TOWN OF HOTCHKISS PUBLIC WORKS FACILITY

LARRY WILKENING, MAYOR

MARY HOCKENBERRY, MAYOR PRO TEM

ESTHER KOONTZ, TRUSTEE

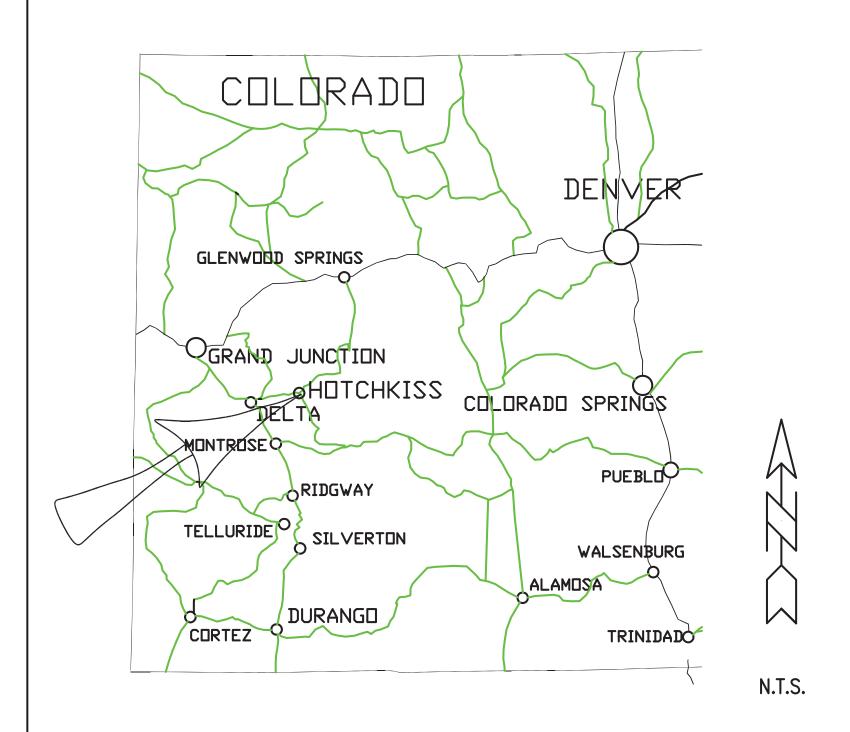
SHEILA MAKI, TRUSTEE

JOHNNY MARTA, TRUSTEE

PAT MEDINA, TRUSTEE

PATRICK WEBB, TRUSTEE

MARLENE SEARLE, TOWN CLERK MIKE OWENS, PUBLIC WORKS DIRECTOR





PROJECT LOCATION

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SHT C7

Trench box detail





Sheet Number

Project No./Code

Computer File	Information		Sheet Revisions	CONSOLIDATED
Creation Date: 2-5-19	Initials: RA			CONSULTING
Last Modification Date: 8/18/19	Initials: RA			SERVICES
Full Path:	C:\Hotchkiss\H-Shop\			
Drawing File Name:	H_Shop base tk.dwg			P.O. BOX 1073 Ridgway, CO 81432
Acad Ver.: R2000 Scale:	NONE Units: English			(970) 240–8510 JF

Town of Hotchkiss

P.O. BOX 369

Hotchkiss, CO 81419
(970) 872-3663

As Constructed	PUBLIC WORKS FACILITY TITLE SHEET						
No Revisions:							
Revised:	Designer:	RA					
	Detailer:	JF					
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Mechanical Details

CONSTRUCTION

- C.1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, APPLICABLE PERMITS, FUNDING AGENCY REQUIREMENTS AND THE TOWN REGULATIONS AND STANDARDS WHEN THERE IS A CONFLCT BETWEEN THE STANDARDS THE MORE STRINGENT SHALL APPLY UNLESS OTHERWISE DIRECTED BY ENGR
- C.2. THE TECHNICAL SPECIFICATIONS COVER NOT ONLY THE WORK SPECIFICALLY INCLUDED IN THE SCOPE OF THE WORK BEING BID, BUT ALSO CONTAINS SPECIFICATIONS FOR WORK THAT COULD BE ADDED AS THE WORK PROGRESS OR AS NEEDED TO COMPLETE THE WORK.
- C.3. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND UNDERSTANDING THE PLANS, SPECIFICATIONS, STANDARDS AND CODES. CONTRACTOR SHALL EXECUTE HIS WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ADDITIONAL WORK OR MATERIALS REQUIRED TO BRING THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS SHALL BE PROVIDED AT NO ADDITIONAL COST TO OWNER
- C.4. A QUALIFIED SUPERINTENDENT WHO IS ACCEPTABLE TO THE OWNER SHALL BE AT THE WORK SITE AND GIVE EFFICIENT SUPERVISION TO THE WORK UNTIL IT IS COMPLETED. THE SUPERINTENDENT SHALL HAVE FULL AUTHORITY TO ACT ON BEHALF OF THE CONTRACTOR, AND ALL DIRECTIONS GIVEN TO THE SUPERINTENDENT SHALL BE CONSIDERED GIVEN TO THE THE CONTRACTOR. AT MOST TIMES, THE SUPERINTENDENT SHALL NOT BE ENGAGED IN OPERATION OF EQUIPMENT OR OTHER CONSTRUCTION.
- C.5. ALIGNMENTS AND UTILITY MODIFICATIONS MAY BE ADJUSTED BY ENGINEER IN THE FIELD TO ACCOMMODATE CONFLICTS THAT ARISE OR FOR OTHER SITE CONDITIONS.
- C.6. CONTRACTOR SHALL PROTECT ALL WORK AREAS AND FACILITIES FROM FLOODING OR WATER DAMAGE REGARDLESS OF WATER SOURCE. ANY REQUIRED DEWATERING AND/OR RESTORATION REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR AT NO COST TO THE OWNER.
- C.7. CONTRACTOR SHALL LIMIT ACTIVITIES TO THOSE AREAS WITHIN THE LIMITS OF DISTURBANCE AND/OR TOES OF SLOPES AS SHOWN ON THE PLANS. ANY DISTURBANCE BEYOND THAT LIMIT SHALL BE RESTORED TO ORIGINAL CONDITION AT CONTRACTOR'S EXPENSE. CONSTRUCTION ACTIVITIES IN ADDITION TO NORMAL WORK SHALL INCLUDE THE PARKING OF VEHICLES & EQUIPMENT, DISPOSAL OF WASTE, & ANY OTHER ACTION WHICH WOULD ALTER EXISTING CONDITIONS.
- C.8. ALL WORK SHALL BE COMPLETED FROM WITHIN EXECUTED EASEMENTS OR RIGHTS OF WAY. NOTIFY ENGINEER SHOULD CONFLICT ARISE. USE OF ADJOINING PROPERTY IS PROHIBITED UNLESS CONTRACTOR MAKES ARRANGEMENTS WITH ADJOINING LAND OWNER AND PROVIDES EXECUTED DOCUMENTATION OF THOSE ARRANGEMENT TO **ENGINEER & ENGINEER DETERMINES THAT THE DOCUMENTATION IS** ADEQUATE. AT CONCLUSION OF PROJECT, A WRITTEN ACCEPTANCE AND RELEASE FROM ADJOINING LAND OWNER IS REQUIRED. USE OF HAND TOOLS IS REQUIRED IN CLOSE PROXIMITY TO PROPERTIES
- C.9. THE CONCRETE SULFATE EXPOSURE IS CLASS 2 FOR THIS PROJECT. ALL EXTERIOR CONCRETE SHALL BE FIBER MESH REINFORCED.
- C.10 CONTROL ALL DUST W/ A DUST PALLATIVE APPROVED BY ENGINEER. INCLUDE THIS WORK IN THE COST OF THE ASSOCIATED WORK,
- C.11 WORK HOURS SHALL BE LIMITED TO BETWEEN 7:30 AND 5:00 ON TOWN WORK DAYS

GENERAL NOTES

CONSTRUCTION (CONT'D)

C12.CONTRACTOR SHALL COORDINATE WITH ADJOINING PROPERTY OWNERS WHEN WORKING ADJACENT TO THEIR PROPERTY. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTIES AT ALL TIMES.

C13. HOT & COLD WEATHER CONCRETING SHALL BE PERFORMED CONSISTENT WITH CDOT STANDARDS. COST FOR THIS WORK SHALL BE INCLUDED IN THE COST OF THE WORK.

C.14. CONTRACTOR SHALL BE RESPONSIBLE FOR STAGING & ACCESS POINTS.

C15. ALL SPOILS AND TRASH REMOVAL SHALL BE INCLUDED IN THE COST OF THE WORK.

C16. REFERENCES TO CDOT STANDARDS REFER TO 2017 COLORADO DEPARTMENT TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD CONSTRUCTION.

C.17 WHERE FUTURE LINES ARE STUBBED, INSTALL END CAP & DELINEATE END BY BRINGING 2X4 WOOD POST MARKED AT EVEN 1' MARKS (0 AT BOTTOM) & EXTENDING FROM THE TOP OF THE CAP TO THE SURFACE. BACK 2X4 W/STEEL T FENCE POST. INCLUDE COST FOR THIS WORK IN THE COST OF THE PIPE OR CONDUIT.

SURVEY AND HORIZONTAL AND VERTICAL CONTROL

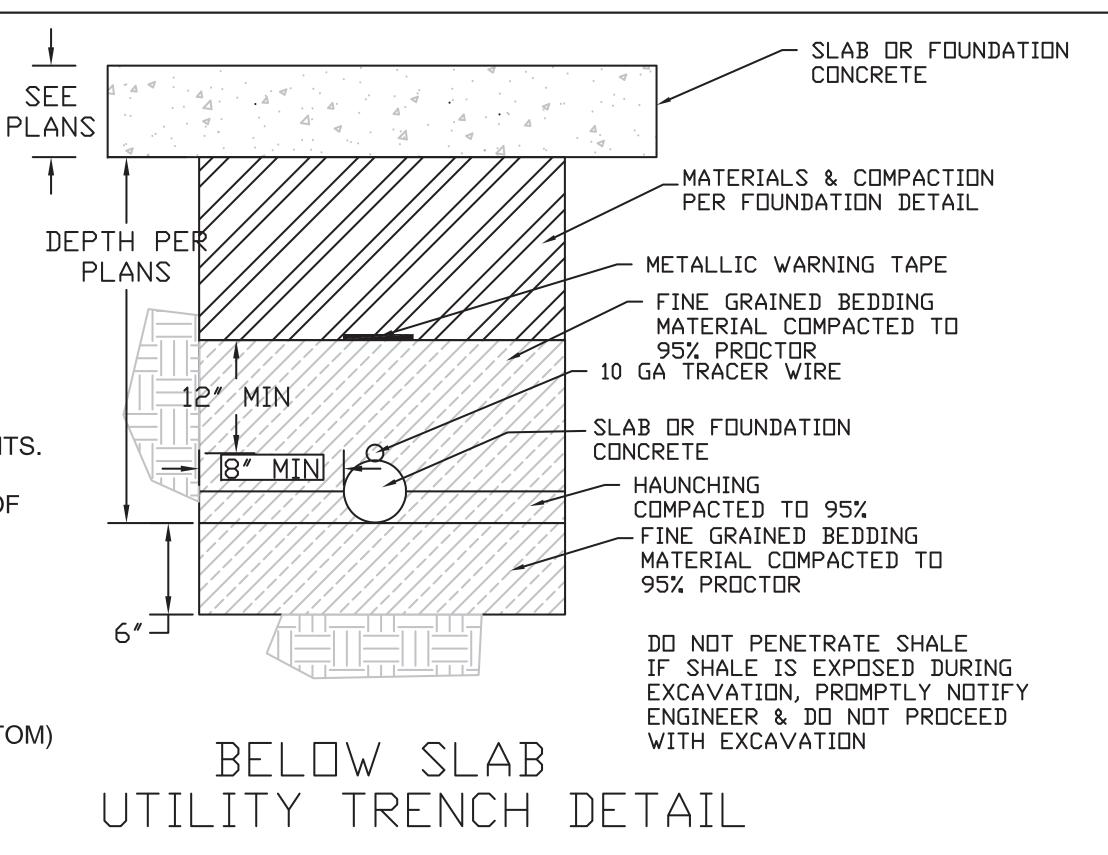
SURVEY INFORMATION TO BE PROVIDED TO THE CONTRACTOR ARE OUTLINED IN SUB SECTION 10.11 OF THE AGREEMENT

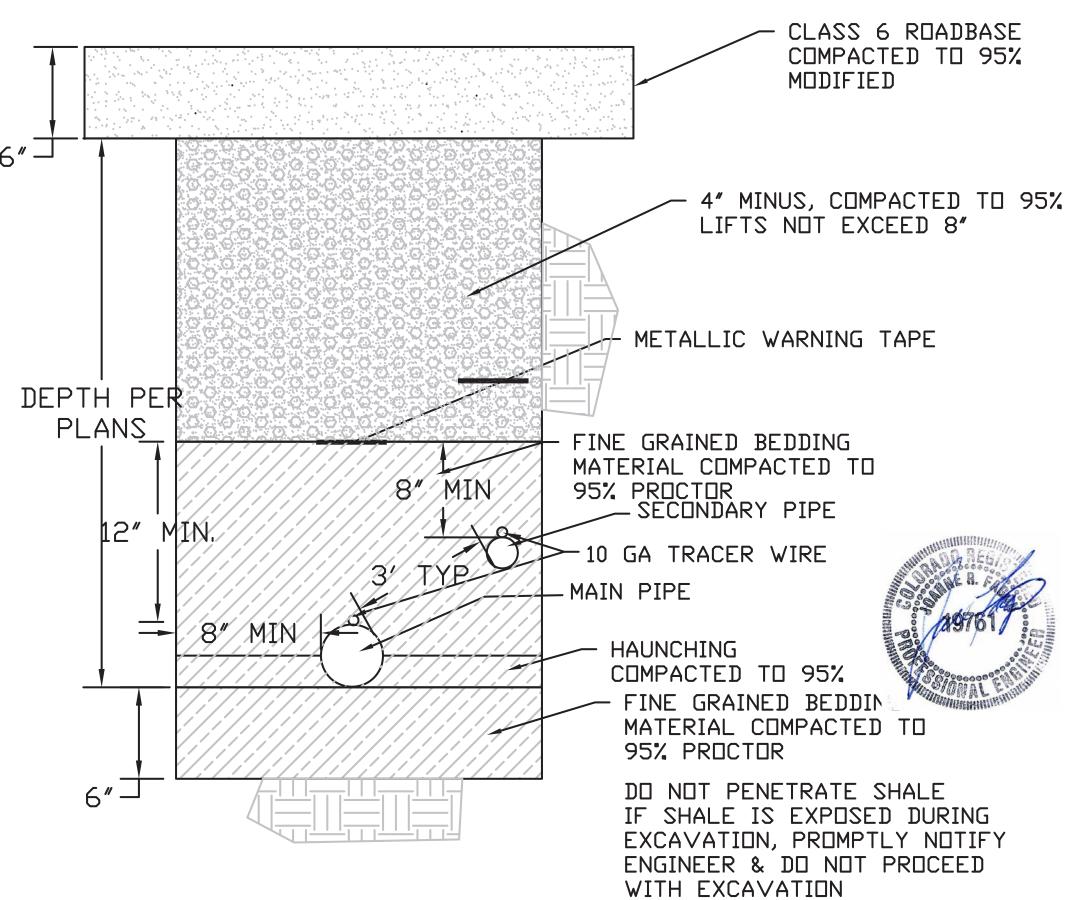
RIGHT OF WAY PRECAUTIONS - WHILE WORK CAN BE PERFORMED FROM WITHIN TOWN PROPERTY. IN PLACES THE LIMITS OF CONSTRUCTION ARE VERY CLOSE TO PRIVATE PROPERTY LINES. CONTRACTOR MUST ENSURE THAT THERE IS NO TRESPASS ON PRIVATE PROPERTY. PRIOR TO CONSTRUCTION, ROW LIMITS MUST BE SURVEYED & STAKED BY PROFESSIONAL LAND SURVEYOR. IN ORDER TO AVOID TRESPASS, CONTRACTOR MAYBE REQUIRED TO USE HAND TOOL.

UTILITIES

- U.1. THE CONTRACTOR SHALL NOTIFY ALL AFFECTED UTILITIES AT LEAST 3 BUSINESS DAYS, NOT INCLUDING THE ACTUAL DAY OF NOTICE, PRIOR TO COMMENCING OPERATIONS IN PROXIMITY OF THE UTILITY. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) TO HAVE LOCATIONS OF UNCC REGISTERED LINES MARKED BY MEMBER COMPANIES. ALL OTHER UNDERGROUND FACILITIES SHALL BE LOCATED BY CONTACTING THE RESPECTIVE OWNER. UTILITY SERVICE LATERALS SHALL ALSO BE LOCATED PRIOR TO BEGINNING EXCAVATION OR GRADING.
- U.2. UTILITIES SHOWN THE PLANS ARE APPROXIMATE BASED ON LOCATES PROVIDED BY THE UTILITIES DURING DESIGN. THERE MAY BE OTHER UTILITIES THAT ARE NOT SHOWN OR ARE SHOWN INCORRECTLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL EXISTING UTILITIES AS NECESSARY TO ENSURE THE UTILITIES WILL NOT BE IMPACTED BY CONSTRUCTION ACTIVITIES. THE COST FOR SUCH INVESTIGATION SHALL BE INCLUDED IN THE COST OF THE WORK TO WHICH IT IS APPURTENANT.

RA





DUTSIDE BUILDING TRENCH DETAIL







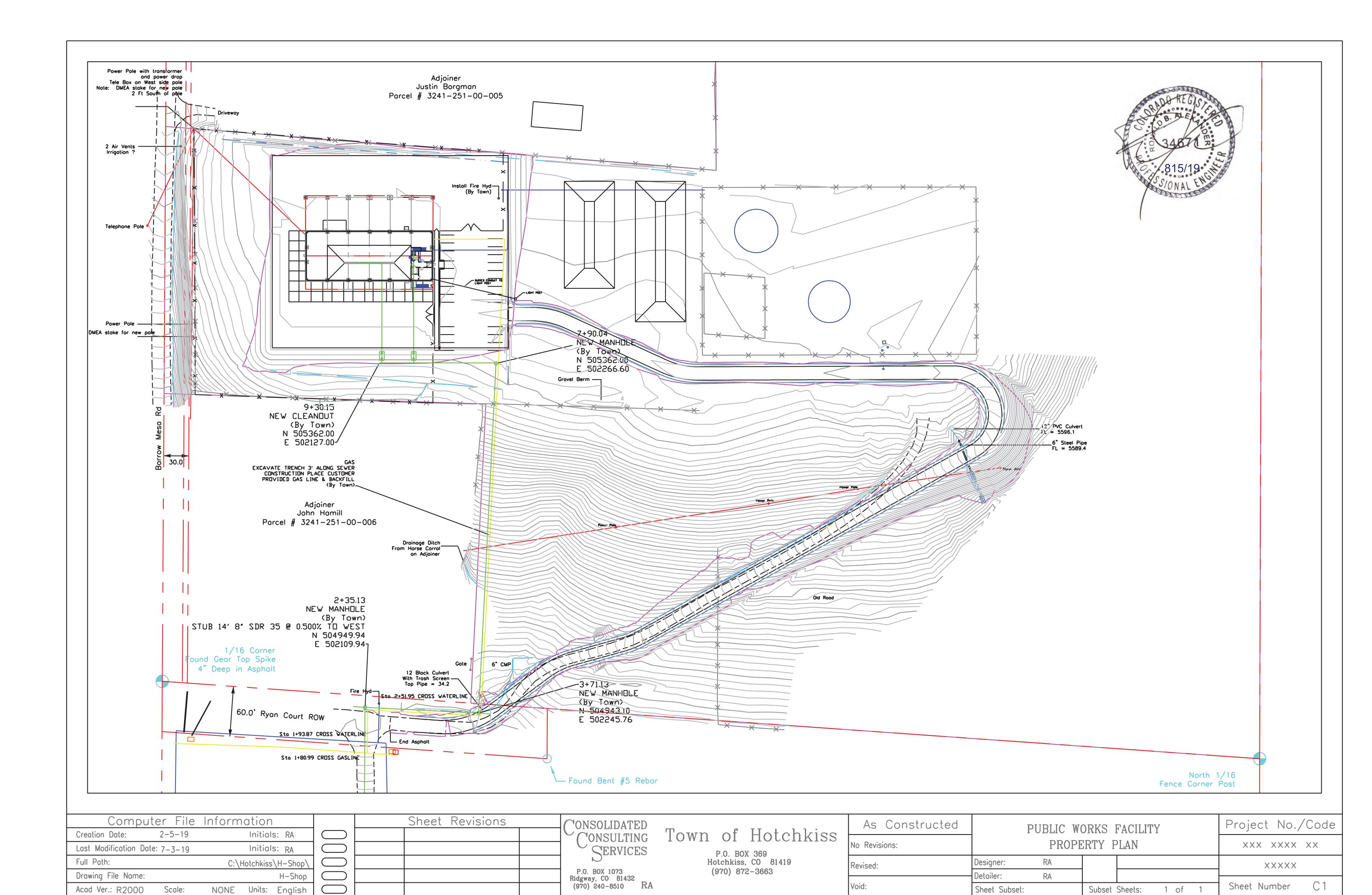
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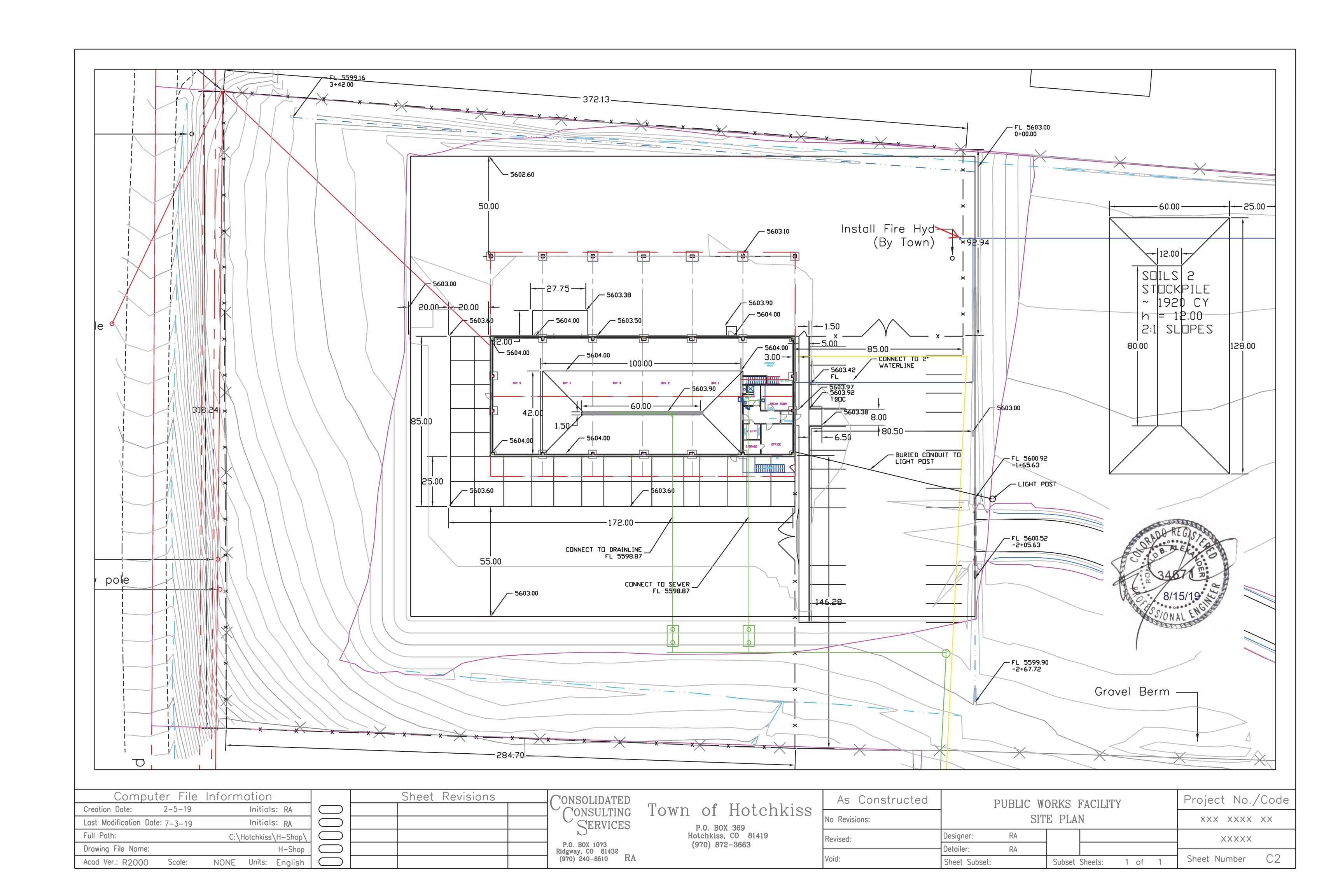
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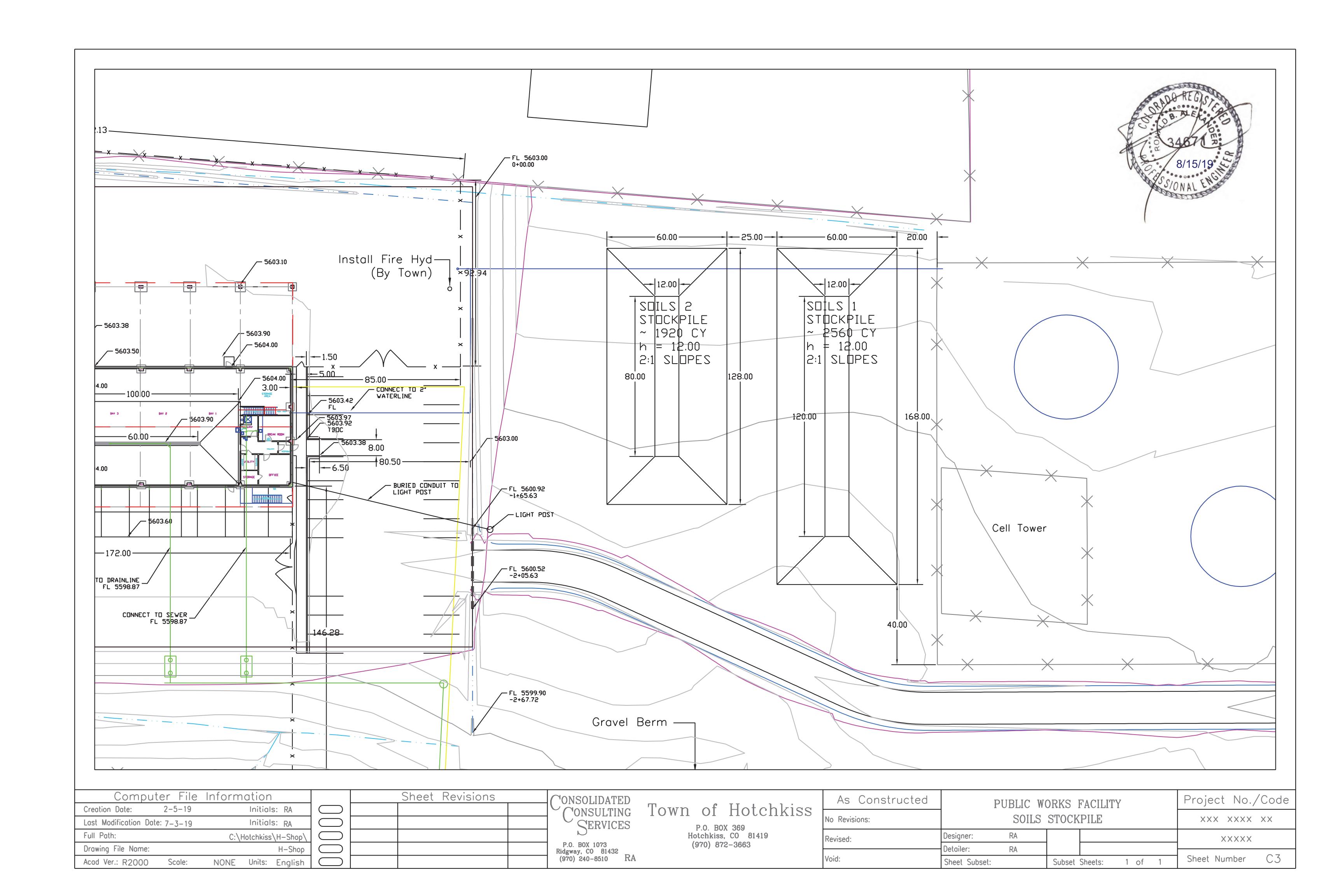
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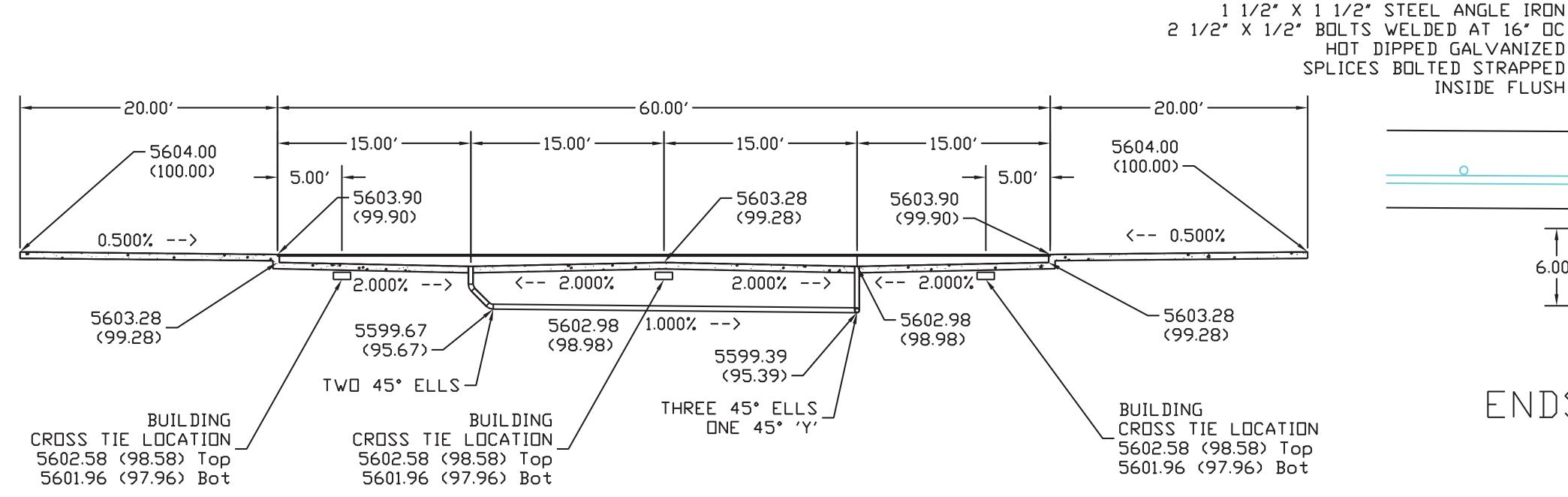
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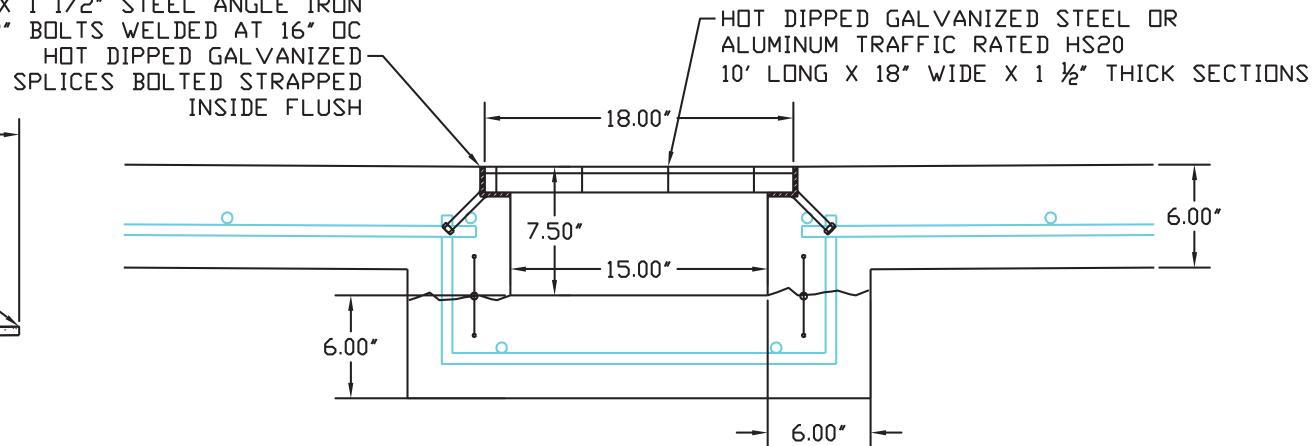
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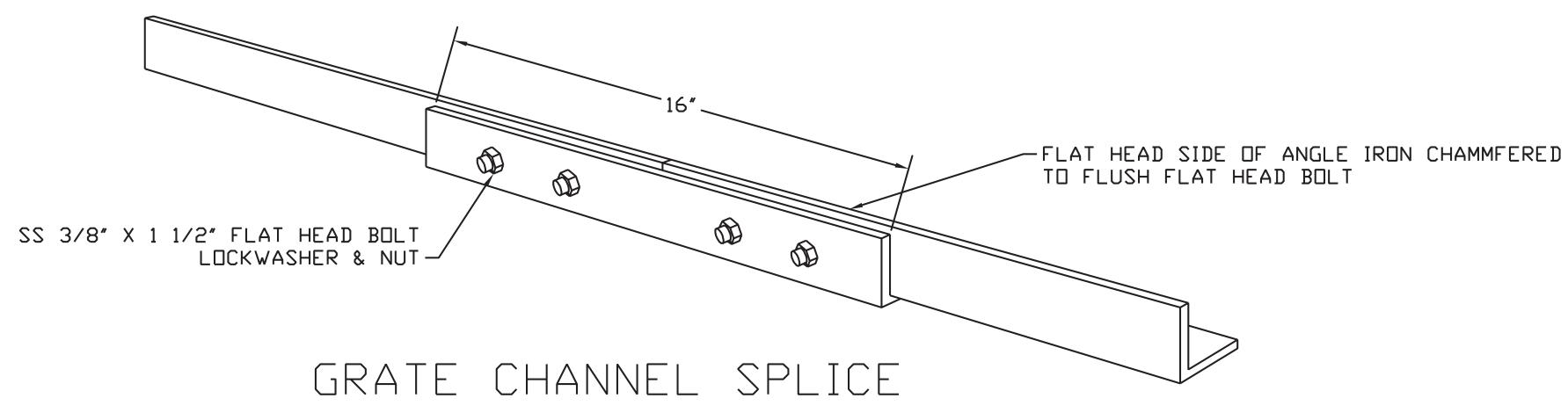






