COLUMBIA STREET RETAIL INFILL

PERMIT/BID

10-11-2017

PROJECT LOCATION:	66 WEST COLUMBIA STREET DETROIT, MI 48201
OWNER:	OLYMPIA DEVELOPMENT OF MICHIGAN FOX OFFICE CENTER 2211 WOODWARD AVENUE DETROIT, MI 48201
ARCHITECT OF RECORD:	KRAEMER DESIGN GROUP, PLC ROBERT J. KRAEMER, RA, NCARB, IIDA STATE OF MICHIGAN CERTIFICATE NO. 1301040246 1420 BROADWAY STREET DETROIT, MI 48226 www.thekraemeredge.com (313) 965-3399
CIVIL ENGINEER:	GIFFELS WEBSTER MICHAEL MARKS LICENSE #51582 28 WEST ADAMS STREET, SUITE 1200 DETROIT, MI 48226
STRUCTURAL ENGINEER:	DESAI/NASR CONSULTING ENGINEERS INC. JAYANT DESAI LICENSE #19102 6765 DALY ROAD WEST BLOOMFIELD, MI 48322
MECHANICAL AND ELECTRICAL ENGINEER:	PETER BASSO ASSOCIATES, INC. DAVID CONRAD, LICENSE # 55589 ERIC GRAETTINGER, LICENSE #52164 5145 LIVERNOIS ROAD, SUITE 100 TROY, MI 48098
CONSTRUCTION MANAGER:	BRINKER/CHRISTMAN, a Joint Venture DOUGLAS NORTON 3363 MICHIGAN AVENUE, SUITE 300 DETROIT, MI 48216

CODE SUMMARY

PROJECT DESCRIPTION:	NEW ONE STORY INFILL CONSTRUCTION OF CORE AND SHELL FOR FUTURE TENANT IMPROVEMENTS	
ZONING:	B5	
OCCUPANCY CLASSIFICATION:	A-2	
CONSTRUCTION TYPE:	(TYPE VB, SPRINKLERED, FIRE ALARM SYSTEM)	
OCCUPANT LOAD:	228 PERSONS	
APPLICABLE CODES:	BUILDING:	MICHIGAN BUILDING CODE (MBC) 2015
	MECHANICAL:	MICHIGAN PART 9A MECHANICAL CODE (MMC) 2015
	PLUMBING:	MICHIGAN PLUMBING CODE (MPC) 2015
	ELECTRICAL:	MICHIGAN/NATIONAL ELECTRICAL CODE (NEC) 2014 W/PART 8
	LIFE SAFETY:	MICHIGAN BUILDING CODE (MBC) 2015 - NFPA 101 2009, DETROIT FIRE CODE
	ENERGY:	MICHIGAN UNIFORM ENERGY CODE (MUEC) 2015 - REFERENCES ANSI/ASHRAE/IESNA STANDARD 90.1-2013
	ACCESSIBILITY:	MICHIGAN BUILDING CODE (MBC) 2015 ICC/ANSI A117.1 2009 ADA ACCESSIBILITY GUIDELINES (ADAAG)

BID ALTERNATES

1. CONCRETE FLOOR SLAB
   BASE BID: SLAB @ SERVICE SPACE AND WATER METER ROOM
   ADD ALTERNATE: FULL SLAB WITH TENANT UTILITY STUBS

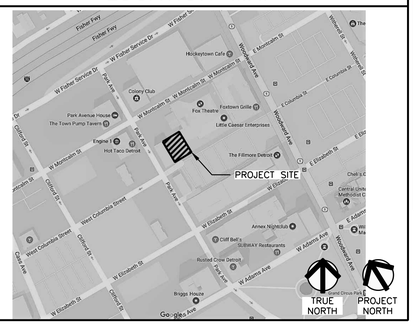
DEFERRED SUBMITTALS

NOTE: THESE CONSTRUCTION DOCUMENTS WERE PREPARED FOR COMPLIANCE WITH THE LOCAL CONSTRUCTION CODES IN EFFECT AT TIME OF PERMIT SUBMITTAL. ALL ENGINEERS, CONTRACTORS AND SUPPLIERS INVOLVED WITH THIS PROJECT SHALL COMPLY WITH THE SAME CODES, ISSUED AND APPROVED CODE MODIFICATIONS AND/OR LOCAL CONSTRUCTION BOARDS OF APPEALS RULINGS AND WHENEVER REQUIRED SHALL PROVIDE SHOP DRAWINGS AND SUBMITTALS CLEARLY DESCRIBING COMPLIANCE TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE FOR REVIEW AND APPROVAL.

THE FOLLOWING SUBMITTALS SHALL BE PREPARED BY OTHERS AND INCLUDED AS PART OF THE CONSTRUCTION DOCUMENTS AS THEY BECOME AVAILABLE: (PER SECTION 107.3.4.2)

- FIRE SUPPRESSION SYSTEMS
- GUARD RAILS / HAND RAILS
- MATERIAL SAFETY AND DATA SHEETS (MSDS) FOR INTERIOR FINISHES
- SIGNAGE

LOCATION MAP



SHEET INDEX

#	SHEET TITLE	SHEET ISSUED: DD OWNER REVIEW 08-31-17	SHEET ISSUED: PERMIT/BID 10-11-17
	COVER	■	■
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CIVIL			
C100	EXISTING CONDITIONS	■	■
C200	DEMOLITION PLAN	■	■
C300	UTILITY PLAN		■
C400	PAVING & GRADING PLAN		■
ARCHITECTURAL			
A001	ARCHITECTURAL SYMBOLS, NOTES & LEGENDS	■	■
A101	GROUND LEVEL PLAN, ROOF PLAN AND ENLARGED PLANS	■	■
A201	EXTERIOR ELEVATIONS	■	■
A202	ENLARGED ELEVATION		■
A301	BUILDING SECTIONS	■	■
A311	WALL SECTIONS		■
A312	EXTERIOR DETAILS		■
A501	PARTITION DETAILS AND INTERIOR DETAILS		■
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S002	SPECIAL INSPECTION SCHEDULES		■
S100	FOUNDATION PLAN	■	■
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MD101	MECHANICAL DEMOLITION PLAN		■
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M301	HVAC PIPING PLAN	■	■
M401	SHEET METAL PLAN	■	■
M601	MECHANICAL DETAILS	■	■
M602	MECHANICAL DETAILS	■	■
M701	MECHANICAL SCHEDULES	■	■
M702	MECHANICAL SCHEDULES	■	■
M703	MECHANICAL SCHEDULES	■	■
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E002	ELECTRICAL STANDARD SCHEDULES	■	■
E201	LIGHTING PLAN	■	■
E301	POWER AND AUXILIARY PLAN	■	■
E501	ONE LINE DIAGRAM AND PANEL SCHEDULES	■	■
E701	ELECTRICAL DETAILS AND DIAGRAMS	■	■

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Project

STATE OF MICHIGAN
ROBERT J. KRAEMER
ARCHITECT
No. 40246
LICENSED ARCHITECT
Seal

PERMIT BID	10-11-17
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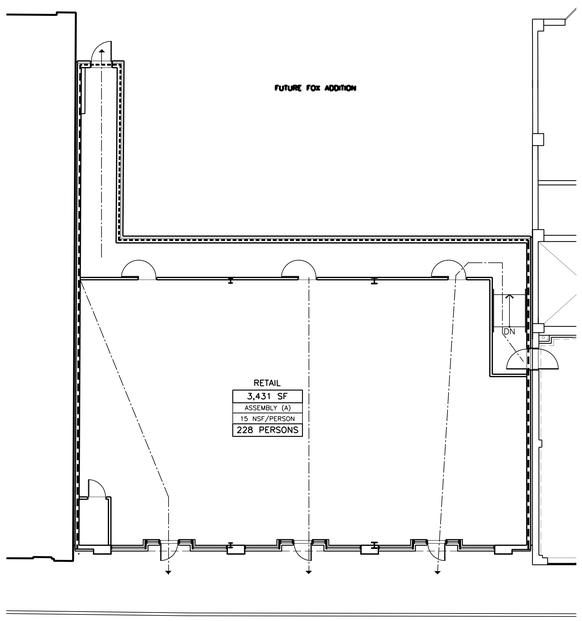
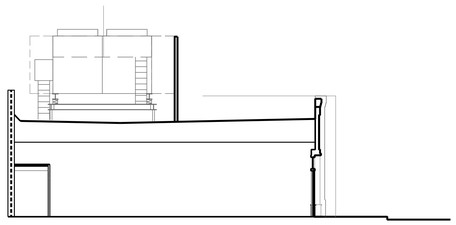
Sheet Title
COVER

Sheet Number
COVER

LIFE SAFETY DIAGRAMS



FIRST FLOOR
SCALE: 3/32"=1-0"



SECTION
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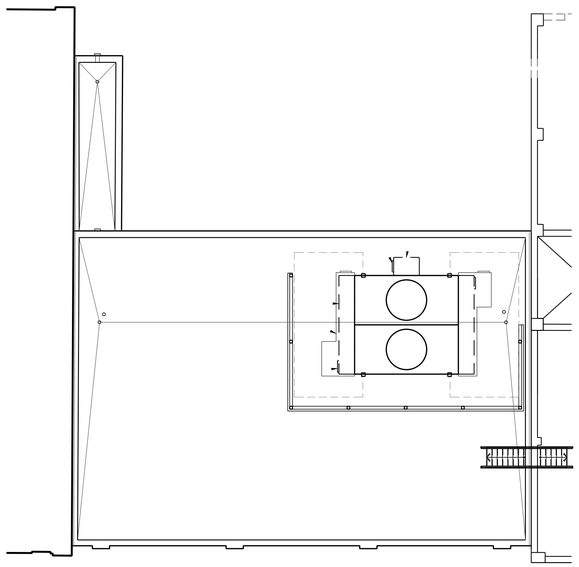

ROOF PLAN
SCALE: 3/32" = 1'-0"

PROJECT NORTH

0 2' 4' 8' 16'
SCALE : 1/8" =1'-0"

LEGEND

- FIRE EXIT
- EGRESS PATH
- 1 HOUR WALL
- 2 HOUR WALL

CODE SUMMARY

SECTION 1 – GENERAL DESCRIPTION

PROJECT NAME: COLUMBIA STREET RETAIL INFILL
PROJECT DESCRIPTION: NEW ONE STORY RETAIL INFILL
APPLICABLE CODES:

BUILDING:	MICHIGAN BUILDING CODE (MBC) 2015
MECHANICAL:	MICHIGAN PART 9oMECHANICAL CODE (MMC) 2015
PLUMBING:	MICHIGAN PLUMBING CODE (MPC) 2015
ELECTRICAL:	MICHIGAN/NATIONAL ELECTRICAL CODE (NEC) 2014 WITH PART 8 AMENDMENTS
LIFE SAFETY:	MICHIGAN BUILDING CODE (MBC) 2015 NFPA 101 2009 DETROIT FIRE CODE
ENERGY:	MICHIGAN ENERGY CODE (MEC) 2015 ANSI/ASHRAE/IESNA STANDARD 90.1–2013 – ENERGY STANDARD FOR BUILDINGS
ACCESSIBILITY:	MICHIGAN BUILDING CODE (MBC) 2015 ICC/ANSI A117.1 2009 EX 611/707 ADA ACCESSIBILITY GUIDELINES (ADAAG)

SECTION 2 – LOCAL ZONING REQUIREMENTS

ZONING ORDINANCE: CITY OF DETROIT
ZONED: B5
PARKING REQUIREMENTS: NONE
BUILDING HEIGHT LIMIT: 60FT 2 STORIES
SETBACKS: FRONT: 0FT REAR: 0FT SIDE: 0FT
OTHER REQUIREMENTS:
- NONE

CHAPTER 3 – USE AND OCCUPANCY CLASSIFICATION

USE GROUP(S) (CHAPTER 3): GROUP A-2
MIXED OCCUPANCY: NO
OCCUPANT LOAD PER FLOOR (SECTION 1004.1, TABLE 1004.1.2): 15 NET SF PER PERSON

FIRST FLOOR:	3,431 NSF	228 PERSONS
TOTAL:	4,666 GSF	228 PERSONS

CHAPTER 4 – SPECIAL DETAILED REQ. BASED ON USE AND OCC.

SPECIAL OCCUPANCIES (CHAPTER 4):
NONE
HAZARDOUS MATERIAL STORAGE LIMITATIONS (CHAPTER 4):
NOT APPLICABLE/NONE USED
HIGHRISE BUILDING (SECTION 403): NO

CHAPTER 5 – GENERAL BUILDING HEIGHT AND AREAS

INITIAL AREA TABULATION (Ai) (TABLE 506.2): 24,000 SF (S1)
PROPOSED TOTAL AREA OF BUILDING: A_{actual} = 4,666 SF
PROPOSED LARGEST STORY: A_{actual} = 4,666 SF
PROPOSED AREA OF BUILDING PER FLOOR: A_{actual} = 4,666 SF
ALLOWABLE HEIGHT AND STORIES (TABLES 504.3 AND 504.4): 2 STORIES, 60 FEET
PROPOSED/EXISTING BUILDING HEIGHT: 21 FEET / 1 STORIES

CHAPTER 6 – TYPES OF CONSTRUCTION

CONSTRUCTION CLASSIFICATION (SECTION 602, TABLE 601): VB
FIRE RESISTANCE RATING FOR THE BUILDING'S INDIVIDUAL STRUCTURAL ELEMENTS (TABLE 601):
- STRUCTURAL FRAME: 0 HRS
- EXTERIOR BEARING WALLS: 0 HRS
- INTERIOR BEARING WALLS: 0 HRS
- EXTERIOR NONBEARING WALLS AND PARTITIONS (TABLE 602): 0 HRS
- INTERIOR NONBEARING WALLS AND PARTITIONS: 0 HRS
- FLOOR CONSTRUCTION – INCLUDING SUPPORTING BEAMS AND JOISTS: 0 HRS
- ROOF CONSTRUCTION – INCLUDING SUPPORTING BEAMS AND JOISTS: 0 HRS
- FIRE RESISTANCE RATING FOR ALL FIRE WALLS (SECTION 706, TABLE 706.4): 2 HRS

SECTION 603.1: COMBUSTIBLE MATERIALS PERMITTED (INCLUDING MILLWORK, WALL & CEILING FINISHES, & BLOCKING)

CHAPTER 7 – FIRE AND SMOKE PROTECTION FEATURES

FIRE RESISTIVE REQUIREMENTS FOR OPENINGS IN FIRE-RATED EXTERIOR WALLS (SECTIONS 705 AND 716, TABLE 705.8):
- ALLOWABLE AREA OF OPENINGS PER STORY (SECTION 705.8): 00% PROTECTED + 100% UNPROTECTED
- MAX PROPOSED AREA OF OPENINGS/STORY (SECTION 705.8.4): 00% PROTECTED + 50% UNPROTECTED
- FIRE RESISTIVE RATING OF OPENINGS (SECTION 716, TABLE 716.5): 0 HRS

PROTECTED OPENINGS NOT REQUIRED IN EXTERIOR WALLS (SECTION 705.8.2): BUILDING EQUIPPED WITH AUTOMATIC SPRINKLER SYSTEM, OPENINGS PROTECTED BY WATER CURTAIN(S)
FIRE RESISTANCE RATINGS FOR ALL VERTICAL/HORIZONTAL FIRE BARRIERS (SECTION 707, TABLE 707.3.10): N/A
FIRE RESISTANCE RATING FOR ALL VERTICAL SHAFT ENCLOSURES (SECTION 713):
- SHAFTS LESS THAN FOUR STORIES 1 HR

FIRE RESISTANCE RATING FOR FIRE PARTITIONS (SECTION 708):
- CORRIDOR WALLS (TABLE 1020.1): 0 HRS
- TENANT SEPARATION WALLS (SECTIONS 420.2 AND 708): 1 HRS

CHAPTER 9 – FIRE PROTECTION SYSTEMS

DEFERRED SUBMITTAL: DESIGN/BUILD FIRE SUPPRESSION DRAWINGS

SMOKE DETECTION AND FIRE ALARM SYSTEM (SECTION 907):
- REQUIRED: AUTOMATIC SMOKE DETECTORS
- PROPOSED: SEE ELECTRICAL AND FIRE PROTECTION DRAWINGS FOR ADDITIONAL INFO.

AUTOMATIC SPRINKLER SYSTEM (SECTIONS 903 AND 904):
- REQUIRED: FULLY SPRINKLED.
- PROPOSED: SEE DESIGN-BUILD FIRE PROTECTION DRAWINGS FOR ADDITIONAL INFO.

STANDPIPE SYSTEM (SECTION 905):
- REQUIRED: NONE
- PROPOSED: EXISTING TO REMAIN. SEE FIRE PROTECTION DRAWINGS FOR ADDITIONAL INFO.

EXTERIOR OPENINGS PROTECTED BY WATER CURTAIN (SECTION 705.8.2): NO
ADDITONAL FIRE PROTECTION NOTES
- PORTABLE FIRE EXTINGUISHERS (SECTION 906): MAX TRAVEL DISTANCE TO EXTINGUISHER = 75 FEET.
- PROVIDE FIRE DEPARTMENT CONNECTIONS PER APPLICABLE NFPA STANDARD (SECTION 912). SEE FIRE PROTECTION DRAWINGS FOR ADDITIONAL INFO.

CHAPTER 10 – MEANS OF EGRESS

FOR OCCUPANT LOADS (SECTION 1004), SEE LIFE SAFETY DIAGRAMS.
NUMBER OF EXITS (SECTION 1006, TABLES 1006.2.1 AND 1006.3.1):
- REQUIRED PER FLOOR: 2
- PROVIDED PER FLOOR: 3

CORRIDOR WIDTH (SECTIONS 1005 & 1020.2):
- MINIMUM REQUIRED AT EACH FLOOR: 36"
- MINIMUM PROVIDED AT EACH FLOOR: 36"

EGRESS DOOR WIDTH (SECTIONS 1005 & 1010.1):
- MINIMUM REQUIRED AT EACH FLOOR: 34"
- MINIMUM PROVIDED AT EACH FLOOR: 34"

STAIRWAY WIDTH (SECTIONS 1005 & 1011): NA
COMMON PATH OF EGRESS TRAVEL (SECTION 1006.2.1):
- MAXIMUM ALLOWABLE LENGTH: 75 FT
- MAXIMUM LENGTH PROVIDED: 46 FT

EXIT SEPARATION DISTANCE (SECTION 1015.2):
- MINIMUM ALLOWABLE: 48 FT
- MINIMUM PROVIDED: 49 FT

EXIT ACCESS TRAVEL DISTANCE (SECTION 1017, TABLE 1017.2):
- MAXIMUM ALLOWABLE: 250 FT
- MAXIMUM PROVIDED: 66 FT

DEAD END CORRIDORS (SECTION 1020.4):
- MAXIMUM ALLOWABLE LENGTH: 20 FT
- MAXIMUM LENGTH PROVIDED: 20 FT

ADDITONAL EGRESS NOTES
- THE MEANS OF EGRESS SHALL BE ILLUMINATED AT ALL TIMES (SECTION 1008)

CHAPTER 13 – ENERGY EFFICIENCY

ENCLOSURE REQUIREMENTS (ASHRAE 90.1):

BUILDING COMPONENT	MIN. R-VALUE	PROVIDED R-VALUE
EXTERIOR WALL		
FRAMED	R13+10CI	R13+13CI
CMU	R11.4CI	R13CI
FENESTRATION	U0.42	U0.40
ROOF	R30	R32
FLOOR	R15	R15
REAR DOORS	U0.50	U0.50

CHAPTER 29 – PLUMBING SYSTEMS

SEE MBC SECTION 1109.5 RE: NUMBER OF ACCESSIBLE FIXTURES REQUIRED.

TO BE PROVIDED BY TENANT IMPROVEMENT

CHAPTER 8 – INTERIOR FINISHES

REQUIRED FINISH LEVEL: (TABLE 803.11): SEE SHEET A501 FOR FINISH DESCRIPTIONS
SERVICE SPACE: 3
TENANT SPACE: 3

CHAPTER 11 – ACCESSIBILITY

CHAPTER 12 – INTERIOR ENVIRONMENT

MINIMUM CEILING HEIGHT (SECTION 1208.2): 7'-6" AFF
MINIMUM CEILING HEIGHT IN TOILET ROOMS, KITCHENS, STORAGE ROOMS, AND LAUNDRY (SECTION 1208.2): 7'-0" AFF

CHAPTER 17 – SPECIAL INSPECTIONS & TEST

SPECIAL INSPECTIONS: NONE

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PROGRESS REVIEW	09-20-17
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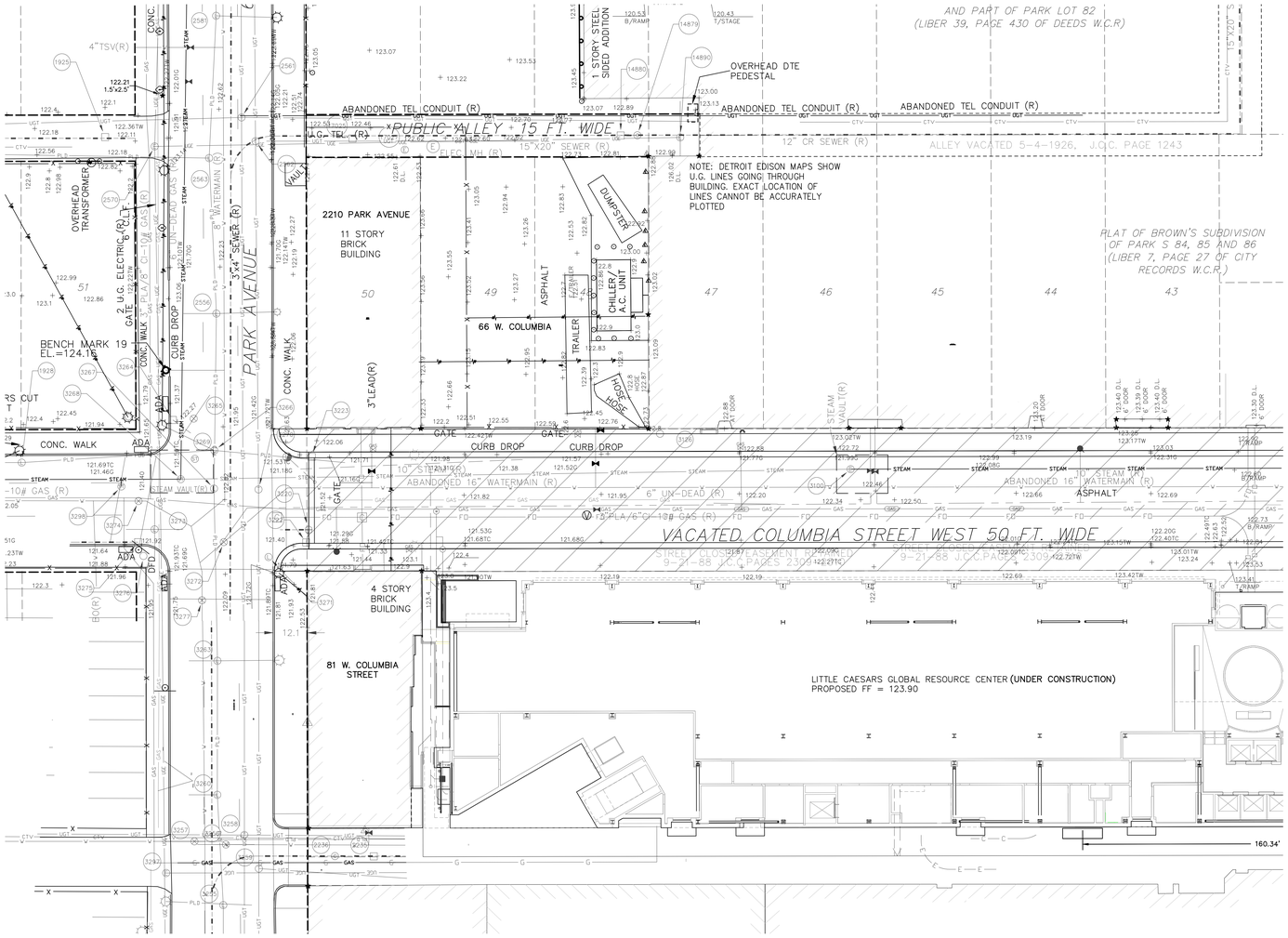
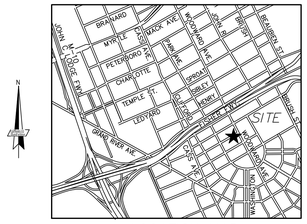
Date 10-11-2017

Project Number 2017041

Sheet Title
CODE ANALYSIS & LIFE SAFETY

Sheet Number
G101





LOCATION MAP
(NOT TO SCALE)

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT STANDARDS, SPECIFICATIONS AND GENERAL CONDITIONS OF THE CITY OF DETROIT, AND ANY/OR OTHER AGENCIES HAVING JURISDICTION.
2. UTILITY INFORMATION SHOWN ON THESE PLANS WAS OBTAINED FROM UTILITY OWNERS AND THEREFORE MAY NOT BE ACCURATE OR COMPLETE. THE CONTRACTOR SHALL VERIFY AND OBTAIN ANY INFORMATION NECESSARY REGARDING THE PRESENCE OF UNDERGROUND UTILITIES WHICH MIGHT HAVE AN IMPACT ON THIS PROJECT, AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES WHETHER THEY ARE SHOWN OR NOT ON THE PLANS.
3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES AT PROPOSED CONNECTIONS AND/OR CROSSINGS, AND TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES TO THESE PLANS.
4. 72 HOURS PRIOR TO EXCAVATION, THE CONTRACTOR SHALL CONTACT MISS DIG AT (800) 482-7171 FOR THE LOCATION OF UNDERGROUND GAS AND CABLE FACILITIES, AND SHALL ALSO NOTIFY REPRESENTATIVES OF OTHER UTILITIES LOCATED IN THE VICINITY OF THE WORK.
5. ALL PERMITS REQUIRED SHALL BE OBTAINED BY THE CONTRACTOR. ALL PERMIT FEES, BONDS, AND INSURANCE REQUIRED BY THE ISSUING AGENCIES SHALL BE PROVIDED BY THE CONTRACTOR, AND MUST BE KEPT CURRENT. THE CONTRACTOR IS RESPONSIBLE FOR ALL OTHER FEES, INSPECTION COSTS, ETC., AND SHALL ADHERE TO ALL REQUIREMENTS SET FORTH IN SAID PERMITS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL WORK AREAS TO ENSURE THE SAFETY OF ALL OCCUPANTS, VISITORS, PEDESTRIANS, WORKERS, ETC. THE CONTRACTOR SHALL REPAIR AND MAINTAIN ALL CONSTRUCTION FENCING AS NECESSARY.
7. THE CONTRACTOR SHALL PROVIDE FOR CONTROLLED ACCESS TO THE SITE FOR USE BY THE VARIOUS WORK FORCES, EMERGENCY VEHICLES, OCCUPANTS, VISITORS, ETC. THROUGHOUT CONSTRUCTION. THIS ACCESS MUST PROVIDE FOR THE REMOVAL OF MUD FROM VEHICLES TIRES. ROADWAYS AND DRIVEWAYS SHALL BE MAINTAINED OPEN FOR EMERGENCY VEHICLES AT ALL TIMES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE RESIDENTS AND BUSINESSES WHOSE DRIVEWAYS ARE AFFECTED BY HIS SCHEDULE 24 HOURS IN ADVANCE. CONTRACTOR SHALL SCHEDULE CONSTRUCTION AT NON-PEAK USE HOURS AND SHALL MINIMIZE DRIVEWAY CLOSURE BY EXPEDITING CONSTRUCTION.
8. THE CONTRACTOR SHALL PROVIDE NECESSARY SIGNS, BARRICADES, AND LIGHTS TO PROTECT THE TRAFFIC AND THE WORK AS DIRECTED BY THE PLANS OR BY THE AGENCY WITH JURISDICTION. ALL TRAFFIC CONTROLS SHALL BE IN ACCORDANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).
9. THE CONTRACTOR IS REQUIRED TO CONFINE CONSTRUCTION ACTIVITIES TO THE LIMITS OF THE SITE AS SHOWN ON THE CONSTRUCTION PLANS. ANY DAMAGE OR DISRUPTION TO ADJACENT SITES IS THE RESPONSIBILITY OF THE CONTRACTOR TO CORRECT IMMEDIATELY. NO OFF-SITE WORK SHALL BE PERFORMED OUTSIDE OF PUBLIC RIGHTS-OF-WAY OR DEDICATED EASEMENTS WITHOUT PRIOR WRITTEN APPROVAL OF THE PROPERTY OWNER.
10. GREAT CARE SHALL BE TAKEN TO AVOID DAMAGE TO VEGETATION OUTSIDE THE CLEARING AND GRUBBING LIMITS. NO DRIVING OR PARKING OF VEHICLES AND/OR STORAGE OF MATERIALS AND SUPPLIES SHALL BE PERMITTED OUTSIDE THE LIMITS OF CONSTRUCTION.
11. ALL ELEVATIONS ON THESE PLANS ARE ON THE CITY OF DETROIT DATUM.
12. THE PROTECTION OF EXISTING TREES, AS REQUIRED, SHALL BE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
13. ALL CONSTRUCTION SHALL HAVE INSPECTION PROVIDED BY THE CITY OF DETROIT, CITY ENGINEERING DIVISION. THE CONTRACTOR SHALL CONTACT THE CITY OF DETROIT 48 HOURS BEFORE THE START OF CONSTRUCTION.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL, AND SHALL PROVIDE ALL NECESSARY MATERIAL AND EQUIPMENT TO KEEP DUST IN CHECK AT ALL TIMES. THE CONTRACTOR SHALL RESPOND IMMEDIATELY TO ANY AND ALL COMPLAINTS. DUST CONTROL SHALL BE INCIDENTAL TO THE PROJECT.
15. DURING CONSTRUCTION, THE CONTRACTOR MAY ENCOUNTER SPRINKLER HEADS, PIPING, LIGHTING AND BURIED ELECTRICAL CABLE, MAILBOXES, FENCES, SIGNS, ETC., THAT MAY OR MAY NOT BE INDICATED ON THESE PLANS. THE CONTRACTOR SHALL REPLACE AND/OR RESTORE ALL COMPONENTS OF SUCH SYSTEMS. ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, MINIMUM STANDARD REQUIREMENTS, OR AS SPECIFIED HEREIN; WHICHEVER IS MORE STRINGENT.
16. ROADWAY, DRIVEWAY, AND PARKING AREA FINAL RESTORATION SHALL BE PERFORMED WITH SURFACE AND BASE MATERIALS MATCHING EITHER THE EXISTING MATERIALS IN QUALITY AND THICKNESS, PER MINIMUM REQUIREMENTS, OR PER THE FOLLOWING; WHICHEVER IS MORE STRINGENT:
    A. ASPHALT ROADWAYS - 4" ASPHALT MDOT 36A13A
    B. ASPHALT DRIVEWAYS - 3" ASPHALT MDOT 36A13A
    C. GRAVEL ROAD AND DRIVEWAYS - 8" MDOT 22A GRAVEL
    D. CONCRETE ROADS - 8" 3500 PSI CONCRETE
    E. CONCRETE DRIVEWAYS - 6" 3500 PSI CONCRETE
17. ALL LOT MARKERS AND MONUMENT POINTS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY A REGISTERED LAND SURVEYOR AT THE EXPENSE OF THE CONTRACTOR.
18. FINAL CLEANUP AND RESTORATION SHALL CONSIST OF FINE GRADING OF CONSTRUCTION AREAS, REMOVAL OF CONSTRUCTION SIGNS, ETC. TOPSOIL SHALL BE SPREAD OVER ALL DISTURBED AREAS, FOLLOWED BY SEED, FERTILIZER AND EROSION MAT OR STRAW MULCH, OR AS FURTHER REQUIRED BY THE LANDSCAPING PLANS AND SPECIFICATIONS. ALL REQUIRED RESTORATION ITEMS NOT SPECIFICALLY IDENTIFIED AS A PAY ITEM SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
19. THE UTILITY POLES SHOWN ON THESE DRAWINGS ARE INTENDED TO SHOW ONLY THE LOCATION OF EXISTING POLES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE QUANTITY AND DIRECTION OF OVERHEAD LINES. THE COST FOR SUPPORTING AND RELOCATING POLES SHALL BE INCIDENTAL TO THE PROJECT.
20. THE MEANS AND METHODS OF CONTROLLING GROUNDWATER AND DEWATERING ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ALL COST ASSOCIATED WITH DEWATERING SHALL BE INCIDENTAL TO THE CONTRACT.

STRUCTURE	TYPE	SIZE OF PIPE	RIM	DROP	INVERT	DIRECTION
824	CATCH BASIN	12"	123.06	-4.30	118.76	SOUTH
1081	TELEPHONE MANHOLE	T/3" CONDUIT	124.59	-2.30	122.29	NORTH/SOUTH
		BOTTOM		-5.30	119.29	
2018	CATCH BASIN	12"	122.91	-3.62	119.29	NORTH
		8"		-3.60	119.31	EAST
2027	PUBLIC LIGHTING MANHOLE	T/PIPE	122.21	-2.35	119.86	NORTH/SOUTH
		BOTTOM		-3.00	119.21	CABLES NORTH, SOUTH/WEST
2028	TELEPHONE MANHOLE	BOTTOM	122.36	-6.70	115.66	CABLES NORTH/SOUTH
2029	ELECTRIC MANHOLE		122.23			
2030	ELECTRIC MANHOLE		122.19			
2031	CATCH BASIN	12"	122.02	-1.60	120.42	WEST
2032	GATE VALVE	T/PIPE	122.80	-4.70	118.10	NORTH/SOUTH
2556	PUBLIC LIGHTING MANHOLE	BOTTOM	122.14	-4.65	117.49	WIRES NORTHEAST/WEST
2561	TELEPHONE MANHOLE	BOTTOM	122.53	-6.97	115.56	WIRES NORTHEAST/SOUTHWEST
2562	TELEPHONE MANHOLE	BOTTOM	122.32	-8.30	114.02	WIRES NORTH/SOUTH
2563	PUBLIC LIGHTING MANHOLE	BOTTOM	122.51	-6.02	116.49	WIRES NORTH/SOUTHWEST
2570	ELECTRIC MANHOLE		122.04			
2581	PUBLIC LIGHTING MANHOLE	BOTTOM	122.67	-4.72	117.95	WIRES NORTHEAST/SOUTH
2594	CATCH BASIN	BOTTOM	122.36	-5.45	116.91	
2597	STORM MANHOLE	CL/CHANNEL	123.05	-16.20	106.85	NORTH/SOUTH, NO PIPE VISIBLE
2605	GATE VALVE	T/PIPE	122.94	-4.65	118.29	EAST/WEST
2610	CATCH BASIN	T/WATER	122.88	-3.60	119.28	
		BOTTOM 1.5' DIA. VERTICAL		-6.14	116.74	
2612	TELEPHONE MANHOLE	BOTTOM	123.27	-9.80	113.47	WIRES NORTH/SOUTH, SAME VAULT
2613	TELEPHONE MANHOLE	BOTTOM	123.13	-9.70	113.43	
2617	CATCH BASIN	BOTTOM	122.44	-5.14	117.30	NO PIPES VISIBLE
		T/WATER		-4.70	117.74	
2619	GATE VALVE	T/PIPE	122.73	-4.07	118.66	EAST/WEST
2620	GATE VALVE	T/PIPE	122.74	-4.35	118.39	EAST/WEST
2621	PUBLIC LIGHTING MANHOLE	BOTTOM	123.13	-6.07	117.06	WIRES NORTHEAST/SOUTHWEST
2623	STEAM MANHOLE	BOTTOM	122.99	-10.60	112.39	PIPE NORTHEAST/SOUTHWEST
2624	STEAM MANHOLE	BOTTOM	122.91	-10.50	112.41	NO PIPES VISIBLE
2625	STEAM MANHOLE		122.77			
2626	ELECTRIC MANHOLE		122.87		122.87	
3052	STEAM MANHOLE	T/PIPE	122.06	-6.15	115.91	EAST & WEST
3053	PUBLIC LIGHTING MANHOLE	BOTTOM	122.10	-2.60	119.50	CABLES EAST & WEST
3054	GATE VALVE	T/PIPE	122.55	-5.90	116.65	EAST & WEST
3055	UNKNOWN MH DFD		123.07		123.07	
3087	PUBLIC LIGHTING MANHOLE	BOTTOM	122.33	-2.30	120.03	CABLES SOUTH, EAST, & WEST
3099	PUBLIC LIGHTING MANHOLE	BOTTOM	122.12	-3.80	118.32	CABLES EAST & WEST
3100	ELECTRIC MANHOLE	T/PIPE	122.22	-7.60	114.62	EAST & WEST
3101	ELECTRIC MANHOLE		122.26		122.26	
3102	HPFS D.F.D. MANHOLE	BOTTOM	122.31	-6.20	116.11	
3125	PUBLIC LIGHTING MANHOLE	BOTTOM	121.73	-4.30	117.43	CABLES EAST & WEST
3126	UNKNOWN MANHOLE		122.74		122.74	
3140	PUBLIC LIGHTING MANHOLE	BOTTOM	121.31	-4.00	117.31	CABLES EAST, WEST, & NORTH
3161	PUBLIC LIGHTING MANHOLE	BOTTOM	121.99	-2.60	119.39	
3219	UNKNOWN MANHOLE DFD	T/PIPE	121.72	-5.80	115.92	EAST & WEST
3220	HPFS D.F.D. MANHOLE	12"	121.52	-2.60	118.92	EAST
		12"		-2.85	118.67	SOUTH
		12"		-4.05	117.47	WEST
3221	CATCH BASIN	12"	121.44	-3.57	117.87	WEST
3222	CATCH BASIN	12"	121.27	-3.58	117.69	NORTH
3223	CATCH BASIN	BOTTOM	121.18	-4.70	116.48	
3255	PUBLIC LIGHTING MANHOLE	BOTTOM	124.10	-6.10	118.00	CABLES NORTH, SOUTH, EAST, & WEST
3256	GATE VALVE	T/PIPE	123.62	-3.65	119.97	EAST & WEST

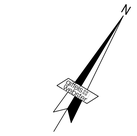
STRUCTURE	TYPE	SIZE OF PIPE	RIM	DROP	INVERT	DIRECTION
3257	GATE VALVE	T/PIPE	123.60	-4.40	119.20	EAST & WEST
3258	TELEPHONE MANHOLE	BOTTOM	123.74	-7.40	116.34	CABLES NORTH & SOUTH
3259	TELEPHONE MANHOLE	BOTTOM	123.69	-8.00	115.69	CABLES NORTH, SOUTH, & EAST
3260	PUBLIC LIGHTING MANHOLE	T/PIPE	123.67	-4.50	119.17	CABLES NORTH , SOUTH, & WEST
		BOTTOM		-6.30	117.37	NORTH & SOUTH
3263	PUBLIC LIGHTING MANHOLE	BOTTOM	122.69	-3.30	119.39	CABLES NORTH, SOUTH, & WEST
3264	CATCH BASIN	12"	121.22	-3.13	118.09	SOUTHEAST
3265	GATE VALVE	T/PIPE	121.60	-5.00	116.60	NORTHEAST & SOUTHWEST
3266	PUBLIC LIGHTING MANHOLE	BOTTOM	121.96	-5.10	116.86	CABLES NORTH, SOUTH, & WEST
3267	PUBLIC LIGHTING MANHOLE	T/PIPE	121.96	-2.60	119.36	WEST, SOUTH, & EAST
		BOTTOM		-5.80	116.16	CABLES NORTH & SOUTH
3268	STEAM MANHOLE	T/PIPE	121.76	-8.20	113.56	EAST & NORTH
3269	STEAM MANHOLE	T/PIPE	121.82	-7.70	114.12	NORTH & SOUTH
3270	TELEPHONE MANHOLE	T/PIPE	121.79	-2.75	119.04	EAST & WEST
		BOTTOM		-6.90	114.89	CABLES NORTH & SOUTH
3271	PUBLIC LIGHTING MANHOLE	BOTTOM	121.69	-4.90	116.79	
3272	GATE VALVE	T/PIPE	121.85	-4.20	117.65	NORTHEAST/SOUTHWEST
3273	PUBLIC LIGHTING MANHOLE	BOTTOM	121.72	-8.65	113.07	CABLES EAST/WEST/NORTH/SOUTH
3274	GATE VALVE	T/PIPE	121.78	-4.25	117.53	EAST/WEST
3275	CATCH BASIN	BOTTOM	121.57	-4.13	117.44	NO PIPES VISIBLE
3276	HPFS D.F.D. MANHOLE	BOTTOM	121.92	-7.00	114.92	NO PIPES VISIBLE
		T/VALVE		-3.90	118.02	
3298	STEAM MANHOLE	BOTTOM	121.79	-12.50	109.29	NO PIPES VISIBLE
3900	PUBLIC LIGHTING MANHOLE	BOTTOM	123.40	-4.30	119.10	CABLES NORTHEAST/SOUTHEAST/WEST
3901	ELECTRIC MANHOLE		122.94			
3902	ELECTRIC MANHOLE	T/ENCLOSED PIPE	123.15	-4.55	118.60	EAST/WEST
		BOTTOM		-6.56	116.59	CABLES NORTH/SOUTH
3904	GATE VALVE	T/PIPE	123.70	-5.65	118.05	NORTH/SOUTH
3905	STEAM MANHOLE	T/PIPE	123.02	-6.50	116.52	EAST/WEST
		BOTTOM	123.02	-7.90	115.12	
3906	GATE VALVE	T/PIPE	122.84	-5.40	117.44	EAST/WEST
3907	GATE VALVE DFD	T/PIPE	123.18	-6.60	116.58	SOUTH PIPE RUNS EAST/WEST W/TEE TO NORTH, BENDS TO WEST
3908	CATCH BASIN	12"	121.69	-4.28	117.41	NORTH
		12"		-2.25	119.44	NORTH
		12"		-4.05	117.64	SOUTHWEST
3909	CATCH BASIN	12"	121.93	-2.48	119.45	SOUTH
3910	PUBLIC LIGHTING MANHOLE		122.40			
3911	CATCH BASIN	12"	122.10	-2.24	119.86	NORTH
3913	PUBLIC LIGHTING MANHOLE	BOTTOM	122.39	-5.60	116.79	CABLES NORTHEAST/SOUTHWEST
3914	STEAM MANHOLE		122.29		122.29	
3915	STEAM MANHOLE		122.38		122.38	
4019	UNKNOWN MH	BOTTOM	125.42	-4.90	120.52	CABLES EAST/WEST
4020	ELECTRIC MANHOLE		124.78			
4021	CATCH BASIN	T/6" PIPE	124.50	-2.10	122.40	SOUTHEAST
		8"		-3.95	120.55	NORTHWEST
4022	GATE VALVE	T/PIPE	124.98	-4.90	120.08	EAST/WEST
4023	STEAM MANHOLE	DUCT BANK	124.39	-6.25	118.14	EAST/WEST
		BOTTOM		-10.00	114.39	NO PIPES VISIBLE
4024	STEAM MANHOLE	T/PIPE	124.37	-7.80	116.57	NORTH/SOUTH
		BOTTOM		-10.00	114.37	
4025	PUBLIC LIGHTING MANHOLE	BOTTOM	124.32	-4.50	119.82	NORTHEAST/SOUTH
4026	GATE VALVE	T/PIPE	124.54	-3.75	120.79	NORTH/SOUTH
4027	CATCH BASIN	12"	124.46	-5.30	119.16	WEST
4028	GATE VALVE	T/PIPE	125.00	-5.15	119.85	EAST/WEST
4041	PUBLIC LIGHTING MANHOLE	BOTTOM	125.07	-4.10	120.97	CABLES NORTHEAST/SOUTH/SOUTHEAST
4314	CATCH BASIN	10"	122.11	-2.93	119.18	EAST

STRUCTURE	TYPE	SIZE OF PIPE	RIM	DROP	INVERT	DIRECTION
4315	CATCH BASIN	10"	122.49	-10.50	111.99	SOUTHEAST
		10"		-10.50	111.99	NORTHWEST
4316	PUBLIC LIGHTING MANHOLE	BOTTOM	123.24	-4.80	118.44	CABLES NORTH/NORTHEAST/SOUTHEAST/SOUTH
4323	UNKNOWN MH	BOTTOM	123.60	-2.40	121.20	CABLES NORTH/SOUTHEAST/EAST
4324	UNKNOWN MH	BOTTOM	123.73	-2.60	121.13	CABLES SOUTHEAST
4328	PUBLIC LIGHTING MANHOLE	BOTTOM	124.22	-4.12	120.10	CABLES NORTHEAST/SOUTH
4332	CATCH BASIN		124.73		124.73	
5128	PUBLIC LIGHTING MANHOLE	BOTTOM	122.93	-3.40	119.53	WIRES NORT/NORTHEAST/NORTHWEST
5129	PUBLIC LIGHTING MANHOLE	BOTTOM	123.07	-4.50	118.57	WIRES SOUTH/WEST
5139	PUBLIC LIGHTING MANHOLE	BOTTOM	123.10	-4.50	118.60	WIRES NORTHEAST/SOUTHWEST
5140	TELEPHONE MANHOLE	BOTTOM	123.78	-5.65	118.13	WIRES EAST/WEST
5141	ELECTRIC MANHOLE		123.57			
5142	PUBLIC LIGHTING MANHOLE	BOTTOM	123.44	-5.40	118.04	WIRES EAST/NORTHEAST/WEST
5160	ELECTRIC MANHOLE		123.95			
5180	PUBLIC LIGHTING MANHOLE	BOTTOM	123.90	-4.80	119.10	WIRES NORTH/SOUTH/NORTHWEST
5195	TELEPHONE MANHOLE	BOTTOM	124.84	-9.00	115.84	CABLES EAST/WEST
5196	TELEPHONE MANHOLE	BOTTOM	124.72	-5.00	119.72	CABLES EAST/WEST
5199	ELECTRIC MANHOLE		124.65			
5200	PUBLIC LIGHTING MANHOLE		124.20		124.20	
5217	PUBLIC LIGHTING MANHOLE	BOTTOM	124.53	-4.90	119.63	CABLES EAST/NORTHWEST
5224	PUBLIC LIGHTING MANHOLE	BOTTOM	124.10	-4.78	119.32	WIRES NORTHEAST/SOUTH
5296	ELECTRIC MANHOLE	T/CONCRETE	122.65	-3.30	119.35	WIRES EAST/SOUTH, ALSO DUCT BANK EAST/WEST
		BOTTOM		-5.00	117.65	
5297	CATCH BASIN	BOTTOM	122.48	-4.06	118.42	NO PIPES VISIBLE
5298	PUBLIC LIGHTING MANHOLE	BOTTOM	122.94	-4.90	118.04	CABLES EAST/SOUTHWEST
5368	CATCH BASIN	BOTTOM	124.22	-5.00	119.22	NO PIPES VISIBLE
5369	GATE VALVE	T/PIPE	124.28	-3.90	120.38	EAST/WEST
5370	GATE VALVE	T/PIPE	124.22	-4.70	119.52	NORTH/SOUTH
5371	GATE VALVE	T/PIPE	124.50	-4.70	119.80	EAST/WEST
5372	STEAM MANHOLE	T/PIPE	124.61	-6.20	118.41	EAST/WEST
5373	ELECTRIC MANHOLE	BOTTOM	124.52	-14.65	109.87	CABLES EAST/WEST
5374	CATCH BASIN	T/DEBRIS	124.54	-3.70	120.84	NO PIPES VISIBLE
5375	TELEPHONE MANHOLE	T/DEBRIS	124.31	-4.00	120.31	CABLES EAST/WEST
5376	ELECTRIC MANHOLE		124.23			
5377	PUBLIC LIGHTING MANHOLE	T/PIPE AT EAST END	124.01	-3.70	120.31	EAST/WEST
		T/PIPE AT WEST END	124.01	-2.70	121.31	
		BOTTOM	124.01	-5.00	119.01	CABLES NORTH/SOUTH/EAST/WEST/NORTHWEST
5390	PUBLIC LIGHTING MANHOLE		123.92		123.92	
5396	PUBLIC LIGHTING MANHOLE		122.96		122.96	
5399	CATCH BASIN		121.77		121.77	
5426	GATE VALVE	T/PIPE	124.51	-4.80	119.71	NORTH/SOUTH
5427	PUBLIC LIGHTING MANHOLE	T/DEBRIS	125.02	-3.30	121.72	CABLES WEST/NORTHWEST/SOUTH
5431	CATCH BASIN	12"	124.74	-3.50	121.24	EAST
5851	STORM MANHOLE	BOTTOM	122.36	-6.47	115.89	PIPE WEST/EAST?
		12"	122.36	-6.42	115.94	WEST, POSSIBLY EAST
5852	PUBLIC LIGHTING MANHOLE	BOTTOM	123.04	-5.28	117.76	WIRES NORTH/EAST
14879	COMBINED MANHOLE	T/DRT	122.64	-3.20	119.44	
		4"		-1.50	121.14	SOUTHEAST
		12"		-2.63	120.01	WEST
		20"		-8.70	113.94	WEST
14880	CATCH BASIN	4"	122.41	-1.17	121.24	NORTHWEST
14890	ELECTRIC MANHOLE	BOTTOM	122.80	-8.50	114.30	CABLES SOUTHWEST

LEGEND - EXISTING

E/ PAVEMENT		DECIDUOUS TREE	
CURB	HH	ELECTRIC HAND HOLE	
E/ WALK		BUSH/SHRUB	
MISC. LINE		PARKING METER	
FENCE		MISC. TOPO. SHOT	
GUARD RAIL		FOUND IRON	
WALL		FOUND NAIL	
BLDG. LINE		F. CUT CROSS	
OVERHANG LINE		FENCE POST	
SHRUB LINE		FOUND PIPE	
TREE LINE		FOUND MON.	
WATER LINE		EXISTING ELEVATION	000.00+ 000.0
GAS LINE		FLAG POLE	
UG ELEC. LINE		ELECTRIC RISER	
UG TELE. LINE		CHAIN-LINK FENCE	
UG CABLE TV LINE		DOOR LEDGE	
PAINT STRIPE		FINISHED FLOOR	
COMBINED SEWER		OVERHANG	
PLD LINE		FOUND IRON PIPE	
STEAM LINE		MEASURED	
ELECTRIC OVERHEAD		RECORD	
COMB. MH		FOUND MONUMENT	
GATE VALVE		SET NAIL	
HYDRANT		STATE PLANE COORDINATE SYSTEM	
WATER VALVE		ASPHALT	
FDC CONNECTION		CONCRETE	
CATCH BASIN			
ROUND CB			
UNKNOWN MANHOLE (AERIAL)			
SIGN			
IRRIGATION CONTROL BOX			
STORM CLEAN OUT			
LIGHT POLE			
UTILITY POLE			
ELEC. TRANS.			
ELEC. MH			
STEAM MH			
PUBLIC LIGHTING MH			
TELE. MH			
MANHOLE			
PROT. POST/GUARD POST			
GUY			

VACATED COLUMBIA STREET HATCH



SCALE: 1"= 20'

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Project

Seal

PERMIT/BID	10-11-17
PROGRESS REVIEW	09-25-17
DD OR	08-31-17
Revision	Date

Date

Project Number 2017041

Sheet Title
EXISTING CONDITIONS

Sheet Number
C100

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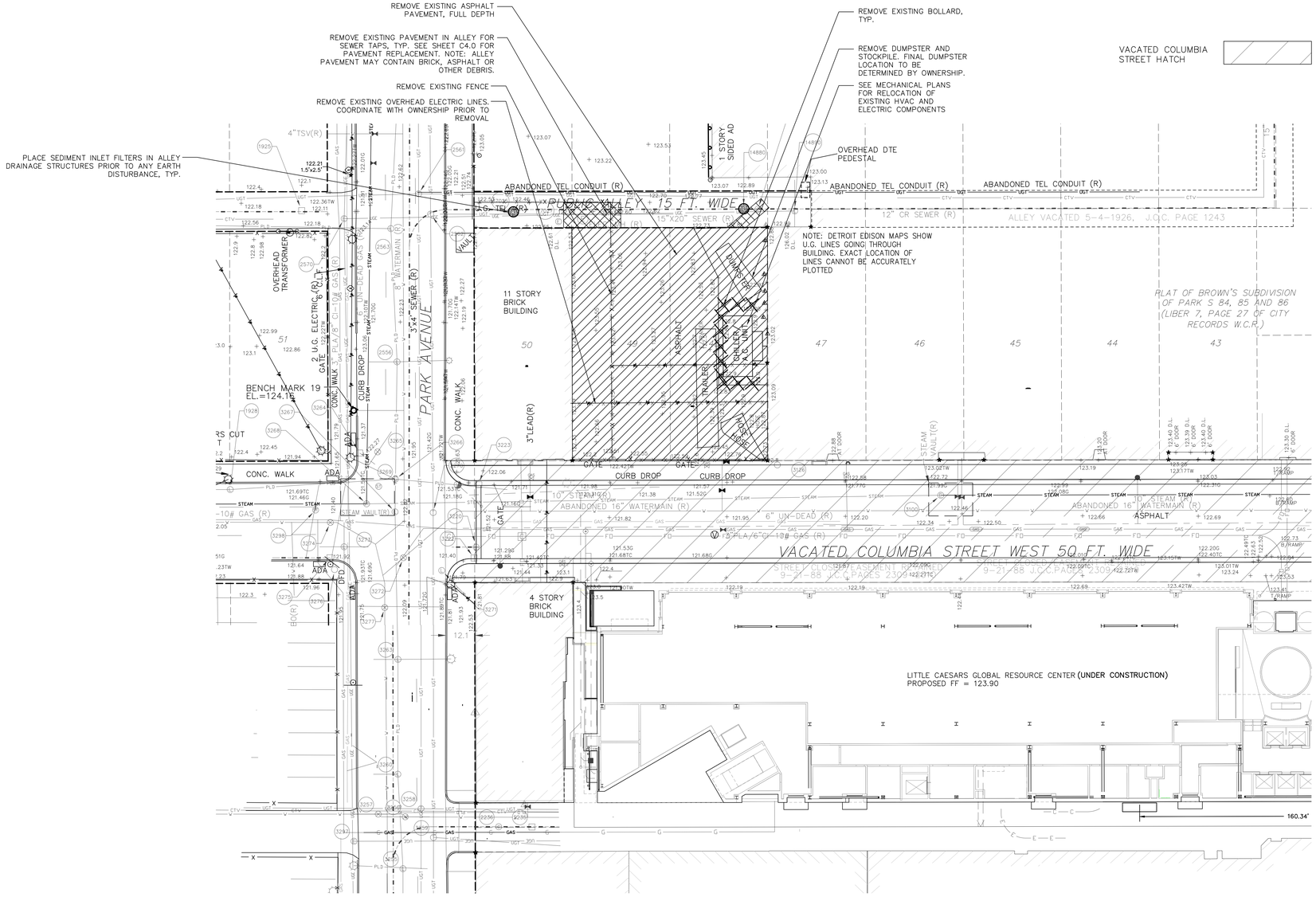
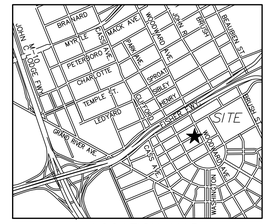




DEMOLITION NOTES

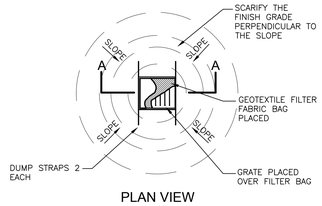
1. REFER TO THE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS AND RESPONSIBILITIES.
2. WITH THE EXCEPTION OF AN AMOUNT OF EXCAVATED MATERIALS SUFFICIENT FOR BACKFILLING AND CONSTRUCTION OF FILLS AS CALLED FOR ON THE PLANS AND AS INDICATED BELOW, ALL BROKEN CONCRETE, STONE AND EXCESS EXCAVATED MATERIALS SHALL BE DISPOSED OF BY THE CONTRACTOR. THE CONTRACTOR WILL BE REQUIRED TO OBTAIN THEIR OWN DISPOSAL GROUND, AND WILL RECEIVE NO ADDITIONAL COMPENSATION FOR DISPOSING OF ANY OF THE EXCESS MATERIALS. MATERIALS ACCEPTABLE TO THE ENGINEER MAY BE DISPOSED OF ON-SITE AT THE CONTRACTORS EXPENSE IN A MANNER APPROVED IN ADVANCE BY THE ENGINEER.
3. THE EDGE OF EXISTING PAVEMENT SHALL BE CLEANED OF EARTH AND OTHER FOREIGN MATERIAL BEFORE ADJACENT POURS ARE PLACED.
4. ALL BULKHEADING AND/OR SEWER PIPE REMOVAL NECESSITATED BY THE REMOVAL OF DRAINAGE STRUCTURES SHALL BE INCLUDED IN THE STRUCTURE REMOVAL.
5. STREET SIGNS IN THE WAY OF CONSTRUCTION WILL BE REMOVED AND RESET IMMEDIATELY IN A TEMPORARY LOCATION, AS APPROVED BY ENGINEER.
6. THE CONTRACTOR SHALL PROTECT ALL EXISTING SIGNS AND POSTS SCHEDULED TO REMAIN, AS DIRECTED BY THE ENGINEER.
7. ALL UNDERGROUND UTILITIES NOT INDICATED FOR REMOVAL SHALL BE PROTECTED THROUGHOUT CONSTRUCTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PRIVATE PROPERTY (INCLUDING BUILDINGS AND FOUNDATIONS) THROUGHOUT CONSTRUCTION AND SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AT ALL TIMES.
9. THE REMOVAL OF PAVEMENT, CURBS AND WALKS SHALL INCLUDE ALL REQUIRED SAWCUTTING. CURB REMOVAL IS INCIDENTAL TO PAVEMENT REMOVAL.

DEMOLITION LEGEND

REMOVE UTILITY STRUCTURE
REMOVE UTILITY PIPE
ABANDON UTILITY PIPE
CUT AND BULKHEAD UTILITY PIPE
REMOVE BUILDING
REMOVE ALLEY PAVEMENT
REMOVE ASPHALT PAVEMENT
REMOVE SIDEWALK
REMOVE BOLLARD
SEDIMENT INLET FILTER - SEE DETAIL ON THIS SHEET FOR MORE INFORMATION

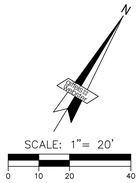
EROSION CONTROL NOTES

1. REFER TO THE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS AND RESPONSIBILITIES.
2. ALL EROSION AND SEDIMENTATION CONTROL WORK SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE WAYNE COUNTY DEPARTMENT OF ENVIRONMENT.
3. ANY EROSION AND SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED WITHIN THE WORK AREA AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. (WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES, PONDS AND WETLANDS)
4. THE CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES AS DIRECTED ON THESE PLANS AND WHENEVER OTHERWISE REQUIRED BY THE WORK. THE CONTRACTOR SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OTHER CHANGES HAVE BEEN ACCOMPLISHED.
5. SOIL EROSION CONTROL PRACTICES WILL BE ESTABLISHED IN EARLY STAGES OF CONSTRUCTION BY THE CONTRACTOR. SEDIMENTATION CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF DIRT OUT OF THE WORK AREA.
6. THE CONTRACTOR SHALL PRESERVE NATURAL VEGETATION AS MUCH AS POSSIBLE.
7. PROTECT ALL EXISTING TREES, INCLUDING THEIR BRANCHES AND ROOTS, FROM DAMAGE DUE TO THIS WORK UNLESS SPECIFICALLY IDENTIFIED FOR REMOVAL.
8. VEGETATION STABILIZATION OF ALL DISTURBED AREAS SHALL BE ESTABLISHED WITHIN 15 DAYS OF COMPLETION OF FINAL GRADING.
9. THE CONTRACTOR SHALL SWEEP THE EXISTING STREETS SURROUNDING THE PROJECT SITE ONCE A WEEK, OR AS DIRECTED BY THE ENGINEER OR INSPECTOR. STREET SCRAPING SHALL BE PERFORMED IN CONJUNCTION WITH THIS SWEEPING ON AN AS NEEDED BASIS.
10. THE SEDIMENT CONTROL FENCING INDICATED ON THIS PLAN IS NOT INTENDED TO SHOW THE EXACT LOCATION OF THE FENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE REQUIRED TO CONTAIN SEDIMENT.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING COMPLIANCE WITH ALL APPLICABLE NPDES REGULATIONS, INCLUDING: INSPECTION, RESTORATION, AND RECORD KEEPING REQUIREMENTS.
12. THE CONTRACTOR IS RESPONSIBLE FOR ON-GOING MAINTANANCE OF ALL SOIL EROSION CONTROLS AS INDICATED BY THESE PLANS.
13. CONSTRUCTION ACTIVITIES (INCLUDING INSTALLATION OF PIPE AND ASSOCIATED VALVES, STRUCTURES, BACK FILLING, SURFACE RESTORATION, AND REMOVAL OF EXCESS EXCAVATED MATERIAL) SHALL BE ACCOMPLISHED IN ONE CONTINOUS OPERATION.
14. PAVEMENT AND/OR VEGETATION SHALL NOT BE STRIPPED FROM AN AREA UNLESS CONSTRUCTION ACTIVITIES ARE TO COMMENCE IN THAT AREA WITHIN THE NEXT THREE DAYS.
15. IF FOR ANY REASON PERMANENT STABILIZATION CAN NOT BE PROVIDED WITHIN 15 DAYS OF THE COMPLETION OF PIPE LAYING OPERATIONS, TEMPORARY STABILIZATION SHALL BE PROVIDED AT ALL DISTURBED AREAS. TEMPORARY STABILIZATION SHALL FURTHERMORE BE PROVIDED DURING THE NON-GROWING SEASON (OCTOBER 1 THROUGH APRIL 20) FOR ALL AREAS TO BE SEEDED.
16. TEMPORARY STABILIZATION SHALL CONSIST OF EITHER SMALL GRAIN STRAW OR GRASS HAY SPREAD AT THE RATE OF 1.5 TO 2 TONS PER ACRE, OR MULCH BLANKETS, WHICH SHALL BE ANCHORED IN PLACE TO PREVENT DISPLACEMENT FROM WIND AND RAIN. TEMPORARY STABILIZATION SHALL BE REPAIRED AS OFTEN AS NECESSARY, AS DETERMINED BY THE AGENCY WITH JURISDICTION.
17. ALL DEWATERING SHALL BE ACCOMPLISHED IN A MANNER THAT WILL NOT CONTRIBUTE TO DEPOSITION OF SEDIMENT IN ROAD DITCHES OR OPEN WATER.
18. THIS PROJECT SHALL BE CONSTRUCTED IN COMPLIANCE WITH PART 91 OF ACT 451 OF 1994, AS AMENDED.
19. SEDIMENT CONTROL FENCING SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND SEVERAL TIMES DURING PROLONGED STORM EVENTS. IF THE FENCE IS SAGGING, OR SOIL HAS REACHED ONE HALF OF THE HEIGHT OF THE FABRIC, THE SOIL BEHIND THE FABRIC SHALL BE REMOVED AND DISPOSED OF IN A STABLE AREA OF THE SITE. IF WATER IS SEEPING UNDER THE FENCE, OR THE FABRIC IS DECMPOSED OR OTHERWISE INEFFECTIVE, THE FENCE SHALL BE REMOVED AND PROPERLY REINSTALLED AS INDICATED ON THESE PLANS.
20. MUD MAT ENTRANCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH STORM RAINFALL. THE SURROUNDING ROADS SHALL ALSO BE INSPECTED AT THIS TIME FOR EVIDENCE THAT MUD IS BEING TRACKED OFF OF THE SITE. MAINTENANCE SHALL INCLUDE THE INSTALLATION OF ADDITIONAL LAYERS OF STONE WHEN THE ORIGINAL STONE BECOMES COVERED WITH MUD. ALL SEDIMENT DROPPED OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS SHALL BE REMOVED IMMEDIATELY BY SWEEPING AND SCRAPING (AS MAY BE REQUIRED BY THE ENGINEER).
21. SEDIMENT INLET FILTERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND SEVERAL TIMES DURING PROLONGED STORM EVENTS. THE FILTERS SHALL BE CLEANED PERIODICALLY THROUGHOUT CONSTRUCTION TO AVOID CLOGGING. FILTERS THAT CANNOT BE MAINTAINED BY CLEANING SHALL BE COMPELTELY REPLACED.



