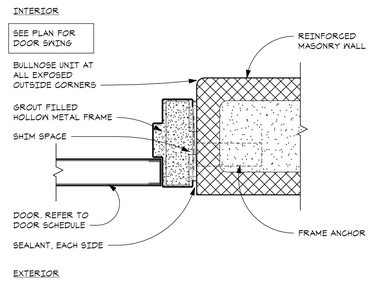
F6 / A-510.2
JAMB DETAIL
ALUM DOOR - STUD WALL
SCALE - 3" = 1'-0"



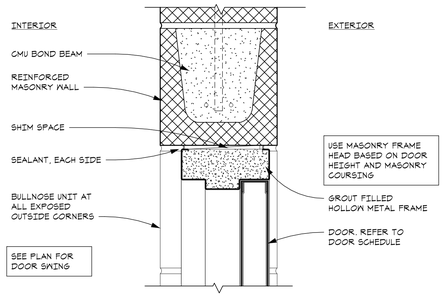
G4 / A-510.2
JAMB DETAIL
ALUM DOOR - STUD WALL
SCALE - 3" = 1'-0"



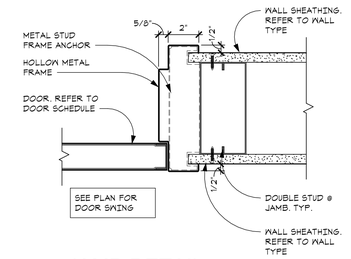
F4 / A-510.2
HEAD DETAIL
ALUM DOOR - STUD WALL
SCALE - 3" = 1'-0"



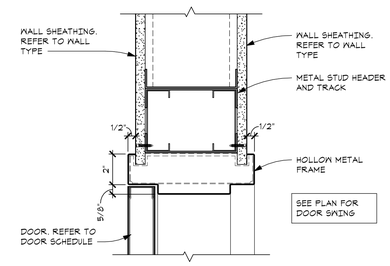
G3 / A-510.2
JAMB DETAIL
HM DOOR IN CMU
SCALE - 3" = 1'-0"



F3 / A-510.2
HEAD DETAIL
HM DOOR IN CMU
SCALE - 3" = 1'-0"



G1 / A-510.2
JAMB DETAIL
HM DOOR - STUD WALL
SCALE - 3" = 1'-0"



F1 / A-510.2
HEAD DETAIL
HM DOOR - STUD WALL
SCALE - 3" = 1'-0"

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DETROIT MI

PROJECT

CONSULTANT

STATE OF MICHIGAN
THOMAS M. DILLENBECK
ARCHITECT
No. 1301057360
LICENSED ARCHITECT

DOOR SCHEDULE & DOOR DETAILS

SHEET TITLE

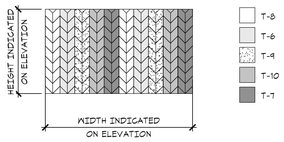
24-103

PROJECT NUMBER

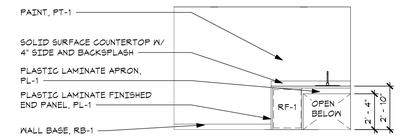
A-510.2

SHEET NUMBER

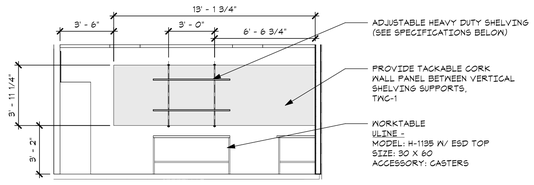
APPLIANCE / ACCESSORY SCHEDULE							
TAG	APPLIANCE	MANUFACTURER	MODEL	DIMENSIONS	FURNISH BY	INSTALL BY	NOTES
RF-1	REFRIGERATOR	TRUE	T-49-HC	54 1/8"W X 29 1/2"D X 78 3/8"H	OWNER	CONTRACTOR	KITCHEN
RF-2	REFRIGERATOR	INSIGNIA	NS-CF11BK9	19 1/2"H X 17 5/16"W	OWNER	CONTRACTOR	WELLNESS ROOM
MC-1	MICROWAVE & TRIM KIT	MONOGRAM	ZUC100A-NM ZX2130SLSS		CONTRACTOR	CONTRACTOR	KITCHEN
DF-1	DRINKING FOUNTAIN W/ BOTTLE FILLER	ELKAY	X	X	X	X	KITCHEN
CH-1	COAT HOOK	BRADLEY	9114	-	CONTRACTOR	CONTRACTOR	WELLNESS ROOM
MR-1	MIRROR	BRADLEY	ELVARI LED MIRROR	24" X 60"	CONTRACTOR	CONTRACTOR	WELLNESS ROOM
TR-1	WASTE RECEPTACLE	-	-	-	OWNER FURNISHED	CONTRACTOR	WELLNESS ROOM



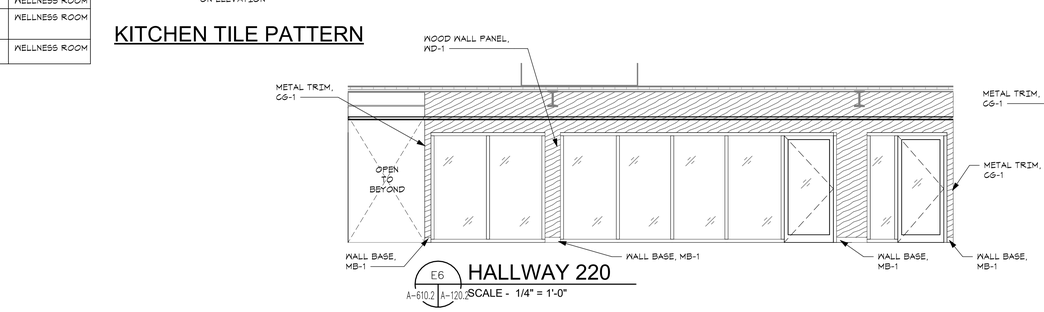
KITCHEN TILE PATTERN



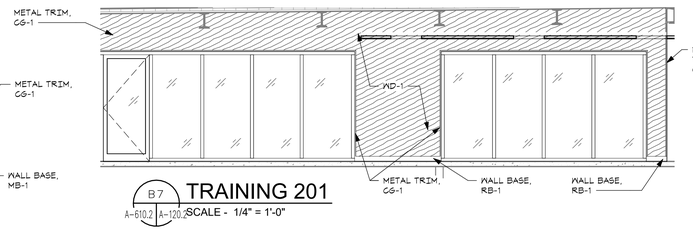
D7 A-610.2 A-120.2 WELLNESS 261
SCALE - 1/4" = 1'-0" SEE SHEET A -620 FOR KEY NOTES



J5 A-610.2 ELEVATION_PILOT LAB
SCALE - 1/4" = 1'-0"



E6 A-610.2 A-120.2 HALLWAY 220
SCALE - 1/4" = 1'-0"

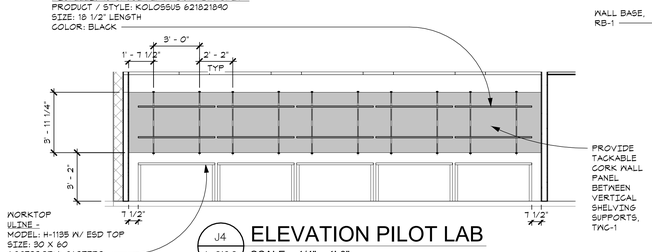


B7 A-610.2 A-120.2 TRAINING 201
SCALE - 1/4" = 1'-0"

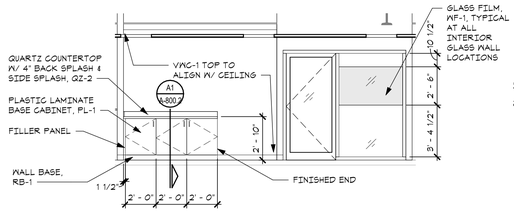
ADJUSTABLE HEAVY DUTY SHELVING

RICHELIEU WALL BRACKET -
PRODUCT / STYLE: KOLOSSUS HEAVY DUTY DOUBLE SLOT STANDARD - 62824890
SIZE: 48" LENGTH
COLOR: BLACK

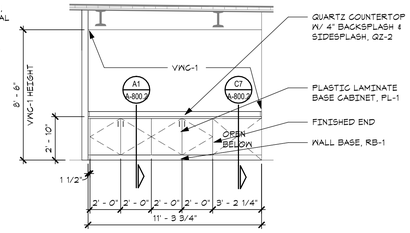
RICHELIEU 16-GAUGE HEAVY DUTY BRACKET -
PRODUCT / STYLE: KOLOSSUS 62182189O
SIZE: 18 1/2" LENGTH
COLOR: BLACK



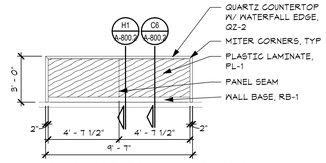
J4 A-610.2 ELEVATION PILOT LAB
SCALE - 1/4" = 1'-0"



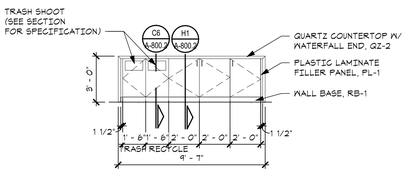
F5 A-610.2 A-120.2 MILLWORK_COFFEE 236
SCALE - 1/4" = 1'-0"



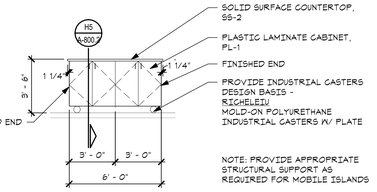
D5 A-610.2 A-610.2 MILLWORK_COFFEE 221
SCALE - 1/4" = 1'-0"



MILLWORK_KITCHEN ISLAND
C5 A-610.2 SCALE - 1/4" = 1'-0"

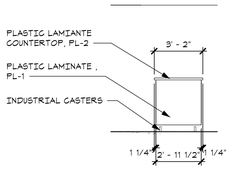


MILLWORK_KITCHEN ISLAND
A5 A-610.2 SCALE - 1/4" = 1'-0"

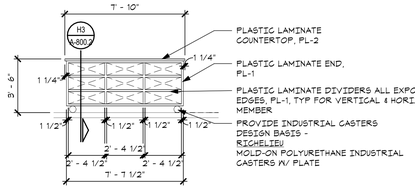


NOTE: PROVIDE APPROPRIATE STRUCTURAL SUPPORT AS REQUIRED FOR MOBILE ISLANDS

J3 A-610.2 MILLWORK_LAB ISLAND
SCALE - 1/4" = 1'-0"

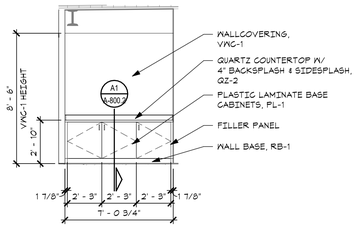


MILLWORK_PRINTER ISLAND
H3 A-610.2 SCALE - 1/4" = 1'-0"

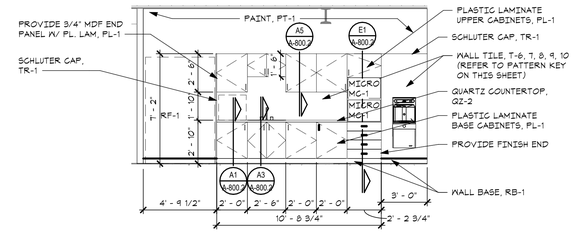


F3 A-610.2 MILLWORK_PRINT ISLAND
SCALE - 1/4" = 1'-0"

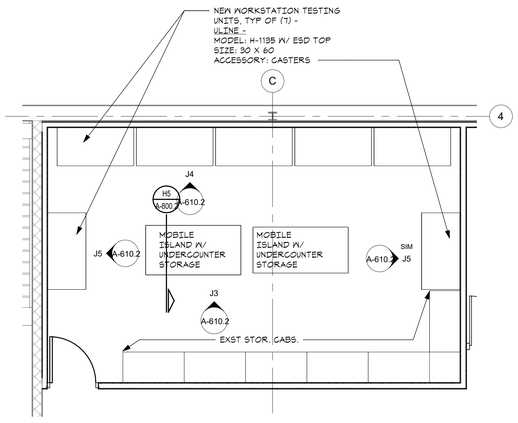
NOTE: PROVIDE APPROPRIATE STRUCTURAL SUPPORT AS REQUIRED FOR MOBILE ISLAND



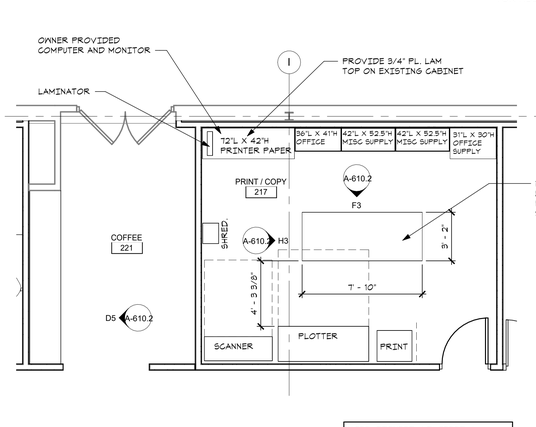
D3 A-610.2 A-120.2 MILLWORK_ENTRY
SCALE - 1/4" = 1'-0"



A3 A-610.2 MILLWORK_KITCHEN
SCALE - 1/4" = 1'-0"

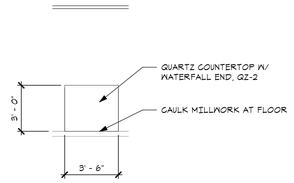


NORTH J1 A-610.2 A-120.2 ENLARGED FLOOR PLAN_PILOT LAB
SCALE - 1/4" = 1'-0"

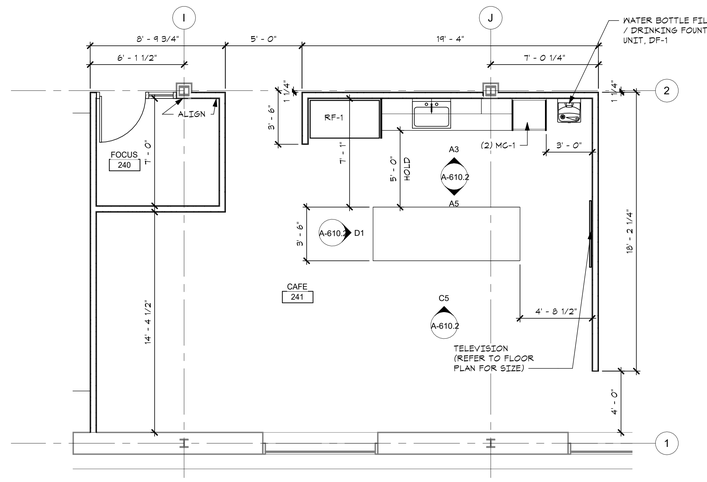


NOTE: PRINTER / PLOTTER / SHREDDER / LAMINATOR / SCANNER TO BE OFCI

NORTH G1 A-610.2 A-120.2 ENLARGED FLOOR PLAN
SCALE - 1/4" = 1'-0"



MILLWORK_KITCHEN ISLAND
D1 A-610.2 SCALE - 1/4" = 1'-0"



NORTH A1 A-610.2 A-120.2 ENLARGED FLOOR PLAN_KITCHEN
SCALE - 1/4" = 1'-0"

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PROJECT

CONSULTANT

STATE OF MICHIGAN
THOMAS M. DILLENBECK
ARCHITECT
No. 1301057360
LICENSED ARCHITECT

ENLARGED FLOOR PLAN - INTERIOR ELEVATIONS

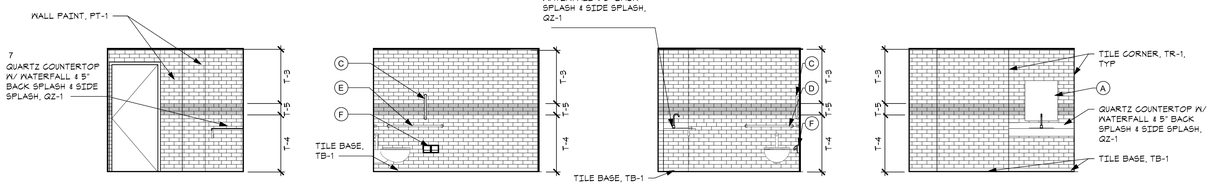
SHEET TITLE

24-103
PROJECT NUMBER

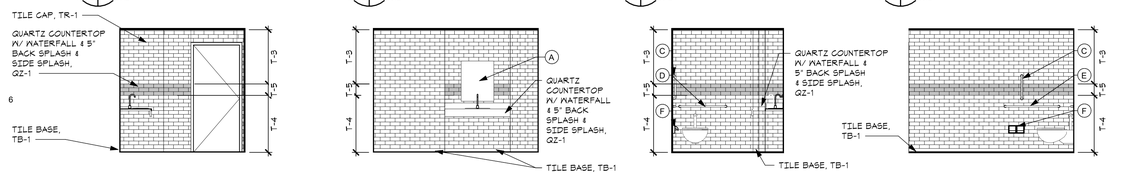
A-610.2
SHEET NUMBER

TOILET ACCESSORY KEY

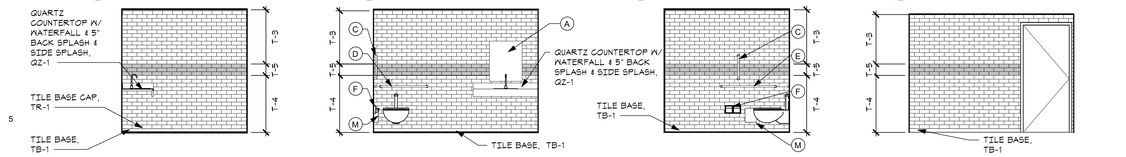
KEY	ITEM	SOURCE	MODEL NUMBER	DESCRIPTION	FURNISHED BY	INSTALLED BY
A	MIRROR	-	-	CUSTOM BACKLIT MIRROR SEE DETAIL F1/A-833	CONTRACTOR	CONTRACTOR
B	FULL HEIGHT MIRROR	-	-	SURFACE MOUNTED WITH BEVELED EDGES. MOUNT TO WALL WITH J-CLIPS. BACKSIDE OF MIRROR FLUSH WITH TILE	CONTRACTOR	CONTRACTOR
C	18" GRAB BAR	BRADLEY	B120-001180	COLOR: SATIN FINISH STAINLESS STEEL - 1 1/2" DIAMETER	CONTRACTOR	CONTRACTOR
D	36" GRAB BAR	BRADLEY	B120-001360	COLOR: SATIN FINISH STAINLESS STEEL - 1 1/2" DIAMETER	CONTRACTOR	CONTRACTOR
E	42" GRAB BAR	BRADLEY	B120-001420	COLOR: SATIN FINISH STAINLESS STEEL - 1 1/2" DIAMETER	CONTRACTOR	CONTRACTOR
F	TOILET PAPER DISPENSER & COVER	KIMBERLY CLARK	09551	WALL MOUNTED, SATIN NICKEL FINISH	OWNER	CONTRACTOR
G	PAPER TOWEL DISPENSER	KIMBERLY CLARK	09990		OWNER	CONTRACTOR
H	SURFACE MOUNTED SEAT COVER DISPENSER	KIMBERLY CLARK	09506	WALL MOUNTED, SATIN NICKEL FINISH	OWNER	CONTRACTOR
I	SOAP DISPENSER	KIMBERLY CLARK	92504	COORDINATE EXACT LOCATION IN FIELD	OWNER	CONTRACTOR
J	DRINKING FOUNTAIN	ELKAY	LZSTL8WSLP	ADA DRINKING FOUNTAIN	CONTRACTOR	CONTRACTOR
K	WASTE RECEPTACLE	BRADLEY	356	WALL MOUNTED WASTE RECEPTACLE	OWNER	CONTRACTOR
L	COAT HOOKS	BRADLEY	9114	COAT HOOKS	CONTRACTOR	CONTRACTOR
M	FEMININE HYGIENE RECEPTACLE	GRAINGER	1ECK9	-	CONTRACTOR	CONTRACTOR
N	TOILET PARTITIONS	BRADLEY 600 SERIES POWDER COATED			CONTRACTOR	CONTRACTOR
O	36" PARTITION STALL DOOR	BRADLEY, CEILING HUNG PROVIDE ADA DOOR PULLS & LOCK HARDWARE, SELF CLOSING HINGES			CONTRACTOR	CONTRACTOR
P	32" PARTITION STALL DOOR	BRADLEY, CEILING HUNG PROVIDE ADA DOOR PULLS & LOCK HARDWARE, SELF CLOSING HINGES			CONTRACTOR	CONTRACTOR
Q	URINAL PARTITIONS	BRADLEY, 600 SERIES POWDER COATED			CONTRACTOR	CONTRACTOR
R	WELLNESS MIRROR	BRADLEY		ELVARI LED MIRROR 24" X 60"		
S	WELLNESS WASTE RECEPTICALE				OWNER	OWNER
T	STAINLESS STL SHELF	BRADLEY	7512-24	12" DEEP SHELF	CONTRACTOR	CONTRACTOR



J7 TOILET ROOM 252 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"
H7 TOILET ROOM 252 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"
G7 TOILET ROOM 252 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"
F7 TOILET ROOM 252 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"

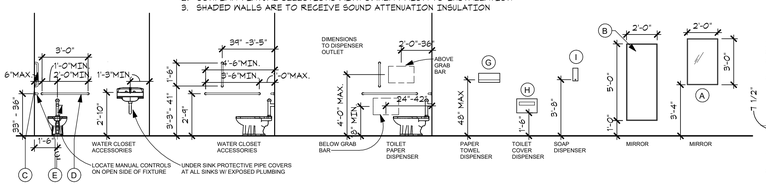


J6 TOILET ROOM 251 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"
H6 TOILET ROOM 251 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"
G6 TOILET ROOM 251 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"
F6 TOILET ROOM 251 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"

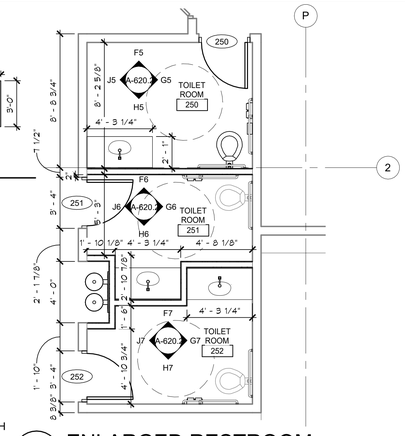


J5 TOILET ROOM 250 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"
H5 TOILET ROOM 250 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"
G5 TOILET ROOM 250 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"
F5 TOILET ROOM 250 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"

NOTE:
1. ALL SCHEDULED ITEMS TO BE INSTALLED BY THE CONTRACTOR
2. CONFIRM FIXTURE SELECTIONS WITH OWNER PRIOR TO INSTALLATION
3. SHADED WALLS ARE TO RECEIVE SOUND ATTENUATION INSULATION

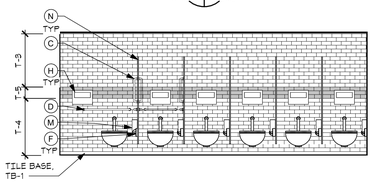


TYP. TOILET ACCESSORY MOUNTING HEIGHTS



ENLARGED RESTROOM

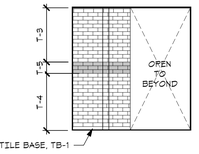
A5 — A-620.2 A-120.2 SCALE - 1/4" = 1'-0"



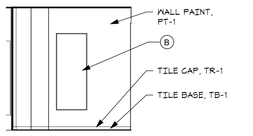
WOMEN'S RESTROOM ELEVATION

H4 — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"

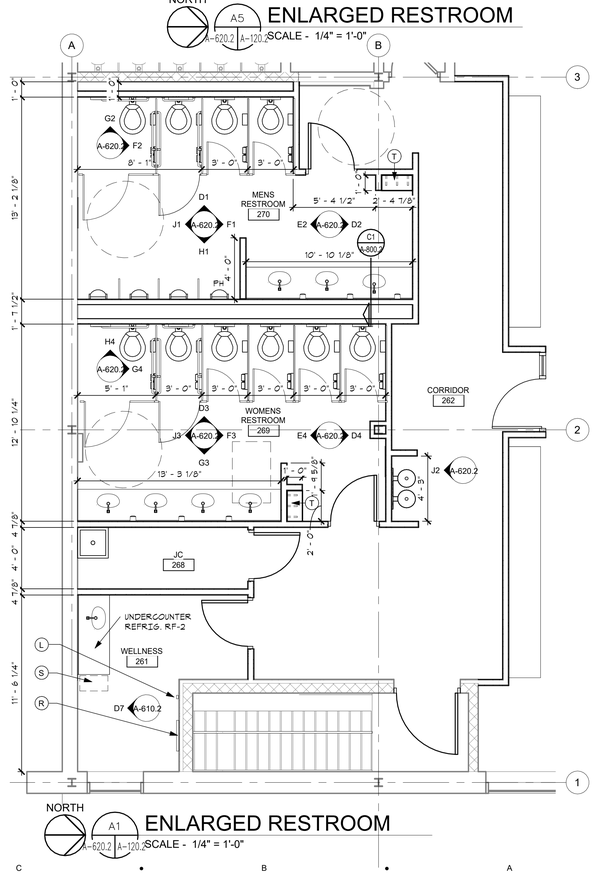
G4 WOMEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"



E4 WOMEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"

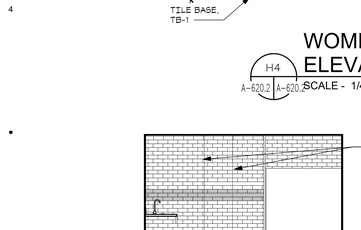


D4 WOMEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"

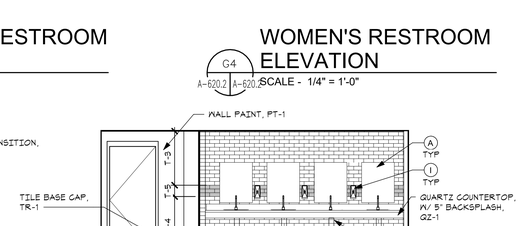


ENLARGED RESTROOM

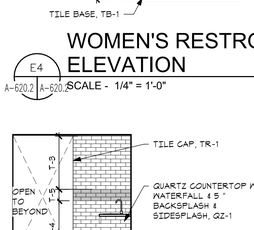
A1 — A-620.2 A-120.2 SCALE - 1/4" = 1'-0"



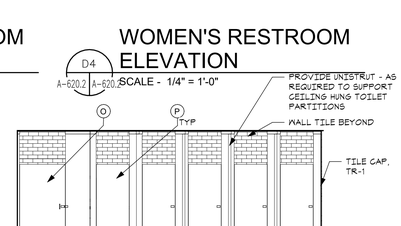
J3 WOMEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"



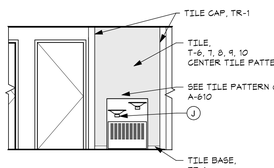
G3 WOMEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"



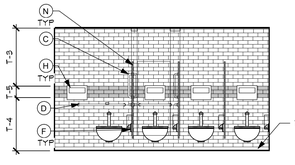
F3 WOMEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"



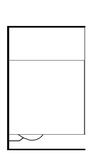
D3 WOMEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"



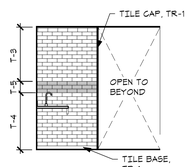
J2 DRINKING FOUNTAIN ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"



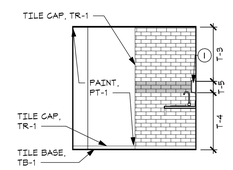
G2 MEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"



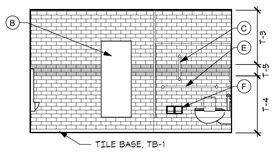
F2 MEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"



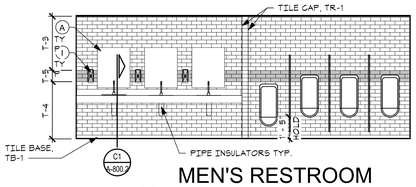
E2 MEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"



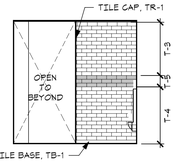
D2 MEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"



J1 MEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"



H1 MEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"



F1 MEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"

D1 MEN'S RESTROOM ELEVATION — A-620.2 A-620.2 SCALE - 1/4" = 1'-0"

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ENLARGED RESTROOM PLANS & ELEVATIONS

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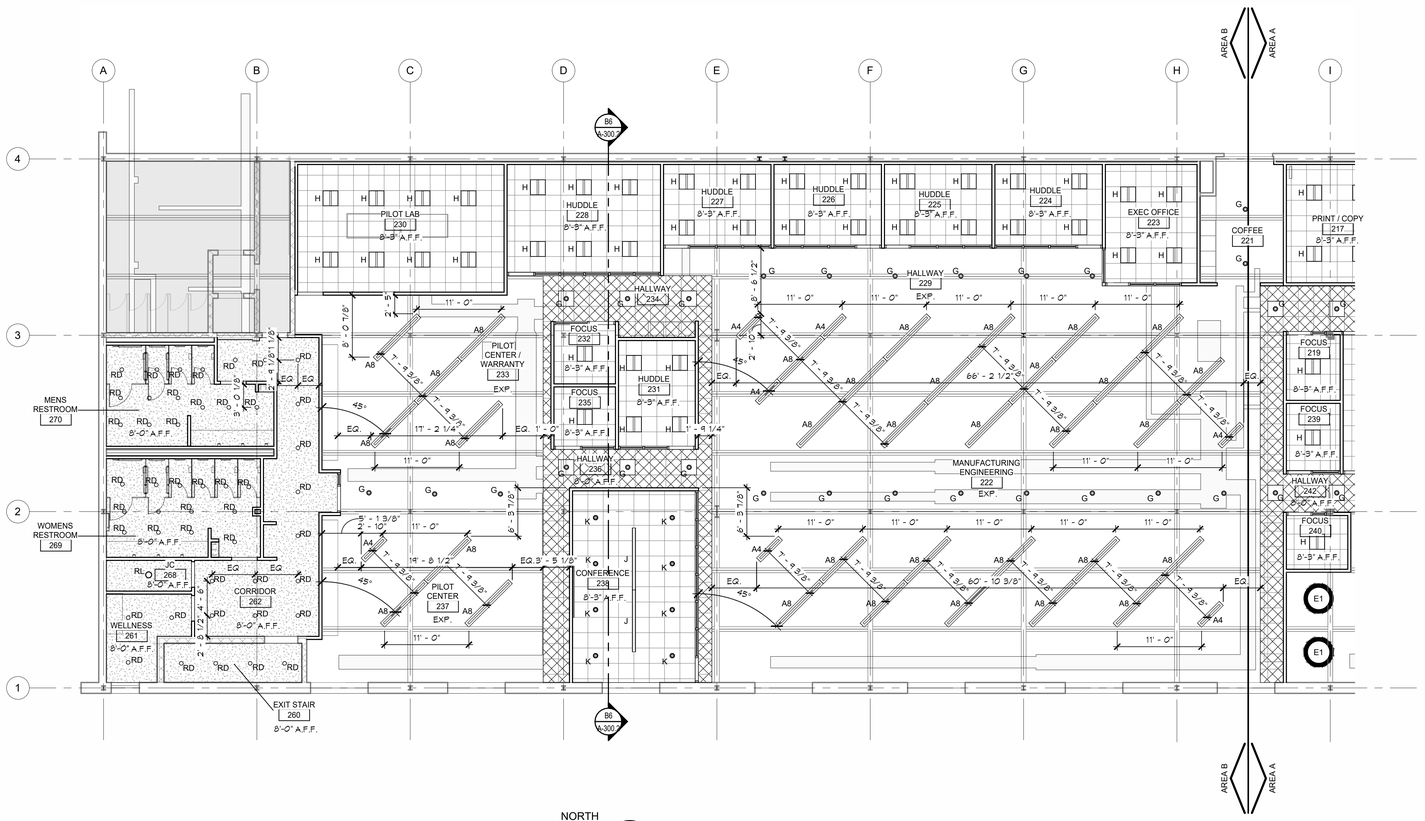
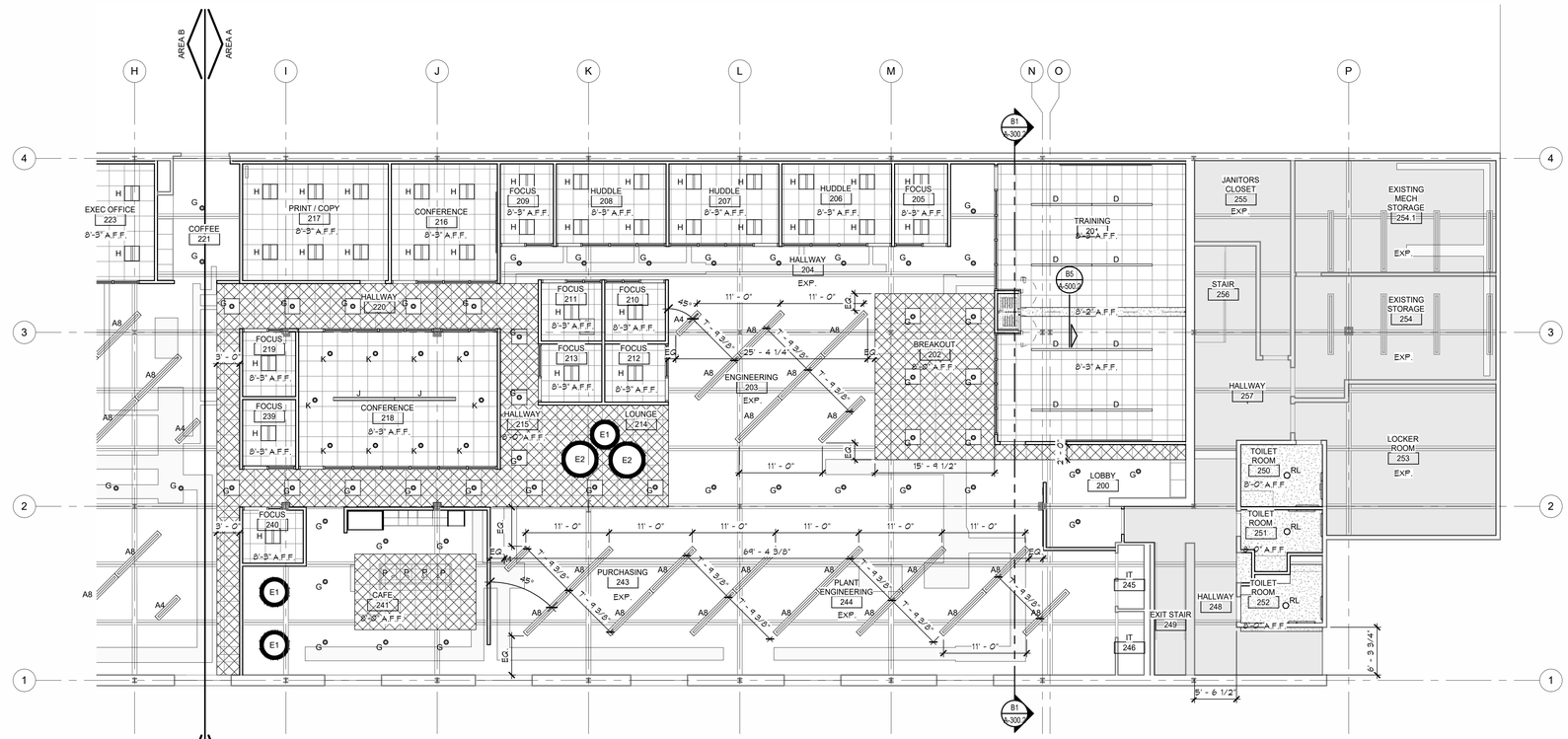


NORTH

F5 A-720.2

REFLECTED CEILING PLAN

SCALE - 1/8" = 1'-0"



NORTH

F1 A-720.2

REFLECTED CEILING PLAN

SCALE - 1/8" = 1'-0"

GENERAL NOTES

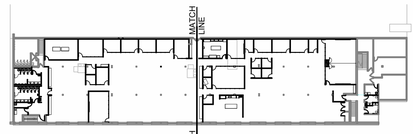
1. ALL POWER AND LOW VOLTAGE TO BE CONCEALED IN CONDUIT OR RACEWAYS IN EXPOSED CEILING AREAS
2. PROVIDE 1' OF SP-1 IN ALL EXPOSED CEILING AREAS
3. ALL EXPOSED FIRE SUPRESSION LINE TO BE PRIMED AND PAINTED PT-3
4. ALL EXPOSED DUCTOWRK TO BE PRIMED AND PAINTED PT-3
5. SPRINKLER HEADS IN EXPOSED CEILING AREAS TO BE INSTALLED 8'-0" MINIMUM AFF
6. SPRINKLER HEADS TO BE INSTALLED IN CENTER OF TILES (AS APPLICABLE)
7. PROVIDE FINISHED EDGE AT GYPSUM BOARD IN ALL EXPOSED CEILINGS
8. ALL FIRE ALARM CABLE TO BE INSTALLED IN CONDUIT AND PAINTED TO MATCH ADJACENT FINISHES

KEYNOTES

1. PARTITION TYPE TO GO UP TO DECK
2. LOUVER PAINTED TO MATCH WALL PAINT

REFLECTED CEILING PLAN LEGEND

- EXISTING WALL CONSTRUCTION
- NEW WALL CONSTRUCTION
- RATED WALL CONSTRUCTION
- NOT IN CONTRACT
- GYPSUM BOARD CEILING OR SOFFIT
- 2' x 2' ACOUSTIC CEILING TILES
- 2' x 2' METAL MESH SYSTEM
- + X'-XX" — CEILING OR SOFFIT HEIGHT ABOVE FINISH FLOOR
- EXIT SIGN -SEE ELECT. DWG'S
- WIRELESS ACCESS POINT -SEE TELECOM. DWG'S
- SPEAKER -SEE TELECOM. DWG'S
- SH — SPRINKLER HEAD, TYP. -SEE FIRE PROT. DWG'S
- EXISTING MECHANICAL
- SUPPLY AIR DIFFUSER -REFER TO MECH. DWG'S
- OR
- RETURN AIR GRILLE -REFER TO MECH. DWG'S
- AV — FIRE ALARM DEVICE
- A4 — 4' LINEAR FOCAL POINT 8'-0" AFF
- A8 — 8' LINEAR FOCAL POINT 8'-0" AFF
- E1 — 48" ACOUSTIC LED PENDANT LOUNGE 214 - 6'-10" AFF CAFE 241 - 5'-6" AFF
- E2 — 60" ACOUSTIC LED PENDANT 6'-10" AFF
- D — 2.5" RECESSED GRID LED LIGHT
- G — 6" PENDANT STEM CYLINDER LIGHT 8'-0" AFF AT OPEN OFFICE, 8'-4" AFF AT METAL CEILING
- H — 2X2' TROFFER LED MODULE LIGHT
- K — 6" RECESSED DOWNLIGHT, GRID SYSTEM.
- J — PENDANT LINEAR LIGHT 7'-0" AFF
- M — 6" SUFACE CEILING CYLINDER LIGHT
- P — LED PENDANT LIGHT 5'-8" AFF
- RD — RECESSED DOWNLIGHT, TYP.
- RL — SURFACE MOUNTED ROUND CEILING LIGHT, TYP.



LEVEL 2 KEY PLAN

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CONSULTANT

STATE OF MICHIGAN
THOMAS M. DILLENBECK
ARCHITECT
No. 1301057360
LICENSED ARCHITECT

LEVEL 2 REFLECTED CEILING PLAN

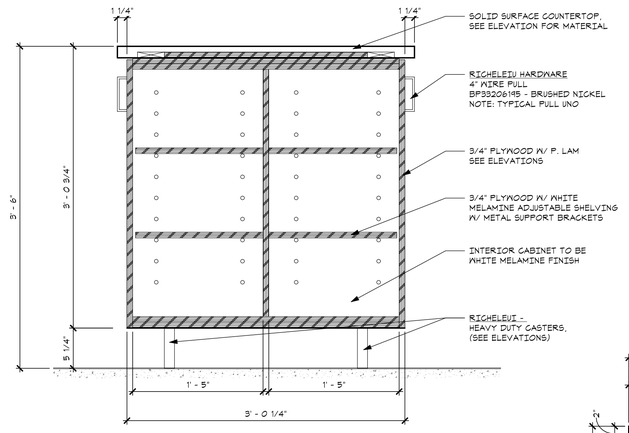
SHEET TITLE

24-103

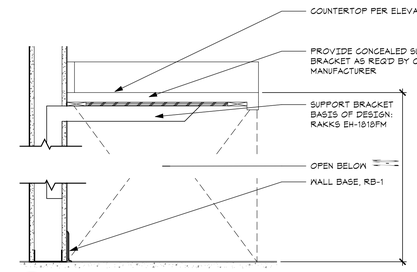
PROJECT NUMBER

A-720.2

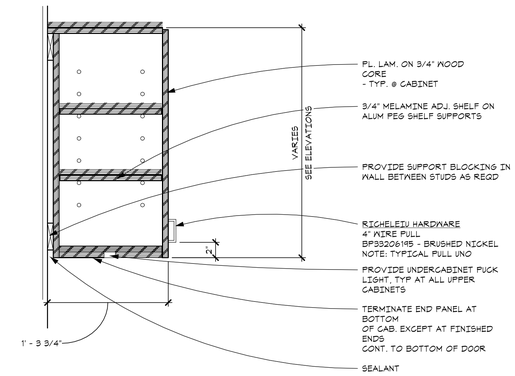
SHEET NUMBER



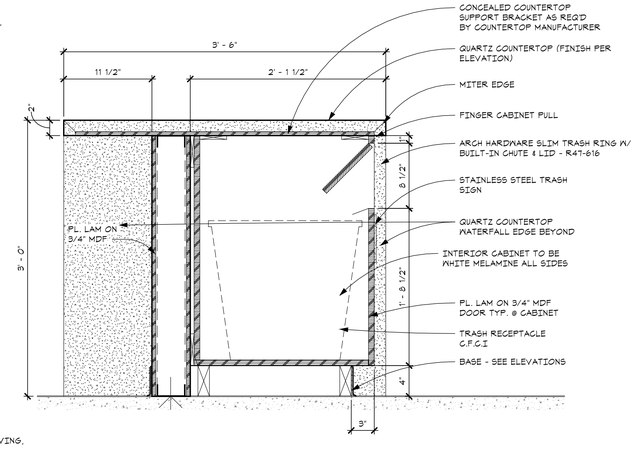
H5 A-800.2 MILLWORK_LAB ISLAND
SCALE - 1 1/2" = 1'-0"



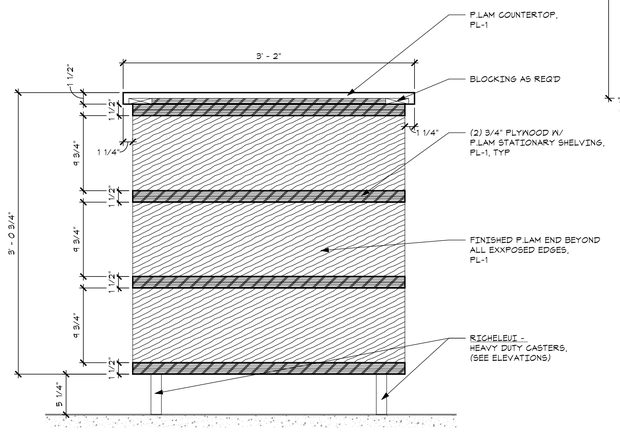
C7 A-800.2 MILLWORK_COUNTERTOP
SCALE - 1 1/2" = 1'-0"



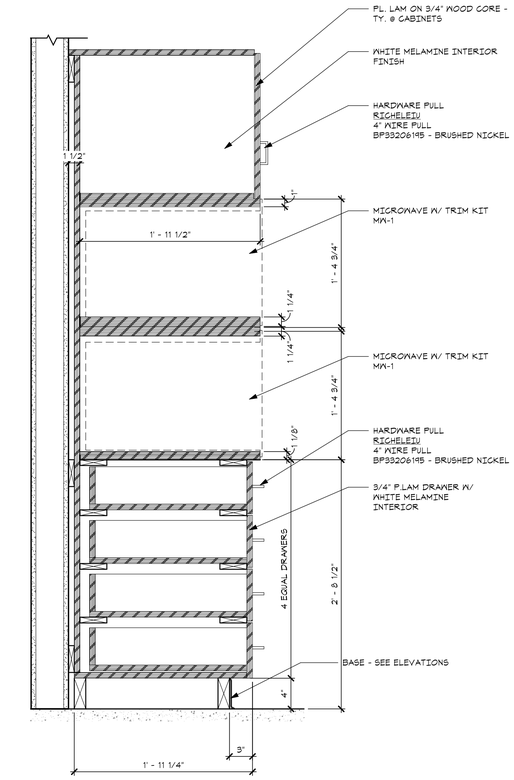
A5 A-800.2 MILLWORK_UPPER CABINET
SCALE - 1 1/2" = 1'-0"



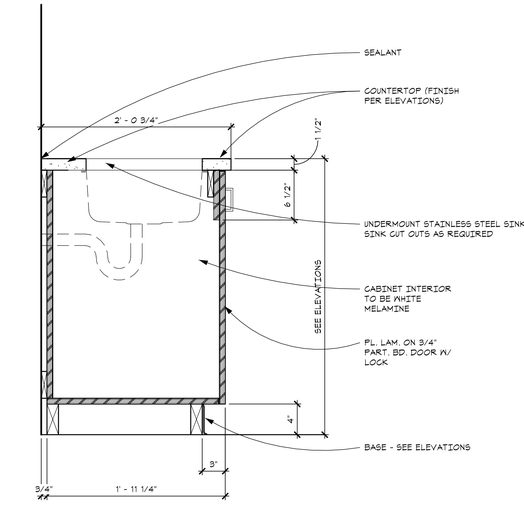
C6 A-800.2 MILLWORK_ISLAND TRASH / RECYCLE
SCALE - 1 1/2" = 1'-0"



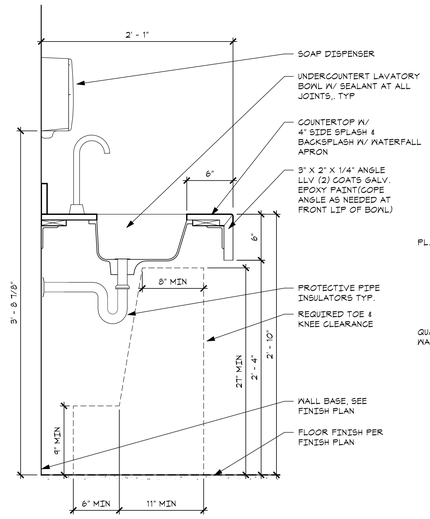
H3 A-800.2 MILLWORK_PRINT ISLAND
SCALE - 1 1/2" = 1'-0"



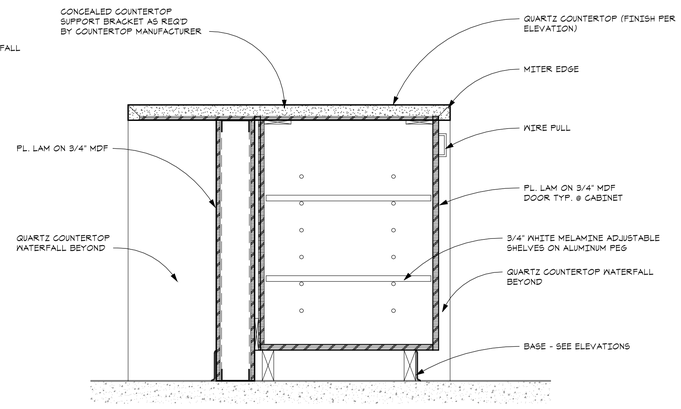
E1 A-800.2 MILLWORK_MICROWAVE CABINET
SCALE - 1 1/2" = 1'-0"



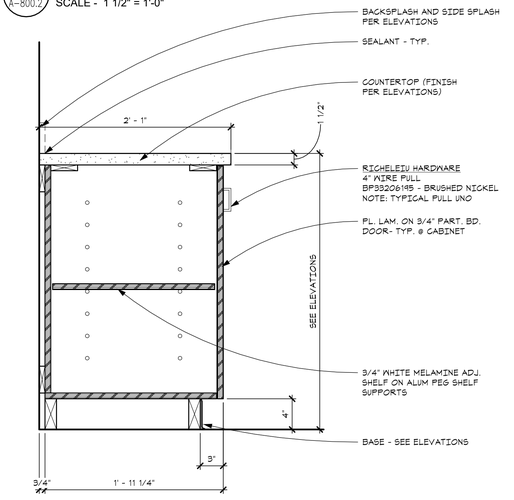
A3 A-800.2 MILLWORK_SINK BASE
SCALE - 1 1/2" = 1'-0"



C1 A-800.2 A-620.2 SECTION VANITY DETAIL
SCALE - 1 1/2" = 1'-0"



H1 A-800.2 MILLWORK_ISLAND BASE CABINET
SCALE - 1 1/2" = 1'-0"



A1 A-800.2 MILLWORK_CABINET BASE
SCALE - 1 1/2" = 1'-0"

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STATE OF MICHIGAN
THOMAS M. DILLENBECK
No. 1301057360
ARCHITECT
LICENSED ARCHITECT

