

FLOOR PLANS AND DETAILS

**GENERAL NOTES** 

SPECIAL INSPECTIONS

SCHEDULES, SECTIONS, DETAILS AND NOTES

STRUCTURAL ABBREVIATIONS AND LEGEND

OVERALL FLOOR PLAN - AREAS OF WORK

MECHANICAL & PLUMBING NEW PLANS **MECHANICAL & PLUMBING DETAILS** 

MECHANICAL & PLUMBING SCHEDULES

MECHANICAL & PLUMBING DETAILS

GENERAL NOTES AND LEGENDS

ELECTRICAL SPECIFICATIONS

ELECTRICAL DEMO PLANS

ELECTRICAL FLOOR PLANS

ELECTRICAL SCHEDULES

**GENERAL NOTES AND LEGENDS** 

MECHANICAL SPECIFICATIONS

MECHANICAL DEMO PLANS

SHEET NAME

# DRAWING LIST

SHEET NUMBER

S0.00

S1.01

S1.02

S2.01

M1.01

MP4.01

MP4.02

MP5.01

E0.00

E0.01

E1.01

E2.01

E5.01

## SHEET ISSUE DATE

16 JULY 2021

## **BUILDING DATA**

THE PROPOSED WORK HAS BEEN REVIEWED AS A LEVEL -II ALTERATION IN THE EXISTING BUILDING CODE OF NEW YORK STATE (EBCNYS) 2020 EDITION, CHAPTERS #7 & 8 EXISTING OCCUPANCY: "B" BUSINESS, "F-1" FACTORY & "S-1" STORAGE

### PROPOSED OCCUPANCY: "B" BUSINESS, "F-1" FACTORY & "S-1" STORAGE CHAPTER #7 EBCNYS: (LEVEL - II ALTERATIONS)

THE FOLLOWING SECTIONS OF CHAPTER 7 OF EBCNYS. ARE APPLICABLE: SECTION 702 - BUILDING ELEMENTS AND MATERIALS

NEWLY INSTALLED INTERIOR WALL AND CEILING FINISHES SHALL COMPLY WITH CHAPTER 8 OF THE BUILDING CODE OF NEW YORK STATE.

AND EXIT PASSAGEWAYS EXIT ACCESS STAIRWAYS AND RAMPS ROOMS & ENCLOSED SPACES

MINIMUM CRITICAL RADIANT FLUX. "IN ALL OCCUPANCIES, INTERIOR FLOOR FINISH AND FLOOR COVERING MATERIALS IN ENCLOSURES FOR STAIRWAYS AND RAMPS, EXIT PASSAGEWAYS, CORRIDORS AND ROOMS OR SPACES NOT SEPERATED FROM CORRIDORS BY PARTITIONS EXTENDING FROM THE FLOOR TO THE UNDERSIDE OF THE CEILING SHALL WITHSTAND A MINIMUM CRITICAL RADIANT FLUX. THE MINIMUM CRITICAL RADIANT FLUX SHALL BE NOT LESS THAN CLASS I IN GROUPS I-1, I-2, AND I-3, AND NOT LESS THAN CLASS II IN GROUPS A, B, E, I-4, M, R-1, R-2, AND S.'

702.6 MATERIAL AND METHODS

SECTION 704 - MEANS OF EGRESS 704.1 GENERAL

CHAPTER #8 EBCNYS:

THE FOLLOWING SECTION OF CHAPTER 8 OF E.B.C.N.Y.S. ARE APPLICABLE:

SECTION 801 - GENERAL 801.2 ALTERATION LEVEL 1 COMPLIANCE

SECTION 807 - ELECTRICAL 807.1 NEW INSTALLATIONS

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ISSUE FOR CONSTRUCTION

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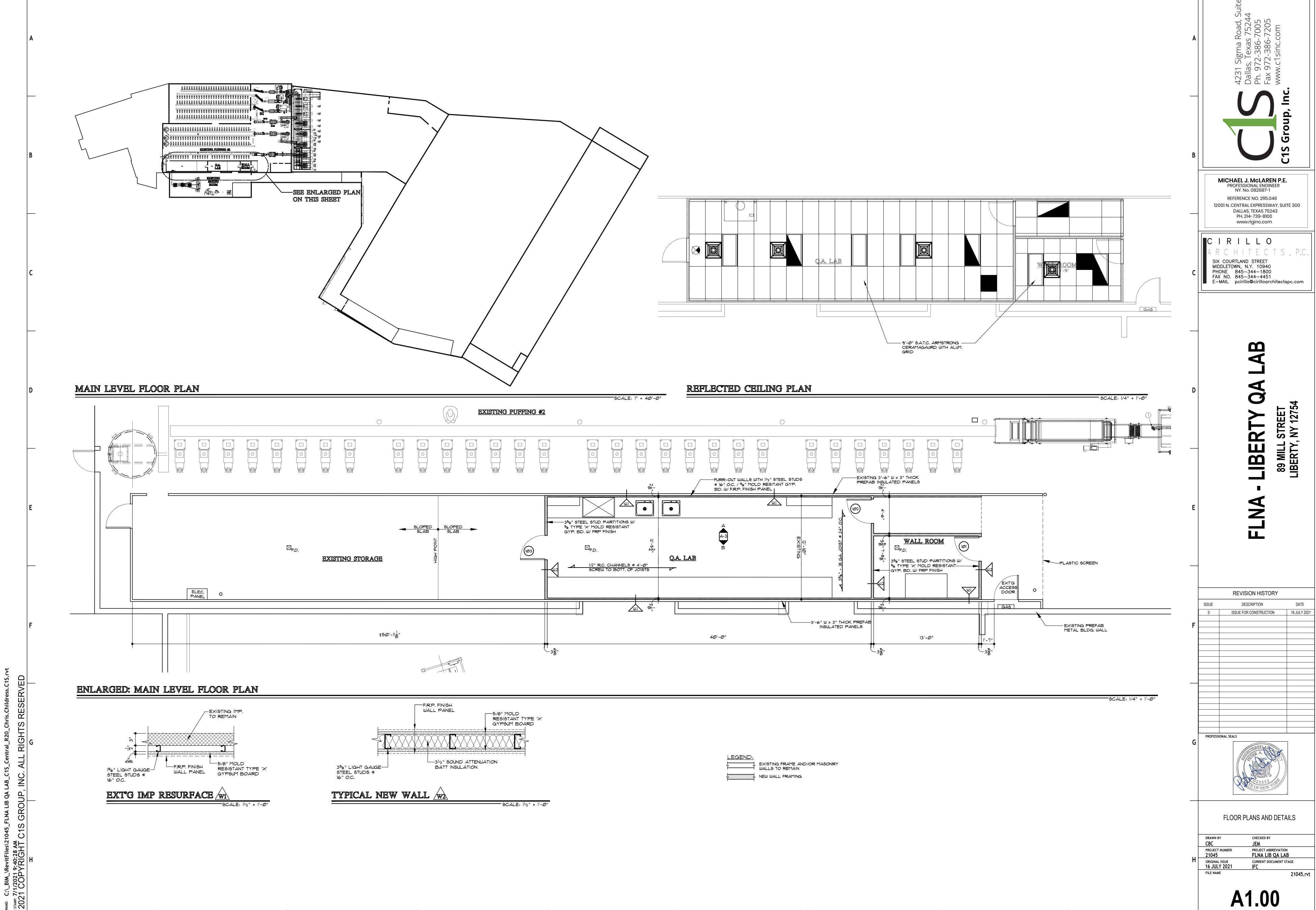
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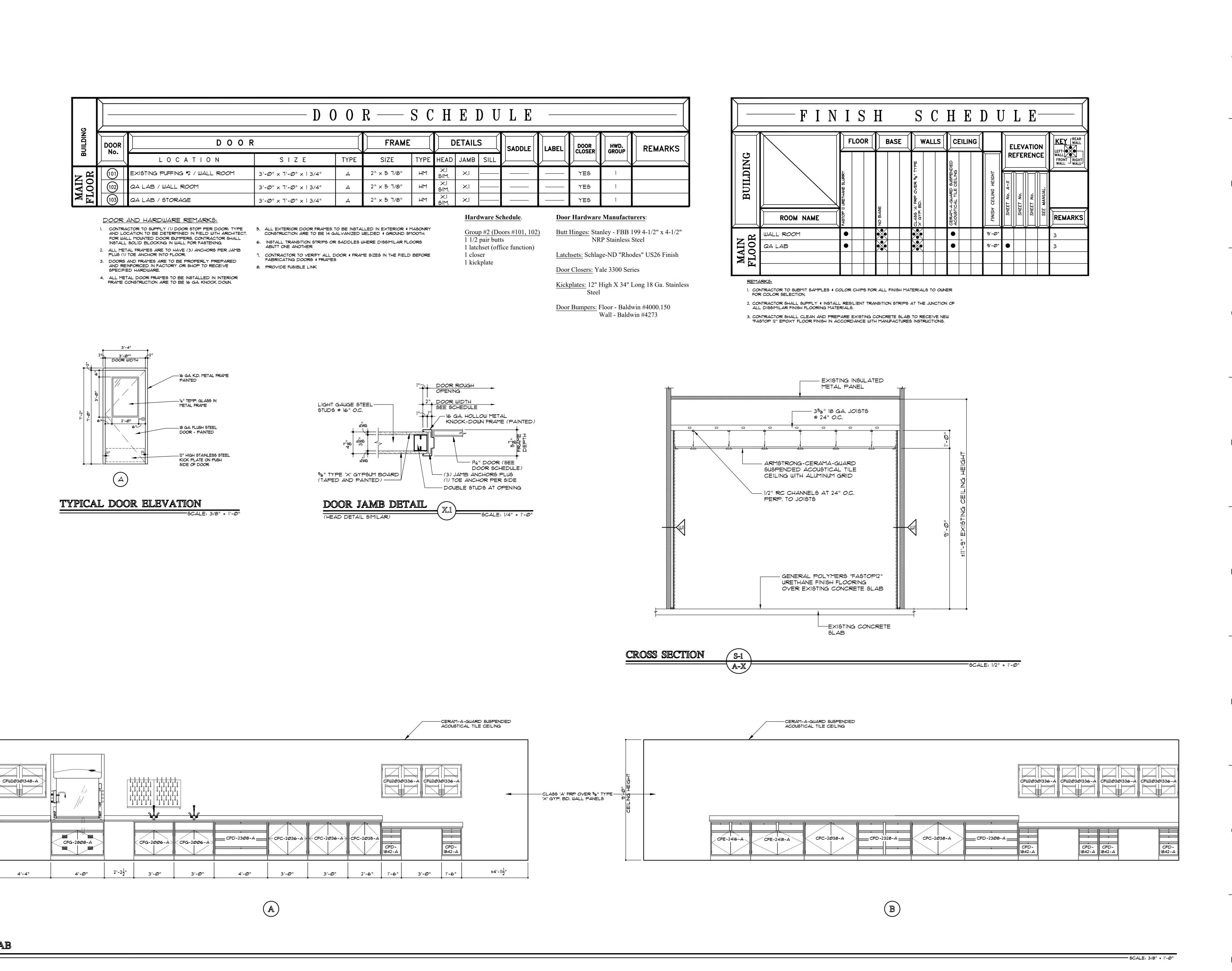
LIBERTY, NY 12754

PROJECT VICINTIY MAP

## BUILDING CODES

2018 INTERNATIONAL BUILDING CODE WITH NEW YORK STATE AMENDMENTS 2018 INTERNATIONAL EXISTING BUILDING CODE WITH NEW YORK STATE AMENDMENTS 2018 INTERNATIONAL MECHANICAL CODE WITH NEW YORK STATE AMENDMENTS 2018 INTERNATIONAL FUEL GAS CODE WITH NEW YORK STATE AMENDMENTS 2018 INTERNATIONAL ENERGY CONSERVATION CODE WITH NEW YORK STATE AMENDMENTS 2017 NATIONAL ELECTRICAL CODE





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REVISION HISTORY

ISSUE DESCRIPTION DATE

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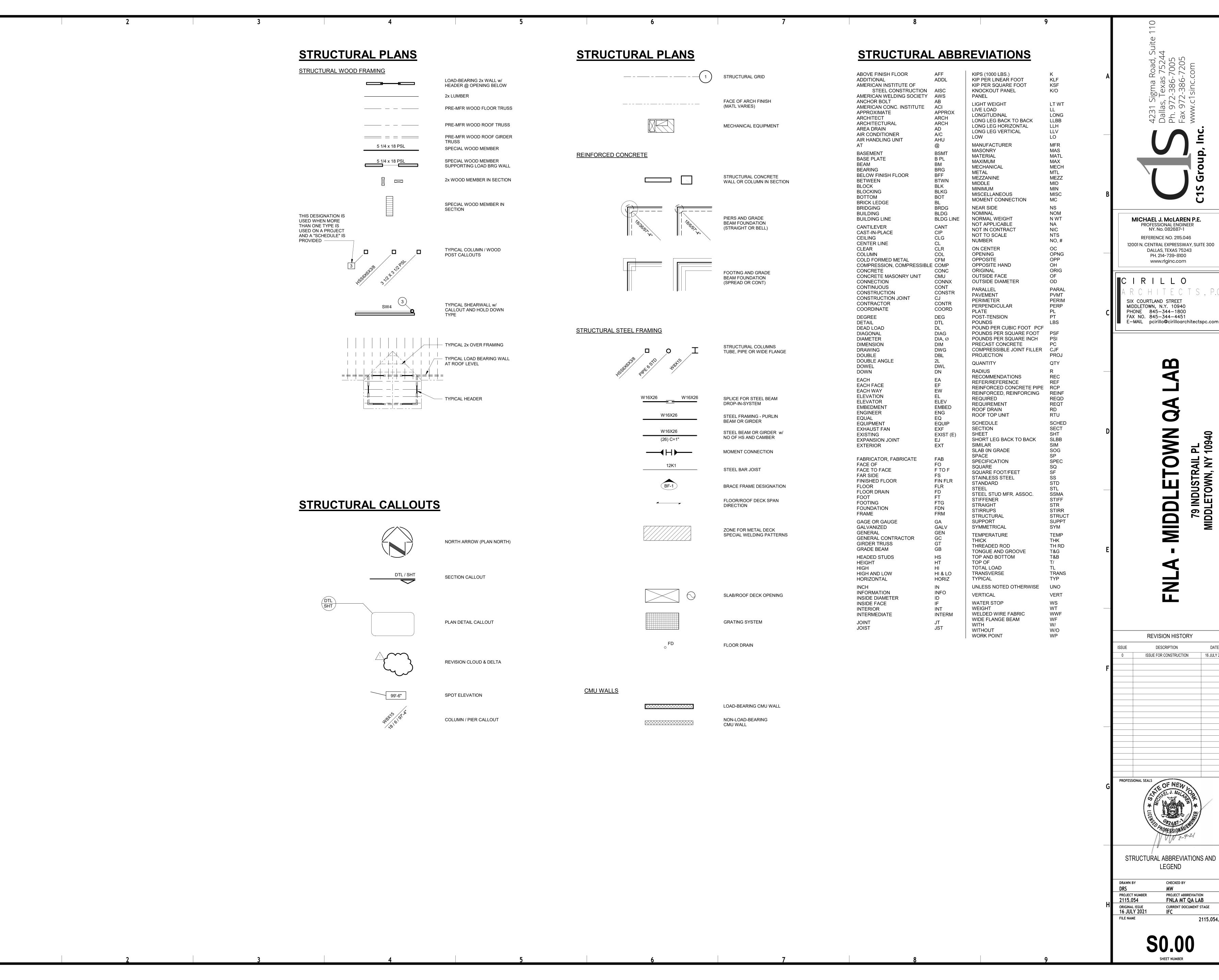
PROFESSIONAL SEALS

PROFESSIONAL SEALS

SCHEDULES, SECTIONS, DETAILS AND NOTES

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PROJECT NUMBER PROJECT ABBREVIATION
21045 FLNA LIB QA LAB
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LEGEND

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- STRUCTURAL STEEL SHALL CONFORM TO AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS," ANSI/AISC 360, LATEST EDITION.
- BOLTS AND BOLTED CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS," APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS, LATEST EDITION. CONNECTIONS SHALL BE BEARING TYPE UNLESS NOTED OTHERWISE IN DRAWINGS.
- ALL W SHAPES SHALL CONFORM TO ASTM A992.
  - ALL OTHER STRUCTURAL STEEL SHAPES, PLATES, ETC., SHALL CONFORM TO ASTM A36, UNLESS NOTED OTHERWISE.
- 4. ALL STRUCTURAL STEEL DETAILS AND CONNECTIONS SHALL CONFORM TO THE STANDARDS OF THE AISC.
- STEEL MEMBERS SHALL NOT BE SPLICED EXCEPT WHERE SHOWN ON THE
- WELDED CONSTRUCTION SHALL CONFORM TO THE AMERICAN WELDING SOCIETY "STRUCTURAL WELDING CODE", D1.1. ELECTRODES FOR FIELD AND SHOP WELDS SHALL BE E70XX, UNLESS NOTED OTHERWISE.
- ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS.
- FULL AND PARTIAL PENETRATION WELDS PERFORMED IN THE FIELD SHALL BE ULTRASONICALLY TESTED.
- WHEN WELDS ARE NOT CALLED-OUT ON DRAWINGS, THEY ARE MINIMUM SIZE CONTINUOUS FILLET WELDS IN ACCORDANCE WITH AWS D1.1.
- 10. TEMPORARY SUPPORTS, SUCH AS TEMPORARY GUYS, BRACES, FALSEWORK, CRIBBING OR OTHER ELEMENTS REQUIRED FOR THE ERECTION OPERATION WILL BE DETERMINED, FURNISHED, AND INSTALLED BY THE ERECTOR. THESE TEMPORARY SUPPORTS SHALL BE CAPABLE OF SECURING THE STEEL FRAMING, OR ANY PARTLY ASSEMBLED STEEL FRAMING, AGAINST LOADS COMPARABLE IN INTENSITY TO THOSE FOR WHICH THE STRUCTURE WAS DESIGNED, RESULTING FROM WIND, SEISMIC FORCES AND ERECTION OPERATIONS.
- 11. THE CONTRACTOR SHALL COMPLY WITH OSHA REQUIREMENTS FOR STEEL ERECTION.
  - WHERE PERIMETER SAFETY CABLES ARE REQUIRED:
  - CABLES MAY BE ATTACHED TO PERIMETER TUBE AND PIPE COLUMNS WITH STEEL DEVICES (PLATES, CLIPS, ETC.) WELDED TO THE COLUMNS.
  - (II) AT WIDE FLANGE COLUMNS, HOLES, UP TO 1" DIAMETER, MAY BE DRILLED IN THE WEB OR FLANGE AT 42" TO 45" ABOVE THE FINISHED FLOOR AND AT THE MIDPOINT BETWEEN THE FINISHED FLOOR AND THE TOP CABLE, TO PERMIT INSTALLATION OF THE PERIMETER CABLE SYSTEM.
  - (III) THE DESIGN OF ATTACHMENTS, THE PERIMETER CABLE SYSTEM AND ANCHORAGE TO THE STRUCTURE IS THE RESPONSIBILITY OF THE CONTRACTOR.
  - PRIOR TO ERECTION OF STEEL, THE CONTRACTOR SHALL PROVIDE TO THE STEEL ERECTOR, ON THE BASIS OF APPROPRIATE ASTM STANDARD TEST METHODS OF FIELD CURED SAMPLES, VERIFICATION THAT THE FOUNDATIONS, PIERS, WALLS AND MASONRY HAVE ACHIEVED SUFFICIENT STRENGTH PER OSHA REQUIREMENTS.

### MECHANICAL UNIT SUPPORT NOTES

 ALL EXPOSED STRUCTURAL STEEL FRAMING AND ACCESSORIES FOR MECHANICAL EQUIPMENT SUPPORTS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION. CONTRACTOR TO PROVIDE BOLTS AND PUNCH BEAMS AS REQUIRED BY EQUIPMENT MANUFACTURER'S DETAILS.

#### DEFERRED SUBMITTALS & DELEGATED DESIGN NOTES

- DEFERRED SUBMITTALS ARE PORTIONS OF THE OVERALL DESIGN WHICH ARE NOT SUBMITTED AT TIME OF PERMIT APPLICATION AND ARE TO BE SUBMITTED TO THE BUILDING OFFICIAL.
- DEFERRED SUBMITTALS WILL BE REVIEWED FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. SUBMITTAL REVIEW WILL NOT BE CONDUCTED FOR THE PURPOSE OF DETERMINING THE ACCURACY AND COMPLETENESS OF OTHER DETAILED INFORMATION SUCH AS DIMENSIONS AND QUANTITIES, OR FOR SUBSTANTIATING INSTRUCTIONS FOR INSTALLATION OR SYSTEMS DESIGNED BY THE CONTRACTOR WHICH REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.
  - REVIEW SHALL NOT CONSTITUTE APPROVAL OF SAFETY PRECAUTIONS OR OF ANY CONSTRUCTION MEANS, METHODS, SEQUENCES OR PROCEDURES.
  - APPROVAL OF A SPECIFIC ITEM SHALL NOT INDICATE APPROVAL OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT.
  - FOLLOWING DEFERRED SUBMITTALS (SHOP DRAWINGS) ARE TO BE PROVIDED FOR APPROVAL:

A. STRUCTURAL STEEL

- SHOP DRAWINGS ARE TO BE DISTRIBUTED ONLY FROM RETURNED SUBMITTALS BEARING AN INITIALED REVIEW STAMP AND WORK ON THESE ITEMS SHALL NOT PROCEED UNLESS THE STAMP CLEARLY INDICATES THE DRAWINGS ARE "APPROVED" OR "APPROVED AS NOTED."
- BEFORE SUBMISSION FOR REVIEW, GENERAL CONTRACTOR SHALL PRE-CHECK SUBMITTALS. SUBMITTALS MUST BEAR AN INITIALED REVIEW STAMP OF THE GENERAL CONTRACTOR. SUBMITTALS WITHOUT REVIEW STAMPS WILL BE RETURNED WITHOUT REVIEW AND SHALL NOT BE CAUSE FOR CLAIMS OF DELAY.
- SCHEDULE SUBMITTALS SUFFICIENTLY IN ADVANCE OF THE DATE REQUIRED TO ALLOW REASONABLE TIME FOR PROCESSING AND REVIEW BY THE DESIGN TEAM. THIS SHALL INCLUDE A MINIMUM OF TEN WORKING DAYS FOR ENGINEER'S PROCESSING AND REVIEW. INCLUDE TIME FOR CONTRACTOR'S RESUBMISSION AND SUBSEQUENT REVIEW IF NECESSARY.
- SHORTER REVIEW PERIODS WILL ONLY BE HONORED WITH PRIOR WRITTEN CONSENT. THESE ACCELERATED SERVICES, AND APPROPRIATE COMPENSATION, MUST BE NEGOTIATED WITH THE ENGINEER AND ARCHITECT IN ADVANCE.
- TEN DAY REVIEW PERIODS CAN NOT BE HONORED WHEN LARGE QUANTITIES OF SHOP DRAWINGS ARE SUBMITTED AT ONE TIME. WHEN THIS HAPPENS, THE CONTRACTOR SHALL SUBMIT AN ITEMIZED LIST INDICATING PRIORITIES AND REASONABLE RETURN DATES.
- REVIEW OF RESUBMITTALS WILL BE LIMITED TO ONLY EARLIER COMMENTS AND IS NOT AN EXTENSIVE REVIEW.
- USE OF REPRODUCTIONS OF THESE CONTRACT DRAWINGS, INCLUDING THE USE OF ELECTRONIC FILES, BY ANY CONTRACTOR IN LIEU OF THE INDEPENDENT PREPARATION OF SHOP DRAWINGS, SIGNIFIES THEIR ACCEPTANCE OF ALL INFORMATION SHOWN HEREON AS CORRECT AND OBLIGATES HIMSELF TO ANY JOB EXPENSE, REAL OR IMPLIED, ARISING DUE TO ANY ERRORS THAT MAY OCCUR HEREON.
- STRUCTURAL FRAMING WAS BASED ON PRE-BID MEP EQUIPMENT. MODIFICATIONS MAY BE NECESSARY IF DIFFERENT EQUIPMENT IS SELECTED OR IF DIFFERENT CRITERIA ARE REQUIRED. BASED ON THE EXTENT OF THE CHANGES, ADDITIONAL SERVICES FOR STRUCTURAL REDESIGN MAY BE REQUIRED. GENERAL CONTRACTOR SHALL INCLUDE A CONTINGENCY FOR THIS REVISED DESIGN AND CONSTRUCTION WORK. COSTS OF THE DESIGN AND CONSTRUCTION REVISIONS SHALL BE BORNE BY THE CONTRACTOR.
  - GENERAL CONTRACTOR TO SUBMIT FINAL WEIGHTS AND CUT-SHEETS FOR REVIEW AND APPROVAL IF EQUIPMENT DIFFERS FROM WHAT IS SHOWN ON THE CONSTRUCTION DOCUMENTS.

## MODIFICATIONS OF EXISTING STRUCTURE NOTES

- 1. THE CONTRACTOR SHALL INSPECT THE EXISTING STRUCTURE PRIOR TO FABRICATION AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES WITH THE CONTRACT DOCUMENTS OR ANY AREAS ERODED BY RUST, CORROSION, ROT, ETC., WHICH MAY ADVERSELY AFFECT THE RELIABILITY OF NEW CONSTRUCTION.
- DIMENSIONS SHOWN FOR, OR TO, THE EXISTING STRUCTURE ARE BASED ON EITHER THE ORIGINAL CONSTRUCTION DOCUMENTS PREPARED FOR THE EXISTING STRUCTURE OR ON APPROXIMATE FIELD MEASUREMENTS. THEY ARE TO BE USED FOR BID PURPOSES ONLY AND NOT FOR SHOP DRAWING PREPARATION OR CONSTRUCTION. ACTUAL CONDITIONS MAY VARY. THE CONTRACTOR SHALL PROVIDE ALL FIELD MEASUREMENTS REQUIRED FOR PROPER FIT UP OF MEMBERS FRAMING TO AND AROUND EXISTING CONSTRUCTION.
- THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR THE ADEQUACY OF ALL SHORING (TEMPORARY SUPPORTS) OF THE EXISTING STRUCTURE NECESSARY TO COMPLETE THE CONSTRUCTION AS OUTLINED IN THE STRUCTURAL DRAWINGS. PROVIDE SHORING, BRACES, JACKS, ETC. AS REQUIRED TO COMPLETE THE WORK. ENGINEERING AND DESIGN OF THE TEMPORARY SUPPORTS SHALL BE PERFORMED BY A PROFESSIONAL ENGINEER, ENGAGED BY THE CONTRACTOR. AND REGISTERED IN THE STATE OF THE PROJECT, WITH EXPERIENCE IN THE DESIGN OF THESE ELEMENTS.

#### DESIGN DATA

1. THE DESIGN OF THE STRUCTURE AND PARTS THEREOF IS IN ACCORDANCE WITH THE 2018 INTERNATIONAL BUILDING CODE, AS AMENDED AND ADOPTED BY THE CITY OF MIDDLETOWN, NEW YORK.

#### ROOF LIVE LOADS:

AREA	UNIFORM	SPECIAL COMMENTS	LIVE LOAD REDUCTION
ROOF, GENERAL	20 psf		YES, PER IBC 1607.13.2
ROOF, EQUIP LOADS		SEE ROOF PLAN	

#### SNOW LOADS:

GROUND SNOW LOAD, Pg	40 psf
FLAT ROOF SNOW LOAD, P <sub>f</sub>	28 psf
SNOW EXPOSURE FACTOR, C <sub>e</sub>	1
SNOW IMPORTANCE FACTOR, I <sub>s</sub>	1
THERMAL FACTOR, C <sub>t</sub>	1
SLOPE FACTOR, C.	1

#### WIND DESIGN DATA:

BASIC WIND SPEED (3 SECOND GUST)	115 mph
ASD WIND SPEED V <sub>asd</sub>	90 mph
RISK CATEGORY	1
WIND EXPOSURE	С
INTERNAL PRESSURE COEFFICIENT	+/- 0.18
COMPONENTS AND CLADDING	PER ASCE 7-16

#### SEISMIC DESIGN DATA:

RISK CATEGORY	II		
SEISMIC IMPORTANCE FACTOR le	1		
MAPPED SPECTRAL RESPONSE ACCEL.	$S_S = 0.206$	S <sub>1</sub> =	0.054
SITE CLASS	D		
SPECTRAL RESPONSE COEFFICIENTS	S <sub>DS</sub> = 0.220	S <sub>D1</sub> =	0.086
SEISMIC DESIGN CATEGORY	В		

#### **GENERAL NOTES**

- PROJECT SPECIFICATIONS ARE A PART OF THE CONTRACT DOCUMENTS. CONTRACTOR SHALL REVIEW THE SPECIFICATIONS AND NOTIFY ARCHITECT OF DISCREPANCIES BEFORE PROCEEDING WITH WORK.
- STRUCTURAL DRAWINGS ARE AN INTEGRAL COMPONENT TO THE CONTRACT DOCUMENTS. CONTRACTOR SHALL REVIEW AND COORDINATE ACCORDINGLY. PRIOR TO FABRICATION OR INSTALLATION OF STRUCTURAL MEMBERS CONTRACTOR SHALL COMPARE STRUCTURAL DIMENSIONS AND
  - SECTIONS WITH ARCHITECTURAL DIMENSIONS AND SECTIONS. DISCREPANCIES ARE TO BE REPORTED IN WRITING TO THE ARCHITECT. PRINCIPAL OPENINGS ARE SHOWN ON THESE DRAWINGS. REFER TO ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR OTHER OPENINGS NOT SHOWN.
  - LOCATIONS OF SLAB DEPRESSIONS AND CURBS NOT SHOWN. PROVIDE POSITIVE SLOPE TO ALL DRAINS.