NOTE:
TEMPORARY SEDIMENT INLET FILTER TO BE INSTALLED ON ALL PAVED CATCH BASINS OR STORM INLETS, OR AS SPECIFIED ON THE SOIL EROSION CONTROL PLAN. CLEAN FILTER AS NEEDED, OR AS REQUIRED BY THE SOIL EROSION CONTROL PLAN.

A SEDIMENT INLET FILTER
SCALE: NTS



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Project

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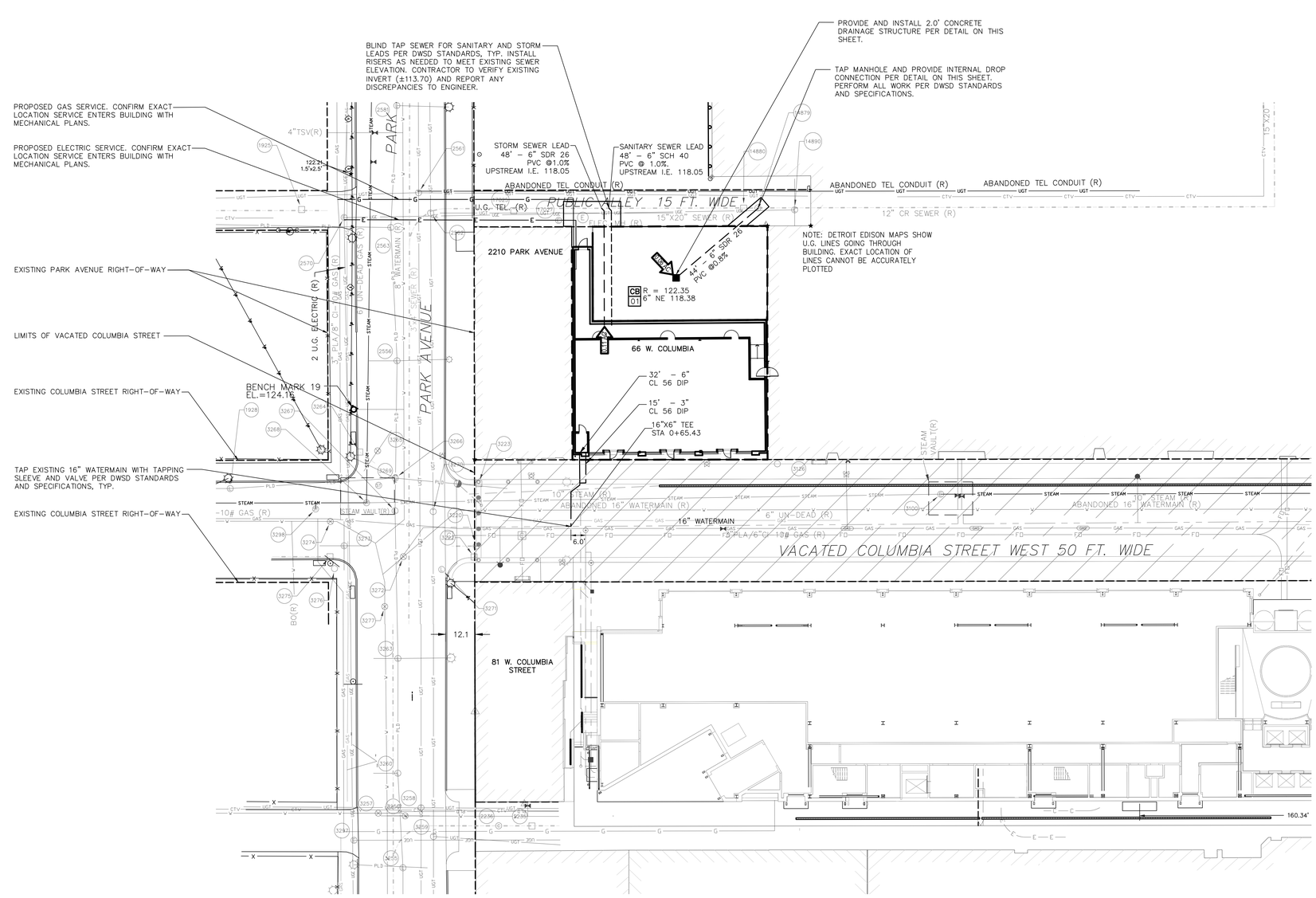
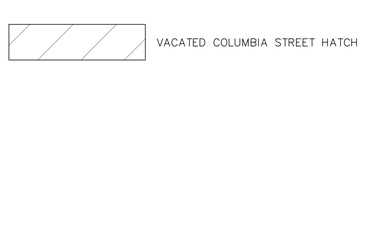
Project Number 2017041

Sheet Title
DEMOLITION PLAN

Sheet Number
C200



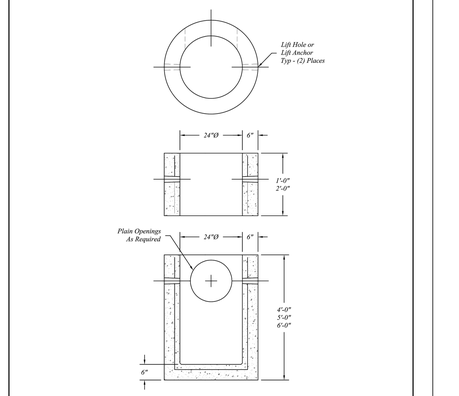


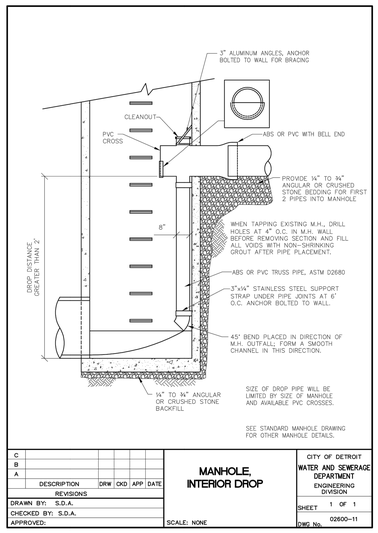
LOCATION MAP
(NOT TO SCALE)

UTILITY NOTES

1. REFER TO THE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS AND RESPONSIBILITIES.
2. REFER TO ARCHITECTURAL PLANS TO COORDINATE ALL:
   A. WATER SUPPLY, METERING, SPRINKLER AND FDC PIPING, DESIGN AND COORDINATION
   B. BUILDING SEWER, BUILDING DRAIN DESIGN AND CONNECTIONS TO CLEAN OUTS AND ROOF CONNECTORS
   C. GAS, ELECTRIC AND COMMUNICATION SERVICES, AND LIGHTING DETAILS
   D. ALL BUILDING ACCESS WALKS AND ENTRY DETAILS, INCLUDING SUPPORTED SLABS
   E. ALL WORK TO CONSTRUCT THE BUILDING AND ALL ITEMS CONNECTED TO IT
3. ALL TRENCHES WITHIN A ONE ON ONE SLOPE OF PAVEMENT SHALL BE BACKFILLED WITH SAND (MDOT CLASS II MINIMUM) AND MECHANICALLY COMPACTED IN NOT MORE THAN 9" LAYER TO 95% MAXIMUM DRY DENSITY PER MODIFIED PROCTER COMPACTION TEST ASTM D-1557. COMPACTED SAND BACKFILL SHALL ALSO BE PROVIDED FOR ALL SEWER TRENCHES LOCATED UNDER, OR WITHIN, THREE FEET OF PAVEMENT.
4. THE COST OF ALL TREE, STUMP, FOUNDATION AND/OR STRUCTURE REMOVAL AND DISPOSAL NOT INCLUDED IN THE PROPOSAL SHALL BE CONSIDERED INCIDENTAL AND INCLUDED IN THE PRICE BID FOR WATERMAIN, SANITARY SEWER, STORM SEWER, AND PAVING WORK.
5. A MINIMUM VERTICAL CLEARANCE OF 18 INCHES IS REQUIRED AT UTILITY CROSSINGS (MASURED FROM THE OUTSIDE OF PIPE TO THE OUTSIDE OF PIPE). POSITIVE PROVISIONS SHALL BE MADE TO ENSURE THAT ALL UTILITY TRENCHES ARE FREE DRAINING DURING ALL PHASES OF CONSTRUCTION.
6. THE REQUIRED BEDDING FOR SEWER PIPE SHALL CONSIST OF A MAXIMUM 3/4 INCH DIAMETER CRUSHED STONE.
7. THE MINIMUM SLOPE FOR A BUILDING LEAD IS 1%. LEADS SHALL ONLY BE CONNECTED TO THE MAIN LINE WITH WYES.
8. ALL STORM SEWER PIPE SHALL BE CONSTRUCTED WITH RUBBER GASKET (PREMIUM) JOINTS.
9. THE CONTRACTOR SHALL COORDINATE THE REMOVAL OF ALL UTILITY LINES AND STRUCTURES, AS OUTLINED ON THE DEMOLITION PLAN, WITH THE INSTALLATION OF UTILITY IMPROVEMENTS.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING GRADE MODIFICATIONS INDICATED ON THE FINISHED LANDSCAPE PLAN, AND COORDINATE THE ACTUAL FINISH GRADE OF FIRE HYDRANTS, GATE VALVE CASTINGS, MANHOLES, YARD DRAINS, CLEAN OUTS AND OTHER UTILITY STRUCTURES. ENSURE THAT ALL FINISH GRADING IS PERFORMED IN A MANNER THAT ACCOMPLISHES THE PROJECT DESIGN OBJECTIVES AND PROVIDES FOR POSITIVE DRAINAGE OF ALL AREAS. ANY SUBSTANTIAL GRADE CHANGES WHICH MAY CAUSE FUNCTIONAL PROBLEMS SHALL BE REPORTED PROMPTLY TO THE ENGINEER WHO SHALL EVALUATE THE CONDITIONS AND PROVIDED CORRECTIONAL RECOMMENDATIONS TO THE OWNER FOR FINAL DETERMINATION.
11. CONTRACTOR SHALL BE REQUIRED TO COORDINATE THE INSTALLATION OF GAS, ELECTRIC, PHONE, CABLE, SPRINKLERS ETC., IN SUCH A MANNER THAT WILL FACILITATE THEIR PROPER INSTALLATION PRIOR TO PLACING THE PAVEMENT MATERIALS. ENSURE THAT ALL REQUIRED PIPES, CONDUITS, CABLES AND SLEEVES ARE PROPERLY PLACED AND THAT THE TRENCHES ARE PROPERLY BACKFILLED AND COMPACTED.
12. THE CONTRACTOR SHALL REMOVE UTILITIES, WHICH HAVE BEEN ABANDONED IN PLACE, AS REQUIRED TO COMPLETE INSTALLATION OF NEW UTILITIES. WHENEVER ABANDONED UTILITIES ARE CUT, CONTRACTOR SHALL COMPLETELY CAP BOTH ENDS TO PREVENT THE INFILTRATION OF SOILS.
13. NO CONNECTION MAY BE MADE TO ANY EXISTING WATER MAIN UNTIL THE NEW MAIN HAS PASSED ALL PRESSURE AND BACTERIOLOGICAL TESTING.
14. ROADWAY, DRIVEWAY AND PARKING AREA CROSSINGS SHALL BE TEMPORARALY CONDITIONED IMMEDIATELY AFTER CROSSING BY PLACING 8" OF MDOT 22A GRAVEL OR SLAG AGGREGATE, AND SHALL BE MAINTAINED IN GOOD, DUST FREE CONDITION UNTIL PAVEMENT RESTORATION IS MADE.

VACATED COLUMBIA STREET HATCH





Columbia Street Infill	Rational Method Q=C*I*A					Mannings Equation DWSD ALLOWABLE			
	Runoff Coefficient	Pipe Slope	Area	Total Area	Flow	Pipe Diameter	Pipe Slope	Manning Velocity in Pipe	Manning Capacity of Sewer
Line ID	C	I	A	A_T	Q		S	V	
		in/hr	acres	acres	cfs	inches	%	ft / sec	cfs
EX 15"X20" SEWER CAPACITY	–	–	–		–	15"X20"	0.4	3.5	5.00
ALLOWABLE CAPACITY 50%	–	–	–		–	–	–	–	2.50
CB01 - EX15"x20"	0.90	2.00	0.06	0.06	0.11	6	0.80	3.03	0.59
6" Bldg Lead - EX 15"x20"	0.90	2.00	0.11	0.11	0.20	6	1.00	3.39	0.67
TOTAL FLOW LESS THAN 50% DOWNSTREAM SEWER CAPACITY =									1.26

UTILITY STATEMENT

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE.

(R) = UTILITY SHOWN FROM RECORDS OR PLANS, & FIELD LOCATED WHERE POSSIBLE.

PRIOR TO THE PLANNED BUILDING IMPROVEMENTS, AND/ OR CONSTRUCTION, THE RESPECTIVE UTILITY COMPANIES MUST BE NOTIFIED TO STAKE THE PRECISE LOCATION OF THEIR UTILITIES.

SCALE: 1"= 20'
0 10 20 40

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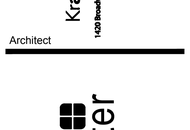

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PROGRESS REVIEW	09-25-17
DD OR	08-31-17
Revision	Date

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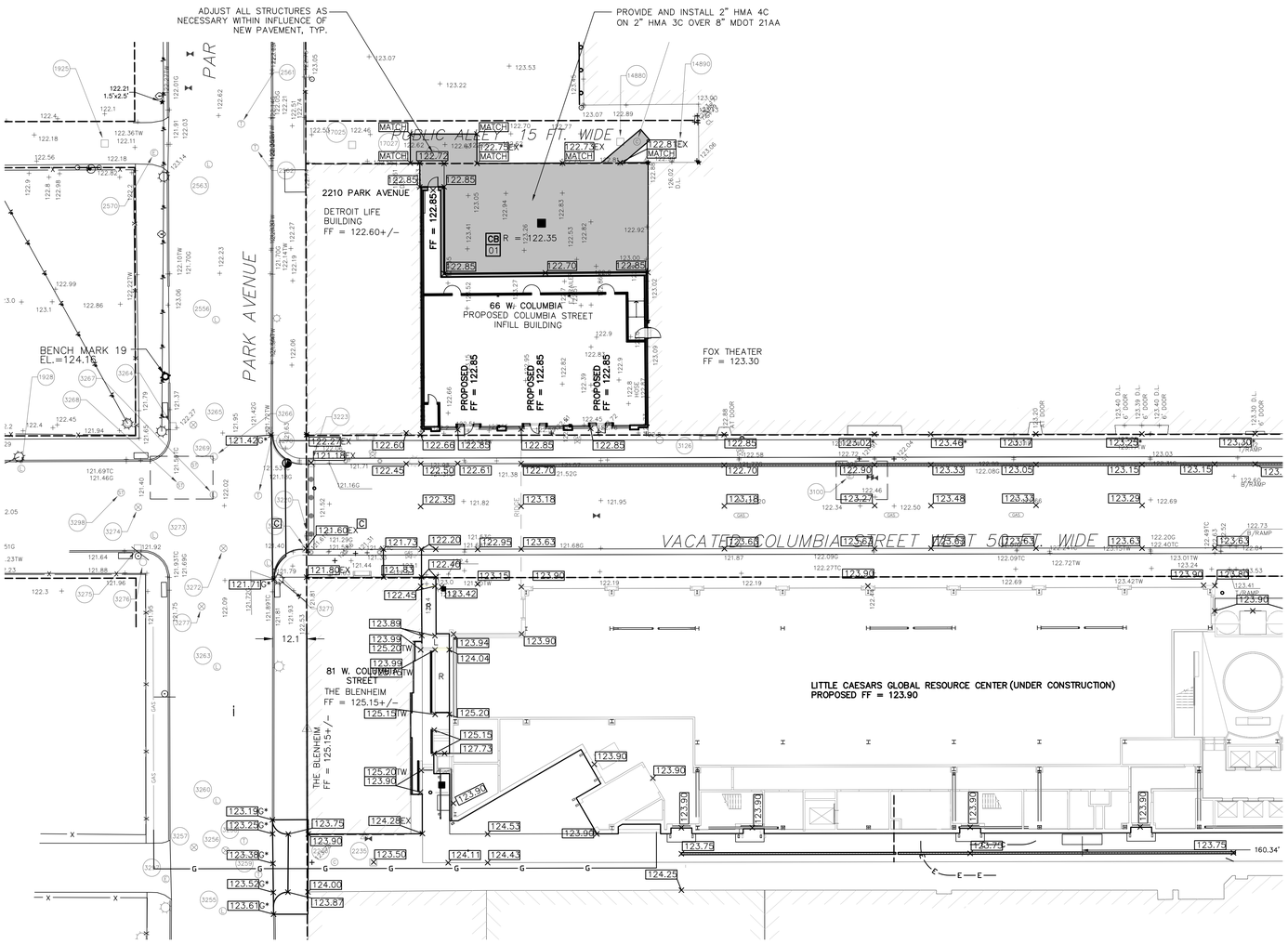
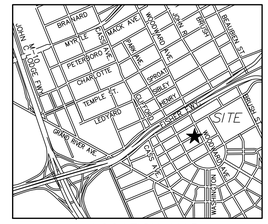
Project Number 2017041

Sheet Title
UTILITY PLAN

Sheet Number
C300





LOCATION MAP
(NOT TO SCALE)

PAVING AND GRADING NOTES

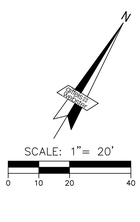
1. REFER TO THE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS AND RESPONSIBILITIES.
2. THE PAVING CONTRACTOR SHALL BE REQUIRED TO COORDINATE THE INSTALLATION OF GAS, ELECTRIC, PHONE, CABLE, SPRINKLERS, ETC. IN SUCH A MANNER THAT WILL FACILITATE THEIR PROPER INSTALLATION PRIOR TO PLACING THE PAVEMENT MATERIALS. ENSURE THAT ALL REQUIRED PIPES, CONDUITS, CABLES AND SLEEVES ARE PROPERLY PLACED AND THAT THE TRENCHES ARE PROPERLY BACKFILLED AND COMPACTED.
3. BUTT JOINTS SHALL BE PLACED AT ALL LOCATIONS WHERE AN EXISTING ASPHALT PAVEMENT SURFACE IS BEING DISTURBED BY REMOVALS AND/OR THE INSTALLATION OF NEW ASPHALT PAVEMENT.
4. ALL PAVEMENT AREAS SHOULD BE CLEARED AND GRUBBED BY REMOVING SURFACE VEGETATION, TOPSOIL, DEBRIS AND OTHER DELETERIOUS MATERIALS.
5. THE PLACEMENT OF THE FINAL ASPHALT LIFT SHALL BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED, OR AS APPROVED BY THE OWNER. A BOND COAT OF SS-1H EMULSION SHALL BE APPLIED (AT A RATE OF 0.10 GALLONS/S.Y.D.) BETWEEN THE LEVELING AND WEARING COURSE WHEN 48 HOURS HAVE ELAPSED BETWEEN PLACEMENTS.
6. THE FINAL SUB-GRADE SHALL BE THOROUGHLY PROOF-ROLLED UNDER THE OBSERVATION OF THE SOILS ENGINEER.
7. PROPOSED AGGREGATE BASE SHALL EXTEND A MINIMUM OF 1 FOOT BEYOND THE PAVEMENT EDGE/BACK OF CURB.
8. ALL TRENCHES WITHIN A ONE ON ONE SLOPE OF PAVEMENT SHALL BE BACKFILLED WITH SAND (MDOT CLASS II MINIMUM) AND MECHANICALLY COMPACTED IN NOT MORE THAN 9" LAYER TO 95% MAXIMUM DRY DENSITY PER MODIFIED PROCTER COMPACTION TEST ASTM D-1557.
9. NO FROZEN MATERIAL SHALL BE PERMITTED AS BACKFILL UNDER ANY ROADWAY, DRIVEWAY OR PARKING AREA.
10. PRIOR TO THE START OF ANY FILLING, THE CONTRACTOR SHALL REMOVE ALL TOPSOIL AND ALL OTHER UNACCEPTABLE SOIL FROM THE FILL AREAS, AND PROPERLY BACKFILL WITH ACCEPTABLE SOIL.
11. BARRIER FREE SIGNAGE SHALL BE PLACED IN FRONT OF EVERY DESIGNATED BARRIER FREE STALL. THE CONTRACTOR SHALL COORDINATE STANDARD AND VAN ACCESSIBILITY SIGNAGE AS INDICATED ON THE PLANS.
12. ALL BARRIER FREE RAMPS TO BE A.D.A. COMPLIANT.
13. GENERAL GRADING REQUIREMENTS ARE AS FOLLOWS:
    A. FINISH GRADE AT EXISTING BUILDING SHALL MATCH BRICK LEDGES, DOORWAYS OR BASEMENT WINDOWS
    B. MAINTAIN POSITIVE DRAINAGE AWAY FROM ALL BUILDING (+ 2%)
    C. SIDEWALK CROSS SLOPE ±2% UNLESS OTHERWISE NOTED (EXCLUDING RAMPS)
    D. PAVEMENT SLOPES (1.0% MINIMUM, 4.0% MAXIMUM) UNIFORMLY BETWEEN FINISH GRADE ON PLANS
    E. LAWN AREAS ± 1% MINIMUM TO 25% (BERMS) MAXIMUM
14. ALL PROPOSED GRADES ARE AT THE GUTTER UNLESS OTHERWISE NOTED. SEE DETAILS FOR FACE OF CURB, TOP OF CURB AND ASPHALT ADJUSTMENTS.
15. REFER TO ARCHITECTURAL PLANS TO COORDINATE ALL:
    A. WATER SUPPLY, METERING, SPRINKLER AND FDC PIPING, DESIGN AND COORDINATION
    B. BUILDING SEWER, BUILDING DRAIN DESIGN AND CONNECTIONS TO CLEAN OUTS AND ROOF CONNECTORS
    C. GAS, ELECTRIC AND COMMUNICATION SERVICES AND LIGHTING DETAILS AND COORDINATION.
    D. ALL BUILDING ACCESS WALKS AND ENTRY DETAILS, INCLUDING SUPPORTED SLABS
    E. ALL WORK TO CONSTRUCT THE BUILDING AND ALL ITEMS CONNECTED TO IT
16. PRIOR TO THE PLACEMENT OF ANY BASE ASPHALT OR LEVELING COURSE, THE CURBS SHALL BE PARTIALLY BACKFILLED AND THE SUB-GRADE SHALL BE PROOF-ROLLED UNDER THE SUPERVISION OF THE SOILS ENGINEER.
17. ALL SIDEWALK AND PATHWAYS IN ANY PUBLIC R.O.W. SHALL BE INSPECTED BY THE AGENCY WITH JURISDICTION.

PAVEMENT HATCH LEGEND

2" HMA 4C OVER 2" HMA 3C
OVER 8" MDOT 21AA

GRADING LEGEND

	EXISTING	PROPOSED
SPOT ELEVATION*	×XXX.XX ×150.23	×XXX.XX
EX*	EXISTING GRADE WAS INTERPOLATED FROM SURROUNDING ELEVATION INFORMATION	
FF	FINISHED FLOOR	
FG	FINISHED GRADE	
TW	TOP OF WALK	
G	GUTTER	



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Project

STATE OF MICHIGAN
MICHAEL W. MARKS
PROFESSIONAL ENGINEER
No. 51562
REGISTERED PROFESSIONAL ENGINEER

Seal

Revision	Date
PERMIT/BID	10-11-17
PROGRESS REVIEW	09-25-17

Date

Project Number 2017041

Sheet Title
PAVING & GRADING PLAN

Sheet Number
C400

DEPARTMENT OF JUSTICE – SEPTEMBER 15, 2010
*FIGURES PRODUCED BY THE U.S. ACCESS BOARD

2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

SCALE: NOT TO SCALE

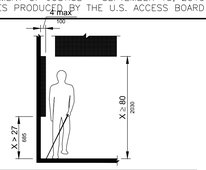


Figure 307.2
Limits of Protruding Objects

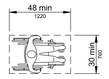


Figure 305.3
Clear Floor or Ground Space

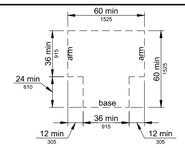


Figure 304.3.2
T-Shaped Turning Space

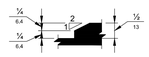


Figure 303.3
Beveled Change in Level

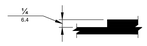


Figure 303.2
Vertical Change in Level

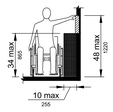


Figure 308.3.2a
Obstructed High Side Reach

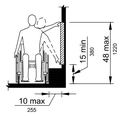


Figure 308.3.1
Unobstructed Side Reach

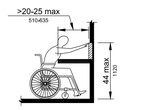


Figure 308.2.2b
Obstructed High Forward Reach

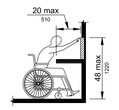


Figure 308.2.2a
Obstructed High Forward Reach

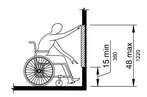
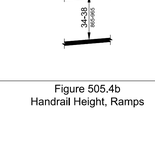


Figure 308.2.1
Unobstructed Forward Reach

Figure 404.2.4.1d
Maneuvering Clearance at Manual Swinging Doors and Gates, Hing Approach, Pull Side



*Door provided with both closer and latch.

Figure 404.2.4.1c
Maneuvering Clearance at Manual Swinging Doors and Gates, Front Approach, Push Side

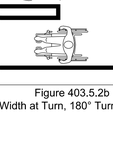


Figure 404.2.4.1b
Maneuvering Clearance at Manual Swinging Doors and Gates, Front Approach, Push Side

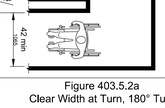


Figure 404.2.4.1a
Maneuvering Clearance at Manual Swinging Doors and Gates, Front Approach, Pull Side

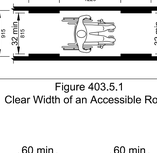


Figure 308.3.2b
Obstructed High Side Reach

*Door provided with closer.

Figure 404.2.4.1i
Maneuvering Clearance at Manual Swinging Doors and Gates, Latch Approach, Pull Side

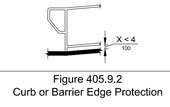
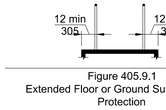


Figure 404.2.4.1h
Maneuvering Clearance at Manual Swinging Doors and Gates, Latch Approach, Pull Side



*Door provided with both closer and latch.

Figure 404.2.4.1g
Maneuvering Clearance at Manual Swinging Doors and Gates, Hinge Approach, Push Side

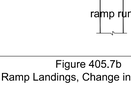


Figure 404.2.4.1f
Maneuvering Clearance at Manual Swinging Doors and Gates, Hinge Approach, Push Side

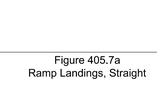


Figure 404.2.4.1e
Maneuvering Clearance at Manual Swinging Doors and Gates, Hinge Approach, Pull Side

Figure 404.2.10
Door and Gate Surfaces

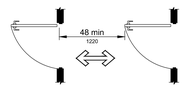
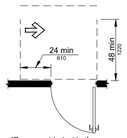


Figure 404.2.6a
Doors in Series and Gates in Series



*Door provided with closer.

Figure 404.2.4.1k
Maneuvering Clearance at Manual Swinging Doors and Gates, Latch Approach, Push Side

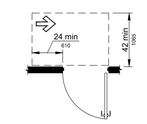


Figure 404.2.4.1j
Maneuvering Clearance at Manual Swinging Doors and Gates, Latch Approach, Push Side

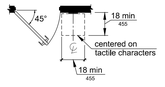


Figure 703.4.2
Location of Tactile Signs at Doors

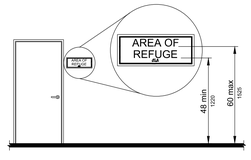


Figure 703.4.1
Height of Tactile Characters Above Floor or Ground

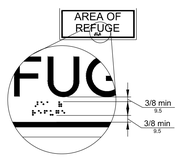


Figure 703.3.2
Position of Braille

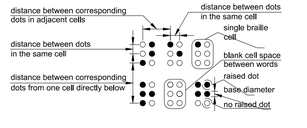


Figure 703.3.1
Braille Measurement

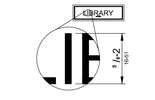


Figure 703.2.5
Height of Raised Characters

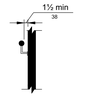


Figure 505.5
Handrail Clearance

Figure 505.4b
Handrail Height, Ramps

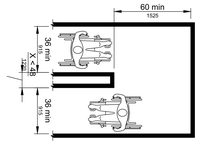


Figure 403.5.2b
Clear Width at Turn, 180° Turn (Exception)

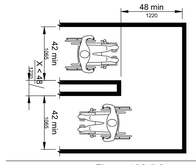


Figure 403.5.2a
Clear Width at Turn, 180° Turn

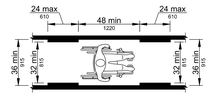


Figure 403.5.1
Clear Width of an Accessible Route

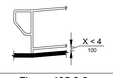


Figure 405.9.2
Curb or Barrier Edge Protection

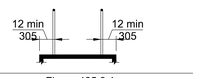


Figure 405.9.1
Extended Floor or Ground Surface Edge Protection

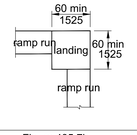


Figure 405.7b
Ramp Landings, Change in Direction

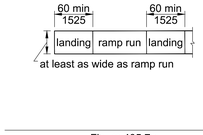


Figure 405.7a
Ramp Landings, Straight

ARCHITECTURAL SYMBOLS

PROJECT NORTH – VERIFY ORIENTATION ON PLAN SHEETS

COLUMN CENTER LINES

EXISTING COLUMN CENTER LINES

FLOOR ELEVATION OR WORK POINT REFERENCE

INDICATES HEIGHT ABOVE FINISH FLOOR

DIMENSION LINE

LEADER LINE

SECTION INDICATION, ie., SECTION A–A ON SHEET A301

DETAIL CUTS – DETAIL NUMBER AT TOP – SHEET WHERE DETAIL IS DRAWN AT BOTTOM.

ROOM NUMBER

DOOR NUMBER

EXIST DOOR TO REMAIN

ITEMS SCHEDULED FOR DEMOLITION

PARTITION

EXIST PARTITION

PARTITION TYPE – REFER TO DETAILS

CEILING HEIGHT

DETAIL BUBBLE– DETAIL NUMBER AT TOP – SHEET WHERE DETAIL OCCURS AT BOTTOM

ELEVATION SYMBOL

COMBINED ROOM ELEVATION SYMBOL

WINDOW TAG SYMBOL

MATERIALS LEGEND

BRICK

CMU

CONCRETE

SOLID SURFACE MATERIAL

QUARRY TILE

ALL METAL IN ELEVATION

STEEL
1. SMALL SCALE
2. LARGE SCALE

WOOD BLOCKING
1. CONTINUOUS
2. DISCONTINUOUS

GYP BD OR PLASTER

RIGID INSULATION

INSULATION LOOSE OR BATT

FINISHED WOOD

PLYWOOD

GENERAL ARCHITECTURAL NOTES

THESE CONSTRUCTION DOCUMENTS WERE PREPARED FOR COMPLIANCE WITH THE MICHIGAN CONSTRUCTION CODES IN EFFECT AT TIME OF PERMIT SUBMITTAL. ALL ENGINEERS, CONTRACTORS AND SUPPLIERS INVOLVED WITH THIS PROJECT SHALL COMPLY WITH THE SAME CODES, ISSUED AND APPROVED CODE MODIFICATIONS AND/OR CITY/STATE CONSTRUCTION BOARDS OF APPEALS AND RULINGS AND WHENEVER REQUIRED SHALL PROVIDE SHOP DRAWINGS AND SUBMITTALS CLEARLY DESCRIBING COMPLIANCE TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE FOR REVIEW AND APPROVAL.

1. CONTRACTOR SHALL RECEIVE CERTIFIED OR ACCEPTED EQUIPMENT DRAWINGS PRIOR TO PROCEEDING WITH AFFECTED WORK.
2. CONTRACTOR SHALL REVIEW DIMENSIONS SHOWN ON CONTRACT DRAWINGS, SHOP DRAWINGS, AND SUBMITTALS. REPORT INCONSISTENCIES TO ARCHITECT AND RECEIVE CLARIFICATION PRIOR TO PROCEEDING.
3. SHEET NUMBERS INDICATED AT SECTIONS OR DETAILS ARE FOR CONVENIENCE ONLY AND ARE NOT INTENDED TO NECESSARILY IDENTIFY ALL CONDITIONS WHERE THE SECTION OR DETAIL MAY BE REFERENCED.
4. DO NOT SCALE DRAWINGS. CONTRACTOR SHALL RELY ON WRITTEN DIMENSIONS AS GIVEN. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT FOR CLARIFICATIONS. ALL DIMENSIONS SHALL BE FIELD VERIFIED BY CONTRACTOR AND COORDINATED WITH ALL OF THE WORK OF ALL TRADES. IF DISCREPANCIES ARE FOUND, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IN WRITING FOR CLARIFICATION BEFORE THE COMMENCEMENT OR RESUMPTION OF WORK.
5. WHERE DETAIL IS SHOWN FOR ONE CONDITION, IT SHALL APPLY TO ALL LIKE OR SIMILAR CONDITIONS, EVEN THOUGH NOT SPECIFICALLY MARKED ON THE DRAWINGS.
6. THESE DRAWINGS ARE COMPLEMENTARY AND INTERRELATED; WORK OF ANY INDIVIDUAL TRADE IS NOT NECESSARILY CONFINED TO SPECIFIC DOCUMENTS, CHAPTERS OR LOCATIONS.
7. ALL DIMENSIONS ARE FROM : FACE OF CONCRETE AT CONCRETE WALLS, FACE OF MASONRY AT CMU PARTITIONS, FINISHED FACE AT DRYWALL PARTITIONS OR CENTERLINE OF COLUMN, UNLESS NOTED OTHERWISE (REFER TO SYMBOL LEGEND).
8. DIMENSIONS FOR MASONRY CONSTRUCTION ARE NOMINAL.
9. AT WALL HUNG EQUIPMENT, MILLWORK AND ACCESSORIES PROVIDE WALL REINFORCING. CONTRACTOR'S OPTION: NON–COMBUSTIBLE WOOD BLOCKING OR 16 GA X 8" METAL STRAPPING. REFER TO INDIVIDUAL ELEVATIONS FOR LOCATION ABOVE FLOOR.
10. ALL MATERIALS ARE NEW U.N.O. REFER TO DEMO PLANS FOR MATERIALS TO REMAIN.
11. THE GENERAL CONTRACTOR SHALL NOTIFY MISS DIG (1–800–482–7171) IN ACCORDANCE WITH ACT 53, P.A. 1974 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.
12. DURING CONSTRUCTION, THE CONTRACTOR SHALL TAKE PRECAUTIONS NOT TO DAMAGE ANY EXISTING MATERIALS, ITEMS OR CONDITIONS TO REMAIN. SHOULD SUCH DAMAGE OCCUR, THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ALL SUCH DAMAGED MATERIALS, ITEMS OR CONDITIONS AT HIS OWN EXPENSE TO THE SATISFACTION OF THE OWNER.
13. THE WORK SHALL NOT BE CONSIDERED COMPLETE AND CERTIFICATION OF THE FINAL PAYMENT WILL NOT BE MADE UNTIL DEBRIS HAS BEEN REMOVED FROM THE JOB SITE, ALL UNUSED CONSTRUCTION MATERIAL AND ITEMS HAVE EITHER BEEN REMOVED FROM THE BUILDING OR STORED AT THE OWNER'S DIRECTION.

ABBREVIATIONS

A

A–E	ARCHITECT
ACOUS	ACOUSTIC
ACP	ACOUS CEILING PANEL
ACT	ACOUSTICAL CEILING TILE
ADDL	ADDITIONAL
ADDM	ADDENDUM
ADDN	ADDITION
ADJ	ADJACENT
ADJUST	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
ALF	ALUMINUM DOOR FRAME
ALT	ALTERNATE
ALUM	ALUMINUM
ANOD	ANODIZED
AP	ACCESS PANEL
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ARP	ARCH ROOF PANELS
AUTO	AUTOMATIC
AUX	AUXILIARY

B

BD	BOARD
BNDY	BOUNDARY
BET	BETWEEN
BEV	BEVELED
BF	BARRIER FREE
BLDG	BUILDING
BLKG	BLOCKING
BOT	BOTTOM
BP	BASE PLATE
BPF & LP	BEARING AND LEVELING PLATES
BPW	BENTONITE PANEL WATERPROOFING
BR	BEDROOM
BRCG	BRACING
BRKT	BRACKET
BRZ	BRONZE
BS	BOTH SIDES
BSMT	BASEMENT
BT	BENT
BULLN	BULLETIN

C

C/C	CENTER TO CENTER
CAB	CABINET
CAP	COMPOSITE ARCHITECTURAL PANELS
CAULK	CAULKING
CB	CATCH BASIN
CEM	CEMENT
CER	CERAMIC
CF/CI	CONTRACTOR FURNISHED/CONTRACTOR INSTALLED
CG	CORNER GUARD
CHKD	CHECKERED
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLO	CLOSET
CLR	CLEAR
CMD	COMPOSITE MOLDED DOOR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPRESSIBLE
CONC	CONCRETE
CONF	CONFERENCE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUE/OUS
COORD	COORDINATE
COORD	COORDINATOR
COR	CORRIDOR
CPT	CARPET TILE
CR	CARD READER
CS	COURSE
CSM	CRACK SUPPRESSION MEMBRANE
CT	CERAMIC TILE
CTB	CERAMIC TILE BASE
CTR	CENTER/ED
CTSK	COUNTERSUNK
CUH	CABINET UNIT HEATER
CWB	CONCEALED WOOD BLOCKING

D

DEMO	DEMOLISH/ITION
DEPT	DEPARTMENT
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DN	DOWN
DO	DOOR OPENING
DR	DOOR
DRW	DECAY RETARDANT WOOD
DS	DOWNSPOUT
DWC	DRINKING WATER COOLER
DWG	DRAWING
DWL	DOWEL

E

EA	EACH
EF	EXHAUST FAN
EGSB	EXTERIOR GYPSUM SOFFIT BOARD
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
ENCL	ENCLOSED/URE
EQ	EQUAL
EQUIP	EQUIPMENT
ETR	EXISTING TO REMAIN
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION/EXPOSED
EXT	EXTERIOR/EXTERNAL

F

FAB	FLUID–APPLIED AIR BARRIER
FAD	FLUSH ALUMINUM DOORS
FF	FACE TO FACE
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FIN	FINISH/ED
FIXT	FIXTURE
FLASH	FLASHING
FLEX	FLEXIBLE
FLR	FLOOR
FOC	FACE OF COLUMN
FP	FIRE PROTECTION
FPG	FIRE PROTECTION RATED GLAZING
FR	FIRE RATED
FRG	FIRE RESISTANCE RATED GLAZING
FRGB	FIRE RESISTANT GYPSUM BOARD
FRHT	FREIGHT
FRP	FIBERGLASS REINFORCED PLASTIC
FRPRG	FIREPROOFING
FRW	FIRE RETARDANT WOOD
FSP	FIRE STANDPIPE
FT	FOOT/FEET
FTG	FOOTING
FVB	FLUID–APPLIED VAPOR BARRIER

G

GA	GAUGE
GALV	GALVANIZED
GEN	GENERAL
GENR	GENERATOR
GFRC	GLASS FIBER REINFORCED CONCRETE
GFRP	GLASS FIBER REINFORCED PLASTIC
GL	GLASS/GLAZING
GLZ	GLAZING/GLAZIER
GMBB	GLASS MAT BACKERBOARD
GMGS	GLASS MAT FACED GYPSUM SHEATHING
GR	GRADE
GYP	GYPSUM
GYP BD	GYPSUM BOARD

H

H	HIGH
HB	HOSE BIB
HDWR	HARDWARE
HEX	HEXAGON
HGT	HEIGHT
HLB	HORIZONTAL LOUVER BLINDS
HM	HOLLOW METAL
HMD	HOLLOW METAL DOOR
HMF	HOLLOW METAL FRAME
HORIZ	HORIZONTAL
HPDL	HIGH PRESSURE DECORATIVE LAMINATE FACED DOORS
HPT	HIGH POINT
HSS	HOLLOW STRUCTURAL SECTION
HW	HOT WATER

I

ID	INSIDE DIAMETER
IG–	INSULATING GLAZING
IN,	INCH/INCHES
INCL	INCLUDING
INSUL	INSULATION/ED
INT	INTERIOR/INTERNAL

J

JC	JANITOR'S CLOSET

K

KIT	KITCHEN

L

L	LENGTH/LONG
LAM	LAMINATED
LAV	LAVATORY
LBS	POUNDS
LDRY	LAUNDRY
LFI	LOOSE FILL INSULATION
LFC	LINEN FACILITY CHUTE
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LO	LOUVER OPENING
LPT	LOW POINT
LVR	LOUVER–METAL WALL

M

MACH	MACHINE
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MDO	MEDIUM DENSITY OVERLAY VENEER FACED DOOR
MECH	MECHANICAL
MEMB	MEMBRANE
MET	METAL/METALLIC
MFR'S	MANUFACTURER
MMP	MANUFACTURED METAL PANELS
MTC	METAL TOILET COMPARTMENTS
MVA	MASONRY VENEER ANCHOR

N

NTS	NOT TO SCALE

O

O/O	OUT TO OUT
OC	ON CENTER
OCD	OVERHEAD COILING DOOR
OD	OUTSIDE DIAMETER
OF/CI	OWNER FURNISHED/CONTRACTOR INSTALLED
OFF	OFFICE
OF/OI	OWNER FURNISHED/OWNER INSTALLED
OH	OPPOSITE HAND
OPG	OPENING
OPP	OPPOSITE
OPP	OPERABLE PANEL PARTITION
ORIG	ORIGINAL
OSD	OVERHEAD SECTION DOOR

P

PAVT	PAVEMENT
PEB	PLASTIC EDGE BANDING
PERF	PERFORATED
PERM	PERMANENT
PL	PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLT	PLATE/PLATED
PLTC	PLASTIC LAMINATE TOILET COMPARTMENTS
PLYWD	PLYWOOD
PNL	PANEL
PNT	PAINT
POL	POLISHED
PREFAB	PREFABRICATED
PRTN	PARTITION
PSF	PRE–FINISHED STEEL DOOR FRAME
PSNGR	PASSENGER
PSMT	POLYMER SIMULATED WOOD TRIM
PWBP	PREFABRICATED WOOD BACKER PLATE

Q

QT	QUARRY TILE

R

R	RADIUS
RAS	REMOVE AND SALVAGE
RAR	REMOVE AND REINSTALL
RC	ROOF CONDUCTOR
RCTC	RECESSED COMPOSITE TOILET COMPARTMENTS
RD	ROOF DRAIN
RECEP	RECEPTACLE
REFRIG	REFRIGERATOR
REINF	REINFORCED/ING REINFORCEMENT
REQD	REQUIRED
RESIL	RESILIENT
RIM	RUST INHIBITIVE COATING
RO	ROUGH
RO	ROUGH OPENING
RS	ROOF SUMP
RSF	RESILIENT SHEET FLOORING
RTF	RESILIENT TILE FLOORING

S

SAB	SHEET AIR BARRIER
SCHED	SCHEDULE
SCI	SPRAYED CELLULOSE INSULATION
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SMR	SINGLE–PLY MEMBRANE ROOFING
SMW	SHEET MEMBRANE WATERPROOFING
SPEC	SPECIFICATION
SPTC	SOLID PLASTIC TOILET COMPARTMENTS
SQ	SQUARE
SRAD	STILE AND RAIL ALUMINUM DOORS
SRHM	STILE AND RAIL HM DOORS
SRWD	STILE AND RAIL WOOD DOOR
SS	STRUCTURAL STEEL
SSTL	STAINLESS STEEL
STL	STEEL
STN	STAIN
STOR	STORAGE
STRUCT	STRUCTURAL
SVB	SHEET VAPOR BARRIER

T

TBD	TACKBOARD
TEL	TELEPHONE
TERR	TERRAZZO
THK	THICKNESS/THICK
THRESH	THRESHOLD
TOC	TOP OF CONCRETE
TOL	TOILET
TOS	TOP OF STEEL
TRA	TOILET ROOM ACCESSORIES
TSL	TENANT STORAGE LOCKERS
TV	TELEVISION
TW	TOP OF WALL
TYP	TYPICAL

U

UNO	UNLESS NOTED OTHERWISE

V

VCE	VINYL COUNTERTOP EDGE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VWC	VINYL WALL COVERING

W

W	WIDE/WIDTH
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WFC	WASTE FACILITY CHUTE
WMS	WALL MOUNTED SHELVING
WO	WINDOW OPENING
WP	WORK POINT
WPFG	WATERPROOFING
WWF	WELDED WIRE FABRIC

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Project

Seal

PERMIT/BID	10-11-17
PROGRESS REVIEW	09-20-2017
DD OR	08-31-17
Revision	Date

Date	10-11-2017
Project Number	2017041

Sheet Title
ARCHITECTURAL SYMBOLS, NOTES & LEGENDS

Sheet Number
A001

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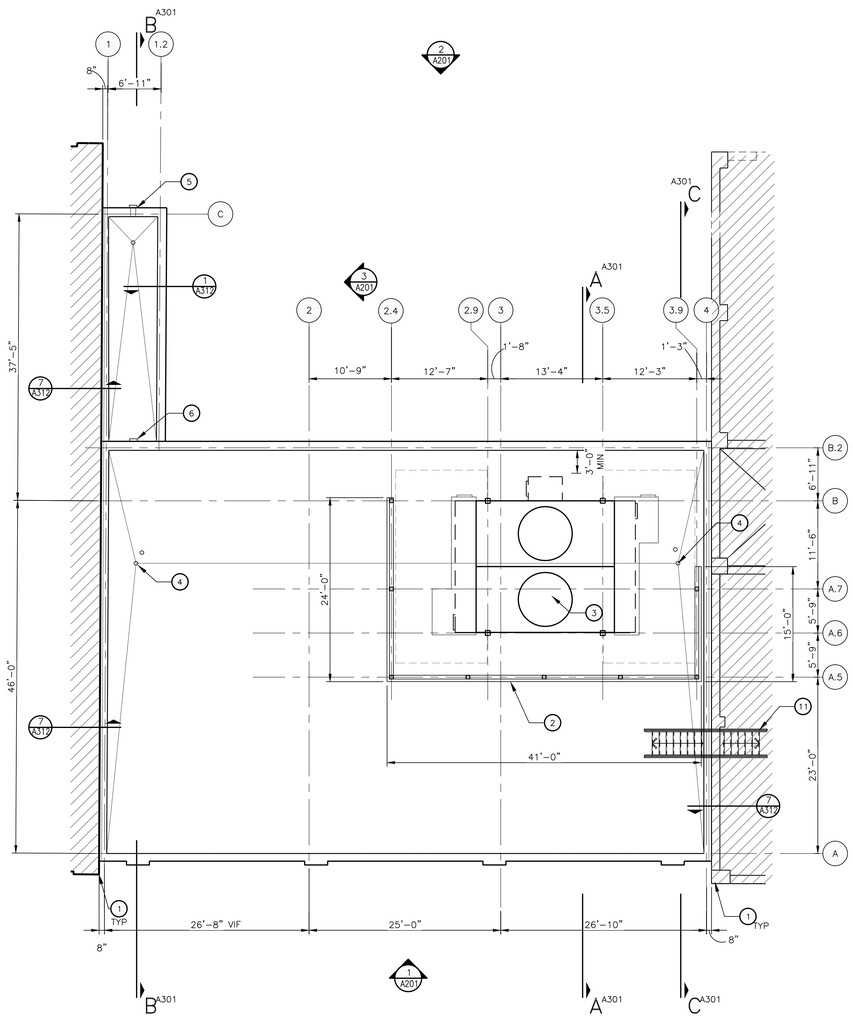
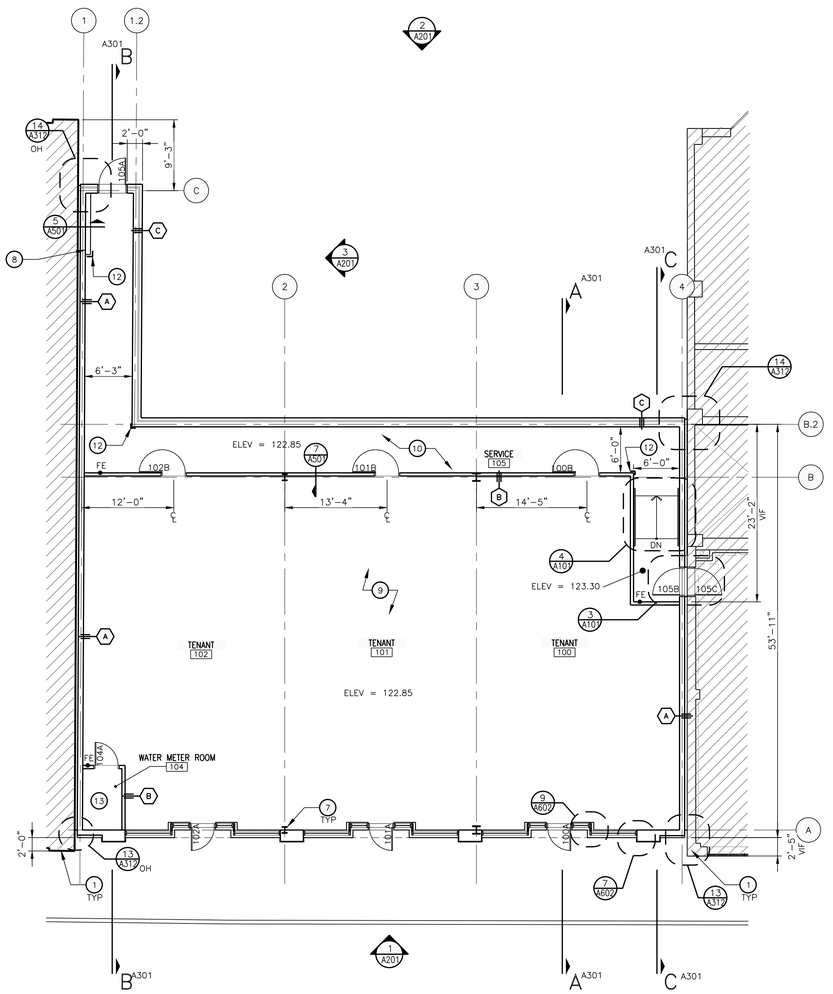


2 A101 ROOF PLAN
SCALE: 1/8" = 1'-0"



1 A101 GROUND LEVEL PLAN
SCALE: 1/8" = 1'-0"

4 A101 RAMP PLAN
SCALE: 1/4" = 1'-0"
REFERENCE LOCATIONS: A101

3 A101 FIRE DOORS
SCALE: 1/4" = 1'-0"
REFERENCE LOCATIONS: A101

GENERAL NOTES

NOTE: ALL ABBREVIATIONS, MATERIALS AND SYMBOLS IN LEGENDS MAY OR MAY NOT BE USED.

A. WHERE SLAB ON GRADE REMOVAL IS REQUIRED FOR UTILITY PLACEMENT REFER TO TYPICAL CONCRETE SLAB INFILL DETAIL ON SHEET A___.

B. PATCH AND REPAIR WALLS AND FLOOR TO ENSURE EVEN SURFACE TO RECEIVE FINISH MATERIAL. COORDINATE WITH ROOM FINISH AND COLOR SCHEDULE.

E. FIRESTOPPING: PROVIDE FIRESTOPPING ASSEMBLIES AT ALL PENETRATIONS AND INTERRUPTIONS TO FIRE RATED ASSEMBLIES WHICH PROVIDE THE SPECIFIED FIRE RATING OR PARTITION OR FLOOR. SEE SPECIFICATIONS.

F. FIRE RATED PARTITIONS SHALL BE CONTINUOUS FROM FLOOR TO STRUCTURE ABOVE AND SHALL BE FIRE STOPPED TIGHTLY TO STRUCTURE PER CODE (U.L. SYSTEM).

G. WHERE NEW GYPSUM BOARD PARTITIONS ARE A CONTINUATION OF AN EXISTING PARTITION OR COLUMN ENCASEMENT, THE FACE OF THE NEW GYPSUM BOARD SHALL BE ALIGNED WITH THE FACE OF THE EXISTING SURFACE. WHERE A NEW GYPSUM BOARD PARTITION IS SHOWN INTERSECTING A COLUMN ENCASEMENT THE CENTERLINE OF THE WALL SHALL BE CENTERED ON THE COLUMN ENCASEMENT.

H. WHERE NEW OR INFILL PARTITION ABUTS EXISTING PARTITION, FACE OF PARTITIONS SHALL ALIGN, UNLESS NOTED OTHERWISE.

I. PARTITIONS WITH EXISTING FRAMING MAY REQUIRE REWORK TO ACCOMODATE NEW OPENINGS, ETC.

J. WHERE NEW FINISHES ARE SPECIFIED ON THE FINISH PLAN REMOVE ALL EXISTING FINISHES – PATCH AND REPAIR WALLS AND FLOOR – PREPARE THEM TO ACCEPT NEW SCHEDULED FINISH PER MANUFACTURER'S INSTRUCTION. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

K. LOCATE DOOR FRAMES 6" FROM INSIDE CORNER TO DOOR OPENING, UNLESS NOTED OTHERWISE.

L. ALL INTERIOR GLAZING INCL DOORS, SIDELITES, & BORROWED LITES SHALL BE CLEAR LAMINATED SAFETY GLASS OR CLEAR TEMPERED SAFETY GLAZING. UNLESS NOTED OTHERWISE.

M. CONTRACTOR SHALL PROVIDE AND INSTALL CORNER GUARDS (CG) AS IDENTIFIED ON PLANS. CG SHALL BE FULL HEIGHT FROM TOP OF BASE TO CEILING. TYP. EXCEPT AT WWC – INSTALL FROM TOP OF WWC TO CLG.

N. SEMI-RECESSED FIRE EXTINGUISHER (FE)• – REFER TO SHEET A501 FOR TYPICAL DETAILS. FINAL LOCATION OF FIRE EXTINGUISHERS SHALL BE REVIEWED IN FIELD WITH BUILDING OFFICIAL PRIOR TO INSTALLATION ROUGH-IN.

O. RECESSED ITEMS (GREATER THAN 16 SQ. IN.) IN RATED AND/OR SMOKE WALLS, INCLUDING ELEC PANELS, ELEC DUCTS, MED GAS VALVE BOXES, FIRE EXT CABINETS, ETC. SHALL BE BACKED WITH 5/8" TYPE 'X' GYPSUM BOARD TO MAINTAIN RATING FIRE WALL.

P. TELEPHONE AND ELECTRICAL PANEL BOARDS: PROVIDE AND INSTALL 4' X 8' X 3/4" THICK, PLYWOOD, FIRE RETARDANT TREATED.

Q. RELOCATE ALL EXISTING MEP ITEMS ON SITE AS REQ'D AND DIRECTED BY OWNER.

R. PROVIDE ROOF PADS TO ALL MEP EQUIPMENT.

S. ALL CEILING TO REMAIN EXPOSED

CONSTRUCTION KEYNOTES

NOTE: NOT ALL NOTES ARE APPLICABLE TO THIS SHEET.

1. EXISTING HISTORIC BUILDING. DO NOT DAMAGE OR MECHANICALLY FASTEN NEW CONSTRUCTION TO THE HISTORIC MATERIALS, UNO.
2. STEEL AND MASONRY SCREEN WALL – SEE STRUCTURAL
3. COOLING TOWER – SEE MEP AND STRUCTURAL
4. ROOF CONDUCTOR AND OVERFLOW, SEE MEP
5. ROOF SCUPPER
6. ROOF CONDUCTOR OUTLET TO LOWER ROOF – SEE MEP
7. COLUMN, SEE STRUCTURAL
8. ELECTRICAL AREA ABOVE CMU PROTECTION W/ #5 REBAR ON BOTH ENDS AND EVERY 3 BLOCKS
9. ALT 01: CONCRETE SLAB TO BE PROVIDED DURING TENANT BUILD-OUT, TO BE COORDINATED TO MEET FINISH FLOOR ELEVATION
10. EPOXY FLOOR – SEE FINISH SCHEDULE AND COORDINATE SLAB ELEVATION TO ACCOMODATE EPOXY THICKNESS TO ACHIEVE FINISH FLOOR ELEVATION
11. PREFAB GAL STEEL MAINTENANCE STAIR, VIF HEIGHT CHANGE AND COORDINATE FINAL LOCATION W/ OWNER
12. CORNER GUARD – SEE 11/A501
13. SEALED CONCRETE FLOOR – SEE FINISH SCHEDULE

PROJECT NORTH

0 2' 4' 8' 16'
SCALE : 1/8" =1'-0"

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COLUMBIA STREET RETAIL INFILL
66 WEST COLUMBIA STREET
DETROIT, MICHIGAN 48201

Project

STATE OF MICHIGAN
ROBERT J KRAEMER
ARCHITECT
No. 40246
LICENSED ARCHITECT

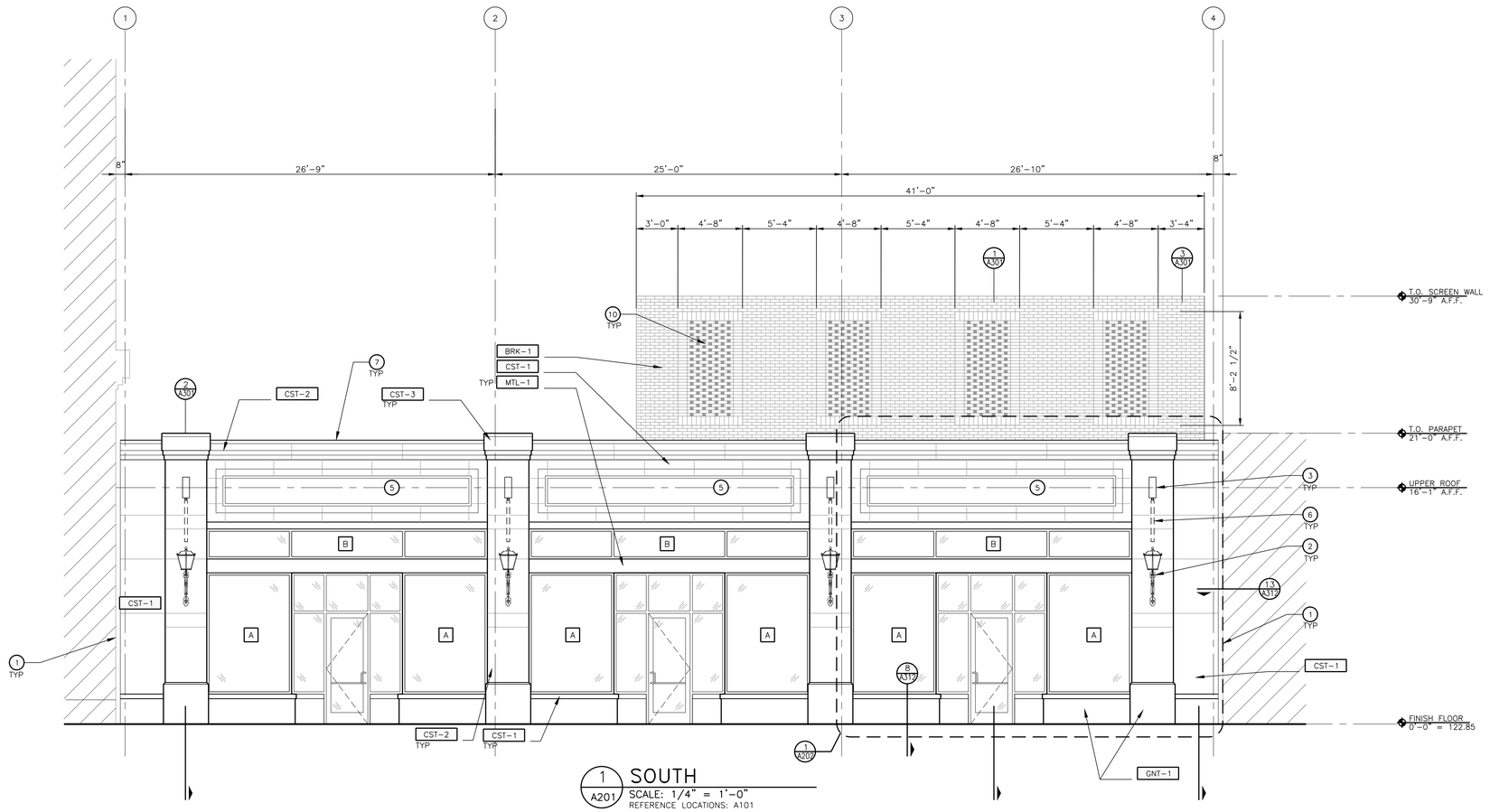
Seal

PERMIT/BID	10-11-17
PROGRESS REVIEW	09-20-17
DD OR	08-31-17
Revision	Date

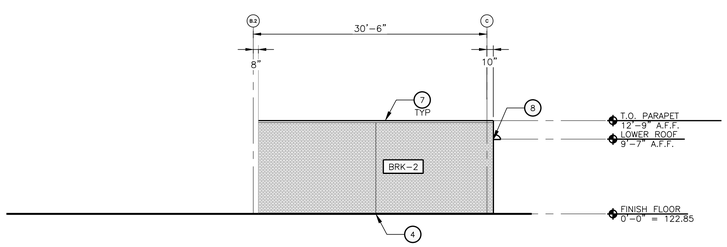
Date	10-11-2017
Project Number	2017041

Sheet Title
GROUND LEVEL PLAN, ROOF PLAN, AND ENLARGED PLANS

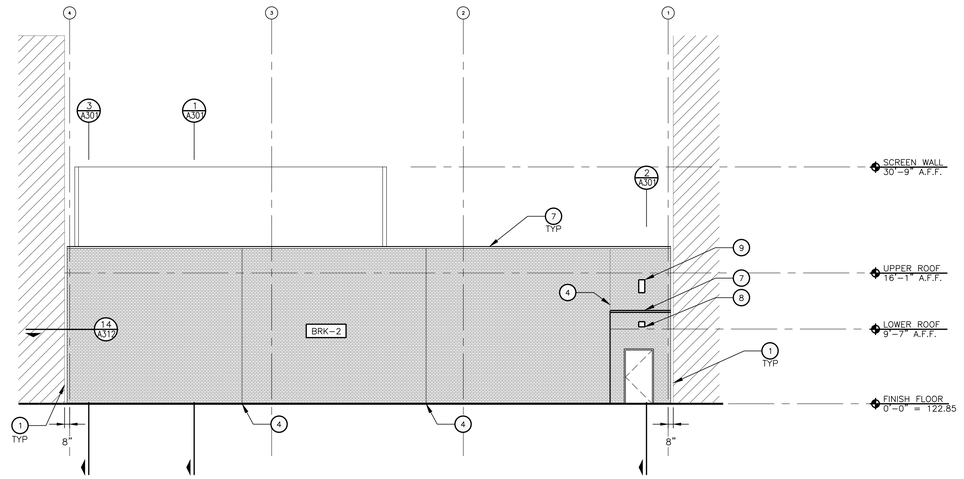
Sheet Number
A101



1 A201 **SOUTH**
SCALE: 1/4" = 1'-0"
REFERENCE LOCATIONS: A101



3 A201 **EAST**
SCALE: 1/8" = 1'-0"
REFERENCE LOCATIONS: A101



2 A201 **NORTH**
SCALE: 1/8" = 1'-0"
REFERENCE LOCATIONS: A101

GENERAL NOTES

NOTE: ALL ABBREVIATIONS, MATERIALS AND SYMBOLS IN LEGENDS MAY OR MAY NOT BE USED.