MILLWORK DETAILS

SHEET TITLE

24-103
PROJECT NUMBER

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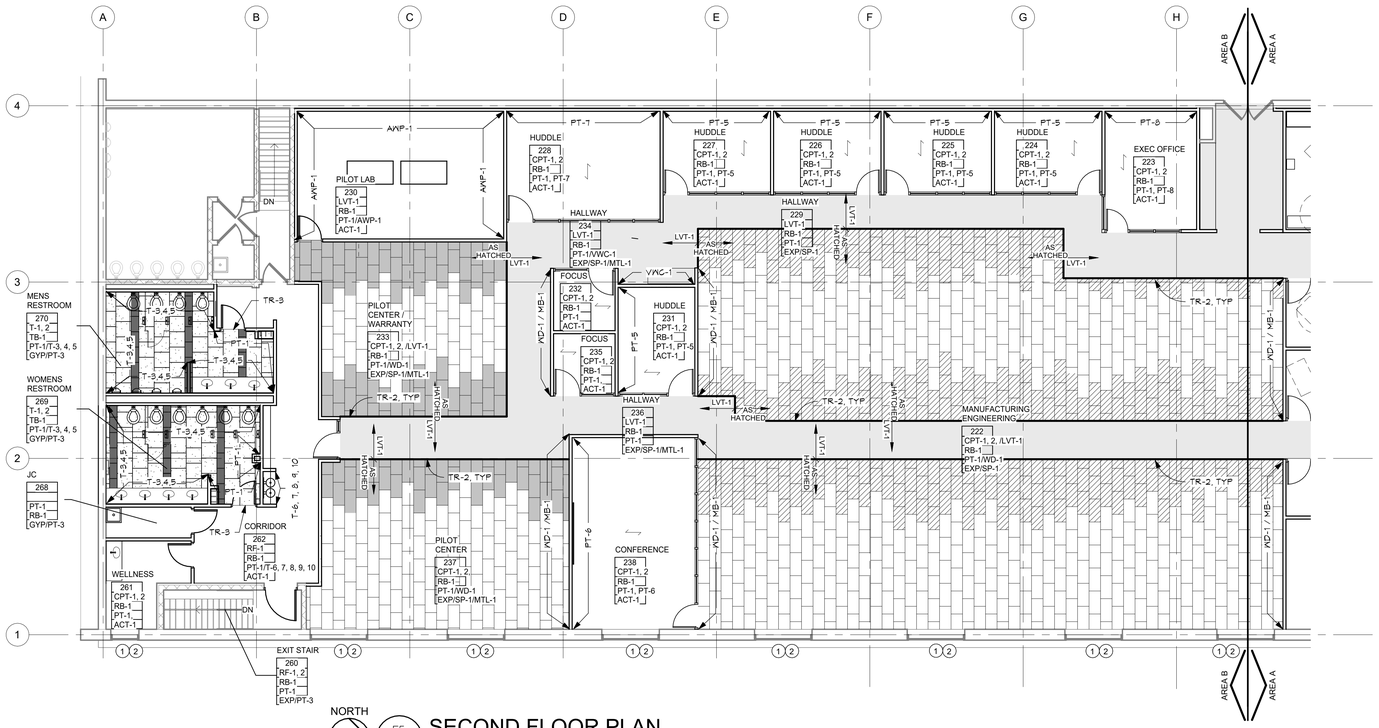
SHEET NUMBER



NORTH

F5 / A-920.2

SECOND FLOOR PLAN

SCALE - 1/8" = 1'-0"

FLOOR FINISH KEY

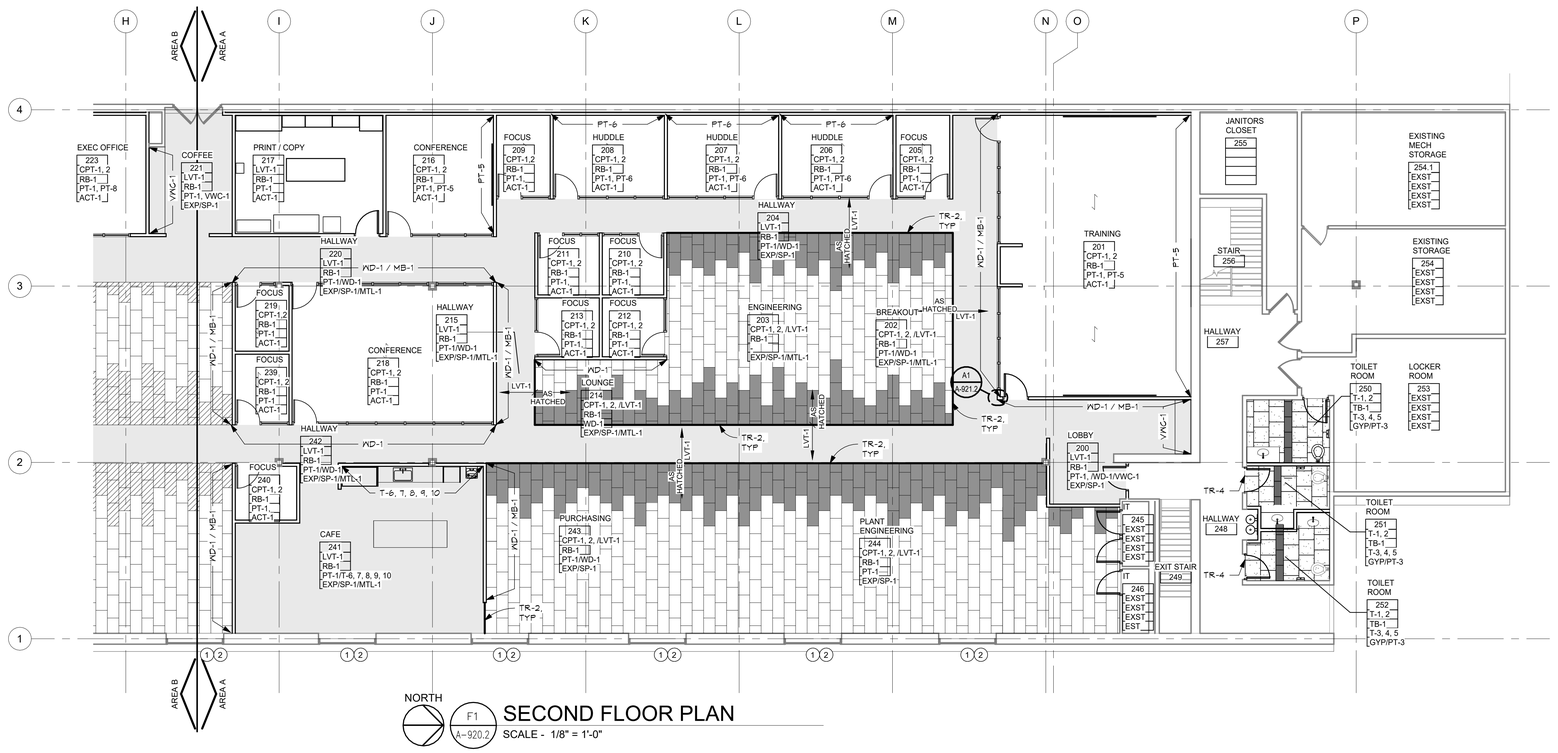
- CPT-1 - 50%
  CPT-2 - 50%
- CPT-3 - 50%
  CPT-4 - 50%
- CPT-5 - 50%
  CPT-6 - 50%
- CPT-7 - 50%
  CPT-8 - 50%
- LVT-1
- T-1
- T-2

FINISH KEYNOTES

1. WINDOW SILLS TO BE SS-1 UNO
2. EXISTING ROLLER SHADES TO REMAIN. RETROFIT WITH NEW FASCIA. SUBMIT COLOR OPTIONS TO ARCHITECT FOR APPROVAL

FINISH PLAN GENERAL NOTES

1. PAINT WALL ABOVE GLAZING, PT-1, TO DECK ABOVE.
2. FLOORING CONTRACTOR TO SUBMIT PATTERN PLAN TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION
3. TERMINATE FLOORING MATERIAL AT CENTER OF DOOR WHERE ADJACENT FLOOR FINISH AND/OR COLOR IS DISSIMILAR UNLESS OTHERWISE NOTED
4. TRANSITION / REDUCER STRIPS SHALL BE USED AT MATERIAL HEIGHT DIFFERENCES AND DISSIMILAR MATERIALS, UNLESS OTHERWISE NOTED
5. SURFACES TO RECEIVE PAINT SHALL RECEIVE PAINT BEHIND WALL MOUNTED COMPONENTS, INCLUDING BUT NOT LIMITED TO TELEVISION MONITORS, GLASS WRITEABLE SURFACES, TACK BOARDS, ETC
6. WIREWAYS, ACCESS PANELS, MECHANICAL DEVICES, ATC. SHALL BE FINISHED TO MATCH ADJACENT MATERIAL
7. PATCH AND REPAIR ALL EXISTING SURFACES TO RECEIVE NEW MATERIAL PER MATERIAL MANUFACTURERS RECOMMENDED INSTALLATION REQUIREMENTS
8. DIFFUSERS IN ACT-1 TO MATCH MATERIAL FINISH COLOR
9. DIFFUSERS IN MTL-1 TO MATCH MATERIAL FINISH COLOR
10. PROVIDE TRANSITION BETWEEN CARPET TILE AND LUXURY VINYL TILE, TR-2, TYP UNO

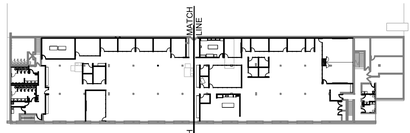


NORTH

F1 / A-920.2

SECOND FLOOR PLAN

SCALE - 1/8" = 1'-0"



NORTH

LEVEL 2 KEY PLAN

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LEVEL 2 FINISH PLAN

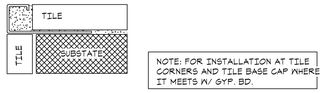
SHEET TITLE

24-103

PROJECT NUMBER

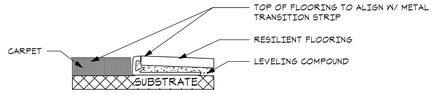
A-920.2

SHEET NUMBER

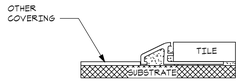


NOTE: FOR INSTALLATION AT TILE CORNERS AND TILE BASE CAP WHERE IT MEETS N/ GYP. BD.

TR-1_TILE TO TILE



TR-2_RESILIENT TO CARPET



TR-3_TILE TO OTHER COVERING

TR-4 TILE TO CONCRETE

MATERIAL INDEX

ACOUSTIC CEILING TILE
ACT-1 MANUFACTURER: ARMSTRONG
STYLE: MARS PANELS - FLB-86985HRG
SIZE: 2X2.
COLOR: WHITE
GRID: CENTRICITEE DXT
GRID COLOR: WHITE
NOTES:

MTL-1 MANUFACTURER: USG
STYLE: WIRE WORKS OPEN CELL CEILING PANEL
SIZE: 24 X 24 X 1/8 - CELLS 1" X 1"
COLOR: 205 FLAT BLACK
GRID: GRIDWARE - GWDX 205 FLAT BLACK
NOTES:

ACOUSTIC CEILING SPRAY
SP-1 MANUFACTURER: INTERNATIONAL CELLULOSE CORPORATION
STYLE: SONASPRAY 'FC'
COLOR: WHITE
THICKNESS: 1"
NOTES:

CARPET
CPT-1 MANUFACTURER: SHAW CONTRACT
STYLE: MODERN EDIT - ORNATE ST166
COLOR: 64595 VINTAGE GREY
SIZE: 18 X 36
INSTALLATION: STAGGER
NOTES: FIELD CARPET
CONTACT: PATRICK IMESCH
EM: PATRICK.IMESCH@SHAWCONTRACT.COM

CPT-2 MANUFACTURER: SHAW CONTRACT
STYLE: MODERN EDIT - RETHREAD ST165
COLOR: 64595 VINTAGE GREY
SIZE: 18 X 36
INSTALLATION: STAGGER
NOTES: FIELD CARPET
CONTACT: PATRICK IMESCH
EM: PATRICK.IMESCH@SHAWCONTRACT.COM

CPT-3 MANUFACTURER: SHAW CONTRACT
STYLE: MODERN EDIT - ORNATE ST166
COLOR: INDIGO 64496
SIZE: 18 X 36
INSTALLATION: STAGGER
NOTES: ACCENT
CONTACT: PATRICK IMESCH
EM: PATRICK.IMESCH@SHAWCONTRACT.COM

CPT-4 MANUFACTURER: SHAW CONTRACT
STYLE: MODERN EDIT - RETHREAD ST165
COLOR: INDIGO 64496
SIZE: 18 X 36
INSTALLATION: STAGGER
NOTES: ACCENT
CONTACT: PATRICK IMESCH
EM: PATRICK.IMESCH@SHAWCONTRACT.COM

CPT-5 MANUFACTURER: SHAW CONTRACT
STYLE: MODERN EDIT - ORNATE ST166
COLOR: HERITAGE BLUE 64481
SIZE: 18 X 36
INSTALLATION: STAGGER
NOTES: ACCENT
CONTACT: PATRICK IMESCH
EM: PATRICK.IMESCH@SHAWCONTRACT.COM

CPT-6 MANUFACTURER: SHAW CONTRACT
STYLE: MODERN EDIT - RETHREAD ST165
COLOR: HERITAGE BLUE 64481
SIZE: 18 X 36
INSTALLATION: STAGGER
NOTES: ACCENT
CONTACT: PATRICK IMESCH
EM: PATRICK.IMESCH@SHAWCONTRACT.COM

CPT-7 MANUFACTURER: SHAW CONTRACT
STYLE: MODERN EDIT - ORNATE ST166
COLOR: BROCADE 64411
SIZE: 18 X 36
INSTALLATION: STAGGER
NOTES: ACCENT
CONTACT: PATRICK IMESCH
EM: PATRICK.IMESCH@SHAWCONTRACT.COM

CPT-8 MANUFACTURER: SHAW CONTRACT
STYLE: RETHREAD ST165
COLOR: BROCADE 64411
SIZE: 18 X 36
INSTALLATION: STAGGER
NOTES: ACCENT
CONTACT: PATRICK IMESCH
EM: PATRICK.IMESCH@SHAWCONTRACT.COM

RESILIENT FLOOR
RF-1 MANUFACTURER: JOHNSONITE
STYLE: SOLID COLOR RUBBER TILE - RAISED ROUND
SIZE: 24 X 24
COLOR: TB1 PEPPERCORN
NOTES: EXISTING LANDING

RF-2 MANUFACTURER: JOHNSONITE
STYLE: V3RTR-RD
COLOR: TB1 PEPPERCORN

LUXURY VINYL TILE
LVT-1 MANUFACTURER: SHAW CONTRACT
STYLE: COMPOUND 5.0 - 407TV
COLOR: GRANITE 71585
SIZE: 24 X 24
THICKNESS: 5MM
INSTALLATION: QUARTER TURN
NOTES: GENERAL
CONTACT: PATRICK IMESCH
EM: PATRICK.IMESCH@SHAWCONTRACT.COM

PAINT
PT-1 MANUFACTURER: SHERWIN WILLIAMS
COLOR: FIRST STAR
COLOR NO.: SW7846
FINISH: EGGSHELL
NOTES:

PT-2 MANUFACTURER: SHERWIN WILLIAMS
COLOR: TRIGORN BLACK
COLOR NO.: SW6258
FINISH: SEMI-GLOSS
NOTES: HM DOORS, HM FRAMES, COLUMNS

PT-3 MANUFACTURER: SHERWIN WILLIAMS
COLOR: CEILING BRIGHT WHITE
COLOR NO.: SW7007
FINISH: EGGSHELL
NOTES:

PT-4 MANUFACTURER: SHERWIN WILLIAMS
COLOR: PEPPERCORN
COLOR NO.: SW7674
FINISH: EGGSHELL
NOTES:

PT-5 MANUFACTURER: SHERWIN WILLIAMS
COLOR: NAVAL
COLOR NO.: SW6244
FINISH: EGGSHELL
NOTES:

PT-6 MANUFACTURER: SHERWIN WILLIAMS
COLOR: SILKEN PEACOCK
COLOR NO.: SW6459
FINISH: EGGSHELL
NOTES:

PT-7 MANUFACTURER: SHERWIN WILLIAMS
COLOR: BLACKBERRY
COLOR NO.: SW7577
FINISH: EGGSHELL
NOTES:

PT-8 MANUFACTURER: PPG
COLOR: DIESEL BLUE GRAY
COLOR NO.: DIESEL BLUE GRAY
NOTES: EX- 20 / FX-8 / LX-20

WALLCOVERING
VNC-1 MANUFACTURER: WOLF GORDON
STYLE: HOLBORN 6OH 33680796
COLOR: ESPRESSO
INSTALLATION: STRAIGHT HANG
NOTES:

TNC-1 MANUFACTURER: FORBO
STYLE: BULLETIN BOARD
COLOR: POPPY SEED - 2204
NOTES:

WINDOW FILM
WF-1 MANUFACTURER: 3M
STYLE: FASARA
COLOR: MILKY WHITE - SH2MAML
NOTES:

PLASTIC LAMINATE
PL-1 MANUFACTURER: WILSONART
COLOR: STUDIO TEAK7960K-18
FINISH: LINEARITY FINISH AEON SCRATCH RESISTANCE
NOTES:

PL-2 MANUFACTURER: WILSONART
COLOR: MUSHROOM 5013K-19
FINISH: LENO WEAVE FINISH AEON SCRATCH RESISTANCE
NOTES:

SOLID SURFACE
SS-1 MANUFACTURER: CORIAN
COLOR: WHITE JASMINE
NOTES:

SS-2 MANUFACTURER: CORIAN
COLOR: CONCRETE
NOTES:

QUARTZ
QZ-1 MANUFACTURER: CAMBRIA
COLOR: SALT LAKE
THICKNESS: 3CM
FINISH: POLISHED
NOTES: RESTROOM

QZ-2 MANUFACTURER: CAMBRIA
COLOR: NEWPORT
THICKNESS: 3CM
FINISH: POLISHED
NOTES: KITCHEN

RUBBER BASE
RB-1 MANUFACTURER: JOHNSONITE
STYLE: 4" MONUMENT MILLWORK BASE - MM-65-54
COLOR: 63 BURNT UMBER
NOTES:

METAL BASE
MB-1 STYLE: EXTRUDED METAL BASE
SIZE: 4" H
COLOR: TO MATCH BLACK GLAZING FRAME
NOTES:

TILE
T-1 MANUFACTURER: ERGON
STYLE: TR3ND CONCRETE
COLOR: GREY
SIZE: 24 X 24
GROUT: TEC - INGOLOR
GROUT COLOR: 934 DELOREAN GRAY
NOTES: RESTROOM FIELD
CONTACT:
EM:

T-2 MANUFACTURER: ERGON
STYLE: TR3ND CONCRETE
COLOR: SAND
SIZE: 12 X 24
GROUT: TEC - INGOLOR
GROUT COLOR: 934 DELOREAN GRAY
NOTES: RESTROOM ACCENT
CONTACT:
EM:

T-3 MANUFACTURER: ERGON
STYLE: ABACUS
COLOR: CORDA LUX
SIZE: 2.95" X 7.78"
GROUT: TEC - INGOLOR
GROUT COLOR: 934 DELOREAN
NOTES:
CONTACT:
EM:

T-4 MANUFACTURER: ERGON
STYLE: ABACUS
COLOR: FIOMBO LUX
SIZE: 2.95" X 7.78"
GROUT: TEC - INGOLOR
GROUT COLOR: 934 DELOREAN
NOTES:
CONTACT:
EM:

T-5 MANUFACTURER: ERGON
STYLE: ABACUS
COLOR: CARBONE LUX
SIZE: 2.95" X 7.78"
GROUT: TEC - INGOLOR
GROUT COLOR: 934 DELOREAN
NOTES:
CONTACT:
EM:

T-6 MANUFACTURER: CROSSVILLE
STYLE: HANDWRITTEN - DIAMOND MOSAIC GLOSS
COLOR: HWR05 PAR AVION
SIZE: 12 X 12
GROUT: TEC - ACCUCOLOR IV/ GROUT BOOST
GROUT COLOR: 948 SILVERADO
NOTES: LIGHT BLUE - 20% MIX
CONTACT:
EM:

T-7 MANUFACTURER: CROSSVILLE
STYLE: HANDWRITTEN - DIAMON MOSAIC GLOSS
COLOR: HWR02 POST CARD
SIZE: 12 X 12
GROUT: TEC - ACCUCOLOR IV/ GROUT BOOST
GROUT COLOR: 948 SILVERADO
NOTES: NEUTRAL - 20 % MIX
CONTACT:
EM:

T-8 MANUFACTURER: CROSSVILLE
STYLE: HANDWRITTEN - DIAMOND MOSAIC GLOSS
COLOR: HWR01 UNSCRIPTED
SIZE: 12 X 12
GROUT: TEC - ACCUCOLOR IV/ GROUT BOOST
GROUT COLOR: 948 SILVERADO
NOTES: WHITE - 20% MIX
CONTACT:
EM:

T-9 MANUFACTURER: CROSSVILLE
STYLE: HANDWRITTEN - DIAMOND MOSAIC GLOSS
COLOR: HWR04 INKWELL
SIZE: 12 X 12
GROUT: TEC - ACCUCOLOR IV/ GROUT BOOST
GROUT COLOR: 948 SILVERADO
NOTES: DARK GREY - 20% MIX
CONTACT:
EM:

T-10 MANUFACTURER: CROSSVILLE
STYLE: HANDWRITTEN - DIAMOND MOSAIC GLOSS
COLOR: HWR03 PRIVATE AFFAIR
SIZE: 12 X 12
GROUT: TEC - ACCUCOLOR IV/ GROUT BOOST
GROUT COLOR: 948 SILVERADO
NOTES: LIGHT GREY - 20%
CONTACT:
EM:

TB-1 MANUFACTURER: ERGON
STYLE: TR3ND CONCRETE
COLOR: GREY
SIZE: 3 X 12
GROUT: TEC
GROUT COLOR: 934 DELOREAN GRAY
NOTES: RESTROOM BASE
CONTACT:
EM:

TRANSITION & TRIM
TR-1 MANUFACTURER: SCHLUTER
STYLE: SCHIENE
COLOR: SATIN NICKEL
NOTES: WALL TILE GAP

TR-2 MANUFACTURER: TARKETT
STYLE: METAL EDGE
COLOR: BLACK PEARL B 82
NOTES: FLOOR TRANSITION

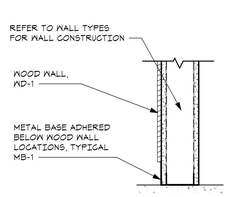
TR-3 MANUFACTURER: SCHLUTER
STYLE: RENO-U
COLOR:
NOTES:

TR-4 MANUFACTURER: SCHLUTER
STYLE: RENO-RAMP
COLOR:
NOTES:

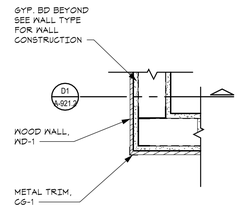
GS-1 MANUFACTURER: EXTRUDED METAL TRIM
SIZE: 1" X 1"
COLOR: TO MATCH BLACK GLAZING FRAME
NOTES: ALL FASTENERS TO MATCH BLACK METAL TRIM AND BE EQUALLY SPACED

WOOD
WD-1 MANUFACTURER: FASHION ARCHITECTURAL DESIGNS
STYLE: STACKED WOOD - VINTAGE COLLECTION
COLOR: FAD 2590 ANDOVER
PANEL SIZE: 14 X 47
NOTES:

GENERAL NOTES:
1. ALL EXPOSED COLUMNS TO BE PAINTED, PT-2, FINISH TO BE SEMI-GLOSS. ROOF DRAIN PIPING ETC TO BE PAINTED TO MATCH COLUMN, PT-2, FINISH TO BE EGGSHELL
2. EXPOSED CEILING TO RECEIVE ACOUSTIC SPRAY, SP-1
3. ALL EXPOSED DUCT WORK, ELECTRICAL CONDUIT, CABLE TRAYS, ETC TO BE PAINTED, PT-3.
4. INTERIOR GLASS PARTITIONS TO HAVE WINDOW FILM, GL-1, SEE TYPICAL GLAZING DETAIL FOR LOCATION
5. HOLLOW METAL DOORS AND DOOR FRAMES TO BE PAINTED, PT-2, FINISH TO BE SEMI-GLOSS
6. PREPARE ALL FLOORING SUBSTRATES TO RECEIVE NEW FLOORING MATERIAL. MAKE ALL TRANSITIONS FLUSH AND CLEAN AS REQUIRED TO RECEIVE NEW FLOORING MATERIAL.
7. ALL WOOD WALLS, WD-1, TO RECEIVE METAL BASE, MB-1
8. REFER TO FINISH PLANS FOR MATERIAL FINISH LOCATIONS



D1 / A-921.2 WOOD WALL METAL BASE DETAIL, TYPICAL
SCALE - 1 1/2" = 1'-0"



A1 / A-921.2 METAL CORNER GUARD AT WOOD, TYPICAL
SCALE - 1 1/2" = 1'-0"

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PROJECT

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STATE OF MICHIGAN
THOMAS M. DILLENBECK
ARCHITECT
No. 1301057360
LICENSED ARCHITECT

MATERIAL INDEX

SHEET TITLE

24-103

PROJECT NUMBER

A-921.2

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Autodesk Docs://24-103 Detroit Diesel 2nd Floor Renov/24-103 Detroit Diesel 2nd Floor Reno-2024.rvt
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ABBREVIATIONS

ACCU	AIR CONDITIONING CONDENSING UNIT
AAV	AIR ADMITTANCE VALVE
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
ASR	AUTOMATIC SPRINKLER RISER
BTU	BRITISH THERMAL UNIT
CC	COOLING COIL
CF	CENTRIFUGAL FAN
CFM	CUBIC FEET PER MINUTE
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CI	CAST IRON
CO	CLEANOUT
COND	CONDENSATE
CONT.	CONTINUATION
CUH	CABINET UNIT HEATER
CW	COLD WATER
Db	DRY BULB TEMPERATURE, °F
dB	DECIBELS
DDC	DIRECT DIGITAL CONTROL
DET	DETAIL
DIA	DIAMETER
DN.	DOWN
DS	DOWNSPOUT
DWG.	DRAWING
EA	EXHAUST AIR
ECUH	ELECTRIC CABINET UNIT HEATER
EF	EXHAUST FAN
ELEV.	ELEVATION
ESP	EXTERNAL STATIC PRESSURE
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
EX.	EXISTING
EXH	EXHAUST
EXIST	EXISTING
F	FAHRENHEIT
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FEC	FIRE EXTINGUISHER CABINET
FGCO	FINISHED GRADE CLEANOUT
FLR.	FLOOR
FPM	FEET PER MINUTE
FR	FIRE RISER
FS	FLOW SWITCH
FT.	FEET
GPM	GALLONS PER MINUTE
HB	HOSE BIBB
HO	HUB OUTLET
HP	HORSEPOWER
HW	HOT WATER (POTABLE)
IN	INCHES
INL	INLET
INV	INVERT
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS/HR	POUNDS PER HOUR
LWT	LEAVING WATER TEMPERATURE
MAX.	MAXIMUM
MBH	1000 BTU/HR
MECH	MECHANICAL
MIN.	MINIMUM
MISC	MISCELLANEOUS
NC	NORMALLY CLOSED
NFWH	NON-FREEZE WALL HYDRANT
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOM.	NOMINAL
OA	OUTSIDE AIR
OF	OVERFLOW
P	PUMP
PD	PRESSURE DROP (FEET OF WATER)
PSI	POUNDS PER SQUARE INCH
PRV	PRESSURE REDUCING VALVE
RA	RETURN AIR
RD/SP	ROOF DRAIN/STAND PIPE
BAL.	BALANCE
RET	RETURN
RF	RETURN FAN
RH	REHEAT COIL
Rh	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SAN	SANITARY WASTE
SD	SMOKE DETECTOR
SF	SUPPLY FAN
SG	SPECIFIC GRAVITY
SP	STATIC PRESSURE (INCHES OF WATER)
SP	STAND PIPE
SPR	SPRINKLER
SPR/STP	SPRINKLER STANDPIPE
SPS	STATIC PRESSURE SENSOR
STK	STACK
TP	TOTAL PRESSURE
TYP	TYPICAL
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
V	VALVE
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VE	VOLUME EXTRACTOR
VTR	VENT THRU ROOF
W	WASTE
WCO	WALL CLEANOUT
WG	WATER GAUGE
WH	WALL HYDRANT

PLUMBING, PIPING & FIRE

- DEMOLITION WORK WORK
- EXISTING WORK
- NEW WORK
- ISOLATION VALVE
- CHECK VALVE
- WATER FLOW SWITCH
- VALVE IN RISER
- STRAINER
- PIPE ANCHOR
- EXPANSION JOINT - SLIDING
- ALIGNMENT GUIDE
- UNION
- SPRINKLER HEAD (PENDANT)
- SPRINKLER HEAD (UPRIGHT)
- CO — CLEANOUT
- FCO — CLEANOUT FLOOR
- WCO — CLEANOUT WALL
- GCO — CLEANOUT GRADE
- FLOOR DRAIN (FD)
- REDUCER - CONCENTRIC
- PRESSURE GAUGE WITH COCK
- THERMOMETER
- CAP OR PLUG
- ELBOW - TURNED DOWN
- ELBOW - TURNED UP
- TEE OUTLET - DOWN
- TEE OUTLET - UP
- DIRECTION OF FLOW
- REDUCED PRESSURE BACKFLOW PREVENTOR
- PRESSURE REDUCING VALVE
- RELIEF VALVE

HVAC LEGEND & SYMBOLS

- BALANCING VALVE
- TWO-WAY MODULATING CONTROL VALVE
- THREE-WAY MODULATING CONTROL VALVE
- MANUAL AIR VENT
- TEST PLUG (PRESSURE/TEMPERATURE)
- NEW CONNECTION
- SAN — SANITARY LINE ABOVE GRADE
- SAN — SANITARY LINE UNDERGROUND
- VENT PIPE
- COLD WATER PIPING
- HOT WATER PIPING (TEMPERATURE)
- HOT WATER RETURN PIPING
- F — MAIN FIRE SPRINKLER
- HPR — HEAT PUMP HOT WATER RETURN
- G — GAS PIPING
- ST — STORM LINE
- HWS — HEATING HOT WATER SUPPLY
- HWR — HEATING HOT WATER RETURN

- 18x6 — INDICATES RECTANGULAR DUCT WITH DUCT SIZE 18 INCHES WIDE (IN PLANE OF DRAWING) AND 6 INCHES DEEP. SIZE PERTAINS TO THE ENTIRE RUN OF DUCT UNLESS OTHERWISE NOTED.
- 22x14# — INDICATES FLAT OVAL DUCT WITH DUCT SIZE 22 INCHES WIDE (IN PLANE OF DRAWING) AND 14 INCHES DEEP. SIZE PERTAINS TO THE ENTIRE RUN OF DUCT UNLESS OTHERWISE NOTED.
- 6"Ø — INDICATES ROUND DUCT WITH DUCT SIZE OF 6 INCHES IN DIAMETER. SIZE PERTAINS TO THE ENTIRE RUN OF DUCT (FROM DUCT ORIGIN AT TAP TO END OF DUCT) UNLESS OTHERWISE NOTED.
- VANE TURN ELBOW & AIR SPLIT TYPE DUCT TAKE-OFF
- RISE — INCLINED RISE IN RESPECT TO AIR FLOW
- DN. — INCLINED DROP IN RESPECT TO AIR FLOW
- VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES)
- VANED ELBOW (SHORT RADIUS)
- INDICATES FLEXIBLE DUCT (RUNOUT) OF SIZE AS SCHEDULED OR SHOWN. LENGTH SHALL NOT EXCEED 5 FT.
- DUCT TURNING UP
- DUCT TURNING DOWN
- VERTICAL FIRE DAMPER
- HORIZONTAL FIRE DAMPER
- VOLUME CONTROL DAMPER (MANUAL) — MD
- FLEXIBLE CONNECTION OR FLEXIBLE DUCT CONNECTOR
- M — MOTORIZED DAMPER
- POINT OF NEW CONNECTION
- SD — DUCT SMOKE DETECTOR
- C — COMBINATION FIRE / SMOKE DAMPER

MECHANICAL DRAWING INDEX

GENERAL HVAC NOTES:

THE FOLLOWING NOTES APPLY TO ALL HVAC DRAWINGS, EXCEPT WHERE OTHERWISE INDICATED.

1. WHEREVER VOLUME DAMPERS OCCUR ABOVE CEILINGS WITHOUT REMOVABLE TILE AND AN ACCESS PANEL IS NOT FURNISHED, PROVIDE AN EXPOSED DAMPER REGULATOR TO ALLOW DAMPER ADJUSTMENT FROM BELOW CEILING. UNIT TO BE EQUAL TO VENTLOCK NO. 666 IN 1/2"X3/8" SIZE.
2. ALL DIMENSIONS SHOWN FOR DUCTWORK ARE NET INSIDE DIMENSIONS.
3. DIFFUSER AND REGISTER LOCATIONS SHALL BE COORDINATED WITH ARCHITECTURAL REFLECTED CEILING PLAN.
4. THOUGH SOME OFFSETS & TRANSITIONS ARE SHOWN IN PIPING AND SHEET METAL TO HELP INDICATE THE PHYSICAL RELATIONSHIP BETWEEN THEM, IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW ALL PIPING AND SHEET METAL OFFSET & TRANSITIONS REQUIRED. THE CONTRACTOR SHALL FULLY COORDINATE THE MECHANICAL WORK WITHIN ITSELF AND WITH THE WORK OF ALL TRADES TO PROVIDE COMPLETE AND OPERABLE SYSTEMS WITHOUT INTERFERENCES.
5. DUCT PRESSURE CONSTRUCTION CLASSIFICATION SHALL BE AS SPECIFIED.
6. ALL ROUND RUNOUTS AND DROPS TO DIFFUSERS SHALL BE SAME NOMINAL SIZE AS INDICATED ON THE DRAWINGS.
7. ALL PIPING AND DUCTS IN FINISHED ROOMS OR SPACES SHALL BE CONCEALED IN FURRED CHASE OR SUSPENDED CEILING.
8. ACCESS PANELS AND DOORS ARE REQUIRED THROUGH BUILDING CONSTRUCTION ASSEMBLIES SUCH AS WALLS, CEILING, PARTITIONS AND FLOORS TO SERVICE AND MAINTAIN DAMPERS, CONTROL MOTORS, REGULATORS, VALVES, FLEXIBLE DUCT CONNECTIONS AND OTHER ITEMS OR DEVICES INCORPORATED IN MECHANICAL WORK. SUCH PANELS AND DOORS SHALL BE PROVIDED AND INSTALLED UNDER THE ARCHITECTURAL SPECIFICATIONS. MECHANICAL CONTRACTOR SHALL COORDINATE LOCATION OF ACCESS DOORS AND PANELS AND VERIFY THE EXACT QUANTITY, SIZE, FIRE-RATING AND LOCATION AFTER THE SYSTEMS AND EQUIPMENT REQUIRING ACCESS HAVE BEEN INSTALLED AND PRIOR TO THE CLOSURE OF THE AFFECTED CEILING AND BUILDING ASSEMBLIES. MINIMUM ACCESS PANEL AND DOOR SIZE SHALL BE 24 INCHES BY 24 INCHES UNLESS OTHERWISE NOTED.
9. ALL EXHAUST GRILLES SHALL BE HARD DUCT CONNECTION.
10. ALL DUCTWORK PENETRATIONS THRU FIRE-RATED WALLS AND FLOORS SHALL BE PROVIDED WITH FIRE DAMPERS AND ACCESS DOOR.

PLUMBING GENERAL NOTES:

1. FOR PIPE SIZES TO INDIVIDUAL PLUMBING FIXTURES AND VARIOUS PIECES OF EQUIPMENT REFER TO SPECIFICATIONS.
2. IN ALL SANITARY DRAINAGE PIPING THE CONTRACTOR SHALL FURNISH AND INSTALL CLEANOUTS (IN ADDITION TO THE CLEANOUTS INDICATED ON DRAWINGS AS REQUIRED BY THE GOVERNING PLUMBING CODE).
3. REFER TO HVAC GENERAL NOTE-4
4. FOR ADDITIONAL NOTES COMMON TO PLUMBING REFER TO HVAC NOTES.

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13400 W. OUTER DR.
DETROIT MI

PROJECT

MAENGINEERING
MECHANICAL ELECTRICAL
180 High Oak Road
Bloomfield Hills, Michigan
48304
t | 248 | 258 | 1610
f | 248 | 258 | 9538

CONSULTANT

STATE OF MICHIGAN
JOHN D. RICHARDS
ENGINEER
No. 6201034544
PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

MECHANICAL LEGEND, SHEET INDEX, AND GENERAL NOTES

SHEET TITLE

24-103

PROJECT NUMBER

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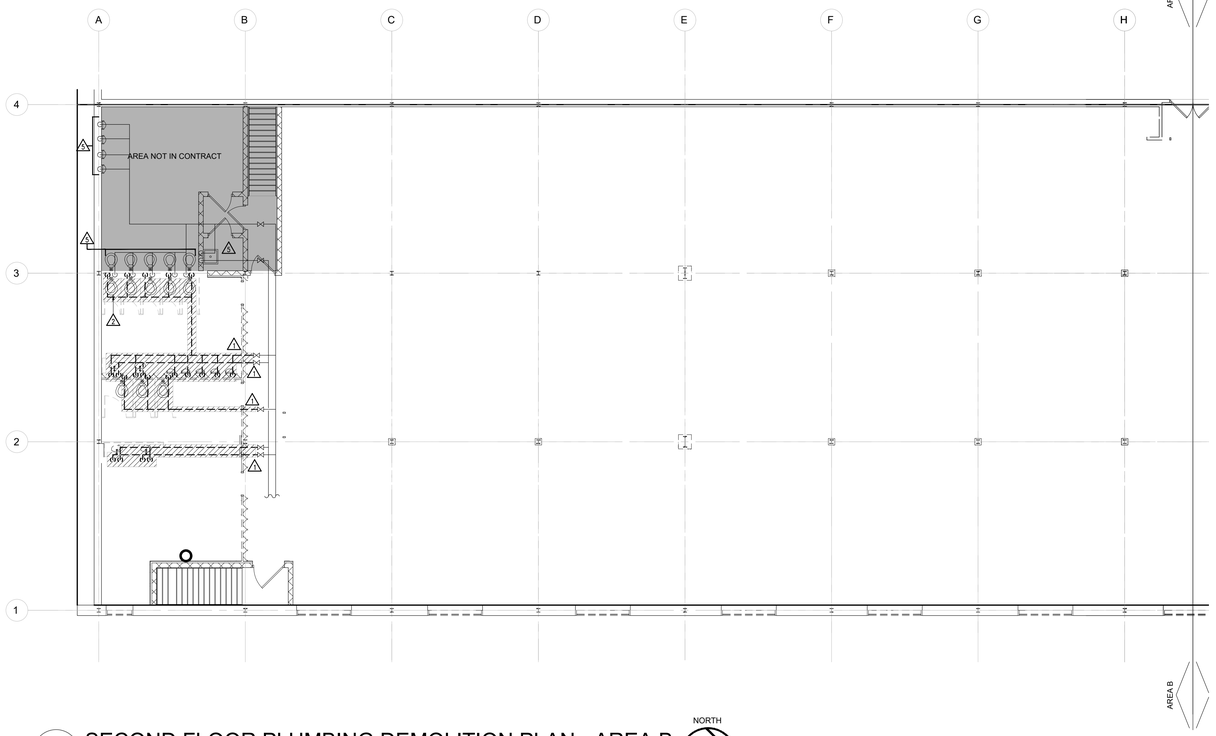


1 MD-101.2
SECOND FLOOR PLUMBING DEMOLITION PLAN - AREA B
SCALE - 1/8" = 1'-0"

NORTH

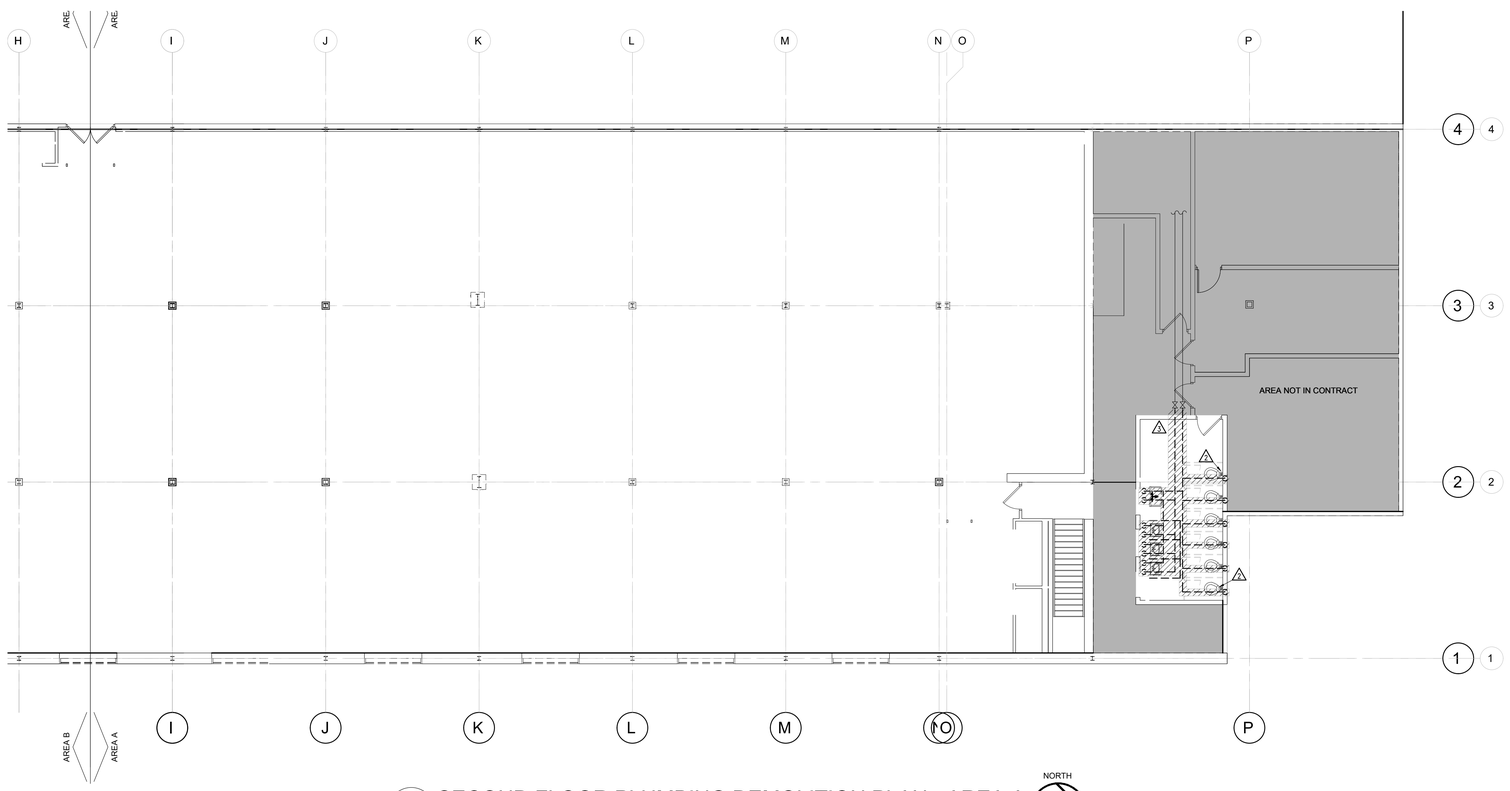
DEMOLITION KEY NOTES:

1. REMOVE AND DISCARD EXISTING PLUMBING FIXTURE AND EXISTING DOMESTIC PLUMBING CONNECTIONS (CW&HW) BACK TO VALVE AND PREPARE FOR NEW CONNECTION. REMOVE AND DISCARD EXISTING SANITARY AND VENT PLUMBING CONNECTIONS WITHIN TOILET ROOM AND PREPARE FOR REWORK. SEE SHEETS M101 & M102 FOR NEW WORK.
2. REMOVE AND DISCARD EXISTING PLUMBING FIXTURE AND EXISTING SANITARY AND DOMESTIC WATER BRANCHES TO FIXTURE BACK TO MAIN AND CAP.
3. REMOVE AND DISCARD EXISTING PLUMBING FIXTURES, UNLESS NOTED OTHERWISE, IN THIS AREA AND DISCONNECT EXISTING SANITARY AND DOMESTIC WATER BRANCHES TO FIXTURE BACK TO MAIN AND CAP. PREPARE FOR REVISED LAYOUT.
4. EXISTING PLUMBING FIXTURE TO REMAIN. REMOVE AND DISCARD EXISTING DOMESTIC AND SANITARY PLUMBING CONNECTIONS AND PREPARE FIXTURE FOR RECONNECTION TO NEW PLUMBING LAYOUT.
5. EXISTING PLUMBING FIXTURE(S) TO REMAIN.

GENERAL NOTES:

A. COORDINATE ALL WORK WITH OTHER TRADES.

B. CONTRACTOR TO FIELD VERIFY SIZE, LOCATION, AND INVERT ELEVATION OF EXISTING PLUMBING IN AFFECTED AREAS PRIOR TO CONSTRUCTION.



2 MD-101.2
SECOND FLOOR PLUMBING DEMOLITION PLAN - AREA A
SCALE - 1/8" = 1'-0"

NORTH

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DETROIT MI

PROJECT

MAENGINEERING
MECHANICAL ELECTRICAL
180 High Oak Road
Bloomfield Hills, Michigan
48304
t | 248 | 258 | 1610
f | 248 | 258 | 9538

CONSULTANT

STATE OF MICHIGAN
JOHN D. RICHARDS
ENGINEER
No. 6201034544
REGISTERED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

LEVEL 2 PLUMBING DEMOLITION PLAN

SHEET TITLE

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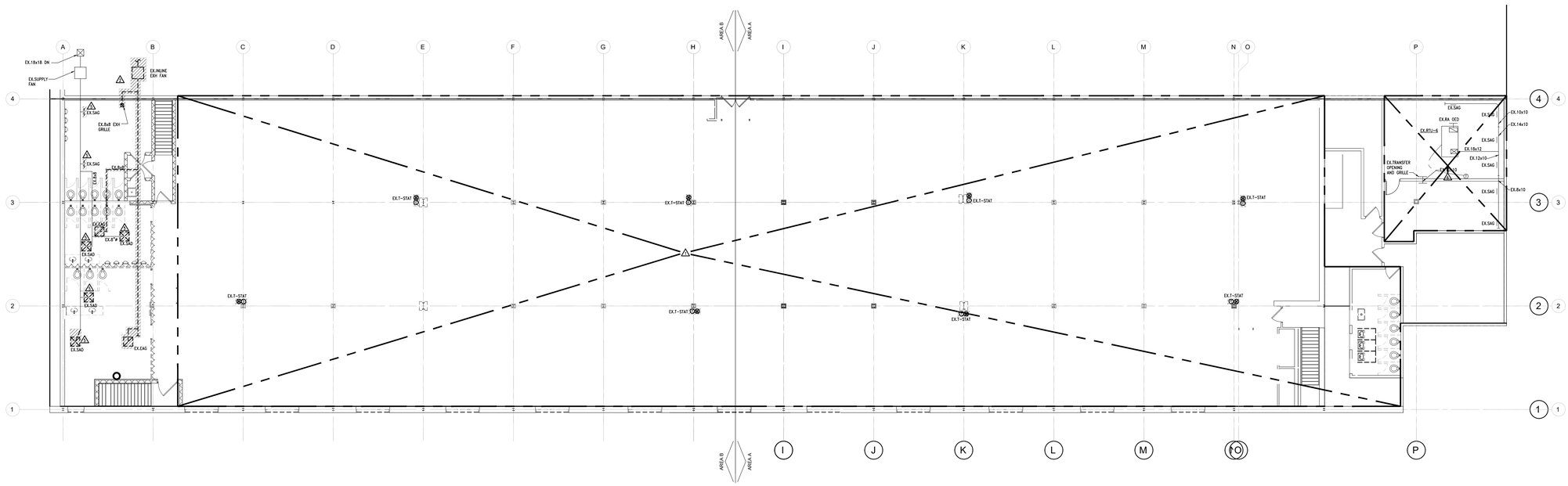

1 MD-201.2

LEVEL 2 HVAC DEMOLITION PLAN

SCALE - 3/32" = 1'-0"

NORTH

DEMOLITION KEY NOTES:

1. ALL EXISTING DUCTWORK TO BE REMOVED BACK TO ROOFTOP UNIT AND DISCARDED IN THIS AREA AND PREPARED FOR NEW DUCT LAYOUT. REMOVE AND DISCARD SUPPLY DIFFUSERS, RETURN GRILLES, THERMOSTATS, SUPPORTS, DAMPERS, WIRING, PNEUMATIC TUBES, ALL ACCESORIES IN THIS AREA.
2. REMOVE AND DISCARD EXISTING EXHAUST FAN, ASSOCIATED DUCTWORK, AND GRILLES BACK TO ROOF PENETRATION AND PREPARE FOR NEW CONNECTION.
3. PROVIDE PREBALANCE REPORT FOR TOILET ROOM EXISTING SUPPLY FAN AND ROOFTOP UNITS. VERIFY SUPPLY FAN CONTROL OPERATION.
4. CLEAN FAN AND EXISTING DUCTWORK THAT IS REMAINING IN TOILET ROOMS.
5. REMOVE AND DISCARD EXISTING SUPPLY DIFFUSERS AND PREPARE BRANCH DUCTWORK TO ACCEPT NEW DIFFUSER.
6. EXISTING HVAC AND ASSOCIATED CONTROLS IN THIS AREA TO REMAIN. AREA WAS RENOVATED IN PHASE 1 OF PROJECT.