REFER TO ARCHITECTURAL DRAWINGS FOR ELEVATIONS AND

- D. CONTRACTOR SHALL COORDINATE PENETRATIONS, SLEEVES, CURBS, AND INSERTS REQUIRED FOR THE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL VERIFY SIZE, WEIGHT, LOCATION, AND SUPPORT CONDITIONS OF MECHANICAL EQUIPMENT SUPPORTED ON OR SUSPENDED FROM THE ROOF OR FLOORS.
- CONTRACTOR SHALL COORDINATE CONSTRUCTION WITH ADJACENT STRUCTURES AND UTILITIES.
- CONTRACTOR SHALL NOTIFY IN WRITING THE ARCHITECT & ENGINEER OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.
- EXISTING CONDITIONS MAY BE CONCEALED. CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER IN WRITING OF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND CONTRACT DOCUMENTS OR ITEMS SUCH AS CORROSION, ROT, DELAMINATION, OR CRACKS WHICH MAY ADVERSELY AFFECT CONSTRUCTION.
- DIMENSIONS TO EXISTING OR ADJACENT CONSTRUCTION ARE BASED ON THE ORIGINAL CONSTRUCTION DOCUMENTS AND/OR APPROXIMATE FIELD MEASUREMENTS. THEY ARE TO BE USED FOR BID PURPOSES ONLY AND NOT FOR SHOP DRAWING PREPARATION OR CONSTRUCTION. FIELD MEASUREMENTS SHALL BE USED TO INSURE PROPER FIT UP OF FRAMING MEMBERS.
- TEMPORARY SHORING AND BRACING DURING CONSTRUCTION
- A. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING OF COMPONENTS DURING CONSTRUCTION TO MEET REGULATORY REQUIREMENTS FOR
- CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND BRACING OF WALLS AND GRADE BEAMS DURING CONSTRUCTION. SHORE WALLS AND GRADE BEAMS DURING THE BACKFILLING AND COMPACTION
- CONTRACTOR SHALL PROVIDE NECESSARY TEMPORARY BRACING AND SHORING DURING CONSTRUCTION UNTIL STRUCTURAL FRAMING AND DIAPHRAGMS ARE COMPLETED. TEMPORARY BRACING SHALL BE DESIGNED UNDER THE SUPERVISION OF A LICENSED ENGINEER.
- SELECTION OF CONSTRUCTION MEANS, METHODS, TECHNIQUES, AND PROCEDURES, AS WELL AS SAFETY PRECAUTIONS AND PROGRAMS, ARE SOLELY THE CONTRACTOR'S RESPONSIBILITIES. AS SUCH, CONSTRUCTION ENGINEERING AND DESIGN RESULTING FROM THESE SELECTIONS IS THE RESPONSIBILITY OF THE CONTRACTOR.
  - EXAMPLES INCLUDE, BUT ARE NOT LIMITED TO, ENGINEERING OF SHORING AND SCAFFOLDING SYSTEMS; LOAD CHECKS AND STRUCTURAL MODIFICATIONS FOR STORAGE, STAGING, AND CONSTRUCTION EQUIPMENT LOADING; MEANS OF EGRESS FOR HEAVY EQUIPMENT; CRANE SELECTION, LOCATION, SUPPORT AND BRACING;
  - TEMPORARY HOISTS, LIFTS AND PLATFORMS. CONTRACTOR SHALL ENSURE THAT APPROPRIATE ENGINEERING IS PERFORMED BY A LICENSED ENGINEER FOR THE WORK, CONSULTED WITH ON FIELD MODIFICATIONS, SPECIFY APPROPRIATE LEVELS OF INSPECTION OF THE WORK, AND TO REVIEW INSPECTION REPORTS.
  - CONSTRUCTION ENGINEERING FEES HAVE NOT BEEN INCLUDED IN THE BASE FEE TO THE OWNER/ARCHITECT. IF REQUESTED, THE EOR MAY CONSIDER PERFORMING THESE SERVICES AS AN ADDITIONAL SERVICE PAID BY THE CONTRACTOR.
- CONTRACTOR SHALL COMPLY WITH REQUIREMENTS AS LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS.

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PROFESSIONAL SEALS

**GENERAL NOTES** 

PROJECT NUMBER FNLA MT QA LAB ORIGINAL ISSUE **CURRENT DOCUMENT STAGE** 16 JULY 2021

#### CONTRACTOR'S ACKNOWLEDGEMENT OF RESPONSIBILITY FOR IMPLEMENTATION OF THE SPECIAL INSPECTIONS PLAN

- 1. AS PART OF THE SUBMITTAL FOR BUILDING PERMIT, THE GENERAL CONTRACTOR SHALL COMPLETE THE FOLLOWING FORM AS A WRITTEN STATEMENT OF RESPONSIBILITY.
- a. AS THE GENERAL CONTACTOR, WE ARE AWARE OF THE REQUIREMENTS FOR SPECIAL INSPECTIONS AS LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS.
- b. AS GENERAL CONTRACTOR, WE ACKNOWLEDGE THAT CONTROL MUST BE EXERCISED BY OUR ORGAINIZATION TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL. WE ACKNOWLEDGE OUR RESPONSIBILITY TO DISTRIBUTE UP TO DATE DOCUMENTS, INCLUDING PLANS, SPECIFICATIONS, ADDENDA, CHANGE ORDERS, RESPONSES TO REQUESTS FOR INFORMATION, ARCHITECTURAL SUPPLEMENTAL INSTRUCTIONS, SHOP DRAWINGS ETC., TO ALL SUBCONTRACTORS AND TO THE SPECIAL INSPECTORS. WE ACKNOWLEDGE OUR RESPONSIBILITY FOR CALLING THE APPROPRIATE SPECIAL INSPECTORS AT APPROPRIATE TIMES TO FULLFILL THE REQUIREMENTS IN THE STATEMENT OF SPECIAL INSPECTIONS.
- c. AS GENERAL CONTRACTOR, WE HAVE DEVELOPED PLANS AND PROCEDURES FOR EXERCISING CONTROL WITHIN OUR ORGANIZATION, FOR THE METHOD AND FREQUENCY OF REPORTING AND FOR THE DISTRIBUTION OF THE REPORTS.

Position within Firm

Position/Office within Firm

d. THE FOLLOWING QUALIFIED INDIVIDUAL(S) WITHIN OUR FIRM WILL BE RESPONSIBLE FOR CONTROLLING THE PLAN, PROCEDURES AND PROCESS OF THE SPECIAL INSPECTIONS PLAN:

Name

2.	THE GENERAL CONTRACTOR ACKNOWLEDGES OUR RESPONSIBLITIES AS STATED ABOVE.	

## INSPECTION OF FABRICATORS

Firm Name

1. WHERE FABRICATION OF STRUCTURAL LOAD-BEARING OR LATERAL LOAD-RESISTING MEMBERS OR ASSEMBLIES IS BEING CONDUCTED ON THE PREMISES OF A FABRICATOR'S SHOP, SPECIAL INSPECTIONS OF THE FABRICATED ITEMS SHALL BE PERFORMED DURING FABRICATION.

- 2. SPECIAL INSPECTIONS DURING FABRICATION ARE NOT REQUIRED WHERE THE FABRICATOR MAINTAINS APPROVED DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES THAT PROVIDE A BASIS FOR CONTROL OF THE WORKMANSHIP AND THE FABRICATOR'S ABILITY TO CONFORM TO APPROVED CONSTRUCTION DOCUMENTS AND THIS CODE.APPROVAL SHALL BE BASED UPON REVIEW OF FABRICATION AND QUALITY CONTROL PROCEDURES AND PERIODIC INSPECTION OF FABRICATION PRACTICES BY THE BUILDING OFFICIAL.
- SPECIAL INSPECTIONS DURING FABRICATION ARE NOT REQUIRED WHERE THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION. APPROVAL SHALL BE BASED UPON REVIEW OF THE FABRICATOR'S WRITTEN PROCEDURAL AND QUALITY CONTROL MANUALS AND PERIODIC AUDITING OF FABRICATION PRACTICES BY AN APPROVED AGENCY. AT COMPLETION OF FABRICATION, THE APPROVED FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE OWNER OR THE OWNER'S AUTHORIZED AGENT FOR SUBMITTAL TO THE BUILDING OFFICIAL AS SPECIFIED IN SECTION 1704.5 STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DUCUMENTS

## REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION

- 1. SPECIAL INSPECTIONS FOR STEEL ELEMENTS OF THE BUILDINGS AND STRUCTURES SHALL BE AS REQUIRED IN THE FOLLOWING TABLE.
- 2. SPECIAL INSPECTION FOR STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF IBC 1705.2 AND AISC 360

		VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	NOT APPLICABLE	REFERENCED STANDARD	IBC REFERENCE	PROJECT SPECIFICATION SECTION
1-	INS	PECTION OF WELDING						
	a.	INSPECTION PRIOR TO WELDING		х		AWS D1.1/ D1.1M	IBC 1705.2 AISC: TABLE N5.4-1	
	b.	INSPECTION DURING WELDING		х		AWS D1.1/ D1.1M	IBC 1705.2 AISC: TABLE N5.4-2	
	C.	INSPECTION AFTER WELDING		Х		AWS D1.1/ D1.1M	IBC 1705.2 AISC: TABLE N5.4-3	
2-	INS	PECTION OF BOLTING						
	a.	INSPECTION PRIOR TO BOLTING			х	-	IBC 1705.2 AISC: TABLE N5.6-1	051000, 3.02
	b.	INSPECTION DURING BOLTING			х	-	IBC 1705.2 AISC: TABLE N5.6-2	
	C.	INSPECTION AFTER BOLTING			х	-	IBC 1705.2 AISC: TABLE N5.6-3	
3-		PECTION OF STEEL ELEMENTS OF COMPOSITE NSTRUCTION			х	-	IBC 1705.2.2 AISC: TABLE N6.1	
5-	REI	NFORCING STEEL		х		AWS D1.4	IBC 1705.3.1, IBC 1705.3.2 ACI 318: CH. 19, 20	

#### STATEMENT OF SPECIAL INSPECTIONS

- 1. INFORMATION ON THIS SHEET IS BEING SUBMITTED IN ACCORDANCE WITH THE SPECIAL INSPECTIONS PROVISIONS OF THE 2015 INTERNATIONAL BUILDING CODE. THIS INFORMATION CONSTITUTES THE SCHEDULE OF SPECIAL INSPECTIONS (SSI) REQUIRED FOR THIS PROJECT.
- 2. THE OWNER OR THE OWNER'S AUTHORIZED AGENT, OTHER THAN THE CONTRACTOR, SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PROVIDE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED HEREIN.
- 3. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
- 4. THE SPECIAL INSPECTOR SHALL FULLFILL THE FOLLOWING REPORT REQUIREMENTS:
  - SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS.
  - THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, THE OWNER, THE GENERAL CONTRACTOR, THE STRUCTURAL ENGINEER, AND THE ARCHITECT. IN ADDITION, REPORTS RELATED TO GEOTECHNICAL ISSUES SHALL BE DISTRIBUTED TO THE GEOTECHNICAL ENGINEER. WHEN TESTS OR INSPECTIONS INDICATE THAT THE WORK DOES NOT COMPLY WITH THE CONSTRUCTION DOCUMENTS, THE SPECIAL INSPECTOR SHALL NOTIFY THE OWNER, CONTRACTOR, ARCHITECT AND STRUCTURAL ENGINEER BY PHONE ON THE DAY OF THE TEST OR INSPECTION AND SHALL FOLLOW THAT CALL WITH AN EXPEDITED WRITTEN REPORT WITHIN ONE BUSINESS DAY. ALL OTHER REPORTS SHALL BE SUBMITTED WITHIN 5 BUSINESS DAYS OF THE EVENT DOCUMENTED.
- REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS.
- DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR
- IF THE DISCREPANCIES ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE WITHIN ONE BUISINESS DAY.
- A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS SHALL BE SUBMITTED BY THE SPECIAL INSPECTOR AT A POINT IN TIME AGREED UPON BY THE PERMIT APPLICANT AND THE BUILDING OFFICIAL PRIOR TO THE START OF WORK.
- THE SPECIAL INSPECTOR'S FINAL REPORT SHALL IDENTIFY THE FOLLOWING:
- THE MATERIALS, SYSTEMS, COMPONENTS, AND WORK REQUIRED TO HAVE SPECIAL INSPECTION OR TESTING BY THE BUILDING OFFICIAL OR BY THE REGISTERED DESIGN PROFESSIONAL RESPONSIBLE FOR EACH PORTION OF THE WORK.
- THE TYPE AND EXTENT OF EACH SPECIAL INSPECTION.
- THE TYPE AND EXTENT OF EACH TEST.
- ADDITIONAL REQUIREMENTS FOR SPECIAL INSPECTION OR TESTING FOR SEISMIC OR WIND RESISTANCE AS SPECIFIED IN SECTIONS 1705.11, 1705.12 AND 1705.13.
- WHERE SECTION 1705.12 OR 1705.13 SPECIFIES SPECIAL INSPECTION, TESTING OR QUALIFICATION FOR SEISMIC RESISTANCE, THE STATEMENT OF SPECIAL INSPECTIONS SHALL IDENTIFY THE DESIGNATED SEISMIC SYSTEMS AND SEISMIC FORCE-RESISTING SYSTEMS THAT ARE SUBJECT TO SPECIAL INSPECTIONS OR TESTS
- ii. WHERE SECTION 1705.11 SPECIFIES SPECIAL INSPECTION FOR WIND REQUIREEMENTS, THE STATEMENT OF SPECIAL INSPECTIONS SHALL IDENTIFY THE MAIN WINDFORCE-RESISTING SYSTEMS AND WIND-RESISTING COMPONENTS SUBJECT TO SPECIAL INSPECTIONS.
- FOR EACH TYPE OF SPECIAL INSPECTION, IDENTIFICATION AS TO WETHER IT WILL BE CONTINUOUS SPECIAL INSPECTION, PERIODIC SPECIAL INSPECTION OR PERFORMED IN ACCORDANCE WITH THE NOTATION USED IN THE REFERENCED STANDARD WHERE THE INSPECTIONS ARE DEFINED.

THE REPORT SHALL BE SIGNED BY THE SPECIAL INSPECTOR.

- 5. THE INSPECTIONS LISTED HEREIN ARE IN ADDITION TO THE INSPECTIONS TO BE PERFORMED BY THE BUILDING OFFICIAL AND LISTED IN SECTION 110 OF THE IBC.
- 6. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION ON QUANTITY, FREQUENCY AND DETAILED INFORMATION ON TESTING, INSPECTION AND REPORTING.
- 7. PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION
- MEETING TO DISCUSS THE SPECIAL INSPECTION REQUIREMENTS WITH ALL INVOLVED PARTIES. 8. THE SPECIAL INSPECTIONS PROGRAM OUTLINED HEREIN, DOES NOT RELIEVE THE CONTRACTOR OR ANY OTHER ENTITY OF ANY CONTRACTUAL DUTIES, INCLUDING QUALITY CONTROL, QUALITY ASSURANCE, OR SAFETY. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, AND JOB SITE
- 9. THE CONTRACTOR SHALL PAY FOR ENGINEERING SERVICES REQUIRED TO INVESTIGATE AND CORRECT WORK THAT DOES NOT CONFORM TO THE PROJECT DOCUMENTS OR IS FOUND DEFICIENT OR DEFECTIVE.

## PERMIT APPLICANT'S RESPONSIBILITIES

- 1. THE PERMIT APPLICANT SHALL SUBMIT THIS SHEET AS THE STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AS A CONDITION FOR PERMIT ISSUANCE.
- 2. THE PERMIT APPLICANT SHALL LIST BELOW THE INDIVIDUALS, APPROVED AGENCIES OR FIRMS INTENDED TO BE RETAINED FOR CONDUCTING SUCH INSPECTIONS.
- a. STRUCTURAL STEEL

name or firm name

3. THE PERMIT APPLICANT SHALL OBTAIN ALL NECESSARY SIGNATURES INCLUDING CONTRACTOR ACKNOWLEDGEMENT OF SPECIAL INSPECTION REQUIREMENTS.

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REVISION HISTORY DESCRIPTION ISSUE FOR CONSTRUCTION 16 JULY 202

PROFESSIONAL SEALS

SPECIAL INSPECTIONS

PROJECT NUMBER ORIGINAL ISSUE 16 JULY 2021

FLNA LIB QA LAB **CURRENT DOCUMENT STAGE** 

PROVIDE SHIMS (C4x5.4x0'-6") AT EACH CORNER OF UNIT AND AT 6'-0" MAX

WHERE UNIT CURB DOES NOT ALIGN WITH SUPPORT, PROVIDE L - 3"x3"x1/4" SUPPORT FRAMING AT EACH SHIM LOCATION.

C4x5.4x0'-6"

SECTION "B"

CL BM OR JST

TION OF OPNGS

THRU DECK ARE

04/S2.01 FOR TYP

OF ACTUAL UNIT PURCHASED.

OUTLINE OF INSIDE

FACE OF RTU CURB

**BLOCK SOLID BTWN** MECH UNIT & JST

--A/---(TYP)

TYPICAL ROOF OPENING DETAIL

W/ C4x5.4x0'-6".

ROOF OPNG DET &

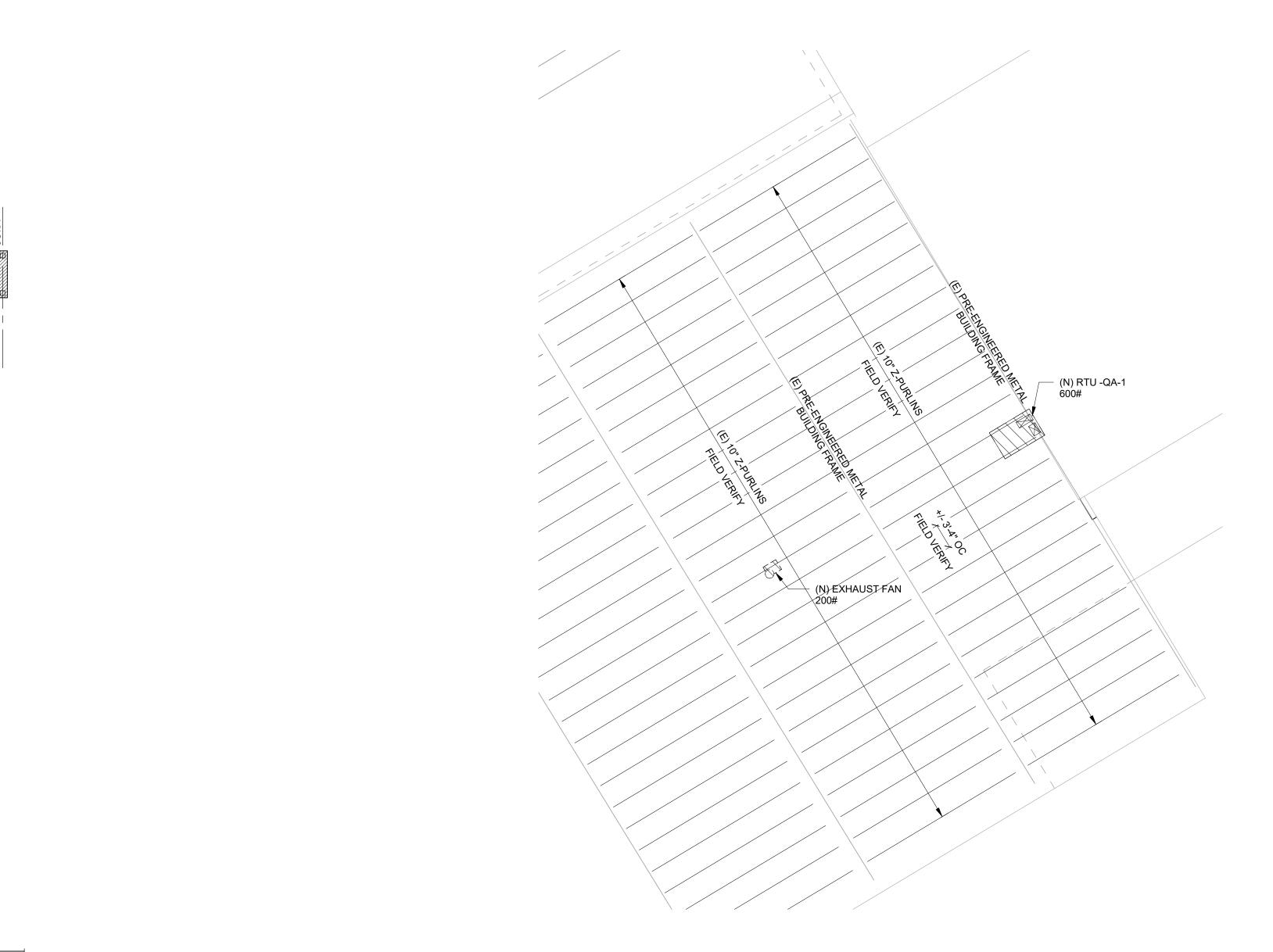
LOCATION & ORIENTA-

DIAGRAMMATIC. REF

COORDINATE FRAMING W/ REQUIREMENTS

BETWEEN SUPPORTS. (TYPICAL).

- WHERE UNIT CURBS ALIGN WITH SUPPORT FRAMING, NO ADDITIONAL ANGLE SUPPORTS ARE REQIUIRED.



# 01 AREA 2 PARTIAL ROOF FRAMING PLAN

## PLAN NOTES:

- 1. ALL ELEVATIONS ARE REFERENCED TO LEVEL 1 FINISHED FLOOR
- EL = 100'-0". REFERENCE SITE PLAN FOR ABSOLUTE ELEVATIONS. 2. SEE S0 SERIES FOR ABBREVIATIONS. SEE S1 SERIES FOR GENERAL NOTES
- AND SPECIAL INSPECTIONS
- 3. EXISTING STRUCTURAL ELEMENTS SHOWN FROM LIMITED SITE EXAMINATION BY OTHERS AND LIMITED ORIGINAL CONSTRUCTION DOCUMENTS. FIELD VERIFY SIZES AND LOCATIONS OF EXISTING FRAMING ELEMENTS. CONTACT STRUCTURAL ENGINEER IN THE EVENT OF CONFLICT AND DISCREPANCIES BETWEEN NEW AND EXISTING STRUCTURAL ELEMENTS.
- 4. COORDINATION ROOF TOP MECHNICAL EQUIPMENT WITH MECHANICAL PLANS.
- 5. UNLESS OTHERWISE NOTED, DO NOT DISTURB EXISTING STRUCTURAL ELEMENTS. 6. PRIOR TO DEMOLITION, FIELD VERIFY EXISTING ROOF ROD BRACING LOCATIONS.

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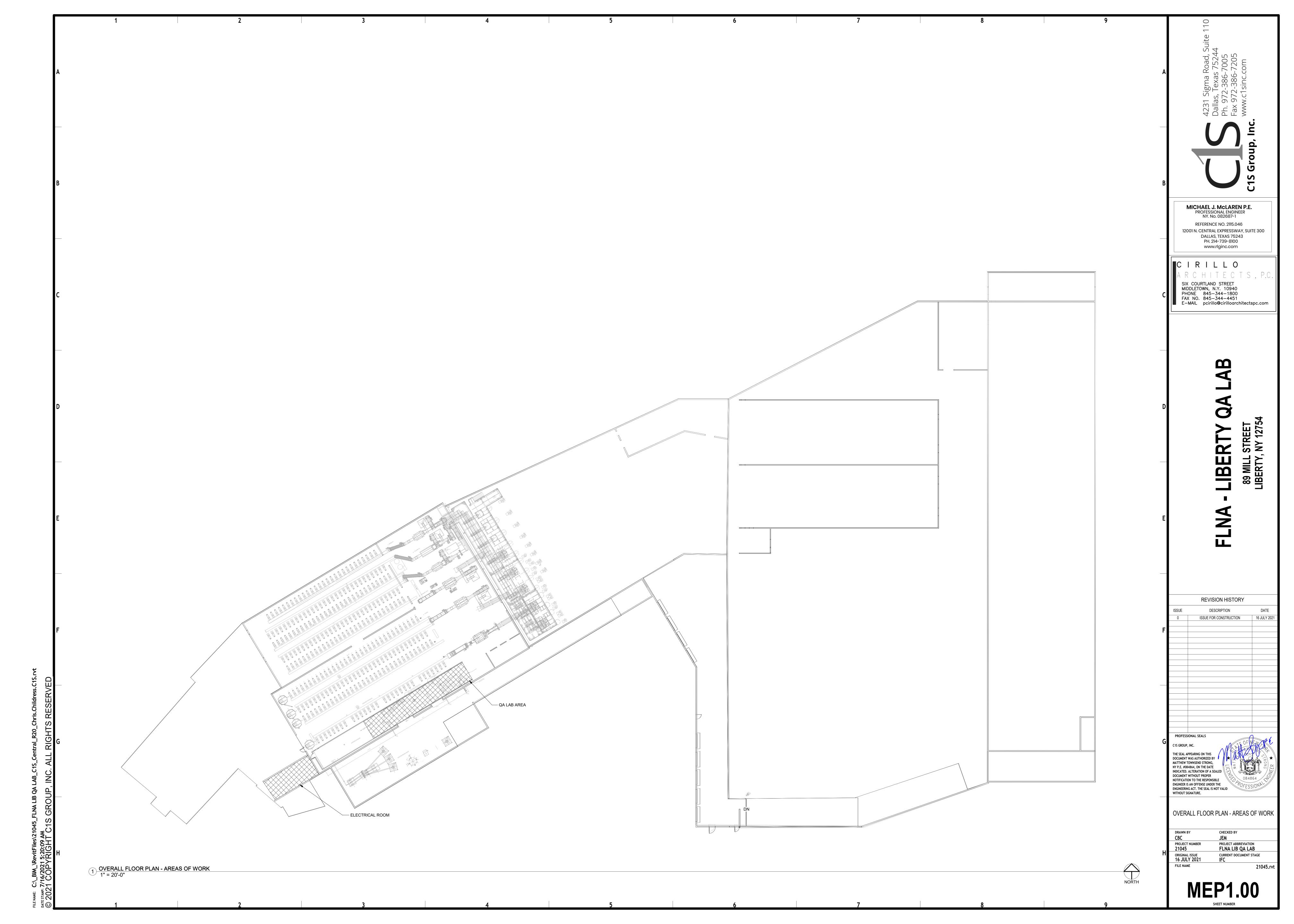
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	HVAC LEGEND
(NOTE: ALL	SYMBOLS MAY NOT APPEAR ON DRAWINGS) LINED DUCTWORK
<u></u>	SUPPLY DUCT
	RETURN DUCT
	EXHAUST DUCT SUPPLY DUCT THROUGH ROOF
	RETURN DUCT THROUGH ROOF
	EXHAUST DUCT THROUGH ROOF
	DIRECTION OF EXHAUST RELIEF
SP SP	SUPPLY DIRECTION  STATIC PRESSURE SENSOR
SP SP	
// M	MOTORIZED VOLUME DAMPER
BD	BACKDRAFT DAMPER
<u> </u>	CONICAL TAP W/DAMPER
Φ.	ROUND DUCT SIZE
<del>-</del>	OVAL DUCT SIZE
	FLEXIBLE DUCT RUNOUT
	FLEXIBLE DUCT CONNECTION
重	MANUAL VOLUME DAMPER
FD	FIRE DAMPER IN DUCT
FSD	FIRE SMOKE DAMPER IN DUCT
(WxD)	DUCTWORK (SHEETMETAL) (WITH/DEPTH IN VIEW OF PLAN)
	DUCTWORK, DIRECTION OF SLOPE
$\boxtimes$	EXISTING SUPPLY AIR GRILLE
(R)	EXISTING AIR DEVICE TO BE RELOCATED
	NEW SUPPLY AIR DIFFUSER
	EXISTING SLOT DIFFUSER TO REMAIN
(ER)	EXISTING SLOT DIFFUSER TO BE RELOCATED
	NEW SLOT DIFFUSER
S	DUCT MOUNTED SMOKE DETECTOR

#### GENERAL NOTES FOR ALL MECHANICAL AND PLUMBING WORK

- EXISTING HVAC DUCTWORK, PLUMBING PIPING AND EQUIPMENT SHOWN IS BASED ON EXISTING PLANS AND FIELD OBSERVATION CURRENT DETAIL. AFTER DEMOLITION, ANY CLARIFICATION REQUIRED TO DETERMINE SCOPE OF WORK SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OR OWNER'S REPRESENTATIVE IN WRITING. THE CONTRACTOR SHALL VISIT THE JOB SITE AND BECOME THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS PRIOR TO BEGINNING ANY WORK OR
- PURCHASING EQUIPMENT. DRAWINGS DO NOT SHOW EVERY EXISTING PIPE, CONDUIT, DUCT, ETC. CONTRACTOR SHALL TAKE CARE TO REMOVE ONLY ITEMS REQUIRED TO BE REMOVED AND VERIFY OPERATION/FUNCTION PIPES, DUCTS, ETC., BEFORE REMOVAL OF ITEMS SHALL INCLUDE ASSOCIATED HANGERS, ANCHOR BOLTS AND OTHER APPURTENANCES. WHERE SUCH REMOVAL RESULTS IN OPEN
- HOLES, VOIDS OR EXPOSURE OF DAMAGED SURFACES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING AND FINISHING THE SURFACE TO MATCH ADJACENT CONDITIONS. THIS WORK SHALL BE COORDINATED WITH ARCHITECTURAL FINISH SCHEDULES WHERE APPLICABLE. BUILDING IS TO REMAIN OCCUPIED DURING CONSTRUCTION. REMOVAL OR SHUT-DOWN OF EQUIPMENT THAT AFFECTS ANY OCCUPIED AREA'S AIR CONDITIONING OR HEATING SHALL ONLY BE DONE AS APPROVED OR TEMPORARY AIR CONDITIONING OR HEATING SHALL BE PROVIDED AT
- CONTRACTOR'S EXPENSE. THIS MAY REQUIRE NIGHT AND WEEKEND WORK TO KEEP BUILDING IN OPERATION. REMOVE EXISTING DUCTWORK AND PIPING NOT TO BE REUSED. ALL MATERIALS REMOVED UNDER DEMOLITION, NOT TO BE RELOCATED OR DESIGNATED TO BE TURNED OVER TO THE OWNER, SHALL BECOME THE PROPERTY OF THE CONTRACTOR, UNLESS OTHERWISE NOTED, AND SHALL BE

REMOVED COMPLETELY FROM THE SITE.