A. ALL MATERIAL TO BE SUBMITTED FOR FINAL OWNER APPROVAL BEFORE MATERIALS ARE ORDERED

B. SEE A601 FOR GLAZING & ELEVATIONS, TAGGED W/ ☐

FINISH LEGEND

MTL-1	BREAK METAL – CLASSIC BRONZE
GNT-1	GRANITE BASE – DARK GREY
CST-1	CAST STONE – NATURAL
CST-2	CAST STONE – SANDSTONE
CST-3	CAST STONE – SIENNA
BRK-1	HOLLOW BRICK – BEIGE TO MATCH FOX THEATER ADJACENT
BRK-2	BRICK – BEIGE TO MATCH FOX THEATER ADJACENT

CONSTRUCTION KEYNOTES

1. EXPANSION JOINT, TYP
2. GAS LIGHTS, BASIS OF DESIGN: SOLARA LIGHTING; MODEL: SICILIA E-004-12, MEDIUM, NICKEL FINISH. WWW.SOLARALIGHTING.COM
3. SIGNAGE FRAME, BASIS OF DESIGN: SIGN COMPANY SUPPLY; MODEL: TORINO ELITE HANGING BLADE, 50", MATTE BLACK POWDER COAT
4. CONTROL JOINT
5. BACK-LIT SIGN PANEL: SIGNAGE AND LIGHTING BY SIGNAGE MANUFACTURER, COORDINATE WITH OWNER
6. FUTURE SIGNAGE PROVIDED BY TENANT
7. METAL COPING
8. SCUPPER
9. ROOF CONDUCTOR OVERFLOW OUTLET TO LOWER ROOF – SEE MEP
10. PROVIDE OPENINGS IN BRICK SCREEN AS SHOWN.

0 1' 2' 4' 8'
SCALE : 1/4" =1'-0"

0 2' 4' 8' 16'
SCALE : 1/8" =1'-0"

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Project

STATE OF MICHIGAN ROBERT J. KRAEMER ARCHITECT No. 40246 LICENSED ARCHITECT

Seal

PERMIT/BID	10-11-17
PROGRESS REVIEW	09-20-17
DD OR	08-31-17
Revision	Date

Date 10-11-2017

Project Number 2017041

Sheet Title
EXTERIOR ELEVATIONS

Sheet Number
A201

GENERAL NOTES

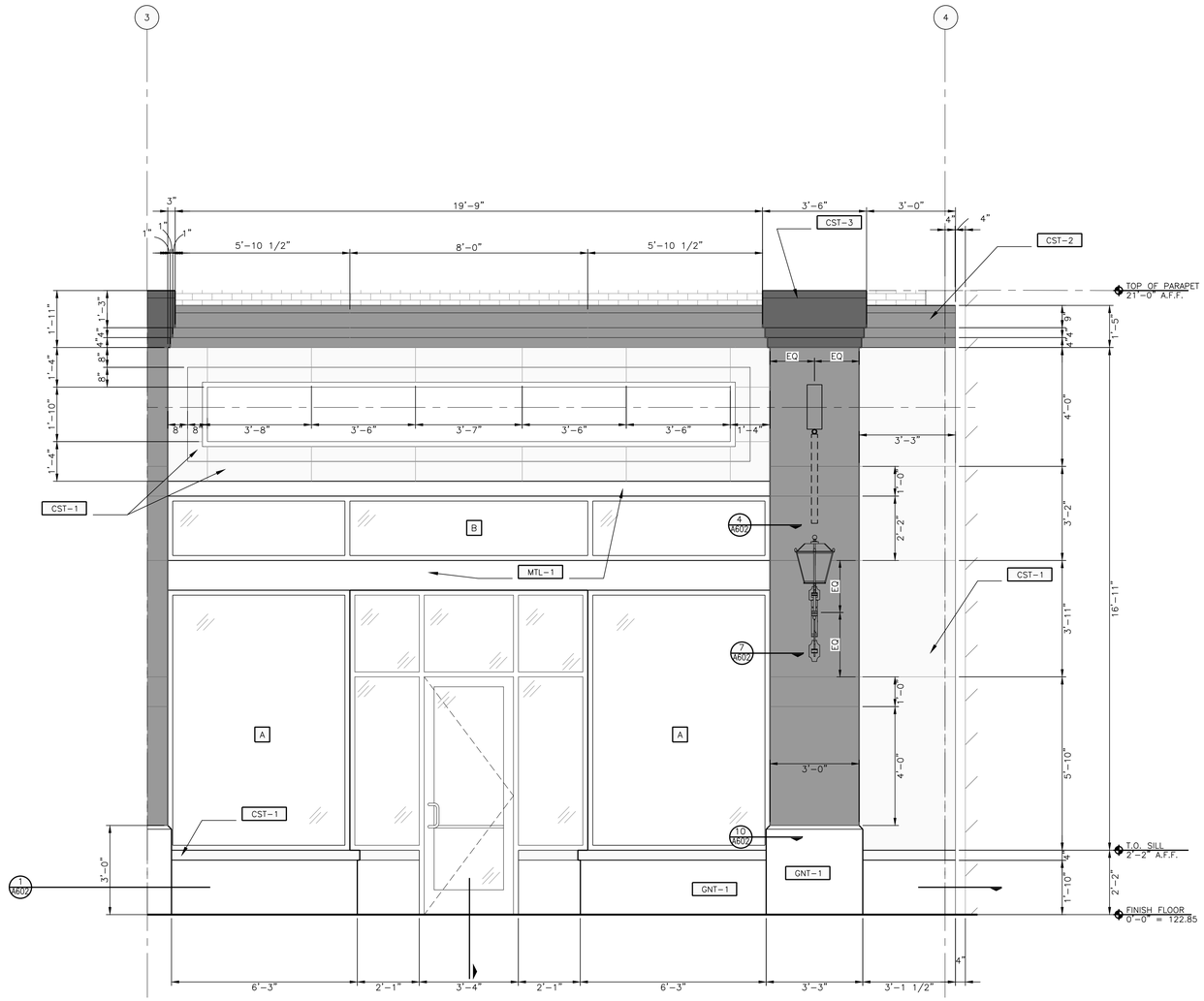
NOTE: ALL ABBREVIATIONS, MATERIALS AND SYMBOLS IN LEGENDS MAY OR MAY NOT BE USED.

A. ALL MATERIAL TO BE SUBMITTED FOR FINAL OWNER APPROVAL BEFORE MATERIALS ARE ORDERED

B. SEE A601 FOR GLAZING & ELEVATIONS, TAGGED W/ ☐

FINISH LEGEND – SEE SPECIFICATIONS

MTL-1	BREAK METAL – CLASSIC BRONZE
GNT-1	GRANITE BASE – DARK GREY
CST-1	CAST STONE – NATURAL
CST-2	CAST STONE – SANDSTONE
CST-3	CAST STONE – SIENNA



1 / A202 TYPICAL CAST STONE ELEVATION

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

REFERENCE LOCATIONS: A201

0 1' 2' 4' 8'
SCALE : 1/4" =1'-0"

0 2' 4' 8' 16'
SCALE : 1/8" =1'-0"

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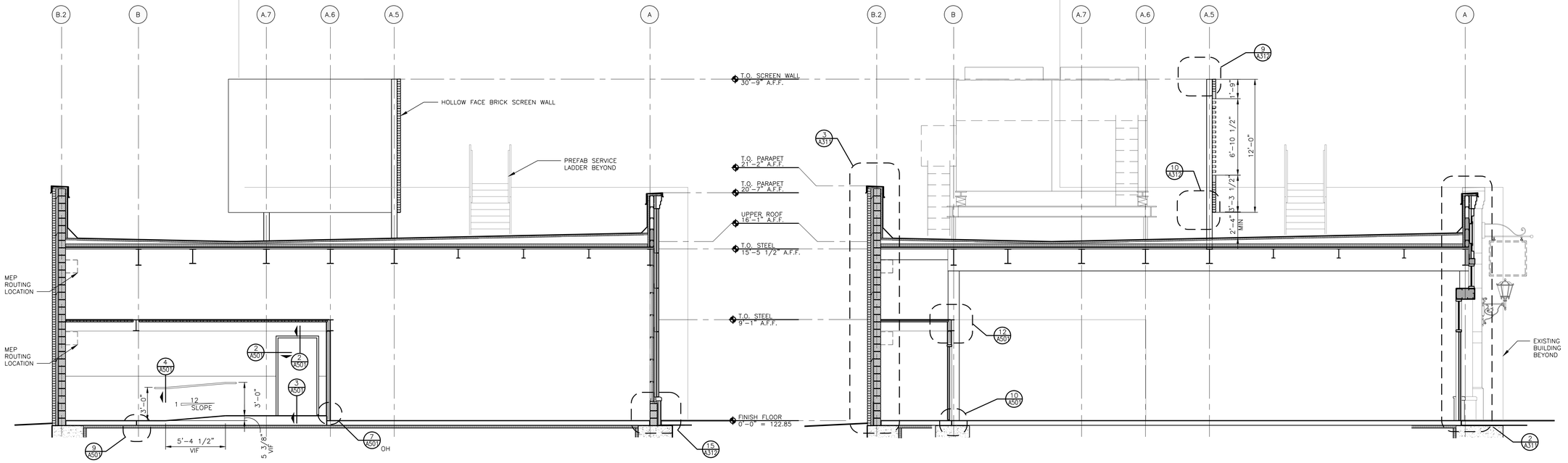
PERMIT/BID	10-11-17
Revision	Date
Date	10-11-2017
Project Number	2017041

Sheet Title

ENLARGED ELEVATION

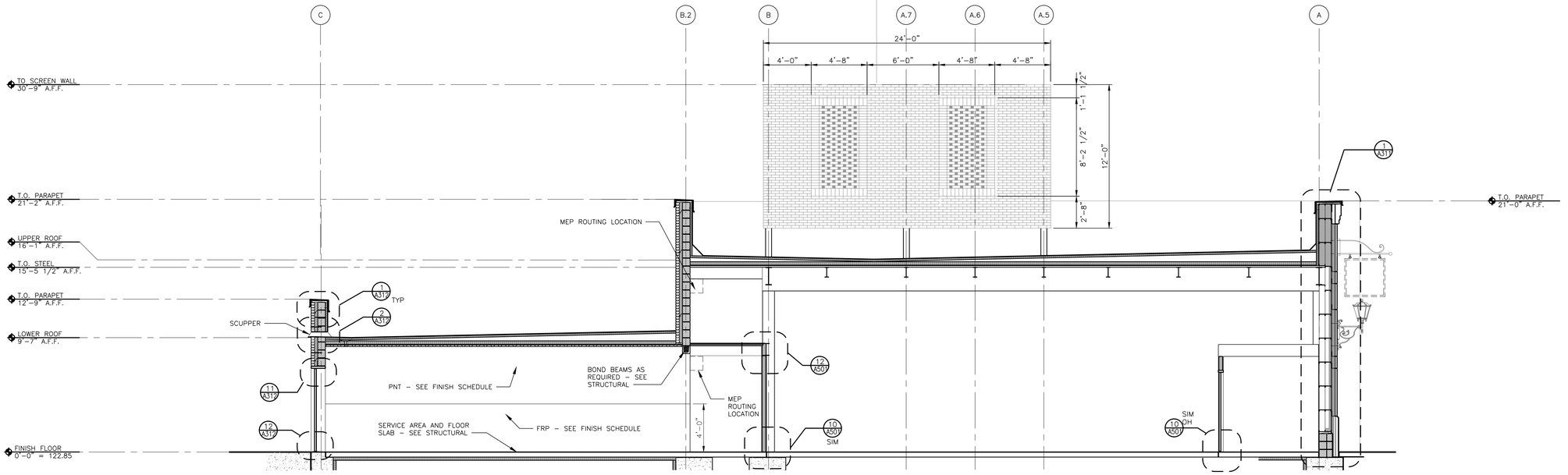
Sheet Number

A202



3 SECTION C–C
A301
SCALE: 1/4" – 1'-0"
REFERENCE LOCATIONS: A101, A201

1 SECTION A–A
A301
SCALE: 1/4" – 1'-0"
REFERENCE LOCATIONS: A101, A201



2 SECTION B–B
A301
SCALE: 1/4" – 1'-0"
REFERENCE LOCATIONS: A101, A201

0 2' 4' 8' 16'
SCALE : 1/8" =1'-0"

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Project

STATE OF MICHIGAN ROBERT J. KRAEMER ARCHITECT No. 40245 REGISTERED ARCHITECT

Seal

Revision	Date
PERMIT/BID	10-11-17
PROGRESS REVIEW	09-20-17
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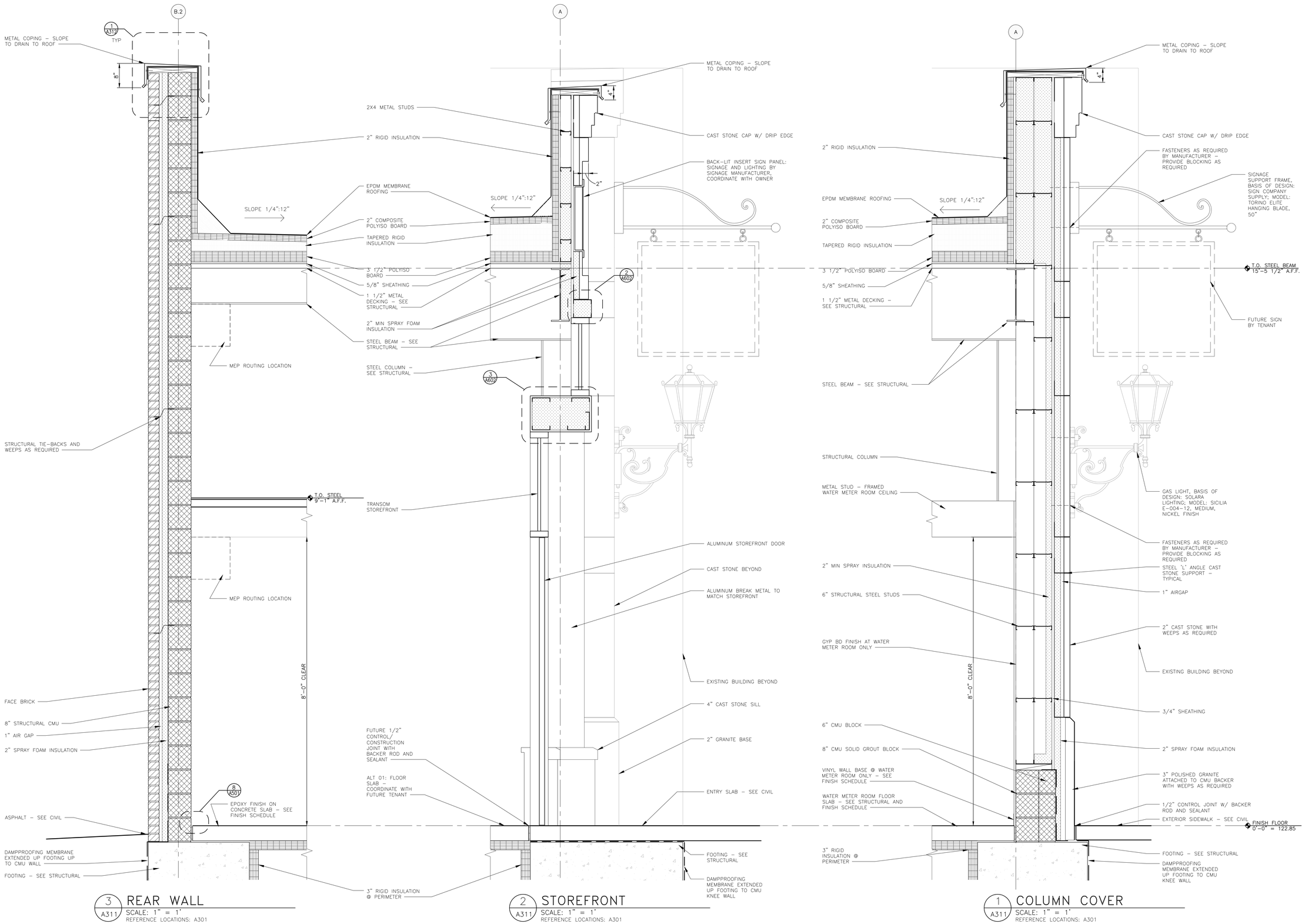
Project Number 2017041

Sheet Title
BUILDING SECTIONS

Sheet Number
A301



3 A311 **REAR WALL**
SCALE: 1" = 1'
REFERENCE LOCATIONS: A301

2 A311 **STOREFRONT**
SCALE: 1" = 1'
REFERENCE LOCATIONS: A301

1 A311 **COLUMN COVER**
SCALE: 1" = 1'
REFERENCE LOCATIONS: A301

0 3/4" 1 1/2" 1'–3" 2'–6"
SCALE : 3/4" =1'–0"

PLOTTED ON 10/11/2017 4:31 PM | PLOTTED BY KELSEY MORRISON

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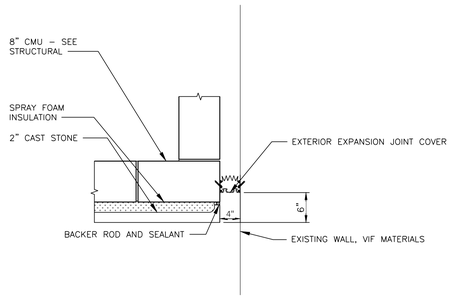
STATE OF MICHIGAN – ROBERT J KRAEMER – ARCHITECT – No. 40246 – LICENSED ARCHITECT

Seal

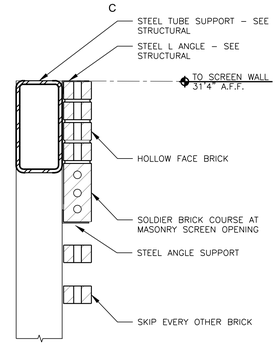
PERMIT/BID	10-11-17
Revision	Date
Date	10-11-2017
Project Number	2017041

Sheet Title
WALL SECTIONS

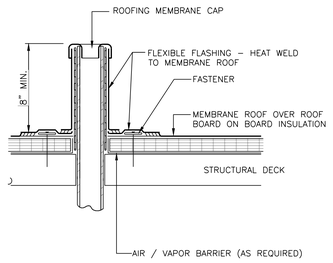
Sheet Number
A311



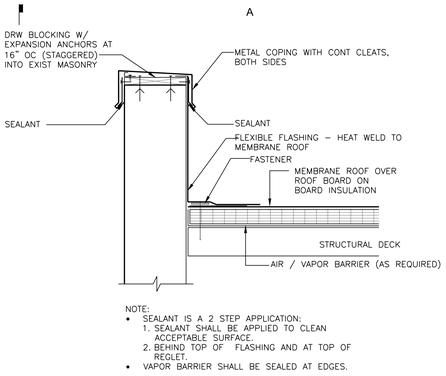
13 / A312 EXPANSION JOINT
SCALE: 1" = 1'
REFERENCE LOCATIONS: A101, A201



9 / A312 T.O. SCREEN WALL
SCALE: 1 1/2" = 1' 0"
REFERENCE LOCATIONS: A301



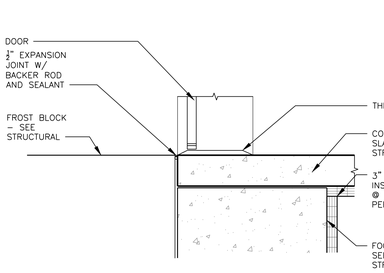
5 / A312 VENT STACK FLASHING DETAIL
SCALE: NTS
REFERENCE LOCATIONS:



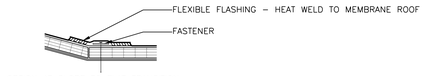
NOTE:
- SEALANT IS A 2 STEP APPLICATION:
  1. SEALANT SHALL BE APPLIED TO CLEAN ACCEPTABLE SURFACE.
  2. BEHIND TOP OF FLASHING AND AT TOP OF REGLET.
- VAPOR BARRIER SHALL BE SEALED AT EDGES.

1 / A312 TYP METAL COPING
SCALE: NTS
REFERENCE LOCATIONS: A101, A301, A311

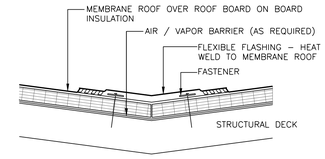
14 / A312 REAR EXPANSION JOINT
SCALE: 1" = 1'
REFERENCE LOCATIONS: A101, A201



10 / A312 B.O. SCREEN WALL
SCALE: 1 1/2" = 1' – 0"
REFERENCE LOCATIONS: A301

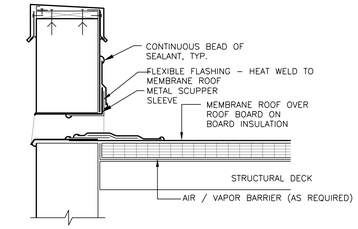


OPTION AT SLOPE TO FLAT TRANSITION

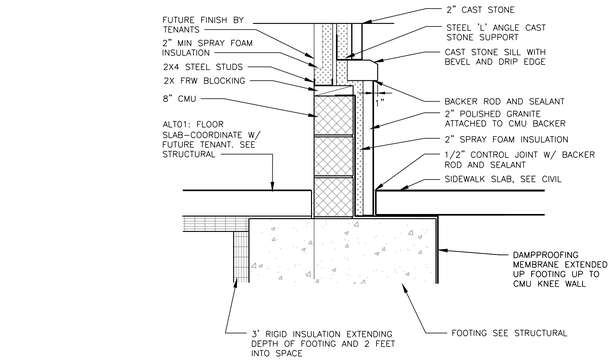


NOTE:
- A WOOD NAILER TO MATCH HEIGHT OF INSULATION MAY BE REQUIRED AT PEAK IF INSULATION THICKNESS EXCEEDS 2".
- VAPOR BARRIER SHALL BE SEALED AT EDGES.

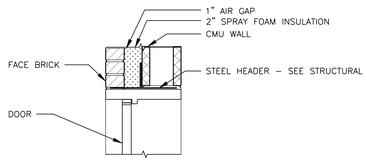
6 / A312 ROOF SLOPE TRANSITION DETAIL
SCALE: NTS
REFERENCE LOCATIONS: A101



2 / A312 SCUPPER DETAIL
SCALE: NTS
REFERENCE LOCATIONS: A101, A301

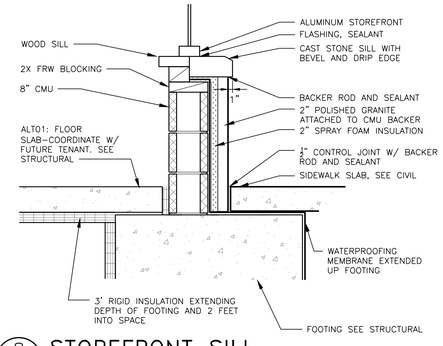


15 / A312 GRANITE BASE AT CAST STONE
SCALE: 1" = 1'
REFERENCE LOCATIONS: A301

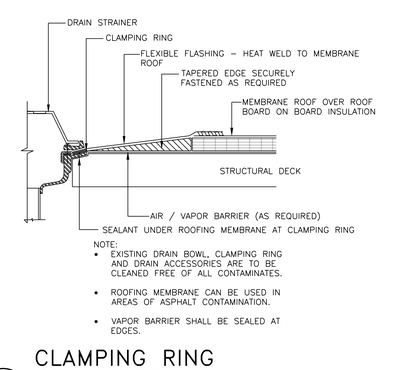


11 / A312 EXT DOOR HEADER
SCALE: 1" = 1'
REFERENCE LOCATIONS: A301

12 / A312 EXT DOOR SILL
SCALE: 1" = 1'
REFERENCE LOCATIONS: A301

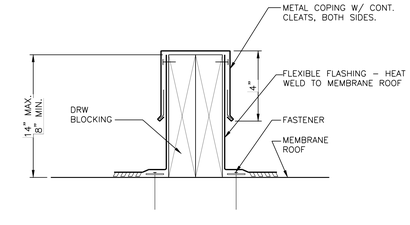


8 / A312 STOREFRONT SILL
SCALE: 1" = 1'
REFERENCE LOCATIONS: A201, A601



NOTE:
- EXISTING DRAIN BOWL, CLAMPING RING AND DRAIN ACCESSORIES ARE TO BE CLEANED FREE OF ALL CONTAMINATES.
- ROOFING MEMBRANE CAN BE USED IN AREAS OF ASPHALT CONTAMINATION.
- VAPOR BARRIER SHALL BE SEALED AT EDGES.

3 / A312 CLAMPING RING DRAIN DETAIL
SCALE: NTS
REFERENCE LOCATIONS: A101



4 / A312 WOOD DECK EQUIPMENT SUPPORT
SCALE: NTS
REFERENCE LOCATIONS:

0 3" 6" 1' 2'
SCALE : 1" =1'–0"

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Project

STATE OF MICHIGAN – ROBERT J. KRAEMER – ARCHITECT – No. 40246 – REGISTERED ARCHITECT

Seal

PERMIT/BID	10-11-17
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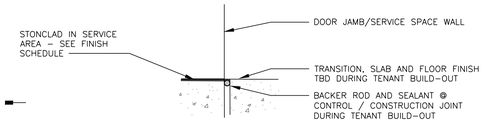
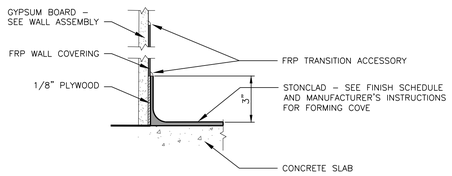
Sheet Title
EXTERIOR DETAILS

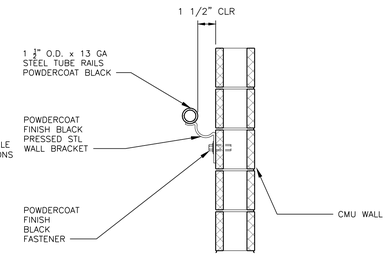
Sheet Number
A312



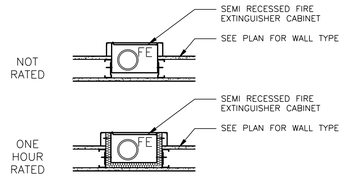
10 / A501 TENANT DOOR TRANSITION
SCALE: 3" = 1' – 0"
REFERENCE LOCATIONS: A301



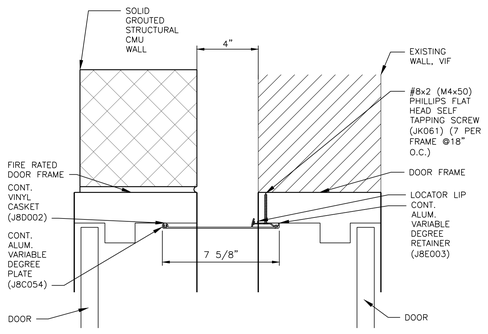
7 / A501 COVE @ GYPSUM BOARD
SCALE: 3" = 1' – 0"
REFERENCE LOCATIONS: A101, A301



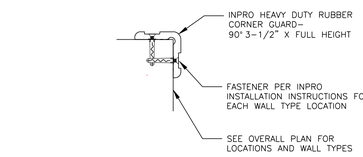
4 / A501 HANDRAIL DETAIL @ RAMP
SCALE: 1"=1'–0"
REFERENCE LOCATIONS: A101, A301



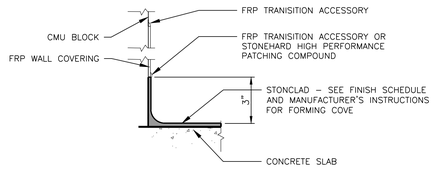
1 / A501 TYPICAL FE CABINETS
SCALE: 1"=1'–0"



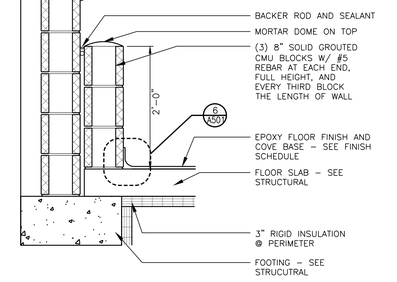
2 / A501 EXPANSION JOINT @ DOOR FRAME
SCALE: 3" = 1' – 0"
REFERENCE LOCATIONS: A101, A301



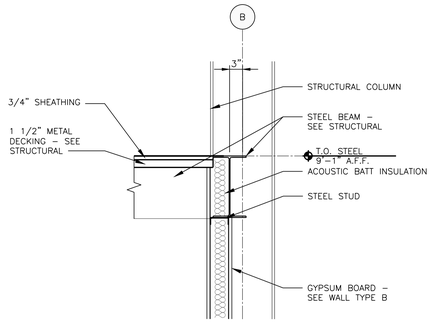
11 / A501 CORNER GUARD DETAIL
SCALE: 3" = 1' – 0"
REFERENCE LOCATIONS: A101



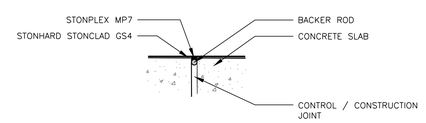
8 / A501 COVE @ CMU BLOCK
SCALE: 3" = 1' – 0"
REFERENCE LOCATIONS: A311



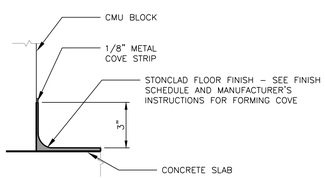
5 / A501 ELECTRICAL CMU WALL
SCALE: 1"=1'–0"
REFERENCE LOCATIONS: A101



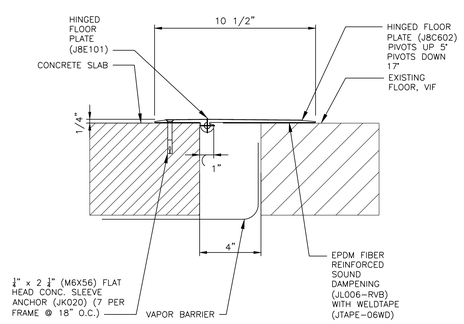
12 / A501 SERVICE CEILING
SCALE: 1"=1'–0"
REFERENCE LOCATIONS: A301



9 / A501 CONTROL / CONSTRUCTION JOINT @ SERVICE AREA
SCALE: 3" = 1' – 0"
REFERENCE LOCATIONS: A101, A301



6 / A501 COVE @ ELECTRIC CMU
SCALE: 3" = 1' – 0"
REFERENCE LOCATIONS: A501



3 / A501 EXPANSION JOINT @ FLOOR
SCALE: 3" = 1' – 0"
REFERENCE LOCATIONS: A101, A301

0 1' 2' 4' 8'
SCALE : 1/4" =1'–0"

PARTITION NOTES

A. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR INTERIOR NON LOAD–BEARING PARTITIONS FOR REVIEW INDICATING GAGE OF METAL STUDS BASED UPON DIMENSIONS OF THE STUD, STUD SPACING, HEIGHT, AND ALLOWABLE DEFLECTION LIMIT, WITH REGARD TO RATED PARTITIONS, IN NO CASE SHALL THE GAGE SELECTED BE LESS THAN THAT DICTATED BY THE UL DESIGN SELECTED.

B. PROVIDE ACOUSTIC SEALANT (BOTH SIDES) AT TOP AND BOTTOM TRACK OF ALL PARTITION TYPES INDICATING ACOUSTICAL FILL.

C. PROVIDE ACOUSTIC SEALANT AT ALL PENETRATIONS WITHIN ACOUSTICAL PARTITIONS.

D. AT ALL WALLS CONTAINING WALL CABINETS REINFORCE FRAMING WITH ADDITIONAL STRAPPING @ 58" AND 78" AFF.

E. PROVIDE FIRERATED SEALANT AT BOTH SIDES OF RATED WALL. JOINT SYSTEM SHALL RESIST THE SPREAD OF FIRE FOR A TIME PERIOD OF NOT LESS THAN THE REQUIRED FIRE RESISTANCE RATING OF THE ASSEMBLY AS INDICIATED BY THE U.L. ASSEMBLY PROVIDED. ALL JOINTS TO BE STAGGERED.

F. PROVIDE WATER–RESISTANT GYPSUM BOARD BACKING AT BATHROOM / TOILET ROOM SIDE ONLY.

G. PROVIDE GLASS MAT GYPSUM BOARD AT ALL WALLS TO RECEIVE TILE.

H. PROVIDE SILL SEALANT ON WALLS THAT SET ON CONCRETE OR MASONRY

I. PENTRATIONS THROUGH RATED PARTITIONS SHALL NOT EXCEED APPLICABLE CODE REQUIREMENTS OR U.L. STANDARDS FOR CONDITIONS INDICATED.

J. PROVIDE STRUCTURAL DEFLECTION AT PARTITION HEADS PER U.L. ASSEMBLY REQUIREMENTS AND MANUFACTURER'S SPECIFICATIONS.

K. FIRESTOPPING: PROVIDE FIRESTOPPING ASSEMBLIES AT ALL PENETRATIONS AND INTERRUPTIONS TO FIRE RATED ASSEMBLIES WHICH PROVIDE THE SPECIFIED FIRE RATING OR PARTITION OR FLOOR. SEE SPECIFICATIONS

L. FOR COMBUSTIBLE WOOD CONSTRUCTION: HORIZONTAL FIRE BLOCKING IS REQUIRED IN EACH STUD SPACE WITHIN ALL WOOD STUD WALLS TALLER THAN 10'. THE BLOCKING CAN BE LOCATED ANYWHERE WITHIN THE HEIGHT OF WALL AS LONG AS THE SPACES SEPARATED BY THE BLOCKING ARE NO TALLER THAN 10'. BLOCKING MATERIAL SHALL BE ANY MATERIAL ALLOWED BY CODE. HORIZONTAL FIREBLOCKING IS NOT REQUIRED WHEN AN APPROVED INSULATION MATERIAL, WITH FLAME SPREAD NO GREATER THAN 100, IS USED WITHIN STUD CAVITIES.

M. AT WALL HUNG EQUIPMENT, MILLWORK AND ACCESSORIES PROVIDE WALL REINFORCING. CONTRACTOR'S OPTION: WOOD BLOCKING OR METAL BACKER PLATE. REFER TO INDIVIDUAL ELEVATIONS FOR LOCATION ABOVE FLOOR.

N. FURNISH AND INSTALL METAL PROFILE CLOSURES WHERE PARTITION EXTENDS TO UNDERSIDE OF METAL DECK.

O. ALL GYPSUM BOARD SURFACES SHALL RECEIVE A LEVEL 4 FINISH UNLESS NOTED OTHERWISE. FOR REFERENCE THE FOLLOWING LEVELS OF FINISH ARE ESTABLISHED AS A GUIDE FOR SPECIFIC FINAL DECORATION. THE MINIMUM REQUIREMENTS FOR EACH LEVEL SHALL BE AS DESCRIBED HEREIN:

LEVEL 0: NO TAPING, FINISHING, OR ACCESSORIES REQUIRED.

LEVEL 1: ALL JOINTS AND INTERIOR ANGLES SHALL HAVE TAPE SET IN JOINT COMPOUND. SURFACE SHALL BE FREE OF EXCESS JOINT COMPOUND. NO MARKS AND RIDGES ARE ACCEPTABLE.

LEVEL 2: ALL JOINTS AND INTERIOR ANGLES SHALL HAVE TAPE EMBEDDED IN AND WIPED WITH A JOINT KNIFE LEAVING A THIN COATING OF JOINT COMPOUND OVER ALL JOINTS AND INTERIOR ANGLES. FASTENER HEADS AND ACCESSORIES SHALL BE COVERED WITH A COAT OF JOINT COMPOUND. TOOL MARKS AND RIDGES ARE ACCEPTABLE. JOINT COMPOUND APPLIED OVER THE BODY OF THE TAPE AT THE TIME OF TAPE EMBEDMENT SHALL BE CONSIDERED A SEPARATE COAT OF JOINT COMPOUND AND SHALL SATISFY THE CONDITIONS OF THIS LEVEL.

LEVEL 3: ALL JOINTS AND INTERIOR ANGLES SHALL HAVE TAPE EMBEDDED IN JOINT COMPOUND AND ONE ADDITIONAL COAT OF JOINT COMPOUND APPLIED OVER ALL JOINTS AND INTERIOR ANGLES. FASTENER HEADS AND ACCESSORIES SHALL BE COVERED WITH TWO SEPARATE COATS OF JOINT COMPOUND. ALL JOINT COMPOUND SHALL BE SMOOTH AND FREE OF TOOL MARKS AND RIDGES. NOTE: IT IS RECOMMENDED THAT THE PREPARED SURFACE BE COATED WITH DRYWALL PRIMER PRIOR TO THE APPLICATION OF FINAL FINISHES. SEE PAINTING/WALLCOVERING SPECIFICATION IN THIS REGARD.

LEVEL 4: ALL JOINTS AND INTERIOR ANGLES SHALL HAVE TAPE EMBEDDED IN JOINT COMPOUND AND TWO SEPARATE COATS OF JOINT COMPOUND APPLIED OVER ALL FLAT JOINTS AND ONE SEPARATE COAT OF JOINT COMPOUND APPLIED OVER INTERIOR ANGLES. FASTENER HEADS AND ACCESSORIES SHALL BE COVERED WITH THREE SEPARATE COATS OF JOINT COMPOUND. ALL JOINT COMPOUND SHALL BE SMOOTH AND FREE OF TOOL MARKS AND RIDGES. NOTE: IT IS RECOMMENDED THAT THE PREPARED SURFACE BE COATED WITH DRYWALL PRIMER PRIOR TO THE APPLICATION OF FINAL FINISHES. SEE PAINTING/WALLCOVERING SPECIFICATION IN THIS REGARD.

LEVLE 5: ALL JOINTS AND INTERIOR ANGLES SHALL HAVE TAPE EMBEDDED IN JOINT COMPOUND AND TWO SEPARATE COATS OF JOINT COMPOUND APPLIED OVER ALL FLAT JOINTS AND ONE SEPARATE COAT OF JOINT COMPOUND APPLIED OVER INTERIOR ANGLES. FASTENER HEADS AND ACCESSORIES SHALL BE COVERED WITH THREE SEPARATE COATS OF JOINT COMPOUND. A THIN SKIM COAT OF JOINT COMPOUND OR A MATERIAL MANUFACTURED ESPECIALLY FOR THIS PURPOSE, SHALL BE APPLIED TO THE ENTIRE SURFACE. THE SURFACE SHALL BE SMOOTH AND FREE OF TOOL MARKS AND RIDGES. NOTE: IT IS RECOMMENDED THAT THE PREPARED SURFACE BE COATED WITH A DRYWALL PRIMER PRIOR TO THE APPLICATION OF FINISH PAINT. SEE PAINTING SPECIFICATION IN THIS REGARD.

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Seal

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Sheet Title
PARTITION DETAILS AND INTERIOR DETAILS

Sheet Number
A501

DOOR SCHEDULE

DOOR NUM.	LOCATION	DOOR SIZE			DOOR MATERIAL	FRAME MATERIAL	DOOR ELEVATION	FRAME ELEVATION	SILL DETAIL	GLASS TYPE	HARDWARE FUNCTION	MORTISE	CYLINDRICAL	EXIT DEVICE	PUSH/PULL HARDWARE	HINGES	CARD READER	CLOSER	OVERHEAD HOLD/STOP	WALL STOP	FLOOR STOP	WEATHER STRIPPING	PROTECTION PLATES	SMOKE SEALS	FIRE RATED IN MINUTES	REMARKS
		WIDTH	HEIGHT	DR THK																						
100A	TENANT	3'-0"	8'-0"	1 3/4"	AL SR	AL	FG	B	4	1	OFFICE	Y	N	Y	Y	Y	N	Y	Y	N	N	Y	Y	N	0	
100B	TENANT	3'-0"	7'-0"	1 3/4"	MD FL	KS	F	A	1	–	OFFICE	Y	N	N	N	Y	N	Y	N	Y	N	N	Y	N	0	
101A	TENANT	3'-0"	8'-0"	1 3/4"	AL SR	AL	FG	B	4	1	OFFICE	Y	N	Y	Y	Y	N	Y	Y	N	N	Y	Y	N	0	
101B	TENANT	3'-0"	7'-0"	1 3/4"	MD FL	KS	F	A	1	–	OFFICE	Y	N	N	N	Y	N	Y	N	Y	N	N	Y	N	0	
102A	TENANT	3'-0"	8'-0"	1 3/4"	AL SR	AL	FG	B	4	1	OFFICE	Y	N	Y	Y	Y	N	Y	Y	N	N	Y	Y	N	0	
102B	TENANT	3'-0"	7'-0"	1 3/4"	MD FL	KS	F	A	1	–	OFFICE	Y	N	N	N	Y	N	Y	N	Y	N	N	Y	N	0	
104A	WATER METER	3'-0"	7'-0"	1 3/4"	MD FL	KS	F	A	4	–	JANITOR	N	Y	N	N	Y	Y	Y	Y	N	N	N	Y	N	0	
105A	SERVICE	3'-0"	7'-0"	1 3/4"	ST PF	WS	F	A	2	–	OFFICE	Y	N	Y	N	Y	Y	Y	Y	N	N	Y	Y	Y	45	
105B	SERVICE	3'-0"	7'-0"	1 3/4"	ST PF	WS	F	A	3	–	OFFICE	Y	N	N	N	Y	Y	Y	Y	N	N	N	Y	Y	90	1,3
105C	SERVICE	3'-0"	7'-0"	1 3/4"	ST PF	WS	F	A	3	–	OFFICE	Y	N	N	N	Y	Y	Y	Y	N	N	N	Y	Y	90	1,2

ROOM FINISH SCHEDULE

ROOM NUM.	ROOM IDENTIFICATION	FLOOR	BASE	WALLS				CEILING	ELEC. DEVICE/ COVER PLATE	DOOR	DOOR FRAME	WINDOWS	NOTES
				NORTH	EAST	SOUTH	WEST						
104	WATER METER	CFS-1	RWB-1	PNT-2	PNT-2	PNT-2	PNT-2	PNT-1	PNT-2	PNT-3	PNT-3	–	–
105	SERVICE	PSC-1	PSC-1	PNT2/FRP1	PNT2/FRP1	PNT2/FRP1	PNT2/FRP1	PNT-1	PNT-2	PNT-3	PNT-3	–	1

FINISH LEGEND

ACP	ACOUSTIC CEILING PANEL
ACT	ACOUSTIC CEILING TILE
AWP	ACOUSTIC WALL PANEL
CFS	CONCRETE FLOOR SEALER
CPT	CARPET
CWB	CARPET WALL BASE
CTF	CERAMIC TILE FLOOR
CTW	CERAMIC TILE WALL
CTB	CERAMIC TILE BASE
DC1	ALMOND
DC2	WHITE
DC3	BLACK
DC4	STAINLESS STEEL
EPX	EPOXY PAINT
ETR	EXISTING TO REMAIN
EXIST	EXISTING
EXP	EXPOSED
FMR	FLOOR MAT – RECESSED
FMS	FLOOR MAT – SURFACE
FRP	FIBER REINFORCED PANELS
GB	GYPSUM BOARD
GNT	GRANITE
GRT	GROUT
MAM	METAL ACCESSORY MOLDING
PNT	PAINT
PSC	PAINT SPECIAL COATING
PLAM	PLASTIC LAMINATE
QTF	QUARRY TILE FLOOR
QTW	QUARRY TILE WALL
QTB	QUARRY TILE BASE
RFT	RESILIENT FLOOR TILE
RCP	(REFER TO) REFLECTED CEILING PLAN
RWB	RESILIENT WALL BASE
RSA	RESILIENT STAIR ACCESSORY
RAM	RESILIENT ACCESSORY MOLDING
SFC	SPECIALTY FLOOR COATING
SSM	SOLID SURFACE MATERIAL
STF	STONE TILE FLOOR
STW	STONE TILE WALL
STN	STAIN
UPH	UPHOLSTERY
VWC	VINYL WALL COVERING
VWP	VINYL WALL PROTECTION
WDF	WOOD FLOORING
WWB	WOOD WALL BASE
WWC	WOOD WAINSCOT

ROOM FINISH NOTES

1. PROVIDE ALL FRP ACCESSORIES FRO CORNER, WALL, BASE, JOINT AND TRANSITIONS AS NEEDED TO OTHER MATERIALS.

GENERAL NOTES

A. PROVIDE APPROPRIATE PRODUCTS TO BE USED AT FLOOR FINISH TRANSITIONS. SEE FINISH PLANS FOR ADDITIONAL INFO.

B. CONTRACTOR TO PROVIDE MATERIAL TAKEOFFS FOR ORDERING ALL FINISHES.

C. PROVIDE JOINT SEALANT AT ANY INTERIOR JOINT LARGER THAN 1/8" OTHER THAN REVEALS, UNLESS OTHERWISE NOTED ON SPECIFICATIONS.

MATERIALS SCHEDULE

CODE	MATERIAL / GENERAL USE	MANUFACTURER	PRODUCT	STYLE	COLOR NAME / COLOR NUMBER	PRODUCT REP. (IF APPLICABLE)
CFS-1	CONCRETE FLOOR SEALER / WATER METER FLOORING	DENSIFIER	SEE SPECIFICATIONS	–	–	–
CG-1	CORNER GUARD / B.O.H. WALLS	INPRO	3-1/2" X 10', FULL HEIGHT; 90°	JOS-CRNR-075	BLACK	MIKE GEHLE (800) 222-5556
FRP-1	FIBER REINFORCED PANEL / B.O.H. WALLS	PANOLAM	FIBER REINFORCED PANEL	FINISH: EMBOSSED	GRAY	JULIE GREENFIELD (248) 727-8231
PNT-1	PAINT / B.O.H. CEILINGS	SHERWIN WILLIAMS	INTERIOR PAINT	FINISH: FLAT	HIGH REFLECTIVE WHITE / SW7757	MADELINE KING (248) 541-3103
PNT-2	PAINT / B.O.H. WALLS	SHERWIN WILLIAMS	INTERIOR PAINT	FINISH: SATIN	BIG CHILL / SW 7648	MADELINE KING (248) 541-3103
PNT-3	PAINT / B.O.H. DOOR AND ACCENT TRIM	SHERWIN WILLIAMS	INTERIOR PAINT	FINISH: SEMI-GLOSS	SUMMIT GRAY / SW7669	MADELINE KING (248) 541-3103
PSC-1	PAINT SPECIAL COATING / B.O.H. FLOORING	STONHARD	STONCLAD GS 4	STONCLAD GS 4 / STONKOTE W/TEXTURE #2	STEEL GRAY	ROBERT LENTZ (574) 229-4388
RWB-1	RESILIENT WALL BASE / WATER METER WALLS	JOHNSONITE	PERCEPTIONS 4" W/TOE	CONTOUR	MOONROCK / 29	JIM HAGOOD (734) 260-2177

MATERIALS LEGEND

ACP	ACOUSTIC CEILING PANEL	DC4	STAINLESS STEEL (ELEC. PLATE)	OF/OI	OWNER FURNISHED/OWNER INSTALLED	STF	STONE TILE FLOOR
ACT	ACOUSTIC CEILING TILE	EPX	EPOXY PAINT	PNT	PAINT	STW	STONE TILE WALL
AWP	ACOUSTIC WALL PANEL	ETR	EXISTING TO REMAIN	PSC	PAINT SPECIAL COATING	STN	STAIN
CF/CI	CONTRACTOR FURNISHED/ CONTRACTOR INSTALLED	EXIST	EXISTING	PLAM	PLASTIC LAMINATE	UPH	UPHOLSTERY
CFS	CONCRETE FLOOR SEALER	EXP	EXPOSED	QTF	QUARRY TILE FLOOR	VWC	VINYL WALL COVERING
CPT	CARPET	FMR	FLOOR MAT – RECESSED	QTW	QUARRY TILE WALL	VWP	VINYL WALL PROTECTION
CWB	CARPET WALL BASE	FMS	FLOOR MAT – SURFACE	QTB	QUARRY TILE BASE	WDF	WOOD FLOORING
CTF	CERAMIC TILE FLOOR	FRP	FIBER REINFORCED PANELS	RFT	RESILIENT FLOOR TILE	WWB	WOOD WALL BASE
CTW	CERAMIC TILE WALL	GB	GYPSUM BOARD	RCP	REFER TO REFLECTED CEILING PLAN	WWC	WOOD WAINSCOT
CTB	CERAMIC TILE BASE	GNT	GRANITE	RWB	RESILIENT WALL BASE		
DC1	ALMOND (ELEC. PLATE)	GRT	GROUT	RSA	RESILIENT STAIR ACCESSORY		
DC2	WHITE (ELEC. PLATE)	MAM	METAL ACCESSORY MOLDING	RAM	RESILIENT ACCESSORY MOLDING		
DC3	BLACK (ELEC. PLATE)	OF/CI	OWNER FURNISHED/CONTRACTOR INSTALLED	SFC	SPECIALTY FLOOR COATING		
				SSM	SOLID SURFACE MATERIAL		

HARDWARE SPECIFICATIONS

1.03 REFERENCE STANDARDS

A. DHI (LOCS) – RECOMMENDED LOCATIONS FOR ARCHITECTURAL HARDWARE FOR STANDARD STEEL DOORS AND FRAMES; DOOR AND HARDWARE INSTITUTE; 2004.

B. DHI WDHS.3 – RECOMMENDED LOCATIONS FOR ARCHITECTURAL HARDWARE FOR FLUSH WOOD DOORS; DOOR AND HARDWARE INSTITUTE; 1993; ALSO IN WDHS-1/WDHS-5 SERIES, 1996.

C. NFPA 80 – STANDARD FOR FIRE DOORS AND FIRE WINDOWS; NATIONAL FIRE PROTECTION ASSOCIATION; 2007.

1.04 ADMINISTRATIVE REQUIREMENTS

A. COORDINATE THE MANUFACTURE, FABRICATION, AND INSTALLATION OF PRODUCTS ONTO WHICH DOOR HARDWARE WILL BE INSTALLED.

B. FURNISH TEMPLATES FOR DOOR AND FRAME PREPARATION TO MANUFACTURERS AND FABRICATORS OF PRODUCTS REQUIRING INTERNAL REINFORCEMENT FOR DOOR HARDWARE.

C. CONVEY KEYING REQUIREMENTS TO MANUFACTURERS.

1.05 SUBMITTALS

A. SHOP DRAWINGS: INDICATE LOCATIONS AND MOUNTING HEIGHTS OF EACH TYPE OF HARDWARE, SCHEDULES, CATALOG CUTS, ELECTRICAL CHARACTERISTICS AND CONNECTION REQUIREMENTS.

B. MAINTENANCE DATA: INCLUDE DATA ON OPERATING HARDWARE, LUBRICATION REQUIREMENTS, AND INSPECTION PROCEDURES RELATED TO PREVENTATIVE MAINTENANCE.

C. WARRANTY: SUBMIT MANUFACTURER'S WARRANTY AND ENSURE THAT FORMS HAVE BEEN COMPLETED IN OWNER'S NAME AND REGISTERED WITH MANUFACTURER.

1.07 DELIVERY, STORAGE, AND HANDLING

A. PACKAGE HARDWARE ITEMS INDIVIDUALLY; LABEL AND IDENTIFY EACH PACKAGE WITH DOOR OPENING CODE TO MATCH HARDWARE SCHEDULE.

2.01 GENERAL REQUIREMENTS FOR DOOR HARDWARE PRODUCTS

A. PROVIDE PRODUCTS THAT COMPLY WITH THE FOLLOWING:

1. APPLICABLE PROVISIONS OF FEDERAL, STATE, AND LOCAL CODES.
2. BUILDING (PROPERTY) STANDARDS (IF ANY)
3. PROVIDE LEVER AND PULL OPTIONS FOR OWNER AND ARCHITECT APPROVAL

B. FINISHES: 10BE / 613E

C. GRADE: MORTISE LOCKS= GRADE 1, CYLINDRICAL LOCKS= GRADE 2

2.02 KEYING

A. DOOR LOCKS: GRAND MASTER KEYED, COORDINATE W/ OWNER

3.01 EXAMINATION

A. VERIFY THAT DOORS AND FRAMES ARE READY TO RECEIVE WORK AND DIMENSIONS ARE AS INDICATED ON SHOP DRAWINGS.

B. VERIFY THAT ELECTRIC POWER IS AVAILABLE TO POWER OPERATED DEVICES AND OF THE CORRECT CHARACTERISTICS.

3.02 INSTALLATION

A. INSTALL HARDWARE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND APPLICABLE CODES.

B. USE TEMPLATES PROVIDED BY HARDWARE ITEM MANUFACTURER.

C. INSTALL HARDWARE ON FIRE-RATED DOORS & FRAMES IN ACCORDANCE WITH CODE & NFPA 80.

D. MOUNTING HEIGHTS FOR HARDWARE FROM FINISHED FLOOR TO CENTER LINE OF HARDWARE ITEM:

1. FOR STEEL DOORS AND FRAMES: COMPLY WITH DHI "RECOMMENDED LOCATIONS FOR ARCHITECTURAL HARDWARE FOR STEEL DOORS AND FRAMES."
2. FOR WOOD DOORS: COMPLY WITH DHI "RECOMMENDED LOCATIONS FOR ARCHITECTURAL HARDWARE FOR WOOD FLUSH DOORS."

3.03 ADJUSTING

A. ADJUST HARDWARE FOR SMOOTH OPERATION.

HARDWARE NOTES

HARDWARE IS REFERRED TO BY ANSI FUNCTION FOR THE PURPOSE OF ESTABLISHING PERFORMANCE STANDARDS. HARDWARE SUBSTITUTIONS SHALL BE REVIEWED BY PROJECT ARCHITECT-ENGINEER AND ACCEPTED BY PROJECT COORDINATOR.

A. LOCK AND LATCHSETS:

LEVER HANDLES, 2 3/4" BACK SET, INTERCHANGEABLE IN STANDARD DOOR CUT OUTS, ANTI-FRICTION LATCH BOLTS (NYLON INSERT OR FINGER TYPE).

B. HINGES:

QUALITY INDICATED IN DOOR SCHEDULE.
HINGES SHALL BE 4 1/2" FULL MORTISE, BALL BEARING FIVE-KNUCKLE, SWAGED WITH BUTTON TIPS. HINGES SHALL BE STEEL WITH PLATED FINISHES AS SPECIFIED UNDER "FINISHES". DOOR HINGES SHALL HAVE NON-REMOVABLE PINS. PROVIDE HEAVY WEIGHT HINGES AT DOORS OVER 41" IN WIDTH OR AT DOORS OF HIGH FREQUENCY AND UNUSUAL STRESS.

C. DOOR CLOSERS:

DOOR CLOSERS SHALL BE SURFACE MOUNTED, FURNISHED WITH METAL COVER TO CONCEAL MOUNTING HARDWARE AND MOUNTED ON ROOM SIDE OF DOORS. PROVIDE CLOSERS WITH PARALLEL ARMS (PA) AND MOUNT ON STOP SIDE. PROVIDE HOLD-OPEN ARMS ON CLOSERS. 90 DEGREE CLOSER SWING MINIMUM. PAINTED FINISH TO MATCH HARDWARE FINISH.

D. DOOR STOPS:

DOOR STOPS TO PREVENT DOORS OR DOOR KNOBS FROM BUMPING ADJACENT WALLS OR FURNISHINGS. DOOR STOPS SHALL HAVE SPECIFIED FINISH. PROVIDE WALL REINFORCING.

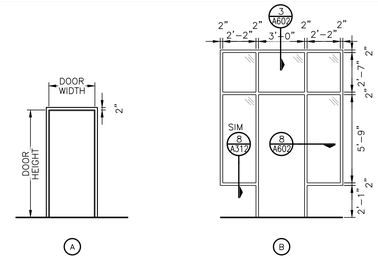
E. SLIDING DOOR HARDWARE:

SLIDING DOOR HARDWARE SHALL BE CONTINUOUS ALUMINUM GUIDE WITH TWO TRACKS FOR BYPASSING DOORS. ADJUSTABLE SIZE TO FIT OPENING.

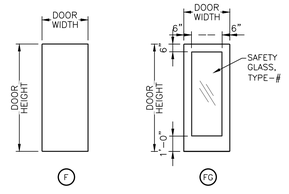
F. PROTECTION PLATES:

1 INCH LESS DOOR WIDTH, HEIGHT INDICATED IN DOOR SCHEDULE. FINISH TO MATCH BALANCE OF HARDWARE.

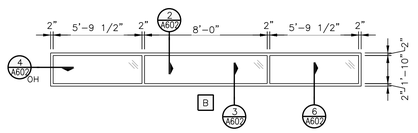
DOOR FRAME ELEVATIONS

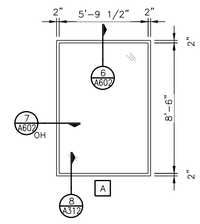


DOOR ELEVATIONS



STOREFRONT ELEVATIONS





GENERAL NOTES

A. DOOR SCHEDULE INDICATES NEW DOORS AND EXISTING DOORS REQUIRING MODIFICATION. CONTRACTOR SHALL COORDINATE THE KEYING OF NEW, REWORKED, AND EXISTING DOOR WITH OWNER'S REQUIREMENTS. ADDITIONAL DOORS DISCOVERED TO REQUIRE MODIFICATION SHALL BE PROMPTLY REPORTED TO ARCHITECT.

B. LOCATE DOOR FRAMES A MINIMUM OF 6" FROM INSIDE CORNER TO DOOR OPENING UNLESS OTHERWISE INDICATED.

C. UNDERCUT DOORS AS REQUIRED TO CLEAR FINISH FLOOR MATERIALS AND TO MAINTAIN FIRE RATING.

D. DOORS SHALL BE SINGLE SWING. (UNLESS OTHERWISE NOTED)

E. ETR = EXISTING TO REMAIN

F. SEE ROOM FINISH SCHEDULE FOR FIELD PAINTED/STAINED FINISHES, SEE SPECIFICATIONS FOR FACTORY FINISHES

G. IN NON-SPRINKLED BUILDINGS, WHERE DOOR SCHEDULE INDICATES RATED DOOR, PROVIDE **FIRE-RATED** DOOR THAT ALLOWS HEAT TRANSMITTED TO UNEXPOSED SIDE TO EXCEED 65O DEGREES WHERE ASSEMBLY IS **NOT** ASSOCIATED WITH EXITS AND MEANS OF EGRESS E.G. CORRIDORS, STORAGE, AND BOILER ROOMS. PROVIDE **TEMPERATURE-RATED** DOORS THAT LIMIT HEAT TRANSMITTED TO 45O DEGREES IN MEANS OF EGRESS INSTALLATIONS E.G. A STAIR DOOR.

H. PRE-HUNG WOOD DOOR FRAMES:
SET PRE-HUNG WOOD DOOR FRAMES LEVEL AND SQUARE WITHIN DESIGNATION PARTITION. MAKE SPACING BETWEEN JAMBS AND DOOR CONSISTENT ON ALL SIDES. SET FRAME AND HINGES TO ALLOW SUFFICIENT HEIGHT FOR DESIGNATED FLOOR FINISH. MAKE DOOR JAMBS FLUSH WITH FINISHED WALL SURFACES ON BOTH SIDES OF PARTITION. IDEALLY PROJECT BEYOND FINISHED WALL SURFACE BY ABOUT 1/32 OF AN INCH. APPLY SPECIFIED WOOD CASING, COUNTER SINK WITH FASTENERS (NAILS) CONCEALED. SECURELY FASTEN PRE-HUNG FRAME TO WALL FRAMING TO AVOID VIBRATION. PROVIDE SHIMS AT EACH HINGE LOCATION. SPACING OF SHIMS NOT TO EXCEED 24 INCHES.