GENERAL NOTES:

A. COORDINATE ALL WORK WITH OTHER TRADES.

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DETROIT MI

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48304
t | 248 | 258 | 1610
f | 248 | 258 | 9538

CONSULTANT

STATE OF MICHIGAN
JOHN D. RICHARDS
ENGINEER
No. 6201034544
REGISTERED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

LEVEL 2 HVAC DEMOLITION PLAN

SHEET TITLE

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MD-201.2

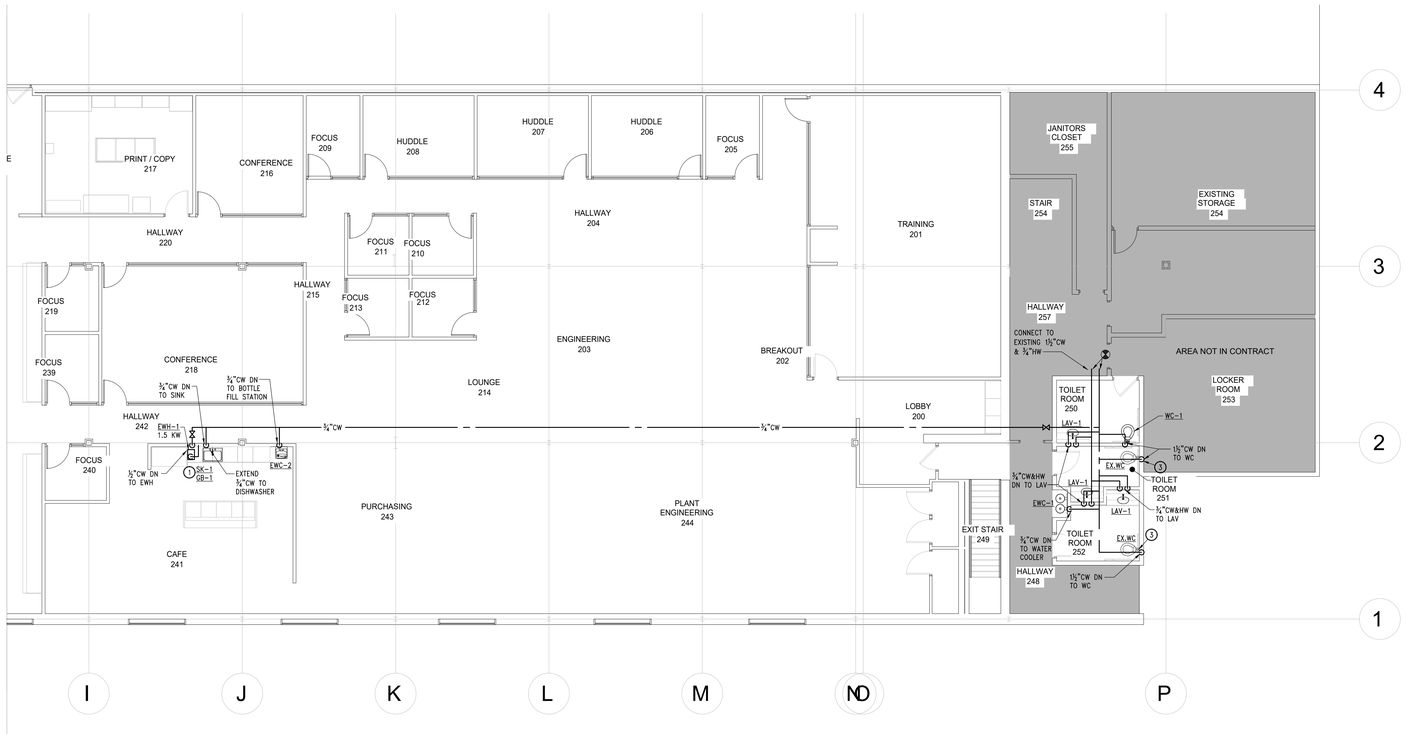
SHEET NUMBER

1 M-101.2

SECOND FLOOR DOMESTIC PLUMBING NEW WORK PLAN - AREA B

SCALE - 1/8" = 1'-0"

NORTH



2 M-101.2

SECOND FLOOR DOMESTIC PLUMBING NEW WORK PLAN - AREA A

SCALE - 1/8" = 1'-0"

NORTH

GENERAL NOTES:

A. COORDINATE ALL WORK WITH OTHER TRADES.

B. CONTRACTOR TO FIELD VERIFY SIZE, LOCATION, AND INVERT ELEVATION OF EXISTING PLUMBING IN AFFECTED AREAS PRIOR TO CONSTRUCTION.

NEW WORK KEY NOTES:

1. PROVIDE POINT OF USE ELECTRIC WATER HEATER MOUNTED BELOW SINK IN ACCESSIBLE LOCATION. EXTEND ¾" HOT WATER FROM WATER HEATER TO SINK. REFER TO SHEET M601 FOR DETAIL.
2. REWORK EXISTING DOMESTIC WATER AT PLUMBING WALL TO ACCOMMODATE EXISTING AND NEW FIXTURES. ENSURE PROPER OPERATION OF ALL EXISTING TO REMAIN FIXTURES UPON COMPLETION OF ADDITIONAL NEW FIXTURES.
3. CONNECT NEW DOMESTIC COLD WATER LINE TO EXISTING WATER CLOSET.

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CONSULTANT

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JOHN D RICHARDS
ENGINEER
No. 6201034544
PROFESSIONAL ENGINEER

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LEVEL 2 DOMESTIC PLUMBING NEW WORK PLAN

SHEET TITLE

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M-101.2

SHEET NUMBER

1 M-102.2

SECOND FLOOR SANITARY PLUMBING NEW WORK PLAN - AREA B

SCALE - 1/8" = 1'-0"

NORTH

GENERAL NOTES:

A. COORDINATE ALL WORK WITH OTHER TRADES.

B. CONTRACTOR TO SCOPE EXISTING SANITARY AND FIELD VERIFY SIZE, LOCATION, AND INVERT ELEVATION OF EXISTING PLUMBING IN AFFECTED AREAS PRIOR TO CONSTRUCTION.

NEW WORK KEY NOTES:

1. REWORK EXISTING SANITARY AND VENT AT PLUMBING WALL TO ACCOMMODATE EXISTING AND NEW FIXTURES. ENSURE PROPER OPERATION OF ALL EXISTING TO REMAIN FIXTURES UPON COMPLETION OF ADDITIONAL NEW FIXTURES.
2. CONNECT NEW VENT LINE DESIGN LAYOUT TO EXISTING VENT THROUGH ROOF PENETRATION.
3. CONNECT NEW SANITARY LINE DESIGN LAYOUT TO EXISTING SANITARY MAIN IN THIS AREA TO ACCOMMODATE NEW TOILET ROOM LAYOUTS.
4. RECONNECT EXISTING PLUMBING FIXTURE TO ACCOMMODATE NEW SANITARY PIPING DESIGN.

2 M-102.2

SECOND FLOOR SANITARY PLUMBING NEW WORK PLAN - AREA A

SCALE - 1/8" = 1'-0"

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STATE OF MICHIGAN
JOHN D RICHARDS
ENGINEER
No. 6201034544
PROFESSIONAL ENGINEER

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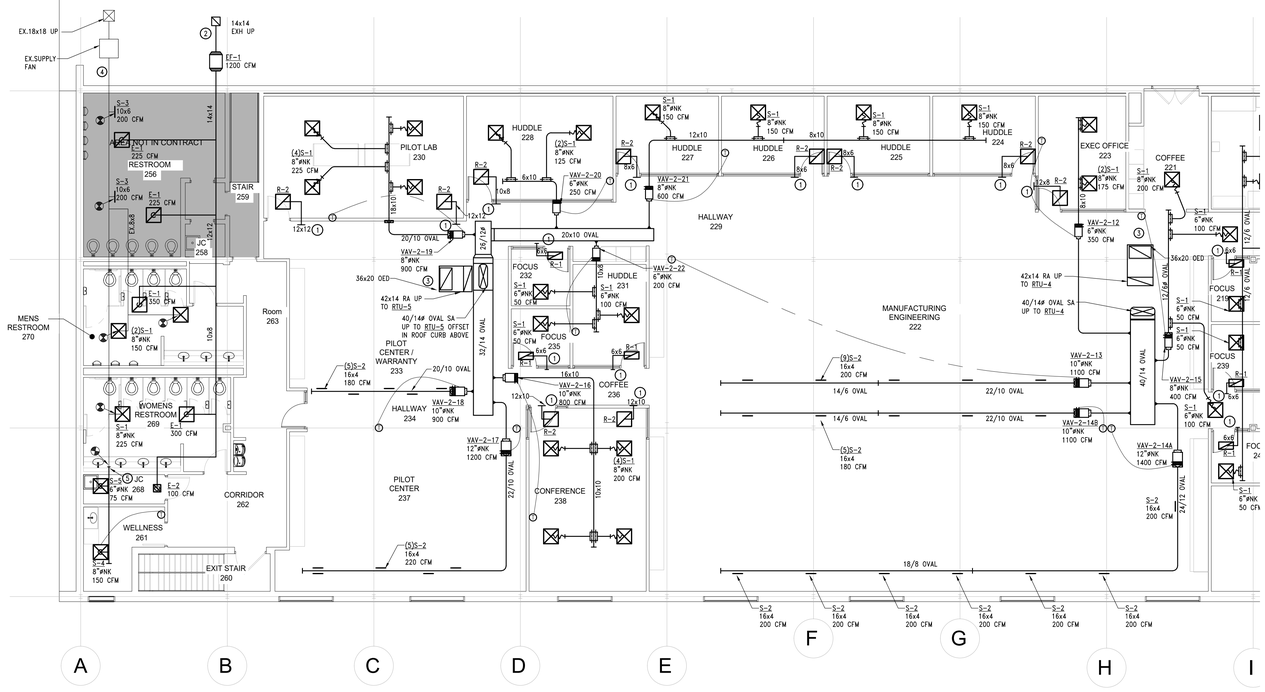
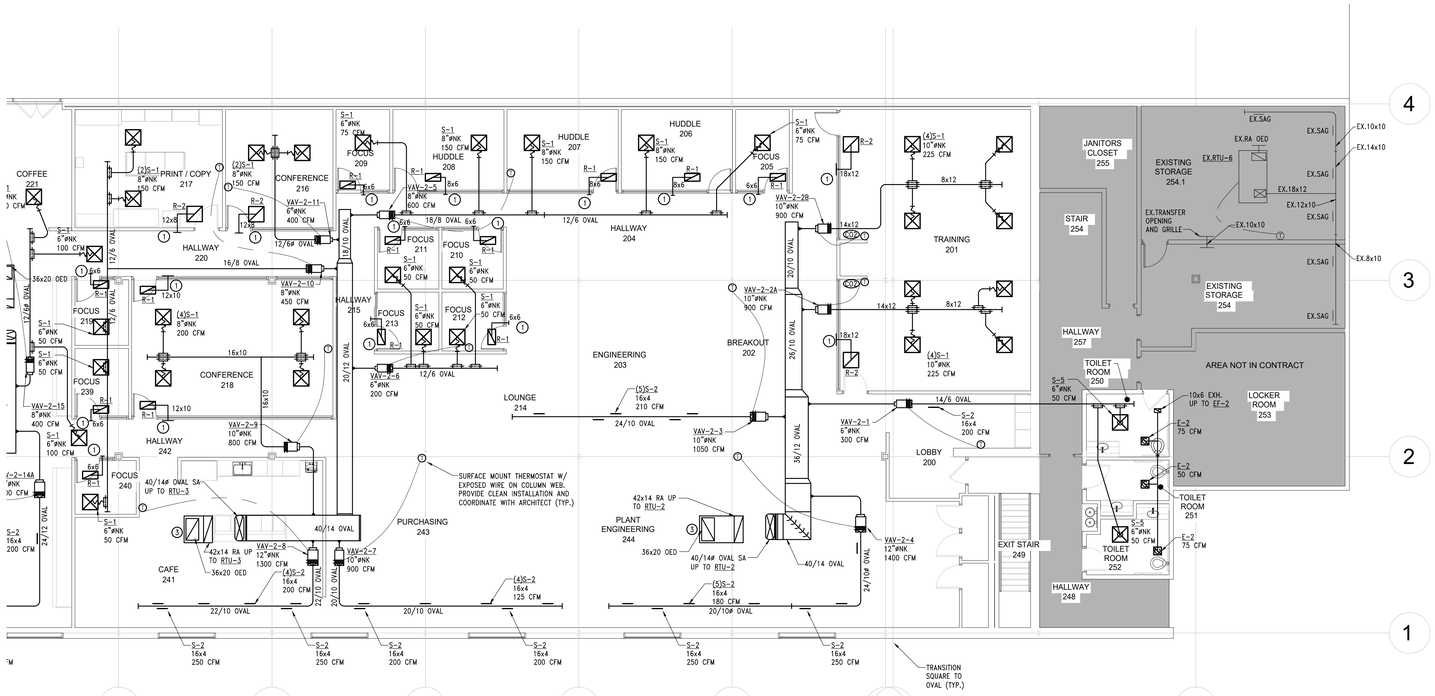


1 M-201.1

SECOND FLOOR HVAC NEW WORK PLAN - AREA B

SCALE - 1/8" = 1'-0"



2 M-201.2

SECOND FLOOR HVAC NEW WORK PLAN - AREA A

SCALE - 1/8" = 1'-0"

GENERAL NOTES:

A. COORDINATE ALL WORK WITH OTHER TRADES.

B. ALL VARIABLE AIR VOLUME BOXES TO HAVE ACCESS PANEL BELOW FOR MAINTENANCE AND ACCESS TO BOTTOM CONTROLS.

C. REFER TO ARCHITECTURAL DRAWINGS FOR EXPOSED CEILING AREAS.

D. ROUTE DUCTWORK AS HIGH AS POSSIBLE ALONG ROOF DECK AND TRANSITION DUCTWORK BELOW BEAMS WHEN NECESSARY. MAINTAIN TOP ALIGNMENT OF DUCTWORK WHEN REDUCING DUCT SIZE. COORDINATE WITH ARCHITECTURAL CEILING PLAN.

NEW WORK KEY NOTES:

1. PROVIDE ACOUSTIC ELBOW AND MOUNT TRANSFER GRILLE AS HIGH AS POSSIBLE. DUCT SIZE INDICATED ON PLAN AND TERMINATE WITH T-1.
2. CONNECT 14x14 EXHAUST DUCTWORK FROM EF-1 TO EXISTING GOOSENECK TERMINATION ON ROOF.
3. PROVIDE 1" ACOUSTIC LINER IN DUCT AND ON CEILING ABOVE OPENING. PROVIDE TURNING VANES ON RETURN DUCTWORK AT 90° ELBOW. TERMINATE OPENING WITH ½"x½" WIRE MESH GRILLE ON TOP OF DUCT.
4. REBALANCE EXISTING SUPPLY FAN TO 1150 CFM.
5. FIELD VERIFY EXISTING DUCTWORK SIZE. EXTEND SAME SIZE DUCTWORK TO ACCOMMODATE NEW DIFFUSER AND INCREASED CFM OF SUPPLY FAN.

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LEVEL 2
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WORK PLAN

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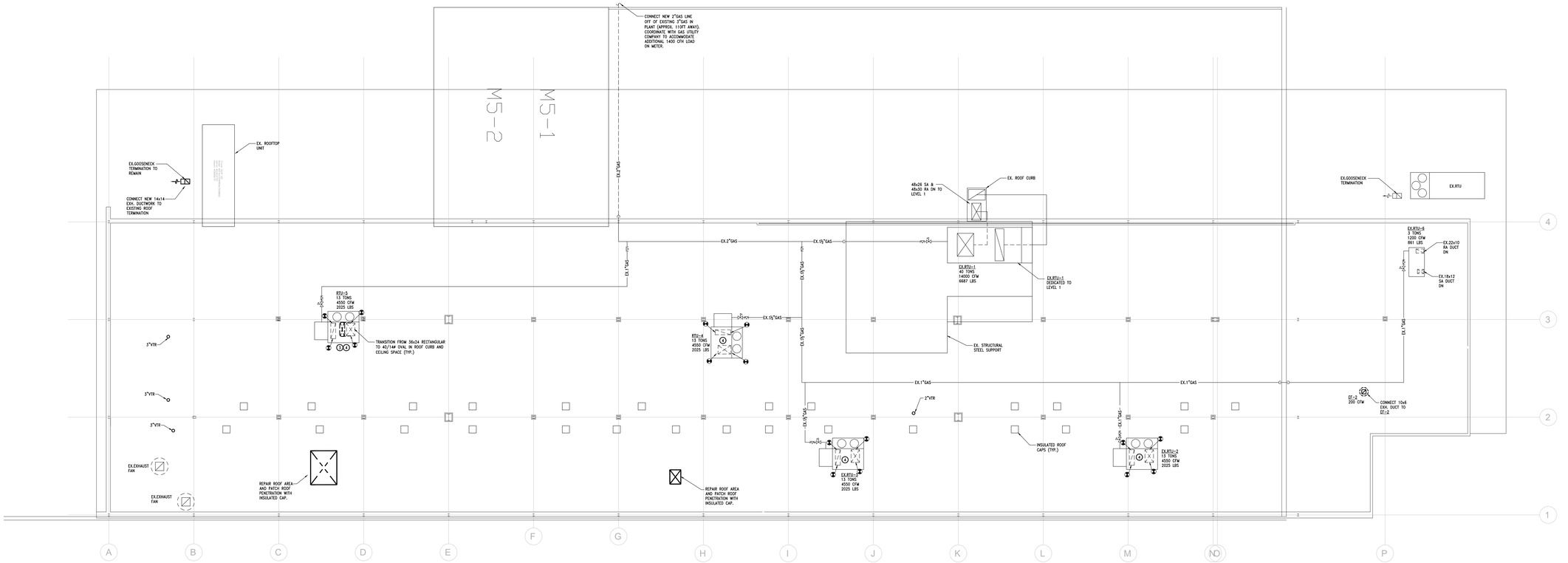

ROOF HVAC NEW WORK PLAN

SCALE - 3/32" = 1'-0"

NORTH

GENERAL NOTES:

A. COORDINATE ALL WORK WITH OTHER TRADES.

NEW WORK KEY NOTES:

1. RECONFIGURE STEEL STRUCTURE SUPPORT OF ROOFTOP UNIT. REFER TO DETAIL AND COORDINATE WITH STRUCTURAL.
2. PROVIDE DUCTWORK WITH FLEX CONNECTIONS. PROVIDE VIBRATION ISOLATION CURB W/ 1" DEFLECTION.
3. OFFSET DUCTWORK IN ROOF CURB TO AVOID ARCHITECTURAL SCREENING BELOW ROOF.
4. CONNECT NEW DUCTWORK TO UNIT IN ROOF CURB TO ACCOMMODATE DUCTWORK LAYOUT BELOW ROOF. EXISTING ROOF CURB TO REMAIN AND PROVIDE DUCT DROPS DIRECTLY BELOW RTU UNLESS NOTED OTHERWISE.

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DETROIT DIESEL SECOND FLOOR RENNOVATION
13400 W. OUTER DR.
DETROIT MI

PROJECT

MAENGINEERING
MECHANICAL ELECTRICAL
180 High Oak Road
Bloomfield Hills, Michigan
48304
t | 248 | 258 | 1610
f | 248 | 258 | 9538

CONSULTANT

STATE OF MICHIGAN
JOHN D. RICHARDS
ENGINEER
No. 6201034544
REGISTERED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

ROOF MECHANICAL NEW WORK PLAN

SHEET TITLE

24-103

PROJECT NUMBER

M-301.2

SHEET NUMBER

GRILLE, REGISTER & DIFFUSER SCHEDULE

TAG	MANUFACTURER & MODEL No.	SERVICE	MOUNTING	OVERALL SIZE	NECK SIZE	NOTES/ACCESSORIES
S-1	PRICE SCD	SAD	LAY-IN	24x24	SEE DWG.	A B C
S-2	PRICE SDG	SAD	DUCT MOUNT	16x4	–	A B C D
S-3	PRICE 510	SAD	DUCT MOUNT	16x4	–	A B C
S-4	PRICE PPD SQUARE	SAD	SURFACE MOUNT	24x24	8"ø	A B E
S-5	PRICE SCD	SAD	SURFACE MOUNT	24x24	SEE DWG.	A B C F
R-1	PRICE 10 SERIES	RAR	LAY-IN	12x24	SEE DWG.	A B
R-2	PRICE 10 SERIES	RAR	LAY-IN	24x24	SEE DWG.	A B
E-1	TITUS 80 SERIES	EAR	SURFACE MOUNT	24x24	SEE DWG.	A B F
E-2	TITUS 80 SERIES	EAR	SURFACE MOUNT	12x12	SEE DWG.	A B F
T-1	PRICE 500 SERIES	TAG	SURFACE	14x6	SEE DWG.	A B

KEY: SAD – CEILING SUPPLY DIFFUSER; RAR – CEILING OR WALL RETURN REGISTER; TAG – CEILING OR WALL TRANSFER GRILLE; EAR – CEILING OR WALL EXHAUST REGISTER

NOTES AND ACCESSORIES DESIGNATION

A	COLOR BY ARCHITECT	D	0 DEGREE DEFLECTION
B	ACCEPTABLE MANUFACTURERS: PRICE, TITUS	E	0.5 KW THERMOLEC REHEAT COIL IN DUCT COLLAR WITH BINARY HEAT OUTPUT CONTROLS
C	OPPOSED BLADE VOLUME DAMPER	F	CABLE-OPERATED VOLUME DAMPER

ELECTRIC WATER HEATER SCHEDULE

TAG	MANUFACTURER & MODEL NO.	AREA SERVED	CAPACITIES			ELECTRICAL		NOTES/ACCESSORIES
			STORAGE GALLON	RECOVERY GPH	TD °F	VOLTS/PHASE	KW	
EWH-1	A.O. SMITH EPU-2.5	CAFE	2	7.0	90	120/1	1.5	A B C D E F

NOTES AND ACCESSORIES DESIGNATION

A	P & T RELIEF VALVE DRAIN TO FLOOR DRAIN	D	SIMULTANEOUS OPERATION (4.5 W x 2)
B	EXPANSION TANK	E	PROVIDE DRAIN PAN AND WATER SENSOR WITH AN AUDIBLE ALARM
C	DISCONNECT SWITCH	F	ACCEPTABLE MANUFACTURERS: LOCHINVAR, BRADFORD WHITE

VARIABLE AIR VOLUME BOX WITH ELECTRIC REHEAT SCHEDULE SECOND FLOOR

TAG	MANUFACTURER & MODEL No.	AREA SERVED	UNIT SERVED	MAXIMUM (CFM)	MINIMUM (CFM)	CALCULATED SPACE HEATING LOSS (BTU/HR)	ADJUSTED SPACE HEATING LOSS (BTU/HR)	HEATING COIL (BTU/HR)	HEATING COIL (KW)	AIR VALVE INET DIA. (INCH)	VOLTAGE/ PHASE	MCA	MOCP	NOTES / ACCESSORIES
VAV-2-1	PRICE SDV	LOBBY	RTU-2	300	90	0	0	2441	1.0	6	277/1	4.9	15	A C E F G H
VAV-2-2A	PRICE SDV	TRAINING	RTU-2	900	270	0	0	7324	2.5	10	480/3	4.1	15	A C E F G H
VAV-2-2B	PRICE SDV	TRAINING	RTU-2	900	270	0	0	7324	2.5	10	480/3	4.1	15	A C E F G H
VAV-2-3	PRICE SDV	ENG./BREAKOUT	RTU-2	1050	320	0	0	8680	3.0	10	277/1	14.8	15	A C E F G H
VAV-2-4	PRICE SDV	PLANT ENG.	RTU-2	1400	420	12900	14835	26228	17.0	12	480/3	28.0	30	A C E F G H
VAV-2-5	PRICE SDV	HUDDLE/FOCUS ROOMS	RTU-3	600	300	0	0	8138	3.0	8	277/1	14.8	15	A C E F G H
VAV-2-6	PRICE SDV	FOCUS/LOUNGE	RTU-3	200	100	0	0	2713	1.0	6	277/1	4.9	15	A C E F G H
VAV-2-7	PRICE SDV	PURCHASING	RTU-3	900	450	11000	12650	24856	12.0	10	480/3	15.1	20	A C E F G H
VAV-2-8	PRICE SDV	CAFÉ	RTU-3	1300	650	10000	11500	29131	9.5	12	480/3	15.6	20	A C E F G H
VAV-2-9	PRICE SDV	CONFERENCE	RTU-3	800	240	0	0	6510	2.5	10	277/1	12.3	15	A C E F G H
VAV-2-10	PRICE SDV	PRINT/COPY/FOCUS	RTU-3	450	140	0	0	3798	1.5	8	277/1	7.4	15	A C E F G H
VAV-2-11	PRICE SDV	CONFERENCE	RTU-3	300	90	0	0	2441	1.0	6	277/1	4.9	15	A C E F G H
VAV-2-12	PRICE SDV	EXEC OFFICE	RTU-4	350	110	0	0	2984	1.0	6	277/1	4.9	15	A C E F G H
VAV-2-13	PRICE SDV	MANUFACT. ENG	RTU-4	1100	330	0	0	8951	3.0	10	480/3	4.9	15	A C E F G H
VAV-2-14A	PRICE SDV	MANUFACT. ENG	RTU-4	1400	700	10000	11500	30488	10.0	12	480/3	16.4	20	A C E F G H
VAV-2-14B	PRICE SDV	MANUFACT. ENG	RTU-4	1100	550	10000	11500	26419	9.0	10	480/3	14.9	15	A C E F G H
VAV-2-15	PRICE SDV	COFFEE/CORR	RTU-4	300	90	0	0	2441	1.0	6	277/1	4.9	15	A C E F G H
VAV-2-16	PRICE SDV	CONFERENCE	RTU-5	800	600	6500	7475	23750	8.0	10	480/3	14.9	15	A C E F G H
VAV-2-17	PRICE SDV	PILOT CENTER	RTU-5	1200	600	8000	9200	25475	8.5	12	480/3	13.9	15	A C E F G H
VAV-2-18	PRICE SDV	PILOT WARRANTY	RTU-5	900	270	0	0	7324	2.5	10	277/1	12.3	15	A C E F G H
VAV-2-19	PRICE SDV	PILOT LAB	RTU-5	900	270	0	0	7324	2.5	10	277/1	12.3	15	A C E F G H
VAV-2-20	PRICE SDV	HUDDLE	RTU-5	250	80	0	0	2170	1.0	6	277/1	4.9	15	A C E F G H
VAV-2-21	PRICE SDV	HUDDLE ROOMS	RTU-5	600	180	0	0	4883	2.0	8	277/1	9.8	15	A C E F G H
VAV-2-22	PRICE SDV	FOCUS/HUDDLE /COFFEE	RTU-5	200	60	0	0	1628	1.0	6	277/1	4.9	15	A C E F G H

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NOTES AND ACCESSORIES DESIGNATION

A	ACCEPTABLE MANUFACTURERS: PRICE, TITUS
B	NOT USED
C	ELECTRIC REHEAT WITH SCR MODULATING CONTROL
D	DUCT TEMPERATURE SENSOR
E	NOT USED
F	NON-FUSED, DOOR INTERLOCKING DISCONNECT SWITCH
G	HANGER BRACKETS
H	1/2" FIBER FREE LINER

PLUMBING CONNECTION SCHEDULE

ITEM #	DESCRIPTION	MANUFACTURER & MODEL NO.	WASTE	TRAP	VENT	COLD WATER	HOT WATER	FURNISHED BY	INSTALLED BY	FINAL CONNECTION	NOTES/ACCESSORIES
WC-1	WATER CLOSET, FLOOR MOUNT, ELONGATED, WHITE COLOR, FLUSHOMETER, 16-1/2"HEIGHT, ADA	AMERICAN STANDARD "MADERA" 3461.001	4"	INTEGRAL	2"	1-1/2"	--	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	SEAT: BEMIS 1655 SSCT WITH STATITE COMMERCIAL FASTENING SYSTEM, WHITE MOLDED OPEN FRONT. FLUSH FLUSH VALVE: SLOAN "ROYAL" NO. 110 SFSM 3.5 GALLONS PER FLUSH WITH SLOAN EBV500A SENSOR FLUSHOMETER.
UR-1	URINAL, WALL MOUNT, WHITE VITREOUS, FLUSH VALVE, 1.0 GPF, INSTALL FIXTURE IN ACCORDANCE WITH MICHIGAN DEPARTMENT OF LABOR CONSTRUCTION CODE "BARRIER FREE" REQUIREMENTS AND ADA REQUIREMENTS.	AMERICAN STANDARD "WASHBROOK" 6590.001EC	1-1/2"	1-1/2"	1-1/2"	3/4"	--	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	PROVIDE CARRIER. FLUSH FLUSH VALVE: SLOAN "ROYAL" NO. 186 SFSM-1 WITH SLOAN EBV500A SENSOR FLUSHOMETER.
LAV-1	COUNTER TOP LAVATORY PHYSICALLY HANDICAPPED, FRONT OVERFLOW, WHITE VITREOUS, BACK SPLASH, SINGLE CENTER HOLE,	AMERICAN STANDARD "AQUALYN" 0475.047	1-1/2"	1-1/2"	1-1/2"	1/2"	1/2"	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	SUPPLIES: 1/2" X 3/8", ANGLE SUPPLIES WITH WHEEL STOPS, FLEXIBLE RISERS AND CP ESCUTCHEON PLATES. TRAP: CP 1-1/2" BENT TUBE, ADJUSTABLE "P" TRAP WITH CLEANOUT, CP TUBING TO WALL AND CP ESCUTCHEON PLATE. FAUCET: DECK MOUNTED, VANDAL RESISTANT, DELTA MODEL 22C101, CAST BRASS CONSTRUCTION, CERAMIC CARTRIDGE W/ ROTATIONAL LIMIT STOP, 4" CENTERSET, AND 1-1/4" CP TAILPIECE. ALL EXPOSED SURFACES HEAVILY CHROME PLATED. PROVIDE MIXING VALVE SPEAKMAN TMV. SEE DETAIL ON DRAWINGS. ALSO, INSULATE EXPOSED DRAIN LINES AND HOT AND COLD WATER SUPPLY LINES BELOW PHYSICALLY HANDICAPPED LAVATORIES PER PHYSICALLY HANDICAPPED CODE REQUIREMENTS. VERIFY LOCATION OF PHYSICALLY HANDICAPPED LAVATORIES WITH ARCHITECTURAL TRADES.
SK-1	UNDERMOUNT SINK STAINLESS STEEL 24"x18-1/4"x6" SINGLE BOWL DROP-IN, 18 GAUGE STAINLESS STEEL, ONE HOLE FAUCET, ADA W/ REAR DRAIN PLACEMENT	KOHLER "VAULT" K-3894	1-1/2"	1-1/2"	1-1/2"	1/2"	1/2"	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	SUPPLIES: 1/2" X 3/8", ANGLE SUPPLIES WITH WHEEL STOPS, FLEXIBLE RISERS AND CP ESCUTCHEON PLATES. TRAP: CP 1-1/2" BENT TUBE, ADJUSTABLE "P" TRAP WITH CLEANOUT, CP TUBING TO WALL AND CP ESCUTCHEON PLATE. FAUCET: DECK MOUNTED, VANDAL RESISTANT, DELTA MODEL 100LF-HDF SINGLE HANDLE KITCHEN FAUCET, ADJUSTABLE HAND LIMIT STOP, BRASS CONSTRUCTION, AERATOR 1.5 GPM MAXIMUM FLOW RESTRICTOR. 1/4 TURN CERAMIC CARTRIDGE. DRAIN: PROVIDE GARBAGE DISPOSAL. SEE GB-1.
EWC-1	WALL MOUNTED BOTTLE FILLING STATION WITH MECHANICALLY ACTIVATED, BI-LEVEL ADA COOLER	ELKAY MODEL LZSBWSLP	1-1/2"	1-1/2"	1-1/2"	1/2"	--	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	ELKAY EZH2O® BOTTLE FILLING STATION & VERSATILE BI-LEVEL ADA COOLER, FILTERED REFRIGERATED LIGHT GRAY GRANITE FINISH. CHILLING CAPACITY OF 8.0 GPH (GALLONS PER HOUR) OF 50 ° F DRINKING WATER, BASED ON 80 ° F INLET WATER AND 90 ° F AMBIENT, PER ASHRAE 18 TESTING. FEATURES SHALL INCLUDE ANTIMICROBIAL, GREEN TICKER , HANDS FREE, LAMINAR FLOW, REAL DRAIN. FURNISHED WITH FLEXI-GUARD ® SAFETY BUBBLER, ELECTRONIC BOTTLE FILLER SENSOR WITH ELECTRONIC FRONT AND SIDE BUBBLER PUSHBAR ACTIVATION. PRODUCT SHALL BE WALL MOUNT (ON WALL), FOR INDOOR APPLICATIONS, SERVING 2 STATION(S) AND USING 51300C FILTERS. UNIT SHALL BE CERTIFIED TO UL 399 AND CAN/CSA C22.2 NO. UNIT SHALL BE LEAD-FREE DESIGN WHICH IS CERTIFIED TO NSF/ANSI 61 & 372 (LEAD FREE) AND MEETS FEDERAL AND STATE LOW-LEAD REQUIREMENTS.
EWC-2	WALL MOUNTED BOTTLE FILLING STATION AND SINGLE COOLER	ELKAY MODEL VRCBWSK	1-1/2"	1-1/2"	1-1/2"	1/2"	--	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	ELKAY EZH2O® BOTTLE FILLING STATION & SINGLE COOLER, NON-FILTERED REFRIGERATED LIGHT GRAY GRANITE FINISH. CHILLING CAPACITY OF 8.0 GPH (GALLONS PER HOUR) OF 50 ° F DRINKING WATER, BASED ON 80 ° F INLET WATER AND 90 ° F AMBIENT, PER ASHRAE 18 TESTING. FEATURES SHALL INCLUDE ANTIMICROBIAL, GREEN TICKER , HANDS FREE, LAMINAR FLOW, REAL DRAIN. FURNISHED WITH VANDAL RESISTANT BUBBLER, ELECTRONIC BOTTLE FILLER SENSOR WITH MECHANICAL FRONT BUBBLER BUTTON ACTIVATION. PRODUCT SHALL BE WALL MOUNT (ON WALL), FOR INDOOR APPLICATIONS, SERVING 1 STATION(S). UNIT SHALL BE CERTIFIED TO UL 399 AND CAN/CSA C22.2 NO. 120. UNIT SHALL BE LEAD-FREE DESIGN WHICH IS CERTIFIED TO NSF/ANSI 61 & 372 (LEAD FREE) AND MEETS FEDERAL AND STATE LOW-LEAD REQUIREMENTS.
SS-1	FLOOR MOUNTED SERVICE SINK ONE-PIECE MOLDED STONE UNIT HAVING 10" HIGH WALLS WITH NOT LESS THAN 1" WIDE SHOULDERS. COLOR SHALL BE #231 WHITE DRIFT. DRAIN BODY SHALL BE FACTORY INSTALLED STAINLESS STEEL #302 WITH COMBINATION DOME STRAINER AND LINT BASKET. THE DRAIN BODY SHALL PROVIDE FOR A LEAD CAULKED JOINT TO A 3" IPS SILICONE SEALANT SHALL BE PLATE #833-AA.	POWERS-FIAT MSB-2424	3"	2"	2"	3/4"	3/4"	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	SUPPLY FITTING: VANDAL-RESISTANT CHICAGO FAUCET NO. 897, COMBINATION SERVICE SINK FITTING WITH VACUUM BREAKER, 3/4" HOSE THREAD RIGID SPOUT, NO. 369 LEVER HANDLES, WALL BRACE PAIL HOOK AND NO. "R" 1/2" FLANGED FEMALE ADJUSTABLE ARMS WITH INTEGRAL STOPS. ALL EXPOSED SURFACES SHALL BE HEAVILY CHROME PLATED. RIM GUARD: VINYL BUMPER GUARDS EQUAL TO PLATE #E-77-AA, SHALL BE PROVIDED ON ALL SIDES NOT ADJACENT TO WALL. WALL GUARD: STAINLESS STEEL MODEL NO. MSG2424. HOSE BRACKET: PLATE #832-AA, 18 GAUGE, NO. 302 STAINLESS STEEL HOSE BRACKET WITH RUBBER GRIP COMPLETE WITH 30" LONG FLEXIBLE, CLOTH REINFORCED, 5/8" HEAVY DUTY RUBBER HOSE WITH 3/4" CHROME COUPLING AT HOSE END. MOP HANGER: #809-CC, 24" LONG X 3" WIDE, STAINLESS STEEL ATTACHED WITH THREE (3) RUBBER TOOL GRIPS.
GB-1	GARBAGE DISPOSAL	INSINKERATOR BADGER 1	--	--	--	--	--	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	FOOD WASTE DISPOSER, CONTINUOUS FEED, WITH 1/3 H.P. MOTOR, CORD, GALVANIZED STEEL GRINDING ELEMENTS WITH TWO STAINLESS STEEL 360° SWIVEL LUGS. EXCLUSIVE SELF-SERVICE WRENCH
FD-1	FLOOR DRAIN	JR SMITH 2020	VARIES	--	--	--	--	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	TRAP SHIELD, BRONZE FINISH, ADJUSTABLE
TRAP SHIELD	FLOOR DRAIN DRAIN TRAP SEAL	SIOUX CHIEF 835 SERIES	VARIES	--	--	--	--	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	PLUMBING CONTRACTOR	POLYPROPYLENE RIGID RING, SILICONE SEALING BODY

EXHAUST FAN SCHEDULE

TAG	MANUFACTURER & MODEL NO.	SERVICE	LOCATION	CFM	ESP "WC	FAN KEY	WHEEL TYPE	ELECTRICAL		NOTES/ ACCESSORIES
								VOLTS	HP	
EF-1	LOREN COOK 135SQN-HP	TOILET ROOMS SOUTH	INLINE	1200	0.5	ILC	BI	277/1	0.25	C D E G H
EF-2	LOREN COOK 60 ACEB	TOILET ROOMS NORTH	ROOF	200	0.25	ILC	BI	277/1	0.25	A C D E G H

FAN KEY:
RMU – ROOF MOUNTED UPBLAST
RMC – ROOF MOUNTED CENTRIFUGAL
RMA – ROOF MOUNTED AXIAL
WMC – WALL MOUNTED CENTRIFUGAL
ILC – INCLINE CENTRIFUGAL
ILA – INLINE AXIAL
VA – VANE AXIAL
TA – TUBE AXIAL
CLG – CEILING MOUNT
UTL – UTILITY SET (ROOF)
WMP – WALL MOUNTED PROPELLER

WHEEL KEY:
FC – FORWARD CURVED
BI – BACKWARD INCLINED
AF – AIRFOIL
RAD – RADIAL
P – PROPELLER

NOTES AND ACCESSORIES DESIGNATION

A	ROOF CURB	E	ACCEPTABLE MANUFACTURERS: GREENHECK, TWIN CITY, LOREN COOK
B	INTERLOCKING CONTROLS	F	GREASE TRAP
C	FACTORY MOUNTED & WIRED DISC. SWITCH	G	VIBRATION ISOLATORS
D	GRAVITY BACKDRAFT DAMPER	H	SCHEDULED TIME OPERATION

04.18.2025 BIDS/PERMIT
03.10.2025 OWNER REVIEW
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HOBBS + BLACK ARCHITECTS
100 N. State St.
Ann Arbor, MI 48104
P. 734.665.4189
www.hobbs-black.com

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MECHANICAL SCHEDULES

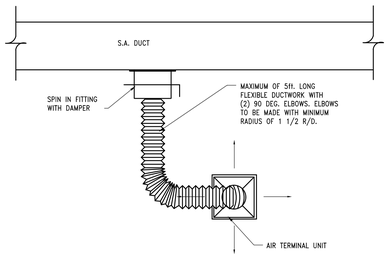
SHEET TITLE

24-103

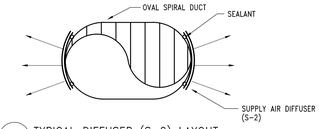
PROJECT NUMBER

M-401.2

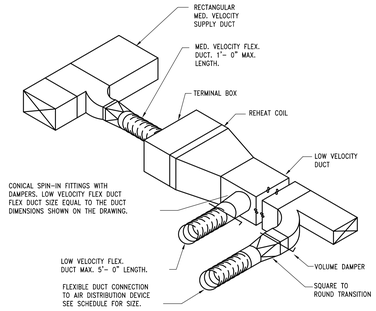
SHEET NUMBER



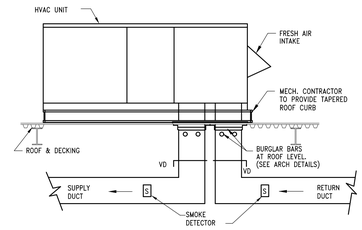
FLEXIBLE DUCT CONNECTION DETAIL
SCALE: NONE



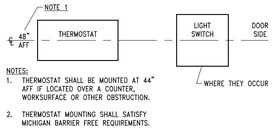
TYPICAL DIFFUSER (S-2) LAYOUT
SCALE: NONE



TYPICAL VAV BOX DETAIL
SCALE: NONE

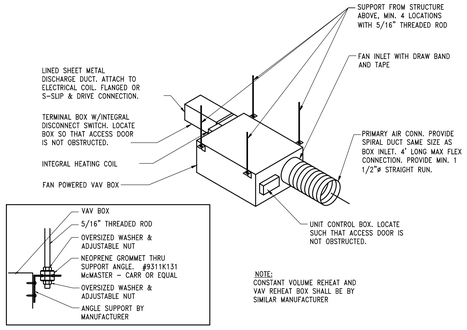


CURB MOUNTED HVAC UNIT SCHEMATIC
SCALE: NONE



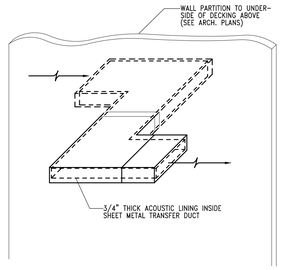
NOTES:
1. THERMOSTAT SHALL BE MOUNTED AT 44" AFF IF LOCATED OVER A COUNTER, WORKSURFACE OR OTHER OBSTRUCTION.
2. THERMOSTAT MOUNTING SHALL SATISFY MICHIGAN BARRIER FREE REQUIREMENTS.

THERMOSTAT MOUNTING DETAIL
SCALE: NONE

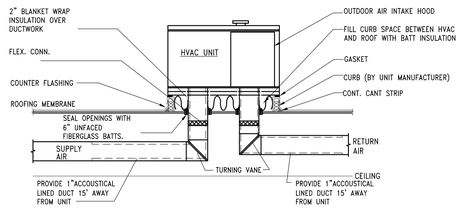


NOTE:
CONSTANT VOLUME REHEAT AND VAV REHEAT BOX SHALL BE BY SIMILAR MANUFACTURER

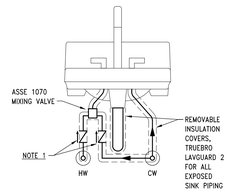
TYPICAL FAN POWERED VAV BOX
SCALE: NONE



TRANSFER DUCT DETAIL
SCALE: NONE



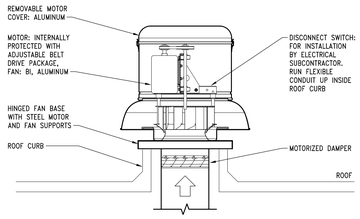
SECTION THROUGH HVAC UNIT
SCALE: NONE



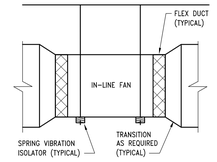
NOTES:
1. ALL ADA LAVATORIES, HAND WASH SINKS MIXING VALVES SHALL BE PROVIDED WITH EXTERNAL BRONZE BODY & TRIM CHECK VALVES ON THE INCOMING HOT & COLD PIPING, REGARDLESS IF MIXING VALVE HAS INHERENT CHECK VALVES.

TYPICAL MIXING VALVE DETAIL FOR ALL LAVATORY AND HAND WASH SINKS
SCALE: NONE

DOMESTIC ELECTRIC WATER HEATER PIPING SCHEMATIC
SCALE: NONE



DOWNBLAST EXHAUST FAN DETAIL
SCALE: NONE



INLINE FAN INSTALLATION DETAIL
SCALE: NONE

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PROJECT

MAENGINEERING
MECHANICAL ELECTRICAL
180 High Oak Road
Bloomfield Hills, Michigan 48304
t | 248 | 258 | 1610
f | 248 | 258 | 9538

CONSULTANT

NOT FOR CONSTRUCTION

MECHANICAL DETAILS

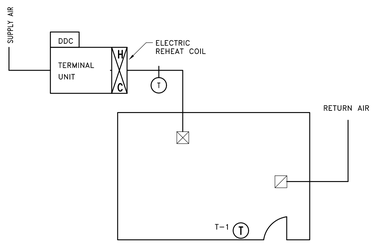
SHEET TITLE

24-103

PROJECT NUMBER

M-501.2

SHEET NUMBER

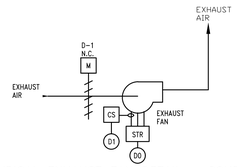


TYPICAL VARIABLE VOLUME W/ REHEAT

NO SCALE

SEQUENCE OF OPERATION:

THE SPACE SENSOR T-1 SHALL, THROUGH THE DDC, MODULATE THE VARIABLE VOLUME REHEAT BOX DAMPER AND REHEAT COIL CONTACTOR TO MAINTAIN THE DESIRED SPACE TEMPERATURE. ON A DROP IN SPACE TEMPERATURE THE SPACE SENSOR T-1, THROUGH THE BOX CONTROL, SHALL REDUCE AIR FLOW TO THE SPACE DOWN TO THE BOXES MINIMUM SETTING. ON A FURTHER DROP IN SPACE TEMPERATURE THE SPACE SENSOR T-1 SHALL INITIATE THE HEATING MODE. IN THE HEATING MODE, THE VAV BOX VOLUME MINIMUM IS RESET TO 80 CFM/KW. THROUGH THE DDC, THE SCR CONTROLLER MODULATES REHEAT COIL KW TO MAINTAIN SPACE TEMPERATURE. VAV DISCHARGE TEMPERATURE IS LIMITED TO 95°F. IF DISCHARGE TEMPERATURE IS AT 95°F AND SPACE TEMPERATURE CANNOT BE MET, BOX SLOWLY OPENS TO ALLOW MORE HEATED AIRFLOW. WHERE CO2 SENSOR IS IN SPACE MINIMUM POSITION SHALL MAINTAIN LESS THAN 900 PPM CO2.

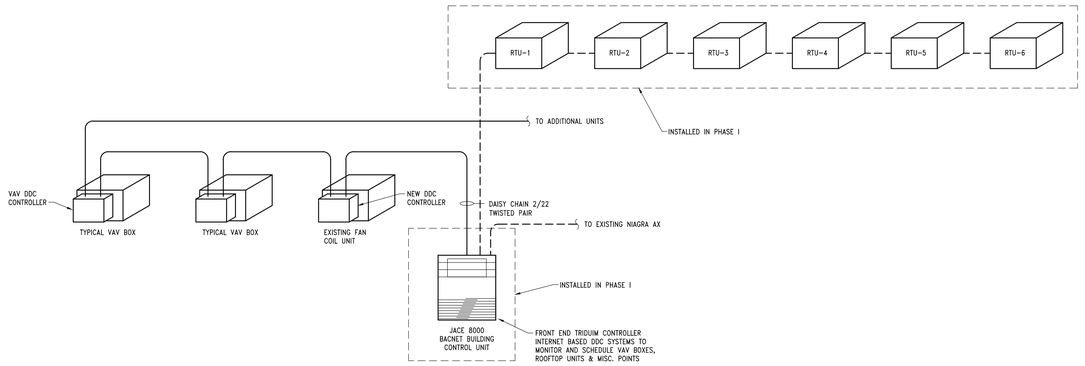


TYPICAL EXHAUST FAN DETAIL – SCHEDULED START/STOP

SEQUENCE OF OPERATION

1. EXHAUST FAN SHALL BE STARTED AND STOPPED AUTOMATICALLY BY DDC BASED ON ASSOCIATED SOFTWARE INTERLOCK WITH RELATED SUPPLY FAN DURING OCCUPIED MODE. THE DAMPER IS INTERLOCKED TO OPEN WHEN THE FAN STARTS.

2. DDC SHALL MONITOR EXHAUST FAN STATUS THRU THE CURRENT SWITCH. ABNORMAL STATUS CONDITION SHALL ACTIVATE AN ALARM IN THE DDC SYSTEM.



TYPICAL COMMUNICATION ARCHITECTURE

NO SCALE

BUILDING CONTROLS:

WORK BY THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR SHALL INCLUDE, BUT NOT BE LIMITED TO:

1. CONTRACTOR TO SELECT CONTROLS PROVIDER.
2. PROVIDING A NATIVE BACNET-BASED (LATEST VERSION OF ANSI/ ASHRAE 135) MCS CONSISTING OF PROGRAMMABLE AND APPLICATION SPECIFIC DDC CONTROLLERS, ELECTRONIC SENSORS, RELAYS, SWITCHES, CONTROL PANELS, POWER SUPPLIES, TWISTED SHIELDED PAIR (TSP)NETWORK CABLING AND ALL ASSOCIATED CONTROL WIRING (EXCLUDING ETHERNET NETWORK WIRING) AND LOW VOLTAGE CONDUIT SYSTEMS. PROVIDE ALL REQUIRED 120V WIRING PER ELECTRICAL SPECIFICATIONS, INCLUDING TRANSFORMERS REQUIRED, FROM DESIGNATED SPARE ELECTRICAL CIRCUITS.
3. THE OWNER'S CONTROL SYSTEM IS A TRIDIUM NIAGRA AX WITH NIAGRA N4 FRAMEWORK. INTEGRATE NEW JACE 8000 CONTROLLER. SYSTEM CONTROLLERS SHALL BE NIAGARA TRIDIUM JACE 8000 SERIES WITH INITIAL CAPACITY FOR 150 VAV BOXES, 6 FAN COIL UNITS, 5 ROOFTOP UNITS AND MISCELLANEOUS POINTS. CONTROLLERS SHALL BE EXPANDABLE FOR OTHER FUTURE GROWTH. CONTROLLERS SHALL RUN ON NIAGARA 4.2.
4. SYSTEM SHALL REPORT TO EXISTING SUPERVISOR SOFTWARE. COORDINATE WITH OWNER FOR COORDINATION REQUIREMENTS. PROVIDE NIAGARA SOFTWARE, GRAPHICS GENERATION, AND ALL FRONT END PROGRAMMING REQUIRED.
5. SYSTEM SHALL HAVE MULTIPLE PASSWORD PROTECTION LEVELS AND ALARM NOTIFICATION THROUGH E-MAIL AND TEST.
6. PROVIDE ALL REQUIRED SYSTEM LICENSES FOR A TWO YEAR PERIOD. AT A MINIMUM PROVIDE 5 USER ACCESS LICENSES.
7. PROVIDE A ONE YEAR WARRANTY ON ALL PARTS, LABOR AND PROGRAMMING.
8. PROVIDE 24 HOUR SERVICE THAT WILL RESPOND WITHIN 3-HOURS OF NOTIFICATION.
9. PROVIDING CONTROL PANELS FOR ALL DDC CONTROLLERS AND AN AUXILIARY CONTROL PANEL FOR ALL ANCILLARY CONTROL DEVICES
10. PROVIDE APPLICATION SPECIFIC NATIVE BACNET TERMINAL UNIT CONTROLLERS FOR TERMINAL UNITS (VAV, FAN COIL UNITS ETC.) INCLUDING ASSOCIATED ROOM TEMPERATURE SENSORS WITH LED DISPLAY, AND CO2 SENSORS. CONTROLLER SHALL CONFORM TO THE LATEST VERSION OF ANSI/ ASHRAE 135 BACNET APPLICATION SPECIFIC CONTROLLER. CONTROLLER SHALL BE A MICROPROCESSOR-BASED, 32 BIT, MULTI-TASKING, REAL-TIME DIGITAL CONTROL PROCESSOR CAPABLE OF STAND-ALONE OPERATION FOR CONTROL OF MECHANICAL TERMINAL UNITS, I.E. VAV TERMINAL UNITS, FAN COIL UNITS.
11. ENGINEERING, SUBMITTALS, AS-BUILT DRAWINGS, AND OPERATION AND MAINTENANCE MANUALS.
12. PROVIDE AND INSTALL ALL DDC PANEL AND DEVICE ENCLOSURES.
13. PROVIDE GAUGES, INDICATING DEVICES, CONTROL VALVES, ELECTRIC AND ELECTRONIC CONTROL ACCESSORIES, AND OTHER CONTROL SYSTEM DEVICES.
14. PROVIDE SETUP/ PROGRAMMING, CALIBRATION AND START-UP SERVICES OF ALL DDC AND NON-DDC TEMPERATURE CONTROL SYSTEMS. PROVIDE COMPLETE FULL AUTOMATED GRAPHICS PROGRAMMING OF SYSTEM FRONT END UTILIZING BUILDING FLOOR PLAN AND AUTOMATED FULL COLOR GRAPHICS. INTEGRATE THE SYSTEM THROUGH THE INTERNET BACK ONTO THE EXISTING UNITED SHORE PLATFORM.
15. PROVIDE SITE SUPERVISION OF TEMPERATURE CONTROL WORK AND COORDINATION WITH RELATED ELECTRICAL, FIRE ALARM WORK AND PACKAGED CONTROLS.
16. PROVIDE ALL CONTROL WIRING AND ELECTRICAL COMPONENTS NECESSARY FOR EACH SYSTEM TO PERMIT AUTOMATIC OR INTERLOCKED OPERATION, SUCH AS: AIR COOLED CONDENSING UNITS, HIGH LEVEL ALARM CIRCUITS, DAMPER END SWITCHES. USE SPARE 120V CIRCUITS.
17. ALL OTHER WORK AND COMPONENTS REQUIRED FOR COMPLETE AND OPERATIONAL TEMPERATURE CONTROL SYSTEMS, INCLUDING PROVISIONS FOR ALL WIRING , SOFTWARE, HARDWARE, REQUIRED ACCESSORIES, PROGRAMMING, GRAPHICS GENERATION, AND TRAINING.
18. START-UP, CALIBRATION, AND CHECKOUT OF SENSORS, TRANSDUCERS, THERMOSTATS, CONTROL VALVES, DAMPERS/DAMPER OPERATORS, METERS, AND ALL OTHER COMPONENTS PROVIDED.
19. TRAINING OF DETROIT DIESEL PERSONNEL TO FAMILIARIZE OPERATIONS STAFF WITH THE CONFIGURATION AND OPERATION OF THIS PROJECT'S INSTALLATIONS.

