LEVEL ONE BANK ROCHESTER HILLS

PH. (248) 213-6010 mark@ABDarch.com



REVISION 1 05-14-19 REVISION 2 05-20-19

PERMIT SET 05-22-19

APRIL 15TH, 2019 COVER SHEET

ABD1902

HEET NUMBER:

1880 S.ROCHESTER ROAD ROCHESTER HILLS, MICHIGAN 48307

GENERAL NOTES:

DEMOLITION NOTES:

SEE DEMOLITION PLANS AND ELEVATIONS FOR NOTES

STRUCTURAL NOTES:

SEE STRUCTURAL DRAWINGS FOR NOTES

ARCHITECTURAL NOTES:

DO NOT SCALE DRAWINGS.

CONTRACTOR SHALL PROVIDE ALL ITEMS, ARTICLES, MATERIALS, AND OPERATIONS SCHEDULED INCLUDING ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED FOR

ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE LOCAL STATE, AND FEDERAL CODES AND LAWS.

CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL APPLICABLE BUILDING AND OTHER PERMITS REQUIRED FOR THE COMPLETION OF THE WORK.

FOR TYPES I AND II CONSTRUCTION, ALL DIMENSION LUMBER IN NONBEARING EXTERIOR WALLS AND ROOF CONSTRUCTION INCLUDING GIRDERS, TRUSSES, FRAMING AND DECKING SHALL BE PRESSURE TREATED / UL CERTIFIED NON-COMBUSTIBLE PER 2015 MBC SECTION

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS SHOWN ON THE DRAWINGS AT THE JOB SITE. NOTIFY THE ARCHITECT OR OWNER PRIOR TO COMMENCING WORK OF ANY DISCREPANCIES, CONFLICTS OR OMISSIONS IN THE CONSTRUCTION DOCUMENTS AND BETWEEN CONSTRUCTION DOCUMENTS AND

FIELD CONDITIONS. AN ADDENDUM WILL BE ISSUED AS NECESSARY AND WILL BECOME A PART OF THE CONTRACT DOCUMENTS. FOR THOSE DISCREPANCIES NOT BROUGHT TO THE ATTENTION OF THE ARCHITECT OR OWNER. IT WILL BE ASSUMED THAT THE CONTRACTOR HAS BID THE MORE EXPENSIVE METHOD OF CONSTRUCTION.

CONTRACTOR SHALL KEEP THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIALS AND DEBRIS AND PROVIDE FINAL CLEAN-UP OF JOB SITE PRIOR TO MOVE-IN.

CONTRACTOR TO PROVIDE ALL NECESSARY TEMPORARY PROTECTION TO ENSURE THE SAFETY OF THE EXISTING TENANT AND GENERAL PUBLIC DURING CONSTRUCTION.

COORDINATE ALL WORK BEFORE AND DURING CONSTRUCTION WITH ALL OTHER AFFECTED

WHERE INTERFERENCES DEVELOP, NOTIFY ARCHITECT FOR RESOLUTION OF CONFLICT.

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

ALL M.E.P. DRAWINGS ARE REVIEWED BY ARCHITECT FOR GENERAL CODE COMPLIANCE WITH THE CURRENT MICHIGAN BUILDING CODE ONLY. ANY & ALL ENGINEERING OF M.E.P. IS THE RESPONSIBILITY OF M.E.P. ENGINEERS AND THE M.E.P. SUB CONTRACTORS, AND DOES NOT FALL ONTO THE ARCHITECT.

MILLWORK NOTES:

ALL WOODWORK /MILLWORK SHALL CONFORM TO THE QUALITY STANDARDS OF ARCHITECTURAL WOODWORK INSTITUTE (AWI) PREMIUM GRADE FOR ALL APPLICABLE SECTIONS. FABRICATOR SHALL BE FAMILIAR WITH AWI STANDARDS.

FABRICATE WOODWORK /MILLWORK ITEMS TO ACTUAL FIELD DIMENSIONS. CONTRACTOR TO FIELD VERIFY EXISTING DIMENSIONS. CONTRACOR(S) SHALL SUBMIT SHOP DRAWINGS, SAMPLES OR MANUFACTURERS LITERATURE OF ALL ITEMS. SHOP DRAWINGS SHALL SHOW SUFFICIENT DETAIL TO DETERMINE COMPLIANCE WITH QUALITY STANDARDS AND DESIGN

COORDINATE LOCATION OF BLOCKING WITHIN PARTITIONS FOR ITEMS TO BE SECURED TO

CABINET INTERIORS TO BE CONSTRUCTED OF MELAMINE-FUSED FINISH HIGH DENSITY PARTICLE BOARD. CABINET DOORS TO BE FULLY FINISHED IN SPECIFIED PLASTIC LAMINATE.

ALL FASTENERS SHALL BE CONCEALED. ALL HINGES SHALL BE CONCEALED, 3-WAY ADJUSTABLE, SELF CLOSING TYPE BY "STANLEY", "BLUM", "GRASS" OR "HAFELE". ALL DRAWER SLIDES SHALL BE BALL-BEARING, FULL EXTENSION TYPE BY "ACCURITE", OR "GRANT". USE LOAD RATING FOR APPLICATIONS AS RECOMMENDED BY MANUFACTURER

GENERAL NOTES:

CONSTRUCTION EQUIPMENT & MATERIALS SHALL BE STORED AND PLACED SO AS NOT TO ENDANGER THE PUBLIC, THE WORKERS OR ADJOINING PROPERTY FOR THE DURATION OF THE CONSTRUCTION PROJECT. REQUIRED EXITS, EXISTING STRUCTURAL ELEMENTS, FIRE PROTECTION DEVICES, AND SANITARY SAFE GUARDS SHALL BE MAINTAINED AT ALL TIMES DURING ALTERATIONS, REPAIRS, OR ADDITIONS TO ANY BUILDING OR STRUCTURE. AN ADEQUATE SUBSTITUTION SHALL BE AVAILABLE IF ANY OF THESE FEATURES BECOMES UNAVAILABLE. WASTE MATERIALS SHALL BE REMOVED IN A MANNER WHICH PREVENTS INJURY OR DAMAGE TO PERSONS, ADJOINING PROPERTIES, AND PUBLIC RIGHTS-OF-WAY. A CONSTRUCTION BARRIER PROTECTING THE PEDESTRIANS, GENERAL PUBLIC. CUSTOMERS & EMPLOYEES SHALL BE IN PLACE AND MAINTAINED AT ALL TIMES DURING DEMOLITION AND CONSTRUCTION

ELECTRICAL NOTES:

CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS

CONTRACTOR TO PROVIDE ALL ITEMS, ARTICLES, MATERIALS, AND OPERATIONS SCHEDULED INCLUDING ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED FOR COMPLETION (ie: DESIGN/BUILD).

ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE LOCAL, STATE, AND FEDERAL

CONTRACTOR SHALL INSTALL NEW EMERGENCY LIGHTS W/ BATTERY BACK-UP, AND EXIT SIGNS W/ BATTERY BACK-UP THROUGHOUT AS REQUIRED BY ALL CODES AND THE LOCAL FIRE MARSHAL. CONTRACTOR SHALL FIELD INSPECT EXISTING FIXTURES AND REPLACE IF FIXTURES ARE NON-FUNCTIONING OR NEED NEW BATTERY BACK-UP.

ANY ENGINEERED DRAWINGS REQUIRED BY CITY SHALL BE PREPARED AND SUBMITTED BY SUBCONTRACTOR. ARCHITECT SHALL RECEIVE RECORD COPY.

LOCATE POWER AND COMMUNICATION RECEPTACLES TO NEAREST STUD IN APPROXIMATE POSITION INDICATED ON PLANS. PROVIDE BRIDGING BETWEEN STUDS AS REQUIRED FOR ALL DIMENSIONED RECEPTACLE LOCATIONS. DO NOT LOCATE BOXES BACK-TO-BACK WITHIN PARTITIONS- STAGGER AS REQUIRED TO MINIMIZE

ELECTRICAL CONTRACTOR TO VERIFY WORKING CONDITION OF ALL SWITHCES, LIGHT FIXTURES, BALLAST'S, EXIT AND EMERGENCY LIGHT AND OUTLETS. REPLACE IF NECESSARY (TYPICAL THROUGHOUT, AND IN ACCORDANCE WITH SPECIFICATIONS).

MECHANICAL (HVAC) NOTES:

CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS

CONTRACTOR TO PROVIDE ALL ITEMS, ARTICLES, MATERIALS AND OPERATIONS SCHEDULED INCLUDING ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED FOR COMPLETION (ie: DESIGN/BUILD).

CONTRACTOR SHALL PROVIDE OR REWORK HVAC SYSTEM PER INFORMATION ON DRAWINGS.

ALL ROOMS TO HAVE A MINIMUM OF ONE (1) SUPPLY DIFFUSER AND ONE (1) RETURN

ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE LOCAL STATE, AND FEDERAL CODES AND LAWS.

CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION, TESTING AND BALANCING OF THE HVAC SYSTEM. MODIFY AND SUPPLEMENT EXISTING SYSTEM AS NECESSARY. AIR DUCTS AND RETURN AIR GRILLES SHALL BE DAMPERED AS REQUIRED.

ANY ENGINEERED DRAWINGS REQUIRED BY CITY SHALL BE PREPARED AND SUBMITTED BY SUBCONTRACTOR. ARCHITECT SHALL RECEIVE RECORD COPY.

HVAC THERMOSTAT CONTROL FOR ALL ROOMS SHALL BE LOCATED WITHIN THE DEMISED SUITE. VERIFY AND REWORK EXISTING DUCTWOK AND THERMOSTATS AS REQUIRED. VERIFY LOCATIONS OF ALL THERMOSTATS WITH TENANT REPRESENTATIVE PRIOR TO INSTALLATION.

HVAC CONTRACTOR SHALL VERIFY WORKING CONDITON OF ALL VAV BOXES, EXHAUST FANS AND ANY OTHER DEVICES DIRECTY RELATED TO THE HVAC SYSTEM. CONTRACTOR SHALL NOTIFY TENANT REP. IMMEDIATELY UPON DISCOVERY OF ANY DEFECTIVE DEVICES.

HVAC CONTRACTOR TO VERIFY WORKING CONDITON OF EVERY THERMOSTAT AND REPLACE IF NECESSARY (TYPICAL THROUGHOUT).

UPON COMPLETION OF THE WORK, HVAC CONTRACTOR SHALL PROVIDE TO THE TENANT REP. A DRAWING (AT 1/8" = 1'-0") INDICATING THE LOCATION OF EACH THERMOSTAT AND THE SUPPLY DIFFUSERS WHICH ARE CONTROLLED BY THAT THERMOSTAT.

PLUMBING NOTES:

CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS

CONTRACTOR TO PROVIDE ALL ITEMS, ARTICLES, MATERIALS, AND OPERATIONS SCHEDULED INCLUDING ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED FOR COMPLETION (ie: DESIGN/BUILD).

CONTRACTOR SHALL PROVIDE OR REWORK PLUMBING SYSTEM PER INFORMATION ON DRAWINGS.

ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE LOCAL STATE, AND FEDERAL CODES AND LAWS.

ANY ENGINEERED DRAWINGS REQUIRED BY CITY SHALL BE PREPARED AND SUBMITTED BY SUBCONTRACTOR. ARCHITECT SHALL RECEIVE RECORD COPY

PHONE/DATA/COMMUNICATIONS NOTES:

CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A JUNCTION BOX WITH PULL STRING TO EACH WALL MOUNTED COMMUNICATIONS LOCATION.

ALL NEW TELEPHONE AND DATA WIRING IN CEILING PLENUM SHALL BE PLENUM-RATED

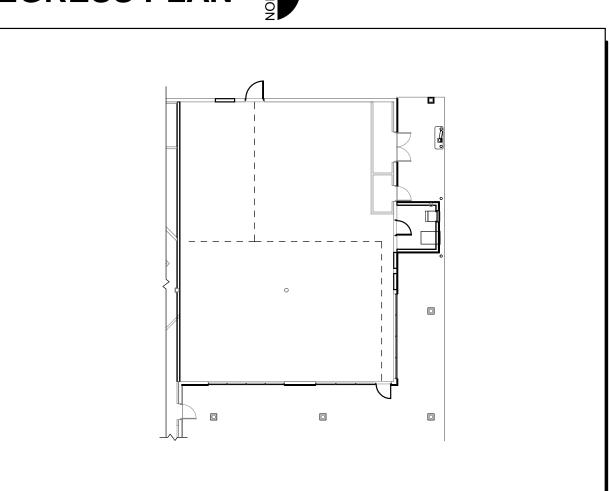
FIRE ALARM NOTES:

FIRE ALARM CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS.

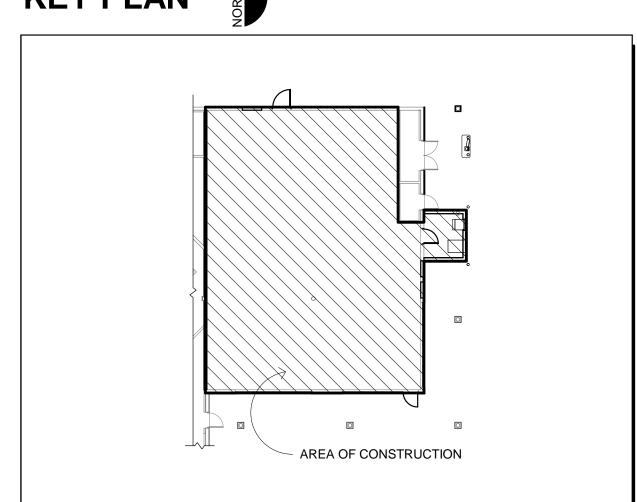
FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR REVISED AND UPDATED DRAWINGS TO BE SUBMITTED TO CITY PRIOR TO BEGINNING WORK. FIRE ALARM CONTRACTOR TO PROVIDE ALL ITEMS, ARTICLES, MATERIALS, & LABOR TO

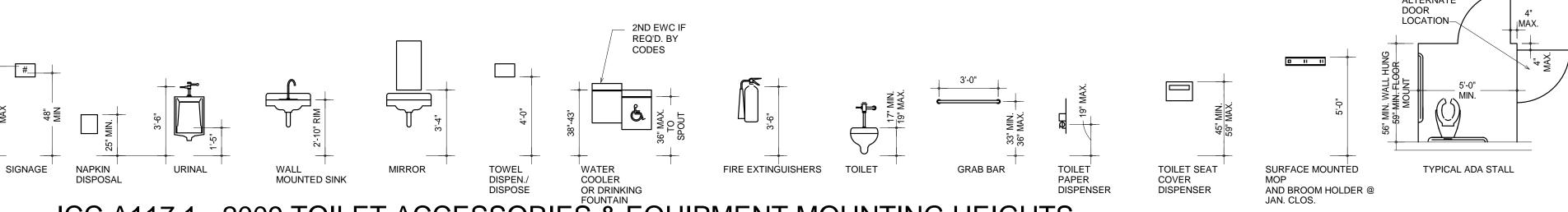


REVISE EXISTING SYSTEM AS REQUIRED (ie: DESIGN/BUILD).



KEY PLAN





ICC A117.1 - 2009 TOILET ACCESSORIES & EQUIPMENT MOUNTING HEIGHTS

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

REVIEW CODE

CODE ANALYSIS:

USE GROUP

2015 MICHIGAN REHABILITATION CODE

FOR EXISTING BUIDINGS 2015 MICHIGAN BUILDING CODE 2015 MICHIGAN MECHANICAL CODE 2015 MICHIGAN PLUMBING CODE 2014 NATIONAL ELECTRIC CODE W/ PART 8 MICHIGAN AMENDMENT

2009 ICC/ANCI A117.1

"B" BUSINESS

TOTAL FLOORS IN BLDG.

TYPE - 2B TYPE OF CONSTRUCTION

OCCUPANCY LOAD **BUSINESS AREAS** 2,587 SF GROSS/ OCCUPANT 2,587 SF/ 100 SF PER OCCUP. = 26 OCCUPANTS

EXIT ACCESS 2 EXITS REQUIRED 2 EXITS PROVIDED

EGRESS WIDTH PER OCCUPANT 25 OCCUP. x 0.2" = 5" REQUIRED 72" PROVIDED

SPRINKLER SYSTEM SPRINKLER SYSTEM IS PROVIDED

SHEET INDEX

A0.1 COVER SHEET

ALTA SURVEY

LANDSCAPE PLAN

A1.1 ARCHITECTURAL SITE PLAN

A1.2 DEMO PLANS

A1.3 DEMO ELEVATIONS

MAIN LEVEL FLOOR PLAN

A2.2 ROOF AND FOUNDATION PLAN **ELEVATIONS**

SECTIONS AND DETAILS

SECTIONS AND DETAILS

A9.1 REFLECTED CEILING PLANS A10.1 WINDOW DETAILS

MP-1 MECHANICAL / PLUMBING NEW WORK PLAN

MP-2 ROOF NEW WORK PLAN

MP-D DEMOLITION PLANS

MP-3 MECHANICAL HVAC **SPECIFICATIONS**

MP-4 PIPING SPECIFICATIONS

E-0 ELECTRICAL SYMBOLS LIST & GENERAL NOTES

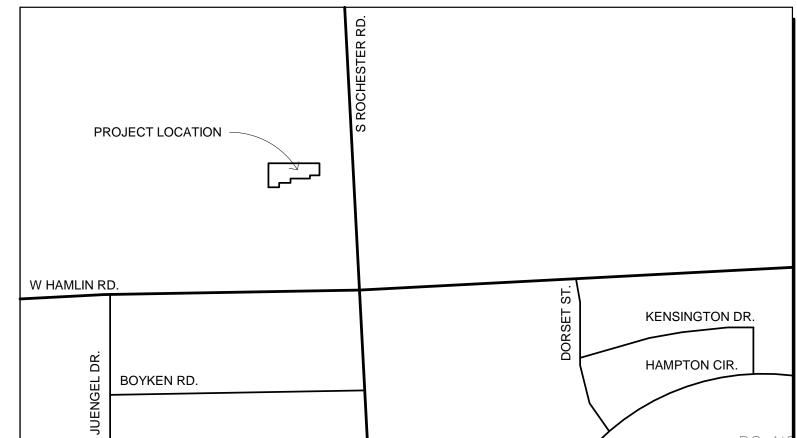
E-1 ELECTRICAL POWER PLAN, RISER

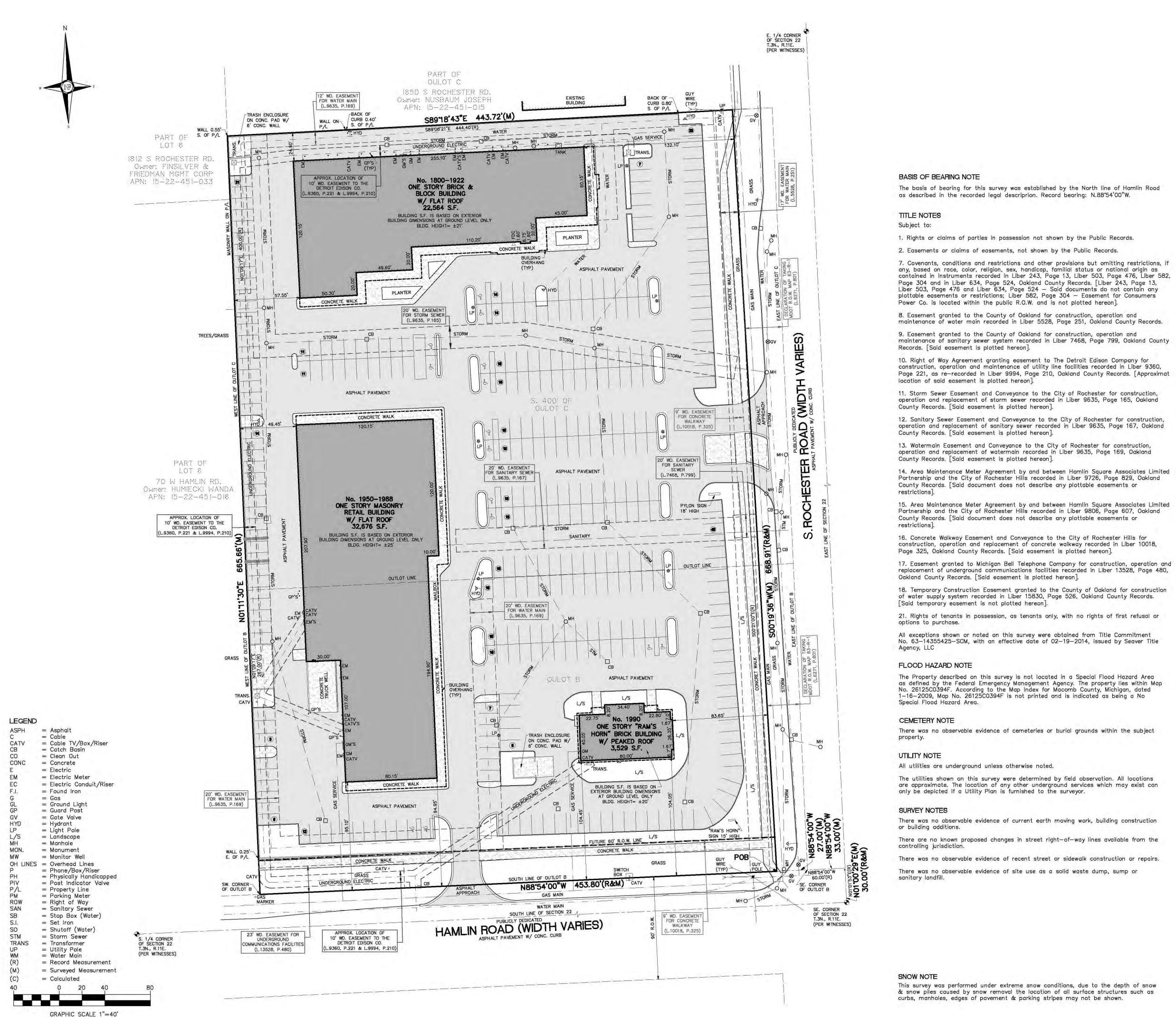
DIAGRAM & PANEL SCHEDULES

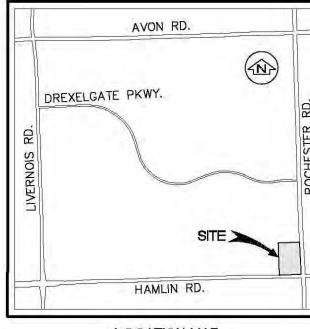
E-2 ELECTRICAL SPECIFICATIONS E-3 ELECTRICAL SPECIFICATIONS

E-4 PHOTOMETRIC PLAN

LOCATION MAP







LOCATION MAP

LEGAL DESCRIPTION

Land Situated in the City of Rochetser Hills, County of Oakland, State of Michigan,

The West 150 feet of Outlot B, ALSO the East 130 feet of the West 280 feet of Outlot B, ALSO Outlot B, EXCEPT the West 280 feet thereof, and the South 400 feet of Outlot C, Hamlin Place Farms, according to the plat thereof as recorded in Liber 15, Page 34 of Plats, Oakland County Records. Said property also being described as: Part of Outlot E and part of Outlot C of Hamlin Place Farms Subdivision, as recorded in Liber 15, Page 34 of Plats, Oakland County Records, being more particularly described as follows: Beginning at a point which is North 01 degrees 01 minutes 53 seconds East 30.00 feet along the East line of Section 22 and North 88 degrees 54 minutes 00 seconds West 60.00 feet from the Southeast corner of Section 22; thence North 88 degrees 54 minutes 00 seconds West 453.80 feet along the South line of Outlot B; thence North 01 degrees 09 minutes 17 seconds East 267.00 feet along the West line of Outlot B: thence continuing North 01 degrees 09 minutes 17 seconds East 400.00 feet along the West line of Outlot C; thence South 89 degrees 08 minutes 21 seconds East 444.40 feet; thence South 00 degrees 21 minutes 00 seconds East 668.91 feet along the Westerly Right of Way line of Rochester Road (as now established) to the point of beginning.

50 W Hamlin Road Tax ID: 15-22-451-030

Based on a field survey being described as:

Part of the Southeast 1/4 of Section 22, Town 3 North, Range 11 East, City of Rochetser Hills, County of Oakland, State of Michigan, being part of Outlot B and part of the South 400 feet of Outlot C of Hamlin Place Farms Subdivision, as recorded in Liber 15, Page 34 of Plats, Oakland County Records, being more particularly described as follows: Commencing at the Southeast corner of said Section 22; thence North 01 degrees 00 minutes 29 seconds East 30.00 feet along the East line of said Section 22; thence North 88 degrees 54 minutes 00 seconds West 33.00 feet to the Southeast corner of said Outlot B; thence continuing, North 88 degrees 54 minutes 00 seconds West 27.00 feet to a point which is the intersection of the Westerly Right-of-Way line of Rochester Road (width varies) with the South line of Outlot B, also being the Northerly Right-of-Way line of Hamlin Road (90' wide) and the point of beginning; thence continuing, North 88 degrees 54 minutes 00 seconds West 453.80 feet to the Southwest corner of said Outlot B; thence North 01 degrees 11 minutes 30 seconds East 665.66 feet along the West line of Outlot B and C; thence South 89 degrees 18 minutes 43 seconds East 443.72 feet to a point on said Westerly Right-of-Way line of Rochester Road; thence South 00 degrees 19 minutes 36 seconds West 668.91 feet along said Westerly Right-of-Way line to the point of beginning.

SITE DATA

Gross Land Area: 299,439 Square Feet or 6.874 Acres. Zoned: B-3 (Shopping Center Business) with FB-3 (Flexible Business) overlay Building Setbacks:

Front = 75'(N)Sides= 25'(F,N) each; 50'(N) total

Rear= 75'(H,I)F. Side Yard Setbacks. Side yards shall comply with the following: 1. If walls of structures facing interior side lot lines contain windows or other openings, the minimum yard requirements in the schedule of regulations shall be

3. Where a B-3 district abuts R, RCD, RM-1, MH, SP and Cl districts, the

minimum side yard shall be 75 feet. 6. In the B-3 district a front yard setback shall be required on any street frontage and from any adjacent parcel not zoned B-3. H. Rear Yard Setback Adjacent to a Residential District. Where a B-3 district

abuts an R, RCD, RM-1 or MH district, the minimum rear yard shall be 100 feet. The rear yard may be reduced to 50 feet with the approval of the Planning Commission after a public hearing in accordance with Section 138-1.203 and submittal of a plan which ensures there will be no significant negative impacts of the adjacent property as a result of the rear yard reduction.

I. Rear Yard Setback Adjacent to a Nonresidential District. Where a B district abuts a B. 0-1. I (industrial) SP or Cl districts, the rear yard may be reduced to 10 feet with the approval of the Planning Commission, upon its determination that the requested reduction will allow for better development and will be compatible with adjoining properties.

N. Building Spacing. When there is more than one principal commercial or industrial building on a lot or parcel, or a combination of parcels included in a unified development, the minimum spacing between buildings shall be 25 feet unless otherwise provided for in this ordinance. On all corner lots in I (industrial) districts, the setbacks from the proposed or existing right-of-way lines, whichever is closer, shall be 50 feet, except as allowed in footnote L with both frontages to be considered as the front yard setback. On corner lots in the B4 and B-5 districts, the setback from the proposed right-of-way line shall be 25 feet, with both frontages to be considered as the front yard setback.

Yard Type Setback Requirement Minimum Maximum 25' Front Yard along Arterial Street permitted optional none Front Yard along Main Street Front Yard along Minor Street Side Yard interior none none 25' perimeter none

Max. Building Height permitted: 2 stories/30'

Total Parking: 346 spaces including 14 barrier free spaces.

The above setback & height requirements were obtained from the City of Rochester Hills Zoning Ordinance. Note: The building setback lines are not plotted hereon. The surveyor cannot make a certification based on an interpretation of the Rochester Hills Zoning Ordinance. A zoning endorsement letter should be obtained from the City of Rochester Hills to insure conformity.

interior

perimeter

none

50'

none

none

SURVEYOR'S CERTIFICATION

Wells Fargo Bank, National Association and its successors and/or assians Rochester-Hamlin Retail Center, L.L.C., a Michigan limited liability company Seaver Title Agency, LLC Stewart Title Guaranty Company

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes items 2, 3, 4, 6(a), 6(b), 7(a), 7(b1), 7(c), 8, 9, 11(a), 13, 16, 17, & 18 of Table A thereof.

The field work was completed on 02-27-2014.

Kevin Navaroli, P.S. No 53503 Dated: 03-10-2014



PROJECT **ROCHESTER-HAMLIN**

ENGINEERS

CIVIL ENGINEERS

LAND SURVEYORS

LAND PLANNERS

NOWAK & FRAUS

ENGINEERS

46777 WOODWARD AVENUE

PONTIAC, MI 48342

TEL. (248) 332-7931

FAX. (248) 332-8257

EMAIL: rfraus@nowakfraus.com

RETAIL CENTER PROJECT LOCATION

No. 50 W. Hamlin Road

Part of the SE. 1/4 of Section 22, T.3N., R.11E., City of Rochester Hills, Oakland County, MI

SHEET ALTA/ACSM Land Title Survey

DRAWN BY: A.G. APPROVED BY:

K.N./R.FRAUS

rfraus@nowakfraus.com DATE ISSUED:

03-10-2014 SCALE: 1''=40'

SHEET NO. NFE JOB NO. H940

SNOW NOTE

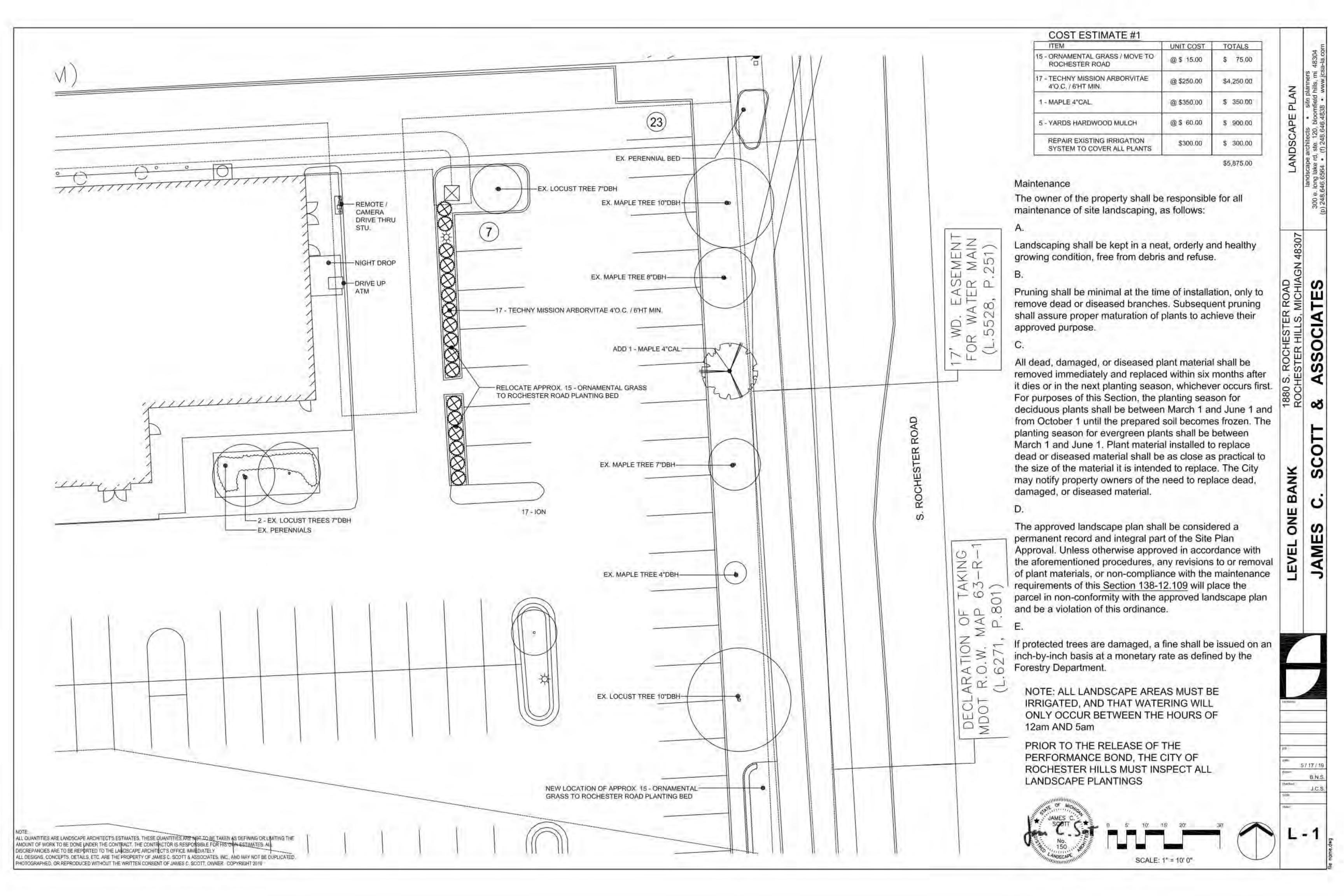
Special Flood Hazard Area.

This survey was performed under extreme snow conditions, due to the depth of snow & snow piles caused by snow removal the location of all surface structures such as curbs, manholes, edges of pavement & parking stripes may not be shown.

There was no observable evidence of cemeteries or burial grounds within the subject

There are no known proposed changes in street right-of-way lines available from the

There was no observable evidence of site use as a solid waste dump, sump or



NLG / MRA

DATE:

APRIL 15TH, 2019

SHEET TITLE:

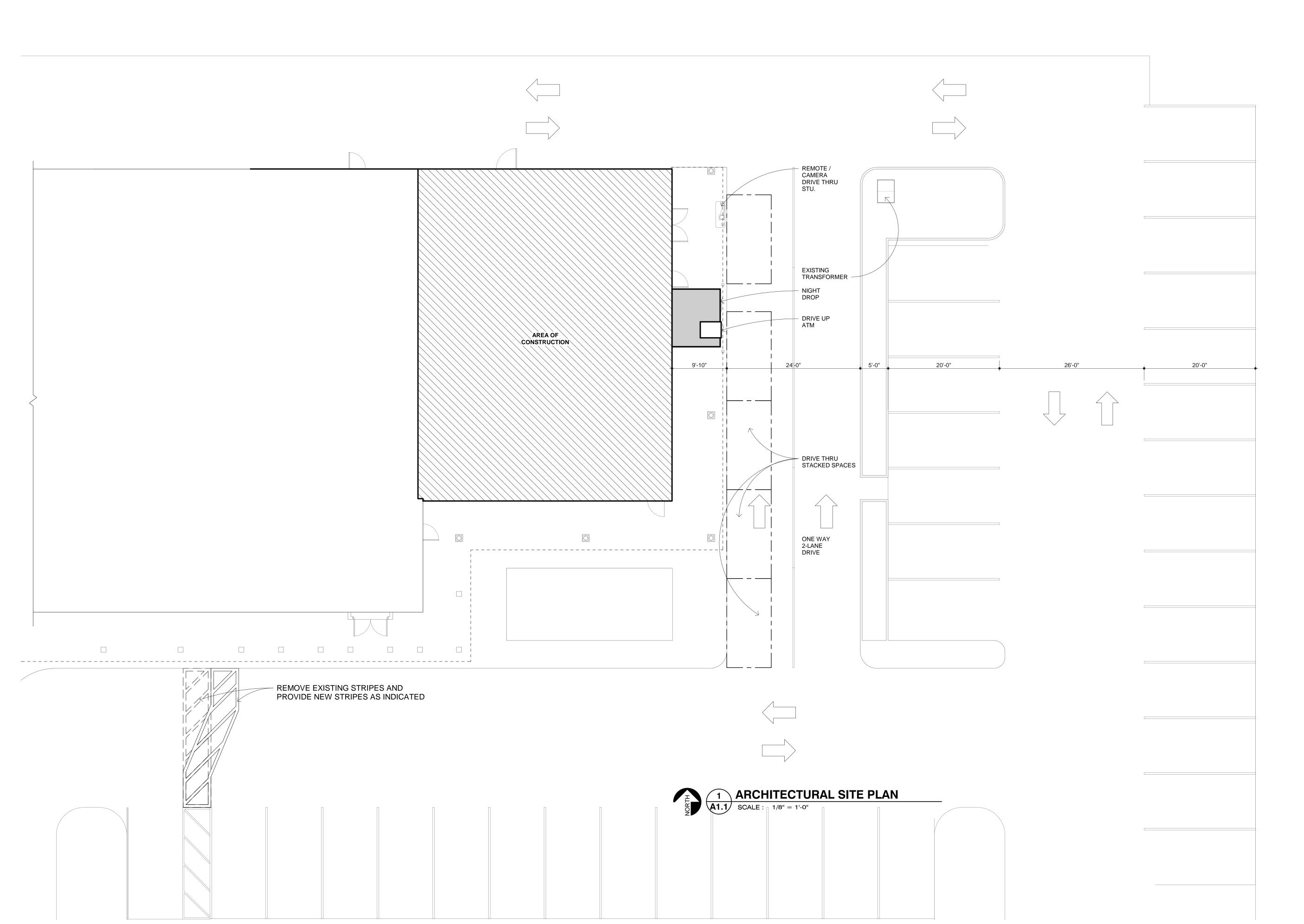
ARCHITECTURAL SITE

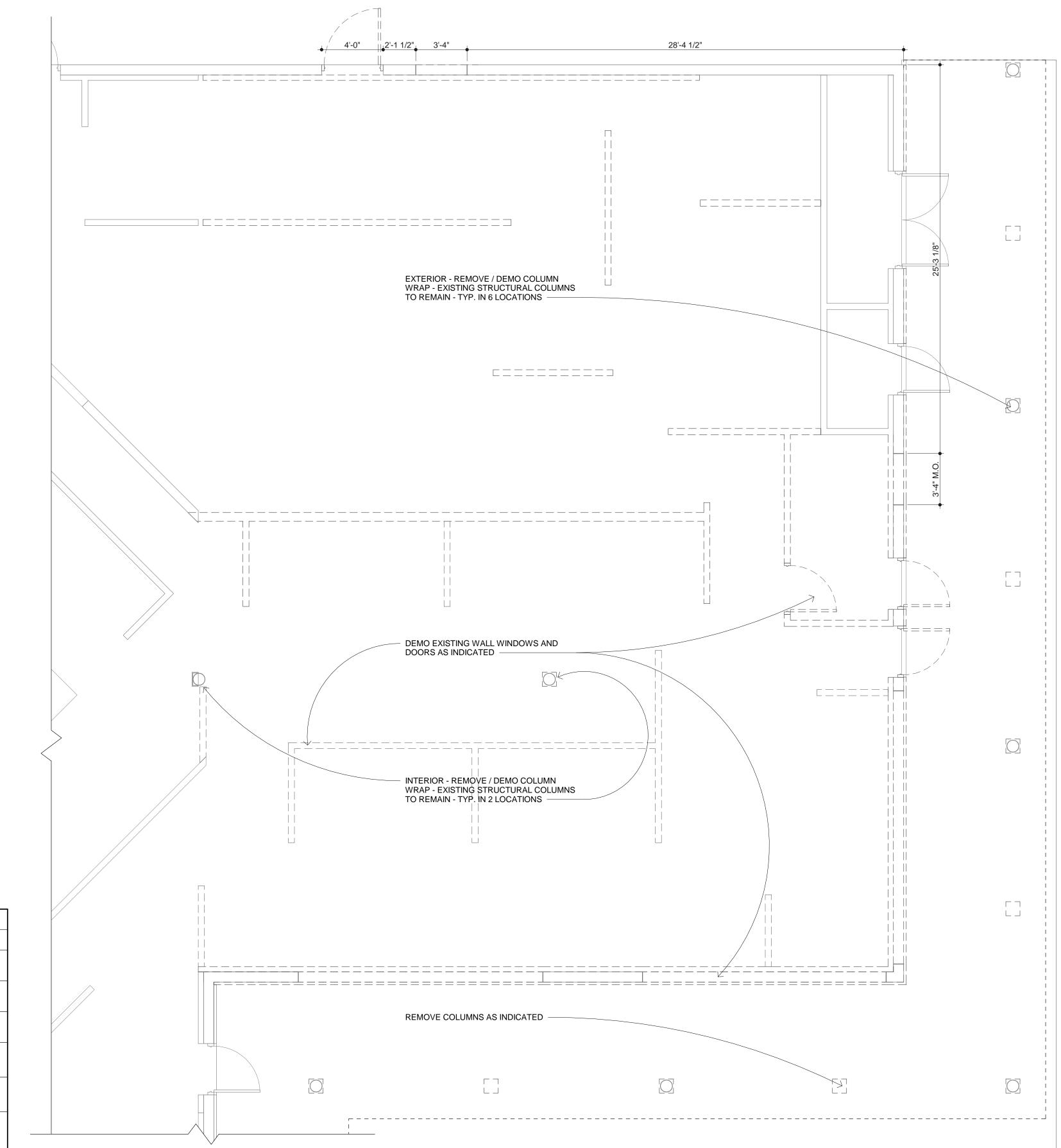
ARCHITECTURAL SITE
PLAN

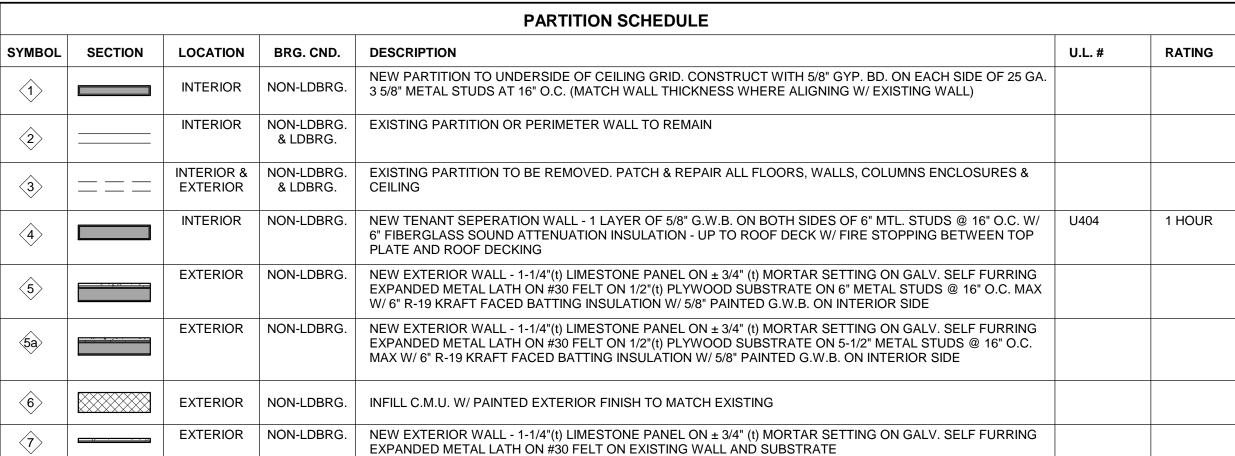
ABD1902

SHEET NUMBER:

A1.1







DEMOLITION NOTES

COPY OF EACH TO THE OWNER / OWNER REPRESENTATIVE.

1. EXTENT OF BUILDING AND SITE DEMOLITION AS INDICATED ON DRAWINGS.

2. THE GENERAL CONTRACTOR SHALL PROCURE ALL PERMITS AND RELEASES NECESSARY TO EXECUTE THE CONTRACT WORK.

3. UPON COMPLETION OF DEMOLITION OPERATIONS THE CONTRACTOR SHALL SECURE CERTIFICATES OF COMPLETION FROM ALL GOVERNING AUTHORITIES AND FORWARD ONE

4. ALL ADJOINING PUBLIC AND PRIVATE PROPERTY SHALL BE PROTECTED FROM DAMAGE CAUSED BY CONSTRUCTION.

5. CONDUCT DEMOLITION TO MINIMIZE INTERFERENCE WITH ADJACENT STRUCTURES. MAINTAIN PROTECTED EGRESS AND ACCESS AT ALL TIMES.

6. PROVIDE, ERECT, AND MAINTAIN TEMPORARY BARRIERS AND SECURITY DEVICES.

7. CONDUCT OPERATIONS WITH MINIMUM INTERFERENCE TO ADJACENT BUSINESSES AND PRIVATE RESIDENCES.

8. DO NOT CLOSE OR OBSTRUCT SIDEWALKS WITHOUT PERMITS.

9. NOTIFY ADJACENT LAND OWNERS OF WORK WHICH MAY AFFECT THEIR PROPERTY OR OF POTENTIAL NOISE OR DISRUPTION.

10. DISCONNECT, REMOVE AND/OR CAP EXISTING UTILITY LINES BY MEANS APPROVED BY THE RESPECTIVE UTILITY COMPANY AND GOVERNING AUTHORITIES. RECORD UTILITY AND CAP LOCATIONS ON CONTRACTOR'S "AS BUILT" DOCUMENTS.

11. DEMOLISH INDICATED STRUCTURES IN AN ORDERLY AND CAREFUL MANNER.

12. CEASE OPERATIONS AND NOTIFY ARCHITECT / OWNER IMMEDIATELY IF ADJACENT STRUCTURES APPEAR TO BE IN DANGER. DO NOT RESUME OPERATIONS UNTIL CORRECTIVE MEASURES HAVE BEEN TAKEN.

13. ALL DEMOLISHED MATERIAL SHALL BE REMOVED BY THE CONTRACTOR FROM THE SITE AND DISPOSED OF IN A PROPER AND LEGAL MANNER. THE SELECTION OF THE DUMP SITE AND DISPOSITION OF MATERIAL IS THE RESPONSIBILITY OF THE CONTRACTOR.

14. REMOVE ALL ABANDONED ELECTRICAL CONDUIT AND WIRING, DUCT WORK, PLUMBING PIPE SUPPLIES, DRAINS AND VENT STACKS INCLUDING AREAS ABOVE CEILINGS AND CONCEALED IN WALLS TO SOURCE. REMOVE ABANDONED FLOOR MOUNTED ELECTRICAL AND TELEPHONE DEVICES, JUNCTION BOXES, OUTLETS, PLUMBING FIXTURES, HVAC EQUIPMENT, ETC., TO BELOW FLOOR SLAB. PATCH FLOOR AS NECESSARY.

15. WORK IN THE AREA SHALL INCLUDE THE DISCONNECTION, REMOVAL, RELOCATION, AND RECONNECTION COMPLETE IN ALL RESPECTS OF ALL ITEMS SHOWN ON PLANS AND/OR OTHERWISE REQUIRED TO SUIT THE DESIGN INTENT. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE PROJECT SITE TO CORRECTLY ASCERTAIN THE SCOPE OF SERVICES AND TO INCLUDE ALL PERTINENT COSTS IN THEIR BID.

16. THE CONTRACTOR IS TO PROVIDE ALL TEMPORARY SHORING, BRACING, AND SUPPORT NECESSARY TO MAINTAIN EXISTING ROOF ELEVATIONS, AND FLOOR ELEVATIONS DURING DEMOLITION.

17. FILL ALL AREAS WHERE EXISTING FOUNDATIONS HAVE BEEN REMOVED WITH COMPACTED ENGINEERED FILL AS REQUIRED. FILL & COMPACT UP TO BOTTOM OF NEW FOUNDATIONS AND/OR GRADE ELEVATION.