I. CONTRACTOR TO CONFIRM SECURITY AND CARD READER LOCATIONS W/ OWNER.

REMARKS

1. EXPANSION THRESHOLD
2. INSTALL DOOR AT EXIST. MASONRY WITH OPENING SPACED TO UNIT SIZES.
3. MAGNETIC HOLD OPEN

MATERIAL LEGEND

WOOD DOORS

CP MD	COMPOSITE MOLDED
WD SR	WOOD STILE AND RAIL
MD SR	MDF STILE AND RAIL
WD FV	WOOD FLUSH VENEER
MD FL	MDF FLUSH
PL FS	PLASTIC LAMINATE FLUSH SMOOTH
PL FR	PLASTIC FIBER REINFORCED

METAL DOORS

ST PF	STEEL PRE-FINISHED
ST FS	STEEL FLUSH FLUSH SMOOTH
ST FE	STEEL FLUSH FLUSH EMBOSSED
ST DS	STEEL DECORATIVE FLUSH SMOOTH
ST DE	STEEL DECORATIVE FLUSH EMBOSSED
ST AC	STEEL ACOUSTIC
ST SR	STEEL STILE AND RAIL
SS FS	STAINLESS STEEL SMOOTH
SS FD	STAINLESS STEEL DECORATIVE
AL PF	ALUMINUM PRE-FINISHED
AL FL	ALUMINUM FLUSH
AL SR	ALUMINUM STILE AND RAIL

MIRROR DOORS

MIRR	MIRROR DOOR

GLASS DOORS

GL FL	GLASS FRAMELESS

PATIO DOORS

CL SW	CLAD SWING EXTERIOR
CL SL	CLAD SLIDING EXTERIOR
AL SL	ALUMNIUM SLIDING EXTERIOR

DOOR FRAMES

PH	PRE-HUNG WOOD
AL	ALUMINUM
WD	WOOD
WS	WELDED STEEL
KS	KNOCKDOWN STEEL
PS	PRE-FINISHED STEEL

GLASS TYPES

1. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION ON GLAZING TYPES

SILL TYPES

1. SEE DETAIL 10/A501
2. SEE DETAIL 12/A312
3. SEE DETAIL 3/A501
4. CONCRETE WITH FINISH TBD DURING TENANT BUILD-OUT

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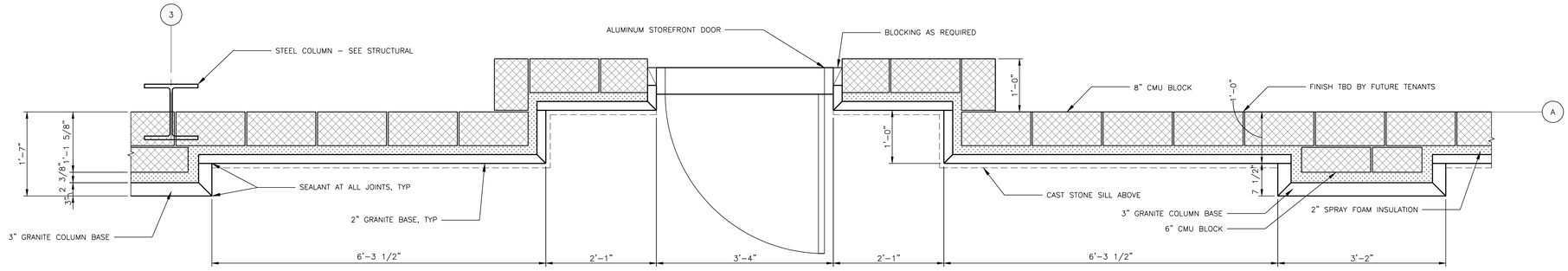
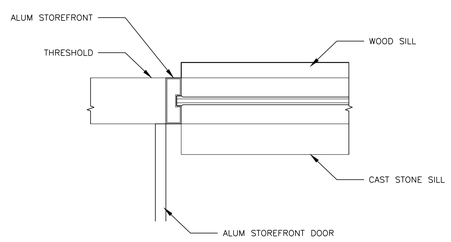
PERMIT/BID	10-11-17
PROGRESS REVIEW	09-20-17
Revision	Date
Date	10-11-2017
Project Number	2017041

Sheet Title
DOOR SCHEDULE
WINDOW ELEVATIONS
AND FINISH
SCHEDULE

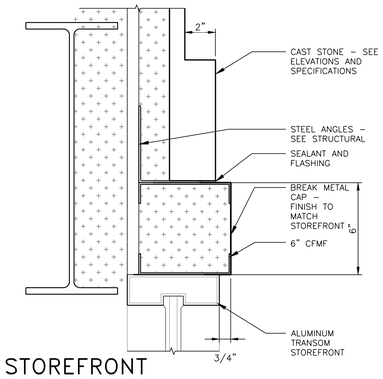
Sheet Number
A601



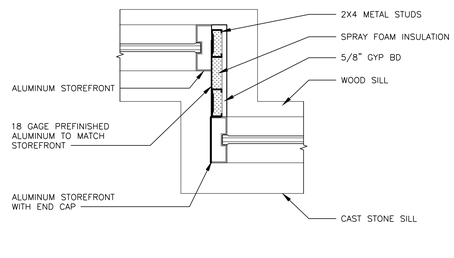
1 A602 **STOREFRONT PLAN**
SCALE: 1"=1'–0"
REFERENCE LOCATIONS: A202



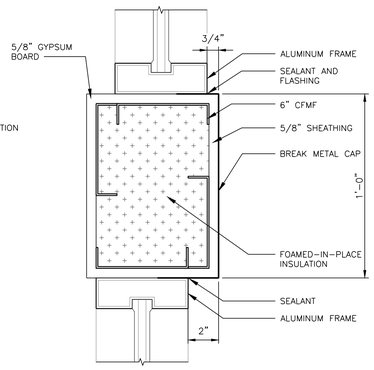
8 A602 **STOREFRONT AT DOOR JAM**
SCALE: 1 1/2"=1'–0"
REFERENCE LOCATIONS: A101, A601



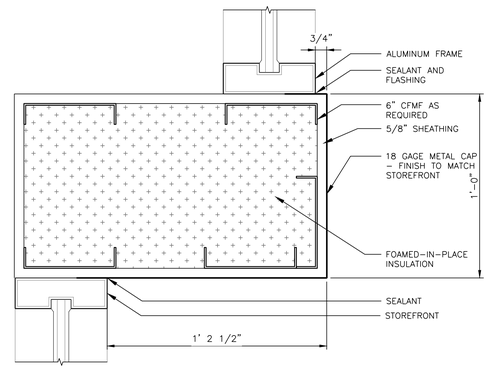
2 A602 **STOREFRONT HEADER**
SCALE: 3"=1'–0"
REFERENCE LOCATIONS: A601, A311



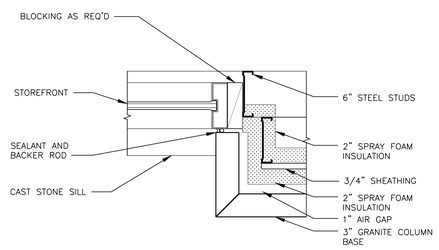
9 A602 **STOREFRONT AT STOREFRONT**
SCALE: 1 1/2"=1'–0"
REFERENCE LOCATIONS: A101



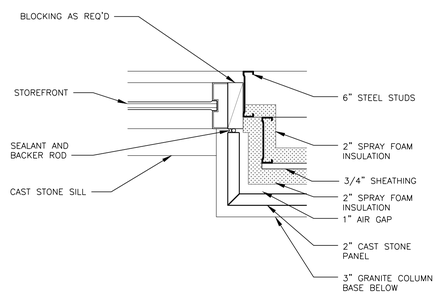
6 A602 **STOREFRONT HEADER**
SCALE: 3"=1'–0"
REFERENCE LOCATIONS: A601



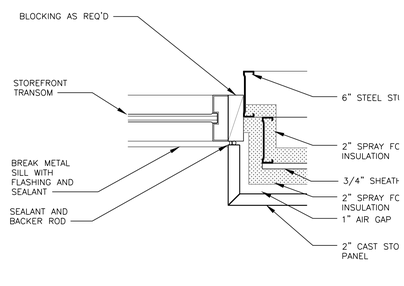
3 A602 **STOREFRONT HEADER**
SCALE: 3"=1'–0"
REFERENCE LOCATIONS: A601, A311



10 A602 **STOREFRONT AT COLUMN WRAP**
SCALE: 1 1/2"=1'–0"
REFERENCE LOCATIONS: A601, A202



7 A602 **STOREFRONT AT COLUMN WRAP**
SCALE: 1 1/2"=1'–0"
REFERENCE LOCATIONS: A101, A202, A601



4 A602 **STOREFRONT TRANSOM AT COLUMN WRAP**
SCALE: 1 1/2"=1'–0"
REFERENCE LOCATIONS: A202, A601

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Sheet Title
STOREFRONT DETAILS

Sheet Number
A602

DESIGN CRITERIA

Note: The structure is designed for the following live loads, in addition to the lateral loads and super-imposed dead loads self-weight of the structure. Where applicable, the live loads are reduced in accordance with the provisions of the Building Code.

		CODE REFERENCE
RISK CATEGORY	II	MBC-Table 1604.5 ASCE Table 1.5-1

FLOOR LIVE LOADS

LIVE LOADS

		CODE REFERENCE
1rst Floor	100 PSF	ASCE Table 4-1

SNOW LOADS

SNOW CRITERIA		CODE REFERENCE
Ground Snow Load	Pg = 25 PSF	ASCE Fig. 7-1
Flat Roof Snow Load	Pf = 25 PSF (Minimum)	ASCE Sec. 7.3
Exposure Factor	Ce = 1.0	ASCE Table 7-2
Importance Factor	Is = 1.0	ASCE Table 1.5-2
Thermal Factor	Ct = 1.0	ASCE Table 7-3

Note: Snow loads adjacent to vertical projections, or on lower roofs adjacent to high roofs or sloped roofs are increased for the effect of drifting.

WIND LOADS

WIND CRITERIA		
Ultimate Design Wind Speed (3 sec. gust)	Vult = 115 mph	ASCE Fig. 26.5-1A
Nominal Design Wind Speed	Vasd = 89 mph	MBC Sec. 1609.3.1
Exposure Category	B	ASCE Sec. 26.7.3
Internal Pressure Coefficient	+/- 0.18 (Enclosed)	ASCE Fig. 26.11-1
Components and Cladding	Per Code Requirement based on above	ASCE Chapt. 30

SEISMIC LOADS

SEISMIC CRITERIA		CODE REFERENCE
Seismic Importance Factor	Ie = 1.25	ASCE Table 1.5-2
Short Perilod Mapped Spectral Response Acceleration Parameter (5% of Critical Damping)	S_S = .076g	ASCE Sec. 11.4.1
1.0 sec Mapped Spectral Response Acceleration Parameter (5% of Critical Damping)	S_1 = .043g	ASCE Sec. 11.4.1
Soil Site Class	D	ASCE Sec. 11.4.2
Design Spectral Response Acceleration Parameter (for short period)	S_{DS} = .081g	ASCE Sec. 11.4.4
Design Spectral Response Acceleration Parameter (for 1 sec. period)	S_{D1} = .068g	ASCE Sec. 11.4.4
Seismic Design Category	B	ASCE Sec. 11.6
Seismic Force-Resisting System	Masonry Framed Shear Walls and Steel Moment Frames Not Specifically Detailed for Seismic	ASCE Table 12.2-1
Seismic Response Coefficient	C_S = .016 / .034	ASCE Sec. 12.8.1
Response Modification Factor	R = 6.5 / 3.0	ASCE Table 12.2-1
Analysis Procedure	Equivalent Lateral Force	ASCE Sec. 12.8

EARTH PRESSURE LOADS

LATERAL EARTH EQUIVALENT FLUID PRESSURE		
Walls Un-braced at Top	40 PCF	
Walls braced at Top	55 PCF	
Allowable soil bearing capacity	5000 psf	

Notes:
1. Refer to geotechnical report – Project No.62-120941-37 dated 5/6/2016 by NTH Consulting Group for additional information.
2. Lateral earth pressure is based upon drained soil. Refer to drawings for foundation drainage.

MECHANICAL/ELECTRICAL LOADS

Typical Floors and Roof	10 PSF	

GENERAL STRUCTURAL NOTES:

1. THE STRUCTURAL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS AND SPECIFICATIONS. SHOULD CONFLICTS EXIST BETWEEN THE DRAWINGS, SPECIFICATIONS AND THE STRUCTURAL NOTES, THE STRICTEST PROVISION SHALL GOVERN.
2. THE STRUCTURAL DRAWINGS FORM AN INTEGRAL PART OF CONTRACT DOCUMENTS, WHICH INCLUDE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, CIVIL/SITE DRAWINGS AND SPECIFICATIONS, COORDINATE THE STRUCTURAL DRAWINGS WITH THE REQUIREMENTS SHOWN IN THE OTHER COMPONENTS OF THE CONTRACT DOCUMENTS.
3. TYPICAL DETAILS AND OTHER SECTIONS/DETAILS APPLY TO CONDITIONS THAT ARE SIMILAR TO THE CONDITIONS DESCRIBED IN THE SECTIONS/DETAILS, EVEN IF THEY ARE NOT SPECIFICALLY REFERENCED ON THE PLANS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEANS, METHODS, SEQUENCES AND PROCEDURES OF CONSTRUCTION.
5. THE STRUCTURE IS DESIGNED TO BE SELF SUPPORTING AND STABLE AFTER IT IS FULLY COMPLETED PER REQUIREMENTS OF CONTRACT DOCUMENTS, CONTRACTOR SHALL DETERMINE ERECTION PROCEDURES AND SEQUENCE, AND ENSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS IF NECESSARY. CONTRACTOR SHALL RETAIN OWNERSHIP OF SUCH MATERIAL AFTER COMPLETION OF THE PROJECT.
6. CONSTRUCTION SHALL COMPLY FULLY WITH THE APPLICABLE PROVISIONS OF OSHA AND THE LOCAL GOVERNING CODES, CURRENT EDITION, AND ALL REQUIREMENTS SPECIFIED IN THE CODES SHALL BE ADHERED TO AS IF THEY WERE CALLED FOR OR SHOWN ON THE DRAWINGS, THIS SHALL NOT BE CONSTRUED TO MEAN THAT REQUIREMENTS SET FORTH ON THE DRAWING MAY BE MODIFIED BECAUSE THEY ARE MORE STRINGENT THAN THE CODE REQUIREMENTS OR BECAUSE THEY ARE NOT SPECIFICALLY REQUIRED BY CODE.
7. GOVERNING BUILDING CODE – MICHIGAN (INTERNATIONAL) BUILDING CODE 2015, STANDARDS LISTED IN STRUCTURAL NOTE SECTIONS REFER TO THE VERSION AND EFFECTIVE DATE IDENTIFIED IN THE REFERENCED STANDARDS CHAPTER IN THE GOVERNING BUILDING CODE.
8. WORK CONSTRUCTED PER THESE DRAWINGS SHALL BE INSPECTED BY AN INDEPENDENT TESTING AGENCY RETAINED TO ENSURE COMPLIANCE WITH THE REQUIREMENTS SHOWN ON THE DRAWINGS. SPECIAL INSPECTIONS REQUIRED BY THE GOVERNING BUILDING CODE, LOCAL BUILDING DEPARTMENT AND THE CONTRACT DOCUMENTS SHALL BE PERFORMED BY A QUALIFIED SPECIAL INSPECTOR. PROJECT SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE OR REPLACE INSPECTION.

SHOP DRAWINGS:

1. SUBMIT SHOP DRAWINGS FOR REVIEW AS INDICATED IN MATERIAL SECTION OF GENERAL STRUCTURAL NOTES.
2. USE OF ENGINEERING DRAWINGS AS ERECTION DRAWINGS BY THE CONTRACTOR IS STRICTLY PROHIBITED.
3. ALLOW IN THE SCHEDULE - DETAILING, FABRICATION AND ERECTION - A MINIMUM OF 10 WORKING DAYS FOR REVIEW OF EACH SHOP DRAWING SUBMITTAL BY THE STRUCTURAL ENGINEER. SUBMIT SHOP DRAWINGS IN REASONABLE QUANTITIES AT REASONABLE INTERVALS (NOT MORE THAN 70 DRAWINGS PER SUBMITTAL PER WEEK), THE 10 WORKING DAYS STATED HEREIN, WILL BE IN ADDITION TO THE REVIEW TIME REQUIRED BY OTHER PROJECT TEAM MEMBERS. SUBMIT A SHOP DRAWING SUBMITTAL SCHEDULE PRIOR TO THE FIRST SUBMITTAL.
4. REVIEW OF SHOP DRAWINGS AND OTHER SUBMITTALS BY THE STRUCTURAL ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO CHECK THE SHOP DRAWINGS PRIOR TO SUBMITTAL. ERRORS AND OMISSIONS ASSOCIATED WITH THE PREPARATION OF SHOP DRAWINGS NOT CONFORMING TO THE CONSTRUCTION DOCUMENTS ARE THE RESPONSIBILITY OF THE SHOP DRAWING PREPARER.
5. NOTES ON SUBMITTED SHOP DRAWINGS FOR WORK 'BY OTHERS' CANNOT BE RESPONSIBLY APPROVED BY STRUCTURAL ENGINEER. CONTRACTOR SHALL COORDINATE RESPONSIBILITY FOR MATERIALS, CONNECTIONS, ETC, PRIOR TO SHOP DRAWING SUBMITTAL TO THE STRUCTURAL ENGINEER.
6. CONTRACTOR SHALL VERIFY ALL RELEVANT DIMENSIONS AND ELEVATIONS FOR EQUIPMENT INSTALLATIONS AGAINST PURCHASED MANUFACTURER'S CERTIFIED EQUIPMENT DRAWINGS, CONTRACTOR SHALL COORDINATE DIMENSIONS THAT DEPEND UPON SPECIFIC EQUIPMENT, SUCH AS ELEVATOR OPENINGS, MECHANICAL EQUIPMENT SUPPORTS, ETC, PRIOR TO SUBMITTAL, SUCH DIMENSIONS SHALL BE PROVIDED ON THE SHOP DRAWINGS PRIOR TO SUBMITTAL TO THE STRUCTURAL ENGINEER. CONTRACTOR'S FAILURE TO PROVIDE SUCH DIMENSIONS ON SUBMITTED SHOP DRAWINGS WILL RESULT IN SHOP DRAWING RETURN WITHOUT REVIEW.

MECHANICAL & ELECTRICAL EQUIPMENT:

1. MECHANICAL AND ELECTRICAL EQUIPMENT WEIGHTS ASSUMED FOR STRUCTURAL DESIGN ARE SHOWN ON THE PLANS, IF THE EQUIPMENT WEIGHT VARIES FROM THAT LISTED, CONSULT WITH THE ARCHITECT/STRUCTURAL ENGINEER PRIOR TO STEEL SHOP DRAWING SUBMITTAL.

SITE PREPARATION:

1. REFER TO THE LISTED GEOTECHNICAL EVALUATION REPORT FOR CONSIDERATION RELATED TO SITE PREPARATION AND EARTHWORK OPERATIONS. THE REQUIREMENTS AND RECOMMENDATIONS CONTAINED IN THE REPORT ARE PART OF CONTRACT REQUIREMENTS.

BACKFILLING:

1. WHERE BACKFILL IS TO BE PLACED ON BOTH SIDES OF FOUNDATION WALLS, PROVIDE A BALANCED BACKFILL AGAINST FOUNDATION WALLS TO ELIMINATE LATERAL LOAD EFFECTS, OR PROVIDE NECESSARY TEMPORARY LATERAL SUPPORT TO THE TOP OF WALL UNTIL PERMANENT SUPPORT IS INSTALLED.
2. BACKFILL MATERIAL SHALL CONSIST OF CLEAN, WELL GRADE GRANULAR SOILS, FREE OF ORGANIC MATERIAL, SILT AND CLAY, OR AS SPECIFIED IN SECTION 2 OF THE PROJECT SPECIFICATIONS.
3. BACKFILL MATERIAL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY, AS DETERMINED BY THE MODIFIED PROCTOR METHOD (ASTM D1557), IN LIFTS NOT EXCEEDING 6 INCHES.

CAST-IN-PLACE CONCRETE:

1. CONCRETE STRUCTURAL FRAMING HAS BEEN DESIGNED BY THE ULTIMATE STRENGTH METHOD PER ACI 318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE".
2. CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 301, "SPECIFICATIONS FOR STRUCTURAL CONCRETE OF BUILDINGS", AND ACI 318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" EXCEPT AS MODIFIED BY STRUCTURAL REQUIREMENTS NOTED ON THE DRAWINGS, REFER TO SPECIFICATIONS SECTION 033000, CAST-IN-PLACE CONCRETE FOR INFORMATION NOT LISTED HEREIN.
3. CEMENT SHALL CONFORM TO ASTM C150 "SPECIFICATION FOR PORTLAND CEMENT" TYPE I OR III.
4. CONCRETE AGGREGATES SHALL CONFORM TO ASTM C33 "SPECIFICATION FOR CONCRETE AGGREGATES".
5. REINFORCING SHALL CONFORM TO ASTM A-615 GRADE 60.
6. REINFORCEMENT SHALL BE FABRICATED AND ERECTED ACCORDING TO THE ACI STANDARDS; "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT", ACI 315 AND "MANUAL OF ENGINEERING AND PLACING DRAWINGS FOR REINFORCED CONCRETE STRUCTURES", ACI 315R.
7. WELDED WIRE FABRIC SHALL BE FURNISHED IN FLAT SHEETS (ROLLS NOT PERMITTED) AND SHALL CONFORM TO ASTM A-185 AND HAVE A MINIMUM SIDE AND END LAP OF 8 INCHES.
8. WELDING OF REINFORCING STEEL IS PROHIBITED UNLESS SPECIFICALLY DETAILED. WELDING WHERE DETAILED SHALL CONFORM TO AWS D1.4 SPECIFICATION.
9. CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH AS FOLLOWS:
   FOUNDATIONS: 4000 PSI
   SLAB-OB-GRADE: 4000 PSI
   SUPPORTED SLABS (EXTERIOR): 4000 PSI
10. EXTERIOR CONCRETE AND INTERIOR CONCRETE SUBJECTED TO FREEZE/THAW CYCLES, SALT, ETC., INCLUDING WALLS, SHALL BE AIR-ENTRAINED 6% +/- 1%.
11. CONCRETE SHALL BE NORMAL WEIGHT, UNLESS INDICATED OTHERWISE.
12. SUBMIT THE CONCRETE MIX DESIGN(S) FOR REVIEW BY THE STRUCTURAL ENGINEER. PROPORTION MIX DESIGNS AND PROVIDE PROOF OF MIX DESIGN STRENGTH AS DEFINED IN ACI 301. THE SUBMITTAL SHALL INCLUDE CEMENT TYPE AND SOURCE, CEMENT CUBE STRENGTH, AGGREGATE GRADATIONS, WATER TESTS, ADMIXTURE CATALOG INFORMATION AND CYLINDER STRENGTH TEST RESULTS FROM 30 TESTS, ON SPECIMENS WITH IDENTICAL MIX DESIGN, FOR EACH CONCRETE MIX, OR PROOF OF STRENGTH PER ACI 301.
13. USE OF CALCIUM CHLORIDE, CHLORIDE IONS, OR OTHER SALTS IN CONCRETE IS NOT PERMITTED.
14. SAMPLES FOR STRENGTH TESTS OF EACH CLASS OF CONCRETE PLACED EACH DAY SHALL BE TAKEN BY THE TESTING AGENCY NOT LESS THAN ONCE PER DAY, NOR LESS THAN ONCE FOR EACH 100 CUBIC YARDS OF CONCRETE, NOR LESS THAN ONCE FOR EACH 50 CUBIC YARDS OF 6000 PSI AND HIGHER CONCRETE, NOR LESS THAN ONCE FOR EACH 5000 SQUARE FEET OF SURFACE AREA FOR SLABS AND WALLS. SAMPLE CONCRETE IN ACCORDANCE WITH ASTM C172. PERFORM THE FOLLOWING TESTS IN ACCORDANCE WITH THE INDICATED STANDARD:
   A. SLUMP: ASTM C143
   B. AIR CONTENT: ASTM C173
   C. COMPRESSIVE STRENGTH: ASTM C39 *
   * WITH 1 CYLINDER AT 7 DAYS, 2 CYLINDERS AT 28 DAYS, AND ONE SPECIMEN HELD IN RESERVE.
15. CONTRACTOR SHALL PREPARE AND SUBMIT REINFORCEMENT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION. THE SHOP DRAWINGS SHALL CLEARLY SHOW REINFORCEMENT LENGTHS AND BENDS, LOCATIONS OF BARS, METHODS OF SUPPORT, DETAILS OF PLACEMENT AND PLACEMENT COORDINATION WITH FORMWORK, EMBEDMENTS, CONCRETE VIBRATION AND CONSTRUCTION JOINTS. THE DRAWINGS SHALL ALSO INDICATE OPENINGS, SLEEVES, CURBS AND CONCRETE DIMENSIONS IN ACCORDANCE WITH ACI 315.
16. CONTRACTOR SHALL TIE REINFORCING STEEL SECURELY IN PLACE PRIOR TO PLACING CONCRETE AND PROVIDE SUFFICIENT SUPPORTS TO MAINTAIN THE POSITION OF REINFORCING WITHIN SPECIFIED TOLERANCES DURING ALL CONSTRUCTION ACTIVITIES, INSERTING DOWELS INTO WET CONCRETE IS NOT PERMITTED.
17. HORIZONTAL WALL REINFORCEMENT SHALL BE CONTINUOUS WITH THE MINIMUM LAP PER ACI 318 UNLESS DETAILED OR NOTED OTHERWISE, CORNER BARS SHALL BE PROVIDED AT CHANGES IN WALL DIRECTION (HOWEVER SMALL) AND SHALL BE OF SAME SIZE AND SPACING AS THE HORIZONTAL STEEL, EACH CORNER BAR LEG TO PROVIDE LAP SPLICE PER ACI 318 UNLESS DETAILED OR NOTED OTHERWISE.
18. HOOKED BARS SHALL BE STANDARD 90 DEGREE HOOKS PER ACI UNLESS NOTED OTHERWISE ON THE DRAWINGS.
19. MINIMUM LAP SPLICES SHALL BE CLASS B PER ACI 318, LOCATION OF LAP SPLICES SHALL BE AS INDICATED ON CONSTRUCTION DOCUMENTS AND/OR AS SHOWN ON THE APPROVED REINFORCING STEEL SHOP DRAWINGS.
20. REINFORCING STEEL SHALL NOT BE CUT, BENT OR STRAIGHTENED IN THE FIELD UNLESS APPROVED BY THE STRUCTURAL ENGINEER OR AS INDICATED ON THE DRAWINGS.
21. REINFORCING STEEL SHALL BE PLACED WITH MINIMUM CONCRETE COVER AND TOLERANCES AS PER THE REQUIREMENTS OF ACI 318.
22. ANCHOR RODS AND STEEL EMBEDS (FURNISHED BY STRUCTURAL STEEL CONTRACTOR) SHALL BE SET BY TEMPLATE TO WITHIN A 1/8" TOLERANCE IN ANY DIRECTION WITH MINIMUM EMBEDMENT AND EXACT PROJECTION INDICATED ON THE DRAWINGS, PRIOR TO PLACING CONCRETE.
23. NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.
24. DOWELS INTO FOUNDATION SHALL MATCH SIZE AND SPACING OF VERTICAL REINFORCEMENT AT ALL COLUMNS, PIERS AND WALLS, UNLESS OTHERWISE NOTED.
25. LOCATE SLEEVES, OPENINGS, EMBEDS, ETC., AS INDICATED ON THE DRAWINGS. THE CONCRETE CONTRACTOR SHALL CHECK WITH OTHER TRADES TO MAKE SURE THE SLEEVES, OPENINGS AND EMBEDS THAT ARE TO BE PROVIDED AND SET BY THEM ARE IN PLACE PRIOR TO PLACING OF CONCRETE IN THE AREA INVOLVED.
26. CONTRACTOR SHALL OBTAIN APPROVAL PRIOR TO PLACING OPENINGS OR SLEEVES NOT SHOWN ON THE DRAWINGS, THROUGH ANY STRUCTURAL MEMBER.
27. FOR CONTROL JOINTS IN SLABS, SPACE JOINTS AT MAXIMUM 12 FEET ON CENTER UNLESS OTHERWISE NOTED ON THE DRAWINGS.
28. CONSTRUCTION JOINTS SHALL BE FURNISHED WITH A FULL LENGTH KEYWAY CENTERED ON MEMBERS. WHERE THE SIZE OF KEY IS NOT SHOWN ON THE DRAWINGS, THE KEY SHALL BE 25% OF THE CROSS SECTION DIMENSION OF THE MEMBER AND MINIMUM 1-1/2 INCHES INTO THE FIRST POUR OF CONCRETE.
29. THE CONCRETE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POUR SEQUENCES AND CONSTRUCTION PROCEDURES FOR ALL CONCRETE WORK TO ACCOUNT FOR TEMPERATURE DIFFERENTIALS AND SHRINKAGE OCCURRING DURING THE CONSTRUCTION PHASE UNTIL THE BUILDING IS PERMANENTLY IN A MECHANICALLY CONTROLLED ENVIRONMENT.
30. SLABS ON GRADE SHALL BE AS INDICATED ON THE DRAWINGS PLACED ON VAPOR BARRIER ON MIN 4 INCHES CLEAN GRANULAR FILL.
31. COORDINATE PLACEMENT OF VAPOR BARRIER WITH FLOOR FINISH REQUIREMENTS.
32. REFER TO ARCHITECTURAL DRAWINGS FOR SLAB RECESSES AND FOR FLOOR FINISH MATERIALS AND REQUIREMENTS.
33. THE USE OF CHLORIDES SUCH AS DEICING SALTS IS PROHIBITED FOR MELTING ICE PRIOR TO PLACEMENT OF CONCRETE.
34. CURING OF CONCRETE SURFACES SHALL CONFORM TO ACI 308,1 "STANDARD SPECIFICATION FOR CONCRETE CURING" AND ACI 308R "GUIDE TO CURING CONCRETE".
35. JOINTS TO BE PREPARED AND FILLED WITH JOINT SEALANT SHALL INCLUDE, BUT ARE NOT LIMITED TO, CONSTRUCTION JOINTS, CONTROL JOINTS, ISOLATIONS JOINTS, AND ALL INTERFACE JOINTS BETWEEN SIMILAR AND DISSIMILAR MEMBERS. SPECIFIC LOCATIONS MAY BE INDICATED ON THE DRAWINGS, OR MAY BE REQUIRED BY APPROVED SHOP DRAWINGS, OR MAY OCCUR DUE TO THE CONSTRUCTION SEQUENCE SELECTED BY THE CONTRACTOR.
36. PRIOR TO PLACING CONCRETE ADJACENT TO EXISTING CONCRETE, THOROUGHLY CLEAN, DE-GREASE AND MECHANICALLY ROUGHEN EXISTING CONCRETE SURFACES. APPLY BONDING AGENT PRIOR TO PLACING FRESH CONCRETE. BONDING AGENT SHALL BE SIKA ARMATEC 110 EPOCHEM BY SIKA CORPORATION, OR APPROVED EQUAL. FOLLOW ALL MANUFACTURER'S INSTRUCTIONS FOR SURFACE PREPARATION, MIXING AND APPLICATION.
37. NON-SHRINK GROUT: GROUT SHALL CONFORM TO ASTM C1107, GROUT SHALL BE PREMIXED, NON-SHRINK, NON-CATALYZED NATURAL AGGREGATE GROUT WITH A MINIMUM SEVEN-DAY COMPRESSIVE STRENGTH OF 7,000 PSI PLASTIC, 6,000 PSI FLOWABLE, AND 5,000 PSI FLUID CONSISTENCY.
38. REINFORCING STEEL, ANCHOR RODS AND EMBED PLACEMENT SHALL BE INSPECTED, PRIOR TO PLACEMENT OF CONCRETE, IN ACCORDANCE WITH ACI-318 AND CODE REQUIRED SPECIAL INSPECTION BY QUALIFIED INSPECTOR PRIOR, THESE INSPECTIONS ARE NOT INCLUDED IN THE BASIC SERVICES OF THE STRUCTURAL ENGINEER OF RECORD.

STRUCTURAL STEEL:

1. DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) 360 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS AND THE STEEL CONSTRUCTION MANUAL, ALLOWABLE STRENGTH DESIGN ASD.
2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS AND MINIMUM YIELD STRENGTH:

W SHAPES	A 992	FY = 50 KSI
MISCELLANEOUS SHAPES AND PLATES	A 36	FY = 36 KSI
ROUND TUBES	A 500 GRADE B	FY = 42 KSI
PIPE	A 53 GRADE B	FY = 35 KSI
SQUARE TUBES	A 500 GRADE B	FY = 46 KSI

3. ANCHOR RODS SHALL CONFORM TO ASTM F 1554 GRADE 36, UNLESS NOTED OTHERWISE.
4. STRUCTURAL STEEL BOLTING SHALL BE ASTM A 325 TYPE N, 3/4" DIAMETER SNUG TIGHT EXCEPT WHERE OTHER SIZE, ASTM A 490 N, PRE-TENSIONED OR SLIP CRITICAL TYPE BOLTS ARE INDICATED.
5. WELDING SHALL BE DONE WITH APPROPRIATE E70 SERIES ELECTRODES COMPATIBLE WITH THE NEW AND EXISTING STEEL. WELDS AND WELDING PROCEDURES SHALL CONFORM TO THE "STRUCTURAL WELDING CODE - STEEL" OF THE AMERICAN WELDING SOCIETY ANSI/AWS D1.1.
6. DETAILING SHALL BE PERFORMED USING RATIONAL ENGINEERING DESIGN AND STANDARD PRACTICE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE TYPICAL DETAILS SHOWN ARE APPROXIMATE ONLY AND DO NOT INDICATE THE REQUIRED NUMBER OF BOLTS OR WELD SIZES, UNLESS SPECIFICALLY NOTED.
7. CONTRACTOR SHALL SUBMIT FOR REVIEW, ENGINEERED DRAWINGS SHOWING SHOP FABRICATION DETAILS, FIELD ASSEMBLY DETAILS AND ERECTION DIAGRAMS FOR ALL STRUCTURAL STEEL. SHOW AT MINIMUM ALL DETAILS INCLUDED IN THESE CONTRACT DOCUMENTS WITH ADDITIONAL ERECTION DETAILS AS REQUIRED TO COMPLETELY DEFINE THE INTERCONNECTION OF STRUCTURAL STEEL PIECES.
8. FABRICATOR SHALL BE AISC CERTIFIED OR HAVE AN AISC EQUIVALENT QUALITY ASSURANCE PROGRAM AS VERTIFIED BY A QUALIFIED INDEPENDENT TESTING AGENCY.
9. ANCHOR RODS, BASE PLATES AND BEARING PLATES SHALL BE LOCATED AND BUILT INTO CONNECTING WORK, PRE-SET BY TEMPLATES OR SIMILAR METHOD PRIOR TO CONCRETE PLACEMENT. PLATES SHALL BE SET IN FULL BEDS OF NON-SHRINK GROUT.
10. CONTRACTOR SHALL REFERENCE ARCHITECTURAL DRAWINGS FOR MISCELLANEOUS SHAPES AND PLATES NOT SHOWN ON STRUCTURAL DRAWINGS. THESE ITEMS SHALL BE SHOP WELDED TO THE STRUCTURAL FRAMING SECTIONS TO MINIMIZE FIELD WELDING.
11. NON-COMPOSITE BEAM CONNECTIONS SHALL BE CAPABLE OF SUPPORTING MINIMUM 50% OF THE MAXIMUM TOTAL UNIFORM LOAD, AISC STEEL CONSTRUCTION MANUAL, UNLESS SPECIFICALLY NOTED ON THE DRAWINGS.
12. BEAM CONNECTIONS SHALL BE STANDARD AISC APPROVED CONNECTIONS.
13. SIMPLE SHEAR CONNECTIONS SHALL BE CAPABLE OF END ROTATION AS PER THE REQUIREMENTS OF THE AISC SPECIFICATION, SIMPLE CONNECTIONS, SPECIFICATION SECTION J1.2 AND MANUAL PART 10.
14. CONNECTIONS SHALL BE SHOP WELDED IN ACCORDANCE WITH LATEST AWS SPECIFICATIONS FOR E70XX ELECTRODES AND FIELD BOLTED WITH ASTM A 325 OR ASTM A 490 BOLTS.
15. WELDING SHALL BE DONE BY WELDERS QUALIFIED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT "STRUCTURAL WELDING CODE - STEEL," AMERICAN WELDING SOCIETY, AWS D1.1
16. CONTRACTOR SHALL INSTALL A325 AND A490 BOLTS IN ACCORDANCE WITH THE "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A 325 OR A 490 BOLTS." SNUG TIGHT CONDITION SHALL BE ACHIEVED USING AN IMPACT WRENCH, TO BRING THE CONNECTED PLIES INTO FIRM CONTACT, EXCEPT WHERE NOTED AS SLIP CRITICAL, PRE-TENSIONED OR FINGER TIGHT.
17. BEAMS SHALL BE FABRICATED WITH THE NATURAL CAMBER UP. PROVIDE CAMBERS AS INDICATED ON THE DRAWINGS.
18. STIFFENER PLATES ARE TO BE PROVIDED IN PAIRS.
19. WOOD BLOCKING SHALL BE FASTENED TO ADJACENT STEEL MEMBERS USING MINIMUM 0.177 INCH DIAMETER POWDER ACTUATED FASTENERS OR EQUIVALENT FASTENERS COORDINATED WITH THE STEEL THICKNESS, INSTALL 2 FASTENERS 3" MINIMUM SPACING ACROSS THE MEMBER SPACED ALONG THE LENGTH AT 24" O.C.
20. CLEAN STEEL PER SSPC-SP3 AND SHALL RECEIVE ONE SHOP COAT OF PRIMER PAINT. OMIT PAINT AT HOLES FOR SLIP CRITICAL TYPE CONNECTIONS, AT STRUCTURAL STEEL TO BE FIREPROOFED, ENCASED OR IN CONTACT WITH CONCRETE, AND ON TOP FLANGE OF BEAMS RECEIVING SHEAR CONNECTORS.
21. STEEL ABOVE THE ROOF AND OUTSIDE THE BUILDING ENVELOPE (EXPOSED TO WEATHER) SHALL BE CLEANED PER SSPC-SP6 AND HOT DIP GALVANIZED, (FINISH PAINT SHALL BE EPOXY SECOND COAT AND ACRYLIC FINISH COAT BY SAME PAINT MANUFACTURER AS PRIME PAINT PER APPROVED PAINT SYSTEM.)
22. CONTRACTOR SHALL PROVIDE ADJUSTABLE CHANNEL SLOTS ON STEEL COLUMNS FOR MASONRY TIES AT 16" O.C. MAXIMUM VERTICAL SPACING AT ENDS OF ALL CMU WALLS WHICH ARE ADJACENT TO STEEL COLUMN LOCATIONS. CONTRACTOR SHALL COORDINATE REQUIREMENTS WITH STEEL AND MASONRY CONTRACTORS.
23. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AS REQUIRED TO ENSURE STABILITY OF THE STRUCTURE UNDER FULL DESIGN LOADS UNTIL THE PERMANENT BRACING IS IN PLACE. PROVIDE NECESSARY SHORING WHERE REQUIRED DURING CONSTRUCTION.
24. THE STEEL FRAME IS SELF SUPPORTING FOR LATERAL LOADS AFTER:
   A. CONNECTIONS, BRACES AND MOMENT FRAMES HAVE COMPLETELY WELDED AND BOLTED.
   B. THE ROOF DECK HAS BEEN PROPERLY INSTALLED AND ATTACHED.
25. WELDING SHALL BE INSPECTED BY AN AWS CERTIFIED WELDING INSPECTOR (CWI).
26. CONTRACTOR SHALL SCHEDULE WORK TO ALLOW THE ABOVE TESTING REQUIREMENTS TO BE COMPLETED.

POST INSTALLED ANCHORS:

1. POST INSTALLED ANCHORS INCLUDE ALL MECHANICAL AND ADHESIVE ANCHORS NOTED ON CONSTRUCTION DOCUMENTS, ALL POST INSTALLED ANCHORS SHALL CONFORM TO AC-193 FOR MECHANICAL ANCHORS AND AC-308 FOR ADHESIVE ANCHORS.
2. USE ONLY CODE APPROVED ANCHORS WITH VALID ICC-ESR EVALUATION REPORT FOR USE IN BASE MATERIAL SHOWN ON THE CONSTRUCTION DOCUMENTS. SUBMIT ICC-ESR EVALUATION REPORT TO STRUCTURAL ENGINEER AND SPECIAL INSPECTION AGENT FOR APPROVAL.
3. INSTALLER OF POST INSTALLED ANCHORS SHALL BE TRAINED BY ANCHOR MANUFACTURER.
4. CLEAN EXISTING CONCRETE SURFACE TO SOLID STRUCTURAL CONCRETE. GRIND SMOOTH FOR FULL STEEL CONTACT AND TO PREVENT GAPS BETWEEN STEEL AND CONCRETE, ALTERNATIVELY, PROVIDE NON-SHRINK GROUT IN ALL VOIDS BETWEEN STEEL AND BASE MATERIAL.
5. DRILL SMALLER DIAMETER PILOT HOLE IN EXISTING CONCRETE AND CHECK FOR EXISTING REINFORCING. DO NOT CUT OR DAMAGE EXISTING REINFORCING.
6. IF EXISTING REINFORCING IS FOUND, SHIFT HOLE TO AVOID EXISTING REINFORCING. SUBMIT LOCATION OF NEW HOLE TO STRUCTURAL ENGINEER FOR REVIEW.
7. INSTALL MECHANICAL ANCHORS AND ADHESIVE ANCHORS IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS AND PROCEDURE DETAILED IN ICC-ESR EVALUATION REPORT.
8. SPECIAL INSPECTIONS ARE REQUIRED FOR ALL MECHANICAL AND ADHESIVE ANCHORS. INSPECT AND TEST POST INSTALLED ANCHORS AS SPECIFIED IN ICC-ESR EVALUATION REPORT.
9. THE FOLLOWING ANCHORS ARE APPROVED. SUBMITTALS FOR ALTERNATIVE EQUAL ANCHORS WILL BE REVIEWED BY STRUCTURAL ENGINEER AND APPROVED AT THEIR DISCRETION.

ANCHOR TYPE:	APPROVED ANCHOR:	MAXIMUM DIAMETER:	BASE MATERIAL:	ICC-ESR EVALUATION REPORT NO.:
SCREW ANCHORS	HILTI KWIK HUS-EZ	5/8"	CONCRETE	ESR-3027
EXPANSION ANCHORS	HILTI KWIK BOLT TZ	3/4"	CONCRETE	ESR-1917
	HILTI KWIK BOLT 3	3/4"	CONCRETE (UN-CRACKED ONLY)	ESR-2302
ADHESIVE ANCHORS	HITLI HIT-HY MAX-SD + HAS	1"	CONCRETE	ESR-3013
	HILTI HIT-HY MAX-SD + REBAR	#10	CONCRETE	ESR-3013
	HILTI HIT-HY MAX-SD + HAS	5/8"	GROUTED MASONRY	ESR-3013
	HILTI HIT-HY 20	5/8"	HOLLOW MASONRY	ESR-3187

FOOTINGS AND FOUNDATIONS:

1. CONTRACTOR SHALL VERIFY ALL CONDITIONS, INCLUDING UNDERGROUND UTILITIES AND FIELD MEASUREMENTS AT JOB SITE AND REPORT ANY DISCREPANCIES TO OWNER'S REPRESENTATIVE.
2. PROVIDE NECESSARY SHEETING, SHORING, BRACING, ETC. AS REQUIRED DURING EXCAVATIONS TO PROTECT SIDES OF EXCAVATIONS.
3. COMPLY FULLY WITH REQUIREMENTS OF OSHA AND OTHER REGULATORY AGENCIES FOR SAFETY PROVISIONS.
4. TOP OF SPREAD FOOTING ELEVATIONS NOTED ON PLAN ARE MINIMUM ELEVATIONS. IN ALL CASES FOOTINGS ARE TO BEAR ON UNDISTURBED NATURAL SOILS OR ENGINEERED FILL HAVING A MINIMUM NET ALLOWABLE BEARING CAPACITY OF THAT LISTED.
5. SIDES OF FOUNDATIONS SHALL BE FORMED UNLESS CONDITIONS PERMIT EARTH FORMING. FOU

SPECIAL INSPECTION REQUIREMENTS - MASONRY: LEVEL B QUALITY ASSURANCE

MINIMUM TESTS

VERIFICATION OF SLUMP FLOW AND VISIBILITY STABILITY INDEX (VSI) AS DELIVERED TO THE PROJECT SITE IN ACCORDANCE WITH SPECIFICATIONS ARTICLE 1.5 B.1.b.3 FOR SELF-CONSOLIDATING GROUT.

VERIFICATION OF f'm AND f'AAC IN ACCORDANCE WITH SPECIFICATIONS ARTICLE 1.4 B PRIOR TO CONSTRUCTION, EXCEPT WHERE SPECIFICALLY EXEMPTED BY THIS CODE.

MINIMUM INSPECTION

INSPECTION TASK	FREQUENCY		REFERENCE FOR CRITERIA			RESPONSIBLE AGENT
	CONTINUOUS	PERIODIC	IBC SECTION	ACI 530 ASCE 5 TMS 402	ACI 530.1 ASCE 6 TMS 602	
1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS.	-	X	-	-	ART. 1.5	SI
2. INSPECTION OF ANCHORS INSTALLED IN HARDENED MASONRY AND GROUT (POST-INSTALLED)	-	X	-	-	-	SI/TA
3. AS MASONRY CONSTRUCTION BEGINS, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:						
A. PROPORTIONS OF SITE-PREPARED MORTAR.	-	X	-	-	ART. 2.1, 2.6A	SI
B. CONSTRUCTION OF MORTAR JOINTS.	-	X	-	-	ART. 3.3B	
C. GRADE AND SIZE OF PRESTRESSING TENDONS AND ANCHORAGES.	-	X	-	-	ART. 2.4B, 2.4H	
D. LOCATION OF REINFORCEMENT, CONNECTORS, PRESTRESSING TENDONS AND ANCHORAGES.	-	X	-	-	ART. 3.4, 3.6A	
E. PRESTRESSING TECHNIQUE.	-	X	-	-	ART. 3.6B	
F. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY.	X FOR FIRST 5000 SQ.FT. OF ACC MASONRY	X AFTER FIRST 5000 SQ.FT. OF ACC MASONRY	-	-	ART. 2.1C	
4. PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:						
A. GROUT SPACE.	-	X	-	-	ART. 3.2D, 3.2F	SI
B. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS, AND PRESTRESSING TENDONS AND ANCHORAGES.	-	X	-	SEC. 1.16	ART. 2.4, 3.4	
C. PLACEMENT OF REINFORCEMENT, CONNECTORS, AND PRESTRESSING TENDONS AND ANCHORAGES.	-	X	-	SEC. 1.16	ART. 3.2E, 3.4, 3.6A	
D. PROPORTIONS OF SITE-PREPARED GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS.	-	X	-	-	ART. 2.6B, 2.4 G.1.b	
E. CONSTRUCTION OF MORTAR JOINTS.		X			ART. 3.3B	
5. VERIFY DURING CONSTRUCTION:						
A. SIZE AND LOCATION OF STRUCTURAL ELEMENTS.	-	X	-	-	ART. 3.3F	SI
B. TYPE, SIZE, AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION.	-	X	-	SEC. 1.16.4.3, 1.17.1	-	
C. WELDING OF REINFORCEMENT.	-	X	-	SEC. 2.1.8.7.2, 3.3.3.4(c), 8.3.3.4(b)	-	SI
D. PREPARATION, CONSTRUCTION AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F) OR HOT WEATHER (TEMPERATURE ABOVE 90°F).	-	X	-	-	ART. 1.8 C, 1.8 D	SI/TA
E. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE.	X	-	-	-	ART. 3.6 B	
F. PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS IS IN COMPLIANCE.	X	-	-	-	ART. 3.5, 3.6 C	
G. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR JOINTS.	X FOR FIRST 5000 SQ.FT. OF ACC MASONRY	X AFTER FIRST 5000 SQ.FT. OF ACC MASONRY	-	-	ART. 3.3 B.8	
6. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS.	-	X	SEC. 2105.2.2, 2105.3	-	ART. 1.4 B.2.a.3, 1.4 B.2.b.3, 1.4 B.2.c.3, 1.4 B.3, 1.4 B.4	SI/TA

SPECIAL INSPECTION REQUIREMENTS - SOILS AND FOUNDATIONS

TASK	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE	RESPONSIBLE AGENT
	CONTINUOUS	PERIODIC			
1. SITE PREPARATION:					
A. VERIFY SITE PREPARED IN ACCORDANCE WITH APPROVED GEOTECHNICAL REPORT.	-	X	GEOTECHNICAL REPORT	1705.6, 1803	SI/GE
2. EXCAVATION:					
A. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	-	X	GEOTECHNICAL REPORT	1705.6	SI/GE
3. FILL PLACEMENT:					
A. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	-	X	GEOTECHNICAL REPORT	1705.6, 1803.5	SI/GE/TA
B. VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	-			
C. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT THE SITE HAS BEEN PREPARED PROPERLY.	-	X			
4. SHALLOW FOUNDATIONS:					
A. IDENTIFICATION OF SOILS AT AND BELOW FOUNDATION BEARING LEVEL.	-	X	GEOTECHNICAL REPORT	1705.6	SI/GE
B. VERIFY ALLOWABLE BEARING CAPACITY OF FOUNDATION BEARING SOILS.	-	X			
5. GEOPIER FOUNDATIONS:					
A. VERIFY SHAFT DIAMETER AND CONDITION OF SHAFT.	X	-	GEOTECHNICAL REPORT	1705.7	SI/GE
B. VERIFY BEARING SOILS.	X	-			
C. DETERMINE CAPACITIES OF TEST GEOPIERS (MODULUS AND UPLIFT) AND CONDUCT ADDITIONAL LOAD TESTS AS REQUIRED.	X	-			
D. OBSERVE GEOPIER INSTALLATION OPERATION AND MAINTAIN A COMPLETE AND ACCURATE RECORD OF EACH GEOPIER INCLUDING OBSERVING SUBSURFACE CONDITIONS AND SOILS AND BOTTOM STABILIZATION TESTS.	X	-			
E. COORDINATE ALL ACTIVITIES WITH INSTALLER'S FULL TIME QUALITY CONTROL REPRESENTATIVE.	X	-			

SPECIAL INSPECTION NOTES

1. SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE 2012 MICHIGAN (INTERNATIONAL) BUILDING CODE CHAPTER 17 AND AS MODIFIED HEREIN.
2. DESIGNATIONS
   - SI: SPECIAL INSPECTOR QUALIFIED WITH DEMONSTRATED COMPETENCE DOCUMENTED BY CERTIFICATIONS FROM RECOGNIZED AGENCIES SUCH AS AWS, ACI, MASONRY INSTITUTE OF MICHIGAN (MIMI), ETC., AS SUBMITTED AND APPROVED BY THE BUILDING OFFICIAL. SPECIAL INSPECTOR MAY BE A FIRM WITH MULTIPLE SPECIALISTS AND A PROJECT MANAGE PROVIDING REPORTS.
   - TA: TESTING AGENCY QUALIFIED TO TEST AND INSPECT MATERIALS AND ASSEMBLIES. TESTING AGENCY SHALL BE UNDER THE SUPERVISION OF THE SPECIAL INSPECTOR.
   - GE: GEOTECHNICAL ENGINEER WHO PROVIDED THE ORIGINAL PROJECT GEOTECHNICAL SOILS INVESTIGATION REPORT.
   - SE: SPECIALTY ENGINEER RESPONSIBLE FOR DESIGNING ASSEMBLIES SUCH AS PRECAST CONCRETE, STEEL JOISTS, COLD FORMED FRAMING ASSEMBLIES, ETC. SPECIALTY ENGINEER SHALL PROVIDE OBSERVATION OF FABRICATED AND INSTALLED ITEMS OF THEIR DESIGN, IN ADDITION TO THE SPECIAL INSPECTION.
3. TA, GE AND SE SHALL SUBMIT RECORDS OF THE INSPECTION RESULTS TO THE SI. THE SI SHALL COMPILE AND SUBMIT INSPECTION RECORDS TO THE ARCHITECT/ENGINEER AND BUILDING OFFICIAL. RECORDS SHALL INCLUDE STATEMENTS OF TESTS, WHETHER INSTALLED/FABRICATED ITEM COMPLIES WITH CONTRACT DOCUMENTS, REMEDIAL WORK PERFORMED, RETESTS,
4. SI SHALL PROVIDE A DAILY REPORT OF ANY DISCREPANCIES FROM THE CONTRACT DOCUMENTS FOUND ON THE SAME DAY OF THE INSPECTION TO THE ENGINEER OF RECORD. FORMAL REPORTS OF COMPLIANCE CAN FOLLOW BY A MAXIMUM OF 2 WEEKS. SI SHALL PROVIDE AND SIGN A FINAL REPORT WITH A SUMMARY OF ALL TESTS PERFORMED AND RESULTS TO THE ENGINEER OF RECORD AND BUILDING OFFICIAL.
5. SI, TA & GE SHALL BE PAID BY THE OWNER IN COMPLIANCE WITH THE MICHIGAN (INTERNATIONAL) BUILDING CODE.

SPECIAL INSPECTION REQUIREMENTS - STEEL CONSTRUCTION

INSPECTION TASK	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE	RESPONSIBLE AGENT
	CONTINUOUS	PERIODIC			
1. INSPECTION OF STEEL FABRICATOR:			AISC QUALITY CERTIFICATION	1704.2.5	SI
A. VERIFY QC PROCEDURES ARE AISC COMPLIANT AND CURRENT.	-	X			

QUALITY CONTROL (QC) SHALL BE PROVIDED BY THE FABRICATOR AND ERECTOR.
QUALITY ASSURANCE (QA) SHALL BE PROVIDED BY OTHERS WHEN REQUIRED BY THE AUTHORITY HAVING JURISDICTION, APPLICABLE BUILDING CODE, PURCHASER, OWNER, OR ENGINEER OF RECORD.

INSPECTION TASK	QC	QA	REFERENCED STANDARD	IBC REFERENCE	RESPONSIBLE AGENT
INSPECTION OF BOLTING:			AISC 360, SECTION N5	—	
1. INSPECTION TASKS PRIOR TO BOLTING:					
A. MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS.	O	P			
B. FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS.	O	O			
C. PROPER FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE).	O	O			
D. PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL.	O	O			
E. CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS.	O	O			
F. PRE-INSTALLATION VERIFICATION TESTING BE INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED.	P	O			
G. PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS.	O	O			
2. INSPECTION TASKS DURING BOLTING:			AISC 360, SECTION N5	—	
A. FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED.	O	O			
B. JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION.	O	O			
C. FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTING FROM ROTATING.	O	O			
D. FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES.	O	O			
3. INSPECTION TASKS AFTER BOLTING:			AISC 360, SECTION N5	—	
A. DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS.	P	P			

O: OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
P: PERFORM THESE TASKS FOR EACH WELDED JOINT OR MEMBER.

INSPECTION OF WELDING:			AISC 360, SECTION N5	—	
1. INSPECTION TASKS PRIOR TO WELDING:					
A. WELDING PROCEDURE SPECIFICATIONS (WPSs) AVAILABLE.	P	P			
B. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE.	P	P			
C. MATERIAL IDENTIFICATION (TYPE/GRADE).	O	O			
D. WELDER IDENTIFICATION SYSTEM.	O	O			
E. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY): - JOINT PREPARATION - DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL) - CLEANLINESS (CONDITION OF STEEL SURFACES) - TACKING (TACK WELD QUALITY AND LOCATION) - BACKING TYPE AND FIT (IF AVAILABLE)	O	O			
F. CONFIGURATION OF FINISH AND ACCESS HOLES.	O	O			
G. FIT-UP OF FILLET WELDS: - DIMENSIONS (ALIGNMENT, GAPS AT ROOT). - CLEANLINESS (CONDITION OF STEEL SURFACES). - TACKING (TACK WELD QUALITY AND LOCATION).	O	O			
H. CHECK WELDING EQUIPMENT.	O	-			
2. INSPECTION TASKS DURING WELDING:			AISC 360, SECTION N5	—	
A. USE OF QUALIFIED WELDERS.	O	O			
B. CONTROL AND HANDLING OF WELDING CONSUMABLES: - PACKAGING. - EXPOSURE CONTROL.	O	O			
C. NO WELDING OVER CRACKED TACK WELDS.	O	O			
D. WPS FOLLOWED: - SETTINGS ON WELDING EQUIPMENT. - TRAVEL SPEED. - SELECTED WELDING MATERIALS. - SHIELDING GAS TYPE/FLOW RATE. - PREHEAT APPLIED. - INTERPASS TEMPERATURE MAINTAINED (MIN./MAX). - PROPER POSITION (F, V, H, OH).	O	O			
E. WELDING TECHNIQUES: - INTERPASS AND FINAL CLEANING. - EACH PASS WITHIN PROFILE LIMITATIONS. - EACH PASS MEETS QUALITY REQUIREMENTS.	O	O			
3. INSPECTION TASKS AFTER WELDING:			AISC 360, SECTION N5	—	
A. WELDS CLEANED.	O	O			
B. SIZE, LENGTH AND LOCATION OF WELDS.	P	P			
C. WELDS MEET VISUAL ACCEPTANCE CRITERIA: - CRACK PROHIBITION. - WELD/BASE-METAL FUSION. - CRATER CROSS SECTION. - WELD PROFILES. - WELD SIZE. - UNDERCUT. - POROSITY.	P	P			
D. ARC STRIKES.	P	P			
E. K-AREA.	P	P			
F. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED).	P	P			
G. REPAIR ACTIVITIES.	P	P			
H. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER.	P	P			

O: OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
P: PERFORM THESE TASKS FOR EACH BOLTED CONNECTION.

INSPECTION OF STEEL ELEMENTS OF COMPOSITE CONSTRUCTION PRIOR TO CONCRETE PLACEMENT:			AISC 360, SECTION N6	—	
1. PLACEMENT AND INSTALLATION OF STEEL DECK.	P	P			
2. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS.	P	P			
3. DOCUMENT ACCEPTANCE OR REJECTION OF STEEL ELEMENTS.	P	P			

O: OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
P: PERFORM THESE TASKS FOR EACH STEEL ELEMENT.

SPECIAL INSPECTION REQUIREMENTS - CONCRETE CONSTRUCTION

TASK	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE	RESPONSIBLE AGENT
	CONTINUOUS	PERIODIC			
1. INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT.	-	X	ACI 318: 3.5, 7.1-7.7	1910.4	SI
2. INSPECTION OF REINFORCING STEEL WELDING IN ACCORDANCE WITH TABLE 1705.2.2, ITEM 2b.	-	-	AWS D1.4 ACI 318: 3.5.2	-	SI
3. INSPECTION OF ANCHORS AND EMBEDS CAST IN CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED OR WHERE STRENGTH DESIGN IS USED.	-	X	ACI 318: 8.1.3, 21.1.8	1908.5, 1909.1	SI/TA
4. INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS.	-	X	ACI 318: 3.8.6, 8.1.3, 21.1.8	1909.1	SI/TA
5. VERIFYING USE OF REQUIRED DESIGN MIX.	-	X	ACI 318: Ch. 4, 5.2-5.4	1904.2, 1910.2, 1910.3	SI/TA
6. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	-	ASTM C172 ASTM C31 ACI 318: 5.6, 5.8	1910.10	SI/TA
7. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	-	ACI 318: 5.9, 5.10	1910.6, 1910.7, 1910.8	SI
8. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	-	X	ACI 318: 5.11-5.13	1910.9	SI
9. INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	-	X	ACI 318: 6.1.1	-	SI/SE/TA

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COLUMBIA STREET RETAIL INFILL
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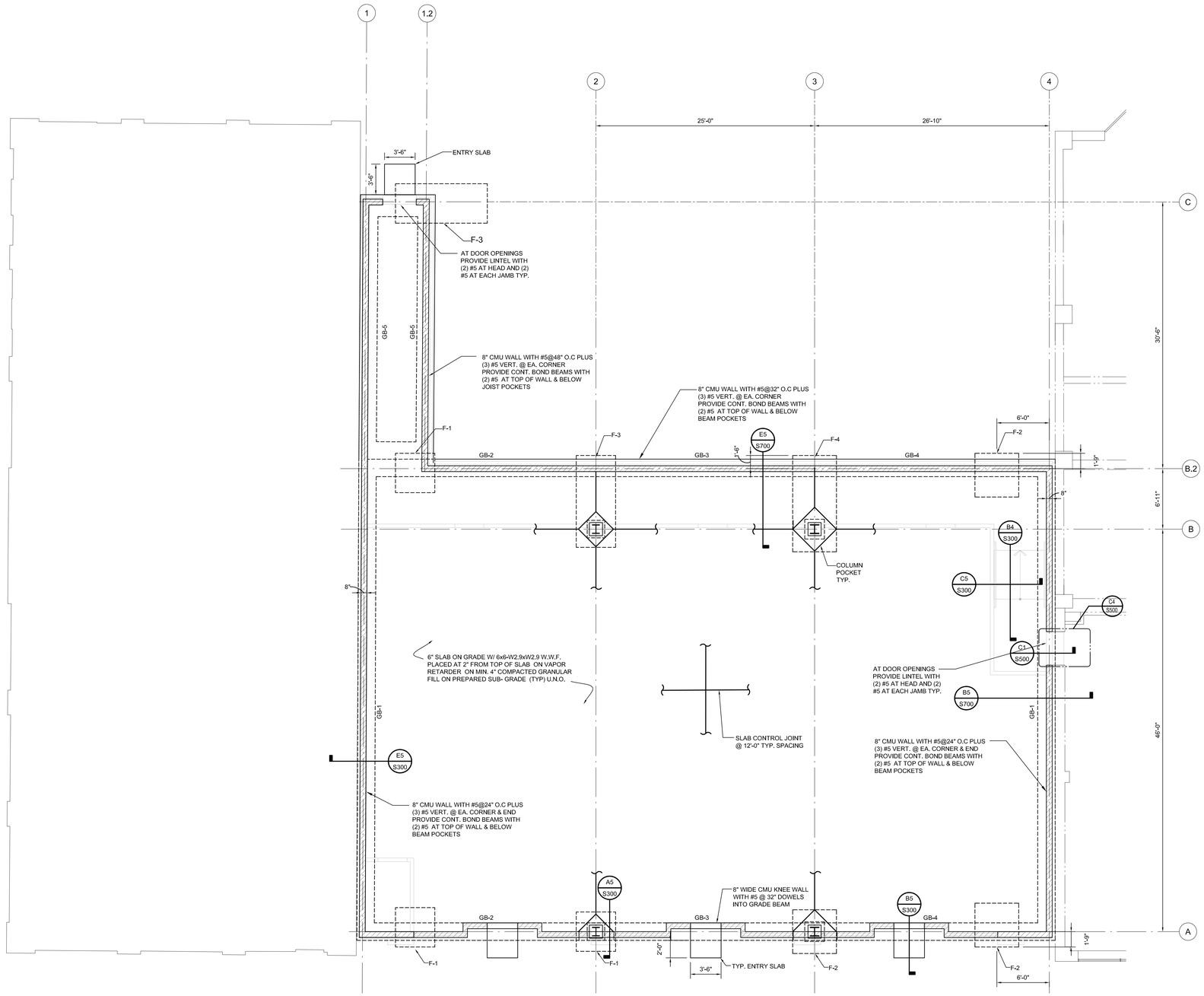
Date	10-11-2017
Project Number	2017041

Sheet Title
SPECIAL INSPECTIONS SCHEDULES

Sheet Number
S002



FOUNDATION PLAN

Scale: 3/16"=1'-0"

NOTES:

1. REFERENCE FINISHED FIRST FLOOR ELEVATION = 0'-0"
2. TOP OF FOOTING ELEVATION = -6"-0" WITH RESPECT TO REFERENCE FINISHED FLOOR ELEVATION U.N. THUS (0'-0")
3. TOP OF PIER ELEVATION = -1'-4"
   TOP OF GRADE BEAM ELEVATION = -0'-8" WITH RESPECT TO REFERENCE FINISHED FLOOR ELEVATION U.N. THUS (0'-0")
4. FOOTINGS ARE DESIGNED TO BEAR ON UNDISTURBED NATURAL SOILS WITH A MINIMUM ALLOWABLE BEARING CAPACITY OF 5000 PSF.