04.18.2025	BIDS/PERMIT
03.10.2025	OWNER REVIEW
	DATE ISSUED

DRAWN BY

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HOBBS + BLACK ARCHITECTS
100 N. State St.
Ann Arbor, MI 48104
P. 734.665.4189
www.hobbs-black.com

DETROIT DIESEL CORP.
DETROIT DIESEL SECOND FLOOR RENNOVATION
13400 W. OUTER DR.
DETROIT MI

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TEMPERATURE CONTROL DETAILS

SHEET TITLE

24-103

PROJECT NUMBER

M-601.2

SHEET NUMBER

MECHANICAL SPECIFICATIONS

MECHANICAL MATERIALS, METHODS AND EXECUTION

WORK INCLUDED:

FURNISH ALL LABOR AND MATERIAL, APPLIANCES, EQUIPMENT AND SUPERVISION TO PUT IN PLACE A COMPLETE AND FUNCTIONING MECHANICAL INSTALLATION READY FOR OPERATION, AS SPECIFIED HEREIN AND AS INDICATED ON THE DRAWINGS. SYSTEMS SHALL INCLUDE BUT NOT NECESSARILY LIMITED TO THE FOLLOWING MAJOR EQUIPMENT OR OPERATIONS:

1. PLUMBING
2. HEATING, VENTILATION AND AIR CONDITIONING
3. INSULATION
4. TEMPERATURE CONTROLS
5. FIRE PROTECTION

DEFINITIONS:

"PROVIDE": TO FURNISH AND COMPLETELY INSTALL SPECIFIED PRODUCTS AND INCIDENTALS, WHETHER SPECIFICALLY INDICATED OR NOT, NECESSARY FOR A COMPLETE, FUNCTIONAL INSTALLATION. INCLUDES ALL GENERAL AND SPECIALIZED LABOR, EQUIPMENT AND TOOLS NECESSARY TO COMPLETE THE INSTALLATION.

"PIPING": A COMPLETE SYSTEM, INCLUDING PIPE, TUBING, FITTINGS, HANGERS, SUPPORTS, VALVES, AND ALL SPECIALTIES THAT COMPRISE A FULLY FUNCTIONAL PIPING SYSTEM, WHETHER SPECIFICALLY INDICATED OR NOT.

CODES, ORDINANCES, AND STANDARDS:

ALL WORK SHALL CONFORM IN ALL RESPECTS TO THE REQUIREMENTS OF THE MICHIGAN BUILDING CODES AND OTHER ADOPTED FEDERAL, STATE, AND LOCAL CODES, ORDINANCES, AND STANDARDS HAVING JURISDICTION OVER THE WORK.

WHERE CONTRACT DOCUMENT REQUIREMENTS EXCEED THE REQUIREMENTS OF THE REFERENCED CODES, ORDINANCES, AND STANDARDS, THE CONTRACT DOCUMENT REQUIREMENTS SHALL BE TAKEN AS MINIMUM.

ALL EQUIPMENT CONTAINING ELECTRICAL WIRING AND/OR ELECTRICAL COMPONENTS SHALL HAVE A UNDERWRITERS LABORATORIES (UL) "PACKAGE" LABEL.

PERMITS, FEES AND INSPECTIONS:

SECURE ALL NECESSARY PERMITS, CONNECTION FEES, TAD FEES, LICENSES AND APPROVALS AND ARRANGE FOR ALL INSPECTIONS, INCLUDE ALL RELATED COSTS.

FURNISH CERTIFICATES OF FINAL INSPECTION AND APPROVAL UPON COMPLETION OF PROJECT.

EXAMINATION OF SITE:

VISIT PROJECT SITE AND BECOME FULLY COGNIZANT OF ALL EXISTING ARCHITECTURAL, MECHANICAL, ELECTRICAL, STRUCTURAL AND SITE CONDITIONS, OR EXISTING CODE VIOLATIONS WHICH MAY AFFECT THE WORK.

NOTIFY ARCHITECT PRIOR TO SUBMITTING BID IF REVISIONS TO CONTRACT DOCUMENTS ARE NECESSARY TO RECTIFY ANY OF THE AFOREMENTIONED EXISTING CONDITIONS.

NO "EXTRAS" TO CONTRACT PRICE WILL BE ALLOWED AFTER RECEIVING BID IN ORDER TO RECTIFY EXISTING CONDITIONS IN ORDER TO MEET THE DESIGN INTENT OF THE CONTRACT DOCUMENTS OR SATISFY CODE REQUIREMENTS.

COORDINATION WITH OTHER TRADES:

COORDINATE ALL WORK BEFORE AND DURING CONSTRUCTION WITH ALL OTHER AFFECTED TRADES.

WHERE INTERFERENCES DEVELOP, NOTIFY ARCHITECT FOR RESOLUTION OF CONFLICT.

RELOCATION OF CONFLICTING INSTALLED WORK, DUE TO LACK OF COORDINATION, OR POOR COORDINATION WILL NOT BE CONSIDERED EXTRA WORK.

APPROVED MANUFACTURERS:

USE ONLY MATERIALS SPECIFICALLY INDICATED IN CONTRACT DOCUMENTS, OR COMPARABLE MATERIALS BY OTHER LISTED ACCEPTABLE MANUFACTURERS. NOTE THAT "ACCEPTABLE MANUFACTURER" DOES NOT CONSTRUE AUTOMATIC APPROVAL OF SPECIFIC MATERIALS BY ONE OR ALL OF THE LISTED ACCEPTABLE MANUFACTURERS. ARCHITECT AND/OR ENGINEER OF RECORD RESERVES THE RIGHT OF FINAL DETERMINATION OF ACCEPTABILITY OF EACH ITEM.

FURNISHING OF MATERIALS AND MANUFACTURERS OTHER THAN THOSE INDICATED AS ACCEPTABLE IN THE CONTRACT DOCUMENTS WILL BE CONSIDERED VOLUNTARY SUBSTITUTES.

SUBMIT ALL VOLUNTARY SUBSTITUTES TO ARCHITECT FOR REVIEW NO LATER THAN FIFTEEN (15) DAYS PRIOR TO BID DUE DATE. IF ACCEPTABLE, ARCHITECT WILL AUTHORIZE USE OF SUBSTITUTE IN WRITTEN FORM BY LETTER OR ADDENDUM TO CONTRACT DOCUMENTS.

APPROVED VOLUNTARY SUBSTITUTES MUST ONLY BE INDICATED ON FORM OF PROPOSAL WITH APPROPRIATE "ADD" OR "DEDUCT" TO CONTRACT PRICE. DO NOT USE VOLUNTARY SUBSTITUTES FOR BASE BID.

SHOP DRAWINGS:

SUBMIT COMPLETE ELECTRONIC SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT INTENDED FOR USE ON THIS PROJECT.

SHOP DRAWINGS SHALL CLEARLY INDICATE ALL PHYSICAL, PERFORMANCE AND ELECTRICAL CHARACTERISTICS FOR ALL MATERIALS AND EQUIPMENT.

SUBMIT ELECTRONIC COPIES OF ALL SHOP DRAWINGS FOR REVIEW BY ARCHITECT.

NO WORK IS TO BE INSTALLED PRIOR TO RETURN OF ARCHITECT REVIEWED SHOP DRAWINGS.

OPERATION AND MAINTENANCE MANUALS:

UPON COMPLETION OF PROJECT, SUBMIT TWO (2) COMPLETE BOUND SETS OF OPERATING AND MAINTENANCE MANUALS FOR ALL EQUIPMENT AND SYSTEMS INSTALLED IN THIS PROJECT.

MANUALS SHALL INCLUDE GUARANTEE(S), COMPLETE OPERATING INSTRUCTIONS, REPAIR PARTS LIST, PREVENTATIVE MAINTENANCE SCHEDULE, BELT AND FILTER SCHEDULE, AND LIST OF ALL SUBCONTRACTORS ASSOCIATED WITH THE WORK, INCLUDING TELEPHONE NUMBER AND CONTACT PERSON.

OPERATING AND MAINTENANCE INSTRUCTIONS:

PRIOR TO FINAL ACCEPTANCE BY OWNER, PROVIDE ALL PERSONNEL, EQUIPMENT, AND LABOR AS NECESSARY TO INSTRUCT OWNER'S PERSONNEL IN PROPER OPERATION AND MAINTENANCE OF THE SYSTEMS AND EQUIPMENT INSTALLED IN THIS PROJECT. PROVIDE INSTRUCTIONAL SESSION DURING TIME PERIOD AGREED TO WITH OWNER.

CUTTING AND PATCHING:

ALL CUTTING AND PATCHING SHALL BE PROVIDED BY THE GENERAL TRADES UNDER THE DIRECTION OF THE MECHANICAL TRADES. COST WILL BE PAID BY THE MECHANICAL TRADE REQUESTING THE WORK.

RESTORED SURFACES SHALL BE OF SAME MATERIALS AND QUALITY AS ADJACENT SURFACES, AND SHALL MATCH SURROUNDING SURFACES, AND/OR BE RESTORED TO PRE-CONSTRUCTION CONDITION.

PROTECTION OF EXISTING SERVICES:

PROTECT FROM ALL DAMAGE, EXISTING SERVICES (I.E., GAS, WATER, ELECTRICAL, ETC.), ENCOUNTERED IN THE WORK, NOT SPECIFICALLY INDICATED TO BE DEMOLISHED. INCLUDE ALL RELATED COSTS.

REPAIR AND/OR REPLACE EXISTING ACTIVE SERVICES INTENDED TO REMAIN IN SERVICE, BUT DAMAGED DURING THE COURSE OF CONSTRUCTION. ABSORB ALL RELATED COSTS. NO "EXTRAS" WILL BE PAID TO RESTORE EXISTING ACTIVE SERVICES DAMAGED DURING CONSTRUCTION.

ARCHITECT WILL DETERMINE COURSE OF ACTION WHEN EXISTING INACTIVE SERVICES ARE DAMAGED DURING COURSE OF CONSTRUCTION. ABSORB ALL COSTS RELATIVE TO ADDITIONAL DEMOLITION, TERMINATION, RELOCATION AND/OR RESTORATION OF EXISTING, DAMAGED INACTIVE SERVICES AS DIRECTED BY ARCHITECT.

DEMOLITION:

DEMOLITION DRAWINGS ARE DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF THE WORK AND INDICATE GENERAL ARRANGEMENT OF EQUIPMENT, DUCTS, PIPING AND APPROXIMATE SIZES AND APPROXIMATE LOCATIONS. DO NOT SCALE DRAWINGS FOR EXACT MEASUREMENTS.

ALL MECHANICAL WORK SHOWN ON THE DEMOLITION DRAWINGS HAS BEEN TAKEN FROM THE OWNER'S RECORD DRAWINGS AND/OR CERTAIN FIELD OBSERVATIONS. EXACT SIZES, LOCATIONS, ARRANGEMENT AND ELEVATIONS OF ALL EXISTING MECHANICAL EQUIPMENT, EXISTING DUCTWORK, EXISTING PIPING AND EXISTING MECHANICAL DEVICES SHALL BE VERIFIED IN THE FIELD.

THE CONTRACTOR SHALL INCLUDE, IN HIS QUOTE, ALLOWANCES FOR REASONABLE DEVIATIONS BETWEEN WHAT IS SHOWN AND ACTUAL JOB CONDITIONS IN ORDER TO COMPLETE THE WORK IN THE SCOPE INDICATED.

REMOVE, RECONNECT, CAP, PLUG AND REPLACE EXISTING PIPING AND DUCTWORK ONLY WHERE INDICATED IN THE CONTRACT DOCUMENTS.

REMOVE AND/OR REPLACE EXISTING EQUIPMENT, VALVES, CONTROLS, ETC., ONLY WHERE INDICATED IN THE CONTRACT DOCUMENTS.

INTERRUPTION OF EXISTING ACTIVE PIPING: WHERE THE WORK MAKES TEMPORARY SHUT-DOWNS OF SERVICE UNAVOIDABLE, SHUT-DOWN AT TIME AS APPROVED BY THE OWNER, WHICH WILL CAUSE LEAST INTERFERENCES WITH ESTABLISHED OPERATING ROUTINE. ARRANGE TO WORK CONTINUOUSLY, INCLUDING OVERTIME, IF REQUIRED TO MAKE NECESSARY CONNECTION TO EXISTING WORK.

UNLESS SPECIFICALLY NOTED TO THE CONTRARY, REMOVED MATERIALS SHALL NOT BE REUSED IN THE WORK. SALVAGE MATERIALS THAT ARE TO BE REUSED SHALL BE STORED SAFE AGAINST DAMAGE AND TURNED OVER TO THE APPROPRIATE TRADE FOR REUSE.

SALVAGED MATERIALS OF VALUE THAT ARE NOT TO BE REUSED SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS POSSESSION RIGHTS ARE WAIVED. THE MATERIALS ARE TO BE REMOVED FROM THE SYSTEMS BY THIS CONTRACTOR AND TURNED OVER TO THE OWNER IN THEIR ORIGINAL CONDITIONS. THE OWNER SHALL MOVE AND STORE THE MATERIALS. WHERE THE OWNER WAIVES POSSESSION RIGHTS, THESE MATERIALS SHALL BECOME THE PROPERTY OF THIS CONTRACTOR, WHO SHALL REMOVE AND LEGALLY DISPOSE OF THE SAME, AWAY FROM THE PREMISES.

ELECTRICAL WORK:

PROVIDE ALL ELECTRICAL WORK ASSOCIATED WITH, AND NECESSARY TO COMPLETE THIS PROJECT, WHICH IS NOT INCLUDED AS ELECTRICAL TRADES WORK.

PROVIDE ALL ELECTRICAL WORK, AS APPLICABLE, IN ACCORDANCE WITH DIVISION 16 REQUIREMENTS.

CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION (WITH ELECTRICAL TRADES) OF CORRECT VOLTAGES FOR ALL MECHANICAL EQUIPMENT. IN CASE OF DISCREPANCY, NOTIFY ENGINEER IMMEDIATELY AND PRIOR TO SHOP DRAWING SUBMITTALS. FAILURE TO COMPLY WITH THIS REQUIREMENT HOLDS THE CONTRACTOR FULLY RESPONSIBLE FOR ANY SUBSEQUENT PROBLEMS

CLEANING AND FINISHING:

PRIOR TO FINAL ACCEPTANCE BY OWNER, THOROUGHLY CLEAN ALL WORK INSIDE AND OUT AS APPLICABLE, AND LEAVE ALL SYSTEMS AND EQUIPMENT IN PERFECT WORKING ORDER. THOROUGHLY CLEAN ALL PLUMBING FIXTURES, EXPOSED PIPING, FLOOR DRAIN GRATES, AND CLEANOUT COVERS AS APPLICABLE.

GUARANTEE:

REFER TO ARCHITECTURAL SPECIFICATIONS FOR GUARANTEES, IF NONE EXIST THE FOLLOWING MINIMUM GUARANTEES SHALL BE PROVIDED.

PROVIDE A ONE (1) YEAR GUARANTEE COVERING ALL LABOR AND MATERIAL PROVIDED IN THIS PROJECT. FROM DATE OF OWNER ACCEPTANCE GUARANTEE SHALL INCLUDE ALL SHIPPING AND TRANSPORTATION CHARGES NECESSARY TO RETURN DEFECTIVE MATERIALS TO MANUFACTURER, AS WELL AS LABOR CHARGES NECESSARY TO REMOVE AND REPLACE DEFECTIVE MATERIALS.

DEFECTIVE MATERIALS AND/OR EQUIPMENT MAY BE REPAIRED IN LIEU OF REPLACED WITH PRIOR APPROVAL OF ARCHITECT AND/OR OWNER.

SANITARY WASTE, VENT AND STORM PIPING:

BELOW GRADE AND/OR BELOW FLOOR SLABS WITHIN BUILDING WALLS AND EXTENDING 5'-0" OUTSIDE:
PIPE 6" AND SMALLER: ASTM D2665 SOLID CORE SCHEDULE 40 PVC-DWV WITH SOLVENT WELDED JOINTS INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
FITTINGS: ASTM D1554 SOLVENT CEMENTED.
SOLVENT CEMENT: ASTM D2564.
INSTALLATION: IN ACCORDANCE WITH ASTM D2321.

ABOVE GROUND PIPE AND FITTINGS: CAST IRON HUBLESS SOIL PIPE AND FITTINGS CONFORMING TO THE REQUIREMENTS OF CISPI STANDARD 310 AND LOCAL CODE REQUIREMENTS. HUBLESS COUPLING GASKETS SHALL CONFORM TO ASTM STANDARD C-564. SOLID CORE SCHEDULE 40 PVC IS ACCEPTABLE IN NON-PLENUM SPACES.

UNDERGROUND SEWERS ON SITE EXTENDING BEYOND 5 FEET OUTSIDE OF BUILDING SHALL BE PROVIDED BY SITE UTILITIES CONTRACTOR.

CONDENSATE DRIP PIPING FROM COOLING COIL DRIP PANS:

PIPE: ASTM B88, TYPE L OR TYPE K, SEAMLESS HARD DRAWN COPPER WATER TUBE
FITTINGS: ANSI B16.22, WROUGHT COPPER
JOINTS: ASTM B32-95TA SOLDER JOINT

SOLVENT WELDED SCHEDULE 40 PVC IS ACCEPTABLE FOR OUTDOOR CONDENSATE PIPING.

DOMESTIC WATER PIPING:

ABOVE GROUND:
PIPE 4" AND SMALLER: ASTM B88, TYPE L, SEAMLESS HARD DRAWN RIGID COPPER WATER TUBE.
FITTINGS: ANSI B16.22, WROUGHT COPPER.
JOINTS: ASTM B32-95TA SOLDER JOINT UP TO 2"; BRAZED JOINTS ABOVE 2" OR PRO-PRESS JOINTS. VICTAULIC GROOVED JOINTS ARE ALSO ACCEPTABLE FOR PIPE LARGER THAN 2".

ALL COMPONENTS OF DOMESTIC WATER SYSTEM SHALL BE LEAD FREE.

DOMESTIC WATER VALVES:

BALL VALVES 2" AND SMALLER: APOLLO 77C-140-01 FULL PORT, TWO PIECE WITH SCREWED ENDS, BRONZE BODY AND END PIECE, STAINLESS STEEL BALL, TEFLON SEAT RINGS, STAINLESS STEEL STEM, REINFORCED PTFE TEFLON PACKING WITH BRASS PACKING GLAND, ZINC PLATED STEEL HANDLE WITH PLASTIC GRIP SECURED BY ZINC PLATED STEEL HANDLE NUT, 150 PSI STEAM, 600 PSI WOG WORKING PRESSURE, NIBCO, JOSAM, WATTS.

VALVES 2-1/2" AND LARGER: BUTTERFLY VALVE, GROOVED: GROOVED DUCTILE IRON BODY, SUITABLE FOR INSTALLATION WITH GROOVED PIPING, EPDM COATED STEEL DISC AND SHAFT, STAINLESS STEEL HUB BEARING, EPDM SEAT, TEFLON STEM PACKING. RATED FOR 300 PSI, 230 DEGREES F.
BUTTERFLY VALVE, GROOVED: GROOVED NYLON COATED DUCTILE IRON BODY, EPDM COATED DUCTILE IRON DISC, STAINLESS STEEL SHAFT, BRONZE SHAFT BEARING. MSS SP-67

CHECK VALVES: 150 LB., SWP 300 LB., WOG COMPOSITION DISC, THREADED ENDS. MILWAUKEE NO. 510.

VALVES GENERAL:

PROVIDE ALL VALVES NECESSARY FOR THE PROPER OPERATION AND DRAINAGE OF THE SYSTEMS. PROVIDE DRAIN VALVES AT ALL LOW POINTS IN ALL SYSTEMS.

PROVIDE BALL VALVES AT EACH PIECE OF EQUIPMENT REQUIRING A WATER CONNECTION, IN RISERS AND MAIN BRANCHES AT POINTS OF TAKE-OFF FROM THEIR SUPPLY AND RETURN MAINS, ADJACENT TO CONTROL VALVES AND ALL EQUIPMENT REQUIRING DISCONNECTION FOR REPAIRS.

PROVIDE CHECK VALVES WHERE SHOWN OR NECESSARY TO PREVENT BACKFLOW.

PROVIDE BALANCING VALVES IN LINES WHERE IT IS NECESSARY TO REGULATE THE QUANTITY OF WATER FLOWING IN A CIRCUIT.

ALL VALVES SHALL BE LINE SIZE UNLESS OTHERWISE INDICATED.

ALL PRODUCTS THAT CONSTITUTE A PART OF ANY VALVE ASSEMBLY SHALL BE ASBESTOS-FREE.

PIPING INSTALLATION:

INSTALL ALL PIPING PARALLEL OR PERPENDICULAR TO BUILDING WALL AND COLUMNS IN LOCATIONS TO AVOID INTERFERENCE WITH DUCTWORK, STRUCTURE, OTHER PIPING, LIGHTING AND ELECTRICAL EQUIPMENT OR OTHER EQUIPMENT.

DO NOT LOCATE PIPING ABOVE OR WITHIN 3 FEET HORIZONTALLY OF ELECTRICAL PANELS OR EQUIPMENT.

FOR PIPING PASSING THROUGH WALLS, PACK VOID BETWEEN PIPE AND STRUCTURE WITH APPROVED, NON-COMBUSTIBLE MATERIAL.

DO NOT ALLOW CONTACT BETWEEN PIPING AND MASONRY OF CONCRETE SURFACES.

PROVIDE ALL THE NECESSARY HANGERS, RODS, SUPPORTS, CHANNELS, ANGLES, STRUCTURAL MEMBERS AND CONCRETE INSERTS TO PROPERLY SECURE PIPING AND RELATED EQUIPMENT. ALL SUPPORTS AND PARTS SHALL CONFORM TO THE LATEST REQUIREMENTS OF ANSI CODE FOR PRESSURE PIPING B31.1, AND MSS STANDARD PRACTICE SP-58.

PROTECT ALL INSULATED PIPE LINES AGAINST INSULATION DAMAGE AT ALL HANGERS BY THE USE OF 1 FOOT LONG, 12 GAUGE STEEL SEMI-CIRCULAR SHIELDS FOR PIPE SIZES WITH 12" OD AND LESS (INCLUDING INSULATION) AND 2 FOOT LONG, 1/2" STEEL SEMI-CIRCULAR SHIELDS FOR PIPE SIZES OVER 12" OD (INCLUDING INSULATION). SECURELY CEMENT ALL SHIELDS TO THE INSULATION. PROVIDE RIGID CALSIL PIPE INSULATION INSERTS AT EACH HANGER.

PIPING INSULATION:

ALL ADHESIVES, SEALERS AND COATINGS SHALL BE INCOMBUSTIBLE. INSULATION SHALL BE APPLIED BY EXPERIENCED PIPE COVERERS AS PER BEST TRADE PRACTICE. WHERE EXISTING INSULATED PIPING AND SURFACES ARE EXPOSED DUE TO RENOVATIONS, RE-INSULATE EXPOSED SURFACES TO MATCH THE EXISTING INSTALLATION. APPLY INSULATION TO PIPE LINES AND EQUIPMENT ONLY AFTER TESTING AND INSPECTION, AND ALL SURFACES HAVE BEEN THOROUGHLY CLEANED. MAINTAIN COMPLETE VAPOR BARRIER IN CONDENSATION PIPING SYSTEMS.

DOMESTIC COLD WATER PIPING INSULATION:

FIBERGLASS INSULATION WITH FACTORY-APPLIED VAPOR BARRIER JACKET WITH SELF-SEALING LAPS. ASTM C547 CLASS 1 INSULATION, CONDUCTIVITY OF 0.26. VAPOR BARRIER JACKET: LAMINATED WHITE KRAFT PAPER, ALUMINUM FOIL, GLASS FIBER REINFORCEMENT, PERMEANCE OF 0.2 PERMS, AND PUNCTURE RESISTANCE OF 50 UNITS. COMPOSITE FLAME SPREAD/ SMOKE DENSITY OF 25/50. APPLY INSULATION IN THICKNESS LISTED BELOW.

ALL PIPE SIZES: 1/2" THICK

DOMESTIC HOT WATER, DOMESTIC HOT WATER RETURN PIPING INSULATION:

FIBERGLASS INSULATION WITH FACTORY-APPLIED VAPOR BARRIER JACKET WITH SELF-SEALING LAPS. ASTM C547 CLASS 1 INSULATION, CONDUCTIVITY OF 0.26. VAPOR BARRIER JACKET: LAMINATED WHITE KRAFT PAPER, ALUMINUM FOIL, GLASS FIBER REINFORCEMENT, PERMEANCE OF 0.2 PERMS, AND PUNCTURE RESISTANCE OF 50 UNITS. COMPOSITE FLAME SPREAD/ SMOKE DENSITY OF 25/50. APPLY INSULATION IN THICKNESS LISTED BELOW.

PIPE 1" AND SMALLER: 1-1/2" THICK

PIPE 1-1/4" AND LARGER: 2" THICK

CONDENSATE PIPING INSULATION:

1" THICK OWENS-CORNING FIBERGLAS ASJ-SSL-II "ONE PIECE" PIPE INSULATION WITH FACTORY APPLIED JACKET WITH SELF-SEALING LAP. PROVIDE PVC COVERS BY PROTO OR ZESTON AT ALL FITTINGS AND VALVES.

PLUMBING/PIPING TESTING AND BALANCING:

TEST AND ADJUST ALL NEW PIPING SYSTEMS INSTALLED IN THIS PROJECT. PROVIDE ALL TESTING INSTRUMENTS, GAUGES, PUMPS AND OTHER EQUIPMENT REQUIRED OR NECESSARY FOR TEST. REPAIR ALL DEFECTS DISCLOSED BY TESTS WITHOUT ADDITIONAL COST TO THE OWNER. REPEAT TESTS AFTER ANY DEFECTS DISCLOSED ARE REPAIRED OR REPLACED, UNLESS WAIVED BY ARCHITECT. ARRANGE AND PAY THE COST OF ALL UTILITIES USED ON TESTS. COMPLETE ALL TESTS BEFORE COVERING IS APPLIED. ISOLATE ALL PIPING SYSTEM COMPONENTS NOT CONSTRUCTED TO WITHSTAND TEST PRESSURES. PURIFY WATER SYSTEM IN ACCORDANCE WITH STATE OF MICHIGAN AND AHJ REQUIREMENTS.

DRAINAGE SYSTEM:

THE DRAINAGE SYSTEM SHALL BE TESTED IN ACCORDANCE WITH ALL LOCAL CODES AND REGULATIONS AND IN THE PRESENCE OF THE PROPER INSPECTOR. AIR TEST SHALL BE 5 PSIG AND SHALL REMAIN IN OPERATION FOR A PERIOD OF 15 MINUTES.

WATER SYSTEM:

TEST AT 150 PSIG FOR EIGHT (8) HOURS WITH ZERO LOSS IN PRESSURE. CHECK JOINTS AND FITTINGS FOR LEAKS WITH LIQUID SOAP SOLUTION.

PIPE IDENTIFICATION:

IDENTIFY ALL NEW PIPING INSTALLED IN THIS PROJECT IN ACCORDANCE WITH ANSI A13.1 1981, OSHA, AND OWNER'S STANDARDS USING COILED PLASTIC MARKERS.

PLUMBING FIXTURE CONNECTIONS SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE:

FIXTURE	SOIL OR WASTE	VENT	TRAP	HOT WATER	COLD WATER
WATER CLOSETS (FLUSH VALVE)	4"	2"			1-1/2"
WATER CLOSETS (FLUSH TANK)	4"	2"			1/2"
URINAL	2"	2"			1"
LAVATORY	1-1/2"	1-1/2"	1-1/4"	1/2"	1/2"
DRINKING FOUNTAINS	1-1/2"	1-1/2"	1-1/4"		1/2"
ELECTRIC WATER COOLERS	1-1/2"	1-1/4"			1/2"
SERVICE SINKS	3"	1-1/2"	3"	3/4"	3/4"
SINKS	1-1/2"	1-1/2"	1-1/2"	1/2"	1/2"
WALL/ROOF HYDRANTS					3/4"

CLEANOUTS AND ACCESS COVERS:

PROVIDE CLEANOUTS AT THE FOOT OR BASE OF EACH VERTICAL WASTE OR SOIL STACK, RAIN CONDUCTORS, IN DRAINAGE LINES AT ALL CHANGES IN DIRECTION AND AT 100'-0" INTERVALS.

CLEANOUTS SHALL BE READILY ACCESSIBLE, AND SHALL HAVE 18" CLEARANCE BEHIND THE PLUG FOR RIDDING, EXCEPT WHERE A REMOVABLE ACCESS COVER IS PROVIDED. CLEANOUTS SHALL BE SAME NOMINAL PIPE SIZE AS LINE SERVED, BUT NOT LARGER THAN 4".

PROVIDE CLEANOUTS SPECIFICALLY DESIGNED FOR FLOOR TYPE.

ZURN 1400 SERIES, JAY R. SMITH, JOSAM, WADE.

FLOOR DRAINS:

UNLESS OTHERWISE NOTED, PROVIDE ROUND STRAINER/ GRATE, CAST IRON BODY, SEEPAGE FLANGE AND CLAMPING COLLAR, BOTTOM OUTLET SAME SIZE AS PIPE SERVED, WITH CAULKED, NO-HUB OR NEOPRENE GASKET CONNECTION. LOAD CLASSIFICATIONS PER ASME A112.21.1M. WATERPROOFING: 40 MILS SHEET MEMBRANE, CHLORINATED POLYETHYLENE, CHLORALOY 240.

REFER TO PLUMBING FIXTURE SCHEDULE FOR FLOOR DRAIN TYPES.

VACUUM BREAKERS:

HOSE CONNECTION VACUUM BREAKERS SHALL CONFORM TO ASSE STANDARD 1011, WITH FINISH TO MATCH HOSE CONNECTION.
MANUFACTURERS: CHICAGO, WATTS, KEWANNEE

BACKFLOW PREVENTERS:

REDUCED PRESSURE ZONE: INCLUDES DUAL CHECK VALVES, REDUCED PRESSURE RELIEF VALVE AND AIR VENT, SHUTOFF VALVES ON INLET AND OUTLET, STRAINER ON INLET, TEST PORTS WITH TEST COCKS, MANUFACTURER'S STANDARD MATERIALS. ASSE STANDARD 1013 CERTIFIED. MANUFACTURERS: WATTS 909 SERIES, CONBRACO, FEBCO

DOUBLE CHECK VALVE ASSEMBLIES:

INCLUDES DOUBLE CHECK VALVES, SHUTOFF VALVES ON INLET AND OUTLET, STRAINER ON INLET, TEST PORTS WITH TEST COCKS, MANUFACTURER'S STANDARD MATERIALS. ASSE STANDARD 1015 CERTIFIED. MANUFACTURER: WATTS 709 SERIES, CONBRACO, FEBCO.

BACKFLOW PREVENTERS (AT APPLIANCE CONNECTIONS):

DUAL CHECK VALVE: INCLUDES TWO REMOVABLE CHECK VALVE ASSEMBLIES, MANUFACTURER'S STANDARD MATERIALS. ASSE STANDARD 1024 CERTIFIED. MANUFACTURERS: WATTS 7 SERIES, CONBRACO, FEBCO.

ATMOSPHERIC VACUUM BREAKERS:

SINGLE FLOAT AND DISC WITH LARGE ATMOSPHERIC PORT. ANGLE PATTERN BRASS BODY, WITH CHROME PLATED FINISH, ½" INLET AND OUTLET UNLESS OTHERWISE NOTED. ASSE STANDARD 1001 CERTIFIED. MANUFACTURERS: WATTS 288A SERIES, CHICAGO WATER SAVER MODEL L-102.

PRESSURE TYPE VACUUM BREAKERS:

SPRING LOADED SINGLE FLOAT AND DISC WITH INDEPENDENT FIRST CHECK VALVE, MANUFACTURER'S STANDARD MATERIALS, WITH TEST COCKS AND BALL TYPE ISOLATION VALVES. ASSE STANDARD 1020 CERTIFIED. MANUFACTURERS: WATTS 800 SERIES, CONBRACO, FEBCO.

WATER HAMMER ARRESTORS:

CERTIFIED PER PDI STANDARD WH-201. BELLOWS TYPE, WITH STAINLESS STEEL CASING AND BELLOWS, PRESSURE RATED FOR 250 PSI. PISTON TYPE, PRECHARGED TO 60 PSIG, SUITABLE FOR INSTALLATION IN ANY POSITION. PROVIDE ON ALL QUICK CLOSING VALVES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS FOR PROPER OPERATION. MANUFACTURERS: (BELLOWS) ZURN SHOKTROL OR BY JAY R. SMITH, WADE; (PISTON) SIOUX CHIEF

SHEET METAL NOTES:

DEGREASE AND TREAT ALL EXPOSED DUCTWORK SO IT IS SUITABLE FOR PAINTING.

BLANK-OFF RETURN DUCTWORK IN AREAS OF WORK THAT CREATES DUST TO PREVENT DEBRIS FROM ENTERING MECHANICAL SYSTEM. PROTECT ALL DUCTWORK DURING CONSTRUCTION BY SEALING OPEN ENDS.

DUCTWORK: ALL DUCTWORK AND SHALL BE CONSTRUCTED AND SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST SMACNA'S ISSUE OF DUCT CONSTRUCTION STANDARDS. IN ADDITION, ALL CONCEALED JOINTS AND SEAMS SHALL BE SEALED WITH DUCT SEALANT EQUAL TO FOSTER #32-14. APPROVED SEALANT MANUFACTURERS: 3M COMPANY, BENJAMIN FOSTER COMPANY, UNITED SHEET METAL, FLINTKOTE. ALL EXPOSED ROUND SPIRAL DUCTWORK SHALL BE MANUFACTURED BY EASTERN SHEET METAL, SEMCO, LYNDEN OR U.S. SHEET METAL. EXPOSED DUCTWORK SHALL HAVE SELF SEALING GASKETS WITH ALL MANUFACTURED FITTINGS. NO DUCT SEALANT ALLOWED ON EXPOSED DUCTWORK. ALL DUCTWORK SHALL BE DESIGNED FOR +/- 2" W.G. STATIC PRESSURE BUT NOT LESS THAN 26 GA. THICKNESS. PROVIDE DOUBLE WALL INSULATED DUCTWORK WHERE INDICATED ON PLAN.

ALL ROUND TAKE-OFFS DOWNSTREAM OF TERMINAL UNITS SHALL BE MADE WITH CONICAL TAKE-OFF SPIN-IN FITTINGS TYPE SM-2DG, WITH FACTORY INSTALLED ADJUSTABLE DAMPER AS MANUFACTURED BY GENERAL ENVIRONMENT CORPORATION, GLENDALE, CALIFORNIA OR EQUAL.

FLEXIBLE CONNECTIONS: AT EACH POINT OF CONNECTION OF DUCTWORK TO FANS, PROVIDE A FLEXIBLE CONNECTION, VENTFABRICS, INC., "VENTGLAS L.A." NOT LESS THAN 12" IN LENGTH AND MADE OF HEAVY GRADE GLASS FABRIC DOUBLE COATED WITH NEOPRENE AND PROVIDED WITH A SUITABLE FRAME AT EACH END ARRANGED FOR BOLTING TO INLET AND OUTLET OF FAN AND DUCTWORK, RESPECTIVELY. PROVIDE EXTERIOR U/V RESISTANT CONNECTIONS OUTDOORS.

VANES AND DEFLECTORS: ALL ELBOWS AND TURNS SHALL BE MADE WITH A RADIUS NOT LESS THE 1-1/2" TIMES THE DUCT DIAMETER OR WIDTH. WHERE BUILDING CONSTRUCTION DOES NOT PERMIT A LONG RADIUS ELBOW OR TURN OR IF SHOWN ON THE CONTRACT DOCUMENTS, ACOUSTICAL TURNING VANES AND DEFLECTORS SHALL BE PROVIDED IN ALL ELBOWS.

FLEXIBLE DUCTWORK: ALL LOW PRESSURE AND HIGH PRESSURE FLEXIBLE DUCT SHALL BE FLEXMASTER USA, INC., TYPE #1M INSULATED FLEXIBLE DUCT CONSISTING OF A FACTORY FABRICATED ASSEMBLY OF A TRILAMINATE ALUMINUM FOIL, FIBERGLASS AND POLYESTER. THE FLEXIBLE DUCT SHALL BE UL LISTED 181 CLASS 1 AIR DUCT AND COMPLY WITH NFPA 90A AND 90B AND HAVE A FLAME SPREAD OF NOT OVER 25 AND A SMOKE DEVELOPED OF NOT OVER 50. THE FLEXIBLE DUCT SHALL HAVE A MINIMUM PRESSURE RATING OF 12" WC THROUGH TEMPERATURE RANGE OF -20 DEGREES F. TO + 250 DEGREES F.

DUCT INSULATION - GENERAL:

DUCTWORK SHALL BE THERMALLY INSULATED AS SPECIFIED.

ALL DUCT INSULATION SHALL HAVE A FLAME SPREAD CLASSIFICATION OF 25 OR LESS, A FUEL CONTRIBUTED RATING OF 35 OR LESS AND SMOKE DEVELOPED RATING OF 50 OR LESS, AS RATED BY UNDERWRITERS' LABORATORIES.

BLANKET TYPE (UP TO 1-1/2 LB./CU. FT. INSULATION):

INSULATION WITH ATTACHED FACING SHALL BE SECURED TO THE DUCTS WITH ADHESIVE APPLIED IN 6" BRUSH WIDTHS EVERY 12". THE ADHESIVE SHALL BE RIDGED SLIGHTLY BY USING A SERRATED TROWEL.

INSULATION WITHOUT ATTACHED FACING (PLAIN) SHALL BE SECURED TO THE DUCTS THE SAME AS ABOVE THEN BIND WITH TYING CORD, SPIRAL WRAPPED OR HALF HITCHED.

DUCT FITTINGS SHALL BE INSULATED BY WRAPPING WITH A GLASS FIBER BLANKET. BLANKETS SHALL BE SECURED TO THE DUCT FITTINGS BY INSULATION STAPLES OR JUTE TWINE. THE BLANKET SHALL BE COVERED WITH AN OPEN MESH CLOTH OR GLASS FIBER HEAVILY COATED WITH VAPOR BARRIER ADHESIVE. THE INSULATION THICKNESS SHALL BE EQUAL TO THE THICKNESS OF THE INSULATION ON THE ADJOINING DUCTWORK.

DUCTWORK WITH ACOUSTICAL INTERNAL LINING SHALL BE 1" ARMAFLEX ANTIMICROBIAL CLOSED CELL INSULATION.

DUCT INSULATION APPLICATION:

THE FOLLOWING DUCTWORK SHALL BE INSULATED AS DESCRIBED HEREIN. REFER TO PREVIOUS PARAGRAPHS FOR RELATED INSULATION MATERIALS, DUCT INSULATION AND FINISH APPLICATIONS.

CONCEALED AIR CONDITIONING SUPPLY AIR DUCTWORK, CONCEALED OUTDOOR INTAKE DUCTWORK AND CONCEALED MIXING PLENUMS: (THIS INCLUDES DUCTWORK IN CEILING SPACES USED AS RETURN AIR PLENUM, DUCTWORK IN UNVENTED ATTIC SPACES OR UNVENTED CEILINGS SPACES WITH ROOF INSULATION). OWENS-CORNING FIBERGLAS FACED DUCTWRAP COMMERCIAL GRADE TYPE 100 1-1/2" THICK, MINIMUM INSTALLED R VALUE 4.5, 1 LB./CU. FT. DENSITY WITH FACTORY "FRK" VAPOR BARRIER JACKET OR LAMINATED ALUMINUM FOIL, OPEN MESH GLASS FIBER REINFORCING MESH SCRIM AND FLAMEPROOF KRAFT PAPER.

HEATING AND AIR CONDITIONING SUPPLY AIR DUCTWORK, OUTDOOR AIR INTAKE DUCTWORK, RETURN AIR DUCTWORK AND MIXING PLENUMS LOCATED IN CONCEALED SPACES VENTED TO THE OUTDOORS (THIS INCLUDES DUCTWORK IN VENTED CEILING SPACES OR ATTICS) AND IN UNVENTED ATTICS OR CEILINGS SPACES WITH INSULATED CEILINGS: OWENS-CORNING FIBERGLAS FACED DUCTWRAP COMMERCIAL GRADE TYPE 100 2" THICK MINIMUM INSTALLED R VALUE 6.0 1 LB./CU. FT. DENSITY WITH FACTORY "FRK" VAPOR BARRIER JACKET OR LAMINATED ALUMINUM FOIL, OPEN MESH GLASS FIBER REINFORCING MESH SCRIM AND FLAMEPROOF KRAFT PAPER.

INSULATION IS NOT REQUIRED ON EXPOSED SUPPLY DUCTWORK, RETURN DUCTWORK AND EXHAUST DUCTWORK.

AIR TESTING AND BALANCING:

BALANCE ALL OUTLETS AND TERMINAL BOXES TO WITHIN 10% OF RATED C.F.M IN ACCORDANCE WITH AABC AND NEBB, SUBMIT BALANCING REPORT.

TEMPERATURE CONTROLS:

PROVIDE COMPLETE AND OPERABLE CONTROLS SYSTEM INCLUDING ALL WIRING, SENSORS, HARDWARE, SOFTWARE AND PROGRAMMING. TAKE POWER FROM SPARE 120V CIRCUIT OR EXTEND FROM EXISTING TRANSFORMER W/ SPARE CAPACITY. ALL WIRING SHALL BE IN ACCORDANCE WITH ELECTRICAL SPECIFICATIONS.

REFER TO MECHANICAL CONTROLS SHEET FOR ADDITIONAL SPECIFICATION REQUIREMENTS.

FIRE SUPPRESSION

1.01 SUBMITTALS:

A. SHOP DRAWINGS AND PRODUCT DATA:

1. BEFORE ANY WORK IS COMMENCED, SUBMIT COMPLETE SETS OF THE FOLLOWING: SHOP DRAWINGS, SPRINKLER SYSTEM HYDRAULIC CALCULATIONS, STANDPIPE SYSTEM HYDRAULIC CALCULATIONS, , MATERIAL AND EQUIPMENT LISTS AND FULL DESCRIPTIVE DATA FOR EACH SYSTEM ALL IN ACCORDANCE WITH NFPA 13 FOR APPROVAL TO:
   a. INSURANCE CARRIER.
   b. LOCAL FIRE MARSHAL.
   c. OWNER.
   d. ARCHITECT.
2. OBTAIN APPROVAL OF SHOP DRAWINGS, HYDRAULIC CALCULATIONS, AND PRODUCT DATA FROM THE FIRE MARSHAL AND THE INSURANCE CARRIER PRIOR TO SUBMISSION TO THE OWNER AND THE ARCHITECT.
3. INCLUDE IN SHOP DRAWINGS REFLECTED CEILING PLANS SHOWING SPRINKLER HEAD LOCATIONS.
4. SUBMIT SPRINKLER DRAWINGS WHICH ARE LEGIBLE AND SHOW:
   a. EXACT PIPING ARRANGEMENT AND SHOW ALL PIPE LENGTHS, VALVES, FITTINGS AND VALVES.
   b. SECTION VIEWS AND SUFFICIENT NOTES TO PROVIDE FULL DESCRIPTIVE DATA FOR REVIEW, EXCEPT FOR FLOW-REQUIREMENTS WHICH SHALL BE SHOWN ON CALCULATION SHEETS.
5. COORDINATION WITH ALL DRAWINGS IS REQUIRED FOR BIDDING AND INSTALLATION.
6. SUBMIT MANUFACTURERS DATA SHEETS ON ALL SYSTEM
7. PROVIDE FIRE-HYDRANT FLOW TEST REPORT:

PART 2 - PRODUCTS

2.01 MATERIALS:

A. ABOVEGROUND PIPING:

1. STANDARD-WEIGHT STEEL PIPE: ASTM A53, ASTM A135, OR ASTM A795; SCHEDULE 40 IN NPS 6 (DN150) AND SMALLER AND SCHEDULE 30 IN NPS 8 (DN200) AND LARGER.
2. SCHEDULE 30 STEEL PIPE: ASTM A135 OR ASTM A795, WITH WALL THICKNESS LESS THAN SCHEDULE 40 AND EQUAL TO OR GREATER THAN SCHEDULE 30 OR ASTM A795 AND ASME B36.10M, SCHEDULE 30 WROUGHT-STEEL PIPE.
3. THINWALL, THREADABLE STEEL PIPE: ASTM A135, OR ASTM A795, WITH WALL THICKNESS LESS THAN SCHEDULE 40 AND GREATER THAN SCHEDULE 10.
4. SCHEDULE 10 STEEL PIPE: ASTM A135 OR ASTM A795, SCHEDULE 10 IN NPS 5 (DN125) AND SMALLER AND NFPA 13 SPECIFIED WALL THICKNESS IN NPS 6 TO NPS 10 (DN150 TO DN250).
5. AS AN ALTERNATE TO SOLID PIPING OFFSETS IN SPRINKLER PIPING DROPS TO ATTAIN CENTER OF CEILING TILE LOCATIONS, THE FOLLOWING FLEXIBLE SYSTEM IS ACCEPTABLE.
   a. PROVIDE SPRINKLER SYSTEM FINAL CONNECTIONS TO THE CENTER OF CEILING OF CEILING TILE BY MEANS OF AN FM APPROVED, BRAIDED, STAINLESS STEEL, ONE-PIECE, LEAK TESTED FLEXIBLE PIPE DROP INCLUDING A CEILING GRID MOUNTING BRACKET, AN ADJUSTABLE FLANGE AND AN FM/UL LISTED SPRINKLER HEAD AS SPECIFIED. PROVIDE UNITS AS MANUFACTURED BY FLEXHEAD INDUSTRIES OR AS APPROVED.

B. ABOVE GROUND FITTINGS:

1. CAST-IRON THREADED FLANGES: ASME B16.1.
2. CAST-IRON THREADED FITTINGS: ASME B16.4.
3. MALLEABLE-IRON THREADED FITTINGS: ASME B16.3.
4. STEEL, THREADED COUPLINGS: ASTM A865.
5. STEEL WELDING FITTINGS: ASTM A234/A234M, ASME B16.9, OR ASME B16.11.
6. STEEL FLANGES AND FLANGED FITTINGS: ASME B16.5.
7. STEEL, GROOVED-END FITTINGS: UL-LISTED AND FM-APPROVED, ASTM A47 (ASTM A47M), MALLEABLE IRON OR ASTM A536, DUCTILE IRON; WITH DIMENSIONS MATCHING STEEL PIPE AND ENDS FACTORY GROOVED ACCORDING TO AWWA C606.

C. ABOVE GROUND FIRE PROTECTION SERVICE VALVES:

1. GENERAL: UL LISTED AND FM APPROVED, WITH MINIMUM 175-PSIG (1200 KPA) NONSHOCK WORKING-PRESSURE RATING. VALVES FOR GROOVED-END PIPING MAY BE FURNISHED WITH GROOVED ENDS INSTEAD OF TYPE OF ENDS SPECIFIED.
2. GATE VALVES: NPS 2 (DN50) AND SMALLER: UL 262; CAST-BRONZE, THREADED ENDS; SOLID WEDGE; OS&Y, AND RISING STEM. VISUAL INDICATOR: WITH ELECTRICAL 115-V AC, PREWIRED,TWO-CIRCUIT, SUPERVISORY SWITCH.
3. GATE VALVES, NPS 2-1/2 (DN65) AND LARGER: UL 262, IRON BODY, BRONZE MOUNTED, TAPER WEDGE, OS&Y, AND RISING STEM. INCLUDE REPLACEABLE, BRONZE, WEDGE FACING RINGS AND FLANGED ENDS. VISUAL INDICATOR: WITH ELECTRICAL 115-V AC, PREWIRED, TWO-CIRCUIT, SUPERVISORY SWITCH
4. SWING CHECK VALVES, NPS 2 (DN50) AND SMALLER: UL 312 OR MSS SP-80, CLASS 150; BRONZE BODY WITH BRONZE DISC AND THREADED ENDS.
5. SWING CHECK VALVES: NPS 2-1/2 (DN65) AND LARGER: UL 312, CAST-IRON BODY AND BOLTED CAP, WITH BRONZE DISC OR CAST-IRON DISC WITH BRONZE-DISC RING AND FLANGED ENDS.
6. SPLIT-CLAPPER CHECK VALVES, NPS 4 (DN100) AND LARGER: UL 312, CAST-IRON BODY WITH RUBBER SEAL, BRONZE-ALLOY DISCS, AND STAINLESS STEEL SPRING AND HINGE PAN.
7. DRAIN & TEST VALVES NEED NOT BE OS&Y.