ENDS & CENTER CROSS SECTION 0+00, 0+30, 0+60

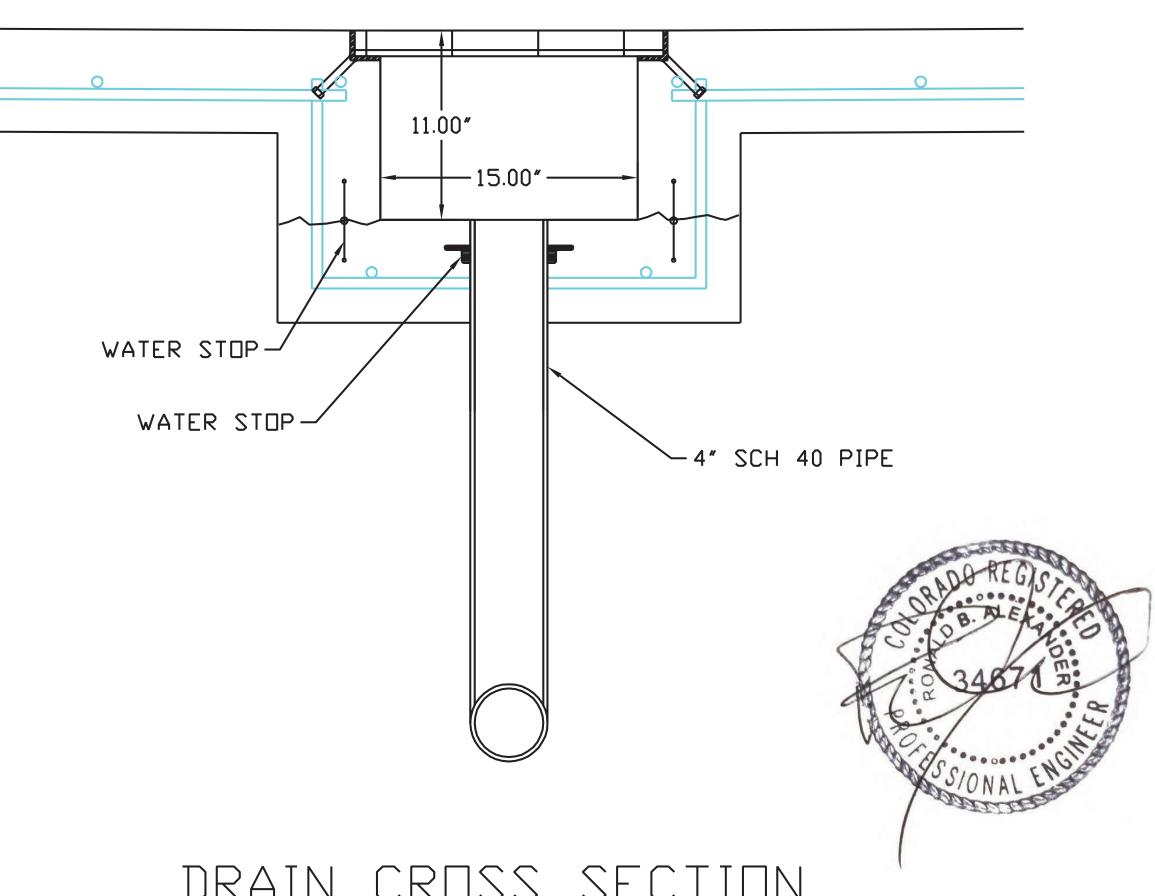
WEST/EAST PROFILE



NOTE:

FLOOR DRAIN IS A WATER TIGHT STRUCTURE POUR SHOULD BE MONOLYTHIC OR IF IN PHASES, WATERSTOP AT ALL COLD JOINTS

BUILDING CROSS TIE LOCATIONS 0+05, 0+30, 0+55 BOTTOM CONCRETE = 5302.68 (98.68)



DRAIN CROSS SECTION

0+15, 0+45

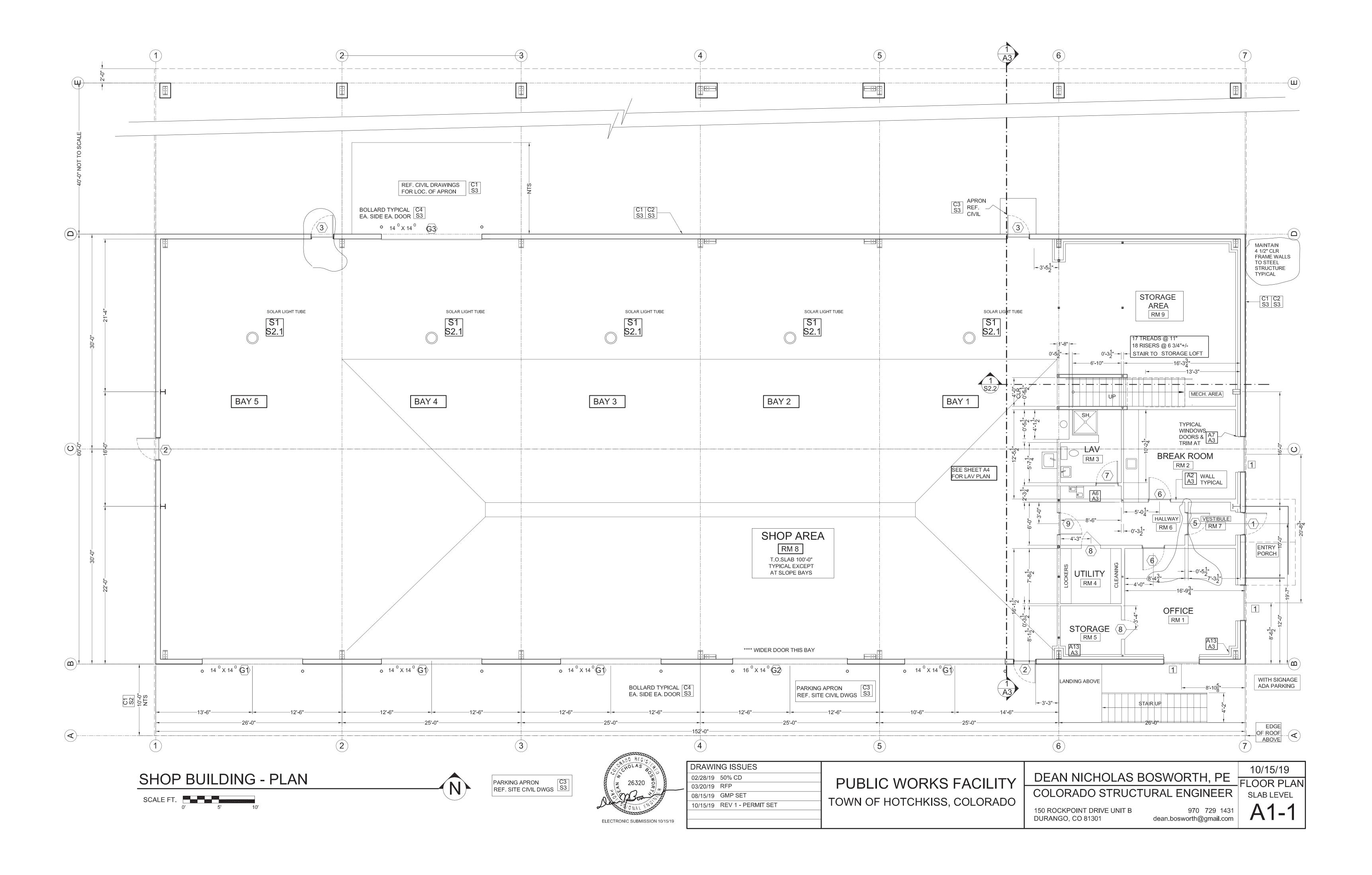
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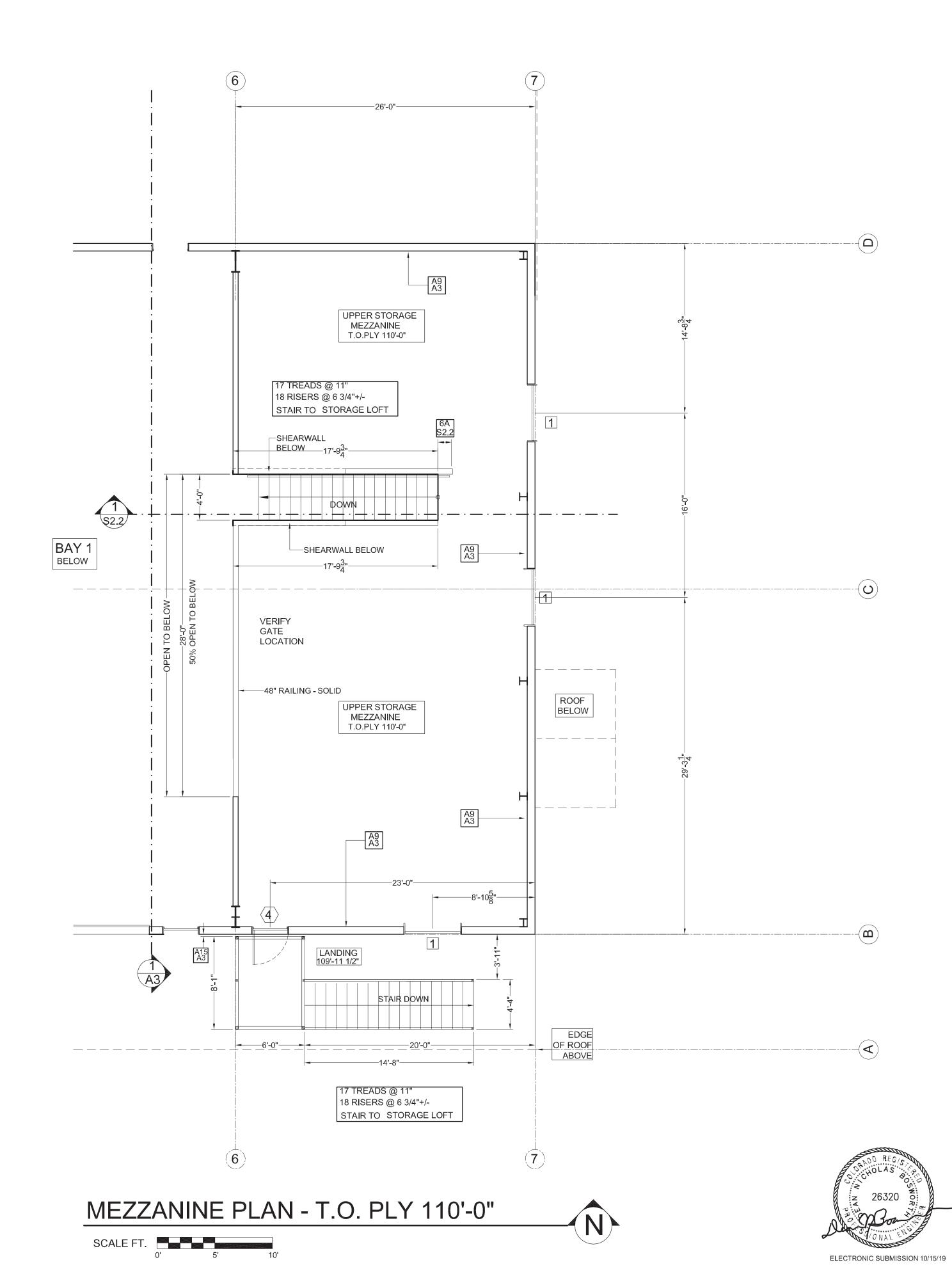
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Town of Hotchkiss P.O. BOX 369 Hotchkiss, CO 81419 (970) 872-3663

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DRAWING ISSUES 02/28/19 50% CD PUBLIC WORKS FACILITY 03/20/19 RFP 08/15/19 GMP SET TOWN OF HOTCHKISS, COLORADO REV 1 - PERMIT SET

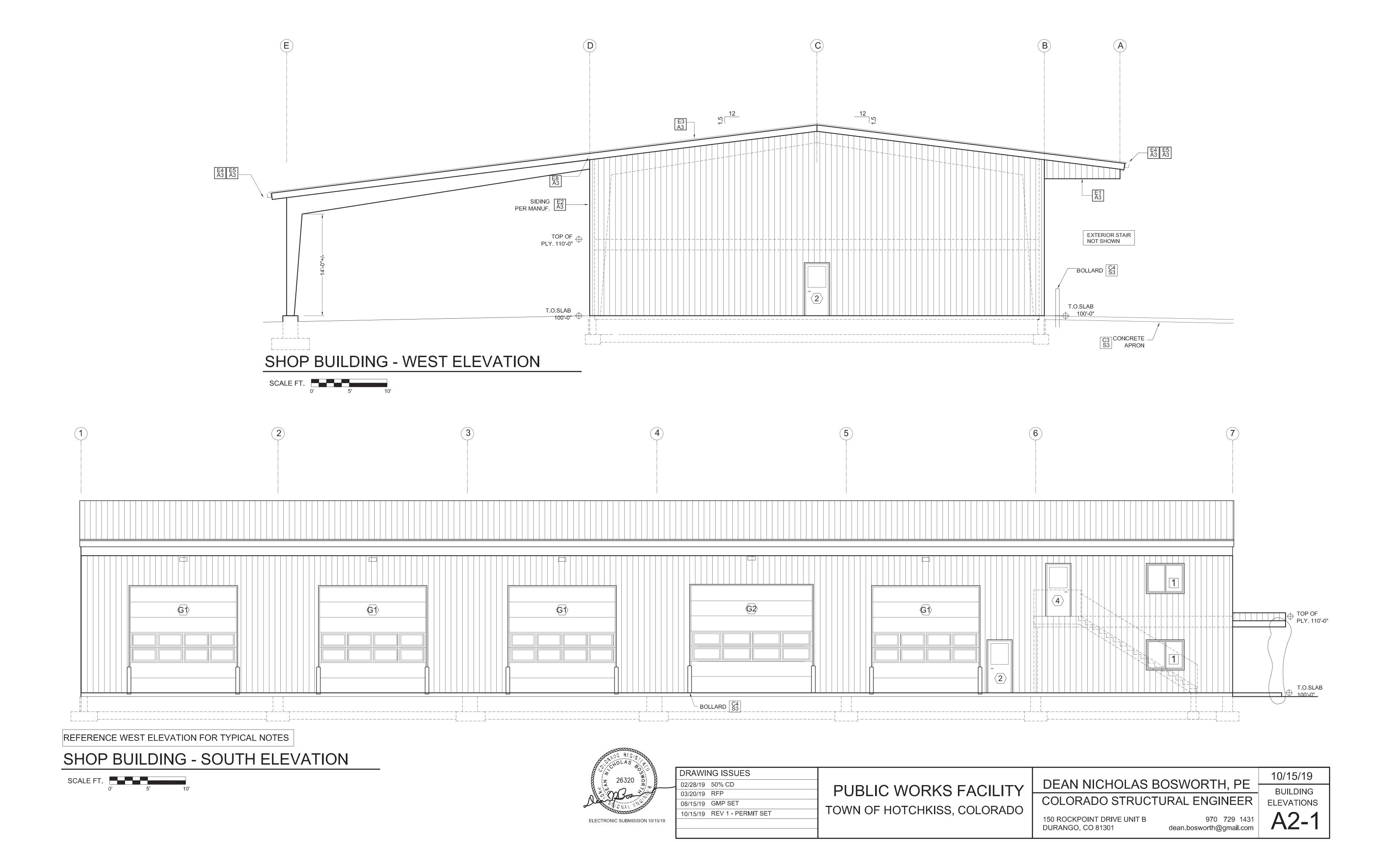
DEAN NICHOLAS BOSWORTH, PE

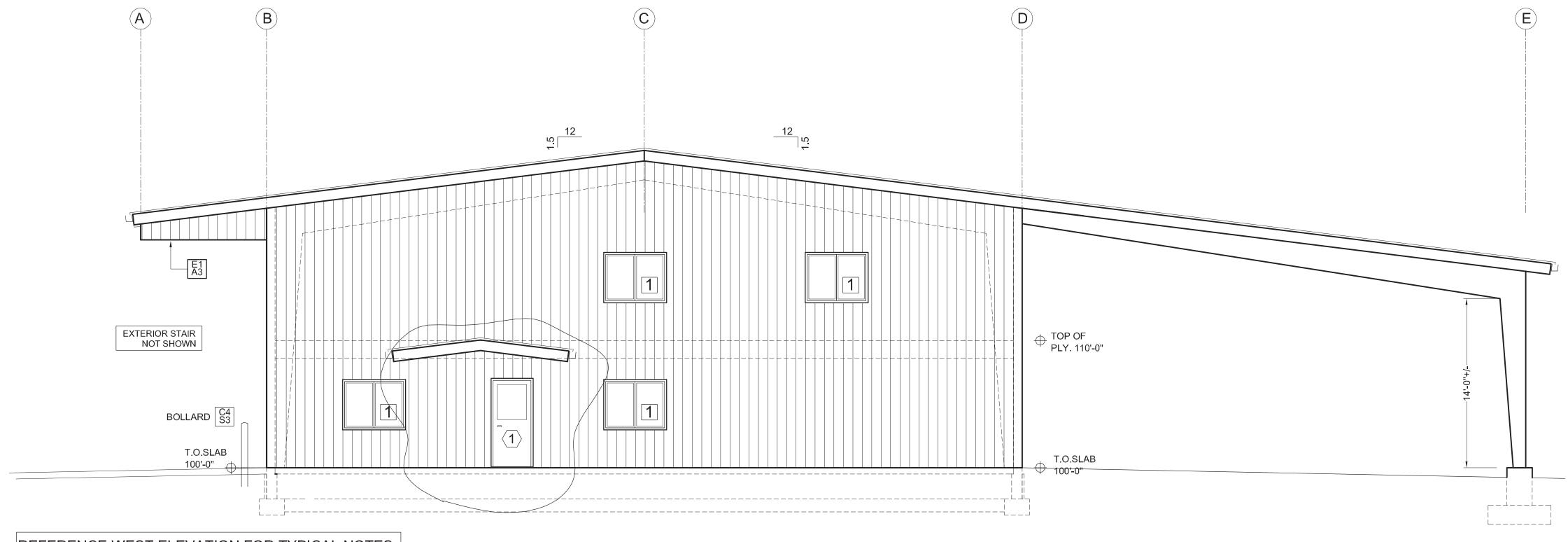
COLORADO STRUCTURAL ENGINEER

MEZZ. LEVEL

150 ROCKPOINT DRIVE UNIT B DURANGO, CO 81301

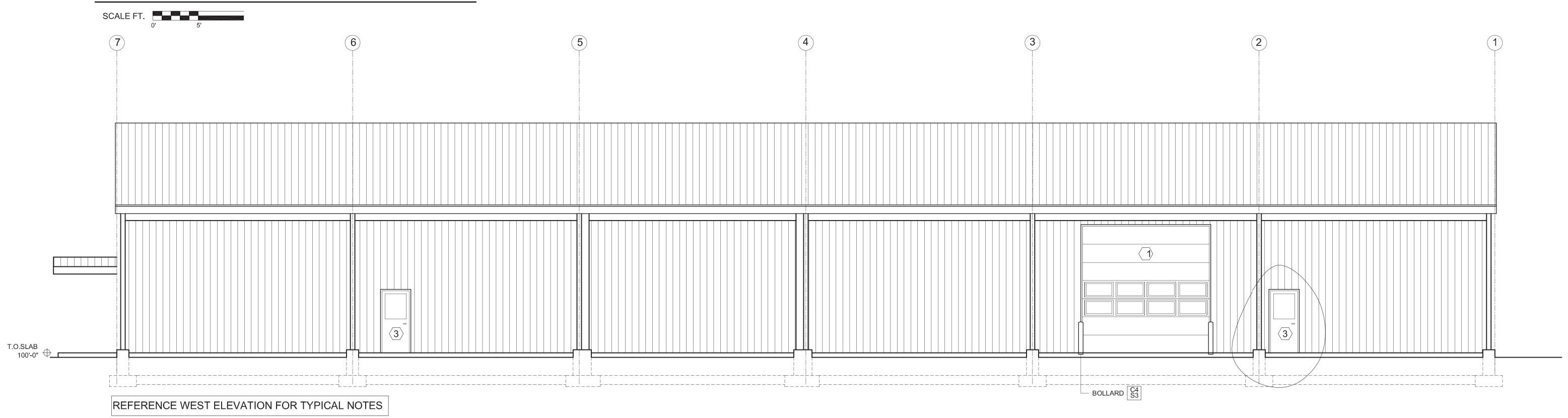
970 729 1431 dean.bosworth@gmail.com





REFERENCE WEST ELEVATION FOR TYPICAL NOTES

SHOP BUILDING - EAST ELEVATION



SHOP BUILDING - NORTH ELEVATION

SCALE FT.

ELECTRONIC SUBMISSION 10/15/19

 DRAWING ISSUES

 02/28/19 50% CD

 03/20/19 RFP

 08/06/19 GMP SET

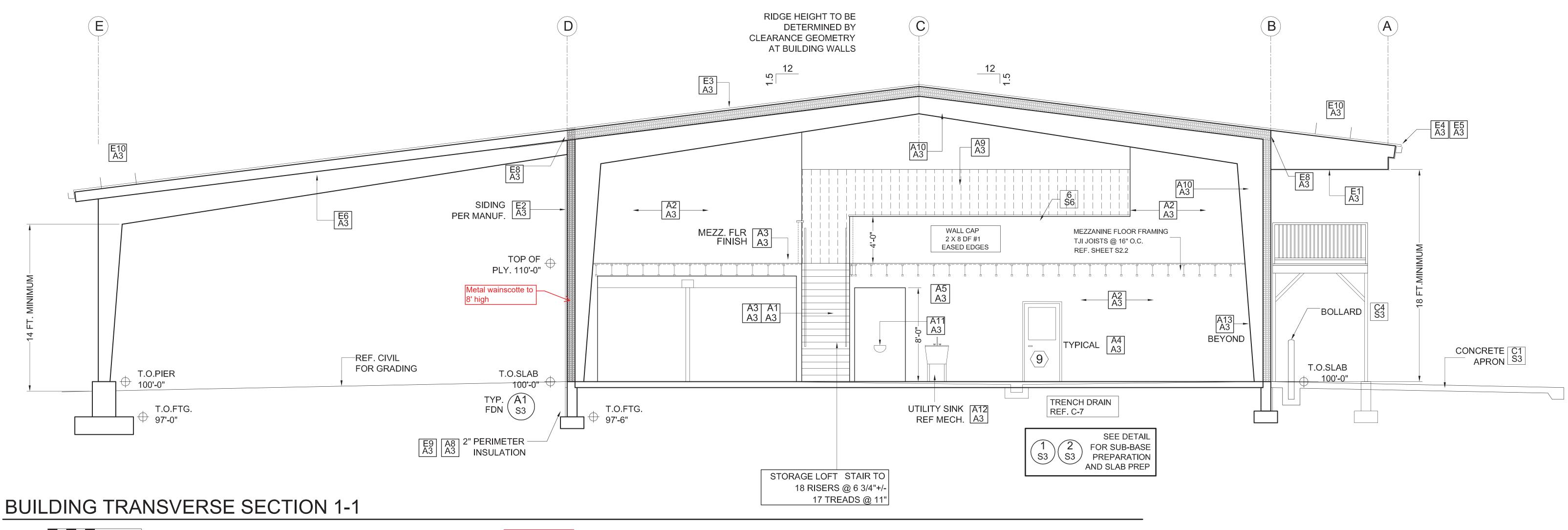
 10/15/19 REV 1 - PERMIT SET

PUBLIC WORKS FACILITY
TOWN OF HOTCHKISS, COLORADO

DEAN NICHOLAS BOSWORTH, PE COLORADO STRUCTURAL ENGINEER

150 ROCKPOINT DRIVE UNIT B 970 729 1431 DURANGO, CO 81301 dean.bosworth@gmail.com

BUILDING ELEVATIONS



DRAWING NOTES MEZZANINE EXIT STAIRS

MEZZANINE STAIRS - MAX. RISE 6 3/4" MAXIMUM RUN 11" TREAD LENGTH 12" 1" TOE SPACE 3/8" MAX. VARIATION STAIR GEOMETRY SHALL BE ADJUSTED WITHIN THESE PARAMETERS WHEN FINAL ELEVATIONS OF UPPER AND LOWER FINISHED FLOORS ARE KNOWN

MEZZANINE HANDRAIL

SEE S2.2 FOR STRUCTURAL REQ'TS.

THE GENERAL CODE REQUIRMENTS FOR THE HANDRAIL ARE INCLUDED BELOW. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE A HANDRAIL THAT MEETS OR EXCEEDS THESE SPECIFICATIONS INCLUDING ALL BLOCKING AND BRACKETS REQUIRED.

HANDRAIL TO BE LOCATED A MIN. OF 34" AND MAX. OF 38" (36" DETAILED) ABOVE THE NOSING. HANDRAIL HEIGHT ABOVE NOSINGS SHALL NOT VARY MORE THAN A TOTAL OF 3/8"

HANDRAIL SHALL EXTEND (1) TREAD LENGTH AT BOTTOM HANDRAIL SHALL RETURN HORIZ. 12 INCHES AT THE TOP

HANDRAILS ARE REQUIRED (1) SIDE OF THE STAIR

HANDRAIL CONSTRUCTION

- 1 1/4" MIN. 2" MAX. CIRCULAR GRIPABLE SURFACE 1 1/2" CLEARANCE TO WALL FINISHES
- HANDRAIL SHALL PROVIDE CONTINUOUS GRIP SURFACE (UNBROKEN)
- SPLICES REQUIRED SHALL BE SEAMLESS

MINIMUM LOADING HANDRAIL LOAD 20 PLF (S OCCUP. IBC 1607.7.11)

2x6 studs, dimensions change

If Contractor uses

TYPICAL INTERIOR WALLS TO BE FRAMED OF 2X4 OR 2 X6 HF #2 STUDS MAXIMUM STUD SPACING 16" O.C., 5/8" DRYWALL, MOISTURE-RESISTANCE DRYWALL SHALL BE USED AT LOCATIONS SUBJECT TO WATER, DRYWALL TO BE INSTALLED TO CODE, TAPED AND TEXTURED. TEXTURE TYPE SHALL BE A NON-SMOOTH FINISH TO BE DETERMINED BY OWNER. LAVATORY TO BE PAINTED (SEMI GLOSS PER OWNER) BY CONTRACTOR ALL OTHER ROOMS TO BE PAINTED BY OWNER

DRYWALL ENTIRE LAVATORY TO BE MOISTURE-RESISTANT R11 INSULATION AT ALL INTERIOR WALLS - COMPATIBLE FOR INTERIOR USE

INSTALL CEMENT BOARD BACKING BEHIND SHOWERS AND OTHER LOCATIONS WHERE REQUIRED BY MANUFACTURER OR THE IBC.

MEZZANINE FLOOR FINISH BY OWNER STAIR FLOOR FINISH BY OWNER

TRIM OUT ALL DOORS AND MOP BOARDS PER FINISH SPECIFICATIONS

RECESS FOR EYE WASH.

WATER FOUNTAIN - ADA COMPLIANT INSTALL TO MANUFACTURER SPECIFICATIONS. REF. MECH.

RETURN TRIM AT WINDOWS AND DOORS TO INTEGRATE WITH TRIM, FLASHING AND MOISTURE-PROOFING FOR EXTERIOR WINDOWS

PERIMETER INSULATION 2" RIGID FOAM REF. SPECIFICATIONS

STEEL INTERIOR LINER PER METAL BUILDING MANUFACTURER PERIMETER OF MAIN FLOOR (EXCEPT) AT OFFICE SPACES WHERE FRAME WALLS EXIST. HEIGHT TO WIND GIRT (MINIMUM 8 FT. HIGH) AND AT EXTERIOR OF MEZZANINE TO A HEIGHT OF 8 FT.

STEEL FRAMING SHALL BE PRIMED PER PROJECT SPECIFICATIONS

EYEWASH PER OSHA. REF. MECH DWGS

A12 A3 MOP SINK REF. MECH.

> FRAME AROUND STEEL COLUMNS IN OFFICE SPACES DRYWALL FINISH PER OTHER DETAILS

A14 A3

LOCATE STAIR LANDING OUTSIDE OF THE ENVELOPE OF THE BUILDING. MAXIMUM GAP 1" TBD

EXTERIOR NOTES FOR METAL BUILDING PACKAGE

REF. METAIL BUIDING SPECIFICATION NOTES AND MANUF. SHOP DRAWINGS ALL EXTERIOR STEEL BUILDING COMPONENTS SHALL BE COMPATIBLE WITH SELECTED STRUCTURAL SYSTEMS, ROOFING SYSTEMS, WALL SYSTEMS AND MISC. TRIM. COLOR TO BE SELECTED BY OWNER AND SHALL MATCH.

SOFFIT TO BE COVERED WITH STEEL SIDING | A3 | TO MATCH WALL APPEARANCE.

EXTERIOR SIDING A3 REF. SPECIFICATIONS COLOR TBD FROM STANDARD COLORS

ROOFING PER STEEL BUILDING MANUF. STANDING SEAM _A3_ ROOFING TO BE SPECIFIED FOR SPANS PER BUILDING MANUF.

FLASHING PER STEEL BUILDING MANUF. _A3_ AS NEEDED FOR A WATER AND DAMP TIGHT INSTALLATION.

CONTINUOUS RAINGUTTER SOUTH OVERHANG PER MANUF. CONTINUOUS RAINGUTTER NORTH OVERHANG PER MANUF. _A3_ DOWNSPOUT EACH END. SLOPE AS REQUIRED.

INTERMEDIATE DOWNSPOUTS SHALL NOT BE USED. ROOFING EXPOSED TO BELOW AT EQUIPMENT AWNING

ALL STRUCTURAL ELEMENTS TO BE PRIMED

FLASH AND SEAL AT BEAM PROJECTIONS AS REQUIRED. _A3_ FLASHING TO MATCH SIDING COLOR, INSULATE AND CAULK

FLASHING OVER INSULATION GALVANIZED 24 GAGE. A3 PROFILE TO ACCOMODATE BASE DETAIL OF BUILDING EXTEND MIN. 6 INCHES BELOW FINISHED GRADE ATTACH INSULATION TO STEMWALL PER INSUL.MANUF.SPEC.

SNOW RAILS SHALL BE DESIGNED AND SPECIFIED BY THE METAL BUILDING MANURACTURE AND SHALL BE CONSITENT WITH THE _A3_ STANDING SEAM ROOF. CLIPS SHALL BE INSTALLED AT NORTH AND SOUTH EAVE LINES TO PROTECT RAINGUTTERS.



A3

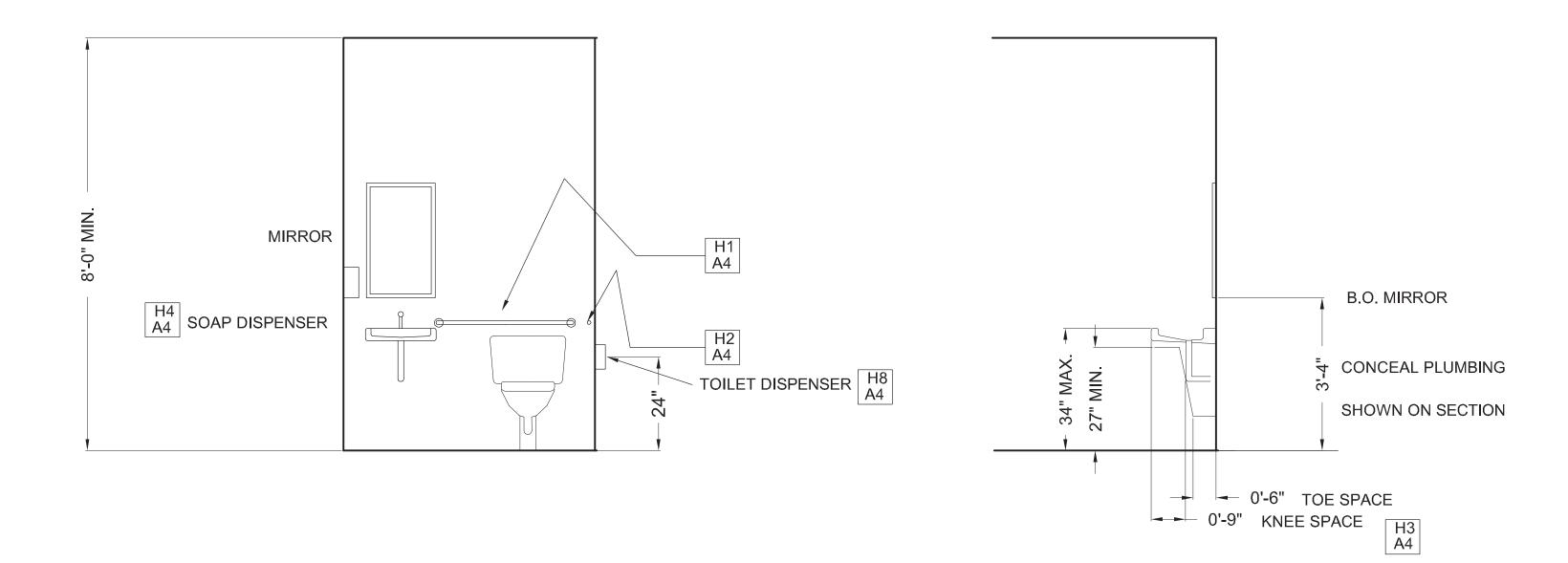
DRAWING ISSUES	
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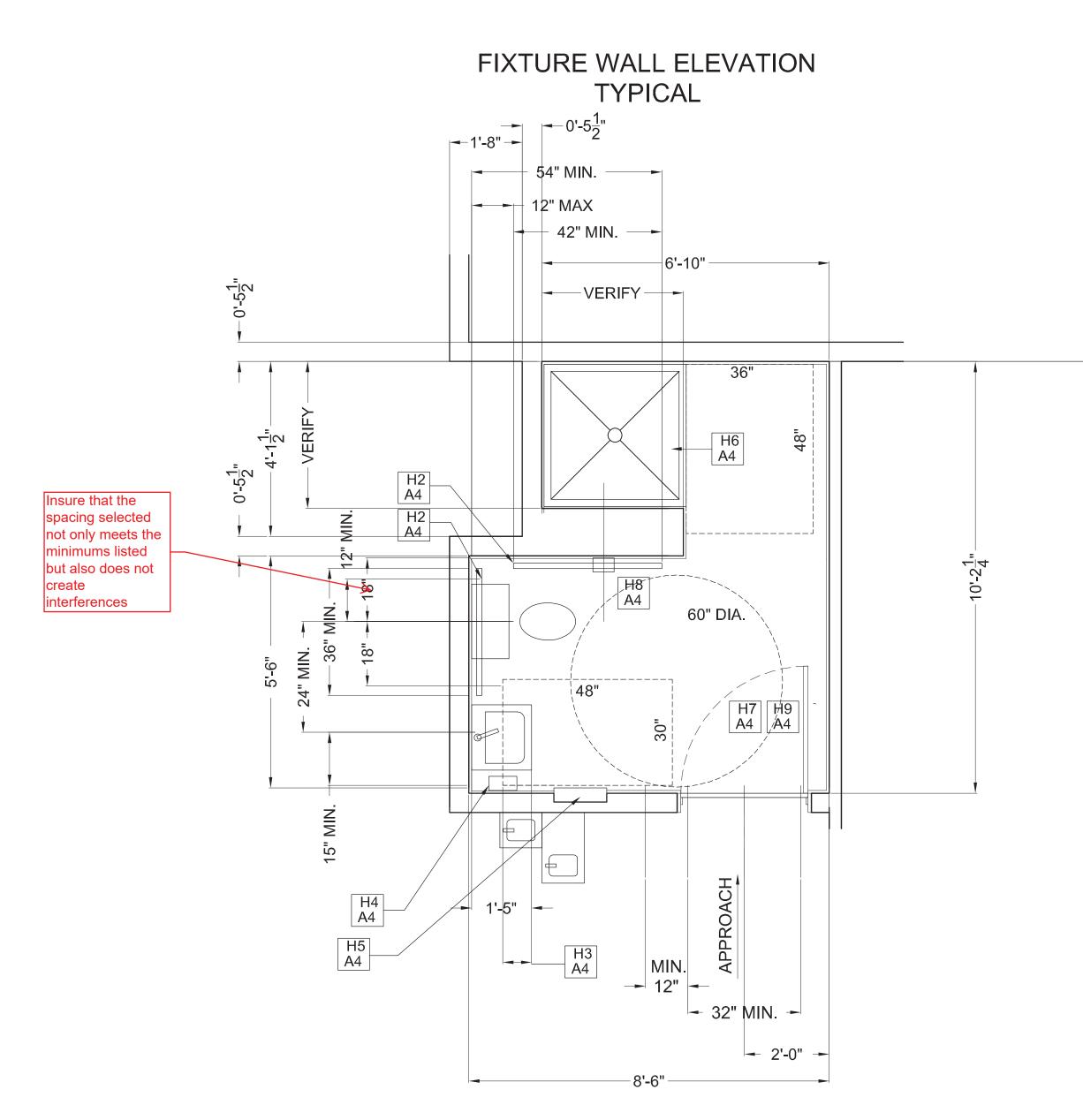
DEAN NICHOLAS BOSWORTH, PE COLORADO STRUCTURAL ENGINEER

150 ROCKPOINT DRIVE UNIT B DURANGO, CO 81301

970 729 1431 dean.bosworth@gmail.com BUILDING X-SECTION **A3**

10/15/19





SECTION AT LAVATORY **TYPICAL**

LAVATORY PLAN/ DETAILS

SCALE FT.