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PERMIT/BID	10-11-17
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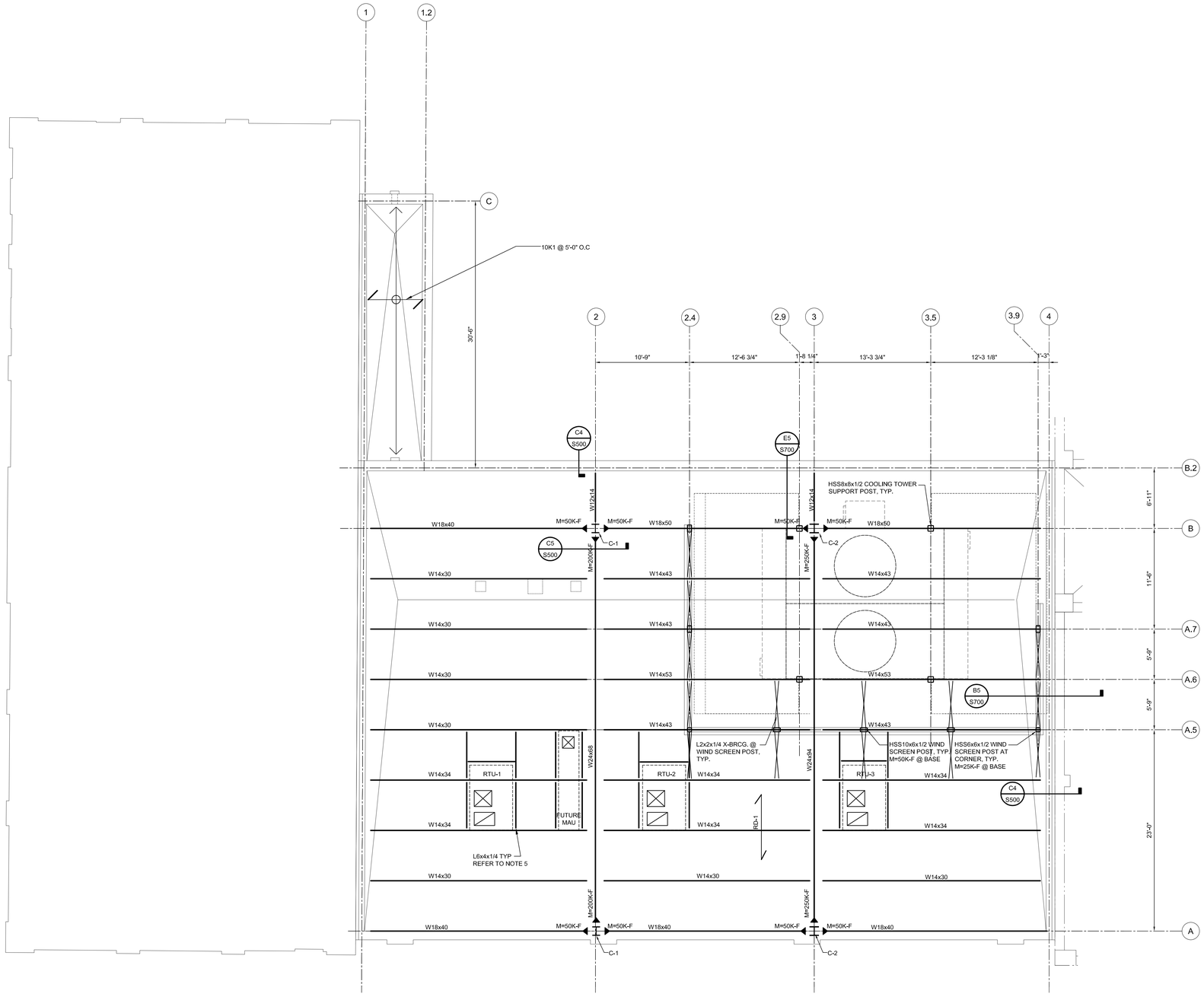
Project Number	2017041

Sheet Title
FOUNDATION PLAN

Sheet Number
S100



ROOF FRAMING PLAN

Scale: 3/16"=1'-0"

NOTES:

1. TOP OF STEEL ELEVATION = 15'-5 1/2" U.N. THUS (±0'-0")
2. RD-1 : 1 1/2"x20 GA MIN. WIDE RIB GALVANIZED STEEL ROOF DECK MIN. 3 SPAN CONTINUOUS, REFER TO DWG. XXX FOR ATTACHMENT TO SUPPORTS AND SIDE LAP FASTENING.
3. PROVIDE 12x12x3/8" CAP PLATE ON COL. FOR DECK BEARING.
4. PROVIDE L6x4X1/4 FRAMING @ PERIMETER OF ALL ROOFTOP UNITS AND OPENINGS. REFER TO ARCH. & MECH. DWGS. FOR SIZE AND LOCATION OF EQUIPMENT.
5. ▶— INDICATES FULL MOMENT CONNECTIONS.

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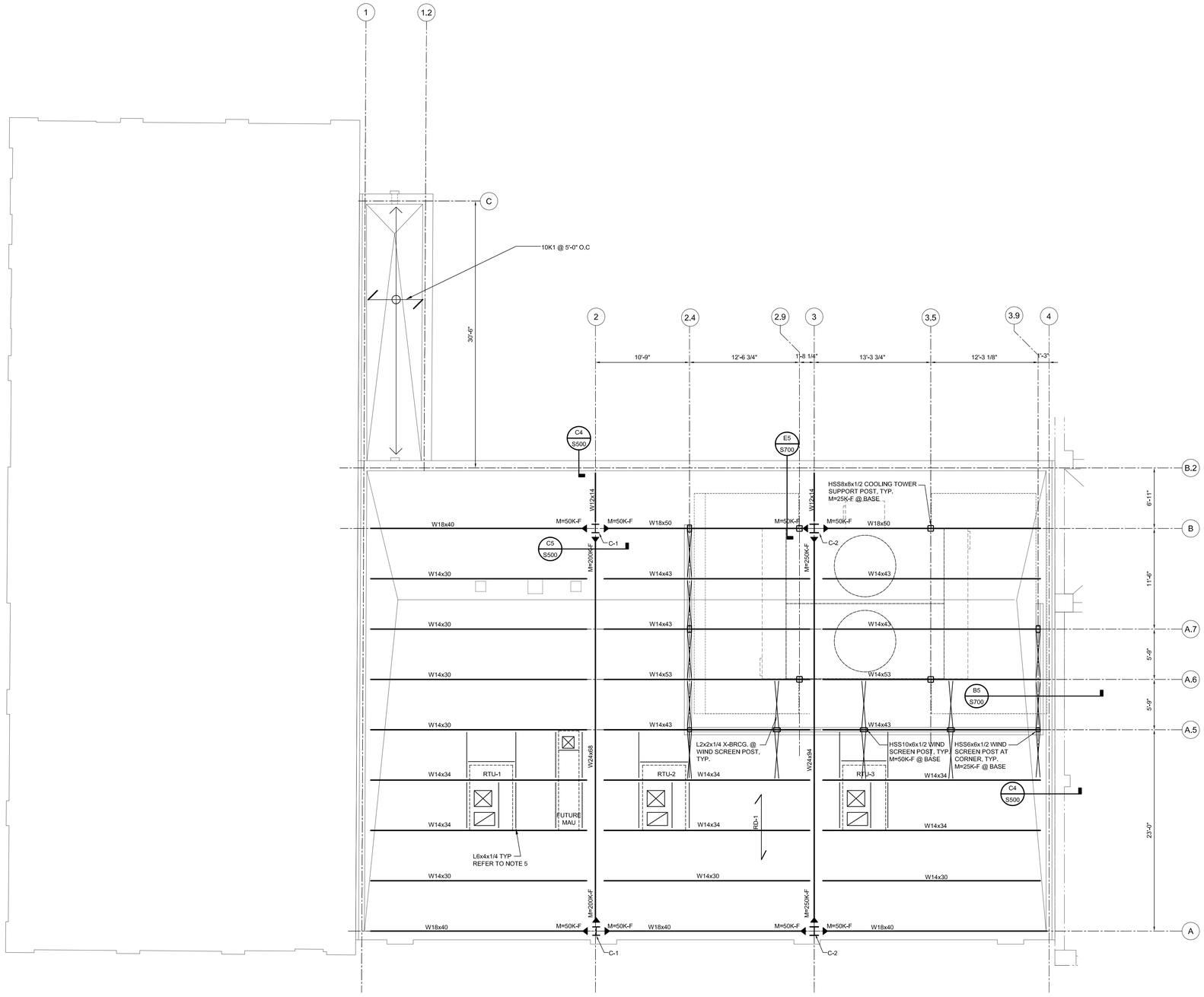
Revision	Date
PERMIT/BID	10-11-17

Date 10-11-2017

Project Number 2017041

Sheet Title
ROOF FRAMING PLAN

Sheet Number
S101



ROOF FRAMING PLAN

Scale: 3/16"=1'-0"

NOTES:

1. TOP OF STEEL ELEVATION = 15'-5 1/2" U.N. THUS (±0'-0")
2. RD-1 : 1 1/2"x20 GA MIN. WIDE RIB GALVANIZED STEEL ROOF DECK MIN. 3 SPAN CONTINUOUS, REFER TO DWG. XXX FOR ATTACHMENT TO SUPPORTS AND SIDE LAP FASTENING.
3. PROVIDE 12x12x3/8" CAP PLATE ON COL. FOR DECK BEARING.
4. PROVIDE L6x4X1/4 FRAMING @ PERIMETER OF ALL ROOFTOP UNITS AND OPENINGS. REFER TO ARCH. & MECH. DWGS. FOR SIZE AND LOCATION OF EQUIPMENT.
5. ▶— INDICATES FULL MOMENT CONNECTIONS.

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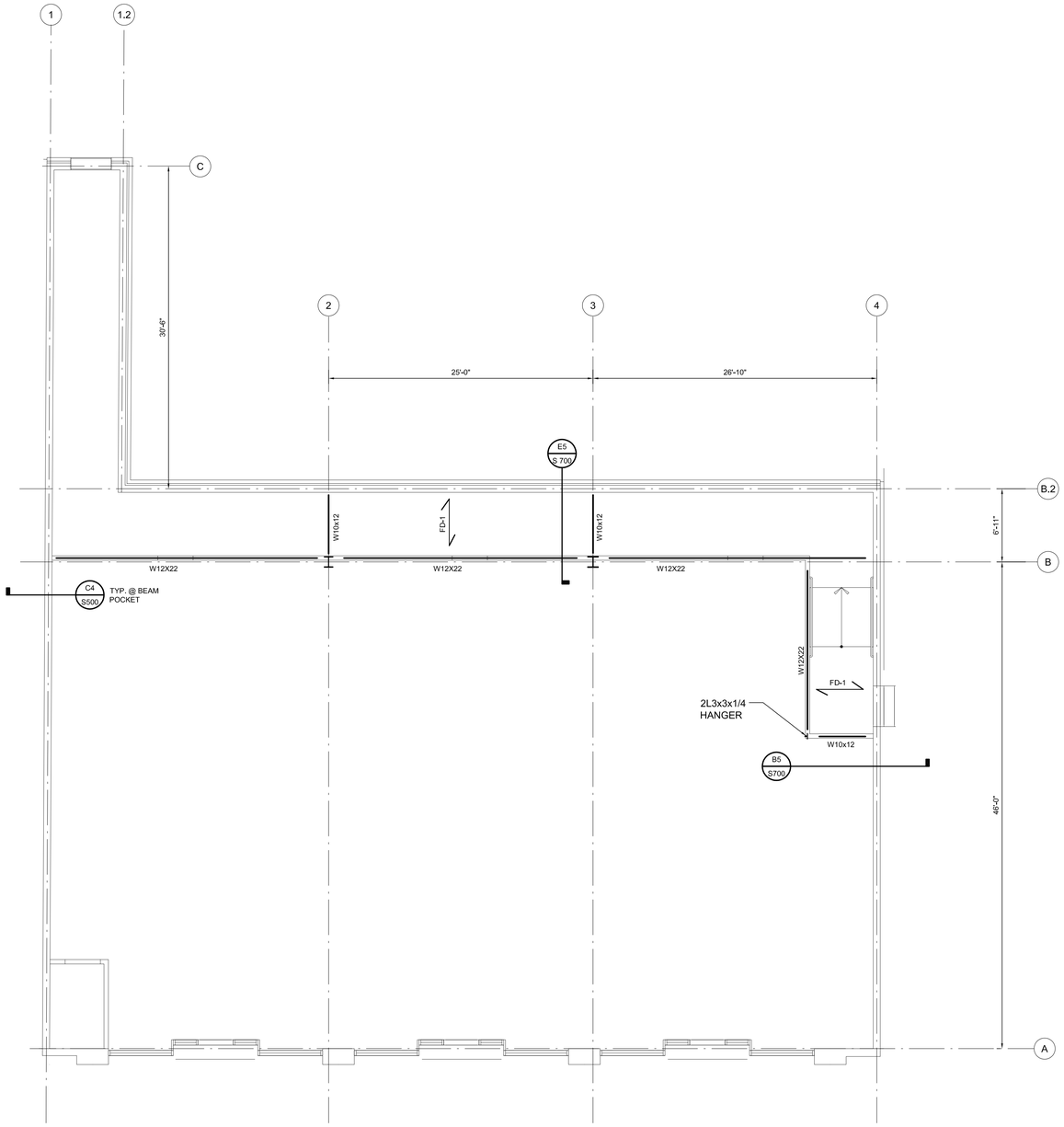
Sheet Title
ROOF FRAMING PLAN

Sheet Number
S101

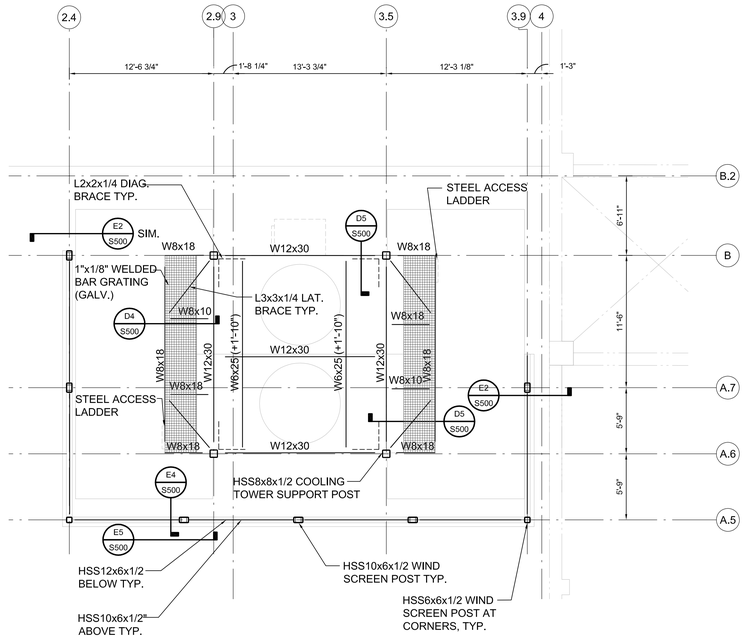


MEZZANNENE PLAN

Scale: 3/16"=1'-0"

NOTES:

1. REFERENCE FINISHED FLOOR ELEVATION = 9'-1"
2. TOP OF STEEL ELEVATION FOR MEZZANINE DICK= 8'-11" U.N. THUS (±0'-0")
3. FD-1: 1 ½"x20 GAUGE MIN. WIDE RIB GALVANIZED STEEL FLOOR DECK WITH ½" PLYWOOD SHEATHING.

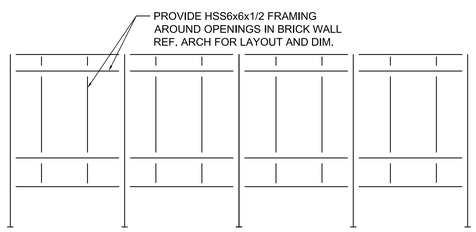


COOLING TOWER SUPPORT FRAMING PLAN

Scale: 3/16"=1'-0"

NOTES:

1. TOP OF STEEL ELEVATION @ H.P. = 19'-5 1/2" U.N. THUS (±0'-0")
2. ACCESS PLATFORM BAR GRATING: 1"x1/8" GALVANIZED.
3. VERIFY SIZE AND LOCATION OF COOLING TOWER AND SCREEN WALL WITH ARCH. AND MECH. DWGS.



SCREEN WALL SCHEMATIC DIAGRAM

N.T.S.

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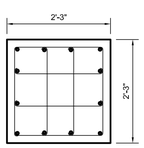
Sheet Title
MEZZANINE AND COOLING TOWER FRAMING PLAN

Sheet Number
S102

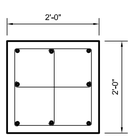
CONCRETE GRADE BEAM SCHEDULE

MARK	BEAM			REINFORCEMENT		BAR ARRANGEMENT	TIES			REMARKS
	SHAPE	WIDTH (W)	DEPTH (D)	BOTTOM BARS	TOP BARS (CONT)		LEFT	MIDDLE	RIGHT	
GB-1		2'-0"	4'-0"	(3) #10	(3) #5		#4 @ 6	#4 @ 12	#4 @ 6	(1) #5 @ EA. FACE
GB-2		2'-0"	4'-0"	(3) #5	(3) #10 - L (3) #5 - R	CANTI.	#4 @ 6	#4 @ 12	#5 @ 6	(1) #5 @ EA. FACE
GB-3		2'-0"	4'-0"	(3) #5	(3) #5		#4 @ 6	#4 @ 12	#4 @ 6	(1) #5 @ EA. FACE
GB-4		2'-0"	4'-0"	(3) #5	(3) #10 - R (3) #5 - L	CANTI.	#5 @ 6	#4 @ 12	#4 @ 6	(1) #5 @ EA. FACE
GB-5		2'-0"	3'-0"	(3) #8	(3) #4		#4 @ 6	#4 @ 12	#4 @ 6	



PIER TYPE B

Scale: 3/4"=1'-0"

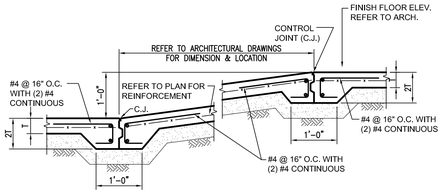


PIER TYPE A

Scale: 3/4"=1'-0"

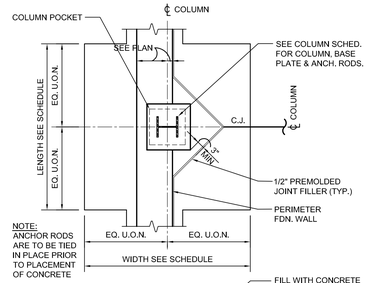
FOOTING & PIER SCHEDULE

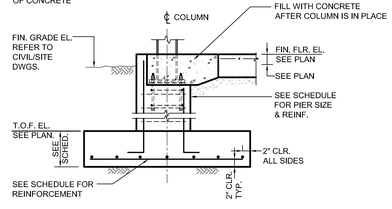
MARK		F-1	F-2	F-3	F-4	F-5
PIER	TYPE	A	B	A	B	-
	SIZE "NS" x "EW"	2'-0" x 2'-0"	2'-3" x 2'-3"	2'-0" x 2'-0"	2-3" x 2'-3"	-
	VERT. REINF.	(8) #6	(12) #6	(8) #6	(12) #6	-
	TIES	(4) @ 12"	(4) @ 12"	(4) @ 12"	(4) @ 12"	-
FOOTING	SIZE "NS" x "EW"	4'-6"x4'-6"	5'-0"x5'-0"	10'-6"x4'-6"	11'-0"x5'-0"	4'-6"x10'-6"
	THICKNESS	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"
	REINF. EA. WAY	#6@12" TOP. @ BOT.	#7@12" TOP. @ BOT.	#6@12" TOP. @ BOT.	#7@12" TOP. @ BOT.	#6@12" TOP. @ BOT.
REMARKS		PIERS PLACED UNDER COLS.	PIERS PLACED UNDER COLS.	PIERS PLACED UNDER COLS.	PIERS PLACED UNDER COLS.	



B4 S300 SECTION @ RAMP

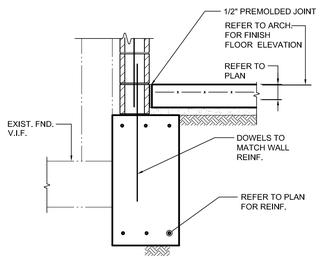
Scale: 3/4" = 1'-0"





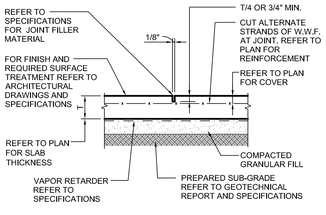
A5 S300 TYP. EXTERIOR COLUMN FTG.

Scale: 3/4" = 1'-0"



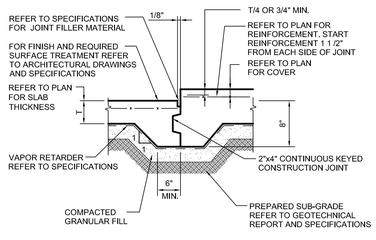
E5 S300 TYPICAL GRADE BEAM DETAIL

Scale: 3/4" = 1'-0"



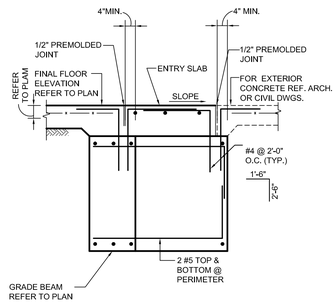
D5 S300 SLAB CONTROL JOINT

Scale: 3/4" = 1'-0"



C5 S300 SLAB CONSTRUCTION JOINT

Scale: 3/4" = 1'-0"



B5 S300 ENTRY SLAB DETAIL

Scale: 3/4" = 1'-0"

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Sheet Title

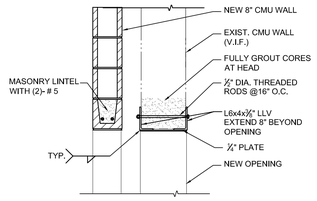
TYPICAL CONCRETE DETAILS

Sheet Number

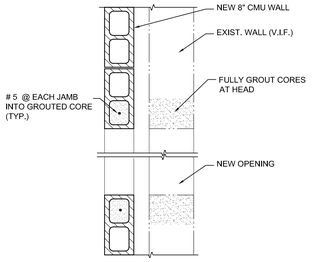
S300

STEEL COLUMN SCHEDULE

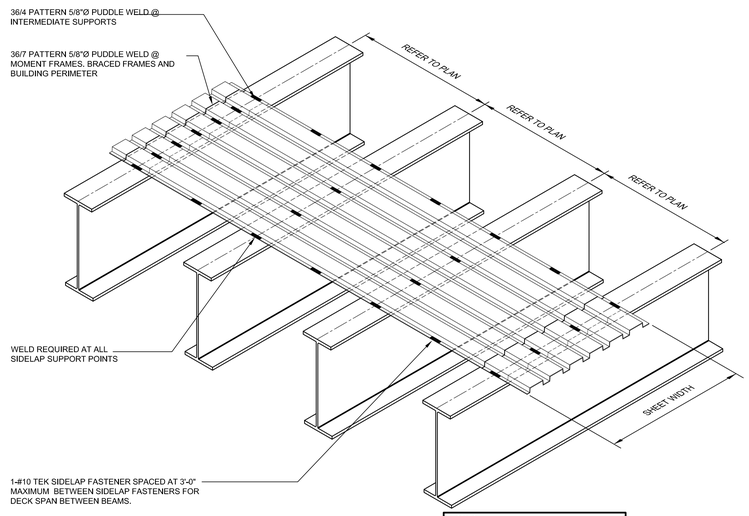
SUPPORTING \ MARK		C-1	C-2		
T.O.S. @ ROOF H.P. EL.					
REF. FIN. MEZZANINE FL. EL.		W12x53	W12x87		
REF. FIN. 1ST. FL. EL.					
BASE PLATE	TYPE	A	A		
	SIZE L" x W" x T"	18"x18"x1"	22"x22"x1 1/2"		
	ANCHOR BOLTS	(4) 1" DIA.	(4) 1 1/2" DIA.		
	ANCHOR BOLT LENGTH	2'-0"	3'-0"		
REMARKS					



C1 / S500 SECTION
Scale: 3/4"=1'-0"

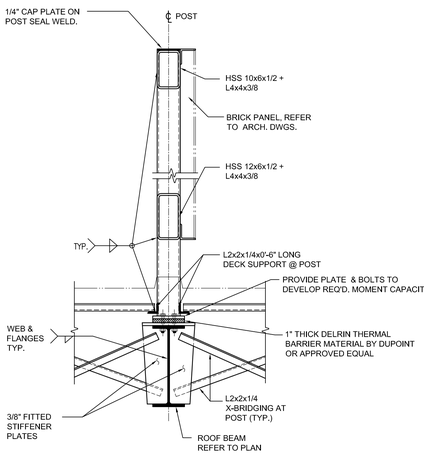


C4 / S500 ENLARGED DETIAL
Scale: 3/4"=1'-0"

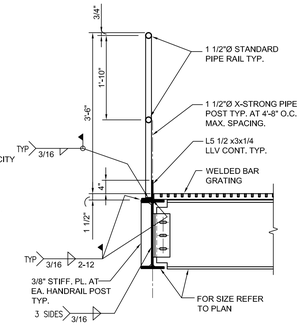


NOTES:
1. WELD THROUGH MULTIPLE SHEETS AT ALL END AND SIDE LAPS.
2. END LAPS SHALL OCCUR ONLY AT SUPPORT POINTS.

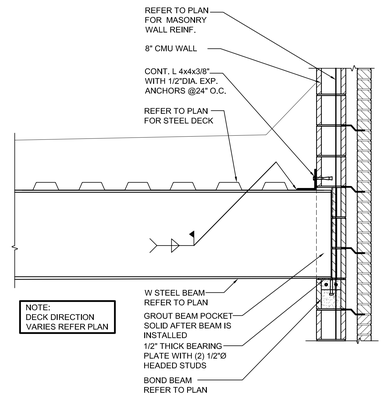
A2 / S500 TYPICAL ROOF DECK WELDING PATTERN DETAIL
Scale: Not to Scale



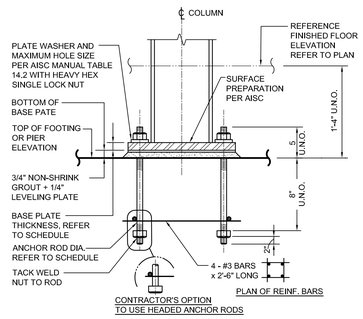
E4 / S500 SCREENWALL POST ON BEAM
Scale: 3/4" = 1'-0"



D4 / S500 TYP. PIPE HANDRAIL AT MECH. PLATFORM
Scale: 3/4" = 1'-0"
NOTE: ALL EXPOSED STEEL TO BE HOT DIPPED GALVANIZED.



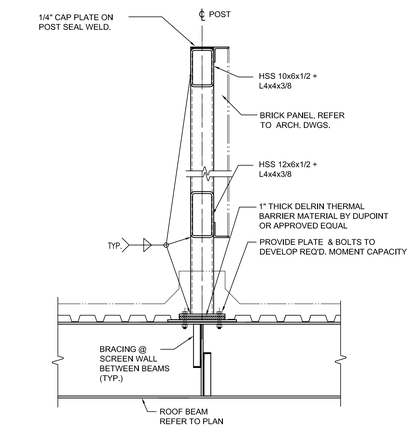
C4 / S500 SECTION
Scale: 3/4"=1'-0"



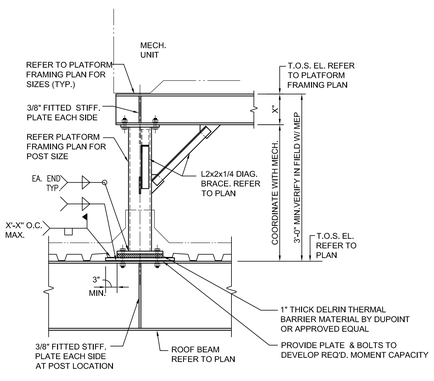
NOTE:
ANCHOR RODS MUST BE INSTALLED WITHIN AISC TOLERANCES BEFORE PLACEMENT OF CONCRETE

G3 / S500 ANCHOR ROD DETAIL WITH LEVELING PLATE - BASE PLATE TYPE "A"
SCALE: 3/4" = 1'-0"

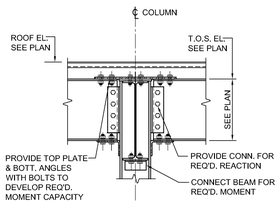
A4 / S500 BASE PLATE TYPE "A"
SCALE: 3/4" = 1'-0"



E5 / S500 SCREENWALL POST ON BEAM
Scale: 3/4" = 1'-0"

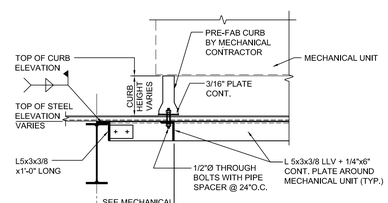


D5 / S500 SECTION @ MECHANICAL PLATFORM POST
Scale: 3/4" = 1'-0"



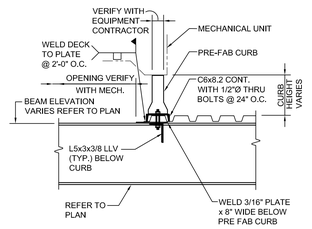
NOTE:
ADD STIFFENERS AND DOUBLER PLATES AS NECESSARY

C5 / S500 TYP. BEAM MOMENT CONN. TO COLUMN
No Scale



NOTE:
COORDINATE SIZE AND LOCATION OF OPENINGS WITH MECHANICAL DRAWINGS

B5 / S500 TYPICAL MECHANICAL UNIT PRE-FAB CURB @ BEAM
Scale: 3/4" = 1'-0"



A5 / S500 TYPICAL MECHANICAL UNIT PRE-FAB CURB @ BEAM
Scale: 3/4" = 1'-0"

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Seal

PERMIT/BID	10-11-17
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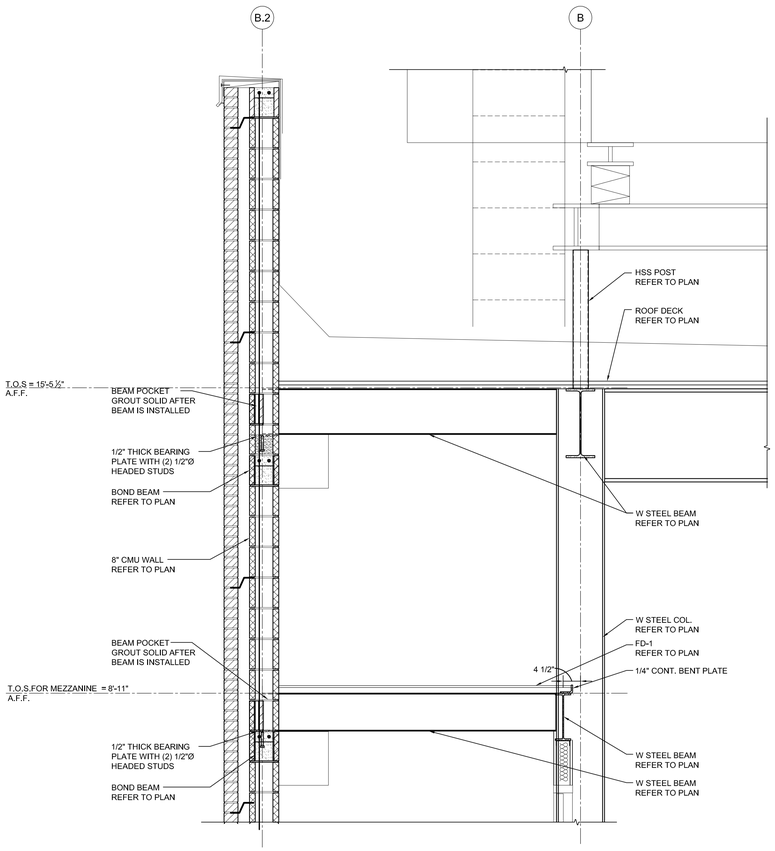
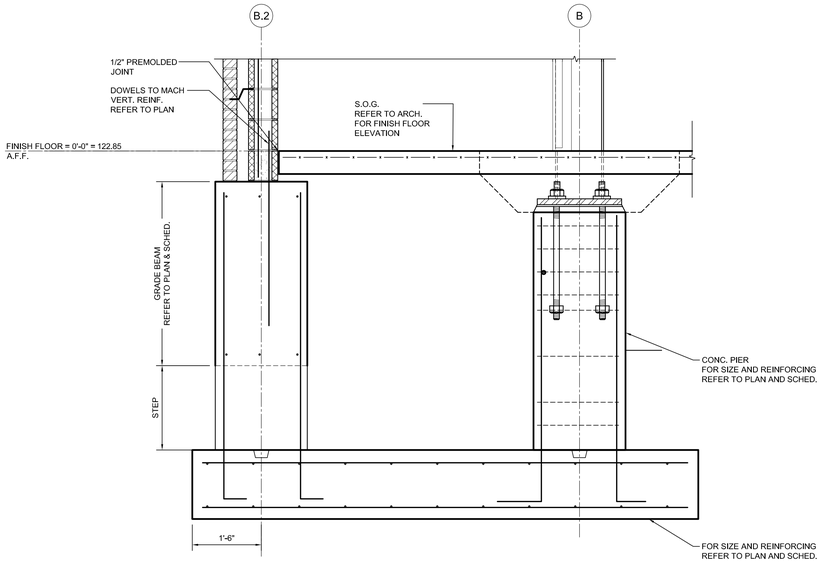
Sheet Title
TYPICAL STEEL DETAILS

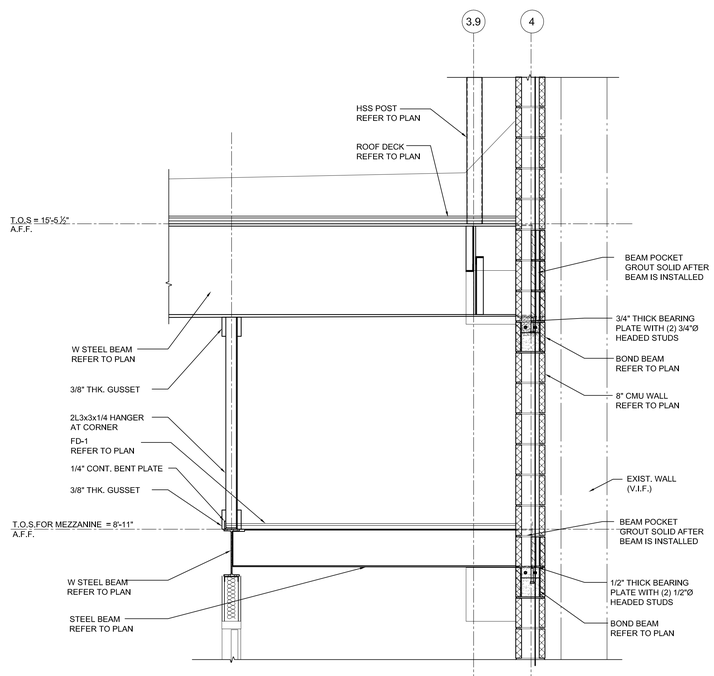
Sheet Number
A500

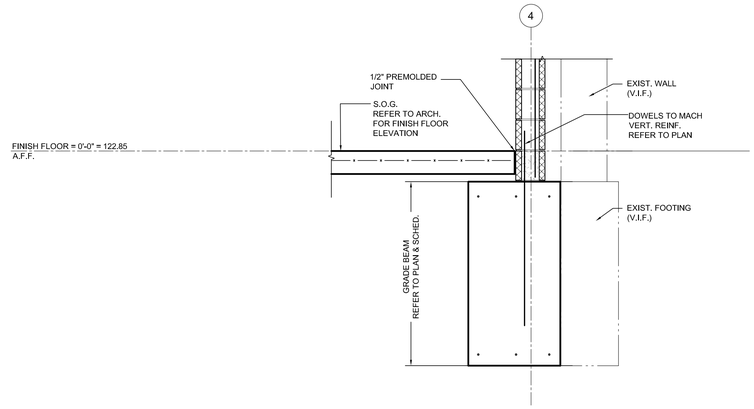




E5 / S700 NORTH WALL SECTION

Scale: 3/4" = 1'-0"





B5 / S700 EAST WALL SECTION

Scale: 3/4" = 1'-0"

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Sheet Title

BUILDING SECTIONS

Sheet Number

S700

MECHANICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
A	COMPRESSED AIR
A(___#)	COMPRESSED AIR (SPECIFIC PSIG)
AAV	AUTOMATIC AIR VENT
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
AD	ACCESS DOOR
AD	AREA DRAIN
AE	AIR EXTRACTOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
AMP	AMPERE
APD	AIR PRESSURE DROP
AR	ARGON
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS
ASR	AUTOMATIC SPRINKLER RISER
AUX	AUXILIARY
AV	ACID VENT
AVTR	ACID VENT THROUGH ROOF
AW	ACID WASTE
BAS	BUILDING AUTOMATION SYSTEM
BCU	BLOWER COIL UNIT
BDD	BACKDRAFT DAMPER
BFF	BELOW FINISHED FLOOR
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BWV	BACKWATER VALVE
C	COMMON
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CB	CATCH BASIN
CC	COOLING COIL
CD	COLD DECK
CD	CONDENSATE DRAIN
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	COOLING
CNDS	CONDENSATE
CNDS (___#)	CONDENSATE (SPECIFIC PSIG)
CO	CLEAN OUT
CO2	CARBON DIOXIDE
CONT	CONTINUATION OR CONTINUED
CONTR	CONTRACTOR
CONV	CONVECTOR
COP	COEFFICIENT OF PERFORMACE
CP	CIRCULATING PUMP
CRU	CONDENSATE RETURN UNIT
CSS	CLINICAL SERVICE SINK
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CW	DOMESTIC COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
D&T	DRIP AND TRAP
DA	DISCHARGE AIR
DAT	DISCHARGE AIR TEMPERATURE
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
DFU	DRAINAGE FIXTURE UNITS
DIA	DIAMETER
DMPR	DAMPER
D/N	DAY/NIGHT
DN	DOWN
DNZ	DOWNSPOUT NOZZLE
DS	DUCT SILENCER
DT	DRAIN TILE
DTC	DRAIN TILE CONNECTION
DWH	DOMESTIC WATER HEATER
DWG	DRAWING
(E)	EXISTING
E	EXHAUST GRILLE OR REGISTER
EA	EACH
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	EXPANSION COMPENSATOR
ECUH	ELECTRIC CABINET UNIT HEATER
EDB	ENTERING DRY BULB
EER	ENERGY EFFICIENCY RATIO
EES	EMERGENCY EYE WASH / SHOWER
EEW	EMERGENCY EYE WASH
EF	EXHAUST FAN
EFF	EFFICIENCY
EHC	ELECTRIC HEATING COIL
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
ERL	ENERGY RECOVERY LOOP
ERLR	ENERGY RECOVERY LOOP RETURN
ERLS	ENERGY RECOVERY LOOP SUPPLY
ERU	ENERGY RECOVERY UNIT
ESH	EMERGENCY SHOWER
ESP	EXTERNAL STATIC PRESSURE
EUH	ELECTRIC UNIT HEATER
EWB	ENTERING WET BULB
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
F	FIRE PROTECTION
°F	DEGREES FAHRENHEIT
F&B	FACE AND BYPASS
F&T	FLOAT AND THERMOSTATIC
FA	FACE AREA
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FFD	FUNNEL FLOOR DRAIN
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
FLA	FULL LOAD AMPS
FLR	FLOOR
FM	FLOW METER
FMS	FLOW MEASURING STATION
FPM	FEET PER MINUTE
FP	FIRE PUMP
FPTU	FAN POWERED (AIR) TERMINAL UNIT
FT	FEET
FTR	FINNED TUBE RADIATION
FV	FACE VELOCITY
G	NATURAL GAS
GA	GAUGE
GAL	GALLON
GRH	GRAVITY RELIEF HOOD
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H	HYDROGEN
HB	HOSE BIBB
HC	HEATING COIL
HD	HOT DECK
HEPA	HIGH EFFICIENCY PARTICULATE ARRESTANCE
HL	HIGH LIMIT
HOA	HAND/OFF/AUTO
HP	HEAT PUMP
HP	HORSEPOWER
HPCW	HIGH PRESSURE DOMESTIC COLD WATER
HPHW	HIGH PRESSURE DOMESTIC HOT WATER
HPHWR	HIGH PRESSURE DOMESTIC HOT WATER RETURN
HPL	HEAT PUMP LOOP
HPLR	HEAT PUMP LOOP RETURN
HPLS	HEAT PUMP LOOP SUPPLY
HR	HOUR
HTG	HEATING
HV	HEATING VENTILATING
HVAC	HEATING, VENTILATING, AIR CONDITIONING
HWH	HOT WATER HEATING
HWHR	HOT WATER HEATING RETURN
HWHS	HOT WATER HEATING SUPPLY
HW	DOMESTIC HOT WATER
HW(___)	DOMESTIC HOT WATER (SPECIFIC TEMP °F)
HWR	DOMESTIC HOT WATER RETURN
HX	HEAT EXCHANGER
HZ	HERTZ
IAQ	INDOOR AIR QUALITY
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IH	INTAKE HOOD
IN	INCHES
IR	INFRARED HEATER
IW	INDIRECT WASTE
JC	JANITOR'S CLOSET
JP	JOCKEY PUMP
KW	KILOWATT
KWH	KILOWATT-HOUR
LAT	LEAVING AIR TEMPERATURE
LAB	LABORATORY
LAV	LAVATORY
LBS	POUNDS
LDB	LEAVING DRY BULB
LL	LOW LIMIT
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MA	MIXED AIR
MAT	MIXED AIR TEMPERATURE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MCA	MEDICAL COMPRESSED AIR
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MMBH	MILLION BRITISH THERMAL UNITS PER HOUR
M/S	MOTOR STARTER
MTD	MOUNTED
MTR	MOTOR
MV	MANUAL AIR VENT
MVAC	MEDICAL VACUUM
N	NITROGEN
N2O	NITROUS OXIDE
NC	NOISE CRITERIA
NC	NORMALLY CLOSED
NCTC	NORMALLY CLOSED TIMED CLOSED
NCTO	NORMALLY CLOSED TIMED OPEN
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NOTC	NORMALLY OPEN TIMED CLOSED
NOTO	NORMALLY OPEN TIMED OPEN
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOM	NOMINAL
NPCW	NON POTABLE COLD WATER
O	OXYGEN
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER/CENTER TO CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OL	OVERLOAD
ORC	OVERFLOW RAIN CONDUCTOR
ORD	OVERFLOW ROOF DRAIN
OS&Y	OUTSIDE SCREW AND YOKE
OV	OUTLET VELOCITY
OWS	OPERATOR WORKSTATION
PACU	PACKAGED AIR CONDITIONING UNIT
PBD	PARALLEL BLADE DAMPER
PC	PUMPED CONDENSATE
PCW	PROCESS COOLING WATER
PCWR	PROCESS COOLING WATER RETURN
PCWS	PROCESS COOLING WATER SUPPLY
PD	PRESSURE DROP (FEET OF WATER)
PH	PERIMETER HEAT
PHR	PERIMETER HEAT RETURN
PHS	PERIMETER HEAT SUPPLY
PNL	PANEL
PPM	PARTS PER MILLION
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSAN	PUMPED SANITARY
PST	PUMPED STORM
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
PSIG	POUNDS PER SQUARE INCH - GAUGE
PW	PURIFIED WATER
PWR	PURIFIED WATER RETURN
PWS	PURIFIED WATER SUPPLY
(R)	RELOCATED
R	RETURN GRILLE OR REGISTER
RA	RETURN AIR
RAT	RETURN AIR TEMPERATURE
RC	RAIN CONDUCTOR
RCP	RADIANT CEILING PANEL
RD	ROOF DRAIN
REQD	REQUIRED
REF	ROOF EXHAUST FAN
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RL	REFRIGERANT LIQUID
RLFA	RELIEF AIR
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
RTU	ROOFTOP UNIT
S	SUPPLY AIR DIFFUSER OR GRILLE
SA	SOUND ATTENUATOR
SA	SUPPLY AIR
SAN	SANITARY WASTE
SAT	SUPPLY AIR TEMPERATURE
SECT	SECTION
SF	SUPPLY FAN
SH	SHOWER
SK	SINK
SMR	SNOW MELT RETURN
SMS	SNOW MELT SUPPLY
SP	STATIC PRESSURE
SPEC	SPECIFICATION
SPKLR	SPRINKLER
SQFT	SQUARE FOOT/SQUARE FEET
S/S	START/STOP
SS	SERVICE SINK
ST	STORM
STD	STANDARD
STK	STACK
STM	STEAM
STM(___#)	STEAM (SPECIFIC PSIG)
S/W	SUMMER/WINTER
SW	SWITCH
T	TRANSFER GRILLE
TC	TEMPERATURE CONTROL
TC	TEMPERING COIL
TCP	TEMPERATURE CONTROL PANEL
TD	TRENCH DRAIN
TEMP	TEMPERATURE
TEMP	TEMPORARY
TH	TERMINAL HEATING
THA	TOTAL HEAT ABSORBED
THR	TERMINAL HEATING RETURN
THR	TOTAL HEAT REJECTED
THS	TERMINAL HEATING SUPPLY
TSP	TOTAL STATIC PRESSURE
TU	(AIR) TERMINAL UNIT
TV	TURNING VANES
TYP	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITER'S LABORATORY
UON	UNLESS OTHERWISE NOTED
UR	URINAL
UV	UNIT VENTILATOR
V	VALVE
V	VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VB	VACUUM BREAKER
VD	VOLUME DAMPER (MANUALLY ADJUSTABLE)
VOL	VOLUME
VFC	VARIABLE FREQUENCY CONTROLLER
VTR	VENT THROUGH ROOF
VTU	VENTURI TERMINAL UNIT
VUV	VERTICAL UNIT VENTILATOR
W	WASTE
W&V	WASTE AND VENT
WB	WET BULB
WC	WATER CLOSET
WC	WATER COLUMN
WG	WATER GAUGE
WH	WALL HYDRANT
WPD	WATER PRESSURE DROP
WT	WEIGHT
XFMR	TRANSFORMER

TEMPERATURE CONTROL - PARTIAL SYMBOLS LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
CO2	CARBON DIOXIDE SENSOR	OS	OCCUPANCY SENSOR
CO	CARBON MONOXIDE SENSOR	PT	PRESSURE TRANSMITTER
DPT	DIFFERENTIAL PRESSURE TRANSMITTER	SP	STATIC PRESSURE SENSOR OR PROBE
FM	FLOW METER		VALVE - 2 WAY CONTROL VALVE
	GUARD FOR STAT OR SENSOR		VALVE - 3 WAY CONTROL VALVE
H	HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS)	T	THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)

NOTE: LIST OF ADDITIONAL SYMBOLS & ABBREVIATIONS ASSOCIATED WITH TEMPERATURE CONTROLS ARE IDENTIFIED ON TC DRAWINGS.

MECHANICAL SYMBOL LIST

PIPING SYMBOLS

SYMBOL	DESCRIPTION
AV	AIR VENT - AUTOMATIC
MV	AIR VENT - MANUAL
BFP	BACKFLOW PREVENTER
	CATCH BASIN
	CIRCULATING PUMP
CO	CLEAN OUT - IN FLOOR
CO	CLEAN OUT - FLANGE
	DIRECTION OF FLOW
	DIRECTION OF PITCH - DOWN
	FINNED TUBE RADIATION
	FIRE PROTECTION - SIAMESE CONNECTION - FREE STANDING
	FIRE PROTECTION - SIAMESE CONNECTION - WALL MOUNTED
	FIRE PROTECTION - SPRINKLER HEAD, CONCEALED
	FIRE PROTECTION - SPRINKLER HEAD, PENDANT
	FIRE PROTECTION - SPRINKLER HEAD, UPRIGHT
	FIRE PROTECTION - SPRINKLER HEAD, SIDEWALL
	FLOOR DRAIN
	FLOOR DRAIN - ELEVATION
	FLOOR DRAIN - FUNNEL
	FLOOR DRAIN - FUNNEL, ELEVATION
	FLOW MEASURING DEVICE (FOR TEST AND BALANCING)
FS	FLOW SWITCH
FM	FLOW METER
HB	HOSE BIBB
MH	MANHOLE
	OPEN SITE DRAIN
	PIPE - ANCHOR
	PIPE - CAP OR PLUG
	PIPE - ELBOW DOWN
	PIPE - ELBOW UP
	PIPE - EXPANSION JOINT OR COMPENSATOR
	PIPE - FLANGE
	PIPE - HOSE AND BRAID FLEXIBLE CONNECTION
	PIPE - RUBBER FLEXIBLE CONNECTION
	PIPE - GUIDE
	PIPE - TEE DOWN
	PIPE - TEE UP
	PIPE - UNION
P/T	PRESSURE AND TEMPERATURE TEST PLUG
	PRESSURE GAUGE AND COCK
	REDUCER - CONCENTRIC
	REDUCER - ECCENTRIC
	ROOF/OVERFLOW DRAIN
	STEAM TRAP - FLOAT AND THERMOSTATIC
	STEAM TRAP - BUCKET
	STRAINER
	STRAINER WITH VALVE AND BLOW-OFF
	THERMOMETER
	TRAP
	VALVE - ANGLE
	VALVE - BALL
	VALVE - BUTTERFLY
0.5	VALVE - BALANCE (i.e. BALANCE VALVE TO 0.5 GPM)
0.5	VALVE - COMBINATION BALANCE & FLOW MEASURING (i.e. BALANCE VALVE TO 0.5 GPM)
	VALVE - CHECK
	VALVE - SPRING CHECK
	VALVE - GAS (MANUAL)
	VALVE - GLOBE
	VALVE - ISOLATION
	VALVE - NEEDLE
	VALVE - OS&Y
	VALVE - PLUG
	VALVE - PRESSURE REGULATING
	VALVE - PRESSURE REDUCING
	VALVE - PRESSURE RELIEF
	VALVE - PRESSURE & TEMPERATURE RELIEF
VTR	VENT THROUGH ROOF
WH	WALL HYDRANT

DOUBLE LINE PIPING SYMBOLS

SYMBOL	DESCRIPTION
	FLANGE
	FLEX CONNECTION
	STRAINER - BASKET
	STRAINER - Y TYPE
	VALVE - 2 WAY CONTROL
	VALVE - 3 WAY CONTROL
	VALVE - BUTTERFLY
	VALVE - CHECK
	VALVE - DETECTOR CHECK
	VALVE - OS&Y HORIZONTAL STEM
	VALVE - OS&Y VERTICAL STEM

DUCTWORK SYMBOLS

SYMBOL	DESCRIPTION
TU-101	AIR TERMINAL UNIT
TU-101	AIR TERMINAL UNIT WITH HEATING COIL
VTU-101	VENTURI AIR TERMINAL UNIT
VTU-101	VENTURI AIR TERMINAL UNIT WITH HEATING COIL
	DAMPER - HORIZONTAL FIRE (EXISTING, NEW)
	DAMPER - HORIZONTAL FIRE / SMOKE (EXISTING, NEW)
	DAMPER - SMOKE (EXISTING, NEW)
	DAMPER - VERTICAL FIRE (EXISTING, NEW)
	DAMPER - VERTICAL FIRE / SMOKE (EXISTING, NEW)
BDD	DAMPER - BACK DRAFT
M	DAMPER - MOTORIZED
	DAMPER - VOLUME (MANUALLY ADJUSTABLE)
	DIFFUSER - BLANK OFF
	DIFFUSER - LINEAR SLOT
	DIFFUSER - SQUARE OR RECTANGULAR
	DUCT CROSS SECTION - SUPPLY
	DUCT CROSS SECTION - RETURN
	DUCT CROSS SECTION - EXHAUST
	DUCT - FLEXIBLE CONNECTION
	DUCT - FLEXIBLE DUCT
	DUCT TAKE-OFF - ROUND CONICAL
	DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP
	ELBOW - RECTANGULAR WITH TURNING VANES
	ELBOW - RECTANGULAR/ ROUND SMOOTH RADIUS
	ELBOW DOWN - RECTANGULAR
	ELBOW DOWN - ROUND
	ELBOW UP - RECTANGULAR
	ELBOW UP - ROUND
	FAN - AXIAL
	FAN - CENTRIFUGAL (ELEVATION)
	HEATING COIL
D	INCLINED DROP IN DIRECTION OF AIRFLOW
R	INCLINED RISE IN DIRECTION OF AIRFLOW
	INTAKE OR RELIEF HOOD
	REGISTER - RETURN OR EXHAUST
	REGISTER - RETURN WITH BOOT
	REGISTER - TRANSFER GRILLE
	ROOF EXHAUST FAN
	TRANSITION - CONCENTRIC
	TRANSITION - ECCENTRIC
	UNIT HEATER - HORIZONTAL THROW
	UNIT HEATER - VERTICAL THROW

DOUBLE LINE DUCTWORK SYMBOLS

SYMBOL	DESCRIPTION
	DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP
	DUCT TAKE-OFF - ROUND CONICAL
	ELBOW - RECTANGULAR WITH TURNING VANES
	ELBOW - RECTANGULAR SHORT RADIUS WITH SPLITTER VANES
	ELBOW - ROUND
	ELBOW - RECTANGULAR SMOOTH RADIUS
	ELBOW DOWN - RECTANGULAR
	ELBOW DOWN - ROUND
	ELBOW UP - RECTANGULAR
	ELBOW UP - ROUND
	HEATING COIL
D	INCLINED DROP IN DIRECTION OF AIRFLOW
R	INCLINED RISE IN DIRECTION OF AIRFLOW
	TRANSITION - CONCENTRIC
	TRANSITION - ECCENTRIC

MECHANICAL DRAWING INDEX

STANDARD METHODS OF NOTATION

S-1 / 10ø / 350-4 — SUPPLY DIFFUSER WITH SCHEDULE TAG "1", 10" DIAMETER NECK SIZE, 350 CFM TYPICAL FOR 4

R-1 / 22x22 / 640-2 — RETURN REGISTER WITH SCHEDULE TAG "1", 22"x 22" NECK SIZE, 640 CFM TYPICAL FOR 2. EXHAUST REGISTER E DESIGNATION SIMILAR.

TU-101 — AIR TERMINAL UNIT WITH HEATING COIL NO. 101 WITH SERVICE CLEARANCE SHOWN

VTU-101 — VENTURI AIR TERMINAL WITH HEATING COIL NO. 101 WITH SERVICE CLEARANCE SHOWN

8 — PIPE DIAMETER NOTATION, ALL SIZES IN INCHES

8ø / 22x10 / 18x14ø — DUCT SIZE NOTATION, ALL SIZES IN INCHES; OVAL DUCT; RECTANGULAR DUCT

1 — CONSTRUCTION NOTE NUMBER

EF 1 — EQUIPMENT DESIGNATION, (i.e. EXHAUST FAN NUMBER 1)

HW-1 — PIPING RISER DESIGNATION (i.e. HOT WATER RISER NUMBER 1)

NEW SYSTEM COMPONENT

EXISTING SYSTEM COMPONENT TO REMAIN

POINT OF NEW CONNECTION SYMBOL

1 / M5.1 — SECTION OR PLAN NUMBER; SHEET WHERE SECTION IS DRAWN

AREA OF ENLARGEMENT

PLAN NUMBER

1 / M5.1 — SHEET WHERE ENLARGED PLAN IS DRAWN

1 / M5.1 — SECTION OR PLAN NUMBER

SECTION OR ENLARGED PLAN
SCALE: 1/8" - 1' - 0"

SHEET WHERE SECTION IS CUT OR ENLARGED PLAN IS REFERENCED

SHEET M1.0 / SHEET M1.1 — MATCH LINE

HEAVY LINE WEIGHT INDICATES NEW WORK

LIGHT LINE WEIGHT INDICATES EXISTING EQUIPMENT OR REFERENCED INFORMATION

GRAY LINE INDICATES BACKGROUND INFORMATION

DASHED LINES INDICATE PIPING ROUTED BELOW SLAB OR GRADE

HATCH MARKS INDICATE EQUIPMENT OR MATERIALS TO BE DISCONNECTED AND REMOVED.

NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

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Seal

PERMIT / BID	10-11-17
PROGRESS REVIEW	09-20-17
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Revision	Date

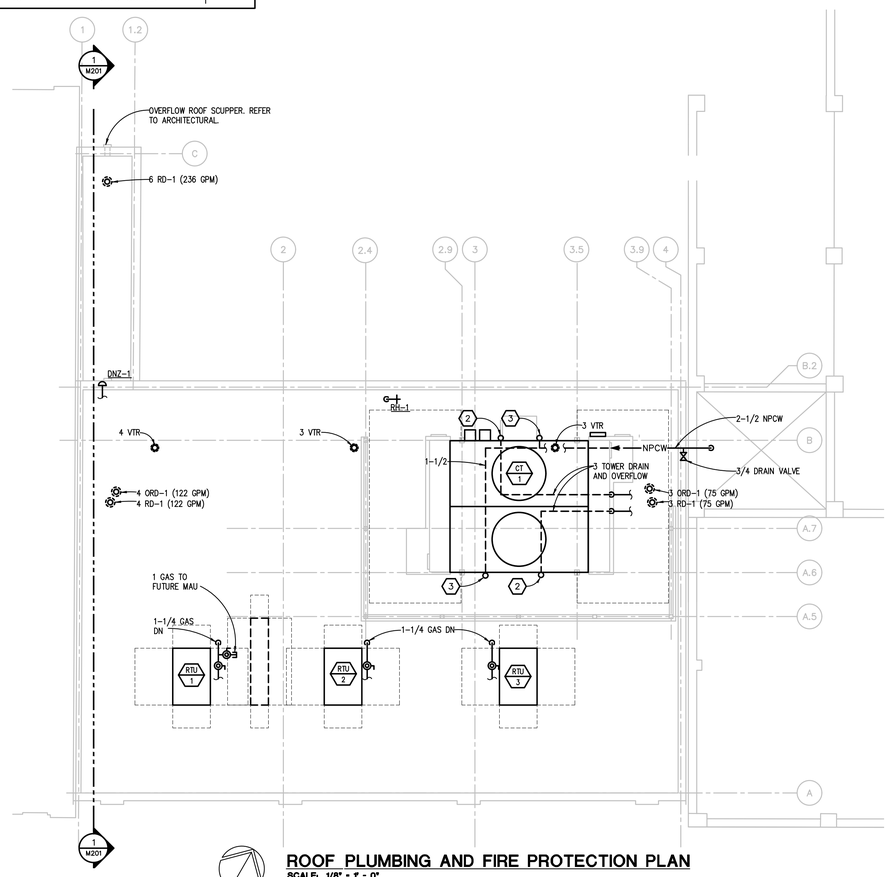
Date: 10-11-17

Project Number: 2017041

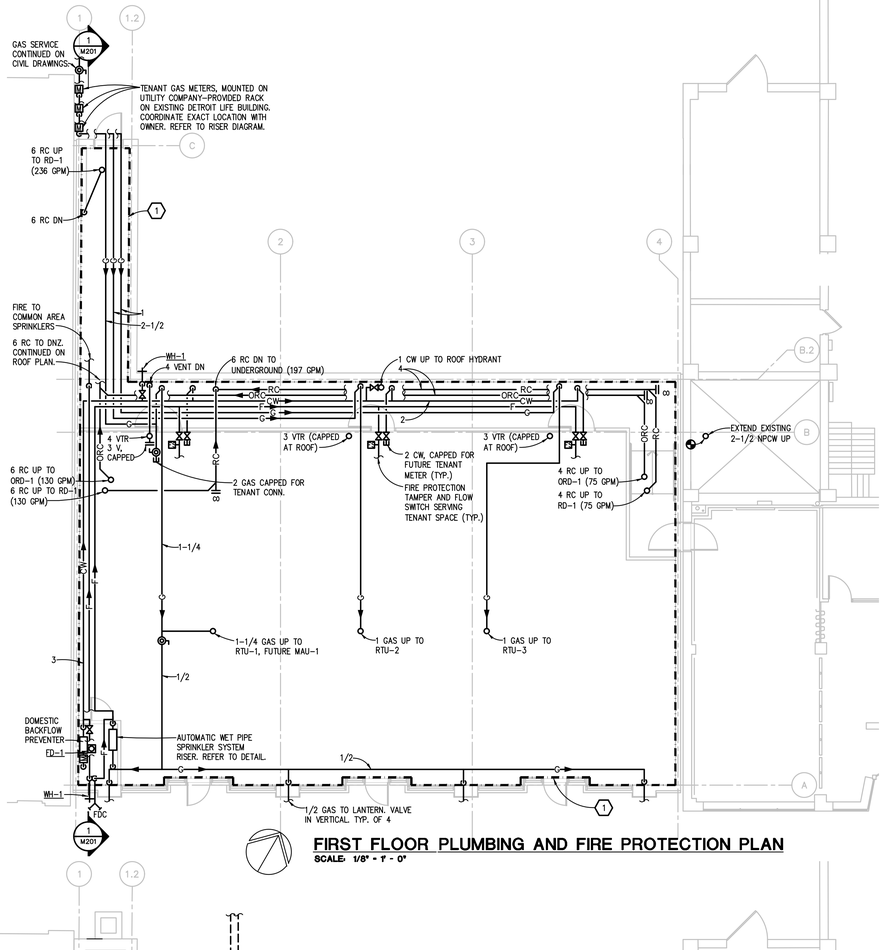
Sheet Title: MECHANICAL STANDARDS AND DRAWING INDEX

Sheet Number: M001

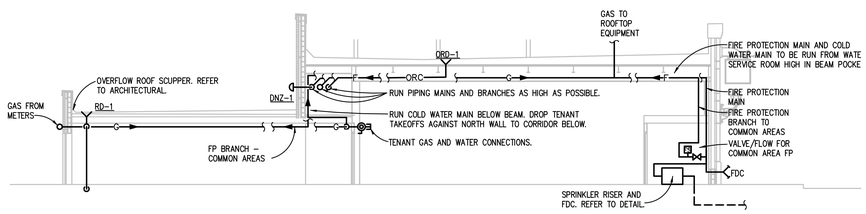
THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



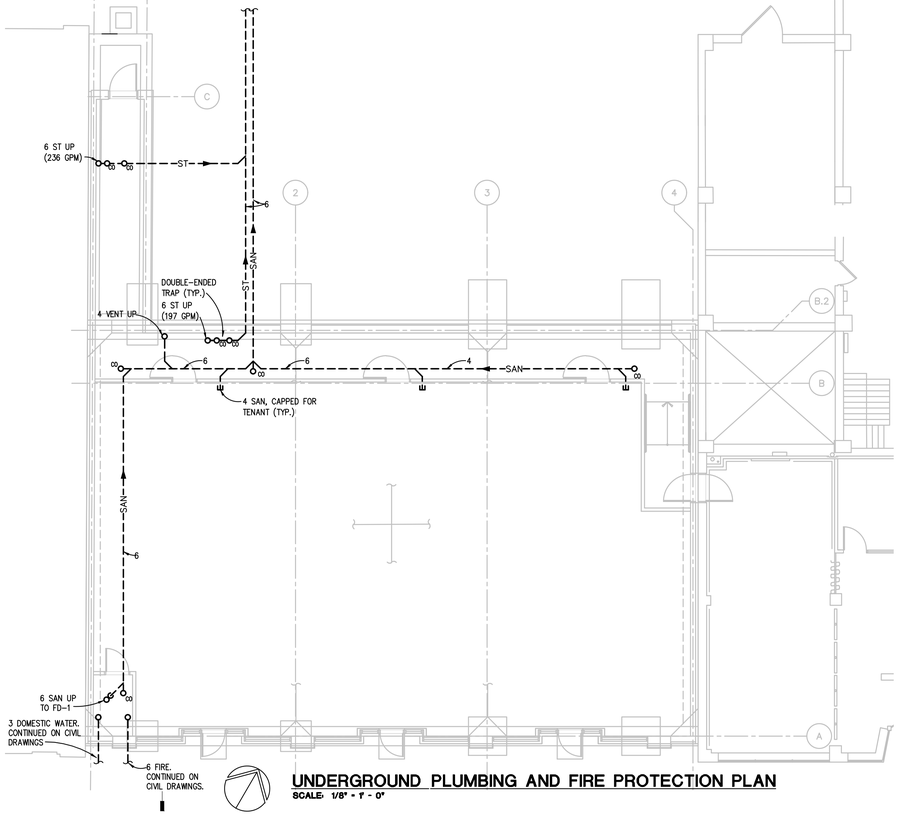
ROOF PLUMBING AND FIRE PROTECTION PLAN
SCALE: 1/8" = 1' - 0"



FIRST FLOOR PLUMBING AND FIRE PROTECTION PLAN
SCALE: 1/8" = 1' - 0"



1 / M201 PLUMBING AND FIRE PROTECTION SECTION
SCALE: 1/8" = 1' - 0"



UNDERGROUND PLUMBING AND FIRE PROTECTION PLAN
SCALE: 1/8" = 1' - 0"

FIRE PROTECTION GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. NO SPRINKLER PIPING SHALL BE ROUTED THROUGH ELECTRICAL EQUIPMENT ROOMS, TELECOMMUNICATION EQUIPMENT ROOMS, ELEVATOR EQUIPMENT ROOMS OR SIMILAR ROOMS. ONLY SPRINKLER PIPING SERVING SPRINKLERS HEADS IN THOSE ROOMS SHALL BE ALLOWED.
4. PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
5. MINIMUM RUN-OUT PIPE SIZE TO SPRINKLER HEADS SHALL BE 1".
6. PROVIDE AN AUTOMATIC WET PIPE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13 LIGHT HAZARD CLASSIFICATION. HYDRAULIC CALCULATIONS SHALL BE BASED ON DENSITY OF 0.10 GPM/SQ FT. OVER THE MOST REMOTE 1500 SQ. FT.
7. ACCORDING TO THE MOST RECENT FLOW TEST INFORMATION, THE STATIC PRESSURE AVAILABLE AT THE CITY WATER MAIN AT THE STREET IS PSIG. RESIDUAL PRESSURE WITH GPM FLOWING IS PSIG. CONTRACTOR SHALL MAKE HIS OWN PRESSURE AND FLOW TEST PRIOR TO SYSTEM DESIGN.
8. FIRE PROTECTION WATER SERVICE ENTRANCE PIPING SHALL BE BURIED WITH DEPTH OF COVER OVER TOP OF PIPE OF AT LEAST 72", OR WITH TOP OF PIPE AT LEAST 12" BELOW LEVEL OF MAXIMUM FROST PENETRATION, OR AS REQUIRED BY AUTHORITIES HAVING JURISDICTION, WHICHEVER IS DEEPEST.

PLUMBING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED LOCATIONS OF PLUMBING FIXTURES.
7. HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.
8. PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
9. PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.
10. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
11. WATER SERVICE ENTRANCE PIPING SHALL BE BURIED WITH DEPTH OF COVER OVER TOP OF PIPE OF AT LEAST 72", OR WITH TOP OF PIPE AT LEAST 12" BELOW LEVEL OF MAXIMUM FROST PENETRATION, OR AS REQUIRED BY AUTHORITIES HAVING JURISDICTION, WHICHEVER IS DEEPEST.

CONSTRUCTION KEY NOTES:

1. PROVIDE AUTOMATIC FIRE SPRINKLER PER NFPA 13.
2. 2 SAN UP TO TOWER DRAIN. 3 SAN UP TO TOWER OVERFLOW. ROUTE TO ROOF SUMP.
3. 1-1/2 NPCW UP TO TOWER MAKEUP.

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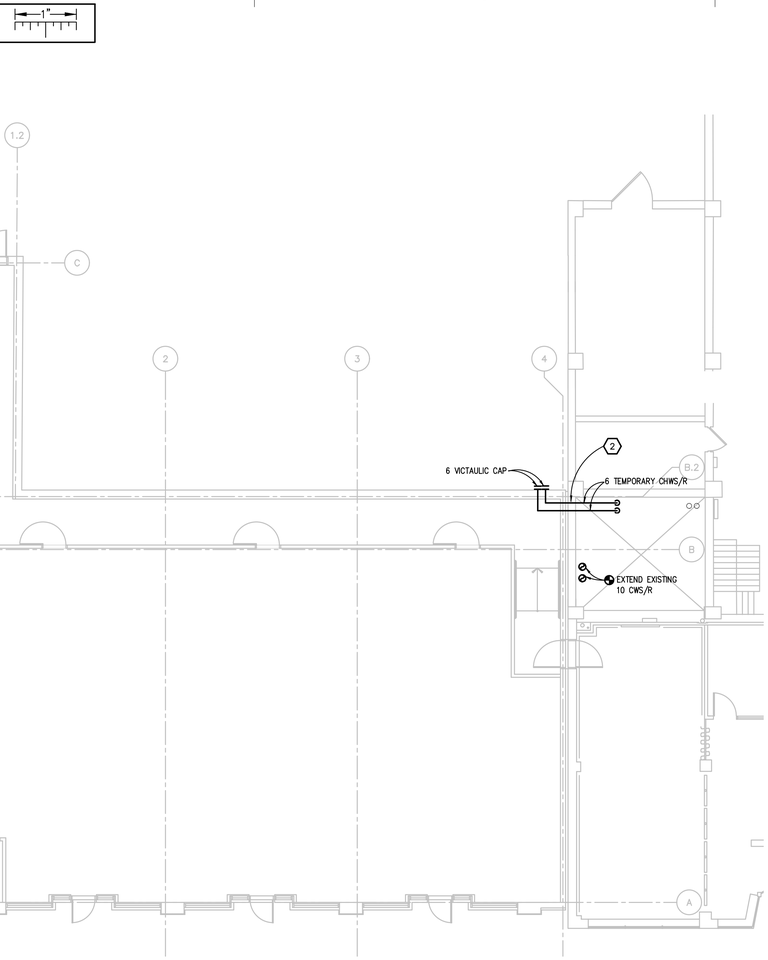
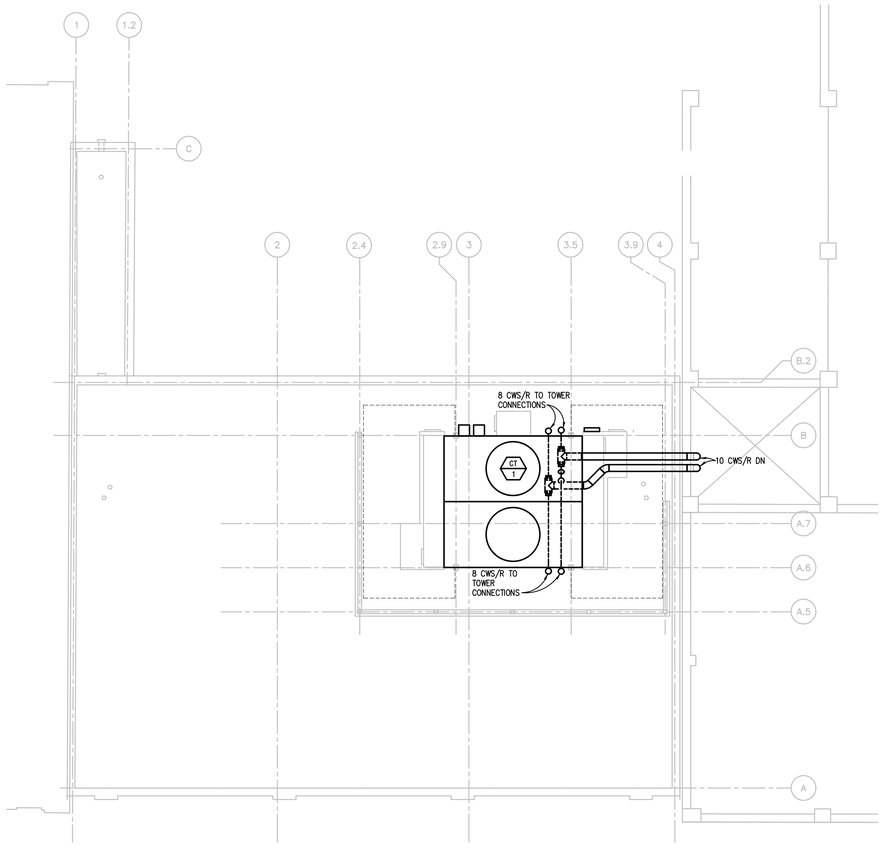
Sheet Title
PLUMBING AND FIRE PROTECTION PLAN

Sheet Number
M201

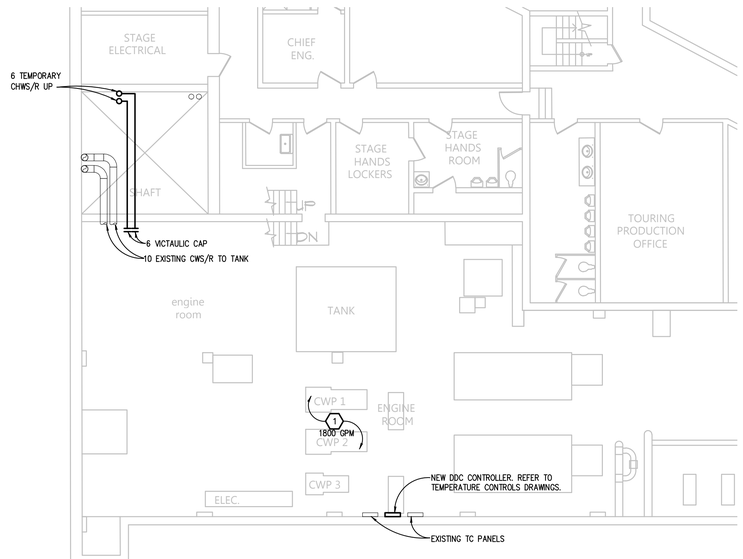
THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.



FIRST FLOOR HVAC PIPING PLAN
SCALE: 1/8" = 1' - 0"



ROOF HVAC PIPING PLAN
SCALE: 1/8" = 1' - 0"



BASEMENT HVAC PIPING PLAN
SCALE: 1/8" = 1' - 0"

HVAC PIPING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. SUBMIT PROPOSED METHODS OF ANCHORING AND GUIDING PIPING SYSTEMS TO STRUCTURAL ENGINEER FOR APPROVAL.
7. COORDINATE LOCATION OF DUCT-MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
8. BRANCH PIPING SERVING TERMINAL UNIT HEATING COILS OR RADIANT CEILING PANELS SHALL BE 3/4" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING MORE THAN ONE TERMINAL UNIT HEATING COIL SHALL BE 1" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING HOT WATER UNIT HEATERS AND CABINET UNIT HEATERS SHALL BE 1" UNLESS OTHERWISE NOTED.
9. MOUNT THERMOSTATS 48" A.F.F., UNLESS OTHERWISE NOTED. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHEN INDICATED NEAR DOOR. COORDINATE EXACT LOCATION WITH ALL OTHER TRADES.

(#) CONSTRUCTION KEY NOTES:

1. REBALANCE EXISTING CONDENSER WATER SYSTEM TO FLOW INDICATED
2. FIRE RATED PENETRATIONS. REFER TO LIFE SAFETY PLANS.

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Sheet Title: HVAC PIPING PLAN

Sheet Number: M301

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"

SHEET METAL GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
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3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
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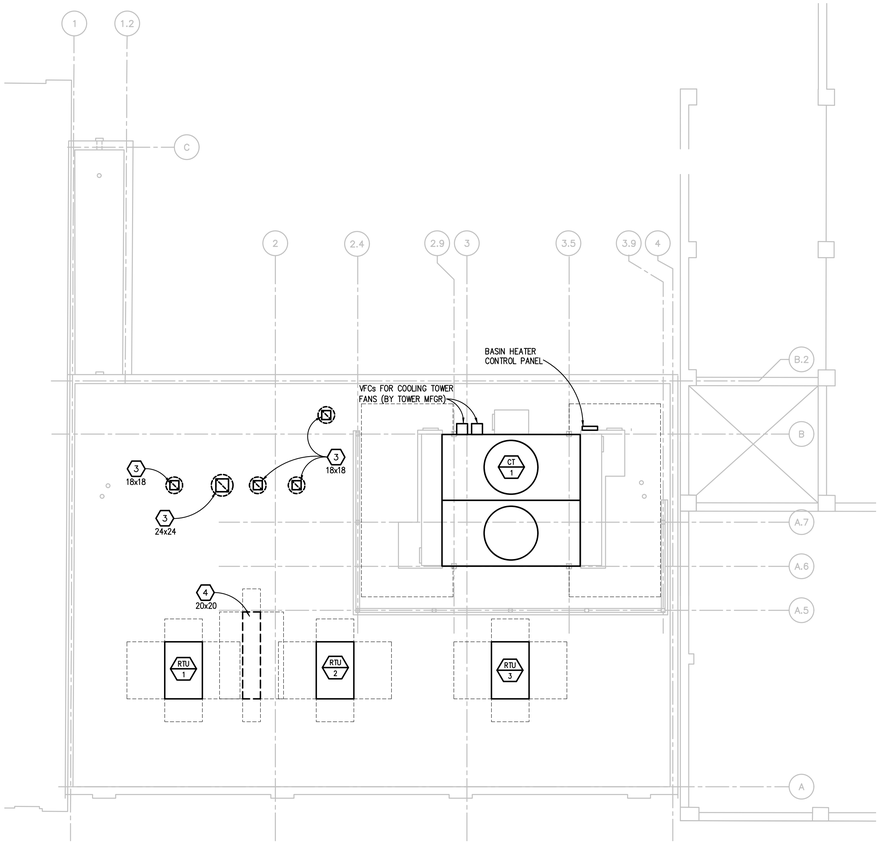
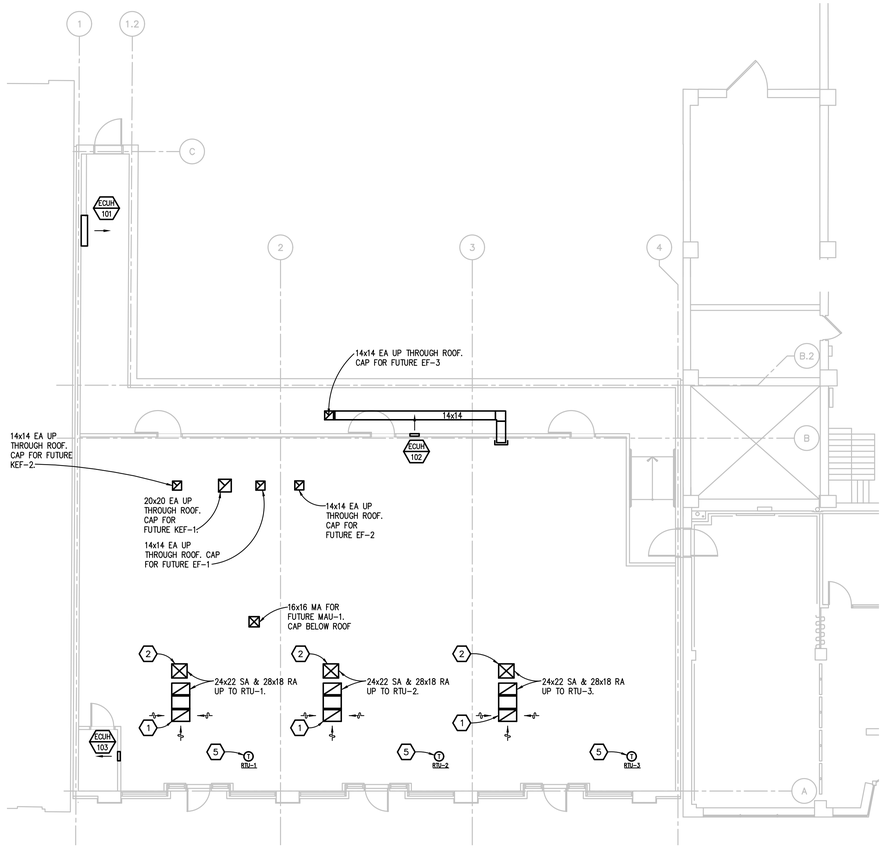
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR DIMENSIONED LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.

(#) CONSTRUCTION KEY NOTES:

1. FULL-SIZE DUCT OPENING ON TOP OF DUCT. COVER OPENING WITH WIRE MESH.
2. OPEN ENDED DUCT.
3. PROVIDE ROOF CURB OF SIZE LISTED FOR FUTURE EXHAUST FAN. CAP CURB PER DETAIL. TENANTS WILL PROVIDE NECESSARY CURB ADAPTERS (NIC).
4. PROVIDE ROOF CURB OF SIZE LISTED FOR FUTURE MAKE-UP AIR UNIT. CAP CURB PER DETAIL. TENANTS WILL PROVIDE NECESSARY CURB ADAPTERS (NIC).
5. PROVIDE SPACE TEMPERATURE SENSOR WITH 50' CONNECTION WIRING, COILED UP AND STORED IN CEILING FOR FUTURE TENANT IMPROVEMENTS.



ROOF SHEET METAL PLAN
SCALE: 1/8" = 1' - 0"



FIRST FLOOR SHEET METAL PLAN
SCALE: 1/8" = 1' - 0"

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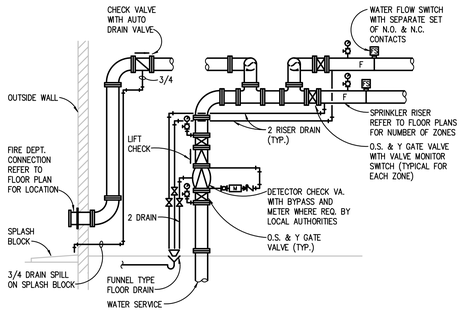
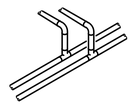
Sheet Title
SHEET METAL PLAN

Sheet Number
M401



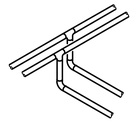
VERTICAL AUTOMATIC SPRINKLER RISER PIPING DIAGRAM

NO SCALE



BRANCH CONNECTION OFF TOP

APPLIES TO THE FOLLOWING SYSTEMS:
DOMESTIC WATER
NATURAL GAS



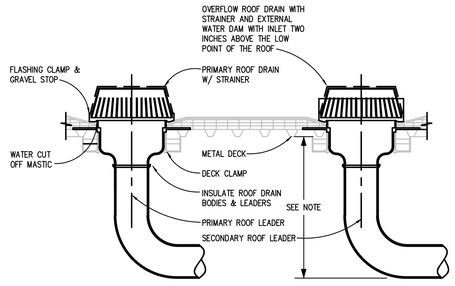
BRANCH CONNECTION OFF BOTTOM

APPLIES TO THE FOLLOWING SYSTEMS:
CHILLED WATER
CONDENSER WATER

NOTE: BOTTOM AS INDICATED OR SIDE CONNECTION IS ACCEPTABLE. CONNECTION ABOVE CENTERLINE OF MAINS IS NOT ACCEPTABLE.

TYPICAL BRANCH TAKE-OFF CONNECTION PIPING DETAIL

NO SCALE



NOTE:
DIMENSION FOR 6" ROOF DRAIN FROM BOTTOM OF DECK TO BOTTOM OF PIPE SHALL BE MAXIMUM OF 20". DIMENSION FOR 8" ROOF DRAIN SHALL BE A MAXIMUM OF 22". DIMENSION FOR 10" ROOF DRAIN SHALL BE A MAXIMUM OF 26".

DOUBLE ROOF SUMP DETAIL

NO SCALE

NOTE:
1. CURBS TO BE PROVIDED AS PART OF BASE BUILDING (CORE AND SHELL). EXHAUST FANS WILL BE PROVIDED BY TENANTS UNDER FUTURE PROJECTS (N.I.C.).
2. ROOF CURB SHALL BE SIZED TO FIT LARGEST CAPACITY FAN THAT CAN BE ACCOMMODATED BY INSTALLED DUCTWORK.
3. USE THIS DETAIL FOR MAKE-UP AIR, BUT CAP DUCT BELOW ROOF.

FUTURE EXHAUST FAN CURB DETAIL

NO SCALE

NOTE: ALL DUCT, PIPING, OR ELECTRICAL CONNECTIONS TO UNIT BELOW CURB SHALL HAVE FLEXIBLE CONNECTIONS. CUT INSULATION, GYP BOARD, ROOFING INSULATION, AND METAL DECKING PENETRATIONS TIGHT TO ITEM PENETRATING ROOF. PACK ALL PENETRATION OPENINGS WITH FLEXIBLE GLASS FIBER.

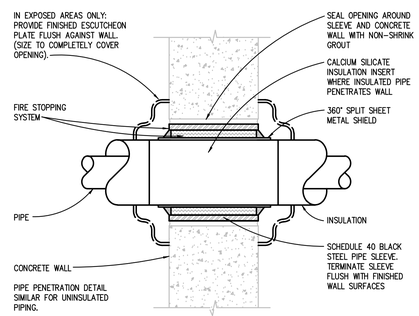
ROOF TOP UNIT CURB DETAIL

NO SCALE

TRAP DIMENSION TABLE

TYPE OF SYSTEM		S.P. AT COIL DRAIN PAN (IN.) (NOTE A)	DIMENSION "A" (INCHES) MIN.	DIMENSION "B" (INCHES)	DIMENSION "C" (INCHES) (TRAP SEAL)	DIMENSION "D" (INCHES)	DIMENSION "E" (INCHES)	DIMENSION "F" (INCHES) DRAIN PIPE SIZE (INCHES) 1 1/2	2	2 1/2, 3	4
DRAW THROUGH		−5.1 TO −6	5.0	5.0	2	6	2	13.0	14.0	15.0	16.0
		−4.1 TO −5	4.5	4.5	2	5	2	12.0	13.0	14.0	15.0
		−3.1 TO −4	4.0	4.0	2	4	2	11.0	12.0	13.0	14.0
		−2.1 TO −3	3.5	3.5	2	3	2	10.0	11.0	12.0	13.0
		UP TO −2	3.0	3.0	2	2	2	9.0	10.0	11.0	12.0
BLOW THROUGH		UP TO +2	4.0	2.0	2	2	4	9.0	10.0	11.0	12.0
		+2.1 TO +3	5.0	2.0	2	3	5	10.0	11.0	12.0	13.0
		+3.1 TO +4	6.0	2.0	2	4	6	11.0	12.0	13.0	14.0
		+4.1 TO +5	7.0	2.0	2	5	7	12.0	13.0	14.0	15.0
		+5.1 TO +6	8.0	2.0	2	6	8	13.0	14.0	15.0	16.0

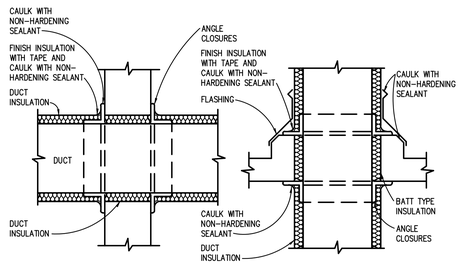
NOTES: A. REFER TO ROOFTOP AIR HANDLING UNIT (COMMERCIAL, UNITARY, MODULAR) SCHEDULE FOR (−) OR (+) STATIC PRESSURE AT COIL DRAIN PAN.
B. ENERGY RECOVERY UNIT HEAT EXCHANGER CONDENSATE PAN TRAP PIPING OUTSIDE CASING SHALL BE INSULATED AND HEAT TRACED.
C. DIMENSION "C" IS MIN: 3" FOR UP TO 1 1/2" DRAIN PIPE
4" FOR 2" DRAIN PIPE
5" FOR 2 1/2" OR 3" DRAIN PIPE
6" FOR 4" DRAIN PIPE
D. PROVIDE ROOF CURB WITH ADEQUATE HEIGHT TO MEET DIMENSION "F"



DETAIL INDICATES THE INSTALLATION REQUIREMENTS FOR A FIRE RATED ASSEMBLY. FOR A NON-FIRE RATED ASSEMBLY PACK SLEEVED OPENING WITH INSULATION MATERIAL AND CAULK WITH NON-HARDENING SEALANT.

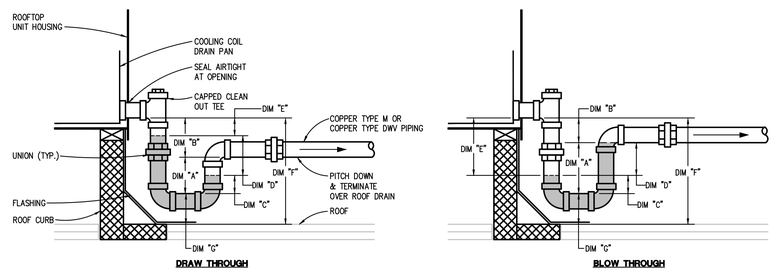
FIRE RATED AND NON-FIRE RATED POURED CONCRETE OR BLOCK WALL PIPE PENETRATION DETAIL

NO SCALE



VERTICAL OR HORIZONTAL (NON FIRE RATED ASSEMBLY) DUCT PENETRATION DETAIL

NO SCALE



ROOFTOP AIR HANDLING UNIT CONDENSATE DRAIN PAN TRAP DETAIL

NO SCALE

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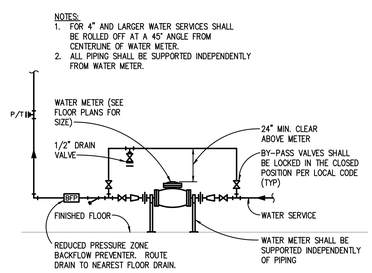
Sheet Title
MECHANICAL DETAILS

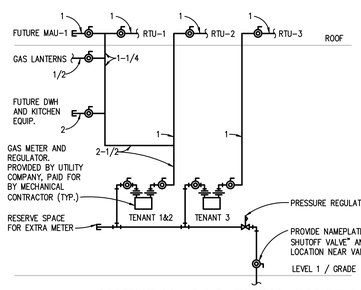
Sheet Number

M601

NOTES:
1. FOR 4" AND LARGER WATER SERVICES SHALL BE ROLLED OFF AT A 45° ANGLE FROM CENTERLINE OF WATER METER.
2. ALL PIPING SHALL BE SUPPORTED INDEPENDENTLY FROM WATER METER.



DOMESTIC WATER METER PIPING DIAGRAM
NO SCALE



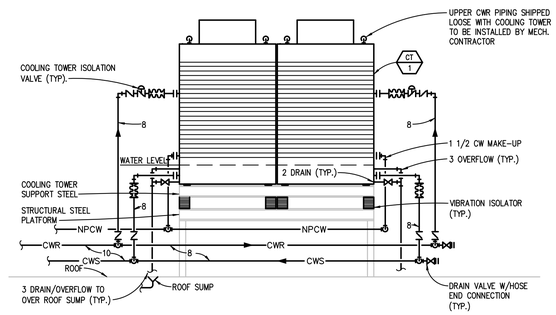
NATURAL GAS PIPING DIAGRAM
NO SCALE

TENANT 1 GAS LOAD SCHEDULE

	TOTAL CFH
GAS LANTERNS	13.2
RTU-1	120
RTU-2	120
FUTURE MAU	180
FUTURE WATER HEATER	150
FUTURE KITCHEN EQUIP	613
CONNECTED GAS LOAD =	1196.2 CFH

TENANT 3 GAS LOAD SCHEDULE

	TOTAL CFH
RTU-3	120
CONNECTED GAS LOAD =	120 CFH



COOLING TOWER PIPING DIAGRAM
NO SCALE

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Revision	Date
PERMIT / BID	10-11-17
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Date 10-11-17

Project Number 2017041

Sheet Title
MECHANICAL DETAILS

Sheet Number

M602

PLUMBING PIPING & VALVE APPLICATION SCHEDULE

PIPE SIZE (INCHES)	MATERIAL: SOFT COPPER TYPE K	HARD COPPER TYPE L	HARD COPPER TYPE M	CARBON STEEL (SCHED. 40)	CARBON STEEL (SCHED. 80)	CARBON STEEL (STD.)	GALV. STEEL (SCHED. 40)	PEX	PE PIPE	PE SHEATHED CARBON STEEL PIPE	CSST	PRESSURE CONNECTIONS: NO-HUB CISP	PVC TYPE DWV	PP DRAINAGE PIPE	COPPER TYPE DWV	DUCTILE IRON PIPE	SOLDERED	BRAZED	WELDED	THREADED	FLANGED	GROOVED	INSERT & CRIMP	FUSION	PRESSURE-SEAL	MECHANICALLY-FORMED TEE	MECHANICAL JOINT	PUSH-ON-JOINT	GRAVITY DWV CONNECTIONS: SOLVENT WELDED	SOLDERED	FUSION	CISPI HUBLESS	HEAVY-DUTY HUBLESS	ISOLATION VALVES: BALL	ASA BALL	GENERAL SERVICE BUTTERFLY	LUBRICATED PLUG	GATE	KEYED NOTES
ABOVEGROUND DOMESTIC WATER (POTABLE AND NON-POTABLE) ON DISTRIBUTION SIDE OF METER - MIN. WORKING PRESS. & TEMP.: 125 PSIG AT 200 DEG F																																							
UP TO 4		X															X	X			X	X			X	X								X		X			A
ABOVEGROUND SANITARY WASTE & VENT - MIN. WORKING PRESS.: 10-FOOT HEAD OF WATER																																							
1-1/2 TO 15												X																				X							
UNDERGROUND SANITARY WASTE & VENT - MIN. WORKING PRESS.: 10-FOOT HEAD OF WATER																																							
3 TO 12												X																				X							
3 TO 12													X																X											
ABOVEGROUND STORM DRAINAGE - MIN. WORKING PRESS.: 10-FOOT HEAD OF WATER																																							
2												X																				X							
3 TO 15												X																				X							
UNDERGROUND STORM DRAINAGE - MIN. WORKING PRESS.: 10-FOOT HEAD OF WATER																																							
3 TO 12												X																				X							
3 TO 12													X																X											
ABOVEGROUND FUEL GAS - MIN. WORKING PRESS.: 100 PSIG																																							
UP TO 2				X															X	X															X				E
2-1/2 TO 3				X															X		X														X				E

GENERAL NOTES

1. "X" INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. DISSIMILAR-METAL PIPING JOINTS: CONSTRUCT JOINTS USING DIELECTRIC FITTINGS COMPATIBLE WITH BOTH PIPING MATERIALS.
   a. NPS 2 AND SMALLER: USE DIELECTRIC NIPPLE/WATERWAY.
   b. NPS 2-1/2 AND LARGER: USE DIELECTRIC FLANGE KITS.
3. USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS.
4. PLUMBING EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING SYSTEM.
5. GROOVED END VALVES MAY BE USED WITH GROOVED PIPING.

KEYED NOTES

A. GROOVED AND PRESSURE SEALED FITTINGS, JOINTS, AND COUPLINGS, IF INDICATED AS AN ACCEPTABLE SELECTION, MAY BE USED IN ACCESSIBLE LOCATIONS ONLY FOR THIS PIPING SYSTEM.
E. USE STEEL WELDING FITTINGS AND WELDED JOINTS IN PLENUM CEILINGS. VALVES, FLANGES, OR UNIONS ARE PROHIBITED.

ABOVEGROUND HVAC PIPING & VALVE APPLICATION SCHEDULE

PIPE SIZE (INCHES)	MATERIAL: HARD COPPER TYPE L	HARD COPPER TYPE M	CARBON STEEL (SCHED. 40)	CARBON STEEL (SCHED. 80)	CARBON STEEL (STD.)	COPPER TYPE DWV	PVC (SCHED. 40)	PVC (SCHED. 80)	CONNECTION: SOLDERED	BRAZED	WELDED	THREADED	FLANGED	GROOVED	PRESSURE SEAL	MECHANICALLY FORMED TEE	ISOLATION VALVES: GENERAL SERVICE BUTTERFLY	HI-PERF BUTTERFLY	GATE	KEYED NOTES
CHILLED WATER SUPPLY & RETURN - TEMPORARY CONNECTIONS - MIN. WORKING PRESS. & TEMP.: 125 PSIG AT 200 DEG F																				
6 TO 8							X							X			X			A, B
CHILLED WATER SUPPLY & RETURN - PERMANENT CONNECTIONS - MIN. WORKING PRESS. & TEMP.: 125 PSIG AT 200 DEG F																				
6 TO 8								X						X			X			A
CONDENSER WATER SUPPLY & RETURN - MIN. WORKING PRESS. & TEMP.: 125 PSIG AT 200 DEG F																				
6 TO 8								X						X			X			A

GENERAL NOTES

1. "X" INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. DISSIMILAR-METAL PIPING JOINTS: CONSTRUCT JOINTS USING DIELECTRIC FITTINGS COMPATIBLE WITH BOTH PIPING MATERIALS. IF A BRONZE VALVE CONNECTS THE DISSIMILAR METALS NO FURTHER DIELECTRIC ISOLATION IS REQUIRED.
   a. NPS 2 AND SMALLER: USE BRASS COUPLING, NIPPLE, OR UNION.
   b. NPS 2-1/2 AND LARGER: USE DIELECTRIC FLANGE KITS.
3. USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS.
4. HVAC EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING SYSTEM.
5. GROOVED END VALVES MAY BE USED WITH GROOVED PIPING.

KEYED NOTES

A. GROOVED FITTINGS, JOINTS, AND COUPLINGS, IF INDICATED AS AN ACCEPTABLE SELECTION, MAY BE USED IN ACCESSIBLE LOCATIONS FOR THIS PIPING SYSTEM ONLY.
B. LOCATIONS RECEIVING TEMPORARY PIPING ARE MARKED ON PLAN. IF NOT MARKED, PIPING SHALL BE ASSUMED TO BE FOR PERMANENT INSTALLATION.

HORIZONTAL PIPING AND SUPPORT APPLICATION SCHEDULE

METAL PIPE TYPE & SIZE	HANGER OR SUPPORT TYPE: MSS TYPE 1 CLEVIS HANGER	MSS TYPE 10 SWIVEL RING BAND HANGER	MSS TYPE 41 DOUBLE ROD PIPE ROLLER	MSS TYPE 43 SINGLE ROD ROLLER HANGER	MSS TYPE 44 PIPE ROLLER & STAND	MSS TYPE 46 ADJUSTABLE PIPE ROLL STAND	SHIELD TYPE: MSS TYPE 39 PROTECTION SADDLE	MSS TYPE 40 INSULATION PROTECTION SHIELD	THERMAL-HANGER SHIELD	KEYED NOTES
UNINSULATED SINGLE PIPE										
UP TO 2 INCH	X	X								
2-1/2 INCH TO 4 INCH	X	X								
6 INCH TO 8 INCH	X									
INSULATED SINGLE COLD PIPES										
UP TO 2 INCH	X	X						X	X	A
2-1/2 INCH TO 4 INCH	X								X	
6 INCH TO 8 INCH	X								X	

GENERAL NOTES

1. "X" INDICATES APPROVED HANGER OR SUPPORT ELEMENTS. IF MORE THAN ONE HANGER OR SUPPORT ELEMENT IS INDICATED, SELECTION FROM APPROVED ELEMENTS IS CONTRACTOR'S OPTION.
2. REFER TO HANGER AND SUPPORT SECTION FOR APPROVED MANUFACTURERS.
3. HANGERS AND SUPPORTS USED FOR FIRE PROTECTION SERVICES SHALL BE UL LISTED OR FMG APPROVED.
4. HANGER ELEMENTS IN CONTACT WITH BARE COPPER PIPE SHALL BE COPPER PLATED, PLASTIC COATED, FELT LINED, OR USE MANUFACTURED COPPER TUBE ISOLATORS.
5. REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR HANGER SPACING.
6. MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING U-BOLTS OR STRUT CLAMPS AND THERMAL HANGER SHIELDS. REFER TO KEYED NOTE A.
7. MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD HANGER ELEMENTS INDICATED FOR SINGLE COLD PIPES.
8. MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING ROLLER ELEMENTS AND THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEYED NOTES B AND C.
9. MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD ROLLER HANGERS INDICATED AND THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEY NOTES B AND C.
10. REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR ADDITIONAL SYSTEM SPECIFIC HANGER APPLICATIONS.

KEYED NOTES

A. USE THERMAL HANGER SHIELD ON TRAPEZE SUPPORTED INSULATED PIPE TO PREVENT CRUSHING OF INSULATION.

ABOVEGROUND PLUMBING PIPE & ACCESSORY INSULATION APPLICATION SCHEDULE

	INSULATION MATERIAL & THICKNESS (INCHES): FLEXIBLE ELASTOMERIC	FIBERGLASS	MINERAL WOOL	POLYISOCYANURATE	PHENOLIC	CELLULAR GLASS	CALCIUM SILICATE	FIELD-APPLIED JACKET MATERIAL: ALUMINUM	STAINLESS STEEL	PVC	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)	PVDC (INDOOR)	PVDC (OUTDOOR)	KEYED NOTES
INDOOR PIPE SYSTEM AND SIZE (INCHES)														
DOMESTIC COLD WATER	1	1						X		X				A
STORM WATER & OVERFLOW	1	1						X		X				A
ROOF DRAIN AND OVERFLOW DRAIN BODIES	1	1												
OUTDOOR (ABOVEGROUND) AND TUNNEL PIPE SYSTEM AND SIZE (INCHES)														
DOMESTIC COLD WATER	2	2						X		X	X			B

UNLESS OTHERWISE INDICATED OR SCHEDULED, DO NOT INSULATE THE FOLLOWING:
FIRE SUPPRESSION PIPING
UNDERGROUND PIPING
FUEL GAS PIPING

GENERAL NOTES
1. "X" OR THICKNESS IN INCHES INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. INSULATE PIPING WITHIN AIR HANDLING EQUIPMENT THE SAME AS INDOOR PIPING. PROVIDE ALUMINUM OR STAINLESS STEEL JACKET.

KEYED NOTES

A. PROVIDE FIELD APPLIED JACKET FOR PIPING EXPOSED IN EQUIPMENT ROOMS, STORAGE ROOMS, JANITORS CLOSETS, RECEIVING ROOMS, TEST AREAS, CIRCULATION AREAS AND SUCH AREAS SUBJECT TO DAMAGE, WITHIN 10 FEET (3 METERS) OF FINISHED FLOOR.

ROOF MOUNTED PIPING SUPPORT APPLICATION SCHEDULE

PIPE TYPE & SIZE	SUPPORT TYPE: LOW FIXED-HEIGHT SINGLE-BASE STAND	LOW ADJUSTABLE-HEIGHT SINGLE-BASE STAND	HIGH ADJUSTABLE-HEIGHT SINGLE-BASE STAND	LOW FIXED HEIGHT SINGLE-BASE ROLLER STAND	LOW ADJUSTABLE-HEIGHT SINGLE-BASE ROLLER STAND	HIGH ADJUSTABLE-HEIGHT SINGLE-BASE ROLLER STAND	HIGH MULTIPLE-BASE PIPE STAND	CUSTOM MULTIPLE BASE PIPE STAND	CURB-MOUNTING PIPE STAND	SHIELD TYPE: MSS TYPE 39 PROTECTION SADDLE	MSS TYPE 40 INSULATION PROTECTION SHIELD	THERMAL-HANGER SHIELD	KEYED NOTES
SINGLE PIPES													
NATURAL GAS NPS 5 AND SMALLER				X	X				X				
CONDENSER WATER SUPPLY AND RETURN NPS 6 TO NPS 16							X		X			X	D
MULTIPLE PARALLEL PIPES													
NATURAL GAS NPS 5 AND SMALLER	X	X							X				
CONDENSER WATER SUPPLY AND RETURN NPS 6 TO NPS 16							X	X	X			X	D

GENERAL NOTES

1. "X" INDICATES APPROVED HANGER OR SUPPORT ELEMENTS. IF MORE THAN ONE HANGER OR SUPPORT ELEMENT IS INDICATED, SELECTION FROM APPROVED ELEMENTS IS CONTRACTOR'S OPTION.
2. REFER TO HANGER AND SUPPORT SECTION FOR APPROVED MANUFACTURERS. CONTRACTOR'S OPTION.
3. SUPPORT ELEMENTS IN CONTACT WITH BARE COPPER PIPE SHALL BE COPPER PLATED, PLASTIC OR PLASTIC COATED, FELT LINED, OR USE MANUFACTURED COPPER TUBE ISOLATORS

KEYED NOTES

D. TYPE 39 PROTECTION SADDLE MAY BE USED IF INSULATION WITHOUT VAPOR BARRIER IS INDICATED. FILL INTERIOR VOIDS WITH INSULATION MATCHING ADJOINING INSULATION.

VIBRATION ISOLATOR APPLICATION SCHEDULE

EQUIPMENT TYPE	EQUIPMENT CATEGORY	HORSEPOWER AND OTHER	RPM	EQUIPMENT LOCATION: SLAB ON GRADE: BASE TYPE	SLAB ON GRADE: ISOLATOR TYPE	SLAB ON GRADE: MIN. DEFL., IN. (MM)	UP TO 40 FT (12 M) FLOOR SPAN: BASE TYPE	UP TO 40 FT (12 M) FLOOR SPAN: ISOLATOR TYPE	UP TO 40 FT (12 M) FLOOR SPAN: MIN. DEFL., IN. (MM)	KEYED NOTES
COOLING TOWERS	ALL	ALL	UP TO 300 301 TO 500 500 AND UP	A A A	1a OR 1b 1a OR 1b 1a OR 1b	0.25 (6) 0.25 (6) 0.25 (6)	A A A	4 4 4	3.50 (89) 2.50 (64) 1.50 (38)	NOTE 3
SUSPENDED HEAT PUMPS, FAN COILS, CONDENSING UNITS, COMPUTER ROOM UNITS, LOCATED INDOORS.	ALL	ALL	ALL				A OR B	8a OR 8b	1.50 (38)	NOTES 1, 3, 4
PACKAGED ROOFTOP EQUIPMENT	ALL	≥10 TONS REFRIG. OR ≥10 HP FAN	ALL				D OR E	3	1.50 (38)	NOTES 1, 3, 4, 5

NOTES:
1. THRUST RESTRAINTS: PROVIDE THRUST RESTRAINTS BETWEEN FAN DISCHARGE AND DUCT (IN PAIRS, LOCATED ON THE CENTERLINE OF THE DISCHARGE OUTLET OF THE FAN, BRIDGING THE FLEXIBLE DUCT CONNECTOR) FOR ALL FAN HEADS, FOR AXIAL AND CENTRIFUGAL FANS UNITS OPERATING AT 2 INCHES OR GREATER TOTAL STATIC PRESSURE AND AS SHOWN ON DRAWINGS. SPRING DEFLECTION SHALL BE SAME AS THE SUPPORT ISOLATORS.
2. PIPING RISER ISOLATION: PROVIDE PIPE RISER RESILIENT ANCHORS, SPRING MOUNTS AND RESILIENT PIPE GUIDES CAPABLE OF DISTRIBUTING THE LOADS WITHIN THE BUILDING DESIGN LIMITS AT THE SUPPORT POINTS.
3. HORIZONTAL PIPING VIBRATION ISOLATION: PROVIDE TYPE 8a OR 8b SPRING HANGERS FOR PIPING CONNECTED TO VIBRATION ISOLATED EQUIPMENT FOR ALL PIPING IN MECHANICAL ROOMS OR THE FOLLOWING MINIMUM HORIZONTAL DISTANCES FROM THE ISOLATED EQUIPMENT: UP TO 6" - 50 FEET (1 1/2" MINIMUM DEFLECTION), 8" AND LARGER - 100 FEET (2 1/2" MINIMUM DEFLECTION), WHICHEVER IS GREATER, AND AS SHOWN ON DRAWINGS. THE FIRST 4 HANGERS FROM THE ISOLATED EQUIPMENT SHALL BE TYPE 8b.
4. DUCTWORK VIBRATION ISOLATION: PROVIDE TYPE 8a OR 8b SPRING HANGERS FOR DUCTWORK WITH A CROSS SECTION OF 2 SQUARE FEET OR GREATER CONNECTED TO AIR HANDLING UNITS, RETURN OR RELIEF FANS, AND VIBRATION ISOLATED EQUIPMENT FOR ALL SUCH DUCTWORK IN MECHANICAL ROOMS OR FOR A MINIMUM HORIZONTAL DISTANCE OF 100 FEET FROM THE ISOLATED EQUIPMENT, WHICHEVER IS GREATER, AND AS SHOWN ON DRAWINGS (3/4" MINIMUM DEFLECTION).
5. IF SPAN DOES NOT EXCEED 20 FT, SPRING DEFLECTION MAY BE 1.0 IN AND TYPE D BASE MAY BE USED. FOR SPANS GREATER THAN 20 FT, USE SPRING DEFLECTION INDICATED AND TYPE E BASE.

BASE TYPES:

BASE TYPE A – NO BASE, ISOLATORS ATTACHED DIRECTLY TO EQUIPMENT.
BASE TYPE B – STRUCTURAL, STEEL RAILS OR BASE.
BASE TYPE C – CONCRETE INERTIA BASE.
BASE TYPE D – CURB – MOUNTED ALUMINUM BASE WITH 1" DEFL. SPRING ISOLATORS
BASE TYPE E – CURB – MOUNTED STEEL BASE WITH ADJUSTABLE 1", 2" OR 3" DEFL. SPRING ISOLATORS

ISOLATOR TYPES:

ISOLATOR TYPE 3 – FREE STANDING SPRING FLOOR ISOLATOR.
ISOLATOR TYPE 4 – RESTRAINED SPRING ISOLATOR.
ISOLATOR TYPE 8a – SPRING HANGERS.
ISOLATOR TYPE 8b – SPRING HANGERS WITH VERTICAL-LIMIT STOP.

SCHEDULES GENERAL NOTES:

TYPICAL FOR ALL SCHEDULE SHEETS:

1. REFER TO ELECTRICAL STANDARD SCHEDULES, ONE LINE DIAGRAM AND PANEL SCHEDULES FOR ADDITIONAL ELECTRICAL INFORMATION
2. PROVIDE THE FOLLOWING FACTORY-WIRED ELECTRICAL OPTIONS/ACCESSORIES WHERE INDICATED IN SCHEDULE:
   A – NON-FUSED DISCONNECT SWITCH
   B – UNIT SHALL BE SINGLE POINT ELECTRICAL CONNECTION WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS
   C – SERVICE RECEPTACLE
   D – FUSED DISCONNECT SWITCH
   E – COMBINATION STARTER
   F – UNIT SHALL HAVE (2) SINGLE POINT CONNECTIONS WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS. (1) CONNECTION SHALL BE FOR CONDENSING SECTION AND (1) CONNECTION SHALL BE FOR THE REMAINDER OF THE UNIT.
3. FOR MODULATION/CONTROL TYPE COLUMN, "VFC" INDICATES VARIABLE FREQUENCY CONTROLLERS, "AUTO" INDICATES AUTOMATIC OPERATION (CONTROLLED BY TEMPERATURE CONTROLS OR SELF CONTAINED CONTROLS), "MANUAL" INDICATES HAND OPERATION.
4. IF VARIABLE FREQUENCY CONTROLLERS ARE INDICATED TO BE PROVIDED AND ARE NOT INSTALLED INTEGRAL TO THE UNIT, VARIABLE FREQUENCY CONTROLLERS SHALL BE SUPPLIED BY THE MECHANICAL CONTRACTOR (UNLESS OTHERWISE NOTED) AND INSTALLED BY THE ELECTRICAL CONTRACTOR INCLUDING THE LINE SIDE AND LOAD SIDE WIRING TO THE MOTOR AND INCLUDING MISCELLANEOUS STEEL REQUIRED FOR THE SUPPORT AND MOUNTING OF THE VFC. REFER TO FLOOR PLANS FOR LOCATION.
5. WHERE EQUIPMENT IS INDICATED TO HAVE A SINGLE POINT ELECTRICAL CONNECTION, THAT EQUIPMENT SHALL COME COMPLETE WITH FACTORY INSTALLED STARTERS, MOTOR OVERLOAD PROTECTION, CONTACTORS, FUSING AND ALL NECESSARY INTERNAL WIRING AND CONTROLS. PROVIDE A FACTORY MOUNTED UNIT DISCONNECTING MEANS WHERE THE ELECTRICAL CONTRACTOR SHALL MAKE SINGLE POINT CONNECTION. INSTALL PACKAGED EQUIPMENT SUCH THAT THE ELECTRICAL CONNECTION AND CONTROLS ARE ACCESSIBLE AND HAVE CLEARANCES MEETING THE NATIONAL ELECTRICAL CODE.
6. WHERE PACKAGED EQUIPMENT IS PROVIDED, NAMEPLATE MUST INDICATE MAXIMUM OVERCURRENT PROTECTION BY HACR RATED CIRCUIT BREAKERS OR FUSES. IF FUSE PROTECTION ONLY IS INDICATED, PROVIDE A FUSIBLE DISCONNECT AND FUSES WITH THE UNIT.
7. WHERE EQUIPMENT IS DESIGNATED BY MANUFACTURER AND MODEL NUMBER, THIS IS THE BASIS OF DESIGN. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT BY OTHER SPECIFIED MANUFACTURERS OR PROPOSED ALTERNATE EQUIPMENT BY THE BASIS OF DESIGN MANUFACTURER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS TO ELECTRICAL REQUIREMENTS, STRUCTURAL LOADING, OR ARCHITECTURAL APPURTENANCES AND SHALL INCLUDE THE COST OF SUCH REVISIONS IN HIS BID.
8. WHERE EQUIPMENT IS SCHEDULED TO INCLUDE A SERVICE RECEPTACLE, PROVIDE A FACTORY MOUNTED SERVICE RECEPTACLE WITH APPROPRIATE FUSES AND TRANSFORMERS CONNECTED ON THE LINE SIDE OF THE UNIT DISCONNECT. PROVIDE A NAMEPLATE ON THE DISCONNECT SWITCH INDICATING THE PRESENCE OF LIVE POWER TO THE SERVICE RECEPTACLE WHEN HE UNIT DISCONNECT IS IN THE OFF POSITION.
9. SIZE ALL EQUIPMENT FEEDERS BASED ON THE LISTED MOP (MAXIMUM OVERCURRENT PROTECTION). REFER TO THE FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE ON THE ELECTRICAL STANDARD SCHEDULES SHEET.

PLUMBING CONNECTION SCHEDULE

UNIT IDENTIFICATION	CW INCHES	HW INCHES	SAN INCHES	VENT INCHES	REMARKS
FD-1	–	–	6	–	
WH-1	3/4	–	–	–	
RH-1	3/4	–	–	–	

NOTE: INDIVIDUAL WATER LINE BRANCHES, WASTE LINES, VENTS, AND TRAPS FOR CONNECTION TO INDIVIDUAL FIXTURES, FIXTURE FITTINGS, AND SPECIALTIES SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE OR AS INDICATED ON DRAWINGS, WHICHEVER IS GREATER.

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Revision	Date
PERMIT / BID	10-11-17
PROGRESS REVIEW	09-20-17
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Date 10-11-17

Project Number 2017041

Sheet Title
MECHANICAL SCHEDULES

Sheet Number
M701

UNITARY ROOFTOP AIR CONDITIONING UNIT SCHEDULE

UNIT I.D.	AREA SERVED	SUPPLY FAN									COOLING SECTION – DX										INTEGRAL AIR-COOLED CONDENSING SECTION			HEATING SECTION – GAS FIRED (NATURAL GAS)							FILTER SECTION				ROOF CURB			MAXIMUM UNIT DIMENSIONS			MAXIMUM UNIT OPERATING WEIGHT LBS. (WITH CURB)	TOTAL UNIT ELECTRICAL					MODEL NO.	NOTES
		AIRFLOW CFM	MINIMUM OUTSIDE AIR FLOW CFM	E.S.P. IN. W.G.	FAN SUCTION OR DISCHARGE S.P. IN. W.G. AT COOILING COIL DRAIN PAN	T.S.P. IN. W.G.	FAN SPEED RPM	BHP	HP	CONTROL	MIXED AIR		UNIT LEAVING AIR		NET UNIT CAPACITY		NUMBER OF CIRCUITS	REFRIG. TYPE	MAX. FACE VEL. F.P.M.	IEER	DESIGN AMBIENT TEMP °F	MIN. AMBIENT TEMP. °F	NO. OF CAPACITY CONTROL STAGES	AIR TEMP.		CAPACITY (MBH)		GAS PRESSURE TO GAS TRAIN IN. W.C.	MAXIMUM ALLOWABLE OUTPUT AT MINIMUM FIRING RATE (MBH)	MIN. NO. OF CAPACITY CONTROL STAGES	TYPE	MERV	AIR PRESS. DROP		TYPE		HEIGHT	LENGTH	HEIGHT (WITH CURB)	WIDTH		VOLTS	PHASE	FLA	MOP	OPTIONS/ ACCESSORIES		
											E.D.B. °F	E.W.B. °F	L.D.B. °F	L.W.B. °F	TOTAL MBH	SENSIBLE MBH								E.A.T. °F	L.A.T. °F	INPUT	OUTPUT						INITIAL IN. W.G.	FINAL IN. W.G.	STANDARD	VIBRATION ISOLATION SPRING CURB NOTE 7												
RTU–1	TENANT 1	2075	705	1.0	–	–	1725	1.55	3	VFC	80.0	67.3	54.3	54.0	92	57.6	2	R–410A	500	13.8	95	45	1	50.5	77.7	82.5	66	7	66	2	PLEATED	8	0.5	1.5	NO	YES	14	89	64	59	1675	208	3	58.6	70		J08ZJN12R2D6BCA2A1	
RTU–2	TENANT 2	2075	705	1.0	–	–	1725	1.55	3	VFC	80.0	67.3	54.3	54.0	92	57.6	2	R–410A	500	13.8	95	45	1	50.5	77.7	82.5	66	7	66	2	PLEATED	8	0.5	1.5	NO	YES	14	89	64	59	1675	208	3	58.6	70		J08ZJN12R2D6BCA2A1	
RTU–3	TENANT 3	1210	250	1.0	–	–	1725	.65	1.5	VFC	78.3	65.1	54.3	54.0	40.4	31.7	1	R–410A	500	14.0	95	45	1	57.6	83.1	41.3	33	7	33	2	PLEATED	8	0.5	1.5	NO	YES	14	89	56	59	1575	208	3	44.3	50		JA4ZTS06R2D6FCA2A1	

NOTE:

1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE JCI UNLESS OTHERWISE NOTED
3. DESIGN MINIMUM OUTSIDE AIRFLOW CFM (VENTILATION) LISTED IS BASED ON THE ESTIMATED MAXIMUM OCCUPANT LOAD. REFER TO TEMPERATURE CONTROL DRAWINGS FOR OUTSIDE AIR CONTROL SEQUENCE.
4. MERV DESIGNATES THE "MINIMUM EFFICIENCY REPORTING VALUE" AS EVALUATED UNDER ASHRAE STANDARD 52.2 1999.
5. AIR HANDLING UNIT TOTAL STATIC PRESSURE FOR VARIABLE AIR VOLUME SYSTEMS IS BASED ON THE FILTER DIRTY AIR PRESSURE DROP AND AVERAGE/MIDLIFE FILTER AIR PRESSURE DROP FOR CONSTANT VOLUME SYSTEMS UNLESS NOTED OTHERWISE.
6. UNIT SHALL HAVE A SINGLE POINT ELECTRICAL CONNECTION WITH FACTORY INSTALLED DISCONNECT MEANS, STARTERS, AND CONTROLS.
7. REFER TO VIBRATION ISOLATOR APPLICATION SCHEDULE.

MAXIMUM SOUND POWER LEVELS

UNIT I.D.	UNIT INLET Lw BY OCTAVE BAND								CASING RADIATED Lw BY OCTAVE BAND							
	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)
RTU–1	77	79	79	77	75	71	71	66	97	94	94	91	87	82	76	69
RTU–2	77	79	79	77	75	71	71	66	97	94	94	91	87	82	76	69
RTU–3	76	70	62	55	48	44	44	43	80	87	77	75	75	70	65	62

NOTE: SEE NOTES UNDER PART "A"

COOLING TOWER SCHEDULE

UNIT IDENTIFICATION	TYPE	AIR		FAN			WATER				DIMENSIONS			MODULATION/ CONTROL TYPE	ELECTRICAL			MODEL NUMBER	REMARKS
		AIRFLOW CFM	E.W.B. °F	QUANTITY	HP EACH	RPM	FLOW GPM	E.W.T. °F	L.W.T. °F	STATIC LIFT FT. HEAD	WIDTH INCHES	HEIGHT INCHES	DEPTH INCHES		VOLTS	PHASE	OPTIONS/ ACCESSORIES		
CT–1	FORCED DRAFT	–	78.2	2	30	–	2400	95	85	–	216	133	206	VFC	480	3	B	S3E–8518–060–2	NOTE 3

NOTE:

1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE BAC UNLESS OTHERWISE NOTED.
3. POWER IS FED FROM FOX THEATER BUILDING. REFER TO ELECTRICAL DRAWINGS.

ELECTRIC CENTRIFUGAL FAN CABINET UNIT HEATER SCHEDULE

UNIT IDENTIFICATION	CAPACITY MBH	AIR			FAN		HEATING ELEMENT		DIMENSIONS			RECESS DEPTH INCHES	FILTER		MODULATION/ CONTROL TYPE	ELECTRICAL					MODEL NUMBER	REMARKS
		AIRFLOW CFM	E.D.B. °F	L.D.B. °F	H.P.	R.P.M.	1ST STAGE KW	TOTAL KW	LENGTH INCHES	HEIGHT INCHES	DEPTH INCHES		TYPE	AREA SQ. FT.		VOLTS	PHASE	FLA	MOP	OPTIONS/ ACCESSORIES		
ECUH–101	18.0	250	40	100	–	–	5	5	33	25	9	0	MERV 5 THROWAWAY	–	AUTO	208	1	25		B	6333D052013B30D0F	
ECUH–102	11.4	175	40	100	–	600	4	4	14–3/16	19–7/16	4	4	–	–	AUTO	208	1	19.2		B	F3326TD–RP	
ECUH–103	0.6	175	40	100	–	600	0.75	0.75	14–3/16	19–7/16	4	4	–	–	AUTO	120	1	6.25		B	E3321TD–RP	

NOTE:

1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE BRASCH UNLESS OTHERWISE NOTED.