#### GENERAL ITEMS

- GENERAL NOTES ON THIS DRAWING ARE APPLICABLE TO EACH MECHANICAL DRAWING OF THIS SET. SEE EACH DRAWING FOR SPECIFIC NOTES APPLICABLE TO SPECIFIC SCOPE AREAS. VERIFY ALL MEASUREMENTS. NO EXTRA COMPENSATION WILL BE ALLOWED BECAUSE OF DIFFERENCES BETWEEN WORK SHOWN ON THE DRAWINGS AND ACTUAL MEASUREMENTS AT THE SITE OF CONSTRUCTION. DO NOT SCALE THE DRAWINGS. DRAWINGS ARE A DIAGRAMMATIC REPRESENTATION AND INTENDED TO CONVEY INTENT.
- UPON COMPLETION OF THE WORK, THOROUGHLY CLEAN ALL EXPOSED PORTIONS OF THE MECHANICAL AND ELECTRICAL EQUIPMENT PROVIDED AS WELL AS THE GENERAL SCOPE AREA. REMOVE ALL TRACES OF SOIL/DUST LABELS. GRADE. OIL. AND OTHER FOREIGN MATERIAL USING ONLY THE TYPE CLEANER RECOMMENDED BY THE MANUFACTURER OF ANY ITEM BEING CLEANED AND APPROVED BY OWNER FOR USE IN THE SCOPE AREA. CONTRACTOR SHALL DESIGNATE ONE PERSON TO SERVE AS PRIMARY POINT OF COMMUNICATION WITH PROJECT TEAM. WORK AMONG ALL TRADES SHALL BE FULLY COORDINATED AS REQUIRED IN THE FIELD TO AVOID SPACE CONFLICTS AND INTERRUPTION OF THE FLOW OF WORK. CONFLICTS SHALL BE IMMEDIATELY REPORTED IN WRITING TO ENGINEER AND OWNERS REPRESENTATIVE.
- THE CONTRACTOR SHALL TAKE PROPER PRECAUTIONS TO PROTECT ANY EXISTING CONSTRUCTION AND ADJACENT PROPERTY, WITH WHICH WORK COMES IN CONTACT, AND OVER WHICH HE MAY TRANSPORT, HOIST OR MOVE MATERIALS, EQUIPMENT, DEBRIS, ETC., AND SHALL REPAIR SATISFACTORILY ALL DAMAGES CAUSED BY HIM DURING CONSTRUCTION. ALL EQUIPMENT SHALL BE NEW, UNLESS NOTED OTHERWISE, AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED RECOMMENDATIONS FOR THE SERVICE INTENDED. PROVIDE ONLY PRODUCTS BEARING UNDERWRITERS LABORATORIES (UL) LABEL AS APPLICABLE. WHEN EXISTING ITEMS ARE TO BE REUSED. REFURBISH AS NOTED ON THE
- DRAWINGS OR SPECIFIED. OTHERWISE, STORE AND MAINTAIN IN THE SAME OR BETTER CONDITION AS WHEN THE WORK WAS PLACED UNDER CONTRACT. REINSTALL THE ITEM IN A GOOD WORKMANLIKE MANNER. THE CONTRACTOR SHALL VERIFY THE WORKING CONDITION OF ALL EXISTING EQUIPMENT TO BE RE-USED AND NOTIFY THE OWNER/ENGINEER PRIOR TO THE START OF CONSTRUCTION OF ANY MISSING OR MALFUNCTIONING DEVICES. CONFIRM OUTSIDE AIR INTAKE OPENINGS FOR VENTILATION AIR ARE LOCATED AT LEAST 10 FEET MEASURED IN ANY DIRECTION FROM ANY FLUES, VENTS. CHIMNEYS. GAS METERS. GAS REGULATORS. PLUMBING VENTS. ETC.. UNLESS TOP OF SUCH INTAKE OPENING IS 3 FEET BELOW ANY OF THE LISTED ITEMS.
- OVERHEAD PIPING IN SPACES WITHOUT HUNG CEILINGS SHALL BE RUN AS CLOSE TO ROOF DECK AS PRACTICAL. AS CLOSE TO PARALLEL JOISTS AS POSSIBLE, AND ABOVE LIGHTING FIXTURES TO CONCEAL PIPING. OVERHEAD DUCTWORK AND PIPING IN SPACES WITH CEILINGS SHALL BE CONCEALED UNLESS OTHERWISE NOTED.
- PROVIDE PIPE SLEEVES LARGE ENOUGH TO ALLOW FOR REQUIRED LATERAL EXERCISE CAUTION IN INSTALLING RUNOUTS AND BRANCH PIPING FROM MAINS ALLOWING FOR EXPANSION MOVEMENT. MAINTAIN A MINIMUM CLEARANCE FOR LIGHTS OF 7" ABOVE FINISHED CEILING AND 1" MINIMUM BELOW ALL DUCTS, PIPES, CONDUIT OR ANY OTHER
- EQUIPMENT IN THE CEILING SPACE, MAINTAIN MANUFACTURER'S RECOMMENDED SERVICE ACCESS CLEARANCE AT ALL EQUIPMENT COORDINATE LOCATION OF GRILLES, REGISTERS, DIFFUSERS, THERMOSTATS AND OTHER WALL OR CEILING MOUNTED HVAC ACCESSORIES WITH REFLECTED CEILING PLAN, LIGHTING FIXTURE LAYOUT AND ACCESSORIES INSTALLED BY OTHER TRADES SO AS TO PRESENT A NEAT AND ATTRACTIVE INSTALLATION THROUGHOUT THE ENTIRE SCOPE. IT IS THE INTENT FOR GRILLES. REGISTERS
- AND DIFFUSERS TO BE INSTALLED IN THE CENTER OF CEILING PANELS. EQUIPMENT ON THE ROOF SHALL BE INSTALLED TO MAINTAIN AT LEAST 10 FEET OF CLEARANCE BETWEEN EQUIPMENT AND THE ROOF EDGE. ARRANGE PIPING AND DUCTWORK, PARTICULARLY ABOVE CEILING, AS REQUIRED TO CLEAR STRUCTURE, DUCTS, CONDUITS, ETC., ALLOWING SPACE FOR PIPE HANGERS, EXPANSION LOOPS AND ACCESS TO VALVES, FILTERS, AND
- MAINTENANCE OF EQUIPMENT. COORDINATE LOCATION AND INSTALLATION OF EQUIPMENT WITH OTHER TRADES. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF DOORS, WINDOWS, ETC.
- THERMOSTATS AND/OR TEMPERATURE SENSORS SHALL BE LOCATED IN THE ROOMS INDICATED. INSTALL TOP OF DEVICE NO MORE THAN 48" ABOVE FINISHED FLOOR TO MATCH THE HEIGHT OF WALL SWITCHES OR OTHER WALL MOUNTED DEVICES. PIPING, DUCTWORK, VENTS, ETC., EXTENDING THROUGH EXTERIOR WALLS AND
- ROOF SHALL BE FLASHED AND COUNTER FLASHED IN A WEATHERPROOF VALVES AND SPECIALTIES SHALL BE LINE SIZE EXCEPT FOR CONTROL VALVES OR UNLESS NOTED OTHERWISE.
- EXTEND DRAIN LINES TO NEAREST FLOOR DRAIN OR AS INDICATED. ROUTING SHALL NOT INTERFERE WITH PASSAGEWAYS AND MAINTENANCE. DRAINS FROM AIR CONDITIONING CONDENSATE DRAIN PANS SHALL BE TRAPPED. SLOPE CONDENSATE DRAIN PIPING AT 1/4" PER FOOT. VERIFY INVERT IS ESTABLISHED AFTER AIR HANDLING UNIT IS INSTALLED BUT PRIOR TO DUCTWORK
- INSTALLATION. ROOFTOP UNITS AND OTHER EQUIPMENT CONTAINING AIR CONDITIONING COILS WHICH DO NOT HAVE A SECONDARY DRAIN OR AUXILIARY DRAIN PAN SHALL BE FITTED WITH A WATER LEVEL SENSOR IN THE PRIMARY DRAIN PAN. THE SENSOR SHALL BE WIRED TO DE-ENERGIZE THE EQUIPMENT IF WATER RISES ABOVE THE
- DRAIN OUTLET PIPING AND DUCTWORK INSULATION SHALL BE RUN CONTINUOUSLY THROUGH NON-RATED FLOORS, WALLS, ROOF AND PARTITIONS, UNLESS OTHERWISE
- NO PIPING SHALL BE SMALLER THAN 1/2", UNLESS OTHERWISE NOTED.
- RUNOUTS SHALL PITCH DOWN IN DIRECTION OF FLOW A MINIMUM OF 1" IN 3'-0". FOR PIPE SIZES NOT INDICATED ON PLANS, SEE EQUIPMENT CONNECTION

DETAILS, FLOW DIAGRAMS, RISER DIAGRAMS AND PIPE SIZING SCHEDULE.

- PROPERLY SUPPORT ALL EQUIPMENT, DUCTWORK, AND PIPING WITHIN THE BUILDING AND PROVIDE ADEQUATE PROVISIONS FOR SLOPE AND ANCHORAGE. PROVIDE ALL MATERIALS REQUIRED FOR THE SUPPORT OF SUCH ITEMS INCLUDING RODS, ANGLES, ETC., TO PROPERLY SUPPORT ALL ITEMS IN A PROPER AND SAFE MANNER. CONTRACTOR SHALL USE HANGER'S RODS. INSERTS ETC. LISTED BY UNDERWRITERS' LABORATORIES FOR THE SERVICE INTENDED. HANGERS FOR COPPER PIPING SHALL BE COPPER PLATED. SECURELY SUPPORT ALL EQUIPMENT FROM STRUCTURAL MEMBERS PROVIDED AS NEEDED, WHICH IN TURN ARE TO BE SUPPORTED DIRECTLY FROM THE BUILDING STRUCTURE. ALL HANGERS SHALL HAVE A MINIMUM FACTOR OF SAFETY OF 5. PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE SPECIFICATIONS. ADDITIONAL SUPPORTS OR HANGERS SHALL BE ADJACENT TO ELBOWS, TO PREVENT WEIGHT OF PIPING BEING PLACED ON THE EQUIPMENT. CORRECT SETTING ON BALANCING FITTINGS SHALL BE PERMANENTLY MARKED SUITABLE FLASHINGS FOR OPENINGS IN THE BUILDING WALLS, FLOOR OR ROOF
- SHALL BE FURNISHED BY THE CONTRACTOR PROVIDING THE PENETRATING ITEM. THE INSTALLATION OF THE FLASHING AND ITS WATERTIGHT INTEGRITY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR THAT PROVIDES THE SEALING AND FINISHING OF THE FLASHING. IN ALL CASES, THE FLASHING MATERIAL AND ITS INSTALLATION SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR FLASHINGS FOR PENETRATIONS MAY ALSO BE PROVIDED ENTIRELY BY THE GENERAL CONTRACTOR. ALSO, REFER TO THE ARCHITECT'S SPECIFICATIONS TO COORDINATE THE COMPLETENESS OF THIS ITEM. ACCESSIBILITY REQUIREMENTS. (REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION/REQUIREMENTS).
- THE PLANS AND SPECIFICATIONS HAVE BEEN PREPARED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF REGULATIONS. CODES AND ORDINANCES REGARDING HANDICAPPED PERSONS. IT IS ASSUMED THAT THE CONTRACTOR IS ALSO KNOWLEDGEABLE OF SAME AND THEIR APPLICATION WITH REGARD TO HIS WORK. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE TYPE OF EQUIPMENT BEING INSTALLED AND ITS LOCATION. MOUNTING HEIGHT
  - AND CLEARANCES AS PRESCRIBED BY ALL APPLICABLE HANDICAP REGULATIONS, CODES AND ORDINANCES PRIOR TO PLACING EQUIPMENT ORDERS AND PRIOR TO INSTALLATION OF ALL WORK. GENERAL LISTING OF MOUNTING HEIGHTS:

#### HEIGHT TO CENTER LINE THERMOSTATES, SWITCHES, ETC. 48" MAXIMUM RECEPTACLES

CONTRACTOR SHALL PROVIDE ALL DIMENSIONS FOR BLOCK OUTS, SLEEVES, ETC., AND THE DIMENSIONED LOCATIONS OF SAME. 33. SEE ELECTRICAL DRAWINGS FOR LOCATION OF MOTOR STARTERS.

#### THROUGH-PENETRATION FIRESTOP ASSEMBLIES

PROVIDE UL LISTED THROUGH-PENETRATION ASSEMBLIES FOR FIREWALLS AND FLOORS. REVIEW ARCHITECTURAL DRAWINGS FOR FIRE PARTITION LOCATIONS AND UL LISTINGS.

#### SHEET METAL

- DUCT DIMENSIONS ARE CLEAR INSIDE DUCT LINING DIMENSIONS. PROVIDE ACCESS DOORS IN DUCTWORK WHERE INDICATED OR REQUIRED FOR ACCESS TO SYSTEM COMPONENTS INCLUDING THE FOLLOWING: A. DAMPER MOTORS AND/OR MOTOR OPERATED DAMPERS
- HIGH SIDEWALL REGISTERS OR GRILLES SHALL BE LOCATED 6" FROM CEILING TO TOP OF REGISTER OR GRILLE, IF APPLICABLE. INSTALL CEILING REGISTERS A MINIMUM OF 4" FROM EXTERIOR WALL. PROVIDE A MINIMUM OF THREE TIMES THE FAN DIAMETER OF STRAIGHT DUCTWORK OFF THE SUPPLY AIR FAN DISCHARGE BEFORE ANY TAKEOFFS OR
- FLBOWS. DUCTWORK SHALL BE CONSTRUCTED TO THE SMACNA STATIC PRESSURE CLASSIFICATION 2" W.G. AND SEAL CLASS "B". PROVIDE EXTENDED VOLUME DAMPER CONTROL RODS SO THAT HANDLES ARE

## CLEAR OF DUCT INSULATION.

- EQUIPMENT WITH FILTERS SHALL BE INSTALLED SO THAT FILTERS CAN BE EASILY REMOVED AND REPLACED. EQUIPMENT INSTALLED ABOVE CEILINGS SHALL BE MOUNTED APPROX. 12" ABOVE CEILING (UON) FOR MAINTENANCE ACCESS. INSTALL PIPE RUNS AT LEAST 6" ABOVE CEILING TILES, WHERE PRACTICAL
- INSTALL VALVES, AND OTHER MAINTAINABLE DEVICES LOW ENOUGH TO REACH WITH A 6'-0" OR 8'-0" LADDER. PROVIDE ACCESS TO ANY INSPECTION OR MAINTAINABLE DEVICE, EQUIPMENT, ETC. - ACCESS OR ACCESS DOOR SHALL BE OF ADEQUATE SIZE TO WORK ON
- EXAMINE MANUFACTURER'S LITERATURE TO DETERMINE RECOMMENDED CLEARANCES. THESE CLEARANCES SHALL BE ESTABLISHED AND MAINTAINED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THESE REQUIREMENTS WITH ALL OTHER TRADES.

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PROFESSIONAL ENGINEER

REVISION HISTORY DESCRIPTION ISSUE FOR CONSTRUCTION 16 JULY 202

PROFESSIONAL SEALS THE SEAL APPEARING ON THIS MATTHEW TOWNSEND STRONG, NY P.E. #084864, ON THE DATE DOCUMENT WITHOUT PROPER

FILE NAME

DOCUMENT WAS AUTHORIZED BY INDICATED. ALTERATION OF A SEALED 084864 NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE ENGINEERING ACT. THE SEAL IS NOT VALID WITHOUT SIGNATURE.

GENERAL NOTES AND LEGENDS

DRAWN BY CHECKED BY PROJECT NUMBER PROJECT ABBREVIATION FLNA LIB QA LAB ORIGINAL ISSUE **CURRENT DOCUMENT STAGE** 16 JULY 2021

ABBREVIATIONS (NOTE: ALL ABBREVIATIONS MAY NOT APPEAR ON DRAWINGS) CLG CEILING AMPS. AMPERE ABC ABOVE COUNTER CO CLEAN OUT ABV ABOVE COL COLUMN A/C AIR CONDITIONER CONC CONCRETE ALTERNATING CURRENT CONST CONSTRUCTION ADJ ADJACENT CONT CONTINUOUS AFF ABOVE FINISH FLOOR CONTR CONTRACTOR

COP COEFFICIENT OF PERFORMANCE COOLING TOWER CVO COLD WATER VALVED OPENING CW DOMESTIC COLD WATER CWR CONDENSER WATER RETURN CWS CONDENSER WATER SUPPLY DFPTH DRY BULB BTUH BRITISH THERMAL UNIT PER HOUR DFU DRAINAGE FIXTURE UNITS DEIONIZED (WATER)

DWG DRAWING EAT ENTERING AIR TEMPERATURE EDH ELECTRIC DUCT HEATER EER ENERGY EFFICIENCY RATIO ELEVATION ESP EXTERNAL STATIC PRESSURE

TERMINAL UNIT FT FEET F/A FROM ABOVE F/B FROM BELOW GROUND GAUGE GAL GALLONS GALVANIZED GC GENERAL CONTRACTOR GPH GALLONS PER HOUR GPM GALLONS PER MINUTE H HEIGHT HD HUB DRAIN HORIZ HORIZONTAL HP HORSEPOWER HTG HEATING

IFGC INTERNATIONAL FUEL GAS CODE IMC INTERNATIONAL MECHANICAL FPW FAN POWERED VARIABLE VOLUME IPC INTERNATIONAL PLUMBING CODE INCHES IN WC INCHES WATER COLUMN IWW INDUSTRIAL WASTE WATER KW KILOWATT KWH KILOWATT - HOUR LENGTH LAT LEAVING AIR TEMPERATURE

N2

NITROGEN GAS NOT APPLICABLE NORMALLY CLOSED ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NUMBER OUTSIDE AIR

NEC NATIONAL ELECTRICAL CODE NEMA NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION NFPA NATIONAL FIRE PROTECTION ON CENTER OUTSIDE DIAMETER

PSIA POUNDS PER SQUARE INCH-ABSOLUTE PSIG POUNDS PER SQUARE INCH-GAUGE PVC POLYVINYL CHLORIDE PWR POWER QTY QUANTITY RA RETURN AIR RCP REFLECTED CEILING PLAN RCP REFORCED CONCRETE PIPE REF REFERENCE REFR REFRIGERATOR

REQ'D REQUIRED RLA RUNNING LOAD AMPS RM ROOM ROMT REQUIREMENT RTU ROOF TOP UNIT SA SUPPLY AIR

PERF PERFORATED

SENS SENSIBLE (BTU) PLBG PLUMBING PSI POUNDS PER SQUARE INCH SFU SUPPLY FIXTURE UNITS SHT SHEET SHTMTL SHEET METAL SiH4 SILANE SMACNA SHEET METAL & AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION SP STATIC PRESSURE SPECS SPECIFICATIONS SQ SQUARE SQFT SQUARE FEET

PCWS PROCESS CHILLED WATER SUPPLY SEER SEASONAL ENERGY EFFICIENCY

SS. SAN SANITARY SEWER STD STANDARD SURF SURFACE SYM SYMMETRICAL T-STAT THERMOSTAT TC TIMECLOCK TOT TOTAL (BTU)

VENT VT VTR VENT THRU THE ROOF VARIABLE VOLUME TERMINAL UNIT WIDTH

DIAMETER DIWR DEIONIZED WATER RETURN DIWS DEIONIZED WATER SUPPLY

ELEV ELEVATOR EMER EMERGENCY EQ EQUAL EQUIP EQUIPMENT ETR EXISTING TO REMAIN EWT ENTERING WATER TEMPERATURE EXH EXHAUST EXIST EXISTING EXP EXPANSION DEGREES FAHRENHEIT FIRE ALARM FRFF ARFA FA

POUNDS (WEIGHT) LIN FT LINEAR FOOT LN2 LIQUID NITROGEN GAS MAX MAXIMUM MBH THOUSAND BTU PER HOUR MCB MAIN CIRCUIT BREAKER MCC MOTOR CONTROL CENTER MCF THOUSAND CUBIC FEET MOTORIZED DAMPER MECH MECHANICAL MIN MINIMUM HHWS HEATINGHOT WATER SUPPLY MISC MISCELLANEOUS

NTS NOT TO SCALE ΟZ OUNCE PRESSURE DROP

MTRZD MOTORIZED

MVD MANUAL VOLUME DAMPER

SD STORM DRAIN

TYP TYPICAL UF UNDERFLOOR

AFG ABOVE FINISH GRADE AH AIR HANDLER AHU AIR HANDLING UNIT

AMB AMBIENT

BLDG BUILDING

CAT CATALOGUE

CI CAST IRON

BOP BO

AUX AUXILIARY, AUXILIARIES

BTU BRITISH THERMAL UNIT

CD CONDENSATE DRAIN

CFH CUBIC FEET PER HOUR

CFM CUBIC FEET PER MINUTE

CHWR CHILLED WATER RETURN

CHWS CHILLED WATER SUPPLY

CDA CLEAN DRY AIR

DIFF DIFFUSER

DS DOWNSPOUT

DN DOWN

DTL DETAIL

ELEC ELECTRICAL

FAN COIL UNIT FD FIRE DAMPER FLOOR DRAIN FINISH FLOOR

HWR DOMESTIC HOT WATER RETURN HWS DOMESTIC HOT WATER SUPPLY HHWR HEATING HOT WATER RETURN

FIXT FIXTURE

FL FLOW LINE

FPM FEET PER MINUTE

LWT LEAVING WATER TEMPERATURE

RETURN

OBD OPPOSED BLADE DAMPER ODS OVERFLOW DOWNSPOUT PCWR PROCESS CHILLED WATER

RPM REVOLUTIONS PER MINUTE

WB WET BULB WATER HEATER WP WEATHERPROOF WPO WASTE PLUGGED OPENING WT WEIGHT

UNO UNLESS NOTED OTHERWISE

VAV VARIABLE AIR VOLUME

VERIFY IN FIELD

VPO VENT PLUGGED OPENING

VOLT

VALVE

VENTIL VENTILATION

VAC VACUUM

VERT VERTICAL

PART 1 – GENERAL

1. CODES AND STANDARDS: THE LATEST EFFECTIVE PUBLICATIONS OF ALL APPLICABLE STANDARDS, CODES, ETC., AS THEY APPLY, FORM PART OF THESE SPECIFICATIONS AS IF WERE WRITTEN FULLY HEREIN AND CONSTITUTE MINIMUM REQUIREMENTS. THE FOLLOWING WILL BE REFERRED TO THROUGHOUT IN ABBREVIATED FORMS.

A. NATIONAL ELECTRICAL CODE, (NFPA 70) (NEC).
 B. AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS (ASHRAE).
 C. RULES AND REGULATIONS OF LOCAL GAS UTILITY COMPANY.
 D. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA).

C. RULES AND REGULATIONS OF LOCAL GAS UTILITY COMPAND. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NE. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
F. APPLICABLE LOCAL CODAES.
G. UNDERWRITER'S LABORATORIES, INC. (UL).

H. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).

I. INTERNATIONAL MECHANICAL CODE (IMC)
SCOPE OF WORK: PROVIDE ALL WORK REQUIRED FOR THIS DIVISION INCLUDING LABOR, MATERIALS, EQUIPMENT, APPURTENANCES AND SERVICES TO PROVIDE COMPLETE MECHANICAL SYSTEMS AS SHOWN ON THE DRAWINGS AND SPECIFIED IN THIS DIVISION OF THE SPECIFICATIONS. THE WORD "PROVIDE" SHALL MEAN "FURNISH, TRANSPORT, INSTALL, CONNECT, WARRANT, START-UP, AND READY FOR

USE", INCLUSIVELY.

A. THE INSTALLATION OF ALL SYSTEMS SHALL BE MADE BY
EXPERIENCED CRAFTSMEN IN A NEAT WORKMANLIKE MANNER.
ALL MATERIALS, TOOLS, PERMITS AND INSPECTIONS AND ALL
OTHER COSTS AND SERVICES NECESSARY TO PROVIDE ALL
NEEDED MECHANICAL AND ELECTRICAL ITEMS SHALL BE

FURNISHED AND PAID FOR IN FULL BY THE CONTRACTOR.

MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE
CONTRACT DOCUMENTS AND ALL CURRENT APPLICABLE CODES
AND STANDARDS. SHOULD THE CONTRACTOR PROVIDE ANY ITEM
OR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE
CURRENT APPLICABLE CODES AND STANDARDS, HE SHALL BEAR
ALL COSTS ARISING FROM CORRECTING ANY DEFICIENCIES.
CURRENT APPLICABLE AND ADOPTED CODES AND STANDARDS
SHALL INCLUDE ALL ORDINANCES, UTILITY COMPANY
REGULATIONS, OSHA REGULATIONS AND APPLICABLE
REQUIREMENTS OF CITY AND NATIONALLY ACCEPTED CODES

AND STANDARDS.

C. IN THE CASE WHERE TWO OR MORE TRADES OR CONTRACTORS ARE INVOLVED IN THE INSTALLATION OF ANY ITEM, ALL SUCH PERSONS SHALL BE RESPONSIBLE FOR COORDINATING THEIR WORK AMONG THEMSELVES TO PROVIDE A FULLY COMPLETED, FUNCTIONING INSTALLATION.

D. WORK INCLUDES BUT IS NOT NECESSARILY LIMITED TO:

HVAC EQUIPMENT
 DUCTWORK, GRILLES, AND ALL ACCESSORIES
 PIPING SYSTEMS
 PLUMBING FIXTURES, EQUIPMENT, AND PIPING
 INSULATION

6. CONTROLS
3. SITE REVIEW: THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO DETERMINE THE EXTENT OF THE WORK AND COORDINATE WITH ALL EXISTING CONDITIONS TO BE ENCOUNTERED BY ALL TRADES. CONTRACTOR SHALL VERIFY ALL CONDITIONS IN THE FIELD, INCLUDE ANY COSTS RELATED IN HIS BID, AND SHALL NOTE IN WRITING, ANY EXCEPTIONS TAKEN WHEN BIDDING THE WORK. LACK OF KNOWLEDGE OF EXISTING CONDITIONS WILL NOT BE CONSIDERED A BASIS FOR CHANGE ORDERS. PRIOR TO ORDERING EQUIPMENT, VERIFY THAT EQUIPMENT TO BE PROVIDED UNDER THIS CONTRACT IS ACCEPTABLE AND CAN FIT INTO BUILDING AREA PROPOSED. EXPENSE INCURRED BY THE CONTRACTOR, WHICH IN THE ENGINEER'S OPINION COULD HAVE BEEN AVOIDED BY THIS STEP, SHALL NOT BE A BASIS FOR CHANGE

DRAWINGS AND SPECIFICATIONS: THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT, CHARACTER, AND ARRANGEMENT OF EQUIPMENT, FIXTURES AND PIPING SYSTEMS. THEIR DRAWINGS SHALL NOT BE SCALED AND THEIR ABSOLUTE ACCURACY IS NOT WARRANTED. BRANCH CIRCUITS. PIPING ARRANGEMENTS. MECHANICA AND ELECTRICAL COMPONENT LOCATION, AND LIKE HAVE BEEN DESIGNED FOR ECONOMY CONSISTENT WITH GOOD PRACTICE AND OTHER CONSIDERATIONS, MAJOR CHANGES TO THE SYSTEMS ARRANGED AS SHOWN ON THE DRAWINGS, IF ACCEPTED, MUST BE APPROVED IN WRITING BY THE ENGINEER, PRIOR TO PROCEEDING, ALL SUCH CHANGES SHALL BE INCORPORATED INTO THE "AS-BUILT" DRAWINGS AS SPECIFIED. IT IS THE INTENTION OF THESE SPECIFICATIONS AND DRAWINGS TO FULLY COVER ALL WORK AND MATERIALS FOR A COMPLETE, FIRST-CLASS MECHANICAL INSTALLATION. ANY DEVICES USUALLY EMPLOYED IN THIS CLASS OF WORK NOT SPECIFICALLY MENTIONED OR SHOWN ON THE DRAWINGS OR IN THIS SPECIFICATION, BUT WHICH MAY BE NECESSARY FOR THE SATISFACTORY COMPLETION OF THE WORK, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR AS A PART OF HIS TOTAL WORK UNDER THIS DIVISION. CONSULT THE SPECIFICATIONS AND DRAWINGS OF ALL OTHER TRADES AND PERFORM ALL MECHANICAL WORK REQUIRED THEREIN. COOPERATE WITH ALL OTHER CONTRACTORS OR SUBCONTRACTORS TO FURNISH COMPLETE WORKABLE SYSTEMS. WARRANTY: PROVIDE A WRITTEN WARRANTY FOR A PERIOD OF NOT LESS THAN 12 MONTHS AGAINST DEFECTIVE WORKMANSHIP AND

MATERIAL AFTER FINAL ACCEPTANCE AT NO ADDITIONAL COST TO THE OWNER.

A. FOR ALL EQUIPMENT HAVING AN EXTENDED WARRANTY AVAILABLE, THE CONTRACTOR SHALL INCLUDE THE FULL ADDITIONAL COST IN HIS BASE BID.

B. ALL WARRANTY CERTIFICATES AND EXTENDED WARRANTY CERTIFICATES ISSUED FOR EQUIPMENT SHALL BE TRANSMITTED

ALL REFRIGERANT MOTOR-COMPRESSORS PROVIDED ON THIS

PROJECT SHALL BE PROVIDED WITH A FIVE (5) YEAR COMPRESSOR WARRANTY.

AS-BUILTS: DURING CONSTRUCTION, CONTRACTOR SHALL KEEP AN ACCURATE RECORD OF ALL DEVIATIONS BETWEEN THE WORK AS SHOWN ON THE CONTRACT DRAWINGS AND THAT WHICH IS ACTUALLY INSTALLED ON A SET OF PRINTS OF THE MECHANICAL DRAWINGS, AND NOTE CHANGES THEREON WITH RED MARKS, IN A NEAT AND ACCURATE MANNER. WHEN ALL REVISIONS HAVE BEEN SHOWN ON THESE PRINTS TO INDICATE THE WORK AS FINALLY INSTALLED, THE PRINTS SHALL BE DELIVERED TO THE ENGINEER BEFORE FINAL PAYMENT.

TESTS: THE RIGHT IS RESERVED TO INSPECT AND TEST ANY PORTION OF THE INSTALLATION/EQUIPMENT DURING THE PROGRESS OF ITS ERECTION. THE CONTRACTOR SHALL TEST THE ENTIRE HVAC SYSTEM

BALANCE SYSTEMS AS REQUIRED AND RECOMMENDED BY

MANUFACTURERS.

A. PROVIDE PERSONNEL AND EQUIPMENT, MAKE REQUIRED TESTS, AND SECURE REQUIRED APPROVALS FROM THE ARCHITECT AND GOVERNMENTAL AGENCIES HAVING JURISDICTION.

B. MAKE WRITTEN NOTICE TO THE ARCHITECT/ENGINEERS ADEQUATELY IN ADVANCE OF EACH OF THESE:

FOR A PERIOD OF 72 HOURS PRIOR TO OCCUPANCY. TEST, ADJUST AND

WHEN ROUGH-INS ARE COMPLETE BUT NOT COVERED.
 AT COMPLETION OF THE WORK.
 WHEN MATERIAL AND/OR WORKMANSHIP IS FOUND TO NOT COMPLY WITH THE SPECIFIED REQUIREMENTS: WITHIN THREE DAYS AFTER RECEIPT OF NOTICE OF NON-COMPLIANCE, REMOVE THE NON-COMPLYING ITEMS FROM THE JOB SITE AND REPLACE

THEM WITH ITEMS THAT COMPLY WITH THE SPECIFIED REQUIREMENTS, ALL AT NO ADDITIONAL COST TO THE OWNER D. IN THE ARCHITECT'S/ENGINEER'S PRESENCE: TEST ALL PARTS OF ALL SYSTEMS AND DEMONSTRATE THAT ALL SUCH ITEMS PROVIDED UNDER THIS SECTION FUNCTION IN THE REQUIRED MANNER.