18. ALL EXISTING ROOF STRUCTURE IS TO REMAIN EXCEPT WHERE NOTED. SEE NOTE 16 FOR BRACING REQUIREMENTS.

DO NOT SCALE DRAWINGS

2601 WENDOVER RD. BLOOMFIELD HILLS, MICHIGAN 48302

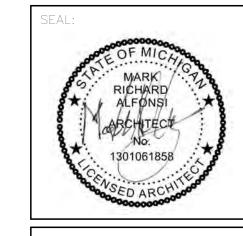
mark@ABDarch.com

PH. (248) 213-6010

REVISION 1 05-14-19 REVISION 2 05-20-19 PERMIT SET 05-22-19

APRIL 15TH, 2019 DEMO PLANS

B NUMBER: ABD1902



OCHESTER HILLS

 \Box

REVISION 1 05-14-19

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DRAWN:

NLG

DATE:

APRIL 15TH, 2019

DEMO ELEVATIONS

ABD1902

HEET NUMBER:

Δ13

DEMO EXISTING ROOF AS INDICATED

DEMO EXISTING ROOF OVERHANDS AS INDICATED

DEMO EXISTING COLLIMNS AS INDICATED

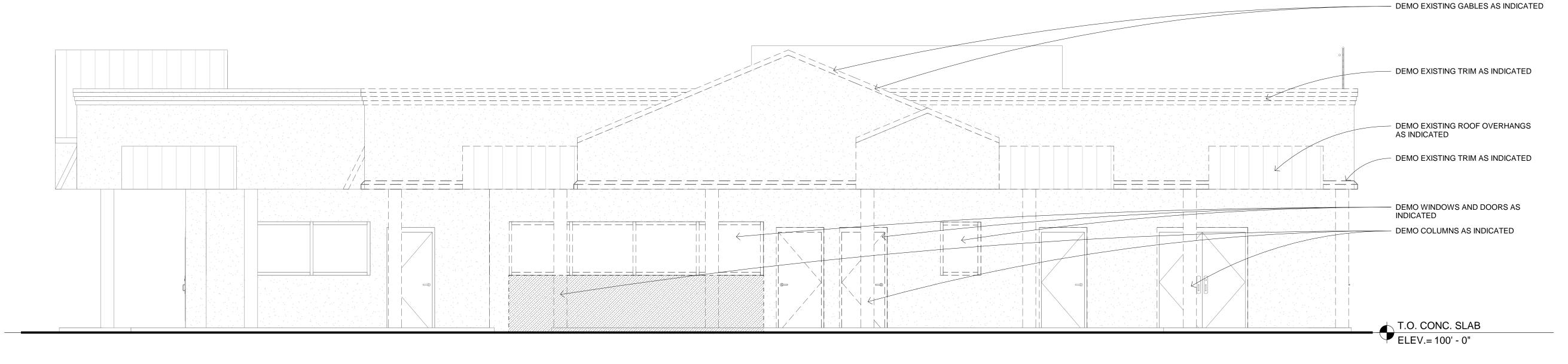
DEMO EXISTING WINDOWS AS INDICATED

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DEMO EXISTING WINDOWS AS INDICATED

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DEMOLITION NOTES

1. EXTENT OF BUILDING AND SITE DEMOLITION AS INDICATED ON DRAWINGS.

2. THE GENERAL CONTRACTOR SHALL PROCURE ALL PERMITS AND RELEASES NECESSARY TO EXECUTE THE CONTRACT WORK.

3. UPON COMPLETION OF DEMOLITION OPERATIONS THE CONTRACTOR SHALL SECURE CERTIFICATES OF COMPLETION FROM ALL GOVERNING AUTHORITIES AND FORWARD ONE COPY OF EACH TO THE OWNER / OWNER REPRESENTATIVE.

4. ALL ADJOINING PUBLIC AND PRIVATE PROPERTY SHALL BE PROTECTED FROM DAMAGE CAUSED BY CONSTRUCTION.

5. CONDUCT DEMOLITION TO MINIMIZE INTERFERENCE WITH ADJACENT STRUCTURES. MAINTAIN PROTECTED EGRESS AND ACCESS AT ALL TIMES.

6. PROVIDE, ERECT, AND MAINTAIN TEMPORARY BARRIERS AND SECURITY DEVICES.

7. CONDUCT OPERATIONS WITH MINIMUM INTERFERENCE TO ADJACENT BUSINESSES AND PRIVATE RESIDENCES.

8. DO NOT CLOSE OR OBSTRUCT SIDEWALKS WITHOUT PERMITS.

NOTIFY ADJACENT LAND OWNERS OF WORK WHICH MAY AFFECT THEIR PROPERTY OR OF POTENTIAL NOISE OR DISRUPTION.

10. DISCONNECT, REMOVE AND/OR CAP EXISTING UTILITY LINES BY MEANS APPROVED BY THE RESPECTIVE UTILITY COMPANY AND GOVERNING AUTHORITIES. RECORD UTILITY AND CAP LOCATIONS ON CONTRACTOR'S "AS BUILT" DOCUMENTS.

11. DEMOLISH INDICATED STRUCTURES IN AN ORDERLY AND CAREFUL MANNER.

12. CEASE OPERATIONS AND NOTIFY ARCHITECT / OWNER IMMEDIATELY IF ADJACENT STRUCTURES APPEAR TO BE IN DANGER. DO NOT RESUME OPERATIONS UNTIL CORRECTIVE MEASURES HAVE BEEN TAKEN.

13. ALL DEMOLISHED MATERIAL SHALL BE REMOVED BY THE CONTRACTOR FROM THE SITE AND DISPOSED OF IN A PROPER AND LEGAL MANNER. THE SELECTION OF THE DUMP SITE AND DISPOSITION OF MATERIAL IS THE RESPONSIBILITY OF THE CONTRACTOR.

14. REMOVE ALL ABANDONED ELECTRICAL CONDUIT AND WIRING, DUCT WORK, PLUMBING PIPE SUPPLIES, DRAINS AND VENT STACKS INCLUDING AREAS ABOVE CEILINGS AND CONCEALED IN WALLS TO SOURCE. REMOVE ABANDONED FLOOR MOUNTED ELECTRICAL AND TELEPHONE DEVICES, JUNCTION BOXES, OUTLETS, PLUMBING FIXTURES, HVAC EQUIPMENT, ETC., TO BELOW FLOOR SLAB. PATCH FLOOR AS NECESSARY.

15. WORK IN THE AREA SHALL INCLUDE THE DISCONNECTION, REMOVAL, RELOCATION, AND RECONNECTION COMPLETE IN ALL RESPECTS OF ALL ITEMS SHOWN ON PLANS AND/OR OTHERWISE REQUIRED TO SUIT THE DESIGN INTENT. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE PROJECT SITE TO CORRECTLY ASCERTAIN THE SCOPE OF SERVICES AND TO INCLUDE ALL PERTINENT COSTS IN THEIR BID.

SITE 16. THE CONTRACTOR IS TO PROVIDE ALL TEMPORARY SHORING, BRACING, AND SUPPORT NECESSARY TO MAINTAIN EXISTING ROOF ELEVATIONS, AND FLOOR ELEVATIONS DURING DEMOLITION.

COMPACTED ENGINEERED FILL AS REQUIRED. FILL & COMPACT UP TO BOTTOM OF NEW FOUNDATIONS AND/OR GRADE ELEVATION.

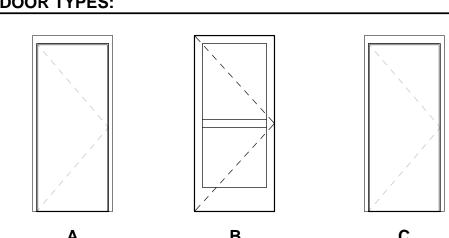
18. ALL EXISTING ROOF STRUCTURE IS TO REMAIN EXCEPT WHERE NOTED. SEE NOTE 16.

17. FILL ALL AREAS WHERE EXISTING FOUNDATIONS HAVE BEEN REMOVED WITH

18. ALL EXISTING ROOF STRUCTURE IS TO REMAIN EXCEPT WHERE NOTED. SEE NOTE 16 FOR BRACING REQUIREMENTS.

			DOOR SC	HEDULE		
MARK	WIDTH	HEIGHT	MODEL	TYPE	HARDWARE	COMMENTS
101A	3' - 0 1/2"	7' - 6 1/2"		В	5, 6, 7, 8	
101B	3' - 8"	7' - 0"		Α	1, 4	RELOCATED EXISTING
102A	3' - 0"	7' - 0"		С	1	
ETR	3' - 8"	7' - 0"		Α		
ETR	6' - 0"	7' - 0"		Α		
ETR	3' - 0"	7' - 0"		Α		
ETR	3' - 0"	7' - 0"		Α		
ETR	3' - 0"	7' - 0"		Α		

DOOR TYPES:



TUBELITE STANDARD MEDIUM STILE

METAL FRAME

EXTERIOR HOLLOW

CLEAR ANODIZED METAL DOOR IN HOLLOW ALUMINUM AND GLASS STOREFRONT DOOR -

INTERIOR STAINED WOOD DOOR W/ PAINT 13'-7 1/2"

4'-0" M.O.

4/"x4/" UNLESS NOTED OTHERWISE (OR MATCH EXISTING STANDARD)

DOOR NOTES: GENERAL:

- ALL NEW HARDWARE TO MATCH EXISTING FINISH. REUSE EXISTING HARDWARE WHEREVER POSSIBLE.
- ROUGH ALL NEW DOOR OPENINGS WITH HEAVY GAUGE METAL OR NON-COMB WOOD STUDS.
- ALL LEVERS & LOCK MECHANISMS SHALL MEET BARRIER FREE REQUIREMENTS.
- ALL NEW DOORS TO RECEIVE 1-1/2 PAIR BUILDING STANDARD HINGES
- ALL NEW SWING DOORS TO RECEIVE NEW WALL BUMPERS OR DOME STOPS. (OR MATCH EXISTING STANDARD)
- ALL KEYING TO MATCH LANDLORD MASTER. COORDINATE KEY SCHEDULE W/ TENANT.
- NEW KICK PLATES SHALL MATCH EXISTING.
- ALL DOORS NOTED "ETR" ARE EXISTING TO REMAIN.
- GLAZING IN DOORS, ADJACENT TO DOORS WITHIN 24", INDIVIDUAL PANE IS GREATER THAN 9 SQ. FT., BOTTOM EDGE OF THE GLAZING IS LESS THAN 18" A.F.F. OR TOP EDGE OF THE GLAZING IS GREATER THAN 36" A.F.F. MUST BE SAFETY GLASS PER MBC 2015 SEC. 2406.4

HARDWARE NOTES:

- LOCKSET MFGR: SCHLAGE STYLE: LEVER 'AL' SERIES JUP FINISH: #626 SATIN CHROME OR APPROVED EQUAL
- PASSAGE SET MFGR: SCHLAGE STYLE: LEVER 'AL' SERIES JUP FINISH: #626 SATIN, CHROME, OR
- PRIVACY SET MFGR: SCHLAGE STYLE: LEVER 'AL' SERIES JUP FINISH: #626 SATIN, CHROME, OR

APPROVED EQUAL

APPROVED EQUAL

- **NEW CLOSER** MFGR: LCN MODEL #4010
- FINISH: CLEAR ANNO OR APPROVED EQUAL
- **NEW HINGES** MFGR: TUBELITE MODEL P092
- FINISH: US26D **NEW CLOSER**
- MFGR: TUBELITE MODEL P1783 HAGER SERIES 5300 FINISH: CLEAR ANNO
- NEW LOCK MFGR: TUBELITE MODEL P1420 ADAMS RITE MS 1850A

APPROVED EQUAL

NEW HANDLE MFGR: TUBELITE MODEL P348a ADAMS RITE 4560 FINISH: CLEAR ANNO OR APPROVED EQUAL

FINISH: CLEAR ANNO OR

				PARTITION SCHEDULE		
SYMBOL	SECTION	LOCATION	BRG. CND.	DESCRIPTION	U.L. #	RATING
1>		INTERIOR	NON-LDBRG.	NEW PARTITION TO UNDERSIDE OF CEILING GRID. CONSTRUCT WITH 5/8" GYP. BD. ON EACH SIDE OF 25 GA. 3 5/8" METAL STUDS AT 16" O.C. (MATCH WALL THICKNESS WHERE ALIGNING W/ EXISTING WALL)		
2		INTERIOR	NON-LDBRG. & LDBRG.	EXISTING PARTITION OR PERIMETER WALL TO REMAIN		
3		INTERIOR & EXTERIOR	NON-LDBRG. & LDBRG.	EXISTING PARTITION TO BE REMOVED. PATCH & REPAIR ALL FLOORS, WALLS, COLUMNS ENCLOSURES & CEILING		
4>		INTERIOR	NON-LDBRG.	NEW TENANT SEPERATION WALL - 1 LAYER OF 5/8" G.W.B. ON BOTH SIDES OF 6" MTL. STUDS @ 16" O.C. W/6" FIBERGLASS SOUND ATTENUATION INSULATION - UP TO ROOF DECK W/FIRE STOPPING BETWEEN TOP PLATE AND ROOF DECKING	U404	1 HOUR
<u>\$</u>	- 15/2	EXTERIOR	NON-LDBRG.	NEW EXTERIOR WALL - 1-1/4"(t) LIMESTONE PANEL ON \pm 3/4" (t) MORTAR SETTING ON GALV. SELF FURRING EXPANDED METAL LATH ON #30 FELT ON 1/2"(t) PLYWOOD SUBSTRATE ON 6" METAL STUDS @ 16" O.C. MAX W/ 6" R-19 KRAFT FACED BATTING INSULATION W/ 5/8" PAINTED G.W.B. ON INTERIOR SIDE		
(5a)		EXTERIOR	NON-LDBRG.	NEW EXTERIOR WALL - 1-1/4"(t) LIMESTONE PANEL ON \pm 3/4" (t) MORTAR SETTING ON GALV. SELF FURRING EXPANDED METAL LATH ON #30 FELT ON 1/2"(t) PLYWOOD SUBSTRATE ON 5-1/2" METAL STUDS @ 16" O.C. MAX W/ 6" R-19 KRAFT FACED BATTING INSULATION W/ 5/8" PAINTED G.W.B. ON INTERIOR SIDE		
<u>6</u>		EXTERIOR	NON-LDBRG.	INFILL C.M.U. W/ PAINTED EXTERIOR FINISH TO MATCH EXISTING		
7>		EXTERIOR	NON-LDBRG.	NEW EXTERIOR WALL - 1-1/4"(t) LIMESTONE PANEL ON \pm 3/4" (t) MORTAR SETTING ON GALV. SELF FURRING EXPANDED METAL LATH ON #30 FELT ON EXISTING WALL AND SUBSTRATE		

FLOOR PLAN GENERAL NOTES

1. ALL EXTERIOR DIMENSIONS ARE FIGURED TO EXTERIOR FACE OF MASONRY OR TO EXTERIOR SHEATHING, UNLESS NOTED OTHERWISE.

2. ALL INTERIOR DIMENSIONS ARE FIGURED TO FACE OF ROUGH STUD UNLESS NOTED OTHERWISE.

3. THE GENERAL CONTRACTOR SHALL COORDINATE ALL APPLICABLE TRADES TO ENSURE PROPER ROUTING, DROPS, ETC. FOR THE H.V.A.C., 9. THE INTERIOR WALLS, FLOOR, AND CEILING SPACE OF THE FOLLOWING ELECTRICAL. PLUMBING, ETC. DURING THE ROUGH FRAMING.

4. ALL GLASS ADJACENT TO DOORS, TUB AND SHOWER AREAS SHALL BE MECHANICAL ROOMS. SAFETY GLASS.

5. IF ANY QUESTIONS ARISE AS TO THE ARCHITECTURAL INTENT OF THESE DOCUMENTS, IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY WITH LOCAL BUILDING CODE REQUIREMENTS. TO ASK SUCH QUESTIONS OF THE ARCHITECT, AS THE ARCHITECT IS THE SOLE INTERPRETER OF THESE DOCUMENTS. IF NO SUCH QUESTIONS ARE ASKED, IT IS ASSUMED THAT THE ARCHITECTURAL INTENT OF THE DOCUMENTS IS UNDERSTOOD.

6. PROVIDE PIPE INSULATION FOR ALL PLUMBING LINES PASSING THROUGH OR CONTAINED IN UN-TEMPERED CAVITIES.

7. CONTRACTOR IS TO VERIFY THAT THE WINDOW MANUFACTURER HAS PROVIDED EGRESS WINDOWS IN ACCORDANCE WITH THE LOCAL BUILDING

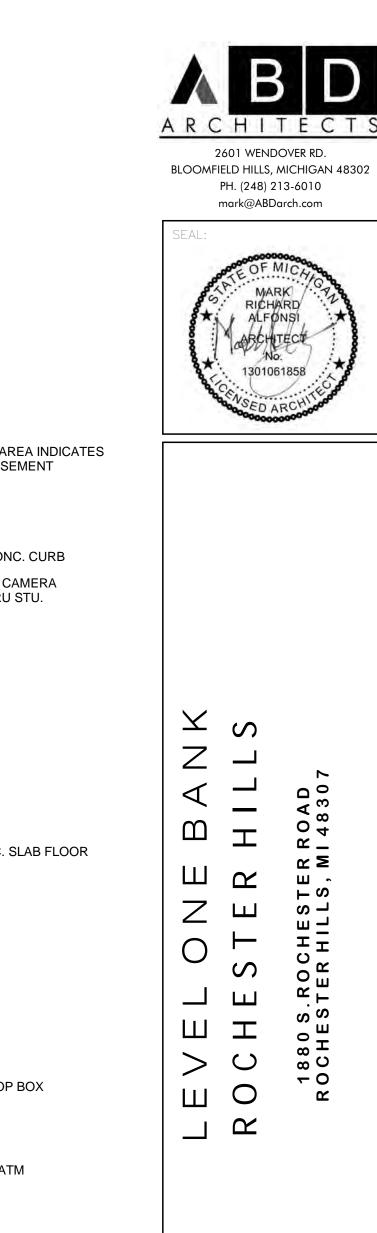
8. SEE WINDOW AND DOOR SCHEDULES FOR ROUGH OPENING REQUIREMENTS FOR WINDOWS AND DOORS.

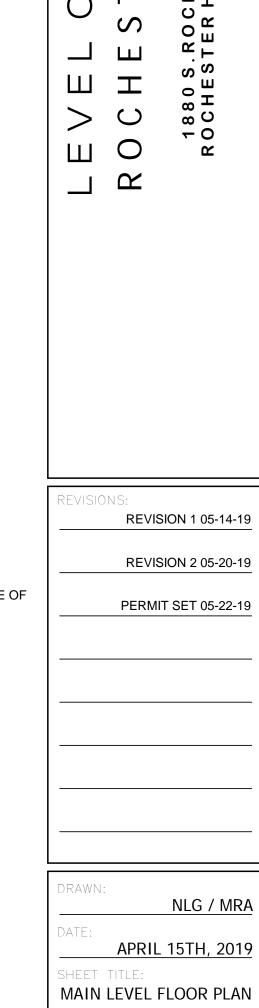
ROOM TYPES SHALL CONTAIN SOUND ATTENUATION BATT INSULATION: LAUNDRY ROOMS, BATHROOMS, POWDER ROOMS, BEDROOMS, AND

10. THE GENERAL CONTRACTOR IS TO COORDINATE THE LOCATION OF ALL FLOOR DRAINS REQUIRED FOR MECHANICAL EQUIPMENT IN ACCORDANCE

11. SMOKE DETECTORS IN THE ENTIRE HOUSE SHALL MEET THE REQUIREMENTS OF SECTION R313 OF THE MICHIGAN RESIDENTIAL CODE.

12. ALL WORK SHALL COMPLY WITH THE 2009 MICHIGAN RESIDENTIAL CODE.



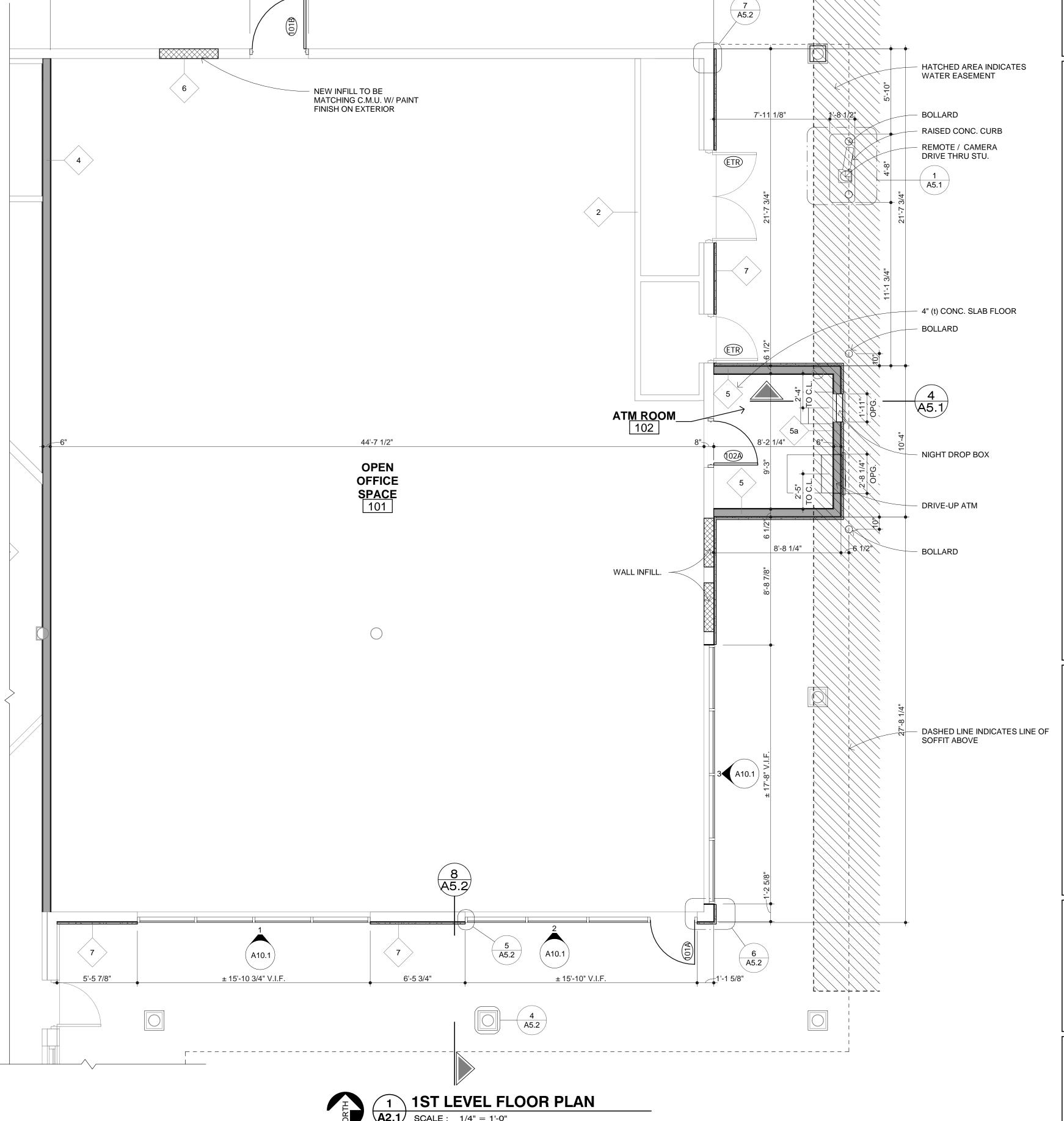


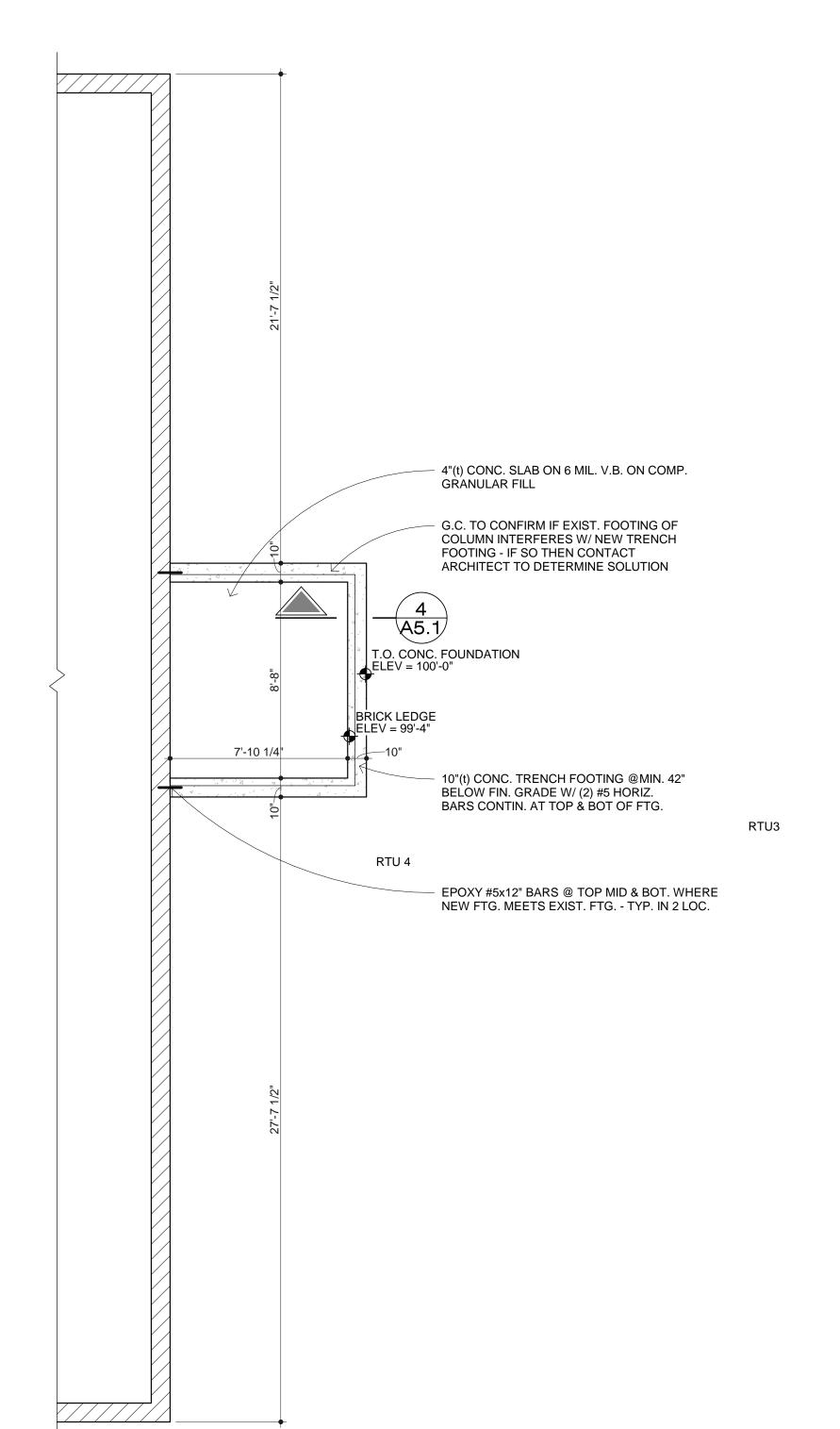
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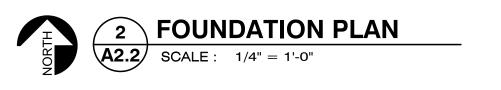
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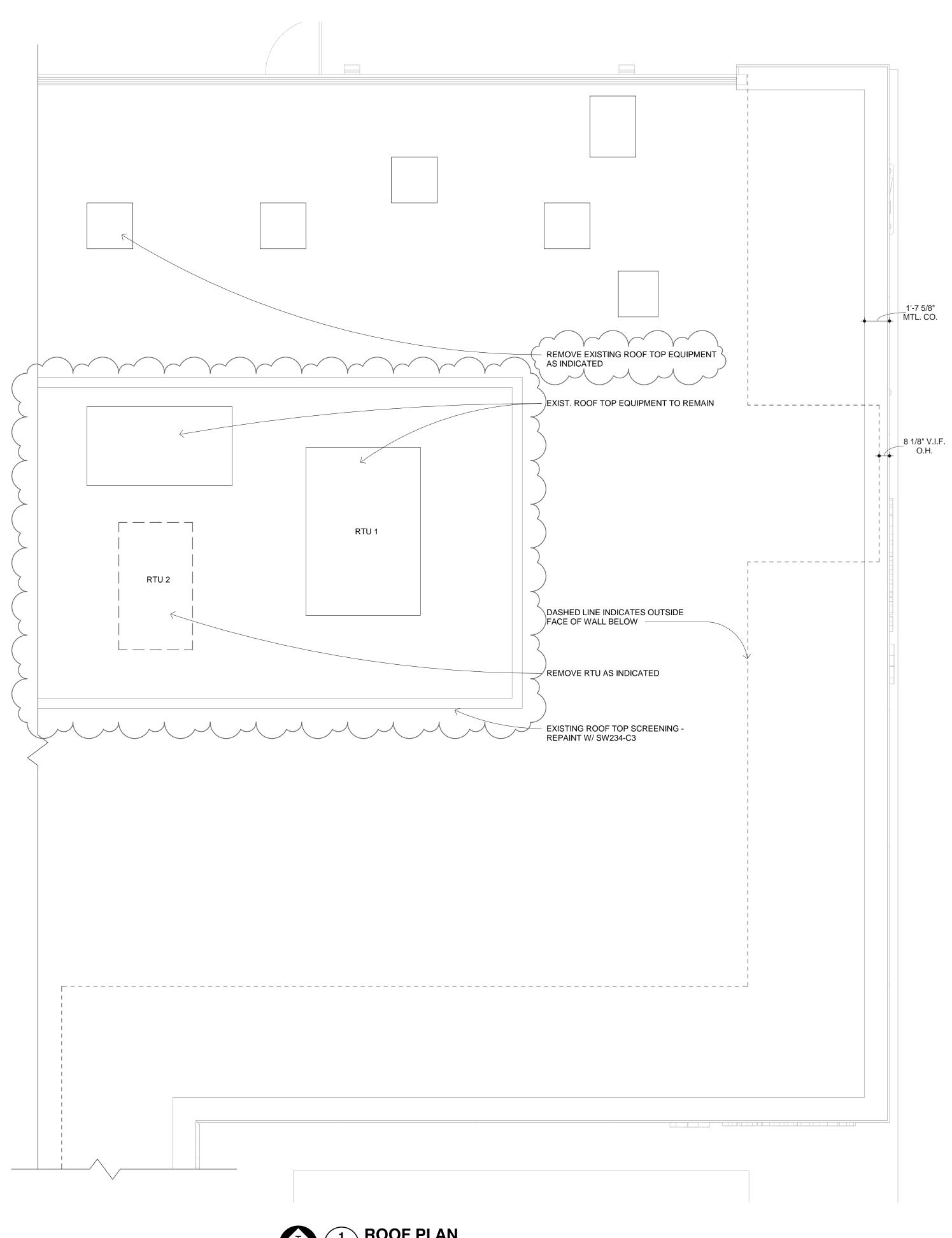
DO NOT SCALE DRAWINGS

ABD1902

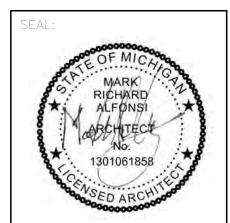












ROCHESTERROAD
1880 S.ROCHESTERROAD
ROCHESTERHILLS MI 48307

REVISION 1 05-14-19

REVISION 2 05-20-19

PERMIT SET 05-22-19

DRAWN:

_______NLG

DATE:

_____APRIL 15TH, 2019

SHEET TITLE:

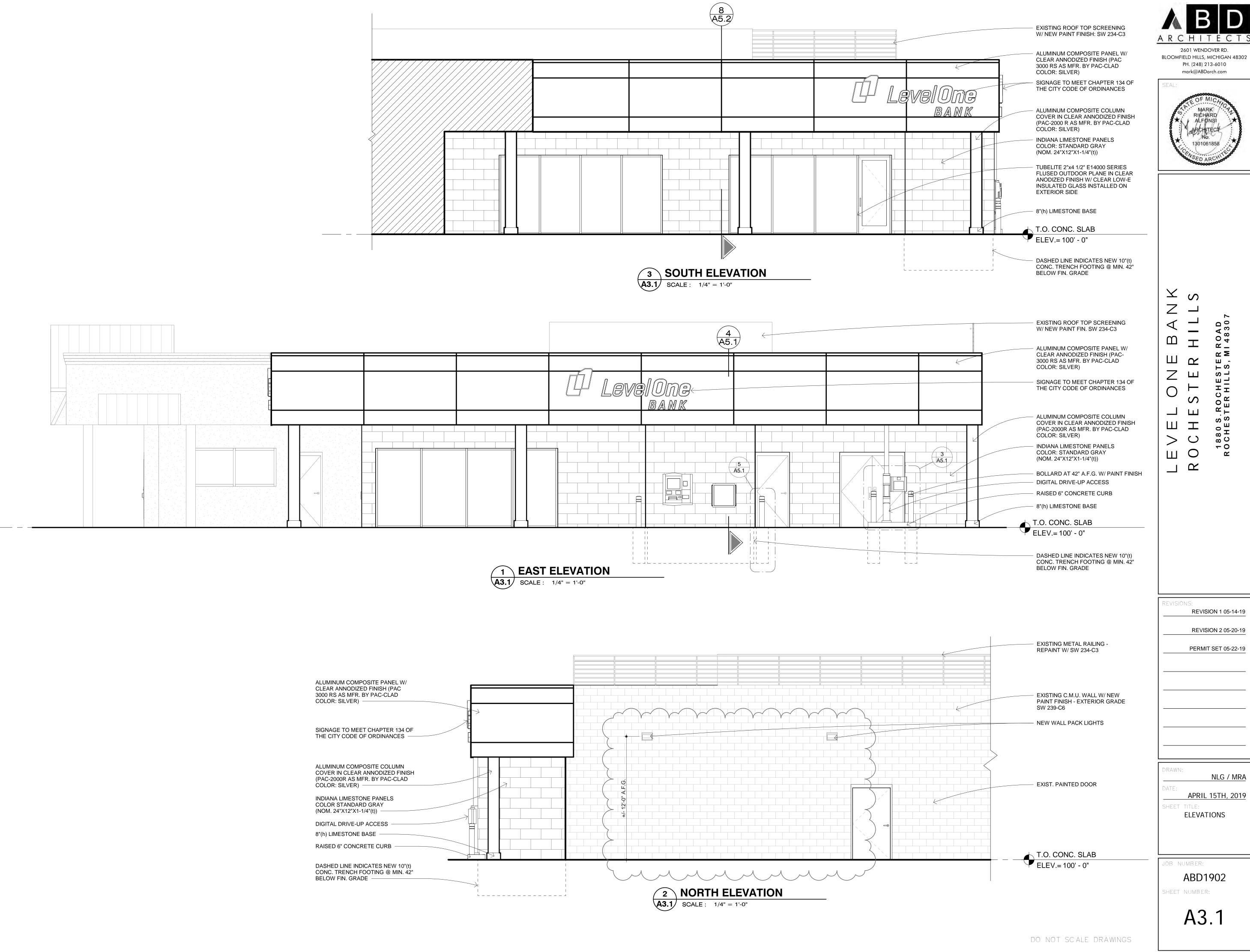
ROOF AND FOUNDATION
PLAN

JOB NUMBER:

ABD1902

SHEET NUMBER:

A2.2





REVISION 1 05-14-19 REVISION 2 05-20-19

PERMIT SET 05-22-19

NLG / MRA APRIL 15TH, 2019



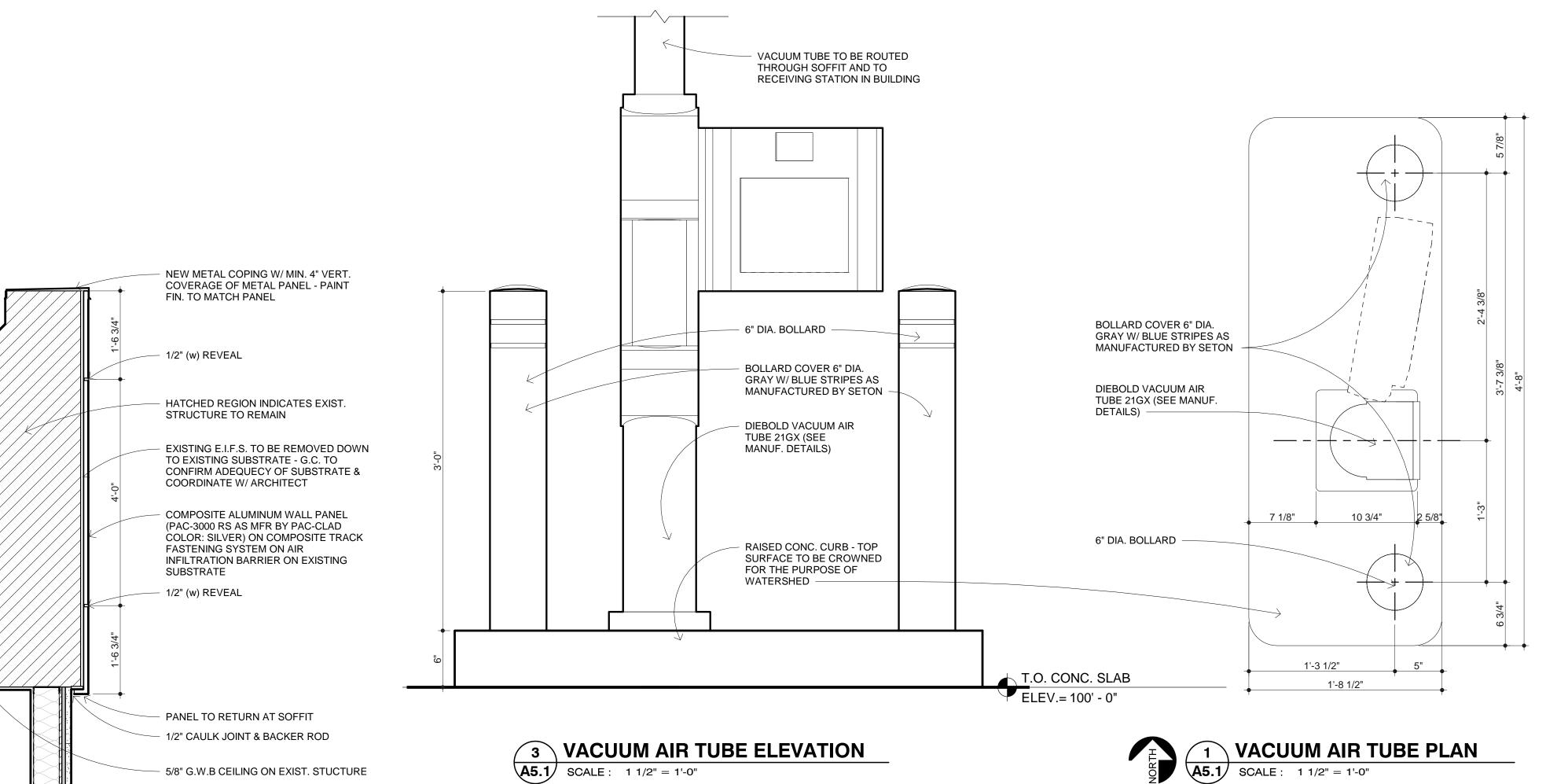
REVISION 1 05-14-19 REVISION 2 05-20-19 PERMIT SET 05-22-19

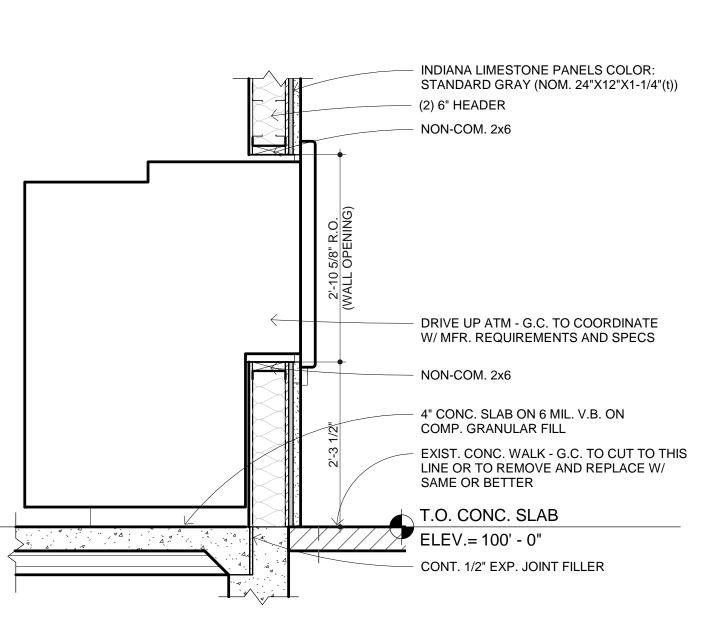
NLG ,MRA APRIL 15TH, 2019

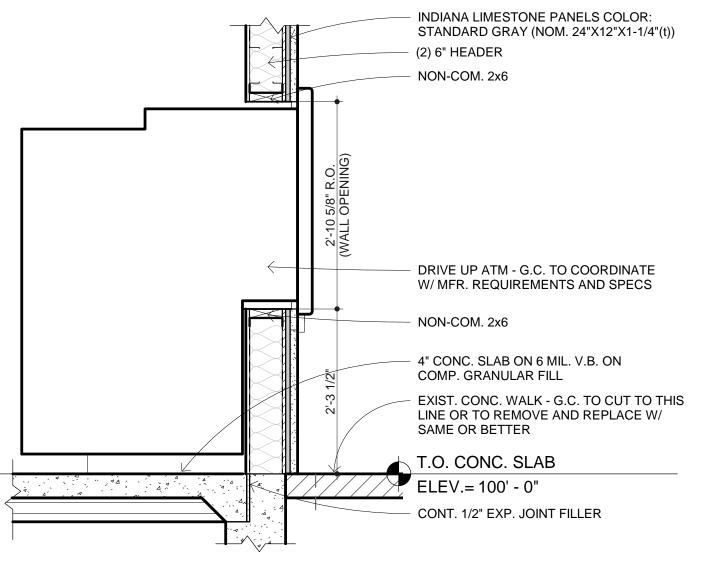
SECTIONS AND DETAILS

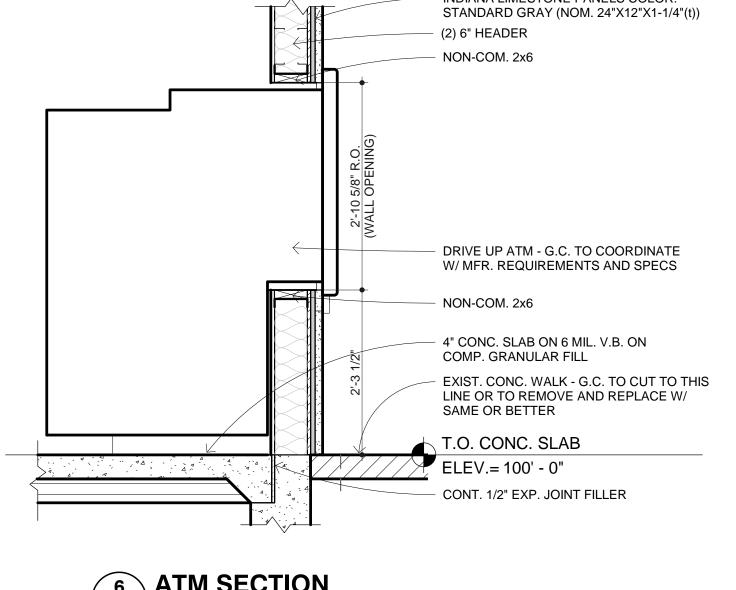
OB NUMBER: ABD1902 SHEET NUMBER:

A5.1









6 ATM SECTION A5.1 SCALE: 3/4" = 1'-0"

4 WALL SECTION **A5.1** SCALE: 3/4" = 1'-0"

- 1-1/4" LIMESTONE PANELS (INDIANA LIMESTONE COLOR STANDARD GRAY) ON ± 3/4"(t) MORTAR SETTING ON GALV. SELF FURRING EXPANDED METAL LATH ON 30# FELT ON 1/2" (t) PLYWOOD SUBSTRATE ON 5-1/2" MTL. STUDS (EAST WALL ONLY) @ 16" O.C. W/ 6" KRAFT FACED BATT INSUL. W/ 5/8"(t) G.W.B. ON INTERIOR SURFACE

- AFTER HOUR DEPOSITORY - G.C. TO COORDINATE W/ MFR. REQUIREMENTS AND SPECS

4" CONC. SLAB ON 6 MIL. V.B. ON

5-1/2" MTL. STUD PLATE ANCHORED TO FND &

EXIST. CONC. WALK - G.C. TO CUT TO THIS LINE OR TO REMOVE AND REPLACE W/ SAME OR BETTER

10" (t) CONC. TRENCH FOOTING @ 42" MIN.

BELOW FIN. GRADE W/ (2)#5 HORIZ. BARS

COMP. GRANULAR FILL

ON CONTIN. SILL SEAL

T.O. CONC. SLAB

CONT. 1/2" EXP. JOINT FILLER

ELEV.= 100' - 0"

AT TOP & BOT.

(WALL TYPE 5a)

(2) 6" HEADER

NON-COM. 2x6

NON-COM. 2x6

DO NOT SCALE DRAWINGS

BOLLARD COVER 6" DIA.

- 6" DIA. STD. PIPE - FILL

EXIST. CONCRETE

ELEV.= 100' - 0"

AROUND PIPE

5 BOLLARD DETAIL

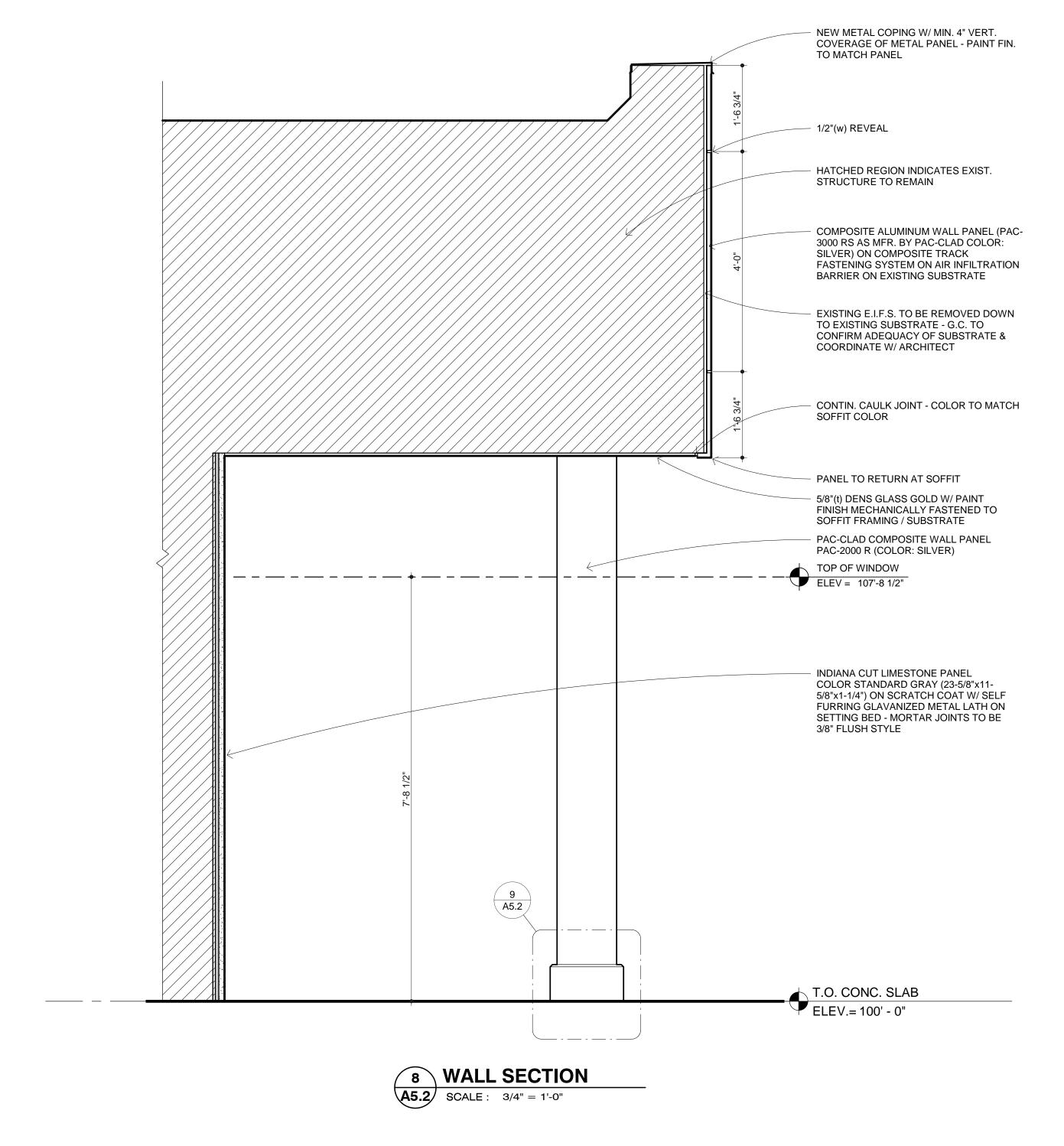
A5.1 SCALE: 3/4" = 1'-0"

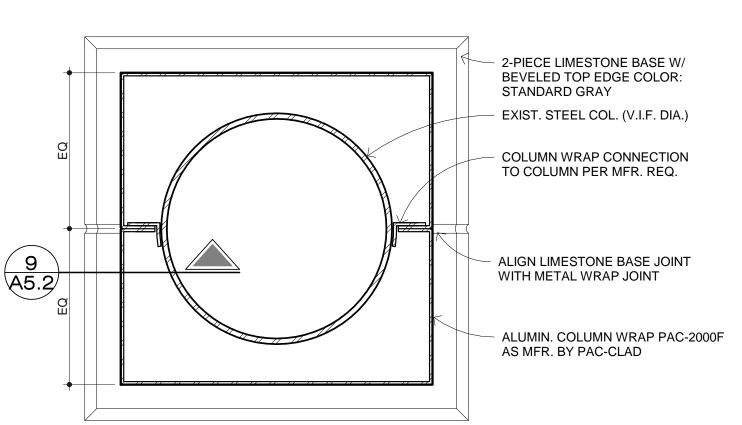
T.O. CONC. SLAB

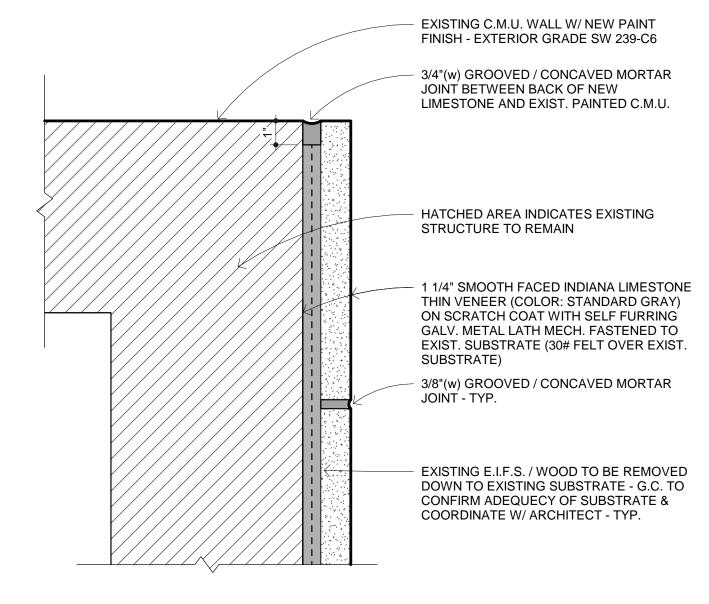
- MIN. 6" CONC. COVER

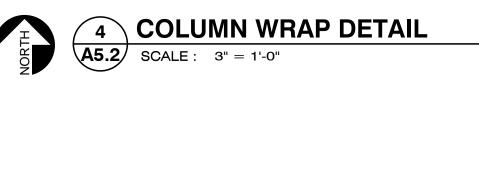
W/ CONC.