PRODUCT SPECIFICATIONS

REFER TO MECHANICAL PLANS AND SPECIFICATIONS FOR ALL PLUMBING FIXTURES. REFER TO MANUFACTURER SPECIFICATIONS FOR R.I. PLUMBING LOCATIONS AND R.I. FRAMING SIZES AND BACKING MATERIAL AS NEEDED.

TOWEL WASTE UNITS - BOBRICK B369 - MOUNT PER MANUF. DIMENSIONS FOR ADA COMPATIBILITY

SOAP DISPENSER - BOBRICK B-2111 - MOUNT PER MANUF. DIMENSIONS

TOILET TISSUE DISPENSER - BOBRICK B4388 - MOUNT PER MANUF. DIM.

MIRROR - BOBRICK B-942 11 1/4" X 17 1/4"

36 INCH GRAB BARS - BOBRICK B-5806 (915MM)

42 INCH GRAB BARS - BOBRICK B-5806 (1065MM)

ADDITIONAL NOTES

PROVIDE BLOCKING IN FRAMING AS REQUIRED FOR ALL SPECIFIED FIXTURES, GRAB BARS, SURFACE AND FLUSH MOUNT ACCESSORIES. VERIFY ALL BACKING REQUIREMENTS AND BLOCKING LOCATIONS WITH MANUFACTURER'S SPECIFIC DIRECTION AND INSTRUCTION.

PRODUCT SPECIFICATIONS SHOWN MAY BE SUBSTITUTED WITH AN APPROVED EQUAL TO BE SELECTED BY THE CONTRACTOR AND OWNER. INSTALLATION TO MAINTAIN ADA ACCESSIBILITY MAY VARY WITH SUBSTITUTED PRODUCTS. VERIFY ANY DIMENSIOAN VARIATIONS AS A RESULT OF SUBSTITUTIONS.

ALL FLOOR SHALL BE FINISHED WITH SHEET VINYL COMPATIBLE WITH WHEELCHAIR LOADING. INSTALL PER MANUFACTURER REQUIREMENTS.

ALL WALLS SHALL BE PRIMED THEN PAINTED WITH A GLOSS/CLEANABLE PAINT.

ALL FLOOR PERIMETERS SHALL BE FINSIHED WITH A MOPABLE VINYL BASEBOARD MATERIAL MINIMUM OF 4 INCHES IN HEIGHT. (BY OWNER)

LIGHTING SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE (LATEST STATE ADOPTED STANDARD)

VENTILATION FAN SHALL BE PROVIDED (SWITCH OR TIMER OPERATED). EXHAUSTED AIR TO EXTERIOR IS REQUIRED. REF. MECH.

EACH DOOR SHALL BE SIGNED WITH ADA ACCESIBILITY SYMBOL AND SHALL BE CLEARLY IDENTIFIED AS UNISEX

36" MIN. REAR GRAB BAR MOUNT 33" MIN. 36" MAX. FROM FINISHED FLOOR

42" MIN. SIDE GRAB BAR MOUNT 33" MIN. 36" MAX. FROM FINISHED FLOOR

H6 A4

KNEE SPACE TO PLUMBING MINIMUM 9 INCHES

SOAP DISPENSER LOCATE PER MANUFACTURER SPECS.

H5 A4 RECESSED COMBINATION TOWEL/WASTE UNIT

5/8" BARRIER FREE THRESHOLD

DOOR - REF. SCHEDULE & SPECIFICATIONS ADA HARDWARE - SELF CLOSING SPRING LOCK - PANIC HARDWARE

TOILET PAPER DISPENSER LOCATE 15" MIN. 24" MAX. FROM FINISHED FLOOR

ADA COMPATIBLE LEVER-TYPE DOOR LATCH

ADA COMPATIBLE DOOR STOP

DRAWING ISSUES **GMP SET** PUBLIC WORKS FACILITY REV 1 PERMIT 10/15/19 TOWN OF HOTCHKISS, COLORADO

DEAN NICHOLAS BOSWORTH, PE

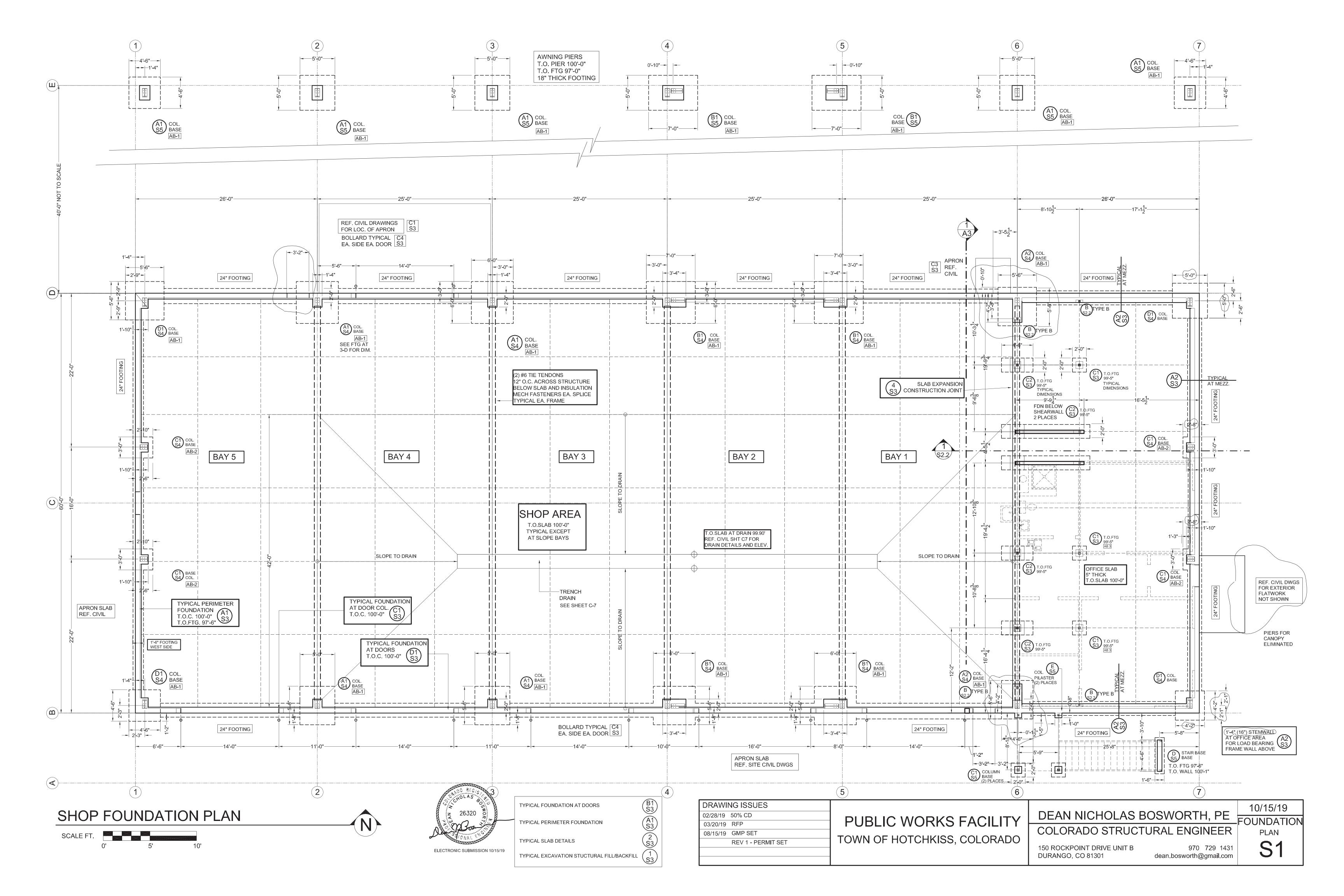
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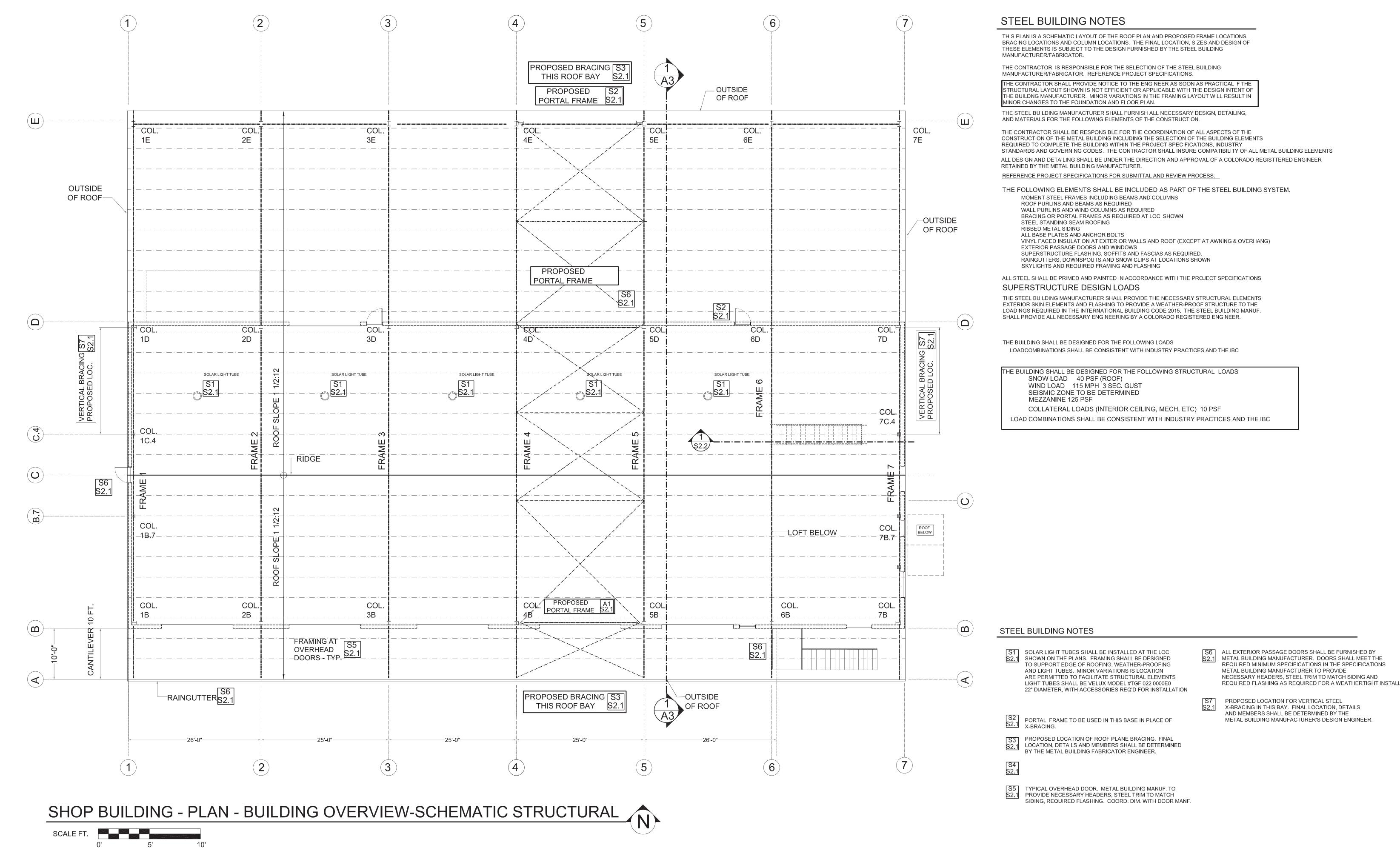
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LAV PLAN COLORADO STRUCTURAL ENGINEER A4 970 729 1431

dean.bosworth@gmail.com

10/15/19





NOT FOR CONSTRUCTION - 50% COMPLETION CD - RFP DRAWING ISSUES 02/28/19 50% CD PUBLIC WORKS FACILITY 03/20/19 RFP 10/15/19 REV. 1 - PERMIT TOWN OF HOTCHKISS, COLORADO ELECTRONIC SUBMISSION 10/15/19

DEAN NICHOLAS BOSWORTH, PE COLORADO STRUCTURAL ENGINEER

150 ROCKPOINT DRIVE UNIT B

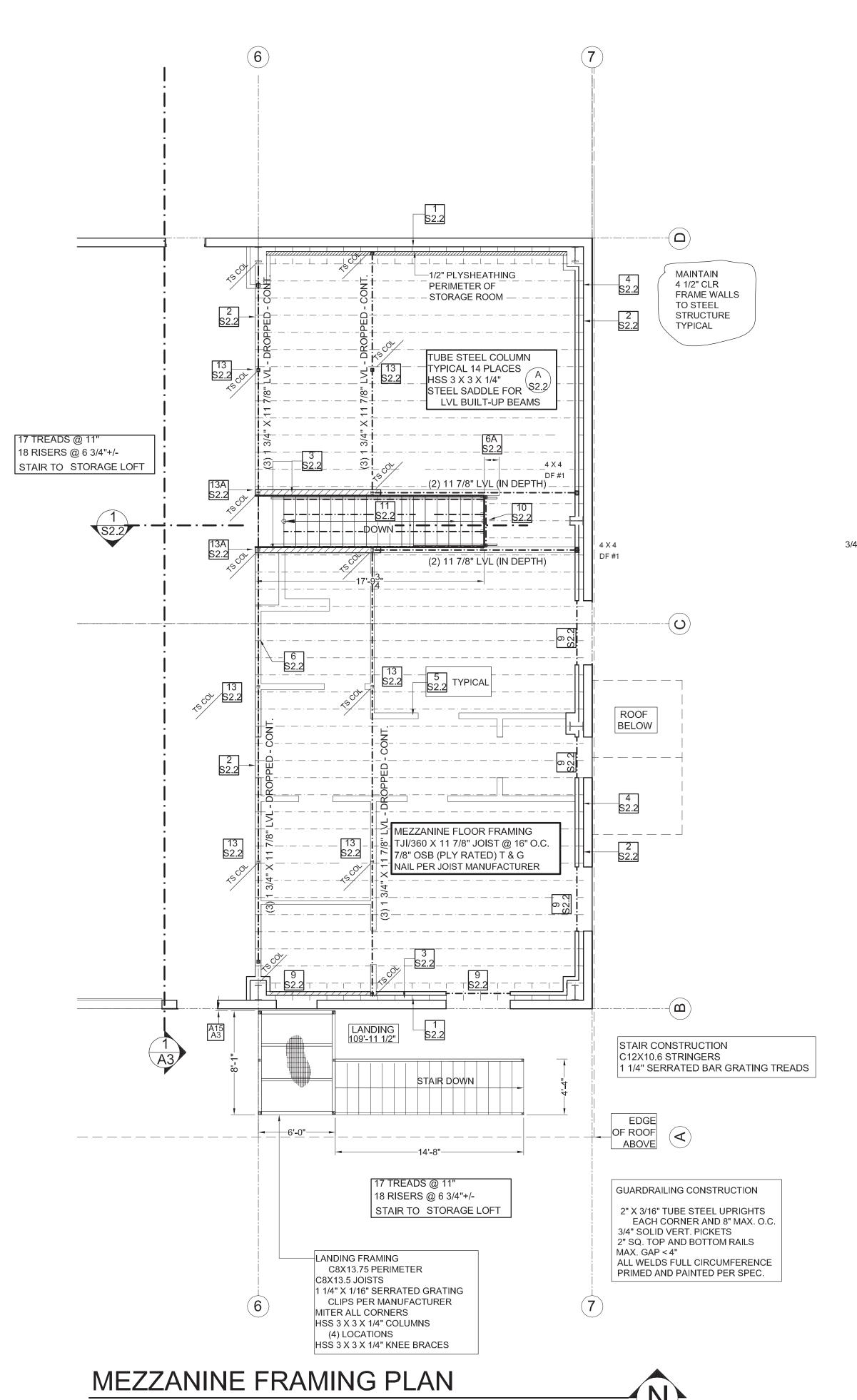
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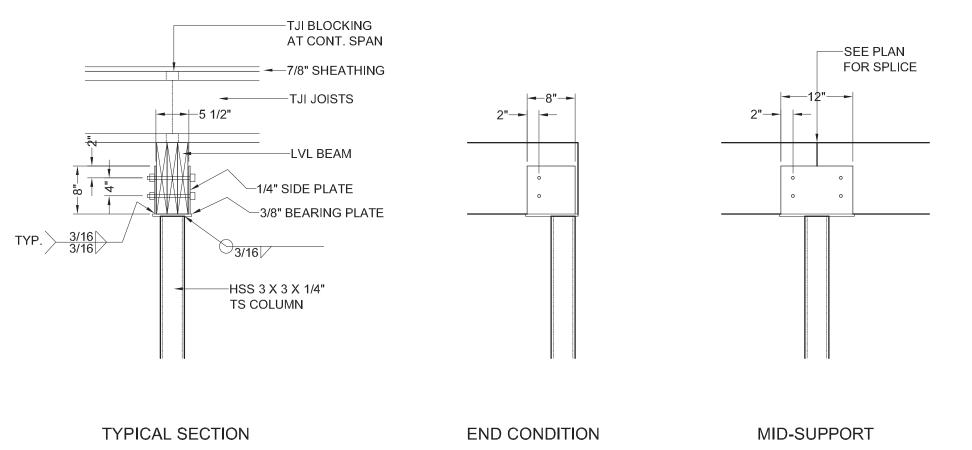
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FRAMING

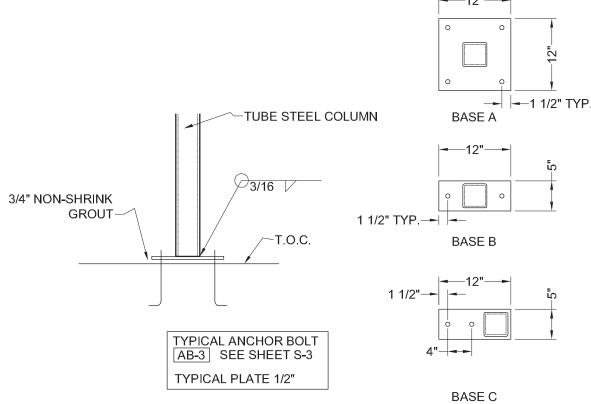
dean.bosworth@gmail.com



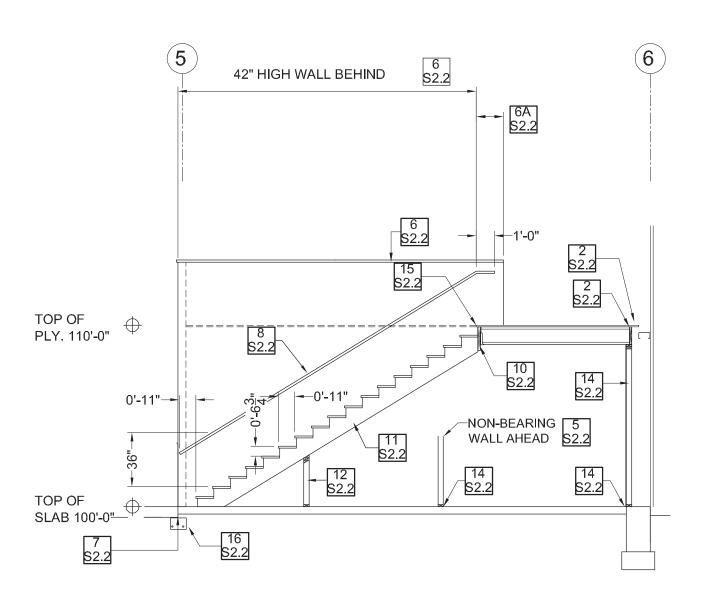
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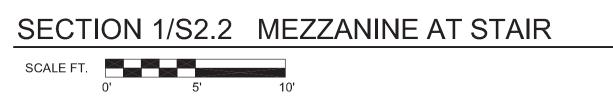


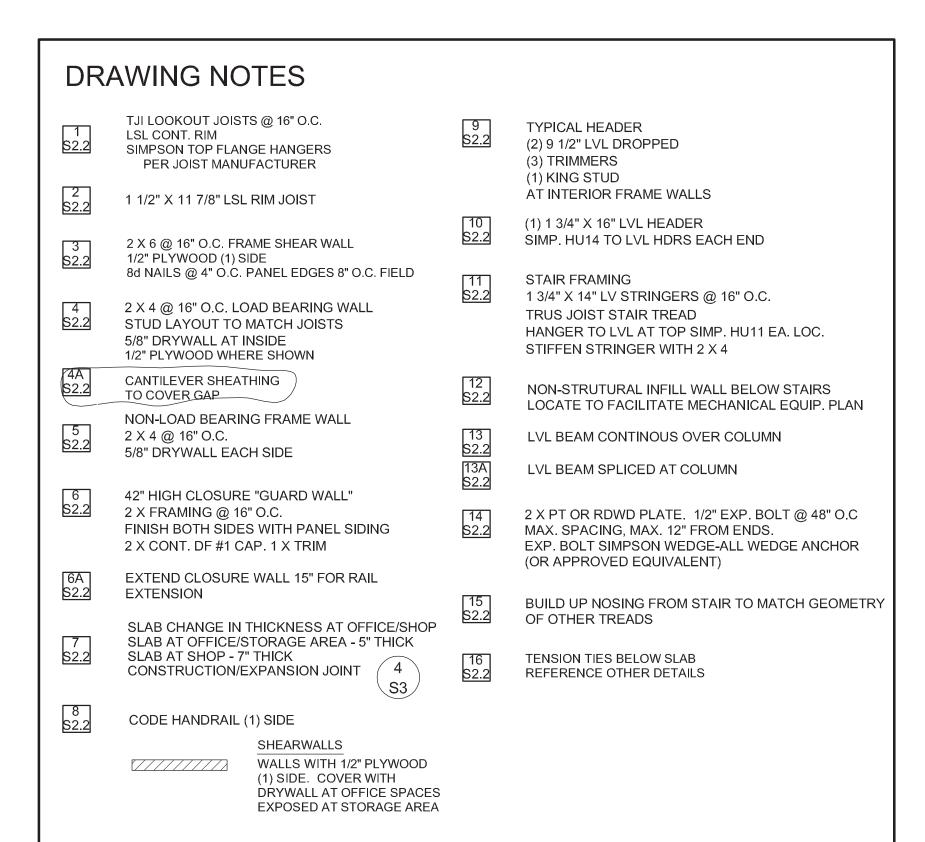
BEAM/COLUMN CONNECTIONS \$2.2 NOT TO SCALE



BEAM/COLUMN CONNECTIONS \$2.2 NOT TO SCALE









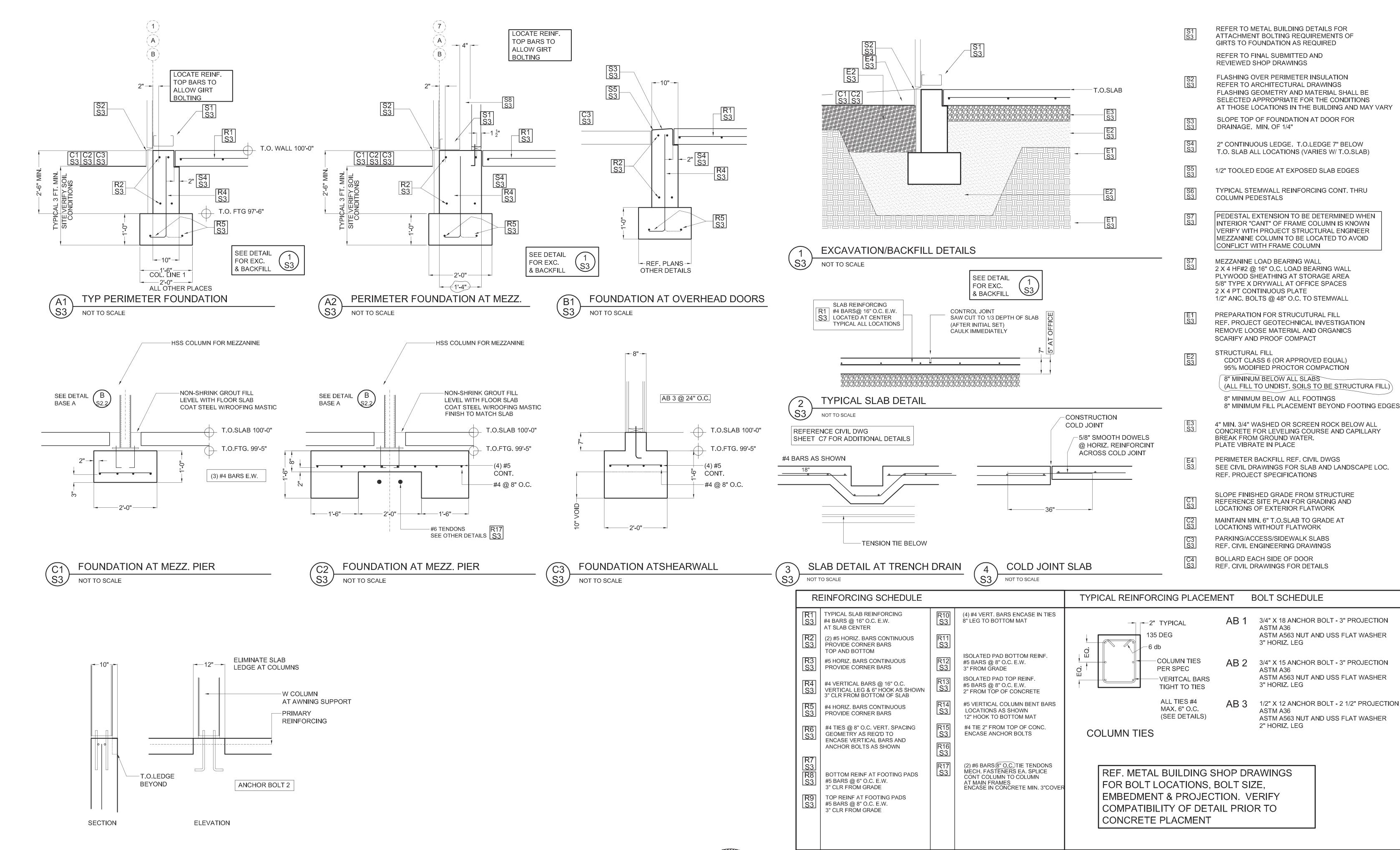
DRAWING ISSUES 02/28/19 50% CD PUBLIC WORKS FACILITY 03/20/19 RFP 08/15/19 GMP SET TOWN OF HOTCHKISS, COLORADO 10/15/19 REV 1 - PERMIT SET

DEAN NICHOLAS BOSWORTH, PE COLORADO STRUCTURAL ENGINEER

DURANGO, CO 81301

970 729 1431 150 ROCKPOINT DRIVE UNIT B

10/15/19 MEZZANINE FRAMING dean.bosworth@gmail.com



D1 FOUNDATION AT MISC COLUMNS

NOT TO SCALE



DRAWING ISSUES

10/15/19 REV 1 PERMIT SET

02/28/19 50% CD

03/20/19 RFP

08/15/19 GMP

PUBLIC WORKS FACILITY TOWN OF HOTCHKISS, CO

DEAN NICHOLAS BOSWORTH, PE COLORADO STRUCTURAL ENGINEER

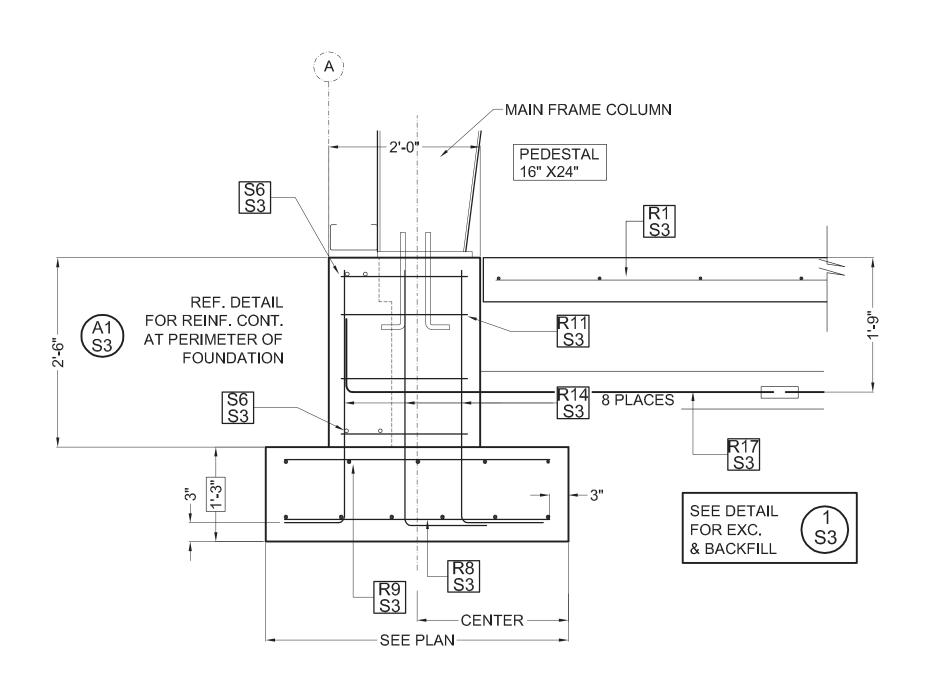
NEER FOUNDATION DETAILS

150 ROCKPOINT DRIVE UNIT B DURANGO, CO 81301 d

970 729 1431 dean.bosworth@gmail.com

S3

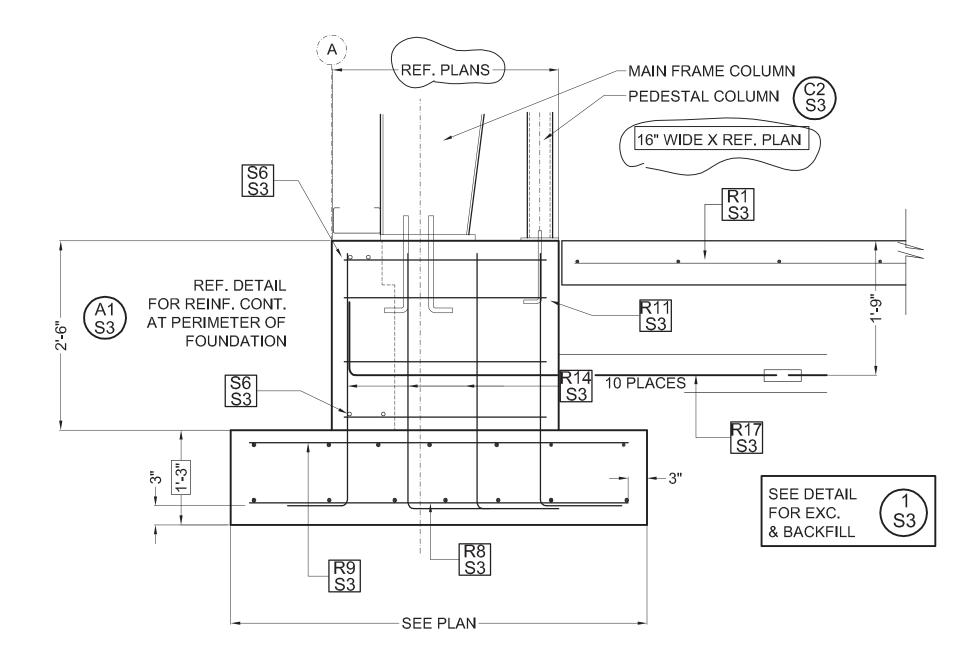
10/15/19



TYPICAL FOUNDATION AT MAIN FRAME

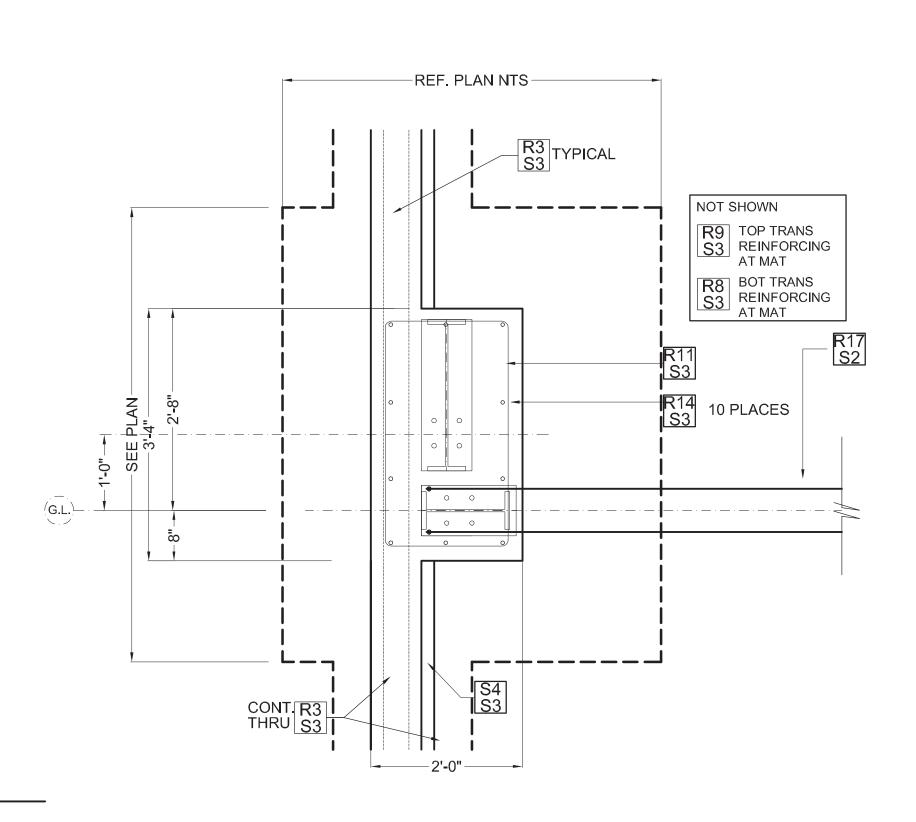
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(A1) S4