PERMITS AND INSPECTIONS: SECURE AND PAY FOR ALL REQUIRED

PERMITS AND INSPECTIONS. INSPECTION CERTIFICATES FROM LOCAL AUTHORITIES HAVING JURISDICTION SHALL BE DELIVERED TO THE OWNER BEFORE FINAL PAYMENT.

9. SUBMITTALS: SUBMIT CLEARLY MARKED SHOP DRAWINGS IN PDF FORMAT, INCLUDING PRODUCT DATA AND SAMPLES WITHIN THIRTY (30) DAYS OF AWARD OF CONTRACT AND IN ACCORDANCE WITH THE GENERAL CONDITIONS AND SUPPLEMENTARY CONDITIONS. SUBMITTALS ARE REQUIRED FOR ALL ITEMS PROVIDED UNDER THIS SPECIFICATION. REVIEW OF SUBMITTALS BY THE ENGINEER AND ANY ASSOCIATED ACTION TAKEN BY THE ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF ANY REQUIREMENTS SET FORTH BY THE CONTRACT DOCUMENTS.

INCOMPLETE SUBMITTALS SHALL NOT BE REVIEWED. SUBMITTALS/SHOP DRAWING SUBMISSIONS IN EXCESS OF THREE (3) TRANSMISSIONS MAY BE CONSIDERED ADDITIONAL SERVICES.

A. SHOP DRAWINGS AND PRODUCT DATA: OBTAIN APPROVED SHOP DRAWINGS SHOWING EQUIPMENT ON THE FOLLOWING ITEMS AS REQUESTED BY THE ENGINEER, CAPACITY, MANUFACTURER'S RECOMMENDATIONS AND HOOKING FOR ALL FOLLOWING TAND COMPLY

REQUESTED BY THE ENGINEER, CAPACITY, MANUFACTURER'S
RECOMMENDATIONS AND HOOKUP DETAILS, FROM OTHER
INVOLVED CONTRACTORS FOR ALL EQUIPMENT AND COMPLY
THEREWITH.

1. HVAC EQUIPMENT
2. FANS

3. AIR DEVICES
4. PLUMBING EQUIPMENT, FIXTURES & TRIM
B. TESTS AND REPORTS: PRIOR TO SUBSTANTIAL COMPLETION,
SUBMIT TESTING, ADJUSTING AND BALANCING REPORT TO
ENGINEER FOR REVIEW. AN APPROVED TAB REPORT MUST BE
RECEIVED BY THE ENGINEER PRIOR TO SUBSTANTIAL
COMPLETION

COMPLETION.

C. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER OF ALL MAJOR ITEMS OF EQUIPMENT PRIOR TO PLACING ORDERS. SHOULD THE CONTRACTOR SUPPLY EQUIPMENT DIFFERING FROM THE SCHEDULED OR SPECIFIED ITEMS IN THE CONTRACT DOCUMENTS WITHOUT NOTIFICATION TO THE ENGINEER, HE SHALL BEAR ALL COST TO REMEDY ANY DEFICIENCIES OR CONFLICTS ARISING FROM DEVIATION FROM BASIS OF DESIGN.

10. EQUIPMENT SUBSTITUTIONS: TO THE NAMED SPECIFIED PRODUCTS MAY BE PROPOSED AND BID BY THE CONTRACTOR IF REQUESTED AND APPROVED BY THE ENGINEER IN WRITING A MINIMUM OF FIVE (5) DAYS BEFORE BID DUE DATE. OTHERWISE, THE CONTRACTOR SHALL BASE HIS BID ON THE NAMED ITEMS. THE CONTRACTOR SHALL DEMONSTRATE TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE THAT THE QUALITY, CAPACITY, AND SUITABILITY OF THE PROPOSED ITEM EQUALS OR EXCEEDS THAT OF THE NAMED ITEM.

A. COORDINATE EQUIPMENT SUBSTITUTIONS FOR THE SCHEDULED OR SPECIFIED ITEM WITH ALL OTHER TRADES. COMPENSATION TO OTHER TRADES DUE TO CHANGES IN RATED VOLTAGE, PHASE, PHYSICAL SIZE, ARRANGEMENTS, SHAPE, COLOR, AND ALL OTHER CHARACTERISTICS INCLUDING THE RELATED EFFECTS ARISING FROM EQUIPMENT SUBSTITUTIONS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR MAKING THE CHANGE.

SCHEDULE OF WORK: THE SCHEDULE OF THE MECHANICAL WORK SHALL BE ARRANGED TO SUIT THE PROGRESS OF WORK BY THE OTHER TRADES AND SHALL IN NO WAY RETARD PROGRESS OF CONSTRUCTION OF THE PROJECT. REFER TO ARCHITECTURAL PLANS FOR PHASING PLAN. THE CONTRACTOR SHALL COORDINATE WITH AND NOTIFY THE OWNER'S REPRESENTATIVE FOR APPROVAL AND SCHEDULING OF ANY BUILDING SYSTEM INTERRUPTIONS OR EXISTING TENANT INTERRUPTIONS (INCLUDING NOISE, DUST, ETC.) THE CONTRACTOR SHALL COORDINATE ANY EXISTING BUILDING EQUIPMENT WARRANTIES PRIOR TO MODIFICATION OR CONNECTION TO SAME.
 STORAGE AND MATERIAL: SPACE WILL BE ASSIGNED TO THE CONTRACTOR BY THE OWNER FOR THE STORAGE OF MATERIALS. THE

CONTRACTOR WILL BE RESPONSIBLE FOR THE PROTECTION AND SAFEKEEPING OF MATERIALS, TOOLS, AND EQUIPMENT. ALL MATERIALS AND EQUIPMENT SHALL BE KEPT IN ITS ASSIGNED PLACE UNTIL THE TIME OF ITS INSTALLATION. EXCESS MATERIALS, DIRT, AND REFUSE SHALL BE PROMPTLY REMOVED FROM THE WORK SITE.

PROVIDE ALL MATERIALS, TOOLS, LABOR, AND OTHER RELATED ITEMS TO COMPLETE ALL WORK, INCLUDING CONNECTIONS TO ALL EQUIPMENT IN ACCORDANCE WITH THE LOCAL CODES. IN THE EVENT THAT ANY ITEM PROVIDED UNDER THIS CONTRACT IS DAMAGED PRIOR TO FINAL ACCEPTANCE THE CONTRACTOR SHALL REPLACE, NOT REPAIR, THE ITEM WITH NEW. IF AN EXISTING ITEM IS DAMAGED DURING THE CONSTRUCTION, THE CONTRACTOR SHALL RESTORE THE ITEM TO NEAR ORIGINAL CONDITION OR PRIOR OPERATING CONDITION TO THE

SATISFACTION OF THE OWNER'S REPRESENTATIVE.

14. LABELING OF EQUIPMENT: ALL HVAC EQUIPMENT SHALL BE IDENTIFIED BY MACHINE ENGRAVED LAMINATED PLASTIC DESIGNATION PLATES PERMANENTLY ATTACHED WITH SELF-TAPPING SCREWS OR RIVETS. ALL PARTS OF EACH ITEM OF EQUIPMENT OR DEVICE SHALL BEAR THE MANUFACTURER'S NAMEPLATE, GIVING NAME OF MANUFACTURER, DESCRIPTION, SIZE, TYPE, SERIAL, AND MODEL NUMBER, AND ELECTRICAL CHARACTERISTICS IN ORDER TO FACILITATE MAINTENANCE OR REPLACEMENT.

15. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR, AND BE REQUIRED TO MAKE GOOD AT HIS OWN EXPENSE, ANY AND ALL

DAMAGES TO ANY WORK OR MATERIALS IN PLACE ON THE PREMISES.

OR INCLUDED IN THIS CONTRACT, DURING THE EXECUTION OF HIS

CONTRACT. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN-UP OF OCCUPIED SPACE AT THE COMPLETION OF EACH WORK PERIOD, COMPLETING CLEAN-UP IN TIME TO NOT CAUSE INTERFERENCE WITH NORMAL OPERATIONS.

6. OPERATIONS AND MAINTENANCE MANUALS: PROVIDE TO OWNER IN 3-RING BINDER AT PROJECT COMPLETION: MANUFACTURER'S OPERATION AND MAINTENANCE MANUALS, WARRANTIES (EQUIPMENT), WARRANT (CONTRACTOR), TAB REPORT, RECORD DRAWINGS. INDICATE DATE OF INSTALLATION, NAMES AND PHONE NUMBERS OF GENERAL CONTRACTOR, INSTALLING CONTRACTOR, LOCAL MANUFACTURER'S REPRESENTATIVE, AND CONTACT FOR SERVICE. PROVIDE ONE HOUR OF

17. IN THE EVENT OF A CONFLICT WITHIN THE DRAWINGS AND/OR SPECIFICATIONS, PROVIDE THE GREATER QUANTITY OR HIGHER QUALITY.
18. DOCUMENTATION OF ANY TEST AND "AS-BUILT" RECORD DRAWINGS SHALL BE PROVIDED TO THE BUILDING OWNER UPON COMPLETION.

EQUIPMENT INCLUDED IN SCOPE OF WORK.

FORMAL TRAINING TO OWNER'S PERSONNEL FOR NEW SYSTEMS/

PART 2 - PRODUCTS

MANUFACTURING STANDARDS: MATERIALS SHALL BE NEW, APPROVED AND LABELED BY ASME, ASHRAE, UL, ETC., WHEREVER STANDARDS HAVE BEEN ESTABLISHED BY THAT AGENCY. DEFECTIVE EQUIPMENT OR EQUIPMENT DAMAGED IN THE COURSE OF INSTALLATION OR TEST SHALL BE REPLACED OR REPAIRED IN A MANNER MEETING THE APPROVAL OF THE OWNER. ALL ITEMS OF THE SAME TYPE SHALL BE IDENTICAL IN MAKE, MODEL, AND ACCESSORIES.

TRADE NAMES: UNLESS SPECIFICALLY IDENTIFIED OTHERWISE,
MANUFACTURERS' NAMES AND CATALOG NUMBERS INDICATED HEREIN
AND ON THE DRAWINGS ARE NOT INTENDED TO BE PROPRIETARY
DESIGNATIONS. THEY ARE TO INDICATE GENERAL TYPE AND QUALITY OF
MATERIALS AND EQUIPMENT REQUIRED. EQUIPMENT AND MATERIALS
BY OTHER MANUFACTURERS WHICH IN THE OPINION OF THE ENGINEER
ARE OF EQUAL QUALITY AND WHICH WILL PRODUCE THE SAME RESULTS
WILL BE CONSIDERED ACCEPTABLE. INSTALL ALL EQUIPMENT AS
RECOMMENDED BY EACH MANUFACTURER. INSTALL ALL PAD/GRADE
MOUNTED EQUIPMENT LEVEL AND PLUMB, PARALLEL AND
PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS IN
EXPOSED INTERIOR SPACES, UNLESS OTHERWISE NOTED OR
INDICATED.

INDICATED.

DUCT INSULATION: INSULATE ALL SUPPLY, RETURN, AND OUTSIDE AIR DUCTWORK WITH ITEMS BELOW.

A. FACED FLEXIBLE GLASS FIBER DUCT INSULATION SHALL HAVE A FIRE RETARDANT, REINFORCED FOIL/KRAFT VAPOR BARRIER FACING AND SHALL BE EQUAL TO OWENS-CORNING FIBERGLASS FACED DUCT WRAP SOFTR SERIES TYPE 100. INSULATION SHALL HAVE A NOMINAL THICKNESS OF 2 INCHES AND A THERMAL

CONDUCTIVITY OF APPROXIMATELY 0.27 AT 75° F.

B. FACED RIGID GLASS FIBER DUCT INSULATION SHALL HAVE A FIRE RETARDANT, REINFORCED FOIL/KRAFT VAPOR BARRIER FACING AND SHALL BE EQUAL TO JOHNS MANVILLE 800 SERIES SPIN-GLASS. INSULATION SHALL HAVE A NOMINAL THICKNESS OF 1-1/2 INCHES, A THERMAL CONDUCTIVITY OF APPROXIMATELY 0.23 AT 75° F, AND A DENSITY OF 2 - 3 POUNDS PER CUBIC FOOT.

FLEXIBLE DUCTWORK: SHALL HAVE 1" THICK INSULATION WITH FOIL JACKET AND VAPOR BARRIER LINER. DUCT SHALL MEET CLASS, UL-181, CLASS I AND NFPA 90A, FACTORY APPLIED INSULATION, VAPOR BARRIER AND END CONNECTIONS. FLAME SPREAD = 25, SMOKE DEVELOPED = 50, SECURE WITH ADHESIVES AND METAL CLAMP. INNER CORE SHALL BE

HELICALLY CORRUGATED.
DUCTWORK: SUPPLY AND RETURN DUCTWORK SHALL BE GALVANIZED
SHEET METAL CONSTRUCTED AND SEALED ACCORDING TO SMACNA
STANDARDS FOR 4" W.C. POSITIVE AND 2" NEGATIVE PRESSURE. SHEET
METAL GAUGES SHALL BE IN ACCORDANCE WITH LOCAL MECHANICAL
CODE. PROVIDE FLEXIBLE GLASS FIBER DUCT INSULATION FOR
CONCEALED LOCATIONS AND RIGID GLASS FIBER DUCT INSULATION FOR
EXPOSED AREAS.

FLEXIBLE DUCT CONNECTORS: PROVIDE AIRTIGHT FLEXIBLE DUCT CONNECTORS AT DUCT CONNECTIONS TO EACH AIR-HANDLING UNIT, EXHAUST FAN, AND VENTILATING FAN. SUPPORT CONNECTORS AT EACH END WITH METAL ANGLE FRAME BANDS AND SECURELY BOLT IN PLACE. PROVIDE NOT LESS THAN 20-OUNCE GLASS FABRIC DUCT CONNECTORS COATED ON BOTH SIDES WITH NEOPRENE.

TURNING VANES: PROVIDE FABRICATED TEES AND SQUARE ELBOWS IN ACCORDANCE WITH SMACNA DOS FOR VANE ELBOWS.

ACCORDANCE WITH SMACNA DCS FOR VANE ELBOWS.

8. DAMPERS: PROVIDE OPPOSED BLADE ADJUSTABLE MANUAL DAMPERS WHERE INDICATED. PROVIDE DAMPER SHAFTS WITH 2-INCH STANDOFFS TO CLEAR 2 INCHES OF DUCT INSULATION WITH BEARINGS AT BOTH ENDS OF THE SHAFTS. PROVIDE ADJUSTMENT QUADRANT WITH INDICATOR AND LOCKING DEVICES. PROVIDE GALVANIZED STEEL DAMPERS ONE GAGE HEAVIER THAN DUCT IN WHICH DAMPERS ARE

INSTALLED.

DIFFUSERS, REGISTERS, AND GRILLES: PROVIDE FACTORY-FABRICATED METAL UNITS WITH EDGES ROLLED OR ROUNDED WHERE EXPOSED TO VIEW, AND FACTORY PRIMED WITH WHITE ENAMEL FINISH. PROVIDE WITH FRAMES COMPATIBLE WITH EACH CEILING TYPE. PROVIDE EACH DIFFUSER AND REGISTER WITH FACTORY-FABRICATED, GROUP-OPERATED, ADJUSTABLE, OPPOSED-BLADE, AIR-VOLUME-CONTROL DAMPERS, KEY OR SCREWDRIVER OPERATED FROM THE FACE OF UNIT. PROVIDE EACH UNIT WITH RUBBER OR PLASTIC INSTALLATION GASKETS. CONTRACTOR SHALL COORDINATE ALL DIFFUSER LOCATIONS AND FRAMES TYPES WITH FINAL APPROVED REFLECTED CEILING PLAN FOR LIGHT FIXTURES AND ALL OTHER CEILING MOUNTED DEVICE LOCATIONS. COORDINATE SIDEWALL GRILLES WITH FINAL APPROVED INTERIOR FLEVATIONS.

3. METALAIRE
4. PRICE

VALVES AND PIPING SPECIALTIES:
A. ACCEPTABLE MANUFACTURERS
1. GATE, GLOBE, ANGLE, CHECK, DRAIN AND BALL VALVES
A. STOCKHAM

KRUEGER

B. LUNKENHEIMER
C. CRANE
D. NIBCO
E. MILWAUKEE VALVE CO., INC.
F. HAMMOND CO.
2. BALANCING VALVES
A. BELL & GOSSETT

PROVIDE AIR DEVICES AS MANUFACTURED BY:

B. ARMSTRONG
C. TACO
VALVE CONNECTIONS
1. PROVIDE VALVES SUITABLE TO CONNECT TO ADJOINING
PIPING AS SPECIFIED FOR PIPE JOINTS. USE PIPE SIZE
VALVES.
2. THREAD OR SWEAT PIPE SIZES 2 INCHES AND SMALLER.
THREAD PIPE SIZES 2-1/2 AND 3 INCHES.
3. FLANGE PIPE SIZES 4 INCHES AND LARGER.
4. PROVIDE BUTTERFLY VALVE WITH TAPPED LUG BODY

WHEN USED FOR ISOLATING SERVICE.

C. GATE VALVES

1. BRONZE, NON-RISING STEM, INSIDE SCREW, DOUBLE WEDGE OR DISC, SCREWED ENDS.

2. IRON BODY, BRONZE TRIM, RISING STEM, O.S. & Y., SOLID WEDGE FLANGED ENDS.

D. GLOBE OR ANGLE VALVES
1. BRONZE, RISING STEM, INSIDE SCREW, RENEWABLE COMPOSITION DISC, SCREWED ENDS.
2. IRON BODY, BRONZE TRIM, RISING STEM O.S. & Y., RENEWABLE COMPOSITION DISC, FLANGED ENDS.

CHECK VALVES

1. BRONZE, SWING DISC, SCREWED ENDS.

2. IRON BODY, BRONZE TRIM, SWING DISC, RENEWABLE DISC AND SEAT, FLANGED ENDS.

3. IRON BODY, BRONZE TRIM, SPRING LOADED, RENEWABLE COMPOSITION DISC. FLANCED ENDS.

COMPOSITION DISC, FLANGED ENDS.

F. BUTTERFLY VALVES

1. IRON BODY, BRONZE DISC, RESILIENT REPLACEABLE
LINER SEAT, TAPPED LUG BODY.

2. PROVIDE WITH MINIMUM SEVEN POSITION LEVER HANDLE
FOR BALANCING SERVICE.

FOR BALANCING SERVICE.
DRAIN VALVES

1. BRONZE COMPRESSION STOP WITH HOSE THREAD CONNECTION.

CONNECTION.

H. BALL VALVES

1. BRASS BODY, BRASS OR STAINLESS STEEL BALL AND STEM.

2. BALL VALVES COMBINED WITH STRAINERS, BALANCING, OR FLOW CONTROL VALVES TO HAVE UNIONS TO PERMIT

REMOVAL OF ALL COMPONENTS WITHOUT REMOVING VALVE BODY.

EXHAUST FANS: ALL FANS SHALL CARRY THE CERTIFIED RATING SEAL AUTHORIZED BY AMCA. PROVIDE CENTRIFUGAL TYPE EXHAUST FANS WITH ALUMINUM HOUSING, FAN WHEEL, AND BIRD SCREEN. PROVIDE EXHAUST OPENING AND GRAVITY CLOSING TYPE AUTOMATIC BACKDRAFT DAMPERS.

HOT WATER, COLD WATER, AND CONDENSATE DRAIN PIPING: INSULATE ALL CONDENSATE PIPING, DOMESTIC HOT WATER AND COLD WATER PIPING WITH 1/2" THICK OWENS CORNING FIBERGLASS ASJ SSL-II OR APPROVED EQUAL, SEALED TO PREVENT SWEATING AND CONTINUOUS THROUGH WALLS, FLOOR, CEILING AND AT HANGERS PROVIDE BLOCKS

ANGERS.
A. CLOSED CELL INSULATION RATED 25/50 MAY BE SUBSTITUTED IN EQUIVALENT THICKNESS, FOR FIBERGLASS INSULATION, ARMAFLEX OR APPROVED EQUAL.

AND INSULATION SHIELDS TO PREVENT CRUSHING OF INSULATION AT

B. PROVIDE ALL INSULATION AND JACKET MATERIALS SPECIFICALLY APPROVED FOR AIR PLENUM USE WHERE EXPOSED TO PLENUM AIR.

AIR.
PROVIDE ALUMINUM WEATHERPROOF JACKET AND SELFREGULATING HEAT TAPE FOR ANY PIPING EXPOSED TO
OUTDOOR CONDITIONS.

13. WIRING AND ELECTRICAL EQUIPMENT: FROM SOURCE UP TO AND INCLUDING JUNCTION BOX OR CIRCUIT BREAKER SHALL BE BY ELECTRICAL CONTRACTOR.
 14. VIBRATION ISOLATOR: FOR ALL MOTOR DRIVEN MECHANICAL EQUIPMENT PER MANUFACTURERS' RECOMMENDATIONS AND AS

A. TYPE 1: SPRING TYPE MOUNT: SPRING TYPE ISOLATORS SHALL
BE FREE STANDING AND LATERALLY STABLE WITHOUT ANY
HOUSING AND COMPLETE WITH 1/4" NEOPRENE ACOUSTICAL
FRICTION PADS BETWEEN THE BASEPLATE AND THE SUPPORT.
ALL MOUNTINGS SHALL HAVE LEVELING BOLTS THAT MUST BE
RIGIDLY BOLTED TO THE EQUIPMENT. SPRING DIAMETERS SHALL
BE NO LESS THAN 0.8 OF THE COMPRESSED HEIGHT OF THE
SPRING AT RATED LOAD. SPRINGS SHALL HAVE A MINIMUM
ADDITIONAL TRAVEL TO SOLID EQUAL TO 50% OF THE RATED
DEFLECTION. BASED ON MASON MODEL 5LF.

15. DOMESTIC HOT AND COLD WATER. RELIEF VALVE AND CONDENSATE
DRAINAGE PIPING SHALL BE TYPE "L" COPPER WITH WROUGHT COPPER
FITTINGS. NO JOINT SHALL BE CONCEALED IN SLABS. JOIN ALL WATER

PIPING WITH LEAD FREE SOLDER. SANITIZE POTABLE WATER SYSTEMS PER LOCAL HEALTH DEPARTMENT REQUIREMENTS.

SANITARY SEWER DRAIN WASTE AND VENT PIPING SHALL BE SERVICE WEIGHT CAST IRON WITH PROPER CAST IRON FITTINGS. PROVIDE PIPING FOR ALL DRAIN AND RELIEF VALVES. SCHEDULE 40 PVC MAY BE USED ABOVE GRADE WHERE LOCAL CODES ALLOW ITS USE IN THE TYPE OF BUILDING WHERE WORK IS BEING DONE.

ALL WATER SERVICE VALVES SHALL BE BUTTERFLY TYPE OR BALL

VALVE TYPE ONLY, RATED FOR 200 PSIG WOG.

18. PLUMBING FIXTURES AND EQUIPMENT SHALL BE FURNISHED AS SCHEDULED OR INDICATED AND INSTALLED COMPLETE WITH STOP KITS, ESCUTCHEONS, TRIM, AND ALL OTHER APPURTENANCES REQUIRED TO CONNECT ROUGH-IN PIPING AT FLOORS AND WALLS UNLESS SPECIFIED OTHERWISE.

A. PROVIDE PLUMBING EQUIPMENT AS MANUFACTURER BY:

AMERICAN STANDARD KHOLER ELJER JOSAM WADE

FIKAY

PROHIBITED FROM LABELING.

HVAC CONTROLS

FLOW BALANCING OF ALL SYSTEMS PROVIDED SHALL BE INCLUDED UNDER THIS CONTRACT BALANCE AIR FLOW AT ALL AIR DEVICES TO ± 10% OF VALUE SHOWN ON DRAWINGS, PROVIDE WRITTEN BALANCE REPORT.

PROVIDE ENGRAVED NAMEPLATE ATTACHED WITH SCREWS FOR ALL MAJOR EQUIPMENT PROVIDED. USE NOMENCLATURE FROM EQUIPMENT SCHEDULES.

PROVIDE SNAP-ON TYPE PIPE MARKERS EACH 10'-0" THAT INDICATE BOTH DIRECTION AND PIPE CONTENT. ADHESIVE TYPE MARKERS ARE

PROGRAMMABLE THERMOSTAT/HUMIDISTAT AS PROVIDED BY THE ROOFTOP UNIT MANUFACTURER. PROVIDE INITIAL PROGRAMMING BASED ON DESIRED OPERATING CONDITIONS OBTAINED FROM OWNER'S REPRESENTATIVE.

FIRE SPRINKLER SYSTEM REVISIONS SHALL BE PROVIDED IN ACCORDANCE WITH ALL APPLICABLE NFPA ARTICLES AND COORDINATED WITH THE SYSTEM FURNISHED UNDER THE BASE BUILDING CONSTRUCTION.

FOR EACH HVAC SYSTEM, PROVIDE 7- DAY ELECTRONIC

PART 3 – EXECUTION

 FIELD INSPECTION AND TESTS PRESSURE PIPING TESTS: TEST PRESSURE SHALL BE 1.5 TIMES MAXIMUM WORKING PRESSURE, BUT IN NO CASE LESS THAN 50 PSIG. DO NOT TEST UNTIL EVERY JOINT HAS SET AND COOLED AT LEAST 8 HOURS AT TEMPERATURES ABOVE 50° F. DO ALL TESTING BEFORE BACKFILLING; HOWEVER, PLACE SUFFICIENT BACKFILL MATERIAL BETWEEN FITTINGS TO HOLD PIPE IN PLACE DURING TESTS. TEST SYSTEM GAS-TIGHT PER ANSI B31. USE CLEAN DRY AIR OR INERT GAS (E.G. NITROGEN OR CARBON DIOXIDE) FOR TESTING. SYSTEMS WHICH MAY BE CONTAMINATED BY GAS SHALL FIRST BE PURGED AS SPECIFIED HEREIN. MAKE TESTS ON ENTIRE SYSTEM OR ON SECTIONS THAT CAN BE ISOLATED BY VALVES. AFTER PRESSURIZATION, ISOLATE ENTIRE PIPING SYSTEM FROM ALL SOURCES OF AIR DURING TEST PERIOD. MAINTAIN TEST PRESSURE FOR AT LEAST 8 HOURS BETWEEN TIMES OF FIRST AND LAST READING OF PRESSURE AND TEMPERATURE. TAKE FIRST READING AT LEAST ONE HOUR AFTER TEST PRESSURE HAS BEEN APPLIED. DO NOT TAKE TEST READINGS DURING RAPID WEATHER CHANGES. TEMPERATURE SHALL BE SAME AS ACTUAL TRENCH CONDITIONS. THERE SHALL BE NO REDUCTION IN THE APPLIED TEST PRESSURE OTHER THAN THAT DUE TO A CHANGE IN AMBIENT TEMPERATURE. ALLOW FOR AMBIENT TEMPERATURE CHANGE IN ACCORDANCE WITH THE RELATIONSHIP PF + 14.7 = (P1 + 14.7) (T2 + 460) / TA + 460), IN WHICH T AND PF REPRESENT FAHRENHEIT TEMPÉRATURE ÁND GAUGE PRESSURE. RESPECTIVELY, SUBSCRIPTS 1 AND 2 DENOTE INITIAL AND FINAL READINGS, AND "PF" IS THE CALCULATED FINAL PRESSURE. IF "PF" EXCEEDS THE MEASURED FINAL PRESSURE (FINAL GAUGE READING) BY 0.5 PSI OR MORE, ISOLATE SECTIONS OF THE PIPING SYSTEM, RETEST EACH SECTION INDIVIDUALLY, AND APPLY A SOLUTION OF WARM SOAPY WATER TO ALL JOINTS OF EACH SECTION FOR WHICH A REDUCTION IN PRESSURE OCCURS AFTER ALLOWING FOR AMBIENT TEMPERATURE CHANGE. REPAIR LEAKING JOINTS AND REPEAT TEST UNTIL NO REDUCTION IN PRESSURE OCCURS. A TEST GAUGE CALIBRATED IN 1 PSI INCREMENTS AND READABLE TO 0.5 PSI SHALL BE USED IN PERFORMING THE TESTS.

IN PERFORMING THE TESTS.

SYSTEM PURGING: AFTER PRESSURE TESTS, AND BEFORE TESTING A GAS CONTAMINATED LINE, PURGE LINE WITH NITROGEN AT JUNCTION WITH MAIN LINE TO REMOVE ALL AIR OR GAS. CLEAR COMPLETED LINE BY ATTACHING A TEST PILOT FIXTURE AT CAPPED STUB-IN LINE AT BUILDING LOCATION AND LET GAS FLOW UNTIL TEST PILOT IGNITES. ALL PROCEDURES SHALL CONFORM TO ANSI B31.