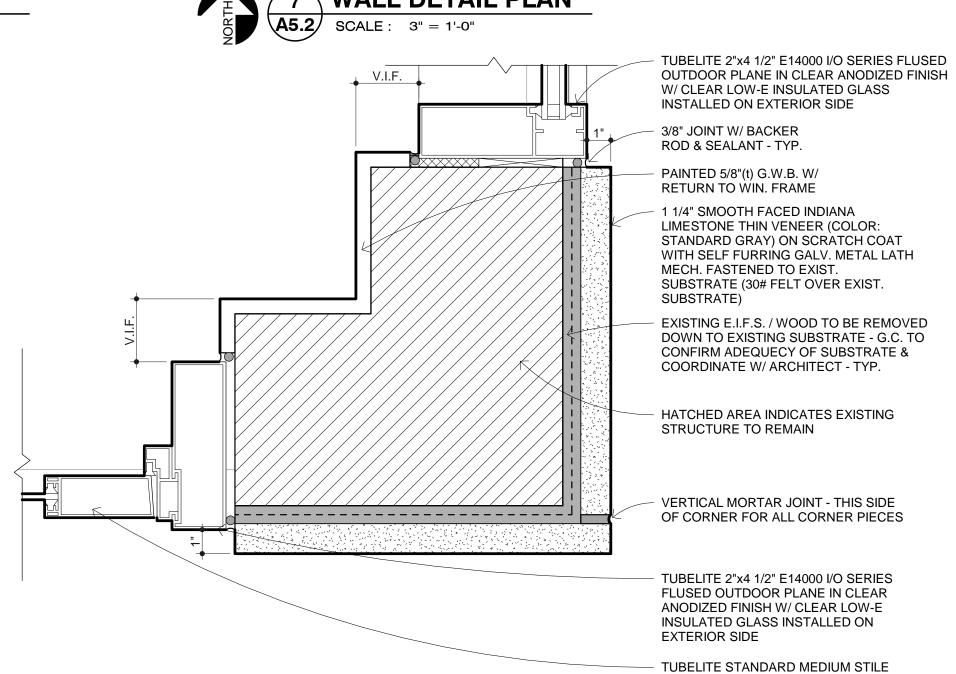
GRAY W/ BLUE STRIPES AS MANUFACTURED BY SETON

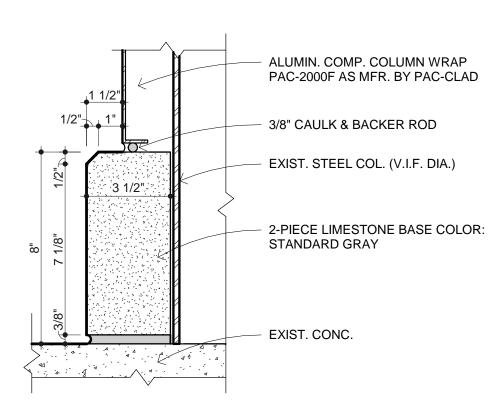






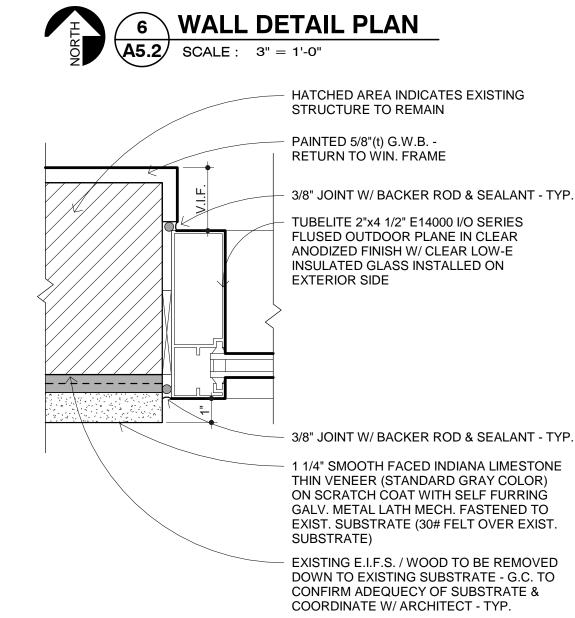






9 COLUMN BASE DETAIL

A5.2 SCALE: 3" = 1'-0"







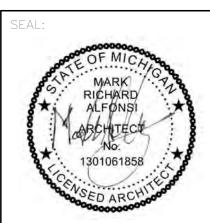
A R C H I T E C T S

2601 WENDOVER RD.

BLOOMFIELD HILLS, MICHIGAN 48302

PH. (248) 213-6010

mark@ABDarch.com



ROCHESTERROAD
1880 S.ROCHESTERROAD
ROCHESTERHILLS, MI 48307

REVISIONS:

REVISION 1 05-14-19

REVISION 2 05-20-19

PERMIT SET 05-22-19

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MRA, NLG

DATE:

APRIL 15TH, 2019

SHEET TITLE:

SECTIONS AND DETAILS

SECTIONS AND DETAILS

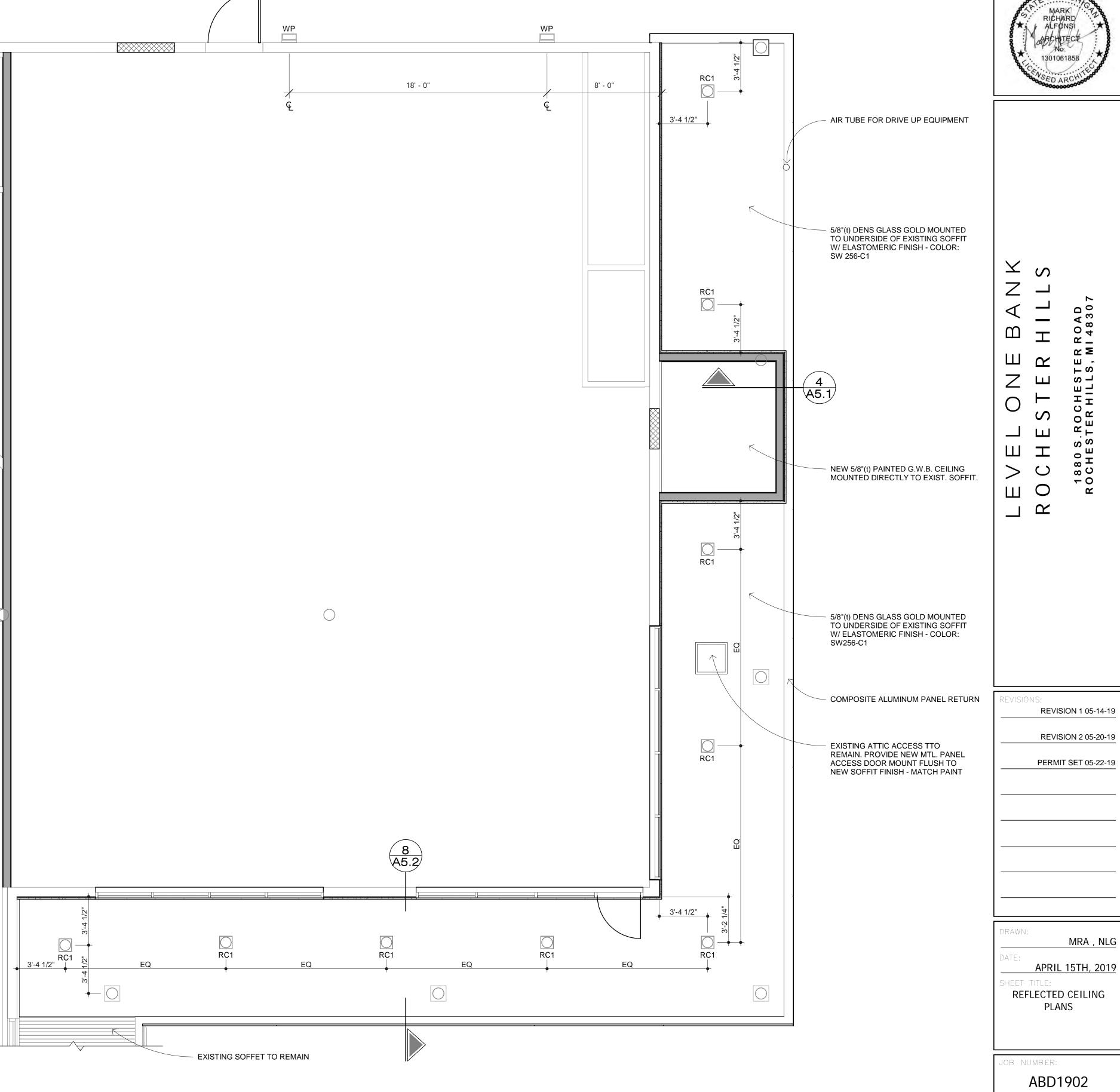
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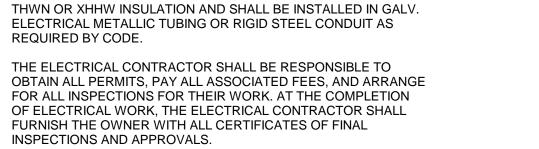
SHEET NUMBER:

A5.2

ENTRANCE W/ 10" BOTTOM RAIL







7. ALL RECEPTACLES AND SWITCHES SHALL CONFORM TO NEC REQUIREMENTS. COLOR TO BE SELECTED.

FURNISH THE OWNER WITH ALL CERTIFICATES OF FINAL

ALL CIRCUITS AND EQUIPMENT SHALL BE TESTED UPON COMPLETION OF WORK WHEN REQUESTED.

EXTERIOR RECESSED LIGHT FIXTURE - PRESCOLITE LMF4ML-

EXTERIOR WALL PACK - HUBBELL LNC2-12L-4K-070-2 W/ C-70-

FURNISH LABOR AND MATERIALS TO PROVIDE A

COMPLETE ELECTRICAL SYSTEM AS SHOWN ON THE PLANS.

PROVIDE NEW LIGHTING FIXTURES AS SHOWN. ELECTRICAL CONTRACTOR TO REVIEW FIXTURE SELECTION WITH OWNER.

AND ORDINANCES OF THE LOCAL MUNICIPALITY, AND THE

REQUIREMENTS AND CRITERIA OF THE NATIONAL ELECTRIC CODE.

APPROVAL OF THE NATIONAL BOARD OF FIRE UNDERWRITER'S

ALL WIRING SHALL BE NEW COPPER CONDUCTORS WITH TYPE

3. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE STATE OF MICHIGAN CODES, CODES

4. ALL MATERIAL AND EQUIPMENT SHALL BEAR THE LABEL OF

4LFML30L30K8 W/54 - PHILLIPS 3000K LEDs LAMP -PHOTOMETRIC - CONTROL AT ELECTRICAL PANEL

ELECTRICAL NOTES:

LABORATORIES.

REQUIRED BY CODE.

INSPECTIONS AND APPROVALS.

REFLECTED CEILING LEGEND

CRI LAMP

WP

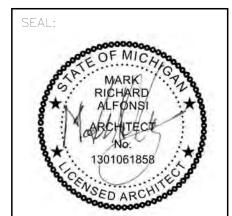
THE ELECTRICAL CONTRACTOR IS TO COORDINATE EXACT LOCATION OF ALL FIXTURES AND RECEPTACLES (LIGHTING, TV, PHONE, ETC.) WITH THE OWNER IN THE FIELD.



SHEET NUMBER:

2601 WENDOVER RD. PH. (248) 213-6010 mark@ABDarch.com ROUGH OPENING V.I.F. 15'-10 3/4" - TUBELITE 2"x4 1/2" E14000 SERIES FLUSED OUTDOOR PLANE IN CLEAR ANODIZED FINISH W/ CLEAR LOW-E INSULATED GLASS INSTALLED ON EXTERIOR SIDE 2" 3'-9 3/4" 2" 3'-8 3/4" 3'-9 3/4" 3'-8 3/4" 2" T.O. CONC. SLAB ELEV.= 100' - 0" 1 STOREFRONT A **A10.1** SCALE: 1/2" = 1'-0" ROUGH OPENING V.I.F. 15'-10" TUBELITE 2"x4 1/2" E14000 SERIES FLUSED OUTDOOR PLANE IN CLEAR ANODIZED FINISH W/ CLEAR LOW-E INSULATED GLASS INSTALLED ON EXTERIOR SIDE 3'-11 1/2" 3'-0 1/2" TUBELITE STANDARD MEDIUM STILE ENTRANCE W/ 10" BOTTOM RAIL IN CLEAR ANODIZED **ALUMINUM FINISH** T.O. CONC. SLAB ELEV.= 100' - 0" 2 STOREFRONT B A10.1 SCALE: 1/2" = 1'-0" ROUGH OPENING V.I.F. 17'-8" **WINDOW NOTES:** WINDOW SELECTION BASED ON TUBELITE WINDOW SYSTEMS.
 COLOR OF ALL ALUMINUM EXTRUSIONS TO BE CLEAR ANNODIZED ALUMINUM. TUBELITE 2"x4 1/2" E14000 SERIES FLUSED OUTDOOR PLANE IN CLEAR ANODIZED 3. HEAD HEIGHT AS INDICATED IN THE SCHEDULE IS FROM THE FINISH FLOOR
THAT THE WINDOW IS ON.
5. DIMENSIONS SHOWN ARE R.O. SIZES.
WINDOW FRAME IS 1/2" SMALLER THAN R.O. SIZE.
VERIFY WITH WINDOW MANUFACTURE. 4'-2" 4'-3" 4'-3" 4'-2" FINISH W/ CLEAR LOW-E
INSULATED GLASS INSTALLED
ON EXTERIOR SIDE 6. ALL CUSTOM WINDOW SIZES TO BE VERIFIED IN FIELD PRIOR TO FABRICATION SHEET TITLE: WINDOW DETAILS T.O. CONC. SLAB ELEV.= 100' - 0" OB NUMBER: 3 STOREFRONT C A10.1 SCALE: 1/2" = 1'-0" ABD1902 SHEET NUMBER: DO NOT SCALE DRAWINGS

BLOOMFIELD HILLS, MICHIGAN 48302



REVISION 1 05-14-19 REVISION 2 05-20-19 PERMIT SET 05-22-19

NLG 04-16-19

DEMOLITION NOTES

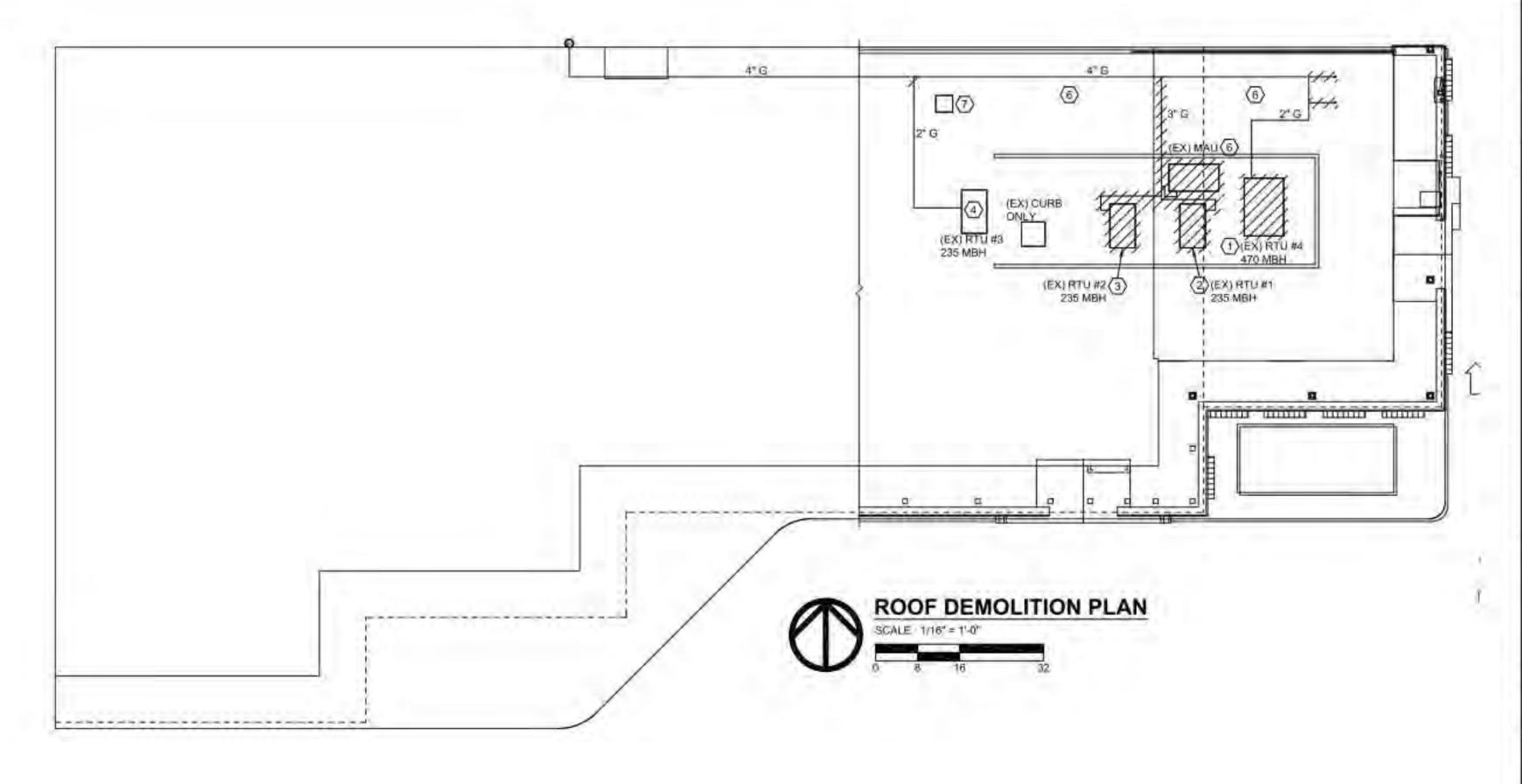
- 1 ALL ABANDONED BRANCH PLUMBING LINES TO BE CUT BACK TO MAIN (NO DEAD LEGS ALLOWED): COORDINATE IN FIELD LIMITS OF DEMOLITION.
- 2 DEMO ALL EXISTING CW, HW & HWR PIPING IN EXISTING TENANT SPACE PROVIDE AND INSTALL NEW PIPING AS SHOWN.
- 3. DEMO EXISTING WATER HEATER AND FLUE COMPLETE.

GENERAL DEMOLITION NOTES:

- THE BUILDER & HIS SUBCONTRACTORS SHALL VISIT THE EXISTING SITE AND SHALL EXAMINE TO THEIR SATISFACTION ALL OF THE PHYSICAL CONDITIONS THAT AFFECT THEIR CONTRACT PRICE, NOTING THE EXISTING SERVICE, LOCATION OF EXISTING STRUCTURES AND EQUIPMENT (IF ANY), AS WELL AS AREAS AVAILABLE FOR THE STORAGE OF MATERIAL, NO ADDITIONS TO THE CONTRACT PRICE SHALL BE REQUESTED OR PERMITTED BY THE IGNORANCE OF ANY EXISTING CONDITIONS OF THE SITE AND SURROUNDING AREA.
- BUILDER SHALL LOCATE ALL EXISTING UTILITY LINES ON THE SITE AND RELOCATE ALL ELECTRICAL EQUIPMENT DEVICES, CONDUIT, WIRING WORK, UNDERGROUND / OVERHEAD UTILITIES. AND PLUMBING AS NECESSARY IN ORDER TO ACCOMPLISH THE WORK OR DEMOLITION WITHIN THE CONSTRUCTION AREA OR ON THE SITE. VERIFY EXACT REQUIREMENTS WITH EACH LOCAL UTILITY COMPANY BEFORE STARTING WORK. CALL "MISS DIG" BEFORE STARTING CONSTRUCTION.
- BUILDER SHALL COORDINATE WITH THE OWNER AND ALL SUB CONTRACTORS ON ANY AND ALL NECESSARY TEMPORARY INTERRUPTIONS IN THE UTILITY DISTRIBUTION SYSTEMS ON THE SITE OR WITHIN THE FACILITY UNDER CONSTRUCTION. EVERY EFFORT SHALL BE MADE TO GIVE THE MAXIMUM ADVANCE NOTICE IN ORDER TO PROVIDE A SATISFACTORY MEANS OF PROPER SCHEDULING OF THE ACTIVITIES OF ALL CONCERNED.
- IN PARTS WHERE ELECTRICAL OR MECHANICAL SYSTEMS CONFLICT OR ALTERATIONS TO AN EXISTING SYSTEM IS REQUIRED BY THE GENERAL CONTRACT WORK, NOTIFY AND COORDINATE ALL TRADES SO THAT THE PROPER ARRANGEMENTS AND SCHEDULING CAN BE MADE FOR INSTALLATION, CUTTING REMOVING, TERMINATING, AND PATCHING OF SURROUNDING SYSTEMS AND MATERIALS CAN BE PROPERLY COMPLETED.
- BUILDER SHALL CHECK & VERIFY ALL CONDITIONS AT THE JOB SITE, REPORTING ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY BEFORE PROCEEDING WITH THE WORK.
- BUILDER SHALL PROVIDE ALL NECESSARY BARRICADES, TEMPORARY SUPPORT OF PARTITIONS, DUST SHIELDS AND SCAFFOLDING AS NECESSARY, TO PROTECT ALL EXISTING, COMPLETED, OR NEW CONSTRUCTION FROM DAMAGE OR VANDALISM
- BUILDER SHALL TAKE NECESSARY MEASURES TO REMOVE ALL DEBRIS LEGALLY FROM THE SITE AND TO DIRECT ALL SUB TRADES TO KEEP THE SITE CLEAN AT ALL TIMES.
- B. BUILDER SHALL CONTINUOUSLY MAINTAIN ADEQUATE PROTECTION OF ALL HIS WORK FROM DAMAGE AND VANDALISM AND SHALL PROTECT THE OWNER OR OTHER BUILDERS PROPERTY FROM INJURY, OR LOSS.
- DO NOT SCALE DRAWINGS. USE ONLY THE DIMENSIONS PROVIDED ON THE PLANS.
 IF OMISSIONS OR DISCREPANCIES EXIST, THE ENGINEER IS TO BE NOTIFIED
 IMMEDIATELY. FAILURE TO DO SO BY ANY TRADE WILL RESULT IN THE COMPLETE
 WAIVER OF ANY LIABILITY OF THE ENGINEER OR OWNER.
- III IF ANY INTERFERENCES OR VIOLATIONS APPEAR AND DEPARTURE FROM THE DESIGN INTENT OF THE CONTRACT DOCUMENTS IS REQUIRED, THE BUILDER SHALL NOTIFY THE ENGINEER BEFORE ENTERING INTO CONTRACT WITH THE OWNER FAILURE TO PROVIDE THE ENGINEER WITH AFOREMENTIONED NOTIFICATION WILL RESULT IN THE BUILDER BEING HELD RESPONSIBLE TO COMPLETE ALL WORK TO MEET THE INTENT OF THE CONTRACT DRAWINGS WITH NO ADDITIONAL EXPENSE ("EXTRAS") BEING INCURRED. ANY CHANGES BY THE BUILDER TO THE CONSTRUCTION DOCUMENTS WILL RESULT IN THE BUILDER ACCEPTING ALL
- RESPONSIBILITY FOR THE WORK INSTALLED.

 11 ALL MATERIAL SELECTION, CONSTRUCTION TECHNIQUES, ALL FINISHED
 CONSTRUCTION SHALL BE PER CODE IF NOT ALREADY NOTED ON PLANS BUILDER
 IS TO CONTACT THE ENGINEER WITH ALL INTERPRETATIONS OR QUESTIONS.
 FAILURE TO DO SO WILL RESULT IN THE COMPLETE ACCEPTANCE OF ALL LIABILITY.
- BY THE CONTRACTOR FOR ANY RELATED CORRECTIONS:

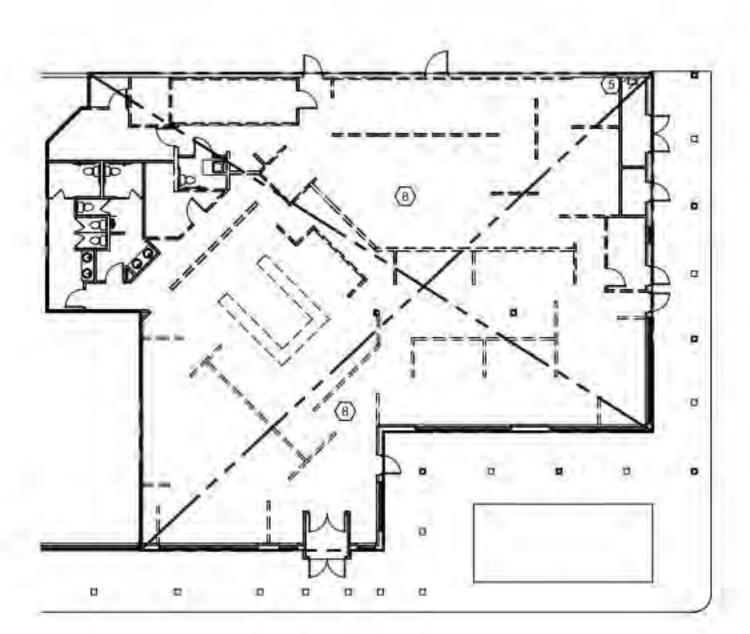
 12. BUILDER SHALL ACTIVELY COOPERATE WITH ALL OTHERS ENGAGED ON THE PROJECT, AND ARRANGE HIS WORK TO AVOID INTERRUPTIONS TO THE WORK OF OTHERS.
- 13 PROJECT SAFETY, CARE OF EXISTING AND ADJACENT STRUCTURES AND PROPERTIES DURING CONSTRUCTION, AND COMPLIANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS SHALL BE THE EXCLUSIVE RESPONSIBILITY OF THE CONTRACTOR.
- 12 COORDINATE INTERRUPTIONS WITH EXISTING UTILITIES AND SERVICES WITH OWNERS REPRESENTATIVE (ENGINEER) TO ACCOMPLISH SAID WORK.

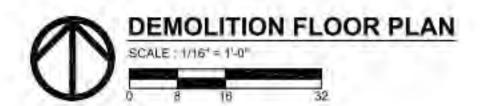


DEMOLITION PLAN KEYED NOTES:

(DEMOLITION KEYED NOTES APPLY TO THIS PLAN ONLY)

- RTU #4 TO BE REPLACED WITH NEW 7.5 TON UNIT.
- (2) RTU #1 TO BE DEMOLISHED
- (3) RTU #2 TO BE DEMOLISHED.
- (4) RTU #3 TO BE TEMPORARILY REUSED FOR EMPTY TENANT.
- 5) EXISTING ELECTRIC UNIT HEATER TO BE REPLACED WITH NEW
- DEMOLISH ALL ABANDONED RTU'S, MAU, EXHAUST FANS (TYP).
- EXISTING EXHAUST FAN FOR EXISTING RESTROOMS TO REMAIN.
- DEMOLISH ALL ABANDONED DUCTWORK, EQUIPMENT, PLUMBING, CONTROLS: GAS PIPING, AND DOMESTIC WATER PIPING. COORDINATE LIMITS OF DEMOLITION WITH LANDLORD AND OWNER'S REPRESENTATIVE AS REQUIRED FOR NEW TENANT(S).







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05/16/19
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DEMOLITION PLANS

(DO NOT SCALE DRAWINGS)

1	DATE	04/29/19	
	APPROVED BY:	E CABELLO	
	CHECKED BY:	E,CABELLO	
П	DESIGNED BY:	JRED	
П	DRAWN BY:	JRED	

ARCH/ENG. SEAL:



JRED PROJECT NUMBER:

19049 SHEET NUMBER:

MP-D

GENERAL PROJECT MECHANICAL NOTES:

- 1. CONTRACTORS SHALL COMPLY WITH ALL LAWS, LOCAL ORDINANCES AND CODES OF THE STATE OF MICHIGAN, FEDERAL AGENCIES AND MUNICIPALITY. CONTRACTORS SHALL SECURE AND PAY FOR ALL NECESSARY FEES AND PERMITS REQUIRED IN THE PERFORMANCE OF HIS WORK. ALL CUTTING AND PATCHING FOR NEW WORK SHALL BE DONE BY THIS CONTRACTOR WITH THE APPROVAL OF THE OWNER'S REPRESENTATIVE
- CONTRACTOR SHALL VISIT THE SITE AND CHECK THE EXISTING CONDITIONS BEFORE SUBMISSION OF BIDS. NO MONETARY ALLOWANCE SHALL BE MADE DUE. TO THE FAILURE TO MAKE SUCH AN EXAMINATION
- ANY CLAIMS FOR ADDITIONAL SERVICES BASED UPON UNDERSTANDING OF THE SYSTEMS WILL NOT BE ALLOWED. CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO CONVEY THE SCOPE OF WORK AND GENERAL ARRANGEMENT OF EQUIPMENT. DO NOT SCALE DRAWINGS,
- 4 BASE BID FOR EQUIPMENT IS TO BE UNITS SCHEDULED. PRICING USING ALTERNATE ACCEPTED AND LISTED MANUFACTURES SHALL STATE ALTERNATE MANUFACTURER AND MODEL NUMBER AS PART OF BID. VOLUNTARY ALTERNATES FOR EQUIPMENT NOT LISTED SHALL ONLY BE WITH WRITTEN ACCEPTANCE OF THE OWNER'S REPRESENTATIVE PRIOR TO BIDDING. VOLUNTARY ALTERNATES WILL NOT BE REVIEWED FOR ACCEPTANCE BY THE ENGINEER DURING THE 7 DAYS PRIOR TO BID DATE.
- CONTRACTOR SHALL PROVIDE A COMPLETED OPERABLE SYSTEM AS HERE-IN DESCRIBED. IF THE DOCUMENTATION IS LINCLEAR OR INCOMPLETE TO THE CONTRACTOR, THEN HE SHALL SO STATE IN WRITING TO THE OWNER'S REPRESENTATIVE AND REQUEST CLARIFICATION ON THOSE ITEMS REQUIRING CLARIFICATION IF NO SUCH STATEMENT IS MADE IT SHALL BE PRESUMED THAT THE CONTRACTOR FULLY UNDERSTANDS THE INTENT OF A FUNCTION OF THE SYSTEM DESCRIBED.
- CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES. CONTRACTOR SHALL SECURE FINAL OCCUPANCY INSPECTION AND SUBMIT CERTIFICATES TO THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL FURNISH THE OWNER WITH A WRITTEN GUARANTEE TO CORRECT ALL IMPERFECTIONS IN MATERIALS AND WORKMANSHIP, WHICH MAY DEVELOP IN THE SYSTEMS INSTALLED AND UNDER NORMAL USE FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE. BY THE OWNER.
- CONTRACTOR SHALL PROVIDE SUBMITTALS TO THE OWNER'S REPRESENTATIVE
- FOR ALL EQUIPMENT AND MATERIALS FOR REVIEW PRIOR TO PURCHASE. CONTRACTOR SHALL PROVIDE STORE, PLACE AND INSTALL ALL NECESSARY EQUIPMENT REQUIRED. ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND IN SUCH A MANNER AS TO FUNCTION
- IN ITS INTENDED USE 9 AFTER INSTALLATION IS COMPLETE, CONTRACTOR SHALL BE RESPONSIBLE FOR STARTUP, INSPECTORS' APPROVAL AND FINAL CLEAN UP.

GENERAL MECHANICAL NOTES:

- MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING, CORING.
- AND PATCHING REQUIRED FOR PROPER INSTALLATION OF THE SYSTEM. THE ENTIRE CONSTRUCTION SHALL CONFORM TO THE LATEST ADOPTED EDITION OF ASHRAE 90.1 STANDARD, N.F.P.A. REQUIREMENTS, SMACNA STANDARDS, THE MICHIGAN MECHANICAL CODE, LOCAL ORDINANCE, AND AUTHORITIES HAVING JURISDICTION.
- 3 MECHANICAL CONTRACTOR SHALL COORDINATE ALL MECHANICAL EQUIPMENT ELECTRICAL REQUIREMENTS WITH ELECTRICAL CONTRACTOR PRIOR TO ANY EQUIPMENT PURCHASE
- 4. TEMPERATURE CONTROLS: ELECTRIC UNIT HEATERS SHALL HAVE INDIVIDUAL CONTROLS FROM EQUIPMENT MANUFACTURER CONTROLS SHALL CONTROL EQUIPMENT TO OPERATE PROPERLY ROOF TOP UNITS SHALL OPERATE FROM INDIVIDUAL THERMOSTATS (7-DAY PROGRAMMABLE WITH NIGHT SET BACK).
- TESTING & BALANCING ENGAGE THE SERVICES OF AN INDEPENDENT CERTIFIED TEST AND BALANCE AGENCY THAT SPECIALIZED IN AND WHO'S BUSINESS IS LIMITED TO THE TESTING AND BALANCING OF HVAC SYSTEMS AND HYDRONIC SYSTEMS THE AGENCY SELECTED SHALL BE CERTIFIED BY ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). AGENCY SHALL SUBMIT A COMPLETE REPORT BASED ON SMACNA "BALANCING AND ADJUSTMENT MANUAL" THE HVAC SYSTEM SHALL BE TESTED AND BALANCED TO DEMONSTRATE THAT SPECIFIED CAPACITY AND PROPER CONTROL FUNCTIONING HAS BEEN ATTAINED.
- START-UP FOR ALL EQUIPMENT SHALL BE CONDUCTED BY EACH MANUFACTURER'S START-UP REPRESENTATIVE. INCLUDE FINAL REPORT AND CERTIFICATE. PROVIDE OWNER'S MANUAL AND TRAINING FOR MAINTENANCE PERSONNEL FOR EACH TYPE
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EQUIPMENT SUPPORTS INCLUDING ROOF MOUNTED EQUIPMENT COORDINATE ANY STRUCTURAL REQUIREMENTS WITH ARCHITECT, AS REQUIRED, FOR PROPER EQUIPMENT MOUNTING AND

GENERAL SMOKE DETECTOR NOTES:

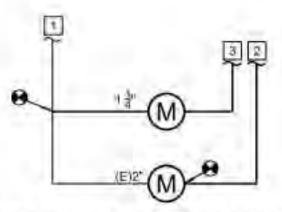
HVAC UNIT(S) SHALL HAVE SMOKE DUCT DETECTOR IN RETURN DUCT. SMOKE DETECTION WILL SHUT OFF HVAC UNIT UPON ACTIVATION. THE ACTIVATION OF THE SMOKE DETECTOR SHALL ACTIVATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL AT A CONSTANTLY ATTENDED LOCATION (OR TIE INTO FIRE ALARM PANEL, IF ONE EXISTS). SMOKE DETECTION DEVICES THAT ARE NOT VISIBLE SHALL BE PROVIDED WITH A REMOTE INDICATION DEVICE PER CODE.

GENERAL PROJECT PLUMBING NOTES:

- 1 CONTRACTORS SHALL PROVIDE EQUIPMENT AND SPECIALTIES INDICATED HERE-IN TO PROVIDE A COMPLETE AND WORKING SYSTEM.
- 2 CONTRACTORS SHALL COMPLY WITH ALL LAWS, LOCAL ORDINANCES AND CODES OF THE STATE OF MICHIGAN, FEDERAL AGENCIES AND MUNICIPALITY CONTRACTORS SHALL SECURE AND PAY FOR ALL NECESSARY FEES AND PERMITS REQUIRED IN THE PERFORMANCE OF HIS WORK. ALL CUTTING AND PATCHING FOR NEW WORK SHALL BE DONE BY THIS CONTRACTOR WITH THE APPROVAL OF THE OWNER'S REPRESENTATIVE
- CONTRACTOR SHALL VISIT THE SITE AND CHECK THE EXISTING CONDITIONS BEFORE SUBMISSION OF BIDS NO ALLOWANCE SHALL BE MADE IN BEHALF OF
- EXTRA EXPENSES DUE TO THE FAILURE TO MAKE SUCH AN EXAMINATION. 4. CONTRACTOR SHALL PROVIDE A COMPLETED OPERABLE SYSTEM AS HERE-IN. DESCRIBED. IF THE DOCUMENTATION IS UNCLEAR OR INCOMPLETE TO THE CONTRACTOR HE SHALL SO STATE IN WRITING TO THE OWNER'S REPRESENTATIVE AND REQUEST CLARIFICATION ON THOSE ITEMS REQUIRING CLARIFICATION. IF NO SUCH STATEMENT IS MADE IT SHALL BE PRESUMED THAT THE CONTRACTOR FULLY UNDERSTANDS THE INTENT OF A FUNCTION OF THE SYSTEM DESCRIBED.
- ANY CLAIMS FOR ADDITIONAL SERVICES BASED UPON UNDERSTANDING OF THE SYSTEMS WILL NOT BE ALLOWED. CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO CONVEY THE SCOPE OF WORK AND GENERAL ARRANGEMENT OF EQUIPMENT. DO NOT SCALE DRAWINGS
- 6. BASE BID FOR EQUIPMENT IS TO BE UNITS SCHEDULED. PRICING USING ALTERNATE ACCEPTED AND LISTED MANUFACTURES SHALL STATE ALTERNATE MANUFACTURER AND MODEL NUMBER AS PART OF BID. VOLUNTARY ALTERNATES FOR EQUIPMENT NOT LISTED SHALL ONLY BE WITH WRITTEN ACCEPTANCE OF THE ENGINEER/OWNER'S REPRESENTATIVE PRIOR TO BIDDING. VOLUNTARY ALTERNATES WILL NOT BE REVIEWED FOR ACCEPTANCE BY THE
- ENGINEER/OWNER'S REPRESENTATIVE DURING THE 7 DAYS PRIOR TO BID DATE. CONTRACTOR SHALL PROVIDE SUBMITTALS FOR ALL EQUIPMENT AND MATERIALS FOR REVIEW PRIOR TO PURCHASE
- 6 CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES. CONTRACTOR SHALL SECURE FINAL OCCUPANCY INSPECTION AND SUBMIT CERTIFICATES TO THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL FURNISH THE OWNER WITH A WRITTEN GUARANTEE TO CORRECT ALL IMPERFECTIONS IN MATERIALS AND WORKMANSHIP, WHICH MAY DEVELOP IN THE SYSTEMS INSTALLED AND UNDER NORMAL USE FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE. BY THE OWNER.
- CONTRACTOR SHALL PROVIDE, STORE, PLACE AND INSTALL ALL NECESSARY EQUIPMENT REQUIRED. ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND IN SUCH A MANNER AS TO FUNCTION IN ITS INTENDED USE.
- 10 AFTER INSTALLATION IS COMPLETE, CONTRACTOR SHALL BE RESPONSIBLE FOR STARTUP, OWNER TRAINING, INSPECTORS' APPROVAL AND CLEAN UP.

GENERAL PLUMBING NOTES

- 1. PIPE ROUTING SHOWN IS SCHEMATIC AND IS INTENDED TO INDICATE GENERAL ROUTING, PROVIDE ANY ADDITIONAL OFFSETS AND FITTINGS REQUIRED FOR PROPER INSTALLATION IN ORDER TO MAINTAIN CLEARANCES AS ENCOUNTERED IN
- THE FIELD. PLUMBING PIPING SHALL NOT BE ROUTED OVER ELECTRICAL PANELS. SLEEVE AND FIRE STOP ALL PENETRATIONS OF RATED WALLS, FLOORS, CEILINGS, ETC., IN ACCORDANCE WITH APPLICABLE UL STANDARDS AND LOCAL CODES TO MAINTAIN RATINGS. REFER TO ARCHITECTURAL DRAWINGS FOR RATED WALL. CEILING AND FLOOR INFORMATION
- 3. ALL WATER PIPING INSTALLED IN EXTERIOR WALLS SHALL BE PLACED ON THE INTERIOR SIDE OF THE WALL THE WALL INSULATION SHALL BE PLACED ON THE EXTERIOR SIDE OF THE PIPING.
- 4. THE PLUMBING CONTRACTOR SHALL INSTALL WATER HAMMER ARRESTORS. THERMOSTATIC MIXING VALVES AND TRAP PRIMERS, AS REQUIRED PER CODE, IN THE DOMESTIC WATER SYSTEM.
- 5. ALL EQUIPMENT AND PLUMBING FIXTURES SHALL BE INSTALLED COMPLETE INCLUDING: ISOLATION VALVES, ANGLE SUPPLIES, SUPPORT HARDWARE, P-TRAPS. OFFSETS, LAVSHEILD, MIXING VALVES, ETC.
- 6. ALL SANITARY WASTE AND VENT PIPING WITHIN FIRE RATED WALLS AND IN RETURN AIR PLENUMS SHALL BE CAST IRON PIPING. REFER TO ARCHITECTURAL DRAWINGS. FOR WALL FIRE RESISTANCE RATINGS, COORDINATE PLENUM LOCATIONS WITH MECHANICAL TRADES.
- ALL ADA FIXTURES, WHERE DESIGNATED BY THE ARCHITECT SHALL BE FURNISHED. AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE 'BARRIER FREE" DESIGN REQUIREMENTS OF THE APPLICABLE LOCAL CODE.
- 8. REFER TO ARCHITECTURAL PLANS FOR ELEVATIONS OF FIXTURES AND THEIR EXACT LOCATIONS.