2.02 WATER FLOW SWITCHES:

A. PROVIDE UL-LISTED OR FM-APPROVED WATER FLOW TYPE SWITCHES AND/OR WATER PRESSURE TYPE FLOW SWITCHES OF THE VANE TYPE DESIGN AS SHOWN AND WHERE REQUIRED, COMPATIBLE WITH THE PIPE SIZE AND PIPE MATERIAL UTILIZED.
B. ON SYSTEMS WHERE PRESSURE FLUCTUATIONS COULD CAUSE FALSE WATER FLOW ALARMS, PROVIDE SWITCHES WITH AN ADJUSTABLE RETARD FEATURE.
C. PROVIDE SWITCHES WITH SINGLE OR DOUBLE-POLE, DOUBLE THROW CONTACTS RATED AT 1.0 AMPS, 120 VOLTS, 60 HERTZ AC AND 0.25 AMPS, 24 VOLTS, DC. COORDINATE WITH SECTION 16800 TO DETERMINE THE EXACT ELECTRICAL REQUIREMENTS OF THE FLOW SWITCHES TO ENSURE THEIR COMPATIBILITY WITH THE FIRE ALARM SYSTEM.
D. PROVIDE SWITCHES WITH A TAMPER SWITCH ON THE WIRING COMPARTMENT COVER PLATE.
E. PROVIDE SWITCHES RATED FOR A MINIMUM OF 250 PSI WORKING PRESSURE.
F. PROVIDE SWITCHES WITH AN ADDRESSABLE MODULE.
G. WIRING OF SWITCHES INTO THE FIRE ALARM SYSTEM IS BY FAC.
H. PROVIDE SWITCHES AT THE FOLLOWING LOCATIONS:
   1. IN THE SPRINKLER/STANDPIPE RISER AS PART OF THE ALARM VALVE TRIM.
   2. ADJACENT TO EACH SPRINKLER ZONE CONTROL VALVE.

2.03 SUPERVISORY TAMPER SWITCHES:

A. PROVIDE UL LISTED AND FM APPROVED SUPERVISORY TAMPER SWITCHES ON ALL MANUALLY OPERATED VALVES WHOSE POSITION COULD IMPAIR ANY PART OF ALL OF SPRINKLER SYSTEM OPERATION.
B. PROVIDE SWITCHES WITH R DOUBLE-POLE, DOUBLE-THROW CONTACTS RATED AT 1.0 AMPS, 120 VOLTS, 60 HERTZ, AC AND 0.25 AMPS, 24 VOLTS DC. COORDINATE WITH SECTION 16800 TO DETERMINE THE EXACT ELECTRICAL REQUIREMENTS OF THE SUPERVISORY TAMPER SWITCHES TO ENSURE THEIR COMPATIBILITY WITH THE FIRE ALARM SYSTEM.
C. PROVIDE SWITCHES WITH A GASKETED, WATERTIGHT WIRING COMPARTMENT COVERPLATE.
D. PROVIDE EXPLOSION-PROOF SWITCHES IN HAZARDOUS AREAS.
E. WIRING OF SWITCHES INTO THE FIRE ALARM SYSTEM IS SPECIFIED IN DIVISION 16.

2.04 ALARM VALVE:

A. PROVIDE A UL-LISTED AND FM-APPROVED ALARM CHECK VALVE, RATED AT A MINIMUM OF 300 PSIG WORKING PRESSURE, CAPABLE OF BEING INSTALLED VERTICALLY OR HORIZONTALLY. PROVIDE VALVE BODY OF DUCTILE IRON WITH FLANGED OR GROOVED CONNECTIONS. PROVIDE VALVE WITH A BRASS SEAT, AND SINGLE HINGE PIN AND LATCH DESIGN. PROVIDE VARIABLE PRESSURE TRIM SET WITH RETARD CHAMBER, DRAIN CONNECTIONS, PRESSURE GAUGES AND CONNECTIONS FOR (ELECTRIC ALARM PRESSURE SWITCH) (WATER MOTOR GONG ALARM). DO NOT DISCHARGE THE DRIP CUP ASSEMBLY INTO THE MAIN DRAIN PIPING. THE VIKING CORP. "MODELJ-1", OR AS APPROVED.

2.05 ACCESSORIES:

A. HANGER AND SUPPORTS:
   1. FURNISH HANGERS AND SUPPORTS IN ACCORDANCE WITH NFPA 13
B. IDENTIFICATION SIGNS:
   1. ATTACH PROPERLY LETTERED, APPROVED IDENTIFICATION SIGNS CONFORMING TO NFPA 13 TO EACH VALVE AND ALARM DEVICE. PERMANENTLY AFFIX A DESIGN DATA NAMEPLATE TO THE RISER OF THE SYSTEM.
C. PRESSURE GAGES:
   1. PROVIDE PRESSURE GAGES ON THE SUCTION AND DISCHARGE SIDES OF THE FIRE PUMP.
   2. PROVIDE PRESSURE GAGES ON BOTH SIDES OF THE WET PIPE SPRINKLER SYSTEM ALARM VALVE AND AT THE TOP OF EACH STANDPIPE RISER.
   3. PROVIDE UL-LISTED SPRING PRESSURE GAGES WITH A 3-1/2-INCH DIAL AND BE DRAINABLE.
   4. PROVIDE ANY ADDITIONAL GAUGES REQUIRED BY NFPA 13, 14 AND 20, NOT SPECIFICALLY LISTED HERE.
D. INSPECTORS TEST CONNECTION AND DRAINS:
   1. PROVIDE AN INSPECTORS TEST CONNECTION AND DRAIN SYSTEM (RISER AND LOW POINT DRAIN) IN ACCORDANCE WITH NFPA 13 FOR EACH ZONE.
   2. PROVIDE A SECTIONAL DRAIN VALVE AND COMMON DRAIN PIPING TO THE NEAREST FLOOR DRAIN FOR DRAINAGE.
   3. PROVIDE A TEST VALVE, SIGHT GLASS, SPRINKLER ORIFICE EQUIVALENT AND PIPING TRIM TO THE COMMON DRAIN PIPING FOR SYSTEM TESTING.

PART 3 - EXECUTION

3.01 PIPING APPLICATIONS:

A. INSTALL ALL PIPING SYSTEMS IN FULL ACCORDANCE WITH NFPA 13 AND THE AUTHORITY HAVING JURISDICTION.

Sheet Size - 30x42

04.18.2025	BIDS/PERMIT
03.10.2025	OWNER REVIEW

DATE ISSUED

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HOBBS + BLACK
ARCHITECTS
100 N. State St.
Ann Arbor, MI 48104
P. 734.663.4189
www.hobbs-black.com

DETROIT DIESEL CORP.
DETROIT DIESEL SECOND FLOOR RENNOVATION
13400 W. OUTER DR,
DETROIT MI

PROJECT

MAENGINEERING
MECHANICAL ELECTRICAL
180 High Oak Road
Bloomfield Hills, Michigan
48304
t | 248 | 258 | 1610
f | 248 | 258 | 9538

CONSULTANT

STATE OF MICHIGAN
JOHN D.
RICHARDS
ENGINEER
No.
6201034544
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

MECHANICAL SPECIFICATIONS

SHEET TITLE

24-103

PROJECT NUMBER

M-701.2

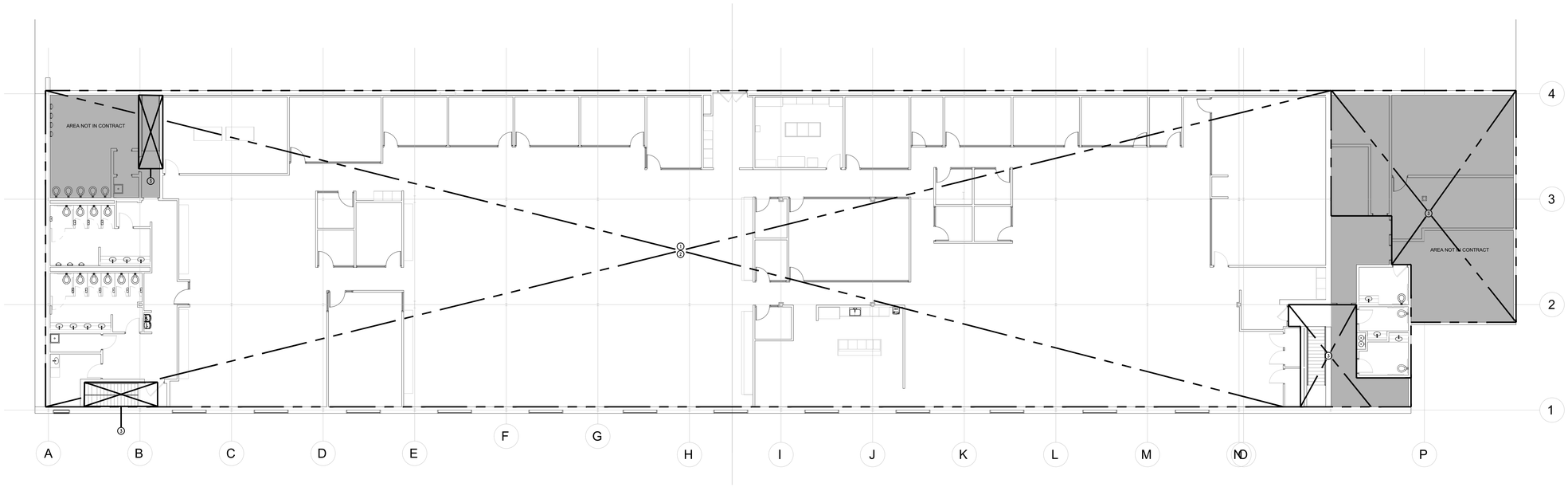
SHEET NUMBER

FIRE PROTECTION GENERAL NOTES:

1. PROVIDE CONCEALED TYPE SPRINKLER HEADS IN ALL FINISHED CEILING AREAS. REFER TO REFLECTED CEILING PLAN.
2. ALL SPRINKLERS LOCATED IN LAY-IN CEILINGS SHALL BE CENTERED IN THE MIDDLE OF THE CEILING TILES UNLESS OTHERWISE INDICATED ON THE ARCHITECTURAL SERIES DRAWINGS.
3. THOUGH SOME FIRE PROTECTION MAINS ARE SHOWN ON THE DRAWINGS, ADDITIONAL PIPING ARE EXISTING AND REQUIRED TO BE REMOVED & TRASHED. FIELD VERIFY LOCATION PRIOR TO START OF DEMOLITION.
4. EXISTING FIRE ALARM SYSTEM IS HONEYWELL.

KEY NOTES:

1. REMOVE THE EXISTING SPRINKLER SYSTEM IN THE AREA INDICATED TO THE MAIN RISER(S).
2. FOR THE AREA INDICATED PROVIDE A HYDRAULICALLY DESIGNED SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13, MICHIGAN BUILDING CODE, THE OWNER'S INSURANCE UNDERWRITER, AND THE AHJ.
3. EXTEND NEW FIRE PROTECTION SYSTEM BRANCH AND RECONNECT TO ANY PIPING SERVING EXIT STAIR OR OTHER AREAS ON FLOOR NOT IN RENOVATION SCOPE.



1 / FP-101 LEVEL 2 FIRE PROTECTION PLAN
SCALE - 1/8" = 1'-0"

NORTH

04.18.2025 BIDS/PERMIT
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LEVEL 2 FIRE PROTECTION PLAN

SHEET TITLE

24-103

PROJECT NUMBER

FP-101.2

SHEET NUMBER

480V., THREE PHASE CIRCUIT LENGTH TABLE

BREAKER AMPACITY (AMPS)	MAX. CIRCUIT LOAD (AMPS)	MAXIMUM LENGTH IN FEET																					
		NO.12	NO.10	NO.8	NO.6	NO.4	NO.2	NO.1	1/0	2/0	3/0	4/0	250	350	500	2-3/0	2-4/0	2-250	2-350	2-500	3-300	3-400	4-350	4-500	5-500	6-500
20	16	253	403	642	1019	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
30	24	–	269	428	679	1079	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
40	32	–	–	321	509	809	1293	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
50	40	–	–	–	408	648	1034	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
60	48	–	–	–	–	540	862	1083	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
70	56	–	–	–	–	–	739	928	1169	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
80	64	–	–	–	–	–	646	812	1023	1286	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
90	72	–	–	–	–	–	574	722	909	1143	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
100	80	–	–	–	–	–	–	650	818	1029	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
125	100	–	–	–	–	–	–	–	655	823	1043	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
150	120	–	–	–	–	–	–	–	546	689	869	1107	–	–	–	–	–	–	–	–	–	–	–	–	–	–
175	140	–	–	–	–	–	–	–	–	588	745	949	1110	–	–	–	–	–	–	–	–	–	–	–	–	–
200	160	–	–	–	–	–	–	–	–	–	652	830	971	1360	–	–	–	–	–	–	–	–	–	–	–	–
225	180	–	–	–	–	–	–	–	–	–	–	738	863	1209	1743	–	–	–	–	–	–	–	–	–	–	–
250	200	–	–	–	–	–	–	–	–	–	–	–	777	1088	1569	1043	–	–	–	–	–	–	–	–	–	–
300	240	–	–	–	–	–	–	–	–	–	–	–	–	907	1307	869	1107	–	–	–	–	–	–	–	–	–
350	280	–	–	–	–	–	–	–	–	–	–	–	–	1120	745	949	1110	–	–	–	–	–	–	–	–	–
400	320	–	–	–	–	–	–	–	–	–	–	–	–	980	652	830	971	1360	–	–	–	–	–	–	–	–
450	360	–	–	–	–	–	–	–	–	–	–	–	–	–	–	738	863	1209	–	–	–	–	–	–	–	–
500	400	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	777	1088	1569	–	–	–	–	–	–	–
600	480	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	907	1307	1165	–	–	–	–	–	–
700	560	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1120	999	1346	–	–	–	–	–
800	640	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	874	1177	1360	–	–	–	–
1000	800	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	942	1088	1569	–	–	–
1200	960	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	785	907	1307	–	–	–
1600	1200	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	980	1226	1307
1800	1440	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1089	1177
2000	1600	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	980	1137

208V. SINGLE PHASE CIRCUIT LENGTH TABLE

BREAKER AMPACITY (AMPS)	MAX. CIRCUIT LOAD (AMPS)	MAXIMUM LENGTH IN FEET				
		NO.12	NO.10	NO.8	NO.6	NO.4
20	4	380	605	964	–	–
	8	190	302	482	765	–
	12	127	202	321	510	810
	16	95	151	241	382	607
30	24	–	101	161	255	405
40	32	–	–	121	191	304
50	40	–	–	–	153	243
60	48	–	–	–	–	202

120V. SINGLE PHASE CIRCUIT LENGTH TABLE

BREAKER AMPACITY (AMPS)	MAX. CIRCUIT LOAD (AMPS)	MAXIMUM LENGTH IN FEET				
		NO.12	NO.10	NO.8	NO.6	NO.4
20	4	220	349	556	882	–
	8	110	174	278	441	701
	12	73	116	185	294	467
	16	55	87	139	221	350
30	24	–	58	93	147	234
40	32	–	–	70	110	175
50	40	–	–	–	88	140
60	48	–	–	–	–	117

208V. THREE PHASE CIRCUIT LENGTH TABLE

BREAKER AMPACITY (AMPS)	MAX. CIRCUIT LOAD (AMPS)	MAXIMUM LENGTH IN FEET				
		NO.12	NO.10	NO.8	NO.6	NO.4
20	4	439	698	1113	–	–
	8	220	349	557	883	–
	12	127	233	371	589	935
	16	95	175	278	442	701
30	24	–	116	186	294	468
40	32	–	–	139	221	351
50	40	–	–	–	177	281
60	48	–	–	–	–	234

FEEDER & BRANCH CIRCUIT SIZING SCHEDULE – NONLINEAR LOADS

OVERCURRENT DEVICE RATING (AMPERES)	WIRE SIZE – AWG OR KCMIL		CONDUIT SIZE			NOTE
	PHASE & NEUTRAL	E.G.	2. WIRE+G.	3. WIRE+G. (NOTE-7)	4. WIRE+G (3PH. & 3N.)	
15–20	12	12	3/4"	3/4"	3/4"	
25–30	10	10	3/4"	3/4"	3/4"	
35–40	8	10	3/4"	1"	1"	
45–50	8(6)	10	3/4"(1")	1"	1"(1 1/4")	
60	6(4)	10	1"(1 1/4")	1"(1 1/4")	1 1/4"	
70	6(4)	8	1"(1 1/4")	1"(1 1/4")	1 1/4"	
80–90	4(2)	8	1 1/4"	1 1/4"(1 1/2")	1 1/4"(1 1/2")	
100	3(2)	8	1 1/4"	1 1/2"	1 1/2"	
110	2(1)	6	1 1/2"	2"	2"	
125	1(1/0)	6	1 1/2"(2")	2"	2"	
150	1/0	6	2"	2"	2"	
175	2/0	6	2"	2"	2 1/2"	
200	3/0	6	2"	2 1/2"	2 1/2"	
225	4/0	4	2 1/2"	2 1/2"	3"	
250	250	4	3"	3"	3"	
300	350	4	3"	3 1/2"	3 1/2"	
350	500	3	3 1/2"	4"	4"	
400	500	3	3 1/2"	4"	4"	
450	2–4/0	2–2	2–2 1/2"	2–2 1/2"	2–3"	
500	2–250	2–2	2–3"	2–3"	2–3"	
600	2–350	2–1	2–3"	2–3 1/2"	2–3 1/2"	
700	2–500	2–1/0	2–3 1/2"	2–4"	2–4"	
800	2–500	2–1/0	2–3 1/2"	2–4"	2–4"	
1000	3–400	3–2/0	3–3"	3–3 1/2"	3–4"	
1200	4–350	4–3/0	4–3"	4–3 1/2"	4–3 1/2"	
1600	5–400	5–4/0	5–3"	5–3 1/2"	5–4"	
2000	6–400	6–250	6–3"	6–3 1/2"	6–4"	

FEEDER & BRANCH CIRCUIT SIZING SCHEDULE – GENERAL PURPOSE

OVERCURRENT DEVICE RATING (AMPERES)	WIRE SIZE – AWG OR KCMIL		CONDUIT SIZE			NOTE
	PHASE & NEUTRAL	E.G.	2. WIRE+G.	3. WIRE+G.	4. WIRE+G (3PH. & 1N.)	
15–20	12	12	3/4"	3/4"	3/4"	
25–30	10	10	3/4"	3/4"	3/4"	
35–40	8	10	3/4"	3/4"	3/4"	
45–50	8(6)	10	3/4"	3/4"	3/4"(1")	
60	6(4)	10	3/4"(1")	3/4"(1")	1"(1 1/4")	
70	6(4)	8	3/4"(1")	3/4"(1")	1"(1 1/4")	
80–90	4(2)	8	1"	1"(1 1/4")	1 1/4"	
100	3(2)	8	1"(1 1/4")	1 1/4"	1 1/4"	
110	2(1)	6	1 1/4"	1 1/4"(1 1/2")	1 1/4"(1 1/2")	
125	1(1/0)	6	1 1/4"	1 1/2"	1 1/2"(2")	
150	1/0	6	1 1/4"	1 1/2"	2"	
175	2/0	6	1 1/2"	2"	2"	
200	3/0	6	1 1/2"	2"	2"	
225	4/0	4	2"	2"	2 1/2"	
250	250	4	2"	2 1/2"	2 1/2"	
300	350	4	2 1/2"	3"	3"	
350	500	3	3"	3"	3 1/2"	
400	500	3	3"	3"	3 1/2"	
450	2–4/0	2–2	2–3"	2–3"	2–2 1/2"	
500	2–250	2–2	2–3"	2–2 1/2"	2–2 1/2"	
600	2–350	2–1	2–3 1/2"	2–3"	2–3"	
700	2–500	2–1/0	2–3"	2–3"	2–3 1/2"	
800	2–500	2–1/0	2–3"	2–3"	3–3 1/2"	
1000	3–400	3–2/0	3–3 1/2"	3–3"	3–3"	
1200	4–350	4–3/0	4–3 1/2"	4–3"	4–3"	
1600	5–400	5–4/0	5–3 1/2"	5–3"	5–3"	
2000	6–400	6–250	6–3 1/2"	6–3"	6–3"	

TRANSFORMER CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE TYPE (NOTE 6)

TRANSF. KVA	PRIMARY CIRCUIT		SECONDARY CIRCUIT	
	SWITCH/FUSE OR CIRCUIT BREAKER	PRIMARY FEEDER	SWITCH/FUSE OR CIRCUIT BREAKER	SECONDARY FEEDER
9	30/20A.	20A., 3W.	30/30A.	30A., 4W.
15	30/25A.	25A., 3W.	60/60A.	60A., 4W.
30	60/45A.	45A., 3W.	100/100A.	100A., 4W.
45	100/70A.	70A., 3W.	200/175A.	175A., 4W.
75	200/125A.	125A., 3W.	400/300A.	300A., 4W.
112 1/2	200/175A.	175A., 3W.	400/400A.	400A., 4W.
150	400/225A.	225A., 3W.	600/600A.	600A., 4W.
225	400/350A.	350A., 3W.	800/800A.	800A., 4W.
300	600/500A.	500A., 3W.	1200/1000A.	1000A., 4W.

TRANSFORMER CIRCUIT SIZING SCHEDULE - NONLINEAR LOAD TYPE (NOTE 6)

TRANSF. KVA	PRIMARY CIRCUIT		SECONDARY CIRCUIT	
	SWITCH/FUSE OR CIRCUIT BREAKER	PRIMARY FEEDER	SWITCH/FUSE OR CIRCUIT BREAKER	SECONDARY FEEDER
9	30/20A.	20A., 3W.	30/30A.	30A., 5W.-NL
15	30/25A.	25A., 3W.	60/60A.	60A., 5W.-NL
30	60/45A.	45A., 3W.	100/100A.	100A., 5W.-NL
45	100/70A.	70A., 3W.	200/175A.	175A., 5W.-NL
75	200/125A.	125A., 3W.	400/300A.	300A., 5W.-NL
112 1/2	200/175A.	175A., 3W.	400/400A.	400A., 5W.-NL
150	400/225A.	225A., 3W.	600/600A.	600A., 5W.-NL
225	400/350A.	350A., 3W.	800/800A.	800A., 5W.-NL

MOUNTING HEIGHTS

EQUIPMENT OR OUTLETS	ELEVATIONS
WALL SWITCHES	4'-0" AFF
RECEPTACLES	1'-6" AFF
TELECOMMUNICATIONS OUTLETS	1'-6" AFF
TELECOMMUNICATIONS OUTLETS – WALL PHONE	4'-6" AFF
CLOCK OUTLETS	7'-6" AFF
TV OUTLETS	1'-6" AFF
FIRE ALARM – PULL STATIONS	4'-0" AFF
FIRE ALARM – SPEAKERS, VISUAL UNITS, HORNS	7'-0" AFF
PUSHBUTTONS	4'-0" AFF
DISCONNECT SWITCHES	5'-6" AFF
MOTOR STARTERS	5'-6" AFF
PANELS & CABINETS	6'-0" TO TOP
VOLUME CONTROLS	4'-0" AFF
NURSE CALL STATIONS	4'-0" AFF
DIMMERS	4'-0" AFF
INDIVIDUAL CIRCUIT BREAKERS	5'-6" TO TOP
ACCESS CONTROL DEVICES	4'-0" AFF

MOUNTING HEIGHT NOTES:

1. ALL ELEVATIONS ARE TO CENTER LINE OF DEVICE, UNLESS OTHERWISE NOTED.
2. REFER TO ARCHITECTURAL ELEVATION DRAWINGS FOR COORDINATION WITH CASEWORK.

CIRCUIT MAXIMUM DISTANCE TABLES

NOTES:

1. CIRCUIT MAXIMUM DISTANCE IS BASED ON NEC CHAPTER 9, TABLE 8 CONDUCTOR PROPERTIES FOR COATED COPPER CONDUCTORS AT 75 DEGREES CELSIUS.
2. MAXIMUM CIRCUIT LOAD FOR DISTANCE IS BASED ON NEC 220-10(b)
3. FOR 208V. THREE PHASE MAXIMUM DISTANCE MULTIPLY 480V DISTANCE IN TABLE ABOVE BY 0.43; AND FOR 240V. THREE PHASE MULTIPLY 480V DISTANCE IN TABLE ABOVE BY 0.5.

CIRCUIT SIZING SCHEDULES NOTES:

1. BASED ON THHN/THWN, 90°., 600V., INSULATED, COPPER WIRE APPLIED AT 75° FOR TERMINATIONS RATED AT 60°C/75°C AND 75°C. FOR TERMINATIONS RATED AT 60°C PROVIDE WIRE AND CONDUIT SIZES INDICATED IN PARENTHESIS.
2. BASED ON WIRE OUTSIDE DIAMETERS AND RIGID METALLIC CONDUIT INSIDE DIAMETERS AS PROVIDED IN THE NEC. DO NOT REDUCE CONDUIT SIZE FOR NON-RIGID METALLIC APPLICATION. REFER TO NEC FOR CONDUIT TYPES MORE RESTRICTIVE THAN RIGID METALLIC.
3. BASED ON MOTOR FULL LOAD AMPERES AS PROVIDED BY THE NEC.
4. BASED ON MOTOR RUNNING OVERLOAD PROTECTION PROVIDED BY THERMAL OVERLOAD RELAYS.
5. MOTOR STARTING TYPE BASED ON 460V., 3 PHASE, FULL VOLTAGE NON- REVERSING EXCEPT FOR MOTORS SIZED 75HP OR GREATER WHICH ARE BASED ON 460V., 3 PHASE, PART WINDING REDUCED VOLTAGE STARTING.
6. TRANSFORMER CIRCUITS BASED ON 480V TO 208/120V., 3 PHASE, 4 WIRE, DRY TYPE.
7. FOR ALL CONDUITS AND WIRES INSTALLED EXPOSED IN DIRECT SUNLIGHT ON OR ABOVE ROOFTOPS, APPLY THE CORRECTION FACTORS PER NEC 208 TABLE 310.15(B)(2)(c) FOR AMBIENT TEMPERATURE ADJUSTMENTS.

MOTOR CIRCUIT SIZING SCHEDULE

(FOR 460V., 3 PHASE MOTORS) (NOTES 3,4,5)

MOTOR HP	SWITCH/FUSE	CIRCUIT BREAKER	STARTER SIZE/TYPE	CONDUIT & WIRE		
				PHASE	E.G.	CONDUIT
1/2	30/3A.	3A	1	12	12	3/4"
3/4	30/3A.	6A	1	12	12	3/4"
1	30/6A.	6A	1	12	12	3/4"
1 1/2	30/6A.	10A	1	12	12	3/4"
2	30/6A.	10A	1	12	12	3/4"
3	30/15A.	15A	1	12	12	3/4"
5	30/15A.	20A	1	12	12	3/4"
7 1/2	30/20A.	30A	1	12	10	3/4"
10	30/25A.	35A	1	12	10	3/4"
15	30/30A.	50A	2	10	10	3/4"
20	60/40A.	60A	2	8	10	3/4"
25	60/50A.	75A	2	6	10	1"
30	60/60A.	100A	3	6	10	1"
40	100/80A.	125A	3	4	8	1 1/2"
50	100/100A.	150A	3	3	8	1 1/2"
60	200/125A.	175A	4	1	6	1 1/2"
75	200/150A.	200A	4	1/0	6	1 1/2"
100	200/200A.	225A	4	2/0	6	2"
125	200/200A.	225A	5	3/0	6	2"
150	400/250A.	300A	5	4/0	4	2 1/2"
200	400/350A.	400A	5	350	4	3"

GENERAL NOTES: (APPLY TO ALL ELECTRICAL DRAWINGS)

1. FEEDER SIZES NOTED ARE FOR COPPER CONDUCTORS, ALUMINUM CONDUCTORS ARE NOTE PERMITTED.
2. REFER TO ARCHITECTURAL SPECIFICATIONS FOR SCHEDULE OF ALTERNATES, COORDINATE ALL DEDUCT AND ADD ALTERNATE WORK REQUIREMENTS WITH ARCHITECT AND OTHER TRADES PRIOR TO BID.
3. COORDINATE WORK WITH ARCHITECTURAL, MECHANICAL, CIVIL, STRUCTURAL AND INTERIOR DESIGN DOCUMENT.
4. COORDINATE ELECTRICAL WORK REQUIREMENTS WITH OTHER TRADES, OWNER, ALL SPECIALTY SYSTEM SUPPLIERS (KITCHEN, ETC.) PRIOR TO BID.
5. ALL WORK TO BE IN COMPLIANCE WITH THE CURRENT ADOPTED MICHIGAN BUILDING CODE AND THE 2017 NATIONAL ELECTRICAL CODE (NEC).
6. UL LISTED FIRESTOPPING TO BE PROVIDED FOR ALL RATED PENETRATIONS TO MAINTAIN THE RATING OF THE ASSEMBLY IN ACCORDANCE WITH SPECIFICATIONS SECTION 07.84.00. PROVIDE SUBMITTALS WITH UL APPROVED PENETRATION DETAIL AND COPY OF DESIGNS FROM THE UL FIRE RESISTANCE DIRECTORY WITH SYSTEM NUMBERS FOR ALL ELECTRICAL PENETRATIONS OF FIRE RATED WALLS, FLOORS AND CEILING ASSEMBLIES AS APPLICABLE.
7. ELECTRICAL WORK SHALL COMPLY WITH ALL LOCAL AND STATE ELECTRICAL CODES AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION (AHJ).

ELECTRICAL LEGEND

- "A" FIXTURE TYPE
- LED STRIP LIGHTING FIXTURE
- LED LIGHTING FIXTURE
- LED LIGHTING FIXTURE
- WALL MOUNTED LIGHTING FIXTURE
- EXIT LIGHTING FIXTURE
- S SINGLE POLE LIGHT SWITCH
- S_2 DOUBLE POLE LIGHT SWITCH
- S_3 THREE WAY LIGHT SWITCH
- S_4 FOUR WAY LIGHT SWITCH
- S_K KEY SWITCH
- S_P SWITCH WITH PILOT LIGHT
- DUPLEX RECEPTACLE
- D_U DUPLEX RECEPTACLE WITH USB
- D_H DUPLEX RECEPTACLE MOUNTED HORIZONTALLY
- QUAD RECEPTACLE
- GFR DUPLEX RECEPTACLE
- GFR QUAD RECEPTACLE
- IG DUPLEX RECEPTACLE
- IG QUAD RECEPTACLE
- J JUNCTION BOX
- J_P FLOOR BOX FOR POWER
- J_D FLOOR BOX FOR DATA
- COMBINATION DATA AND TELEPHONE OUTLET
- TELEPHONE OUTLET
- FLUSH FLOOR BOX WITH 2 DUPLEX OUTLETS, WALKER.
- FLUSH FLOOR BOX WITH 1 DUPLEX OUTLETS, WALKER.
- FF1 FLUSH FLOOR BOX WITH 2 DUPLEX OUTLETS AND VOICE AND DATA, WALKER.
- F2 MULTI-SERVICE FLUSH FLOOR BOX – TYPE F2 – WITH (2)-20A DUPLEX RECEPTACLES, (4)-DATA AND (2)-HDMI COMPARTMENT, WIREMOLD #RFB4 SERIES OR APPROVED EQUAL BY HUBBELL.
- FP1 FLUSH POKE-THRU – TYPE FP1 – WITH (2)-20A DUPLEX RECEPTACLES, WIREMOLD #6AT OR APPROVED EQUAL BY HUBBELL.
- FP2 MULTI-SERVICE FLUSH POKE-THRU – TYPE FP2 – WITH (2)-20A DUPLEX RECEPTACLES, (4)-DATA AND (2)-HDMI COMPARTMENT, WIREMOLD #6AT OR APPROVED EQUAL BY HUBBELL.
- D P FF1 FURNITURE FEED FLUSH FLOOR BOX – TYPE FF1 – (P: POWER, D: DATA) WITH WHIP CONNECTION TO ELECTRIFIED SYSTEMS FURNITURE, PROVIDE 1 1/2"C FOR TELECOMM AND 3/4"C FOR POWER. VERIFY WITH OWNER'S IT REPRESENTATIVE FOR CONDUIT SIZE REQUIRED FOR TELECOMM. PROVIDE FINAL CONNECTIONS AND COVERPLATES SUITABLE FOR WHIP CONNECTIONS AND FOR THE FLOOR TYPES, REFER TO ARCHITECTURAL FINISH PLANS. WIREMOLD OR HUBBELL.
- FP4 FURNITURE FEED FLOOR FLUSH POKE THRU – TYPE F6 – (P: POWER, D: DATA) WITH WHIP CONNECTION TO ELECTRIFIED SYSTEMS FURNITURE, PROVIDE 1 1/2"C FOR TELECOMM AND 3/4"C FOR POWER. VERIFY WITH OWNER'S IT REPRESENTATIVE FOR CONDUIT SIZE REQUIRED FOR TELECOMM. PROVIDE FINAL CONNECTIONS AND COVERPLATES SUITABLE FOR WHIP CONNECTIONS AND FOR THE FLOOR TYPES, REFER TO ARCHITECTURAL FINISH PLANS. WIREMOLD #6AT OR APPROVED EQUAL BY HUBBELL.
- P D JUNCTION BOX WALL MOUNTED FOR FLEXIBLE CONNECTION TO SYSTEMS (P: POWER, D: DATA) FURNITURE WHIP PROVIDED BY FURNITURE SUPPLIER. PROVIDE 1 1/2"C FOR TELECOMM. AND 3/4"C FOR POWER. VERIFY WITH OWNER'S IT REPRESENTATIVE FOR CONDUIT SIZE REQUIRED FOR TELECOMM. COORDINATE LOCATION WITH FURNITURE SYSTEM SUPPLIER. PROVIDE FINAL CONNECTION AND COVERPLATE SUITABLE FOR WHIP CONNECTION.
- AV1 AUDIO/VIDEO OUTLET, 2-GANG BACK BOX WITH 1 1/4"C TO ABOVE ACCESIBLE CEILING. TERMINATE CONDUIT WITH INSULATING BUSHING, PROVIDE PULL STRING
- CR CARD READER
- IC INTERCOM
- CEL CEILING MOUNTED DUPLEX RECEPTACLE, DATA/PHONE AND AV OUTLET
- CEILING MOUNTED DUPLEX RECEPTACLE
- TIME CLOCK, SINGLE GANG BOX, 48"AFF, 3/4"C. TO BOX FROM ABOVE SUSPENDED CEILING, REQUIRES DUPLEX OUTLET NEARBY FOR POWER
- MANUAL SINGLE PHASE MOTOR STARTER
- THREE PHASE COMBINATION MAGNETIC FUSIBLE MOTOR STARTER
- FUSIBLE DISCONNECT SWITCH
- NON-FUSIBLE DISCONNECT SWITCH
- CIRCUIT BREAKER
- MOTOR – SINGLE PHASE
- MOTOR – THREE PHASE
- LIGHTING AND/OR RECEPTACLE PANEL
- HOMERUN TO LIGHTING PANEL
- T TRANSFORMER
- C CONTACTOR
- CP CONTROL PANEL
- TS TIME SWITCH
- MUSHROOM TYPE EMERGENCY SHUT-OFF PUSHBUTTON
- SM SMOKE DETECTOR
- HD HEAT DETECTOR
- DSD DUCT SMOKE DETECTOR
- DH MAGNETIC DOOR HOLDER
- F FIRE ALARM PULL STATION
- FB FIRE ALARM STROBE
- FH FIRE ALARM HORN-STROBE
- F FIRE ALARM HORN/STROBE – CEILING OR PENDANT MOUNTED
- TS TAMPER SWITCH (REFER TO MECHANICAL FOR QUANTITIES)
- FS FLOW SWITCH (REFER TO MECHANICAL FOR QUANTITIES)
- AV AUDIO/VISUAL ALARM
- ACP FIRE ALARM CONTROL PANEL
- AAP FIRE ALARM ANNUNCIATOR PANEL – FLUSH
- AAC FIRE ALARM NOTIFICATION APPLINACE PANEL – FLUSH
- SECURITY CAMERA
- HANDICAP DOOR ACTIVATOR
- PUSH BUTTON STATION
- S SPEAKER
- OCCUPANCY SENSOR MULTI-TECHNOLOGY CEILING MOUNTED
- OS OCCUPANCY SENSOR MULTI-TECHNOLOGY WALL MOUNTED WITH LIGHT SWITCH
- OCCUPANCY SENSOR POWER PACK
- X KEY NOTE

ELECTRICAL LEGEND CONTINUED

- DB DOOR ALARM
- EDS ELECTRIC DOOR STRIKE
- HOA HAND-OFF-AUTOMATIC
- UH UNIT HEATER
- EF EXHAUST FAN
- EWC ELECTRIC WATER COOLER
- AFF ABOVE FINISHED FLOOR
- WP WEATHERPROOF
- NEC NATIONAL ELECTRICAL CODE
- SD SERVICE DISCONNECT
- GFR GROUND FAULT CIRCUIT INTERRUPTER
- MW MICROWAVE
- GD GARBAGE DISPOSAL
- REF. REFRIGERATOR
- DW DISHWASHER

LEGEND NOTES:

1. ALL OCCUPANCY SENSORS SHALL HAVE ISOLATED AUXILIARY CONTACTS FOR USE BY MECHANICAL TRADES TO CONTROL MECHANICAL EQUIPMENT.
2. THIS IS STANDARD SYMBOL LIST – SOME OF THESE SYMBOL MAY NOT APPEAR ON DRAWINGS.

ELECTRICAL SHEET INDEX

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100 N. State St.
Ann Arbor, MI 48104
P. 734.663.4189
www.hobbs-black.com

DETROIT DIESEL CORP.
DETROIT DIESEL SECOND FLOOR RENNOVATION
13400 W. OUTER DR.
DETROIT MI

PROJECT

MAENGINEERING
MECHANICAL ELECTRICAL
180 High Oak Road
Bloomfield Hills, Michigan 48304
t | 248 | 258 | 1610
f | 248 | 258 | 9538

CONSULTANT

STATE OF MICHIGAN
JOHN D. RICHARDS
ENGINEER
No. 6201034544
REGISTERED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

ELECTRICAL LEGEND, SHEET INDEX, TABLES AND GENERAL NOTES

SHEET TITLE

24-103

PROJECT NUMBER

E-000.2

SHEET NUMBER

GENERAL NOTES:

A. REFER TO SHEET E0.0 FOR ELECTRICAL LEGEND, SHEET E0.2 FOR CONDUIT AND WIRE SCHEDULES AND E0.3 FOR ELECTRICAL PANEL SCHEDULES.

B. ALL ITEMS INDICATED ON THESE RISER DIAGRAMS ARE NEW UNLESS OTHERWISE NOTED; EX. – INDICATES EXISTING ITEM TO REMAIN.

C. ALL EXISTING TO REMAIN ITEMS (NOT SHOWN ON THESE DRAWINGS) DISTURBED BY THIS EXPANSION PROJECT TO BE MAINTAINED, PROVIDE BREAKERS, EXTEND EXISTING CONDUIT AND WIRING AS REQUIRED – FIELD VERIFY EXISTING CONDITIONS. REMOVE ALL UNUSED WIRING, CONDUITS, BOXES, SUPPORTS.

D. COORDINATE WITH MECHANICAL FOR EXACT REQUIREMENTS FOR ALL EQUIPMENT, INCLUDING DISCONNECT SWITCHES SUPPLIED WITH THE UNITS, INTERWIRING REQUIREMENTS AND ALL BRANCH CIRCUITS REQUIRED FOR TEMPERATURE CONTROLS.

E. EXACT LOCATIONS FOR ALL NEW EQUIPMENT AND CONDUIT ROUTINGS FOR ALL TO BE FIELD VERIFIED AND COORDINATED WITH ALL OTHER TRADES TO MAINTAIN CODE REQUIRED DEDICATED EQUIPMENT SPACE, WORKING CLEARANCES AND TO AVOID INTERFERENCE WITH ALL OTHER SYSTEMS.

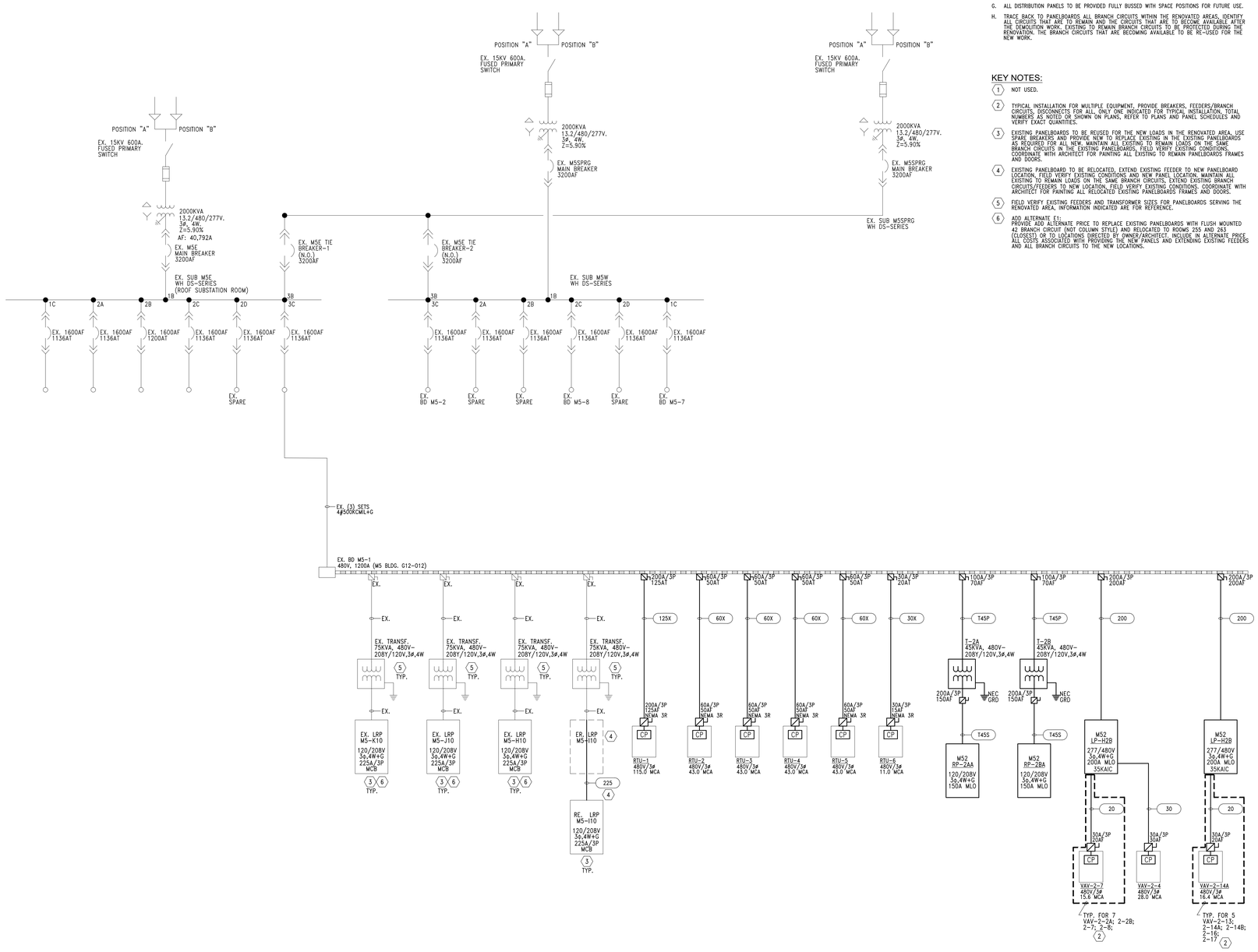
F. PROVIDE HOUSEKEEPING CONCRETE PAD FOR ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT (DISTRIBUTION PANELS, TRANSFORMERS, ETC.)

G. ALL DISTRIBUTION PANELS TO BE PROVIDED FULLY BUSSED WITH SPACE POSITIONS FOR FUTURE USE.

H. TRACE BACK TO PANELBOARDS ALL BRANCH CIRCUITS WITHIN THE RENOVATED AREAS, IDENTIFY ALL CIRCUITS THAT ARE TO REMAIN AND THE CIRCUITS THAT ARE TO BECOME AVAILABLE AFTER THE DEMOLITION WORK. EXISTING TO REMAIN BRANCH CIRCUITS TO BE PROTECTED DURING THE RENOVATION. THE BRANCH CIRCUITS THAT ARE BECOMING AVAILABLE TO BE RE-USED FOR THE NEW WORK.

KEY NOTES:

1. NOT USED.
2. TYPICAL INSTALLATION FOR MULTIPLE EQUIPMENT, PROVIDE BREAKERS, FEEDERS/BRANCH CIRCUITS, DISCONNECTS FOR ALL, ONLY ONE INDICATED FOR TYPICAL INSTALLATION, TOTAL NUMBERS AS NOTED OR SHOWN ON PLANS, REFER TO PLANS AND PANEL SCHEDULES AND VERIFY EXACT QUANTITIES.
3. EXISTING PANELBOARDS TO BE REUSED FOR THE NEW LOADS IN THE RENOVATED AREA, USE SPARE BREAKERS AND PROVIDE NEW TO REPLACE EXISTING IN THE EXISTING PANELBOARDS AS REQUIRED FOR ALL NEW. MAINTAIN ALL EXISTING TO REMAIN LOADS ON THE SAME BRANCH CIRCUITS IN THE EXISTING PANELBOARDS, FIELD VERIFY EXISTING CONDITIONS. COORDINATE WITH ARCHITECT FOR PAINTING ALL EXISTING TO REMAIN PANELBOARDS FRAMES AND DOORS.
4. EXISTING PANELBOARD TO BE RELOCATED, EXTEND EXISTING FEEDER TO NEW PANELBOARD LOCATION, FIELD VERIFY EXISTING CONDITIONS AND NEW PANEL LOCATION. MAINTAIN ALL EXISTING TO REMAIN LOADS ON THE SAME BRANCH CIRCUITS, EXTEND EXISTING BRANCH CIRCUITS/FEEDERS TO NEW LOCATION, FIELD VERIFY EXISTING CONDITIONS. COORDINATE WITH ARCHITECT FOR PAINTING ALL RELOCATED EXISTING PANELBOARDS FRAMES AND DOORS.
5. FIELD VERIFY EXISTING FEEDERS AND TRANSFORMER SIZES FOR PANELBOARDS SERVING THE RENOVATED AREA, INFORMATION INDICATED ARE FOR REFERENCE.
6. ADD ALTERNATE E1:
PROVIDE ADD ALTERNATE PRICE TO REPLACE EXISTING PANELBOARDS WITH FLUSH MOUNTED 42 BRANCH CIRCUIT (NOT COLUMN STYLE) AND RELOCATED TO ROOMS 255 AND 263 (CLOSEST) OR TO LOCATIONS DIRECTED BY OWNER/ARCHITECT. INCLUDE IN ALTERNATE PRICE ALL COSTS ASSOCIATED WITH PROVIDING THE NEW PANELS AND EXTENDING EXISTING FEEDERS AND ALL BRANCH CIRCUITS TO THE NEW LOCATIONS.



1 E-010 PARTIAL ELECTRICAL ONE-LINE DIAGRAM

SCALE N.T.S

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PARTIAL ELECTRICAL ONE -LINE DIAGRAM

SHEET TITLE

24-103

PROJECT NUMBER

E-010.2

SHEET NUMBER

LIGHTING FIXTURE SCHEDULE:

"A" LED PENDANT MOUNTED DIRECT/INDIRECT CONTINUOUS LINEAR LIGHTING FIXTURE, REFER TO PLANS FOR OVERALL RUN LENGTHS, ALUMINUM CONSTRUCTION, CLEAR ANODIZED FINISH, END CAP TO BE SELECTED BY LIGHTING DESIGNER/ARCHITECT/OWNER. PROVIDE SEPARATE DIMMING CONTROL FOR THE DIRECT AND INDIRECT COMPONENTS, 120/277V, HPF ELECTRONIC DRIVER, DIMMING CONTROL, 9.5W/FT, 1000 LUMENS/FT.
FOCAL POINT #FTWLS-AC-1000-35K-1C-UNV-LD1-J12-WH.

"AE" SAME AS TYPE "A" EXCEPT 4' SECTION WITH BUILT-IN EMERGENCY BATTERY PROVIDE 10W, 1000LM, 90 MIN. OPERATION INTEGRAL CHARGE INDICATOR AND TEST.

"D" LED RECESSED LED LINEAR LIGHT, EXTRUDED ALUMINUM HOUSING, 2.5" APERTURE LENGTH PER PLAN, FLAT FROSTED ACRYLIC LENS, TRIMLESS MUD-IN INSTALLATION IN GYP CEILING, 120/277V INTEGRAL DRIVER, 0-10V DIMMING, 1000LM/FT, 3500?K, 9.5W/FT INPUT POWER.
FOCAL POINT #FSM2L-FL-1000LF-35K-1C-UNV-LD1-XFF-WH OR APPROVED EQUAL

"DE" SAME AS TYPE "D" EXCEPT 4' SECTION WITH BUILT-IN EMERGENCY BATTERY PROVIDE 10W, 1000LM, 90 MIN. OPERATION INTEGRAL CHARGE INDICATOR AND TEST.

"E1" LED DECORATIVE PENDANT FIXTURE, 48" SHADE AND 12" HEIGHT, BLACK ACOUSTIC FINISH. 120/277V WITH 0-10V DIMMING, 72W WITH MINIMUM 5000LM PACKAGE
FOCAL POINT #DLIA SERIES OR APPROVED EQUAL.

"E2" SAME AS TYPE "E1" EXCEPT 60" SHADE.

"G" LED SURFACE OR PENDANT MOUNTED 6" DIA CYLINDER LIGHTING FIXTURE, HEAVING-GUAGE ALUMINUM CONSTRUCTION, MEDIUM-WIDE DISTRIBUTION, DAMP LOCATION RATED, 0-10V DIMMING, DIMMING CONTROL, 120/277V HPF ELECTRONIC DRIVER, 19.7W, 2000LM. COORDINATE EXACT MOUNTING WITH ARCHITECT/OWNER. EVO-CYL-35/20-6AR-MD-LSS-UNV-EZ1O-ACC-DWHO OR APPROVED EQUAL.

"GE" SAME AS TYPE "G" EXCEPT WITH BUILT-IN EMERGENCY BATTERY PROVIDE 10W, 1000LM, 90 MIN. OPERATION INTEGRAL CHARGE INDICATOR AND TEST.

"H" LED 2'X2' LAY-IN LIGHTING FIXTURE, EXTRUDED ALUMINUN AND COLD ROLLED STEEL HOUSING, 120/277V, HPF ELECTRONIC DRIVER, DIMMING CONTROL, 39W, 4300LM.
METALUX #22EN-LD1-34-UNV-L835-CD-1.