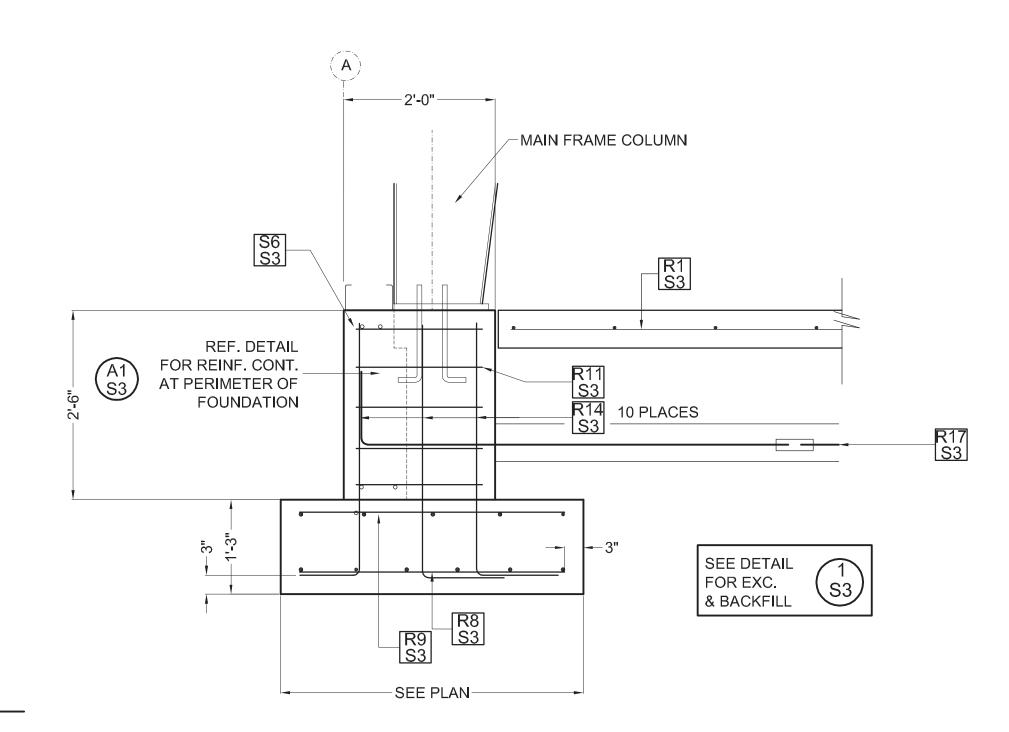


FOUNDATION MAIN FRAME AT MEZZANINE COLUMNS GRID LINE 6

NOT TO SCALE



FOUNDATION PLAN AT PORTALS



FOR REINF. CONT. AT PERIMETER OF FOUNDATION R11 S3 R14 8PLACES SEE DETAIL FOR EXC. & BACKFILL

PEDESTAL 16" X 22"

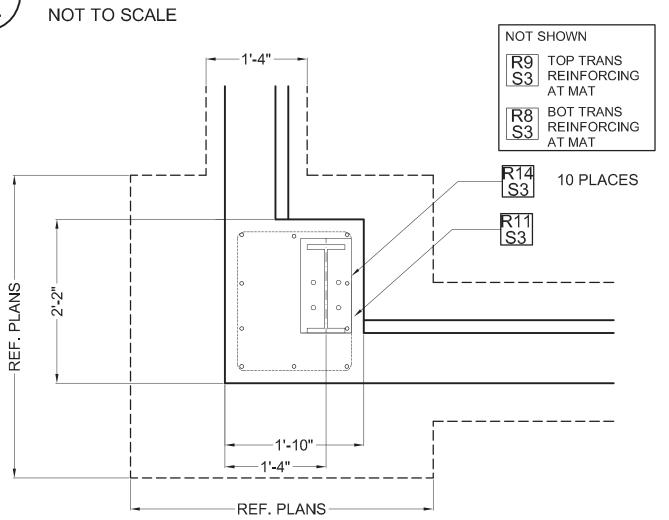
R1 S3

------1'-10"--

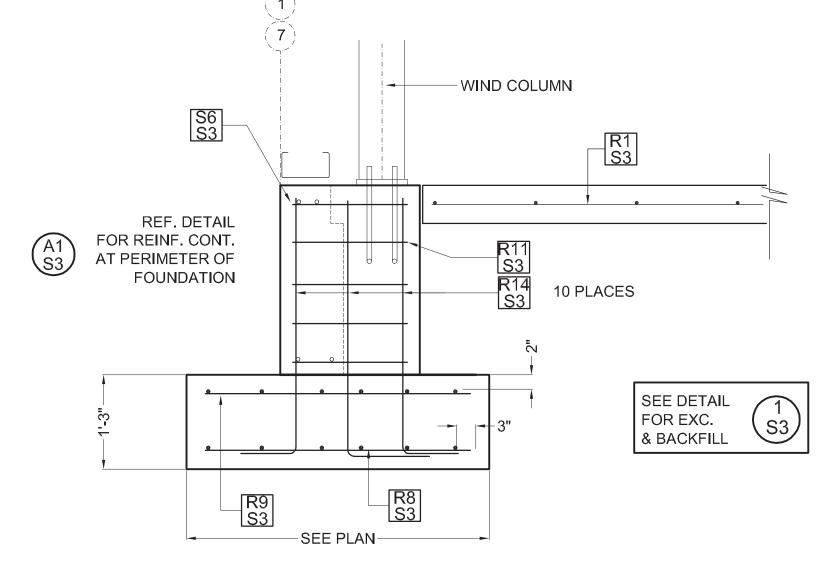
---1'-0" ---

REF. DETAIL



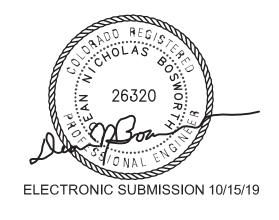


FOUNDATION PLAN AT CORNER



FOUNDATION AT SHOP BUILDING PORTAL FRAMES (B1 NOT TO SCALE

REF. METAL BUILDING SHOP DRAWINGS FOR BOLT LOCATIONS, BOLT SIZE, EMBEDMENT & PROJECTION. VERIFY COMPATIBILITY OF DETAIL PRIOR TO CONCRETE PLACMENT



DRAWING ISSUES	
02/28/19 50% CD	
03/20/19 RFP	PUBLIC WORKS FACILITY
08/15/19 GMP	
10/15/19 REV 1 PERMIT SET	TOWN OF HOTCHKISS, CO

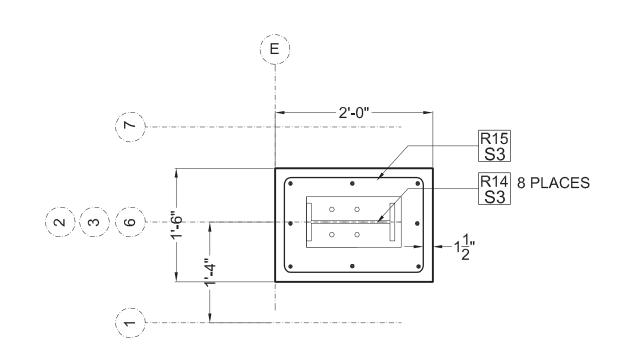
DEAN NICHOLAS BOSWORTH, PE COLORADO STRUCTURAL ENGINEER

10/15/19 - FOUNDATION DETAILS **S4** 970 729 1431 dean.bosworth@gmail.com

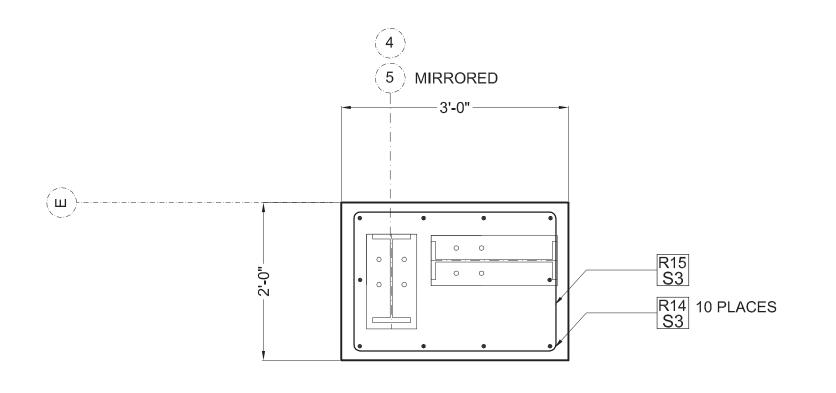
FOUNDATION AT CORNERS - SHOP BUILDING S4 NOT TO SCALE

150 ROCKPOINT DRIVE UNIT B

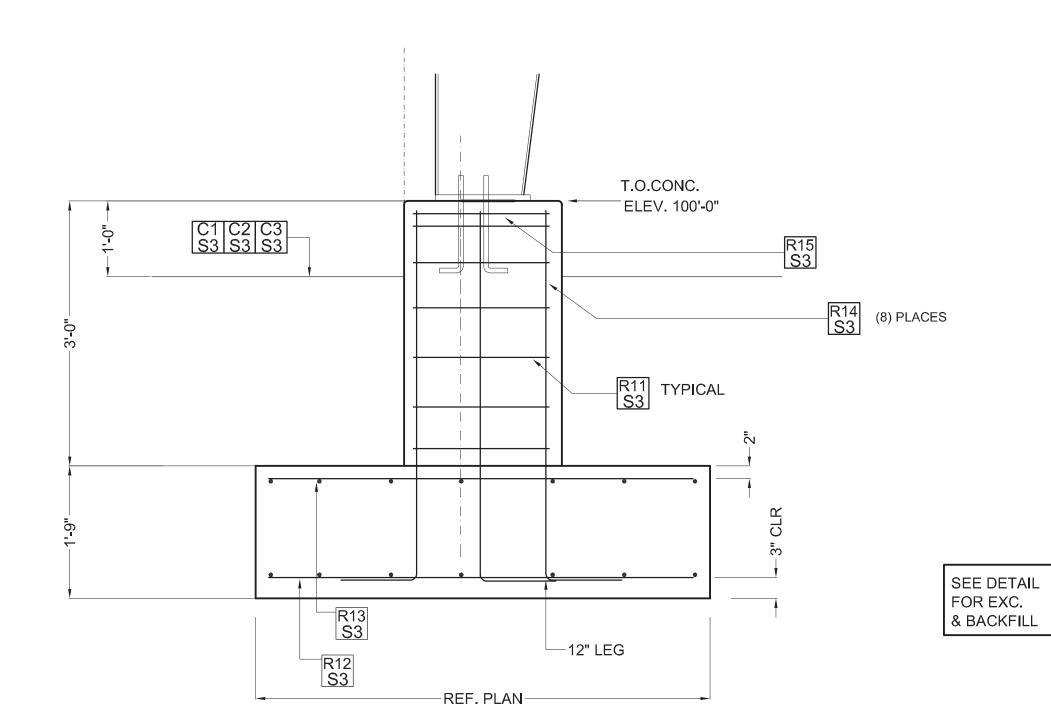
DURANGO, CO 81301

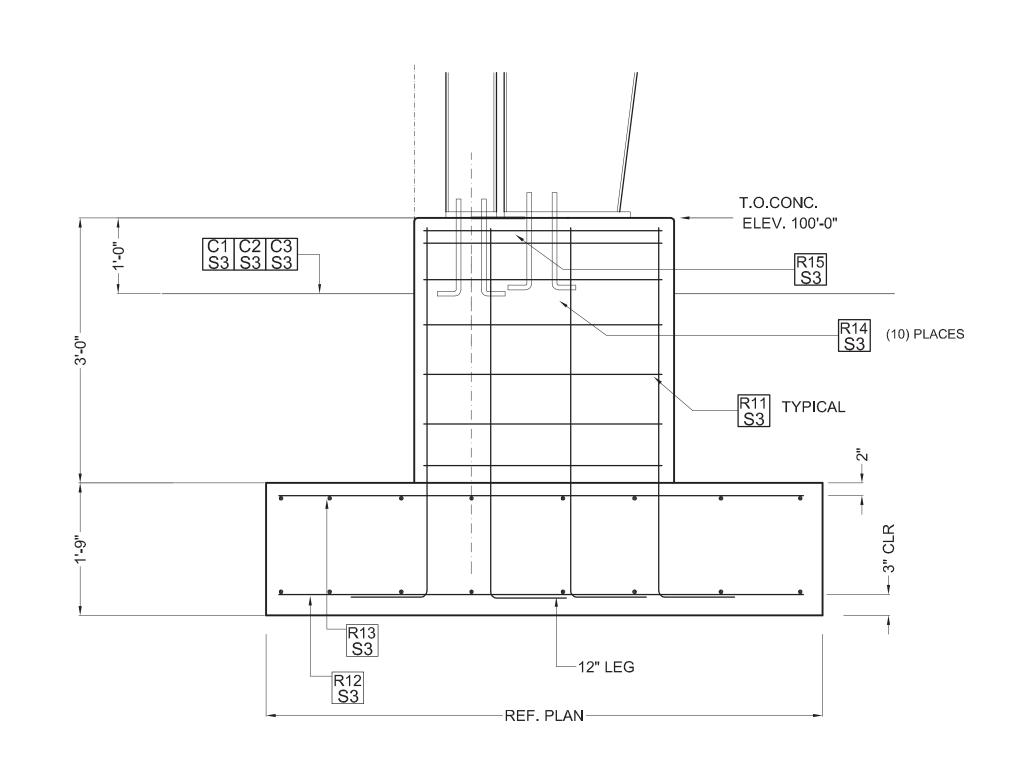


PEDESTAL PLAN



PEDESTAL PLAN

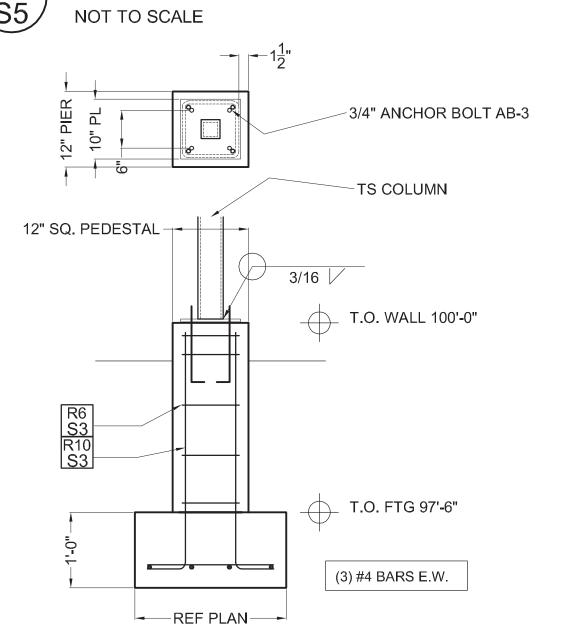




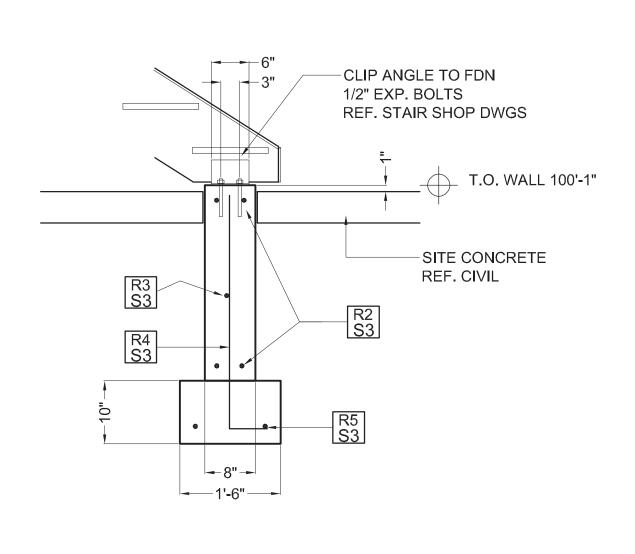


PIER AT AWNING PORTAL FRAMES

NOT TO SCALE



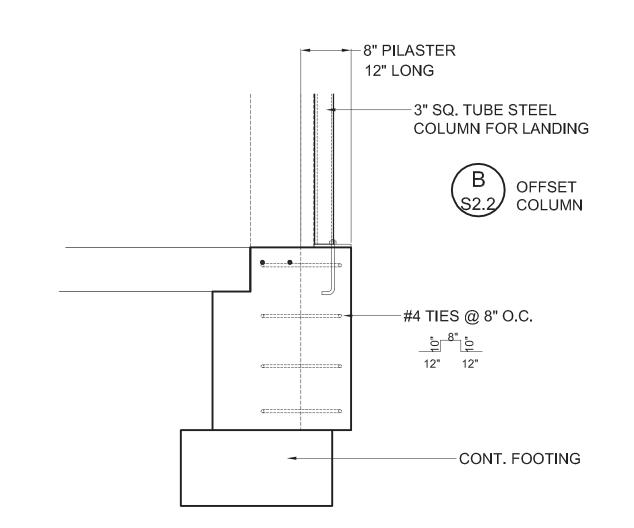
ISOLATED PAD AT EXT. STEEL COLUMN NOT TO SCALE



EXT. STAIR FDN DETAIL

D S5 NOT TO SCALE 26320 ELECTRONIC SUBMISSION 10/15/19

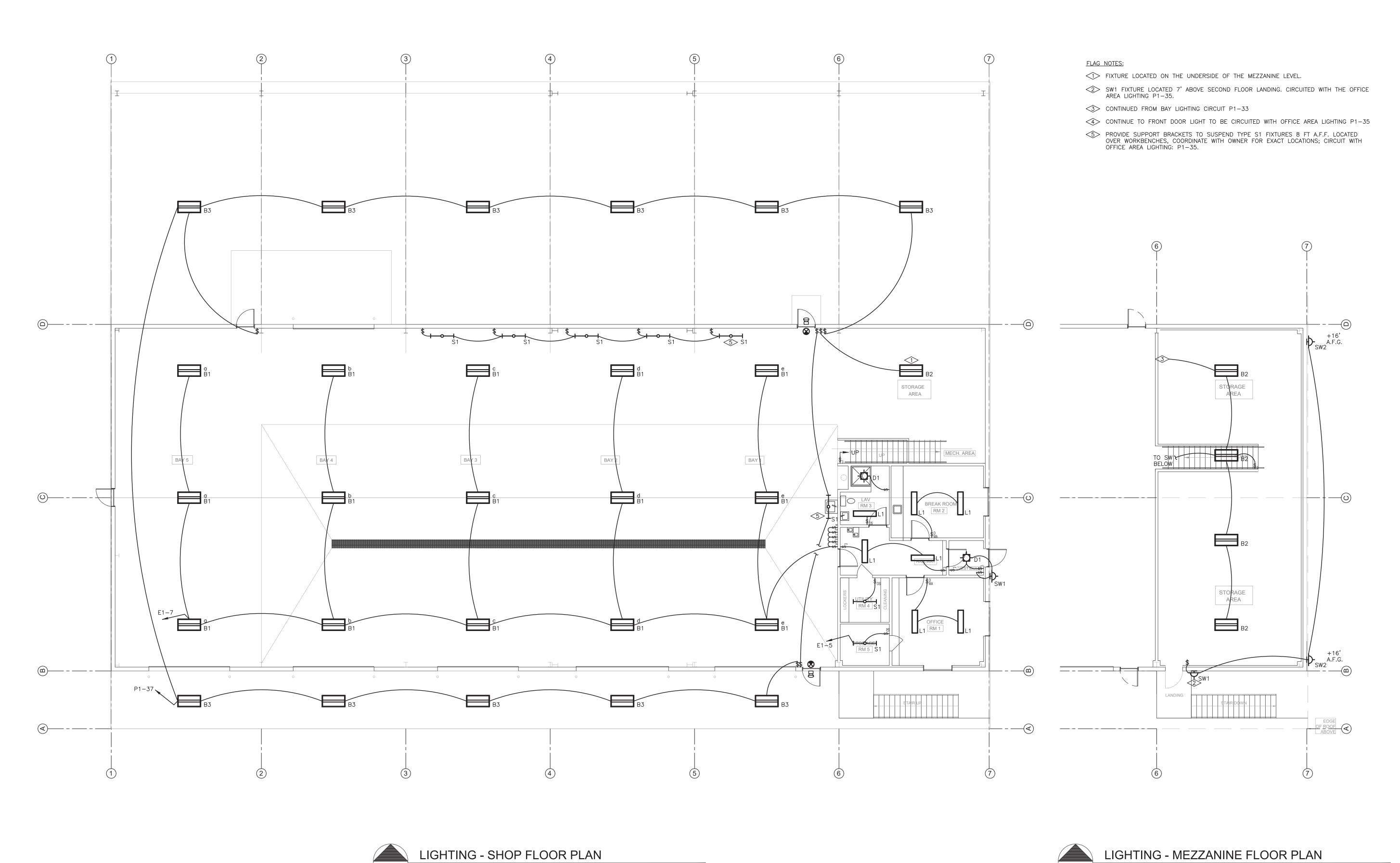
REF. METAL BUILDING SHOP DRAWINGS FOR BOLT LOCATIONS, BOLT SIZE, EMBEDMENT & PROJECTION. VERIFY COMPATIBILITY OF DETAIL PRIOR TO CONCRETE PLACMENT



COLUMN PILASTER AT LANDING

NOT TO SCALE

DRAWING ISSUES				10/15/19
02/28/19 50% CD		DEAN NICHOLAS B	OSWORTH, PE	501 IN IS A TION
03/20/19 RFP	PUBLIC WORKS FACILITY	OOLODADO OTRUOTI	FOUNDATION	
08/15/19 GMP		COLORADO STRUCT	DETAILS	
10/15/19 REV 1 PERMIT SET	TOWN OF HOTCHKISS, CO	150 ROCKPOINT DRIVE UNIT B DURANGO, CO 81301	970 729 1431 dean.bosworth@gmail.com	S5



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

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ers, Inc.

Bighorn Consulting Engineers, Inc Mechanical & Electrical Engineers 386 Indian Road Grand Junction, CO 81501 Phone: 970-241-8709

BLIC WORKS FACILIT

DATE: ISSUED FOR:

03/21/19 REVISED 50% DD

06/28/19 REVISED DRAWINGS

08/16/19 100% CD



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

NORTH

DATE: 03/21/19

JOB NO: 18-159

DRAWN BY: BCE

CHECKED BY: BCE

SCALE: AS SHOWN

SHEET NUMBER:

LIGHTING LEGEND

SYMBOLS SHOWN ARE STANDARD. VARIATION AND/OR COMBINATIONS MAY BE USED ON THE PLANS. THIS LIST SHOWS STANDARD SYMBOLS AND ALL MAY NOT APPEAR ON THE PROJECT DRAWINGS; HOWEVER, WHEREVER THE SYMBOL ON THE PROJECT DRAWINGS OCCUR; THE ITEM SHALL BE PROVIDED AND INSTALLED.

A LOWER CASE LETTER NEXT TO LIGHT FIXTURE OR SWITCH INDICATES A SWITCH DESIGNATION.

AN UPPER CASE LETTER NEXT TO A SWITCH INDICATES THE TYPE OF SWITCH. SEE THE LIST BELOW

AN UPPER CASE LETTER NEXT TO A LIGHT FIXTURE INDICATES THE TYPE OF FIXTURE. REFER TO THE LUMINAIRE SCHEDULE FOR FIXTURE SPECIFICATIONS.

ELECTRICAL EQUIPMENT

BRANCH CIRCUIT PANELBOARD

LA-7 CIRCUITRY HOMERUN: PANEL LA - CIR. #7 CONDUIT OR WIRE CONCEALED IN WALL/CLG.

----- CONDUIT OR WIRE UNDERFLOOR/UNDERGND.

○ CEILING JUNCTION BOX - SURFACE/FLUSH OH WALL JUNCTION BOX - SURFACE/FLUSH

SWITCHES

- \$ SINGLE POLE SWITCH
- \$2 TWO POLE SWITCH
- \$₃ THREE-WAY SWITCH
- \$₄ FOUR—WAY SWITCH
- \$n DIMMER SWITCH
- \$3D 3 WAY DIMMER SWITCH (4D INDICATES A 4WAY DIMMER) \$0S WALL MOUNTED DUAL TECHNOLOGY VACUITY SENSOR SWITCH
- \$_{LV} LOW VOLTAGE LIGHT SWITCH
- \$MA MANUAL ON / AUTO OFF LIGHT SWITCH
- \$MA MANUAL ON / AUTO OFF DIMMING LIGHT SWITCH
- (OS) CEILING MOUNTED MOTION SENSOR

LIGHT FIXTURES

ALL FIXTURES: A-UPPER CASE LETTER INDICATES FIXTURE TYPE

REFERENCE LUMINAIRE SCHEDULE FOR SPECIFICATIONS a-LOWER CASE LETTER INDICATES SWITCHING CIRCUIT.

ACTUAL FIXTURE ON PLANS MAY VARY SLIGHTLY FROM THE SYMBOL SHOWN HERE

A 2'x4' LED HIGH BAY TYPE FIXTURE, SUSPENDED MOUNTED

A 1'x4' LED TROFFER OR DIRECT/INDIRECT TYPE FIXTURE GRID, FLANGE OR SURFACE MOUNTED 2'x4' LED TROFFER OR DIRECT/INDIRECT TYPE FIXTURE

➡GRID, FLANGE OR SURFACE MOUNTED A 2'x2' LED TROFFER OR DIRECT/INDIRECT TYPE FIXTURE GRID. FLANGE OR SURFACE MOUNTED

GRID, FLANGE OR SURFACE MOUNTED A H)- WALL BRACKET LIGHT FIXTURE

A-D- RECESSED DOWNLIGHT CAN FIXTURE

A-O- SURFACE CEILING OR PENDANT MOUNTED FIXTURE

EX1 SINGLE FACE EXIT SIGN, WALL AND CEILING MOUNTED EX2 DOUBLE FACE EXIT SIGN, WALL AND CEILING MOUNTED EM OCCO WALL MOUNTED EMERGENCY LIGHT

EMR EMERGENCY EXTERIOR EGRESS FIXTURE

ABBREVIATIONS

E1 DRAWING KEYED NOTE

ROOM DESIGNATION, NAME AND NUMBER NIGHT/SECURITY LIGHT - DO NOT SWITCH

WP WEATHERPROOF

A.F.F. ABOVE FINISHED FLOOR A.F.G. ABOVE FINISHED GRADE

GFCI OR GF GROUND FAULT CIRCUIT INTERRUPTER

EM EMERGENCY FUNCTION NON-SWITCHED FIXTURE FOR

MOUNTING HEIGHT - A.F.F. OR A.F.G. TO CENTERLINE A.C. ITEM TO BE MOUNTED ABOVE COUNTER HEIGHT

Ck with Town, think awning lights are by switch

Not sure it

are shown

occupancy sensors

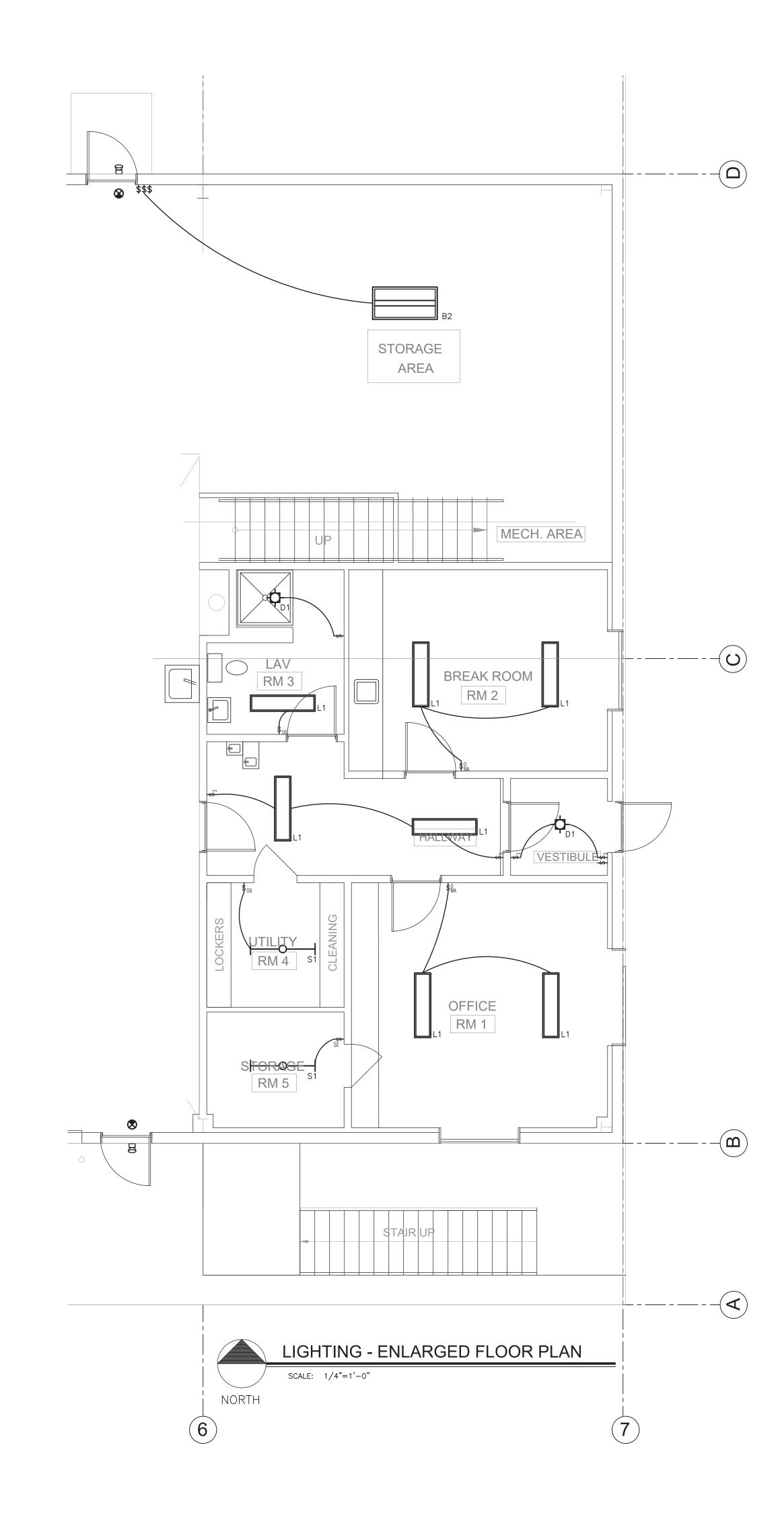
GENERAL LIGHTING NOTES

- 1.1. LIGHTING FIXTURES SHALL BE SUPPORTED FROM THE STRUCTURE ABOVE AND SHALL NOT BE SUPPORTED
- FROM THE T-BAR CEILING GRID. 1.2. THE ELECTRICAL CONTRACTOR IS TO CONFIRM THE LIGHT FIXTURES ORDERED WILL BE COMPATIBLE WITH THE CEILING TYPES AS SHOWN ON THE ARCHITECTURAL REFLECTED CEILING PLANS. NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO
- ORDERING THE FIXTURES. 1.3. COORDINATE THE LOCATION OF LIGHTING EQUIPMENT INCLUDING BUT NOT LIMITED TO THE LUMINAIRES, SWITCHES AND CONTROL COMPONENTS WITH THE ARCHITECTURAL, STRUCTURAL AND MECHANICAL
- DRAWINGS AND ALL OTHER TRADES AS REQUIRED. VERIFY LUMINAIRE MOUNTING REQUIREMENTS AND
- OVERALL HEIGHT OF ALL PENDANT MOUNTED FIXTURES PRIOR TO ORDERING. ALL LIGHT FIXTURES NEED TO BE COMPATIBLE WITH THE SWITCHES AND CONTROLS BEING PROVIDED.
- THE LIGHTING PACKAGE SHALL BE APPROVED BY BOTH ARCHITECTS AND ENGINEERS AS APPROVED EQUAL BEFORE BID. NO LIGHT FIXTURE SHALL BE ORDERED UNTIL THE LIGHT FIXTURE SUBMITTAL PACKAGE HAS BEEN APPROVED IN WRITING BY THE ARCHITECT,
- GENERAL CONTRACTOR AND ELECTRICAL ENGINEER. 1.7. COORDINATE LUMINAIRE MOUNTING REQUIREMENTS PRIOR TO PLACING ORDER.
- PROVIDE EMERGENCY AND EXIT SIGNS AS PER ALL LOCAL CODES.
- EXIT SIGNS CONNECTED TO A REMOTE EMERGENCY HEAD REQUIRES EXTRA BATTERY CAPACITY TO OPERATE THE REMOTELY LOCATED EMERGENCY HEAD FOR EGRESS AWAY FROM THE BUILDING.
- REFER TO THE PLANS FOR THE NUMBER OF FACES REQUIRED AT EACH EXIT. FIELD ADJUST THE LOCATION OF THE EXIT SIGNS FOR THE BEST VISIBILITY
- ALL LIGHTING FIXTURES DENOTED WITH "EM" SHALL BE PROVIDED WITH AN ENGINEER APPROVED EMERGENCY LED DRIVER OR BALLAST TO OPERATION THE FIXTURE IN AN EMERGENCY MODE TO MEET ALL CURRENT LOCAL CODES AND WILL BE CIRCUITED TO THE
- UNSWITCHED SIDE OF THE LIGHTING CIRCUIT. 2.4. ALL LIGHT FIXTURES DESIGNATED WITH "EM" OR SPECIFIED WITH AN EM FUNCTION SHALL BE PROVIDE WITH ONE OF THE FOLLOWING;
- 2.4.1. INTEGRAL TEST SWITCH; REMOTE INFRARED HAND HELD DEVICE: 2.4.3. INTEGRAL ELECTRONIC DEVICE THAT AUTOMATICALLY
- PERFORMS CODE REQUIRED TESTS. 2.5. ALL STAIRWELLS AND PATHS OF EGRESS TO THE EXTERIOR DOORS, AND THE EXTERIOR PATH OF EGRESS AWAY FROM THE BUILDING SHALL RECEIVE EMERGENCY LIGHTING PER CODE.
- 3. <u>LIGHTING CONTROLS:</u>
 3.1. ALL LIGHTS IN; RESTROOMS, STORAGE CLOSETS, JANITORS CLOSETS AND STAIRWELLS ARE TO BE SWITCHED WITH A MOTION SENSOR ON/OFF SWITCH WITH A TIME DELAY. SET THE TIME DELAY LENGTH AS DIRECTED BY THE OWNER.
- 3.1.1. EXCEPTION: IN AREAS WHERE THE SWITCH IS LOCATED OUTSIDE THE AREA THE LIGHT IS
- 4. OFFICES WITH MORE THAT ONE FIXTURE WILL BE
- SWITCHED WITH A MANUAL ON/AUTO OFF DIMMING SWITCH. 5. SWITCHING FOR LIGHTS IN LARGE COMMON AREA ARE AS SHOWN ON PLAN.
- 6. <u>GENERAL NOTES:</u>
- FIELD COORDINATION DURING CONSTRUCTION IS IMPERATIVE. CONTRACTORS BIDDING THIS WORK MUST MAKE REASONABLE ALLOWANCES FOR UNFORESEEN CONTINGENCIES.
- 7. <u>WIRING:</u>
 ALL WIRING IS SHOWN DIAGRAMMATICALLY ON DRAWING, FIELD VERIFY ALL CONDITIONS PRIOR TO ROUGH-IN. ALL WIRE IS TO BE #12 UNLESS NOTED OTHERWISE.
- 7.2. ALL BRANCH CIRCUITS WITH HOME RUNS OVER 50 FEET, WILL BE SIZED ONE SIZE LARGER.
- 7.3. ALL ELECTRICAL WORK TO COMPLY WITH LATEST EDITON OF NEC AND ALL APPLICABLE LOCAL CODES.