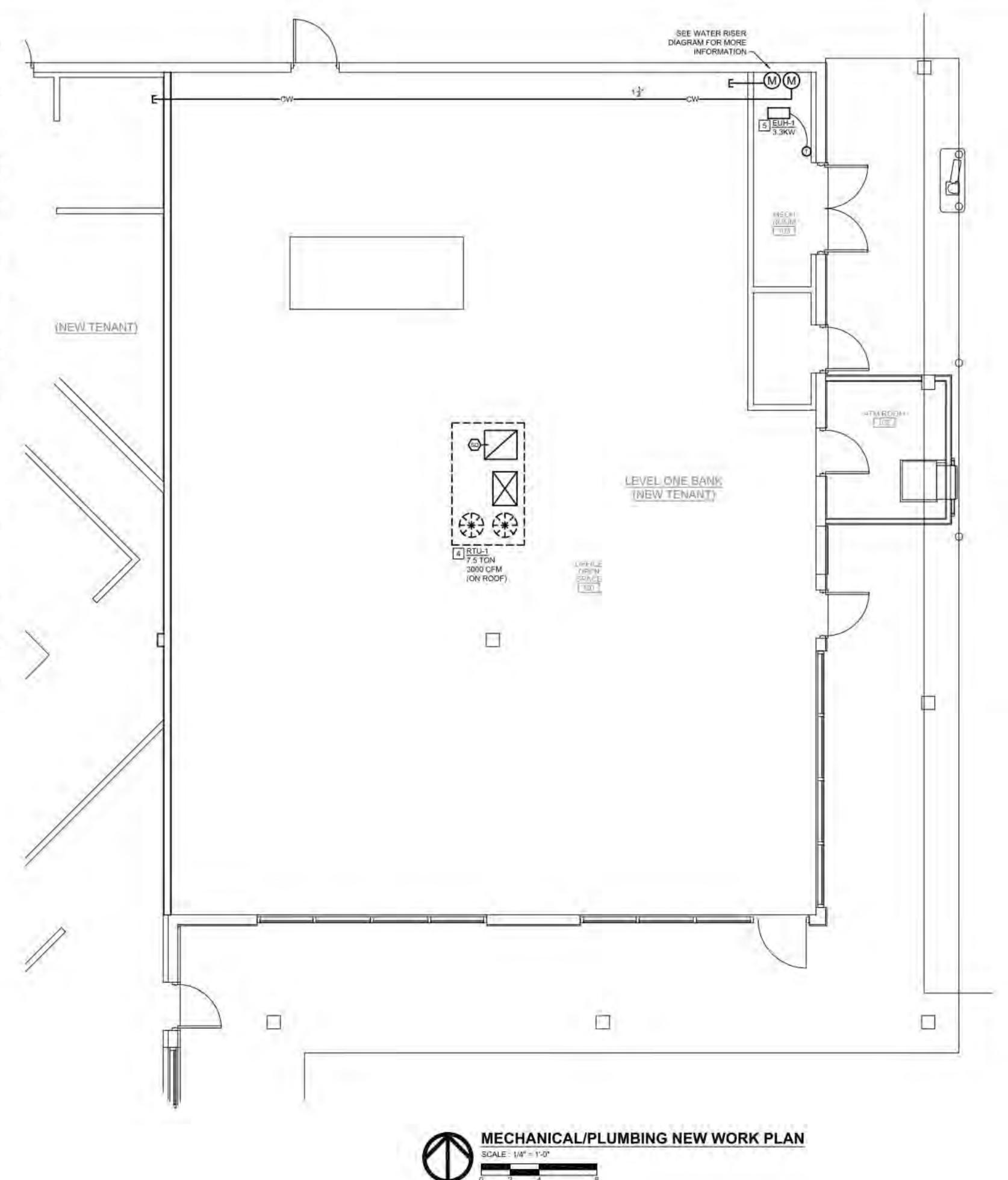
WATER RISER DIAGRAM MECH RM 103

NO SCALE

NEW WORK KEYED NOTES:

(KEYED NOTES APPLY TO THIS SHEET ONLY)

- EXISTING 2" CW SERVICE TO REMAIN
- CONTRACTOR SHALL TERMINATE EXISTING 2" CW SERVICE AT NEW LEVEL ONE BANK TENANT AND TERMINATE WITH BALL VALVE AND CAP ALL DEAD LEGS ARE TO BE REMOVED AND CAPPED BACK TO MAIN.
- CONTRACTOR SHALL ROUTE NEW 1 1 CW SERVICE (WITH NEW TENANT METER) TO NEW TENANT (ADJACENT TO LEVEL ONE BANK TENANT SPACE) AND TERMINATE WITH BALL VALVE AND CAP. CONTRACTOR SHALL INSTALL RPZ BACKFLOW ASSEMBLY FOR NEW SERVICE PER CITY AND WATER DEPARTMENT REQUIREMENTS.
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW 7.5 TON RTU IN SAME LOCATION OF EXISTING UNIT THAT IS TO BE DEMOLISHED. EXTEND SUPPLY AIR AND RETURN AIR DUCTWORK FULL SIZE DOWN TO SPACE AND TERMINATE 5 FEET BELOW DECK. PROVIDE AND INSTALL ACCOUNTICAL LINING FOR RETURN AIR DUCTWORK, COORDINATE CURB AND SUPPORTS WITH ARCHITECTURAL TRADES. EXTEND NEW 1 1 GAS TO UNIT FROM EXISTING MAIN SERVING THIS TENANT
- CONTRACTOR SHALL INSTALL NEW ELECTRIC UNIT HEATER (TO REPLACE EXISTING). COORDINATE WITH LANDLORD EXACT LOCATION. PROVIDE SUPPORTS AND CONTROLS AS REQUIRED





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SHEET TITLE:

MECHANICAL / **PLUMBING NEW WORK PLAN**

(DO NOT SCALE DRAWINGS)

A STATE OF A STATE WAY OF	
DRAWN BY:	JRED
DESIGNED BY:	JRED
CHECKED BY:	E.CABELLO
APPROVED BY:	E.CABELLO
DATE	04/29/19

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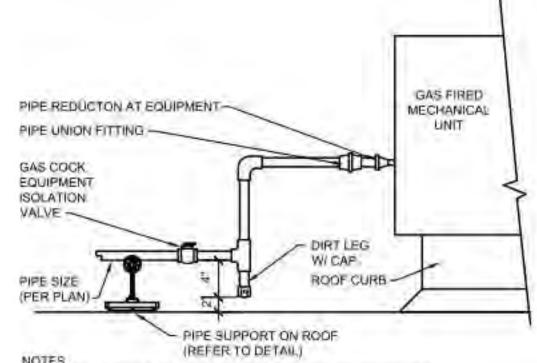


JRED PROJECT NUMBER:

19049

SHEET NUMBER:

MP-1



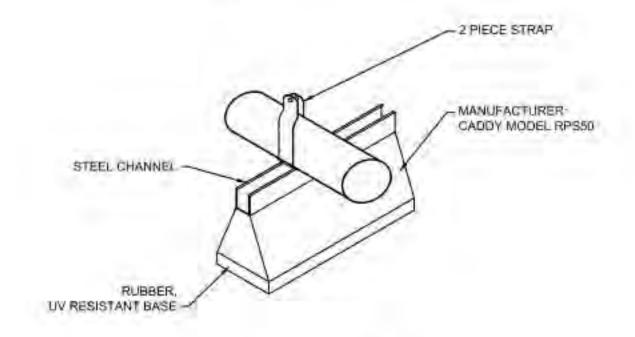
NOTES

1. PIPE SIZES INDICATED ON PLANS SHALL BE CONSIDERED UP TO EQUIPMENT GAS INLET CONNECTION.

2 PROVIDE PIPE REDUCER FOR EQUIPMENT GAS INLET CONNECTION.

GAS EQUIPMENT CONNECTION DETAIL

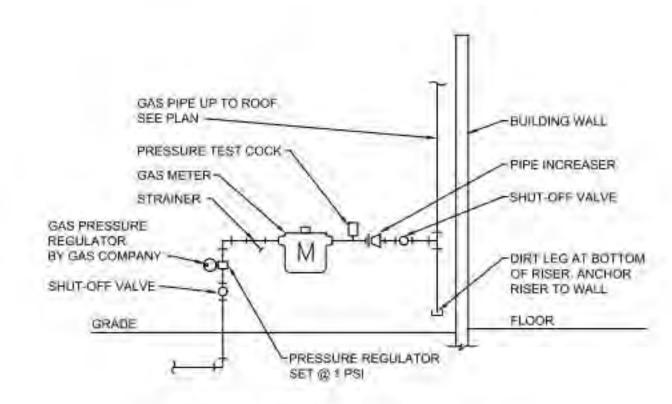
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PIPE SUPPORT DETAIL

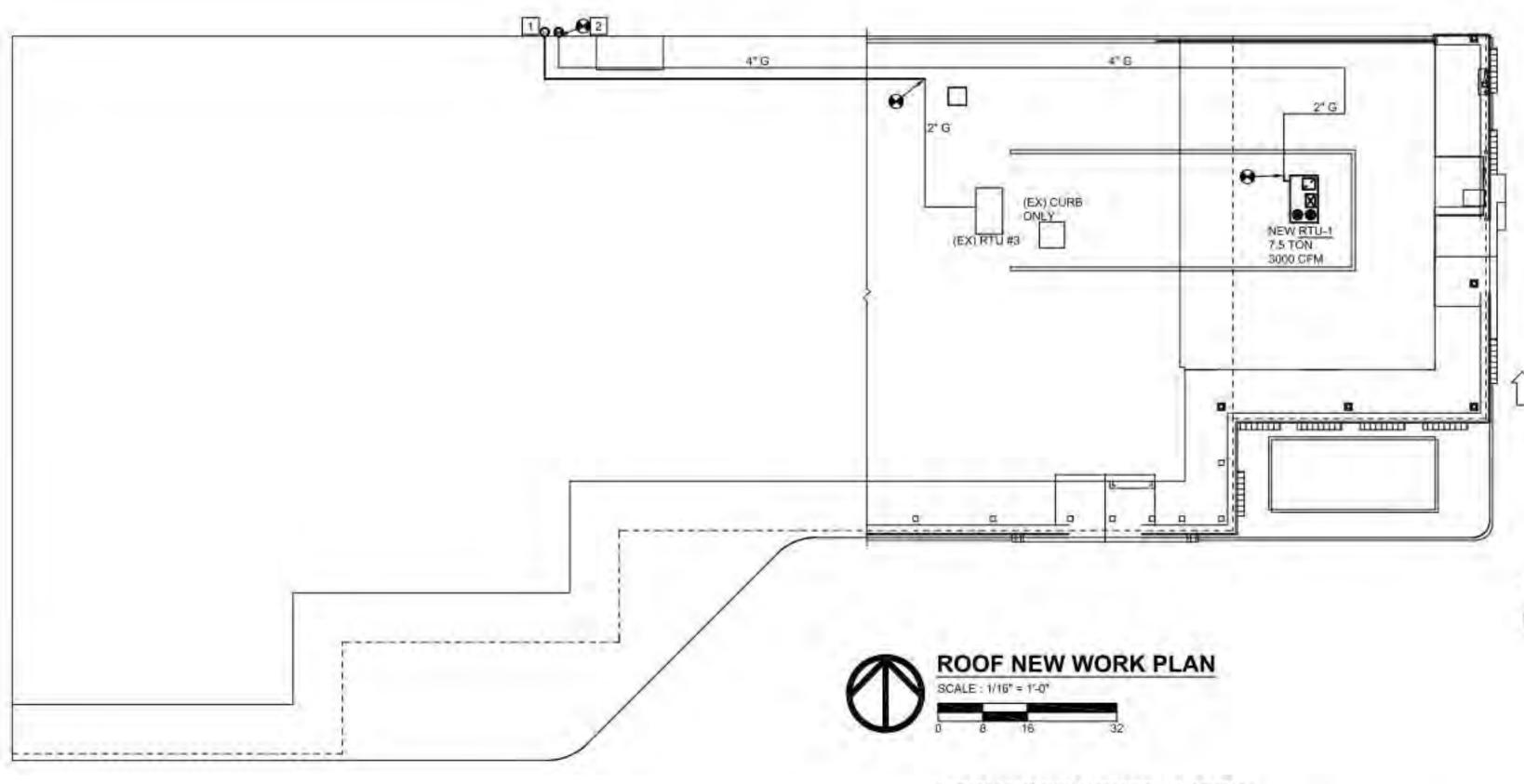
1. SUPPORT SPACING FOR PIPE SIZE 2"=10" 1/2"=9" 1/2"=8" 1"=7" 1/2"=6" 2. INSTALL PIPE STANDS IN ACCORDANCE WITH PIPE STAND MANUFACTURERS

INSTRUCTIONS AND RECOMMENDATIONS, PLACE SUPPORT PADS ON ROOFING, AND SET PIPE STANDS FREE AND CENTERED ON SUPPORT PAD INSTALL PIPE TO ALLOW FOR EXPANSION AND CONTRACTION, PRIME AND PAINT GAS PIPING, COLOR SHALL BE PER AUTHORITY HAVING JURISDICTION.



GAS METER DETAIL

NO SCALE



NEW WORK KEYED NOTES:

(KEYED NOTES APPLY TO THIS SHEET ONLY)

- CONTRACTOR SHALL COORDINATE WITH LOCAL GAS UTILITY FOR INSTALLATION OF NEW GAS METER SIZED AT MINIMUM 250 CFH @ 7" W.C. ROUTE NEW 2' GAS TO EXISTING RTU-J
- 2 CONTRACTOR SHALL COORDINATE WITH LOCAL GAS UTILITY FOR INSTALLATION OF NEW GAS METER (REPLACE EXISTING), SIZED AT MINIMUM 250 CFH @ 7" W.C. RECONNECT TO EXISTING 4" GAS MAIN

			SUPPL	v FAN				- 19	EATING SEC	DON	ELECTRIC	AL DAT	A			REMARKS
MARK	SERVES	AIRFLOW (CFM)	OUTSIDE AIR (CFM)	EXTERNAL STATIC PRESSURE (Inch w.g.)	HP	NOMINAL TOWNAGE	AGE DISCHARGE	INPUT (MBH)	OUTPUT (MBH)	NO OF STAGES	VOLTS/PHASE	UNIT	UNIT	BASED ON MANUFACTURER AND MODEL NUMBER	UNIT WEIGHT (lbs.)	
RIGHT	SPACE	3,000	750	0.5	2	7.5	VERTICAL	240.0	192.0	2	208/3Ø	39 0	48	LENNOX LGH092H4M	1.329	1-9

PROVIDE 14" HIGH ROOF CURB PROVIDE 100% ECONOMIZER, SINGLE ENTHALPY CONTROL

PROVIDE MOTORIZED OUTDOOR AIR DAMPERS.

PROVIDE RETURN AIR SMOKE DETECTOR

PROVIDE FILTER RACK WITH 2 FILTERS MERV 8

PROVIDE WEATHERPROOF DISCONNECT SWITCH

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ī	8	PROVIDE 7 DAY	PROGRAMMABLE	THERMOSTAT WITH L	OCKABLE COVER

- 9 PROVIDE START-UP BY MANUFACTURER'S REPRESENTATIVE.
- ELECTRIC HEATING EQUIPMENT SCHEDULE HEATING SECTION ELECTRICAL DATA BASED ON MAXIMUM ARRANGEMENT SERVES MARK LOCATION MANUFACTURER AND REMARKS NO OF STAGES KVV DRIVE VOLTS/PHASE MODEL NUMBER 15.9 SUSPENDED CORRIDOR HANGING 208/10
- UNIT SHALL HAVE THERMAL OVERLOAD PROTECTION.
- PROVIDE WITH DISCONNECT AND INTERGRAL THERMOSTAT
- UNIT SHALL BE VANDAL PROOF
- PROVIDE MOUNTING BRACKETS AND 24V THERMOSTAT

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5/16/19

SHEET TITLE:

ROOF NEW WORK PLAN

(DO NOT SCALE DRAWINGS)

1 50	DATE	04/29/19
	APPROVED BY:	E CABELLO
	CHECKED BY:	E,CABELLO
	DESIGNED BY:	JRED
13	DRAWN BY:	JRED

ARCH/ENG. SEAL:



JRED PROJECT NUMBER:

19049

SHEET NUMBER:

MP-2

MECHANICAL GENERAL

- A. PROVIDE MATERIALS AND EQUIPMENT AND EXECUTE THE WORK, INCLUDING ALL TESTING AND INSPECTIONS, IN COMPLIANCE WITH THE APPLICABLE PROVISIONS OF FEDERAL STATE AND LOCAL GOVERNMENT LAWS, ORDINANCES, REFERENCED CODES, AND STANDARDS CURRENT AS OF THE ISSUE DATE OF THESE DRAWINGS, INCLUDING THE GOVERNING LAWS, ORDINANCES, CODES AND STANDARDS CONSTITUTE MINIMUM REQUIREMENTS. ALL MORE STRINGENT REQUIREMENTS SHALL MODIFY, SUPPLEMENT, AND SUPERCEDE APPLICABLE PORTIONS OF GOVERNING LAWS, ORDINANCES, CODES, AND STANDARDS.
- B. CONTRACTOR SHALL PRESENT CERTIFICATE TO THE OWNERS REPRESENTATIVE THAT ALL APPLICABLE BUILDING PERMITS HAVE BEEN SECURED PRIOR TO STARTING ANY WORK AND PROVIDE THE OWNER WITH ALL REQUIRED CERTIFICATES OF FINAL APPROVAL FROM GOVERNING JURISDICTIONS AT COMPLETION OF THE WORK. PROVIDE ALL SHOP DRAWINGS AS REDUIRED IN FOLLOWING SECTIONS.
- C. MAKE ALL CONNECTIONS TO EXISTING SYSTEMS DURING DESIGNATED PERIODS UPON APPROVAL OF THE OWNER AND AT NO INCREASE IN CONTRACT SUM.
- D. REFER TO ALL GENERAL NOTES ON DRAWINGS FOR ADDITIONAL REQUIREMENTS.
- E MECHANICAL EQUIPMENT SHALL HAVE DECALS AND TAGS TO INDICATE LIFTING AND RIGGING, SERVICE AREAS, AND CAUTION IDENTIFICATION FOR SAFETY TO ASSIST SERVICE PERSONNEL.
- F LINIT NAMEPLATE SHALL BE PROVIDE IN TWO LOCATIONS ON THE EQUIPMENT. AFFIX TO THE EXTERIOR OF THE EQUIPMENT AND TO THE INTERIOR OF THE CONTROL COMPARTMENT

SHOP DRAWINGS

- A NO APPARATUS OR EQUIPMENT SHALL BE SHIPPED FROM STOCK OR FABRICATED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND STAMPED 'REVIEWED', OR 'REVIEWED AS NOTED."
- B. PROVIDE DETAILED SHOP DRAWINGS OF ALL SHEETMETAL DUCTWORK WITH NECESSARY SECTIONS. DETAILS, DIMENSIONS, ETC. SUBMIT AMCA CERTIFIED PERFORMANCE CURVES FOR EACH FAN INDICATING ITS OPERATING POINT, EFFICIENCY, STARTING TIME AND DATA RELATIVE TO SOUND LEVELS, ALL SHEETMETAL SHOP DRAWINGS SHALL BEAR INDEPENDENT BALANCE AGENCY (AABC) APPROVAL STAMP BEFORE SHOP DRAWINGS ARE SUBMITTED TO THE ARCHITECT FOR APPROVAL.
- C SUBMIT FOR APPROVAL, SHOP DRAWINGS FOR ALL EQUIPMENT, INCLUDING MATERIALS, VALVES. HEATING SPECIALTIES, WIRING DIAGRAMS, AND CONTROL DIAGRAMS, INCLUDING, BUT NOT LIMITED TO THE ITEMS LISTED BELOW. WHERE ITEMS ARE REFERRED TO BY SYMBOL NUMBERS ON THE DRAWINGS AND SPECIFICATIONS, ALL SUBMITTALS SHALL BEAR THE SAME SYMBOL NUMBERS. ALL DRAWINGS SHALL CONTAIN THE PROJECT NAME AND PROJECT NUMBER. NO LOOSE SHEETS SHALL BE SUBMITTED UNLESS A COVER SHEET IS ATTACHED.
- D. PROVIDE THE FOLLOWING EQUIPMENT SHOP DRAWINGS: PACKAGED HVAC EQUIPMENT; AIR DEVICES; EXHAUST FANS; HEATING UNITS; FILTERS; PIPING; TEMPERATURE CONTROLS, AND THERMOSTATS.
- E APPROVAL OF SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES TO CONFORM TO THE DESIGN INTENT OF THE CONTRACT DOCUMENTS. APPROVAL OF SHOP DRAWINGS IS INTENDED TO BE FOR GENERAL CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS ONLY. ANY INSTALLED EQUIPMENT WHICH REQUIRES WORK BY OTHER TRADES SHALL BE COORDINATED WITH THOSE TRADES. REFER TO OTHER TRADES BID DOCUMENTS.

CODES, PERMITS, AND FEES

- A UNLESS OTHERWISE INDICATED, ALL REQUIRED PERMITS, LICENSES, INSPECTIONS, APPROVALS, AND FEES FOR MECHANICAL WORK SHALL BE SECURED AND PAID FOR BY THIS CONTRACTOR. ALL WORK SHALL CONFORM TO ALL APPLICABLE CODES, RULES, AND REGULATIONS.
- B. RULES OF LOCAL UTILITY COMPANIES SHALL BE COMPLIED WITH.
- C. ALL WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE RULES AND REGULATIONS SET FORTH IN LOCAL AND STATE CODES. WHERE THE DRAWINGS AND/OR SPECIFICATIONS INDICATE MATERIALS OR CONSTRUCTION IN EXCESS OF CODE REQUIREMENTS. THE DRAWINGS AND/OR SPECIFICATIONS SHALL GOVERN.

BASIC MATERIALS AND METHODS

A PROVIDE ALL ITEMS, ARTICLES, MATERIALS, OPERATIONS, AND METHODS LISTED, MENTIONED OR SCHEDULED ON DRAWINGS AND/OR HEREIN, INCLUDING ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY AND REQUIRED FOR THEIR COMPLETION. THE WORK SHALL INCLUDE INSTALLATION, CLEANING, AND TESTING OF COMPLETE AND OPERATING HVAC, TEMPERATURE CONTROL, AND OTHER SPECIAL

MECHANICAL SPECIFICATIONS

HEATING AND VENTILATING

A GENERAL

REFER TO SCHEDULES FOR CAPACITIES, ACCESSORIES, AND LEVEL OF QUALITY

B CONTROLS

UNITS SHALL BE ORDERED AND INSTALLED WITH MANUFACTURED STANDARD CONTROLS. SCOPE OF CONTROLS WORK SHALL BE COORDINATED WITH MECHANICAL CONTRACTOR. CONTROLS CONTRACTOR, AND GENERAL CONTRACTOR.

REFER TO SCHEDULES FOR EQUIPMENT REQUIREMENTS.

SYSTEM TESTING AND BALANCING

- A. ALL HVAC SYSTEMS SHALL BE TESTED AND BALANCED TO DEMONSTRATE THAT SPECIFIED CAPACITIES AND PROPER CONTROL FUNCTIONING HAS BEEN ATTAINED. FAN SYSTEMS ARE NOT TO BE COMPLETED PRIOR TO RUNNING PERFORMANCE TESTS, AND PRIOR TO TRAINING AND INSTRUCTION OF THE OWNER'S PERSONNEL IN THE SYSTEMS OPERATION.
- B ENGAGE THE SERVICES OF AN INDEPENDENT CERTIFIED TEST AND BALANCE AGENCY THAT SPECIALIZES IN AND WHOSE BUSINESS IS LIMITED TO THE TESTING AND BALANCING OF AIR CONDITIONING SYSTEMS AND IS NOT AFFILIATED IN ANY WAY WITH MANUFACTURER. SUPPLIER, OR INSTALLATION CONTRACTOR. THE AGENCY SELECTED SHALL BE CERTIFIED BY ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBS).
- C. TAKE CHARGE OF AND DIRECT THE PERFORMANCE TESTS AND SUBMIT A COMPLETE REPORT ON SAME TO THE ARCHITECT. REFER TO "PERFORMANCE TESTS" IN THIS SECTION OF THE SPECIFICATIONS.
- D. EXAMINE THE AIR HANDLING SYSTEMS TO SEE THAT THEY ARE FREE FROM DISTRUCTIONS. DETERMINE THAT ALL DAMPERS AND REGISTERS ARE OPEN, THAT MOVING EQUIPMENT IS LUBRICATED, THAT FILTERS ARE FUNCTIONING, AND PERFORM OTHER INSPECTION AND MAINTENANCE ACTIVITIES NECESSARY FOR PROPER OPERATION OF THE SYSTEMS.

- E. DEMONSTRATE THAT THE AIR HANDLING EQUIPMENT PERFORMS AS SPECIFIED. ADJUST VARIABLE TYPE PULLEYS AND VOLUME DAMPERS, WHERE NECESSARY TO ACHIEVE DESIGN AIR VALUES.
- F PERFORM THIS WORK IN ACCORDANCE WITH THE PROCEDURES AND STANDARDS DESCRIBED IN THE SMACNA "BALANCING AND ADJUSTMENT MANUAL." REPORTS ARE TO BE MADE ON SMACNA FORMS OR FACSIMILES THEREOF.
- G. TESTING AND BALANCING OF ALL AIR (AND HYDRONIC) SYSTEMS SHALL BE PERFORMED BY A SINGLE AGENCY IN COMPLETE ACCORDANCE WITH THE AABC "STANDARDS AND INSTRUMENTATION"S FORM NUMBER 81266 VOLUME NUMBER 1" AS PUBLISHED BY AABC, INCLUDING ALL CURRENT REVISIONS THERETO OR BY NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).

PERFORMANCE TESTS

- A. A PERFORMANCE TEST SHALL BE RUN ON ALL MECHANICAL SYSTEMS IN THE PRESENCE OF THE ARCHITECT OR THE OWNER'S REPRESENTATIVE. THE OWNER'S OPERATION PERSONNEL, AND UNDER THE DIRECTION OF THE TESTING AND BALANCING TRADE. THE DURATION OF THE TEST SHALL BE A MINIMUM OF 8 HOURS OF CONTINUOUS SUCCESSFUL OPERATION (WITH NO DOWN TIME) IN WEATHER SUCH THAT A REASONABLE LOAD IS PLACED ON THE EQUIPMENT. AIR TEMPERATURES, VOLTAGES, AMPERAGES, RPM'S, ETC., SHALL ALL BE TAKEN AND RECORDED HOURLY. AT THIS TIME, ANY ADJUSTMENTS TO AIRFLOW, ETC., SHALL BE MADE.
- B. WHERE THE TIME OF YEAR PRECLUDES WEATHER TESTING OF EITHER SYSTEM, THEN SYSTEM OPERATION SHALL BE SIMULATED TO FACILITATE TESTING AT REQUIRED AIR TEMPERATURES, RESULTS RECORDED AND ANY ADJUSTMENTS SHALL BE PERFORMED AT THIS TIME.

SHEET METAL

- A. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL AS INDICATED ON THE DRAWINGS OR AS DIRECTED HEREIN. ALL SHEET METAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF SMACNA "HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE" MANUALS, NFPA 90A AND 96, AND THE LATEST EDITION OF THE ASHRAE GUIDE AND DATA BOOKS. ALL DUCTWORK SIZES INDICATED ON THE PLANS ARE THE INTERNAL DIMENSIONS.
- B. ALL DUCTWORK SHALL BE SEALED AIR TIGHT AND SHALL NOT ALLOW MORE THAN 10% AIR-LEAKAGE THROUGHOUT THE ENTIRE SYSTEM
- C. SHEET METAL DUCTWORK SHALL BE SMOOTH INSIDE AND TRUE TO SIZE
- D. DUCTWORK FITTINGS SHALL BE PER SMACNA STANDARDS. RADIUS TURNS ON SUPPLY AIR DUCTS SHALL BE 1-1/2 TIMES THE DUCT WIDTH, MINIMUM. WHERE SPACE OR CLEARANCES REQUIRES THE USE OF MITERED TURNS, PROVIDE HIGH PERFORMANCE DOUBLE THICKNESS TURNING VANES EQUAL TO AERO/DYNE "HEP."
- E. PROVIDE FACTORY MANUFACTURED TEST HOLES IN DUCTWORK WHERE REQUIRED TO FACILITATE AIR BALANCE.
- F. DUCT CONSTRUCTION AND SUPPORT DESIGN SHALL BE PER SMACNA. MINIMUM DUCT DESIGN IS PRESSURE CLASS 2" W.G. ALL DUCTWORK FROM THE AIR HANDLING UNIT FAN AND/OR STAND ALONE FAN (SUPPLY, RETURN, AND/OR EXHAUST) TO A MAIN DUCT DAMPER. (CONTROL) SHALL BE DESIGNED FOR THE MAXIMUM TOTAL FAN OUTPUT PRESSURE (THIS IS TO PREVENT DUCT FAILURE IN CASE WHERE A MAIN DUCT DAMPER CLOSES BY DESIGN OR MALFUNCTION). ALL OTHER DUCTWORK SHALL BE DESIGNED FOR THE MAXIMUM SYSTEM EXTERNAL FAN OUTPUT PRESSURE.
- G. ALL RECTANGULAR DUCTWORK SHALL BE IN ACCORDANCE WITH THE LATEST SMAGNA STANDARDS WITH REGARD TO DUCT GAGE THICKNESS, REINFORCEMENT SPACING. BRACING, HANGERS, AND SUPPORTS. ALL LONGITUDINAL SEAMS SHALL BE MADE WITH A PITTSBURGH LOCK (TYPE L-1). TRANSVERSE JOINTS SHALL BE MADE WITH A POCKET LOCK (TYPE T-17) FOR DUCTWORK UP TO 3" W.G.
- H. CONTRACTOR SHALL USE DEGREASER, CLEAN AND PREP ALL EXPOSED DUCTWORK TO HAVE PAINT APPLIED. COORDINATE WITH ARCHITECTURAL TRADES.
- AT EACH POINT OF CONNECTION OF DUCTWORK TO FANS, PROVIDE A FLEXIBLE CONNECTION EQUAL TO VENTFABRICS, INC. "VENTGLAS L.A.", NOT LESS THAN 6" IN LENGTH AND MADE OF HEAVY GRADE FABRIC DOUBLE COATED WITH NEOPRENE AND PROVIDED WITH A SUITABLE FRAME AT EACH END, ARRANGED FOR BOLTING TO THE INLET OR OUTLET OF FAN AND DUCTWORK, RESPECTIVELY.
- J. FLEXIBLE CONNECTORS ON DUCTWORK TO AIR HANDLING EQUIPMENT SHALL HAVE A. MAXIMUM FLAME/SMOKE DEVELOPED RATING NOT TO EXCEED 25/50.
- K. PROVIDE VOLUME DAMPERS IN THE DUCT SYSTEMS WHERE SHOWN ON PLANS AND WHERE REQUIRED TO INSURE PROPER SYSTEM BALANCING.
- L PROVIDE FACTORY FABRICATED VOLUME DAMPERS IN ALL SUPPLY AND EXHAUST BRANCH DUCTS AND OTHERS WHERE INDICATED ON DRAWINGS. VOLUME DAMPERS SHALL BE CONSTRUCTED WITH APPLICABLE SMACNA STANDARDS.
- M. MANUAL VOLUME DAMPERS SHALL BE MADE OF GALVANIZED STEEL 18 GAUGE OR HEAVIER. DAMPERS FOR DUCTWORK UP TO 12 INCHES DEEP SHALL BE ONE BLADE CARRIED ON A 3/8-INCH SQUARE STEEL ROD MOUNTED IN THE SIDE OF DUCT WITHOUT FRAME AND FITTED WITH A LOCKING TYPE QUADRANT. SINGLE BLADE HAND DAMPERS UP TO 12-INCHES WIDTH MAY BE USED. DAMPERS FOR DUCTS OF GREATER DEPTH SHALL BE MULTI-BLADE TYPE, MAXIMUM BLADE WIDTH 12-INCHES UP TO 30-INCHES BLADE LENGTH, 8-INCHES MAXIMUM WIDTH OVER 30-INCHES LENGTH. BLADES SHALL BE MOUNTED IN FRAME AND INTERCONNECTED FOR OPERATION FROM ONE LOCKING TYPE HAND QUADRANT.
- N. ALL AUTOMATIC DAMPERS CONTROLLING OUTSIDE AIR, RELIEF AIR, AND/OR RETURN AIR SHALL HAVE FRAMES OF 13 GAUGE GALVANIZED STEEL. BLADES SHALL BE 22 GAUGE GALVANIZED STEEL. BEARINGS SHALL BE OIL IMPREGNATED SINTERED BRONZE. EDGE SEALS SHALL BE SILICONE PROVIDING LOW LEAKAGE CHARACTERISTICS. SEALS SHALL BE REPLACEABLE.
- O. WALL LOUVERS SHALL BE ALL WEATHER DESIGN TO PROTECT AIR INTAKE AND/OR EXHAUST OPENINGS IN BUILDING EXTERIOR WALLS. LOUVER SHALL INCORPORATE DRAIN GUTTERS TO CHANNEL WATER TO THE LOUVER SIDE FRAMES AND JAMBS TO THE LOUVER SILL. LOUVER SHALL BE EXTREMELY EFFICIENT AND CONFORM TO AMCA LICENSED PERFORMANCE DATE. FRAME; HEAVY GAUGE EXTRUDED ALUMINUM. BLADES; EXTRUDED ALUMINUM ON 4" CENTERS. PROVIDE BIRDSCREEN ON EXTERIOR FACE OF LOUVER. ACCEPTABLE MANUFACTURERS; RUSKIN, AMERICAN WARMING, GREENHECK.

FLEXIBLE AIR DUCTWORK

- C. INSULATED FLEXIBLE AIR DUCTS SHALL BE U, L. 181 LISTED WITH TRILAMINATE OF ALUMINUM FOIL. FIBERGLASS AND POLYESTER INNER LINER ON GALVANIZED STEEL HELIX WITH R-5.0 RATING. FIBERGLASS INSULATION SHALL HAVE 25/50 FLAME/SMOKE FIRE RETARDANT VAPOR BARRIER JACKET.
- D. ALL CONNECTIONS TO DIFFUSERS ARE TO BE MADE WITH ADJUSTABLE CLAMPS AND TIGHTENED AIRTIGHT.
- E MANUFACTURERS: CLEVAFLEX OR FLEXMASTER TYPE 5

DUCTWORK CONSTRUCTION

A LOW PRESSURE DUCTWORK

LONGITUDINAL JOINTS SHALL BE PITTSBURGH TYPE AND SHALL BE SEALED WITH MINNESOTA MINING AND MANUFACTURING COMPANY'S (3M) EC-800 OR AS APPROVED SEALING COMPOUND AS SHOWN ON DRAWING.

TRANSVERSE JOINTS SHALL BE STANDING 'S' SLIP TYPE FOR HORIZONTAL JOINTS UP TO AND INCLUDING 40' WIDTH, AND REINFORCED BAR SLIP (CLEAT) JOINT FOR 41" TO 84" WIDTH; AND 1-1/2" ANGLE REINFORCED SLIP TYPE JOINT FOR DUCTS OVER 84".

DRIVE SLIP TYPE FOR VERTICAL JOINTS.

ALL DUCTS WIDER THAN 48" SHALL BE PROVIDED WITH 1-1/2"x1-1/2"x1/8" ANGLE IRON STIFFENERS ON ALL SIDES ON MAXIMUM OF 48" CENTER.

B. MEDIUM PRESSURE DUCTWORK

TRANSVERSE DUCT JOINTS MAY BE MADE WITH THE "DUCTMATE" SYSTEM OR A STRUCTURALLY TESTED EQUAL. THE "DUCTMATE" SYSTEM COMPONENTS SHALL BE OF STANDARD IDENTIFIABLE CATALOG SYSTEMS SUPPLIED BY "DUCTMATE INDUSTRIES", PITTSBURGH, PA.

THE STANDARD "DUCTMATE" 35 SYSTEM JOINT IS THE EQUIVALENT OF A SMACNA "J" CONNECTION. THE "DUCTMATE" 26 SYSTEM JOINT IS THE EQUIVALENT OF A SMACNA "F" JOINT CONNECTION. CONSTRUCTION OF THE DUCT SUCH AS GAUGE, REINFORCING, ETC. SHALL BE AS PREVIOUSLY INDICATED AND MEETING OR EXCEEDING SMACNA MANUALS AND ASSOCIATED ADDENDUM MANUALS PER THE MOST RECENT SMACNA STANDARDS.

THE INSTALLATION OF THE "DUCTMATE" SYSTEM SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S MOST RECENT PRINTED ASSEMBLY AND INSTALLATION INSTRUCTIONS.

E. HANGERS FOR DUCTWORK:

ALL SHEET METAL DUCTWORK SHALL BE SECURELY SUPPORTED ON APPROVED HANGERS OR SADDLES AS REQUIRED.

RECTANGULAR HORIZONTAL DUCTWORK SHALL BE SUPPORTED BY ROUND STEEL RODS THREADED AT BOTH ENDS AND BOLTED THROUGH THE SUPPORTING STEEL ACROSS THE DUCT.

SUPPORTING STEEL SHALL BE AS FOLLOWS:

DUCT SIZE (MAXIMUM DIMENSION) SUPPORT STEEL SPACING

UP TO 26". 2"x3" - 1" STRAP 8"-0" 27" TO 48" (INCLUSIVE): L 1-1/2"x1-1/2"x1/8" - 6"-0" 49" to 59" (INCLUSIVE): L 2"x2"x1/8" Over 60" L 2-1/2"x2-1/2"x3/16" - 5"-0"

ALL DUCTWORK AND PIPING INSIDE THE BUILDING SHALL BE SUSPENDED FROM THE TOP CHORD OF BAR JOIST POINTS ONLY, DO NOT CONNECT TO THE ROOF DECK. DUCTWORK AND PIPES LOCATED ON THE ROOF ARE TO BE MOUNTED ON "PATE" EQUIPMENT OR PIPE SUPPORTS. EQUIPMENT CURBS SHALL BE TYPE ES-1 OR ES-5 FOR INSULATED ROOFS. CONTRACTOR HAS THE OPTION TO USE "MIRO INDUSTRIES" EQUIPMENT OR PIPE SUPPORTS.

ALL SHARP ENDS AND EDGES SHALL BE GROUND DOWN SMOOTH DRIGOVERED TO PREVENT INJURY TO RERSONNEL

HANGER RODS, ANGLES, AND STRAPS SHALL BE ATTACHED TO BEAM CLAMPS, CONCRETE INSERTS, AND APPROVED ANCHORS. ALL SUCH DEVICES SHALL BE UNDERWRITER'S LABORATORIES APPROVED. INSERTS AND ANCHORS SHALL BE SET IN COOPERATION WITH ALL TRADES INVOLVED.

C-CLAMPS SHALL NOT BE USED FOR ATTACHING HANGERS.

INSULATION - GENERAL

A. THE CONTRACTOR SHALL FURNISH ALL LABOR AND MATERIALS NECESSARY FOR THE INSTALLATION OF THERMAL INSULATION ON ALL HOT AND COLD SURFACES WHICH REQUIRE INSULATION FOR HEAT OR COLD CONSERVATION, COMFORT OF OCCUPANTS, EFFICIENCY OR EASE OF OPERATION OR TO PREVENT CONDENSATION OR DRIPPING. THE INSULATION SHALL BE COMPLETE AND EFFECTIVE THROUGHOUT THE BUILDING.

INSULATION - MATERIALS

- A ALL INSULATION MATERIALS SHALL BE CLASS A BY UNDERWRITER'S LABORATORIES, STANDARD FIBERGLASS INSULATION SHALL BE MINIMUM 5 LBS, DENSITY AND SHALL HAVE UL RATING NOT EXCEEDING 25 FLAME SPREAD, 35 FUEL CONTRIBUTED, AND 50 SMOKE DEVELOPED. ACCESSORIES SUCH AS ADHESIVE, MASTICS, CEMENTS, AND CLOTH FOR FITTINGS SHALL BE PERMANENTLY FIRE AND SMOKE RESISTANT. CHEMICALS USED FOR TREATING PAPER IN JACKET LAMINATES SHALL BE UNAFFECTED BY WATER OR HUMIDITY.
- 6. MANUFACTURES: CERTAIN TEED/SAINT GOBAIN, OWENS CORNING, JOHN-MANSVILLE, ARMSTRONG CORK COMPANY.

DUCT INSULATION

- A. ALL CONCEALED SUPPLY AND RETURN AIR DUCTS SHALL BE INSULATED PER ASHRAE STANDARD 90.1, GENERAL REQUIREMENTS.
- B. CONCEALED DUCTWORK SHALL BE INSULATED WITH FACE DUCTWRAP 1" THICK, ONE (1) LB/CU FT. DENSITY WITH FACTORY APPLIED "FRK" VAPOR BARRIER JACKET OR LAMINATED ALUMINUM FOIL, OPEN MESH GLASS FIBER REINFORCING MESH SCRIM AND FLAMEPROOF KRAFT PAPER. INSULATION SHALL BE EQUAL TO OWENS-CORNING FIBERGLASS. COMMERCIAL GRADE TYPE 100.

ENSURE INSULATION IS CONTINUOUS THROUGH INSIDE WALLS, PACK AROUND DUCTS WITH FIRE PROOF SELF-SUPPORTING INSULATION MATERIAL, PROPERLY SEALED.

FINISH INSULATION NEATLY AT HANGERS, SUPPORTS AND OTHER PROTRUSIONS.

LOCATE COVER SEAMS IN LEAST VISIBLE LOCATIONS.

C. ALL SUPPLY AND RETURN AIR DUCTWORK SHALL BE INSULATED ACCORDING TO THE ASHRAE 90.1 ENERGY STANDARDS. GENERAL REQUIREMENTS FOR INSULATION SHALL BE R-6 FOR SUPPLY AND RETURN DUCTS IN AN UNCONDITIONED SPACE; R-8 OUTSIDE THE BUILDING: R-8 INSULATION INSTALLED BETWEEN SUPPLY AND RETURN DUCTS AND BUILDING EXTERIOR WHEN DUCTS ARE PART OF THE BUILDING ASSEMBLY; AND R-3 FOR ALL DUCTS IN UNDERGROUND INSTALLATIONS.

GRILLES, REGISTERS, AND CEILING DIFFUSERS

A. REFER TO SCHEDULE ON DRAWINGS FOR CAPACITIES, SIZES, AND TYPES

- B. GRILLES AND REGISTERS PERFORMANCE SHALL BE BASED ON TESTS CONDUCTED IN ACCORDANCE WITH ADC STANDARDS 1062 AZ, "AIR DIFFUSING EQUIPMENT TEST CODE" AND ASHRAE STANDARD 3368 "METHOD OF TESTING FOR RATING THE ACOUSTIC PERFORMANCE OF AIR CONTROL AND TERMINAL DEVICES AND SIMILAR EQUIPMENT."
- C. GRILLES, REGISTERS, AND DIFFUSERS SHALL BE MANUFACTURED BY PRICE, TITUS, CARNES, DR KRUGER, PROVIDE DAMPERS AT EACH DIFFUSER AND REGISTER. PROVIDE OPTIONS PER SCHEDULE ON DRAWINGS

FANS (SUPPLY/RETURN)

A FANS SHALL BE AS SCHEDULED WITH ACCESSORIES ON DRAWINGS. FANS SHALL BEAR AMCA SEAL FOR RATED SOUND AND AIR PERFORMANCE. ALL UNITS TO BE VANDAL PROOF AND COVERS TO BE BOLTED SECURE.

AFTER THE VISUAL INSPECTION, ALL FANS SHALL BE TESTED AT FULL SYSTEM STATIC PRESSURES BY OPERATING THE SYSTEM FANS.

ALL TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE TESTING AND BALANCING TRADES

ALL REPAIRS MUST BE DONE IN A MANNER SATISFACTORY TO THE ENGINEERS FIELD REPRESENTATIVE.

B. THE CONTRACTOR SHALL GUARANTEE THE ENTIRE INSTALLATION OF THE DUCT SYSTEMS TO FUNCTION SATISFACTORILY AGAINST THE SPECIFIED SYSTEM TOTAL STATIC PRESSURE DEFECTS DUE TO IMPROPER MATERIALS, WORKMANSHIP, AND LEAKS SHALL BE CORRECTED WITHOUT ADDITIONAL COST TO THE OWNER. OTHER WORK AFFECTED AS A RESULT OF THE ABOVE MENTIONED DEFECTS SHALL ALSO BE MADE GOOD WITHOUT COST TO THE OWNER. THE ENTIRE SYSTEM SHALL BE LEFT IN PROPER OPERATING CONDITION, ACCEPTABLE TO THE ENGINEER'S FIELD REPRESENTATIVE. OIL CANNING OF DUCTS WILL NOT BE

SMOKE DETECTORS AND/OR HEAT DETECTORS (SYSTEMS OVER 2000 CFM):

- A. WHERE REQUIRED BY LOCAL CODE, FURNISH AND INSTALL IN THE MAIN SUPPLY AND RETURN AIR DUCT OF EACH AIR HANDLING UNIT, A SELF-CONTAINED. IONIZATION-TYPE DUCT SMOKE DETECTOR DESIGNED TO MOUNT TO A DUCT LISING SAMPLING TUBES ACROSS THE DUCT TO SENSE THE AIR. UNIT SHALL BE MANUALLY RESET AND SHALL HAVE A SET OF CONTACTS FOR FAN SHUT DOWN AS WELL AS FOR REMOTE ALARMING. SMOKE DETECTORS SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED EDITIONS OF NEPA 90A AND THE INTERNATIONAL MECHANICAL CODE OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- B. SMOKE DETECTORS SHALL HAVE SAMPLING TUBES AND AUXILIARY CONTACTS FOR FAN SHUTDOWN. SMOKE DETECTORS SHALL BE CONNECTED TO THE BUILDING FIRE ALARM SYSTEM.
- C. SMOKE DETECTORS THAT ARE NOT VISIBLE SHALL HAVE REMOTE INDICATION DEVICE (LIGHT OPTION) FOR UNIT STATUS CONDITION.

HRING

- A. FACTORY MOUNT AND WIRE UNIT CONTROLS. MOUNT ELECTRICAL COMPONENTS IN TERMINAL UNIT CONTROL BOX WITH REMOVABLE COVER. PROVIDE FIELD WIRING FROM TERMINAL STRIP IN TERMINAL UNIT CONTROL PANEL TO THERMOSTAT, COMMUNICATIONS AND POWER SOURCE.
- B ALL WIRING SHALL COMPLY WITH LOCAL AND NATIONAL ELECTRIC CODES AND THE MANUFACTURER'S PUBLISHED INSTALLATION MANUAL
- C. PROVIDE LAMINATED COLOR CODED WIRING DIAGRAM TO MATCH FACTORY INSTALLED WIRING AND BE PROVIDED IN BOTH POINT TO POINT AND LADDER DIAGRAM FORMAT AND AFFIXED TO THE INTERIOR OF THE CONTROL COMPARTMENT ACCESS DOOR.

THERMOSTATS

- A. IN GENERAL, ALL THERMOSTATS, INCLUDING SENSORS, ETC. SHALL BE PROVIDED BY THE HVAC EQUIPMENT MANUFACTURER.
- B. MECHANICAL TRADES SHALL FURNISH AND INSTALL ALL REQUIRED AUTOMATIC TEMPERATURE CONTROLS, INCLUDING WIRING, TRANSFORMERS, 7-DAY PROGRAMMABLE THERMOSTATS FOR PROPER OPERATION OF THE HVAC SYSTEM. WIRING SHALL BE IN ACCORDANCE WITH N.E.C. STANDARDS. COORDINATE WITH CONTROLS AND ELECTRICAL

MISCELLANEOUS CONTROLS (MAU, KITCHEN EXHAUST FANS)

A. PROVIDE ALL NECESSARY INTERLOCKING CONTROL DEVICES SUCH AS, STARTER RELAYS, ELECTRIC SOLENOID VALVES AND CONTROL TRANSFORMERS FOR A COMPLETE OPERATING SYSTEM.

CONTROLS INSTALLATION

A. ALL WIRING IN CONNECTION WITH THE TEMPERATURE CONTROLS, AS WELL AS, THE WIRING IN CONNECTION WITH ALL ELECTRIC SWITCHES FOR CONTROLLING OF SYSTEMS, DAMPERS AND EQUIPMENT, SHALL BE PROVIDED BY THE CONTROL CONTRACTOR. ALL INSTALLATION AND MATERIALS SHALL CONFORM TO THE ELECTRICAL SPECIFICATIONS FOR THIS PROJECT. WIRING SHALL BE IN CONDUITS AND IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.



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ISSLIES/REVISIONS:	DATE
PERMIT	05/16/19
	36

MECHANICAL HVAC SPECIFICATIONS

(DO NOT SCALE DRAWINGS)

1.4000000000000000000000000000000000000	2000
DATE	04/29/19
APPROVED BY:	E.CABELLO
CHECKED BY:	E,CABELLO
DESIGNED BY:	JRED
DRAWN BY:	JRED

ARCH/ENG. SEAL



IRED PROJECT NUMBER

19049 SHEET NUMBER

MD_3

PLUMBING GENERAL

- A. PROVIDE MATERIALS AND EQUIPMENT AND EXECUTE THE WORK, INCLUDING ALL TESTING AND INSPECTIONS, IN COMPLIANCE WITH THE APPLICABLE PROVISIONS OF FEDERAL, STATE AND LOCAL GOVERNMENT LAWS, ORDINANCES REFERENCED CODES AND STANDARDS CURRENT AS OF THE ISSUE DATE OF THESE DRAWINGS INCLUDING THE GOVERNING LAWS, ORDINANCES, CODES AND STANDARDS CONSTITUTE MINIMUM REQUIREMENTS. ALL MORE STRINGENT REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL MODIFY, SUPPLEMENT AND SUPERCEDE APPLICABLE PORTIONS OF GOVERNING LAWS, ORDINANCES, CODES AND STANDARDS.
- B. CONTRACTOR SHALL PRESENT CERTIFICATE TO THE OWNER THAT ALL APPLICABLE BUILDING PERMITS HAVE BEEN SECURED PRIOR TO STARTING ANY WORK AND PROVIDE THE OWNER WITH ALL REQUIRED CERTIFICATES OF FINAL APPROVAL FROM THE GOVERNING JURISDICTIONS AT COMPLETION OF THE WORK. PROVIDE ALL SHOP DRAWINGS AS REQUIRED IN FOLLOWING SECTIONS.
- C. MAKE ALL CONNECTIONS TO EXISTING SYSTEMS DURING DESIGNATED PERIODS UPON APPROVAL OF THE OWNER AND AT NO INCREASE IN CONTRACT SUM
- D. COORDINATE EXACT LOCATION OF NEW CONSTRUCTION TO AVOID ANY INTERFERENCE BETWEEN PIPING, WIRING, LIGHTING FIXTURES, DUCTWORK, BUILDING EQUIPMENT AND STRUCTURAL CONSTRUCTION.
- E. PROVIDE LABOR, INCLUDING FIELD ERECTION AND SUPERVISION, MATERIALS, EQUIPMENT AND ANCILLARIES AND COORDINATE, PROCURE, FABRICATE, DELIVER, ERECT OR INSTALL, INTERFACE WITH EXISTING WORK, START, DEBUG AND TEST ALL SYSTEMS AS NECESSARY TO PROVIDE THE OWNER WITH A COMPLETE, OPERATING FACILITY IN CONFORMANCE WITH THE CONSTRUCTION BID DOCUMENTS.
- F. ALL CUTTING AND PATCHING THAT MAY BE NECESSARY FOR THE INSTALLATION OF THE PLUMBING CONTRACTOR'S WORK SHALL BE PERFORMED AND REPAIRED BY THE TRADE WHOM NORMALLY PERFORMS THAT WORK AND PAID FOR BY THE PLUMBING CONTRACTOR. NO CUTTING OF THE BUILDING STRUCTURAL SYSTEM SHALL BE PERFORMED WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT BEING PREVIOUSLY OBTAINED.

G SHOP DRAWINGS

NO APPARATUS OR EQUIPMENT SHALL BE SHIPPED FROM STOCK OR FABRICATED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND STAMPED "REVIEW COMPLETED", "APPROVED" OR "NOT APPROVED".

SUBMIT FOR APPROVAL SHOP DRAWINGS FOR ALL EQUIPMENT AND SYSTEM LAYOUT (PIPING) INCLUDING MATERIALS, VALVES PLUMBING SPECIALTIES, PIPE HANGERS, WIRING DIAGRAMS AND CONTROL DIAGRAMS INCLUDING, BUT NOT LIMITED TO THE ITEMS LISTED BELOW. WHERE ITEMS ARE REFERRED TO BY SYMBOL NUMBERS ON THE DRAWINGS AND SPECIFICATIONS, ALL SUBMITTALS SHALL BEAR THE SAME SYMBOL NUMBERS. ALL DRAWINGS SHALL CONTAIN THE PROJECT NAME, AND PROJECT NUMBER. NO LOOSE SHEETS SHALL BE SUBMITTED UNLESS A COVER SHEET IS ATTACHED.

PROVIDE THE FOLLOWING EQUIPMENT SHOP DRAWINGS.

VALVES, TEMPERATURE AND PRESSURE GAUGES, PROPRESS COPPER FITTINGS, PLUMBING SPECIALTIES, PIPE INSULATION, RELATED PRV'S AND UNDERGROUND GAS PIPING.

APPROVAL OF SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES TO CONFORM TO THE DESIGN INTENT OF THE CONTRACT DOCUMENTS APPROVAL OF SHOP DRAWINGS IS INTENDED TO BE FOR GENERAL CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS ONLY. ANY INSTALLED EQUIPMENT WHICH REQUIRES WORK BY OTHER TRADES, SHALL BE COORDINATED WITH THOSE TRADES. REFER TO OTHER TRADES BID DOCUMENTS.

H. CODES, PERMITS AND FEES.

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

RULES OF LOCAL UTILITY COMPANIES SHALL ALSO BE COMPLIED WITH. BEFORE SUBMITTING HIS BID. THE PLUMBING CONTRACTOR SHALL VERIFY WITH EACH UTILITY COMPANY SUPPLYING SERVICE TO THIS PROJECT. THAT ALL SPECIALTY VALVES AND METERS REQUIRED WILL BE PROVIDED. THE PLUMBING CONTRACTOR SHALL INCLUDE THESE COSTS IN HIS BID. (NO ADDITIONAL PAYMENTS WILL BE MADE FOR INSTALLATION OF SUCH ITEMS, EXCEPT IN CASES WHERE THE REQUIREMENTS OF THE UTILITIES COMPANIES MAY CHANGE AFTER THE BID HAS BEEN SUBMITTED.)