-CAUTION- FAILURE TO PURGE MAY RESULT IN EXPLOSION WITHIN LINE WHEN AIR-TO-GAS IS AT

CORRECT MIXTURE. SCHEDULING: WORK UNDER THIS DIVISION SHALL PROCEED IN ADVANCE OF THE WORK OF OTHERS WHENEVER POSSIBLE, ELIMINATING ALL CUTTING AND PATCHING. WHEN SUCH PROCEDURE IS IMPOSSIBLE CUTTING AND PATCHING SHALL BE DONE IN A MANNER APPROVED IN ADVANCE BY OWNER. CUTTING SHALL NOT ENDANGER STRUCTURAL INTEGRITY IN ANY WAY. PATCHING SHALL EXACTLY MATCH CONTIGUOUS WORK. ACTUAL WORK OF CUTTING AND PATCHING OF EXISTING SURFACES SHALL BE PERFORMED BY THE SUBCONTRACTOR WHO ORIGINALLY PREPARED THESE SURFACES, E.G., CUTTING AND PATCHING OF MASONRY WALL WILL BE PERFORMED BY THE MASONRY SUBCONTRACTOR. COSTS OF SUCH CUTTING AND PATCHING SHALL BE BORNE BY THE MECHANICAL SUBCONTRACTOR. CUTTING SHALL BE CAREFULLY DONE AND DAMAGE TO BUILDING, PIPING, WIRING OR EQUIPMENT AS A RESULT OF CUTTING SHALL BE REPAIRED BY SKILLED MECHANICS OF TRADE INVOLVED. COORDINATION: COOPERATE AND COORDINATE EFFORTS WITH ALL CONTRACTORS ON THE PROJECT. THIS IS ESPECIALLY IMPORTANT IN DETERMINING EXACT LOCATIONS OF ALL DIFFUSERS, REGISTERS, GRILLES, DUCTWORK AND FANS. ARRANGE AIR INLETS AND OUTLETS IN ACCORDANCE WITH THE ARCHITECTURAL REFLECTED CEILING PLANS UNLESS OTHERWISE INDICATED. COORDINATE LIGHTING FIXTURE LOCATIONS WITH GRILLES, DIFFUSERS, ACCESS PANELS, ETC. VERIFY CFILING AND WALL CONSTRUCTION AND MATERIAL PRIOR TO ORDERING EQUIPMENT OR OTHER DEVICES TO ENSURE PROPER DEVICE IS FURNISHED TO MATCH CONSTRUCTION. THIS VERIFICATION MUST BE EXECUTED REGARDLESS OF INFORMATION PLACED ON THE DRAWINGS ANY COST INCURRED WHICH IN THE OPINION OF THE OWNER, COULD HAVE BEEN AVOIDED BY THIS STEP SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. GUARANTEE OF WORK: CONTRACTOR GUARANTEES BY HIS ACCEPTANCE OF THE CONTRACT THAT ALL WORK INSTALLED IS FREE FROM ANY AND ALL DEFECTS IN WORKMANSHIP AND/OR MATERIALS. AND THAT THE APPARATUS WILL DEVELOP CAPACITIES AND CHARACTERISTICS SPECIFIED. AND THAT IF, DURING THE PERIOD OF

FROM ANY AND ALL DEFECTS IN WORKMANSHIP AND/OR MATERIALS, AND THAT THE APPARATUS WILL DEVELOP CAPACITIES AND CHARACTERISTICS SPECIFIED, AND THAT IF, DURING THE PERIOD OF ONE YEAR OR AS OTHERWISE SPECIFIED, FROM DATE OF CERTIFICATE OF COMPLETION AND ACCEPTANCE OF THE WORK ANY SUCH DEFECTS IN WORKMANSHIP MATERIAL OR PERFORMANCE APPEAR, HE WILL, WITHOUT COST TO THE OWNER, REMEDY SUCH DEFECTS WITHIN A REASONABLE TIME TO BE SPECIFIED IN NOTICE. IN DEFAULT THEREOF, THE OWNER MAY HAVE SUCH WORK DONE AND CHARGE COST TO CONTRACTOR. EQUIPMENT GUARANTEES FROM DATE OF "START-UP" WILL NOT BE RECOGNIZED.

INSULATION: INSTALL DUCT AND PIPE INSULATION AFTER TESTING IS COMPLETE.

FIELD COORDINATION: THE EXACT LOCATION OF PIPES WILL BE

FIELD COORDINATION: THE EXACT LOCATION OF PIPES WILL BE DETERMINED BY THE CONTRACTOR AFTER THE WORKING PLANS ARE MADE TO AVOID INTERFERENCE WITH DUCTS, LIGHTING FIXTURES AND PIPING.

PERFORMANCE TESTING: BEFORE FINAL ACCEPTANCE OF THE WORK, TEST EACH SYSTEM AS IN SERVICE TO DEMONSTRATE COMPLIANCE WITH THESE DRAWINGS AND TESTING AS SPECIFIED IN THE LOCAL MECHANICAL CODE.

TAB: BALANCE AIR SIDE SYSTEMS RELATED TO SCOPE OF WORK.

CERTIFIED BALANCE REPORTS SHALL BE FURNISHED TO THE ENGINEER FOR REVIEW AND APPROVAL. REPORT FORMAT AND PROCEDURE SHALL BE IN ACCORDANCE WITH AABC OR NEEB REQUIREMENTS BY AN AABC OR NEBB CERTIFIED PROFESSIONAL AND SHALL BE PERFORMED BY A THIRD PARTY TESTING AGENCY.

9. CODE INSTALLATION: EQUIPMENT WHICH IS REQUIRED BY CODE OR IS SPECIFIED TO HAVE UL OR SIMILAR LISTING, SHALL BE INSTALLED AS

SPECIFIED TO HAVE UL OR SIMILAR LISTING, SHALL BE INSTALLED AS REQUIRED TO MEET THAT LISTING.

10. PIPE SLEEVES: PROVIDE PIPE SLEEVES AT WALL PENETRATIONS. PIPE SLEEVE SHALL BE FIRE RATED WHERE REQUIRED.

11. ROOF PENETRATIONS AND EQUIPMENT INSTALLATIONS SHALL BE IN ACCORDANCE WITH ROOFING MANUFACTURER SO AS NOT TO VOID

ROOF WARRANTY.
 SMOKE DETECTORS: PROVIDE SMOKE DETECTORS AT AIR HANDLING UNITS AS REQUIRED BY LOCAL MECHANICAL CODES.
 CONDENSATE TRAPS: PROVIDE TRAPPED CONDENSATE DRAINS ON AIR HANDLING UNITS.
 CONCEAL INSTALLATIONS: RUN PIPES AND DUCTWORK ABOVE CEILINGS IN ROOMS WITH CEILINGS. RUN EXPOSED PIPES AS HIGH AS POSSIBLE,

IN STRAIGHT LINES PARALLEL OR PERPENDICULAR TO STRUCTURE AND/OR WALLS.

VIBRATION ISOLATION: INSTALLATION OF ALL VIBRATION ISOLATION MATERIALS AND SUPPLEMENTAL EQUIPMENT BASES SPECIFIED IN THIS SPECIFICATION SHALL BE ACCOMPLISHED FOLLOWING THE MANUFACTURERS WRITTEN INSTRUCTIONS. ON COMPLETION OF INSTALLATION OF ALL ISOLATION MATERIALS AND BEFORE STARTUP OF ISOLATED EQUIPMENT ALL DEBRIS SHALL BE CLEARED FROM AREAS SURROUNDING AND FROM BENEATH ALL ISOLATED EQUIPMENT, LEAVING EQUIPMENT FREE TO MOVE ON THE ISOLATION SUPPORTS. NO RIGID CONNECTIONS BETWEEN EQUIPMENT AND BUILDING STRUCTURE SHALL BE MADE THAT DEGRADES THE NOISE AND VIBRATION ISOLATION SYSTEM HEREIN SPECIFIED. ELECTRICAL CONDUIT CONNECTIONS TO ISOLATED EQUIPMENT SHALL BE LOOPED TO ALLOW FREE MOTION OF ISOLATED EQUIPMENT.

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ISSUE FOR CONSTRUCTION 16 JULY 2021

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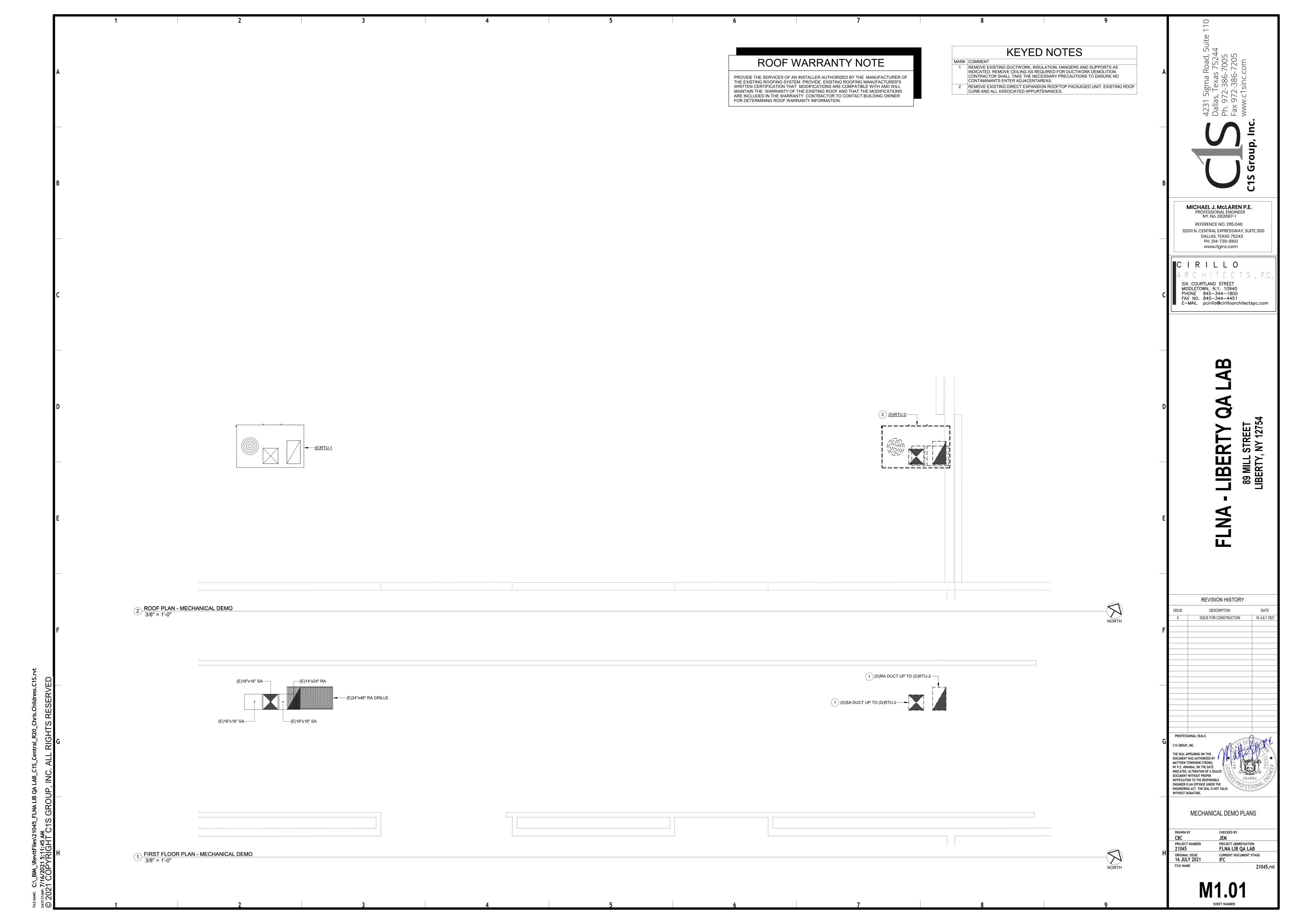
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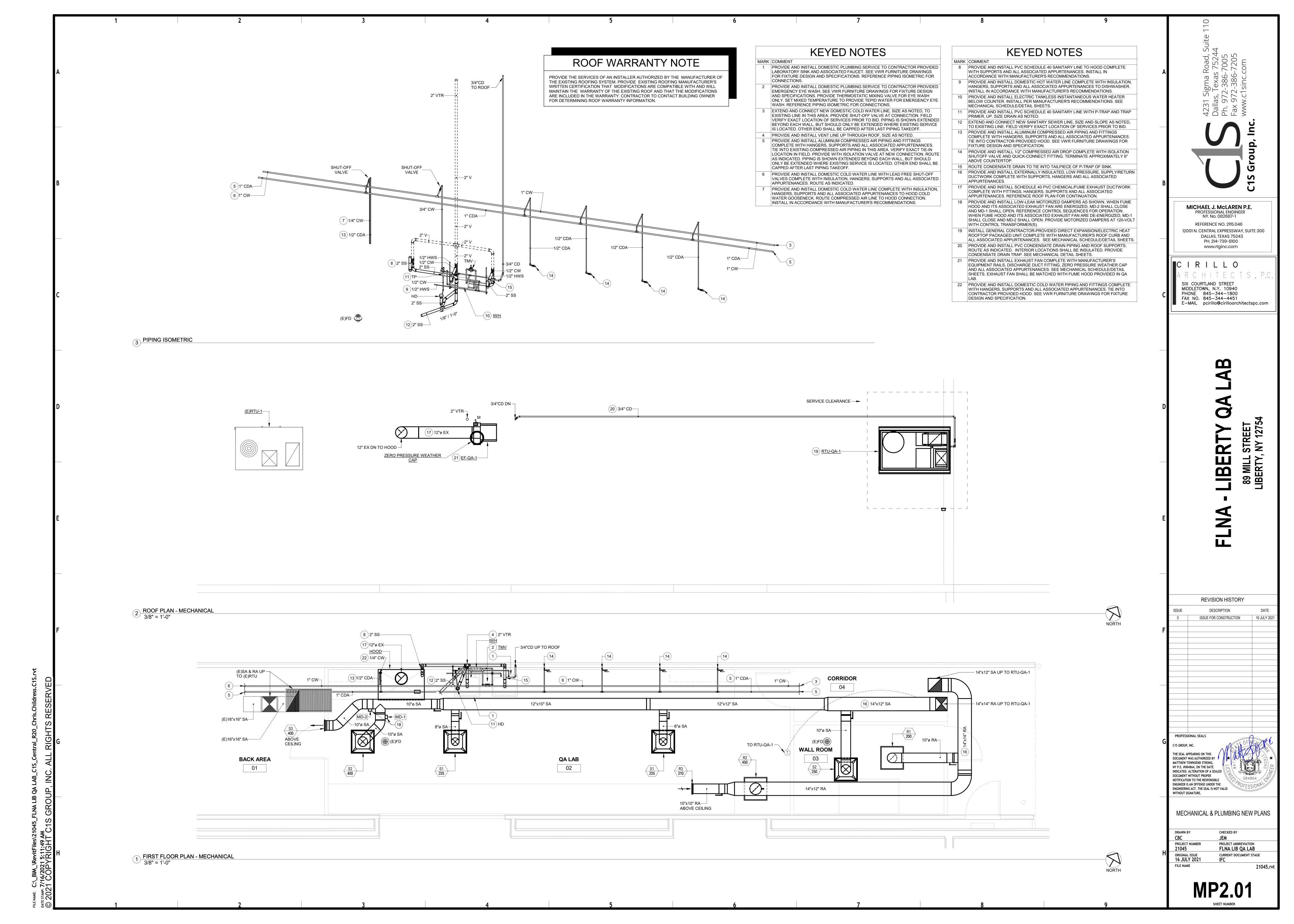
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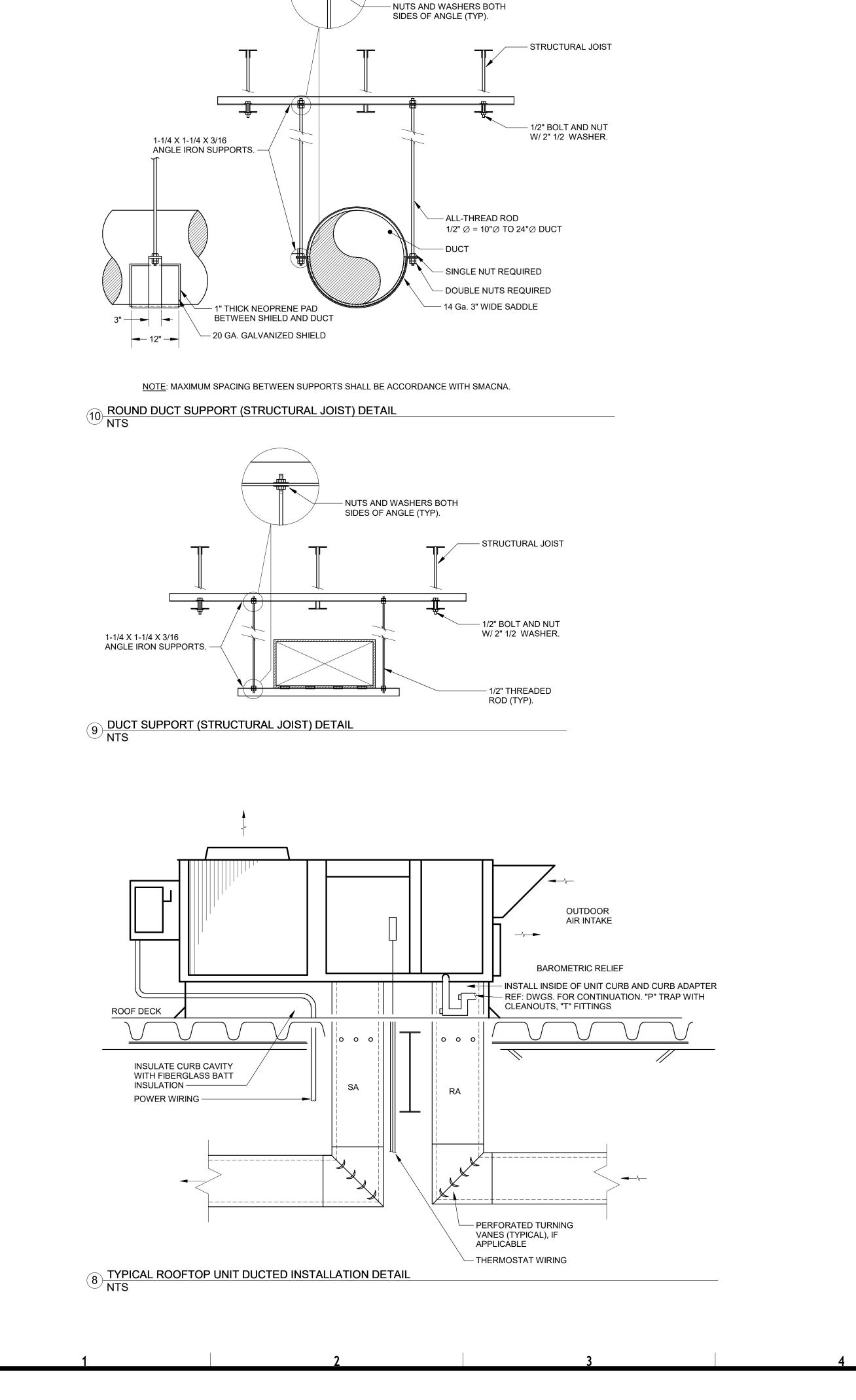
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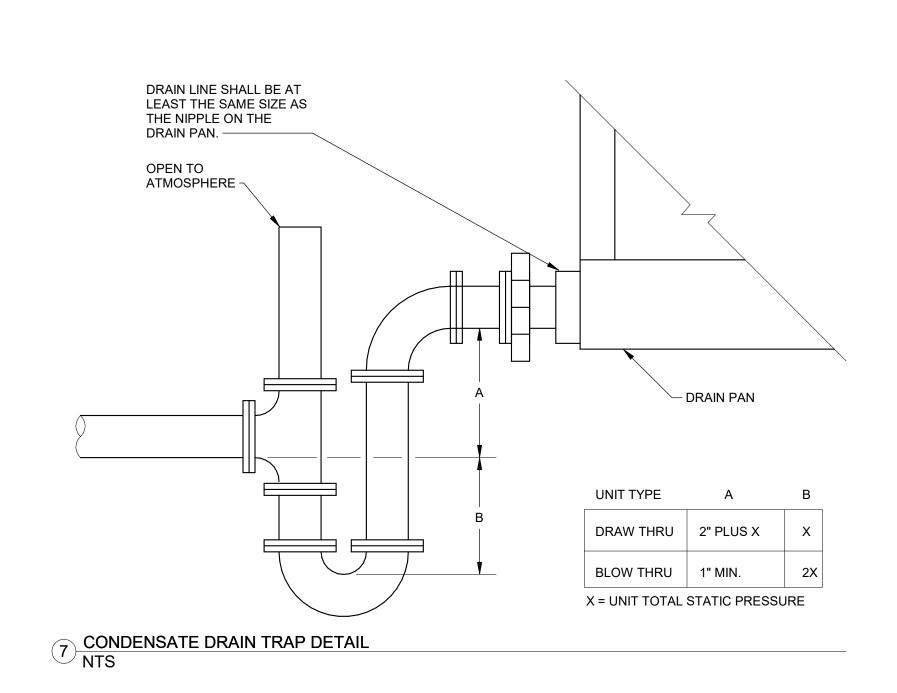
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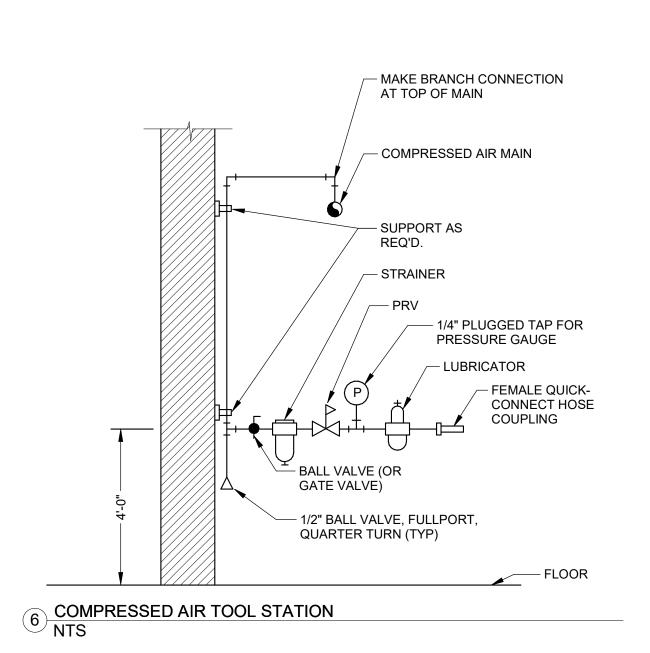
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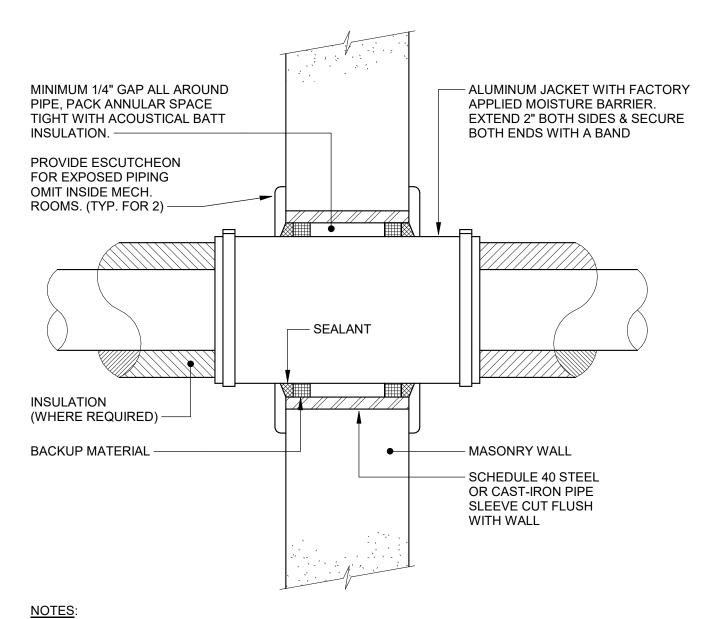










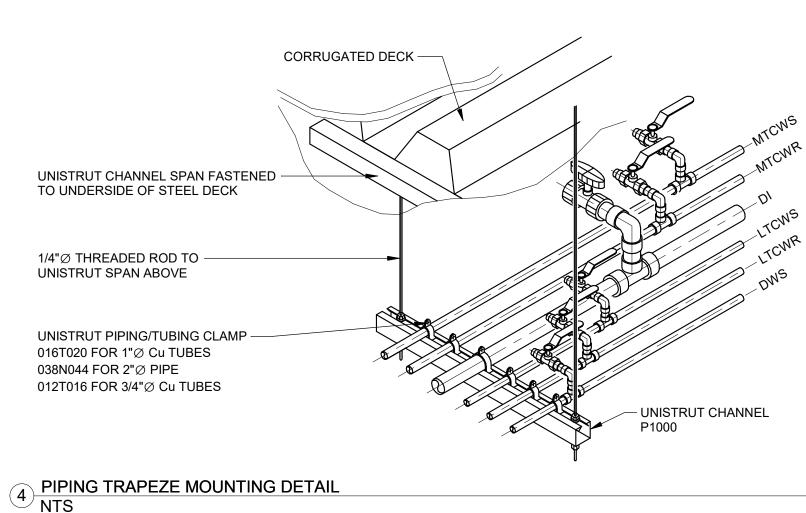


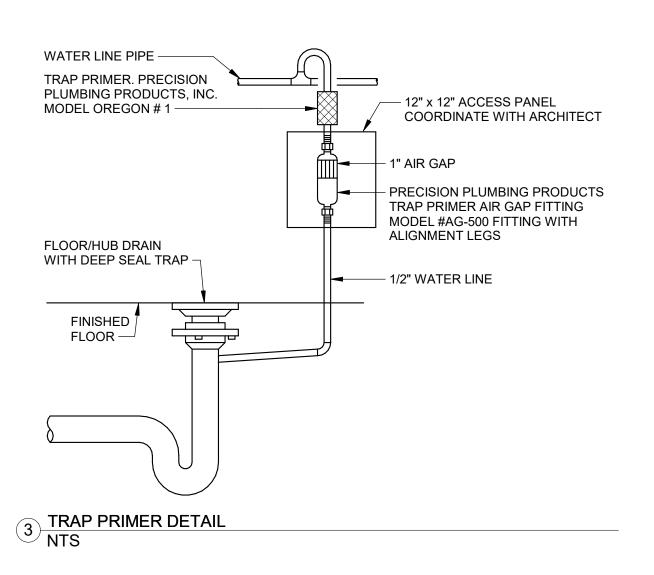
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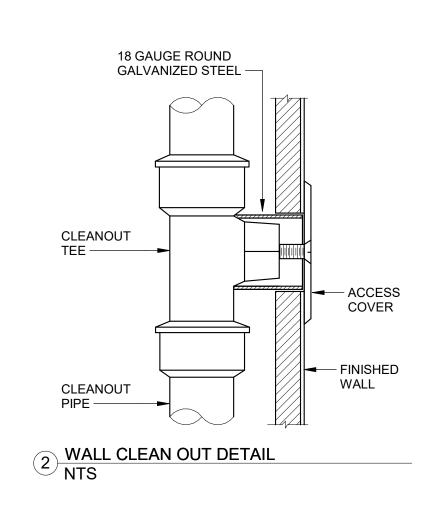
1. FOR GYP. BOARD WALLS PROVIDE MIN. 16 GAUGE GALV. STEEL SLEEVE W/ LOCK-TYPE LONGITUDINAL SEAM.

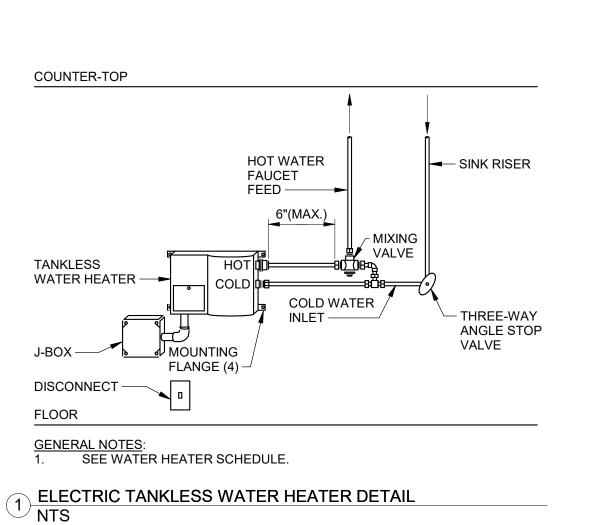
2. OMIT ALUMINUM JACKET IF PIPING IS UNINSULATED.

5 WALL PIPE PENETRATION DETAIL NTS









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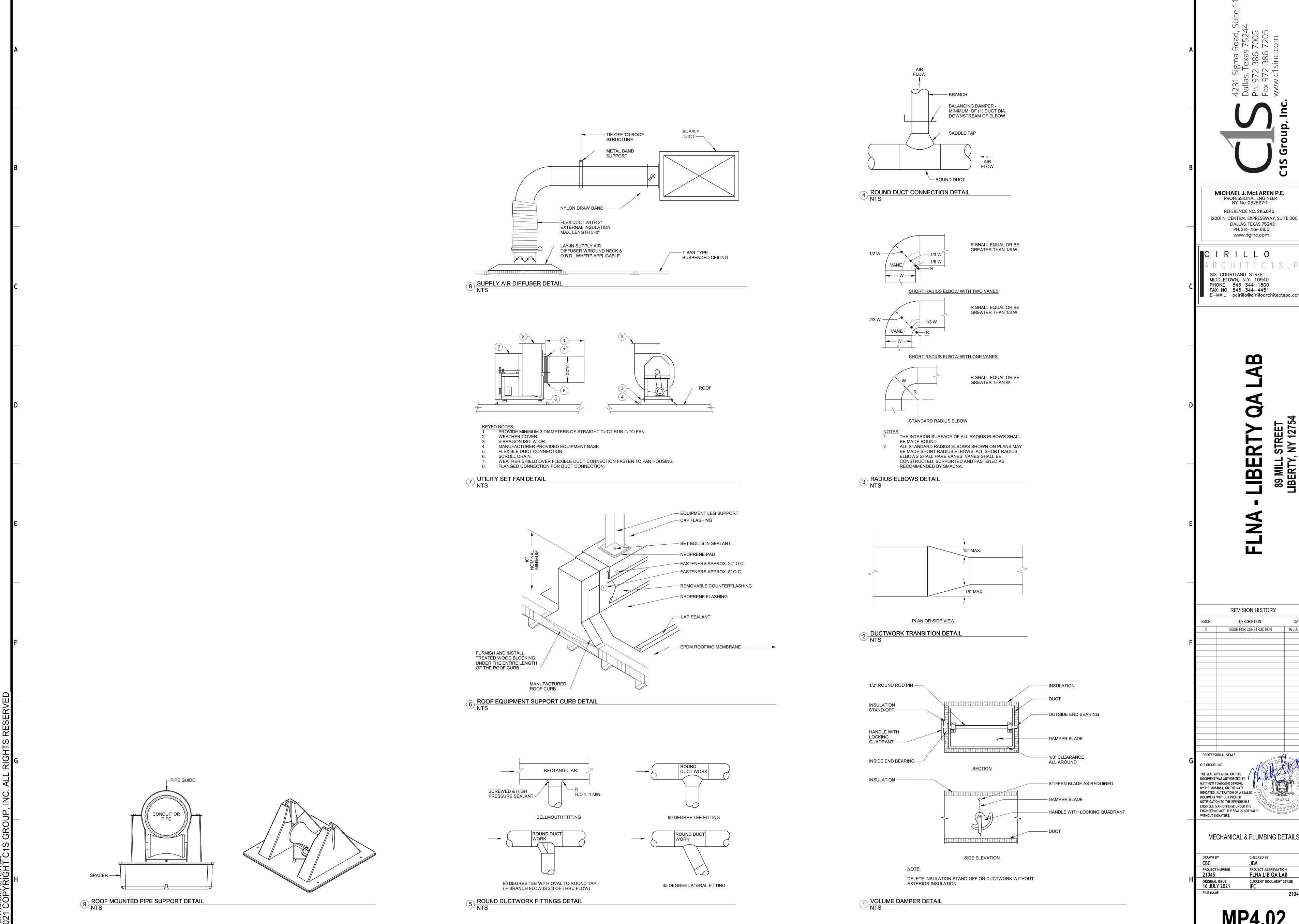
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ECONOMIZER MODE: THE ECONOMIZER MODE SHALL BE INITIATED WHEN THE OUTDOOR AIR DRY-BULB TEMPERATURE RANGE IS BETWEEN 50dF AND 58dF (ADJ). CHANGEOVER FROM COMPRESSOR TO ECONOMIZER OPERATION SHALL BE PROVIDED BY AN INTEGRAL ELECTRONIC ENTHALPY CONTROL.