	INTERIOR LUMINAIRE SCHEDULE							
TYPE	MANUFACTURER CATALOG NO.	MANUFACTURER CATALOG NO.	VOLTAGE MOUNTING # OF LAMPS	BALLAST LAMP TYPE LAMP CAT. #	DESCRIPTION			
B1	LITHONIA LIGHTING IBG 15000LM SEF ACL GND MVOLT GZ10 40K 80CRI	APPROVED EQUIVALENT	120-277V SUSPENDED CEILING 1	14059LM, 4000K	24"Lx16"Wx5"H SUSPENDED HIGH BAY LED LIGHTING, LM-80 80,000 HOUR LIFESPAN, DAMP LISTED 5 YEAR WARRANTY, -40°C STARTING TEMPERATURE			
B2	LITHONIA LIGHTING IBG 8000LM SEF ACL WD MVOLT GZ10 40K 80CRI	APPROVED EQUIVALENT	120-277V SUSPENDED CEILING 1	7384LM, 4000K	24"Lx16"Wx5"H SUSPENDED HIGH BAY LED LUMINAIRE LM-80 80,000 HOUR LIFESPAN, DAMP LISTED 5 YEAR WARRANTY			
В3	LITHONIA LIGHTING IBG 15000LM SEF ACL GND MVOLT GZ10 40K 80CRI LAOZU	APPROVED EQUIVALENT	120-277V SUSPENDED CEILING 1	14059LM, 4000K	24"Lx16"Wx5"H SUSPENDED HIGH BAY LED LIGHTING, LM-80 80,000 HOUR LIFE, DAMP LISTED, 5 YEAR WARRANTY INTEGRAL OCCUPANCY SENSOR, -40°C STARTING TEMPERATURE			
D1	LITHONIA LIGHTING 6JBK-RD-40K-90CRI-MW	APPROVED EQUIVALENT	120-277V SURFACE CEILING 1	LED DRIVER 13W, 80CRI 1000LM, 4000K	4"DIAx5"H SURFACE MOUNTED LUMINAIRE WET LISTED, 5 YEAR WARRANTY			
L1	LITHONIA LIGHTING BLTX 48L ADP EZ1 LP840	APPROVED EQUIVALENT	120-277V SURFACE CEILING 1	LED DIMMING DRIVER 45W, 80CRI 5261LM, 4000K	12"Lx48"Wx5"H SURFACE ARCHITECTURAL LINEAR LIGHT LONG LIFE LED, DAMP LISTED 5 YEAR WARRANTY			
S1	LITHONIA LIGHTING ZL1D L48 5000LM FST MVOLT 40K 80CRI	APPROVED EQUIVALENT	120-277V STRIP LIGHT 1	LED DIMMING DRIVER 41W, 80CRI 5541LM, 4000K	48"Lx3"Wx2"H STRIP LIGHT LONG LIFE LED 5 YEAR WARRANTY			
0_0	LITHONIA LIGHTING EU2C	APPROVED EQUIVALENT	120/277 SURFACE WALL/CEILING 2	NONE REQUIRED LED WITH UNIT	11"Wx3.5"Dx7.5"H IMPACT RESISTANT THERMO-PLASTIC, BATTERY			
Н⊗	LITHONIA LIGHTING ECG LED HO M6	APPROVED EQUIVALENT	120/277 WALL/CEILING N/A	NONE REQUIRED LED WITH UNIT	14"Wx8"H COMBO EXIT EGRESS LIGHT NICAD BATTERY, UNIVERSAL MOUNTING, 5 YEAR WARRANTY FIELD CONFIGURABLE INDICATION, REMOTE HEAD CAPABLE			
9	LITHONIA LIGHTING ELA LED WP M12	APPROVED EQUIVALENT	120/277 WALL/CEILING N/A	NONE REQUIRED LED WITH UNIT	6.5"Wx10.5"Hx4"D EXTERIOR EGRESS LIGHTING WET LOCATION RATED,			
SW1	LITHONIA LIGHTING OLWX1 20W 40K PE	APPROVED EQUIVALENT	120-277V WALL MOUNT 1	LED DRIVER 20W, 80CRI 2697LM, 4000K	48"Lx24"Wx2"H EXTERIOR WALL PACK LONG LIFE LED, -20°C STARTING TEMPERATURE IP 65 RATED, FULL CUTOFF, 5 YEAR WARRANTY			
SW2	LITHONIA LIGHTING TWH LED ALO 40K T3M MVOLT PE	APPROVED EQUIVALENT	120-277V WALL MOUNT 1	LED DRIVER 78W, 70CRI 9214LM, 4000K	16"Hx16"Wx8"D EXTERIOR WALL PACK LONG LIFE LED, -20°C STARTING TEMPERATURE IP 65 RATED, 5 YEAR WARRANTY			

. OCCUPANCY SENSORS ARE DIAGRAMMATICALLY DISPLAYED ON THE PLANS, FIELD ADJUST UNITS TO MEET THE MANUFACTURER'S RECOMMENDED

- SPACING REQUIREMENTS. 2. THE EXIT LIGHT SYMBOL USED IN THIS SCHEDULE IS A GENERIC SYMBOL TO INDICATE AN EXIT LIGHT FIXTURE. REFER TO THE PLANS FOR THE NUMBER OF FACES REQUIRED AT EACH EXIT. INSTALL THE NUMBER OF FACES REQUIRED AT EACH EXIT. FIELD ADJUST THE LOCATION OF THE
- EXIT SIGNS FOR THE BEST VISIBILITY POSSIBLE. ALL EXIT LIGHTS SHALL COMPLY WITH ALL LOCAL BUILDING CODES. 3. EXIT AND EMERGENCY EGRESS LIGHTING TO BE CIRCUITED TO THE UNSWITCHED SIDE OF THE LIGHTING CIRCUIT OF THE SPACE IN WHICH IT IS EXTERIOR FIXTURES UNDER THE AWNING ARE TO BE CONTROLLED WITH A PHOTOCELL, PROVIDE A SNAP SWITCH IN SERIES TO CONTROL NORTH
- AWNING AND SOUTH AWNING INDEPENDENTLY OF EACH OTHER. 5. PROVIDE A MEANS FOR AUTOMATIC OFF CONTROL FOR THE FIXTURES IN THE SHOP AREA; SET TIME DELAY PER OWNER.



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ANY OTHER PROJECTS FOR ADDITIONS TO THIS PROJECT

BY OTHERS EXCEPT BY THE EXPRESSED WRITTEN

PERMISSION OF THE DESIGNER.

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Bighor Mechani 386 Indian Grand Jur

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DATE: | ISSUED FOR:

REVISED 50% DD

BCE

AS SHOWN

06/28/19 REVISED DRAWINGS

03/21/19

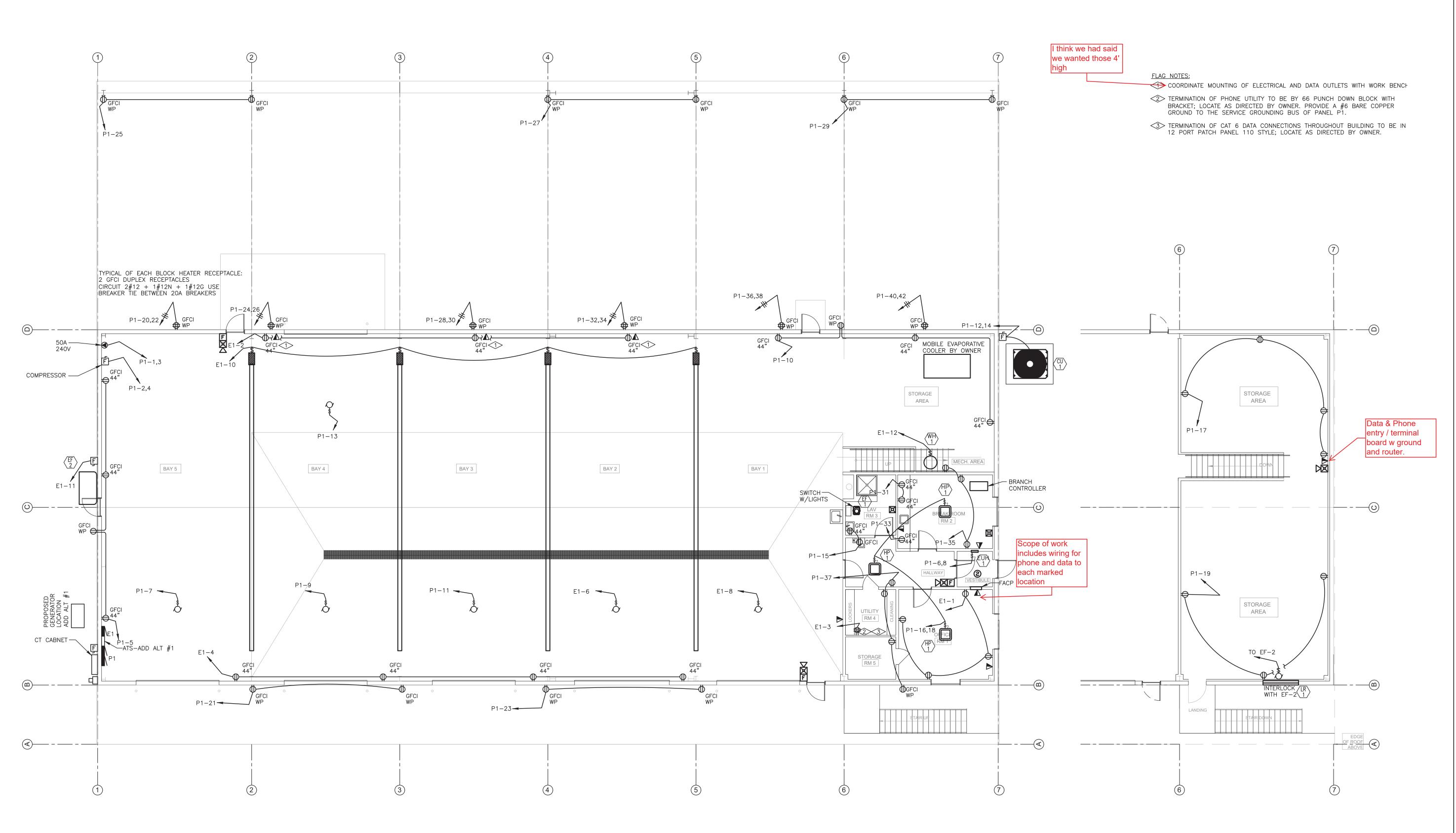
08/16/19

JOB NO:

DRAWN BY:

CHECKED BY: SCALE:

SHEET NUMBER:







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Bighorn Consulting Engineers, Inc.

Mechanical & Electrical Engineers

386 Indian Road
Grand Junction, CO 81501
Phone: 970-241-8709

TOWN OF HOTCHKISS
PUBLIC WORKS FACILITY
TRD BARROW MESA RD

DATE: ISSUED FOR:

03/21/19 REVISED 50% DD

06/28/19 REVISED DRAWINGS

08/16/19 100% CD



DATE: 03/21/19

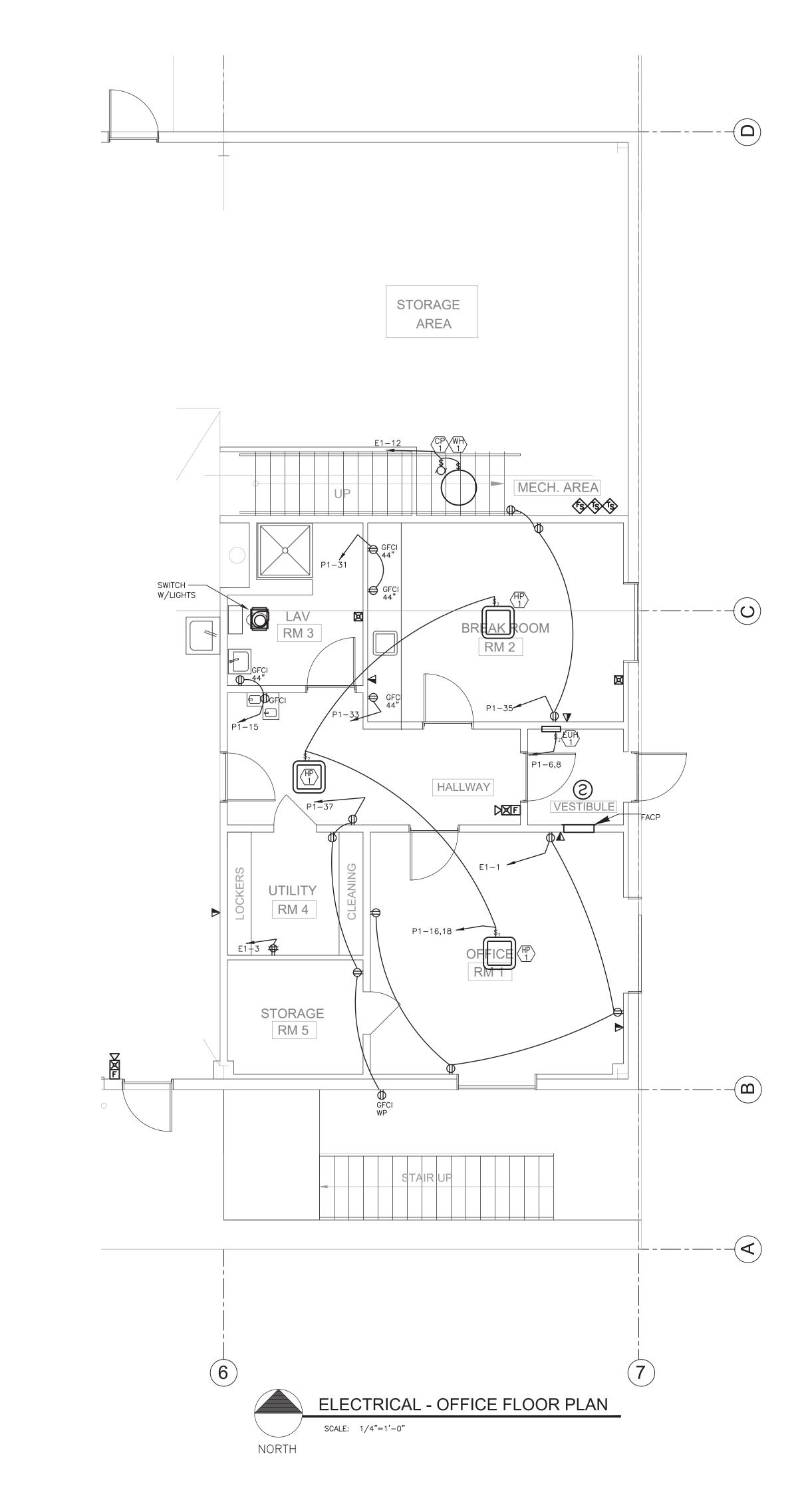
JOB NO: 18-159

DRAWN BY: BCE

CHECKED BY: BCE

SCALE: AS SHOWN

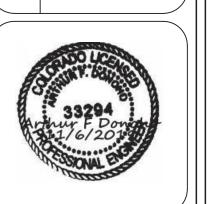
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DATE: ISSUED FOR:
03/21/19 REVISED 50% DD
06/28/19 REVISED DRAWINGS
08/16/19 100% CD



DATE: 03/21/19

JOB NO: 18-159

DRAWN BY: BCE

CHECKED BY: BCE

SCALE: AS SHOWN

SHEET NUMBER:

EZ-Z

PANEL SCHEDULE	TYPE: PANELB VOLTAGE: 120/24 ENCLOSURE: NEMA1		MAIN	SIZE: BRKR NTING:	600 : NONE SURF		PHASES: 1 WIRES: 3 SC RATING: 22000	NEUTRAL BUS: YES GROUND BUS: YES
LOAD TYPE	LOAD DESCRIPTION	AMPS POLES	CKT# LOAD	Ø	CKT# LOAD	AMPS POLES	LOAD TYPE	LOAD DESCRIPTION
PROCESS	SHOP OUTLET	50A 2P	1 4800	А	2 4000	50A 2P	MOTOR	AIR COMPRESSOR
PROCESS			3 4800	В	4 4000		MOTOR	
RECEPTACLE	SHOP OUTLETS	20A 1P	5 720	Α	6 1000	20A 2P	MECH HEATING	UNIT EUH-1
PROCESS	DOOR OPENER	20A 1P	7 1500	В	8 1000		MECH HEATING	
PROCESS	DOOR OPENER	20A 1P	9	Α	10 720	20A 1P	RECEPTACLE	SHOP OUTLET
PROCESS	DOOR OPENER	20A 1P	11 1500	В	12 5040	45A 2P	MECH YEAR ROUND	UNIT CU-1
PROCESS	DOOR OPENER	20A 1P	13	А	14 5040		MECH YEAR ROUND	
RECEPTACLE	BATHROOM OUTLETS	20A 1P	15 360	В	16 250	20A 2P	MECH YEAR ROUND	HP UNITS
RECEPTACLE	MEZZANINE OUTLETS	20A 1P	17 540	A	18 250		MECH YEAR ROUND	
RECEPTACLE	MEZZANINE OUTLETS	20A	19	В	20	20A	RECEPTACLE	BLOCK HEATER 1
RECEPTACLE	EXTERIOR OUTLETS	1P 20A	21	Α	1000	1P 20A	RECEPTACLE	PROVIDE BREAKER TIE WITH P1-22 BLOCK HEATER 1 PROVIDE BREAKER TIE WITH P1 20
RECEPTACLE	EXTERIOR OUTLETS	1P 20A	360 23	В	1000	1P 20A	RECEPTACLE	PROVIDE BREAKER TIE WITH P1-20 BLOCK HEATER 2 BROWNE BREAKER TIE WITH P1 26
RECEPTACLE	AWNING POLE OUTLET	1P 20A	360 25	A	26	1P 20A	RECEPTACLE	PROVIDE BREAKER TIE WITH P1-26 BLOCK HEATER 2
RECEPTACLE	AWNING POLE OUTLET	1P 20A	360 27	В	1000	1P 20A	RECEPTACLE	PROVIDE BREAKER TIE WITH P1-24 BLOCK HEATER 3
RECEPTACLE	AWNING POLE OUTLET	1P 20A	360 29	A	30	1P 20A	RECEPTACLE	PROVIDE BREAKER TIE WITH P1-30 BLOCK HEATER 3
RECEPTACLE	BREAK ROOM COUNTER OUTLET	1P 20A	360	В	32	1P 20A	RECEPTACLE	PROVIDE BREAKER TIE WITH P1-28 BLOCK HEATER 4
RECEPTACLE	BREAK ROOM COUNTER OUTLET	1P 20A	360	A	34	1P 20A	RECEPTACLE	PROVIDE BREAKER TIE WITH P1-34 BLOCK HEATER 4
RECEPTACLE	BREAK ROOM OUTLETS	1P 20A	360 35	В	36	1P 20A	RECEPTACLE	PROVIDE BREAKER TIE WITH P1-32 BLOCK HEATER 5
RECEPTACLE	CONVENIENCE OUTLETS	1P 20A	360 37	A	38	1P 20A	RECEPTACLE	PROVIDE BREAKER TIE WITH P1-38 BLOCK HEATER 5
LIGHTING	EXTERIOR LIGHTING	1P 20A	720 39	В	40	1P 20A	RECEPTACLE	PROVIDE BREAKER TIE WITH P1-36 BLOCK HEATER 6
SPARE	UNALLOCATED FUTURE	1P 20A	1200	Α	1000	1P 20A	RECEPTACLE	PROVIDE BREAKER TIE WITH P1-42 BLOCK HEATER 6
SPARE	UNALLOCATED FUTURE	1P 20A	43	В	1000	1P 20A	SPARE	PROVIDE BREAKER TIE WITH P1-40 UNALLOCATED FUTURE
SPACE		1P	200 45	A	200 46	1P 20A	SPARE	UNALLOCATED FUTURE
SPACE			47	В	200	1P	SPACE	
SPACE			49	Α	50		SPACE	
SUBFEED	PANEL E1	100A	51	В	52		SPACE	
SUBFEED		2P	4640	A	0 54		SPACE	
LOADS BY TYPE:			5976 LOADS E	Y PHA	0			
LOAD TYPE	CONNECTED DEMAND DEMAND LOAD (VA) FACTOR LOAD (VA)		PHASE		· · · · · · · · · · · · · · · · · · ·	CONNECTED LOAD (VA)	CONNECTED LOAD (AMPS)	BALANCE (PERCENT)
LIGHTING KITCHEN PROCESS	3600.00 1.25 4500.00 0.00 1.00 0.00 15600.00 1.00 15600.00		A B C	-	_	34606.00 32670.00	288.38 272.25	A-B: 94.4 B-A: 94.4
RECEPTACLES RECEPTACLES MECH HEATING MECH COOLING MECH YEAR ROUND APPLIANCE	10000.00 1.00 10000.00 11140.00 0.50 5570.00 2400.00 1.00 2400.00 0.00 1.00 0.00 10780.00 1.00 10780.00 0.00 1.00 0.00		TOTAL,	/AVERA	AGE	67276.00	280.32	94.4
MISCELLANEOUS MOTOR SPARE LARGEST MOTOR 1 TOTAL	300.00 1.00 300.00 12656.00 1.00 18984.00 800.00 1.00 800.00 ABOVE 0.25 2520.00 67276.00 65126.00		1. THI	E LARC	GEST CON	NECTED MO	TOR LOAD IS INCLUDED	IN MECHANICAL, PROCESS, OR MOTOR LOAD

PANEL SCHEDULE	– E1	TYPE: VOLTAGE: ENCLOSURE:	PANELB 120/24 NEMA1		MAIN	SIZE: BRKR NTING:	100 : 100 SURF	ACE	PHASES: 1 WIRES: 3 SC RATING: 10000	NEUTRAL BUS: YES GROUND BUS: YES
LOAD TYPE	LOAD DESCRIPTION			AMPS POLES	CKT# LOAD	Ø	CKT# LOAD	AMPS POLES	LOAD TYPE	LOAD DESCRIPTION
RECEPTACLE	OFFICE OUTLETS			20A 1P	1 720	А	2 720	20A 1P	RECEPTACLE	SHOP OUTLETS
RECEPTACLE	COMMS CABINET			20A 1P	3 500	В	4 720	20A 1P	RECEPTACLE	SHOP OUTLETS
LIGHTING	OFFICE LIGHTING			20A 1P	5 1000	А	6 1500	20A 1P	MOTOR	DOOR OPENER
LIGHTING	BAY LIGHTING			20A 1P	7 1400	В	8 1500	20A 1P	MOTOR	DOOR OPENER
MISCELLANEOUS	FACP			20A 1P	9 300	А	10 400	20A 1P	MECH HEATING	SHOP HEATER
MOTOR	UNIT EF-2			20A 1P	11 1656	В	12 200	20A 1P	MECH YEAR ROUND	WATER HEATER & CIRC PUMP
SPACE					13	А	14		SPACE	
SPACE					15 0	В	16 0		SPACE	
SPACE					17	А	18 0		SPACE	
SPACE					19 0	В	20		SPACE	
SPACE					21	А	22 0		SPACE	
SPACE	 				23 0	В	24 0		SPACE	
SPACE	 				25 0	А	26 0		SPACE	
SPACE					27 0	В	28 0		SPACE	
SPACE					29 0	А	30 0		SPACE	
LOADS BY TYPE:					LOADS E	BY PHA	SE:			
LOAD TYPE			DEMAND LOAD (VA)		PHASE			CONNECTED LOAD (VA)	CONNECTED LOAD (AMPS)	BALANCE (PERCENT)
LIGHTING KITCHEN PROCESS	2400.00 0.00 0.00	1.25 0.00 1.00	3000.00 0.00 0.00		A B C	_		4640.00 5976.00 	38.67 49.80 ——	A-B: 77.6 B-A: 77.6
RECEPTACLES MECH HEATING MECH COOLING MECH YEAR ROUND APPLIANCE MISCELLANEOUS MOTOR	2660.00 400.00 0.00 200.00 0.00 300.00 4656.00	1.00 1.00 1.00 1.00 1.00 1.00	2660.00 400.00 0.00 200.00 0.00 300.00 6984.00		NOTES:	/AVERA		10616.00 NECTED MO	44.23 FOR LOAD IS INCLUDED	77.6 IN MECHANICAL, PROCESS, OR MOTOR LOAD
SPARE LARGEST MOTOR 1	0.00 ABOVE	1.00 1.00 0.25	0.00							

TOTAL

10616.00

11630.00

	MECHA	NIC	AL	E	QUII	PMEI	T	SC	HE	DUL	E		
COMB: MAG:													
UNIT NO	FUNCTION (NOTES)	LOAD	VOLTS	ø	FULL LOAD AMPS	BRANG CONDUIT SIZE		CUIT WIRE SIZE	GRND WIRE SIZE	BRKR SIZE	START	DISC FUSE	
(CU)	CONDENSING UNIT		240	1	42 A	3/4"	2	8	10	50A	NR	60 50	
(EF)	EXHAUST FAN		120	1	1.0A	1/2"	2	12	12	20A	NR	\$	
(EF)	EXHAUST FAN	3/4HP	120	1	13.8A	1/2"	2	12	12	20A	NR	\$	
(HP)	INDOOR AC EQUIPMENT		240	1	0.3A	1/2"	2	12	12	20A	NR	\$ ₂	
(IR)	RADIANT HEATER		120	1	1.0A	1/2"	2	12	12	20A	NR	\$	
LR 1	MOTORIZED LOUVER		120	1	1.0A	1/2"	2	12	12	20A	NR	\$	

— SIZE PER 2017 NEC TABLE 250.102(C)(1)

- SIZE PER 2017 NEC

CONNECTIONS MADE

WITHIN 5' OF POINT OF ENTRANCE OF PIPE

GROUNDING ELECTRODE SYSTEM DETAIL

NOTES:

1. SEE ONE LINE DIAGRAM FOR GROUNDING CONDUCTOR SIZES REQUIRED.

2. PROVIDE A MINIMUM OF TWO SEPARATE GROUND SOURCES, U.O.N. ON

3. CADWELD ALL ENCASED GROUND CONNECTIONS

METALLIC MAIN

DOMESTIC COLD

WATER PIPE

(MIN 10')

- FOUNDATION

CONCRETE ENCASED ELECTRODE (MIN. 20'LF OF CONDUCTOR)

REBAR TO BE ENCASED BY A

MINIMUM OF 2" OF CONCRETE

TABLE 250.102(C)(1)

EQUIPMENT

LR MOTORIZED LOUVER		120
ABBREVIATIONS AND NOTAT	IONS	
A.C. ABOVE COUNTER — VERIFY H A.F.C. ABOVE FINISHED CEILING A.F.F. ABOVE FINISHED FLOOR A.F.G. ABOVE FINISHED GRADE AIC AMPS INTERRUPTING CAPACIT AL ALUMINUM ATS AUTOMATIC TRANSFER SWITCH AV AUDIO/VIDEO AWG AMERICAN WIRE GAGE CB CIRCUIT BREAKER CCT CIRCUIT CT CURRENT TRANSFORMER CU COPPER EC ELECTRICAL CONTRACTOR EF EXHAUST FAN EM EMERGENCY FLA FULL LOAD AMPS G GROUND GEC GROUNDING ELECTRODE COND GFI GROUND FAULT INTERRUPTER HP HORSEPOWER IG ISOLATED GROUND MCA MINIMUM CIRCUIT AMPACITY MCB MAIN CIRCUIT BREAKER MLO MAIN LUGS ONLY N NEUTRAL NL NIGHT LIGHT OCP OVERCURRENT PROTECTION OL OVERLOAD SC SHORT CIRCUIT TR TAMPER RESISTANT TTB TELECOMMUNICATIONS TERMIN VFD VARIABLE FREQUENCY DRIVE WP WEATHERPROOF WPIU WEATHERPROOF IN—USE XFMR TRANSFORMER	EIGHT Y H AL BACKE	
<		
DELTA REVISION NOTE		
——————————————————————————————————————		
SCHEMATIC WIRING SYMBOLS		
TRANSFORMER		
ELECTRICAL POWER PANEL — MAIN LUG ONLY/MAIN CIR — III GROUND	CUIT BREAK	KER
CURRENT TRANSFORMER		

____CIRCUIT BREAKER, MOLDED-CASE

FUSED DISCONNECT SWITCH

STRUCTURAL STEEL FRAME OF BUILDING

SIZE PER 2017 NEC-

TABLE 250.102(C)(1)

#6 CU-

- GROUND ROD

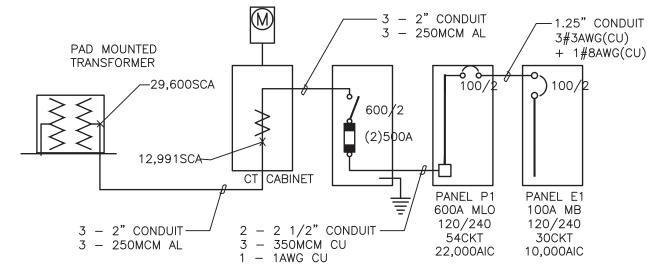
SCALE: NOT TO SCALE

ONE LINE DIAGRAM.

(96"L x 3/4"DIA) COPPER CLAD

METER

1.0	JA	1/2	2	12	12	20A	NR	\$					
			ELEC	TRICAL	SYMBO	LS							
		\Leftrightarrow	DUPLEX	RECEPT	ACLE								
		\bigoplus	FOUR P	LEX REC	EPTACLE	Ξ							
		\ominus	SINGLE	RECEPTA	ACLE								
		\Leftrightarrow	SPLIT-V	VIRED RE	CEPTAC	LE							
			SPECIAL	. PURPO	SE RECE	PTACLE							
		\Box	FLOOR RECEPTACLE										
			JUNCTION BOX										
		$\vdash \bigcirc$	WALL MOUNTED J-BOX										
			DISCONNECT SWITCH										
		F	FUSED DISCONNECT SWITCH										
			BRANCH	I CIRCUI	T PANEL	BOARD							
		PP1−3	CIRCUIT	RY HOME	ERUN: P	OWER PANE	EL 1 — CIF	RCUIT #3					
	_		-CONDUI	T OR WIF	RE CONC	EALED IN	WALL/CLG						
	_		- CONDUI	T OR WIF	RE UNDE	RFLOOR/UN	NDERGROUI	ND					
				FIRE A	LARM								
		FACP	FIRE ALARM CONTROL PANEL										
		F	MANUAL PULL STATION										
		Ø	WALL MOUNTED HORN										
		\boxtimes	WALL MOUNTED SPEAKER										
		MD	ELECTRO	DMAGNET	TC DOOR	HOLD OPE	ΞN						
		(Fs)	SPRINKL	ER FLOV	V SWITCH	1							
		√T§>	SPRINKL	ER TAM	PER SWI	TCH							
		Š	SMOKE	DETECTO	R								
		(S)CO	SMOKE/	CARBON	MONOXI	DE DETECT	OR						
		© _{PB}	SMOKE	DETECTO	R WITH	PIEZO BUZ	ZER						
			SY	STEMS	LEGEND)							
			TTB, MD	F OR ID	F								
		\triangleleft	TELECON	MUNICA	TION OU	TLET							
		◀	TELEPHONE OUTLET										
		\triangleleft	DATA O	UTLET									
		\leftarrow	TELEVISI	ON OUTI	_ET								



ONE-LINE DIAGRAM

NOT TO SCALE

ONE LINE NOTES:

KAIC CALCULATIONS:

1. PROVIDE GROUNDING AND LABELING PER NEC REQUIREMENTS 2. PROVIDE A #6 COPPER CONDUCTOR TO A 10' BY 5/8" DRIVEN ROD. 3. CT TO BE INSTALLED BACK TO BACK WITH PANEL P1.

ADD ALT #1 : 20kVA GENSET WITH ATS AND SPD

4. PROVIDE A #6 COPPER TO THE IT CABINET FOR GROUNDING

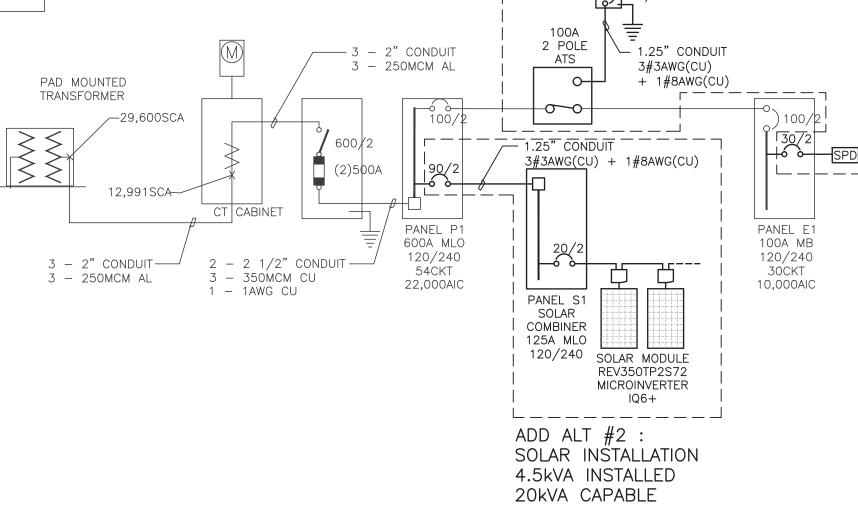
100KVA 120/240V 1Ø TRANSFORMER INFORMATION 29,600 KAIC

UTILIZING POINT TO POINT METHODS: $f = 2 \times L \times 1 =$ $N \times C \times E(L-L)$ L = WIRE LENGTH = 200' ESTIMATED I = FAULT CURRENT = 29,600 AMPS

N = NUMBER OF CONDUCTORS PER PHASE = 3C = CONSTANT INVERSE IMPEDANCE PER FOOT 250kcmil : 12862 E(L-L) = VOLTAGE (LINE TO LINE) = 240 VOLTS

 $f = \frac{400 \times 29600}{3 \times 12862 \times 240 } = 3.835$ MULTIPLIER $M = \frac{1}{1 + f} = \frac{1}{1 + 1.219} = .439$

FAULT CURRENT $I(F) = I(SC) \times M = 29600A \times .439 = 12991$



ONE-LINE DIAGRAM OF ADD ALT #1&2

NOT TO SCALE

ADD ALT NOTES: ADD ALT #1:

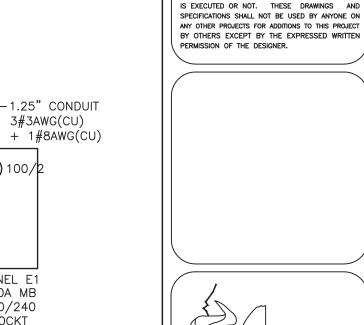
1. PROVIDE 20kW GENERATOR AND 100A TRANSFER SWITCH.
2. PROVIDE SURGE SUPPRESSION ON PANEL E1

ADD ALT #2:

3. SOLAR PANEL INSTALLATION TO MEET ALL APPLICABLE SECTIONS OF NEC ARTICLE 690.

4. SOLAR PANEL INSTALLATION TO MEET ALL LABELING AND DISCONNECT REQUIREMENTS OF DMEA.

SHEET UPDATED 8/23/19 MOST OF SHEET MODIFIED TO REFLECT TWO PANELS



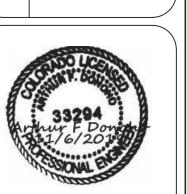
Engineer

DO NOT REPRODUCE THESE DRAWINGS AN SPECIFICATIONS WITHOUT THE EXPRESSED WRITTEN
PERMISSION OF THE DESIGNER. THE DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF THE SERVICE AND SHALL REMAIN THE PROPERTY OF THE DESIGNER WHETHER THE PROJECT FOR WHICH THEY ARE MADE

> Consulting I Bighorn Consulting Mechanical & Electrical E 386 Indian Road Grand Junction, CO 81501 Phone: 970-241-8709

HKIS D BARROW MESA CHKISS, COLORA WORK M

DATE: ISSUED FOR: 03/21/19 REVISED 50% DD 06/28/19 REVISED DRAWINGS 08/16/19



03/21/19 JOB NO: BCE DRAWN BY: CHECKED BY: SCALE: AS SHOWN SHEET NUMBER:

CONTRACTOR SHALL EXAMINE THE GENERAL AND SPECIAL CONDITIONS BEFORE SUBMITTING B. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK INCLUDED IN THIS SECTION AND THE DELEGATION OF WORK TO THE ELECTRICAL CONTRACTOR. SHALL NOT

RELIEVE HIM OF THIS RESPONSIBILITY. THE ELECTRICAL CONTRACTOR AND HIS SUBCONTRACTORS WHO PERFORM WORK UNDER THIS SECTION SHALL BE RESPONSIBLE TO THE GENERAL CONTRACTOR.