ALL WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE RULES AND REGULATIONS SET FORTH IN LOCAL AND STATE CODES. (THE CONTRACTOR SHALL PREPARE ANY DETAILED DRAWINGS OR DIAGRAMS WHICH MAY BE REQUIRED BY THE GOVERNING AUTHORITIES.) WHERE THE DRAWINGS AND/OR SPECIFICATIONS INDICATE MATERIALS OR CONSTRUCTION IN EXCESS OF CODE REQUIREMENTS, THE DRAWINGS AND/OR SPECIFICATIONS SHALL GOVERN.

I. ACCESS DOORS

ACCESS DOORS SHALL BE PROVIDED TO MAKE ALL SHUT DFF VALVES, BALANCING VALVES OR THERMOSTATIC WATER MIXING VALVES LOCATED ABOVE HARD CEILINGS ACCESSIBLE FOR CLEANING, SERVICE AND MAINTENANCE. ACCESS DOORS SHALL BE FURNISHED BY PLUMBING TRADES AND INSTALLED BY ARCHITECTURAL TRADES. PLUMBING TRADES SHALL INCLUDE THE FULL COST OF THE WORK TO BE DONE BY OTHERS. TIMELY DELIVERY TO THE ARCHITECTURAL TRADES IS ESSENTIAL, SO AS NOT TO INTERRUPT THE SEQUENCE OF CONSTRUCTION. WHERE VALVES OR OTHER PLUMBING DEVICES ARE WITHIN EASY REACH OF THE OPERATOR, PROVIDE 12" X 12" ACCESS DOOR. WHERE OPERATOR MUST PASS THROUGH OPENING TO REACH THE DEVICE, PROVIDE 24" X 24" ACCESS DOOR.

ACCESS DOORS FOR NON-FIRE RATED CONSTRUCTION: UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR SPECIFIED, PROVIDE HINGED FLUSH TYPE STEEL FRAMED ACCESS DOORS WITH CONCEALED HINGES, SCREWDRIVER-OPERATED FLUSH LOCK, FACTORY-APPLIED RUST-INHIBITIVE PRIMER PAINT FINISH AND FLANGE OR CASING HEAD TRIM AS REQUIRED TO SUIT WALL OR CEILING CONSTRUCTION. FOR MASONRY CONSTRUCTION, USE MILCOR STYLE M STANDARD, OR APPROVED EQUIVALENT. FOR GYPSUM BOARD OR OTHER DRYWALL CONSTRUCTION USE MILCOR STYLE DW. OR APPROVED EQUIVALENT. FOR ACOUSTICAL TILE CEILINGS, USE RECESS PANEL TYPE, SUCH AS MILCOR STYLE AT, OR APPROVED EQUIVALENT.

FIRE RATED ACCESS DOORS: WHEN ACCESS DOORS ARE LOCATED IN FIRE RATED WALLS OR CEILINGS, THEY MUST BEAR THE UNDERWRITERS' LABORATORIES. INC. LABEL WITH TIME DESIGN RATING EQUAL TO OR EXCEEDING THAT OF THE WALL OR CEILING.

LOCATION ALL ACCESS DOOR LOCATIONS MUST BE APPROVED BY THE ARCHITECT

APPROVED MANUFACTURES SHALL BE: MILCOR, MEADOWGRAFT, KARP ASSOCIATES.

PLUMBING SPECIFICATIONS

SPECIAL SYSTEMS.

A. PROVIDE ALL ITEMS, ARTICLES, MATERIALS, OPERATIONS AND METHODS LISTED, MENTIONED OR SCHEDULED ON DRAWINGS AND/OR HEREIN, INCLUDING ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY AND REQUIRED FOR THEIR COMPLETION. THE WORK SHALL INCLUDE INSTALLATION, CLEANING AND TESTING OF COMPLETE AND OPERATING, PLUMBING-PIPING, TEMPERATURE CONTROL AND OTHER

B. GRAVITY-FLOW SANITARY AND RELATED VENT (ABOVE GROUND)

PIPING SHALL BE NO-HUB SERVICE WEIGHT CAST IRON PIPE AND/OR PVC DWV WHERE ALLOWED BY CODE OR PER OWNER PREFERENCE AND/OR REQUIREMENTS

JOINTS SHALL BE STAINLESS STEEL SHIELD AND RUBBER SLEEVE

CONNECTIONS TO UNDERGROUND SYSTEM SHALL BE MADE WITH PUSH-ON JOINTS, WHERE

C. GRAVITY FLOW SANITARY AND RELATED VENT (BELOW GROUND)

BELOW GROUND SOIL AND WASTE PIPING SHALL BE STANDARD WEIGHT HUB AND SPIGOT CAST IRON SOIL PIPE, TAR COATED INSIDE AND DUTSIDE OR PVC DWV.

JOINTS SHALL BE NEOPRENE COMPRESSION GASKET

TRANSITIONS FROM CAST IRON SOIL PIPE TO ANOTHER PIPE MATERIAL SHALL BE MADE WITH JOINT ADAPTERS, APPLICABLE FOR SUCH INSTALLATION PER MANUFACTURERS INSTRUCTIONS.

D. DOMESTIC WATER PIPING (ABOVE GROUND)

PIPING SHALL BE TYPE "K" OR "L" HARD DRAWN SEAMLESS COPPER TUBE. MUELLER "STREAMLINE" OR EQUAL.

TUBING JOINTS SHALL BE SOLDER TYPE, WITH 95-5 TIN-ANTIMONY SOLDER, OR SILVABRITE 100. OR "VIEGA" PROPRESS SOLDERLESS PRESS CONNECTION USING "RIDGID" POWER TOOLS AND SPECIFIC TOOL JAWS TO COMPLETE THE CONNECTION.

FITTINGS SHALL BE WROUGHT COPPER SOLDER JOINT, OR SOLDERLESS PRESS TYPE WITH "SMART CONNECT" FEATURE AND EPDM SEALING ELEMENT RATED FOR THIS APPLICATION WITH NSF APPROVAL STAMP ON FITTINGS.

BALL VALVES SHALL BE 600 PSIG WOG, BRONZE BODY, FULL PORT, 2 PIECE CONSTRUCTION WITH BLOW-OUT PROOF STEM.

CHECK VALVES SHALL BE 400 PSIG WOG, BRONZE BODY.

DIELECTRIC COUPLINGS SIMILAR TO EPCO SHALL BE USED AT JOINTS OF DISSIMILAR

PROVIDE ALL NECESSARY SPECIALTY TRANSITION FITTING WHERE A CHANGE IN MATERIAL OCCURS (COPPER CPVC) COPPER SWEAT, INCLUDING ALL NECESSARY BUSHINGS

E. BELOW GROUND ASTM SIMILAR TO "VIEGA NORTH AMERICA".

F. NATURAL GAS PIPING (ABOVE GROUND)

INSTALLATION SHALL BE IN ACCORDANCE WITH THE METHODS AS DESCRIBED IN THE INTERNATIONAL FUEL GAS CODE NPPA 58 AND THEIR RELATED SECTIONS.

GAS PIPING MATERIAL SHALL COMPLY WITH ONE OF THE STANDARDS LISTED IN THE INTERNATIONAL FUEL GAS CODE

CORROSION PROTECTION, PROTECTIVE COATING AND WRAPPING SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL FUEL GAS CODE AND NFPA 58.

VALVES SHALL NOT BE LOCATED IN ANY AIR PLENUM. PORTIONS OF A GAS PIPING SYSTEM INSTALLED IN CONCEALED LOCATIONS SHALL NOT HAVE UNIONS. TUBE FITTINGS, OR RUNNING THREADS. PROVIDE SHUT-OFF COCKS ON ALL BRANCH PIPING TO REGULATORS AND EQUIPMENT.

COORDINATE WITH LOCAL AUTHORITIES FOR OTHER REQUIREMENTS.

G PIPE HANGERS AND SUPPORTS

THE PLUMBING CONTRACTOR SHALL PROVIDE PIPE HANGERS AND SUPPORTS AS REQUIRED. APPROVED MANUFACTURERS SHALL BE: GRINNELL, CARPENTER-PATTERSON, FEE-MASON OR MICHIGAN HANGER CO.

GENERALLY ALL SUPPORT COMPONENTS SHALL CONFORM TO MANUFACTURERS' STANDARDIZATION SOCIETY SPECIFICATION SP-69.

HANGERS SHALL ADEQUATELY SUPPORT THE PIPING SYSTEM. THEY SHALL BE LOCATED NEAR DR AT CHANGES IN PIPING DIRECTION, WITHIN 1"-0" OF EVERY FITTING AND CONCENTRATED LOAD. THEY SHALL PROVIDE VERTICAL ADJUSTMENT TO MAINTAIN PITCH REQUIRED FOR PROPER DRAINAGE AND/OR VENTING. THEY SHALL ALLOW FOR EXPANSION AND CONTRACTION OF THE PIPING. HANGERS SHALL BE FASTENED TO BUILDING STEEL MEMBERS WHEREVER PRACTICAL AND HUNG FROM TRUSS OR JOIST PANEL POINTS ONLY.

H. JOINING OF PIPE

THREADED JOINTS SHALL HAVE AMERICAN NATIONAL STANDARD TAPER PIPE THREADS REAM PIPE ENDS AND REMOVE BURRS AFTER THREADING. MAKE UP JOINTS USING ON APPROVED COMPOUND APPLIED TO THE MALE THREADS ONLY.

SOLDER JOINTS: TUBING OR PIPE SHALL BE CUT SQUARE AND BURRS REMOVED, BOTH INSIDE OF FITTINGS AND OUTSIDE OF TUBING OR PIPE SHALL BE WELL CLEANED WITH STEEL WOOL BEFORE SWEATING. CARE SHALL BE TAKEN TO PREVENT ANNEALING OF FITTINGS AND HARD DRAWN TUBING WHEN MAKING CONNECTIONS: JOINTS SHALL BE MADE WITH 95/5 TIN-ANTIMONY SOLDER.

I. CHARACTER OF PIPE WORK.

PIPING SHALL BE LOCATED OR OFFSET AS REQUIRED TO CLEAR OTHER TRADES WORK, TO AVOID INTERFERENCE WITH OTHER PIPING HAVING PRECEDENCE, TO CONCEAL THEM MORE READILY OR TO ALLOW FOR MAXIMUM HEADROOM, PIPING AND CONDUIT IN FINISHED AREAS SHALL BE CONCEALED (WHEREVER POSSIBLE)

ALL CUT ENDS SHALL HAVE BURRS REMOVED AND ENDS REAMED.

INTERIOR OF ALL SERVICE PIPING SUCH AS WATER, AIR, ETC. SHALL BE CLEANED FREE OF DIRT AND IMPURITIES BEFORE PIPES ARE PUT IN PLACE. PIPING SHALL BE FLUSHED CLEAN AT COMPLETION.

NO PIPING SHALL BE RUN ABOVE ANY ELECTRICAL DEVICE, PANEL, SWITCHGEAR, ETC. PIPING SHALL BE OFFSET TO CONFORM TO THIS REQUIREMENT WHETHER INDICATED ON THE DRAWINGS OR NOT

ALL PIPING SHALL BE PROPERLY PITCHED FOR DRAINING AND VENTING AS REQUIRED.

UNDERGROUND LINES SHALL BE LAID ON SOLID EARTH WITH PIPE EVENLY SUPPORTED THROUGHOUT LENGTH OF PIPE.

CAP ALL OPENINGS WITH SUITABLE PLUGS OR CAPS DURING CONSTRUCTION

KEEP HOT AND COLD LINES AT LEAST SIX (6) INCHES APART.

EACH TRADE IS WARNED TO MAKE CERTAIN THAT ALL PIPING, FITTINGS, VALVES, THREADS AND JOINTS ARE FREE FROM DEFECTS AND ARE TIGHTLY FITTED. WHERE LEAKS OCCUR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING DEFECTIVE PORTIONS OF THE SYSTEM, AS WELL AS REPAIRING DAMAGES TO FINISH PORTIONS OF THE BUILDING OR ITS CONTENTS AT NO EXTRA COST.

J VALVES

VALVES SHALL BE AS MANUFACTURED BY NIBCO, OR APOLLO/CONBRACO

AS FAR AS POSSIBLE, VALVES SHALL BE BY ONE MANUFACTURER.

VALVES SHALL BE DESIGNED FOR EACH SPECIFIC PRESSURE. TEMPERATURE AND APPLICATION.

ALL BALL VALVES SHALL BE TWO-PIECE, FULL PORT DESIGN WITH CHROME PLATED OR STAINLESS STEEL BALL AND BRONZE BODY.

DO NOT USE GATE VALVES FOR THROTTLING FLOW

PROVIDE CHECK VALVES WHERE NECESSARY IN THE SYSTEM TO PREVENT BACKFLOW

ALL MAINS, BRANCH MAINS AND BRANCHES SHALL BE VALVED SO AS TO PROVIDE MEANS OF SHUTTING DOWN THE COMPLETE SYSTEM OR SO THAT BRANCH LINES OR BRANCH MAINS MAY BE SHUT DOWN WITHOUT REQUIRING SHUTDOWN OF MAIN. (THESE VALVES SHALL BE INSTALLED WHETHER SHOWN ON DRAWINGS OR NOT.)

PROVIDE BALL VALVES FOR SHUTTING OFF EACH GROUP OF FIXTURES OR EQUIPMENT TO PERMIT REPAIRS WITHOUT INTERFERING WITH THE REMAINDER OF THE SYSTEM.

PROVIDE VACUUM BREAKERS AND ANTI-SIPHON FITTINGS ON WATER PIPING SYSTEMS BEFORE ALL REQUIRED EQUIPMENT CONNECTIONS, ALL HOSE END SPIGOTS AND HOSE CONNECTIONS, ETC. INSTALL BACKFLOW DEVICE ON ALL WATER LINES TO EQUIPMENT WHERE LOCAL CODE REQUIRES THE INSTALLATION IN STRICT ACCORDANCE WITH LOCAL CODES AND OR AUTHORITIES HAVING JURISDICTION.

CONTRACTOR SHALL COMPLETELY TAG AND LABEL ALL VALVES AND PROVIDE A COMPLETE VALVE CHART INDICATING LOCATION, FUNCTION AND EQUIPMENT SERVED.

k. INSULATION - GENERAL

THE CONTRACTOR SHALL FURNISH ALL LABOR AND MATERIALS NECESSARY FOR THE INSTALLATION OF THERMAL INSULATION ON ALL HOT AND COLD SURFACES WHICH REQUIRE INSULATION FOR HEAT OR COLD CONSERVATION, COMFORT OF OCCUPANTS, EFFICIENCY OR EASE OF OPERATION OR TO PREVENT CONDENSATION OR DRIPPING. THE INSULATION SHALL BE COMPLETE AND EFFECTIVE THROUGHOUT THE BUILDING.

ALL INSULATION MATERIALS SHALL BE CLASS A BY UNDERWRITER'S LABORATORIES STANDARD PIPING FIBERGLASS INSULATION SHALL BE MINIMUM 5 LB. DENSITY AND SHALL HAVE U.L. RATING NOT EXCEEDING 25 FLAME SPREAD, 35 FUEL CONTRIBUTED AND 50 SMOKE DEVELOPED. ACCESSORIES SUCH AS ADHESIVE, MASTICS, CEMENTS, AND CLOTH FOR FITTINGS SHALL BE PERMANENTLY FIRE AND SMOKE RESISTANT. CHEMICALS USED FOR TREATING PAPER IN JACKET LAMINATES SHALL BE UNAFFECTED BY WATER OR

APPROVED MANUFACTURERS CERTAIN TEED/SAINT GOBAIN, OWENS CORNING, JOHNS-MANSVILLE OR ARMSTRONG CORK COMPANY

THERMAL INSULATION SHALL BE APPLIED TO THE FOLLOWING PIPING:

1. DOMESTIC WATER PIPING AND RELATED VALVES.

INSULATE FITTINGS AND VALVES. DO NOT INSULATE FLEXIBLE CONNECTIONS AND EXPANSION JOINTS. TERMINATE INSULATION NEATLY WITH PLASTIC MATERIAL TROWELLED ON BEVEL

INSULATION SHALL BE APPLIED TO PIPE LINES AND EQUIPMENT ONLY AFTER THEY HAVE BEEN INSPECTED, TESTED, CLEANED AND DRIED BY THE CONTRACTOR AND SO APPROVED BY THE OWNER'S FIELD REPRESENTATIVE. INSULATION SHALL BE DRY BEFORE AND DURING APPLICATION. FINISHING SHALL BE DONE AT OPERATING CONDITIONS.

THE INSULATION ON PIPING SHALL BE NEATLY AND TIGHTLY APPLIED WITH UNBROKEN LENGTHS AND WITH THE ENDS OF THE SECTIONS FIRMLY BUTTED TOGETHER.

THE INSULATION ON PIPING SHALL BE EXTENDED THROUGH ALL SLEEVES IN ORDER TO PRODUCE A CONTINUOUS APPLICATION. INSULATE ALL PIPING PASSING THROUGH SLEEVES.

ALL DOMESTIC WATER MAINS AND BRANCHES TO RECEIVE 1" THICK FIBERGLASS INSULATION. ALL IN-WALL DOMESTIC WATER PIPING TO RECEIVE 1/2" THICK FIBERGLASS INSULATION WITH PVC COVERS.

L. MATERIALS TESTS

PERFORM ALL TESTS REQUIRED BY STATE, CITY, COUNTY AND/OR OTHER AGENCIES HAVING JURISDICTION, AND AS INDICATED HEREIN.

PROVIDE ALL MATERIALS, EQUIPMENT, WATER, ETC. AND LABOR REQUIRED FOR THE TESTS.

PIPING UNDER HYDROSTATIC PRESSURE TEST SHALL NOT LOSE MORE THAN 2 PSI FOR A

PERIOD OF 5 HOURS UNDER TEST PRESSURE, EXAMINE PIPING FOR LEAKAGE.

PIPING UNDER AIR PRESSURE TEST SHALL NOT LOSE MORE THAN 2% OF TEST PRESSURE FOR A PERIOD OF 1 HOUR. TEST SHALL BE PERFORMED WITH AMBIENT TEMPERATURE APPROXIMATELY CONSTANT.

TESTS SHALL BE AS REQUIRED BY AGENCIES HAVING JURISDICTION. WHERE NO TESTING REQUIREMENTS EXIST, OR WHERE SUCH REQUIREMENTS ARE LESS STRINGENT THAN THOSE LISTED BELOW. TESTS SHALL BE AS LISTED BELOW. VALVE OFF OR REMOVE ALL GAUGES, EQUIPMENT, ETC., WHICH MAY BE DAMAGED BY TESTS.

1. DOMESTIC WATER PIPING, PIPING SHALL BE TESTED AT 150-PSI. HYDROSTATIC PRESSURE

M. PERFORMANCE TESTS

THE PLUMBING SYSTEM SHALL BE TESTED AND BALANCED TO DEMONSTRATE THAT SPECIFIED CAPACITIES AND PROPER CONTROL FUNCTIONING HAS BEEN ATTAINED. ALL TESTING AND BALANCING IS TO BE COMPLETED PRIOR TO RUNNING PERFORMANCE TESTS, AND PRIOR TO TRAINING AND INSTRUCTION OF THE OWNER'S PERSONNEL IN SYSTEM OPERATION.

N. DISINFECTION OF POTABLE WATER SYSTEM

PLUMBING CONTRACTOR SHALL REVIEW APPLICABLE STATE AND LOCAL CODE REQUIREMENTS FOR CLEANING PROCEDURES ON DRINKING WATER SYSTEMS.

PLUMBING CONTRACTOR SHALL PURGE ALL POTABLE WATER SYSTEM OF DELETERIOUS MATTER AND DISINFECT PRIOR TO UTILIZATION AS PRESCRIBED BY THE LOCAL HEALTH AUTHORITY OR WATER PURVEYOR HAVING JURISDICTION. IN THE ABSENCE OF A PRESCRIBED METHOD, THE PROCEDURE DESCRIBED IN EITHER AWWA C651 OR AWWA C652.



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ELECTRICAL CONSULTANT



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ISSLIES/REVISIONS:	DATE
PERMIT	05/16/19
	-
	+
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	1
	+

PIPING

SPECIFICATIONS

(DO NOT SCALE DRAWINGS)

Tech Lieu minimum minimum	TOTO SEAL	
DATE	04/29/19	
APPROVED BY:	E.CARELLO	
CHECKED BY:	E,CABELLO	
DESIGNED BY:	JRED	
DRAWN BY-	IRED	

ARCH/ENG. SEAL



IRED PROJECT NUMBER:

19049 SHEET NUMBER

MP-4

ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
0,2.00		*	QUAD ISOLATED GROUND RECEPTACLE
3	SNOLE POLE TOOCLE SWITCH	**	WITH DEDICATED NEUTRAL CONDUCTOR
52	TWO POLE TOGGLE SWITCH		QUAD FLOOR MOUNTED RECEPTACLE
31	3 WAY TOGGLE SWITCH	Φ),	DUPLEX FLOOR MOUNTED RECEPTAGLE
\$4	4 WAY TOGGLE SWITCH	•	SPECIAL RECEPTABLE-NEWA CONFIGURATION AS NOTED
54	KEY OPERATED SWITCH	₹ 7,	QUAD RECEPTACLE/LOW VOLTAGE SYSTEM FLOOR BOX
150	3 WAY KEY OPERATED SWITCH	V	DUTTED DESCRIPTIONS AND LOS TANDS DUSTED A FLAGRA DOLL
Tak	4 WAY KEY OPERATED SWITCH	(\$ [4]	DUPLEX RECEPTABLE/LOW VOLTAGE SYSTEM FLOOR BOX
Sip.	DIMMER SWITCH MATCH LIGHTING FOR LINE OR U-10V	80	VERTICAL RISER FOR SURFACE RACEWAY
\$30	3 WAY DAMER SWITCH		SURFACE RACEWAY
\$	PLOT SWITCH		aus duct
Sos	MANUAL ON/AUTO OFF OCCUPANCY SENSOR WALL SMITCH		PANEL 480/277 VOLT
5.	LOCKABLE SINGLE POLE SMITCH		PANEL 208Y/120 VOLT
SM.	HORSE POWER RATED SWITCH		DISTRIBUTION PANEL
Soos	DIMMING - MATCH LICHTING FOR LINE OR D-10V		MAIN DISTRIBUTION PANEL/MAIN
os	CEILING MOUNTED OCCUPANCY SENSOR	76	TRANSFORMER
0	CEILING MOUNTED DAYLIGHT SENSOR	~	ELECTRIC MOTOR
P	OCCUPANCY SENSOR FOMER PACK		MANUAL NOTON STARTER
uc,	PROGRAMMABLE LIGHT CONTROL SWITCH	a e	MANUAL MOTOR STARTER WITH PILOT LIGHT
BLTC	BALLAST LOAD TRANFSER CONTROL		MOTOR STARTER
TG:	TIMER CONTROLLER	⊠ ₁	COMBINATION WOTOR STARTER
C	CONTACTOR	EP.	HON-FUSED DISCONNECT SWITCH
€	PHOTOELECTRIC CONTROLLER	Zh,	FUSED DISCONNECT SWITCH
ф	SINGLE RECEPTACLE		PUSH BUTTON
ф	DUPLEX RECEPTACLE	Ø	JUNCTION BOX
-	QUAD RECEPTACLE	•	HARD WIRE POWER CONNECTION
•	DUPLEX RECEPTACLE MIRINTED 42" AFF OR 8" ABOVE COUNTER TOP. (UNLESS NOTED OTHERWISE)	©	HARD WIRE CONNECTION AT FLOOR BOX
660	(SINILAR FOR EMERGENCY RECEPTACLES)	2	CROUT BREAKER
ф ^{он}	DUPLEX RECEPTACLE—GROUND FAULT INTERRUPTER	7	5 MTCH
\$	DUFLEX RECEPTACLE MOUNTED 42" AFF OR 6" ABOVE COUNTER TOP (UNLESS NOTED DTHERWISE) WITH GROUND FAULT INTERRUPTER	[2]	AUTOMATIC OR MANUAL TRANSFER SWITCH
*	DUPLEX ISOLATED GROUND RECEPTABLE MOUNTED	©	ENGINE GENERATOR
w	42" AFF OR 6" ABOVE COUNTER TOP (LINLESS NOTED. OTHERWISE) WITH DEDICATED NEUTRAL CONDUCTOR:		FUSE
	THE RESERVE OF THE PARTY OF THE	m	TRANSFORMER
ф ^и	COMBINATION 2A USB / 20A RECEPTAGE PASSASEYMOUR TREMSTUSE OR COUAL	3	CURRENT TRANSFORMER
o F	DUTIES AND AND PROPERTY OF THE AND ADDRESS.	38	POTENTIAL TRANSFORMEN
(A)	RECEPTACLE WITH DEDICATED NEUTRAL CONDUCTOR	PNL	PANEL (LIGHTING OR RECEPTABLE)
•	DUPLEX ISOLATED GROUND RECEPTABLE WITH		NOOE
	DEDICATED NEUTHAL CONDUCTOR	1	GROUND
		7	TRANSFORMER GROUND
		TVSS	TRANSIENT VOLTAGE SURVE SUPPRESSON
		7	

ELECTRICAL ABBREVIATION LIST

	DESCRIPTION	ABBREVATION	DESCRIPTION	ABBREYATION	DESCRIPTION
A	AMPHERE	QF)	GROUND FAULT INTERRUPTER	HC	NORMALLY CLOSED
AFF	ABOVE FINEN FLOOR	GRO	GROUND	NF	NON-FUSIBLE
AFG	ABOVE FINISH GRADIC	GRC	GALVANIZED RIGID CONDUIT	NIC	NOT IN CONTRACT
AHU	AIR FLANDLING UNIT			NL	MIGHT LIGHT
NC	AMPS INTERRUPTING CAPACITY	HOA	HAND-OFF-AUTO	NO	NORMALLY OPEN
		160	HORSEPOWER	NTS	NOT TO SCALE
BKS)	BREAKER	HZ	HERTZ		day to made
BPS	BOLTED PRESSURE SWITCH	No.	ISOLATED GROUND	RECEPT.	RECEPTACLE
		16	ISOCATED GROUND	RP	RECEPTACLE PANEL
CB	DROUT ERGANTR	.8	JUNCTION HOX	RTU	ROOF TOP UNIT
CIR/CKT	CRCUIT	***	AND STATE OF THE PARTY OF THE P	4.00	100 3010
CLG.	CELING	kw .	KILOWATT	50	SMOKE DETECTOR
CP .	CRCULATION PUMP	KWH	KILOWATT - HOURS	SPEC	SPECIFICATION
CUA	CABINET LINIT HEATER	KVA	KILD VOLT-AMPERES		
		4440		TELCOM	TELECOMMUNICATIONS
DED	DEDICATED	10	LICHTING PANEL	TYP	TYPICAL
DESC	DISCONNECT	LO	LOCK-ON		
OP.	DISTRIBUTION PANEL			DH	UNIT HEATER
DWG	DRAWING	MCA	MINMUM CIRCUIT AMPACITY	U.O.N.	UNLESS OTHERWISE NOTED
		MCB	MAIN CIRCUIT BREAKER	-	
BU	EMERGENCY BATTERY UNIT	MCC	MOTOR CONTROL CENTUR	W.	WEATHERPROOF
EF	EXHAUST FAIL	MDP	MAIN DISTRIBUTION PANEL	WG.	WRE GUARD
EM .	EMERICENCY	MLO	MAIN LUGS ONLY		
EM/NL	EMERGENCY/NIGHT LIGHT	MSB	MAIN SWITCHEDARD	T#	TRANSFORMER
EUH	ELECTRIC UNIT HEATER	MID	MOUNTED		
EWC	ELECTRIC WATER COOLER	MUA	MAKE-UP AR UNIT	(6)	EXISTING
EWH!	ELECTRIC WATER HEATER			(R)	RELOCATED
rand.					
FLA	FULL LOAD AMPS			(10)	MELOCATED

SYMBOL	DESCRIPTION
offe	NORMALLY OPEN CONTACTS
offo	HORMALLY CLUSED CONTACTS
1	N.O. PUSH BUTTON SINGLE CIRCLIT
مله	N.C. PUSH BUTTON SINGLE DRIGHT
(3)	SPEAKER
18	DOUBLE FACE SPEAKER - WALL MOUNTE
HS	SPEAKER - WALL MOUNTED
(M)	MICROPHONE
0	VOLUME CONTROL
0	SINGLE FACE CLOCK - CEILING MOUNTED
Ю	SINGLE FACE CLOCK MALL MOUNTED (MOUNT 7'-6" AFF TO GENTER)
1-8	DOUBLE FACE CLOCK - WALL MOUNTED
MD	MOTION DETECTOR
oc	GOOR CONTACT
KP	KEY PAD
	SECURITY CAMERA
CR	CARD READER
NC	NURSE CALL DEVICE
E	MANUAL FIRE ALARM STATION
(90)	SMOKE DETECTOR
(BS)	DUCT SMOKE DETECTOR
€	OUCT SMOKE DAMPER. CONNECT 120V TO SMOKE DAMPER AND FIRE ALARM CONNECTION TO SMOKE DAMPER AS WELL AS DUCT SMOKE DETECTORS AS REQUIRED PER MIPA — COORDINATE WITH MECH TRADES, PROVIDE RESET SWITCH IN ACCESSIBLE LOCATION IN AREA SERVED BY DUCT.
Mol	DUCT SMOKE AUDIBLE/MSUAL ALARM DEVICE WITH KEYED TEST AND RESET SWITCH
(H)	THERMAL DETECTOR
KF	KITCHEN FIRE CONTROLS
(H)0	FIRE ALARM HORN
5 4	FIRE ALARM STROBE
FG4	FIRE ALARM HORN/STROBE
DR	MAGNETIC DOOR RELEASE
TS	TAMPER SWITCH

SPECIAL SYSTEMS

FRE ALARM CONTROL PANEL

FRE ALARM ANNUNCIATOR PANEL

FLOW SWITCH

FACE

4	SINGLE GANG OUTLET BOX FOR LOW VOLTAGE SYSTEMS, STUB RACEWAY UP INTO ACCESSIBLE CEILING SPACE. PROVIDE BUSHING PROVIDE BLANK COVERPLATE. WRING BY OTHERS.
7	SINGLE GANG DUTLET BOX FOR LOW VOLTAGE SYSTEMS MOUNTED AFF OR 6" ABOVE COUNTERTOP (COORDINATE WITH MULLWORK) UNI

NOTED OTHERWISE. STUB UP RACEWAY INTO ACCESSIBLE CELLING SPACE. PROVIDE BUSHING, PROVIDE BLANK COVERPLATE, WRING BY SINGLE GANG OUTLET BOX FOR TV. STUB UP RACEWAY INTO

ACCESSBLE CEILING SPACE. PROVIDE BLISHING, PROVIDE BLANK COVERPLATE. WRING BY OTHERS. TELECOMMUNICATIONS BACKBOARD

ALL "SPECIAL SYSTEMS" (TYPICALLY TELEPHONE, TV, AND DATA) WRING AND DEVICES BY OTHERS, UNLESS NOTED ON PLANS OR SPECIFICATIONS. E.C. TO PROVIDE BOXES; RACEWAYS, BACKBOARDS, AND COVERPLATES (PER SPECIFICATIONS IF COORDINATE EXACT REQUIREMENTS OF RACEWAY AND BOX SIZES WITH LOW VOLTAGE CONTRACTOR.

PRIOR TO INSTALLATION.

CONVENIENCE AND SPECIAL PLIPPOSE RECEPTACLE OUTLETS AND LOW VOLTAGE SYSTEMS OUTLETS NOT OTHERWISE SPECIFIED	18" AFT TO CENTER OF BOX
CONVENIENCE AND SPECIAL PURPOSE RECEPTACLE OUTLETS AND LOW VOLTAGE SYSTEMS OUTLETS NOT OTHERWISE SPECIFIED IN CIAU WALLS	24" AFF TO TOP OF BOX
LIGHT SWITCHES, MOTOR CONTROL DEVICES AND FIRE ALARM PULL STATIONS NOT OTHERWISE SPECIFIED	48" AFF TO CENTER OF BOX
FIRE ALARM HORMS, SPEAKERS, STROBES	BUT AFF OR 6" BELOW COLUNG WHICHEVER IS LESS
CLOCKS AND COMBINATION DEVICES NOT OTHER MEE SPECIFIED	HICKEYER IS LESS.
OF PECEPTACLES IN TOLET ROOMS AND JANITOR CLOSETS NOT OTHERWISE SPECIFIED	42" AFF TO CENTER OF BOX
LIGHTING AND RECEPTACLE BRANCH CIRCUIT PANELBOARDS AND LIGHTING CONTROLLERS NOT OTHERWISE SPECIFIED	6'-6" AFF TO TOP OF ENCLOSUME

** COORDINATE EXACT MOUNTING HEIGHTS WITH ARCHTECT/MILLWORK PRIOR TO ROUGH-IN. **

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GENERAL DEMOLITION NOTES:

2. ALL LINUSED LOW VOLTAGE WIRING SHALL BE REMOVED IN ITS ENTIRETY.

GENERAL POWER NOTES

DISCONNECTING MEANS IN PLACE OF SINGLE POLE BREAKERS.

TERMINATION'S AND CONDUIT BACK TO THE SOURCE,

OPENINGS SHALL BE NEATLY DRILLED OF CUT.

SHALL ONLY BE PERMITTED WHERE NOTED.

3% FOR BRANCH AND FEEDER AND 5% OVERALL

POSSIBLE, DO NOT SCALE DRAWNES.

1. ELECTRICAL FIXTURES, DEVICES, PANELBOARDS, AND OTHER ITEMS OF ELECTRICAL EQUIPMENT ON THIS DRAWING.
SHOWN HATCHED SHALL BE DISCONNECTED AND REMOVED BY THE CONTRACTOR, REMOVE ASSOCIATED WRING,

3. REMAINING LUMINAIRES, SWITCHES, RECEPTACLES, MOTORS, ETC., NOT PART OF THE REMODELING SHALL BE. CHECKED FOR PROPER OPERATION, AND CIRCUITS OPENED BY THE REMODELING WORK SHALL BE PROPERLY

4. CONTRACTOR SHALL BE RESPONSIBLE FOR CUTTING AND PATCHING OF EXISTING WALLS, FLOORS, AND CELLINGS REQUIRED FOR THE INSTALLATION OF ELECTRICAL WORK IN THE REMODELED PORTIONS OF THE EXISTING BUILDING.

5. PATCHING SHALL BE PERFORMED BY A WORKMAN SKILLED IN THE TRADE INVOLVED, AND PATCH WORK SHALL

G. ALL DISCREPANCES WITH THESE DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION PRIOR TO BIDS, IN OTHERWISE DOING SO, THE ELECTRICAL CONTRACTOR CHALL BE LIABLE FOR ANY

1. ALL ELECTRICAL DEVICES AND ASSOCIATED OUTLET BOXES SHALL BE FLUSH MOUNTED UNLESS OTHERWISE

NOTED. ALL CONDUIT AND WRING SHALL BE CONCEALED WHERE PHYSICALLY POSSIBLE, SURFACE RACEWAY

2. PROVIDE (1) NO. 10 AWG NEUTRAL CONDUCTOR FOR MAY 20 AMP SINGLE PHASE CIRCUITS SHARING A

NEUTRAL IN A SINGLE CONDUIT, WHERE WULTIWIRE BRANCH CIRCUITS ARE USED, PROMOE SMULTANEOUS

ALL FEEDERS AND BRANCH CIRCUITS, CONDUIT IS NOT PERMITTED TO ACT AS AN EQUIPMENT GROUNDING

I PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR WITHIN THE RACEWAYS ALONG WITH PHASE CONDUCTORS FOR

CONDUCTOR UNLESS NOTED, AN ISOLATED GROUND CONDUCTOR (CREEN/MHITE) IS REQUIRED FOR ALL ISOLATED

A MEREVER 4 OR MORE CURRENT CARRYING CONDUCTORS ARE INSTALLED IN A SINGLE RACEWAY, E.C. SHALL NOREASE CONDUCTOR SIZE AS REQUIRED FOR DERATING PER NEC 315,B.2.9.

5. GROUND FAULT INTERBUPTING DEVICES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS AND NOT ALLOWED

6. ALL CIRCUITS SHALL USE A MINIMUM OF 12 AWG FOR 20 AMP CIRCUITS UNLESS OTHERWISE HOTED. ELECTRICAL CONTRACTOR SHALL CONFIRM CONDUCTOR AND CONDUIT SIZES FOR VOLTAGE ORCP, A MAXIMUM OF

7. COORDINATE WITH OTHER TRADES FOR ANY ELECTRICAL DEVICE LOCATIONS PRIOR TO ROUGH-IN. COMPLY WITH

a. WHERE LOW VOLTAGE DEVICES AND RECEPTACLES ARE SHOWN NEXT TO EACH OTHER, INSTALL AS GLOSE AS

9. ALL "SPECIAL SYSTEMS" WRING AND DEVICES (IE. TELEPHONE, DATA, TV.) SHALL BE PROVIDED AND INSTALLED BY OTHERS UNLESS NOTED ON PLANS OR SPECIFICATIONS, E.C. TO PROVIDE BOXES AND RACEWAYS PER LEGEND

10, ALL DISCREPANCIES WITH THESE DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION PRIOR TO BIOS. IN OTHERWISE DOING SQ, THE ELECTRICAL CONTRACTOR SHALL BE LIABLE FOR ANY

11. E.C. TO COORDINATE EXACT EQUIPMENTS OF ALL OTHER SYSTEMS WITH MANUFACTURER AND OTHER TRADES PRIOR TO ROUGH—IN AND PURCHASE OF ANY ELECTRICAL EQUIPMENT ASSOCIATED WITH SYSTEM, ANY DISCREPANCIES WITH THIS PLAN AND MANUFACTURER REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF

12. ALL ITEMS SHOWN ON PLAN ARE NEW LINLESS WARKED AS (E) FOR EXISTING OF (R) FOR RELOCATED. 13. FOR MEDICAL BUILDINGS, ALL PATIENT CARE AREAS, EXAM AND PROCEDURE ROOMS AND THE LINE SHALL

BEHIND FIXED IN PLACE OR UNINOVABLE EQUIPMENT, REMOTE DEVICES MAY BE REQUIRED.

AND SPECIFICATIONS, COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER/SUPPLIER.

THE ARCHITECT/ENGINEER PRIOR TO PURCHASE OR ELECTRICAL ROUGH-IN OF THIS EQUIPMENT.

WEET NEC 2014 - 517.13 FOR REDUNDANT GROUNDING.

ALL APPLICABLE CODES FOR PROPER MOUNTING HEIGHTS, NIPA, NEC, ADA, ETC.

MATCH THE EXISTING SURFACE AND FINISH IN A MANNER ACCEPTABLE TO THE ARCHITECT.

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ISSLIES/REVISIONS:	DATE:
WERMITS	09/16/19
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SHEET TITLE:

ELECTRICAL SYMBOLS LIST & **GENERAL NOTES**

(DO NOT SCALE DRAWINGS)

DATE	04/29/19
APPROVED BY:	RSL
CHECKED BY:	RSL
DESIGNED BY:	
DRAWN BY:	ETS

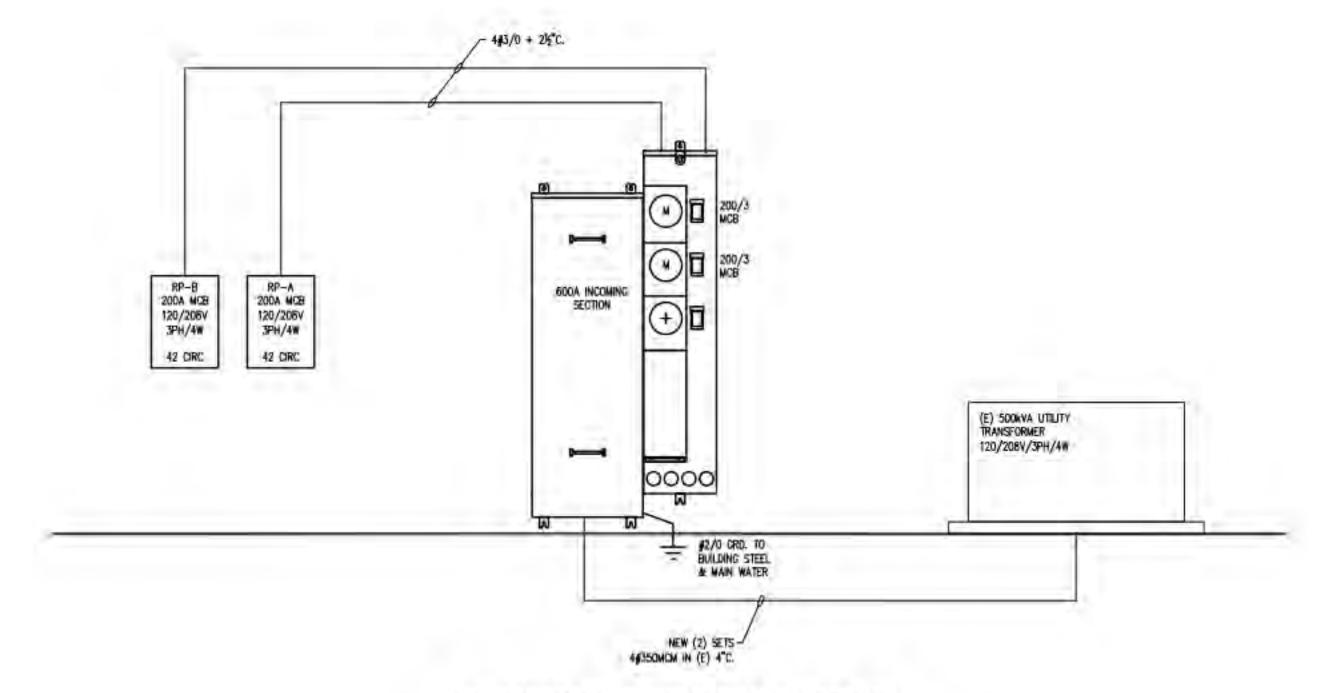
ARCH ENG SEAL



JRED PROJECT NUMBER:

19049

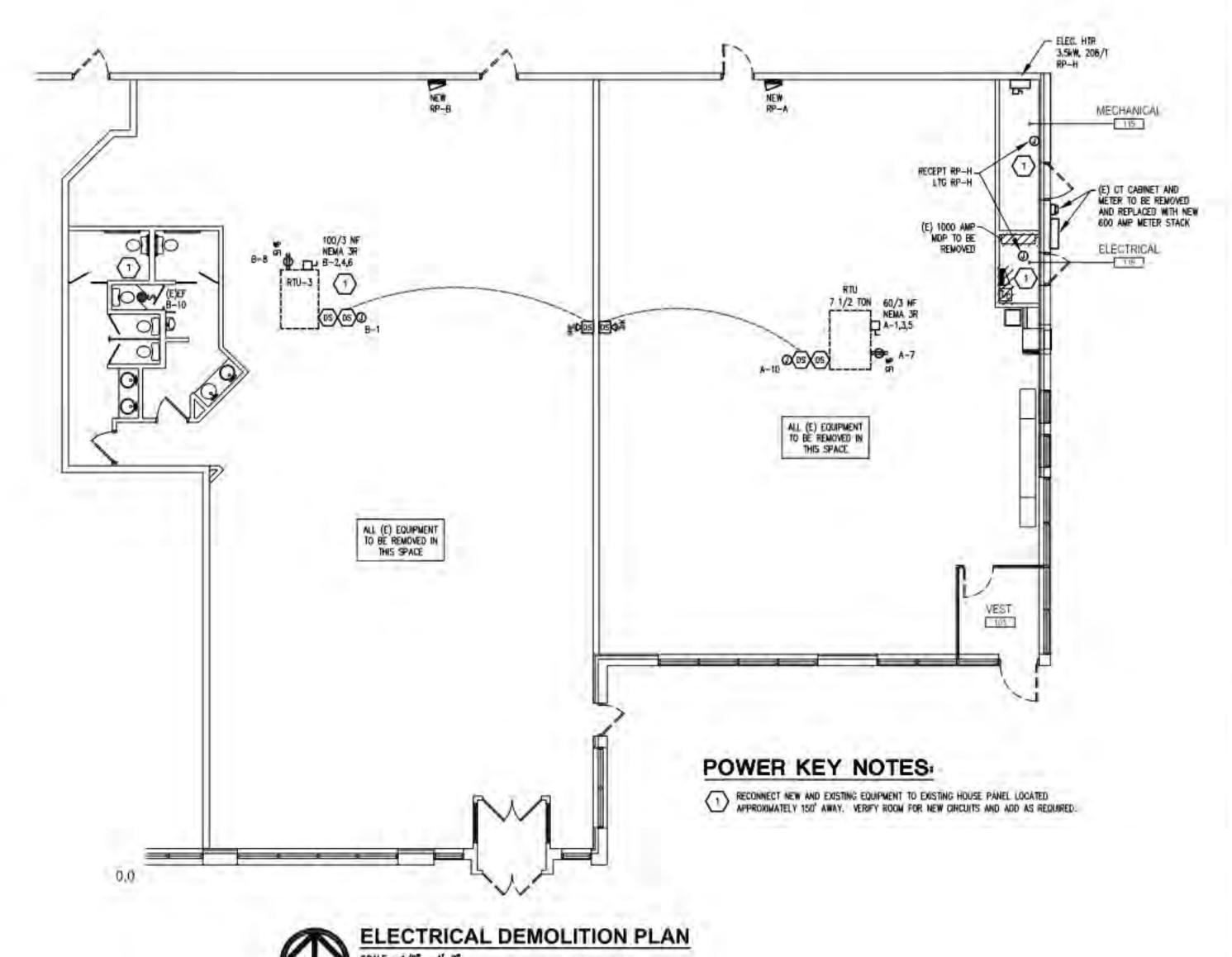
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ELECTRICAL NEW RISER DIAGRAM SCALE : NONE

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ENGINEERING, INC.

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Tel: (734) 855-4904 email: esteban@jredengingering.com



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SHEET TITLE:

ELECTRICAL POWER PLAN, RISER DIAGRAM & PANEL SCHEDULES

(DO NOT SCALE DRAWINGS)

	DATE	04/29/19
1	APPROVED BY:	RSL
	CHECKED BY:	RSL
	DESIGNED BY:	
- 1	DRAWN BY:	ETS

ARCH ENG SEAL



JRED PROJECT NUMBER:

19049 SHEET NUMBER:

J. 40. UNISWITCHED DISHT TO AUG TO BE SERVICED DURING SWITCH DUTY BREAKER. 4. DEMAND LOAD COMPUTED AS FOLLOWS:

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I, WHEN USING A SHAKED NEUTRAL, SUBSTRUE A 3 FOLE PREAKER FOR SINGLE POLE DICARDIA SHOWN

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S. WHEN USING A SHAKID INDITIVAL, SUBSTITUE A 3 POLE INGAKER FOR SINGLE POLE MEANING SHOWN

IDDITIONAL ACCESS PANELS, PIPE, FITTINGS, MATERIALS, AND LABOR, TO

ACHIEVE THE SAME END RESULTS.

C. THE CONTRACTOR SHALL TAKE RIELD MEASUREMENTS NECESSARY FOR HIS WORK AND SHALL BE RESPONSIBLE FOR THE ACCURATE LOCATION AND SIZE OF OPENINGS, RECESSES, SLOTS, AND THE LIKE.

D. THE CONTRACTOR SHALL BE REQUIRED TO COOPERATE WITH THE OTHER TRACES AND OTHER CONTRACTORS IN THE COORDINATION OF HIS WORK TO AVOID INTERFERENCES WITH INSTALLATIONS BY OTHER TRACES AND

FONTHACTORS.

E. EXTRA COSTS WHICH MIGHT RESULT FROM DEVIATIONS FROM THE DRAWINGS, SO AS TO AVOID INTERFERENCES, SHALL BE CONSIDERED A "JOB COMPITION" AND NO ADDITIONAL COMPENSATION WILL BE CONSIDERED APPLICABLE. IN THE EVENT THAT SUCH INTERFERENCES OCCUR IN COURSE OF THE WORK, DUE TO AN ERROR, OMISSION, OR OVERSIGHT BY THE CONTRACTOR, NO ADDITIONAL COMPENSATION SHALL BE ALLOWED. INTERFERENCES WHICH MAY OCCUR DURING THE COURSE OF CONSTRUCTION SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION DITHE ARCHITECT/ENGINEER, AND HIS DECISION. CONFIRMED IN WRITING, SHALL BE FINAL.

1.2 REFERENCES

A. WORK SHALL BE IN COMPLETE ACCORDANCE WITH CODES, RIULES, ORDINANCES, REGULATIONS OF AUTHORITIES, BODIES, ASSOCIATIONS, AND GOVERNMENTS, HAVING PROPER AND LEGAL JURISDICTION. SPECIFICALLY, THE FOLLOWING REQUIREMENTS SHALL BE MET IN THEIR ENTIRETY.