FUME HOOD CLOSED/MOTORIZED DAMPER FOR FUME HOOD OPERATION: WHILE THE FUME HOOD IS CLOSED AND IN THE FUME HOOD EXHAUST FAN IS DE-ENERGIZED, MD-1 SHALL BE CLOSED AND MD-2 SHALL BE OPEN TO PROVIDE SUPPLY AIR TO THE ADJACENT SPACE OF THE QA LAB.

FUME HOOD OPEN/MOTORIZED DAMPER FOR FUME HOOD OPERATION: WHILE THE FUME HOOD IS OPEN (18" MAX PER FLNA STANDARDS) AND THE FUME HOOD EXHAUST FAN IS ENERGIZED, MD-1 SHALL BE OPEN TO SUPPLY MAKE-UP AIR TO THE QA LAB AND MD-2 SHALL BE CLOSED.

TAG	LOCATION	FAN TYPE	CFM	(IN WG)	DRIVE	HP	VOLTS	PHASE	BASIS OF D	MODEL NO	REMARKS
EF-QA-1	ROOF	UTILITY SET	450 / 725	0.88	BELT	3/4	120	1	LABCONCO	82006-752	SEE NOTES
2. F	PER FLNA STAN	NDARDS, THE M	HALL BE PROVIDED W MAXIMUM SASH HEIGH FED STEEL BLOWER V				•			FPM FOR TH	E 4' FUME HOOD.

		GF	RILLE,	REC	GIS	TER & DIFFUS	SER SCHEDULE	
TAG	TYPE	SERVICE	CFM RANGE	NECK SIZE (IN)	MAX PD	MANUFACTURER/ MODEL NO	DESCRIPTION	REMARKS
S1	CEILING	SUPPLY	225	8	0.1	PRICE / SCD	SQUARE CONE DIFFUSER WITH 360-DEGREE AIR PATTERN	SEE NOTES
S2	CEILING	SUPPLY	250 - 400	10	0.1	PRICE / SCD	SQUARE CONE DIFFUSER WITH 360-DEGREE AIR PATTERN	SEE NOTES
S3	SIDEWALL	SUPPLY	400	10 X 10	0.1	PRICE / 610	SIDEWALL SUPPLY GRILLE/0-DEGREE/3/4" BLADE SPACING	SEE NOTES
R1	CEILING	RETURN	200	10	0.1	PRICE / 610Z	SIDEWALL RETURN GRILLE/0-DEGREE/3/4" BLADE SPACING	SEE NOTES
R2	CEILING	RETURN	450	12	0.1	PRICE / 610Z	SIDEWALL RETURN GRILLE/0-DEGREE/3/4" BLADE SPACING	SEE NOTES
R3	SIDEWALL	RETURN	310	10 X 10	0.1	PRICE / 610Z	SIDEWALL RETURN GRILLE/0-DEGREE/3/4" BLADE SPACING	SEE NOTES
NOTEO				-1				

WATER HEATER SHALL BE HARD WIRED WITH CUTOFF SWITCH OR DISONNECT.

PROVIDE WATER HAMMER ARRESTOR.

PROVIDE ALUMINUM GRILLES AND DIFFUSERS WITH BAKED ENAMEL COATING. SIDEWALL GRILLES (SUPPLY AND RETURN) ARE DUCT-MOUNTED ONLY. GRILLES ARE NOT MOUNTED IN A WALL FACE.

CEILING SUPPLY GRILLES (SCD) SHALL HAVE INSULATION OVER COVER.

	WATER HEATER SCHEDULE    PRESET WATER   VOLTS / HEATING   HEATING						
		PRESET WATER	VOLTS /	HEATING			
TAG	LOCATION	TEMP (°F)	PHASE	ELEMENT KW	MANUFACTURER	MODEL	REMARKS
IWH	BELOW COUNTER	120	480 / 3	24	CHRONOMITE	ER-50L	SEE NOTE:
OTES:							

PROVIDE LEONARD MODEL 170-LF MIXING VALVE, OR APPROVED EQUAL, TO PROVIDE TEPID WATER FOR EMERGENCY EYE WASH.

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PUSH BUTTON RELEASE

FAAP FIRE ALARM ANNUNCIATOR PANEL

FACP | FIRE ALARM CONTROL PANEL

☐ CAMERA

**ELECTRICAL SYMBOLS** 

(SEE NOTES BELOW)

## **GENERAL NOTES FOR ELECTRICAL WORK**

#### **DEMOLITION**

- THE DEMOLITION DRAWING SHOWING EXISTING UTILITIES DOES NOT NECESSARILY REFLECT THE EXACT CONDITIONS, SUCH AS SIZES, ELEVATIONS AND ROUTING. THE PURPOSE OF THIS LAYOUT IS TO GIVE THE CONTRACTOR A GENERAL IDEA OF THE SCOPE OF THE DEMOLITION WORK. IF IN DOUBT AS TO EXTENT OR TO THE SPECIFIC WORK INVOLVED, CONTRACTOR SHALL CONSULT WITH THE ENGINEER FOR CLARIFICATION.
- WHEN THE WORK INVOLVES THE REMOVAL OF EQUIPMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISMANTLING OR DISCONNECTION OF THE RESPECTIVE UTILITIES, SUCH AS ELECTRICAL POWER, CONTROLS AND OTHER RELATED CONNECTIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF THE SYSTEMS BEING REUSED, THE COORDINATION OF THE PATCHING OF WALLS, CEILING AND ROOF THAT ARE AFFECTED BY THE DEMOLITION. WHEN THE EQUIPMENT CALLS FOR A REPLACEMENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RECONNECTION OF ALL THE RESPECTIVE SYSTEMS.
- REMOVE ALL ABANDONED WIRING, CONDUIT AND ELECTRICAL EQUIPMENT. ALL REMOVED EQUIPMENT AND ASSOCIATED WIRING DEVICES, CONDUIT, AND CONDUCTORS SHALL BE RECYCLED TO EXTENT
- ELECTRICAL EQUIPMENT SHALL BE REUSED AS INDICATED. REPLACE ANY PORTION OF FEEDERS OR BRANCH CIRCUIT THAT IS NOT IN GOOD
- WHERE REMOVAL OF AN EXISTING OUTLET OR EQUIPMENT FEED WILL RESULT IN LOSS OF CIRCUIT CONTINUITY, THE ISOLATED PORTIONS OF THE CIRCUIT OR FEED SHALL BE RECONNECTED TO PROVIDE SERVICE TO ALL OUTLETS AND EQUIPMENT.
- DISCONNECT ALL MECHANICAL EQUIPMENT BEING DEMOLISHED. REMOVE CIRCUITS BACK TO SOURCE U.N.O. SEE MECHANICAL DRAWINGS FOR EXTENT OF WORK.
- PROVIDE CIRCUIT MODIFICATIONS INDICATED OR AS OTHERWISE REQUIRED TO MAINTAIN THE CONTINUITY OF EXISTING CIRCUITS THAT REMAIN. BE SURE TO MAINTAIN THE EXISTING PHASE SEQUENCE.
- REGARDING EXISTING CIRCUITRY THAT IS NOT REUSED AT THE COMPLETION OF THE DEMOLITION WORK, THE FOLLOWING SHALL APPLY. (A) ALL EXISTING EXPOSED CIRCUITRY (WIRE AND CONDUIT) SHALL BE REMOVED. (B) EXISTING CONDUITS CONCEALED IN WALLS SHALL BE ABANDONED AND THE WIRES SHALL BE REMOVED. (C) FOR CIRCUITS CONCEALED WITHIN THE FLOOR, REMOVE THE WIRES AND CUT OFF THE CONDUIT ONE INCH BELOW THE ROUGH FLOOR GROUT FLUSH. (D) FOR AFFECTED CIRCUITS THAT HAVE NO LOAD CONNECTIONS. DISCONNECT THE WIRES FROM THEIR POWER SOURCE AND REMOVE THEM IN THEIR ENTIRETY.
- DEMOLITION DRAWINGS ARE BASED ON EXISTING PLANS AND FIELD INVESTIGATION. CONTRACTOR SHALL VERIFY AND MAKE FINAL DETERMINATION OF ALL EXISTING CIRCUITS INDICATED FOR REMOVAL AND/OR TO REMAIN.
- ALL ITEMS SHOWN DASHED ON DEMOLITION PLANS ARE EXISTING AND SHALL BE REMOVED. UNLESS SPECIFICALLY INDICATED OTHERWISE, REMOVED ASSOCIATED WIRING, CONDUIT, SWITCHES, ETC.
- ALL ITEMS SHOWN SHADED ON DEMOLITION PLANS ARE EXISTING TO REMAIN. MAINTAIN CIRCUIT CONTINUITY. PROVIDE CIRCUIT MODIFICATIONS AS REQUIRED TO ENSURE THE CONTINUITY OF EXISTING CIRCUITS THAT REMAIN.
- ALL CONDUIT REMOVED SHALL BE REMOVED IN ITS ENTIRETY. INCLUDING FITTINGS, MOUNTING DEVICES, MOUNTING HARDWARE, AND SO FORTH. THE REMOVAL OF CONDUIT. PROVIDE BLANK COVER PLATES FOR ALL OPENED OUTLET BOXES CREATED BY THE REMOVAL OF EQUIPMENT AND/OR DEVICES.
- WHICH ARE CREATED IN THE DEMOLITION PROCESS. PATCH WORK IN EXTERIOR WALLS SHALL BE WATERPROOF. PAINT THE PATCH WORK AS REQUIRED TO MATCH THE FINISH OF THE ADJACENT SURFACES.

PATCH ALL HOLES, OPENINGS, CREVICES, AND SIMILAR DEFACEMENTS

- THE CONTRACTOR SHALL REMOVE ALL ELECTRICAL APPURTENANCES (DISCONNECTS SWITCHES, MOTOR STARTERS, WIRE, CONDUIT, ETC) ASSOCIATED WITH ELECTRIFIED EQUIPMENT REMOVED BY THE OTHERS UNDER THE CONTRACT.
- UNLESS NOTED OTHERWISE. ALL MATERIALS REMOVED UNDER THE CONTRACT, AND THAT IS NOT REINSTALLED OR TURNED OVER TO THE OWNER, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED COMPLETELY FROM THE SITE.
- THE CONTRACTOR SHALL EXERCISE CARE IN REMOVAL OF DEMOLISHED ITEMS. THE CONTRACTOR SHALL REPAIR. AT HIS COST. ANY DAMAGE CAUSED TO EXISTING CONSTRUCTION AND/OR EQUIPMENT TO REMAIN.

WORK SHALL COMPLY WITH APPLICABLE NATIONAL, STATE, AND LOCAL CODES, RULES, AND REGULATIONS.

EXISTING CONDITIONS ARE BASED ON INFORMATION PROVIDED BY SITE

- ALL WORK SHALL COMPLY WITH THE BUILDING OWNER CONSTRUCTION GUIDE. COORDINATE WITH BUILDING MANAGEMENT/OWNER FOR ACCESS TO ANY SPACES THAT MIGHT BE REQUIRED FOR THE INSTALLATION.
- SURVEY, HOWEVER, IT IS NOT INTENDED TO BE EXACT REPRESENTATION OF ACTUAL CONDITIONS. VISIT JOB SITE BEFORE BIDDING TO ASCERTAIN EXISTING CONDITIONS AND NOTIFY ENGINEER OF DISCREPANCIES BEFORE BID. WHERE WIRE SIZES ARE NOTED ON DRAWINGS OR SCHEDULES, SIZE
- SHALL BE PROVIDED THROUGH ENTIRE RUN UNLESS NOTED OTHERWISE WIRE SHALL BE COPPER.
- DOWN-TIME WITH BUILDING OWNER BEFORE PERFORMING WORK. ALL 20A BRANCH CIRCUITS UNDER 150 FEET SHALL BE (2)#12, #12G, 3/4"C. U.N.O. ALL 20A BRANCH CIRCUITS 150 FEET AND OVER SHALL BE (2)#10, #

CONNECTIONS TO PANELBOARDS OR BUSWAY SHALL BE MADE ONLY WHEN PANELBOARD OR BUSWAY HAS BEEN DE-ENERGIZED. SCHEDULE

- BRANCH CIRCUITS SHALL HAVE SEPARATE NEUTRAL AND GROUND
- PROVIDE LABELS ON WIRING DEVICES, DISCONNECT SWITCHES, ETC., WITH CIRCUIT NUMBER FROM PANEL SERVING DEVICES.
- UNLESS SPECIFICALLY NOTED TO BE EXISTING, WORK AND MATERIAL SHOWN BOLD SHALL BE PROVIDED AS NEW. WHEREVER "NEW TO EXISTING" CONNECTION IS REQUIRED, PROVIDE ACCESSORIES, SPLICES, CONDUIT, FITTINGS, AND MISCELLANEOUS HARDWARE AND COMPONENTS AS NECESSARY TO EFFECT CONNECTIONS. PROVIDE CUTTING AND PATCHING AS NECESSARY, CONCEAL CONDUITS WHENEVER POSSIBLE.
- NEW CONDUIT PENETRATIONS THROUGH BLOCK, BRICK, AND/OR CONCRETE WALLS, FLOORS, AND OTHER SIMILAR CONSTRUCTION SHALL BE ACCOMPLISHED BY CORE DRILLING. REFER TO SPECIFICATIONS FOR CONDUIT SLEEVE REQUIREMENTS. SEAL AND CALK AROUND CONDUIT. PROVIDE PROPERLY RATED FIRE SEALS FOR CONDUITS THAT PENETRATE FIRE-RATED CONSTRUCTION. REFER TO ARCHITECTURAL DRAWING FOR FIRE-RATED CONSTRUCTION.

- ALL WORK IN THE EXISTING BUILDING SHALL BE SCHEDULED AT TIMES THAT ARE CONVENIENT TO THE OWNER.
- 13. BEFORE BID CONTRACTOR SHALL VISIT SITE AND VERIFY ALL EXISTING EQUIPMENT, MATERIALS, SYSTEMS, AND EXACT REQUIREMENTS OF THE PROPOSED WORK. ANY DISCREPANCY OR CONFLICT THAT IS FOUND
- SHALL BE REPORTED TO THE ENGINEER OR OWNER'S REPRESENTATIVE. UNDER NO CIRCUMSTANCE SHALL UTILITY SERVICES BE INTERRUPTED WITHOUT CAREFUL COORDINATION AND WRITTEN CONSENT FROM OWNER. INTERRUPTION IN UTILITY SERVICES SHALL BE PLANNED IN
- COMPLY WITH REQUIREMENTS OF NFPA 70E WHEN WORKING WITH ENERGIZED ELECTRICAL EQUIPMENT.

ADVANCE FOR ALL PARTIES INVOLVED.

- CIRCUITRY SHALL BE CONCEALED IN FINISHED AREAS. EXISTING CIRCUITRY TO REMAIN THAT BECOMES EXPOSED IN A FINISHED AREA SHALL BE REROUTED AND RECONNECTED AS REQUIRED TO BECOME CONCEALED AND TO MAINTAIN CIRCUIT CONTINUITY. EXPOSED CONDUIT MAY BE PROVIDED IN UNFINISHED SPACES.
- GENERAL NOTES ON THIS DRAWING ARE APPLICABLE TO EACH ELECTRICAL DRAWING OF THIS SET. REFER TO EACH DRAWING FOR SPECIFIC SCOPE AREAS.
- VERIFY MEASUREMENTS. NO EXTRA COMPENSATION WILL BE ALLOWED BECAUSE OF DIFFERENCES BETWEEN WORK SHOWN ON DRAWINGS AND ACTUAL MEASUREMENTS AT SITE OF CONSTRUCTION. DRAWINGS ARE DIAGRAMMATIC REPRESENTATION AND INTENDED TO CONVEY INTENT.
- UPON COMPLETION OF WORK, THOROUGHLY CLEAN EXPOSED PORTIONS OF ELECTRICAL EQUIPMENT. ONLY USE CLEANERS RECOMMENDED IF APPROVED BY MANUFACTURER.
- DESIGNATE ONE PERSON TO SERVE AS PRIMARY POINT OF COMMUNICATION WITH PROJECT TEAM.
- WORK AMONG TRADES SHALL BE FULLY COORDINATED AS REQUIRED IN FIELD TO AVOID CONFLICTS. CONFLICTS SHALL BE REPORTED IN WRITING TO ENGINEER AND OWNER.
- EQUIPMENT SHALL BE NEW UNLESS NOTED OTHERWISE AND INSTALLED IN ACCORDANCE WITH MANUFACTURERS' PUBLISHED RECOMMENDATIONS. PRODUCTS SHALL BEAR UL LABELS.
- REUSED EXISTING ITEMS SHALL BE REFURBISHED, STORED, AND MAINTAINED IN SAME OR BETTER CONDITIONS AS WHEN REMOVED FROM
- COORDINATE LOCATION AND INSTALLATION OF EQUIPMENT WITH OTHER
- COORDINATE EXACT LOCATIONS OF EQUIPMENT POWER CONNECTIONS WITH OWNER AND OEM EQUIPMENT VENDORS BEFORE FINAL ROUGH-IN.
- WITHIN 30 DAYS AFTER DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF INITIAL INSTALLATION SHALL BE PROVIDED TO BUILDING OWNER, INCLUDING SINGLE LINE DRAWING OF BUILDING ELECTRICAL DISTRIBUTION SYSTEM AND FLOOR PLANS INDICATING LOCATION AND
- EACH TELEPHONE/DATA OUTLET OR COMMUNICATIONS JUNCTION BOX IN FINISHED SPACES. PROVIDE 3/4"C WITH PULL STRING FROM 15 FEET ABOVE FINISHED FLOOR TO EACH TELEPHONE/DATA OUTLET OR COMMUNICATIONS JUNCTION BOX IN UNFINISHED SPACES.
- LOCAL AUTHORITIES HAVING JURISDICTION, COORDINATE AND ALARM CONTRACTOR SHALL INSTALL FIRE PROTECTION EQUIPMENT, DEVICES. ETC.. PER DOCUMENTS PREPARED BY LICENSED FIRE JURISDICTION. INCLUDE IN BID NECESSARY COSTS FOR UPGRADING EXISTING FIRE ALARM SYSTEM TO ACCOMMODATE NEW DEVICE CAPACITY REQUIREMENTS.
- MAINTENANCE; REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED; (C) NAMES AND ADDRESSES OF AT LEAST ONE QUALIFIED SERVICE AGENCY; AND (D) COMPLETE NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE.
- TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE
- PROVIDE ILSCO PIN TERMINATOR CONNECTED TO WIRES VIA COMPRESSION FITTING AS REQUIRED FOR CONNECTION TO VENDOR-
- CONDUIT ROUTED ALONG ROOF SHALL BE SUPPORTED BY BLOCKS MANUFACTURED FROM RECYCLED RUBBER OR POLYCARBONATE BASE WITH SUPPORT PAD. NO WOOD BLOCKING IS ALLOWED.

- AMPS, AMPERE ABOVE COUNTER ABOVE AIR CONDITIONER ALTERNATING CURRENT AMP FRAME
- ABOVE FINISH FLOOR AFG ABOVE FINISH GRADE AHU AIR HANDLING UNIT AMP TRIP
- BLDG BUILDING CONDUIT
- CIRCUIT BREAKER CKT CIRCUIT CLG CEILING COMM COMMUNICATION
- CONST CONSTRUCTION CONT CONTINUOUS CONTR CONTRACTOR CARD READER
- CONDENSING UNIT DIRECT CURRENT
- DIAMETER DN DOWN DETAIL
- DWG DRAWING EXISTING EACH
- ELEVATION ELEC ELECTRICAL ELEV ELEVATOR
- EMER EMERGENCY EQ EQUAL EQUIP EQUIPMENT
- EXIST EXISTING FA FIRE ALARM
- FIRE DAMPER FDR FEEDER FIXT FIXTURE
- FN FULL NEUTRAL **TERMINAL UNIT**

KILOAMPERES

MCM THOUSAND CIRCULAR MILS

- FUSED SWITCH FSD FIRE SMOKE DAMPER
- GALV GALVANIZED GENERAL CONTRACTOR GEN GENERATOR
- GFCI GROUND FAULT CIRCUIT INTERRUPTER HORSEPOWER ISOLATED GROUND INCANDESCENT
- PROVIDE FIRE ALARM SYSTEM AS REQUIRED PER NFPA, ADA, TAS, AND
- SPECIFIED IN UL 486A-486B.

#### <u>ABBREVIATIONS</u>

- AMPERES INTERRUPTING CAPACITY
- AUX AUXILIARY, AUXILIARIES AUDIO VISUAL
- CONN CONNECT
- COOLING TOWER **CURRENT TRANSFORMER**
- DTL
- ELECTRICAL CONTRACTOR EDH ELECTRIC DUCT HEATER
- FAN COIL UNIT
- FLUOR FLUORESCENT FPVV FAN POWERED VARIABLE VOLUME
- FEET GROUND
- AREA SERVED FOR DISTRIBUTION. GFI GROUND FAULT INTERRUPTER PROVIDE 3/4"C WITH PULL STRING FROM TELEPHONE BACKBOARD TO
- KVA KILOVOLT AMPERES KW KILOWATT KWH KILOWATT - HOUR INTERFACE DEVICES WITH EXISTING BUILDING FIRE ALARM SYSTEM. FIRE LTG LIGHTING MAX MAXIMUM PROTECTION ENGINEER AND APPROVED BY LOCAL AUTHORITIES HAVING MCB MAIN CIRCUIT BREAKER MCC MOTOR CONTROL CENTER
- OPERATING MANUAL AND MAINTENANCE MANUAL SHALL BE PROVIDED TO BUILDING OWNER. MANUALS SHALL INCLUDE, AT MINIMUM, (A) SUBMITTAL DATA STATING EQUIPMENT RATING AND SELECTED OPTIONS FOR EACH ITEM OF EQUIPMENT REQUIRING MAINTENANCE; (B) OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH ITEM OF EQUIPMENT REQUIRING
- FURNISHED EQUIPMENT.
- MECH MECHANICAL MIC MICROPHONE MIN MINIMUM MISC MISCELLANEOUS MTD MOUNTED MTG MOUNTING MTR MOTOR MVD MANUAL VOLUME DAMPER NEUTRAL NOT APPLICABLE
- NORMALLY CLOSED NEC NATIONAL ELECTRICAL CODE NEMA NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION NFPA NATIONAL FIRE PROTECTION
- ASSOCIATION NOT IN CONTRACT NORMALLY OPEN PHOTO-ELECTRIC
- POWER FACTOR PHASE PLBG PLUMBING PNL PANEL PVC POLYVINYL CHLORIDE PWR POWER
- QTY QUANTITY REUSE RCP REFLECTED CEILING PLAN REC RECEPTACLE REF REFERENCE
- REFR REFRIGERATOR REQ'D REQUIRED RLA RUNNING LOAD AMPS RM ROOM
- RQMT REQUIREMENT SPECS SPECIFICATIONS SPKR SPEAKER SQ SQUARE SQFT SQUARE FEET
- SHORT CIRCUIT CURRENT STD STANDARD SW SWITCH SWBD SWITCHBOARD SWGR SWITCHGEAR
- SYM SYMMETRICAL TIMECLOCK TELE TELEPHONE
- TTB TELEPHONE TERMINAL BOARD TYP TYPICAL UON UNLESS OTHERWISE NOTED
- VA VOLT-AMPS VAV VARIABLE AIR VOLUME VERT VERTICAL W WATTS

VOLT WH WATER HEATER WP WEATHERPROOF XFMR TRANSFORMER Y WYE

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DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE

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**CURRENT DOCUMENT STAGE** 

PART 1 - ELECTRICAL INSTRUCTIONS

GENERAL REQUIREMENTS ALL REQUIREMENTS UNDER THE GENERAL AND SUPPLEMENTARY CONDITIONS OF THESE SPECIFICATIONS APPLY TO THIS SECTION AND DIVISION. BECOME THOROUGHLY FAMILIAR WITH ALL THEIR CONTENTS AS TO REQUIREMENTS THAT AFFECT THIS DIVISION, SECTION OR BOTH. WORK REQUIRED UNDER THIS DIVISION INCLUDES ALL MATERIAL. EQUIPMENT, APPLIANCES, AND LABOR REQUIRED TO COMPLETE THE ENTIRE ELECTRICAL SYSTEM AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS, OR REASONABLY INFERRED TO BE NECESSARY TO FACILITATE EACH SYSTEM'S FUNCTIONING AS IMPLIED BY THE DESIGN AND THE EQUIPMENT SPECIFIED. THE SPECIFICATIONS AND DRAWINGS FOR THE PROJECT ARE COMPLEMENTARY, AND PORTIONS OF THE WORK DESCRIBED IN ONE. SHALL BE PROVIDED AS IF DESCRIBED IN BOTH, IN THE

EVENT OF DISCREPANCIES, NOTIFY THE ENGINEER AND REQUEST CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK INVOLVED. DRAWINGS ARE GRAPHIC REPRESENTATIONS OF THE WORK UPON WHICH THE CONTRACT IS BASED. THEY SHOW THE MATERIALS AND THEIR RELATIONSHIP TO ONE ANOTHER,

INCLUDING SIZES, SHAPES, LOCATIONS, AND CONNECTIONS THEY ALSO CONVEY THE SCOPE OF WORK. INDICATING THE INTENDED GENERAL ARRANGEMENT OF THE EQUIPMENT. FIXTURES, OUTLETS AND CIRCUITS WITHOUT SHOWING ALL OF THE EXACT DETAILS AS TO ELEVATIONS, OFFSETS, CONTROL LINES, AND OTHER INSTALLATION REQUIREMENTS. USE THE DRAWINGS AS A GUIDE WHEN LAYING OUT THE WORK AND TO VERIFY THAT MATERIALS AND EQUIPMENT WILL FIT INTO THE DESIGNATED SPACES, AND WHICH, WHEN INSTALLED PER MANUFACTURERS' REQUIREMENTS, WILL ENSURE A COMPLETE. COORDINATED, SATISFACTORY AND PROPERLY OPERATING DRAWINGS ARE SCHEMATIC IN NATURE. SHOW THE VARIOUS

COMPONENTS OF THE SYSTEMS APPROXIMATELY TO SCALE AND ATTEMPT TO INDICATE HOW THEY SHALL BE INTEGRATED WITH OTHER PARTS OF THE WORK. FIGURED DIMENSIONS TAKE PRECEDENCE TO SCALED DIMENSIONS. DETERMINE EXACT LOCATIONS BY JOB MEASUREMENTS. BY CHECKING THE REQUIREMENTS OF OTHER TRADES, AND BY REVIEWING ALL CONTRACT DOCUMENTS. CORRECT ERRORS THAT COULD HAVE BEEN AVOIDED BY PROPER CHECKING AND INSPECTION. AT NO ADDITIONAL COST TO THE OWNER. SPECIFICATIONS DEFINE THE QUALITATIVE REQUIREMENTS FOR

PRODUCTS, MATERIALS, AND WORKMANSHIP UPON WHICH THE CONTRACT IS BASED. ELECTRICAL SUB-CONTRACTOR SHALL MAINTAIN AT LEAST ONE (1) LICENSED JOURNEYMAN ELECTRICIAN ON-SITE AT ALL TIMES

DURING ACTIVE CONSTRUCTION HOURS. ELECTRICAL SUB-CONTRACTOR SHALL SCHEDULE AND COORDINATE ALL REQUIRED PERMIT INSPECTIONS WITH CITY AND AUTHORITIES HAVING JURISDICTION. ALL CONTRACT PERSONNEL SHALL COMPLETE THE OWNER'S SAFETY TRAINING AND ORIENTATION CLASSES. PERSONNEL FOUND NOT IN COMPLIANCE WITH SAFETY REGULATIONS AND PROCEDURES WILL BE SUBJECT TO DISCIPLINE UPTO AND

INCLUDING REMOVAL FROM THE SITE AT THE DISCRETION OF

THE OWNER OR GENERAL CONTRACTOR. CONTRACTOR SHALL

PROVIDE AT THEIR COST ALL REQUIRED PERSONAL PROTECTION EQUIPMENT (PPE) FOR THEIR PERSONNEL. ALL EQUIPMENT SHALL BE NEW UNLESS NOTED OTHERWISE WHEN EXISTING ITEMS ARE REUSED, REFURBISHED AS NOTED ON THE DRAWINGS OR SPECIFIED, OTHERWISE, STORE AND MAINTAIN IN THE SAME CONDITION AS EXISTED WHEN THE WORK WAS PLACED UNDER CONTRACT. RE-INSTALL THE ITEMS IN A GOOD WORKMANSHIP MANNER. PROVIDE LABELS ON ALL WIRING DEVICES, DISCONNECT

SWITCHES, ETC. WITH CIRCUIT NUMBERS FROM POWER SOURCE SERVING DEVICE. NOT ALL PARAGRAPHS OF SPECIFICATION MAY APPLY TO THIS PARTICULAR PROJECT.

WHENEVER USED IN THESE SPECIFICATIONS OR DRAWINGS, THE FOLLOWING TERMS SHALL HAVE THE INDICATED MEANINGS: FURNISH: "TO SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLING, INSTALLING, AND SIMILAR OPERATIONS." INSTALL: "TO PERFORM ALL OPERATIONS AT THE PROJECT SITE, INCLUDING, BUT NOT LIMITED TO, AND AS REQUIRED: UNLOADING, UNPACKING, ASSEMBLING, ERECTING, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, TESTING, COMMISSIONING, STARTING UP AND SIMILAR OPERATIONS, COMPLETE, AND READY FOR THE PROVIDE: "TO FURNISH AND INSTALL COMPLETE, AND READY FOR THE INTENDED USE." FURNISHED BY OWNER (OR OWNER-FURNISHED) OR FURNISHED BY OTHERS: "AN ITEM FURNISHED BY THE OWNER OR UNDER OTHER DIVISIONS OR CONTRACTS.