DUCT SYSTEM APPLICATION SCHEDULE

	DUCT MATERIAL																	
AIR SYSTEMS	G90 GALV. SHEET METAL	DOUBLE–WALL LINED G90 GALV. SHEET METAL (SOLID INNER WALL)	DOUBLE–WALL LINED G90 GALV. SHEET METAL (PERF. INNER WALL)	G90 GALV. SHEET METAL WITH 1–INCH LINING	GALVANNEALED SHEET METAL	ALUMINUM	TYPE 304 STAINLESS STEEL	TYPE 316 STAINLESS STEEL	PVC COATED GALV. SHEET METAL (4X1)	PVC COATED GALV. SHEET METAL (1X4)	PVC COATED GALV. SHEET METAL (4X4)	16 GA. CARBON STEEL	ZERO–CLEARANCE PREFABRICATED RANGE HOOD EXHAUST DUCT	FABRIC	DESIGN PRESSURE CLASS (INCHES WG)	SEAL CLASS	MAX. ALLOWABLE LEAKAGE RATE (PERCENT)	KEYED NOTES
SUPPLY AIR WITHOUT TERMINAL UNITS	X														+2	A	5	
RETURN AIR WITHOUT TERMINAL UNITS				X											–2	A	5	A
EXHAUST AIR WITHOUT TERMINAL UNITS	X														–2	A	5	
KITCHEN EXHAUST (TYPE I HOOD)												X			N/A	N/A	N/A	B
KITCHEN EXHAUST (TYPE II HOOD)							X								–2	N/A	N/A	B

GENERAL NOTES

1. 'X' INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A DUCT SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.

KEYED NOTES

A. DUCT SHALL BE LINED WITHIN 25 FEET UPSTREAM OF FANS.
B. ALL WELDED CONSTRUCTION.

DUCT SYSTEM INSULATION APPLICATION SCHEDULE

	INSULATION MATERIAL & THICKNESS (INCHES)							FIELD APPLIED JACKET MATERIAL		
	FIBERGLASS BLANKET 0.75 LB/CU FT	FIBERGLASS BLANKET 1.0 LB/CU FT	FIBERGLASS BOARD 2.25 LB/CU FT	FIBERGLASS BOARD 6.0 LB/CU FT	FLEXIBLE ELASTOMERIC	ASTM E2336 2–HOUR FIRE RATED BLANKET	2–HOUR FIRE RATED BLANKET	ALUMINUM	SELF–ADHESIVE (FOR OUTDOOR APPLICATIONS)	KEYED NOTES
DUCT SYSTEMS LOCATED INDOORS										
SUPPLY AIR, EXCEPT AS NOTED BELOW		1.5								A

PLENUMS, DUCTS, AND DUCT ACCESSORIES NOT REQUIRING INSULATION:
FIBROUS–GLASS DUCTS
DOUBLE–WALL METAL DUCTS WITH INSULATION OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1 – 2007
METAL DUCTS WITH DUCT LINER OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1 – 2007
EXPOSED SUPPLY DUCT IN CONDITIONED SPACE SERVED BY THAT SYSTEM
FABRIC SUPPLY DUCTS
FACTORY–INSULATED FLEXIBLE DUCTS
FACTORY–INSULATED PLENUMS AND CASINGS
FLEXIBLE CONNECTORS
VIBRATION–CONTROL DEVICES
FACTORY–INSULATED ACCESS PANELS AND DOORS

GENERAL NOTES

1. 'X' OR THICKNESS IN INCHES INDICATE ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A DUCT SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. REFER TO METAL DUCT SECTION OF SPECIFICATIONS FOR DUCT LINING AND DOUBLE–WALL INSULATED DUCT.
3. REFER TO HVAC CASINGS SECTION OF SPECIFICATIONS FOR DOUBLE–WALL INSULATED PLENUMS.

KEYED NOTES

A. INCLUDE INSULATION AROUND DUCT MOUNTED COILS AND AIR TERMINAL UNIT COILS.

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Revision	Date
PERMIT / BID	10-11-17
PROGRESS REVIEW	09-20-17
DD OR	08-31-17

Date 10-11-17

Project Number 2017041

Sheet Title
MECHANICAL SCHEDULES

Sheet Number
M702

VENTILATION & AIR BALANCE CALCULATION

PROJ NAME: OD KOG Columbia Street Infill — PROJ #:

DATA FROM LOADS

Room #	Architectural Room Name	Area (Sq. Ft)	Space Height (Ft.)	Max Cooling Design (CFM)	Min Air Fluid Occupancy (CFM)	Space Volume (Cu. Ft.)	Load (CFM/ Sq. Ft)
	FUTURE DINING AREA	1,700	15.5	2,025	2,400	26,350	1.2
	FUTURE UNISEX TOILET #1	100	15.5	50	50	1,550	0.5
	FUTURE UNISEX TOILET #2	100	15.5	50	50	1,550	0.5
	FUTURE KITCHEN AREA	400	15.5	2,025	2,400	6,200	5.1
BUILDING TOTALS:		2,300		4,150	4,900	35,650	1.8
DIVERSIFIED TOTALS:				4,150			

VENTILATION CODES

Room Name (Use) per Code	Outdoor Air: Min Ac/Hr	Outdoor Air: Min Ac/Hr	Outdoor Air: People/ 1000 Sq.Ft.	Outdoor Air: Min CFM/Pers Rq'd	Outdoor Air: Min CFM/Sq.Ft Rq'd	Exhaust Air: Min CFM/Sq.Ft	Exhaust Air: Min CFM	Offset (+,-,+)	SA Req'd in Room? (N or Blank)	EA? (E or Blank)	FPB (Y or Blank)	CO2 Sensor? (Y or Blank)	Cont VAV (C or Blank)	OA People Rq'd x Pz*	OA Sq.Ft.Rq'd x Az*
DINING ROOM			70	7.5	0.18									893	306
RESTROOM - PUBLIC							50		N	E					
RESTROOM - PUBLIC							50		N	E					
COMMERCIAL KITCHEN						0.7									
														893	306

KITCHEN EXHAUST AIR BY FUTURE TENANT EQUIPMENT

PEOPLE

Total People Per Code	Total People Over-Ride	Total People Pz*
119.0		119.0
119		119

OUTSIDE AIR

Air Dis Eff Ez* Leave blank for: 0.8	Breathing Zone OA Req'd Vou*	Breathing Zone OA Req'd W/ CO2 Sensor Vou*	Calc Add'l OA from AC1HR	Lowest SA @ Full Occ Vps*	Min Occ Zp*	Override Min Occ Zp*	MMC Ev	ASHRAE Ev'd
0.8	1498	1498		2400	0.62	0.62	0.53	0.88
0.8								1.50
0.8								1.50
0.8								1.50
	1498			2400				

Diversity/Safety

Occupant Diversity (*D):	100%
Supply Air Diversity	102%
AHU and Duct Leakage (TYP 5%):	5%

Final Results

Based on ASHRAE 62.1-2007 Appendix A

WIN	SA CFM	4483
	OA CFM	1362
	OA %	31%
MIN	SA CFM	1972
	OA CFM	1362
	OA %	69%

PROJECT NAME:	OD KOG Columbia Street Infill	
PROJECT #:	2017.0195	
APPLICABLE CODES:		
IMC/IMMC:	2012	
ASHRAE 62.1:	2007	
ASHRAE 90.1:	2013	
LEED PROJECT? Y OR N	n	
100% OA Unit? Y OR N	n	

SYSTEM: AHU-1 / AHU-2
DATE: 10/4/2017
ENGINEER: ACF
APPROVED: GAH

VENTILATION & AIR BALANCE CALCULATION

PROJ NAME: OD KOG Columbia Street Infill — PROJ #:

DATA FROM LOADS

Room #	Architectural Room Name	Area (Sq. Ft)	Space Height (Ft.)	Max Cooling Design (CFM)	Min Air Fluid Occupancy (CFM)	Space Volume (Cu. Ft.)	Load (CFM/ Sq. Ft)
	FUTURE RETAIL	1,000	15.5	1,092	800	15,500	1.1
	FUTURE UNISEX TOILET #1	100	15.5	50	50	1,550	0.5
BUILDING TOTALS:		1,100		1,142	850	17,050	1.0
DIVERSIFIED TOTALS:				1,100			

VENTILATION CODES

Room Name (Use) per Code	Outdoor Air: Min Ac/Hr	Outdoor Air: Min Ac/Hr	Outdoor Air: People/ 1000 Sq.Ft.	Outdoor Air: Min CFM/Pers Rq'd	Outdoor Air: Min CFM/Sq.Ft Rq'd	Exhaust Air: Min CFM/Sq.Ft	Exhaust Air: Min CFM	Offset (+,-,+)	SA Req'd in Room? (N or Blank)	EA? (E or Blank)	FPB (Y or Blank)	CO2 Sensor? (Y or Blank)	Cont VAV (C or Blank)	OA People Rq'd x Pz*	OA Sq.Ft.Rq'd x Az*
RETAIL SALES			15	7.5	0.12									113	120
RESTROOM - PUBLIC							50		N	E					
														113	120

PEOPLE

Total People Per Code	Total People Over-Ride	Total People Pz*
15.0		15.0
15		15

OUTSIDE AIR

Air Dis Eff Ez* Leave blank for: 0.8	Breathing Zone OA Req'd Vou*	Breathing Zone OA Req'd W/ CO2 Sensor Vou*	Calc Add'l OA from AC1HR	Lowest SA @ Full Occ Vps*	Min Occ Zp*	Override Min Occ Zp*	MMC Ev	ASHRAE Ev'd
0.8	291	291		800	0.36	0.36	0.79	0.93
0.8								1.29
	291			800				

Diversity/Safety

Occupant Diversity (*D):	100%
Supply Air Diversity	101%
AHU and Duct Leakage (TYP 5%):	5%

Final Results

Based on ASHRAE 62.1-2007 Appendix A

WIN	SA CFM	1208
	OA CFM	250
	OA %	21%
MIN	SA CFM	358
	OA CFM	250
	OA %	70%

PROJECT NAME:	OD KOG Columbia Street Infill	
PROJECT #:	2017.0195	
APPLICABLE CODES:		
IMC/IMMC:	2012	
ASHRAE 62.1	2007	
ASHRAE 90.1	2013	
LEED PROJECT? Y OR N	n	
100% OA Unit? Y OR N	n	

SYSTEM: AHU-3
DATE: 10/4/2017
ENGINEER: ACF
APPROVED: GAH

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Project Number: 2017041

Sheet Title
MECHANICAL SCHEDULES

Sheet Number
M703

TEMPERATURE CONTROL - SYMBOLS LIST

SCHEMATIC SYMBOLS

SYMBOL	DESCRIPTION
CS	CURRENT SWITCH
	DAMPER – PARALLEL BLADE
M	DAMPER MOTOR
	LINE – ELECTRIC
M/S	MOTOR STARTER
OS	OCCUPANCY SENSOR
AI	SIGNAL – DDC/BAS, ANALOG INPUT
AO	SIGNAL – DDC/BAS, ANALOG OUTPUT
DI	SIGNAL – DDC/BAS, DIGITAL INPUT
DO	SIGNAL – DDC/BAS, DIGITAL OUTPUT
SW	SWITCH
T	THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)

WIRING TERMS

ABBREVIATION	DESCRIPTION
NO	NORMALLY OPEN
NC	NORMALLY CLOSED

SCHEMATIC SYMBOLS (CONT.)

WIRING SYMBOLS

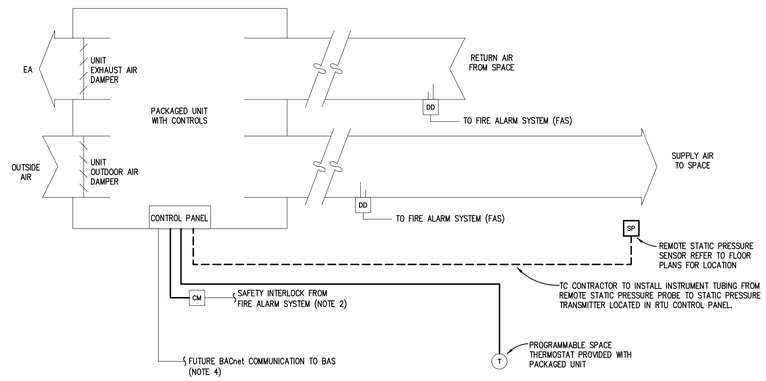
SYMBOL	DESCRIPTION
M/S	COIL – MOTOR STARTER CONTACTOR
	CONTACT – INSTANT OPERATING, NO
	CONTACT – INSTANT OPERATING, NC
	MOTOR, SINGLE PHASE
	SWITCH – MANUAL SPST, NO
	SWITCH – TEMPERATURE ACTUATED, NO
	THERMAL OVERLOAD, SINGLE PHASE
OL'S	THERMAL OVERLOAD CONTACTS – 3 PHASE
	TRANSFORMER
	VALVE – 2 WAY CONTROL VALVE
	VALVE – 3 WAY CONTROL VALVE
	WIRE TERMINATION AT DEVICE
	WIRE TO WIRE TERMINATION

NOTES:

1. SOME SYMBOLS & ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.
2. REFER TO MECHANICAL STANDARDS ON DRAWING M0.1 FOR ADDITIONAL SYMBOLS & ABBREVIATIONS THAT MAY BE USED ON TEMPERATURE CONTROL DRAWINGS.

GENERAL NOTES

1. THESE GENERAL NOTES SHALL BE APPLICABLE FOR ALL TC DRAWINGS.
2. "PROVIDE" IS DEFINED AS 'FURNISH AND INSTALL".
3. TC CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS.
4. FOR TEMPERATURE CONTROL DRAWINGS ONLY: ALL DETAILED INFORMATION IDENTIFIED WITH HEAVY LINE WEIGHT SHALL BE PROVIDED BY TC CONTRACTOR. ALL OTHER INFORMATION IDENTIFIED WITH LIGHT LINE WEIGHT SHALL BE PROVIDED BY OTHER TRADES.
5. ALL CONTROL SCHEMATICS AND WIRING DIAGRAMS ARE FOR THE CLARIFICATION OF EQUIPMENT INTERLOCKING FUNCTIONS AND THE INTERFACE OF VARIOUS CONTRACTORS' WORK AND SHALL NOT BE MISTAKEN AS SHOP DRAWINGS FOR ACTUAL INSTALLATION.
6. TC CONTRACTOR SHALL PROVIDE DDC CONTROLLERS AS REQUIRED TO MEET INTENT OF DESIGN DOCUMENTS. REFER TO THE PLANS FOR THE DDC FUNCTIONS THAT APPLY TO EACH MECHANICAL SYSTEM.
7. ALL TC PROVIDED COMPONENTS AND ALL TC CONTRACTOR INSTALLED WIRING SHALL BE LABELED PER SPECIFICATIONS.
8. ALL WIRING AND SYSTEM CONTROL VOLTAGES SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATION AND THE ELECTRICAL SPECIFICATIONS.
9. VARIABLE FREQUENCY CONTROLLER, FAN MOTOR STARTERS, STARTER WIRING, CONTROL VOLTAGE TRANSFORMERS AND ASSOCIATED POWER WIRING SHALL BE PROVIDED BY OTHER TRADES.
10. DUCT SMOKE DETECTORS SHALL BE FURNISHED, INSTALLED AND WIRED TO THE FIRE ALARM SYSTEM BY THE ELECTRICAL CONTRACTOR. ELECTRICAL SHALL PROVIDE FIRE ALARM SYSTEM CONTROL MODULES FOR REQUIRED SAFETIES TO MOTOR STARTERS OR VFCs AS INDICATED. CONTROL MODULES SHALL BE LOCATED NEAR RESPECTIVE MOTOR STARTERS OR VFCs. TC CONTRACTOR SHALL PROVIDE INTERLOCK WIRING FROM CONTROL MODULES TO MOTOR STARTERS OR VFCs.
11. ALL DDC AND CONTROL INTERLOCK WIRING SHALL BE BY TC CONTRACTOR UNLESS OTHERWISE NOTED. TC CONTRACTOR SHALL COORDINATE WITH VFC AND MOTOR STARTER SUPPLIERS TO DETERMINE EXACT WIRING REQUIREMENTS AND TERMINATION POINTS.
12. ALL DDC AND CONTROL INTERLOCK WIRING BETWEEN COMPONENTS SHALL BE INSTALLED WITHOUT INTERMEDIATE STOPS. WIRE SPLICING AT INTERMEDIATE TERMINAL STRIPS IS NOT ACCEPTABLE.
13. ALL ELECTRICAL WIRING AND RACEWAY SYSTEMS SHALL COMPLY WITH ELECTRICAL SPECIFICATION REQUIREMENTS. WHERE RACEWAY IS REQUIRED, TWO SEPARATE ELECTRICAL RACEWAY SYSTEMS SHALL BE PROVIDED: ONE FOR 120V WIRING AND THE OTHER FOR 24V WIRING.
14. TC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER SUPPLIES REQUIRED FOR TC SYSTEM UNLESS OTHERWISE NOTED. REFER TO ELECTRICAL PANEL SCHEDULES FOR SPARE CIRCUITS OR CIRCUITS DEDICATED TO TEMPERATURE CONTROLS. COORDINATE CIRCUIT USE WITH ELECTRICAL CONTRACTOR.
15. TC CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL FIELD MOUNTED COMPONENTS.
16. REMOTELY MOUNTED FIELD DEVICES SUCH AS RELAYS, CONTROL TRANSFORMERS, ETC., SHALL BE HOUSED IN AN ENCLOSURE PROVIDED BY THE TC CONTRACTOR.
17. CONTROL TRANSFORMERS WHEN REQUIRED SHALL BE SIZED FOR 150% OF ACTUAL LOAD.
18. CURRENT SWITCHES USED FOR OPERATIONAL STATUS SHALL HAVE CURRENT THRESHOLD SETPOINT ADJUSTED TO INDICATE BELT OR DRIVE FAILURE.
19. TC CONTRACTOR SHALL FIELD MOUNT ALL REQUIRED PACKAGED CONTROL COMPONENTS FURNISHED BY EQUIPMENT SUPPLIERS WHERE INDICATED. ALL REQUIRED 24V AND 120V FIELD WIRING SHALL BE PROVIDED BY TC CONTRACTOR UNLESS NOTED OTHERWISE. TC CONTRACTOR SHALL COORDINATE SPECIFIC SYSTEM WIRING REQUIREMENTS WITH PACKAGED EQUIPMENT SUPPLIERS.



RTU CONTROL

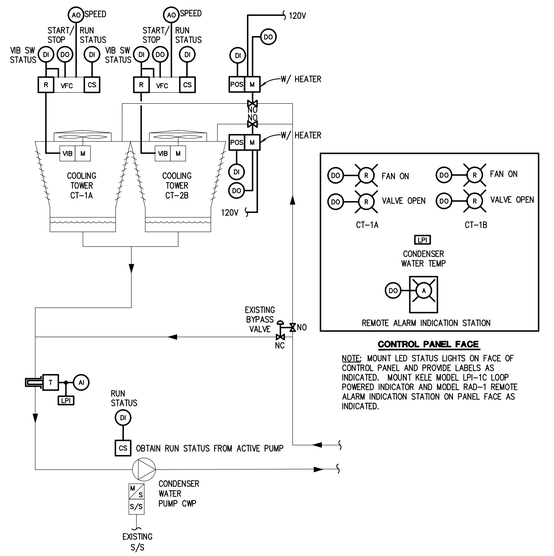
TYPICAL

NOTES:

1. RTU UNIT SHALL BE SUPPLIED FOR PROJECT WITH PACKAGED CONTROLS INCLUDING CONTROL DAMPERS AND BACnet COMMUNICATION INTERFACE FOR FUTURE BAS SCHEDULING, SPACE TEMP SETPOINT ADJUSTMENT AND UNIT MONITORING. UNIT SINGLE POINT CONNECTION POWER SUPPLY SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR. TC CONTRACTOR SHALL PROVIDE CONTROL FIELD WIRING FOR UNIT AS INDICATED PLUS ANY MISCELLANEOUS FIELD CONTROL WIRING THAT MAY BE REQUIRED FOR PACKAGED UNIT THAT IS NOT SHOWN.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE ALARM SYSTEM COMPONENTS AND WIRING FROM FIRE ALARM PANEL TO CONTROL MODULE. TC CONTRACTOR SHALL PROVIDE WIRING FROM CONTROL MODULE TO RTU UNIT SAFETY CUTOUT CIRCUIT..
3. BACnet COMMUNICATION INTERFACE TO FUTURE BAS NETWORK SUPERVISORY CONTROLLER, COMMUNICATING BUT NOT LIMITED TO THE FOLLOWING POINTS AS AVAILABLE:
   - OCCUPANCY MODE SCHEDULER (FROM BAS)
   - EFFECTIVE OCCUPANCY MODE (TO BAS)
   - SUPPLY FAN RUN STATUS (TO BAS)
   - EXHAUST FAN RUN STATUS (TO BAS)
   - SUPPLY AND EXHAUST FAN AIR FLOW (TO BAS)
   - SPACE TEMP SETPOINT (FROM BAS)
   - EFFECTIVE SPACE TEMP SETPOINT (TO BAS)
   - SPACE TEMP (TO BAS)
   - DISCHARGE AIR TEMP (TO BAS)
   - HEATING/COOLING MODE STATUS (TO BAS)
   - HEATING OUTPUT STATUS (TO BAS)
   - COMPRESSOR ENABLE STATUS, EACH STAGE (TO BAS)
   - DIRTY FILTER STATUS (TO BAS)
   - MSC UNIT TEMPERATURE MONITORING (TO BAS)
   - TEMP SENSOR FAILURE ALARMS (TO BAS)
   - UNIT SAFETY CUTOUT ALARMS (TO BAS)
   - OTHER MISC ALARMS (TO BAS)

SEQUENCE OF OPERATION:

1. RTU WITH PACKAGED CONTROLS SHALL MAINTAIN A SPACE TEMPERATURE (ADJUSTABLE THRU BAS) FOR BUILDING TEMPERATURE CONTROL REQUIREMENTS. PACKAGED CONTROL SHALL MODULATE MIXING DAMPERS, GAS BURNER CONTROL AND STAGE DX UNIT AS REQUIRED TO MAINTAIN PROPER DISCHARGE AIR TEMPERATURE CONTROL. PACKAGED CONTROL SHALL PROVIDE MINIMUM OUTSIDE AIR DAMPER CONTROL WITH ENTHALPY ECONOMIZER OVERRIDE CONTROL TO SATISFY MINIMUM OUTSIDE AIR QUANTITY, AS SCHEDULED, AND/OR FREE COOLING WHEN AVAILABLE.
2. SF VFC SHALL BE MODULATED BY PACKAGED CONTROLS AND SPACE STAT TO FUNCTION AS A SINGLE ZONE VAV UNIT. DURING OCCUPIED MODE, DDC SHALL ACTIVATE EF AND MODULATE THE EXHAUST (RELIEF) FAN SPEED TO MAINTAIN SPACE STATIC PRESSURE SETPOINT OF +0.02" W.C. THAT IS ADJUSTABLE FROM FUTURE BAS THRU BACnet COMMUNICATION. EF SHALL REMAIN OFF FOR UNOCCUPIED CYCLING AND MORNING WARM-UP MODES OF OPERATION. VFC COMMON FAILURE ALARM FOR SUPPLY FAN AND EXHAUST FAN SHALL BE MONITORED THRU AVAILABLE CONTACTS AT VFC'S. THE AIR BALANCE CONTRACTOR SHALL DETERMINE APPROPRIATE SPACE STATIC PRESSURE SETPOINT.
3. BACnet OPEN PROTOCOL COMMUNICATIONS INTERFACE SHALL BE PROVIDED WITH PACKAGED CONTROLS AND CONNECTED IN THE FUTURE TO OWNER'S BUILDING AUTOMATION SYSTEM THAT SHALL ALLOW UNIT SCHEDULING, FAN STATUSES, SPACE TEMPERATURE ADJUSTMENT AND ADDITIONAL UNIT MONITORING AS AVAILABLE.
4. FREEZESTAT(S) WIRED TO RTU SF SAFETY CUTOUT CIRCUIT SHALL DEACTIVATE SUPPLY FAN WHEN TEMPERATURE IS 35°F OR BELOW. DDC SHALL MONITOR FREEZESTAT STATUS AND ACTIVATE ALARM AT BAS IF CONDITION OCCURS.
5. DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE UNIT THRU FIRE ALARM SYSTEM CONTROL MODULE WHEN PRODUCTS OF COMBUSTION ARE DETECTED.



CONTROL PANEL FACE

NOTE: MOUNT LED STATUS LIGHTS ON FACE OF CONTROL PANEL AND PROVIDE LABELS AS INDICATED. MOUNT KELE MODEL LPI-1C LOOP POWERED INDICATOR AND MODEL RAD-1 REMOTE ALARM INDICATION STATION ON PANEL FACE AS INDICATED.

COOLING TOWER CONTROL

SEQUENCE OF OPERATION

COOLING TOWER SEQUENCE OF OPERATION

1. FOR NORMAL OPERATION, COOLING TOWER SYSTEM SHALL HAVE START/STOP CAPABILITY FROM THE DDC AND SHALL BE INTERLOCKED TO RUN WHEN THE EXISTING CONDENSER WATER PUMP RUNS..
2. COOLING TOWER FANS HAVE VFC'S WITH MODULATING SPEED CONTROL FROM DDC.
3. WHEN THE CONDENSER WATER PUMP IS STARTED (MANUALLY BY SYSTEM OPERATOR), DDC SHALL ACTIVATE THE COOLING TOWER CONTROL. THE ONE COOLING TOWER ISOLATION VALVE OPENS WHEN THE CONDENSER WATER PUMP STARTS. IF THE CONDENSER WATER TEMPERATURE IS ABOVE SETPOINT THE SECOND TOWER VALVE SHALL OPEN, THEN ONE FAN STARTED ON MIMINUM SPEED, THEN SECOND FAN STARTED ON MINIMUM SPEED. IF THE TEMPERATURE CONTINUE TO RISE THE VFC'S ON THE ACTIVE COOLING TOWER FANS SHALL BE MODULATED IN UNISON TO MAINTAIN CWS TEMP SETPOINT. AS THE TEMPERATURE DECREASES THE SEQUENCE SHALL GO IN REVERSE ORDER AS THE STARTING SEQUENCE. THE DDC SHALL ALTERNATE THE STARTING SEQUENCE OF THE FANS ON A MONTHLY BASIS.
4. WHEN THE CHILLER IS DEACTIVATED, THE COOLING TOWER FANS ARE DEACTIVATED AND COOLING TOWER ISOLATION VALVES REMAIN OPEN FOR A SET TIME DELAY TO ALLOW CW PUMP SHUTDOWN SEQUENCE TO OCCUR. TIME DELAY SHALL BE ONE MINUTE AFTER PUMP SHUTDOWN. TIMING IS CONTROLLED BY THE DDC.
5. DDC SHALL MONITOR COOLING TOWER FAN OPERATION THRU RESPECTIVE CURRENT SWITCH. UPON FAILURE, DDC SHALL PROVIDE ALARM AND SHUT DOWN THE FAILED FAN. IF ONLY ONE FAN WAS OPERATING, THE DDC WILL START THE OTHER FAN.
6. THE COOLING TOWER FAN VIBRATION SWITCH IS HARDWIRED TO SHUTDOWN THE COOLING TOWER FAN IF EXCESSIVE VIBRATION OCCURS. DDC SHALL MONITOR COOLING TOWER FAN VIBRATION SWITCH FOR EACH COOLING TOWER FAN AND PROVIDE ALARM IF LIMIT IS REACHED.
7. DDC CONTROLLER SHALL DRIVE LED STATUS INDICATOR LIGHTS FOR FAN "ON" AND VALVE "OPEN". DDC SHALL ACTIVATE A GENERAL ALARM LIGHT AND HORN IF ANY ALARM CONDITION OCCURS. REMOTE ALARM INDICATING STATION SHALL CONTAIN A HORN SILENCE BUTTON.

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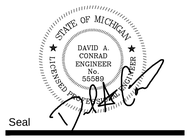


Seal

Revision	Date
PERMIT / BID	10-11-17
PROGRESS REVIEW	09-20-17
DD OR	08-31-17

Date: 10-11-17

Project Number: 2017041

Sheet Title: TEMPERATURE CONTROL STANDARDS AND GENERAL NOTES

Sheet Number: M801

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"

MECHANICAL GENERAL DEMOLITION NOTE

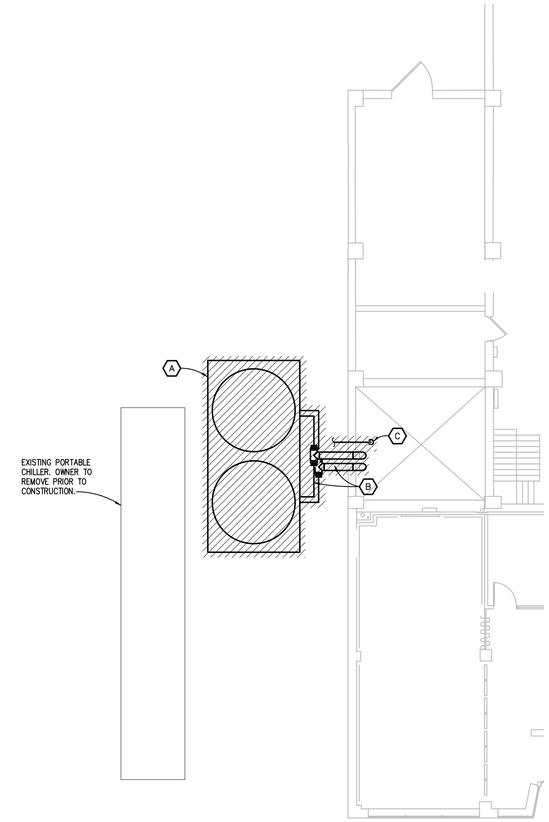
1. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE.
2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. ACTUAL ROUTING AND SIZES OF EXISTING PIPING AND DUCTWORK MIGHT DIFFER TO A LIMITED EXTENT FROM WHAT IS SHOWN. MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER.
3. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
4. ALL MECHANICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE, INCLUDING ALL RELATED ITEMS SUCH AS HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTWORK.

(#) DEMOLITION KEY NOTES:

A. REMOVE COOLING TOWER AND ALL ASSOCIATED ACCESSORIES, STEEL, AND SUPPORTS.

B. REMOVE CONDENSER WATER AND ASSOCIATED VALVES BACK TO SHAFT. PREPARE EXISTING PIPING IN SHAFT FOR EXTENSION UP. REFER TO NEW WORK PLANS.

C. REMOVE NPCW TOWER MAKEUP BACK TO SHAFT. PREPARE EXISTING PIPING IN SHAFT FOR EXTENSION UP. REFER TO NEW WORK PLANS.



FIRST FLOOR MECHANICAL DEMOLITION PLAN

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

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Sheet Title
MECHANICAL DEMOLITION PLAN

Sheet Number
MD101

ELECTRICAL GENERAL REQUIREMENTS

A. SCOPE OF WORK: ALL MATERIAL SHALL BE NEW UNLESS OTHERWISE INDICATED. FURNISH ALL LABOR, EQUIPMENT, TECHNICAL SUPERVISION, AND INCIDENTAL SERVICES REQUIRED TO COMPLETE, TEST, AND LEAVE READY FOR OPERATION THE ELECTRICAL SYSTEMS AS SPECIFIED AND AS INDICATED ON DRAWINGS.

B. ORDINANCES AND CODES: PERFORM ALL WORK IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL ORDINANCES AND REGULATIONS, THE RULES AND REGULATIONS OF NFPA, NECA, AND UL, UNLESS OTHERWISE INDICATED.

C. UNLESS OTHERWISE INDICATED, ALL REQUIRED PERMITS, LICENSES, INSPECTIONS, APPROVALS AND FEES FOR ELECTRICAL WORK SHALL BE SECURED AND PAID FOR BY THE CONTRACTOR. ALL WORK SHALL CONFORM TO ALL APPLICABLE CODES, RULES AND REGULATIONS.

D. THE DRAWINGS SHOW THE LOCATION AND GENERAL ARRANGEMENT OF EQUIPMENT, ELECTRICAL SYSTEMS AND RELATED ITEMS. THEY SHALL BE FOLLOWED AS CLOSELY AS ELEMENTS OF THE CONSTRUCTION WILL PERMIT.

E. EXAMINE THE DRAWINGS OF OTHER TRADES AND VERIFY THE CONDITIONS GOVERNING THE WORK ON THE JOB SITE. ARRANGE WORK ACCORDINGLY, PROVIDING SUCH FITTINGS, CONDUIT, JUNCTION BOXES AND ACCESSORIES AS MAY BE REQUIRED TO MEET SUCH CONDITIONS.

F. COORDINATE ARRANGEMENT, MOUNTING AND SUPPORT OF ELECTRICAL EQUIPMENT WITH OTHER TRADES.

G. VISIT THE SITE, EXAMINE AND VERIFY THE CONDITIONS UNDER WHICH THE WORK MUST BE CONDUCTED BEFORE SUBMITTING PROPOSAL. THE SUBMITTING OF A PROPOSAL IMPLIES THAT THE CONTRACTOR HAS VISITED THE SITE AND UNDERSTANDS THE CONDITIONS UNDER WHICH THE WORK MUST BE CONDUCTED. NO ADDITIONAL CHARGES WILL BE ALLOWED BECAUSE OF FAILURE TO MAKE THIS EXAMINATION OR TO INCLUDE ALL MATERIALS AND LABOR TO COMPLETE THE WORK.

H. BIDS SHALL BE BASED UPON MANUFACTURED EQUIPMENT SPECIFIED. VOLUNTARY ALTERNATES MAY BE SUBMITTED FOR CONSIDERATION, WITH LISTED ADDITION OR DEDUCTION TO THE BID.

I. WARRANTY: CONTRACTOR SHALL WARRANTY THAT THE ELECTRICAL INSTALLATION IS FREE FROM DEFECTS AND AGREES TO REPLACE OR REPAIR, TO THE OWNER'S SATISFACTION, ANY PART OF THIS ELECTRICAL INSTALLATION WHICH BECOMES DEFECTIVE WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION FOLLOWING FINAL ACCEPTANCE, PROVIDED THAT SUCH FAILURE IS DUE TO DEFECTS IN THE EQUIPMENT, MATERIAL, WORKMANSHIP OR FAILURE TO FOLLOW THE CONTRACT DOCUMENTS.

J. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY TEMPORARY SERVICES INCLUDING EQUIPMENT AND INSTALLATION REQUIRED TO MAINTAIN OPERATION AS A RESULT OF ANY EQUIPMENT FAILURE OR DEFECT DURING WARRANTY PERIOD.

K. FILE WITH THE OWNER ANY AND ALL WARRANTIES FROM THE EQUIPMENT MANUFACTURERS INCLUDING THE OPERATING CONDITIONS AND PERFORMANCE CAPACITIES THEY ARE BASED ON.

L. CONSULT WITH THE OWNER'S REPRESENTATIVE AS TO THE METHODS OF CARRYING ON THE WORK SO AS NOT TO INTERFERE WITH THE OWNER'S OPERATION ANY MORE THAN ABSOLUTELY NECESSARY. ACCORDINGLY, ALL SERVICE LINES SHALL BE KEPT IN OPERATION AS LONG AS POSSIBLE AND THE SERVICES SHALL ONLY BE INTERRUPTED AT SUCH TIME AS WILL BE DESIGNATED BY THE OWNER'S REPRESENTATIVE.

M. ALL CUTTING, PATCHING AND REPAIR WORK SHALL BE PERFORMED BY THE CONTRACTOR THROUGH APPROVED, QUALIFIED SUBCONTRACTORS. CONTRACTOR SHALL INCLUDE FULL COST OF SAME IN BID.

N. PROVIDE ALL EXCAVATION, TRENCHING, TUNNELING, DEWATERING AND BACKFILLING REQUIRED FOR THE ELECTRICAL WORK. COORDINATE THE WORK WITH OTHER EXCAVATING AND BACKFILLING IN THE SAME AREA.

O. INSPECT THE INSTALLATION OF ALL EQUIPMENT PER THE MANUFACTURER'S RECOMMENDATION AND APPLICABLE CODES.

P. PROVIDE UL APPROVED FIRE-STOPPING SYSTEM FOR ALL PENETRATIONS PASSING THROUGH FIRE RATED ASSEMBLIES.

Q. COMPLY WITH NECA 1.

R. PROVIDE COMPLETE OPERATION AND MAINTENANCE INSTRUCTIONAL MANUALS COVERING ALL ELECTRICAL EQUIPMENT HEREIN SPECIFIED, TOGETHER WITH PARTS LISTS.

S. CONTRACTOR SHALL SUBMIT TO THE ARCHITECT/ENGINEER, RECORD DRAWINGS ON ELECTRONIC MEDIA OR MYLAR WHICH HAVE BEEN NEATLY MARKED TO REPRESENT AS-BUILT CONDITIONS FOR ALL NEW ELECTRICAL WORK.

T. SUBMIT FOR APPROVAL SHOP DRAWINGS FOR ELECTRICAL SYSTEMS OR EQUIPMENT LISTED BELOW:
1. PANELBOARDS
2. TRANSFORMERS
3. MOTOR CONTROL
4. DISCONNECT SWITCHES
5. TIME SWITCHES
6. WIRING DEVICES
7. LIGHTING FIXTURES
8. LIGHTING CONTROL SYSTEMS AND DEVICES
9. SURFACE RACEWAYS
10. FUSES
11. FIRE ALARM SYSTEM

U. PROVIDE AND INSTALL ARC-FLASH HAZARD LABELS ON EACH ELECTRICAL EQUIPMENT AND ENCLOSURES DEFINED BY NFPA 70E. LABELS SHALL COMPLY WITH THE REQUIREMENTS OF NFPA 70E AND CONTAIN AS A MINIMUM:
1. VOLTAGE (PHASE-PHASE)
2. FLASH PROTECTION BOUNDARY (INCHES)
3. INCIDENT ENERGY LEVEL AT THE WORKING DISTANCE (CA/CM2)
4. PERSONNEL PROTECTIVE EQUIPMENT (PPE) CLASS AND DESCRIPTION.
5. RESTRICTED APPROACH BOUNDARY (INCHES)
6. LIMITED SHOCK APPROACH BOUNDARY (INCHES)
7. PROHIBITED SHOCK APPROACH BOUNDARY (INCHES)

GROUNDING AND BONDING

A. EQUIPMENT GROUNDING: COMPLY WITH NFPA 70, ARTICLE 250, FOR TYPES, SIZES, AND QUANTITIES OF EQUIPMENT GROUNDING CONDUCTORS, UNLESS SPECIFIC TYPES, LARGER SIZES, OR MORE CONDUCTORS THAN REQUIRED BY NFPA 70 ARE INDICATED.

B. PROVIDE EQUIPMENT GROUNDING CONDUCTORS IN EACH RACEWAY.

C. PANELBOARDS SHALL BE BONDED PER NEC ARTICLE 517.

CONDUCTORS AND CABLES

A. CONDUCTOR MATERIAL: COPPER COMPLYING WITH NEMA WC 70; STRANDED CONDUCTOR.

B. CONDUCTOR INSULATION TYPES: TYPE THIN-THWN, XHHW-2, SO, COMPLYING WITH NEMA WC 70.

C. CONCEAL CABLES IN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.

D. USE CONDUCTOR NOT SMALLER THAN 12 AWG FOR POWER AND LIGHTING CIRCUITS. UNLESS INDICATED OTHERWISE, ALL CIRCUITS SHALL BE #12, #12G, 3/4"C.

E. USE CONDUCTOR NOT SMALLER THAN 14 AWG FOR CONTROL CIRCUITS, PROVIDED BY ELECTRICAL CONTRACTOR.

F. SUPPORT COMMUNICATION CABLES ABOVE ACCESSIBLE CEILING, USING SPRING METAL CLIPS OR PLASTIC CABLE TIES TO SUPPORT CABLES FROM STRUCTURE. DO NOT REST CABLE ON CEILING PANELS.

G. USE "STA-KON" CONNECTORS TO TERMINATE STRANDED CONDUCTORS #10 AWG AND SMALLER TO SCREW TERMINALS.

H. CONDUCTOR AND INSULATION APPLICATIONS:
1. FEEDERS: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.
2. BRANCH CIRCUITS, INCLUDING IN CRAWLSPACES: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY OR TYPE MC CABLE. PROVIDE A DEDICATED NEUTRAL FOR EACH CIRCUIT.
3. UNDERGROUND FEEDERS AND BRANCH CIRCUITS: TYPE XHHW-2, SINGLE CONDUCTORS IN RACEWAY.
4. FEEDERS AND BRANCH CIRCUITS ON ROOFTOPS: TYPE XHHW-2, SINGLE CONDUCTORS IN RACEWAY.
5. CORD DROPS AND PORTABLE APPLIANCE CONNECTIONS: TYPE SO, HARD SERVICE CORD
6. CLASS I CONTROL CIRCUITS: TYPE THHN -THWN IN RACEWAY.
7. CLASS II CONTROL CIRCUITS: POWER LIMITED CABLE

RACEWAYS AND BOXES

A. SURFACE METAL RACEWAYS: GALVANIZED STEEL WITH SNAP-ON COVERS. FINISH WITH MANUFACTURER'S STANDARD PRIME COATING. WIREMOLD OR EQUAL. SIZE/TYPE AS SHOWN ON DRAWINGS.

B. MINIMUM RACEWAY SIZE: 3/4-INCH TRADE SIZE.

C. INSTALL CONDUIT IN ACCORDANCE WITH NECA "NATIONAL ELECTRICAL INSTALLATION STANDARDS".

D. ROUTE CONDUITS IN FINISHED AREAS WITH EXPOSED CEILINGS AT UNDERSIDE OF STRUCTURAL DECK OR AS HIGH AS POSSIBLE. WHERE STEEL METAL DECK ON STEEL JOIST CONSTRUCTION, ROUTE CONDUITS ABOVE JOISTS. DO NOT SECURE CONDUIT TO BOTTOM OF JOISTS.

E. RACEWAY APPLICATIONS: REFER TO RACEWAY APPLICATIONS SCHEDULE ON SHEET E0.2.

F. FITTINGS FOR EMT: STEEL, COMPRESSION TYPE.

G. INSTALL SURFACE RACEWAYS ONLY WHERE INDICATED ON DRAWINGS.

H. CONCEAL CONDUIT AND EMT WITHIN FINISHED WALLS, CEILINGS, AND FLOORS UNLESS OTHERWISE INDICATED.

IDENTIFICATION

A. COMPLY WITH ANSI A13.1, ANSI C2, NFPA 70, AND 29 CFR 1910.145.

B. COORDINATE IDENTIFICATION NAMES, ABBREVIATIONS, COLORS, AND OTHER FEATURES WITH REQUIREMENTS IN THE CONTRACT DOCUMENTS, SHOP DRAWINGS, MANUFACTURER'S WIRING DIAGRAMS, AND THE OPERATION AND MAINTENANCE MANUAL, AND WITH THOSE REQUIRED BY CODES, STANDARDS, AND 29 CFR 1910.145. USE CONSISTENT DESIGNATIONS THROUGHOUT PROJECT.

C. COORDINATE INSTALLATION OF IDENTIFYING DEVICES WITH COMPLETION OF COVERING AND PAINTING OF SURFACES WHERE DEVICES ARE TO BE APPLIED, WITH LOCATION OF ACCESS PANELS AND DOORS.

D. INSTALL IDENTIFYING DEVICES BEFORE INSTALLING ACOUSTICAL CEILINGS AND SIMILAR CONCEALMENT.

E. INSTALL ENGRAVED, LAMINATED ACRYLIC OR MELAMINE LABEL THAT ARE PUNCHED OR DRILLED FOR SCREW MOUNTING WITH SELF TAPPING STAINLESS STEEL SCREWS. LABELS SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND. MINIMUM LETTER HEIGHT SHALL BE 3/8 INCH (10 MM). LABELS SHALL BE INSTALLED ON ALL ELECTRICAL EQUIPMENT AFFECTED BY PROJECT.
1. PANELBOARD AND TRANSFORMER NAMEPLATES: IDENTIFY SOURCE FED FROM, VOLTAGE, SIZE, AND NAME.
2. ENCLOSED CONTROLLERS, CIRCUIT BREAKERS, DISCONNECT SWITCHES: IDENTIFY SOURCE AND LOAD SERVED.

F. USE THE COLORS LISTED BELOW FOR UNGROUNDED SERVICE, FEEDER, AND BRANCH-CIRCUIT CONDUCTORS.
1. COLOR SHALL BE FACTORY APPLIED OR, FOR SIZES LARGER THAN NO. 10 AWG IF AUTHORITIES HAVING JURISDICTION PERMIT, FIELD APPLIED.
2. COLORS FOR 208/120-V CIRCUITS:
   a. PHASE A: BLACK.
   b. PHASE B: RED.
   c. PHASE C: BLUE.
   d. NEUTRAL: WHITE.
3. FIELD-APPLIED, COLOR-CODING CONDUCTOR TAPE: APPLY IN HALF-LAPPED TURNS FOR A MINIMUM DISTANCE OF 6 INCHES FROM TERMINAL POINTS AND IN BOXES WHERE SPLICES OR TAPS ARE MADE. APPLY LAST TWO TURNS OF TAPE WITH NO TENSION TO PREVENT POSSIBLE UNWINDING. LOCATE BANDS TO AVOID OBSCURING FACTORY CABLE MARKINGS.

G. WARNING LABELS FOR INDOOR CABINETS, BOXES, AND ENCLOSURES FOR POWER AND LIGHTING: COMPLY WITH 29 CFR 1910.145 AND APPLY SELF-ADHESIVE WARNING LABELS. IDENTIFY SYSTEM VOLTAGE WITH BLACK LETTERS ON AN ORANGE BACKGROUND. APPLY TO EXTERIOR OF DOOR, COVER, OR OTHER ACCESS.
1. EQUIPMENT WITH MULTIPLE POWER OR CONTROL SOURCES: APPLY TO DOOR OR COVER OF EQUIPMENT INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
   a. ATS.
   b. SERVICE ENTRANCE EQUIPMENT.
2. EQUIPMENT REQUIRING WORKSPACE CLEARANCE ACCORDING TO NFPA 70: UNLESS OTHERWISE INDICATED, APPLY TO DOOR OR COVER OF EQUIPMENT BUT NOT ON FLUSH PANELBOARDS AND SIMILAR EQUIPMENT IN FINISHED SPACES.

H. ACCESSIBLE RACEWAYS AND CABLES OF AUXILIARY SYSTEMS: IDENTIFY THE FOLLOWING SYSTEMS WITH COLOR-CODED, SELF-ADHESIVE VINYL TAPE APPLIED IN BANDS:
1. FIRE ALARM SYSTEM: RED.
2. SECURITY SYSTEM: BLUE AND YELLOW.
3. TELECOMMUNICATION SYSTEM: GREEN AND YELLOW.
4. CONTROL WIRING: GREEN AND RED.

WIRING DEVICES

A. STRAIGHT-BLADE-TYPE RECEPTACLES: COMPLY WITH NEMA WD 1, NEMA WD 6, DSCC W-C-596G, AND UL 498. CONFIGURATION 5-20R DUPLEX RECEPTACLE. HUBBELL HBL 5362 OR EQUAL BY PASS & SEYMOUR OR COOPER.

B. GFCI RECEPTACLES: STRAIGHT BLADE, FEED-THROUGH TYPE, GENERAL DUTY GRADE, WITH INTEGRAL NEMA WD 6, CONFIGURATION 5-20R DUPLEX RECEPTACLE; COMPLYING WITH UL 498 AND UL 943. DESIGN UNITS FOR INSTALLATION IN A 2-3/4-INCH- (70-MM-) DEEP OUTLET BOX WITHOUT AN ADAPTER. HUBBELL GF5362 OR EQUAL BY PASS & SEYMOUR OR COOPER.

C. WALL SWITCHES: SINGLE AND DOUBLE-POLE SWITCHES: COMPLY WITH DSCC W-C-896F AND UL 20. HUBBELL WIRING DEVICE, KELLEMS 1220 SERIES OR EQUAL BY PASS & SEYMOUR, COOPER OR LEVITON.

D. LED LAMP DIMMER SWITCHES: LUTRON OR EQUAL, COMPATIBLE WITH LED DIMMING BALLASTS SPECIFIED.

E. WALL PLATES:
1. PROVIDE STAINLESS STEEL WALL PLATES IN FINISHED AREAS.
2. PROVIDE GALVANIZED STEEL WALL PLATES IN UNFINISHED AREAS.
3. PROVIDE WEATHERPROOF WHILE-IN-USE COVERPLATES FOR WET LOCATIONS.

F. WIRING DEVICE COLOR AS SELECTED BY ARCHITECT UNLESS OTHERWISE INDICATED OR REQUIRED BY NFPA 70.

G. CONNECT WIRING DEVICE GROUNDING TERMINAL TO OUTLET BOX WITH BONDING JUMPER. USE OF QUICK GROUND STRAP OR SCREW IS NOT ACCEPTABLE.

H. CORD AND PLUG SETS: MATCH VOLTAGE AND CURRENT RATINGS AND NUMBER OF CONDUCTORS TO REQUIREMENTS OF EQUIPMENT BEING CONNECTED.
1. CORD: RUBBER-INSULATED, STRANDED-COPPER CONDUCTORS, WITH TYPE SOW-A JACKET; WITH GREEN-INSULATED GROUNDING CONDUCTOR AND EQUIPMENT-RATING AMPACITY PLUS A MINIMUM OF 30 PERCENT.
2. PLUG: NYLON BODY AND INTEGRAL CABLE-CLAMPING JAWS. MATCH CORD AND RECEPTACLE TYPE FOR CONNECTION.

LIGHTING CONTROL DEVICES

I. INSTALL LIGHTING CONTROL DEVICES AS INDICATED ON PLAN. INSTALL AT ACCESSIBLE LOCATIONS. MOUNT PHOTOCELL ON ROOF OR PARAPET TO ½" GRS CONDUIT, SUPPORTED TO BUILDING STRUCTURE BELOW. COORDINATE ROOF PENETRATION WITH ROOFING CONTRACTOR.

J. COORDINATE OCCUPANCY SENSOR LOCATIONS, COVERAGES AND REQUIRED QUANTITIES WITH MANUFACTURER'S RECOMMENDATIONS. COVERAGE AREAS INDICATED ON THE DRAWINGS ARE FOR MINOR MOTION (6 TO 8 INCHES OF HAND MOVEMENT). PROVIDE ADDITIONAL OCCUPANCY SENSORS AND CONTROL UNITS AS REQUIRED TO ACHIEVE COMPLETE MINOR MOTION COVERAGE OF THE SPACE INDICATED.

K. OCCUPANCY SENSOR ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTING SENSORS TO SUIT ACTUAL OCCUPIED CONDITIONS. PROVIDE UP TO TWO VISITS TO SITE OUTSIDE NORMAL OCCUPANCY HOURS FOR THIS PURPOSE.

L. OCCUPANCY SENSOR:
1. WALL SWITCH PASSIVE INFRARED OCCUPANCY SENSOR: WATTSTOPPER PW-100 OR EQUAL.
2. DUAL LEVEL SWITCHING PASSIVE INFRARED OCCUPANCY SENSOR: WATTSTOPPER PW-200 OR EQUAL.
3. 360° CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR: WATTSTOPPER DT 300 OR EQUAL.
4. 110° WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR: WATTSTOPPER DT-200 OR EQUAL.
5. 360° CEILING MOUNTED ULTRASONIC OCCUPANCY SENSORS: WATTSTOPPER "WT" SERIES OR EQUAL.
6. 360° CEILING MOUNTED PASSIVE INFRARED OCCUPANCY SENSOR. WATTSTOPPER CI-200 OR EQUAL.

M. OCCUPANCY SENSOR CONTROL UNITS:
1. DESCRIPTION: TRANSFORMER AND RELAY COMBINED IN SINGLE UNIT TO PROVIDE 24DC POWER TO SENSORS AND PROVIDE 20A CONTACT(S) FOR CONTROL OF LIGHTING LOADS AT 120 OR 277V. CONTROL UNIT INPUT POWER SHALL BE FROM UNSWITCHED LEG OF LIGHTING CIRCUIT IT IS CONTROLLING.
   a. CONTROL UNITS SHALL BE PROVIDED AS REQUIRED TO POWER CEILING MOUNTED OCCUPANCY SENSORS, CONTROL LIGHTING LOADS AND PROVIDE A MINIMUM OF ONE AUXILIARY CONTACT.
   b. OCCUPANCY SENSOR CONTROL UNITS SHALL MOUNT EXTERNAL TO 4"SQ JUNCTION BOX IN THE CEILING SPACE. ALL WIRING BETWEEN CONTROL UNIT AND OCCUPANCY SENSOR SHALL BE PLENUM RATED.
   c. LOCATE CONTROL UNIT IN ACCESSIBLE LOCATION IN GYP-BOARD CEILINGS, ADJACENT TO RETURN AIR GRILLES, OR PROVIDE ACCESS PANEL.
   d. ADDITIONAL AUXILIARY RELAY MODULES SHALL BE PROVIDED AS REQUIRED TO PROVIDE CONTROL OF ALL LIGHTING CIRCUITS AND ADDITIONAL AUXILIARY CONTACTS AS REQUIRED.
   e. IT IS ACCEPTABLE TO PROVIDE CONTROLS AND AUXILIARY CONTACTS AS REQUIRED INTEGRAL TO THE CEILING SENSOR, PROVIDED ALL REQUIRED CONTACTS ARE PROVIDED.
   f. MAXIMUM OF 3 SENSORS PER POWER PACK. VERIFY EXACT QUANTITIES REQUIRED WITH MANUFACTURER.

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS; PROVIDE PRODUCTS BY SQUARE D, EATON, GENERAL ELECTRIC, OR SIEMENS.

B. FUSIBLE AND NON-FUSIBLE SWITCHES: NEMA KS 1, QUICK MAKE, QUICK-BREAK LOAD INTERRUPTER ENCLOSED KNIFE SWITCH TYPE HD, WITH CLIPS OR BOLT PADS TO ACCOMMODATE SPECIFIED FUSES (IF REQUIRED), EXTERNALLY OPERABLE LOCKABLE HANDLE WITH CAPABILITY TO ACCEPT TWO PADLOCKS, AND INTERLOCKED WITH COVER IN CLOSED POSITION. SQUARE D OR EQUAL.

C. TOGGLE DISCONNECT SWITCH: HEAVY DUTY, 30A, 600 VOLT, DOUBLE OR THREE POLE AS REQUIRED, SINGLE THROW, MOTOR RATED SWITCH WITHOUT OVERLOAD PROTECTION. PROVIDE NEMA 1 ENCLOSURE AND PADLOCK ATTACHMENT.

D. MOLDED-CASE CIRCUIT BREAKER: NEMA AB 1, WITH INTERRUPTING CAPACITY TO MEET AVAILABLE FAULT CURRENTS. THERMAL-MAGNETIC CIRCUIT BREAKER WITH INVERSE TIME-CURRENT ELEMENT FOR LOW-LEVEL OVERLOADS AND INSTANTANEOUS MAGNETIC TRIP ELEMENT FOR SHORT CIRCUITS. ADJUSTABLE MAGNETIC TRIP SETTING FOR CIRCUIT-BREAKER FRAME SIZES 250 A AND LARGER.

E. MOLDED-CASE SWITCHES: MOLDED-CASE CIRCUIT BREAKER WITH FIXED, HIGH-SET INSTANTANEOUS TRIP ONLY, AND SHORT-CIRCUIT WITHSTAND RATING EQUAL TO EQUIVALENT BREAKER FRAME SIZE INTERRUPTING RATING.

F. COMPLY WITH APPLICABLE PORTIONS OF NECA 1, NEMA PB 1.1, AND NEMA PB 2.1 FOR INSTALLATION OF ENCLOSED SWITCHES AND CIRCUIT BREAKERS.

G. SET FIELD-ADJUSTABLE SWITCHES AND CIRCUIT-BREAKER TRIP AND TIME DELAY SETTINGS.

ENCLOSED CONTROLLERS

A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS; PROVIDE PRODUCTS BY SQUARE D, EATON, GENERAL ELECTRIC, OR SIEMENS.

B. ENCLOSURES: FLUSH- OR SURFACE-MOUNTING CABINETS AS INDICATED. NEMA 250, TYPE 1, UNLESS OTHERWISE INDICATED TO COMPLY WITH ENVIRONMENTAL CONDITIONS AT INSTALLED LOCATION.

C. SELECT HORSEPOWER RATING OF CONTROLLERS TO SUIT MOTOR CONTROLLED.

D. FOR CONTROL EQUIPMENT AT WALLS, BOLT UNITS TO WALL OR MOUNT ON LIGHTWEIGHT STRUCTURAL-STEEL CHANNELS BOLTED TO WALL FOR CONTROLLERS NOT AT WALLS, PROVIDE FREESTANDING RACKS.

E. INSTALL FREESTANDING EQUIPMENT ON CONCRETE BASES.

F. ENCLOSED CONTROLLER FUSES: INSTALL FUSES IN EACH FUSIBLE SWITCH.

G. SELECT AND INSTALL HEATER ELEMENTS IN MOTOR STARTERS TO MATCH INSTALLED MOTOR CHARACTERISTICS.

H. SET FIELD-ADJUSTABLE SWITCHES AND CIRCUIT-BREAKER TRIP RANGES.

I. MANUAL CONTROLLER: NEMA ICS 2, GENERAL PURPOSE, CLASS A, WITH "QUICK-MAKE, QUICK-BREAK" TOGGLE OR PUSHBUTTON ACTION, MARKED TO SHOW WHETHER UNIT IS "OFF," "ON," OR "TRIPPED," AND OVERLOAD RELAY.

J. MAGNETIC CONTROLLER: NEMA ICS 2, CLASS A, FULL VOLTAGE, NONREVERSING, ACROSS THE LINE, UNLESS OTHERWISE INDICATED.
1. CONTROL CIRCUIT: 120 V, OBTAINED FROM INTEGRAL CONTROL POWER TRANSFORMER WITH SUFFICIENT CAPACITY TO OPERATE CONNECTED PILOT, INDICATING AND CONTROL DEVICES, PLUS 100 PERCENT SPARE CAPACITY.
2. OVERLOAD RELAY: AMBIENT-COMPENSATED TYPE WITH INVERSE-TIME-CURRENT CHARACTERISTIC AND NEMA ICS 2, CLASS 20 TRIPPING CHARACTERISTIC. PROVIDE WITH HEATERS OR SENSORS IN EACH PHASE MATCHED TO NAMEPLATE FULL-LOAD CURRENT OF SPECIFIC MOTOR TO WHICH THEY CONNECT AND WITH APPROPRIATE ADJUSTMENT FOR DUTY CYCLE.

K. COMBINATION MAGNETIC CONTROLLER: FACTORY-ASSEMBLED COMBINATION CONTROLLER AND DISCONNECT SWITCH.
1. FUSIBLE DISCONNECTING MEANS: NEMA KS 1, HEAVY-DUTY, FUSIBLE SWITCH WITH REJECTION-TYPE FUSE CLIPS RATED FOR FUSES. SELECT AND SIZE FUSES TO PROVIDE TYPE 2 PROTECTION ACCORDING TO IEC 947-4-1, AS CERTIFIED BY AN NRTL.

L. ACCESSORIES:
1. DEVICES SHALL BE FACTORY INSTALLED IN CONTROLLER ENCLOSURE, UNLESS OTHERWISE INDICATED.
2. PUSH-BUTTON STATIONS, PILOT LIGHTS: NEMA ICS 2, HEAVY-DUTY TYPE.
3. INDICATING LIGHTS: RUN (RED), OFF OR READY (GREEN).
4. AUXILIARY CONTACTS: PROVIDE TWO NORMALLY OPEN (N.O.) AND TWO NORMALLY CLOSED (N.C.) CONTACTS.
5. SELECTOR SWITCH: NEMA ISC 2, MOUNTED IN FRONT COVER TO READ "HAND/OFF/AUTO". PROVIDE AUXILIARY CONTACT FOR AUTO POSITION MONITORING.
6. CONTROL RELAYS: AUXILIARY AND ADJUSTABLE TIME-DELAY RELAYS.

PANELBOARDS

A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS; PROVIDE PRODUCTS BY SQUARE D, EATON, GENERAL ELECTRIC, OR SIEMENS.

B. COORDINATE LAYOUT AND INSTALLATION OF PANELBOARDS AND COMPONENTS WITH OTHER CONSTRUCTION THAT PENETRATES WALLS OR IS SUPPORTED BY THEM, INCLUDING ELECTRICAL AND OTHER TYPES OF EQUIPMENT, RACEWAYS, PIPING, AND ENCUMBRANCES TO WORKSPACE CLEARANCE REQUIREMENTS.

C. PHASE AND GROUND BUSES SHALL BE HARD-DRAWN COPPER, 98 PERCENT CONDUCTIVITY.

D. SERVICE EQUIPMENT LABEL: UL LABELED FOR USE AS SERVICE EQUIPMENT FOR PANELBOARDS WITH MAIN SERVICE DISCONNECT SWITCHES.

E. SHORT-CIRCUIT RATING: FULLY RATED TO INTERRUPT SYMMETRICAL SHORT-CIRCUIT CURRENT AVAILABLE AT TERMINALS.

F. INSTALL PANELBOARDS AND ACCESSORIES ACCORDING TO NEMA PB 1.1.

G. MOUNT TOP OF TRIM 74 INCHES (1880 MM) ABOVE FINISHED FLOOR, UNLESS OTHERWISE INDICATED.

H. STUB FOUR 1-INCH (27-GRC) EMPTY CONDUITS FROM RECESSED PANELBOARD INTO ACCESSIBLE CEILING SPACE OR SPACE DESIGNATED TO BE CEILING SPACE IN THE FUTURE. STUB FOUR 1-INCH (27-GRC) EMPTY CONDUITS INTO RAISED FLOOR SPACE OR BELOW SLAB NOT ON GRADE.