1. STATE AND LOCAL RULES, REGULATIONS, CODES, STATUTES, AND ORDINANCES

2. NATIONAL PIRE PROTECTION ASSOCIATION — APPLICABLE REQUIREMENTS
3. NATIONAL BOARD OF FIRE PROTECTION
4. NATIONAL ELECTRIC CODE — APPLICABLE REQUIREMENTS
5. OTHER CODES AND STANDARDS AS SPECIFICALLY NOTED IN FACH

SECTION OF THE SPECIFICATIONS

B. ELECTRICAL EQUIPMENT SHALL BE UNDERWINTER'S APPROVED; ALSO, SHALL MEET RECUIREMENTS ESTABLISHED BY NEC., NEMA, AND ANSI AND AS SPECIFIED HEREINAFTER.

A. GENERAL E.C. TO PROVIDE 8 SETS OF SUBMITTALS FOR ALL SUBSTANTIAL ELECTRICAL COMPONENTS AND SYSTEMS.

LE RECORD DOCUMENTS (AS-BILLTS)

A. PREPARE RECORD DOCUMENTS FOR PROJECT CLOSEOUT. THE
CONTRACTOR SHALL KEEP A RUNNING RECORD OF EACH CHANGE AND
DEMATION FROM THE DRAWINGS. RECORD SHALL BE KEPT CLEAN AND
UNDAMAGED UPON A SET OF DRAWINGS USED FOR NO OTHER PURPOSE.
UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT
TWO DOMPLETE SETS OF RECORD DRAWINGS; ONE FOR THE OWNER AND
ALSO ONE COPY SET FOR ARCHITECT/ENGINEER. ELECTRONIO DRAWINGS.
OF THE ORIGINAL DRAWINGS, WITHOUT CORRECTIONS, ARE AVAILABLE FROM
THE ARCHITECT/ENGINEER AT A CHARGE OF \$100 PER DRAWING. RECORD
DOCUMENTS SHALL INDICATE INSTALLED CONDITIONS FOR:

I MAJOR RACEWAY SYSTEMS, SIZE AND LOCATION, FOR BOTH EXTERIOR
AND INTERIOR; LOCATIONS OF CONTROL DEVICES, DISTRIBUTION AND
BRANCH ELECTRICAL CRICLITRY; AND FUSE AND CIRCUIT BREAKER SIZE

AND ARRANGEMENTS.

2. EQUIPMENT LOCATIONS (EXPOSED AND CONCEALED), DIMENSIONED FROM PROMIMENT BUILDING LINES.

3. APPROVED SUBSTITUTIONS, CONTRACT MODIFICATIONS, AND ACTUAL EQUIPMENT AND MATERIALS INSTALLED.

LO MAINTENANCE MANUALS

A. PREPARE MAINTENANCE MANUALS INCLUDING THE FOLLOWING
INFORMATION FOR EQUIPMENT ITEMS:

1. DESCRIPTION OF FUNCTION, NORMAL OPERATING CHARACTERISTICS AND
LIMITATIONS, PERFORMANCE CURVES, ENGINEERING DATA AND TESTS,
AND COMPLETE NOMENCLATURE AND COMMERCIAL NUMBERS OF

REPLACEMENT PARTS.

Z. MANUFACTURER'S PRINTED OPERATING PROCEDURES TO INCLUDE START-UP, BREAK-IN, AND ROUTINE AND NORMAL OPERATING INSTRUCTIONS; REGULATION, CONTROL, STOPPING, SHUTDOWN, AND EMERGENCY INSTRUCTIONS; AND SUMMER AND WINTER OPERATING.

A. MAINTENANCE PROCEDURES FOR ROUTINE PREVENTATIVE MAINTENANCE AND TROUBLESHOOTING, DISASSEMBLY, REPAIR, AND REASSEMBLY; ALIGNING AND ADJUSTING INSTRUCTIONS.

4. SERVIOUS INSTRUCTIONS AND LUBRICATION CHARTS AND SCHEDULES.

17. DELIVERY, STORAGE, AND HANDLING

A. DELIVER PRODUCTS TO THE PROJECT PROPERLY IDENTIFIED WITH MAMES, MODEL NUMBERS, TYPES, GRADES, COMPLIANCE LABELS, AND DIVER INFORMATION MEEDED FOR IDENTIFICATION.

1.8 TEMPORARY WORK

A. EXCEPT WHEN OTHERWISE STIPULATED, COMPLETED PORTIONS OF THE PERMANENT INSTALLATION OR MATERIALS FOR USE IN THE PERMANENT INSTALLATION SHALL NOT BE USED IN TEMPORARY WORK WITHOUT SPECIFIC PERMISSION.

1. INSTALLED RACEWAYS FOR THE PERMANENT INSTALLATION MAY BE UTILIZED FOR INSTALLATION OF TEMPORARY WRING.

B. OVERLOAD PROTECTION AND CROUNDING FOR CIRCUITS AND EQUIPMENT OF THE TEMPORARY LIGHT AND POWER SYSTEM SHALL COMPLY WITH APPLICABLE CODES RELATING TO PERMANENT WORK. PANELBOARDS AND OTHER PROTECTIVE EQUIPMENT SHALL BE FURNISHED AND INSTALLED AS REQUIRED BY FIELD CONDITIONS.

LEGORED BY FIELD CONSTITUONS.

LOONTRACTOR SHALL LOCATE TEMPORARY ELECTRIC SERVICE MAIN DISCONNECT IN AN APPROVED ENCLOSURE WITH LOCK. CONTRACTOR SHALL ARRANGE TO DAILY DISCONNECT ELECTRIC POWER ON LOAD SIDE OF THAMPS)* AND LOCK THE ENCLOSURE(S) CONTAINING SAME. SOLID GROUNDING OF THE TEMPORARY ELECTRIC SERVICE IS REQUIRED, D. PROVIDE GROUND FAULT INTERRUPTER CIRCUIT BREAKERS FOR BRANCH CIRCUITS IN ACCORD WITH CODES AND REGULATIONS, INCLUDING "OSHA"

AND "MIOSHA".

E. LICHTING FIXTURES EMPLOYED SHALL BE OF THE TYPE, QUALITY, AND QUANTITY REQUIRED TO PROVIDE A TEMPORARY LICHTING SYSTEM A ACCORD WITH CODES AND REGULATIONS, INCLUDING "OSHA" AND "MIOSHA", AND SAME SHALL NOT SE ON THE SAME CRICUITS WITH RECEPTACLES AND OTHER DEVICES.

F. UPON REQUEST, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DETAIL INFORMATION FOR TEMPORARY SERVICE AND DISTRIBUTION TO THE ARCHITECT/ENGINEER FOR APPROVAL.

1.9 WORK IN EXISTING BUILDINGS

I.O WORK IN EXISTING BUILDINGS

A. DURING PHASING OF THE WORK AND GENERAL CONSTRUCTION SCHEDULE,
ALL EXISTING SYSTEMS, INCLUDING POWER, LIGHTING, FIRE ALARM,
1ELEPHONE SYSTEM, CENTRAL SOUND SYSTEM (INTERCOM SYSTEM), ETC.,
SHALL BE MAINTAINED IN OPERATION, EVEN IF IT REQUIRES TEMPORARY
RELOCATION, UNTIL THE NEW WORK AND NEW SYSTEM IS COMPLETED AND
OPERATIONAL; AT WHICH TIME THE OLD WORK IS TO BE REMOVED,
B. THIS CONTRACTOR SHALL EXAMINE THE EXISTING SITE AND FAMILIARIZE
HMSELF WITH THE EXISTING CONDITIONS THAT WILL IN ANY MANNER

AFFECT HIS WORK UNDER THIS CONTRACT AND INCLUDE THESE

CONDITIONS AND REQUIRED WORK IN HIS BID.

C. CONTRACTOR SHALL INCLUDE IN HIS BID ALL NECESSARY CHANGES IN SERVICES (FOWER, TELEPHONE, FIRE ALARM, CENTRAL SOUND SYSTEM, ETC.) TO PROVIDE A MINIMUM OF INTERFERENCE WITH THE OPERATION AND INTERRUPTION OF THESE SERVICES (INCLUDING UTILITY SERVICES) IN THE BUILDING. WHEN CHANGES REQUIRE SHUTDOWN OF ANY BUILDING SERVICES, THE CONTRACTOR SHALL OBTAIN OWNER/ARCHITECT APPROVAL AT LEAST 48 HOURS IN ADVANCE. SHUTDOWN OF ANY BUILDING SERVICES SHALL BE SCHEDULED AFTER NORMAL BUSINESS HOURS, ON

D. GENERAL - ELECTRICAL FIXTURES, DEVICES, PANELBOARDS, AND OTHER ITEMS OF ELECTRICAL EQUIPMENT LOCATED IN REMODELED PORTIONS OF THE EXISTING BUILDING WHICH BECOME OBSOLETE OR ARE SHOWN TO BE REMOVED, SHALL BE DISCONNECTED AND REMOVED BY THE CONTRACTOR, WHERE EXISTING WORK IS REMOVED, REMOVE ASSOCIATED WIRING, TERMINATIONS, AND OBSOLETE EXPOSED AND INTERFTRING CONDUIT AND

E. REMAINING LIGHTS, SWITCHES, RECEPTAGLES, MOTORS, ETC., NOT DISTURBED IN THE REMODELING SHALL BE CHECKED FOR PROPER OPERATION, AND CIRCUITS OPENED BY THE REMODELING WORK SHALL BE PROPERLY RECONNECTED.

PROPERLY RECONNECTED.

5.1 ROUGH—IN.

A. VERIFY FINAL LOCATIONS FOR ROUGH—INS WITH FIELD MEASUREMENTS.

AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED.

AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED.

B. COORDINATE ROUGH-IN REGUIREMENTS AND LOCATIONS WITH ALL OTHER APPLICABLE TRADES.

5.2 ELECTRICAL INSTALLATIONS
A. DENERAL SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF ELECTRICAL SYSTEMS, MATERIALS, AND EQUIPMENT.

COMPLY WITH THE FOLLOWING REQUIREMENTS:

1. FOR PURPOSE OF CLEARNESS AND LEGIBILITY, THE ELECTRICAL "E"
DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND, ALTHOUGH SIZE AND
LOCATION OF EQUIPMENT ARE CLOSELY DRAWN TO SCALE WHENEVER
POSSIBLE, EACH CONTRACTOR SHALL MAKE USE OF THE DATA IN ALL
OF THE CONTRACT DOCUMENTS AND SHALL VERIFY THIS INFORMATION
AT THE BUILDING SITE.

2. THE DRAWINGS INDICATE REQUIRED SIZE AND POINTS OF TERMINATION

THE DRAWINGS INDICATE REQUIRED SIZE AND POINTS OF TERMINATION OF WRING AND OTHER RELATED ITEMS AND THEY MAY SUGGEST PROPER ROUTES FOR SUCH ITEMS TO CONFORM TO STRUCTURE, AVOID OBSTRUCTIONS, AND PRESERVE GLEARANCES. IT IS NOT INTENDED THAT ORAMINGS INDICATE EVERY NECESSARY OFFSET, AND IT SHALL SE THE WORK OF THE CONTRACTOR TO INSTALL EACH ITEM IN A MANNER AS TO CONFORM TO STRUCTURE, AVOID OBSTRUCTIONS, PRESERVE HEADROOM, AND KEEP OPENING AND PASSAGEWAYS CLEAR, WITHOUT FURTHER INSTRUCTIONS OR COSTS TO THE OWNER.

3. AMBRAIGE FOR CHASES, SLOTS, AND OPENINGS IN OTHER BUILDING TOMPOWENTS DURING PROVERESS OF CONSTRUCTION. TO ALLOW FOR

3. AHRANGE FOR CHASES, SLOTS, AND DPENINGS IN DTHER BUILDING COMPONENTS DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR ELECTRICAL INSTALLATIONS.

4. COORDINATE THE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SLEEVES TO BE SET IN POURED-IN-PLACE CONCRETE AND OTHER STRUCTURAL COMPONENTS, AS THEY ARE CONSTRUCTED.

5. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLATIONS OF

ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORM. GIVE PARTICULAR ATTENTION TO LARGE EQUIPMENT REQUIRING POSITIONING PRIOR TO CLOSING IN THE BUILDING.

6. WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM POSSIBLE.

7. COOPSINATE CONNECTION OF ELECTRICAL SYSTEMS WITH EXTERIOR.

UNDERGROUND AND OVERHEAD UTUITIES AND SERVICES. COMPLY WITH REQUIREMENTS OF GOVERNING REGULATIONS, FRANCHISED SERVICE COMPANIES, AND CONTROLLING AGENCIES. PROVIDE REQUIRED CONNECTION FOR EACH SERVICE. INSTALL UTILITY METERING EQUIPMENT ACCORDING TO UTILITY COMPANY'S WRITTEN REQUIREMENTS. PROVIDE CIRCUMDING AND EMPTY COMPONIS AS REQUIRED BY UTILITY COMPANY.

B. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO CONFORM WITH APPROVED SUBMITTAL DATA, INCLUDING COORDINATION DRAWINGS, TO CREATEST EXTENT POSSIBLE. CONFORM TO ARRANGEMENTS INDICATED BY THE CONTRACT DOCUMENTS, RECOGNIZING THAT PORTIONS OF THE WORK. ARE SHOWN ONLY IN DIAGRAMMATIC FORM. WHERE COORDINATION PECULIBERURYS COME NOT WITH INDIVIDUAL SYSTEM REQUIREMENTS. PETERS

REQUIREMENTS CONFLICT WITH INDIVIDUAL SYSTEM REQUIREMENTS, REFER CONFLICT TO THE ARCHITECT.

9. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, WHERE INSTALLED EXPOSED IN FINISHED SPACES, IO. INSTALL ELECTRICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE, AND REPAIR OR REPLACEMENT OF EQUIPMENT COMPONENTS. AS MUCH AS PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM OF INTERFERENCE WITH OTHER INSTALLATIONS.

INSTALLATIONS.

11. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT CIVING RIGHT-OF-WAY PRIORITY TO SYSTEMS REQUIRED TO BE INSTALLED AT A SPECIFIED SLOPE.

3.4 PERMITS, FEES, REGULATIONS, AND INSPECTIONS

A. THE CONTRACTOR SHALL ARRANGE AND PAY FOR PERMITS, FEES, AND INSPECTIONS REQUIRED IN CONNECTION WITH HIS WORK.

B. WORK SHALL BE INSPECTED BY APPROVED LOCAL AND STATE INSPECTION DUREAUS, ELECTRICAL INSPECTION AGENCY OR AUTHORITY,

INSPECTION BUREAUS, ELECTRICAL INSPECTION AGENCY OR AUTHORITY,
AND ELECTRIC UTILITY.

C. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL FURNISH TO
THE ARCHITECT/ENGINEER A CERTIFICATION OF INSPECTION AND
APPROVAL FROM SAID BUREAU OR AGENCY BEFORE FINAL PAYMENT ON
CONTRACT.

3.5 PERMANENT UTILITY CONNECTIONS
A. THE CONTRACTOR SHALL MAKE HIS OWN ARRANGEMENTS WITH THE

UTILITY COMPANIES FOR CONNECTION OF THE PERMANENT UTILITIES.

B. THE CONTRACTOR SHALL INCLUDE CONNECTION COSTS AS PART OF THE WORK UNDER HIS CONTRACT.

C. THE CONTRACTOR SHALL VERIFY EXACT REQUIREMENTS OF THE UTILITY WITH REGARD TO SUCH SERVICE; AND THE CONTRACTOR SHALL INCLUDE IN HIS BID COSTS RELATED TO SAME, SUCH AS NETER ARRANGEMENTS, PIPE, CONDUIT, WIRE, FITTINGS, SPECIALTES, AND RELATED WORK.

3.6 HOISTS, RIGGING, TRANSPORTATION, AND SCAFFOLDING
A. THE CONTRACTOR SHALL PROVIDE SCAFFOLDING, STAGING, CRIBBING,
TACKLE, HOISTS, AND RIGGING NECESSARY FOR FLACING OF HIS
MATERIALS AND EQUIPMENT IN THEIR PROPER PLACES IN THE PROJECT.
TEMPORARY WORK SHALL BE REMOVED FROM THE PREMISES WHEN ITS
USE IS NO LONGER REQUIRED ON THE JOB.
B. THE CONTRACTOR SHALL PAY COSTS FOR TRANSPORTATION OF
MATERIALS AND EQUIPMENT TO THE JOBSITE AND SHALL INCLIDIT SUCH
COSTS IN HIS PROPOSAL.

C. SCAFFOLDING AND HOISTING EQUIPMENT SHALL COMPLY WITH REQUIREMENTS OF PERTINENT FEDERAL, STATE, AND LOCAL LAWS AND CODES.

3.7 DEMONSTRATION OF COMPLETE ELECTRICAL SYSTEM
A. PROVIDE A MINIMUM OF 24 HOURS TOTAL INSTRUCTION TO PERSONNEL SELECTED BY THE OWNER. INSTRUCTIONS SHALL INCLUDE THE FOLLOWING.

1. SHOW LOCATION OF ITEMS OF EQUIPMENT AND EXPLAIN WHAT THEY DO.

2. REFER TO DEFRATING INSTRUCTIONS MANUAL FOR RECORD AND CLARIFY.
3. COORDINATE WOTTEN AND VERBAL INSTRUCTIONS SO THAT EACH IS UNDERSTOOD BY PERSONNEL.
3.5 FINAL COMPLETION
A. WORK SHALL BE CLEANED PRIOR TO SUBSTANTIAL COMPLETION OF THE

WORK.

B. RETOUCH OR REPAINT FACTORY PAINTED PRIME AND FINISH COATS, WHERE SCRATCHED OR DAMAGED. WHENEVER RETOUCHING WILL NOT BE SATISFACTORY, IN THE OPINION OF THE ARCHITECT/ENGINEER, THE ARCHITECT/ENGINEER HAS THE OPTION TO REQUIRE DOMPLETE REPAINTING UNTIL THE DESIRED APPEARANCE IS OBTAINED.

C. REMOVE TEMPORARY WRING AS SOON AS PERMANENT SYSTEM(S) OR PORTIONS THEREOF ARE IN OPERATING CONDITION AND HAVE BEEN INSPECTED AND APPROVED.

D. THE CONTRACTOR SHALL CLEAN EQUIPMENT: RESTORE DAMAGED MATERIALS; REMOVE GREASE, CIL, CHEMICAL, MAINT SPOTS, AND STAINS; AND GENERALLY LEAVE THE WORK IN A-1 CONDITION.

E. ON COMPLETION OF HIS WORK, THE CONTRACTOR SHALL NEMOVE AND SEE THAT EACH OF HIS SUBCONTRACTORS REMOVES FROM THE SITE TOOLS, EQUIPMENT, SURPLUS MATERIALS, AND RUBBISH PERTAINING TO HIS OPERATIONS, AND PAY COSTS FOR SUCH REMOVAL AND DISPOSITION.

RESTOPPING

1 DEFINITION
1. FIRESTOPPING: MATERIAL OR COMBINATION OF MATERIALS TO RETAIN INTEGRITY OF FIRE RATED CONSTRUCTION BY MAINTAINING AN EFFECTIVE BARRIER AGAINST THE EPREAD OF FLAME, SMOKE, AND GASES.
1. THROUGH-PENETRATION FIRESTOP SYSTEMS: MATERIAL OR COMBINATION OF MATERIALS WHICH ARE FIELD-CONSTRUCTED OF FILL, VOID, OR CAVITY MATERIALS AND FORMING MATERIALS, DESIGNED TO RESIST FIRE SPREAD WHEN INSTALLED AS A COMPLETE FIRESTOP SYSTEM.
1. THROUGH-PENETRATION FIRESTOP DEVICES: FACTORY BUILT PRODUCTS
DESIGNED TO RECIPIE ORS SPREAD. ANABILETY MAKEN OF MEDICAL FOR SING

DESIGNED TO RESIST FIRE SPREAD. COMPLETE WHEN DELIVERED TO SITE, READY FOR INSTALLATION.

1.2 SUMMARY

A. PROVIDE LABOR, MATERIALS, SERVICES, COORDINATION, AND EQUIPMENT NECESSARY FOR COMPLETE INSTALLATION OF FIRESTOPPING MATERIALS.

1. PROVIDE THROUGH—PENETRATION FIRESTOP SYSTEMS AND THROUGH—PENETRATION FIRESTOP DEVICES, SEALANTS, AND RELATED PRODUCTS FOR FLOOR AND WALL POWERLATIONS FOR ELECTRICAL COMPLETE TO THE PROPERTY AND SEALING TO THE PROP

EQUIPMENT (AND SEALING TOP OF HATED WALLS TO DECK WIEN REQUIRED BY CODE OFFICIALS).

B. RESTORATION OF TIME-RATED BUILDING COMPONENTS FOLLOWING THEIR PENETRATION USING THROUGH-PENETRATION FIRESTOP SYSTEMS, AND THROUGH-PENETRATION FIRESTOP DEVICES, SEALANTS, AND RELATED

1.3 SUBMITTALS
A. PROVIDE SUBMITTALS INDICATING PRODUCT INFORMATION, PROPOSED INSTALLATION DRAWINGS, AND QUALIFICATIONS OF FIRESTOPPING INSTALLER.
1.4 QUALITY ASSURANCE
A. CONFORM TO MICHIGAN BUILDING CODE.

A, CONFORM TO MICHIGAN BUILDING CODE.

B. MEET REQUIREMENTS OF ASTM E814 THROUGH PENETRATION FIRE TEST
BY A NATIONALLY RECOGNIZED TESTING AGENCY AND OTHER ASTM
STANDARDS AS APPLICABLE FOR THE INSTALLATION.

C. INSTALLER SHALL HAVE SUCCESSPULLY COMPLETED WITHIN THE LAST 3
YEARS AT LEAST Z FIRESTOP PROJECTS SIMILAR IN TYPE AND SIZE TO
THAT OF THIS PROJECT. THE INSTALLER IS REQUIRED TO HAVE BEEN
TRANED BY EACH MANUFACTURER OF PRODUCTS HE IS INSTALLING IN
THE PROPER HANDLING AND INSTALLATION OF THAT PRODUCT.

D. OBTAIN FIRESTOP MATERIALS FROM A SINGLE MANUFACTURER FOR EACH

DEFERENT PRODUCT RECUIRED.

E. APPLICATION CERTIFICATION: UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL FURNISH TO THE ARCHITECT CERTIFICATION THAT MATERIALS HAVE BEEN INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION REQUIREMENTS, CERTIFICATION SHALL HI SIGNED BY THE INSTALLER.

E. CONTACT THE MANUFACTURERS OF EACH PRODUCT INTENDED FOR USE FOR A LIST OF QUALIFIED PRESTOP SPECIALTY INSTALLERS.

A. COORDINATE THIS WORK AS REQUIRED WITH WORK OF OTHER TRADES.

B. COORDINATE WITH OTHER CONTRACTORS TO MAKE OR KEEP PENETRATION AREAS ACCESSIBLE TO PRESTOPPING INSTALLER.

2.1 ACCEPTABLE MANUFACTURER'S PRODUCTS A. PENETRATION SEALANTS

BRAND, HILTI, BIO FIRESHIELD, OR TREMCO.

1. DOW CORNING "FIRESTOP FOAM" AND "FIRESTOP SEALANT" OR EQUAL BY INSTA-FOAM PRODUCTS, 3M BRAND, METALINES INC., HLTI, BICP FIRESHELD, OF TREMCO.

B. INTUMESCENT SEALANTS AND FIRESTOPPING BAGS FOR USE IN OPENINGS AND SLEEVES INVOLVING PLASTIC PIPE, INSULATED PIPE, OR FLEXIBLE

A. PROVIDE FLAME (F) RATING MINIMUM ONE HOUR, BUT NOT LESS TMAN-FIRE RESISTANCE RATING OF THE ASSEMBLY IN WHICH INSTALLED, PER ASTM E814.

B. MAINTAIN EFFECTIVE BARRIER ADAINST FLAME, SMOKE, AND HOT (LASSES PER ASTM E814 AND UL 1479.

G. SUITABLE FOR FRESTOPPING OF PENETRATIONS BY STEEL GLASS. PLASTIC, AND INSULATED PIPE. ALSO FLEXIBLE CABILE, BUS DUCT, AND CABLE TRAY.

, dow corning "firestop intlinescent wrap strip" or equal by w

3.1 EXAMINATION
A. EXAMINE SURFACES TO RECEIVE PENETRATION SEALANT OR FOAM AND REPORT UNACCEPTABLE CONDITIONS TO THE ARCHITECT BEFORE STARTING FIRESTOPPING WORK. START OF WORK INDICATES PIRESTOPPING INSTALLERS ADDEPTANCE OF SYMD OF HOLES AND APPLICATION CONDITIONS.
3.2 PREPARATION
A. CLEAN PENETRATION HOLES OF DIRT, LOOSE MATERIALS, AND FOREIGN MATTER WHICH MAY AFFECT BOND OR INSTALLATION.
B. REMOVE COATINGS SUCH AS PAINT, CURING COMPOUNDS, WATER

REPELLENT, AND SEALERS AS REQUIRED,
3.3 APPLICATION
A. INSTALL FRESTOPPING MATERIALS, INCLUDING FORMING, PACKING, AND
OTHER ACCESSORY MATERIALS TO FILL OPENINGS AROUND MECHANICAL
AND ELECTRICAL SERVICES, PENETRATING FLOORS AND WALLS TO PROVIDE
FRESTOPS WITH FIRE RESISTANCE RATINGS INDICATED FOR FLOOR OR
WALL ASSEMBLY IN WHICH PENETRATION OCCURS. COMPLY WITH
INSTALLATION REQUIREMENTS ESTABLISHED BY TESTING AND INSPECTING

AGENCY.

B. INSTALL FIRESTOPPING MATERIALS SYSTEMS IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND CIDE REQUIREMENTS.

C. EMPLOY INSTALLATION TECHNIQUES WHICH WILL ENSURE THAT FIRESTOPPING IS DEPOSITED TO RILL AND SEAL HOLES AND OPENINGS.

D. TOOL EXPOSED SURFACES OF APPLIED SEALANT SMOOTH.

J.A. CLEAN-LIP.

J. CLEAN-LIP.

J.4 CLEAN-UP

A. CLEAN SURFACES ADJACENT TO SEALED JOINTS FREE OF ENCESS
SEALANT AND SOILING FROM THIS WORK AS WORK PROGRESSES, USING
SOLVENT OR CLEANING AGENT RECOMMENDED IN WRITING BY THE SEALANT
MANUFACTURER, MLE
B. LEAVE FINISHED WORK IN NEAT, CLEAN CONDITION; REMOVE EXCESS
DEBRIS AND MATERIALS.

BASIC ELECTRICAL MATERIALS AND METHODS
1.2 QUALITY ASSURANCE
A. INSTALLER QUALIFICATIONS: ENGAGE AN EXPERIENCED INSTALLER FOR THE INSTALLATION AND APPLICATION JOINT SEALERS, ACCESS PANELS, AND DOORS.

B. QUALIFY WELDING PROCESSES AND WELDING OPERATORS IN ACCORDANCE WITH AWS DI.1. "STRUCTURAL WELDING CODE - STEEL."

G. FIRE-RESISTANCE RATINGS: WHERE A FIRE-RESISTANCE CLASSFICATION IS INDICATED, PROVIDE ACCESS DOOR ASSEMBLY WITH PANEL DOOR, FRAME, HINCE, AND LATCH FROM MANUFACTURER LISTED IN THE UL. "BUILDING MATERIALS DIRECTORY" FOR RATING SHOWN.

1. PROVIDE UL LABEL ON EACH FIRE-RATED ACCESS DOOR.

II. MATERIALS SHALL BE NEW, COMPLETE WITH MANUFACTURER'S CHARANTEE OR WARRANTY, AND SHALL BE APPROVED BY THE UNDERWRITERS" LABORATORIES, INC., NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION, INSULATED POWER CABLE ENGINEERS. ASSOCIATION, NATIONAL SAFETY CODE, AND THE INSTITUTE OF ELECTRICAL

E. WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED. METHIOS AND TECHNIQUES OF INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT.

F. MATERIALS OF THE SAME TYPE OR CLASS SHALL BE THE PRODUCT OF ONE MANUFACTURER, FOR EXAMPLE, PANELBOARDS SHALL BE FROM ONE MANUFACTURER, LIGHTING SWITCHES FROM ONE MANUFACTURER, LIGHTING SWITCHES FROM ONE MANUFACTURER.

H. ENMRONMENTAL CONDITIONS: APPLY JOINT SEALERS UNDER TEMPERATURE AND HUMIDITY CONDITIONS WITHIN THE LIMITS PERMITTED BY THE JOINT SEALER MANUFACTURER. DO NO APPLY JOINT SEALERS TO

WET SUBSTRATES.

1.3 SEQUENCE AND SCHEDULING

A. COORDINATE THE SHUT-OFF AND DISCONNECTION OF ELECTRICAL SERVICE WITH THE OWNER AND THE LITLLITY COMPANY.

B. PERFORM DEMOLITION IN PHASES AS COORDINATED WITH ARCHITECT/OWNER.

AND ELECTRONICS ENGINEERS.

Z MISCELLANEOUS METALS

A. STEEL PLATES, SHAPES, BARS, AND BAR GRATING: ASTM A 36.
H. COLD-FORMED STEEL TUBING: ASTM A 500.
C. HOT-ROLLED STEEL TUBING: ASTM A 501.
D. STEEL PIPE: ASTM A 63, SCHEDULE 40, WELDED.
E. NONSHRINK. NONMETALLIC GROUT: PREMIXED, FACTORY-PACKAGED, NGNSTAINING, NONCORROSIVE, NONDASEOUS DROUT, RECOMMENDED FOR INTERIOR AND EXTERIOR APPLICATIONS.
F. FASTEMERS: ZINC-COATED, TYPE, GRADE, MID CLASS AS REQUIRED.

2.3 MISCELLANEOUS LUMBER
A. FRAMING MATERIALS: STANDARD GRADE, LIGHT-FRAMING-97E LUMBER
OF ANY SPECIES. NUMBER 3 COMMON OR STANDARD GRADE BOARDS
COMPLYING WITH WOUB OR AWFA RULES, OR NUMBER 3 BOARDS
COMPLYING WITH SPIB RULES, LUMBER SHALL BE PRESERVATIVE TREATED
IN ACCORDANCE WITH AWFB LP-2. AND KILN DRIED TO A MOISTURE
CONTENT OF NOT MORE THAN 19 PERCENT.
B. CONSTRUCTION PANELS: PLYWOOD PANELS: APA C-D PLUGGED INT, WITH
EXTERIOR GLUE; THICKNESS AS INDICATED, OR IF NOT INDICATED, NOT
LESS THAT 15/32 INCHES.

3.1 EXAMINATION

A. EXAMINE SUBSTRATES, AREAS, AND CONDITIONS, WITH INSTALLER PRESENT, FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES AND OTHER CONDITIONS AFFECTING INSTALLATION AND APPLICATION OF JUINT SEALERS AND ACCESS PANELS. DO NOT PROCEED WITH INSTALLATION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

3.2 SELECTIVE DEMOLITION

A. CENERAL: DEMOLISIA, REMOVE, DEMOUNT, AND DISCONNECT ABANDONED ELECTRICAL MATERIALS AND EQUIPMENT INDICATED TO BE REMOVED AND NOT INDICATED TO BE SALVAGED OR SAVED.

H. MATERIALS AND EQUIPMENT TO BE SALVAGED: REMOVE, DEMOUNT, AND DISCONNECT EXISTING ELECTRICAL MATERIALS AND EQUIPMENT MORCATED TO BE REMOVED AND SALVAGED, AND DELIVER MATERIALS AND EQUIPMENT TO THE LOCATION DESIGNATED FOR STORAGE.

C. DISPOSAL AND CLEANUP: REMOVE FROM THE SITE AND LEGALLY DISPOSE OF DEMOLISHED MATERIALS AND EQUIPMENT NOT INDICATED TO BE SALVAGED. THE FOLLOWING PARAGRAPHS ARE EXAMPLES OF THE TYPES OF DEMOLISHICAL MATERIALS AND EQUIPMENT: DEMOLISH, REMOVE, DEMOLINT, AND DISCONNECT THE FOLLOWING ITEMS.

AND DISCONNECT THE FOLLOWING ITEMS:

1. INACTIVE AND OBSILETE RACEWAY SYSTEMS, CONTROLS, AND FOCURES.

A. RACEWAYS EMBEDDED IN FLOORS, WALLS, AND CEILINGS MAY REMAIN
IF SUCH MATERIALS DO NOT INTERFERE WITH NEW INSTALLATIONS.
REMOVE MATERIALS ABOVE ACCESSIBLE CEILINGS.

2. PERFORM CUTTING AND PATCHING REQUIRED FOR DEMOLITION.

3. TEMPORARY DISCONNECTION: REMOVE, STORE, CLEAN, REINSTALL,

RECONNECT, AND MAKE OPERATIONAL COMPONENTS INDICATED FOR RELOCATION.

3.4 ERECTION OF METAL SUPPORTS AND ANCHORAGE

A. CUT, FIT, AND PLACE MISCELLANEOUS METAL FABRICATIONS ACCURATELY IN LOCATION, AUGMNENT, AND ELEVATION TO SUPPORT AND ANCHOR ELECTRICAL MATERIALS AND EQUIPMENT.

B. FIELD WELDING: COMPLY WITH AWS "STRUCTURAL WELDING CODE."

3.5 ERECTION OF WOOD SUPPORTS AND ANCHORAGE

A. CUT, FIT, AND PLACE WOOD GROUNDS, NAILERS, BLOCKING, AND ANCHORAGE ACCURATELY IN LOCATION, AUGMNENT, AND ELEVATION TO SUPPORT AND ANCHORAGE ACCURATELY IN LOCATION, AUGMNENT, AND ELEVATION TO SUPPORT AND ANCHORAGE ACCURATELY IN LOCATION, AUGMNENT, AND ELEVATION TO SUPPORT AND ANCHORAGE ACCURATELY IN LOCATION, AUGMNENT, AND ELEVATION TO SUPPORT AND ANCHORAGE SUPPORTS THAT WILL NOT PENETRATE MEMBERS WHERE

opposite side will be exposed to view on will receive finish

FASTENERS WITHOUT SPLITTING WOOD MEMBERS.

MATERIALS. MAKE TIGHT CONNECTIONS BETWEEN MEMBERS. INSTALL

ATTACH TO SUBSTRATES AS REQUIRED TO SUPPORT APPLIED LOADS.

MANGERS AND SUPPORTING DEVICES

A. CONDUITS OR RACEWAYS SHALL BE SECURELY SUPPORTED AND ANCHORED WITH PROPER DEVICES, USING LEAD SHIELDS IN WALLS OR SIDES OF BEAMS, EXPANSION SHIELDS OR OTHER APPROVED TYPE DEVICE FOR DIRECT DOWN-PULL LOADS. MINERALLAC TYPE HANGER SHALL BE LIMITED TO ABOVE CEILINGS. HOLES MADE IN WALLS OR CEILINGS FOR LISE WITH ANCHORING DEVICES SHALL BE OVERED BY LARGE STEEL (FENDER) WASHERS OF EQUAL APPROVED DEVICE. INCLUDE SPECIAL HANGERS, AS REQUIRED. ONE HOLE STRAP FITTINGS SHALL NOT BE PERMITTED WITHIN B FEET OF THE FLOOR SUMPACE WHERE EXPOSED BACEWAYS ARE INSTALLED.

B. HANGERS SHALL BE INDIVIDUAL RING OR CLEYS TYPE, ONE HOLE

STRAPS OF MULTIPLE TRAPEZE HANGERS.

O. IN LIEU OF HANGER RODS, THE USE OF HANGER WIRE NO. 12 OR NO. II FOR THE SUSPENSION OF LUMINOUS CEILINGS, LIGHTING FIXTURES, AND THE LIKE, SHALL BE APPROVED BY ARCHITECT/ENGINEER PRIOR TO INSTALLATION.

O. THE MATERIAL ALLOY OF HANGING DEVICES, SUPPLIETS, RODS, WIRES AND THE LIKE, LOCATED IN CORROSIVE AMBIENTS SHALL BE APPROVED BY ARCHITECT/ENGINEER PRIOR TO INSTALLATION.

2.2 STRUCTURAL ATTACHMENTS
A. CONCRETE. USE GRINNELL FIG. 285, OR EQUAL, LIGHT WEIGHT.

CONORETE INSERT FOR LOADS UP TO 400 POUNDS; OR GRIMMELL FIG. 262, OR EQUAL, UNIVERSAL CONORETE INSERT FOR LOADS UP TO 1430 POUNDS.

B. STEEL BEAMS: WHITHE PIPE SIZE IS Z INCHES OR LESS, USE DIMINIFELD FIG. 87 OR EQUAL, MALLEABLE INION C-CLAMP AND RETAINING CUP. WHERE PIPE SIZE IS OVER Z INCH, USE GRIMMELL FIG. 229, OR EQUAL. C. WOODEN CEILINGS AND BEAMS: USE CRIMMELL FIG. 153, OR EQUAL. D. INTERNEDIATE ATTACHMENTS: CONTINUOUS THREADED ROO SHALL BE USED WHEREVER POSSIBLE. NO CHAIN, WIRE, OR PERFORATED STRAP SHALL BE USED. UP TO 2 INCHES TRADE SIZE PIPE USE 3/8 INCH (MINIMUM) ROO, 2-1/2 INCHES AND LARGER USE 1/2 INCH (MINIMUM)

E. PIPE ATTACHMENTS: FOR STEEL PIPE USE CRINNELL FIG. 135 RING AND TURNBUCKLE ADJUSTER, OR EQUAL, OR FIG. 260 CLEMS, OR EQUAL, F. TRAPEZE HANGERS: FRAMING FOR FARALLEL RUNS SHALL CONSIST OF LINSTRUT, OR APPROVED EQUAL, WITH APPROVED CLAMPS AND HANGER RODS.

3.1 INSTALLATION

A. CONDUITS SHALL BE SUPPORTED TO MEET THE CONDITIONS OF THE WORK IN A THOROLOGILLY WORKMANLIKE MANNER, USING PROPER TYPE AND SIZE STRAPS, DLANPS, AND HANGERS.

B. EXPOSED CONDUITS SHALL BE INSTALLED PARALLEL WITH OR AT RIGHT ANGLES TO BUILDING STRUCTURE, FASTENED AT LEAST EVERY B FEET AND AT BOTH SIDES OF EACH DUTLET, EXCEPT AT ONE SIDE ONLY OF CONDUIT TERMINATING OUTLET.

C. CONDUIT RESERS SHALL BE SUPPORTED WITH FRICTION CLAMPS WITH TWO POINT BEARING ANCHORED TO BUILDING CONSTRUCTION AND AT EVERY

D. THE FOLLOWING HANGER METHODS ARE NOT PERMITTED:

1. WOOD PLUGS, PERFORATED BAND IRON, HOOK CHAIN SUPPORTS, AND BAILING WIRE.

E. WIENEVER POSSIBLE, USE SUPPORTS, CLAMPS, HANGERS, ETC., DESIGNED ESPECIALLY FOR CONDUIT.

F. THE MAXIMUM PERMITTED LOAD ON HANGER ROD, PLAN OR

ALL-THREAD, SHALL BE AS FOLLOWS:

1. 1/4 MICH SIZE - 750 POUNDS

2. 3/6 MICH SIZE - 1000 POUNDS

3. 1/2 MICH SIZE - 2000 POUNDS

5/8 NCH SIZE - 3000 POUNDS
 THE MINIMUM SIZE HANGER ROD PERMITTED IS 1/4 INCH SIZE.

CONDUIT AND RACEWAY

1.1 MAINTENANCE

A EXTRA MATERIALS: UNLESS ADDITIONAL REQUIREMENTS ARE
STIPULATED, PROVIDE A MINIMUM OF NOT LESS THAN 2 SPARE 1 INCM
AND 2 SPARE 3/4 INCH EMT CONDUITS FOR EACH FLUSH MOUNTED
DISTRIBUTION PANEL OR PANELBOARD WITH CONDUITS ELBOWED OUT
ABOVE AN ACCESSIBLE DEILING AND SUITABLY CAPPED.

2.1 HEAVY WALL — (RIGID) CONDUITS — "CRO"

A HEAVY WALL CONDUIT SHALL BE GALVANIZED, HAVING UNDERWRITER'S APPROVED MARK, MEETING FEDERAL SPECIFICATION WC-581A, LATEST EDITION AND ANS. C8D.

B. CONDUIT SHALL BE STANDARD WEIGHT, FREE FROM BURRS AND SCALE. CONDUIT SHALL NOT CRACK OR SPLIT, NOR SHALL GALVANIZING CRACK OR FLAKE WHEN BENT TO SMALLEST RADIUS ALLOWED BY NEC.

G. CONDUIT THREADS SHALL BE STANDARD AND PROPERLY CUT. THREADS SHALL BE GALVANIZED. FIELD OUT THREADS SHALL BE COATED WITH TKOPR-SHELD" BEFORE COUPLING.

D. CONDUIT SHALL MEET REQUIREMENTS OF NEC ARTICLE 346.

2.2 NON-METALLIC CONDUITS — "PYC"

A. NON-METALLIC CONDUIT SHALL BE UNDERWRITER'S APPROVED SCHEDULE

40 HEAVY WALL "PYC" POLYVINYL CHLORIDE PLASTIC TYPE, PROPERLY

SUPPORTED AND ANCHORED. CONDUIT SHALL BE TERMINATED IN

ENO-BELLS OR BUSHINGS. PROVIDE BONDING DR GROUNDING

CONDUCTORS IN ACCORDANCE WITH NEC.

2.3 THIN WALL CONDUITS — "EMT"

A. THIN WALL COMOUIT SHALL BE LINDERWRITER'S APPROVED ELECTRICAL

METALLIC TUBING (EWT). EMT SHALL MEET FEDERAL SPECIFICATION WW

906, LATEST EDITION.

2.4 INTERMEDIATE METAL CONDUIT — "IMC"

2.4 INTERMEDIATE METAL CONDUIT - "IMC"

A. INTERMEDIATE METAL CONDUIT (IMC) SHALL BE GALVANZED ON THE EXTERIOR AND COATED WITH A CORROSION RESISTANT (LIBRIGATING COATING ON THE INTERIOR AND EXTERIOR SURFACE, METING REQUIREMENTS OF NEC ARTICLE 300—6.

B. CONDUIT 4 NICHES DIAMETER AND UNDER SHALL BE UL APPROVED, MEETING REQUIREMENTS OF UL 1242 (UL LISTING NO. DYEY).

C. CONDUIT SHALL BE MANUFACTURED FROM HIGH STRENGTH LOW ALLOY ASTM—ASSB STEEL. IT SHALL BE FURTHER STRENGTHENED BY THE WORK HARDENING FORMING PROCESS TO ACHIEVE A TENSILE STRENGTH OF APPROXIMATELY 67,000 PS.

D. THREADS SHALL BE STANDARD CONDUIT TAPER OUT TO FIT STANDARD COUPLING THREADS. THREADS SHALL BE GALVANIZED. FIELD OUT THREADS SHALL BE COATED WITH "KOPFI-SHELD" BEFORE COUPLING.

E. CONDUIT SHALL MEET REQUIREMENTS OF NEC ARTICLE 345, FEDERAL
SPECIFICATION WC 581, AND ANSI-C80.
2.5 FLEXIBLE METAL CONDUIT

W. GALVANIZED STEEL, MADE WITH A SINGLE CONTINUOUS STRAY OF
INTERLOCKED, DOUBLE WRAPPED STEEL, GALVANIZED INSIDE AND OUTSIDE,
FORMING A SMOOTH INTERNAL WRING CHANNEL

B. EFDERAL SPECIFICATION WWC-586, IS USITED AND IN ACCORDANCE WITH

B. FEDERAL SPECIFICATION WWC-566, UL USTED, AND IN ACCORDANCE WITH NEC ARTICLE 350.

2.6 LIQUID-TIGHT FLEXIBLE METAL CONDUIT

A. GALVANIZED STEEL, MADE WITH A SINGLE CONTINUOUS STRIP OF INTERLOCKED, DOUBLE MEAPPED STEEL, GALVANIZED INISDE AND OUTSIDE, FORMING A SMOOTH INTERNAL WIRING CHAMNEL.

B. CONDUIT TO HAVE A CONTINUOUS LIQUID-TIGHT JACKET OF FLEXIBLE PVC.

C. FEDERAL SPECIFICATION WWC-556, UL LISTED AND IN ACCORDANCE WITH

NEC ARTICLE 351.

2.7 CONDUIT FITTINGS
A. FITTINGS SHALL BE ULLUSTED, CONSTRUCTED OF FORMED MATERIAL,
ELECTRICALLY CONDUCTIVE OF THE SAME SIZE AND FINISH AS THE
CONDUIT ON WHICH INSTALLED,
B. CONDUIT ON WHICH AND LARGER IN SIZE SHALL BE PROVIDED WITH A
GROUNDING AND INSULATED BUSHING SMILLAR AND EQUAL TO Q.Z.
ELECTRICAL PRODUCTS COMPANY'S TYPE "BL." INSULATING BUSHINGS
AND DOUBLE LOCKNUTS (THAT IS, ONE INSDE AND ONE GUTSIDE) SHALL
BE PROVIDED AT JUNCTION BOXES, OUTLET BOXES, PULL BOXES, AND
CABINET ENTRANCES.
C. PROVIDE UL SEAL-OFF FITTINGS FOR CONDUITS DUE TO HIGH OF LOW
TEMPERATURE PLACES SUCH AS WALK-IN COOLERS, AND FOR HAZARDOUS
APPLICATIONS SUCH AS GASCUNE PUMPS, PAINT STORAGE, PAINT SPRAY
BOOTH, STORM WATER, OR SEWACE WATER UFT STATIONS.

1. FILL SEAL OFF AS RECOMMENDED BY CROUSE HINDS CO. FOR
EXPLOSION—PROOF APPLICATIONS.

D. BONDED GALVANIZED EXPANSION JOINTS SHALL PROVIDE FOR A MINIMUM OF 4 MCH MOVEMENT AND SHALL HAVE A TINNED COPPER FLEXIBLE BRAIDED JUMPER.

E. CONDUIT PENETRATIONS THROUGH FLOORS (NOT SLABS ON GRADE AND FOUNDATION WALLS) AND FREWALLS SHALL BE SLEEVED, USING ORC AND SEALED WITH A UL APPROVED/LISTED MATERIAL GIVING A MINIMUM FIRE RATING OF 2 HOURS,

F. FOUNDATION WALL SLEEVES INTO BASEMENT AREAS TO BE SEALED WITH OZ TYPE CSML. COAT EXTERIOR WITH HEAVY COAT M.P. ASPHALT

COMPOUND,

G. PROMOE O.Z. ELECTRICAL PRODUCTS COMPANY'S TYPE "DUX" DUCT WATERSTOP SEALING COMPOUND FOR ALL SERVICE ENTRANCE AND ANY OTHER OUTSIDE FEEDER CONDUITS TO PREVENT WATER TO DRAIN INTO ELECTRICAL EQUIPMENT SPACE

2.8 RACEWAYS

A. WHEN DENDTED ON DRAWNGS OR REQUIRED FOR GROUPING OF
STARTERS, SWITCHES, CONTROL EQUIPMENT; PROVIDE A COMPLETE METAL
RACEWAY OR TROUGH FOR THE CONVEYANCE AND DISTRIBUTION OF
ELECTRIC WIRES AND CABLES, DESIGNED FOR EASY ACCESSIBILITY TO THE

INTERVALS FOR THE EXTENSION OF CONDUIT.

B. SQUARE DUCT SHALL BE STANDARD IN 1, 2, 3, 4, 5, AND 10 FOOT LENGTHS, BOLTED TOGETHER TO FORM A CONTINUOUS, UNBROKEN WIREWAY, SMALL SIZES (4"X4" AND SMALLER) SHALL BE PROVIDED WITH HINGLD DOVER AND FASTENING DEVICE. LARGER SIZES (6"X6" AND LARGER SHALL BE PROVIDED WITH SCREW COVER AND GASKET. PROVIDE TELS, ELBOWS, PULL BOX HANGERS, SUPPORTS, TO MAKE SAME ADAPTABLE TO BUILDING STRUCTURE, DUCTS SHALL BE PERMANENTLY SUPPORTED, ANCHORED TO WALL CEILING TRUSS. BOND EACH LENGTH TOGETHER WITH NO. 12 AWG (MINIMUM) CREEN GROUNDING CONDUCTOR.

C. N. AREAS OF HIGH MOISTURE OR WHERE DENOTED ON THE DRAWNOS, DOMPONENTS SHALL BE GALVANIZED STEEL.

D. EXTERIOR WIREWAYS SHALL BE WEATHERTIGHT, WITH SCREW COVERS, GALVANIZED AND PAINTED, AND WITHOUT KNOCKOUTS.

ALL WAS SHALL BE RUN IN CONDUIT UNLESS OTHERWISE NOTED, AND ALL CONDUIT SHALL RUN CONCEALED IN WALL, ABOVE CEILINGS, OR BELOW CONCRETE SLABS UMLESS OTHERWISE NOTED.