AND INSTALLED UNDER THE REQUIREMENTS OF THIS DIVISION, COMPLETE, AND READY FOR THE INTENDED USE, INCLUDING ALL ITEMS AND SERVICES INCIDENTAL TO THE WORK NECESSARY FOR PROPER INSTALLATION AND OPERATION. INCLUDE THE INSTALLATION UNDER THE WARRANTY REQUIRED BY THIS DIVISION. ENGINEER: WHERE REFERENCED IN THIS DIVISION "ENGINEER" IS THE ENGINEER OF RECORD AND THE DESIGN PROFESSIONAL FOR THE WORK UNDER THIS DIVISION, AND IS A CONSULTANT TO, AND AN

AUTHORIZED REPRESENTATIVE OF THE ARCHITECT, AS DEFINED IN THE GENERAL AND/OR SUPPLEMENTARY CONDITIONS. WHEN USED IN THIS DIVISION, IT MEANS INCREASED INVOLVEMENT BY, AND OBLIGATIONS TO, THE ENGINEER, IN ADDITION TO INVOLVEMENT BY, AND OBLIGATIONS TO, THE "ARCHITECT". AHJ: THE LOCAL CODE AND/OR INSPECTION AGENCY (AUTHORITY) HAVING JURISDICTION OVER THE WORK

NRTL: NATIONALLY RECOGNIZED TESTING LABORATORY AS DEFINED AND LISTED BY OSHA IN 29 CFR 1910.7 (E.G. UL, ETL, CSA), AND ACCEPTABLE TO THE AHJ OVER THIS HOMERUN: THAT PORTION OF AN ELECTRICAL CIRCUIT ORIGINATING AT A JUNCTION BOX, TERMINATION BOX, RECEPTACLE OR SWITCH WITH TERMINATION AT AN ELECTRICAL PANELBOARD, MCC, SWITCHBOARD, OR OTHER POWER SOURCE

THE TERMS "APPROVED EQUAL", "EQUIVALENT", OR

"EQUAL" ARE USED SYNONYMOUSLY AND SHALL MEAN "ACCEPTED BY OR ACCEPTABLE TO THE ENGINEER AS EQUIVALENT TO THE ITEM OR MANUFACTURER SPECIFIED". THE TERM "APPROVED" SHALL MEAN LABELED, LISTED, CERTIFIED, OR ALL THREE, BY AN NRTL, AND ACCEPTABLE TO THE AHJ OVER THIS PROJECT. CONDUCTOR, CABLE, OR WIRE: ONLY APPLIES TO POWER CONDUCTORS UNLESS OTHERWISE NOTED IN DRAWINGS. CONTROL, INTRUMENTATION AND ALL OTHER CONDUCTORS ARE PROVIDED / INSTALLED BY OWNER OR CONTRACTOR OTHER THAN ELECTRICAL UNLESS NOTED OTHERWISE ON DRAWINGS, ELECTRICAL CONTRACTOR ONLY INSTALLS EMPTY CONDUIT WITH

PULL STRING FOR CONDUCTORS OTHER THAN POWER.

PERSONALLY INSPECT THE SITE OF THE PROPOSED WORK AND BECOME FULLY INFORMED OF CONDITIONS UNDER WHICH THE WORK IS TO BE DONE. FAILURE TO DO SO WILL NOT BE CONSIDERED SUFFICIENT JUSTIFICATION TO REQUEST OR OBTAIN EXTRA COMPENSATION OVER AND ABOVE THE CONTRACT PRICE.

MATERIAL AND WORKMANSHIP PROVIDE ALL MATERIAL AND EQUIPMENT NEW AND IN FIRST CLASS CONDITION. PROVIDE MARKINGS OR A NAMEPLATE FOR ALL MATERIAL AND EQUIPMENT IDENTIFYING THE MANUFACTURER AND PROVIDING SUFFICIENT REFERENCE TO ESTABLISH QUALITY, SIZE AND CAPACITY. ALL WORKMANSHIP SHALL BE OF THE FINEST POSSIBLE BY EXPERIENCED MECHANICS OF THE PROPER TRADE. IN GENERAL, PROVIDE THE FOLLOWING QUALITY GRADE(S) FOR ALL MATERIALS AND **EQUIPMENT** 

COMMERCIAL SPECIFICATION GRADE INDUSTRIAL SPECIFICATION GRADE PROVIDE ALL HOISTS, SCAFFOLDS, STAGING, RUNWAYS, TOOLS, MACHINERY AND EQUIPMENT REQUIRED FOR THE PERFORMANCE OF THE ELECTRICAL WORK, STORE AND MAINTAIN MATERIAL AND EQUIPMENT IN CLEAN CONDITION. AND PROTECTED FROM WEATHER, MOISTURE, AND PHYSICAL FURNISH ONLY MATERIAL AND EQUIPMENT THAT ARE LISTED LABELED, CERTIFIED, OR ALL THREE, BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL), WHENEVER ANY

LISTING OR LABELING EXISTS FOR THE TYPES OF MATERIAL AND EQUIPMENT SPECIFIED. AT A MINIMUM, GENERAL WORK PRACTICES FOR ELECTRICAL CONSTRUCTION SHALL BE IN ACCORDANCE WITH: NECA 1 (LATEST EDITION), "STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONSTRUCTION"

MANUFACTURERS IN OTHER ARTICLES WHERE LISTS OF MANUFACTURERS ARE INTRODUCED, SUBJECT TO COMPLIANCE WITH REQUIREMENTS: PROVIDE PRODUCTS BY ONE OF THE MANUFACTURERS SPECIFIED WHERE A LIST IS PROVIDED. MANUFACTURERS ARE LISTED ALPHABETICALLY AND NOT IN ACCORDANCE WITH ANY RANKING OR PREFERENCE WHERE MANUFACTURERS ARE NOT LISTED. PROVIDE PRODUCTS SUBJECT TO COMPLIANCE WITH REQUIREMENTS FROM MANUFACTURERS THAT HAVE BEEN ACTIVELY INVOLVED IN MANUFACTURING THE SPECIFIED PRODUCT FOR NO LESS THAN 5

COORDINATION COORDINATE ALL WORK WITH OTHER DIVISIONS AND TRADES SO THAT VARIOUS COMPONENTS OF THE ELECTRICAL SYSTEMS ARE INSTALLED AT THE PROPER TIME, FIT THE AVAILABLE SPACE, AND ALLOW PROPER SERVICE ACCESS TO ALL EQUIPMENT. REFER TO ALL DRAWINGS, INCLUDING, BUT NOT LIMITED TO CONTROLS. INSTRUMENTATION, CIVIL, ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND PLUMBING, AND TO RELEVANT EQUIPMENT SUBMITTALS AND SHOP DRAWINGS TO DETERMINE THE EXTENT OF CLEAR SPACES. MAKE ALL OFFSETS REQUIRED TO CLEAR EQUIPMENT, BEAMS AND OTHER STRUCTURAL MEMBERS, AND TO FACILITATE CONCEALING RACEWAYS IN THE MANNER ANTICIPATED IN THE DESIGN. PROVIDE MATERIALS WITH TRIM THAT WILL FIT PROPERLY THE TYPES OF CEILING, WALL, OR FLOOR FINISHES ACTUALLY INSTALLED. THE BURDEN OF INITIATING THE COORDINATION REST WITH THE OTHER TRADES

ORDINANCES, CODES, AND STANDARDS COMPLY, AT A MINIMUM, WITH NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS, STATE AND LOCAL BUILDING CODES, AND ALL OTHER APPLICABLE CODES AND ORDINANCES FOR PERFORMANCE, WORKMANSHIP, EQUIPMENT, AND MATERIALS. ADDITIONALLY, COMPLY WITH RULES AND REGULATIONS OF PUBLIC UTILITIES AND MUNICIPAL

DEPARTMENTS AFFECTED BY CONNECTION OF SERVICES. WHERE CONFLICTS BETWEEN VARIOUS CODES, ORDINANCES, RULES. AND REGULATIONS EXIST. COMPLY WITH THE MOST STRINGENT. WHEREVER REQUIREMENTS OF THESE SPECIFICATIONS, DRAWINGS, OR BOTH, EXCEED THOSE OF THE ABOVE ITEMS. THE REQUIREMENTS OF THESE SPECIFICATIONS. DRAWINGS, OR BOTH, SHALL GOVERN. CODE COMPLIANCE, AT A MINIMUM, IS MANDATORY. CONSTRUE NOTHING IN THESE CONSTRUCTION DOCUMENTS AS PERMITTING WORK NOT IN COMPLIANCE, AT A MINIMUM, WITH THESE CODES. PROMPTLY BRING ALL CONFLICTS OBSERVED BETWEEN CODES. ORDINANCES, RULES, REGULATIONS, REFERENCED STANDARDS AND THESE DOCUMENTS TO THE ENGINEER'S ATTENTION FOR FINAL RESOLUTION. CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY VIOLATION OF THE LAW. PROVIDE AND MAINTAIN ALL NECESSARY SIGNAL LIGHTS AND GUARDS FOR THE SAFETY OF THE PUBLIC. OBTAIN AND PAY FOR

ALL PERMITS FOR WORK IN THIS DIVISION. PROTECTION OF EQUIPMENT AND MATERIALS STORE AND PROTECT FROM DAMAGE EQUIPMENT AND MATERIALS DELIVERED TO JOB SITE, IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS. FOR MATERIALS AND EQUIPMENT SUSCEPTIBLE TO CHANGING WEATHER CONDITIONS, DAMPNESS, OR TEMPERATURE VARIATIONS, STORE INSIDE IN CONDITION SPACES. FOR MATERIALS AND EQUIPMENT NOT SUSCEPTIBLE TO THESE CONDITIONS, COVER WITH WATERPROOF, TEAR-RESISTANT, HEAVY TARP OR POLYETHYLENE PLASTIC AS REQUIRED TO PROTECT FROM DIRT, WATER, OR PHYSICAL DAMAGE. EQUIPMENT AND MATERIAL THAT HAS BEEN DAMAGED BY CONSTRUCTION ACTIVITIES WILL BE REJECTED, AND CONTRACTOR SHALL FURNISH NEW EQUIPMENT AND MATERIAL OF A LIKE KIND PLUG OR CAP OPEN-ENDS OF CONDUITS TO PREVENT THE

BE INSTALLED WHILE CONDUIT IS STORED AND DURING CONSTRUCTION WHEN INSTALLED BUT NOT IN USE. SUBSTITUTIONS INCLUDE IN THE BASE BID THE PRODUCTS SPECIFICALLY NAMED IN THESE SPECIFICATIONS OR ON THE DRAWINGS. SUBMIT, IN THE FORM OF ALTERNATES, WITH BID, PRODUCTS OF ANY OTHER MANUFACTURERS FOR SIMILAR USE, PROVIDED THE DIFFERENCES IN COST, IF ANY ARE INCLUDED FOR EACH

ENTRANCE OF DEBRIS INTO THE SYSTEMS. PLUG OR CAP SHALL

PROPOSED ALTERNATE. PRIOR TO THE BID DATE. SUBSTITUTIONS WILL NOT BE CONSIDERED UNLESS SUBMITTED FOR ENGINEER'S REVIEW, AT LEAST TEN CALENDAR DAYS PRIOR TO THE DATE FOR RECEIPT OF BIDS. INCLUDE THE NAME OF THE MATERIAL OR EQUIPMENT FOR WHICH IT IS TO BE SUBSTITUTED AND A COMPLETE DESCRIPTION OF THE PROPOSED SUBSTITUTE INCLUDING CUTSHEETS, PHOTOMETRIC DATA, AND ALL OTHER INFORMATION NECESSARY FOR AN EVALUATION FOR EACH SUCH CALCULATIONS FOR ALL EXTERIOR LIGHT FIXTURES (PHOTOMETRIC FILES SUPPLIED SO THE ENGINEER CAN GENERATE A POINT-BY-POINT DO NOT SUFFICE FOR THE POINT-BY-POINT CALCULATIONS). PROVIDE INTERIOR POINT-BY-POINT CALCULATIONS AT THE DISCRETION OF THE ENGINEER. SUBMIT A \$100.00 REVIEW FEE TO THE ENGINEER WITH EACH SUCH POINT-BY-POINT CALCULATION FOR USE OF ELECTRONIC BASE FILES. AFTER THE BID DATE, PROPOSALS TO SUBSTITUTE LIGHT FIXTURES FOR THOSE SHOWN ON THE DRAWINGS OR SPECIFIED HEREIN. WILL ONLY BE CONSIDERED AS A DEDUCT. SUBMIT PROPOSED SUBSTITUTIONS SEPARATELY, IN SUBMITTAL FORM, WITH A LIST OF PROPOSED SUBSTITUTIONS TOGETHER WITH A DEDUCT PRICE FOR EACH SUBSTITUTION. THE ENGINEER WILL THEN REVIEW THE PROPOSED SUBSTITUTIONS. THE ENGINEER WILL HAVE THE FINAL AUTHORITY AS TO WHETHER THE LIGHT FIXTURE IS AN ACCEPTABLE REPLACEMENT TO THE SPECIFIED ITEM. THE PROPOSED SUBSTITUTION MAY ALSO BE REJECTED BY THE ARCHITECT, THE ENGINEER OR THE OWNER FOR AESTHETIC REASONS IF FELT NECESSARY OR DESIRABLE. IN THE EVENT THE PROPOSED SUBSTITUTIONS

SUBMITTALS ASSEMBLE AND SUBMIT FOR ENGINEER'S REVIEW, MANUFACTURERS' PRODUCT LITERATURE FOR MATERIAL AND EQUIPMENT TO BE FURNISHED, INSTALLED, OR BOTH, UNDER THIS DIVISION, INCLUDING SHOP DRAWINGS, MANUFACTURERS' PRODUCT DATA AND PERFORMANCE SHEETS, AND OTHER SUBMITTALS REQUIRED BY THIS DIVISION. HIGHLIGHT, MARK, LIST OR INDICATE THE MATERIALS, PERFORMANCE CRITERIA AND ACCESSORIES THAT ARE BEING PROPOSED. BEFORE SUBMITTING, VERIFY THAT ALL MATERIALS AND EQUIPMENT SUBMITTED ARE MUTUALLY COMPATIBLE AND SUITABLE FOR THE INTENDED USE, FIT THE AVAILABLE SPACES, AND ALLOW AMPLE SUBMITTALS SHALL CONTAIN THE FOLLOWING INFORMATION. SUBMITTALS NOT SO IDENTIFIED WILL BE RETURNED TO THE

HEREIN DESCRIBED ARE REJECTED, FURNISH THE SPECIFIED

AND CODE-REQUIRED ROOM FOR ACCESS AND MAINTENANCE. CONTRACTOR WITHOUT ACTION THE PROJECT NAME. THE APPLICABLE SPECIFICATION SECTION AND PARAGRAPH THE SUBMITTAL DATE. THE CONTRACTOR'S STAMP, WHICH SHALL CERTIFY THAT THE

STAMPED DRAWINGS HAVE BEEN CHECKED BY THE CONTRACTOR, COMPLY WITH THE DRAWINGS AND SPECIFICATIONS, AND HAVE BEEN COORDINATED WITH OTHER SUBMITTALS AND SHOP DRAWINGS SHALL NOT CONTAIN C15 GROUP FIRM NAME OR LOGO, NOR SHALL IT CONTAIN THE C1S GROUP ENGINEERS' SEAL AND SIGNATURE. THE SUBMITTALS SHALL NOT BE COPIES OF THE ENGINEERS WORK PRODUCT. TRANSMIT SUBMITTALS AS EARLY AS REQUIRED TO SUPPORT THE PROJECT SCHEDULE. ALLOW FOR TWO WEEKS ENGINEER REVIEW TIME, PLUS MAILING TIME, PLUS A DUPLICATION OF THIS TIME FOR RESUBMITTALS, IF REQUIRED. TRANSMIT SUBMITTALS AS SOON AS POSSIBLE AFTER NOTICE TO PROCEED AND BEFOR CONSTRUCTION STARTS. THE ENGINEER'S SUBMITTAL REVIEWS WILL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS IN DIMENSIONS, DETAILS, SIZE OF MEMBERS, OR QUANTITIES; OR FOR OMITTING COMPONENTS OR FITTINGS; OR FOR NOT COORDINATING ITEMS WITH UNFORSEEN CONDITIONS. ELECTRONIC SUBMITTALS ARE REQUIRED FOR THIS PROJECT. THE CONTRACTOR SHALL SUBMIT THE DOCUMENTS IN ACCORDANCE WITH THE OWNER'S PROCEDURES. CONTRACTOR SHALL NOTIFY THE ENGINEER THAT THE SHOP DRAWINGS HAVE BEEN POSTED TO THE PROJECT FTP SITE. IF ELECTRONIC SUBMITTAL PROCEDURES ARE NOT DEFINED, CONTRACTOR SHALL INCLUDE THE WEBSITE. USER NAME AND PASSWORD INFORMATION NEEDED TO ACCESS THE SUBMITTALS. FOR SUBMITTALS SENT BY E-MAIL, CONTRACTOR SHALL COPY THE ENGINEER'S DESIGNATED REPRESENTATIVES. CONTRACTOR SHALL ALLOW THE ENGINEER REVIEW TIME AS SPECIFIED ABOVE IN THE CONSTRUCTION SCHEDULE. CONTRACTOR SHALL SUBMIT ONLY THE DOCUMENTS REQUIRED TO PURCHASE THE MATERIALS AND/OR EQUIPMENT IN THE ELECTRONIC SUBMITTAL AND SHALL CLEARLY INDICATE THE MATERIALS, PERFORMANCE CRITERIA AND ACCESSORIES BEING PROPOSED. GENERAL PRODUCT CATALOG DATA NOT SPECIFICALLY NOTED TO BE PART

OF THE SPECIFIED PRODUCT WILL BE REJECTED AND RETURNED

WARRANTIES WARRANT EACH SYSTEM AND EACH ELEMENT THEREOF AGAINST ALL DEFECTS DUE TO FAULTY WORKMANSHIP. DESIGN OR MATERIAL FOR A PERIOD OF 12 MONTHS FROM DATE OF SUBSTANTIAL COMPLETION, UNLESS SPECIFIC ITEMS ARE NOTED TO CARRY A LONGER WARRANTY IN THE CONSTRUCTION DOCUMENTS OR MANUFACTURER'S STANDARD WARRANTY EXCEEDS 12 MONTHS. REMEDY ALL DEFECTS, OCCURRING WITHIN THE WARRANTY PERIOD(S), AS STATED IN THE GENERAL CONDITIONS

ALSO WARRANT THE FOLLOWING ADDITIONAL ITEMS: ALL RACEWAYS ARE FREE FROM OBSTRUCTIONS, HOLES. CRUSHING. OR BREAKS OF ANY NATURE. ALL RACEWAY SEALS ARE EFFECTIVE. THE ENTIRE ELECTRICAL SYSTEM IS FREE FROM ALL

SHORT CIRCUITS AND UNWANTED OPEN CIRCUITS AND THE ABOVE WARRANTIES SHALL INCLUDE LABOR AND MATERIAL MAKE REPAIRS OR REPLACEMENTS WITHOUT ANY ADDITIONAL COSTS TO THE OWNER. PERFORM THE REMEDIAL WORK PROMPTLY, UPON WRITTEN NOTICE FROM THE ENGINEER OR OWNER. AT THE TIME OF SUBSTANTIAL COMPLETION, DELIVER TO THE OWNER ALL WARRANTIES, IN WRITING AND PROPERLY EXECUTED. INCLUDING TERM LIMITS FOR WARRANTIES EXTENDING BEYOND THE ONE YEAR PERIOD, EACH WARRANTY INSTRUMENT BEING ADDRESSED TO THE OWNER AND STATING THE COMMENCEMENT DATE AND TERM.

PART 2 - ELECTRICAL MATERIALS AND METHODS RACEWAYS

METALLIC CONDUIT AND TUBING: INTERMEDIATE METAL CONDUIT (IMC): HOT-DIP GALVANIZED RIGID STEEL CONDUIT: ANSI C80.6, UL 1242. LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC): FLEXIBLE STEEL CONDUIT WITH PVC JACKET: UL 360. RIGID METAL CONDUIT (RMC): HOT-DIP GALVANIZED RIGID

STEEL CONDUIT (GRS): ANSI C80.1, UL 6. RACEWAY INSTALLATION 1. GENERAL RACEWAY INSTALLATION REQUIREMENTS: INSTALL RACEWAYS SET IN FORMS FOR CONCRETE STRUCTURE IN SUCH A MANNER THAT INSTALLATION WILL NOT AFFECT THE STRENGTH OF THE STRUCTURE. INSTALL RACEWAYS CONTINUOUS BETWEEN

CONNECTIONS TO OUTLETS, BOXES AND CABINETS WITH A MINIMUM POSSIBLE NUMBER OF BENDS AND NOT MORE THAN THE EQUIVALENT OF FOUR 90-DEGREE BENDS BETWEEN CONNECTIONS. USE MANUFACTURED ELBOWS FOR ALL 45- AND 90-DEGREE BENDS, UNLESS APPROVED BY THE ENGINEER IN ADVANCE. MAKE OTHER BENDS SMOOTH AND EVEN AND WITHOUT FLATTENING RACEWAY OR FLAKING GALVANIZING OR ENAMEL. RADII OF BENDS SHALL BE AS LONG AS POSSIBLE AND NEVER SHORTER THAN THE CORRESPONDING TRADE ELBOW. REAM RACEWAY ENDS. THOROUGHLY CLEAN RACEWAYS BEFORE INSTALLATION. AND KEEP CLEAN AFTER INSTALLATION. PLUG OR COVER OPENINGS AND BOXES AS REQUIRED TO KEEP RACEWAYS CLEAN DURING CONSTRUCTION AND

FISH ALL RACEWAYS CLEAR OF OBSTRUCTIONS BEFORE PULLING CONDUCTORS. PROVIDE RACEWAYS OF AMPLE SIZE FOR PULLING OF CONDUCTORS AND NOT SMALLER THAN THOSE INDICATED ON DRAWINGS. PROTECT ALL RACEWAY INSTALLATIONS AGAINST DAMAGE DURING CONSTRUCTION, REPAIR ALL RACEWAYS DAMAGED OR MOVED OUT OF LINE AFTER ROUGHING-IN TO MEET ENGINEER'S APPROVAL WITHOUT ADDITIONAL COST TO THE

ALIGN AND INSTALL TRUE AND PLUMB ALL RACEWAY TERMINATIONS AT PANELBOARDS INSTALL A PULL LINE IN EACH EMPTY RACEWAY THAT IS LEFT FOR INSTALLATION OF CONDUCTORS UNDER OTHER DIVISIONS OR CONTRACTS. USE POLYPROPYLENE OR MONOFILAMENT PLASTIC LINE WITH NOT LESS THAN 200-LB TENSILE STRENGTH. LEAVE AT LEAST 24 INCHES OF SLACK AT EACH END OF PULL LINE. MAKE ALL JOINTS AND CONNECTIONS IN A MANNER THAT WILL ENSURE MECHANICAL STRENGTH AND ELECTRICAL CONTINUITY.

BUSHINGS AND LOCKNUTS RIGIDLY TERMINATE CONDUITS ENTERING SHEET METAL ENCLOSURES TO THE ENCLOSURE WITH A BUSHING AND LOCKNUT ON THE INSIDE AND A LOCKNUT OR AN APPROVED HUB ON THE OUTSIDE. CONDUIT SHALL ENTER THE ENCLOSURE

PROVIDE BUSHINGS AND LOCKNUTS MADE OF GALVANIZED MALLEABLE IRON WITH SHARP, CLEAN-CUT THREADS. USE INSULATED, GROUNDING, OR COMBINATION, BUSHINGS WHEREVER CONNECTION IS SUBJECT TO VIBRATION OR MOISTURE. WHEN REQUIRED BY NFPA 70. OR BOTH. CONDUCTORS AND CABLES

 A. CONDUCTOR MATERIAL 1. ANNEALED (SOFT) COPPER COMPLYING WITH ICEA S-95-658/NEMA WC70 TERMINATIONS: TINNED, MECHANICAL TYPE ONLY; UL-LISTED FOR COPPER CONDUCTORS AT 75 DEGREES C MINIMUM.

CONDUCTOR INSULATION TYPES: 90-DEGREE C-RATED, TYPE THHN/THWN-2 OR XHHW-2 COMPLYING WITH ICEA S-95-658/NEMA WC70. SIZES OF CONDUCTORS INDICATED OR SPECIFIED ARE IN AMERICAN WIRE GAGE (AWG - BROWN AND SHARPE). ALL FEEDER AND BRANCH CIRCUIT CONDUCTORS NO. 8 AWG AND LARGER: STRANDED. ALL CONDUCTORS, NO. 10 & 12 AWG: SOLID OR

STRANDED COPPER. ALL BRANCH CIRCUIT WIRING: NOT SMALLER THAN NO. 12AWG. IF NO CONDUCTOR SIZE IS INDICATED ON THE DRAWINGS FOR A BRANCH CIRCUIT, PROVIDE CONDUCTORS AND CONDUIT SIZED PER NFPA 70 AND BASED ON THE INDICATED BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE (OCPD) RATING AND NUMBER OF POLES. WHERE NO CIRCUIT SIZE (I.E., CONDUCTORS AND OCPD) IS INDICATED ON THE DRAWINGS FOR A BRANCH CIRCUIT, PROVIDE THREE NO. 12 AWG CONDUCTORS, IN 3/4-INCH RACEWAY, AND A 20A CIRCUIT BREAKER NEW INSTRUMENTATION AND CONTROLS (I&C) WIRES

SHALL BE SIMILAR TO EXISTING.

INSTALLATION OF CONDUCTORS AND CABLES INSTALL ALL WIRING IN APPROVED RACEWAY AND **ENCLOSURES** INSTALL ALL CONDUCTORS AND CABLE IN RACEWAYS CONTINUOUS WITHOUT TAPS OR SPLICES. SPLICE OR TAP ONLY IN APPROVED BOXES AND ENCLOSURES WITH APPROVED SOLDERLESS CONNECTORS, OR CRIMP CONNECTORS AND TERMINAL BLOCKS FOR CONTROL WIRING, AND KEEP TO THE MINIMUM REQUIRED. INSULATE ALL SPLICES, TAPS, AND JOINTS AS REQUIRED BY CODES ALL MATERIALS USED TO TERMINATE, SPLICE OR TAP

AND UL LISTED FOR THE SPECIFIC APPLICATION AND CONDUCTORS INVOLVED. AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, USING THE MANUFACTURER'S RECOMMENDED TOOLS. THE DIRECTION OF BRANCH CIRCUIT "HOME RUN" ROUTING IS INDICATED ON THE DRAWINGS, COMPLETE WITH CIRCUIT NUMBERS AND POWER SOURCE DESIGNATION. CONTINUE ALL SUCH "HOME RUN" WIRING TO THE DESIGNATED PANELBOARD, AS THOUGH "CIRCUIT RUNS" WERE INDICATED IN THEIR ENTIRETY. MULTI-CONDUCTORS BRANCH CIRCUITS (I.E., SHARED NEUTRAL) ARE NOT ALLOWED FOR THIS INSTALLATION. ALL BRANCH CIRCUITS SHALL HAVE DEDICATED NEUTRAL CONDUCTORS WHEN MULTIPLE HOME RUNS ARE COMBINED INTO A SINGLE RACEWAY SUCH THAT THE NUMBER OF CONDUCTORS EXCEEDS FOUR (CONDUCTOR COUNT IS MADE UP OF ANY COMBINATION OF PHASE AND NEUTRAL CONDUCTORS). THE FOLLOWING RESTRICTIONS APPLY. WHICH ARE IN ADDITION TO THOSE IN NFPA 70:

CONDUCTORS: DESIGNED FOR, PROPERLY SIZED FOR,

MAXIMUM OF 16 CONDUCTORS IN A SINGLE RACEWAY. FOR UP TO EIGHT CONDUCTORS IN A RACEWAY, MINIMUM RACEWAY SIZE: 3/4-INCH. FOR GREATER THAN EIGHT CONDUCTORS, MINIMUM RACEWAY SIZE: 1-INCH. THE MINIMUM SIZE FOR ALL CONDUCTORS IN THIS RACEWAY: NO. 10AWG. ONLY 15A AND 20A BRANCH CIRCUIT HOMERUNS MAY BE COMBINED INTO ONE RACEWAY. PROVIDE AN EQUIPMENT-GROUNDING CONDUCTOR, OR BONDING JUMPER, AS APPLICABLE, IN ALL FEEDERS AND BRANCH CIRCUITS, SIZED IN ACCORDANCE WITH NFPA 70 TABLES 250.66 OR 250.122, AS APPLICABLE, UNLESS INDICATED AS LARGER ON THE DRAWINGS. WIRING SHALL HAVE INSULATION OF THE PROPER COLOR TO MATCH COLOR CODE SYSTEM IN THE TABLE BELOW. IN LARGER SIZES, WHERE PROPERLY COLORED INSULATION IS NOT AVAILABLE, USE VINYL PLASTIC ELECTRICAL TAPE OF THE APPROPRIATE COLOR AROUND EACH CONDUCTOR AT ALL TERMINATION POINTS, JUNCTION AND PULL BOXES.

> 208/120V, THREE PHASE SYSTEM PHASE A - BLACK PHASE B - RED PHASE C - BLUE NEUTRAL - WHITE **EQUIPMENT GROUND – GREEN** 480/277V, THREE PHASE SYSTEM PHASE A - BROWN PHASE B - ORANGE PHASE C - YELLOW

NEUTRAL - GRAY EQUIPMENT GROUND - GREEN USE OF MC CABLE: MC CABLE SHALL NOT BE USED EXCEPT FOR LIGHTING FIXTURE WHIPS. LENGTHS SHALL BE KEPT TO A MINIMUM AND SHALL NOT BE LONGER THAN 6 FEET. I & C WIRES SHALL BE TESTED FOR CONTINUITY AND LABELLED AT BOTH ENDS BEFORE TERMINATION, OWNER OR OWNER'S CONTRACTOR WILL TERMINATE WIRES AT EQUIPMENT AND CONTROLLER UNLESS NOTED

OTHERWISE JUNCTION BOXES, PULL BOXES, CABINETS AND WIREWAYS PROVIDE JUNCTION BOXES, PULL BOXES, CABINETS AND WIREWAYS WHEREVER NECESSARY FOR PROPER INSTALLATION OF VARIOUS ELECTRICAL SYSTEMS ACCORDING TO NFPA 70 AND WHERE INDICATED ON THE DRAWINGS. SIZE AS REQUIRED FOR THE SPECIFIC FUNCTION OR AS REQUIRED BY NFPA 70, WHICHEVER IS LARGER. CONSTRUCTION SHALL BE OF A NEMA DESIGN SUITABLE FOR THE ENVIRONMENT INSTALLED.