I. CREATE A DIRECTORY TO INDICATE INSTALLED CIRCUIT LOADS AFTER BALANCING PANELBOARD LOADS OR CREATED BY RETROFITTING. OBTAIN APPROVAL BEFORE INSTALLING. USE A COMPUTER OR TYPEWRITER TO CREATE DIRECTORY; HANDWRITTEN DIRECTORIES ARE NOT ACCEPTABLE. COORDINATE FINAL DIRECTORY ROOM NAMES AND NUMBERS WITH (OWNER) (FACILITY ENGINEER).

J. LOAD BALANCING: AFTER SUBSTANTIAL COMPLETION, BUT NOT MORE THAN 60 DAYS AFTER FINAL ACCEPTANCE, MEASURE LOAD BALANCING AND MAKE CIRCUIT CHANGES.

K. ON COMPLETION OF INSTALLATION, INSPECT INTERIOR AND EXTERIOR OF PANELBOARDS. REMOVE PAINT SPLATTERS AND OTHER SPOTS. VACUUM DIRT AND DEBRIS; DO NOT USE COMPRESSED AIR TO ASSIST IN CLEANING. REPAIR EXPOSED SURFACES TO MATCH ORIGINAL FINISH.

L. LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS
1. BRANCH OVERCURRENT PROTECTIVE DEVICES: BOLT-ON CIRCUIT BREAKERS, REPLACEABLE WITHOUT DISTURBING ADJACENT UNITS.

M. SURGE PROTECTIVE DEVICE PANELBOARDS
1. SINE-WAVE-TRACKING TYPE, WITH THE FOLLOWING FEATURES AND ACCESSORIES:
   a. MOV TECHNOLOGY FOR EACH SUPPRESSION MODE.
   b. FUSES, RATED AT 200-KA INTERRUPTING CAPACITY, PROVIDE FUSING FOR EACH SUPPRESSION PATH.
   c. FABRICATION USING BOLTED COMPRESSION LUGS FOR INTERNAL WIRING. NO PLUG-IN COMPONENT MODULES, QUICK DISCONNECT TERMINALS OR PRINTED CIRCUIT BOARDS SHALL BE USED IN CURRENT-CARRYING PATHS.
   d. INTEGRAL DISCONNECT SWITCH WHICH HAS BEEN TESTED TO THE SURGE CURRENT RATING OF THE SP TO MATCH OR EXCEED THE FAULT CURRENT RATING OF THE BOARD. USE OF CIRCUIT BREAKERS FOR DISCONNECTING MEANS IS ACCEPTABLE.
   e. LED INDICATOR LIGHTS FOR POWER AND PROTECTION STATUS FOR EACH PHASE MOUNTED IN PANELBOARD FRONT COVER: GREEN INDICATES FULLY OPERATIONAL CIRCUIT AND RED INDICATES LOSS OF PROTECTION.
   f. EMI-RFI NOISE REJECTION: BASED ON MIL-STD-E220A, 50-OHM STANDARD INSERTION LOSS TEST: 34DB AT 100 KHZ; 51DB AT 1 MHZ; 54DB AT 10 MHZ; 48DB AT 100 MHZ.
   g. THE MAXIMUM CONTINUOUS OPERATING VOLTAGE (MCOV) FOR ALL VOLTAGE CONFIGURATIONS SHALL BE 115% IF NOMINAL OR GREATER.
   h. AUDIBLE ALARM, WITH SILENCING SWITCH, TO INDICATE WHEN PROTECTION HAS FAILED.
   2. PEAK SINGLE-IMPULSE SURGE CURRENT RATING: 200 KA PER PHASE; 100 KA PER MODE BASED ON A SINGLE PULSE, IEEE C62.41 STANDARD 8 X 20 MICROSECOND WAVEFORM. DEVICE SHALL NOT SUFFER MORE THAN 10% DEVIATION IN CLAMPING VOLTAGE AT SPECIFIED SURGE CURRENT.
   3. CONNECTION MEANS: INTEGRAL; BUS MOUNTED, PARALLEL CONNECTION
   4. PROTECTION MODES AND UL 1449 LISTED AND RECOGNIZED COMPONENT SURGE VOLTAGE RATING FOR GROUNDED WYE CIRCUITS WITH VOLTAGES OF 208Y/120V, 3-PHASE, 4-WIRE CIRCUITS SHALL NOT EXCEED THE FOLLOWING: LINE TO NEUTRAL: 700V; LINE TO GROUND: 700V; NEUTRAL TO GROUND: 700V; LINE TO LINE: 1500V

N. MOLDED-CASE CIRCUIT BREAKERS: UL 489, WITH INTERRUPTING CAPACITY TO MEET AVAILABLE FAULT CURRENTS.
1. THERMAL-MAGNETIC CIRCUIT BREAKERS: INVERSE TIME-CURRENT ELEMENT FOR LOW-LEVEL OVERLOADS, AND INSTANTANEOUS MAGNETIC TRIP ELEMENT FOR SHORT CIRCUITS. ADJUSTABLE MAGNETIC TRIP SETTING FOR CIRCUIT-BREAKER FRAME SIZES 250 A AND LARGER WITH RESTRICTED ACCESS COVER.

O. MOLDED-CASE CIRCUIT-BREAKER FEATURES AND ACCESSORIES:
1. LUGS: MECHANICAL STYLE, SUITABLE FOR NUMBER, SIZE, TRIP RATINGS, AND CONDUCTOR MATERIALS.
2. APPLICATION LISTING: APPROPRIATE FOR APPLICATION; TYPE SWD FOR SWITCHING FLUORESCENT LIGHTING LOADS; TYPE HACR FOR HEATING, AIR-CONDITIONING, AND REFRIGERATING EQUIPMENT.
3. GROUND-FAULT PROTECTION: INTEGRALLY MOUNTED RELAY AND TRIP UNIT WITH ADJUSTABLE PICKUP AND TIME-DELAY SETTINGS, PUSH-TO-TEST FEATURE, AND GROUND-FAULT INDICATOR.
4. DO NOT USE TANDEM CIRCUIT BREAKERS.
5. PROVIDE CIRCUIT BREAKERS U.L. LISTED AS TYPE GFEPCI FOR ALL SELF REGULATING HEATING (SNOW MELTING AND HEAT TRACE) CABLES BRANCH CIR

ELECTRICAL SYMBOL LIST

(NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT)

SYMBOL	DESCRIPTION
FX	FIXTURE TYPE
	LIGHTING FIXTURE
	DIRECT/INDIRECT LIGHTING FIXTURE
	EMERGENCY FIXTURE
FX-NL	NIGHT LIGHTING FIXTURE
	LIGHTING FIXTURE
	EMERGENCY FIXTURE
1	WALL MOUNTED LIGHTING FIXTURE
	LIGHTING FIXTURE
	EMERGENCY FIXTURE
	DIRECTIONAL LIGHTING FIXTURE
	PENDANT LIGHTING FIXTURE
	WALL SCONCE
	LIGHTING TRACK
	TRACK LIGHTING FIXTURE
	POLE MOUNTED LIGHTING FIXTURE
	POLE MOUNTED LIGHTING FIXTURE – POST TOP
	BOLLARD LIGHTING FIXTURE
	EMERGENCY LIGHTING UNIT
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)
	EXIT LIGHTING FIXTURE – WALL MOUNTED
ELTD	EMERGENCY LOAD TRANSFER DEVICE
S	SINGLE POLE TOGGLE SWITCH
S2	TWO POLE TOGGLE SWITCH
S3	3 WAY TOGGLE SWITCH
S4	4 WAY TOGGLE SWITCH
K	KEY OPERATED SWITCH
K3	3 WAY KEY OPERATED SWITCH
K4	4 WAY KEY OPERATED SWITCH
D	DIMMER SWITCH
D3	3 WAY DIMMER SWITCH
DO	DIMMER OCCUPANCY SENSOR SWITCH
DL	LOW VOLTAGE DIMMER SWITCH
SP	PILOT SWITCH

SYMBOL	DESCRIPTION
TWC	TWO-WAY COMMUNICATION SYSTEM CALL STATION
TWCD	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER
TWCA	TWO-WAY COMMUNICATION SYSTEM ANNUNCIATOR & COMMUNICATION PANEL
TWCP	TWO-WAY COMMUNICATION SYSTEM POWER SUPPLY WITH BATTERY BACK-UP
TWCDP	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER POWER SUPPLY WITH BATTERY BACK-UP
RGP	REMOTE GENERATOR ANNUCIATOR PANEL
ATS	AUTOMATIC TRANSFER SWITCH
UPS	UN-INTERRUPTABLE POWER SUPPLY
CSX	LOW VOLTAGE CONTROL STATION "X" INDICATES TYPE
	SINGLE RECEPTACLE
DP	DUPLEX RECEPTACLE
	QUAD RECEPTACLE
	ABOVE COUNTER DUPLEX RECEPTACLE (SIMILAR FOR TAMPER RESISTANT, QUADS, EMERGENCY AND GFI RECEPTACLES)
	DUPLEX RECEPTACLE-GROUND FAULT CIRCUIT INTERRUPTER
	DUPLEX EMERGENCY RECEPTACLE
	TAMPER RESISTANT RECEPTACLE
	QUAD TAMPER RESISTANT RECEPTACLE
	ABOVE COUNTER DUPLEX TAMPER RESISTANT RECEPTACLE
	DUPLEX UPS RECEPTACLE
	USB RECEPTACLE
	4 PORT USB CHARGING STATION
	CEILING MOUNTED DUPLEX RECEPTACLE
	POWER POLE
	SPECIAL RECEPTACLE – REFER TO ELECTRICAL STANDARD SCHEDULES
	MULTI-OUTLET RACEWAY
"X"	MULTI-SERVICE DROP SEE ELECTRICAL DETAILS AND DIAGRAMS SHEET "X" INDICATES TYPE
PTX	POKE THRU SERVICE FITTING "X" INDICATES TYPE
FBX	FLOOR BOX SERVICE FITTING "X" INDICATES TYPE
AFX	ACCESS FLOOR SERVICE FITTING "X" INDICATES TYPE
RX	CORD REEL "X" INDICATES TYPE
S3	DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
S3S3	3-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
S4S4	4-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
ST	DIGITAL TIME SWITCH
SI	ILLUMINATED TOGGLE SWITCH FOR CONTROL OF LIGHTING ON CRITICAL POWER-ILLUMINATED WHEN SWITCH IS IN "OFF" POSITION
SL	LOW VOLTAGE SWITCH
SO	OCCUPANCY SENSOR – REFER TO ELECTRICAL STANDARD SCHEDULES
SO2	OCCUPANCY SENSOR
OS X	OCCUPANCY SENSOR "X" INDICATES TYPE

SYMBOL	DESCRIPTION
CP	CONTROL PANEL
	MOTOR
VFC	VARIABLE FREQUENCY CONTROLLER.
	MANUAL CONTROLLER
	MAGNETIC CONTROLLER
	COMBINATION MAGNETIC CONTROLLER
	NON-FUSIBLE DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
CB	ENCLOSED CIRCUIT BREAKER
	PUSH BUTTON STATION
J	JUNCTION BOX
	HARD WIRE POWER CONNECTION
DC	AUTOMATIC DOOR CONTROLLER
PP	AUTOMATIC DOOR PUSH PAD OPERATOR
	GROUND ROD
	GROUND CONNECTION
X	CONDUIT SLEEVE WITH BUSHINGS LENGTH AS REQUIRED "X" INDICATES CONDUIT SIZE
	CONDUIT UP
	CONDUIT DOWN
	EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET
	ABOVE COUNTER EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET
	EMPTY BOX FOR FUTURE CEILING MOUNTED TELECOMMUNICATION OUTLET
X	TELECOMMUNICATION OUTLET "X" INDICATES TYPE
X	ABOVE COUNTER TELECOMMUNICATION OUTLET "X" INDICATES TYPE
X	TELECOMMUNICATION CEILING MOUNTED OUTLET "X" INDICATES TYPE
	TELECOMMUNICATION BACKBOARD
TGB	TELECOMMUNICATION GROUNDING BUS BAR
TMGB	TELECOMMUNICATION MAIN GROUNDING BUS BAR
IC	INTERCOM OUTLET
S	SPEAKER
S	SPEAKER – WALL MOUNTED
MIC	MICROPHONE
VC	VOLUME CONTROL/STATION SELECTOR
B	SIGNALING BELL
	SINGLE FACE CLOCK – CEILING MOUNTED
	SINGLE FACE CLOCK – WALL MOUNTED
	DOUBLE FACE CLOCK – CEILING MOUNTED
S	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED
S	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED
TC	TIME CLOCK
C	CONTACTOR
P	PHOTOCELL
TT	TWIST TIMER

SYMBOL	DESCRIPTION
	SECURITY CAMERA
MD	MOTION DETECTOR
K	SECURITY KEY SWITCH
DC	DOOR CONTACT
KP	KEY PAD
CR	ACCESS CONTROL STATION
DB	DURESS PUSH BUTTON STATION
DE	DELAYED EGRESS
REX	REQUEST TO EXIT STATION
	CIRCUIT BREAKER
	DRAWOUT CIRCUIT BREAKER MANUALLY/ OPERATED
	DRAWOUT CIRCUIT BREAKER ELECTRICALLY/ OPERATED
	SWTCH
	AUTOMATIC OR MANUAL TRANSFER SWITCH
	FUSE
	TRANSFORMER
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	LIGHTNING ARRESTOR
X	PANELBOARD "X" INDICATES PANELBOARD NAME
	GROUND
	STRESS CONE TERMINATION
K	SECURITY KEY INTERLOCK
G	ENGINE GENERATOR
M	UTILITY METER
EMU	ELECTRONIC METERING UNIT
A	AMMETER
V	VOLTMETER
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
SPD	SURGE PROTECTIVE DEVICE
CR	CONTROL RELAY
TDR	TIME DELAY RELAY
	THERMAL OVERLOAD RELAY
	NORMALLY OPEN CONTACTS
	NORMALLY CLOSED CONTACTS
	N.O. PUSH BUTTON SINGLE CIRCUIT
	N.C. PUSH BUTTON SINGLE CIRCUIT
X-X	CABLE VAULT "X-X" INDICATES TYPE
	BRANCH CIRCUIT PANELBOARD
	LOAD CENTER
	MOTOR CONTROL CENTER
T	TRANSFORMER
	DISTRIBUTION PANEL
GB	GROUND BUS
PB	PLUG IN BUSWAY
FB	FEEDER BUSWAY

REFER TO ELECTRICAL STANDARD SCHEDULES

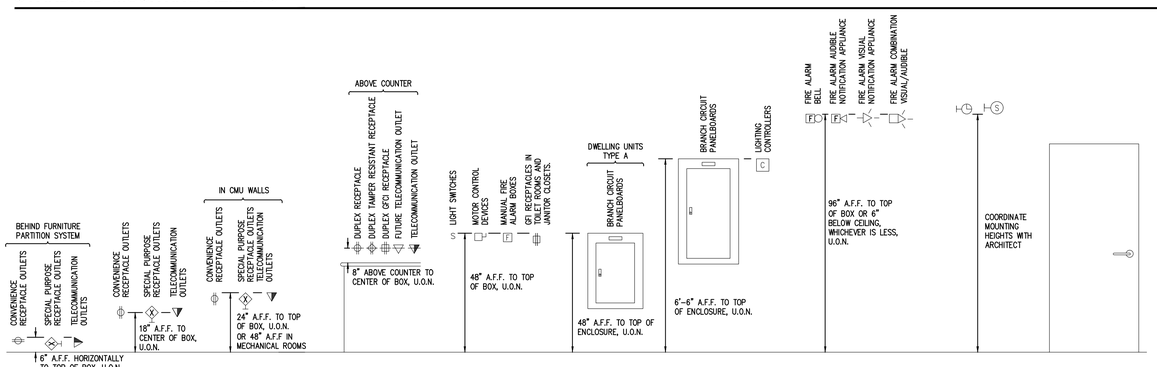
SYMBOL	DESCRIPTION
F	MANUAL FIRE ALARM BOX
SD	SMOKE DETECTOR
DD	DUCT SMOKE DETECTOR
CO	CARBON MONOXIDE DETECTOR
RT	REMOTE TEST STATION (FOR DUCT DETECTOR)
TD	THERMAL DETECTOR
BD	PROJECTED BEAM DETECTOR
F	FIRE ALARM BELL
F	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE
XX	FIRE ALARM VISUAL NOTIFICATION APPLIANCE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
XX	FIRE ALARM COMBINATION VISUAL/ AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
F XX	FIRE ALARM COMBINATION VISUAL/ AUDIBLE NOTIFICATION APPLIANCE– CEILING MOUNTED "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
XX	FIRE ALARM VISUAL NOTIFICATION APPLIANCE CEILING MOUNTED "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
F	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE – CEILING MOUNTED
F	FIREFIGHTERS PHONE JACK
FACP	FIRE ALARM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR PANEL
NAC	NOTIFICATION APPLIANCE CIRCUIT EXTENDER PANEL
IM	ADDRESSABLE MONITORING MODULE
CM	ADDRESSABLE CONTROL MODULE
TS	TAMPER SWITCH
FS	FLOW SWITCH
DR	MAGNETIC DOOR RELEASE

ELECTRICAL DRAWING INDEX

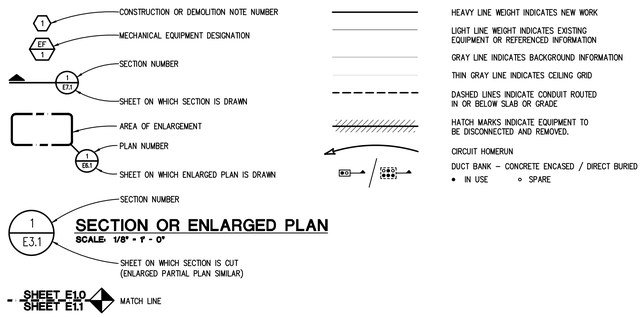
ELECTRICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
A	AMPERES
AF	AMPERES FRAME (BREAKER RATING)
A.F.F.	ABOVE FINISH FLOOR
AIC	AMPS INTERRUPTING CAPACITY
AL	AUDIENCE LEFT
AR	AUDIENCE RIGHT
AT	AMPERES TRIP (BREAKER SETTING)
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
BKR	BREAKER
BPS	BOLTED PRESSURE SWITCH
C	CONDUIT
CB	CIRCUIT BREAKER
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CKT	CIRCUIT
CT	CURRENT TRANSFORMER
DEMO	DEMOLITION
DIM	DIMENSION
DISC	DISCONNECT
DP	DISTRIBUTION PANEL
DS	DOWNSTAGE
DWG	DRAWING
EBU	EMERGENCY BATTERY UNIT
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRICAL
EM/ EMERG	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EO	ELECTRICALLY OPERATED
EPO	EMERGENCY POWER OFF
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
FA	FIRE ALARM
FLA	FULL LOAD AMPS
FLR	FLOOR
FOH	FRONT OF HOUSE
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR
FU	FUSE
G/GRD/EG	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HV	HIGH VOLTAGE
HZ	HERTZ
IG	ISOLATED GROUND
JB	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT – AMPERES
KW	KILOWATT
KWH	KILOWATT – HOURS
LA	LIGHTNING ARRESTOR
LP	LIGHTING PANEL
LDP	LIGHTING DISTRIBUTION PANEL
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MIN	MINIMUM
MISC.	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTG	MOUNTING
MTR	MOTOR
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NF	NON-FUSIBLE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
P	POLE
PB	PUSHBUTTON STATION
PH	PHASE
PT	POTENTIAL TRANSFORMER
PDP	POWER DISTRIBUTION PANEL
RECEPT.	RECEPTACLE
RDP	RECEPTACLE DISTRIBUTION PANEL
RP	RECEPTACLE PANEL
RSC	RIGID STEEL CONDUIT
SCHED	SCHEDULE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TB	TERMINAL BOX
TELECOM	TELECOMMUNICATIONS
TR	TAMPER RESISTANT
TTB	TELEPHONE TERMINAL BACKBOARD
TYP	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
US	UPSTAGE
V	VOLTS
W	WIRE
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
(E)	EXISTING
(R)	RELOCATED

STANDARD MOUNTING HEIGHTS



STANDARD METHODS OF NOTATION



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Sheet Title
ELECTRICAL STANDARDS AND DRAWING INDEX

Sheet Number
E001

FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE

OVERCURRENT DEVICE RATING (AMPERES)	COPPER CONDUCTORS						ALUMINUM CONDUCTORS				
	WIRE SIZE (AWG OR KCMIL)		CONDUIT SIZE				WIRE SIZE (AWG OR KCMIL)		CONDUIT SIZE		
	PHASE & NEUTRAL	GROUND	SINGLE PHASE 2 WIRE+G (1PH, 1N, 1G)	SINGLE PHASE 3 WIRE+G (2PH, 1N, 1G)	THREE PHASE 3 WIRE+G (3PH, 1G)	THREE PHASE & NEUTRAL 4 WIRE+G (3PH, 1N, 1G)	PHASE & NEUTRAL	GROUND	SINGLE PHASE 3 WIRE+G (2PH, 1N, 1G)	THREE PHASE 3 WIRE+G (3PH, 1G)	THREE PHASE & NEUTRAL 4 WIRE+G (3PH, 1N, 1G)
15-20	12	12	3/4"	3/4"	3/4"	3/4"	NOT ACCEPTABLE				
25-30	10	10	3/4"	3/4"	3/4"	3/4"					
35-40	8	10	3/4"	3/4"	3/4"	3/4"					
* 45-50	8 (6)	10	3/4"	3/4"	3/4"	3/4"					
* 60	6 (4)	10	3/4" (1")	3/4" (1")	3/4" (1")	1" (1 1/4")					
70	4	8	1"	1 1/4"	1 1/4"	1 1/4"					
* 80	4 (3)	8	1"	1 1/4"	1 1/4"	1 1/4"					
* 90-100	3 (2)	8	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1	6	1 1/2"	1 1/4"	1 1/2"
* 110	2 (1)	6	–	1 1/4"	1 1/4"	1 1/4" (1 1/2")	1/0	4	–	1 1/2"	2"
* 125	1 (1/0)	6	–	1 1/4" (1 1/2")	1 1/4" (1 1/2")	1 1/2"	2/0	4	–	1 1/2"	2"
150	1/0	6	–	1 1/2"	1 1/2"	1 1/2"	3/0	4	–	2"	2 1/2"
175	2/0	6	–	2"	2"	2"	4/0	4	–	2"	2 1/2"
200	3/0	6	–	2"	2"	2 1/2"	250	4	–	2"	3"
225	4/0	4	–	2"	2"	2 1/2"	300	2	–	2 1/2"	3"
250	250	4	–	2 1/2"	2 1/2"	2 1/2"	350	2	–	2 1/2"	3"
300	350	4	–	2 1/2"	2 1/2"	3"	500	2	–	3"	3 1/2
350	500	3	–	3"	3"	3"	2-4/0	2-1/0	–	2-2"	2-2"
400	500	3	–	3"	3"	3"	2-250	2-1/0	–	2-2"	2-2 1/2"
450	2-4/0	2-2	–	2-2"	2-2"	2-2 1/2"	2-300	2-1/0	–	2-2 1/2"	2-3"
500	2-250	2-2	–	2-2 1/2"	2-2 1/2"	2-2 1/2"	2-350	2-1/0	–	2-2 1/2"	2-3"
600	2-350	2-1	–	2-2 1/2"	2-2 1/2"	2-3"	2-500	2-2/0	–	2-3"	2-3 1/2"
700	2-500	2-1/0	–	2-3"	2-3"	2-3"	2-600	2-3/0	–	2-3"	2-3 1/2"
800	2-500	2-1/0	–	2-3"	2-3"	2-3 1/2"	3-400	3-3/0	–	3-3"	3-3 1/2"
1000	3-400	3-2/0	–	3-3"	3-3"	3-3"	3-600	3-4/0	–	3-3 1/2"	3-3 1/2"
1200	3-600	3-3/0	–	3-3 1/2"	3-3 1/2"	3-3 1/2"	4-500	4-250	–	4-3"	4-3 1/2"
1600	4-600	4-4/0	–	4-3 1/2"	4-3 1/2"	4-3 1/2"	5-600	5-350	–	5-3 1/2"	5-4"
2000	5-600	5-250	–	5-3 1/2"	5-3 1/2"	5-3 1/2"	6-600	6-400	–	6-3 1/2"	6-4"

* = SEE NOTE 4

NOTES:

1. CONTRACTOR TO SIZE FEEDERS AND BRANCH CIRCUITS BASED ON THIS SCHEDULE AND OVER CURRENT DEVICE SIZE, UNLESS NOTED OTHERWISE.
2. CONTRACTOR MAY COMBINE 20A CIRCUITS AS NOTED IN SPECIFICATION.
3. CONDUCTORS ARE BASED ON THHN/THWN UP TO AND INCLUDING #4/0. LARGER THAN #4/0 ARE BASED ON TYPE XHHW.
4. CONDUCTORS ARE BASED ON 90°C, 600V. INSULATED COPPER WIRE APPLIED AT 75°C FOR TERMINATION RATED 60/75°C OR 75°C. FOR TERMINATION RATED AT 60°C, USE CONDUCTORS AND CONDUIT SIZES INDICATED IN PARENTHESES.
5. CONDUIT SIZES ARE VALID FOR EMT OR RGS. CONDUIT SIZES SHALL BE ADJUSTED AS REQUIRED FOR OTHER TYPES OF CONDUIT.
6. ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE REQUIRED WIRE SIZES TO ACCOMMODATE MECHANICAL EQUIPMENT LUG SIZES.
7. SIZE OF DISCONNECT SWITCH LOCATED AT EQUIPMENT SHALL BE SIZED BASED UPON OVERCURRENT PROTECTION OF THAT DEVICE.
8. OBTAIN APPROVAL FROM ENGINEER PRIOR TO INSTALLING DIFFERENT SIZE/QUANTITY OF CONDUCTORS TO OBTAIN AN EQUIVALENT AMPACITY.
9. SPLICE FROM ALUMINUM TO COPPER PRIOR TO ENTERING EQUIPMENT LISTED FOR USE WITH COPPER CONDUCTORS ONLY OR USE COPPER CONDUCTORS FOR THE ENTIRE LENGTH OF FEEDER.

BRANCH CIRCUIT VOLTAGE DROP WIRING SCHEDULE FOR SINGLE PHASE CIRCUITS

BRANCH CKT RATING (A)	WIRE SIZE (AWG)	MAXIMUM BRANCH CIRCUIT LENGTH (IN FEET)				
		120V	208V	240V	277V	480V
20A	12	83	143	165	191	331
	10	128	222	256	295	511
	8	201	348	402	464	804
	6	313	542	625	721	1250
30A	10	85	148	170	197	341
	8	134	232	268	309	536
	6	208	361	417	481	833
	4	313	542	625	721	1250

NOTES:

1. THE ABOVE TABLE VALUES ARE BASED ON COPPER CONDUCTORS, IN STEEL CONDUIT, WITH A LOAD POWER FACTOR OF 0.85 PER NEC CHAPTER 9, TABLE 9.
2. PROVIDE BRANCH CIRCUIT CONDUCTORS AS INDICATED IN THE TABLE ABOVE FOR ALL LIGHTING AND RECEPTACLE BRANCH CIRCUITS. WHERE BRANCH CIRCUITS SERVE DEDICATED EQUIPMENT, THE CONTRACTOR MAY PERFORM VOLTAGE DROP CALCULATIONS BASED ON ACTUAL EQUIPMENT CONNECTED LOAD AND PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO A MAXIMUM OF 3%.
3. CONDUCTOR SIZES ARE BASED ON MAXIMUM OF 9 CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT.
4. LIMITS FOR CONDUCTOR LENGTHS SHOWN ARE BASED ON A MAXIMUM BRANCH CIRCUIT LOADING OF 64% OF THE BRANCH BREAKER RATING AND A MAXIMUM OF 3 PERCENT VOLTAGE DROP TO COMPLY WITH ASHRAE 90.1 AND THE NEC. FOR CIRCUITS LOADED GREATER THAN 64% OF BRANCH BREAKER RATING, THE CONTRACTOR SHALL PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO 3%.

OCCUPANCY SENSOR LEGEND

TYPE	DESCRIPTION
OS_A	360° CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
OS_B	90° CEILING/WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
OS_C	360° CEILING MOUNTED PASSIVE INFRARED OCCUPANCY SENSOR
OS_D	360° CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR
OS_E	360° CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR – CORRIDOR OPTIMIZED
So	WALL SWITCH OCCUPANCY SENSOR
So2	WALL SWITCH OCCUPANCY SENSOR – DUAL LEVEL SWITCHING
Do	WALL DIMMER SWITCH OCCUPANCY SENSOR

NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

RACEWAY / CONDUCTOR / CABLE APPLICATION SCHEDULE

		WIRE			RACEWAY															CABLE/CORD					
		COPPER, TYPE THWN/THWN-2	COPPER, TYPE XHHW-2	ALUMINUM, TYPE XHHW-2 (100A AND ABOVE ONLY)	ALUMINUM RIGID CONDUIT	ELECTRICAL METALLIC TUBING (EMT)	INTERMEDIATE METAL CONDUIT (IMC)	RIGID STEEL CONDUIT (RSC)	PVC COATED RIGID STEEL CONDUIT	RIGID NON-METALLIC CONDUIT (RNC) TYPE EPC-40	RIGID NON-METALLIC CONDUIT (RNC) TYPE EPC-80	HIGH DENSITY POLYETHYLENE (HDPE) SCHEDULE 80	HIGH DENSITY POLYETHYLENE (HDPE) SCHEDULE 40	REINFORCED THERMOSET RESIN CONDUIT (RTRC) TYPE XW	REINFORCED THERMOSET RESIN CONDUIT (RTRC) TYPE 80	FLEXIBLE METAL CONDUIT (FMC)	LIQUID TIGHT FLEXIBLE METAL CONDUIT (LFMC)	SURFACE RACEWAY	METAL CLAD TYPE CABLE WITH INSULATED GROUND WIRE (TYPE MC)	ARMOR CLAD TYPE CABLE WITH INSULATED GROUND WIRE (TYPE AC)	UNDERGROUND FEED CABLE (TYPE UF)	TYPE SO	VFC CABLE
FEEDERS – EXTERIOR	EXPOSED, SURFACE MOUNTED TO STRUCTURE		X	X			X	X	X					X										
	EXPOSED, WITH FREESTANDING SUPPORT		X	X			X	X	X					X										
	CONCEALED IN RETAINING WALL OR SIMILAR ELEMENT		X	X				X	X	X	X													
	BELOW PARKING LOTS AND ROADWAYS (NOTE 1)		X	X					X		X		X		X									
	BELOW GREEN SPACE (NOTE 1)		X	X					X	X		X			X									
	WITHIN 5' OF FOUNDATION WALL		X	X				X	X															
	ROOFTOPS (WHEN APPROVED BY ENGINEER)		X	X				X	X															
FEEDERS – INTERIOR	BELOW SLAB ON GRADE (NOTE 1)	X		X				X		X	X													
	EXPOSED, BELOW 10' AFF AND SUBJECT TO DAMAGE	X		X				X	X															
	EXPOSED, ABOVE 10' AFF UNFINISHED SPACES	X		X		X																		
	EXPOSED, FINISHED SPACES	X		X															X					
	DAMP AND WET LOCATIONS	X		X			X	X		X														
	CONCEALED, ACCESSIBLE CEILINGS	X		X		X														X	X			
	CONCEALED, INACCESSIBLE CEILINGS	X		X		X																		
	CONCEALED IN GYPSUM BOARD PARTITION WALLS	X		X		X														X	X			
	CONCEALED IN CMU WALLS	X		X		X																		
BRANCH CIRCUITS – EXTERIOR	EXPOSED, SURFACE MOUNTED TO STRUCTURE		X					X	X	X		X												
	EXPOSED, WITH FREESTANDING SUPPORT		X					X	X	X														
	CONCEALED IN RETAINING WALL OR SIMILAR ELEMENT		X						X		X													
	BELOW PARKING LOTS AND ROADWAYS (NOTE 1)		X						X		X		X											
	BELOW GREEN SPACE		X						X		X													
	WITHIN 5' OF FOUNDATION WALL		X						X															
	ROOFTOPS (WHEN APPROVED BY ENGINEER)		X	X				X	X															
BRANCH CIRCUITS – INTERIOR	BELOW SLAB ON GRADE (NOTE 1)	X								X														
	EMBEDDED IN ELEVATED CONCRETE SLAB (NOTE 1)	X								X														
	EXPOSED, BELOW 10' AFF AND SUBJECT TO DAMAGE	X						X	X															
	EXPOSED, ABOVE 10' AFF UNFINISHED SPACES	X				X																		
	CONCEALED, ACCESSIBLE CEILINGS (NOTE 2)	X				X														X				
	CONCEALED, INACCESSIBLE CEILINGS	X				X																		
	CONCEALED IN GYPSUM BOARD PARTITION WALLS	X				X										X				X				
	CONCEALED IN CMU WALLS	X				X																		
	EXPOSED, FINISHED SPACES	X																	X					
	EXPOSED, UNFINISHED SPACES	X				X																		
	EXPOSED, EXISTING CONSTRUCTION	X																	X					
	DAMP AND WET LOCATIONS	X					X	X	X	X								X						
SPECIAL APPLICATIONS	SERVICE ENTRANCE		X	X				X	X	X	X	X	X											
	CONNECTION BETWEEN VFC AND MOTORS, DISTANCE> 50'		X					X	X	X	X													X
	CLASS 1 CONTROL CIRCUITS	X				X																		
	CLASS 2 CONTROL CIRCUITS	X				X																		
	FIRE PUMP FEEDERS (NOTE 3)		X					X	X	X	X	X	X											
	EMERGENCY FEEDERS		X	X			X	X	X	X	X	X	X											
	CONNECTIONS TO TRANSFORMERS, MOTORS AND VIBRATING EQUIPMENT		X														X	X						
	NATATORIUMS AND POOLS, PUBLIC SPACES	X	X					X	X	X									X					
	POOL AND FOUNTAIN EQUIPMENT ROOMS	X	X					X	X	X									X					
	FOUNTAINS							X		X									X					
	MRI				X																			
	HAZARDOUS LOCATIONS																							

GENERAL NOTES

1. PROVIDE RIGID STEEL SWEEPS WHERE CONDUITS PENETRATE WALLS, CONCRETE SLABS, AND CONCRETE BASES.
2. REFER TO SPECIFICATIONS FOR RESTRICTIONS ON MC CABLE INSTALLATION.
3. CONDUIT AND WIRE ALLOWED WHEN ENCASED IN MINIMUM 2" CONCRETE.

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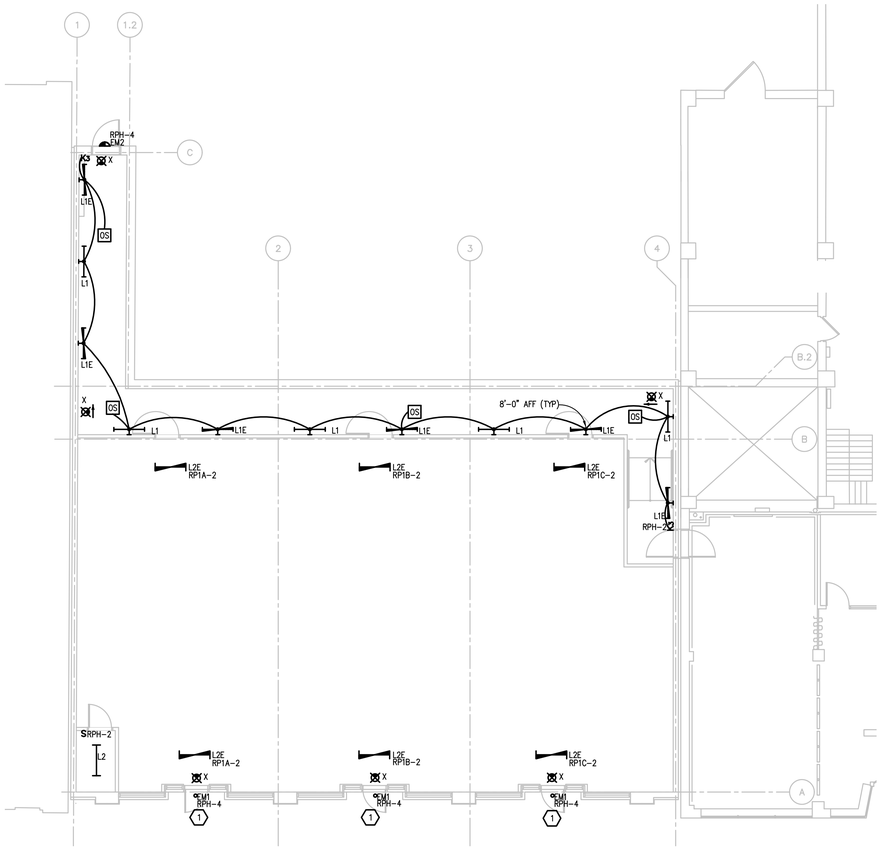
Sheet Title
ELECTRICAL STANDARD SCHEDULES

Sheet Number
E002

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.



FIRST FLOOR LIGHTING PLAN

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

GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZING SCHEDULE SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
7. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
8. COORDINATE EXACT LOCATIONS OF ALL FLOOR BOXES WITH FINAL FURNITURE LAYOUT DRAWINGS.
9. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
10. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.
11. PROVIDE THE DESIGN AND INSTALLATION FOR A COMPLETE AND FUNCTIONAL FIRE ALARM SYSTEM IN ACCORDANCE WITH SPECIFICATIONS, DRAWINGS, AND ALL APPLICABLE CODES. THE FIRE ALARM VENDOR SHALL PROVIDE LAYOUT DRAWINGS INDICATING THE REQUIRED QUANTITIES AND LOCATIONS OF MANUAL PULL STATIONS, NOTIFICATION APPLIANCES, SMOKE AND HEAT DETECTORS, CONTROL MODULES, INTERFACE MODULES, MODULES FOR SPRINKLER FLOW AND TAMPER SWITCHES, ALL CONTROL PANELS, POWER SUPPLIES, ADDITIONAL DEVICES AND EQUIPMENT REQUIRED, COORDINATE LOCATIONS OF DEVICES WITH ARCHITECTURAL FINISHES AND REFLECTED CEILING PLANS, INCLUDING ADDITIONAL SMOKE AND HEAT DETECTORS REQUIRED FOR NON-SMOOTH CEILING APPLICATIONS. INCLUDE ALLOWANCES FOR ADJUSTMENT OF DEVICES BY THE ARCHITECT AT THE TIME OF SUBMITTAL TO COORDINATE WITH BUILDING FINISHES AND OTHER CEILING ELEMENTS.

CONSTRUCTION KEY NOTES:

1. WIRE FIXTURE FOR OPERATION ONLY UPON LOSS OF POWER.

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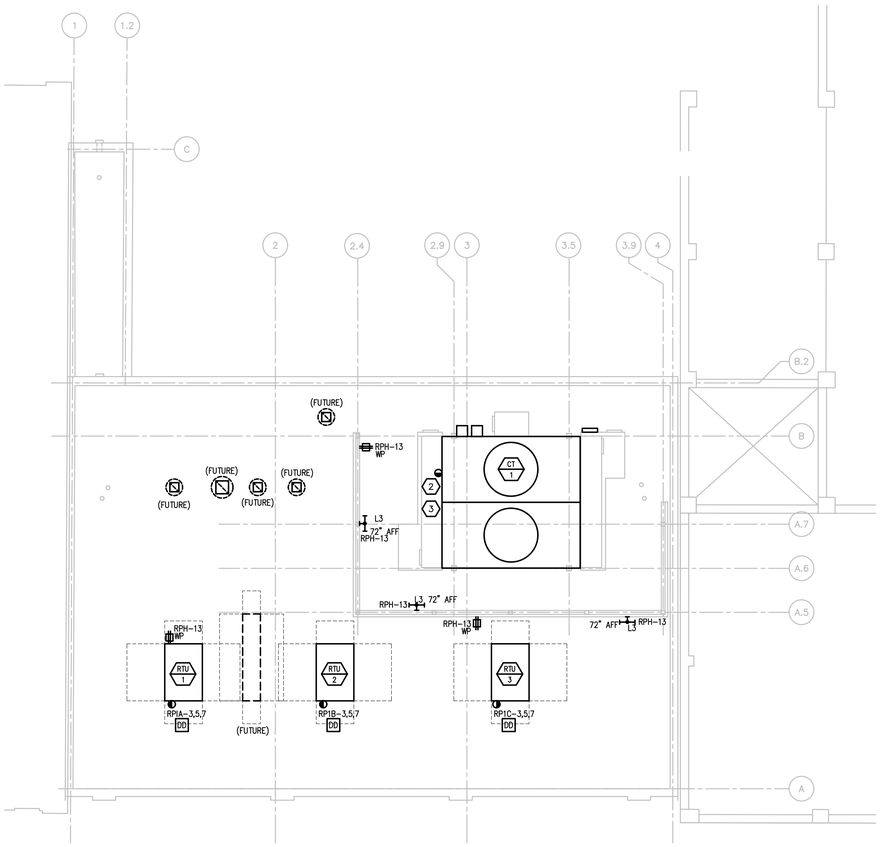
Sheet Title
LIGHTING PLAN

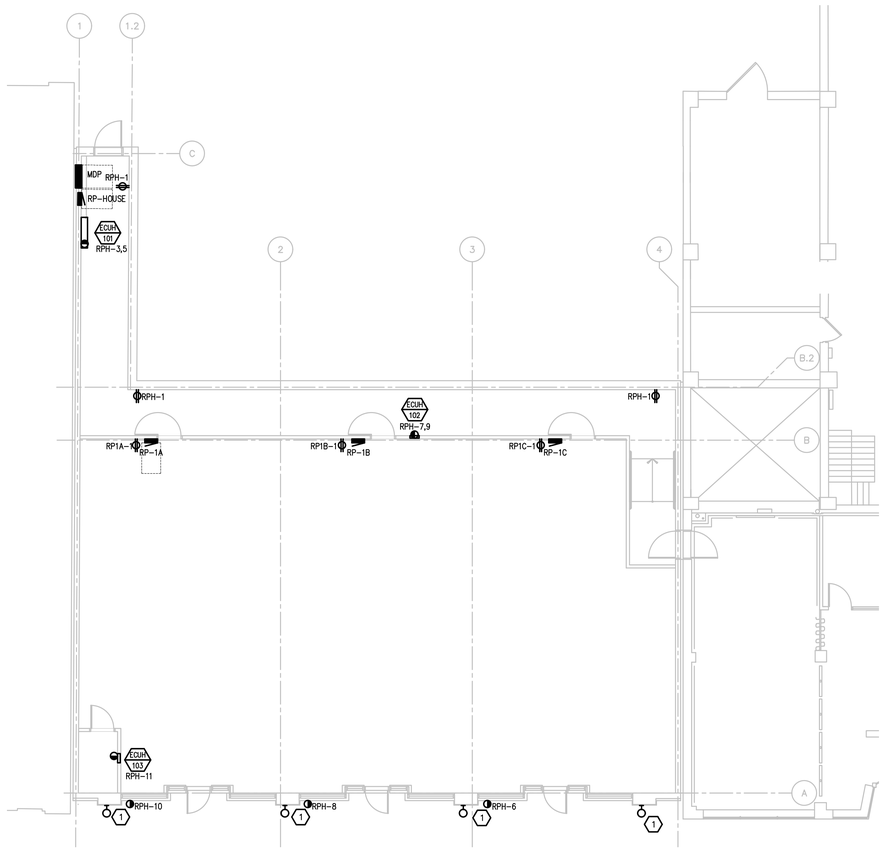
Sheet Number
E201

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



ROOF POWER AND AUXILIARY PLAN

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



FIRST FLOOR POWER AND AUXILIARY PLAN

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

GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZING SCHEDULE SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
7. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
8. COORDINATE EXACT LOCATIONS OF ALL FLOOR BOXES WITH FINAL FURNITURE LAYOUT DRAWINGS.
9. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
10. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.
11. PROVIDE THE DESIGN AND INSTALLATION FOR A COMPLETE AND FUNCTIONAL FIRE ALARM SYSTEM IN ACCORDANCE WITH SPECIFICATIONS, DRAWINGS, AND ALL APPLICABLE CODES. THE FIRE ALARM VENDOR SHALL PROVIDE LAYOUT DRAWINGS INDICATING THE REQUIRED QUANTITIES AND LOCATIONS OF MANUAL PULL STATIONS, NOTIFICATION APPLIANCES, SMOKE AND HEAT DETECTORS, CONTROL MODULES, INTERFACE MODULES, MODULES FOR SPRINKLER FLOW AND TAMPER SWITCHES, ALL CONTROL PANELS, POWER SUPPLIES, ADDITIONAL DEVICES AND EQUIPMENT REQUIRED. COORDINATE LOCATIONS OF DEVICES WITH ARCHITECTURAL FINISHES AND REFLECTED CEILING PLANS, INCLUDING ADDITIONAL SMOKE AND HEAT DETECTORS REQUIRED FOR NON-SMOOTH CEILING APPLICATIONS. INCLUDE ALLOWANCES FOR ADJUSTMENT OF DEVICES BY THE ARCHITECT AT THE TIME OF SUBMITTAL TO COORDINATE WITH BUILDING FINISHES AND OTHER CEILING ELEMENTS.

(#) CONSTRUCTION KEY NOTES:

1. PROVIDE 2 CHANNEL ASTRONOMICAL TIMECLOCK (INTERMATIC) FOR CONTROL OF GAS LIGHTING (CHANNEL 1) AND SIGNAGE (CHANNEL 2). CIRCUIT GAS LIGHTS AND SIGNAGE THROUGH THIS TIMECLOCK. MOUNT CONTROL ADJACENT TO MAIN ELECTRICAL SERVICE.
2. DEMOLISH EXISTING COOLING TOWER FEEDERS FOR PUMPS (2@50A-3P) AND BASIN HEATER (2@30A-3P) BACK TO SOURCE (PANEL VWV02 IN FOX BASEMENT). PROVIDE NEW FEEDERS FROM SAME SOURCE. REPLACE EXISTING COMBINATION STARTERS OR DISCONNECT SWITCHES WITH NEW FUSED DISCONNECTS AND FUSES. PROVIDE NEW FEEDERS AND CONDUITS TO NEW COOLING TOWER PUMPS VFC'S (2@30HP/60A-3P) AND TO NEW BASIN HEATER CONTROL PANEL (40A-3P). INSTALL BASIN CONTROL PANEL AND FEEDERS FROM BASIN HEATER CONTROL PANEL TO BASIN HEATERS (4@15A-3P). COORDINATE WITH FINAL SELECTED UNIT TO PROVIDE ALL REQUIRED ELECTRICAL CONNECTIONS AND ADJUST OVERCURRENT AND FEEDER SIZES ACCORDINGLY. VFC'S ARE UNIT MOUNTED AND PROVIDED WITH THE COOLING TOWER.
3. PROVIDE SIGNAGE ON ALL COOLING TOWER ELECTRICAL CONNECTIONS STATING, "THIS ELECTRICAL SOURCE IS FED FROM THE FOX BUILDING, NOT THE BUILDING BELOW THIS COOLING TOWER."

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Sheet Title
POWER AND AUXILIARY PLAN

Sheet Number
E301

PANELBOARD RP-1A

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1	R	RECEPT -TENANT 102		20	180	210			30	20		LTG - TENANT 102	L	2
3	C				6825		6825			20		SPARE		4
5	C	RTU-1		60	6825			6825		20		SPARE		6
7	C				6825	6825				20		SPARE		8
9		SPARE		20						20		SPARE		10
11		SPARE		20						20		SPARE		12
13		SPARE		20						20		SPARE		14
15		SPARE		20						20		SPARE		16
17		SPARE		20						20		SPARE		18
19		SPARE		20						20		SPARE		20
21		SPARE		20						20		SPARE		22
23		SPARE		20						20		SPARE		24
25		SPARE		20						20		SPARE		26
27		SPARE		20						20		SPARE		28
29		SPARE		20						20		SPARE		30
31		SPARE		20						20		SPARE		32
33		SPARE		20						20		SPARE		34
35		SPARE		20						20		SPARE		36
37		SPARE		20						20		SPARE		38
39		SPARE		20						20		SPARE		40
41		SPARE		20						20		SPARE		42
						7035	6825	6825						
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY:
MAIN TYPE: 400A MCB
MINIMUM A.I.C.:
MOUNTING:

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD:		FEEDER DEMAND LOAD:		OVERCURRENT LOAD:		NOTES:
CONTINUOUS LOAD (C):	20475	X 125%	25594	X 100%	25594	
NON-CONTINUOUS LOAD (NC):		X 100%		X 100%		
KITCHEN LOAD (K):		X 100%		X 100%		
RECEPTACLE BASE LOAD (R):	180	X 100%	180	X 100%	180	
RECEPTACLE DEMAND LOAD (R):		X 50%		X 100%		
LIGHTING LOAD (L):	30	X 100%	30	X 125%	38	
TRACK LIGHTING (T):		(150VA/2FT)		X 125%		
MOTORS, HIGHEST LOAD (MH):		X 125%		X 100%		
MOTORS, REMAINING LOAD (M):		X 100%		X 100%		
TOTAL(KVA):	20.69	TOTAL(KVA):	25.80	TOTAL(KVA):	25.81	
TOTAL (AMPS):	57.42	TOTAL (AMPS):	71.63	TOTAL (AMPS):	71.65	

PANELBOARD RP-1B

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1	R	RECEPT -TENANT 101		20	180	210			30	20		LTG - TENANT 101	L	2
3	C				6825		6825			20		SPARE		4
5	C	RTU-2		60	6825			6825		20		SPARE		6
7	C				6825	6825				20		SPARE		8
9		SPARE		20						20		SPARE		10
11		SPARE		20						20		SPARE		12
13		SPARE		20						20		SPARE		14
15		SPARE		20						20		SPARE		16
17		SPARE		20						20		SPARE		18
19		SPARE		20						20		SPARE		20
21		SPARE		20						20		SPARE		22
23		SPARE		20						20		SPARE		24
25		SPARE		20						20		SPARE		26
27		SPARE		20						20		SPARE		28
29		SPARE		20						20		SPARE		30
31		SPARE		20						20		SPARE		32
33		SPARE		20						20		SPARE		34
35		SPARE		20						20		SPARE		36
37		SPARE		20						20		SPARE		38
39		SPARE		20						20		SPARE		40
41		SPARE		20						20		SPARE		42
						7035	6825	6825						
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY:
MAIN TYPE: 225A MCB
MINIMUM A.I.C.:
MOUNTING:

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD:		FEEDER DEMAND LOAD:		OVERCURRENT LOAD:		NOTES:
CONTINUOUS LOAD (C):	20475	X 125%	25594	X 100%	25594	
NON-CONTINUOUS LOAD (NC):		X 100%		X 100%		
KITCHEN LOAD (K):		X 100%		X 100%		
RECEPTACLE BASE LOAD (R):	180	X 100%	180	X 100%	180	
RECEPTACLE DEMAND LOAD (R):		X 50%		X 100%		
LIGHTING LOAD (L):	30	X 100%	30	X 125%	38	
TRACK LIGHTING (T):		(150VA/2FT)		X 125%		
MOTORS, HIGHEST LOAD (MH):		X 125%		X 100%		
MOTORS, REMAINING LOAD (M):		X 100%		X 100%		
TOTAL(KVA):	20.69	TOTAL(KVA):	25.80	TOTAL(KVA):	25.81	
TOTAL (AMPS):	57.42	TOTAL (AMPS):	71.63	TOTAL (AMPS):	71.65	

PANELBOARD RP-1C

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1	R	RECEPT -TENANT 100		20	180	210			30	20		LTG - TENANT 100	L	2
3	C				4445		4445			20		SPARE		4
5	C	RTU-3		40	4445			4445		20		SPARE		6
7	C				4445	4445				20		SPARE		8
9		SPARE		20						20		SPARE		10
11		SPARE		20						20		SPARE		12
13		SPARE		20						20		SPARE		14
15		SPARE		20						20		SPARE		16
17		SPARE		20						20		SPARE		18
19		SPARE		20						20		SPARE		20
21		SPARE		20						20		SPARE		22
23		SPARE		20						20		SPARE		24
25		SPARE		20						20		SPARE		26
27		SPARE		20						20		SPARE		28
29		SPARE		20						20		SPARE		30
31		SPARE		20						20		SPARE		32
33		SPARE		20						20		SPARE		34
35		SPARE		20						20		SPARE		36
37		SPARE		20						20		SPARE		38
39		SPARE		20						20		SPARE		40
41		SPARE		20						20		SPARE		42
						4655	4445	4445						
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY:
MAIN TYPE: 225A MCB
MINIMUM A.I.C.:
MOUNTING:

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD:		FEEDER DEMAND LOAD:		OVERCURRENT LOAD:		NOTES:
CONTINUOUS LOAD (C):	13335	X 125%	16669	X 100%	16669	
NON-CONTINUOUS LOAD (NC):		X 100%		X 100%		
KITCHEN LOAD (K):		X 100%		X 100%		
RECEPTACLE BASE LOAD (R):	180	X 100%	180	X 100%	180	
RECEPTACLE DEMAND LOAD (R):		X 50%		X 100%		
LIGHTING LOAD (L):	30	X 100%	30	X 125%	38	
TRACK LIGHTING (T):		(150VA/2FT)		X 125%		
MOTORS, HIGHEST LOAD (MH):		X 125%		X 100%		
MOTORS, REMAINING LOAD (M):		X 100%		X 100%		
TOTAL(KVA):	13.55	TOTAL(KVA):	16.88	TOTAL(KVA):	16.89	
TOTAL (AMPS):	37.60	TOTAL (AMPS):	46.85	TOTAL (AMPS):	46.87	

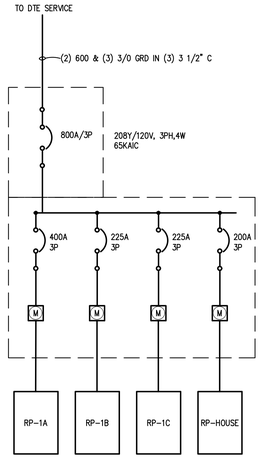
PANELBOARD RP-HOUSE

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1	R	RECEPTS - SERVICE 105		20	540	720			180	20		LTG - SERVICE 105 AND WATER METER ROOM 104	L	2
3	M	EQUH 101		70	4505		4530		25	20		LTG - OUTDOORS	L	4
5	M				4505			4605	100	20		SNAGE TENANT 100	NC	6
7	M	EQUH 102		50	3460	3560			100	20		SNAGE TENANT 101	NC	8
9	M				3460		3560		100	20		SNAGE TENANT 102	NC	10
11	M	EQUH 103		20	750			750		20		SPARE		12
13	R	RECEPTS - ROOF		20	540	540				20		SPARE		14
15		SPARE		20						20		SPARE		16
17		SPARE		20						20		SPARE		18
19		SPARE		20						20		SPARE		20
21		SPARE		20						20		SPARE		22
23		SPARE		20						20		SPARE		24
25		SPARE		20						20		SPARE		26
27		SPARE		20						20		SPARE		28
29		SPARE		20						20		SPARE		30
						4820	8090	5355						
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY:
MAIN TYPE: 200A MCB
MINIMUM A.I.C.:
MOUNTING:

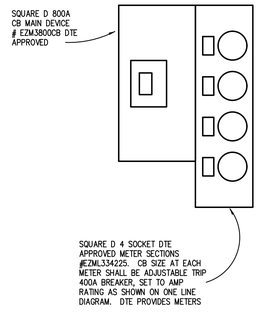
PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD:		FEEDER DEMAND LOAD:		OVERCURRENT LOAD:		NOTES:
CONTINUOUS LOAD (C):		X 125%		X 100%		
NON-CONTINUOUS LOAD (NC):	300	X 100%	300	X 100%	300	
KITCHEN LOAD (K):		X 100%		X 100%		
RECEPTACLE BASE LOAD (R):	1080	X 100%	1080	X 100%	1080	
RECEPTACLE DEMAND LOAD (R):		X 50%		X 100%		
LIGHTING LOAD (L):	205	X 100%	205	X 125%	256	
TRACK LIGHTING (T):		(150VA/2FT)		X 125%		
MOTORS, HIGHEST LOAD (MH):		X 125%		X 100%		
MOTORS, REMAINING LOAD (M):	16680	X 100%	16680	X 100%	16680	
TOTAL(KVA):	18.27	TOTAL(KVA):	18.27	TOTAL(KVA):	18.32	
TOTAL (AMPS):	50.70	TOTAL (AMPS):	50.70	TOTAL (AMPS):	50.84	



ONE LINE DIAGRAM

NO SCALE



EQUIPMENT RISER DIAGRAM

NO SCALE

GENERAL NOTES:

1. ALL EQUIPMENT SHALL BE RATED FOR 65KAIC MINIMUM.
2. ALL EQUIPMENT SHALL BE DTE APPROVED UNITS FROM SQUARE D. MODEL NUMBERS ARE INDICATED.

GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
2. FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
3. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "TRANSFORMER CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
4. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH THE MOTOR CIRCUIT SIZING SCHEDULES ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
5. BASIS OF DESIGN IS SQUARE D DISTRIBUTION EQUIPMENT. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT FROM OTHER APPROVED MANUFACTURERS, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LAYOUT AND CLEARANCE REQUIREMENTS IN ALL SPACES CONTAINING ELECTRICAL EQUIPMENT AND PROVIDE EQUIPMENT MEETING THE SPECIFICATIONS AND ACHIEVING CODE REQUIRED CLEARANCES WITHIN THE SPACE PROVIDED.
6. BRANCH CIRCUIT CONDUCTORS, FEEDERS, AND BRANCH CIRCUIT OVERCURRENT PROTECTION ARE SIZED AT 125% OF THE TOTAL CONTINUOUS AND NON CONTINUOUS LOAD FOR LIGHTING AND MOTOR LOADS THAT RUN CONTINUOUSLY FOR THREE HOURS OR MORE (NEC 210.19 A, 210.20 A, AND 215.2 A). DEMAND AND CONNECTED LOADS ARE CALCULATED PER NEC 220.
7. VARIABLE FREQUENCY CONTROLLERS (VFC) FURNISHED BY MECHANICAL TRADES. ELECTRICAL CONTRACTOR SHALL INSTALL VFC, PROVIDE POWER FEEDER FROM DISTRIBUTION EQUIPMENT TO VFC AND PROVIDE POWER FEEDER FROM VFC TO MOTOR. REFER TO SPECIFICATIONS FOR APPLICATION OF VFC POWER CABLE FROM VFC TO MOTOR.

(#) CONSTRUCTION KEY NOTES:

1. xxx
2. xxx

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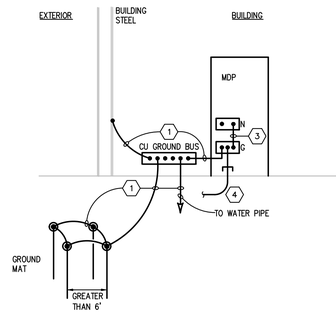
PERMIT / BID	10-11-17
PROGRESS REVIEW	09-20-17
DD OR	08-31-17
Revision	Date
Date	10-11-17
Project Number	2017041

Sheet Title
ONE LINE DIAGRAM AND PANEL SCHEDULES

Sheet Number
E501

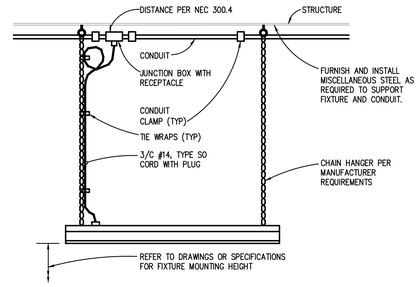


TYPICAL SERVICE ENTRANCE GROUNDING

NO SCALE

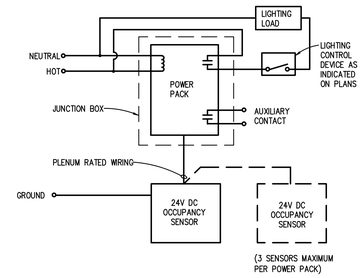
(#) **KEYED NOTES:**

1. GROUNDING ELECTRODE CONDUCTOR, #4/0 COPPER.
2. NOT USED
3. SYSTEM BONDING JUMPER, PROVIDED BY MANUFACTURER AS PART OF LISTED EQUIPMENT SIZED PER NEC 250.28 AND 250.102.
4. PRIMARY PHASE CONDUCTORS AND GROUND IN CONDUIT. SEE ONE LINE DIAGRAM.



TYPICAL MOUNTING DETAIL FOR CHAIN HUNG LIGHTING FIXTURES

NO SCALE



OCCUPANCY SENSOR WIRING DIAGRAM

NO SCALE

NOTES:

1. REFER TO SPECIFICATIONS FOR ACCEPTED MANUFACTURERS.
2. PROVIDE POWER PACKS AND SLAVE PACKS AS REQUIRED FOR SWITCHING AS INDICATED ON PLAN. REVISE DETAIL AS REQUIRED BY MANUFACTURER.
3. MOUNTING LOCATION PER MANUFACTURER'S RECOMMENDATION.
4. ADJUST SENSITIVITY LEVELS PER THE OWNER REQUIREMENTS.
5. PROVIDE FACTORY SUPPORT FOR AIMING/ADJUSTING OF SENSORS.
6. PLACE CEILING MOUNTED OCCUPANCY SENSORS IN CENTER OF A FULL CEILING TILE, WHERE APPLICABLE.
7. SENSOR ADJUSTMENT: BEFORE MAKING ADJUSTMENTS, MAKE SURE ROOM FURNITURE IS INSTALLED, LIGHTING CIRCUITS ARE TURNED ON, AND THE HVAC SYSTEMS ARE IN THE ON POSITION. VAV SYSTEMS SHOULD BE SET TO THEIR HIGHEST AIRFLOW. SET THE LOGIC CONFIGURATION DIP SWITCHES TO "EITHER". EITHER REQUIRES MOTION DETECTION BY ONLY ONE TECHNOLOGY. SET THE TIME DELAY PER OWNERS DIRECTION.

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Project Number 2017041

Sheet Title
ELECTRICAL DETAILS AND DIAGRAMS

Sheet Number
E701