"HE" SAME AS TYPE "B" EXCEPT WITH BUILT-IN EMERGENCY BATTERY PROVIDE 14W, 1615 LUMENS, 90 MIN. OPERATION INTEGRAL CHARGE INDICATOR AND TEST.

"J" LED PENDANT MOUNTED DIRECT/INDIRECT CONTINUOUS LINEAR LIGHTING FIXTURE, REFER TO PLANS FOR OVERALL RUN LENGTHS, ALUMINUM CONSTRUCTION, SQUARE REMOTE, FINISH, END CAP TO BE SELECTED BY LIGHTING ARCHITECT/OWNER, PROVIDE SEPARATE DIMMING CONTROL FOR THE DIRECT AND INDIRECT COMPONENTS, 120/277V, HPF ELECTRONIC DRIVER, DIMMING CONTROL, 9.5W/FT, 1000LM/FT.
PRUDENTIAL LIGHTING #STOV-LED35-SO-R16-TWW-D1-SYM-SC-UNV- CA48"-X1-X1-TW-W-DM01.

"JE" SAME AS TYPE "J" EXCEPT 4' SECTION WITH BUILT-IN EMERGENCY BATTERY PROVIDE 10W, 600 LUMENS, 90 MIN. OPERATION INTEGRAL CHARGE INDICATOR AND TEST.

"K" LED RECESSED DOWNLIGHT, 6" APERTURE, 120/277V WITH 0-10V DIMMING, 24W WITH MINIMUM 2500LM PACKAGE, WET LOCATION LISTED. FINISH SELECTED BY ARCHITECT.
GOTHAM #EVO SERIES OR APPROVED EQUAL.

"KE" SAME AS TYPE "K" EXCEPT WITH BUILT-IN EMERGENCY BATTERY PROVIDE MIN. 10W, MIN. 1000LM, 90 MIN. OPERATION INTEGRAL CHARGE INDICATOR AND TEST.

"L" LED SURFACE OR PENDANT MOUNTED 4' OR 8' STRIP LIGHTING FIXTURE, LENGTH AS INDICATED ON PLANS, FLAT DIFFUSE LENS, ENDCAPS, COLD-ROLLED STEEL HOUSING, 120/277V, ELECTRONIC HPF DRIVER, 8000LM 58W.
LITHONIA #CLX SERIES OR APPROVED EQUAL.

"LE" SAME AS TYPE "D" EXCEPT BUILT-IN EMERGENCY BATTERY PROVIDE 10W, 1000LM, 90 MIN. OPERATION INTEGRAL CHARGE INDICATOR AND TEST.

"P" LED DECORATIVE PENDANT FIXTURE, BLACK ACOUSTIC FINISH. **120V** WITH 0-10V DIMMING, 9W WITH MINIMUM 1687LM PACKAGE
TECH LIGHTING #700TDALVFWC-1-B-B-LED30 OR APPROVED EQUAL.

"RD" SAME AS TYPE "K" EXCEPT 1200LM AND 10W.

"RDE" SAME AS TYPE "RD" EXCEPT WITH BUILT-IN EMERGENCY BATTERY PROVIDE MIN. 10W, MIN. 1000LM, 90 MIN. OPERATION INTEGRAL CHARGE INDICATOR AND TEST.

"X" LED UNIVERSAL MOUNT EDGE LIT EXIT SIGN, SINGLE OR DOUBLE FACE AND DIRECTIONAL ARROWS AS INDICATED, RED STENCIL LETTERS, CLEAR OR MIRROR FOR DOUBLE FACE, RED LETTERS, 120-277 INPUT AND NI-CAD BATTERY.

"X1" LED UNIVERSAL MOUNT THERMOPLASTIC EXIT SIGN, SINGLE OR DOUBLE FACE AND DIRECTIONAL ARROWS AS INDICATED, RED STENCIL LETTERS, CLEAR OR MIRROR FOR DOUBLE FACE, RED LETTERS, 120-277 INPUT AND NI-CAD BATTERY.

"X2" SAME AS TYPE "X1" EXCEPT WET LOCATION RATED.

LIGHTING FIXTURE SCHEDULE NOTES:

1. ALL LIGHTING FIXTURES COLOR TEMPERATURE TO BE 4000K LED, UNLESS OTHERWISE DIRECTED BY ARCHITECT/OWNER.
2. REFER TO SPECIFICATIONS FOR ADDITIONAL LAMP AND DRIVER REQUIREMENTS.
3. COORDINATE MOUNTING OF ALL LIGHTING FIXTURES WITH THE ARCHITECTURAL PLANS, PROVIDE MOUNTING HARDWARE AS REQUIRED FOR A COMPLETE INSTALLATION FOR THE CEILING TYPES THE FIXTURES ARE BEING INSTALLED.
4. ALL FIXTURE FINISHES/COLORS TO BE COORDINATED WITH ARCHITECT.
5. FOR ALL LINEAR CONTINUOUS RUN LIGHTING FIXTURES REFER TO PLANS FOR OVERALL LENGTHS, PROVIDE SECTIONS AS REQUIRED. PROVIDE 4' SECTIONS CONNECTED TO THE EMERGENCY GENERATOR LIGHTING CIRCUITS AT LOCATIONS INDICATED ON PLANS.
6. FOR ALL PENDANT MOUNTED LIGHTING FIXTURES PROVIDE CABLE SUSPENSION LENGTHS AS REQUIRED FOR THE MOUNTING HEIGHTS INDICATED ON THE ARCHITECTURAL REFLECTED CEILING PLANS AND ELEVATIONS.
7. DIMMERS TO BE COMPATIBLE WITH THE DIMMING DRIVERS, PROVIDE TYPES AND RATINGS AS REQUIRED FOR THE LOADS CONTROLLED.
8. DIMMING TO BE TO 1%, UNLESS OTHERWISE DIRECTED BY ARCHITECT/OWNER.

LIGHTING CONTROL MATRIX SCHEDULE

LIGHTING CONTROL TAG	ROOM/SPACE TYPE	CONTROLS	AUTOMATIC LIGHTING CONTROL	LOCAL CONTROL	MANUAL ON	PARTIAL AUTO. ON	BI-LEVEL	DAYLIGHT SIDE LIGHT	DAYLIGHT TOP LIGHT	AUTOMATIC PARTIAL OFF (IF APPLIES)	AUTOMATIC FULL OFF	SCHEDULED FULL OFF	NOTES
BASED ON ASHRAE 90.1-2013 TABLE 9.6.1 – CONTROL FUNCTIONS				a	b	c	d	e	f	g	h	i	
LC1	IT ROOM / ELECTRICAL	LOCAL		YES									
LC2	CORRIDOR	LOCAL	RELAY PANEL TIMER (TIME CLOCK)	YES						YES		YES	
LC3	OFFICE/ CONFERENCE/ BREAK ROOM	LOCAL/DIM/OS	OCCUPANCY SENSOR (OS)	YES		YES	YES				YES		
LC4	STORAGE/ JANITOR/ RESTROOM/ SHOWER	LOCAL/OS	OCCUPANCY SENSOR (OS)	YES		YES					YES		
LC5	LOUNGE/ OPEN OFFICE/ BREAKOUT	LOCAL/DIM/TC	RELAY PANEL TIMER (TIME CLOCK)	YES	YES		YES					YES	
LC6	STAIRS	PARTIAL DIM	OCCUPANCY SENSOR	YES						YES			OCC. SENSOR TO DIM4 STAIR LIGHTING FIXTURES TO 50%

LIGHTING CONTROL NOTES:

1. CONTRACTOR TO PROVIDE MOTION SENSORS, DAYLIGHT SENSORS, ROOM CONTROLLERS, AND ACCESSORIES AS REQUIRED FOR A FULLY OPERATIONAL INSTALLATION PER 2015 MICHIGAN ENERGY CODE. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO REVIEW MANUFACTURER'S INSTALLATION INSTRUCTIONS PRIOR TO ROUGH-IN. PROVIDE ADDITIONAL ROOM CONTROLLERS/POWER PACKS AND ASSOCIATED WIRING FOR MULTIPLE SWITCH LEG LOCATIONS. SEE PLANS FOR EXACT SWITCH LEGS WITH-IN EACH AREA OR ROOM. ELECTRICAL CONTRACTOR SHALL PROVIDE LIGHTING CONTROL MANUFACTURER'S DEVICE LAYOUT AS PART OF SHOP DRAWINGS SUBMITTALS.
2. ELECTRICAL CONTRACTOR IS TO INCLUDE THE SCOPE OF A LIGHTING CONTROLS DESIGNER/INSTALLER AS SUBCONTRACTOR TO ELECTRICAL CONTRACTOR TO PROVIDE FINAL DESIGN, DOCUMENTATION, PROGRAMMING, AND INSTALLATION OF THE LIGHTING CONTROLS. CONTRACT DOCUMENTS INCLUDE INTENDED FUNCTIONALITY ONLY.
3. TO PREVENT FALSE ACTIVATION, MOUNT CEILING MOUNT SENSORS AWAY FROM DIFFUSERS AND THE PATH OF STRONG AIR TURBULENCE A MINIMUM OF FOUR FEET FOR STANDARD SENSITIVITY AND SIX FEET FOR MAXIMUM SENSITIVITY.
4. LOCATE AND AIM SENSORS IN THE CORRECT LOCATION REQUIRED FOR COMPLETE AND PROPER VOLUMETRIC COVERAGE WITHIN THE RANGE OF COVERAGE(S) OF CONTROLLED AREAS PER THE MANUFACTURER'S RECOMMENDATIONS. ROOMS SHALL HAVE ONE HUNDRED (100%) PERCENT COVERAGE TO COMPLETELY COVER THE CONTROLLED AREA TO ACCOMMODATE ALL OCCUPANCY HABITS OF SINGLE OR MULTIPLE OCCUPANTS AT ANY LOCATION WITHIN THE ROOM(S).
5. PROVIDE THE QUANTITY OF ROOM CONTROLLERS AND POWER PACKS NEEDED TO CONTROL SWITCH LEGS AND VOLTAGES INDICATED.
6. UNLESS OTHERWISE INDICATED, ADJUST MOTION SENSOR TIME TO TURN OFF CONTROLLED LIGHTING AFTER 20 MINUTES.
7. INCLUDE TESTING BY AN INDEPENDENT THIRD PARTY TESTING AGENCY OR INDEPENDENT COMMISSIONING AGENT AS REQUIRED BY THE MICHIGAN ENERGY CODE (ASHRAE 90.1-2013). TEST, CERTIFY AND PROVIDE DOCUMENTATION OF LIGHTING CONTROL DEVICES AND SYSTEMS. TESTING SHALL BE DONE AFTER CONTROLS ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS, THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND ANSI/ASHRAE/IES STANDARD 90.1-2013, SECTION 9.4.3 FUNCTION TESTING.
8. PROVIDE DAY LIGHT SENSORS WHERE LIGHTING FIXTURES FALL WITHIN TOP/SIDE LIGHTED AREAS FOR BOTH PRIMARY AND SECONDARY ZONES AS DEFINED BY ASHRAE 90.1-2013, SECTION 9.4.1.1-e AND SECTION 9.4.1.1-f.
9. INTEGRATE CONTROLS FOR UNDERCABINET LIGHTING TO PROVIDE AS MANUAL ON/AUTOMATIC OFF BY SAME SENSOR(S) SERVING GENERAL LIGHTING IN SPACE/ROOM.
10. IN ROOMS WITH PARTIAL ON CONTROL, PROGRAM ASSOCIATED SWITCH FOR FULL ON AND MANUAL OFF IN ADDITION TO AUTOMATIC OFF VIA OCCUPANCY SENSOR.
11. FOR AUTOMATIC DAYLIGHT RESPONSIVE CONTROLS SET DAYLIGHT SENSOR TO MAINTAIN THE SAME LIGHTING LEVELS AS THE LEVELS OUTSIDE THE DAYLIGHT AREA.

TRANSFORMER CONDUIT & WIRE SCHEDULE
(480-208Y/120V-3Ø, 4W)

XFMR. KVA	PRI. O.C.P.D.	SEC. O.C.P.D.	WIRE TAG	CONDUIT & WIRE (CU)	CONDUIT & WIRE (AL)
15 KVA	25A	60A	T15P	3/4"C, 3#10 + 1#10G.	USE CU
			T15S	1 1/4"C, 4#4 + 1#8G.	USE CU
30 KVA	45A	100A	T30P	1"C, 3#6 + 1#10G.	USE CU
			T30S	1 1/4"C, 4#2 + 1#8G.	2"C, 4#1/0 + 1#6G.
45 KVA	70A	150A	T45P	1 1/4"C, 3#4 + 1#8G.	USE CU
			T45S	2"C, 4#1/0 + 1#6G.	2"C, 4#3/0 + 1#4G.
75 KVA	125A	250A	T75P	2"C, 3#1/0 + 1#6G.	2"C, 3#2/0 + 1#4G.
			T75S	3"C, 4#250KCMIL + 1#2G.	3"C, 4#350KCMIL + 1#1/0G.
112.5 KVA	175A	400A	T112.5P	2"C, 3#2/0 + 1#6G.	2 1/2"C, 3#4/0 + 1#4G.
			T112.5S	4"C, 4#600KCMIL + 1#1/0G.	(2) 3"C, EA/W 4#250KCMIL + 1#1/0G.
150 KVA	225A	500A	T150P	2 1/2"C, 3#4/0 + 1#4G.	3"C, 3#300KCMIL + 1#2G.
			T150S	(2) 3"C, EA/W 4#250KCMIL + 1#1/0G.	(2) 3"C, EA/W 4#350KCMIL + 1#3/0G.
225 KVA	350A	800A	T225P	4"C, 3#500KCMIL + 1#3G.	(2) 2 1/2"C, EA/W 3#4/0 + 1#1G.
			T225S	(2) 4"C, EA/W 4#600KCMIL + 1#3/0G.	(3) 3"C, EA/W 4#500KCMIL + 1#250KCMIL G.

CONDUIT & WIRE SCHEDULE
(600V & BELOW)

3–WIRE SYSTEM			4–WIRE SYSTEM		
WIRE TAG	CU	CONDUIT & WIRE	WIRE TAG	CU	CONDUIT & WIRE
20X	CU	3/4"C, 3#12 + 1#12G.	20	CU	3/4"C, 4#12 + 1#12G.
25X	CU	3/4"C, 3#10 + 1#10G.	25	CU	3/4"C, 4#10 + 1#10G.
30X	CU	3/4"C, 3#10 + 1#10G.	30	CU	3/4"C, 4#10 + 1#10G.
35X	CU	3/4"C, 3#8 + 1#10G.	35	CU	3/4"C, 4#8 + 1#10G.
40X	CU	3/4"C, 3#8 + 1#10G.	40	CU	3/4"C, 4#8 + 1#10G.
50X	CU	1"C, 3#6 + 1#10G.	50	CU	1"C, 3#6 + 1#10G.
55X	CU	3/4"C, 3#6 + 1#10G.	55	CU	3/4"C, 4#6 + 1#10G.
60X	CU	1 1/4"C, 3#4 + 1#10G.	60	CU	1 1/4"C, 4#4 + 1#10G.
70X	CU	1 1/4"C, 3#4 + 1#8G.	70	CU	1 1/4"C, 4#4 + 1#8G.
85X	CU	1 1/4"C, 3#3 + 1#8G.	85	CU	1 1/4"C, 4#3 + 1#8G.
100X	CU	1 1/4"C, 3#2 + 1#8G.	100	CU	1 1/4"C, 4#2 + 1#8G.
110X	CU	1 1/2"C, 3#1 + 1#6G.	110	CU	1 1/2"C, 4#1 + 1#6G.
125X	CU	2"C, 3#1/0 + 1#6G.	125	CU	2"C, 4#1/0 + 1#6G.
150X	CU	2"C, 3#1/0 + 1#6G.	150	CU	2"C, 4#1/0 + 1#6G.
175X	CU	2"C, 3#2/0 + 1#6G.	175	CU	2"C, 4#2/0 + 1#6G.
200X	CU	2"C, 3#3/0 + 1#6G.	200	CU	2"C, 4#3/0 + 1#6G.
225X	CU	2 1/2"C, 3#4/0 + 1#4G.	225	CU	2 1/2"C, 4#4/0 + 1#4G.
250X	CU	3"C, 3#250KCMIL + 1#4G.	250	CU	3"C, 4#250KCMIL + 1#4G.
300X	CU	3"C, 3#350KCMIL + 1#4G.	300	CU	3"C, 4#350KCMIL + 1#4G.
350X	CU	4"C, 3#500KCMIL + 1#3G.	350	CU	4"C, 4#500KCMIL + 1#3G.
400X	CU	4"C, 3#600KCMIL + 1#3G.	400	CU	4"C, 4#600KCMIL + 1#3G.
450X	CU	(2) 2 1/2"C, EA/W 3#4/0 + 1#2G.	450	CU	(2) 2 1/2"C, EA/W 4#4/0 + 1#2G.
500X	CU	(2) 3"C, EA/W 3#250KCMIL + 1#2G.	500	CU	(2) 3"C, EA/W 4#250KCMIL + 1#2G.
600X	CU	(2) 3"C, EA/W 3#350KCMIL + 1#1G.	600	CU	(2) 3"C, EA/W 4#350KCMIL + 1#1G.
700X	CU	(2) 4"C, EA/W 3#500KCMIL + 1#1/0G.	700	CU	(2) 4"C, EA/W 4#500KCMIL + 1#1/0G.
800X	CU	(2) 4"C, EA/W 3#600KCMIL + 1#1/0G.	800	CU	(2) 4"C, EA/W 4#600KCMIL + 1#1/0G.
1000X	CU	(3) 3"C, EA/W 3#400KCMIL + 1#2/0G.	1000	CU	(3) 3"C, EA/W 4#400KCMIL + 1#2/0G.
1200X	CU	(3) 4"C, EA/W 3#600KCMIL + 1#3/0G.	1200	CU	(3) 4"C, EA/W 4#600KCMIL + 1#3/0G.
1600X	CU	(4) 4"C, EA/W 3#600KCMIL + 1#4/0G.	1600	CU	(4) 4"C, EA/W 4#600KCMIL + 1#4/0G.

GENERAL WIRING NOTES:

1. FOR 2-WIRE SYSTEMS USE Y AS SUFFIX, SIMILAR TO X FOR THE 3-WIRE SYSTEM.
2. USE ONLY COPPER WIRES, ALUMINUM NOT PERMITTED.

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Ann Arbor, MI 48104
P. 734.663.4189
www.hobbs-black.com

DETROIT DIESEL CORP.
DETROIT DIESEL SECOND FLOOR RENNOVATION
13400 W. OUTER DR.
DETROIT MI

PROJECT

MAENGINEERING
MECHANICAL ELECTRICAL
180 High Oak Road t | 248 | 258 | 1610
Bloomfield Hills, Michigan 48304 f | 248 | 258 | 9538

CONSULTANT

STATE OF MICHIGAN
JOHN D. RICHARDS
ENGINEER
No. 6201034544
PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

WIRE SCHEDULES, LIGHTING FIXTURE SCHEDULE & CONTROL MATRIX

SHEET TITLE

24-103

PROJECT NUMBER

E-020.2

SHEET NUMBER

EX. BUD DUCT SCHEDULE BD M5-1

277/480V, 3PH,4W+G, 1200A MLO

POSITION	CIRCUIT BREAKER FRAME	CIRCUIT BREAKER TRIP	EQUIPMENT		CONNECTED LOAD (KVA)	DEMAND LOAD (KVA)	FEEDER SIZE (COPPER) (SEE RISER FOR AL)
1	EX	EX	EX. T-75 (LRP-M5-K10)		75.0	60.0	
2	EX	EX	EX. T-75 (LRP-M5-K10)		75.0	60.0	
3	EX	EX	EX. T-75 (LRP-M5-K10)		75.0	60.0	
4	EX	EX	EX. T-75 (LRP-M5-K10)		75.0	60.0	
5							
6							
7							
8	**200A/3P**	**200 A**	**LP-M5E-H2A**		**84.3**	**69.4**	**2"C, 4#3/0 & 1#6 G**
9	**200A/3P**	**200 A**	**LP-M5E-H2B**		**125.8**	**100.7**	**2"C, 4#3/0 & 1#6 G**
10	200A/3P	125 A	EX. RTU-1	115.0 MCA	81.2	65.0	2"C, 3#1/0 & 1#6 G
11	60A/3P	50 A	EX. RTU-2	43.0 MCA	30.4	24.3	1"C, 3#6 & 1#10 G
12	60A/3P	50 A	EX. RTU-3	43.0 MCA	30.4	24.3	1"C, 3#6 & 1#10 G
13	60A/3P	50 A	EX. RTU-4	43.0 MCA	30.4	24.3	1"C, 3#6 & 1#10 G
14	60A/3P	50 A	EX. RTU-5	43.0 MCA	30.4	24.3	1"C, 3#6 & 1#10 G
15	30A/3P	15 A	EX. RTU-6	11.0 MCA	7.8	6.2	3/4"C, 3#12 & 1#12 G
16	**100A/3P**	**70 A**	**TRANSF. T-M5E-2A (RP-2AA)**		**45.0**	**36.0**	**1 1/4"C, 3#4 & 1#8 G**
17							
18							
			TOTAL CALCULATED LOAD:		773 KVA / 932 A	621 KVA / 747 A	

* FIELD VERIFY ALL EXISTING EQUIPMENT CONNECTED, DATA INDICATED IS FOR REFERENCE ONLY.

PANEL: RP-2BA

PROJECT: **DD 2ND FLOOR RENOV** | **150A** | **MLO** | CLASS: **120/208V,3PH,4W+G.** | PROJ NO: **85550** | DATE: **04/18/25** | MOUNTING: **SURF.**

NO.	POLES	BKR.	BUS A	BUS B	BUS C	L	R	E	REMARKS
1	1	20	800				R		4 REC.
3	1	20		800			R		4 REC.
5	1	20			800		R		4 REC.
7	1	20	800				R		4 REC.
9	1	20							SPARE
11	1	20							SPARE
13	1	20							SPARE
15	1	20							SPARE
17	1	20							SPARE
19	1	20							SPARE
21	1	20							SPARE
23	1	20							SPARE
25	1	20							SPARE
27	1	20							SPARE
29	1	20							SPARE
31	1	20							SPARE
33	1	20							SPARE
35	1	20							SPARE
37									EXISTING *
39									EXISTING *
41									EXISTING *
2	1	20	800					E	DEDIC. REC. LAB **
4	1	20		800				E	DEDIC. REC. LAB **
6	1	20			800			E	DEDIC. REC. LAB **
8	1	20	800					E	DEDIC. REC. LAB **
10	1	20		800				E	DEDIC. REC. LAB **
12	1	20			800			E	DEDIC. REC. LAB **
14	1	20	800					E	DEDIC. REC. LAB **
16	1	20		800				E	DEDIC. REC. LAB **
18	1	20			800			E	DEDIC. REC. LAB **
20	1	20							SPARE
22	1	20							SPARE
24	1	20							SPARE
26	1	20							SPARE
28	1	20							SPARE
30	1	20							SPARE
32	1	20							SPARE
34	1	20							SPARE
36	1	20							SPARE
38	1	20							SPARE
40	1	20							SPARE
42	1	20							SPARE

	BUS A	BUS B	BUS C	CONNECTED LOAD		DEMAND LOAD
LIGHTING LOAD					NEC 220.42	=
RECEPTACLE LOAD	1,600	800	800	3200 VA	NEC 220.44	= 3200 VA
EQUIPMENT LOAD	2,400	2,400	2,400	7200 VA	80%	= 5760 VA
						=
TOTAL LOAD	4,000	3,200	3,200	10400 VA		= 8960 VA
				29 A		25 A

* EXISTING TO REMAIN LOADS IN THE AREA TO BE CONNECTED TO NEW PANELOBARD, PROVIDE BREAKERS AS REQUIRED TO MATCH EXISTING INSTALLATIONS, RATINGS AND QUANTITIES ARE FOR RERENCE ONLY.

** PROVIDE BREAKERS FOR EQUIPMENT IN LAB AS REQUIRED, BREAKER SIZES AND QUNATITIES INDICATED

PANEL: LP-H2B

PROJECT: **DD 2ND FLOOR RENOV** | **200A** | **MLO** | CLASS: **277/480V,3PH,4W+G.** | PROJ NO: **85550** | DATE: **04/18/25** | MOUNTING: **SURFACE**

NO.	POLES	BKR.	BUS A	BUS B	BUS C	L	R	E	REMARKS
1	1	20							SPARE
3	1	20							SPARE
5	1	20							SPARE
7	1	20							SPARE
9	1	20							SPARE
11	1	20							SPARE
13	3		1357					E	
15				1357				E	VAV-2-13 4.9 MCA
17		15			1357			E	
19	3		4543					E	
21				4543				E	VAV-2-14A 16.4 MCA
23		20			4543			E	
25	3		4127					E	
27				4127				E	VAV-2-14B 14.9 MCA
29		15			4127			E	
31	3		4127					E	
33				4127				E	VAV-2-16 14.9 MCA
35		15			4127			E	
37	3		4127					E	
39				4127				E	VAV-2-17 14.9 MCA
41		15			4127			E	
2	1	15	3407					E	VAV-2-12 12.3 MCA
4	1	15		1357				E	VAV-2-15 4.9 MCA
6	1	15			3407			E	VAV-2-18 12.3 MCA
8	1	15	3407					E	VAV-2-19 12.3 MCA
10	1	15		1357				E	VAV-2-20 4.9 MCA
12	1	15			2715			E	VAV-2-21 9.8 MCA
14	1	15	1357					E	VAV-2-22 4.9 MCA
16	1	15		1000				E	EF-1
18	1	20							SPARE
20	1	20							SPARE
22	1	20							SPARE
24	1	20							SPARE
26	1	20							SPARE
28	1	20							SPARE
30	1	20							SPARE
32	3		1330					E	
34				1330				E	EX. EF *
36		20			1330			E	
38	3		1330					E	
40				1330				E	EX. EF *
42		20			1330			E	

	BUS A	BUS B	BUS C	CONNECTED LOAD		DEMAND LOAD
LIGHTING LOAD					NEC 220.42	=
RECEPTACLE LOAD					NEC 220.44	=
EQUIPMENT LOAD	29,113	24,656	27,063	80831 VA	80%	= 64665 VA
T-2B (RP-2BA)	15,000	15,000	15,000	45000 VA		= 36000 VA
TOTAL LOAD	44,113	39,656	42,063	125831 VA		= 100665 VA
				152 A		121 A

* EXISTING TO LOAD REMAIN, CONNECT TO NEW PANELBOARD OR MAINTAIN ON EXISTING PENELBOARD, VERIFY EXISTING CONDITIONS AND EQUIPMENT RATINGS

PANEL: RP-2AA

PROJECT: **DD 2ND FLOOR RENOV** | **150A** | **MLO** | CLASS: **120/208V,3PH,4W+G.** | PROJ NO: **85550** | DATE: **04/18/25** | MOUNTING: **SURF.**

NO.	POLES	BKR.	BUS A	BUS B	BUS C	L	R	E	REMARKS
1	1	20	1200				R		FURNITURE FEED
3	1	20		1200			R		FURNITURE FEED
5	1	20			1200		R		FURNITURE FEED
7	1	20	1067				R		FURNITURE FEED
9	1	20		1067			R		FURNITURE FEED
11	1	20			1067		R		FURNITURE FEED
13	1	20	1067				R		FURNITURE FEED
15	1	20		1067			R		FURNITURE FEED
17	1	20			1067		R		FURNITURE FEED
19	1	20	1067				R		FURNITURE FEED
21	1	20		1067			R		FURNITURE FEED
23	1	20			1067		R		FURNITURE FEED
25	1	20							SPARE
27	1	20							SPARE
29	1	20							SPARE
31	1	20							SPARE
33	1	20							SPARE
35	1	20							SPARE
37	1	20	600				R		3 REC.
39	1	20		800			R		4 REC.
41	1	20			500			E	EWC
2	1	20	800				R		DEDIC. QUAD REC.
4	1	20		800			R		DEDIC. QUAD REC.
6	1	20			800		R		DEDIC. QUAD REC.
8	1	20	800				R		DEDIC. QUAD REC.
10	1	20		800			R		DEDIC. QUAD REC.
12	1	20			800		R		DEDIC. QUAD REC.
14	1	20	800				R		REC.
16	1	20		800			R		REC.
18	1	20			800		R		REC.
20	1	20	1200				R		REC.
22	1	20		1200			R		REC.
24	1	20			800		R		REC.
26	1	20	600				R		REC.
28	1	20		800			R		REC.
30	1	20			800		R		REC.
32	1	20	800				R		REC.
34	1	20		800			R		REC.
36	1	20			800		R		REC.
38	1	20	800				R		REC.
40	1	20		400			R		WP GFR REC. ROOF
42	1	20							SPARE

	BUS A	BUS B	BUS C	CONNECTED LOAD		DEMAND LOAD
LIGHTING LOAD					NEC 220.42	=
RECEPTACLE LOAD	10,800	10,800	9,200	30800 VA	NEC 220.44	= 20400 VA
EQUIPMENT LOAD			500	500 VA	80%	= 400 VA
						=
TOTAL LOAD	10,800	10,800	9,700	31300 VA		= 20800 VA
				87 A		58 A

PANEL: LP-H2A

PROJECT: **DD 2ND FLOOR RENOV** | **200A** | **MLO** | CLASS: **277/480V,3PH,4W+G.** | PROJ NO: **85550** | DATE: **04/18/25** | MOUNTING: **SURFACE**

NO.	POLES	BKR.	BUS A	BUS B	BUS C	L	R	E	REMARKS
1	1	20	2214			L			LIGHTING
3	1	20		1265		L			LIGHTING VIA RLP
5	1	20			1792	L			LIGHTING VIA RLP
7	1	20	2146			L			LIGHTING VIA RLP
9	1	20		2556		L			LIGHTING
11	1	20							SPARE
13	3		1136					E	
15				1136				E	VAV-2-2A 4.1 MCA
17		15			1136			E	
19	3		1136					E	
21				1136				E	VAV-2-2B 4.1 MCA
23		15			1136			E	
25	3		7756					E	
27				7756				E	VAV-2-4 28.0 MCA
29		30			7756			E	
31	3		4183					E	
33				4183				E	VAV-2-7 15.1 MCA
35		20			4183			E	
37	3		4321					E	
39				4321				E	VAV-2-8 15.6 MCA
41		20			4321			E	
2	1	15	1357					E	VAV-2-1 4.9 MCA
4	1	15		4100				E	VAV-2-3 14.8 MCA
6	1	15			4100			E	VAV-2-5 14.8 MCA
8	1	15	1357					E	VAV-2-6 4.9 MCA
10	1	15		3407				E	VAV-2-9 12.3 MCA
12	1	15			2050			E	VAV-2-10 7.4 MCA
14	1	15	1357					E	VAV-2-11 4.9 MCA
16	1	20							SPARE
18	1	20							SPARE
20	1	20							SPARE
22	1	20							SPARE
24	1	20							SPARE
26	1	20							SPARE
28	1	20							SPARE
30	1	20							SPARE
32	1	20	1000					E	EF-2
34	1	20							SPARE
36	1	20							SPARE
38	1	20							SPARE
40	1	20							SPARE
42	1	20							SPARE

	BUS A	BUS B	BUS C	CONNECTED LOAD		DEMAND LOAD
LIGHTING LOAD	4,360	3,820	1,792	9973 VA	NEC 220.42	= 9973 VA
RECEPTACLE LOAD					NEC 220.44	=
EQUIPMENT LOAD	23,603	26,038	24,681	74322 VA	80%	= 59458 VA
						=
TOTAL LOAD	27,963	29,858	26,473	84294 VA		= 69430 VA
				102 A		84 A

PANEL: EX. LRP-M5-K10

PROJECT: **DD 2ND FLOOR RENOV** | **225A/3P** | **MCB** | CLASS: **120/208V,3PH,4W+G.** | PROJ NO: **85550** | DATE: **04/18/25** | MOUNTING: **SURF.**

NO.	POLES	BKR.	BUS A	BUS B	BUS C	L	R	E	REMARKS
1	1	20	200					E	UC REFR.
3	1	20		800			R		4 REC.
5	1	20			600		R		3 REC.
7	1	20	500					E	EWC
9	1	20		600			R		3 REC.
11	1	20			600		R		3 REC.
13	1	20	600				R		3 REC.
15	1	20		800			R		4 REC.
17	1	20			800		R		4 REC.
19	1	20	800				R		2 REC. + 1 FLOOR REC.
21	1	20		1000			R		5 REC.
23	1	20			1200		R		2 QUAD + 2 REC.
25	1	20	1000				R		5 REC.
27	1	20							SPARE
29	1	20							SPARE
31	1	20	400				R		FURNITURE FEED
33	1	20		400			R		FURNITURE FEED
35	1	20			400		R		FURNITURE FEED
37	1	20	600					E	EXISTING *
39	1	20		600				E	EXISTING *
41	1	20			600			E	EXISTING *
2	1	20	800				R		FURNITURE FEED
4	1	20		800			R		FURNITURE FEED
6	1	20			800		R		FURNITURE FEED
8	1	20	800				R		FURNITURE FEED
10	1	20		800			R		FURNITURE FEED
12	1	20			800		R		FURNITURE FEED
14	1	20	800				R		FURNITURE FEED
16	1	20		800			R		FURNITURE FEED
18	1	20			800		R		FURNITURE FEED
20	1	20	600				R		3 REC.
22	1	20		800			R		4 REC.
24	1	20			800		R		2 REC. + 1 FLOOR REC.
26	1	20	800				R		4 REC.
28	1	20		600			R		1 DEDIC. REC.
30	1	20			600		R		1 DEDIC. REC.
32	1	20	200				R		GFR REC.
34	1	20		400			R		WP GFR REC. ROOF
36	1	20							SPARE
38	1	20							SPARE
40	1	20							SPARE
42	1	20							SPARE

	BUS A	BUS B	BUS C	CONNECTED LOAD		DEMAND LOAD
LIGHTING LOAD					NEC 220.42	=
RECEPTACLE LOAD	6,800	7,800	7,400	22000 VA	NEC 220.44	= 16000 VA
EQUIPMENT LOAD	1,300	600	600	2500 VA	80%	= 2000 VA
						=
TOTAL LOAD	8,100	8,400	8,000	24500 VA		= 18000 VA
				68 A		50 A

* MAINTAIN EXISTING TO REMAIN BRANCH CIRCUITS, ON THE SAME EXISTING BREAKERS, QUANTITIES, RATINGS AND POSITIONS INDICATED ARE FOR REFERENCE ONLY.

PANEL: EX. LRP-M5-J10

PROJECT: **DD 2ND FLOOR RENOV** | **225A/3P** | **MCB** | CLASS: **120/208V,3PH,4W+G.** | PROJ NO: **85550** | DATE: **04/18/25** | MOUNTING: **SURF.**

NO.	POLES	BKR.	BUS A	BUS B	BUS C	L	R	E	REMARKS
1	1	20	800				R		4 REC.
3	1	20		800			R		4 REC.
5	1	20			800		R		4 REC.
7	1	20	1200				R		6 REC.
9	1	20		1200			R		6 REC.
11	1	20			1200		R		6 REC.
13	1	20	1200				R		4 REC. + 1 QUAD
15	1	20		1000			R		5 REC.
17	1	20			600		R		3 REC.
19	1	20	800				R		4 REC.
21	1	20							SPARE
23	1	20							SPARE
25	1	20							SPARE
27	1	20							SPARE
29	1	20							SPARE
31	1	20	400				R		WP GFR ROOF
33	1	20		400			R		WP GFR ROOF
35	1	20			400		R		WP GFR ROOF
37	1	20	600					E	EXISTING *
39	1	20		600				E	EXISTING *
41	1	20			600			E	EXISTING *
2	1	20	1067				R		FURNITURE FEED
4	1	20		1067			R		FURNITURE FEED
6	1	20			1067		R		FURNITURE FEED
8	1	20	1067				R		FURNITURE FEED
10	1	20		1067			R		FURNITURE FEED
12	1	20			1067		R		FURNITURE FEED
14	1	20	933				R		FURNITURE FEED
16	1	20		933			R		FURNITURE FEED
18	1	20			933		R		FURNITURE FEED
20	1	20	933				R		FURNITURE FEED
22	1	20		933			R		FURNITURE FEED
24	1	20			933		R		FURNITURE FEED
26	1	20	933				R		FURNITURE FEED
28	1	20		933			R		FURNITURE FEED
30	1	20			933		R		FURNITURE FEED
32	1	20	933				R		FURNITURE FEED
34	1	20		933			R		FURNITURE FEED
36	1	20			933		R		FURNITURE FEED
38	1	20	933				R		FURNITURE FEED
40	1	20		933			R		FURNITURE FEED
42	1	20			933		R		FURNITURE FEED

	BUS A	BUS B	BUS C	CONNECTED LOAD		DEMAND LOAD
LIGHTING LOAD					NEC 220.42	=
RECEPTACLE LOAD	11,200	10,200	9,800	31200 VA	NEC 220.44	= 20600 VA
EQUIPMENT LOAD	600	600	600	1800 VA	80%	= 1440 VA
						=
TOTAL LOAD	11,800	10,800	10,400	33000 VA		= 22040 VA
				92 A		61 A

* MAINTAIN EXISTING TO REMAIN BRANCH CIRCUITS, ON THE SAME EXISTING BREAKERS, QUANTITIES, RATINGS AND POSITIONS INDICATED ARE FOR REFERENCE ONLY.

PANEL: EX. LRP-M5-I10

PROJECT: **DD 2ND FLOOR RENOV** | **225A/3P** | **MCB** | CLASS: **120/208V,3PH,4W+G.** | PROJ NO: **85550** | DATE: **04/18/25** | MOUNTING: **SURF.**

NO.	POLES	BKR.	BUS A	BUS B	BUS C	L	R	E	REMARKS
1	1	20	200					E	UC REFR.
3	1	20		800			R		4 REC.
5	1	20			600		R		3 REC.
7	1	20	500					E	EWC
9	1	20		600			R		3 REC.
11	1	20			600		R		3 REC.
13	1	20	600				R		3 REC.
15	1	20		800			R		4 REC.
17	1	20			800		R		4 REC.
19	1	20	800				R		2 REC. + 1 FLOOR REC.
21	1	20		1000			R		5 REC.
23	1	20			1200		R		2 QUAD + 2 REC.
25	1	20	1000				R		5 REC.
27	1	20							SPARE
29	1	20							SPARE
31	1	20	600					E	EXISTING *
33	1	20		600				E	EXISTING *
35	1	20			600			E	EXISTING *
37	1	20	600					E	EXISTING *
39	1	20		600				E	EXISTING *
41	1	20			600			E	EXISTING *
2	1	20	800					E	PRINTER **
4	1	20		800				E	SHREAD **
6	1	20			800			E	SCANNER **
8	1	20	800					E	PLOTTER **
10	1	20		800				E	PRINTER **
12	1	20			800			E	LAMINATOR **
14	1	20	600				R		1 DEDC. REC.
16	1	20		800			R		2 REC. + 1 FLOOR REC.
18	1	20			1200		R		4 REC. + 1 QUAD REC.
20	1	20	1000				R		5 REC.
22	1	20		1200			R		2 REC. + 2 QUAD REC.
24	1	20			1200		R		2 REC. + 2 QUAD REC.
26	1	20	800				R		4 REC.
28	1	20		1200			R		6 REC.
30	1	20			800		R		2 FLOOR REC.
32	1	20	1200				R		4 REC. + 1 QUAD REC.
34	1	20		1000			R		3 REC. + 1 QUAD REC.
36	1	20							SPARE
38	1	20							SPARE
40	1	20							SPARE
42	1	20							SPARE

	BUS A	BUS B	BUS C	CONNECTED LOAD		DEMAND LOAD
LIGHTING LOAD					NEC 220.42	=
RECEPTACLE LOAD	6,000	7,400	6,400	19800 VA	NEC 220.44	= 14900 VA
EQUIPMENT LOAD	3,500	2,800	2,800	9100 VA	80%	= 7280 VA
						=
TOTAL LOAD	9,500	10,200	9,200	28900 VA		= 22180 VA
				80 A		62 A

* MAINTAIN EXISTING TO REMAIN BRANCH CIRCUITS, ON THE SAME EXISTING BREAKERS, QUANTITIES, RATINGS AND POSITIONS INDICATED ARE FOR REFERENCE ONLY.

** PROVIDE NEW BREAKERS TO REPLACE EXISTING AS REQUIRED FOR EQUIPMENT IN PRINT ROOM, BREAKER INDICATED ARE FOR REFERENCE ONLY

PANEL: EX. LRP-M5-H10

PROJECT: **DD 2ND FLOOR RENOV** | **225A/3P** | **MCB** | CLASS: **120/208V,3PH,4W+G.** | PROJ NO: **85550** | DATE: **04/18/25** | MOUNTING: **SURF.** | BRANCH CIRC. *

NO.	POLES	BKR.	BUS A	BUS B	BUS C	L	R	E	REMARKS
1	1	20	400				R		WP GFR REC. ROOF
3	1	20		400			R		WP GFR REC. ROOF
5	1	20							SPARE
7	1	20	400				R		FURNITURE FEED
9	1	20		400			R		FURNITURE FEED
11	1	20			400		R		FURNITURE FEED
13	1	20	800				R		FURNITURE FEED
15	1	20		800			R		FURNITURE FEED
17	1	20			800		R		FURNITURE FEED
19	1	20	800				R		FURNITURE FEED
21	1	20		800			R		FURNITURE FEED
23	1	20			800		R		FURNITURE FEED
25	1	20							SPARE
27	1	20							SPARE
29	1	20							SPARE
31	1	20							SPARE
33	1	20							SPARE
35	1	20							SPARE
37	1	20							SPARE
39	1	20							SPARE
41	1	20							SPARE
2	1	20	1000				R		5 REC.
4	1	20		800			R		4 REC.
6	1	20			800			E	REFR. GFCI
8	1	20	800					E	DEDIC. GFR REC.
10	1	20		1200				E	GARBAGE DISP. GFCI
12	1	20			800			E	DEDIC. GFR REC.
14	1	20	1200					E	DISHWASHER GFCI
16	1	20		1200				E	MICROWAVE GFCI
18	1	20			1200			E	MICROWAVE GFCI
20	1	20							SPARE
22	1	20							SPARE
24	1	20							SPARE
26	1	20							SPARE
28	1	20							SPARE
30	1	20							SPARE
32	1	20							SPARE
34	1	20							SPARE
36	1	20							SPARE
38	1	20							SPARE
40	1	20							SPARE
42	1	20							SPARE

	BUS A	BUS B	BUS C	CONNECTED LOAD		DEMAND LOAD
LIGHTING LOAD					NEC 220.42	=
RECEPTACLE LOAD	3,400	3,200	2,000	8600 VA	NEC 220.44	= 8600 VA
EQUIPMENT LOAD	2,000	2,400	2,800	7200 VA	80%	= 5760 VA
						=
TOTAL LOAD	5,400	5,600	4,800	15800 VA		= 14360 VA
				44 A		40 A

* MAINTAIN EXISTING TO REMAIN BRANCH CIRCUITS, ON THE SAME EXISTING BREAKERS, QUANTITIES, RATINGS AND POSITIONS INDICATED ARE FOR REFERENCE ONLY.

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100 N. State St.
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P. 734.663.4189
www.hobbs-black.com

DETROIT DIESEL CORP.
DETROIT DIESEL SECOND FLOOR RENNOVATION
13400 W. OUTER DR, DETROIT MI

PROJECT

MAENGINEERING
MECHANICALELECTRICAL
180 High Oak Road
Bloomfield Hills, Michigan 48304
t | 248 | 258 | 1610
f | 248 | 258 | 9538

CONSULTANT

STATE OF MICHIGAN
JOHN D. RICHARDS ENGINEER No. 6201034544
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

ELECTRICAL PANEL SCHEDULES

SHEET TITLE

24-103

PROJECT NUMBER

E-030.2

SHEET NUMBER

KEYED DEMOLITION NOTES:

(D1) DISCONNECT AND REMOVE EXISTING LIGHTING FIXTURES WITHIN THE RENOVATED AREA, AND ASSOCIATED LIGHTING CONTROLS, ITEMS ARE NOT INDICATED ON THESE PLANS, FIELD VERIFY EXISTING CONDITIONS.

(D2) DISCONNECT AND REMOVE EXISTING ELECTRICAL AND TELECOMMUNICATION DEVICES WITHIN THE RENOVATED AREA, UNLESS OTHERWISE NOTED (EX. – EXISTING TO REMAIN, OR ER. – EXISTING TO BE RELOCATED). DEVICES ARE NOT INDICATED ON THESE PLANS, FIELD VERIFY EXISTING CONDITIONS. EXISTING TO REMAIN DEVICES TO BE PROVIDED WITH NEW DEVICE IN EXISTING BACK BOX AND FACEPLATE AN RE-WIRED TO NEW AND EXISTING PANELS.

(D3) DISCONNECT AND REMOVE EXISTING FIRE ALARM SYSTEM DEVICES AND EQUIPMENT INTERFERING WITH NEW WORK, DEVICES ARE NOT INDICATED ON THESE PLANS, FIELD VERIFY EXISTING CONDITIONS. NEW DEVICES TO BE PROVIDED, SEE SPECS.

(D4) DISCONNECT AND REMOVE EXISTING SECURITY SYSTEM DEVICES AND EQUIPMENT INTERFERING WITH NEW WORK, NOT ALL DEVICES ARE INDICATED ON THESE PLANS, FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH OWNER FOR ANY EXISTING TO REMAIN PRIOR TO DEMOLITION.

(D5) DISCONNECT AND RELOCATE EXISTING ELECTRICAL PANELBOARD, COORDINATE WITH ARCHITECT FOR NEW LOCATIONS, EXTEND EXISTING FEEDER TO THE NEW LOCATION.

(D6) DISCONNECT AND REMOVE ELECTRICAL PANEL, ALL EXISTING TO REMAIN LOADS TO BE EXTENDED TO NEW PANELBOARS LOCATIONS, REMOVE EXISTING FEEDER BACK TO SOURCE, FIELD VERIFY EXISTING CONDITIONS.

GENERAL DEMOLITION NOTES:

DA. REFER TO SHEET E0.0 FOR ELECTRICAL LEGEND.

DB. THESE DEMOLITION NOTES AND PLAN DO NOT FULLY REPRESENT ALL DEMOLITION WORK REQUIRED TO INSTALL NEW WORK IN ACCORDANCE WITH CONTRACT DOCUMENTS, BUT ARE INTENDED TO SERVE AS GENERAL DEMOLITION GUIDELINES. REFER TO ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATIONS OF INCIDENTAL DEMOLITION WORK NOT INDICATED ON THIS PLAN AND COMPLETE SCOPE OF DEMOLITION WORK. NOT ALL ELECTRICAL DEVICES, LIGHTING, EQUIPMENT, ETC. ARE INDICATED ON THESE PLANS, FIELD VERIFY EXISTING CONDITIONS.

DC. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REVIEW OF THE AMOUNT OF DEMOLITION REQUIRED PRIOR TO BID SUBMITTAL.

DD. ALL ITEMS INDICATED ON THESE DEMOLITION PLANS ARE TO BE DISCONNECTED AND REMOVED (ALL CROSS HATCHED AND DOTTED LINE ITEMS ARE TO BE DISCONNECTED AND REMOVED); ALL DOTTED LINE ITEMS INDICATED WITH ER. TO BE DISCONNECTED AND RELOCATED; EX. – INDICATES EXISTING ITEM TO REMAIN.

DE. EXISTING ELECTRICAL ROOMS TO BE MAINTAINED WITH ALL EXISTING DISTRIBUTION EQUIPMENT.

DF. MAINTAIN CIRCUIT CONTINUITY TO ALL EXISTING TO REMAIN ITEMS ON THE SAME CIRCUIT OUTSIDE OF RENOVATION AREA.

DG. DISCONNECT AND REMOVE ALL ELECTRICAL EQUIPMENT AND DEVICES ON WALLS TO BE DEMOLISHED OR INTERFERING WITH THE NEW WORK, COORDINATE WITH ARCHITECT AND OWNER.

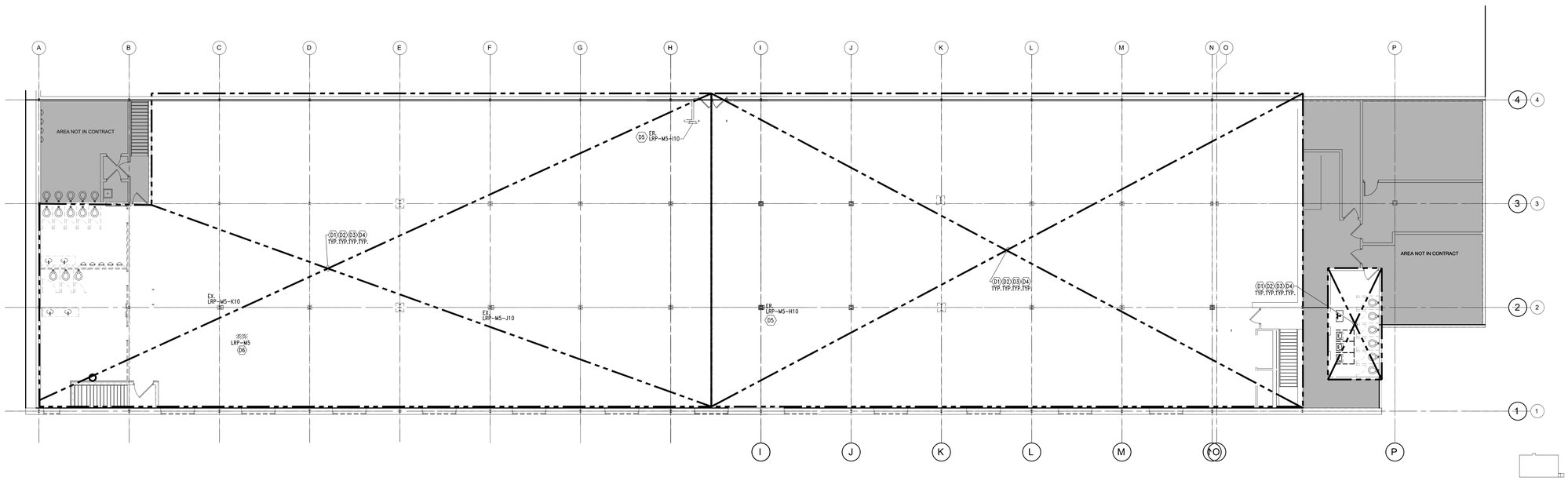
DH. DEMOLITION WORK SHALL INCLUDE ALL ASSOCIATED AND ABANDONED BOXES, CONDUITS, WIRING, SURFACE RACEWAYS, ETC. REFER TO SPECIFICATIONS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

DI. PROVIDE NEW TYPEWRITTEN DIRECTORIES IN ALL PANELS DISTURBED DUE TO NEW WORK. ALL SPARE BREAKERS TO BE PLACED IN "OFF" POSITION. IDENTIFY ALL CIRCUITS: EXISTING, NEW OR SPARE, REFER TO SPECIFICATIONS FOR ADDITIONAL INFO.