OUTLET BOXES A. ALL OUTLETS INCLUDING LIGHT FIXTURE, SWITCH, RECEPTACLE, AND SIMILAR OUTLETS: NATIONAL ELECTRICAL, APPLETON, STEEL CITY, RACO, OR APPROVED EQUAL, GALVANIZED STEEL KNOCKOUT BOXES, SUITABLE IN DESIGN TO THE PURPOSE THEY SERVE AND THE SPACE THEY OCCUPY. SIZE AS REQUIRED FOR THE SPECIFIC FUNCTION OR AS REQUIRED BY NFPA 70, WHICHEVER IS LARGER. SET ALL OUTLET BOXES SO THEY ARE FLUSH WITH THE FINISHED SURFACE, ACCURATELY SET, AND RIGIDLY SECURED IN POSITION. PROVIDE EXTENSION RINGS AND/OR MASONRY RINGS AS REQUIRED FOR FLUSH MOUNTING. PROVIDE APPROVED CAST OUTLET BOXES, WITH HUBS AND WEATHERPROOF COVERS, IN ALL AREAS SUBJECT TO DAMP,

WET, OR HARSH CONDITIONS. OUTLET LOCATIONS COORDINATE LOCATIONS OF OUTLET BOXES. OUTLETS ARE ONLY APPROXIMATELY LOCATED ON THE SMALL SCALE DRAWINGS. USE GREAT CARE IN THE ACTUAL LOCATION BY CONSULTING THE VARIOUS LARGE SCALE DETAILED DRAWINGS USED BY OTHER DIVISION TRADES, AND BY SECURING DEFINITE LOCATIONS FROM THE ENGINEER. RECEPTACLES: INSTALL WHERE LOCATED ON PLANS. SWITCHES: INSTALL WHERE LOCATED ON PLANS.

WIRING DEVICES A. WIRING DEVICES SHALL BE 20A RATED DEVICES OR AS IDENTIFIED ON PLANS OR SCHEDULES. PROVIDE WIRING DEVICES WHERE SHOWN ON DRAWINGS OR REQUIRED. MINOR CHANGES RELATIVE TO THE LOCATION OF ELECTRICAL EQUIPMENT MAY BE MADE TO COMPLY WITH REQUIREMENTS AS DETERMINED IN THE COURSE OF CONSTRUCTION. WIRING DEVICES SHALL BE PROVIDED BY THE SAME MANUFACTURER AND NOT MIXED ON THE PROJECT. SWITCH AND OUTLET COVER PLATES

SWITCH AND OUTLET PLATES: 1. BY THE SAME MANUFACTURER AS THE WIRING DEVICES, WHEREVER POSSIBLE. VERIFY DESIRED MATERIALS AND COLORS WITH ENGINEER BEFORE INSTALLATION. DISTRIBUTION EQUIPMENT

LIGHTING AND APPLIANCE PANELBOARDS PANELBOARDS: EXISTING TO REMAIN. EXISTING CIRCUIT BREAKERS SHALL BE REUSED WHERE THE OVERCURRENT DEVICE MATCHES THE REQUIREMENTS FOR THE EQUIPMENT. PROVIDE NEW CIRCUIT BREAKERS AS REQUIRED FOR INSTALLATION IN EXISTING PANELBOARDS. NEW CIRCUIT BREAKERS SHALL BE OF THE SAME MANUFACTURER, TYPE AND SHORT CIRCUIT **CURRENT INTERRUPTING RATINGS AS THE EXISTING** PANELBOARD AND CIRCUIT BREAKERS. PANELBOARDS: NEW. THE PANEL BOARD MAIN TYPE (MCB OR MLO), BUS AMPS, NEUTRAL SIZE, VOLTAGE (208/120, 240/120, 240, 480/277, 480), PHASES, WIRES (3 OR 4 WIRE), AIC SHALL BE AS SHOWN ON DRAWINGS.

10. DISCONNECT SWITCHES DISCONNECT (SAFETY) SWITCHES PROVIDE DISCONNECT SWITCHES BY ONE OF THE FOLLOWING MANUFACTURERS: SQUARE D, SIEMENS, CUTLER HAMMER, OR GENERAL ELECTRIC FUSED OR NON-FUSED (AS INDICATED ON DRAWINGS OR REQUIRED) NEMA KS1, HEAVY DUTY, EXTERNALLY OPERATED, VISIBLE-BLADE SAFETY SWITCHES; NEMA ENCLOSURE TYPE INDICATED ON THE DRAWINGS OR SUITABLE FOR THE ENVIRONMENT IN WHICH INSTALLED. BASED ON FUSIBLE SWITCH AND FUSE SIZES INDICATED. INCLUDE CLASS R, J, OR L FUSE PROVISIONS AS **APPLICABLE** 

11. LIGHT FIXTURES, LAMPS AND BALLASTS LIGHT FIXTURE LOCATIONS LIGHT FIXTURES SHOWN ON THE ELECTRICAL DRAWINGS REPRESENT GENERAL ARRANGEMENTS ONLY. COORDINATE LOCATION WITH ALL OTHER TRADES BEFORE INSTALLATION TO AVOID CONFLICTS.

LIGHT FIXTURES 1. PROVIDE LIGHT FIXTURES AS SCHEDULED ON DRAWINGS, INCLUDING ALL LAMPS, ALL NECESSARY ACCESSORIE MATERIAL AND LABOR TO MAKE LIGHT FIXTURES COMPLETELY READY FOR USE. LIGHT FIXTURE MODEL NUMBERS SCHEDULED ON THE DRAWINGS SHOW ONLY THE MANUFACTURER, GRADE AND STYLE OF LIGHT FIXTURES REQUIRED.

POWER SYSTEM STUDY A POWER SYSTEM STUDY INCLUDES COMPUTER BASED SHORT CIRCUIT, OVERCURRENT COORDINATION, AND ARC FLASH THE CONTRACTOR SHALL PERFORM THE STUDY AND SUBMIT

FOR APPROVAL BEFORE ENERGIZING THE INSTALLED

EQUIPMENT. THE STUDY SHALL INCLUDE THE UTILITY INPUT; INFINITY UTILITY BUS IS NOT ACCEPTABLE. THE CONTRACTOR IS RESPONSIBLE FOR COLLECTING OWN INFORMATION WHICH SHALL INCLUDE THE CONTRIBUTIONS OF NEW/EXISTING MOTORS 50 HP AND LARGER. THE STUDY SHALL COORDINATE FROM THE SERVICE CIRCUIT BREAKER TO THE LARGEST CIRCUIT BREAKER AFTER THE NEW

EQUIPMENT. THE AMP INTERRUPTING CAPACITY (AIC) OF THE NEW EQUIPMENT SHALL BE GREATER THAN THE AIC OF THE STUDY. CONTRACTOR SHALL PRINT AND INSTALL ARC FLASH LABELS FOR THE NEW EQUIPMENT.

13. IDENTIFICATION THE EQUIPMENT ID SHALL INCLUDE OWNER ID FOR EQUIPMENT AND POWER SOURCE.

EQUIPMENT WITH MULTIPLE POWER SOURCES SHALL HAVE A LABEL SAYING "ELECTRICAL SHOCK HAZARD – EQUIPMENT HAS MULTIPLE POWER SOURCES' UNDERGROUND CONDUCTOR INSTALLATIONS SHALL HAVE A WARNING TAPE WITH A METAL TRACER WIRE INSTALLED 8" MINIMUM ABOVE CONDUCTORS. LAMINATED EQUIPMENT TAGS SHALL BE SIMILAR TO EXISTING

POWER CONDUCTORS SHALL BE LABELLED AT ENTRY TO BOXES, HAND HOLES, PANEL BOARDS, AND OTHER ELECTRICAL USE INDUSTRY STANDARD CONDUCTOR TAPES FOR ENDS OF POWER, NEUTRAL, AND GROUND CONDUCTORS. 14. MISCELLANEOUS ELECTRICAL

> WIRING OF MECHANICAL EQUIPMENT PROVIDE ALL RACEWAYS AND POWER WIRING FOR ALL MECHANICAL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS. CONNECT PER MANUFACTURERS' WIRING DIAGRAMS. COORDINATE WITH MECHANICAL PLANS FOR DISCONNECTS FURNISHED WITH EQUIPMENT, AND PROVIDE ALL DISCONNECT SWITCHES AS REQUIRED. AFTER INSTALLING WIRING, VERIFY THAT EACH MOTOR LOAD HAS THE CORRECT PHASE ROTATION. VERIFY THE ACTUAL "MAXIMUM OVERCURRENT PROTECTION" (MOCP) DEVICE RATINGS AND "MINIMUM CIRCUIT AMPACITY" (MCA) CONDUCTOR SIZING FOR MECHANICAL EQUIPMENT FROM THE EQUIPMENT NAMEPLATE. BASE ELECTRICAL INSTALLATIONS ON ACTUAL REQUIRED AMPERAGES, WHICH MAY VARY SOMEWHAT FROM THE CONDUCTOR AND EQUIPMENT SIZES SHOWN ON THE DRAWINGS; HOWEVER, IN NO CASE, REDUCE THE SIZE OF CONDUCTORS INDICATED ON THE DRAWINGS WITHOUT AUTHORIZATION FROM THE ENGINEER. PROVIDE PROPERLY SIZED ELECTRICAL WIRING AND EQUIPMENT WITHOUT EXTRA COST TO THE OWNER. NOTIFY THE ENGINEER OF ALL CHANGES REQUIRED IN THE ELECTRICAL INSTALLATION DUE TO EQUIPMENT VARIANCES SO THAT THE EFFECTS ON FEEDERS, BRANCH CIRCUITS, SWITCHGEAR,

> > SWITCHBOARDS, MOTOR CONTROL CENTERS (MCC).

PANELBOARDS, FUSES AND CIRCUIT BREAKERS CAN BE

RESPONSIBLE FOR COORDINATING WITH MECHANICAL

PLANS AND SPECIFICATIONS TO VERIFY THE ACTUAL

AND OVERCURRENT PROTECTIVE DEVICES FOR ALL

CHECKED PRIOR TO PURCHASING AND INSTALLATION. BE

AMPACITIES AND CORRECT SIZES OF ALL CONDUCTORS

EQUIPMENT PART 3 - ELECTRICAL EXECUTION

ELECTRICAL SWITCHGEAR, SWITCHBOARDS, MCCS, PANELBOARDS EXISTING TO REMAIN - USE AVAILABLE SPARE CIRCUITS AVAILABLE, LABEL DISCONNECTED POWER, CONTROL, AND INSTRUMENTATION CONDUCTORS FOR RE-USE. EXISTING TO BE REPLACED - LABEL DISCONNECTED POWER, CONTROL, AND INSTRUMENTATION CONDUCTORS FOR RE-USE OR REPLACEMENT IN KIND. PERFORM A POWER SYSTEM STUDY WHICH INCLUDES SHORT CIRCUIT, OVERCURRENT PROTECTION DEVICE COORDINATION, AND ARC FLASH. THE STUDY SHALL INCLUDE POWER SOURCES SUCH AS UTILITY, GENERATORS, AND MOTORS 50 HP OR LARGER. THE COORDINATION TRAIN SHALL INCLUDE SERVICE ENTRANCE, DEVICES BETWEEN SERVICE ENTRANCE AND NEW EQUIPMENT, NEW EQUIPMENT, AND MAIN CIRCUIT BREAKERS OF DEVICES AFTER THE NEW EQUIPMENT OR TO LARGEST BRANCH CIRCUIT BREAKER IF THE EQUIPMENT DOESN'T HAVE A MAIN CIRCUIT BREAKER. ARC FLASH LABELS SHALL BE APPLIED TO THE NEW EQUIPMENT AND EXISTING EQUIPMENT OF WHICH THE ARC FLASH LEVELS CHANGED. SUBMIT THE POWER STUDY FOR APPROVAL BEFORE ADJUSTING CIRCUIT BREAKER SETTINGS OR

PERMANENTLY AND EFFECTIVELY GROUND AND BOND THE ELECTRICAL INSTALLATION IN A THOROUGH AND EFFICIEN MANNER, AND IN CONFORMANCE, AT A MINIMUM, WITH NFPA 70, OR THESE DOCUMENTS, WHERE THEY EXCEED CODE REQUIREMENTS. USE BARE OR INSULATED CONDUCTORS. AS SPECIFIED HEREIN, AND OTHER MATERIALS INDICATED ON THE

PRINTING ARC FLASH LABELS.

COINCIDENTAL DAMAGE REPAIR ALL WALLS, FINISHES, AND OTHER FACILITIES DAMAGED IN THE COURSE OF THIS WORK. REPAIR MATERIALS SHALL GENERALLY MATCH EXISTING CONSTRUCTION. REPAIR WORK SHALL MEET OR EXCEED THE STANDARD LEVEL OF CARE FOR THE TRADES INVOLVED WITH THE REPAIR. SUPPORT SYSTEMS

STEEL SLOTTED SUPPORT SYSTEMS (SLOTTED CHANNEL) COMPLY WITH MFMA-3, FACTORY-FABRICATED COMPONENTS FOR FIELD ASSEMBLY: 12-GAUGE. 1-5/8-INCH BY 1-5/8-INCH: COOPER B-LINE, ERICO INTERNATIONAL CORPORATION, HILTI, INC., POWER-STRUT, THOMAS & BETTS CORPORATION, FINISHES

METALLIC COATINGS: HOT-DIP GALVANIZED AFTER FABRICATION AND APPLIED ACCORDING TO MFMA-3. FIELD FABRICATION: WHERE FIELD CUTTING OF STANDARD LENGTHS OF CHANNEL ARE REQUIRED. MAKE CUTS STRAIGHT AND PERPENDICULAR TO MANUFACTURED SURFACES. FOR FIELD-CUT OR DAMAGED SURFACES OF COATED CHANNELS, DRESS CUT ENDS, DAMAGED SURFACES, OF BOTH, WITH AN ABRASIVE MATERIAL (E.G., FILE, GRINDING STONE, OR SIMILAR) AND CLEANSER TO REMOVE OILS, RUST, SHARP EDGES AND SHARDS. FOR CHANNEL WITH A FACTORY-APPLIED COATING, RE-FINISH CUT EDGES WITH A COATING COMPATIBLE WITH THE FACTORY FINISH AND AS RECOMMENDED BY THE MANUFACTURER (E.G., MANUFACTURER'S TOUCH-UP

PAINT OR ZINC-RICH COLD-GALVANIZING COMPOUND, AS

APPLICABLE). REMOVE FROM THE PREMISES DIRT AND REFUSE RESULTING FROM THE PERFORMANCE OF THE ELECTRICAL WORK, AS REQUIRED, TO PREVENT ACCUMULATION. COOPERATE IN MAINTAINING REASONABLY CLEAN PREMISES AT ALL TIMES. IMMEDIATELY PRIOR TO FINAL INSPECTION, MAKE A FINAL CLEANUP OF DIRT AND REFUSE RESULTING FROM THE WORK CLEAN ALL MATERIAL AND EQUIPMENT INSTALLED UNDER THIS DIVISION. REMOVE DIRT, DUST, STAINS AND FOREIGN MATTER FROM ALL SURFACES. TOUCH UP AND RESTORE ALL DAMAGED FINISHES TO THEIR ORIGINAL CONDITION. ADJUSTING, ALIGNING AND TESTING

ADJUST, ALIGN, AND TEST ALL ELECTRICAL EQUIPMENT ON THIS PROJECT PROVIDED UNDER THIS DIVISION AND ALL ELECTRICAL EQUIPMENT FURNISHED BY OTHERS FOR INSTALLATION OR WIRING UNDER THIS DIVISION, FOR PROPER OPERATION. TEST ALL SYSTEMS AND EQUIPMENT ACCORDING TO THE REQUIREMENTS IN NETA ATS (LATEST EDITION). MAINTAIN THE FOLLOWING ON THE PROJECT PREMISES AT ALL TIMES: A TRUE RMS READING VOLTMETER, A TRUE RMS READING AMMETER, AND AN INSULATION RESISTANCE TESTER. PROVIDE TEST DATA READINGS AS REQUESTED OR AS REQUIRED BY THE

WITH NORMAL POWER OFF, OPERATE EMERGENCY AND EXIT LIGHTS FOR A MINIMUM OF 90 MINUTES TO SHOW PROOF OF MEETING THE LIFE SAFETY CODES FOR PATHS OF EGRESS. EQUIPMENT IDENTIFICATION PROVIDE EQUIPMENT IDENTIFICATION NAMEPLATES ON ALL EQUIPMENT NOT CURRENTLY LABELED: ON ALL SWITCHGEAR, SWITCHBOARDS, MCCS,

PANELBOARDS, SWITCHES, AND CABINETS. NAMEPLATES: ENGRAVED, CONTRASTING COLOR, TWO-LAYER, LAMINATED PLASTIC INDICATING THE NAME OF THE EQUIPMENT, LOAD, OR CIRCUIT AS DESIGNATED ON THE DRAWINGS AND IN THE SPECIFICATIONS. SELF-ADHERING, WITH A PERMANENT, WEATHERPROOF ADHESIVE. ATTACHMENT METHOD SHALL BE ACCEPTABLE TO THE MANUFACTURERS OF THE EQUIPMENT TO WHICH THE NAMEPLATES ARE BEING COLOR: BLACK BACKGROUND WITH WHITE LETTERS FOR NORMAL POWER. LETTER HEIGHT: 1/2-INCH MINIMUM.

SYSTEMS START UP PRIOR TO ENERGIZING SYSTEMS:

> CHECK ALL COMPONENTS AND DEVICES. TIGHTEN SCREWS AND BOLTS FOR CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A AND UL 486B. ADJUST CIRCUIT BREAKER SETTINGS TO MATCH THE APPROVED COORDINATION REPORT SETTINGS. APPLY ARC FLASH LABELS TO ELECTRICAL EQUIPMENT. CHECK GROUNDING CONDITIONS, GROUNDING RESISTANCE, AND PROPER PHASING. AFTER ALL SYSTEMS HAVE BEEN INSPECTED AND

ADJUSTED, CONFIRM ALL OPERATING FEATURES

MAKE FINAL ADJUSTMENTS AS NECESSARY.

REQUIRED BY THE DRAWINGS AND SPECIFICATIONS AND

 $\sigma$   $\sigma$ 

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REVISION HISTORY

DESCRIPTION

ISSUE FOR CONSTRUCTION PROFESSIONAL SEALS THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY MATTHEW TOWNSEND STRONG, NY P.E. #084864, ON THE DATE INDICATED. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER 084864 NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE ENGINEERING ACT. THE SEAL IS NOT VALID WITHOUT SIGNATURE. **ELECTRICAL SPECIFICATIONS** 

16 JULY 2021

CHECKED BY

PROJECT ABBREVIATION

FLNA LIB QA LAB

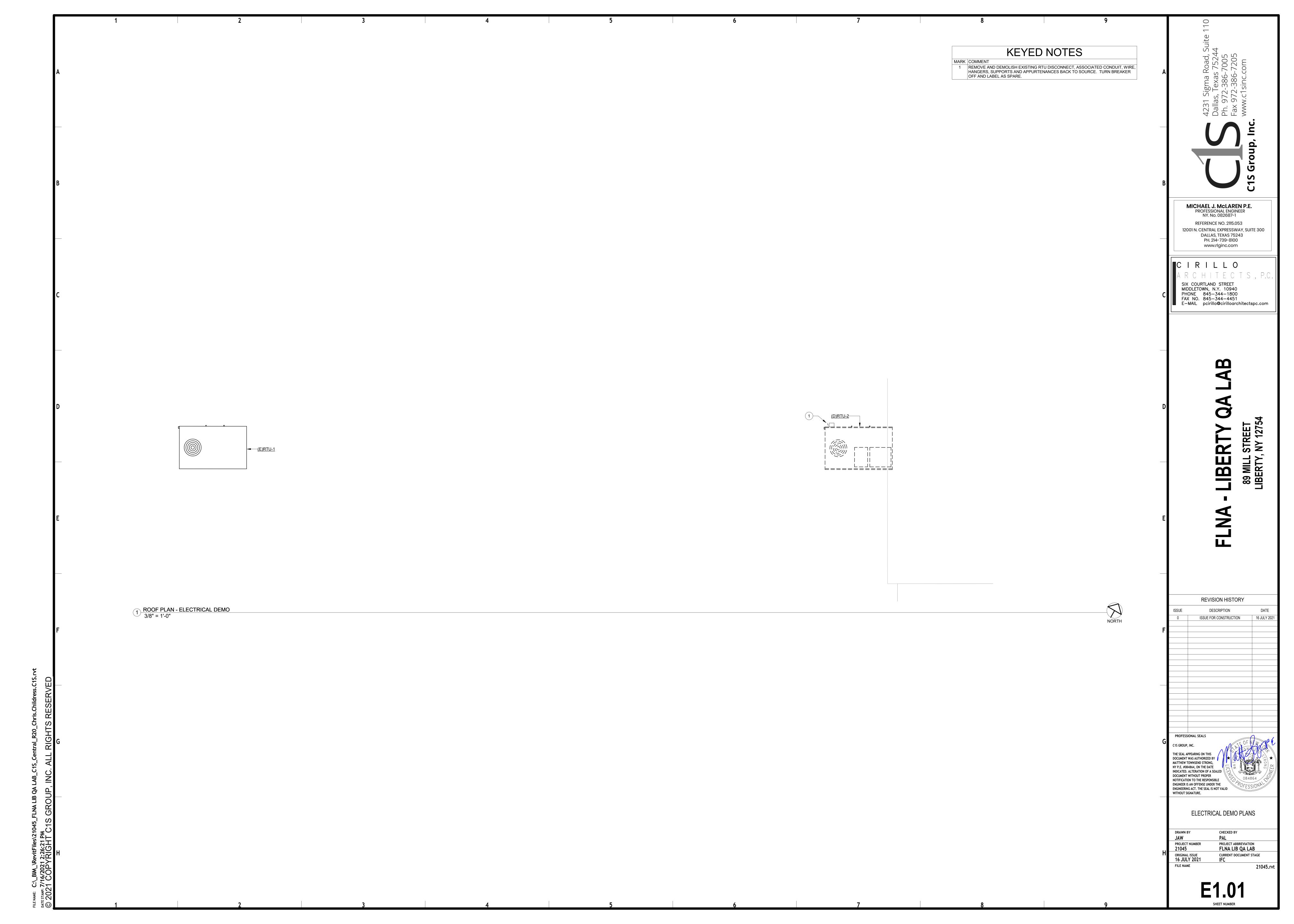
**CURRENT DOCUMENT STAGE** 

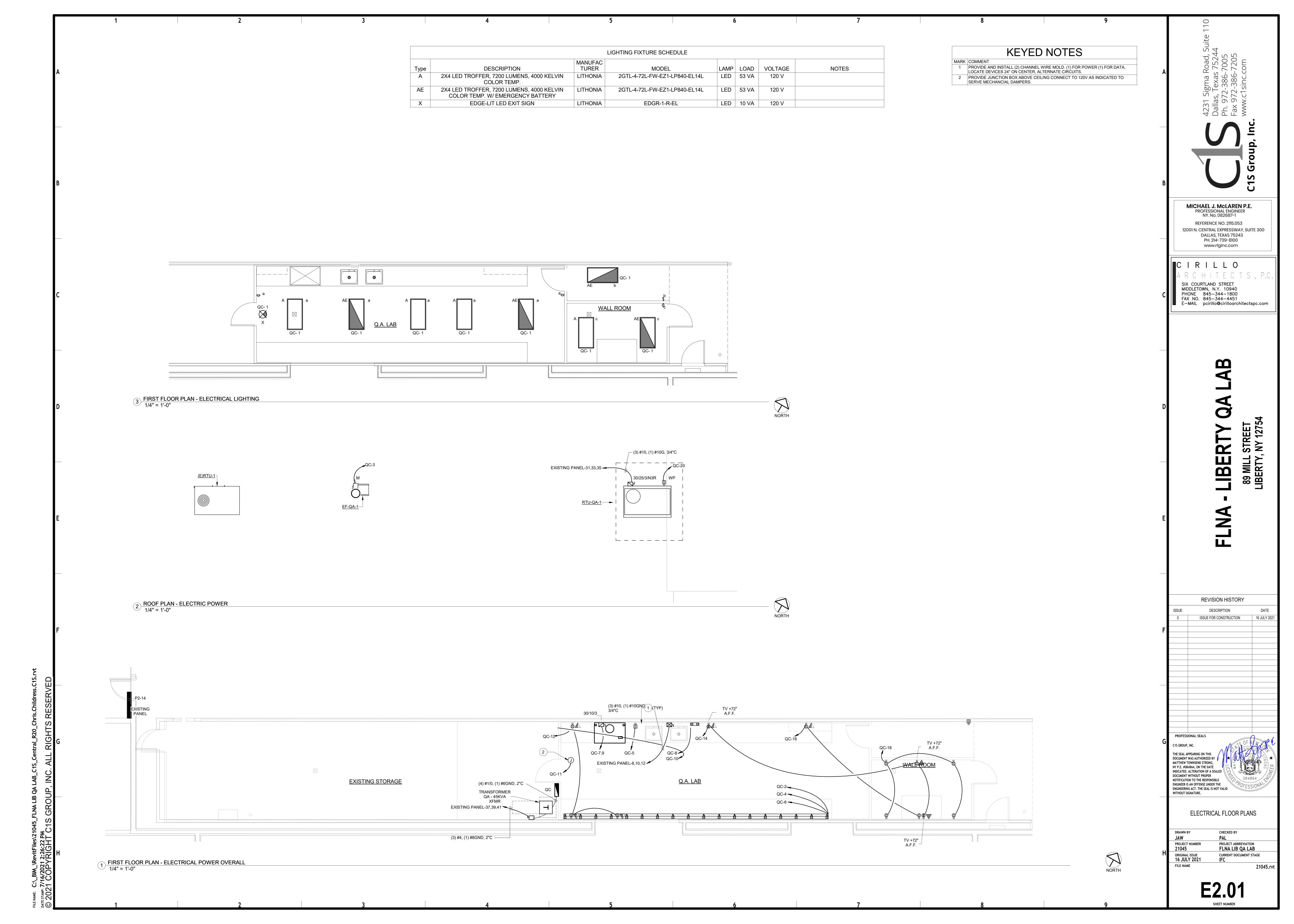
DRAWN BY

PROJECT NUMBER

ORIGINAL ISSUE

FILE NAME





**Branch Panel: QC** Location: BACK AREA 01 Volts: 120/208 Wye **A.I.C. Rating:** 10000 Supply From: TRANSFORMER QA - 45KVA... Phases: 3 Mains Type: MCB Wires: 4 Mains Rating: 225 A Mounting: Enclosure: MCB Rating: 150 A 
 CKT
 Circuit Description
 Trip
 Poles
 A
 B
 C
 Poles
 Trip
 Circuit Descriptic

 1
 ROOM 02, 03, 04
 20 A
 1
 437
 1200
 1
 20 A
 RECEPTACLE QA LAB 02

 3
 EF-QA-1
 25 A
 1
 437
 1200
 1
 20 A
 RECEPTACLE QA LAB 02

 7
 KITCHEN EQUIPMENT - NON-DWELLING UNIT...
 20 A
 1
 440
 1200
 1
 20 A
 RECEPTACLE QA LAB 02

 9
 - - - - 520
 200
 1
 20 A
 RECEPTACLE QA LAB 02

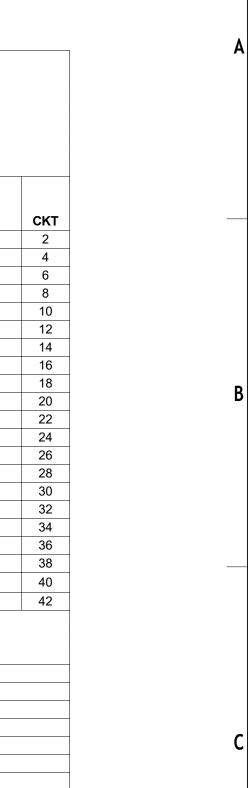
 11
 MOTORIZED DAMPERS
 20 A
 1
 - - 520
 200
 1
 1
 20 A
 RECEPTACLE QA LAB 02

 13
 SPARE
 20 A
 1
 0
 540
 1
 20 A
 RECEPTACLE QA LAB 02

 15
 SPARE
 20 A
 1
 0
 560
 540
 1
 20 A
 RECEPTACLE QA LAB 02

 15
 SPARE
 20 CKT Load Classification Demand Factor **Estimated Demand** Panel Totals Connected Load 2156 VA 100.00% 2156 VA Receptacle 7780 VA 100.00% 7780 VA Total Conn. Load: 11413 VA Total Est. Demand: 11413 VA 437 VA 100.00% 437 VA Total Conn.: 32 A Total Est. Demand: 32 A

	Location: Supply From: Mounting: Enclosure:					Volts: Phases: Wires:	-	Wye				A.I.C. Rating: 10000 Mains Type: MCB Mains Rating: 400 A MCB Rating: 0 A		
СКТ	Circuit Description	Trip	Poles		A		В			Poles	Trip	Circuit D	escription	СКТ
1	FAN #1	20 A	3	0	0					3		EXISTING FAN		2
3						0	0							4
5								0	0					6
7	FAN #2	20 A	3	0	2667					3	20 A	HEATING QA LAB 02		8
9						0	2667							10
11								0	2667					12
13	EXISTING	80 A	3	0	0					3	30 A	SPARE		14
15						0	0							16
17								0	0		-			18
19	EXISTING	30 A	1	0	0					3	30 A	GERBS GRAIN RM		20
21	EXISTING	20 A	1			0	0							22
23	EXISTING	20 A	1					0	0					24
25	EXISTING	80 A	3	0	0					3	20 A	BAGGER 17		26
27						0	0							28
29								0	0					30
31	RTU-QA-1	25 A	3	480	0					3	20 A	BAGGER 16		32
33						480	0							34
35								480	0					36
37	TRANSFORMER QA	70 A	3	3077	0					3	60 A	EXISTING		38
39						3936	0							40
41								4400	0					42
			al Load: Il Amps:		3 VA 2 A		3 VA 6 A	754 28	7 VA 5 A					
	Classification		nected I			mand Fa			ated De			Panel	Totals	
HVAC			1440 VA			100.00%			1440 VA					
Heating			8000 VA			100.00%			8000 VA			Total Conn. Load:		
Other			2156 VA			100.00%			2156 VA			Total Est. Demand:		
Recepta			7780 VA		-	100.00%			7780 VA			Total Conn.:		
Lighting	9		437 VA			100.00%	, b		437 VA			Total Est. Demand:	25 A	
Notes:														



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REVISION HISTORY

ISSUE DESCRIPTION DAT

0 ISSUE FOR CONSTRUCTION 16 JULY

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ELECTRICAL SCHEDULES

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PAL
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21045
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FLNA LIB QA LAB
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16 JULY 2021
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