C. WHERE ITEMS OF THE GENERAL CONDITIONS OR OF THE SPECIAL CONDITIONS ARE REPEATED IN THIS SECTION OF THE SPECIFICATIONS, IT IS INTENDED TO RE-ENFORCE OR QUALIFY THEM; IT IS NOT INTENDED THAT ANY OTHER PARTS OF THE GENERAL CONDITIONS OR SPECIAL CONDITIONS SHALL BE ASSUMED TO BE OMITTED IF NOT REPEATED HEREIN. D. THE NAMING OF A CERTAIN BRAND OR MAKE OR MANUFACTURER IN THE SPECIFICATIONS IS TO ESTABLISH A QUALITY STANDARD FOR THE ARTICLE DESIRED. THE CONTRACTOR IS NOT RESTRICTED TO THE USE OF THE SPECIFIC BRAND OF THE MANUFACTURER NAMED UNLESS SO INDICATED IN THE SPECIFICATIONS.

E. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND PRESENT FIVE (5) COPIES OF SHOP DRAWINGS OR BROCHURES FOR ALL FIXTURES, EQUIPMENT, AND ACCESSORIES TO THE ENGINEER FOR THE ENGINEER'S APPROVAL. CHECKING IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE SHOWN IS SUBJECT TO THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR: DIMENSIONS WHICH SHALL BE CONFIRMED AND CORRELATED AT THE JOB SITE; FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATION OF HIS WORK WITH THAT OF ALL OTHER TRADES AND THE SATISFACTORY PERFORMANCE OF HIS WORK. F. THE ELECTRICAL CONTRACTOR SHALL EXAMINE DRAWINGS RELATING TO WORK OF ALL TRADES AND BECOME FULLY INFORMED AS TO EXTENT AND CHARACTER OF WORK REQUIRED AND ITS

RELATION TO ALL OTHER WORK IN THE PROJECT G.BEFORE SUBMITTING A BID, THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE ALL ADJOINING EXISTING BUILDINGS, EQUIPMENT AND SPACE CONDITIONS ON WHICH HIS WORK IS IN ANY WAY DEPENDENT FOR THE BEST WORKMANSHIP AND OPERATION ACCORDING TO THE INTENT OF SPECIFICATIONS AND DRAWINGS. HE SHALL REPORT TO THE ARCHITECT ANY CONDITION WHICH MIGHT PREVENT HIM FROM INSTALLING HIS EQUIPMENT IN THE MANNER

H.NO CONSIDERATION OR ALLOWANCE WILL BE GRANTED FOR FAILURE TO VISIT SITE, OR FOR ANY ALLEGED MISUNDERSTANDING OF MATERIALS TO BE FURNISHED OR WORK TO BE DONE. I. EXISTING CONDUITS, PIPES, EQUIPMENT, ETC.: REFER TO DIVISION I FOR ADDITIONAL REQUIREMENTS. EXISTING CONDUITS, PIPES, UTILITY LINES, TANKS, EQUIPMENT, OR OTHER OBSTRUCTIONS WHETHER LINDERGROUND CONCEALED OR EXPOSED ARE NOT IN GENERAL INDICATED ON DRAWINGS. PRIOR TO START OF WORK, HAVE EXISTING UTILITY OBSTRUCTIONS CLEARLY MARKED BY UTILITIES LOCATOR SERVICE. PLAN WORK SO AS TO ROUTE AND LOCATE ALL NEW WORK TO AVOID THESE OBSTRUCTIONS. REPAIR OR REPLACE AT NO COST TO OWNER, EXISTING INSTALLATIONS WHERE DAMAGED, THAT OCCURRED DURING THE COURSE OF CONSTRUCTION.

END OF SECTION 16010

SECTION 16015 ELECTRICAL DRAWINGS AND REFERENCE SYMBOLS

A. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERALLY THE LOCATIONS OF MATERIAL AND EQUIPMENT. THESE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE WORK UNDER THIS SECTION WITH THE ARCHITECTURAL, STRUCTURAL, PLUMBING, HEATING AND AIR CONDITIONING, AND THE DRAWINGS OF OTHER TRADES FOR EXACT DIMENSIONS, CLEARANCES AND ROUGHING-IN LOCATIONS: THIS CONTRACTOR SHALL COOPERATE WITH ALL OTHER TRADES IN ORDER TO MAKE MINOR FIELD ADJUSTMENTS TO ACCOMMODATE THE WORK OF OTHERS. DO NOT RELY ON THE SCALE OF THE DRAWINGS FOR ROUGH-IN MEASUREMENTS, NOR USE THEM AS SHOP

B. THE DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY, EACH TO THE OTHER, AND THE WORK REQUIRED BY EITHER SHALL BE INCLUDED IN THE CONTRACT AS IF CALLED FOR BY BOTH. C.IF DIRECTED BY THE ARCHITECT, THE CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE REASONABLE MODIFICATIONS IN THE LAYOUT AS NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES OR FOR PROPER EXECUTION OF THE WORK D.ELECTRICAL SYMBOLS USED ON THIS PROJECT ARE SHOWN IN A SYMBOL LIST ON THE

ACCOMPANYING WORKING DRAWINGS. THIS LIST SHOWS STANDARD SYMBOLS AND ALL MAY NOT APPEAR ON THE PROJECT DRAWINGS; HOWEVER, WHEREVER THE SYMBOL ON PROJECT DRAWINGS OCCURS, THE ITEM SHALL BE PROVIDED AND INSTALLED. END OF SECTION 16015

SECTION 16020

WORK INCLUDED A. THE SCOPE OF THE WORK CONSISTS OF ELECTRICAL INSTALLATION AND MODIFICATION AT THE HOTCHKISS SHOP. THIS SHALL INCLUDE BUT NOT BE LIMITED TO AINSTALLATION OF ELECTRICAL DISTRIBUTION AND OTHER ITEMS AS CALLED OUT ON THE DRAWINGS FOR THE AREAS OF WORK THIS WORK WILL ALSO INCLUDE ELECTRICAL DISTRIBUTION INSTALLATION: POWERING OF MECHANICAL EQUIPMENT: AND OTHER ITEMS AS CALLED OUT ON THE DRAWINGS FOR THE CONSTRUCTION. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL SUPERVISION, LABOR, MATERIALS, EQUIPMENT, MACHINERY, AND ANY AND ALL OTHER ITEMS NECESSARY TO COMPLETE THE SYSTEMS. THE ELECTRICAL CONTRACTOR SHALL NOTE THAT ALL ITEMS OF EQUIPMENT ARE SPECIFIED IN THE SINGULAR: HOWEVER. THE CONTRACTOR SHALL PROVIDE AND INSTALL THE NUMBER OF ITEMS OF EQUIPMENT AS INDICATED ON THE DRAWINGS AND AS REQUIRED FOR COMPLETE SYSTEMS.

B.IT IS THE INTENTION OF THE SPECIFICATIONS AND DRAWINGS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION. C.ANY APPARATUS, APPLIANCE, MATERIAL OR WORK NOT SHOWN ON DRAWINGS BUT MENTIONED IN THE SPECIFICATIONS, OR VICE VERSA, OR ANY INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE AND PERFECT IN ALL RESPECTS AND READY FOR OPERATION. EVEN IF NOT PARTICULARLY SPECIFIED, SHALL BE FURNISHED, DELIVERED AND INSTALLED BY THE CONTRACTOR WITHOUT ADDITIONAL EXPENSE TO THE OWNER. WITH SUBMISSION OF BID.

THE ELECTRICAL CONTRACTOR SHALL GIVE WRITTEN NOTICE TO THE ARCHITECT: ANY MATERIALS OR APPARATUS BELIEVED INADEQUATE OR UNSUITABLE, IN VIOLATION OF LAWS, ORDINANCES OR RULES: ANY NECESSARY ITEMS OR WORK OMITTED. IN THE ABSENCE OF SUCH WRITTEN NOTICE, IT IS MUTUALLY AGREED THE CONTRACTOR HAS INCLUDED THE COST OF ALL REQUIRED ITEMS IN HIS PROPOSAL, AND THAT HE WILL BE RESPONSIBLE FOR THE APPROVED SATISFACTORY FUNCTIONING OF THE ENTIRE SYSTEM WITHOUT EXTRA COMPENSATION.

END OF SECTION 16020

SECTION 16030 CODES AND FEES

A. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ALL APPLICABLE CODES, SPECIFICATIONS, LOCAL ORDINANCES, INDUSTRY STANDARDS. UTILITY COMPANY AND FIRE INSURANCE CARRIER'S REQUIREMENTS. CONTACT PROPER AUTHORITIES, OBTAIN AND PAY FOR REQUIRED PERMITS, INSPECTIONS AND UTILITY SERVICE CONNECTIONS. DO NOT INCLUDE ANY UTILITY COMPANY CHARGES THAT CAN BE BILLED DIRECTLY TO THE OWNER. B. IN CASE OF DIFFERENCE BETWEEN THE BUILDING CODES, SPECIFICATIONS, STATE LAWS, LOCAL ORDINANCES, INDUSTRY STANDARDS, UTILITY COMPANY REGULATIONS, FIRE INSURANCE CARRIER'S REQUIREMENTS, AND THE CONTRACT DOCUMENTS, THE MOST STRINGENT SHALL

SUCH DIFFERENCE C.NONCOMPLIANCE: SHOULD THE CONTRACTOR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE BUILDING CODES, STATE LAWS, LOCAL ORDINANCES, INDUSTRY STANDARDS, FIRE INSURANCE CARRIER'S REQUIREMENTS, AND UTILITY COMPANY REGULATIONS, HE SHALL BEAR THE COST ARISING IN CORRECTING ANY SUCH

GOVERN. THE CONTRACTOR SHALL PROMPTLY NOTIFY THE ARCHITECT IN WRITING OF ANY

DEFICIENCY. END OF SECTION 16030

SECTION 16100 BASIC METHODS AND MATERIALS

SECTION 16101 GENERAL

A.PROTECTION: ALL WORK, MATERIALS AND EQUIPMENT SHALL BE COMPLETELY AND ADEQUATELY PROTECTED AT ALL TIMES. PAY FOR ALL DAMAGE, INJURY OR LOSS, EXCEPT SUCH AS MAY BE DIRECTLY DUE TO ERRORS IN THE CONTRACT DOCUMENTS OR BE CAUSED BY AGENTS OR EMPLOYEES OF THE OWNER. POST EFFECTIVE DANGER SIGNS WARNING AGAINST HAZARDS CREATED BY THE WORK.

B. TRENCHING AND BACKFILLING: PERFORM ALL TRENCHING AND BACKFILL REQUIRED BY WORK UNDER THIS DIVISION OF THE SPECIFICATIONS. TRENCHING AND BACKFILLING SHALL BE DONE IN ACCORDANCE WITH THE "SITE WORK" DIVISION OF THE SPECIFICATIONS AND AS HEREIN SPECIFIED. THIS PORTION OF THE WORK SHALL BE EXECUTED UNDER THE DIRECT SUPERVISION OF THE GENERAL CONTRACTOR. TRENCHES SHALL BE EXCAVATED TO THE DEPTH REQUIRED FOR THE UTILITIES INVOLVED. THE TRENCH BOTTOM SHALL BE GRADED TRUE AND FREE FROM DEBRIS, STONES AND SOFT SPOTS. WHERE DIRECT BURIAL CABLES ARE USED FOUR INCHES OF FINE SAND SHALL BE PLACED IN THE BOTTOM OF THE TRENCH PRIOR TO CABLE PLACEMENT

C.EQUIPMENT, MATERIALS, INSTALLATION; 1. ALL EQUIPMENT, ACCESSORIES AND SPECIALTIES CONNECTED TO EQUIPMENT AND ALL ITEMS OF MATERIAL SHALL BE INSTALLED AS RECOMMENDED BY THEIR MANUFACTURERS UNLESS

SPECIFICALLY STATED OTHERWISE.

2. PROVIDE PROPER SUPPORTS, MOUNTS, ETC., AS REQUIRED. 3. COORDINATE WITH THE GENERAL CONTRACTOR.

4. OBTAIN INSTRUCTIONS FROM THE ARCHITECT FOR INSTALLATION OF ITEMS NOT COMPLETELY COVERED BY CONTRACT DOCUMENTS OR PUBLISHED MANUFACTURER'S RECOMMENDATIONS. D. EQUIPMENT FINISH: ALL ELECTRICAL EQUIPMENT SHALL BE FURNISHED FACTORY PAINTED OR FINISHED WITH TWO COATS OF HIGH GRADE ENAMEL AND IN THE MANUFACTURER'S STANDARD COLORS UNLESS OTHERWISE SPECIFIED.

1. UNPAINTED EQUIPMENT AND MATERIALS, EXCEPT CONDUIT IN CONCEALED SPACES, SHALL BE CLEANED AND PRIMED TO BE PAINTED BY THE PAINTING CONTRACTOR IN ACCORDANCE WITH THE PAINTING SECTION OF THESE SPECIFICATIONS.

2. THE COLORS OF ALL EXPOSED ELECTRICAL MATERIAL AND APPARATUS SHALL BE AS SELECTED BY THE OWNER. E. CHASES, SLEEVES, CUTTING, PATCHING

1. PROVIDE FOR NECESSARY CHASES, HOLES, SLEEVES, BOXES, INSERTS AND HANGERS BY ARRANGEMENT WITH CONTRACTORS OF THE OTHER APPROPRIATE TRADES. PROVIDE "FLAMESEAL" OR OF THE APPROVED FIRESTOPPING MATERIAL AT ALL PENETRATIONS

THROUGH RATED WALLS, FLOORS AND CEILINGS. 2. PROVIDE FOR ALL CUTTING AND PATCHING OF HOLES, OPENINGS, AND NOTCHES. OBTAIN WRITTEN APPROVAL OF THE ARCHITECT BEFORE NOTCHING, BORING, CHIPPING, BURNING, DRILLING, WELDING TO STRUCTURAL MEMBERS.

1. ALL WORK AND MATERIALS COVERED BY DRAWINGS AND SPECIFICATIONS SHALL BE SUBJECT TO INSPECTION AT ANY AND ALL TIMES BY REPRESENTATIVES OF THE ARCHITECT AND OWNER. IF ANY MATERIAL OR INSTALLATION DOES NOT CONFORM TO THE DRAWINGS AND SPECIFICATIONS, WITHIN THREE DAYS AFTER BEING NOTIFIED BY THE ARCHITECT, REMOVE THE MATERIALS FROM THE PREMISES AND CORRECT THE INSTALLATION TO THE SATISFACTION OF THE ARCHITECT. ASSUME THE ENTIRE COST OF REMOVING AND REPLACING THE MATERIAL AND CORRECTING THE INSTALLATION, INCLUDING CUTTING AND PATCHING

THAT MAY BE NECESSARY. 2. WORK SHALL NOT BE CLOSED IN NOR COVERED BEFORE INSPECTION AND APPROVAL BY THE ARCHITECT. PROVIDE FOR UNCOVERING AND MAKING REPAIRS, AT NO EXTRA COST, WHEN UNINSPECTED WORK HAS BEEN CLOSED IN. NOTIFY THE ARCHITECT WHEN WORK IS READY FOR INSPECTION

3. NOTIFY PROPER AUTHORITIES WHEN WORK IS READY FOR ANY INSPECTIONS REQUIRED BY APPLICABLE CODES. RULES AND REGULATIONS. ALLOWING SUFFICIENT TIME FOR INSPECTIONS TO BE MADE WITHOUT HINDERING PROGRESS OF THE WORK, AND FURNISH THE OWNER, WITHOUT ADDITIONAL COSTS, PROPER CERTIFICATES OF ACCEPTANCE FROM SUCH AUTHORITIES.

4. UPON COMPLETION OF ALL WORK AND ADJUSTMENT OF ALL EQUIPMENT, FINAL INSPECTION SHALL BE MADE UNDER DIRECTION OF THE ARCHITECT. TEST AND OPERATE ALL DEVICES. EQUIPMENT AND SYSTEMS TO DEMONSTRATE THAT THE ELECTRICAL SYSTEM IS COMPLETE AND FUNCTIONAL IN THE MANNER REQUIRED. G.CLEAN UP

1. DURING THE COURSE OF THE WORK REMOVE ANY MATERIALS NOT INSTALLED IN THE WORK WHICH CONFLICT WITH THE WORK OF OTHERS IF SO DIRECTED BY THE ARCHITECT. 2. AT COMPLETION OF WORK CLEAN UP AND REMOVE FROM THE PREMISES ALL DEBRIS AND MATERIALS NOT INSTALLED IN THE WORK SO THE PREMISES WILL BE LEFT CLEAN. WASH AND WIPE CLEAN ALL LIGHTING FIXTURES AND LAMPS WHICH MAY HAVE BECOME SOILED DURING INSTALLATION.

H.RECORD DRAWINGS: AT COMPLETION OF THE WORK FURNISH TO THE ARCHITECT THREE COMPLETE HARD COPY SETS AND ONE SEARCHABLE PDF SET OF ELECTRICAL PRINTS MARKED TO SHOW THE WORK "AS-BUILT"

PROVIDE THE ABOVE FOR BOTH LINE AND LOW VOLTAGE CABLING.

I. MAINTENANCE AND OPERATING PROCEDURES: UPON COMPLETION OF ALL WORK AND ADJUSTMENT OF ALL EQUIPMENT, INSTRUCT THE OWNER ON THE CORRECT OPERATION AND MAINTENANCE PROCEDURE FOR THE ELECTRICAL SYSTEM IN TOTAL. FURNISH 3 SETS OF TYPED MAINTENANCE MANUALS CONTAINING CUT SHEETS ON ALL EQUIPMENT, TABLES OF FUSES AND FOR WHAT EQUIPMENT, TABLE OF LAMPS AND BALLASTS AND FOR WHAT FIXTURES. INCLUDE A LIST OF CONTACTS WITH PHONE NUMBERS FOR ALL SYSTEMS FOR OWNERS' USE. IN THE EVENT THE ELECTRICAL SYSTEM REQUIRES SERVICE WORK WITHIN THE WARRANTY PERIOD. J. GUARANTEE: GUARANTEE THAT ALL WORK GOVERNED BY THIS DIVISION SHALL BE NEW AND FREE OF DEFECTIVE WORK. MATERIALS. AND COMPONENTS FOR A PERIOD OF ONE YEAR AFTER WRITTEN ACCEPTANCE. REPAIR, REVISE AND REPLACE DEFECTS AS DIRECTED, WITH NO ADDITIONAL COST TO THE OWNER. (INCANDESCENT LAMPS, FUSES AND ANY EXISTING EQUIPMENT ARE EXEMPT END OF SECTION 16101

A.PVC CONDUIT SHALL BE USED FOR ALL UNDERGROUND FEEDERS AND BRANCH CIRCUITS UNLESS OTHERWISE DIRECTED ON PLANS OR AS APPROVED BY NEC. ALL CONDUIT SHALL BE UL

B. CONDUIT SIZES SHALL BE AS INDICATED ON THE DRAWINGS, OR MINIMUM IN ACCORDANCE WITH THE NEC, INCLUDING PROVISION FOR GREEN EQUIPMENT GROUNDING CONDUCTOR USING 3/4 INCH MINIMUM CONDUIT. THE USE OF 1/2 INCH CONDUIT ELSEWHERE MAY BE APPROVED IF CONDITIONS WARRANT

C.SPECIAL CONDUIT FITTINGS SHALL BE APPROPRIATE FOR EACH APPLICATION AND SHALL BE MANUFACTURED BY T & B OR APPROVED EQUAL. D. CONDUIT SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC AND SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.

E. THE ENTIRE CONDUIT SYSTEM SHALL BE INSTALLED TO PROVIDE A CONTINUOUS BOND THROUGHOUT THE SYSTEM. F. ELECTRICAL METALLIC TUBING (EMT) MAY BE USED FOR BRANCH CIRCUITS AND RACEWAYS OTHER THAN FOR SERVICE ENTRANCE AND MAIN FEEDERS UNLESS PROHIBITED BY THE NEC OR LOCAL ORDINANCES. EMT SHALL BE UL APPROVED, GALVANIZED INSIDE AND OUTSIDE, COMPLYING WITH ANSI C-80.3 FOR ZINC COATED EMT WITH FITTINGS OF THE SAME TYPE

MATERIAL AND FINISH, OF THE PRESSURE CONNECTED TYPE FOR EXTERIOR INSTALLATION AND OF THE SET SCREW TYPE FOR INTERIOR INSTALLATION. G.ALL CONDUIT JOINTS SHALL BE CUT SQUARE, REAMED SMOOTH, AND DRAWN UP TIGHT. BENDS OR OFFSETS SHALL BE MADE WITH AN APPROVED BENDER OR HICKEY, OR HUB-TYPE CONDUIT FITTINGS. NUMBER OF BENDS PER RUN SHALL CONFORM TO THE NEC LIMITATIONS.

H. CONCEALED CONDUITS SHALL BE RUN IN A DIRECT LINE WITH LONG SWEEP BENDS AND OFFSETS. EXPOSED CONDUITS SHALL BE PARALLEL TO AND AT RIGHT ANGLES TO BUILDING LINES. USING CONDUIT FITTINGS FOR ALL TURNS AND OFFSETS. TRANSITIONS BETWEEN NONMETALLIC CONDUITS AND CONDUITS OF OTHER MATERIALS SHALL BE MADE WITH THE MANUFACTURER'S STANDARD ADAPTERS DESIGNED FOR SUCH PURPOSE.

J. EXPOSED CONDUITS SHALL BE SECURELY FASTENED IN PLACE ON MAXIMUM 10 FOOT

INTERVALS; AND HANGERS, SUPPORTS OR FASTENERS SHALL BE PROVIDED AT EACH ELBOW AND AT THE END OF EACH STRAIGHT RUN TERMINATING AT A BOX OR CABINET. **END OF SECTION 16111**

SECTION 16120

WIRES AND CABLES A. WIRE AND CABLE SHALL MEET ALL STANDARDS AND SPECIFICATIONS APPLICABLE, AND SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF THE NEC. INSULATED WIRE AND CABLE SHALL HAVE SIZE, TYPE OF INSULATION, VOLTAGE AND MANUFACTURER'S NAME PERMANENTLY MARKED ON OUTER COVERING AT REGULAR INTERVALS NOT EXCEEDING FOUR FEET. WIRE AND CABLE SHALL BE DELIVERED IN COMPLETE COILS OR REELS WITH IDENTIFYING TAGS, STATING SIZE, TYPE OF INSULATION, ETC

B. WIRE AND CABLE SHALL BE SUITABLY PROTECTED FROM WEATHER AND OTHER DAMAGE DURING STORAGE AND HANDLING, AND SHALL BE IN FIRST CLASS CONDITION AFTER INSTALLATION. C. WIRE AND CABLE SHALL BE FACTORY COLOR CODED WITH A SEPARATE COLOR FOR EACH

PHASE AND NEUTRAL USED CONSISTENTLY THROUGHOUT THE SYSTEM. COLOR CODING SHALL BE AS REQUIRED BY THE NEC. D. ALL CONDUCTORS SHALL BE RATED 600 VOLTS, UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE DRAWINGS, OR FOR ELECTRONIC OR COMMUNICATION USE.

E. WIRE AND CABLE FOR VARIOUS APPLICATIONS SHALL BE AS FOLLOWS UNLESS OTHERWISE DESIGNATEDA 1. WIRE #10 AND SMALLER SHALL BE SOLID; WIRE #8 AND LARGER SHALL BE STRANDED. 2. #12 THRU #6 DRY LOCATIONS: TYPE THHN, 90 DEGREES C.

3. #12 THRU #6 IN SLABS, UNDERGROUND, OR WET LOCATIONS: TYPE THWN OR TYPE XHHW, 75 DEGREES C 4. #4 AND LARGER: TYPE XHHW OR TYPE THWN 75 DEGREES C.

F. WIRE AND CABLE SHALL BE AS MANUFACTURED BY GENERAL ELECTRIC, ANACONDA WIRE & CABLE, ROME CABLE, TRIANGLE CONDUIT & CABLE, OR APPROVED EQUAL. SUBSTITUTION OF WIRE AND CABLE MANUFACTURER SHALL BE ONLY WITH THE APPROVAL OF THE ARCHITECT/ENGINEER

G.FOR ANY SPECIFIC USE NOT COVERED HERE ABOVE, COMPLY WITH THE NEC IN CONDUCTOR H. ALL CIRCUITS SHALL BE 2#12 CU + 1#12G CU UNLESS OTHERWISE NOTED ON DRAWINGS OR IN

I. ALL 15 AND 20 AMP CIRCUITS WITH LENGTHS OVER 50 FT. SHALL HAVE THEIR CONDUCTOR SIZE INCREASED TO #10 FOR VOLTAGE DROP. J. COMMUNICATION CABLING, OUTLETS AND GEAR TO MEET CAT 6 REQUIREMENTS. K. COMMUNICATION CABLING TO BE CONSISTENT THROUGHOUT WITH DISTINCT OWNER SELECTED

COLORS FOR PHONE, DATA, SECURITY AND FIRE SYSTEMS.

END OF SECTION 16120

SECTION 16121 WIRE CONNECTIONS

A. JOINTS ON BRANCH CIRCUITS SHALL OCCUR ONLY WHERE SUCH CIRCUIT DIVIDE AS INDICATED ON PLANS AND SHALL CONSIST OF ONE THROUGH CIRCUIT TO WHICH SHALL BE SPLICED THE BRANCH FROM THE CIRCUIT. IN NO CASE SHALL JOINTS IN BRANCH CIRCUITS BE LEFT FOR THE FIXTURE HANGER TO MAKE. NO SPLICES SHALL BE MADE IN CONDUCTOR EXCEPT AT OUTLET

BOXES, JUNCTION BOXES, OR SPLICE BOXES. B. ALL JOINTS OR SPLICES FOR #10 AWG OR SMALLER SHALL BE MADE WITH UL APPROVED WIRE NUTS OR COMPRESSION TYPE CONNECTORS. C. ALL JOINTS OR SPLICES FOR #8 AWG OR LARGER SHALL BE MADE WITH A MECHANICAL

COMPRESSION CONNECTOR. AFTER THE CONDUCTORS HAVE BEEN MADE MECHANICALLY AND ELECTRICALLY SECURE, THE ENTIRE JOINT OR SPLICE SHALL BE COVERED WITH SCOTCH #33 TAPE OR APPROVED EQUAL TO MAKE THE INSULATION OF THE JOINT OR SPLICE EQUAL TO THE INSULATION OF THE CONDUCTORS. THE CONNECTOR SHALL BE UL APPROVED. END OF SECTION 16121

PULLING CABLES

AND WORKMANLIKE MANNER. ALL EMPTY CONDUITS SHALL HAVE A #14 GALVANIZED PULL WIRE OR NYLON PULLCORD LEFT IN PLACE FOR FUTURE USE. B. CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH THE NEC. MAINS, FEEDERS.

SUBFEEDERS SHALL BE TAGGED IN ALL PULL, JUNCTION, AND OUTLET BOXES AND IN THE GUTTER OF PANELS WITH APPROVED CODE TYPE WIRE MARKERS. C.NO LUBRICANT OTHER THAN POWDERED SOAPSTONE OR APPROVED PULLING COMPOUND MAY BE USED TO PULL CONDUCTORS.

D. AT LEAST EIGHT (8) INCHES OF SLACK WIRE SHALL BE LEFT IN EVERY OUTLET BOX WHETHER IT BE IN USE OR LEFT FOR FUTURE USE. E. ALL CONDUCTORS AND CONNECTIONS SHALL TEST FREE OF GROUNDS, SHORTS AND OPENS BEFORE TURNING THE JOB OVER TO THE OWNER.

F. PULL BOXES SHALL BE REQUIRED IN RUNS OVER 100 FEET OR WHEN MORE THAN THREE 90-DEGREE BENDS ARE USED, OR AS INDICATED ON THE DRAWINGS. G.FEEDERS ARE TO BE RUN ABOVE GROUND TO ALL POWER PANELS AND LIGHTING PANELS, UNLESS INDICATED OTHERWISE ON DRAWINGS.

H. WHERE MOTORS HAVE CONDUIT TERMINAL BOXES, FEEDERS SHALL BE CONNECTED TO SAME BY FI FXIBI F MFANS. I. ALL MOTORS WITH SLIDING BASE MOUNTINGS SHALL HAVE NOT LESS THAN 18 INCHES NOR MORE THAN 6 FEET OF CONDUIT CONNECTING RIGID CONDUIT FEED TO MOTOR TERMINAL BOX. J. CONDUCTOR SPLICES SHALL BE MADE ONLY IN JUNCTION BOXES, TERMINAL BOXES, OR PULL

END OF SECTION 16125

BY STEEL CITY OR APPROVED EQUAL.

SECTION 16133 OUTLET BOXES

ALL OUTLET BOXES FOR CONCEALED WIRING SHALL BE SHEET METAL A.GALVANIZED OR CADMIUM PLATED, AT LEAST 1 INCHES DEEP, SINGLE OR GANGED, OF SIZE TO ACCOMMODATE DEVICES AND NUMBER OF CONDUCTORS NOTED. BOXES SHALL BE EQUIPPED WITH PLASTER RING OR COVER AS NECESSARY. ALL OUTLET BOXES SHALL BE MANUFACTURED

B. BOXES FOR EXPOSED WIRING SHALL BE MALLEABLE IRON, CADMIUM FINISH, OR CAST ALUMINUM ALLOY, AS MANUFACTURED BY STEEL CITY, AND SHALL NOT BE LESS THAN 4 INCHES SQUARE BY 1 INCHES DEEP UNLESS OTHERWISE NOTED. C.FIXTURE OUTLET BOXES SHALL BE MINIMUM 4 INCH OCTAGONAL AND, WHERE REQUIRED AS OUTLET AND JUNCTION BOXES, THEY SHALL BE 4 11/16 INCHES BY 2 1/8 INCHES DEEP. END OF SECTION 16133

SECTION 16190 SUPPORTING DEVICES

A. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL METALLIC SUPPORTS AS REQUIRED FOR THE PROPER INSTALLATION OF RACEWAY SYSTEMS AND ALL OTHER EQUIPMENT INSTALLED UNDER THIS DIVISION OF THE CONTRACT CONFORMING TO THE LATEST EDITION OF

B. CONDUIT SHALL BE SUPPORTED ON APPROVED TYPES OF WALL BRACKETS, CEILING TRAPEZES, STRAP HANGERS OR PIPE SUPPORTS, SECURED BY MEANS OF TOGGLE BOLTS IN HOLLOW MASONRY WALLS OR UNITS. EXPANSION BOLTS WILL BE USED IN CONCRETE OR BLOCK. MACHINE SCREWS ON METAL SURFACES, AND WOOD SCREWS ON WOOD CONSTRUCTION. C.CONDUIT SHALL BE SECURELY FASTENED TO ALL SHEET METAL OUTLETS, JUNCTION AND PULL BOXES WITH TWO GALVANIZED LOCKNUTS AND BUSHING, CARE BEING TAKEN TO SEE THAT THE FULL NUMBER OF THREADS PROJECT THROUGH TO PERMIT THE BUSHING TO BE DRAWN TIGHT AGAINST THE END OF THE CONDUIT, AFTER WHICH THE LOCKNUTS SHALL BE MADE TIGHT SUFFICIENTLY TO DRAW THEM INTO FIRM ELECTRICAL CONTACT WITH THE OUTLET BOX. INSTALL A PLASTIC BUSHING ON END OF PIPE THREADS PROTRUDING INTO JUNCTION BOXES AND OTHER ENCLOSURES TO PROTECT CABLING.

D. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SUPPORTS REQUIRED FOR THE ELECTRICAL EQUIPMENT AND CONDUIT. END OF SECTION 16190

ELECTRICAL IDENTIFICATION

A. THE ELECTRICAL CONTRACTOR SHALL MAINTAIN ACCURATE RECORDS OF ALL DEVIATIONS IN WORK AS ACTUALLY INSTALLED FROM WORK INDICATED ON THE DRAWINGS. UPON COMPLETION OF THE PROJECT, TWO (2) COMPLETE SETS OF MARKED-UP PRINTS SHALL BE DELIVERED TO THE ARCHITECT

1. PROVIDE AND INSTALL LAMINATED BLACK AND WHITE LAMACOID NAMEPLATES FOR ALL SERVICE SWITCHES, DISTRIBUTION SWITCHES, DISTRIBUTION SWITCHBOARDS, BRANCH CIRCUIT PANELBOARDS, SAFETY SWITCHES, CABINETS, STARTERS, AND OTHER EQUIPMENT WITH THEIR CORRECT DESIGNATION. LABEL EQUIPMENT IN AREAS ACCESSIBLE TO THE PUBLIC ON INSIDE OF ENCLOSURE ONLY. NAMEPLATES SHALL BE FIRMLY SECURED TO FRONT COVER OR DOOR WITH TWO PROPERLY SIZED POP RIVETS.

2. MOUNT A TYPEWRITTEN DIRECTORY BEHIND PLASTIC ON THE INSIDE OF EACH BRANCH CIRCUIT PANEL DOOR, GIVING THE NUMBER, DESCRIPTION AND LOCATION OF THE CIRCUIT CONTROLLED BY EACH CIRCUIT BREAKER. REVISE EXISTING DIRECTORIES TO REFLECT CIRCUIT MODIFICATIONS UNDER THIS CONTRACT.

3. ALL FUSED SAFETY SWITCHES AND FUSED SWITCH UNITS IN SWITCHBOARDS SHALL INDIVIDUALLY BEAR A FUSE LABEL SHOWING PROPER SIZE AND TYPE OF FUSE TO BE USED. 4. INSTALL WIRING DIAGRAMS ON THE INSIDE COVER OF ALL STARTERS, SWITCHES AND OTHER SUCH EQUIPMENT. SUCH DIAGRAMS SHALL NOT BE HANDWRITTEN. 5. ALL JUNCTION BOXES WITH BLANK COVERS SHALL HAVE CIRCUITS CONTAINED THEREIN IDENTIFIED BY MEANS OF PERMANENT BLACK "MAGIC MARKER" ON THE COVER.

ELECTRONIC EQUIPMENT A. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND CONNECTION OF A PROPER POWER SUPPLY TO ALL ELECTRONIC EQUIPMENT FURNISHED BY OTHERS. HE SHALL VERIFY ALL VOLTAGE, FREQUENCY, ETC., REQUIREMENTS PRIOR TO ENERGIZING THE CIRCUIT. THOSE INSTALLING THE EQUIPMENT WILL BE RESPONSIBLE FOR THE PROPER OPERATION OF THE EQUIPMENT PROVIDED THE PROPER POWER SUPPLY CIRCUIT IS INSTALLED BY THE ELECTRICAL CONTRACTOR. B. PROVIDE TELEPHONE LINES TO EQUIPMENT CONTROL PANELS WITH MODEM ACCESS.

COORDINATE WITH MECHANICAL CONTRACTOR. END OF SECTION 16199

END OF SECTION 16195

SERVICE AND DISTRIBUTION

SECTION 16401 GENERAL

SECTION 16400

A. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL RELATED DISTRIBUTION EQUIPMENT AS INDICATED ON THE FLOOR PLAN, DIAGRAMS, SCHEDULES, AND NOTES. ALL EQUIPMENT SHALL BE NEW AND UL LISTED.