DJ. PROVIDE COVERPLATES FOR ALL ABANDONED DEVICES, REFER TO SPECIFICATION.

DK. TRACE BACK TO PANELBOARDS ALL BRANCH CIRCUITS WITHIN THE RENOVATED AREAS, IDENTIFY ALL CIRCUITS THAT ARE TO REMAIN AND THE CIRCUITS THAT ARE TO BECOME AVAILABLE AFTER THE DEMOLITION WORK. EXISTING TO REMAIN BRANCH CIRCUITS TO BE PROTECTED DURING THE RENOVATION. THE BRANCH CIRCUITS THAT ARE BECOMING AVAILABLE TO BE RE-USED FOR THE NEW WORK.

DL. COORDINATE WITH MECHANICAL FOR ALL DEMOLITION WORK RELATED TO THE MECHANICAL EQUIPMENT. PROTECT AND MAINTAIN POWER TO ALL EXISTING TO REMAIN MECHANICAL EQUIPMENT. FOR ALL RELOCATED EQUIPMENT DISCONNECT EXTEND EXISTING WIRING AND RECONNECT AT THE NEW LOCATION, FOR ALL REMOVED EQUIPMENT DISCONNECT AND REMOVE ALL CONDUITS AND WIRING BACK TO SOURCE.

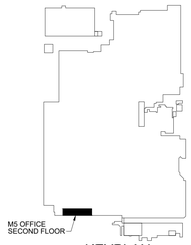


E1 / ED-120

COMPOSITE LEVEL 2 DEMOLITION PLAN - ELECTRICAL

SCALE - 3/32" = 1'-0"

NORTH



KEYPLAN

NOT TO SCALE

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t | 248 | 258 | 1610
f | 248 | 258 | 9538

CONSULTANT

STATE OF MICHIGAN
JOHN D. RICHARDS
ENGINEER
No. 6201034544
REGISTERED PROFESSIONAL ENGINEER

COMPOSITE LEVEL 2 DEMOLITION PLAN - ELECTRICAL

SHEET TITLE

24-103

PROJECT NUMBER

ED120.2

SHEET NUMBER

GENERAL LIGHTING NOTES:

A. ALL ITEMS INDICATED ON THESE PLANS ARE NEW UNLESS OTHERWISE NOTED.
EX. – INDICATES EXISTING ITEM TO REMAIN.

B. REFER TO SHEET E0.0 FOR ELECTRICAL LEGEND, SHEET E0.2 FOR LIGHTING FIXTURE SCHEDULE AND LIGHTING CONTROL MATRIX.

C. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN AND SECTIONS FOR EXACT LOCATIONS AND MOUNTING OF ALL CEILING MOUNTED LIGHTING FIXTURES.

D. ALL LIGHTING FIXTURES INDICATED ON THIS PLAN ARE TYPE "H" UNLESS OTHERWISE NOTED.

E. USE #10 WIRE FOR LIGHTING CIRCUIT HOMERUNS LONGER THAN 150 FEET FROM PANEL.

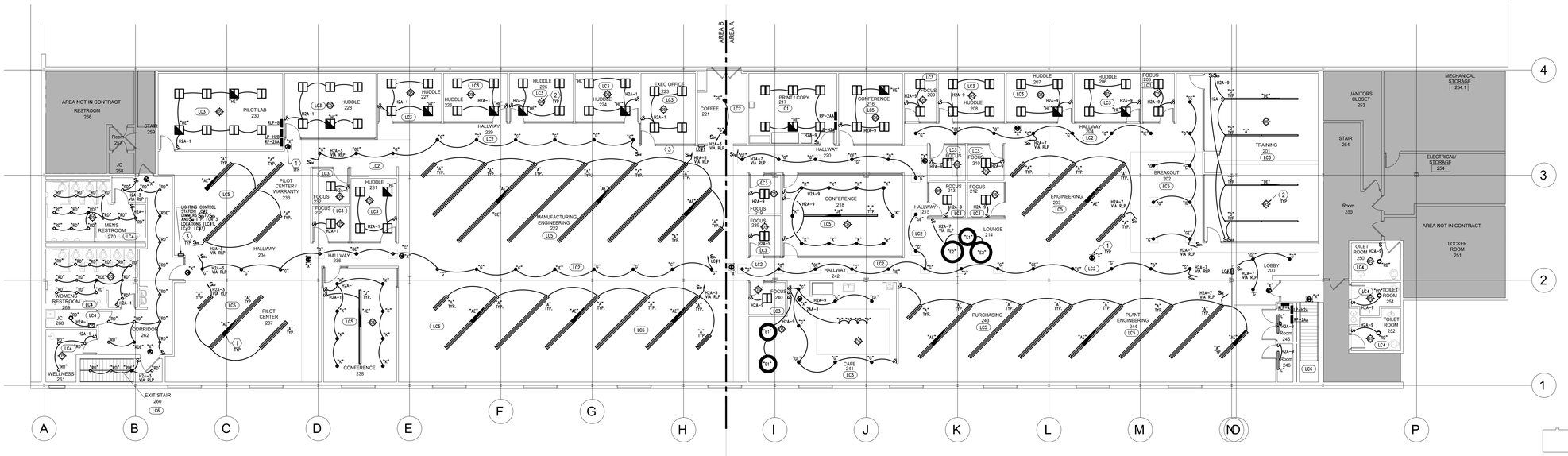
F. REFER TO SPECIFICATIONS FOR ADDITIONAL BALLAST AND LAMP REQUIREMENTS AND OWNER LIGHTING CRITERIA. PROVIDE MOUNTING HARDWARE FOR ALL LIGHTING FIXTURES AS REQUIRED.

G. IN ADDITION TO THE LOCAL SWITCHES SHOWN PROVIDE A COMPLETE OCCUPANCY SENSOR BASED AUTOMATIC LIGHTING CONTROL SYSTEM, DEVICES INDICATED ON PLANS ARE FOR REFERENCE ONLY, REFER TO SPECIFICATIONS FOR EXACT REQUIREMENTS. SYSTEM SHALL BE LAYED OUT ON A PERFORMANCE BASIS, TYPICAL FOR ALL ROOMS/AREAS. COORDINATE WITH OWNER FOR EXACT REQUIREMENTS.

H. MAINTAIN SERVICE CONTINUITY TO ALL EXISTING TO REMAIN ITEMS ON THE SAME PANEL AND BRANCH CIRCUITS.

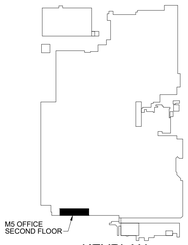
KEYED LIGHTING NOTES:

1. ALL EXIT LIGHTS AND EMERGENCY BATTERY UNITS TO BE CONNECTED TO AREA EXISTING NORMAL LIGHTING CIRCUIT AHEAD OF LOCAL AND AUTOMATIC LIGHTING CONTROL, UNSWITCHED.
2. PROVIDE OCCUPANCY SENSORS FOR FULL COVERAGE OF THE NEW ADDITION, REFER TO GENERAL NOTE-G THIS SHEET.
3. PROVIDE LIGHTING CONTROL STATIONS WITH DIMMERS TO CONTROL LIGHTING IN OPEN AREAS, AS INDICATED. LOCATIONS OF LIGHTING CONTROL STATIONS TO BE COORDINATED WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.
4. CONNECT NEW LIGHTING FIXTURE TO AREA EXISTING LIGHTING BRANCH CIRCUIT AND CONTROLS, NOT TO EXCEED 16A ON A 20A/1P BRANCH BREAKER, FIELD VERIFY EXISTING CONDITIONS.



E1 / E-220 COMPOSITE LEVEL 2 FLOOR PLAN - LIGHTING
SCALE - 3/32" = 1'-0"

NORTH



KEYPLAN
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PROJECT
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DETROIT MI

MAENGINEERING
MECHANICAL ELECTRICAL
180 High Oak Road t | 248 | 258 | 1610
Bloomfield Hills, Michigan 48304 f | 248 | 258 | 9538

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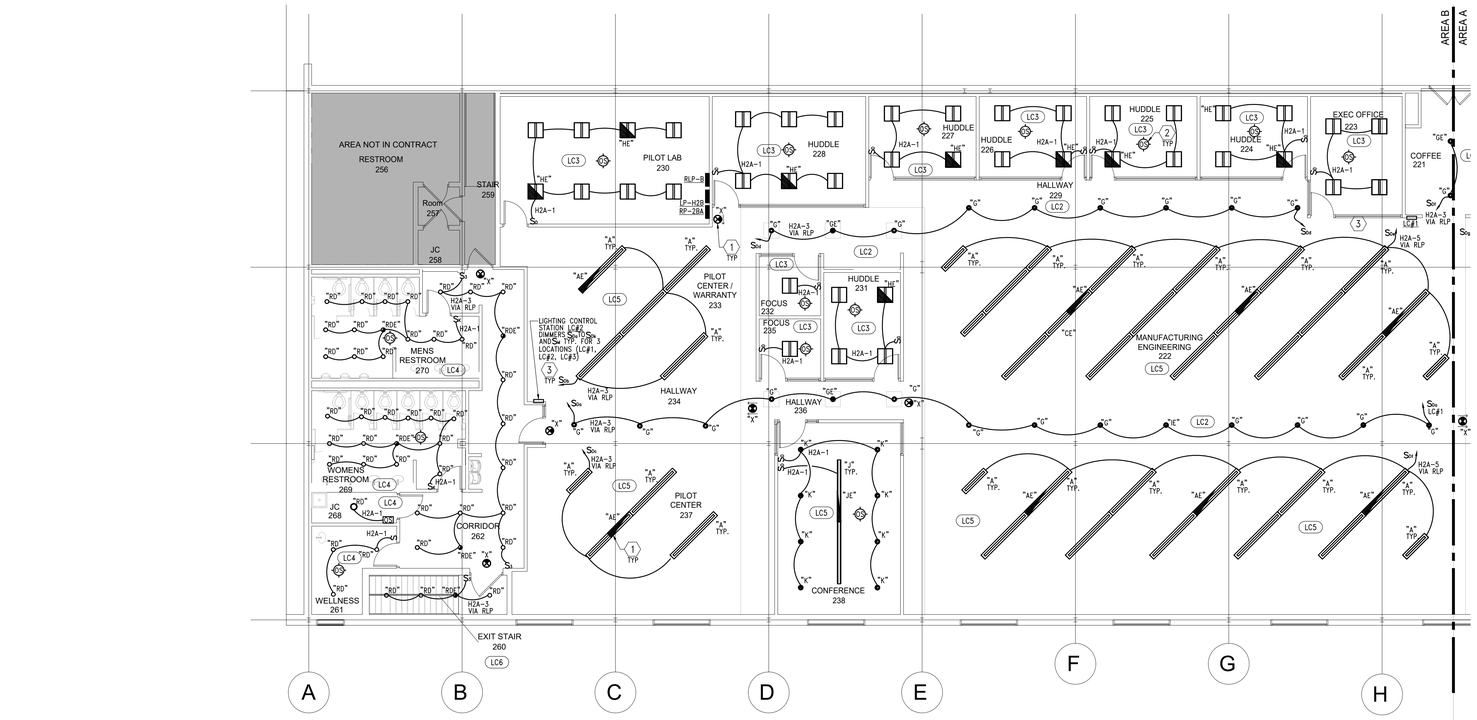
COMPOSITE LEVEL 2 FLOOR PLAN - LIGHTING
SHEET TITLE

24-103
PROJECT NUMBER

E-220.2
SHEET NUMBER

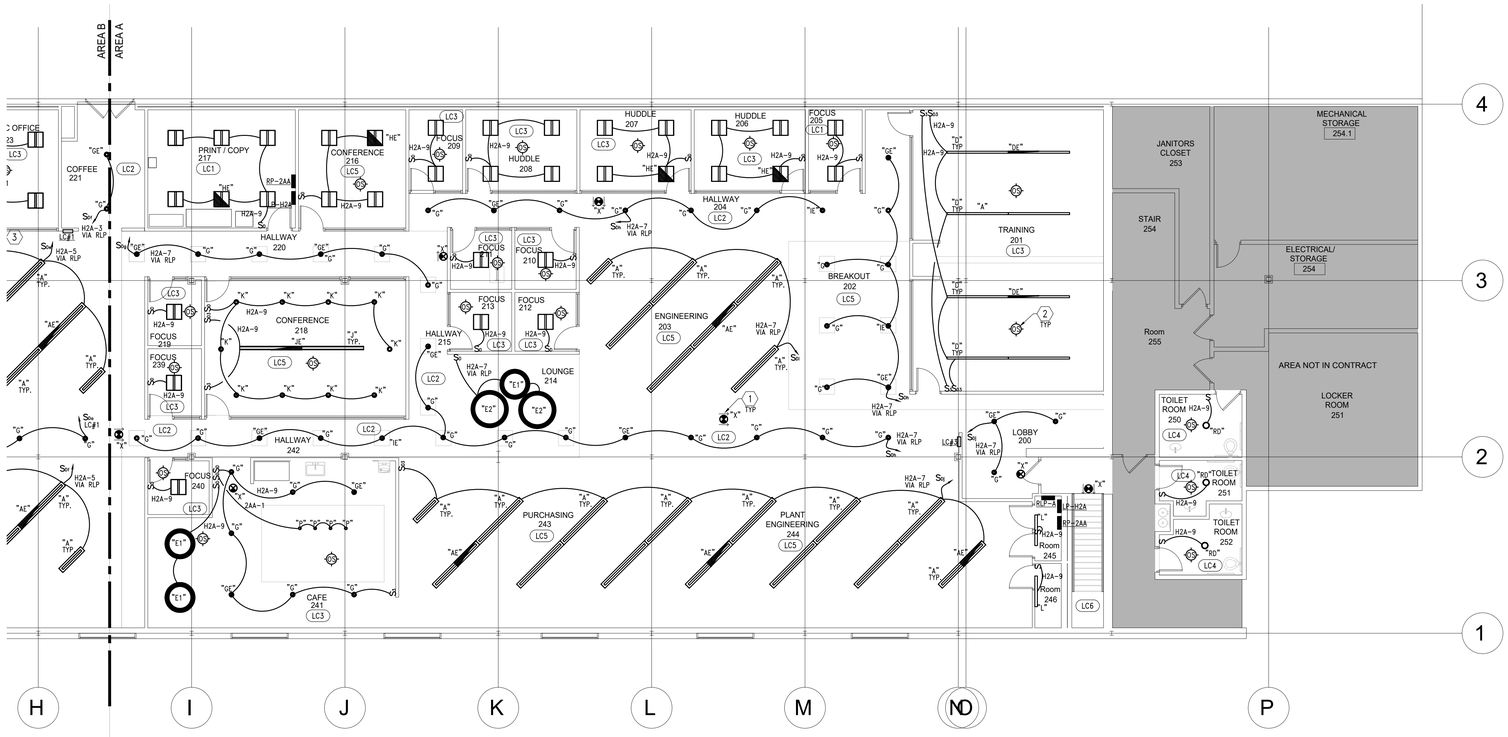


LEVEL 2 FLOOR PLAN - AREA B - LIGHTING

E2
E-221

SCALE - 1/8" = 1'-0"

NORTH

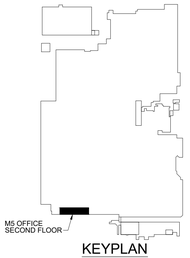


LEVEL 2 FLOOR PLAN - AREA A - LIGHTING

E1
E-221

SCALE - 1/8" = 1'-0"

NORTH



KEYPLAN
NOT TO SCALE

GENERAL LIGHTING NOTES:

A. ALL ITEMS INDICATED ON THESE PLANS ARE NEW UNLESS OTHERWISE NOTED. EX. – INDICATES EXISTING ITEM TO REMAIN.

B. REFER TO SHEET E0.0 FOR ELECTRICAL LEGEND, SHEET E0.2 FOR LIGHTING FIXTURE SCHEDULE AND LIGHTING CONTROL MATRIX.

C. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN AND SECTIONS FOR EXACT LOCATIONS AND MOUNTING OF ALL CEILING MOUNTED LIGHTING FIXTURES.

D. ALL LIGHTING FIXTURES INDICATED ON THIS PLAN ARE TYPE "H" UNLESS OTHERWISE NOTED.

E. USE #10 WIRE FOR LIGHTING CIRCUIT HOMERUNS LONGER THAN 150 FEET FROM PANEL.

F. REFER TO SPECIFICATIONS FOR ADDITIONAL BALLAST AND LAMP REQUIREMENTS AND OWNER LIGHTING CRITERIA. PROVIDE MOUNTING HARDWARE FOR ALL LIGHTING FIXTURES AS REQUIRED.

G. IN ADDITION TO THE LOCAL SWITCHES SHOWN PROVIDE A COMPLETE OCCUPANCY SENSOR BASED AUTOMATIC LIGHTING CONTROL SYSTEM. DEVICES INDICATED ON PLANS ARE FOR REFERENCE ONLY, REFER TO SPECIFICATIONS FOR EXACT REQUIREMENTS. SYSTEM SHALL BE LAYED OUT ON A PERFORMANCE BASIS, TYPICAL FOR ALL ROOMS/AREAS. COORDINATE WITH OWNER FOR EXACT REQUIREMENTS.

H. MAINTAIN SERVICE CONTINUITY TO ALL EXISTING TO REMAIN ITEMS ON THE SAME PANEL AND BRANCH CIRCUITS.

KEYED LIGHTING NOTES:

1. ALL EXIT LIGHTS AND EMERGENCY BATTERY UNITS TO BE CONNECTED TO AREA EXISTING NORMAL LIGHTING CIRCUIT AHEAD OF LOCAL AND AUTOMATIC LIGHTING CONTROL, UNSWITCHED.
2. PROVIDE OCCUPANCY SENSORS FOR FULL COVERAGE OF THE NEW ADDITION, REFER TO GENERAL NOTE–G THIS SHEET.
3. PROVIDE LIGHTING CONTROL STATIONS WITH DIMMERS TO CONTROL LIGHTING IN OPEN AREAS, AS INDICATED. LOCATIONS OF LIGHTING CONTROL STATIONS TO BE COORDINATED WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.
4. CONNECT NEW LIGHTING FIXTURE TO AREA EXISTING LIGHTING BRANCH CIRCUIT AND CONTROLS, NOT TO EXCEED 16A ON A 20A/1P BRANCH BREAKER, FIELD VERIFY EXISTING CONDITIONS.

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LEVEL 2 FLOOR PLANS - LIGHTING

SHEET TITLE

24-103

PROJECT NUMBER

E-221.2

SHEET NUMBER

DETROIT DIESEL CORP.
DETROIT DIESEL SECOND FLOOR RENNOVATION
13400 W. OUTER DR.
DETROIT MI

PROJECT

MAENGINEERING
MECHANICAL ELECTRICAL
180 High Oak Road
Bloomfield Hills, Michigan 48304
t | 248 | 258 | 1610
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GENERAL POWER NOTES:

A. ALL ITEMS INDICATED ON THIS PLAN ARE NEW UNLESS OTHERWISE NOTED.
EX. – INDICATES EXISTING ITEM TO REMAIN.

B. REFER TO SHEET E0.0 FOR ELECTRICAL LEGEND.

C. PROVIDE FIRE STOPPINGS WHERE REQUIRED TO MAINTAIN THE RATINGS OF ALL NEW AND EXISTING ASSEMBLIES, COORDINATE WITH ARCHITECT FOR ALL REQUIREMENTS.

D. COORDINATE WITH OWNER FOR EXACT REQUIREMENTS AND LOCATIONS FOR ALL POWER AND DATA OUTLETS, LOCATIONS INDICATED ON PLANS ARE FOR REFERENCE.

E. EXACT REQUIREMENTS AND LOCATIONS FOR SOUND SYSTEM, ACCESS CONTROL SYSTEM, SECURITY SYSTEM TO BE COORDINATED WITH OWNER AND SYSTEM SUPPLIER, PROVIDE RACEWAYS, J-BOXES AND 20A/1P BRANCH CIRCUITS AS REQUIRED.

F. PROVIDE COMPLETE ADDRESSABLE FIRE ALARM SYSTEM FOR THE NEW ADDITION AS AN EXTENSION AND COMPATIBLE WITH THE FACILITY EXISTING FIRE ALARM SYSTEM. FIRE ALARM SYSTEM SHALL INCLUDE ALL CONTROL, MONITORING, POWER SUPPLIES, INITIATING DEVICES, INDICATING APPLIANCES, CONTROL MODULES AND WIRING AS REQUIRED BY AUTHORITIES HAVING JURISDICTION FOR AN APPROVED INSTALLATION, REFER TO SPECIFICATIONS. SYSTEM SHALL BE LAYED OUT ON A PERFORMANCE BASIS, DEVICES ARE NOT INDICATED ON PLANS. FIRE ALARM SYSTEM SHALL BE INTER-WIRED WITH THE FACILITY EXISTING FIRE ALARM SYSTEM.

G. COORDINATE WITH OWNER FOR ALL AUDIO/VISUAL AND TELECOMMUNICATION INSTALLATION REQUIREMENTS, DEVICES INDICATED ON PLANS ARE FOR REFERENCE ONLY, PROVIDE ALL 120V BRANCH CIRCUITS FOR HEAD END EQUIPMENT, BACK BOXES, RACEWAYS, ETC. AS REQUIRED.

H. ALL EXISTING INTERFERING WITH THE NEW WORK TO BE DISCONNECTED AND REMOVED OR RELOCATED TO ALLOW FOR THE NEW INSTALATIONS. EXISTING ITEMS ARE NOT INDICATED ON THESE PLANS, FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH ARCHITECT/OWNER.

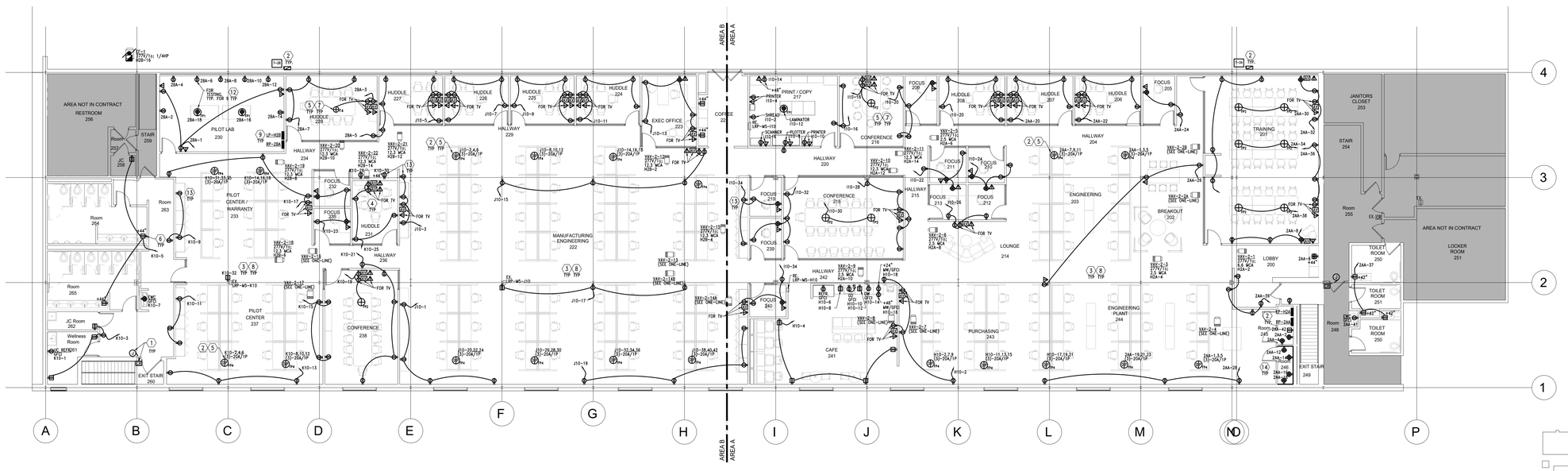
I. MAINTAIN SERVICE CONTINUITY TO ALL EXISTING TO REMAIN ITEMS ON THE SAME BRANCH CIRCUITS OR CONNECT TO NEAREST AVAILABLE OR PROVIDE NEW AS REQUIRED. FIELD VERIFY EXISTING CONDITIONS, TRACE BACK TO SOURCE AND IDENTIFY ALL EXISTING BRANCH CIRCUITS SERVING THE AREA.

J. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL ELECTRICAL AND TELECOMMUNICATIONS DEVICES.

K. PROVIDE TELECOMM. DEVICES AND CABLES AS DIRECTED BY DOC IT:
- EACH DESK REQUIRES 1 CAT 6 CABLE.
- IN CONFERENCE ROOMS, 2 CAT 6 CABLES REQUIRED FOR EACH TV.
- WORK WITH DOC IT ON ADDITIONAL OF WIRELESS ACCESS POINTS.

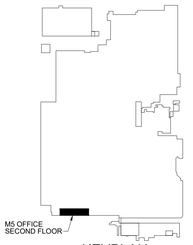
KEYED POWER NOTES:

1. PROVIDE POWER, J-BOXES AND CONDUITS FOR ACCESS CONTROL AS REQUIRED, REFER TO GENERAL NOTE-D THIS SHEET.
2. PROVIDE FURNITURE FEED FOR SYSTEM FURNITURE, WITH 3/4"C. 8#12 TO 3L+3N+2G. (3) CIRCUITS WITH DEDICATED NEUTRAL WITH BRANCH CIRCUITS AS INDICATED FOR POWER AND MAKE FINAL CONNECTIONS TO FURNITURE. VERIFY EXACT REQUIREMENTS AND LOCATIONS WITH APPROVED FURNITURE SYSTEM SUBMITTALS PRIOR TO ROUGH-IN. PROVIDE 2"CONDUIT FROM DATA COMPARTMENT TO ABOVE ACCESSIBLE CEILINGS, OR AS DIRECTED BY OWNER'S IT REPRESENTATIVE. PROVIDE HANDLE TIES FOR BREAKERS FEEDING THE SYSTEM FURNITURE.
3. PROVIDE FIRE ALARM DEVICES AS REQUIRED, REFER TO GENERAL NOTE-B THIS SHEET.
4. DUPLEX RECEPTACLES, DATA AND AV OUTLETS FOR TV/MONITORS SHALL BE MOUNTED AT 5'-6"AFF UNLESS OTHERWISE NOTED. PROVIDE RECESSED MULTI-SERVICE WALL BOXES WITH POWER/DATA/HDMI OUTLETS FOR ALL TV'S/MONITORS, COORDINATE WITH ARCHITECT/OWNER FOR EXACT REQUIREMENTS, QUANTITIES, LOCATIONS AND MOUNTING HEIGHTS.
5. EXACT LOCATIONS FOR ALL FLOOR OUTLETS TO BE COORDINATED WITH ARCHITECT/OWNER. PROVIDE FLUSH FLOOR POKE THRUS AS INDICATED. COORDINATE EXACT ACTIVATIONS FOR LOW VOLTAGE WITH OWNER'S IT REPRESENTATIVE AND IT/AV VENDORS.
6. ALL RECEPTACLES LOCATED WITHIN 6'-0" OF SINKS, ALL IN KITCHENS, WET LOCATIONS SHALL BE GFR TYPE. PROVIDE GFR RECEPTACLES REGARDLESS OF SYMBOL USED ON PLAN FOR THESE LOCATIONS.
7. PROVIDE 2"C FROM FLOOR BOX AV AND DATA COMPARTMENT TO WALL AND UP WALL INTO CEILING, COORDINATE EXACT REQUIREMENTS WITH OWNER'S AV VENDOR.
8. PROVIDE NEW DEVICES AND COVER PLATES FOR ALL EXISTING LOCATIONS TO MATCH NEW INSTALLATIONS, RE-WIRE DEVICES AS INDICATED.
9. EXACT LOCATION FOR ALL ELECTRICAL EQUIPMENT: PANELS, TRANSFORMER, DISCONECT SWITCHES TO BE COORDINATED IN FIELD WITH ARCHITECT/OWNER AND MECHANICAL – TO MAINTAIN CODE REQUIRED DEDICATED EQUIPMENT SPACE AND WORKING CLEARNACES, RE-LOCATE EXISTING DEVICES/RACEWAYS AS REQUIRED THAT INTERFERE WITH THE NEW INSTALLATION.
10. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL ELECTRICAL AND TELECOMMUNICATIONS DEVICES. MOUNTING HEIGHTS SHOWN ARE TYPICAL FOR ALL SIMILAR ROOMS PRESENT ON THIS FLOOR.
11. PROVIDE POWER AND CONTROLS FOR MOTORIZED SHADES, ONE JUNCTION BOX SHOWN TO INDICATE CIRCUITING INTENT. INCLUDE COST TO INSTALL ADDITIONAL BOXES, CONDUITS CONTROLS AND WIRING FOR A COMPLETE INSTALLATION OF THE MOTORIZED SHADES BETWEEN EACH INDIVIDUAL SET OF VERTICAL WINDOW MULLIONS, COORDINATE WITH ARCHITECT AND SHADES SUBMITTALS FOR EXACT REQUIREMENTS.
12. EXACT REQUIREMENTS, DEVICE TYPES, RATINGS, LOCATIONS FOR PARTS TESTING OUTLETS IN THE PILOT LAB #230 TO BE VERIFIED WITH OWNER/LAB USERS PRIOR TO ROUGH-IN. INFORMATION INDICATED ON THESE PLANS ARE FOR REFERENCE ONLY.
13. EXACT LOCATIONS AND MOUNTING FOR ALL OUTLETS AT MILLWORK TO BE COORDINATED WITH ARCHITECT PRIOR TO ROUGH-IN.
14. COORDINATE WITH OWNER'S IT FOR EXACT REQUIREMENTS FOR IT CLOSETS/MDF/IDF, PROVIDE ALL OUTLETS, BRANCH CIRCUITS, CABLE TRAYS, CONDUITS, SLEEVES AS DIRECTED, INFORMATION NOT SPECIFICALLY INDICATED ON THESE DOCUMENTS, TO BE VERIFIED.



E1 / E-320 COMPOSITE LEVEL 2 FLOOR PLAN - POWER
SCALE - 3/32" = 1'-0"

NORTH



KEYPLAN
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04.18.2025	BIDS/PERMIT
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P. 734.665.4189
www.hobbs-black.com

DETROIT DIESEL CORP.
DETROIT DIESEL SECOND FLOOR RENNOVATION
13400 W. OUTER DR.
DETROIT MI

PROJECT

MAENGINEERING
MECHANICAL ELECTRICAL
180 High-Oak Road
Bloomfield Hills, Michigan 48304
t | 248 | 258 | 1610
f | 248 | 258 | 9538

CONSULTANT

STATE OF MICHIGAN
JOHN D. RICHARDS
ENGINEER
No. 6201034544
PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

COMPOSITE LEVEL 2 FLOOR PLAN - POWER

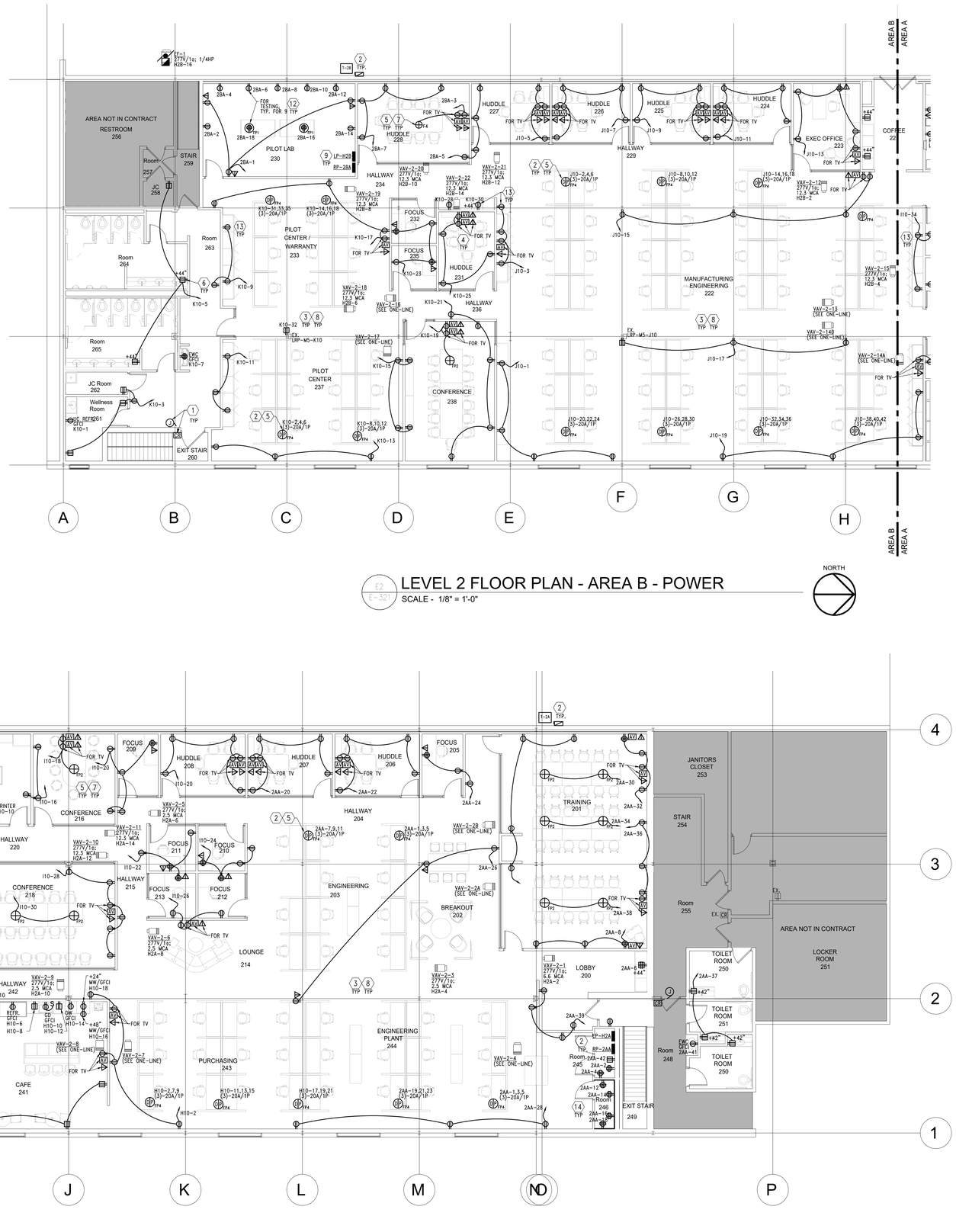
SHEET TITLE

24-103

PROJECT NUMBER

E-320.2

SHEET NUMBER



LEVEL 2 FLOOR PLAN - AREA B - POWER

E2 / E-321

SCALE - 1/8" = 1'-0"

NORTH

LEVEL 2 FLOOR PLAN - AREA A - POWER

E1 / E-321

SCALE - 1/8" = 1'-0"

NORTH

GENERAL POWER NOTES:

A. ALL ITEMS INDICATED ON THIS PLAN ARE NEW UNLESS OTHERWISE NOTED. EX. – INDICATES EXISTING ITEM TO REMAIN.

B. REFER TO SHEET E0.0 FOR ELECTRICAL LEGEND.

C. PROVIDE FIRE STOPPINGS WHERE REQUIRED TO MAINTAIN THE RATINGS OF ALL NEW AND EXISTING ASSEMBLIES, COORDINATE WITH ARCHITECT FOR ALL REQUIREMENTS.

D. COORDINATE WITH OWNER FOR EXACT REQUIREMENTS AND LOCATIONS FOR ALL POWER AND DATA OUTLETS, LOCATIONS INDICATED ON PLANS ARE FOR REFERENCE.

E. EXACT REQUIREMENTS AND LOCATIONS FOR SOUND SYSTEM, ACCESS CONTROL SYSTEM, SECURITY SYSTEM TO BE COORDINATED WITH OWNER AND SYSTEM SUPPLIER, PROVIDE RACEWAYS, J-BOXES AND 20A/1P BRANCH CIRCUITS AS REQUIRED.

F. PROVIDE COMPLETE ADDRESSABLE FIRE ALARM SYSTEM FOR THE NEW ADDITION AS AN EXTENSION AND COMPATIBLE WITH THE FACILITY EXISTING FIRE ALARM SYSTEM. FIRE ALARM SYSTEM SHALL INCLUDE ALL CONTROL, MONITORING, POWER SUPPLIES, INITIATING DEVICES, INDICATING APPLIANCES, CONTROL MODULES AND WIRING AS REQUIRED BY AUTHORITIES HAVING JURISDICTION FOR AN APPROVED INSTALLATION. REFER TO SPECIFICATIONS. SYSTEM SHALL BE LAYED OUT ON A PERFORMANCE BASIS, DEVICES ARE NOT INDICATED ON PLANS. FIRE ALARM SYSTEM SHALL BE INTER-WIRED WITH THE FACILITY EXISTING FIRE ALARM SYSTEM.

G. COORDINATE WITH OWNER FOR ALL AUDIO/VISUAL AND TELECOMMUNICATION INSTALLATION REQUIREMENTS, DEVICES INDICATED ON PLANS ARE FOR REFERENCE ONLY, PROVIDE ALL 120V BRANCH CIRCUITS FOR HEAD END EQUIPMENT, BACK BOXES, RACEWAYS, ETC. AS REQUIRED.

H. ALL EXISTING INTERFERING WITH THE NEW WORK TO BE DISCONNECTED AND REMOVED OR RELOCATED TO ALLOW FOR THE NEW INSTALLATIONS. EXISTING ITEMS ARE NOT INDICATED ON THESE PLANS, FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH ARCHITECT/OWNER.

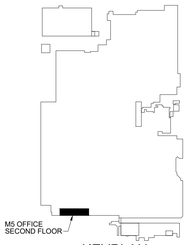
I. MAINTAIN SERVICE CONTINUITY TO ALL EXISTING TO REMAIN ITEMS ON THE SAME BRANCH CIRCUITS OR CONNECT TO NEAREST AVAILABLE OR PROVIDE NEW AS REQUIRED. FIELD VERIFY EXISTING CONDITIONS, TRACE BACK TO SOURCE AND IDENTIFY ALL EXISTING BRANCH CIRCUITS SERVING THE AREA.

J. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL ELECTRICAL AND TELECOMMUNICATIONS DEVICES.

K. PROVIDE TELECOMM. DEVICES AND CABLES AS DIRECTED BY DOC IT:
- EACH DESK REQUIRES 1 CAT 6 CABLE.
- IN CONFERENCE ROOMS, 2 CAT 6 CABLES REQUIRED FOR EACH TV.
- WORK WITH DOC IT ON ADDITIONAL OF WIRELESS ACCESS POINTS.

KEYED POWER NOTES:

1. PROVIDE POWER, J-BOXES AND CONDUITS FOR ACCESS CONTROL AS REQUIRED, REFER TO GENERAL NOTE–D THIS SHEET.
2. PROVIDE FURNITURE FEED FOR SYSTEM FURNITURE, WITH 3/4"C, 8#12 TO 3L+3N+2G, (3) CIRCUITS WITH DEDICATED NEUTRAL WITH BRANCH CIRCUITS AS INDICATED FOR POWER AND MAKE FINAL CONNECTIONS TO FURNITURE. VERIFY EXACT REQUIREMENTS AND LOCATIONS WITH APPROVED FURNITURE SYSTEM SUBMITTALS PRIOR TO ROUGH-IN. PROVIDE 2"CONDUIT FROM DATA COMPARTMENT TO ABOVE ACCESSIBLE CEILINGS, OR AS DIRECTED BY OWNER'S IT REPRESENTATIVE. PROVIDE HANDLE TIES FOR BREAKERS FEEDING THE SYSTEM FURNITURE.
3. PROVIDE FIRE ALARM DEVICES AS REQUIRED, REFER TO GENERAL NOTE–B THIS SHEET.
4. DUPLEX RECEPTACLES, DATA AND AV OUTLETS FOR TV/MONITORS SHALL BE MOUNTED AT 5'–6"AFF UNLESS OTHERWISE NOTED. PROVIDE RECESSED MULTI-SERVICE WALL BOXES WITH POWER/DATA/HDMI OUTLETS FOR ALL TV'S/MONITORS, COORDINATE WITH ARCHITECT/OWNER FOR EXACT REQUIREMENTS, QUANTITIES, LOCATIONS AND MOUNTING HEIGHTS.
5. EXACT LOCATIONS FOR ALL FLOOR OUTLETS TO BE COORDINATED WITH ARCHITECT/OWNER. PROVIDE FLUSH FLOOR POKE THRUS AS INDICATED, COORDINATE EXACT ACTIVATIONS FOR LOW VOLTAGE WITH OWNER'S IT REPRESENTATIVE AND IT/AV VENDORS.
6. ALL RECEPTACLES LOCATED WITHIN 6'–0" OF SINKS, ALL IN KITCHENS, WET LOCATIONS SHALL BE GFR TYPE. PROVIDE GFR RECEPTACLES REGARDLESS OF SYMBOL USED ON PLAN FOR THESE LOCATIONS.
7. PROVIDE 2"C FROM FLOOR BOX AV AND DATA COMPARTMENT TO WALL AND UP WALL INTO CEILING, COORDINATE EXACT REQUIREMENTS WITH OWNER'S AV VENDOR.
8. PROVIDE NEW DEVICES AND COVER PLATES FOR ALL EXISTING LOCATIONS TO MATCH NEW INSTALLATIONS, RE–WIRE DEVICES AS INDICATED.
9. EXACT LOCATION FOR ALL ELECTRICAL EQUIPMENT: PANELS, TRANSFORMER, DISCONECT SWITCHES TO BE COORDINATED IN FIELD WITH ARCHITECT/OWNER AND MECHANICAL – TO MAINTAIN CODE REQUIRED DEDICATED EQUIPMENT SPACE AND WORKING CLEARNACES, RE–LOCATE EXISTING DEVICES/RACEWAYS AS REQUIRED THAT INTERFERE WITH THE NEW INSTALLATION.
10. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL ELECTRICAL AND TELECOMMUNICATIONS DEVICES. MOUNTING HEIGHTS SHOWN ARE TYPICAL FOR ALL SIMILAR ROOMS PRESENT ON THIS FLOOR.
11. PROVIDE POWER AND CONTROLS FOR MOTORIZED SHADES, ONE JUNCTION BOX SHOWN TO INDICATE CIRCUITING INTENT, INCLUDE COST TO INSTALL ADDITIONAL BOXES, CONDUITS CONTROLS AND WIRING FOR A COMPLETE INSTALLATION OF THE MOTORIZED SHADES BETWEEN EACH INDIVIDUAL SET OF VERTICAL WINDOW MULLIONS, COORDINATE WITH ARCHITECT AND SHADES SUBMITTALS FOR EXACT REQUIREMENTS.
12. EXACT REQUIREMENTS, DEVICE TYPES, RATINGS, LOCATIONS FOR PARTS TESTING OUTLETS IN THE PILOT LAB #230 TO BE VERIFIED WITH OWNER/LAB USERS PRIOR TO ROUGH–IN. INFORMATION INDICATED ON THESE PLANS ARE FOR REFERENCE ONLY.
13. EXACT LOCATIONS AND MOUNTING FOR ALL OUTLETS AT MILLWORK TO BE COORDINATED WITH ARCHITECT PRIOR TO ROUGH–IN.
14. COORDINATE WITH OWNER'S IT FOR EXACT REQUIREMENTS FOR IT CLOSETS/MDF/IDF, PROVIDE ALL OUTLETS, BRANCH CIRCUITS, CABLE TRAYS, CONDUITS, SLEEVES AS DIRECTED, INFORMATION NOT SPECIFICALLY INDICATED ON THESE DOCUMENTS, TO BE VERIFIED.



KEYPLAN

NOT TO SCALE

Sheet Size - 30x42

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f | 248 | 258 | 9538

CONSULTANT

STATE OF MICHIGAN
JOHN D. RICHARDS
ENGINEER
No. 6201034544
PROFESSIONAL ENGINEER

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LEVEL 2 FLOOR PLANS - POWER

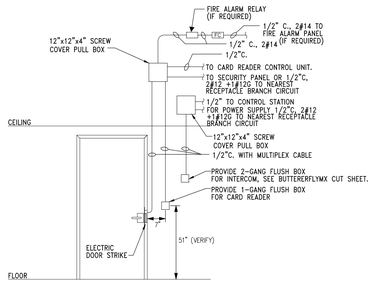
SHEET TITLE

24-103

PROJECT NUMBER

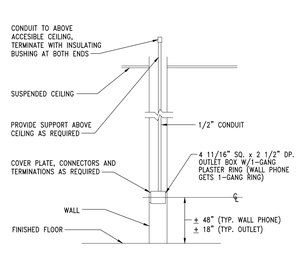
E-321.2

SHEET NUMBER

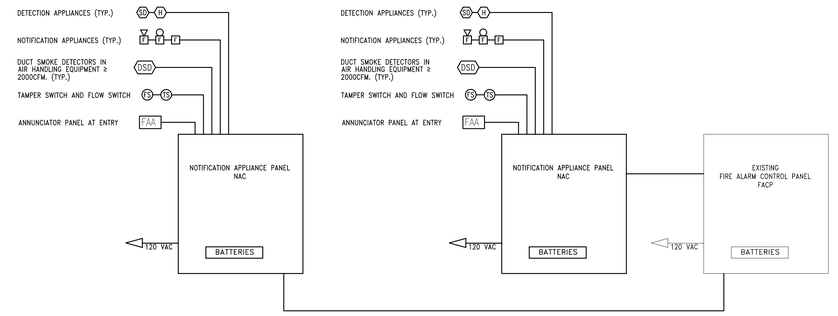


1. ALL WORK SHOWN ON THIS DETAIL IS BY ELECTRICAL CONTRACTOR INCLUDING BUT NOT LIMITED TO: J-BOXES, CONDUIT, WIRING, CARD READER HARDWARE, INTERCOM AND FINAL INSTALLATION IS DONE BY SECURITY CONTRACTOR.
2. PROVIDE MULTIPLEX CABLE FOR CARD READER.
3. VERIFY WITH LOW VOLTAGE CONTRACTOR PRIOR TO INSTALLATION.

TYPICAL CARD READER DOOR DETAIL
No Scale



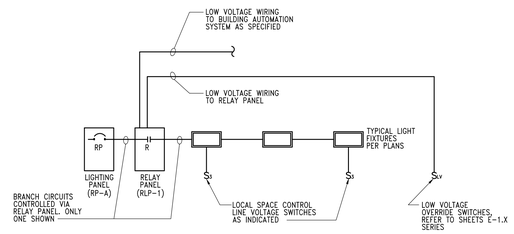
TYPICAL TELECOMMUNICATION OUTLET DETAIL
No Scale



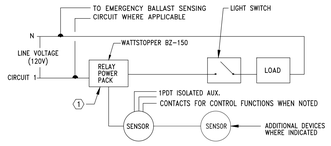
NOTE:
SUBMIT DETAILED DRAWING OF SYSTEM AND ALL COMPONENTS FOR APPROVAL BY THE A/E AND THE LOCAL FIRE MARSHAL (AHJ).

NEW NAC AND FAA PANELS TO BE ADDED AS REQUIRED, CONNECT TO EXISTING FIRE ALARM CONTROL PANEL.

FIRE ALARM SYSTEM RISER
Schematic Only



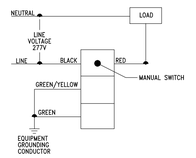
AUTOMATIC LIGHTING CONTROL OVERRIDE SCHEMATIC DIAGRAM
No Scale



KEY NOTES:

1. OCCUPANCY SENSOR MODEL NUMBERS WIRING DIAGRAMS AND CONDUCTOR COLORS ARE BASED ON WATTSTOPPER. EQUAL EQUIPMENT ON THE WSU PREFERRED MANUFACTURERS LIST MAY BE USED. MODIFY DIAGRAMS ACCORDINGLY PER MANUFACTURERS INSTALLATION INSTRUCTIONS AND INDICATE ON AS-BUILT DOCUMENTS.

SCHEMATIC OCCUPANCY CONTROL DETAIL (CEILING MOUNTED SENSOR) ①
No Scale



WALL MOUNTED SENSOR
No Scale

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JOHN D. RICHARDS
ENGINEER
No. 6201034544
PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

ELECTRICAL DETAILS

SHEET TITLE

24-103

PROJECT NUMBER

E-500.2

SHEET NUMBER

ELECTRICAL SPECIFICATIONS

GENERAL REQUIREMENTS:

ALL WORK SHALL BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE, LATEST EDITION, AND ALL LOCAL AND STATE AUTHORITIES HAVING JURISDICTION THEREOF.

ALL EQUIPMENT SHALL BE SPECIFICATION GRADE AND SHALL HAVE U.L. LABEL FOR INTENDED USE.

ELECTRICAL SYSTEMS SHALL BE COMPLETE IN EVERY DETAIL, INCLUDING ALL INCIDENTAL ITEMS FOR A PROPER AND FUNCTIONING INSTALLATION SUBJECT TO FINAL APPROVAL OF ARCHITECT/ENGINEER.

ALL REQUIRED PERMIT AND INSPECTIONS SHALL BE OBTAINED BY CONTRACTOR AND SUCH COSTS SHALL BE INCLUDED IN BID PRICE FOR THIS WORK.

PROVIDE UL LISTED SYSTEM FOR FIRE STOPPING PENETRATIONS THROUGH FIRE RATED ASSEMBLIES. PROVIDE SYSTEM WITH EQUAL OR GREATER RATING THAN ASSEMBLY. REFER TO ARCHITECTURAL DOCUMENTS FOR RATINGS AND LOCATIONS OF ASSEMBLIES.

EXAMINATION OF SITE IS MANDATORY. CONTRACTOR IS HEREBY HELD TO HAVE EXAMINED THE SITE AND HAVE INCLUDED IN HIS BID PRICE ALL COSTS DUE TO SITE AND FIELD CONDITIONS.