B. PROVIDE CONDUITS FROM DISTRIBUTION CENTER THROUGH PULL AND JUNCTION BOKES AND PANELBOARDS, TO OUTLETS AND BOND THROUGHOUT TO MAKE A CONTINUOUS CIRCUIT, CONDUITS SHALL BE CONCEALED ACCURATELY IN PARTITIONS AND FLOORS. DO NOT EXPOSE CONDUIT BENDS AT FLOOR OR CEILING. PLACE CONDUITS UNDER STRUCTURAL SLABS. PROVIDE BONDED GALVANIZED EXPANSION JOINTS WHERE CONDUIT DROSSES BUILDING EXPANSION JOINTS, ALSO IN STRAIGHT RUNS OVER 200 FEET.

C. MAKE RELD BENDS PROPERLY AND IN ACCORD WITH NEC; FOR 3 INON CONDUIT AND CREATER, USE EACTORY 9D DEGREE AND 45 DEGREE BENDS.

D. LEAVE 14 GAUGE FISH OF DRAG WIRE IN EMPTY CONDUITS. CAP EACH

END OF UNUSED CONDUITS. PROVIDE COLOR CODED END CAPS ON EXPOSED THREADS OF METAL CONDUIT. . MINIMUM SIZE CONDUIT PERMITTED IS 3/4 INCH UNLESS OTHERWISE NOTED ON DRAWINGS, EXCEPT SWITCH LEGS MAY BE 1/2 INCH. CONDUIT SHALL BE CUT SQUARE, CAREFULLY REAMED, COUPLED WATER TIGHT, AND FASTENED SECURELY TO THE STRUCTURE. TERMINATE IN METAL ENCLOSURES, SUCH AS OUTLET BOXES, FULL BOXES, EABINET SWITCHES, OTHER TYPES OF RACEWAYS, DR AS INDICATED. EQUIP WITH DOUBLE LOCKNUTS AND APPROVED BUSHINGS TO PROTECT WIRE FROM MBRASION, EXCEPT WHERE EQUIPMENT AFFORDS EQUAL PROTECTION. LISE DE SINGLE LOCKNUTS IS NOT PERMITTED. CONQUIT SIZES OF 1 INCH AND ARGER SHALL BE EQUIPPED WITH GROUNDING AND INSULATING TYPE BUSHINGS AND WITH LOCKNUTS INSIDE AND OUTSIDE THE ENCLOSURE CONDUIT SHALL NOT BE INSTALLED IN CONDRETE SLABS, STRUCTURAL LABS, OR THROUGH WOOD MEMBERS, CONDUIT SHALL NOT BE INSTALLED HORIZONTALLY IN MASONRY WALLS, UNLESS DENOTED ON DRAWINGS, NOR SHALL WALLS BE CHANNELED OR CUT TO INSTALL CONDUITS, UNLESS APPROVED BY THE ARCHITECT/ENGINEER.

APPROVED BY THE ARCHITECT/ENGINEER.

H. CONDUIT INSTALLED BELOW ON-GRADE CONCRETE SLAB IS TO BE AT MINIMUM 1 INCH FROM TOP OF CONDUIT TO TOP OF DRAINAGE FILL.

I. MEVER RUN CONDUITS DIAGONALLY WHEN DVERHEAD OR EXPOSED, RUN CONDUIT PARALLEL OF PERPENDICULAR WITH THE BUILDING STRUCTURE.

3. WHENEVER CONDUIT IS REQUIRED UNDERWEATH PLASTER, CHANNEL OUT TO SUFFICIENT DEPTH AND PROPERLY ANDHOR CONDUIT. WHEN

PLASTER IS EXISTING, MORTAR-IN CONDUIT AND FINISH PLASTER TO "LIKE NEW" CONDITION.

A RUNNING THREAD CONNECTIONS BETWEEN CONDUITS IS NOT PERMITTED; ERICKSON TYPE COUPLING MUST BE USED.

K. CONNECT MOTORS AND OTHER EQUIPMENT OR APPLIANCES SUBJECT TO MOVEMENT, USING A SHORT LENGTH OF U. APPROVED LIQUID—TIGHT FLEXIBLE METAL CONDUIT FOR CONCEALED DASEWORK ELECTRICAL CONNECTIONS (SCIENCE LAB TABLES, ETC.) AND IN OTHER AREAS WHERE MOSTURE OR WATER IS PRESENT.

LIMITED AREAS WHERE MOSTURE OR WATER IS PRESENT.

LIMITED AREAS WHERE CONCEALMENT OF RIGID CONDUIT REQUIRES DEMOLITION OR REMOVAL OF THE CEILING OR CHANNELING OF WALLS, FLEXIBLE CONDUIT MAY BE INSTALLED WITH WRITTEN APPROVAL OF THE ARCHITECT/ENGINEER.

EXPOSED CONDUITS RISING FROM FLOOR TO SURFACE PANELS AND POXES SHALL HAVE A 3 INCH HIGH CONCRETE CURB ENCASING THE CONDUITS AT THE FLOOR LINE. OURS TO HAVE CHAMFERED EDGES. COMOUIT SHALL BE SEALED WHERE ENTERING OR LEAVING REFRIGERATED OR HAZARDOUS SPACES, AND SPACES HAVING AMBIENT TEMPERATURE DIFFERENTIALS OF 10 DEGREES F OR GREATER. 2. MINIMUM SIZE OF FLEXIBLE CONDUIT SHALL BE 1/2 INCH DIAMETER TRADE SIZE. MAXIMUM LENGTH OF 6 FEET, . NO CONDUIT SHALL REST ON OR BE SUPPORTED FROM SUSPENDED CELLINGS, MECHANICAL CELLING SUSPENSION SYSTEMS, OR HANGER WIRES. D. INTERIOR WRING SHALL BE INSTALLED IN GALVANIZED RIGID HEAVY WALL CONDUIT (CRC) OR INTERMEDIATE METAL CONDUIT (IMC) BEARING THE UL. LABELS, EXCEPT FOR 2-1/2 INCH CONDUIT SIZE AND SMALLER UL LABELED GALVANIZED ELECTRICAL METALLIC TUBING (EMT) WITH PEREADLESS COMPRESSION TYPE STEEL COUPLINGS AND CONNECTORS IN INTERIOR PARTITIONS AND ABOVE SUSPENDED CEILINGS. E ENT IS NOT APPROVED FOR INSTALLATION IN CONCRETE SLABS, BELOW BLABS ON CRADE, UNDERGROUND, IN EXTERIOR WALLS, OR EXPOSED BELOW B FEET AFF EXCEPT FOR YOP FEED CONDUIT FOR PANELBOARDS,

DISCONNECTS, AND STARTERS. NO CAST TYPE/POT METAL OR INDENTER
TYPE FITTINGS ARE PERMITTED. SIZE OF CONDUITS MUST MEET NATIONAL
ELECTRICAL CODE REQUIREMENTS.

5. CONDUIT SHALL BE INSTALLED CONCEALED IN WALLS, SLABS, OR ABOVE
CEILINGS EXCEPT AS NOTED. CONDUIT MAY BE RUN EXPOSED IN
ELECTRIC ROOMS, MECHANICAL ROOMS, EQUIPMENT ROOMS. TUNNELS.
ATTICS, PENTHOUSES, OR LIKE UNFINISHED SPACES.
T. PVC CONDUIT SHALL NOT BE USED EXCEPT IN UNDERGROUND LOCATIONS.
3.3 CONDUIT PLATES AND ESCUTCHEONS.
A. THE CONTRACTOR SHALL PROVIDE APPROVED PLATES INSTALLED AROUND.

EACH CONDUIT PASSING THROUGH WALLS AND FLOORS, WHEN EXPOSED TO VIEW. PLATES SHALL BE SIZED TO COVER EXPOSED ENDS OF THE SLEEVES AND SHALL BE FINISHED TO MATCH EXISTING SURFACE. B. FLOOR PLATES SHALL BE SPUT TYPE, HEAVILY CHROME PLATED, AND SECURELY ATTACHED TO THE PIPE. TO ROUGHING-IN SHALL BE PROPERLY INSTALLED TO AYOU CUTTING OF PLATES DUE TO INSUFFICIENT CLEARANCE.

A ELEVATED FLOOR SLABS, SLEEVES SHALL BE PVC SCHEDULE NO AND BE INSTALLED 4 INCHES ABOVE FINISH FLOOR.

B. SLEEVE TO BE OVERSIZED AS REQUIRED TO INSTALL FIRESTOPPING THROUGH FLOORS AND FIRE WALLS.

C. ON SLABS, PROVIDE 1/4 INOH FOAM EXPANSION JOINT MATERIAL FOR 2 INCH CONDUITS AND LARGER.

D. CONDUITS WHICH PENETRATE MASONRY WALLS SHALL BE SLEEVED AND GROUTED INTO THE MASONRY WALL.

E. COORDINATE LOCATIONS OF ALL PENETRATIONS WITH OTHER TRAINES.

WRE AND CABLE
1.1 DELIVERY
1.4 WRE AND CABLE SHALL BE EROUGHT TO THE SITE IN LINEROKEN
PACKAGES AND REELS.

2.1 MATERIALS

A. UNLESS OTHERWISE SPECIFIED, WIRES AND CABLES SHALL BE INSULATED AND OF 08 PERCENT CONDUCTIVITY SOFT DRAWN COMMERCIALLY PURE DOPPER.

B. INSULATING WALL MUST CONFORM IN THICKNESS TO THE LATEST REQUIREMENTS OF THE MET.

. INSULATING WALL SHALL HAVE INTEGRAL COLOR CODE FOR BRANCH

CIRCUITS:

. WHE TERMINATING IN LIGHT FIXTURES SHALL BE OF THE HEAT RESISTING TYPE, APPROVED FOR THE SPECIFIC APPLICATION, BUT NOT LESS THAN 90 DEGREES C (194 DECREES F) INSULATION AND MAY BE TYPE "SA".

. WHE AND CABLE FOR GENERAL WHING SHALL BE OF SIZES DENOTED ON REQUIRED AND SHALL BE RATED BOOV.

. FEEDERS OR BRANCH CIRCUITS IN EXTREMELY HOT LOCATIONS WHERE AMBIENT TEMPERATURES ARE 90 DECREES C OR ABOVE SHALL BE TYPE SA 125 DEGREES C (257 DECREES F.)

G. CORDS FOR MAKE-UP CONNECTIONS TO EQUIPMENT SHALL BE 600V,
HEAT RESISTANT, RUBBER INSULATED, PORTABLE CABLE WITH LEAD CURED
NEOPRENE JACKET, TYPE "SO" AND/OR "O" WITH EXTRA FLEXIBLE
STRANGED COPPER CONDUCTORS.
H. USE OF "NO" CABLE IS ONLY PERMITTED FOR FIXTURE WAPS NOT
EXCEEDING 6 FEET IN LENGTH.
L. WHERE CABLE IS DENOTED ON THE DRAWINGS TO BE DIRECTLY BURIED

N EARTH, THE CABLE SHALL BE TYPE "RHW/RHH/USE" EQUAL TO G.E.

CO. S1-58073, UNLESS OTHERWISE STECRED.

A CONDUCTORS SIZED NO. 12 AWG THROUGH NO. 1 AWG SHALL HAVE TYPE "THWN/THHN" INSULATING WALL, UNLESS OTHERWISE STIPLLATED.

K. CONDUCTORS SIZED NO. 1/O AWG AND LARGER SHALL HAVE TYPE "THWN/THHN" OR TYPE "XHHW" INSULATING WALL, UNLESS OTHERWISE STIPULATED.

M. CONDUCTORS FOR USE ON VOLTAGES ABOVE 600V SHALL HAVE AN INSULATION SYSTEM PER G.E. CO. S1-582Z4, UNLESS OTHERWISE STIPULATED, AND NEUTRAL COMDUCTORS SHALL HAVE "FULL INSULATION" (NOT 600V - SAME AS PHASE CONDUCTORS).

N. CONDUCTORS INSTALLED WITHIN 12 INCHES OF ROOF DECKS SHALL HAVE

A 90 DEGREE C INSULATION SYSTEM, UNLESS OTHERWISE STIPULATED.
THE MINIMUM CONDUCTOR SIZE SHALL BE NO. 12 EXCEPT NO. 14 AWG
FOR CONTROL CIRCUITS, UNLESS OTHERWISE STIPULATED.
VOLTAGE DROP
1. IT IS INTENDED THAT THE VOLTAGE DROP SHALL NOT EXCEED 3
PERCENT FROM THE ORIGINATION OF THE FEEDER TO THE LAST DEVICE
OR PIECE OF EQUIPMENT
2. ALL 120V SINGLE PHASE WIKING RUINS EXCEEDING 120 LINEAR FEET
SHALL BE INCREASED A MINIMUM OF DISE WIRE SIZE TO ALLOW FOR

2. ALL 120V SINGLE PHASE WIRING HUNS EXCEEDING 120 LINEAR FEET SHALL BE INCREASED A MINIMUM OF DNE WIRE SIZE TO ALLOW FOR VOLTAGE DROP.

1. ALL 208V, 240V, OR 277V SINGLE PHASE WIRING RUNS EXCEEDING 200' SHALL BE INCREASED A MINIMUM OF ONE WIRE SIZE TO ALLOW FOR VOLTAGE DROP.

4. ALL 208V OR 240V THREE PHASE WIRING RUNS EXCEEDING 250' SHALL BE INCREASED A MINIMUM OF ONE WIRE SIZE TO ALLOW FOR VOLTAGE

ALL 460V SINGLE OR THREE PHASE WRING RUNS EXCEEDING 350'
SHALL BE INCREASED A MINIMUM OF ONE WRE SIZE TO ALLOW FOR
VOLTAGE DROP.
 CONTRACTOR SHALL BE RESPONSIBLE TO ADEQUATELY SIZE
CONDUCTORS TO ALLOW FOR VOLTAGE DROP PER NEC WHETHER SHOWN
ON THE PLANS OR NOT.

1.1 INSTALLATION

A. ALL WIRE SHALL BE INSTALLED IN CONDUIT OR PLACEWAY UNLESS NOTED OTHERWISE.

B. GREASE OR COMMON LUBRICATING OIL SHALL NOT BE USED IN PULLING WIRE. USE ONLY CONVENTIONAL MANUFACTURED PULLING AID COMPOUNDS SUCH AS "WIRE-EASE."

C. WIRES SHALL NOT BE PULLED UNTIL MECHANICAL WORK WHICH IS LIABLE.

TO INJURE THE WIRES HAS BEEN COMPLETED. REMOVE FOREIGN MATTER
AND DIRT FROM THE RACEWAY SYSTEM BEFORE INSTALLING CONDUCTORS
AND DEVICES.

D. TYPE "XHHW" WIRE SHALL BE PULLED WITH THE AID OF IDEAL "YELLOW
77" TO PREVENT CHEMICAL DAMAGE TO THIS TYPE OF INSULATION
SYSTEM.

E. IN GENERAL, SPLICING OF CONDUCTORS LARGER THAN NO. 6 AWG WILL

NOT BE PERMITTED. HOWEVER, SHOULD SPLICING BE REQUIRED, SPLICE WORK SHALL BE PERFORMED BY CRAFTSMEN SKILLED IN THIS WORK AND UNDER THE SUPERVISION OF THE ARCHITECT/ENGINEER. WRITTEN APPROVAL OF THE ARCHITECT/ENGINEER IS REQUIRED BEFORE DOING SUCH SPLICING.

F. TAGGING

1. THE CONTRACTOR SHALL TAG FEEDERS, SUBFEEDERS, BRANCH DROUTS, AND MAIN CABLES IN JUNCTION BOXES, PLAL BOXES, WIRE

DROUTS, AND MAIN CABLES IN JUNCTION BOXES, PULL BOXES, WRE OUTTERS, AND MAIN SWITCHBOARD.

2. CIRCUIT CONDUCTORS SHALL BE TAGGED BY PRESSURE—SENSITIVE, ALL TEMPERATURE, SELF STICKING, PERMA—CODE, PLASTIC COATED WHITE WIRE MARKERS WITH BLACK LETTENING, AS MANUFACTURED BY BHADY, SETON, OR APPROVED EQUIVALENT.

3. COLOR CODING OF CONDUCTOR MELLIATION

1. THE CONTRACTOR SHALL EXERCISE GREAT CARE IN IDENTIFYING THE WIRES AND CARLES OF THE ELECTRICAL CIRCUITS.

1. THE CONTRACTOR SHALL EXERCISE GREAT CARE IN IDENTIFYING THE WIRES AND CABLES OF THE ELECTRICAL CIRCUITS.

2. BRANCH CIRCUIT WIRE AND CABLE SHALL BE DENTIFIED WITH A VISUAL COLOR CODE WHICH SHALL BE AN INTEGRAL PART OF THE BRAID OR OUTER INSULATION AND SHALL BE OF THE PERMANENT MOELIBLE TYPE NOT AFFECTED BY MOISTORE, OIL, GREASE, AND AGE.

3. PEEDER CIRCUIT WIRE AND CABLE SHALL BE IDENTIFIED IN ACCORD WITH ABOVE OR BY APPLYING 1/2 LAP WRAP OF SCOTCH NO. 27 COLORED TAPE TO THE ENTIRE LENGTH OF THE DONDUCTOR WHERE VISIBLE FOR INSPECTION AS IN BOXES, CABINETS, PANELBOARDS, AND THE LIKE.

THE LIKE.

4. COLOR CODING SHALL BE AS FOLLOWS:

120/206V 277/480V

PHASE "A" BLACK BROWN

PHASE "B" RED ORANGE

PHASE "C" BLUE YELLOW

NEUTRAL "N" WHITE GRAY

LAYER OF CONCRETE ABOVE THE SAND.

CHOUND "G" GREEN DREEN

EXCEPT: WHEN THE SYSTEM IS THE SECONDARY OF A # MIRE DELTA

CONNECTED TRANSFORMER SECONDARY, THEN THE "WILLEG" PHASE

SHALL BE CRANCE THROUGHOUT.

H. GENERALLY, DONDUCTORS OF DIFFERENT SYSTEMS (PANELBOARD, FTC.)

SHALL NOT COCUPY THE SAME RACEWAY SYSTEM OR ENCLOSURES.

WHERE DUAL OCCUPANCY IS APPROVED BY THE ARCHTECT/ENGINEER.

THE PROVISIONS OF THE NEC SHALL BE FOLLOWED.

WHERE EMERCENCY CIRCUITS APPEAR IN THE SAME SPACES WITH

CONDUCTORS OF OTHER SYSTEMS, THE EMERGENCY CIRCUIT CONDUCTORS

SHALL BE ROUTED IN A DEDICATED PACEWAY FOR EMERGENCY CIRCUITS

AND SHALL BE PROPERLY IDENTIFIED AND TARGED AS SUCH.

J. DIRECTLY BURIED CABLES WILL ONLY BE PERMITTED WHERE DENOTED ON

THE DRAWINGS. WHERE PERMITTED, DIRECT BURIAL CABLE SHALL BE

MECHANICALLY PROTECTED WITH QUEAN MASONRY SAMD EXTENDING 2

NCHES ABOVE AND BELOW THE CONDUCTORS, FOLLOWED WITH A 1 INCH

WRING DEVICES
1.1 COALITY ASSURANCE
A. NFPA 70 "NATIONAL ELECTRICAL COO

A. NFPA 70 "NATIONAL ELECTRICAL CODE".

1. UL AND NEMA COMPLIANCE: PROVIDE WRING DEVICES WHICH ARE LISTED AND LABELED BY UL AND COMPLY WITH APPLICABLE UL AND NEMA STANDARDS.

2.1 MANUFACTURERS: (WIRING DEVICES AND WALL SWITCHES) SLIBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING (UNLESS NOTED OTHERWISE).

1. HUBBELL INC., BRYANT, LEVITON, OR ARROW HART

2.2 WIRING DEVICES:

A. GENERAL: PROVIDE WIRING DEVICES, IN TYPES, CHARACTERISTICS.

A. GENERAL: PROVIDE WRING DEVICES, IN TYPES, CHARACTERISTICS,
GRADES, COLORS, AND ELECTRICAL RATINGS FOR APPLICATIONS INDICATED
WHICH ARE ULLISTED AND WHICH COMPLY WITH NEMA WD 1 AND OTHER
APPLICABLE UL AND NEMA STANDARDS. PROVIDE WHITE COLOR DEVICES.
E. RECEPTACLES: RECEPTACLES SHALL BE HEAVY DUTY 20A, 125V
DUPLEX OR SINGLE AS INDICATED ON DRAWINGS. CONSTRUCTION SHALL BE
A REINFORCED THERMOPLASTIC POLYESTER BASE ON A ONE PIECE BRASS
MOUNTING STRAP WITH INTEGRAL GROUND CONTACTS WITH IMPACT
RESISTANT NYLON FACE.

1. HUEBELL 5362 OF EDUAL BY BRYANT, LEVITON, OF ARROW MART

C. OROUND-FAULT INTERMUPTER (CFI) RECEPTACLES: PROMDE INDIVIDUAL YPE GROUND-FAULT CIRCUIT INTERRUPTER, WITH INTEGRAL HEAVY-DUTY NEMA 5-20R DUPLEX RECEPTACLES AT EACH LOCATION SHOWN ON DRAWINGS. PROVIDE UNIT DESIGNED FOR INSTALLATION IN A 2-3/4 INCH DEEP DUTLET BOX WITHOUT ADAPTER, GROUNDING TYPE, CLASS A, GROUP 1, PER UL STANDARD P43 AND 408. OFGI SHALL TRIF AT 5MA (±1MA)
AND SHALL TRIP IN 0.025 SECONDS FOR 240MA FAULT. 1. HUBBELL CF5362 OR EQUAL BY BRYANT, LEVITON, OR ARROW HART. L. SWITCHES: SWITCH SHALL BE HEAVY OUTY INDUSTRIAL/INSTITUTIONAL TYPE WITH ABUSE RESISTANT TOGGLE, QUIET TYPE, BACK AND SIDE WRED. FULLY ENCLOSED IN COMPOSITION CASE, 120/277 VOLTS AC. TERMINAL SCREWS ON CONTACTS SHALL BE ABLE TO ACCOMMODATE UP TO #10 SOLID CONDUCTOR WIRE. ALL SWITCHES SHALL BE 20 AMPERES. MANUFACTURERS' IDENTITY SHALL BE PROVIDED ON STRAP, LE SERIES 1200: SWITCHES SHALL HAVE "ONE PIECE" RIVETLESS SPRING CONTACT ARM TO ELIMINATE STRESS AND WEAK POINTS. CONTACTS SHALL BE SILVER CADMIUM DXIDE TO ELIMINATE WELDING. SWITCHES SHALL HAVE I BACKWIRE ENTRY POINTS PER TERMINAL PROVIDE SWITCHES OF SAME SERIES FOR THREE WAY, FOUR WAY, KEY, PILOT, ETC. HURBELL HBL1221 OR EQUAL BY BRYANT, LEVITON, OR ARROW HART. 2.3 WRIND DEVICE ACCESSORES

A. WALL PLATES: SINGLE AND COMBINATION, OF TYPES, SIZES, AND WITH GANGING AND CUTOUTS AS INDICATED. PROVIDE PLATES WHICH MATE AND

A. WALL PLATES: SINGLE AND COMBINATION, OF TYPES, SIZES, AND WITH GANGING AND CUTOUTS AS INDICATED. PROVIDE PLATES WHICH MATE AND MATCH WITH WITING DEVICES TO WHICH ATTACHED. PROVIDE METAL SCREWS FOR SECURING PLATES TO DEVICES WITH SCREW HEADS COLORED. TO MATCH FINISH OF PLATES.

1. MATERIAL AND FINISH: 0.04 INCH THICK, TYPE 302 SATIN FINISHED. STAINLESS STEEL (UNLESS SPECIFICALLY APPROVED OTHERWISE).

2. DUTDOOR DEVICE COVERS SHALL BE WEATHERPROOF WHILE IN USE;
EQUAL TO LEVITON 5977. DUTDOOR RECEPTACLES SHALL BE GFC!

3. CONFORM TO REQUIREMENTS OF SECTION "ELECTRICAL IDENTIFICATION."

3.1 INSTALLATION OF WRING DEVICES AND ACCESSORIES
A. INSTALL WRING DEVICES AND ACCESSORIES AS INDICATED, IN
ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE
REQUIREMENTS OF NEC AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY

PRACTICES TO FULFILL PROJECT REQUIREMENTS.

B. COORDINATE WITH OTHER WORK, INCLUDING PAINTING, ELECTRICAL BOXES AND MIRING INSTALLATIONS, AS NECESSARY TO INTERFACE INSTALLATION OF MIRING DEVICES WITH OTHER WORK.

C. INSTALL MIRING DEVICES ONLY IN ELECTRICAL BOXES WHICH ARE CLEAN; FREE FROM BUILDING MATERIALS, OIRT, AND DEBRIS.

D. INSTALL GALVANIZED STEEL WALLPLATES IN UNFINISHED SPACES.

E. WEAP EACH SWITCH AND RECEPTAGE WITH TWO FULL TURNS OF BLACK ELECTRICAL TAPE TO COVER SIDE TERMINALS BEFORE MOUNTING MISIDE THE.

F. INSTALL WAING DEVICES AFTER WRING WORK IS COMPLETED.

B. INSTALL WALL PLATES AFTER PAINTING WORK IS COMPLETED.

H. TIGHTEN CONNECTORS AND TERMINALS, INCLUDING SCREWS AND BOLTS.

IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S PUBLISHED TORQUE
TIGHTENING VALUES FOR WRING DEVICES. WHERE MANUFACTURER'S
TORCUING REQUIREMENTS ARE NOT INDICATED, TIGHTEN CONNECTORS AND
TERMINALS TO DOMPLY WITH TIGHTENING TORQUES SPECIFIED IN UL
STANDAND 486A.

I. PROVIDE SEPARATE NEUTRAL CONDUCTOR FOR ALL CIRCUITS SERVICING
SOLATED GROUND DEVICES. PROVIDE ISOLATED GROUND CONDUCTOR FOR
ALL CIRCUITS DESIGNATED AS ISOLATED GROUND.

A. TESTING: PRIOR TO ENERGIZING CIRCUITS, TEST WRING FOR ELECTRICAL CONTINUITY, AND FOR SHORT-CIRCUITS. ENSURE PROPER POLARITY OF CONNECTIONS IS MAINTAINED. SUBSEQUENT TO ENERGIZING, TEST WRING DEVICES AND DEMONSTRATE COMPLIANCE WITH REQUIREMENTS, OPERATING EACH OPERASLE DEVICE AT LEAST SIX TIMES.

B. TEST GROUND FAULT INTERRUPTER OPERATION WITH BOTH LOCAL AND REMOTE FAULT SIMULATIONS IN ACCORDANCE WITH MANUFACTURER RECTIMENDATIONS.



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(SSLIES/REVISIONS:	DAYE:
PERMITS	05/16/19
	-

SPECIFICATIONS

ELECTRICAL

SHEET TITLE:

(DO NOT SCALE DRAWINGS)

DATE: 04/29/19

APPROVED BY: RSL

CHECKED BY: RSL

ARCH ENG SEAL:

DESIGNED BY:



RED PROJECT NUMBER

SHEET NUMBER

F-2

1.1 DEFINITIONS

A. CABINETS: AN ENCLOSURE DESIGNED EITHER FOR SURFACE OR FOR FLUSH MOUNTING AND HAVING A FRAME, OR TRIM IN WHICH A DOOR OR DOORS MAY BE MOUNTED. B. DEVICE BOX: AN OUTLET BOX DESIGNED TO HOUSE A RECEPTACLE

ENGLOSURE: A BOX, CASE, CABINET, OR HOUSING FOR ELECTRICAL MRING OF COMPONENTS. O. HINGED DOOR ENGLOSURE: AN ENGLOSURE DESIGNED FOR SURFACE MDUNTING AND HAVING SWINGING DOORS DR DOVERS SECURED DIRECTLY AND TELESCOPING WITH THE WALLS OF THE BOX. E. OUTLET BOX: A MIRING ENCLOSURE WHERE CURRENT IS TAKEN FROM WRING SYSTEM TO SUPPLY LITILIZATION EQUIPMENT.

DEVICE OR A WIRING BOX DESIGNED TO HOUSE A SWITCH.

WRING BOX: AM ENCLOSURE DESIGNED TO PROVIDE ACCESS TO WRING SYSTEMS OR FOR THE MOUNTING OF INDICATING DEVICES OR OF SWITCHES 2.1 MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS.

PROVIDE PRODUCTS BY THE FOLLOWING WHERE/IF INDICATED ON PLANS: A. AMERICAN ELECTRIC/STEEL CITY, APPLETON ELECTRIC CO., COOPER

INDUSTRIES, INC., WALKER SYSTEMS, INC., OR HUBBELL A ELECTRIC PANELBOARD, INC., ERICKSON ELECTRICAL EQUIPMENT CO., HOFFMAN ENGINEERING CO., PARKER ELECTRICAL MFG. CO., SPRING CITY ELECTRICAL MFG. CO., OR SQUARE D. CO. 3. BOXES AND FITTINGS FOR HAZARDOUS LOCATIONS:

A. ADALET-PLM., COOPER INDUSTRIES, INC., KILLARK ELECTRIC MFG. CO., DZ/GEDNEY, ROBROY INDUSTRIES, INC., SPRING DITY ELECTRICAL MFG. OR WOODHEAD INDUSTRIES, INC. . ALL ITEMS UNDER THIS SECTION SHALL COMPLY WITH APPROPRIATE IN PROVISIONS AND NEMA OS 1 FOR THE TYPE OF ENCLOSURE.

2.7 CABINETS, BOXES, AND FITTINGS, GENERAL.
A. ELECTRICAL CARINETS, BOXES, AND FITTINGS: OF INDICATED TYPES, SIZES, AND NEMA ENCLOSURE CLASSES. WHERE NOT INDICATED, PROVIDE UNITS OF TYPES, SIZES, AND CLASSES APPROPRIATE FOR THE USE AND LOCATION. PROVIDE ALL ITEMS COMPLETE WITH COVERS AND ACCESSORIES REQUIRED FOR THE INTENDED USE. PROVIDE GASKETS FOR UNITS IN DAMP OF WET LOCATIONS.

2.3 MATERIALS AND FINISHES
A. SHEET STEEL: FLAT-ROLLED, CODE-GAGE, GALVANIZED STEEL. FASTENERS FOR GENERAL USE: CORROSION RESISTANT SOREWS AMIT HARDWARE INCLUDING CADMIUM AND ZING PLATED ITEMS. FASTENERS FOR DAMP OR WET LOCATIONS: STAINLESS STEEL SCREWS AND HARDWARE D. CAST METAL FOR BOXES, ENGLOSURES, AND COVERS: COPPER-FREE

ALUMINUM EXCEPT AS OTHERWISE SPECIFIED. E. EXTERIOR FINISH: GRAY BAKED ENAMEL FOR ITEMS EXPOSED IN FINISHED LOCATIONS EXCEPT AS OTHERWISE INDICATED. . FITTINGS FOR BOXES, CABINETS, AND ENGLOSURES CONFORM TO UL 14B. MALLEABLE IRON OR ZINC PLATED STEEL FOR CONDUIT HUBS,

USHINGS AND BOX CONNECTORS, A. BOXES SHALL BE OF TYPE, SHAPE, SIZE, AND DEPTH TO SUIT EACH LOCATION AND APPLICATION. B. STEEL BOXES: BOXES SHALL BE SHEET STEEL WITH STAMPED

EACH LOCATION INCLUDING MOUNTING BRACKETS AND STRAPS, CABLE CLAMPS, EXTERIOR FINGS AND FIXTURE STUDS. CAST-ALUMINUM BOXES: COPPER FREE ALUMINUM THREADED RACEWAY ENTRIES, AND FEATURES AND ACCESSORIES SUITABLE FOR EACH LOCATION INCLUDING MOUNTING EARS. THREADED SCREW HOLES FOR GEVICES AND CLOSURE PLUGS.DELETE BELOW WHERE NONMETALLIC BOXES ARE NOT

KNOCKOUTS, THREADED SCREW HOLES AND ACCESSORIES SUITABLE FOR

2.5 PHONE, DATA AND PHONE DATA BOXES.
A. BOXES SHALL BE SHEET STEEL WITH STAMPED KNOCKOUTS, THREADED SCREW HOLES AND ACCESSORIES SUITABLE FOR EACH LOCATION INCLUDING MOUNTING BRACKETS AND STRAPS, CABLE CLAMPS, EXTERIOR

B. BOXES SHALL BE SINGLE GANG, 3-1/2" CEEF WITH KNOCKOUTS FOR UP TO 1" CONDUIT UNLESS OTHERWISE INDICATED. 2.6 PULL AND JUNCTION BOXES
A. BOXES SHALL HAVE SCREWED OR BOLTED ON COVERS OF MATERIAL SAME AS BOX AND SHALL BE OF SIZE AND SHAPE TO SUIT APPLICATION.

B. STEEL BOXES: SHEET STEEL WITH WELDED SEAMS. WHERE NECESSARY D PROMDE A RIGID ASSEMBLY, CONSTRUCT WITH INTERNAL STRUCTURAL . HOT-DIPPED GALVANIZED STEEL BOKES: SHEET STEEL WITH WELDED SEAMS, WHERE NECESSARY TO PROVIDE A RIGID ASSEMBLY, CONSTRUCT WITH INTERNAL STRUCTURAL STEEL BRADING. HOT-DIP GALVANIZED AFTER FABRICATION. COVER SHALL BE GASKETED. D. STAINLESS-STEEL BOXES: FABRICATE OF STAINLESS STEEL CONFORMING

TO TYPE 302 OF ASTM A 167, "SPECIFICATION FOR STAINLESS AND HEAT RESISTING CHROMIUM-MICKEL STEEL PLATE, SHEET, AND STRIP," WHERE ECESSARY TO PROVIDE A RIGIO ASSEMBLY, CONSTRUCT WITH INTERNAL STRUCTURAL STAINLESS STEEL BRACING. (OVER SHALL BE GASKETED) A. CAP UNUSED KNOCKOUT HOLES WHERE BLANKS HAVE BEEN REMOVED

AND PLUG UNUSED CONDUIT HUBS, SIZES SHALL BE ADEQUATE TO MEET NEC VOLUME REQUIREMENTS, BLIT N NO CASE SMALLER THAN SIZES INDICATED. REMOVE SHARP EDGES WHERE THEY MAY COME IN CONTACT WITH WIRING R PERSONNEL

3.2 APPLICATIONS A. CABINETS: FLUSH MOUNTED, NEWA ENCLOSURE TYPE 1 EXCEPT AS I OUTLET BOXES AND FITTINGS: INSTALL DUTLET AND DEVICE BOXES AND associated covers and fittings of materials and nema type: SUITABLE FOR EACH LOCATION AND IN CONFORMANCE WITH THE FOLLOWING

. INTERIOR DRY LOCATIONS: NEMA TYPE I, SHEET STEEL OR NONNETALLIC AS PERMITTED BY LOCAL CODE. 2. INTERIOR DRY LOCATIONS: SHEET STEEL, NEMA TYPE 1, 3. LOCATIONS EXPOSED TO WEATHER OR DAMPHESS: CAST METAL NEMA

4. WET LOCATIONS: NEMA TYPE & ENCLOSURES. 5. COFFROSIVE LOCATIONS: NEWA TYPE 1X ENCLOSURES. HAZARDOUS (CLASSIFIED) LOCATIONS: NEMA TYPE LISTED AND LABELED OR THE LOCATION AND CLASS OF HAZARD INDICATED. . PULL AND JUNCTION BOXES: INSTALL PULL AND JUNCTION BOXES OF MATERIALS AND NEWA TYPES BUITABLE FOR EACH LOCATION EXCEPT AS OTHERWISE INDICATED.

3.3 INSTALLATION OF OUTLET BOXES.
A OUTLETS AT WINDOWS AND DOORS: LOCATE CLOSE TO WINDOW TRM. FOR OUTLETS INDICATED ABOVE DOORSINSTALL 6" ABOVE DOOR TRAME AND CENTER DUTLETS ABOVE THE DOOR OPENING EXCEPT AS OTHERWISE

B. COLUMN AND PILASTER LOCATIONS: LOCATE OUTLET BOXES FOR SWITCHES AND RECEPTACLES ON COLUMNS OR PILASTERS SO THE CENTERS OF THE COLLIMNS ARE CLEAR FOR FUTURE INSTALLATION OF PARTITIONS. LOCATIONS IN SPECIAL FINISH MATERIALS: FOR OUTLET BOXES FOR RECEPTACLES AND SWITCHES MOUNTED IN CESKS OR FURNITURE CABINETS OR IN GLAZED TILE, CONCRETE BLOCK, MARGLE, BRICK, STONE OR WOOM WALLS, USE RECTANGULAR SHAPED BOXES WITH SQUARE CORNERS AND STRAIGHT SIDES. INSTALL SUCH BOXES WITHOUT PLASTER RINGS. SAW OUT ALL RECESSES FOR OUTLET BOXES IN EXPOSED MASONRY WALLS. CASKETED BOXES: AT THE FOLLOWING LOCATIONS USE CAST METAL THREADED HUB TYPE BOXES WITH CASKETED WEATHERPROOF COVERS: EXTERIOR LOCATIONS

WHERE SURFACE MOUNTED ON UNFINISHED WALLS, COLUMNS OF PILASTERS. (COVER GASKETS MAY BE OMITTED IN DRY LOCATIONS). I WHERE EXPOSED TO MOISTURE LADEN ATMOSPHERE AT FOOD PREPARATION EQUIPMENT WITHIN FOUR FT. OF STEAM CONNECTIONS.

WHERE INDICATED. MOUNTING: MOUNT OUTLET BOXES FOR SWITCHES WITH THE LONG AXIS VERTICAL OR AS INDICATED. MOUNT BOXES FOR RECEPTACLES VERTICALLY THREE OR MORE GANG BOKES SHALL BE MOUNTED WITH THE LONG AXIS HORIZONTAL, LOCATE BOX COVERS OR DEVICE PLATES SO THEY WILL NOT SPAN DIFFERENT TYPES OF BUILDING FINISHES EITHER VERTICALLY OR HORIZONTALLY. F. PHONE, DATA AND PHONE/DATA BOXES: INSTALL BUXES AT INDICITED

MOUNTING HEIGHTS AND EXTEND A 3/4" CONDUIT INTO ACCESSIBLE CEILING SPACE. PROVIDE SUITABLE BUSHING ON END OF CONDUIT. WHERE CABLE TRAYS ARE USED FOR CABLE DISTRIBUTION, EXTEND CONDUIT OVER ' CABLE TRAY AND SECURE WITH APPROPRIATE MOUNTING DEVICE. 2. CELLING CUTLETS: FOR FIXTURES, WHERE WIRING IS CONCEALED, USE OUTLET BOXES 4-INCHES SQUARE BY 1-1/2-INCHES DEEP, MINIMUM. COVER PLATES FOR SURFACE BOXES: USE PLATES BIZED TO BOX FRONT WITHOUT OVERLAP. PROTECT OUTLET BOXES TO PREVENT ENTRANCE OF PLASTER, AND

DEBRIS. THOROUGHLY CLEAN FOREIGN MATERIAL FROM BOXES BEFORE CONDUCTORS ARE INSTALLED. FLOOR BOXES. INSTALL IN CONCRETE FLOOR SLABS SO THEY ARE COMPLETELY ENVELOPED IN CONCRETE EXCEPT FUN THE TOP. WHERE NORMAL SLAB THEYNESS WILL NOT ENVELOP BOX AS SPECIFIED ABOVE

PROVIDE INCREASED THICKNESS OF THE SLAEL PROVIDE EACH COMPARTMENT OF EACH FLOOR BOX WITH GROUNDING TERMINAL CONSISTING OF A WASHER-IN-HEAD MACHINE SCREW, NOT SMALLER THAN NO. 10-32, SCREWED INTO A TAPPED HOLE IN THE BOX. ADJUST COVERS OF FLOOR BOXES FLUSH WITH FINISHED FLOOR.

3.4 INSTALLATION OF PULL AND JUNCTION BOXES A BOX SELECTION: FOR BOXES IN MAIN FEEDER CONDUIT RUNS, USE SIZES NOT SMALLER THAN 8-INCHES SQUARE BY 4-INCHES DEEP. D NOT EXCEED & ENTERING AND & LEAVING RACEWAYS IN A SINGLE BOX CABLE SUPPORTS: INSTALL CLAMPS, GROS, OR DEVICES TO WHICH CABLES MAY BE SECURED. ARRANCE CABLES SO THEY MAY BE READILY IDENTIFIED. SUPPORT CABLE AT LEAST EVERY 30-INCHES INSIDE BOXES. . MOUNT PULL BOXES IN INACCESSIBLE CEILINGS WITH THE COVERS FLUSH WITH THE FINISHED CEILING.

PROVIDE PULL AND JUNCTION BOXES FOR TELEPHONE, SIGNAL, A THER SYSTEMS AT LEAST 50 PERCENT LARGER THAN WOULD BE REQUIRED THE NEG, OF AS INDICATED, LOCATE BOXES STRATEGICALLY AND PROVIDE SHAPES TO PERMIT EASY PULLING OF FUTURE WIRES OR CABLES OF TYPES NORMAL FOR SUCH SYSTEMS.

ELECTRICALLY GROUND METALLIC CABINETS, BOXES, AND ENCLOSURES. 1.7 CLEANING AND FINISH REPAIR.

L UPON COMPLETION OF INSTALLATION, INSPECT COMPONENTS. REMOVE BURRS, DIRT, AND CONSTRUCTION DEBRIS AND REPAIR DAMAGED FINISH INCLUDING CHPS, SCRATCHES, ABRASIONS AND WELD MARKS B. GALVANIZED FINISH: REPAIR DAMAGE USING A ZINC-RICH PAINT RECOMMENDED BY THE TRAY MANUFACTURER. PAINTED FINISH REPAIR DAMAGE USING MATCHING CORROSON INHIBITING

> I. TAG OR LABEL CONDUCTORS AS FOLLOWS: CONNECTION OR CONNECTION LINDER ANDTHER CONTRACT WITH IDENTIFICATION INDICATING SOURCE AND CRICUIT NUMBERS INDICATING SOURCE, VOLTAGE, CIRCUIT NUMBER, AND PHASE FOR

> > MRE/CABLE MARKING TAPES 3. MATCH IDENTIFICATION MARKINGS WITH DESIGNATIONS LISED IN PANELBOARDS SHOP ORAWINGS, CONTRACT DOCUMENTS, AND SIMILAR PREVIOUSLY ESTABLISHED IDENTIFICATION SCHEMES FOR THE FACILITY'S ELECTRICAL INSTALLATIONS.

H. APPLY WARNING, CAUTION, AND INSTRUCTION SIGNS AND STENCES AS 1. INSTALL WARNING, CAUTION, ON INSTRUCTION SIGNS WHERE REQUIRED BY NEC, WHERE INDICATED, OR WHERE REASONABLY REQUIRED TO AND OF THE ITEMS TO WHICH THEY CONNECT, INSTALL ENGRAVED NSTRUCTIONS OR EXPLANATIONS ARE NEEDED FOR SYSTEM OR EQUIPMENT OPERATION, INSTALL BUTYRATE SICKS WITH METAL BACKING OR OUTDOOR ITEMS.

E. EMERGENCY OFFERATING SIGNS: INSTALL ENGRAVED LANINATE SIGNS WITH WHITE LEGEND ON RED BACKGROUND WITH MINIMUM 3/8-INCH HIGH LETTERING FOR EMERGENCY INSTRUCTIONS ON POWER TRANSFER. LOAD SHEDDING, OR OTHER EMERGENCY OPERATIONS.

1. APPLY EQUIPMENT IDENTIFICATION LABELS OF ENGRAVED PLASTIC-SPECIFIED WITH ITS OWN SELF-EXPLANATORY IDENTIFICATION. HE FOLLOWING CATEGORIES OF ELECTRICAL EQUIPMENT. AND PANELS, SWITCHGEAR AND SWITCHBOARDS, ELECTRICAL

DISTRIBUTION AND CONTROL COMPONENTS ABOVE, EXCEPT PANELBOARDS ELSEWHERE. FOR PAMELBOARDS, PROVIDE FRAMED, TYPED CIRCUIT CHEDULES WITH EXPLICIT DESCRIPTION AND IDENTIFICATION OF ITEMS CONTROLLED BY EACH INDIVIDUAL DREAKER.

2.1 ELECTRICAL CONTRICATION PRODUCTS

A. ADMESIVE MARKING LABOLS FOR RACEWAY AND METAL-CLAD CABLE-2.1 GROUNDING AND BONDING PRODUCTS A. PRODUCTS: OF TYPES INDICATED AND OF SIZES AND RATINGS TO DOMPLY WITH NEC. WHERE TYPES, SIZES, RATINGS, AND QUANTITIES PRE-PRINTED, FLEXIBLE, SELF-ADNESIVE LABELS WITH LEGEND INDICATING VOLTAGE AND SERVICE (EMERGENCY, LIGHTING, POWER, LIGHT, POWER D.C., NOICATED ARE IN EXCESS OF NEC REQUIREMENTS, THE MORE STRINGENT

2.3 MISCELLANEOUS CONDUCTORS
A. OROUND BUS: BARE ANNEALED COPPER BARS OF RECTANGULAR CROSS

5. BRAIDED BOILDING JUMPERS: COPPER TAPE, BRAIDED NO. 30 GAGE

E BONDING STRAP CONDUCTOR/CONNECTORS: SOFT COPPER, 0.05 INIDA

BOLTED CLAMPS: HEAVY-DUTY UNITS LISTED FOR THE APPLICATION.

S.1 APPLICATION

A. EQUIPMENT DROUNDING CONDUCTOR APPLICATION: COMPLY WITH NEC

CONDUCTORS, EXCEPT WHERE LARGER SIZES OR MORE CONDUCTORS ARE

1. INSTALL SEPARATE INSULATED EQUIPMENT CROUNDING CONDUCTORS

A. FEEDERS AND BRANCH CIRCUITS, LIGHTING CIRCUITS, RECEPTACLE

CROUITS, SINGLE-PHASE MOTOR OR APPLIANCE DIRCUITS, AND

HREE-PHASE WOTOR OR APPUANCE BRANCH CIRCUITS.

UNDERGROUND CONDUCTORS: BARE, STRANDED COPPER EXCEPT

SIGNAL AND COMMUNICATIONS: FOR TELEPHONE, ALARM, AND

GENERAL! CROUND ELECTRICAL SYSTEMS AND EQUIPMENT IN

WITH CIRCUIT CONDUCTORS FOR THE FOLLOWING IN ADDITION TO THOSE

1. NONMETALLIC RACEWAYS: INSTALL AN INSULATED EQUIPMENT GROUND.

CONDUCTOR IN NONMETALLIC RACEWAYS UNLESS THEY ARE DESIGNATED

DOMNUNICATION SYSTEMS, PROVIDE A #4 AWG MINIMUM GREEN INSULATED

SYSTEM TO EACH TERMINAL CABINET OR CENTRAL EQUIPMENT LOCATION.

ACCORDANCE WITH NEC REQUIREMENTS EXCEPT WHERE THE DRAWINGS OR

GROUND ROOS: LOCATE A MINIMUM OF ONE-ROO LENGTH FROM EACH

ELECTRODE. INTERCONNECT GROUND RODS WITH BARE CONDUCTORS

BURIED AT LEAST 24 MICHES BELOW CRADE. CONNECT BARE-CABLE

WELDS EXCEPT AS OTHERWISE INDICATED. MAKE THESE CONNECTIONS

WITHOUT DAMAGING THE COPPER COATING OR EXPOSING THE STEEL. USE

DRIVE RODS UNTIL TOPS ARE 6 INCHES BELOW FINISHED FLOOR OR FINAL GRADE EXCEPT AS OTHERWISE INDICATED.

CONDUCTORS, SIZED AS INDICATED, IN CONDUIT FROM THE BUILDING MAIN

3/4-INCH BY 10-FT, GROUND ROOS EXCEPT AS OTHERWISE INDICATED.