B. RELATED DOCUMENTS: DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATIONS SECTION, APPLY TO WORK OF THIS SECTION. END OF SECTION 16401

SECTION 16440

DISCONNECT SWITCHES A. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL SAFETY SWITCHES AS INDICATED ON THE DRAWINGS OR AS REQUIRED. ALL

SAFETY SWITCHES SHALL BE UL LISTED. 1. THE SWITCHES SHALL BE FUSED SAFETY SWITCHES (FSS) OR NON-FUSED SAFETY SWITCHES (NFSS) AS SHOWN ON THE DRAWINGS OR REQUIRED AND SHALL BE MANUFACTURED BY

SIEMENS, SQUARE D, OR APPROVED EQUAL 2. SWITCHES SHALL HAVE A QUICK-MAKE AND QUICK-BREAK OPERATING HANDLE AND MECHANISM WHICH SHALL BE AN INTEGRAL PART OF THE BOX, PADI OCKING PROVISIONS SHALL BE PROVIDED FOR PADLOCKING IN THE OFF POSITION WITH AT LEAST THREE PADLOCKS. SWITCHES SHALL BE HORSEPOWER RATED FOR 250 VOLTS AC OR DC OR 600 VOLTS AC AS REQUIRED. LUGS SHALL BE UL LISTED FOR COPPER AND ALUMINUM CABLE 3. SWITCHES SHALL BE FURNISHED IN NEMA I GENERAL PURPOSE ENCLOSURES WITH KNOCKOUTS UNLESS OTHERWISE NOTED OR REQUIRED. SWITCHES LOCATED ON THE EXTERIOR OF THE BUILDING OR IN "WET" LOCATIONS SHALL HAVE NEMA 3R ENCLOSURES

4. THE SAFETY SWITCHES SHALL BE SECURELY MOUNTED IN ACCORDANCE WITH THE NEC. THE CONTRACTOR SHALL PROVIDE ALL MOUNTING MATERIALS AND INSTALL FUSES IN THE FSS. THE FUSES SHALL BE DUAL ELEMENT ON MOTOR CIRCUITS. END OF SECTION 16440

SECTION 16450 GROUNDING

SECTION 16470

A. THE CONDUIT SYSTEMS AND NEUTRAL CONDUCTOR FOR THE WIRING SYSTEM, AND THE TELEPHONE SYSTEM SHALL BE SECURELY GROUNDED. THE GROUNDS SHALL BE INSTALLED PER NEC STANDARDS IN EACH CASE.

B. A GROUND SHALL BE ESTABLISHED AND TESTS CARRIED OUT TO INDICATE THAT SATISFACTORY GROUND HAS BEEN ESTABLISHED IN ACCORDANCE WITH THE NEC. C. WRITTEN RESULTS OF THIS TEST SHALL BE FORWARDED TO THE ENGINEER BEFORE CONNECTION TO THE SERVICE.

END OF SECTION 16450

PANELBOARDS A.FURNISH AND INSTALL DISTRIBUTION AND POWER PANELBOARDS AS INDICATED IN THE PANELBOARD SCHEDULE AND WHERE SHOWN ON THE DRAWINGS. PANELBOARDS SHALL BE DEAD-FRONT SAFETY TYPE. EQUIPPED WITH QUICK-MAKE, QUICK-BREAK FUSIBLE BRANCH

SWITCHES AND APPROVED FOR SERVICE ENTRANCE. THE ACCEPTABLE MANUFACTURERS OF THE PANELBOARD ARE SIEMENS, SQUARE D, AND GE, PROVIDED THEY ARE FULLY EQUAL TO THE TYPE LISTED ON THE DRAWINGS. THE PANELBOARD SHALL BE UL LISTED AND BEAR THE UL A.INSTALL CONDUCTORS IN ALL RACEWAYS AS REQUIRED, UNLESS OTHERWISE NOTED, IN A NEAT

B. ALL FUSIBLE BRANCH SWITCHES SHALL BE QUICK-MAKE, QUICK BREAK, WITH VISIBLE BLADES

AND DUAL HORSEPOWER RATINGS SWITCH HANDLES SHALL PHYSICALLY INDICATE ON AND OFF POSITIONS. SUCH HANDLES SHALL ALSO BE ABLE TO ACCEPT THREE PADLOCKS HAVING HEAVY-DUTY INDUSTRIAL TYPE SHACKLES. COVERS SHALL BE INTERLOCKED WITH THE SWITCH HANDLES TO PREVENT OPENING IN THE ON POSITION. A MEANS SHALL BE PROVIDED TO ALLOW AUTHORIZED PERSONNEL TO RELEASE THE INTERLOCK FOR INSPECTION PURPOSES WHEN A SWITCH IS ON. A CARDHOLDER, PROVIDING CIRCUIT IDENTIFICATION, SHALL BE MOUNTED ON EACH BRANCH SWITCH. SWITCHES SHALL BE PROVIDED WITH FUSES OR AS NOTED ON THE

C.PANELBOARD BUS STRUCTURE AND MAIN LUGS OR MAIN SWITCH SHALL HAVE CURRENT RATINGS AS SHOWN ON THE PANELBOARD SCHEDULE. THE BUS STRUCTURE SHALL ACCOMMODATE PLUG-ON OR BOLTED BRANCH SWITCHES AND MOTOR STARTERS AS INDICATED IN THE PANELBOARD SCHEDULE WITHOUT MODIFICATION TO THE BUS ASSEMBLY. PROVIDE SOLID NEUTRAL ASSEMBLY (S/N).

D. SWITCHES AND PANELBOARD BUS STRUCTURE SHALL SAFELY AND WITHOUT FAILURE WITHSTAND SHORT CIRCUITS ON THE SYSTEMS CAPABLE OF DELIVERING UP TO 100,000 AMPERES RMS SYMMETRICAL, UNLESS OTHERWISE NOTED. E. PANELBOARD ASSEMBLY SHALL BE ENCLOSED IN A STEEL CABINET. THE RIGIDITY AND GAUGE

OF STEEL TO BE AS SPECIFIED IN UL STANDARD FOR CABINETS. THE SIZE OF WIRING GUTTERS SHALL BE IN ACCORDANCE WITH UL STANDARD. CABINETS SHALL BE EQUIPPED WITH A FRONT DOOR AND HAVE FULLY CONCEALED, SELF-ALIGNING TRIM CLAMPS. FRONTS SHALL BE FULL-FINISHED STEEL WITH RUST INHIBITING PRIMER AND BAKED ENAMEL FINISH. F. TERMINALS FOR FEEDER CONDUCTORS TO THE PANELBOARD MAINS AND NEUTRAL SHALL BE SUITABLE FOR THE TYPE OF CONDUCTOR SPECIFIED. TERMINALS FOR BRANCH CIRCUIT WIRING, BOTH BREAKER AND NEUTRAL, SHALL BE SUITABLE FOR THE TYPE OF CONDUCTOR SPECIFIED. G. BEFORE INSTALLING PANELBOARDS CHECK ALL OF THE ARCHITECTURAL DRAWINGS FOR POSSIBLE CONFLICT OF SPACE AND ADJUST THE LOCATION OF THE PANELBOARD TO PREVENT SUCH CONFLICT WITH OTHER ITEMS. H. THE PANELBOARDS SHALL BE MOUNTED IN ACCORDANCE WITH THE NEC. THE ELECTRICAL

CONTRACTOR SHALL FURNISH ALL MATERIAL FOR MOUNTING THE PANELBOARDS. END OF SECTION 16470

BRANCH CIRCUIT PANELBOARD A.POWER AND LIGHTING PANELS SHALL BE OF THE DEAD-FRONT, SAFETY TYPE, WITH THERMAL MAGNETIC, QUICK-MAKE, QUICK-BREAK, TRIP FREE, BOLTED-TYPE MOLDED CASE CIRCUIT BREAKERS VOI TAGE RATINGS NUMBER OF POLES FRAME SIZE TRIP RATINGS MAIN BREAKER OR LUGS, NEUTRAL BUS, AND GROUND BUS ARE ALL AS SHOWN ON THE DRAWINGS. BUS BARS SHALL BE RECTANGULAR, SOLID COPPER, SECURELY MOUNTED AND BRACED. ALL CONNECTIONS TO BUS BARS SHALL BE SECURELY BOLTED. CABINET BOXES SHALL BE CONSTRUCTED OF CODE GRADE GALVANIZED STEEL, SIZED TO PROVIDE MINIMUM 4-INCH WIDE WIRING GUTTERS ON SIDES, TOP AND BOTTOM. FRONTS SHALL BE CONSTRUCTED OF CODE GRADE STEEL, ADJUSTABLE INDICATING TRIM CLAMPS AND WITH DOOR PROVIDED WITH CONCEALED HINGES AND CYLINDER TYPE LOCK AND CATCH. TWO KEYS PER PANEL SHALL BE FURNISHED, AND ALL LOCKS KEYED ALIKE. FRONT SHALL BE FINISH PAINTED BLUE-GRAY. B. POWER PANELS SHALL BE SIEMENS, TYPE S1, S2, S3, SE, OR ENGINEER APPROVED EQUAL, WITH BRANCH BREAKERS, MAIN BREAKERS OR LUGS, NEUTRAL AND GROUND BUSES, ETC., ALL AS SHOWN ON THE DRAWINGS.

C. POWER AND LIGHTING PANEL CONSTRUCTION DETAILS SHALL BE IN ACCORDANCE WITH UL STANDARDS AND SHALL CONFORM TO NEMA STANDARDS. THEY SHALL BEAR THE UL LABEL. PANELS SHALL MEET FEDERAL SPECIFICATIONS W-P-115A, TYPE 1, CLASS I. D. ALL PANEL DIRECTORIES SHALL BE TYPED AND TERMINOLOGY APPROVED BY THE OWNER. END OF SECTION 16471

OVERCURRENT PROTECTIVE DEVICES

A. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL WHERE INDICATED ON THE DRAWINGS OR AS REQUIRED BY THE NEC MOLDED CASE CIRCUIT BREAKERS IN A NEMA TYPE 1 ENCLOSURE. BREAKERS SHALL BE MANUALLY OPERATED, TRIP-FREE AND DESIGNED SO THAT ALL POLES OPEN SIMULTANEOUSLY. TRIPPING MECHANISM SHALL BE (THERMALLY, MAGNETICALLY) OPERATED, SHALL OPEN INSTANTANEOUSLY ON SHORT CIRCUITS AND HAVE TIME DELAY ON OVERLOADS, AND HAVE EFFECTIVE SCALING AGAINST TAMPERING. BREAKERS SHALL BE AS CALLED FOR ON THE DRAWINGS OR IN THE PANELBOARD SCHEDULE AND AS MANUFACTURED BY SIEMENS, SQUARE D, OR APPROVED EQUAL B. FUSES, UNLESS INDICATED OTHERWISE, SHALL BE DUAL ELEMENT, TIME LAG, CARTRIDGE TYPE

AS MANUFACTURED BY BUSSMAN. FUSES FOR MOTOR CIRCUITS SHALL BE SIZED IN ACCORDANCE WITH THE NEC. LABELS INDICATING THE SIZE AND TYPE OF REPLACEMENT FUSES SHALL BE GLUED TO INSIDE OF DOOR ON ALL FUSIBLE SWITCHES AND PANELBOARDS. C. ALL FUSES SHALL BE OF THE CURRENT AND VOLTAGE RATING AS REQUIRED OR INDICATED. D. SPARES: SPARE FUSES AMOUNTING TO 10% (MINIMUM THREE) OF EACH TYPE AND RATING SHALL BE SUPPLIED BY THE ELECTRICAL CONTRACTOR. THESE SHALL BE TURNED OVER TO THE OWNER UPON PROJECT COMPLETION.

SECTION 16900 CONTROLS AND INSTRUMENTATION

END OF SECTION 16475

SECTION 16901

A. ALL EQUIPMENT AND MATERIALS USED IN RELATION TO CONTROL WORK FOR THE PROJECT SHALL BE NEW AND SHALL BEAR THE MANUFACTURER'S NAME AND TRADE NAME. THE EQUIPMENT AND MATERIAL SHALL BE ESSENTIALLY THE STANDARD PRODUCT OF A MANUFACTURER REGULARLY ENGAGED IN THE PRODUCTION OF THE REQUIRED TYPE OF EQUIPMENT AND SHALL BE THE MANUFACTURER'S LATEST APPROVED DESIGN B. THE ELECTRICAL CONTRACTOR SHALL RECEIVE AND PROPERLY STORE THE EQUIPMENT AND MATERIAL PERTAINING TO THE ELECTRICAL WORK. THE EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT, WATER, CHEMICAL OR MECHANICAL INJURY AND THEFT. THE MANUFACTURER'S DIRECTIONS SHALL BE FOLLOWED COMPLETELY IN THE DELIVERY, STORAGE, PROTECTION AND INSTALLATION OF ALL FOLIPMENT AND MATERIALS C. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL ITEMS NECESSARY FOR THE COMPLETE INSTALLATION OF THE EQUIPMENT AS RECOMMENDED OR AS REQUIRED BY THE

MANUFACTURER OF THE EQUIPMENT OR REQUIRED BY CODE WITHOUT ADDITIONAL COST TO THE OWNER, REGARDLESS OF WHETHER THE ITEMS ARE SHOWN ON THE PLANS OR COVERED IN THE SPECIFICATIONS. D.IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO CLEAN THE ELECTRICAL EQUIPMENT, MAKE NECESSARY ADJUSTMENTS AND PLACE THE EQUIPMENT INTO OPERATION BEFORE TURNING EQUIPMENT OVER TO OWNER. ANY PAINT THAT WAS SCRATCHED DURING CONSTRUCTION SHALL BE "TOUCHED-UP" WITH FACTORY COLOR PAINT TO THE SATISFACTION OF THE ARCHITECT. ANY ITEMS THAT WERE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED.

E. GENERAL 1. UNLESS OTHERWISE INDICATED ALL HEATING, VENTILATING, AIR CONDITIONING, PLUMBING, AND OTHER MECHANICAL EQUIPMENT, MOTORS, AND CONTROLS SHALL BE FURNISHED, SET IN

PLACE AND WIRED AS FOLLOWSA

RESPONSIBLE DIVIS	ION					
ITEM	FUR	NISHED	SET	POWER- WIRED	CONTROL- WIRED	
EQUIPMENT		15	15	16		
COMBINATION MAGNETIC MOTOR STARTERS, MAGNETIC MOTOR STARTERS AND CONTACTORS		15	16	16	15	
FUSED AND UNFUSED DISCONNECT SWITCHES, THERMAL OVERLOAD SWITCHES AND HEATERS, MANUAL MOTOR STARTERS		16(1)	16(1)	16		
MANUAL-OPERATING AND MULTI-SPEED SWITCHES .		15	16	16	16	
CONTROLS, RELAYS, TRANSFORMERS		15	15	16	15	
THERMOSTATS (LOW VOLTAGE) AND TIME SWITCHES		15	15	16	15	
THERMOSTATS (LINE VOLTAGE)		15	15	16	16	
TEMPERATURE CONTROL PANELS		15	15	16	15	
MOTOR AND SOLENOID VALVES, DAMPER MOTORS, PE & EP SWITCHES		15	15(2)		15(2)	
PUSH-BUTTON STATIONS AND PILOT LIGHTS		15	15(2)		15(2)	
HEATING, COOLING, VENTILATION AND AIR CONDITIONING CONTROL	S	15	15	16	15	
EXHAUST FAN SWITCHES .		15	16	16	15(2)	
SUBSCRIPT FOOTNOTES:						

1) GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL SUBCONTRACTOR WORK.

OF EQUIPMENT OR IF FURNISHED WITH COMBINATION STARTERS.

UNDER DIVISION 15 IF FURNISHED FACTORY-WIRED AS PART

3) IF ITEM IS FOR LINE VOLTAGE, SET IN PLACE AND CONNECT UNDER DIVISION 16. WHERE FACTORY MOUNTED ON EQUIPMENT OR ATTACHED TO PIPING OR DUCTS AND USING LINE VOLTAGE FURNISH AND SET UNDER DIVISION 15, CONNECT UNDER DIVISION 16.

2. VERIFY LOCATION AND NAMEPLATE DATA OF ALL MECHANICAL EQUIPMENT WITH THE MECHANICAL CONTRACTOR PRIOR TO INSTALLING ELECTRICAL FACILITIES. BE RESPONSIBLE FOR COORDINATION OF REVISIONS AND MODIFICATIONS NECESSARY TO PROPERLY SUPPLY ELECTRICAL FACILITIES TO HEATING, VENTILATING, AIR CONDITIONING, PUMPS, MOTORS, CONTROLS, AND OTHER MECHANICAL EQUIPMENT INSTALLED IN PLACE OF EQUIPMENT SPECIFIED. REQUIRED ELECTRICAL FACILITIES CHANGES SHALL BE CONSIDERED TO BE A

PART OF THE MECHANICAL CONTRACT. 3. PROVIDE EACH MOTOR WITH A HORSEPOWER RATED DISCONNECT SWITCH AND MOTOR RUNNING OVERCURRENT PROTECTION PER N.E.C. 430-37. TO FACILITATE EASE AND SAFETY OF OPERATION AND MAINTENANCE OF MECHANICAL EQUIPMENT, LOCATE THE DISCONNECT SWITCH IMMEDIATELY ADJACENT TO THE MOTOR, UNLESS OTHERWISE INDICATED. SIZE THERMAL OVERLOAD HEATER UNITS FOR APPROXIMATELY 115% OF FULL LOAD MOTOR CURRENT. SIZE FUSES IN ACCORDANCE WITH THE ACTUAL MOTOR NAMEPLATE RATING AND AS RECOMMENDED BY THE BUSSMAN MFG. CO. CHECK AND COORDINATE ALL STARTERS, FUSES. AND OTHER MOTOR-RUNNING PROTECTIVE DEVICES WITH THE EQUIPMENT THEY CONTROL, AND PROVIDE AND INSTALL THE CORRECT SIZE PROTECTIVE ELEMENTS AS

4. DO NOT CONNECT MOTORS WHICH ARE OF A VOLTAGE RATING DIFFERENT THAN SUPPLY VOLTAGE. REPORT SAME TO THE ARCHITECT IN WRITING AND OBTAIN WRITTEN INSTRUCTIONS FOR RESOLUTION.

5. USE FLEXIBLE CONDUIT FOR ALL CONNECTIONS TO DEVICES DIRECTLY ATTACHED TO DUCTS, PIPING AND MECHANICAL EQUIPMENT. END OF SECTION 16901

SECTION 16950

A. AS SOON AS ELECTRIC POWER IS AVAILABLE AND CONNECTED TO SERVE THE EQUIPMENT IN THE BUILDING. AND EVERYTHING IS READY FOR FINAL TESTING AND PLACING IN SERVICE. A COMPLETE OPERATIONAL TEST SHALL BE MADE. THE CONTRACTOR SHALL FURNISH ALL NECESSARY INSTRUMENTS AND EQUIPMENT AND MAKE ALL TESTS, ADJUSTMENTS, AND TRIAL OPERATIONS REQUIRED TO PLACE THE SYSTEM IN BALANCED AND SATISFACTORY OPERATING CONDITION: FURNISH ALL NECESSARY ASSISTANCE AND INSTRUCTIONS TO PROPERLY INSTRUCT THE OWNER'S AUTHORIZED PERSONNEL IN THE OPERATION AND CARE OF THE

B. PRIOR TO TESTING THE SYSTEM, THE FEEDERS AND BRANCH CIRCUITS SHALL BE CONTINUOUS FROM MAIN FEEDERS TO MAIN PANELS, TO SUBPANELS, TO OUTLETS, WITH ALL BREAKERS AND FUSES IN PLACE. THE SYSTEM SHALL BE TESTED FREE FROM SHORTS AND GROUNDS. SUCH TESTS SHALL BE MADE IN THE PRESENCE OF THE ENGINEER'S REPRESENTATIVE.

D. THE RIGHT IS RESERVED TO INSPECT AND TEST ANY PORTION OF THE EQUIPMENT AND/OR MATERIALS DURING THE PROGRESS OF ITS ERECTION. THE CONTRACTOR SHALL FURTHER TEST ALL WIRING AND CONNECTIONS FOR CONTINUITY AND GROUNDS BEFORE CONNECTING ANY FIXTURES OR EQUIPMENT.

C. NO CIRCUITS SHALL BE ENERGIZED WITHOUT THE OWNER'S APPROVAL.

E. THE CONTRACTOR SHALL TEST THE ENTIRE SYSTEM IN THE PRESENCE OF THE ARCHITECT OR HIS ENGINEER WHEN THE SYSTEM IS FINALLY COMPLETED TO ENSURE THAT ALL PORTIONS ARE FREE FROM SHORT CIRCUITS OR GROUND FAULTS. END OF SECTION 16950

SECTION 16980

DEMONSTRATION OF ELECTRICAL EQUIPMENT A. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE ARCHITECT WITH CERTIFICATION OF THE INSPECTION AND APPROVAL OF AN ACTIVE MEMBER OF THE INTERNATIONAL ASSOCIATION OF ELECTRICAL INSPECTORS OF ALL WORK COMPLETED AND INCLUDED IN THE SECTION, IF REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE INSPECTOR WHEN WORK REACHES INSPECTION STAGE.

B. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE LOCAL AUTHORITY HAVING JURISDICTION IN ORDER THAT LOCAL INSPECTION MAY BE CARRIED OUT AT THE PROPER STAGE

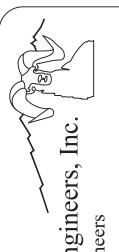
C.THE ELECTRICAL CONTRACTOR SHALL PAY FOR ALL PERMITS, INSPECTION FEES, AND INSTALLATION FEES AS REQUIRED TO COMPLETE THE WORK UNDER THIS SECTION OF THE D. THIS CONTRACTOR SHALL GUARANTEE THE MATERIALS AND WORKMANSHIP FOR A PERIOD OF

TWELVE (12) MONTHS FROM THE TIME THE INSTALLATION IS ACCEPTED BY THE OWNER. IF, DURING THIS TIME, ANY DEFECTS SHOULD SHOW UP DUE TO ANY DEFECTIVE MATERIALS, WORKMANSHIP, NEGLIGENCE OR WANT OF PROPER CARE ON THE PART OF THIS CONTRACTOR, HE SHALL FURNISH ANY NEW MATERIALS AS NECESSARY, REPAIR SAID DEFECTS, AND PUT THE SYSTEM IN ORDER AT HIS OWN EXPENSE ON RECEIPT OF NOTICE OF SUCH DEFECTS FROM THE ARCHITECT. THIS SPECIFICATION IS NOT INTENDED TO IMPLY THAT THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR NEGLIGENCE OF THE OWNER.

END OF SECTION 16980

END OF DIVISION

PERMISSION OF THE DESIGNER. THE DRAWINGS AND SHALL REMAIN THE PROPERTY OF THE DESIGNER WHETHER THE PROJECT FOR WHICH THEY ARE MADE IS EXECUTED OR NOT. THESE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED BY ANYONE O ANY OTHER PROJECTS FOR ADDITIONS TO THIS PROJECT BY OTHERS EXCEPT BY THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER.

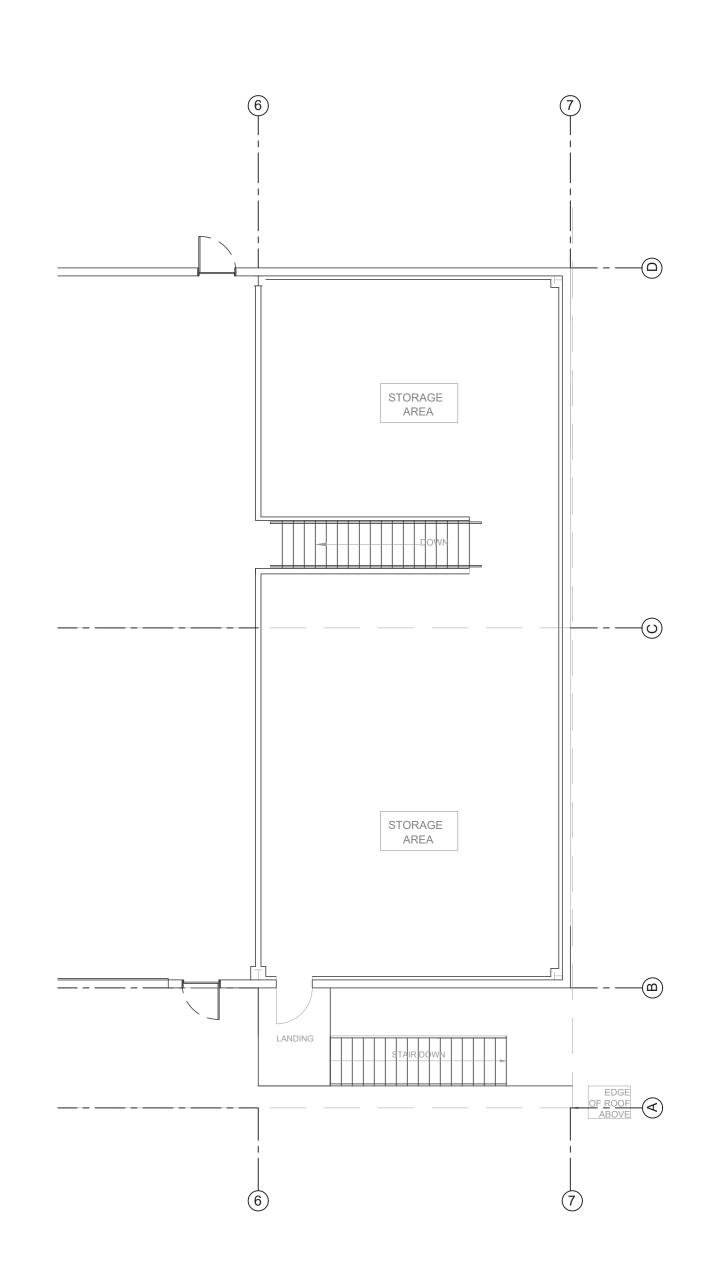


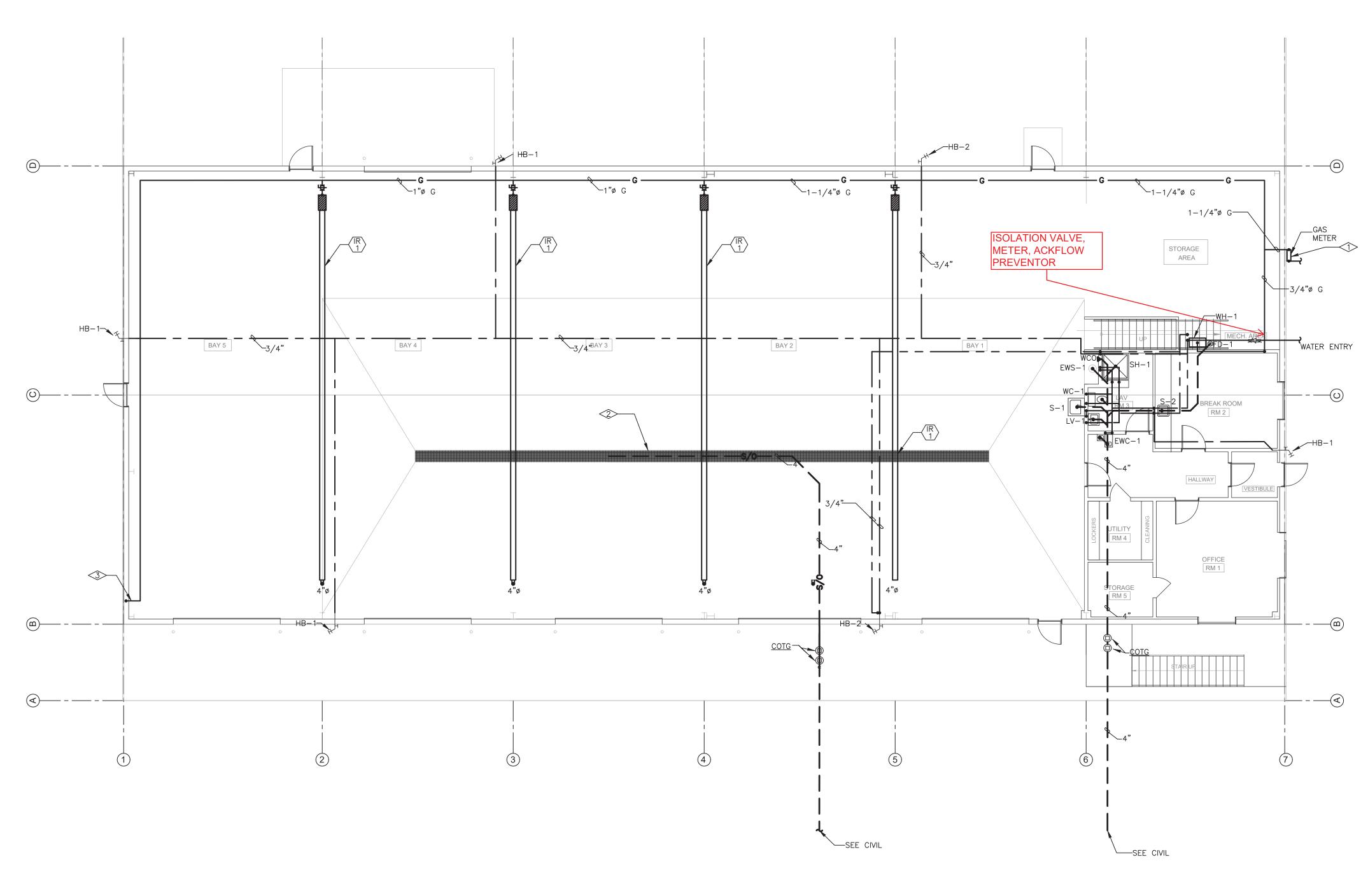
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DATE: | ISSUED FOR: 03/21/19 REVISED 50% DD 06/28/19 REVISED DRAWINGS 08/16/19



JOB NO: DRAWN BY: CHECKED BY: SCALE: AS SHOWN SHEET NUMBER







FLAG NOTES:

1. TRENCH DRAIN GRATE TO BE TRAFFIC RATED AND SLOPED PER IPC, SEE CIVIL.

2. NEW GAS METER, ASSUMED MEDIUM PRESSURE GAS (I.E. 2PSI). TOTAL APPROXIMATE LOAD 1,246MBH (~1,520 CFH). LONGEST LENGTH IS APPROXIMATELY 200 FT LONG.

3. 3/4" (2PSI) GAS LINE STUB FOR FUTURE GENERATOR. PROVIDE WITH ISOLATION VALVE AND CAP ON INTERIOR OF BUILDING.

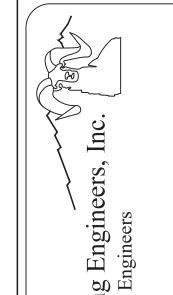
GENERAL NOTES:

1. PROVIDE GAS REGULATORS AT GAS FIRED EQUIPMENT.



VENTING CAN BE GROUPED AND ROUTED TO THE EAST HORIZONTALLY IN THE FIRST FLOOR CEILING SPACE
TO THE EAST EXTERIOR WALL AND ROUTED UP THE INTERIOR WALL AND ACROSS THE MEZZANNINE CEILING
SPACE TO THE ROOF ON A SLOPE ON ALL "HORIZONTAL" RUNS. THE ONLY OTHER FIXTURE THAT WOULD
NEED VENTING IS THE TRENCH DRAIN AND THIS CAN BE ROUTED UP THE INTERIOR OF THE SOUTH WALL
AND TO THE ROOF. if 8/23/19

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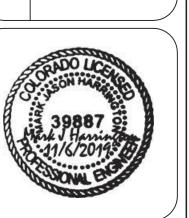
TOWN OF HOTCHKISS
PUBLIC WORKS FACILI

DATE: ISSUED FOR:

03/21/19 REVISED 50% DD

06/28/19 REVISED DRAWINGS

08/16/19 100% CD



DATE: 03/21/

JOB NO: 18-15

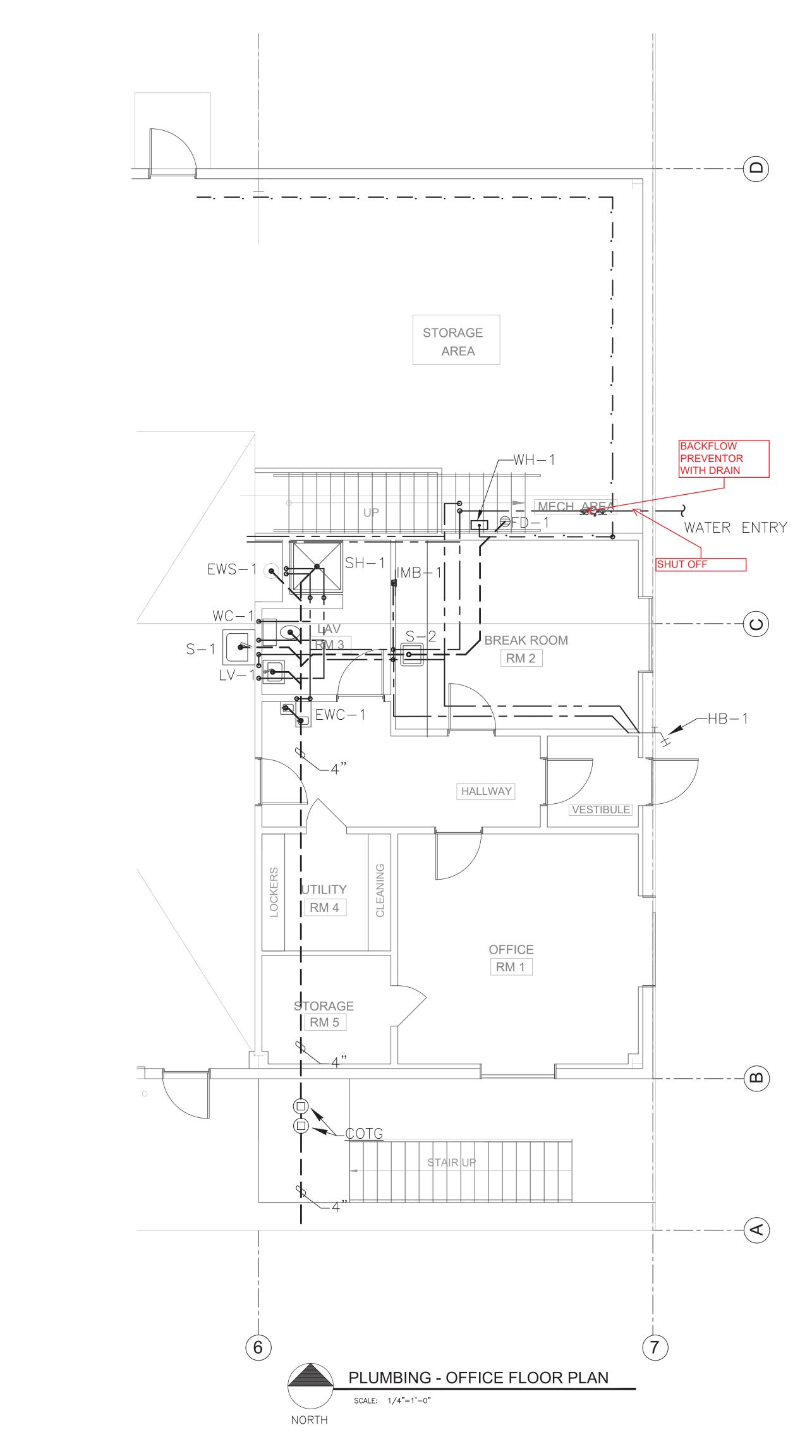
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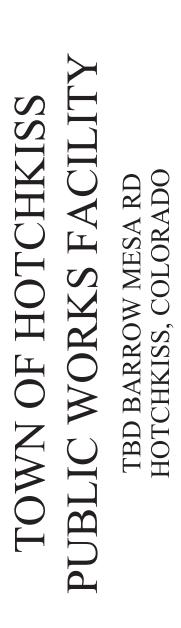
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SCALE: AS SHOW

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DATE: ISSUED FOR:

03/21/19 REVISED 50% DD

06/28/19 REVISED DRAWINGS

08/16/19 100% CD



DATE: 03/21/19

JOB NO: 18-159

DRAWN BY: BCE

CHECKED BY: BCE

SCALE: AS SHOWN

SHEET NUMBER:

November 06, 2019 – 1:45:53pm

				PLUMBING FIXTURE SCHEDULE					
FIXTURE NO.	DESCRIPTION	MANUFACTURER	MODEL	TRIM	PII	PING CONNE	CTIONS		- OPTIONS-ACCESSORIES
FIXTURE NO.	DESCRIPTION	MANUFACTURER	WIODEL	I KINI	S/W	VENT	C.W.	HW	OF HONS-ACCESSORIES
EWC-1	ELECTRIC WATER COOLER	ELKAY	LZSVR8L		1-1/2"	1-1/2"	1/2"	1/2"	PROVIDE WITH WALL CARRIER, WALL MOUNT ADA VANDAL RESISTANT, 8 GPH. POWER 115V/60HZ, FLA 5 AMPS, 370 WATT.
EWS-1	EYE WASH STATION	GUARDIAN	G1814P	WALL MOUNTED EYE WASH		-	3/4"	3/4"	FLOOR MOUNTED, PROVIDE WITH MIXING VALVE, FLOOR DRAIN, HAND PADLE OPERATION. WATER DELIVERED SHOWER SHALL BE TEPID MINIMUM 60°F TO 100°F.
FD-1	FLOOR DRAIN	SIOUX CHIEF	832-4PNR	BRONZE	4"	2"	-	-	PROVIDE NICKEL BRONZE STRAINER, MECHANICAL TRAP SEAL SIMILAR TO J.R. SMITH QUAD CLOSE.
HB-1	FREEZE PROOF HOSE BIB	WOODFORD	B67		-	-	3/4"	1/2"	PROVIDE LOCKING BOX WITH ANTI-SIPHON AND VACUMN BREAKER, FREEZE PROOF.
HB-2	FREEZE PROOF HOSE BIB	WOODFORD	V22		-	-	3/4"	1/2"	PROVIDE LOCKING BOX WITH ANTI-SIPHON AND VACUMN BREAKER, FREEZE PROOF.
LV-1	WALL MOUNTED BATHROOM SINK	AMERICAN STANDARD-REGALYN	4867.008	PROVIDE AMERICAN STANDARD MONTERREY .35 GPM FAUCET	1 1/2"	1 1/2"	1/2"	1/2"	GRID DRAIN, P TRAP, LOCAL MIXING VALVE, WALL HANGER KIT.
S-1	24"X24" TERRAZZO BASIN	FIAT	TSB100	PROVIDE PROFLOW PF1118 UTILITY FAUCET	1-1/2"	1-1/2"	1/2"	1/2"	PROVIDE WITH TOP MOUNT UTILITY FAUCET WITH INTEGRAL VACUUM BREAKER, HOT COLD STEMS, STAINLESS STEEL CAPS, SILICONE SEALENT, WALL GAURDS.
S-2	1 COMPARTMENT SINK COUNTER MOUNTED	JUST	SLN-1815-A-GR	JUST JV-174-A COUNTER MOUNTED SINK	1-1/2"	1-1/2"	1/2"	1/2"	SINK STRAINER, P-TRAP, LOCAL MIXING VALVE, ADDITIONAL ACCESSORIES COORDINATE WITH OWNER.
SH-1	ADA SHOWER ENCLOSURE	CHICAGO FAUCETS	SH-PB1-00-013	ADA TERRAZO BASIN, TILE WITH GREEN BOARD.	1-1/2"	1-1/2"	1/2"	1/2"	TERRAZO BASIN, PRESSURE BALANCED MIXING VALVE POLYPROPYLENE WALLS, CURTAIN ROD, SIONGLE LEVER VALVE, GRID FLOOR DRAIN, GRAB BARS, SEAT.
WC-1	ADA WATER CLOSET	AMERICAN STANDARD-CHAMPION	2034.314	1.6 GPF FLUSH TANK WATER CLOSET	4"	2"	3/4"	-	VACUUM BREAKER, COORDINATE COLOR WITH OWNER, PROVIDE ELONGATED SEAT.