COMPLETE IDENTIFICATION OF PROJECT ELECTRICAL COMPONENTS IS REQUIRED. IDENTIFY ALL PANELS, DISCONNECTS, CONTROL DEVICES, ETC., WITH THE NOMENCLATURE INDICATED ON THE DOCUMENTS AND WITH POWER SOURCE AND ELECTRICAL RATINGS USING PLASTIC LAMINATE NAMEPLATE. INSTALL TYPEWRITTEN DIRECTORIES OF ALL CIRCUITS ON INSIDE OF PANELS. IDENTIFY WIRING DEVICE COVERPLATES WITH PANELBOARD AND BRANCH CIRCUIT NUMBER SERVING DEVICE, E.G. "A-15". PROVIDE ¼" MACHINE-WRITTEN BLACK LETTERING ON CLEAR PLASTIC ADHESIVE TAPE. LOCATE ON BOTTOM FRONT OF COVERPLATE, CENTERED BELOW WIRING DEVICE(S). SUBMIT SAMPLE OF LABELED TAPE WITH WIRING DEVICE/COVERPLATE SUBMITTAL. SAMPLE MAY BE ADHERED TO PAPERWORK IN SUBMITTAL, RATHER THAN TO A COVERPLATE.

PROVIDE TEMPORARY POWER AND LIGHTING DURING CONSTRUCTION. REMOVE TEMPORARY WIRING UPON COMPLETION OF THE PROJECT. TEMPORARY SERVICES SHALL BE AS REQUIRED, BY N.E.C. AND OSHA.

GROUND CONTINUITY SHALL BE MAINTAINED THROUGHOUT THE ELECTRICAL SYSTEM. INSTALL EQUIPMENT GROUNDING CONDUCTOR WITH EVERY CIRCUIT.

COORDINATE SIZE AND LOCATION OF ANY REQUIRED ACCESS PANELS IN WALLS OR FINISHED CEILINGS WITH ARCHITECT PRIOR TO INSTALLATION.

WARRANTY:

UNLESS A LONGER PERIOD IS SPECIFIED IN INDIVIDUAL PARAGRAPHS, PROVIDE A MINIMUM OF A ONE YEAR WARRANTY ON ALL ELECTRICAL WORK BEGINNING THE DATE OF FINAL ACCEPTANCE OF THE PROJECT BY THE OWNER.

SUBMITTALS:

SUBMIT SHOP DRAWINGS FOR ALL MAJOR COMPONENTS OR SYSTEMS OF THE PROJECT. SUBMIT ADDITIONAL SHOP DRAWINGS IF REQUESTED BY ENGINEER.

NO APPARATUS OR EQUIPMENT SHALL BE SHIPPED FROM STOCK OR FABRICATED UNTIL SHOP DRAWINGS FOR SAME HAVE BEEN STAMPED 'REVIEWED" OR "REVIEWED AS NOTED". SUBMIT DATA REQUIRED FOR TRANSFORMERS SUCH AS EFFICIENCY, REGULATION, CORE LOSS AND SOUND LEVELS. (SEE APPLICABLE SECTIONS).

SUBMIT SYSTEM COMPONENTS, PRODUCT DATA AND SHOP DRAWINGS COMPLETE FOR EACH SYSTEM UNDER ONE SUBMITTAL. DO NOT BREAK OUT EQUIPMENT FOR ONE SYSTEM BETWEEN MULTIPLE SUBMITTALS.

ALL SHOP DRAWINGS MUST BE CLEARLY MARKED TO SHOW EQUIPMENT SUBMITTED AND ANY DEVIATIONS FROM SPECIFICATIONS SHALL BE NOTED THEREON. DO NOT INCLUDE ONLY MODEL NUMBERS TO INDICATE SUBMITTED EQUIPMENT. STRIKE OUT ANY INFORMATION ON PRODUCT DATA THAT IS NOT PROJECT SPECIFIC, AND EDIT RELEVANT INFORMATION TO SHOW ACTUAL EQUIPMENT SUBMITTED. ELECTRICAL CONTRACTOR MUST SIGN AND APPROVED ALL SHOP DRAWINGS PRIOR TO SUBMITTAL.

UNIQUELY NUMBER EACH PAGE IN SUBMITTAL.

IF DIFFERENT SYSTEMS ARE INCLUDED IN ONE SUBMITTAL, CLEARLY SEPARATE INFORMATION AND PROVIDE DIFFERENT SUB-NUMBERING OF SYSTEMS. SHOP DRAWINGS THAT ARE INCOMPLETE, UNSIGNED AND NOT PLAINLY MARKED WILL NOT BE REVIEWED.

DEMOLITION AND RENOVATION WORK:

DISCONNECT, REMOVE, RELOCATE, REWIRE OR DISPOSE OF ANY EQUIPMENT INTERFERING WITH NEW CONSTRUCTION OR AFFECTED BY RENOVATION WORK.

ANY ELECTRICAL EQUIPMENT OR SYSTEMS WHICH ARE TO REMAIN, AND ARE AFFECTED BY THIS WORK, SHALL BE IMMEDIATELY RESTORED TO FULL OPERATING CONDITION AND AT NO ADDITIONAL COST TO THE CONTRACT.

EQUIPMENT REMOVED SHALL BE DISPOSED OF AS DIRECTED, EITHER TO STORAGE OR OFF THE PREMISES.

WHERE SERVICES OR CIRCUITS ARE DISCONNECTED OR DISCONTINUED, IT IS MANDATORY THAT ANY EXISTING UNUSED WIRING BE REMOVED TO THE SOURCE UNLESS SPECIFICALLY NOTED ON THE DRAWINGS. IT IS THE INTENT OF THIS ARTICLE TO PERMANENTLY DISCONNECT ALL UNUSED CIRCUITS AT THE MAIN SOURCE WHENEVER POSSIBLE. NO ENERGIZED CIRCUIT SHALL BE TAPED AND ABANDONED IN OUTLET BOXES UNLESS SO SPECIFIED ON DRAWINGS.

CIRCUIT TRACE EXISTING TO REMAIN CIRCUITS AS NECESSARY FOR PROPER IDENTIFICATION, AND AS REQUIRED TO PERFORM WORK.

REMODELING WORK INVOLVING EXISTING BRANCH CIRCUIT PANELBOARD SHALL BE SUCH THAT, WHEN ALL WORK IS COMPLETED EXISTING PANELS ARE PROVIDED WITH NEW AND UPDATED ACCURATE DIRECTORIES. ALL VACATED CIRCUITS SHALL BE MARKED SPARE. WHEN NEW BREAKERS ARE REQUIRED, THEY SHALL BE INSTALLED IN EXISTING SPACES AND SHALL MATCH THOSE THAT ARE EXISTING. IN THE EVENT THAT MORE BREAKERS ARE REQUIRED THAN THE SPACES AVAILABLE, CONTRACTOR SHALL CONSULT ENGINEER FOR DIRECTION.

CONTRACTOR MAY USE EXISTING CONDUITS AND OUTLET BOXES, PROVIDED THEY ARE IN GOOD ELECTRICAL CONDITION. RE-SUPPORT EXISTING TO REMAIN CONDUIT AND BOXES IN RENOVATION AREA IF INADEQUATELY SUPPORTED. PROVIDE SUPPORT AS REQUIRED TO COMPLY WITH NEC AND LOCAL AUTHORITY REQUIREMENTS.

IT IS THE INTENT OF THE OVERALL DESIGN TO CONCEAL ALL WORK EXCEPT IN UNFINISHED AREAS. IN CASES WHERE IT IS IMPOSSIBLE TO CONCEAL THE WORK, SHORT EXPOSED METAL RACEWAYS MAY BE USED SUBJECT TO APPROVAL OF ENGINEER.

ALL ELECTRICAL OPENINGS THAT ARE ABANDONED IN WALLS, CEILINGS OR FLOOR SHALL BE PROVIDED WITH SUITABLE BLANK COVER PLATES. ABANDONED FLOOR OUTLET SHALL BE PROVIDED WITH .040 BRASS PLATES.

CONDUITS AND OTHER PARTS OF ELECTRICAL SYSTEMS THAT BECOME EXPOSED AS A PART OF NEW WORK SHALL BE REMOVED AS REQUIRED TO A POINT WHERE THE ABANDONED PORTION IS TOTALLY CONCEALED.

ALL SURFACES DAMAGED BY THIS CONTRACTOR IN THE COURSE OF PERFORMING WORK SHALL BE RESTORED TO SATISFACTORY CONDITION, AS DIRECTED BY THE ARCHITECT AND ALL COSTS OF REPAIRS SHALL BE PAID FOR BY THE CONTRACTOR

REMOVE SERVICE TO MECHANICAL, ELECTRICAL AND BUILDING EQUIPMENT INDICATED AS REMOVED OR DISCONNECTED. MAINTAIN CIRCUITS TO EXISTING-TO-REMAIN EQUIPMENT. IDENTIFY UNUSED, REMOVED CIRCUITS ON PANEL SCHEDULE AS SPARE. COORDINATE WITH ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR EXISTING TO REMAIN EQUIPMENT AND FOR DEMOLITION WORK.

SERVICE SHUTDOWN AND POWER OUTAGES SHALL BE SCHEDULED WITH THE OWNER PRIOR TO PERFORMING ANY WORK ON EXISTING SERVICE. SCHEDULE SHALL BE IN WRITING AND SHALL SHOW A DETAILED DESCRIPTION OF THE PROPOSED WORK AND THE DURATION OF OUTAGE.

UTILITY SERVICES:

ELECTRIC SERVICE TO THE SITE IS EXISTING AND SHALL BE UTILIZED AS INDICATED ON THE DRAWINGS.

TELEPHONE SERVICE TO THE SITE IS EXISTING AND SHALL BE UTILIZED AS INDICATED ON THE DRAWINGS.

MICHIGAN UNIFORM ENERGY CODE:

THIS IS A PERFORMANCE BASED DESIGN-BUILD SPECIFICATION.

THE INTENT OF THIS SPECIFICATION ITEM IS FOR FULL COMPLIANCE WITH THE REQUIREMENTS OF THE MICHIGAN UNIFORM ENERGY CODE 2015 AND RELATED AMENDMENTS AS THEY APPLY TO THE ASHRAE 90.1-2013 STANDARD, REFER TO PLANS FOR DETAILS AND REQUIREMENTS FOR EACH SPACE AND/OR AREA.

DESIGN AND PROVIDE A COMPLETE LIGHTING CONTROL SYSTEM PER MANUFACTURER'S RECOMMENDATION. INDICATE ALL COMPONENTS ON PLAN FOR REVIEW AND APPROVAL AS PART OF THE LIGHTING PACKAGE SUBMITTAL DOCUMENTATION. COORDINATE WITH ARCHITECTURAL TRADES TO PROVIDE CEILING ACCESS PANELS WHERE REQUIRED.

MICHIGAN UNIFORM ENERGY CODE:

THIS IS A PERFORMANCE BASED DESIGN-BUILD SPECIFICATION.

THE INTENT OF THIS SPECIFICATION ITEM IS FOR FULL COMPLIANCE WITH THE REQUIREMENTS OF THE MICHIGAN UNIFORM ENERGY CODE AND RELATED AMENDMENTS AS THEY APPLY TO THE ASHRAE 90.1-2013 STANDARD. AUTOMATIC CONTROL APPLIES TO NEW AND TO EXISTING TO REMAIN FIXTURES.

DESIGN AND PROVIDE A COMPLETE LIGHTING CONTROL SYSTEM PER MANUFACTURER'S RECOMMENDATION. INDICATE ALL COMPONENTS ON AS-BUILT DOCUMENTATION. COORDINATE WITH ARCHITECTURAL TRADES TO PROVIDE CEILING ACCESS PANELS WHERE REQUIRED.

PROVIDE OCCUPANCY SENSOR(S) IN EVERY ROOM OR SPACE (EXCEPT WHERE TIME SWITCHES/CONTACTOR CONTROL IS INDICATED) TO AUTOMATICALLY SHUTOFF ALL NON-EMERGENCY LIGHTING WITHIN ITS SPACE WITH ADJUSTABLE TIME DELAY UP TO 30 MINUTES. WHERE INDICATED, CONTROL LIGHTING THROUGH TIME SWITCH WITH ASTRONOMICAL TIME CLOCK. PROVIDE LIGHTING CONTROLLED VIA CONTACTORS AND TIME SWITCH AS REQUIRED FOR QUANTITY OF CIRCUITS CONTROLLED. CONTROL EXTERIOR FIXTURES WITH TIME CLOCK, CONTACTOR AND PHOTOCELL.

OCCUPANCY SENSORS SHALL BE OF ULTRASONIC, INFRARED OR MULTI-TECHNOLOGY TYPE AS RECOMMENDED BY MANUFACTURER FOR EACH SPACE/APPLICATION CEILING MOUNTED.

OCCUPANCY SENSORS AND ACCESSORIES, TIME CLOCKS, AND CONTACTORS ARE NOT SPECIFICALLY INDICATED. CONTRACTOR TO DESIGN GROUPING OF BRANCH CIRCUITS AND QUANTITY OF TIME CLOCKS AND CONTACTORS REQUIRED AND PROVIDE ACCORDINGLY.

PROVIDE LOCAL WALL SWITCHES ON-OFF TYPE IN ADDITION TO OCCUPANCY AND TIME CLOCK/CONTACTOR CONTROL.

PROVIDE UNIVERSAL VOLTAGE POWER SWITCHES (RELAY) PACKS WITH LOAD CONTACT RATED 20A @ 120/277V FOR EACH SENSOR AS REQUIRED TO ACHIEVE THE LIGHTING CONTROL INTENDED. COORDINATE WITH SWITCH LEGS SHOWN ON PLANS. PROVIDE AUXILIARY CONTACT FOR CONTROL OF HVAC EQUIPMENT ON EACH RELAY PACK. MOUNT COMPONENTS CONCEALED ABOVE FINISHED CEILINGS WHEN PRESENT. PROVIDE ACCESS PANELS FOR NON-ACCESSIBLE CEILINGS. WHEN NO FINISHED CEILINGS ARE PRESENT, MOUNT COMPONENTS CONCEALED IN SHEET METAL ENCLOSURE WITH HINGED COVER. SIZE ENCLOSURE TO ACCOMMODATE COMPONENTS AND WIRING, AND COORDINATE LOCATION WITH ARCHITECT.

PROVIDE FIXTURES WITH TANDEM WIRED BALLASTS AS REQUIRED TO COMPLY WITH ASHRAE 90.1.

REFER TO THE LIGHTING DRAWINGS FOR COORDINATION WITH FIXTURES, CIRCUITING AND SWITCHING.

ELECTRICAL EQUIPMENT AND DEVICES:

STEP DOWN TRANSFORMERS SHALL BE GENERAL PURPOSE, DRY TYPE, SELF AIR COOLED, TWO WINDING, UL CLASS 185 INSULATION (115 DEGREE C RISE, 30 DEGREE C HOT SPOT, AND 40 DEGREE C AMBIENT) WITH STANDARD FULL CAPACITY TAPS. VOLTAGE AND KVA AS INDICATED. MANUFACTURERS: GE, WESTINGHOUSE, SQUARE D, OR APPROVED EQUAL. PROVIDE GROUNDING OF TRANSFORMERS AS SEPARATELY DERIVED SOURCES PER NEC ARTICLE 250.30. INCLUDE INSULATION CLASS IN SUBMITTAL INFORMATION.

RECEPTACLES SHALL BE SPECIFICATION GRADE, GROUNDING TYPE, 2-POLE, 3-WIRE, AND POLARIZED. RECEPTACLES IN GENERAL SHALL BE 20A, 125 V., HUBBELL #HBL5362 OR EQUAL MOUNTED 18" AFF EXCEPT AT COUNTERS WHERE THEY SHALL BE 6" ABOVE COUNTER AND IN TOILET ROOMS AT 48" AFF. RECEPTACLES ON SINGLE CIRCUIT SHALL BE 20 AMPERES, HUBBELL #HBL5362. HIGH AMPERE RATINGS AND VOLTAGES ARE INDICATED ON DRAWINGS.

RECEPTACLES DESIGNATED "GFR" SHALL BE GROUND FAULT RECEPTACLES, SIMILAR TO HUBBELL #GF-5362. FOR OUTDOOR OR WET LOCATIONS, PROVIDE WEATHERPROOF BOX AND GASKETED COVER PLATE. WIRE "GFR" RECEPTACLES FOR SELF PROTECTION AND NOT DOWNSTREAM PROTECTION OF OTHER WIRING DEVICES.

SWITCHES SHALL BE SINGLE POLE, TWO POLE, OR THREE-WAY, AS INDICATED, TOGGLE TYPE, 20A, 120/277V., QUIET TYPE, HUBBELL #1221/1222/1223 OR EQUAL. PILOT TYPE SWITCHES HUBBELL #1251.

PROVIDE DIMMERS RATED FOR LOAD WATTAGE AND VOLTAGE CONTROLLED. CONTRACTOR TO COORDINATE RATING BASED ON APPROVED FIXTURE SUBMITTALS AND ACTUAL FIXTURE QUANTITIES. PROVIDE DIMMERS DESIGNED FOR CONTROLLED LOAD (INCANDESCENT, MAGNETIC LOW VOLTAGE, ELECTRONIC LOW VOLTAGE OR FLUORESCENT).

WIRING DEVICE AND FACEPLATE COLORS SHALL BE BLACK ON WOOD FINISHES AND WHITE FOR ALL OTHERS, ARCHITECT/OWNER TO CONFIRM COLORS, VERIFY WITH ARCHITECT FOR ALL LOCATIONS PRIOR TO INSTALLATIONS.

DEVICE COVER PLATES SHALL BE OF TYPE AND NUMBER OF GANGS FOR DEVICES INSTALLED, SMOOTH EDGED 302/304 GRADE BRUSHED STAINLESS STEEL. PROVIDE BRANCH CIRCUIT IDENTIFICATION ON ALL COVERPLATES AS SPECIFIED UNDER "GENERAL REQUIREMENTS". COVERPLATES FOR DEVICES CONNECTED TO THE EMERGENCY SYSTEM SHALL ALSO BE FACTORY LABELED WITH BLACK LETTERING TO READ "EMERGENCY".

PROVIDE TELEPHONE/DATA OUTLETS AND STUBS AS INDICATED. TELEPHONE/DATA OUTLETS SHALL CONSIST OF TWO GANG OUTLET BOX WITH PLASTER RING AND NO COVER PLATE. JACK AND COVER PLATE ARE SUPPLIED BY OTHERS. HEIGHT OF OUTLET FOR DESK PHONE IS 16" AFF AND FOR WALL PHONE 48" AFF. TELEPHONE/DATA OUTLETS SHALL CONTAIN OF 3/4" CONDUIT FROM OUTLET TO AN ACCESSIBLE PORTION OF CEILING SPACE. TERMINATE WITH INSULATING BUSHING.

TIME SWITCHES SHALL BE ELECTRONIC, PROGRAMMABLE, FOUR CHANNEL, FULL YEAR OR SEVEN DAY PROGRAMMING, NI-CAD BATTERY BACK-UP WITH CHARGER, 365 DAY ASTRO DIAL AND MOMENTARY FEATURE FOR ALL CIRCUITS, WITH AUTOMATIC DAYLIGHT SAVINGS AND LEAP YEAR ADJUSTMENT AND SEASONAL PROGRAMMING, #ET816CR OR SIMILAR FROM TORK GENERAL PURPOSE.

LIGHTING CONTACTORS SHALL BE 600V, 120V COIL, ELECTRICALLY OPERATED, MECHANICALLY HELD AMPERE RATING AND NUMBER OF POLES AS INDICATED ON DRAWINGS OR 3-POLE IF NOT INDICATED. SQUARE D CLASS 8903 OR EQUAL.

LOCATE TIME SWITCHES AND CONTACTORS ADJACENT TO THE PANELS SERVING THEM, UNLESS OTHERWISE INDICATED.

PHOTOCELL CONTROLS SHALL BE "ON-FF" CONTROL EQUIPPED WITH ½" THREADED STEM, ADJUSTABLE YOKE, FAIL-SAFE OPERATION, ONE TO THREE FOOT CANDLE "ON" ADJUSTMENT, HERMETICALLY SEALED, LIGHTING ARRESTOR, S.P.S.T. SWITCH, 120 OR 277 VOLT AS REQUIRED, 60 HZ, 1500 WATTS TUNGSTEN, TORK 2000 SERIES OR EQUAL. PROVIDE ALL MOUNTING HARDWARE IN STAINLESS STEEL. INSTALL IN ACCESSIBLE LOCATION OF ROOF. WHEN USED WITH RELAY PANEL SYSTEM, SELECT SENSOR WHICH IS COMPATIBLE WITH RELAY PANEL INPUT.

GROUND BUS SHALL BE 8" LONG, 2" WIDE AND MINIMUM ¼" THICK WITH PRE-DRILLED HOLES FOR LUGGING CABLE. WALL MOUNT AS INDICATED. PROVIDE ALL HARDWARE FOR WALL MOUNTING.

LIGHTING CONTROL RELAY PANEL:

PROVIDE A STANDALONE LIGHTING CONTROL RELAY PANEL IN A SURFACE MOUNTED ENCLOSURE, SUITABLE FOR OPERATION ON 120VAC CONTROL POWER. PROVIDE LOCKABLE FRONT COVER. TURN OVER MINIMUM TWO KEYS TO TENANT.

PANEL SHALL CONTAIN INTEGRAL ASTRONOMICAL TIME CLOCK WITH AUTOMATIC DAYLIGHT SAVINGS, LEAP YEAR ADJUSTMENTS, AND CAPABILITY TO PROGRAM SITE LOCATION INFORMATION INTO TIME CLOCK FOR USE WITH SUNRISE/SUNSET SETTINGS.

REFER TO DRAWINGS FOR LOADS CONTROLLED BY THE RELAY PANEL.

COORDINATE QUANTITY OF RELAYS AND PANELS WITH CIRCUITS BEING CONTROLLED. IN EACH RELAY PANEL IN THE PROJECT, PROVIDE MINIMUM 10% SPARE RELAYS IN ADDITION TO THOSE REQUIRED FOR CONTROLLED CIRCUITS. PANELS MAY BE OF THE SINGLE FEED TYPE WITH BRANCH CIRCUITS AS REQUIRED OR OF THE MULTIPLE FEED TYPE: ONE FOR EACH CIRCUIT NOTED ON THE DRAWINGS AT THE OPTION OF THE CONTRACTOR.

COORDINATE VOLTAGE OF RELAYS WITH CIRCUITS BEING CONTROLLED. PROVIDE 1-POLE RELAYS FOR 120V.

PANEL IS TO INCLUDE CIRCUITRY FOR SWITCHING FULL LOAD AT THE ZERO-CROSSING OF THE AC CURRENT WAVEFORM. RELAYS ARE TO BE NORMALLY OPEN.

PROVIDE LOW VOLTAGE SWITCHES, OCCUPANCY SENSORS AND PHOTOELECTRIC CONTROLS WHICH ARE COMPATIBLE WITH CONTROL PANEL. IDENTIFY LOW VOLTAGE SWITCH COVERPLATES AS SPECIFIED ABOVE EXCEPT ADD A SECOND LINE OF IDENTIFICATION TO INDICATE CONTROL THROUGH RELAY PANEL (E.G. "LP-1AA-3," AND "VIA RELAY PANEL.")

PROVIDE LOW VOLTAGE AUTOMATIC CONTROL OVERRIDE MASTER SWITCHES WHERE INDICATED WITH OPERATION AS SPECIFIED. COORDINATE COMPATIBILITY OF SWITCH WITH PANEL AND WITH OPERATION AS SPECIFIED. LABEL SWITCH COVERPLATE AS SPECIFIED FOR WIRING DEVICES, EXCEPT INDICATE RELAY PANEL CONTROLLED AND GEOGRAPHIC LOCATION OF CIRCUITS CONTROLLED, E.G. "RELAY PANEL RLP-1, MASTER SWITCH". PROGRAM RELAY PANEL TO OPERATE WITH LOW VOLTAGE AUTOMATIC CONTROL OVERRIDE SWITCH AS FOLLOWS:

OVERRIDE ON: PRESSING THE MASTER SWITCH WITH CIRCUITS OFF WILL TURN ON ALL RELAY-CONTROLLED BRANCH CIRCUITS IN THE PANEL FOR A MAXIMUM OF FOUR HOURS, AND THEN AUTOMATICALLY SHUT CIRCUITS OFF AFTER TIME EXPIRES. CIRCUITS WILL REMAIN OFF UNTIL THE SWITCH IS PRESSED AGAIN, OR UNTIL THE NEXT PROGRAMMED AUTOMATIC ON-TIME OCCURS.

OVERRIDE OFF: PRESSING THE MASTER SWITCH WITH CIRCUITS ON WILL TURN OFF ALL RELAY-CONTROLLED BRANCH CIRCUITS IN THE PANEL. CIRCUITS WILL REMAIN OFF UNTIL THE SWITCH IS PRESSED AGAIN, OR UNTIL THE NEXT PROGRAMMED AUTOMATIC ON-TIME OCCURS.
THE PROGRAMMED CONTROL OF THE CIRCUITS ABOVE IS TO OPERATE INDEPENDENTLY OF ANY LOCAL SPACE CONTROL.

PROGRAM PANEL TO FLASH LIGHTS PRIOR TO AUTOMATICALLY TURNING THEM OFF.

COORDINATE QUANTITY OF CIRCUITS REQUIRED AND APPLICATION OF LOW VOLTAGE SWITCHES AS SPECIFIED IN FLORIDA ENERGY CODE, THIS SECTION.

PROVIDE DATA OUTLET MOUNTED ADJACENT TO PANEL FOR REMOTE PROGRAMMING AND/OR CONNECTION TO TENANT'S COMPUTER NETWORK.

INCLUDE CONTROL PANEL STARTUP/COMMISSIONING AND TRAINING BY MANUFACTURER'S FACTORY-TRAINED PERSONNEL. IN ADDITION TO OTHER STARTUP.

FLOOR MOUNTED SERVICE FITTING - TYPE F1:

PROVIDE TWO-GANG, RECTANGULAR, FLUSH MOUNTED, DEEP CAST IRON, FULLY ADJUSTABLE, WATERTIGHT FLOOR BOX.

PROVIDE RECTANGULAR FLIP-TOP COVER FOR EACH GANG SUITABLE FOR GROUND-FAULT STYLE RECEPTACLE. COVER IS TO COMPLY WITH UL REQUIREMENTS FOR SCRUB WATER EXCLUSION.

PROVIDE 20A, 125V, GROUND-FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE IN POWER COMPARTMENT WITH ¾" CONDUIT FOR BRANCH CIRCUITING INDICATED. PROVIDE DATA COMPARTMENTS WITH COVER, READY FOR OWNER-INSTALLED DATA WIRING AND CONNECTORS. IDENTIFY RECEPTACLE BRANCH CIRCUITS AS SPECIFIED FOR WIRING DEVICE COVERPLATES.

PROVIDE 1"C FROM DATA COMPARTMENT FROM BOX, UP WALL TO NEAREST ACCESSIBLE CEILING.
PROVIDE FLANGES AND TRIM COMPONENTS SUITABLE FOR FLOOR FINISH (TILE OR CARPET). COORDINATE WITH ARCHITECTURAL FINISH FOR APPROPRIATE COMPONENTS. COORDINATE FINISH COLOR OF ALL EXPOSED COMPONENTS WITH ARCHITECT PRIOR TO SUBMITTAL - BLACK, BRUSHED ALUMINUM OR BRASS. INCLUDE ARCHITECT-APPROVED COLOR AND COORDINATED TRIM COMPONENTS WITH SUBMITTAL.

CUT AND PATCH FLOOR AS REQUIRED FOR INSTALLATION.

MANUFACTURERS: HUBBELL B4233 OR APPROVED EQUAL BY WALKER.

FLOOR MOUNTED SERVICE FITTING - TYPE F2:

SAME GENERAL REQUIREMENTS AS TYPE F1 EXCEPT CONFIGURATION AS DESCRIBED BELOW

MULTI-SERVICE FOUR COMPARTMENT WITH POWER, DATA AND AV WITH 3/4"C, FOR POWER AND 2"C FOR DATA WITH (2)-DUPLEX RECEPTACLES, AND TELECOMM. AND AV COMPARTMENTS

MANUFACTURER: WIREMOLD RFB4 SERIES OR APPROVED EQUAL BY HUBBELL.

FLOOR MOUNTED SERVICE FITTING - TYPE F3:

SAME AS TYPE F1 EXCEPT POKE THRU DEVICE.

MANUFACTURER: WIREMOLD 4AT SERIES OR APPROVED EQUAL BY HUBBELL.

FLOOR MOUNTED SERVICE FITTING - TYPE F4

SAME AS TYPE F2 EXCEPT POKE THRU DEVICE.

MANUFACTURER: WIREMOLD 6AT SERIES OR APPROVED EQUAL BY HUBBELL.

CONDUCTORS:

ALL CONDUCTORS SHALL BE SOFT-DRAWN COPPER OF SIZES INDICATED ON THE DRAWINGS. ALL CONDUCTORS SHALL BE INSULATED FOR 600 VOLTS AND WITH 75 DEGREES (CENTIGRADE) CODE GRADE INSULATION.

CONDUCTORS SIZED #10 AND SMALLER SHALL BE SOLID. ALL CONDUCTORS LARGER THAN #10 SHALL BE MADE UP OF STRANDED SINGLE CONDUCTOR CABLE. CONDUCTORS SHALL HAVE THWN OR THHN INSULATION AS APPLICABLE. CONDUCTORS IN UNDERGROUND CONDUIT AND FOR SERVICE ENTRANCE CONDUCTOR SHALL HAVE XHHW OR THWN INSULATION.

#12 AWG SHALL BE THE MINIMUM WIRE SIZE ALLOWED EXCEPT #14 AWG MAY BE USED FOR CONTROL WIRING.

TYPICAL BRANCH CIRCUITS FROM 20A, 1-POLE BRANCH OVERRCURRENT DEVICES ARE 1/2"C, 2 #12 AND 1 # 12G.

MC CABLE SHALL BE PERMITTED FOR USE AS APPROVED BY N.E.C AND AUTHORITY HAVING JURISDICTION.

STARTERS, SAFETY SWITCHES, FUSES AND HEATERS:

MANUAL MOTOR STARTERS SHALL BE 600V TOGGLE TYPE WITH THERMAL OVERLOAD ELEMENT FOR MOTOR PROTECTION STAINLESS STEEL COVER PLATE AND PILOT LIGHT; FLUSH IN ALL AREAS EXCEPT IN UNFINISHED SPACES. CONTRACTOR TO COORDINATE AND PROVIDE QUANTITY OF POLES AS REQUIRED FOR BRANCH CIRCUIT AND LOAD SERVED. MANUAL MOTOR SWITCHES SHALL BE THE SAME AS MANUAL STARTERS EXCEPT WITHOUT OVERLOADS AND USED AS DISCONNECTING MEANS.

MAGNETIC MOTOR STARTERS SHALL BE 600 VOLT 3-PHASE WITH 3 THERMAL OVERLOAD ELEMENTS, HOA SWITCH AND RESET BUTTON IN COVER AND GREEN RUNNING PILOT LIGHT, NEMA ENCLOSURE AND SIZE AS INDICATED. COMBINATION STARTERS SHALL HAVE BUILT-IN FUSED DISCONNECT. PROVIDE START-STOP PUSH BUTTONS FOR USE IN HAND (MANUAL) MODE.

PROVIDE THERMAL ALLOY MELTING TYPE HEATER ELEMENTS FOR ALL MOTORS BASED ON MOTOR NAMEPLATE DATA.

SAFETY AND DISCONNECT SWITCHES SHALL BE 250 OR 600 VOLTS AS REQUIRED, HEAVY DUTY, TWO OR THREE POLE, "QUICK-MAKE', "QUICK-BREAK" SWITCH MECHANISM AND COVER INTERLOCK. SWITCHES SHALL BE FUSED OR UNFUSED AS INDICATED AND SHALL HAVE PAD LOCK PROVISIONS, WITH NEMA TYPE ENCLOSURE FOR LOCATION USED. SWITCHES SHALL BE SQUARE "D"CLASS 3110 OR APPROVED EQUAL.

PROVIDE ALL NECESSARY FUSES AND REPLACE ALL THOSE BLOWN DURING CONSTRUCTION. ALL FUSES SHALL BE TIME LAG, DUAL ELEMENT, BUSSMAN "LOW PEAK YELLOW" OR EQUAL.

PANELBOARDS:

DISTRIBUTION PANEL SHALL BE FUSE-SWITCH TYPE, BRACED FOR 35,000 A.I.C. MINIMUM, DEAD FRONT CONSTRUCTION. VOLTAGE, PHASE, AMPERE RATING, AND DEVICES SHALL BE AS INDICATED ON THE DRAWINGS. MAIN DISTRIBUTION PANEL SHALL HAVE SERVICE ENTRANCE LABEL.

LIGHTING PANELS SHALL BE OF VOLTAGE, PHASE, SERVICE AND NUMBER OF WIRES INDICATED ON THE DRAWINGS. BREAKERS SHALL BE THERMAL MAGNETIC, TRIP FREE, SINGLE OR MULTIPOLE, BOLTED DESIGN, MOLDED CASE, MINIMUM 10,000 A.I.C. AT 240 VOLTS OR 14,000 A.I.C. AT 277 VOLTS UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR AS SCHEDULED.

LIGHTING PANELS RATED FOR 277/480V, 3-PHASE, 4W SERVICE SHALL BE SQUARE D TYPE "NF" OR EQUAL, AND THOSE RATED FOR 120/208V, 3-PHASE, 4-WIRE SERVICE SHALL BE SQUARE D TYPE "NQOD" OR EQUAL. LOAD CENTERS ARE NOT PERMITTED.
PROVIDE ARC-FAULT CIRCUIT INTERRUPTER (AFCI) BREAKERS ON ALL BRANCH CIRCUITS SERVING DWELLING UNIT BEDROOMS AND IN NON-DWELLING UNIT SLEEPING AREAS. AFCI CIRCUIT BREAKERS ARE NOT SPECIFICALLY INDICATED ON PANEL SCHEDULES.

CONTRACTOR, MANUFACTURER MAY RE-ARRANGE CIRCUIT ORDER IN PANELS, HOWEVER CIRCUIT NUMBERS FROM PANELBOARD SCHEDULES IN CONTRACT DOCUMENTS MUST BE INDICATED ON ANY SUBMITTED PANELBOARD ELEVATIONS, DRAWINGS, TABLES AND SCHEDULES.

SHORT CIRCUIT AND ARC FLASH:

CONTRACTOR IS TO FURNISH SHORT CIRCUIT AND ARC FLASH CALCULATIONS FOR ALL NEW DISTRIBUTION EQUIPMENT AND FOR ALL MODIFIED EXISTING DISTRIBUTION EQUIPMENT FROM THE SERVICE CONNECTION POINT DOWN TO THE PANELBOARD LEVEL. THE CALCULATIONS SHALL BE CONDUCTED UNDER THE SUPERVISION AND APPROVAL OF A REGISTERED PROFESSIONAL ELECTRICAL ENGINEER SKILLED IN PERFORMING AND INTERPRETING POWER SYSTEM STUDIES. OBTAIN AVAILABLE FAULT CURRENT FROM UTILITY AS REQUIRED TO PERFORM THE STUDY. SUBMIT REPORT TO DEMONSTRATE THAT EQUIPMENT IS ADEQUATELY PROTECTED FOR AVAILABLE FAULT CURRENT. INCREASE THE WITHSTAND RATING OF ANY DISTRIBUTION EQUIPMENT WHICH IS FOUND TO BE INADEQUATELY RATED. SUBMIT STUDY RESULTS PRIOR TO DISTRIBUTION EQUIPMENT, AND INDICATE COORDINATED RATINGS IN DISTRIBUTION EQUIPMENT SUBMITTALS. INCLUDE FAULT CURRENT RATINGS ON ONE-LINE DIAGRAM FOR REVIEW IN ADDITION TO TABULAR FORMAT TO INDICATE EQUIPMENT RATINGS ALONGSIDE CALCULATED VALUES.

INCLUDE IN BID ALL COSTS TO PROVIDE FINAL APPROVED STUDY INCLUDING MULTIPLE ITERATIONS OR "RUNS" OF THE STUDY AS REQUIRED IF FIRST PASS STUDY FINDS THAT EQUIPMENT IS NOT COMPLIANT, AND/OR IF SUBMITTALS ARE NOT APPROVED. DO NOT ASSUME THAT THE STUDY WILL RESULT IN ACCEPTABLE OR "PASSING" EQUIPMENT RATINGS AND SETTINGS ON THE FIRST RUN. THE STUDY IS TO PROVIDE DIRECTION AND RECOMMENDATIONS AS REQUIRED TO ACHIEVE AN ACCEPTABLE ELECTRICAL SYSTEM INCLUDING POSSIBLE REVISIONS TO SPECIFIED EQUIPMENT IN THE MODELING. ADDITIONAL COST FOR MULTIPLE ITERATIONS, "RUNS," AND SUBMITTALS WILL NOT BE APPROVED.

PERFORM CALCULATIONS AS REQUIRED TO APPLY FIELD MARKINGS FOR ARC FLASH INCLUDING RECOMMENDED MARKING REQUIREMENTS, BOUNDARIES AND DESCRIPTIONS. FIELD MARK DISTRIBUTION EQUIPMENT (SWITCHBOARDS, PANELBOARDS, CONTROL PANELS, AND MOTOR CONTROL CENTERS) WITH FLASH PROTECTION INFORMATION PER NATIONAL ELECTRICAL CODE ARTICLE 110.16, FLASH PROTECTION. INCLUDE CALCULATED RATINGS ON MARKINGS. PROVIDE ANY ADDITIONAL MARKINGS ON EQUIPMENT AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION. FIELD MARK FLASH PROTECTION BOUNDARIES RESULTING FROM CALCULATIONS PER NFPA 70E.

INSTALLATION AND METHODS OF EXECUTION:

ALL WIRING SHALL BE IN CONDUIT, MINIMUM ½". FLEXIBLE METAL CONDUIT SHALL BE USED FOR SHORT CONNECTION TO MOTORS, FINAL CONNECTION TO RECESSED LIGHTING FIXTURES FROM RIGIDLY MOUNTED OUTLET BOX (NOT BETWEEN FIXTURES), VIBRATING EQUIPMENT, ETC., BUT NEVER LONGER THAN 6 FEET. PROVIDE LIQUID TIGHT FLEXIBLE METAL CONDUIT FOR ALL APPLICATIONS EXPOSED TO WATER OR WEATHER. PROVIDE ANTI-SHORT BUSHINGS FOR ALL FLEXIBLE CONDUIT ARMOR TERMINATIONS. PROVIDE SEPARATE EQUIPMENT GROUND WIRE IN ALL CONDUIT RUNS.

CONDUIT CONCEALED IN CEILING, WALLS OR FURRED SPACES OR EXPOSED IN DRY LOCATIONS SHALL BE EMT, THIN WALL ELECTRIC METALLIC TUBING. CONDUIT EXPOSED TO WEATHER, IN CONTACT WITH CONCRETE, BURIED IN SLAB, OR IN HAZARDOUS AREAS, SHALL BE HEAVY WALL, RIGID. ALL CONDUITS SHALL BE HOT DIPPED GALVANIZED STEEL.

ALL WORK IN HAZARDOUS LOCATIONS SHALL BE DONE IN STRICT CONFORMANCE WITH NEC ARTICLE 500.

PLASTIC CONDUIT, PVC-40, SHALL BE USED ONLY AS INDICATED ON THE DRAWINGS. PLASTIC CONDUIT SHALL BE APPROVED FOR UNDERGROUND USE. PVC BURIAL DEPTH SHALL BE 36" MINIMUM BELOW FINISH GRADE. IN PVC CONDUIT SYSTEMS, RISERS ABOVEGROUND SHALL BE RIGID HEAVY WALL STEEL.

CONDUIT RUNS SHOWN ON DRAWINGS ARE DIAGRAMMATIC. EXACT ROUTING OF CONDUIT RUNS SHALL SUIT JOB CONDITIONS. EXPOSED CONDUIT SHALL BE RUN ONLY IN UNFINISHED AREAS SUBJECT TO FINAL APPROVAL OF ENGINEER AND SHALL RUN PARALLEL TO BUILDING LINES, NEVER DIAGONALLY.

CONNECTION TO EQUIPMENT SHALL BE DONE IN ACCORDANCE WITH MANUFACTURER'S SHOP AND INSTALLATION DRAWINGS. REQUIREMENTS GENERALLY VARY FROM ONE MANUFACTURER TO ANOTHER AND CONTRACTOR IS BOUND TO COMPLY AND PROVIDE ALL WORK AS REQUIRED ALTHOUGH CERTAIN DISCREPANCIES MAY EXIST REGARDING THE REQUIREMENT FROM ONE MANUFACTURER TO ANOTHER.

PROVIDE POWER WIRING, DISCONNECTS, AND PROTECTION DEVICES TO ALL MECHANICAL EQUIPMENT AND MAKE FINAL CONNECTIONS, INCLUDING TESTING OF MOTORS FOR PROPER ROTATION.

OUTLET BOXES MAY-BE SURFACE MOUNTED ON EXISTING WALLS (CMU, BRICK OR CONCRETE) WITH SMALLEST SURFACE RACEWAY AS REQUIRED FOR WIRING INSTALLED. PROVIDE FLUSH OUTLET BOXES AND CONDUIT AT NEW CONSTRUCTION WALL AND AT EXISTING WALLS WHICH ARE NOT CMU BRICK OR CONCRETE CONSTRUCTION. CUT AND PATCH EXISTING WALLS AS REQUIRED FOR FLUSH INSTALLATION.

PROVIDE 4" TALL CONCRETE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT.

LIGHTING SPECIFICATIONS:

LED LIGHTING FIXTURES SHALL HAVE 5 YEAR WARRANTY, A COLOR RENDERING INDEX OF 90 OR HIGHER, 3500K COLOR TEMPERATURE UNLESS OTHERWISE INDICATED ON DRAWINGS, LIFETIME: 50,000 HOURS OR GREATER AND MAINTAIN AT LEAST 70% OF INITIAL LUMEN OUTPUT. RATED FOR OUTDOOR USE AND WET LOCATION, IF IN OPEN FIXTURE.

SHALL POSSESS COLOR MANAGEMENT SYSTEM TO MAINTAIN COLOR CONSISTENCY OVER TIME AND TEMPERATURE OF NO GREATER THAN ±100K OVER LIFE.

REFER TO LIGHTING FIXTURE SCHEDULE FOR LED FIXTURES WITH DIMMING CONTROLS.

LED DRIVERS TO BE ELECTRONIC, HIGH POWER FACTOR, MIN. 0.9; UNIVERSAL VOLTAGE 120-277V; 5 YEAR WARRANTY, COMPATIBLE WITH THE LED LAMP OR MODULE USED.

EMERGENCY BATTERY BALLASTS INTEGRAL TO FIXTURES SHALL BE SELF-DIAGNOSTIC TYPE, WITH 5 YEAR WARRANTY AND TEST SWITCH INTEGRAL TO FIXTURE, BODINE B50ST OR APPROVED EQUAL. PROVIDE EXIT AND EMERGENCY BATTERY LIGHTING UNITS WITH SELF DIAGNOSTICS, MAINTENANCE-FREE NI-CAD BATTERY, AND WITH UNIVERSAL VOLTAGE INPUT - 120V THROUGH 277V. REQUIREMENTS SPECIFIED HERE TAKE PRECEDENCE OVER SCHEDULED INFORMATION.

PROVIDE FACTORY INSTALLED FUSING IN EACH FIXTURE.

FOR ALL ELECTRIC-DISCHARGE LIGHTING FIXTURES, PROVIDE A LUMINAIRE DISCONNECTING MEANS TO DISCONNECT PHASE AND NEUTRAL CONDUCTORS FROM THE BRANCH CIRCUIT TO THE BALLAST. LOCATE DISCONNECTING MEANS CONCEALED WITHIN THE FIXTURE. TYPICAL FOR NEW, REUSED AND RELOCATED FIXTURES. ASSUME ALL REUSED AND RELOCATED FIXTURES REQUIRE THE FIELD ADDITION OF THE DISCONNECTING MEANS AND INCLUDE WORK IN BID. PROVIDE ALL NEW FIXTURES WITH DISCONNECTING MEANS FACTORY-INSTALLED. PROVIDE THOMAS & BETTS STA-KON LUMINAIRE DISCONNECT OR EQUAL.

SUBMIT LAMP AND BALLAST PRODUCT DATA WITH EACH FIXTURE TYPE.

FIRE ALARM SYSTEM - PERFORMANCE SPECIFICATION:

FIRE ALARM SYSTEM IS EXISTING PROVIDE NEW DEVICES IN THE RENOVATED AREA AS REQUIRED TO EXTEND THE EXISTING FIRE ALARM SYSTEM. PROVIDE ALL NECESSARY COMPONENTS AS REQUIRED FOR A COMPLETE, FUNCTIONING AND APPROVED INSTALLATION. DEVICES ARE NOT SPECIFICALLY INDICATED ON THESE PLANS. SYSTEM SHALL BE LAYED OUT ON A PERFORMANCE BASIS BY A CERTIFIED DESIGNER.

EXISTING FIRE ALARM CONTROL PANEL TO BE FIELD VERIFIED.

NEW EQUIPMENT AND DEVICES SHALL BE COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM. COORDINATE WITH OWNER FOR BUILDING STANDARDS AND FIELD VERIFY EXISTING CONDITIONS.

SURVEY EXISTING CONDITIONS PRIOR TO BID. COORDINATE WORK WITH BUILDING FINISHES AND WITH OTHER WORK BEING PERFORMED.

THE SYSTEM AS DESCRIBED SHALL BE INSTALLED, TESTED, AND APPROVED BY THE AHJ. THE SYSTEM SHALL INCLUDE ALL THE REQUIRED HARDWARE, RACEWAYS, INTERCONNECTING WIRING AND SOFTWARE TO ACCOMPLISH THE INTENT OF THESE SPECIFICATIONS AND THE CONTRACT DOCUMENTS, WHETHER OR NOT SPECIFICALLY ITEMIZED HEREIN.

ALL EQUIPMENT FURNISHED SHALL BE NEW AND INCLUDE THE LATEST STATE OF THE ART PRODUCTS FROM A SINGLE MANUFACTURER, ENGAGED IN THE MANUFACTURING AND SALE OF FIRE DETECTION SYSTEMS FOR OVER FIVE YEARS. THE INSTALLING CONTRACTOR SHALL CONTRACT WITH A SINGLE SOURCE FOR SUPPLYING DEVICES/MATERIALS, SERVICES, AND PROGRAMMING, INCLUDING FINAL INSPECTION/TEST SERVICES FOR THE FIRE ALARM SYSTEM.

CONTROL AND OTHER PANELS SHALL BE MOUNTED WITH SUFFICIENT CLEARANCE FOR OBSERVATION AND TESTING. ALL FIRE ALARM JUNCTION BOXES MUST BE CLEARLY MARKED FOR EASY IDENTIFICATION.

PROVIDE ALL INTERWIRING WITH OTHER SYSTEMS: AIR HANDLING UNITS SMOKE DETECTION, BMS SYSTEM, FIRE SUPPRESSION SYSTEMS, ETC..

FIRE ALARM PULL STATIONS AND HORNS INSTALLED IN FINISHED AREAS SHALL BE MOUNTED SEMI-FLUSH AND MAY BE SURFACE MOUNTED IN EXISTING AND NON-FINISHED AREAS. SMOKE DETECTORS AND THERMAL DETECTORS SHALL BE MOUNTED ON A RECESS MOUNTED JUNCTION BOX IN FINISHED AREAS AND TO SURFACE MOUNTED JUNCTION BOXES IN NON-FINISHED AREAS.

INSTALL MANUAL STATION FLUSH MOUNTED WITH OPERATING HANDLE 48 INCHES ABOVE FLOOR. INSTALL AUDIBLE AND VISUAL SIGNAL DEVICES NO MORE THAN 80 INCHES ABOVE HIGHEST FLOOR LEVEL OR 6 INCHES BELOW THE CEILING, WHICHEVER IS LOWER.

MOUNT OUTLET BOX FOR ELECTRIC DOOR HOLDER TO WITHSTAND 80 POUNDS PULLING FORCE.

ALL FIRE ALARM WIRING SHALL BE RUN IN A DEDICATED RACEWAY SYSTEM APPROVED BY THE AHJ. FIRE ALARM CONDUITS TO BE PAINTED WHITE, UNLESS LOCAL AHJ OR OWNER REQUIRES RED COLOR, PROVIDE CIRCUIT IDENTIFICATION PER NEC 760.30 AND AS REQUIRED BY THE AHJ AND OWNER.
COORDINATE APPROVAL OF RACEWAY TYPE, ROUTING AND FINISH WITH THE AHJ, OWNER AND ARCHITECT, PRIOR TO INSTALLATION.

NO WIRING OTHER THAN THAT DIRECTLY ASSOCIATED WITH FIRE ALARM DETECTION, ALARM OR AUXILIARY FIRE PROTECTION FUNCTIONS SHALL BE PERMITTED IN FIRE ALARM CONDUITS. WIRING SPLICES ARE TO BE AVOIDED TO THE EXTENT POSSIBLE, AND IF NEEDED THEY MUST BE MADE ONLY IN JUNCTION BOXES AND SHALL BE CRIMP CONNECTED. TRANSPOSING OR CHANGING COLOR CODING OF WIRE SHALL NOT BE PERMITTED. ALL CONDUCTORS IN CONDUIT CONTAINING MORE THAN ONE WIRE SHALL BE LABELED AND HARNESSED SO THAT EACH DROPS OFF DIRECTLY OPPOSITE TO ITS TERMINAL.

ALL WIRING SHALL BE CHECKED AND TESTED TO ENSURE THAT THERE ARE NO GROUNDS, OPENS, OR SHORTS.

TESTING, APPROVAL AND CERTIFICATION:
FIRE ALARM SYSTEM SHALL BE TESTED IN PRESENCE OF LOCAL INSPECTING AUTHORITY AND TEST REPORT OF RESULTS SHALL BE FILED WITH OWNER/ARCHITECT/ENGINEER AS PART OF SYSTEMS DOCUMENTATION.
MAKE ALL REVISIONS OR CHANGES NECESSARY TO MAINTAIN FINAL APPROVAL AT NO EXTRA COST TO OWNER.

PROVIDE ALL PERSONNEL AND MATERIALS REQUIRED FOR SYSTEM TESTING.

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HOBBS + BLACK
ARCHITECTS
100 N. State St.
Ann Arbor, MI 48104
P. 734.663.4189
www.hobbs-black.com

DETROIT DIESEL CORP.
DETROIT DIESEL SECOND FLOOR RENNOVATION
13400 W. OUTER DR,
DETROIT MI

PROJECT

MAENGINEERING
MECHANICALELECTRICAL
180 High Oak Road
Bloomfield Hills, Michigan 48304
t | 248 | 258 | 1610
f | 248 | 258 | 9538

CONSULTANT

STATE OF MICHIGAN
JOHN D. RICHARDS ENGINEER No. 6201034544
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

ELECTRICAL SPECIFICATIONS

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PROJECT NUMBER

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