D. METALLIC WATER SERVICE PIPE PROVIDE INSULATED COPPER GROUND

SERVICE EQUIPMENT, OR THE GROUND BUS, TO MAIN METALLIC WATER

SERVICE ENTRANCES TO THE BUILDING. CONNECT GROUND CONDUCTORS

THE MAIN METALLIC WATER SERVICE PIPES BY MEANS OF GROUND

CONNECT THE GROUND CONDUCTOR TO THE STREET SIDE OF THE FITTING

CLAMPS. WHERE A DIELECTRIC MAIN WATER FITTING IS INSTALLED,

E. BRAIDED-TYPE BONDING JUMPERS: INSTALL TO CONNECT GROUND DLAMPS ON WATER METER PIPING TO BYPASS WATER METERS

STRAIGHTEST PATHS POSSIBLE WITHOUT OBSTRUCTING ACCESS OF

PLACING CONDUCTORS WHERE THEY MAY BE SUBJECTED TO STRAIN,

BOND INTERIOR WETAL PIPING SYSTEMS AND METAL AIR DUCTS TO

EQUIPMENT GROUND CONDUCTORS OF PUMPS, FANS, ELECTRIC HEATERS,

H. TEST WELLS: LOCATE AS INDICATED, AND FABRICATE IN ACCORDANCE

CONNECTORS, CONNECTION HARDWARE, CONDUCTORS, AND CONNECTION

CONDUCTIVITY AND MAKE CONTACT POINTS CLOSER BY ORDER OF

4. ALUMINUM TO GALVANIZED STEEL CONNECTIONS SHALL BE WITH TIN-PLATED COPPER JUMPERS AND MECHANICAL CLAMPS

5. COAT AND SEAL CONNECTIONS INVOLVING DISSIMILAR METALS WITH

STRUCTURAL STEEL AND FOR UNDERGROUND CONNECTIONS EXCEPT THOSE

AT TEST WELLS. INSTALL AT CONNECTIONS TO CROWN ROOS AND PLATE

CONVEX SURFACES INDICATING IMPROPER CLEANING ARE NOT ACCEPTABLE.

FEEDERS AND BRANCH CIRCUITS WITH PRESSURE-TYPE GROUNDING LUGS.

WHERE METALLIC RACEWAYS TERMINATE AT METALLIC HOUSINGS WITHOUT

BUSHINGS WITH A BARE GROUNDING CONDUCTOR TO THE GROUND BUS IN

THE HOUSING. BOND ELECTRICALLY NONCONTINUOUS CONDUITS AT BOTH

INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TICHTENING VALUES FOR CONNECTORS AND BOLTS.

WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT INDICATED.

SPECIFIÉD IN UL 486A AND UL 486B.

E. CONNECTIONS AT TEST WELLS: USE COMPRESSION-TYPE CONNECTIONS ON CONDUCTORS AND MAKE BOLTED- AND DLAMPED-TYPE CONNECTIONS BETWEEN CONDUCTORS AND GROUND ROOS.

TIGHTEN CONNECTIONS TO COMPLY WITH TORQUE TIGHTENING VALUES

COMPRESSION—TYPE CONNECTIONS: USE HYDRAULIC COMPRESSION TOOLS TO PROVIDE THE CORRECT DIRCUMFERENTIAL PRESSURE FOR COMPRESSION CONNECTORS. USE TOOLS AND DIES RECOMMENDED BY

THE MANUFACTURER OF THE CONNECTORS. PROVIDE EMBOSSING DIE

A CONNECTOR HAS BEEN ADEQUATELY COMPRESSED ON THE GROUND

G. MOISTURE PROTECTION: WHERE INSULATED GROUND CONDUCTORS ARE

CONNECTED TO GROUND RODS OF GROUND BUSES, INSULATE THE ENTIRE

AS CLEANING AND ADJUSTING A. RESTORE SURFACE FEATURES AT AREAS DISTURBED BY EXCAVATION AND

REESTABLISH DRIGNAL DRADES EXCEPT AS OTHERWISE INDICATED.

AREA OF THE CONNECTION AND SEAL AGAINST MUSTURE PENETRATION

CODE OR OTHER STANDARD METHOD TO MAKE A VISIBLE INDICATION THAT

ENTRANCES AND EXITS WITH GROUNCING BUSHINGS AND BARE GROUNCING

MECHANICAL AND ELECTRICAL COMMECTION TO THE HOUSING, TERMINATE

MERT MATERIAL SUCH AS RED LEAD PAINT TO PREVENT FUTURE

B. EXIDTHERMIC WELDED CONNECTIONS: USE FOR CONNECTIONS TO

ELECTRODES. COMPLY WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS. WELDS THAT ARE PUFFED UP OR THAT SHOW

TERMINATE INSULATED EQUIPMENT GROUNDING CONDUCTORS FOR

EACH CONDUIT WITH A CROUNDING BUSHING. CONNECT GROUNDING

D. TICHTEN GROUNDING AND BONDING CONNECTORS AND TERMINALS.

PENETRATION OF MOISTURE TO CONTACT SURFACES.

USE ELECTROPLATED OR HOT-TIN-COATED MATERIALS TO ASSURE HIGH

MAKE CONNECTIONS WITH CLEAN BARE METAL AT POINTS OF CONTACT.

ALLIMINUM TO STEEL CONNECTIONS SHALL BE WITH STAINLESS STEEL

A. GENERAL: MAKE CONNECTIONS IN SUCH A MANNER AS TO MINIMIZE

POSSIBILITY OF GALVANIC ACTION OR ELECTROLYSIS. SELECT

METHODS SO METALS IN DIRECT CONTACT WILL BE GALVANICALLY

F. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND

MPACT, DR DAMAGE, EXCEPT AS INDICATED.

SEPARATORS AND MECHANICAL CLAMPS.

GALVANIC SERIES.

CONDUCTOR.

F THE INSULATION AND CABLE.

AND AIR CLEANERS SERVING INDIVIDUAL SYSTEMS

DO NOT INSTALL A GROUNDING JUMPER AROUND DIELECTRIC FITTINGS.

BOND THE CROUND CONDUCTOR CONDUIT TO THE CONDUCTOR AT EACH

ELECTRICALLY. USE ELSEWHERE FOR FLEXIBLE BONDING AND GROUNDING

GROUND CONDUCTORS TO GROUND RODS BY MEANS OF EXOTHERMIC

OTHER AND AT LEAST THE SAME DISTANCE FROM ANY OTHER GROUNDING

COMPER CONDUCTOR IN PACEWAY FROM THE GROUNDING ELECTRODE

D. SEPARATELY DERIVED SYSTEMS REQUIRED BY NEC TO BE GROUNDED

SHALL BE GROUNDED IN ACCORDANCE WITH NEC PARACRAPH 250-26.

ARTICLE 250 FOR SIZES AND QUANTITIES OF EQUIPMENT GROUNDING

EXOTHERMIC WELDED CONNECTIONS: PROVIDED IN NOT FORM AND

SPLECTED FOR THE SPECIFIC TYPES, SIZES, AND COMBINATIONS OF

BARE COPPER WIRE, TERMINATED WITH COPPER FERRULES.

B. PRESSURE CONNECTORS: HIGH-CONDUCTIVITY-PLATED UNITS.

THICK AND 2 INCHES WIDE, EXCEPT AS INDICATED.

CONDUCTORS AND OTHER ITEMS TO BE CONNECTED.

LOCATIONS WHERE REQUIRED BY CODE:

FOR TELEPHONE OR DATA CABLES.

ECIFICATIONS EXCEED NEC REQUIREMENTS.

OTHERWISE INDICATED

MATERIALS USED.

RECURREMENTS AND THE CREATER SIZE, RATING, AND QUANTITY AIR CONDITIONING, COMMUNICATIONS, CONTROL, FIRE). INDIGATIONS GOVERN. LABIT SIZE: AS FOLLOWS: CONDUCTOR MATERIALS COPPER A. RACEWAYS 1-INCH AND SMALLER: 1-1/8 INCHES HIGH BY A INCHES 2 WRE AND CABLE CONDUCTORS
GENERAL: CONFORM TO NEC TABLE 8, EXCEPT AS OTHERWISE

B. RACEWAYS LARGER THAN 1-INCH. 1-1/8 INCHES HIGH BY 8 TICHES INDICATED, FOR CONDUCTOR PROPERTIES, INCLUDING STRANDING BL EQUIPMENT CROUNDING CONDUCTOR: GREEN INSULATED. COLDR: BLACK LEGEND ON DRANGE BACKGROUND. GROUNDING ELECTRODE CONDUCTOR: STRANDED CABLE. COLORED ADNESIVE MARKING TAPE FOR RACEWAYS, WIRES, AND CABLES: BARE COPPER CONDUCTORS: CONFORM TO THE FOLLOWING SELF-ADHESIVE VINYL TARE NOT LESS THAN IT MILS THICK BY I INCH TO SOLID CONDUCTORS: ASTM B-3. INCHES IN WOTH ASSEMBLY OF STRANDED CONDUCTORS: ASTM B-B. D. WITE/CABLE DESIGNATION TAPE MARKERS: VINYL DR VINYL-CLOTH. TINNED CONDUCTORS: ASTM B-33.

SELF- ADHESIVE, WRAFAROUND, CABLE/CONDUCTOR MARKERS WITH PREPRINTED NUMBERS AND LETTER. E. ENGRAVED, PLASTIC-LAMINATED LABELS, SIGNS, AND INSTRUCTION PLATES: ENGRAVING STOCK MELANINE PLASTIC LAMINATE, 1/16-INCH MINIMUM THICK FOR SIGNS UP TO 20 SQUARE INCHES, OR I INCHES II LENGTH: 1/8-INCH THICK FOR LARGER SIZES. ENGRAVED LEGEND IN WHITE LETTERS ON BLACK FACE AND PUNCHED FOR MECHANICAL

BAKED-ENAMEL WARNING AND CAUTION SIGNS FOR INTERIOR USE: PREPRINTED ALUMINUM SIGNS, PUNCHED FOR FASTENERS, WITH COLDES, LEGEND, AND SIZE APPROPRIATE TO THE LOCATION. G. EXTERIOR METAL-BACKED BUTYRATE WARNING AND CAUTION SIGNS: WEATHER-RESISTANT, NONFADING, PREPRINTED CELLULOSE ACETATO BUTYHATE SIGNS WITH 20-GAGE, GALVANIZED STEEL BACKING, WITH COLORS, LEGEND, AND SIZE APPROPRIATE TO THE LOCATION. PROVIDE 1/4-INCH GROWNETS IN CORNERS FOR MOUNTING H. FASTENERS FOR PLASTIC-LAMINATED AND METAL SIGNS: SELF-TAPPING STAINLESS STEEL SCREWS OR NUMBER 10/32 STAINLESS STEEL MACHINE

3.1 INSTALLATION LETTERING AND GRAPHICS: COORDINATE NAMES, ABBREVIATIONS, COLORS, AND OTHER DESIGNATIONS USED IN ELECTRICAL IDENTIFICATION WORK WITH CORRESPONDING DESIGNATIONS SPECIFIED OF INDICATED INSTALL NUMBERS, LETTERING, AND COLORS AS APPROVED IN SUBMITTALS AND AS REQUIRED BY CODE. R INSTALL IDENTIFICATION DEVICES IN ACCORDANCE WITH MANUFACTURER'S

WRITTEN INSTRUCTIONS AND REQUIREMENTS OF MEC. SURFACES THAT REQUIRE FINISH, INSTALL (DENTIFICATION AFTER) DOMPLETION OF FINISH WORK.

. CONDUIT IDENTIFICATION: DENTIFY JUNCTION, PULL, AND CONNECTION BOXES: CODE-REQUIRED CAUTION SIGN FOR BOXES SHALL BE PRESSURE—SENSITIVE, SELF-ADHESIVE LABEL INDICATING SYSTEM VOLTAGE IN BLACK, PREPRINTED ON ORANGE BACKGROUND. INSTALL ON OUTSIDE OF BOX COVER. ALSO LABEL BOX COVERS WITH IDENTITY OF CONTAINED GROWTS. LISE PRESSURE- SENSITIVE PLASTIC LABELS AT EXPOSED LOCATIONS AND SIMILAR LABELS OR PLASTICIZED GARD STUCK TAGS A CONCEALED ROXES USE CONDUCTORS WITH COLOR FACTORY-APPLIED THE ENTIRE LENGTH

IF THE CONDUCTORS EXCEPT AS FOLLOWS: THE FOLLOWING FIELD-APPLIED COLOR-COOKING METHODS MAY BE USED IN LIEU OF FACTORY-CODED WHIE FOR SIZES LARGER THAN NO. 10 A APPLY COLORED, PRESSURE-SENSITIVE PLASTIC TAPE IN HALF-LAPPED TURNS FOR A DISTANCE OF 6 INCHES FROM TERMINAL POINTS AND IN BOXES WHERE SPLICES OR TAPS ARE MADE. APPLY THE LAST

TWO LAPS OF TAPE WITH NO TENSION TO PREVENT POSSIBLE ANWINDING, USE 1-INCH-WIDE TAPE IN COLORS AS SPECIFIED, DO NOT OBLITERATE CABLE IDENTIFICATION MARKINGS BY TAPING. TAPE LOCATIONS MAY BE ADJUSTED SUGHTLY TO PREVENT SUCH OBLITERATION. E IN LIEU OF PRESSURE-BENSITIVE TAPE, COLORED CABLE TIES MAY BE USEIT FOR COLOR IDENTIFICATION. APPLY THREE TIES OF SPECIFIED DOLOR TO EACH WIRE AT EACH TERMINAL OR SPLICE POINT STARTING I NCHES FROM THE TERMINAL AND SPACED 3 INCHES APART. APPLY

WITH A SPECIAL TOOL OR PLIERS, TIGHTEN FOR SNUG FIT, AND CUT OFF I. FUTURE CONNECTIONS: CONDUCTORS INDICATED TO BE FOR FUTURE. 2. MULTIPLE CIRCUITS: WHERE MULTIPLE BRANCH CIRCUITS OR CONTRO WRING OR COMMUNICATIONS/SIGNAL CONDUCTORS ARE PRESENT IN THE SAME BOX OR ENCLOSURE (EXCEPT FOR THREE-CIRCUIT, FOUR-WIRE HOME RUNS), LABEL EACH CONDUCTOR OR CABLE, PROVIDE LEGEND BRANCH CROUIT WRING. PHASE AND VOLTAGE OF BRANCH CROUIT MRING MAY BE INDICATED BY MEAN OF CODED COLOR OF CONDUCTOR

INSULATION. FOR CONTROL AND COMMUNICATIONS/SIGNAL WIRING, USE COLOR CODING OR WIRE/CABLE MARKING TAPE AT TERMINATIONS AND AT INTERMEDIATE LOCATIONS WHERE CONDUCTORS APPEAR IN MIRING BOXES, TROUGHS, AND CONTROL CARINETS, USE CONSISTENT LETTER/NUMBER CONDUCTOR DESIGNATIONS THROUGHOUT ON

ASSURE SAFE OPERATION AND MAINTENANCE OF ELECTRICAL SYSTEMS PLASTIC-LAMINATED INSTRUCTION SIGNS WITH APPROVED LEGEND WHERE

INSTALL EQUIPMENT/SYSTEM DIRCUIT/DEVICE IDENTIFICATION AS FOLLOWS: LAMINATE ON EACH MAJOR UNIT OF ELECTRICAL EQUIPMENT IN BUILDING, INCLUDING CENTRAL OR MASTER UNIT OF EACH ELECTRICAL SYSTEM. THIS INCLUDES COMMUNICATION/SIGNAL/ALARM SYSTEMS, UNLESS UNIT EXCEPT AS OTHERWISE INDICATED, PROVIDE SINGLE LINE OF TEXT, WITH 1/2-INCH-HIGH LETTERING ON 1-1/2-INCH-HIGH LABEL (2-INCH-HIGH WHERE TWO LINES ARE REQUIRED), WHITE LETTERING IN BLACK FIELD. TEXT SHALL MATCH TERMINOLOGY AND NUMBERING OF THE CONTRACT DOCUMENTS AND SHOP DRAWINGS. APPLY LABELS FOR EACH UNIT OF A. PANELBOARDS, ELECTRICAL CABINETS, ENCLOSURES, ACCESS DOORS SUBSTATIONS, MOTOR CONTROL CENTERS, MOTOR STARTERS, PUSH BUTTON STATIONS, POWER TRANSFER EQUIPMENT, CONTACTORS,

REMOTE-CONTROLLED SWITCHES, DIMMERS, CONTROL DEVICES, TRANSFORMERS, BATTERY RACKS, AND POWER CENERATING UNITS: APPLY CIRCUIT/CONTROL/ITEM DESIGNATION LABELS OF ENGRAVED PLASTIC LAMINATE FOR DISCONNECT SWITCHES, BREAKERS, PUSHBUTTONS PILOT LIGHTS, MOTOR CONTROL CENTERS, AND SIMILAR ITEMS FOR POWER AND ALARM/SIGNAL COMPONENTS, WHERE LABELING IS SPECIFIED INSTALL LABELS AT LOCATIONS INDICATED AND AT LOCATIONS FOR BEST CONVENIENCE OF VIEWING WITHOUT INTERFERENCE WITH OPERATION AND

MAINTENANCE OF EQUIPMENT.

PANELBOARDS AND DISTRIBUTION PANELS

OVERCURRENT PROTECTIVE DEVICE (OCPO): A DEVICE OPERATIVE ON EXCESSIVE CURRENT THAT CAUSES AND MAINTAINS THE INTERRUPTION OF POWER IN THE CIRCUIT IT PROTECTS. 1.2 SUBMITTALS A. (IENERAL) SUBMIT THE FOLLOWING:

1. PRODUCT DATA FOR EACH TYPE PANELBOARD, ACCESSORY ITEM, AND COMPONENT SPECIFIED. 2. DRAWINGS. ELECTRICAL AND MECHANICAL DRAWINGS SHALL BE PROVIDED BY THE MANUFACTURER WHICH SHOW UNIT DIMENSIONS WEIGHTS, MOUNTING PROVISIONS, CONNECTION DETAILS AND LAYOUT DIAGRAM OF THE UNIT. SHOP DRAWINGS FROM MANUFACTURERS OF PANELBOARDS INCLUDING

DIMENSIONED PLANS, SECTIONS, AND ELEVATIONS. SHOW TABULATIONS OF INSTALLED DEVICES, MAJOR FEATURES, AND VOLTAGE RATING. . WRING DIAGRAMS DETAILING SCHEMATIC DIAGRAM INCLUDING CONTROL WRING, AND DIFFERENTIATING BETWEEN MANUFACTURER-INSTALLED AND FIELD-INSTALLED WRING. 5. PANEL SCHEDULES FOR INSTALLATION IN PANELBOARDS. SUBMIT FINAL VERSIONS AFTER LOAD BALANCING. 6. MAINTENANCE DATA FOR PANELBOARD COMPONENTS, FOR INCLUSION IN OPERATING AND MAINTENANCE MANUAL. INCLUDE INSTRUCTIONS FOR

TESTING CIRCUIT BREAKERS. 2.4 CONNECTOR PRODUCTS

A. GENERAL: LISTED AND LABELED AS GROUNDING CONNECTORS FOR THE .3 EXTRA MATERIALS A. KEYS FURNISH SIX SPARES OF EACH TYPE FOR PANELBOARD CABINET B. TOUCH-UP PAINT FOR SURFACE-MOUNTED PANELBOARDS: ONE HALF-FINT CONTAINER 2.2 PANELBOARDS, GENERAL REQUIREMENTS
A. MANUFACTURERS

1.SOUARE D. CO. - NOOD OR EQUAL BY CENERAL ELECTRIC, ITE SEMENS, OR CUTLER HAMMER / WESTINGHOUSE. B. DOPO: PROVICE TYPE, RATING, AND FEATURES AS INDICATED. TANDEM CIRCUIT BREAKERS SHALL NOT BE USED. MILITIPLE BREAKERS SHALL HAVE COMMON TRIP. ALL CIRCUIT BREAKERS ARE TO BE BOLT ON TYPE UNLESS NOTED OTHERWISE. ENCLOSURES CABINETS, FLUSH OR SURFACE MOUNTED AS INDICTED. NEMA TYPE I ENCLOSURE, EXCEPT WHERE THE FOLLOWING ENCLOSURE REQUIREMENTS ARE INDICATED.

1. NEMA 3R: RAINTIGHT. NEMA 35: RAINTIGHT AND DUST TIGHT NEMA 4X: CORROSION-RESISTANT FINERGLASS ENCLOSURE. WATERTIGHT, DUST TIGHT, AND RESISTANT TO OIL AND COOLANT 4. NEMA 12 DUST TIGHT, DRIF PROOF, AND RESISTANT TO CIL AND

COOLANT SEEPAGE. D. FRONT: SECURED TO BOX WITH CONCEALED TRIM CLAMPS EXCEPT AS INDICATED. FRONT FOR SURFACE-MOUNTED PANELS BHALL BE SAME DIMENSIONS AS BOX. FRONTS FOR FLUSH PANELS SHALL OVERLAP BOX DIRECTORY FRAME: METAL, MOUNTED INSIDE EACH PANEL DOOR BUS: COPPER BUS FOR ALL PHASE, NEUTRAL AND CROUND BUSES. EACH BUS SHALL HAVE THE CURRENT CARRYING CAPACITY SCHEDULED ON THE DRAWNOS WITH AN AVERAGE TEMPERATURE MOSE NOT TO EXCEED 40 DEGREES ABOVE AMBIENT AND NOT MORE THAN 1000A PER SOUARE INCH CURRENT DENSITY. BUS BARS IN PANELBOARD AND DISTRIBUTION PANEL ASSEMBLIES SHALL BE ADEQUATELY BRACED TO WITHSTAND THE MAXIMUM SHORT CIRCUIT CURRENT AT THE POINT OF APPLICATION AND MUST AT LEAST WITHSTAND A RATING EQUIVALENT TO THE INTERRUPTING CAPACITY OF THE MAIN BREAKER OR 125% OF THE AVAILABLE SHORT CIRCUIT CURRENT OR AS INDICATED ON THE DRAWINGS.

MAIN AND NEUTRAL LUGS: MECHANICAL NEUTRAL BUS: PROVIDE 100% RATED NEUTRAL BUS ON ALL FOUR WIFE PANELBOARDS UNLESS NOTED OTHERWISE ON PLANS. EQUIPMENT GROUND BUS: ADEQUATE FOR FEEDER AND BRANCH-CRECUIT EQUIPMENT GROUND CONDUCTORS. BONDED TO BIOM. SERVICE EQUIPMENT APPROVAL: LISTED FOR USE AS SERVICE EQUIPMENT FOR PANELBOARDS HAVING MAIN SERVICE DISCONNECTIONLETE BELOW WHERE NO FUTURE PROVISIONS ARE REQUIRED. PROVISION FOR FUTURE DEVICES: EQUIP WITH MOUNTING BRACKETS, BUS CONNECTIONS, AND NECESSARY APPURTENANCES, FOR THE OOPD AMPERE RATINGS INDICATED FOR FUTURE INSTALLATION OF DEVICES. L. SPECIAL FEATURES. PROVIDE THE FOLLOWING FEATURES FOR

PANELBOARDS (WHERE INDICATED OF REQUIRED) 1. ISOLATED EQUIPMENT GROUND BUS: ADEQUATE FOR BRANCH-CROUT EQUIPMENT GROUND CONDUCTORS; INSULATED FROM BOX. 1. HINCED FRONT COVER: FOR DISTRIBUTION POWER PANELS PROVIDE FRONT TRIM HINGED TO BOX WITH STANDARD DOOR WITHIN HINGED TRIM 3. SPLIT BUS: VERTICAL BUS OF INDICATED PANELS DIVIDED INTO TWO VERTICAL SECTIONS WITH CONNECTIONS AS INDICATED. 4. SKIRT FOR SURFACE-MOUNTED PANELS: SAME CAUCE AND FINISH AS

PANEL FRONT WITH FLANGES FOR ATTACHMENT TO PANEL, WALL, AND 5. CONTACTORS IN MAINS: MECHANICALLY HELD, WITH CURRENT RATING, POLES, AND CONNECTIONS AS INDICATED. II. CONTROL POWER SOURCE: CONTROL POWER TRANSFORMER OF GAPACITY INDICATED, FOR CONTACTOR SHUNT TRIP OR OTHER DEVICES. MOUNT IN CABINET OF PANEL INDICATED. PROTECT PRIMARY WITH CURRENT-LIMITING OOPD AS INDICATED. PROVIDE FUSED PROTECTION . EXTRA GUTTER SPACE: DIMENSIONS AND ARRANGEMENT AS INDICATED.

B. GUTTER BARRIER: ARRANGED TO ISQUATE SECTION OF CUTTER AS 9. AUXILIARY GUTTER: CONFORM TO UL 870, "WREWAYS, AUXILIARY GUTTERS AND ASSOCIATED FITTINGS." COLUMN-TYPE PANELBOARD CONFIGURATION: NARROW CABINET EXTENDED AS WIREWAY TO OVERHEAD JUNCTION BOX EQUIPPED WITH

GROUND AND NEUTRAL TERMINAL BUSES. SUBFEED: OCPO OR LUG PROVISION AS INDICATED. 12. FEED-THROUGH LUGS: SIZED TO ACCOMMODATE FEEDERS INDICATED. M. FROMDE MINIMUM (SERIES RATED) INTERRUPTING RATINGS AS INDICATED 4 LIGHTING AND APPLIANCE BRANCH DROUT PANELSCOARDS

1. SQUARE D. CO. - NEMB OR EQUAL BY GENERAL ELECTRIC, ITE SEMENS, OR CUTLER HAMMER / WESTINGHOUSE BRANCH OCFOS: BOLT-ON CIRCUIT BREAKERS, REPLACEABLE WITHOUT DISTURBING ADJACENT UNITS COORDINATE BELOW WITH DRAWINGS.

DOUBLE-WOTH PANELS: WHERE MORE THAN 42 POLES ARE INDICATED OR WHERE OTHERWISE INDICATED, PROVIDE TWO PANELBOARDS LINDER SINGLE PRONT

, DDORS) IN PANEL FRONT, WITH CONCEALED HINGES. SECURE WITH FLUSH CATCH AND TUMBLER LOCK, ALL KEYED AUKE A. ACCESSORY COMPONENTS AND FEATURES

A. ACCESSORY SET: INDIVIDE TOOLS AND MISCELLANEOUS ITEMS AS REQUIRED FOR OVERCURRENT PROTECTIVE DEVICE TEST, INSPECTION, MAINTENANCE, AND OPERATION. B. PORTABLE TEST SET: ARRANGED TO PERMIT TESTING OF FUNCTIONS OF SOLID-STATE TRIP DEVICES WITHOUT REMOVAL FROM PANELBOARD. CL SPARE FUSE CABINET: IDENTIFIED, COMPARTMENTED, LOCKABLE STEEL BOX OR CABINET WITH COMPARTMENTS SUITABLE FOR SURFACE MOUNTING

D. FUNGUS PROOFING: PERMANENT FUNGICIDAL TREATMENT FOR PANELBOARDS INTERIOR INCLUDING OCPDS AND OTHER COMPONENTS. A. PANELBOARD NAMEPLATES: ENGRAVED LAMINATED PLASTIC OF METAL. NAMEPLATE FOR EACH PANELBOARD MOUNTED WITH EPOXY OR INDUSTRIAL CEMENT OR INDUSTRIAL ADHESIVE.

A. GENERAL: INSTALL PANELBOARDS AND ACCESSORY ITEMS IN ACCORDANCE WITH NEMA PB 1.1, "GENERAL INSTRUCTIONS FOR PROPER INSTALLATION, OPERATION AND MAINTENANCE OF PANELBOARDS RATED 600 VOLTS OR LESS" AND MANUFACTURERS' WRITTEN INSTALLATION INSTRUCTIONS.

E. GROUND FAULT PROTECTION: INSTALL PANELBOARD GROUND FAULT CROUIT INTERRUPTER DEVICES IN ACCORDANCE WITH INSTALLATION QUIDELINES OF NEMA 289, "APPLICATION GUIDE FOR GROUND FAULT ORCUIT INTERRUPTERS." C. MOUNTING HEIGHTS: TOP OF THIM 6'-2" ABOVE FINISHED FLOOR, EXCEPT AS INDICATED.

E CIRCUIT DIRECTORY: TYPED AND REFLECTIVE OF FINAL CIRCUIT CHANGES REQUIRED TO BALANCE PANEL LOADS. INSTALL FILLER PLATES IN UNUSED SPACES. . PROVISION FOR FUTURE CIRCUITS AT FLUSH PANELBOARDS: STUB FOUR 1-INCH EMPTY CONDUITS FROM PANEL INTO ACCESSIBLE CEILING SPACE OR SPACE DESIGNATED TO BE CEILING SPACE IN FUTURE. STUB FOUR 1-INCH EMPTY CONDUITS INTO RAISED FLOOR SPACE OR BELOW SLAB OTHER THAN SLABS ON GRADE.

D. MOUNTING: PLUMB AND RIGID WITHOUT DISTORTION OF BOX. MOUNT

PLUSH PANELS UNIFORMLY FLUSH WITH WALL FINISH

H. AUXILIARY GUTTER: INSTALL WHERE A PANEL IS TAPPED TO A RISER AT AN INTERMEDIATE LOCATION. WIRING IN PANEL CUTTERS: TRAIN CONDUCTORS NEATLY IN GROUPS, BUNDLE, AND WRAP WITH WIRE TIES AFTER COMPLETION OF LOAD BALANCING

3.2 GROUNDING A. PROVIDE GROUND CONTINUITY TO MAIN ELECTRICAL GROUND BUS. B. WHERE INSULATED/ISOLATED GROUND BARS ARE PROVIDED, THEY SHALL BE DIRECTLY CONNECTED TO THE EQUIPMENT GROUNDING CONDUCTOR

TERMINAL OF THE APPLICABLE DERIVED SYSTEM OR SERVICE. 3.3 CONNECTIONS
A. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS, INCLUDING GROUNDING CONNECTIONS, IN ACCORDANCE WITH MANUFACTURER'S FUBLISHED TORQUE-TIGHTENING VALUES.

A UPON COMPLETION OF INSTALLATION, INSPECT INTERIOR AND EXTERIOR OF PANELBOARDS. REMOVE PAINT SPLATTERS AND OTHER SPOTS, DIRT, AND DEBRIS. TOUCH UP SCRATCHES AND MARS OF TIMEN TO MATCH

OVERCURRENT PROTECTIVE DEVICES

OVERQUERENT PROTECTIVE DEVICE (OCPD): A DEVICE OPERATIVE ON EXCESSIVE CURRENT THAT CAUSES AND MAINTAINS THE INTERRUPTION OF POWER IN THE CIRCUIT IT PROTECTS. 1.4 EXTRA MATERIALS
A. MAINTENANCE STOCK, FUSES: FOR TYPES AND RATINGS REQUIRED,

FURNISH SPARE FUSES, AMOUNTING TO ONE UNIT FOR EVERY 5 INSTALLED UNITS, BUT NOT LESS THAN ONE SET OF 3 OF EACH KIND. 2.2 OVERO RRENT PROTECTIVE DEVICES (OCPOS), GENERAL A. GENERAL: PROVIDE OCPOS IN INDICATED TYPES, AS INTEGRAL COMPONENTS OF PANELBOARDS, EWITCHBOARDS, AND MOTOR CONTROL CENTERS; AND ALSO AS INDIVIDUALLY ENCLOSED AND MOUNTED SINGLE

B. ENCLOSURES: NEMA 250 "ENCLOSURES FOR ELECTRICAL EQUIPMENT (1,000 WR TS MAXIMUM)." 3 FUSED POWER CIRCUIT DEVICES (BOLIED PRESSURE SWITCH)

L CUTLER HANNER, GENERAL ELECTRIC CO., PRINCLE ELECTRICAL MEG. CO., SQUARE D CO., OR ITE SIEMENS. B. GENERAL: UL 877, "FUSED POWER CIRCUIT DEVICES," WITH EITHER BOLTED-PRESSURE-TYPE OR HIGH-PRESSURE CONTACT-TYPE SWITCH. OPERATION: FLECTRICALLY CLOSED AND TRIPPED. GROUND FAULT PROTECTION: INTEGRAL, SELF-POWERED TYPE WITH MECHANICAL CROUND FAULT INDICATOR, TEST FUNCTION, ADJUSTABLE PICK-UP CURRENT AND DELAY TIME WITH INVERSE AND CONSTANT TIM CHARACTERISTICS, INTERNAL MEMORY ARRANGED TO INTEGRATE NTERMITTENT ARCING DROUND FAULTS, AND GROUND FAULT CHRAENT SENSOR LOCATED AS INDICATED. OPEN FUSE TRIP DEVICE: ARRANGED TO TRIP SWITCH OPEN & A PHASE ENOLOGURE FOR SWITCHBOARD MOUNTING: SLITABLE FOR MOUNDUAL

ENCLUSURE FOR INDEPENDENT MOUNTING: NEMA TYPE I ENCLUSAINE. EXCEPT AS INDICATED OR EXCEPT AS REQUIRED TO SUIT ENVIRONMENT WHERE LOCATED. I. MINIMUM FAULT CURRENT RATING: 200,000 RMS SYMMETRICAL

4 MOLDED-CASE DROUT PREAKERS WOLDED-CASE CIRCUIT BREAKERS: A. OUTLER HAMMER, GENERAL ELECTRIC CO., ITE SEMENS, OR SQUARE D Z. COMBINATION CIRCUIT BREAKER AND DROUND FAULT CIRCUIT

INTERRUPTERS A CUITLER HAMMER, GENERAL ELECTRIC CO., ITE SEMENS, SOUARE D CO. MOLIED-CASE CURRENT-UNITING CIRCUIT BREAKINGS A. GENERAL ELECTRIC CO., ITE SEMENS, SQUARE D. CO., OR CUTLER 4. MOLDED-CASE CIRCUIT BREAKERS WITH SOLID-STATE TRIP DEVICES: A CENERAL ELECTRIC CO., ITE SEMENS, SQUARE D. CO., DR CUTLER

5. INTEGRALLY FUSED MOLDED-CASE CIRCUIT BREAKERS: A CENERAL ELECTRIC CO., ITE SEMENS, CUILER HAMMER, OR SOUARE D L GENERAL: LIL 489, "MOLDED CASE CIRCUIT BREAKERS AND CIRCUIT

BREAKER ENGLOSURES," AND NEMA AB 1, "MOLDED CASE CIRCUIT 2. CONSTRUCTION: BOLT-IN TYPE, EXCEPT BREAKERS 225-AMPERE FRAME SIZE AND LARGER WAY BE PLUG-IN TYPE IF HELD IN PLACE BY POSITIVE OCKING DEVICE REQUIRING MECHANICAL RELEASE FOR REMOVAL , CHARACTERISTICS: INDICATED FRAME SIZE, TRIP RATING, NUMBER OF POLES, AND SHORT-GROUT INTERRUPTING CAPACITY. MINIMUM INTERRUPTING RATING SHALL BE 14,000 ALC. FOR 480 VOLT AND 480/277 DISTRIBUTION. MINIMUM INTERRUPTING RATINGS SHALL BE 10,000 AIC FOR 240V, 120/240 V AND 120/200V DISTRIBUTION. LARGER TRATINGS MAY APPLY AS SHOWN ON DIRAWINGS. , TRIPPING DEVICE: QUICK-MAKE, QUICK-BREAK TOGGLE MECHANISM WITH INVERSE-TIME DELAY AND INSTANTANEOUS OVERCURRENT TRIF PROTECTION FOR EACH POLE. E. ADJUSTABLE INSTANTANEOUS TRIP DEVICES: FACTORY ADJUSTED TO LOW-TRIP-SETTING CURRENT VALUES.

ENCLOSURE FOR SWITCHBOARD OR PANELBOARD MOUNTING. SUITABLE FOR PANEL MOUNTING IN SWITCHEDARD OR FANELBOARDS WHERE . ENCLOSURE FOR INDEPENDENT MOUNTING: NEWA TYPE I ENCLOSURE, EXCEPT AS OTHERWISE INCICATED OR REQUIRED TO SUIT ENVIRONMENT

H. COMBINATION CIRCUIT BREAKERS AND CROWNS FAULT CIRCUIT INTERRUPTERS: UL 943 "GROUND FAULT CIRCUIT INTERRUPTERS," ARRANGED FOR SENSING AND TRIPPING FOR CHOUND FAULT CURRENT IN ADDITION TO EVERGURRENT AND SHORT-CIRCUIT CURRENT. CURRENT-LIMITING CIRCUIT BREAKERS: ARRANGED TO LIMIT LET-THROUGH AMPERE-SOLIARED-SECONDS DURING FAULT CONDITIONS TO A VALUE LESS THAN THE AMPERE-SQUARED-SECONDS OF ONE-HALF-CYCLE WAVE OF THE PROSPECTIVE SYMMETRICAL FAULT JURRENT. THE CROUIT BREAKER SHALL USE NO FUSIBLE DEVICES IN ITS PERATION. THE CURRENT-LIMITING CHARACTERISTIC SHALL BE IN

DDITION TO NORMAL TIME-DELAY AND INSTANTANEOUS-TRIP J. CIRCUIT BREAKERS WITH SOUD-STATE TRIP DEVICES: PROVIDE INDIGATED CIRCUIT BREAKERS WITH SOUD-STATE TRIP DEVICES HAVING THE FOLLOWING FEATURES: 1. AMBIENT COMPENSATION: TRIP DEVICE INSENSITIVE TO TEMPERATURE CHANGES BETWEEN MINUS 20 DEG C AND PLUS 55 DEG C 2. ADJUSTABILITY: BREAKER RATINGS AND TRIP SETTINGS SHALL BE CHANGEABLE BY OPERATION OF CONTROLS ON FRONT PANEL OF

BREAKER FROM MOUNTING, OR BY A COMBINATION OF THE TWO 3. GROUND-FAULT TRPPING. ADJUSTABLE FOR PICK-UP AND TIME-DELAY VALUES. PROVIDE FOR INDICATED UNITS. LE OCPD ACCESSORIES KEY INTERLOCKS: ARRANGE INTERLOCKING SO KEYS ARE HELD CAPTIVE AT DEVICES INDICATED. WHERE FUTURE KEY INTERLOCKING PROVISIONS

BREAKER, BY CHANGE OF PLUG-IN ELEMENT WITHOUT REMOVING

ARE INDICATED, PROVIDE NECESSARY MOUNTINGS AND HARDWARE AS REQUIRED FOR THE FUTURE INSTALLATION,
INSTANTANEOUS UNDERVOLTAGE TRIP DEVICE: FOR INDICATED OCPOS. ADJUSTABLE-TIME-DELAY UNDERVOLTAGE TRIP DEVICES: FOR INDICATED O. SHUNT-TRIP DEVICES FOR CIRCUIT BREAKERS: WHERE INDIGATED, ARRANGE TO TRIP BREAKER FROM AN EXTERNAL SOURCE OF POWER

HROUGH A CONTROL SWITCH OF RELAY CONTACTS UNSTALLATION ... INDEPENDENTLY MOUNTED COPDS: LOCATE AS INDICATED AND INSTALL IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTALLATION OCPOS IN DISTRIBUTION EQUIPMENT SHALL BE FACTORY INSTALLED.

L2 CONNECTIONS A. CHECK CONNECTORS, TERMINALS, BUS JOINTS, AND MOUNTINGS FOR TIGHTNESS, TIGHTEN FIELD-CONNECTED CONNECTORS AND TERMINALS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT INDICATED, TICHTEN CONNECTORS AND TERMINALS TO COMPLY WITH TIGHTENING TORQUES SPECIFIED IN UL 486A AND UL 486E.

L PROVIDE EQUIPMENT GROUNDING CONNECTIONS FOR WOLVIDUALLY MOUNTED DOPD UNITS AS INDICATED AND AS REQUIRED BY NEC. TIGHTEN CONNECTORS TO COMPLY WITH TIGHTENING TORQUES SPECIFIED IN ME. STANDARD 486A TO ASSURE PERMANENT AND EFFECTIVE ORGUNOUND 3.4 FIELD QUALITY CONTROL

A. VISUAL AND MECHANICAL INSPECTION: INCLUDE THE FOLLOWING

INSPECTIONS AND RELATED WORK 1. OVERCURRENT-PROTECTIVE-DEVICE RATINGS AND SETTINGS. VERIFY INDICATED RATINGS AND SETTINGS TO BE APPROPRIATE FOR FINAL SYSTEM ARRANGEMENT AND PARAMETERS. WHERE DISCREPANCIES ARE D, TEST ORGANIZATION SHALL RECOMMEND FINAL PROTECTIVE DEVICE RATINGS AND SETTINGS. USE ACCEPTED REVISED RATINGS OF SETTINGS TO MAKE THE FINAL SYSTEM ADJUSTMENTS. INSPECT FOR DEFECTS AND PHYSICAL DAMAGE, NRTL LABELING, AND NAMEPLATE COMPLIANCE WITH CURRENT SINGLE LINE DIAGRAM. 1. EXERCISE AND PERFORM OPERATIONAL TESTS OF ALL MECHANICAL COMPONENTS AND OTHER OPERABLE DEVICES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION MANUAL

4. CHECK TICHTNESS OF ELECTRICAL CONNECTIONS OF OCPOS WITH CALBRATED TORQUE WRENCH. REFER TO MANUFACTURER'S INSTRUCTIONS FOR PROPER TORQUE VALUES. 5. CLEAN OCPDS USING MANUFACTURER'S APPROVED METHODS AND S, VERIFY INSTALLATION OF PROPER FUSE TYPES AND RATINGS IN

, UPON COMPLETION OF INSTALLATION, INSPECT COPOS. REMOVE PAINT SPLATTERS AND OTHER SPOTS, DIRT, AND DEBROS. TOWARD WE SCRATCHES AND MARS OF IONISH TO MATCH DRIGINAL FINISH.

A. MAINTENANCE STOCK, FUSES. FOR TYPES AND RATINGS REQUIRED. FURNISH SPARE FUSES, AMOUNTING TO ONE UNIT FOR EVERY 5 INSTALLED UNITS, BUT NOT LESS THAN ONE SET OF 3 OF EACH KIND, A MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS,

BUSSMANN DIV., COOPER INDUSTRIES, INC. OR GOULD, SHAWMIT INC. 2.2 FUSES, GENERAL.
A. GENERAL: PROVIDE FUSES OF TYPES, CLASSES, AND CURRENT RATINGS AS INDICATED. VOLTAGE RATINGS SHALL BE CONSISTENT WITH THE CIRCUITS ON WHICH USED. B. FUSE'S FOR DIRECT CURRENT CHICUITS: MARKED FOR SUCH USE BY THE

2.3 CARTRIGGE FUSES A. GENERAL: COMPLY WITH ANS/JEEF STANDARD FUIL "LOW VOLTAGE CARTRIDIZE FUSES." PROVIDE NONRENEWABLE-CARTRIDGE-TYPE FUSES EXCEPT AS INDICATED. 2.4 SPARE FUSE CARINET A. CABINET: WALL-MOUNTED, 18 GACE MINIMUM STEEL UNIT WITH

FULL-LENGTH, RECESSED PLAND-HINGED DOOR WITH KEY CODED DAM B. SIZE: PROVIDE FOR ORDERLY STURAGE OF ALL SPARE FUSES OF THIS PROJECT PLUS 15 PERCENT SPARE CAPACITY, MINIMUM. FINISH GRAY BAKED ENAMEL CABINET DOOR: BEAR THE LECENO IN STENCIED 1-1/2-INCH-HIGH LETTERS, "SPANE FUSES,"

J APPLICATION OF FUSES GENERAL: APPLY FUSES AS INDICATED AND AS FOLLOWS: NEW GENERAL PURPOSE FUSIBLE SWITCHES: APPLY THE FOLLOWING CLASS AND TYPES:

B. 601-1,200 AMPERES, MOTOR OR TRANSFORMER CIRCUIT: DLASS L. C. 601-1,200 AMPERES, NONINDUCTIVE CIRCUIT: CLASS L. FAST BOLTED PRESSURE SWITCHES CLASS L. TIME DELAY.

SERVICE PROTECTORS: DLASS L. TIME DELAY.

FUSIBLE SWITCH PANELBOARDS. CLASS J TIME DELAY. COMBINATION STARTERS: CLASS J TIME DELAY. COMBINATION STARTERS IN MOTOR CONTROL CENTERS: CLASS J TIME SWITCHES IN SWITCHBOARDS: APPLY THE FOLLOWING CLASSES AND

FAST ACTING B. 30-600 AMPERES, MOTOR OR TRANSFORMER CIRCUIT: CLASS J TIME C. 601 AMPERES AND ABOVE: DLASS L. TIME DELAY EXISTING GENERAL-PURPOSE SWITCHES: APPLY THE FOLLOWING

A. 30-600 AMPERES, LIGHTING/RECEPTACLE PANEL CIRCUITS: CLASS J.

CLASSES AND TYPES A. 30-600 AMPERES: CLASS RKI, TIME DELAY. B. 601-1,200 AMPERES: CLASS L. TIME OBLAY

B. INSTALL SPARE FUSE CABINET WALL MOUNTED WHERE INDICATED.

PROVIDE PRODUCTS BY THE FOLLOWING ENGINEERING, INC MANUFACTURER ON THE FUSE LADEL. Consulting Engineers 14137 Farmington Rd.

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ISSUES/REVISIONS.	DAYE:
FERMITS	09/16/19
	-

SHEET TITLE: ELECTRICAL

SPECIFICATIONS

(DO NOT SCALE DRAWINGS)

DATE	04/29/19
APPROVED BY:	RSL
CHECKED BY:	RSL
DESIGNED BY:	
DRAWN BY:	ETS

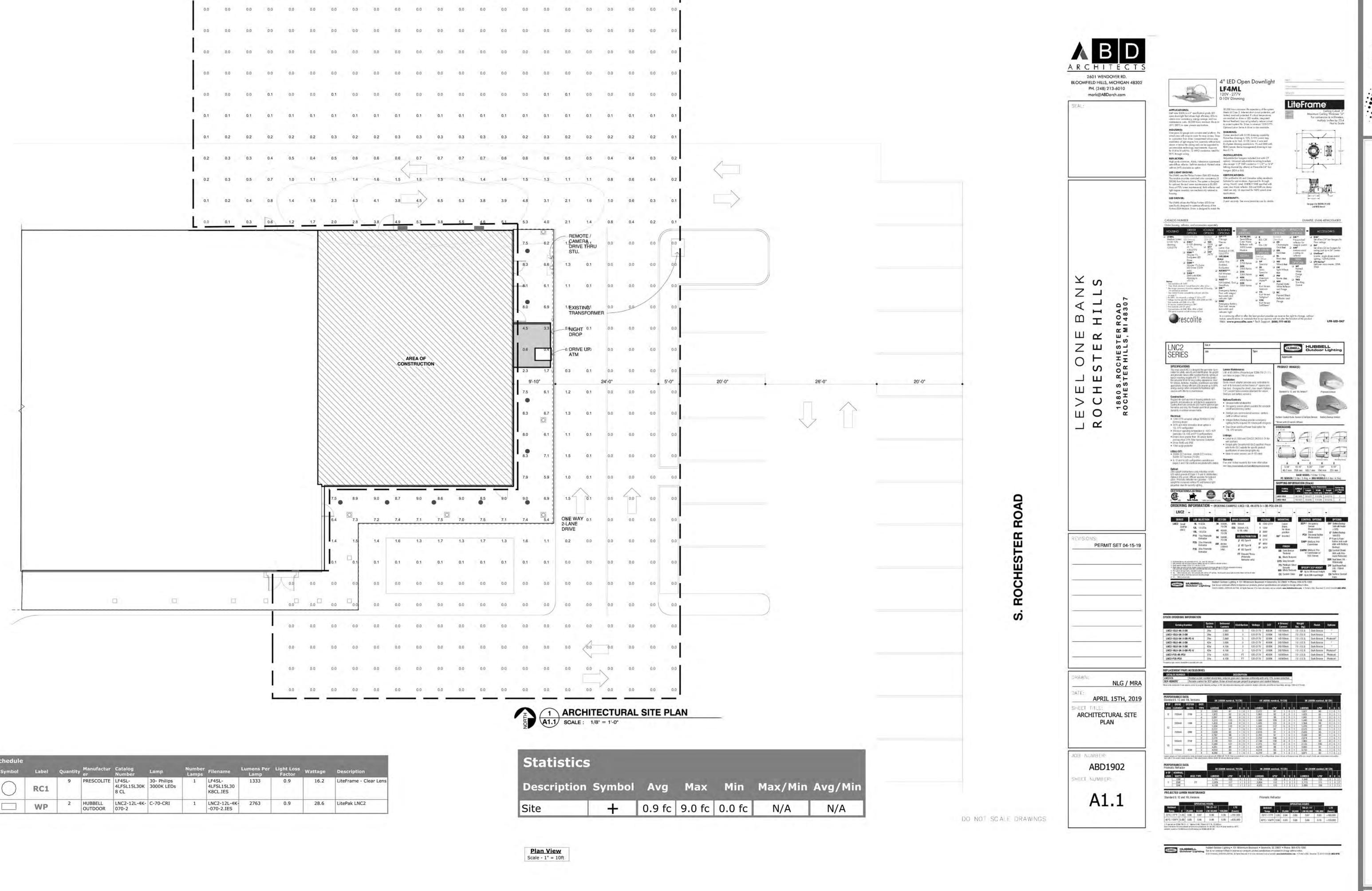
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RED PROJECT NUMBER:

19049

SHEET NUMBER:



Designer

Date
5/19/2019
Scale
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1 of 1

Summary

Level One Bank Rochester, MI e Plan Calculations