PLUMBING SPECIFICATION.

1. SCOPE OF WORK

- A. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER
- SPECIFIED OR IMPLIED.

 B. ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE INTERNATIONAL PLUMBING CODE (LATEST EDITION), ALL LOCAL
- CODES AND ALL OTHER REGULATION GOVERNING WORK OF THIS NATURE.

 C. THE CONTRACTOR SHALL, BEFORE SUBMITTING ANY PROPOSAL,
 EXAMINE THE PROPOSED SITE AND SHALL DETERMINE FOR HIMSELF
 THE CONDITIONS THAT MAY AFFECT THE WORK. NO ALLOWANCE SHALL
- BE MADE IF THE CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS.

 D. ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED EQUAL" BY THE ENGINEER OR ARCHITECT.

2. PERMITS

A. THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES.

3. SHOP DRAWINGS

- A. SUBMIT MATERIAL LIST AND SHOP DRAWINGS FOR MAJOR EQUIPMENT TO THE ACHITECT/ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL SUBMIT FIVE SETS OF SHOP DRAWINGS AND THEY SHALL BE CLEARLY LABELED.
- 4. DOMESTIC WATER SUPPLY PIPING
- A. UNDERGROUND: PROVIDE TYPE "K" SOFT DRAWN COPPER TUBING WITH BRAZED CONNECTIONS.
- B. ABOVE GROUND: PROVIDE TYPE "L" HARD DRAWN COPPER TUBING WITH 125 PSI SOLDER JOINTS, COPPER OR BRASS FITTINGS.
 ALL SOLDER TO BE "NO LEAD" TYPE.
- C. ALL HOT WATER PIPING TO BE INSULATED WITH 1" FIBERGLASS INSULATION.
- D. ALL COLD WATER PIPING TO BE INSULATED WITH 1/2" FOAM INSULATION.

5. SANTARY/STORM DRAINAGE AND VENT PIPING.

- A. ABOVE GRADE: -2"BELOW: SCI
 - -2"BELOW: SCH.40 GALV. STL. PIPE WITH SCREWED ENDS OR SCH. 40PVC WITH SOLVENT JOINTS OR DWV COPPER WITH SOLDER JOINTS. ALL SOLDER TO BE "NO LEAD" TYPE.

 -3" AND ABOVE: SERVICE WT. CAST IRON WITH NO-HUB OR BELL AND SPIGOT JOINTS; OR SCH 40 PVC WITH SOLVENT
- B. BELOW GRADE: SERVICE WT. CAST IRON WITH NO-HUB OR BELL AND SPIGOT JOINTS; OR SCH 40 PVC WITH SOLVENT JOINTS.
 C. PVC PIPING SHALL NOT BE USED IN AIR PLENUM CEILINGS AND
- SHALL NOT CROSS FIRE RATED WALLS, CEILINGS, OR FLOORS.

 D. DRAINAGE PIPING SHALL BE RUN AS STRAIGHT AS POSSIBLE
- AND SHALL HAVE LONG TURN FITTINGS.

 E. DRAINAGE PIPING 3" SIZE AND SMALLER SHALL RUN AT A UNIFORM GRADE OF AT LEAST ¼" PER FOOT. AND PIPING LARGER THAN 3" SHALL BE RUN AT A GRADE OF NO LESS THAN 1/8" PER FOOT.
- F. ALL VENT PIPING SHALL BE SLOPED TO DRAIN BACK TO FIXTURES.
 G. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER FLASHING OF

PENETRATIONS OF BUILDING FOUNDATIONS OR FÓOTINGS SHALL

THE VENT PIPING RUN THROUGH THE ROOF.

6. <u>ALL STUB-INS</u> AND/OR SLAB OR WALL PENETRATION TO BE PER INTERNATIONAL PLUMBING CODE (LATEST EDITION).ALL PIPING

7. PIPE SUPPORTS

BE SLEEVED.

- A. ABOVE GRADE
- ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE AND PERFORATED METAL TO SUPPORT PIPES WILL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL BE AS SPECIFIED IN INTERNATIONAL PLUMBING CODE (LATEST EDITION).
- B. BELOW GRADE

 EARTH SHALL BE EXCAVATED TO A MINIMUM DEPTH WITH AN EVEN SURFACE
 TO INSURE SOLID BEARING OF PIPE FOR ITS ENTIRE LENGTH.

 -INTERIOR: THE PIPE SHALL BE INSTALLED (UNLESS OTHERWISE SPECIFIED)
 A MINIMUM OF 4 INCHES BELOW THE BOTTOM OF THE SLAB AND SHALL
 NOT BE IN ANY DIRECT CONTACT WITH THE CONCRETE AT ANY POINT.

 -EXTERIOR: THE WATER PIPE SHALL HAVE A MINIMUM OF 60" OF COVER
 AND THE SANITARY WASTE PIPE SHALL HAVE A MINIMUM OF 24" OF COVER.

8. MISCELLANEOUS

- A. COORDINATE INSTALLATION OF ALL ROOFS FLASHING AT ROOF PENETRATION.
 B. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES,
- CONDITIONS AND DIMENSIONS AT THE JOB SITE.

 C. THE PLUMBING PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURE'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION. THE EXACT DIMENSIONS OR ALL THE DETAILS OF THE EQUIPMENT. THE CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT THE AVAILABLE SPACE.

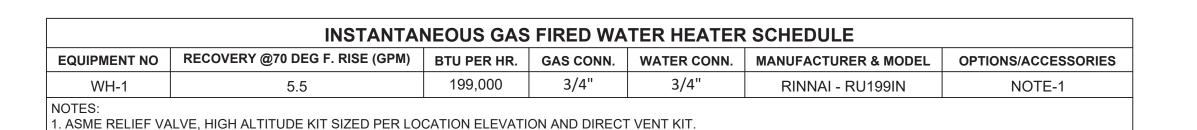
9. TESTING

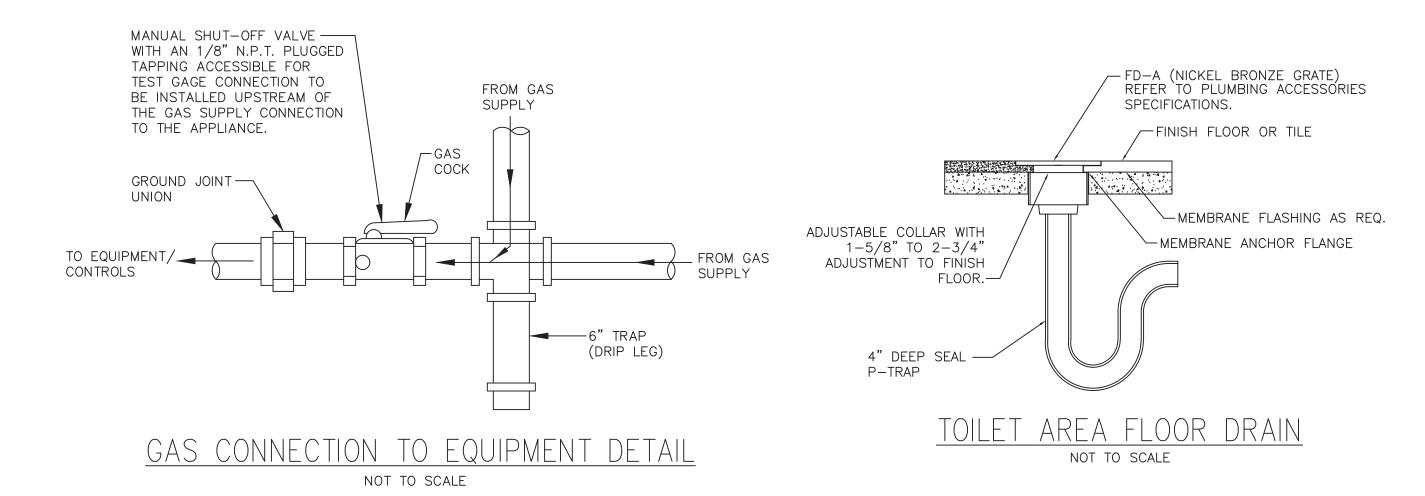
A. PLUMBING SYSTEM SHALL BE FLOW AND PRESSURE TESTED IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE (LATEST EDITION).

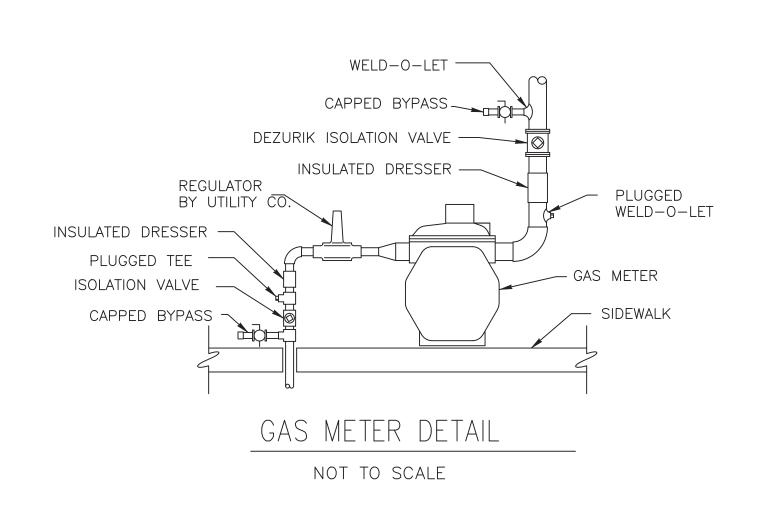
10. GUARANTEE

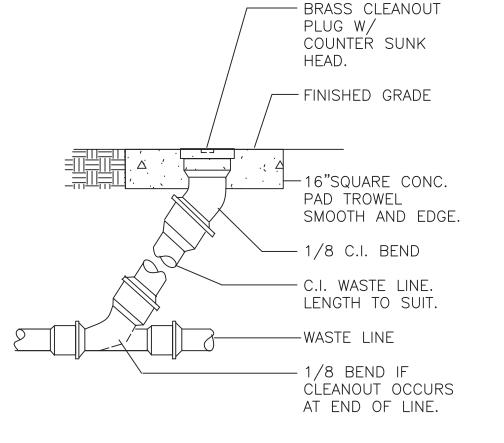
- A. MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS
- CONTRACTOR'S EXPENSE.

 B. FOR THE SAME PERIOD. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY HIM.









CLEANOUT TO GRADE

NOT TO SCALE

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TOWN OF HOTCHKISS
PUBLIC WORKS FACILITY

DATE: | ISSUED FOR:

08/16/19

03/21/19 REVISED 50% DD

06/28/19 REVISED DRAWINGS

DATE: 03/21/19
JOB NO: 18-159

BCE

AS SHOWN

November 06, 2019 – 1:45:54pm

DRAWN BY:

SCALE:

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SHEET NUMBER:

				А	BBREVIATIONS				
				_					
AAV	AUTOMATIC AIR VENT	DN	DOWN	FTR	FINNED TUBE RADIATION	NC	NORMALLY CLOSED	RM	ROOM
ABV	ABOVE	DWG	DRAWING	FV	FACE VELOCITY	NEG	NEGATIVE	ROD	ROOF OVERFLOW DRAIN
ADR	AREA DRAIN (SEE SYMBOLS)	DX	DIRECT EXPANSION	FXC	FLEXIBLE CONNECTION	NIC	NOT IN CONTRACT	RPM	REVOLUTIONS PER MINUTE
AFF	ABOVE FINISHED FLOOR	EA	EACH	GA	GAUGE	No	NUMBER	SA	SUPPLY AIR
ALUM	ALUMINUM	EAT	ENTERING AIR TEMPERATURE	GAL	GALLON	NO	NORMALLY OPEN	SAD	SUPPLY AIR DIFFUSER
AP	ACCESS PANEL	EC	ELECTRICAL CONTRACTOR	GALV	GALVANIZED	NOM	NOMINAL	SCH	SCHEDULE
ATC	AUTOMATIC TEMPERATURE CONTROL	ECC	ECCENTRIC	GC	GENERAL CONTRACTOR	NTS	NOT TO SCALE	SCHEM	SCHEMATIC
AVER	AVERAGE	EFF	EFFICIENCY	GPM	GALLONS PER MINUTE	OA	OUTSIDE AIR	SH	SENSIBLE HEAT
AWT	AVERAGE WATER TEMPERATURE	EJ	EXPANSION JOINT	GR	GRILLE	OB	OFF BOTTOM	SP	STATIC PRESSURE
BDD	BACK DRAFT DAMPER	EL	ELEVATION	GRS/LB	GRAINS PER POUND	OD	OUTSIDE DIMENSION	SPEC	SPECIFICATION
BFP	BACK FLOW PREVENTOR	ELEC	ELECTRIC	HT	HEIGHT	OC	ON CENTER	SQ	SQUARE
BLDG	BUILDING	ELEV	ELEVATOR	$H_2 O$	WATER	OCC	OCCUPIED	SS	STAINLESS STEEL
BLW	BELOW	ENT	ENTERING	HB	HOSE BIBB	OGH	OUTSIDE GROUND HYDRANT	STD	STANDARD
BSMT	BASEMENT	EQ	EQUAL	HD	HEAD (SEE SCHEDULES)	OPG	OPENING	STL	STEEL
BTU	BRITISH THERMAL UNIT	EQUIP	EQUIPMENT	HP	HORSEPOWER	OT	OFF TOP	STM	STEAM
CAP	CAPACITY	EQUIV	EQUIVALENT	HR	HOUR	OZ	OUNCE	STR	STRUCTURAL
CBV	CIRCUIT BALANCING VALVE	ER	EXHAUST REGISTER	HTR	HEATER	PART	PARTIAL	SUCT	SUCTION
CFH	CUBIC FEET PER HOUR	ES	END SWITCH	HZ	HERTZ	PDR	PLENUM DRAIN	SYS	SYSTEM
CFM	CUBIC FEET PER MINUTE	EWT	ENTERING WATER TEMPERATURE	ID	INTERNAL DIAMETER	PD	PRESSURE DROP (SEE SCHEDULE) TAD	TRANSFER AIR DUCT
CHP	CONCRETE HOUSEKEEPING PAD	EX	EXHAUST	IN	INCHES	PERF	PERFORATED	TDH	TOTAL DYNAMIC HEAD
ÇI	CAST IRON	EXPAN	EXPANSION	INCL	INCLUDING	PH	PHASE	TEMP	TEMPERATURE
<u>¢</u>	CENTER LINE	EXT	EXTERNAL	INT	INTERNAL	PNEU	PNEUMATIC	THT	TOTAL HEAT
CLG	CEILING	°F	DEGREES FAHRENHEIT	INV	INVERT	POS	POSITIVE	TP	TOTAL PRESSURE
CMU	CONCRETE MASONRY UNIT	FA	FROM ABOVE	KW	KILOWATT	PRESS	PRESSURE	TT	TEMPERATURE TRANSMITTER
CO	CLEAN OUT	FB	FROM BELOW	L	LENGTH	PS	PRESSURE SWITCH	TYP	TYPICAL
COL	COLUMN	FC	FAIL CLOSED	LAT	LEAVING AIR TEMPERATURE	PSI	POUNDS PER SQUARE INCH	UC	UNDERCUT
COMP	COMPRESSOR	FCV	FLOW CONTROL VALVE	LB	POUND	PT	PRESSURE TRANSMITTER	UNOCC	UNOCCUPIED
CON	CONCENTRIC	FD	FLOOR DRAIN	LD	LINEAR DIFFUSER	PV	PLUG VALVE	V	VOLTS
CONC	CONCRETE	F/D	FIRE DAMPER	LIN	LINEAR	PVC	POLYVINYL CHLORIDE	VA	VALVE
COND	CONDENSATE	FIN	FINISHED	LIQ	LIQUID	QUAN	QUANTITY	VB	VACUUM BREAKER
CONN	CONNECTION	FL	FLANGE	LRA	LOCK ROTOR AMPS	R	REGISTER	VEL	VELOCITY
CONT'N	CONTINUATION	FLA	FULL LOAD AMPS	LVG	LEAVING	RA	RETURN AIR	VI	VIBRATION ISOLATOR
CONTR	CONTRACTOR	FLEX	FLEXIBLE	LVR	LOUVER	RD	ROOF DRAIN	VOLT	VOLTAGE
DA	DIRECT ACTING	FLR	FLOOR	LWT	LEAVING WATER TEMPERATURE	RE	ROUNDED ENTRANCE/EXIT	VTR	VENT THRU ROOF
DAMP	DAMPER	FO	FAIL OPEN	MC	MECHANICAL CONTRACTOR	REL	RELIEF	W	WIDTH
DB	DRY BULB	FP	FIRE PROTECTION	MBH	THOUSANDS OF BTU PER HOUF	RREQD	REQUIRED	W/	WITH
DEPT	DEPARTMENT	FPM	FEET PER MINUTE	MED	MEDIUM	RET	RETURN	W/O	WITHOUT
DIA	DIAMETER	FPS	FEET PER SECOND	MFR	MANUFACTURER	RH	RELATIVE HUMIDITY	WB	WET BULB
DIAG	DIAGRAM	FRICT	FRICTION	MH	MANHOLE	RICW	RUN IN CASEWORK	WC	WATER COLUMN
DIFF	DIFFERENTIAL	FS	FLOW SWITCH	MIN	MINIMUM	RIE	RUN IN ENCLOSURE	WG	WATER GAUGE
DISCH	DISCHARGE	F/S/D	FIRE/SMOKE DAMPER WITH ACCESS DOOR	MISC	MISCELLANEOUS	RIW	RISE IN WALL		
DIV	DIVISION	. , 5, 5	WITH ACCESS DOOR	MTD	MOUNTED	RLA	RATED LOAD AMPS		
DIW	DOWN IN WALL	FT	FEET						
DL	DOOR LOUVER								

TRANSFER GRILLE

VOLUME DAMPER

VENT THRU ROOF

WET BULB

WMS WIRE MESH SCREEN

UNIT HEATER

TYPICAL

UNLESS OTHERWISE NOTED

VARIABLE AIR VOLUME UNIT

NO

OAT

OC

OD

OBD

PBD

PRV

PTAC

RA

RAG

RCP

RHC

RF

SAR

SCG

SEF

SF

SP

TG

TYP

UON

VTR

WB

ABBREVIATIONS (CONTINUED)

EXPANSION TANK

FREE AREA

FAN COIL UNIT

FLAT ON BOTTOM

FUEL OIL PUMP

FEET PER MINUTE

FINNED TUBE RADIATION

GENERAL CONTRACTOR

GALLONS PER HOUR

GALLONS PER MINUTE

HOT WATER CONVERTER

HOT WATER PUMP

HEAT EXCHANGER

INSIDE DIAMETER

LINEAR DIFFUSER

MAKE-UP AIR UNIT

LINEAR FEET

MOUNTED

HERTZ

HEATING AND VENTILATING UNIT

HEATING HOT WATER RETURN

HEATING HOT WATER SUPPLY

LEAVING AIR TEMPERATURE

MECHANICAL CONTRACTOR

MOTOR OPERATED DAMPER

LEAVING WATER TEMPERATURE

FIRE DAMPER

FLAT ON TOP

HAND DAMPER

HEAT PUMP

FIRE PUMP

FLOOR

ESP

EWC

FA

FΧ

FLR

FOB

FOP

FP

FTR

GC

GPH

GPM

HD

ΗP

HV

HWP

HWR

HWS

HX

HΖ

ID

LAT

LWT

MC

MTD

MOD

EXTERNAL STATIC PRESSURE

ENTERING WATER TEMPERATURE

ELECTRIC WATER COOLER

FLEXIBLE CONNECTION

AIR CONDITIONING UNIT

ABOVE FINISHED FLOOR

AIR HANDLING UNIT

ACOUSTICAL LINING

BACK DRAFT DAMPER

BOTTOM OF BEAM

BOTTOM OF DUCT

CEILING DIFFUSER

BOTTOM OF PIPE

BELOW FINISHED CEILING

CUBIC FEET PER MINUTE

CHILLED WATER RETURN

CHILLED WATER SUPPLY

CONDENSER WATER RETURN

CONDENSER WATER SUPPLY

CONDENSATE PUMP

COOLING TOWER

CONDENSING UNIT

CABINET UNIT HEATER

CONSTANT VOLUME BOX

DOMESTIC WATER PUMP

ELECTRICAL CONTRACTOR

ENTERING AIR TEMPERATURE

CONDENSER WATER PUMP

CHILLED WATER PUMP

ACCESS PANEL

BOILER

CHILLER

CLEAN OUT

DRY BULB

DUCT SILENCER

EXHAUST FAN

EXPANSION JOINT EXHAUST REGISTER

BDD

BFC

BOB

BOD

BOP

CFM

CHWP

CHWR

CHWS

CO

CP

CWR

CWS

CT

CU

CWP

DB

DS

DWP

EAT

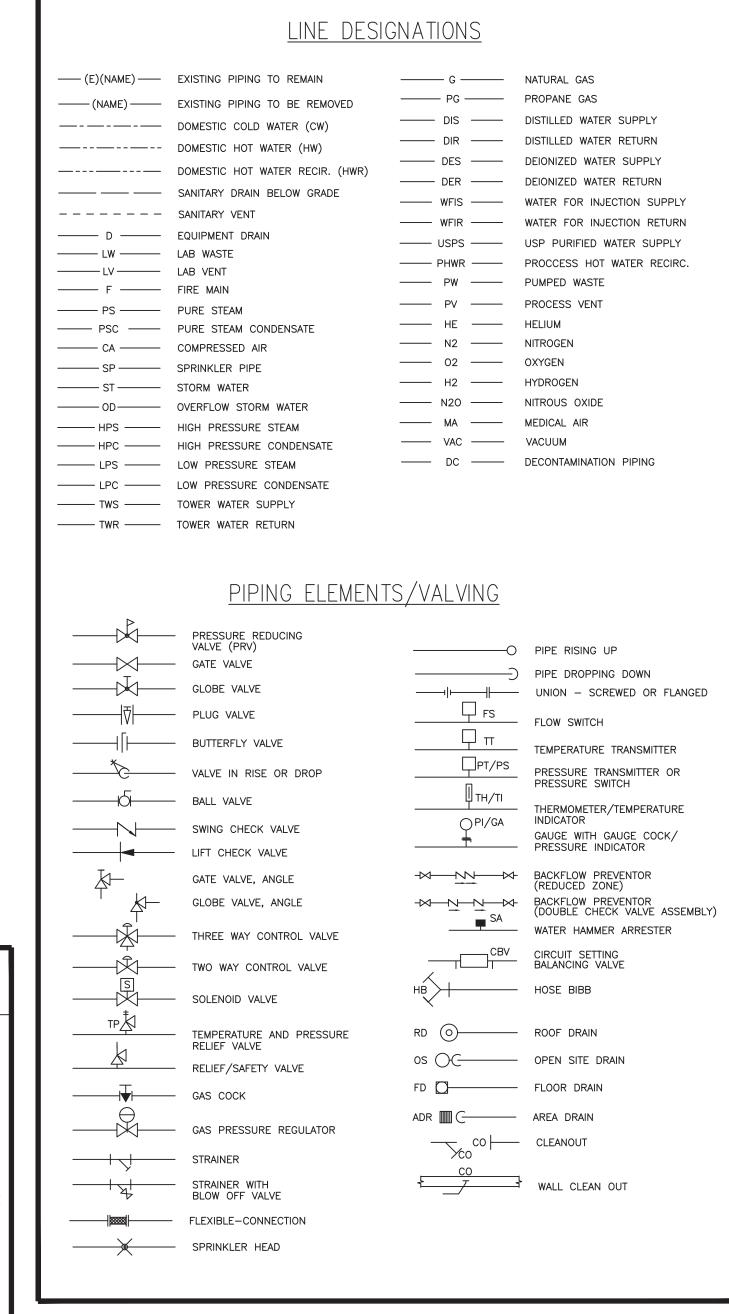
EF

AIR HANDLER (SPLIT REFRIG)

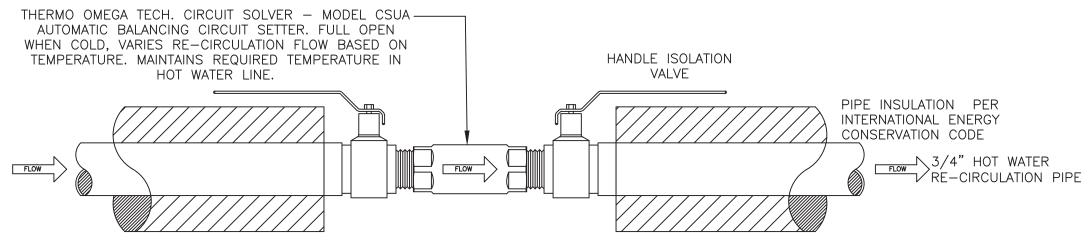
ELECTRIC BASEBOARD RADIATION FD

ACCESS DOOR

		<u>PLUMBING S</u>	SYMBOLS	
	<u>SYMBOL</u>	DESCRIPTION	SYMBOL	DESCRIPTION
NORMALLY CLOSED NORMALLY OPEN		SOIL OR WASTE PIPE (BELOW GROUND)	<u></u>	VACUUM BREAKER
NOT IN CONTRACT		SOIL OR WASTE PIPE (ABOVE GROUND)	—(○) RD	ROOF DRAIN
NECK		- VENT PIPE (V)	_	PRESSURE GAGE
OUTSIDE AIR OUTSIDE AIR INTAKE		— COLD WATER PIPE (CW)	⊘ □	TEMPERATURE GAGE
OUTSIDE AIR TEMPERATURE		- HOT WATER PIPE (HW)	₩ ——(M)——	WATER METER
ON CENTER		- HOT WATER RETURN (HWR)		PRESSURE REDUCING VALVE
OUTSIDE DIAMETER	т	- TEMPERED HOT WATER LINE (THW)	—	GAS COCK
OPPOSED BLADE DAMPER PARALLEL BLADE DAMPER	G	- NATURAL GAS PIPE	v	
PRESSURE REDUCING VALVE	sD	STORM DRAIN PIPE	VTR	VENT THROUGH ROOF
PACKAGED TERMINAL AIR CONDITIONER	——	FLOOR DRAIN	LAV	LAVATORY
RETURN AIR RETURN AIR GRILLE	——— co	CLEAN-OUT(FLOOR)	WC	WATER CLOSET
RETURN AIR REGISTER	—— co	CLEAN-OUT(WALL)	URN	URINAL
REFLECTED CEILING PLAN	(WH)	HOT WATER HEATER	DF	DRINKING FOUNTAIN
REHEAT COIL RETURN FAN	Į į	GATE VALVE	SH	SHOWER
SUPPLY AIR	~	CHECK VALVE	A.D.	ACCESS DOOR
SUPPLY AIR REGISTER	——————————————————————————————————————	TEMP./PRESS. RELIEF VALVE	SS	SAFETY SHOWER
SMOKE CONTROL GRILLE	\$- T			
SMOKE DAMPER SMOKE EXHAUST FAN	_	FIXTURE ISOLATION VALVE		
SUPPLY FAN				
STATIC PRESSURE TRANSFER GRILLE	_	FUEDNO OMECA TECH CIDO	NUT COLVED	MODEL COLLA



PLUMBING LEGEND



CIRCUIT SOLVER - AUTOMATIC CIRCUIT SETTER DETAIL NOT TO SCALE

PLUMBING - LEGEND

Consulting 1 & Electrical En Bighorn Cc Mechanical & J 386 Indian Road Grand Junction, O Phone: 970-241-8 X

Engine

d CO 81 -8709

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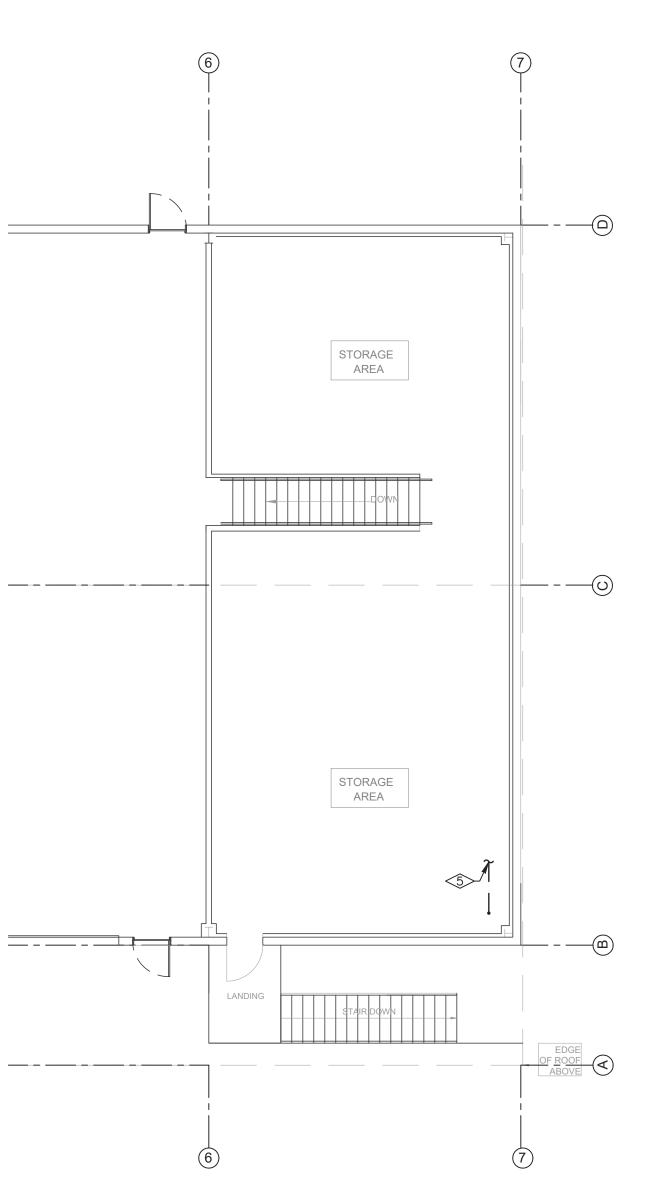
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03/21/19 JOB NO: DRAWN BY: BCE CHECKED BY: AS SHOWN SHEET NUMBER:





MECHANICAL GENERAL NOTES:

1. DRAWING IS DIAGRAMMATIC IN NATURE. LOCATIONS AND SIZES MAY VARY DURING FIELD COORDINATION & INSTALLATION OF MECHANICAL, PLUMBING, & ELECTRICAL. DRAWINGS DO NOT NECESSARILY INDICATE EVERY REQUIRED OFFSET, FITTING, ETC. DRAWINGS ARE NOT TO BE SCALED FOR DIMENSIONS. TAKE ALL DIMENSIONS FROM ARCHITECTURAL DRAWINGS, CERTIFIED EQUIPMENT DRAWINGS AND FROM THE STRUCTURE ITSELF BEFORE FABRICATING ANY WORK, VERIFY ALL SPACE REQUIREMENTS COORDINATING WITH OTHER TRADES, AND INSTALL THE SYSTEMS IN THE SPACE PROVIDED WITHOUT EXTRA CHARGES TO THE OWNER.

2. ALL REFRIGERANT LINES ARE TO BE LIMITED TO 75' EQUIVALENT LINE LENGTH. ALL REFRIGERANT LINES SHALL BE INSULATED PER IECC REQUIREMENTS. ALL REFRIGERANT LINES SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATION.

3. INDOOR HEAT PUMPS SHALL BE PROVIDED WITH AUXILLARY CONDENSATE PUMP, 240V/1PH/60HZ "ASPEN-PUMP". CONDENSATE SHALL BE ROUTED THROUGH 3/4" TYPE L COPPER TO NEAREST PLUMBING FIXTURE GROUP. DISCHARGE INDIRECTLY THROUGH AIR GAP SIZED PER IPC.

FLAG NOTES:

1. MACURCO CM-6, TX-6-ND CARBON MONOXIDE & NITROGEN DIOXIDE SENSORS. SENSORS TO BE INTERLOCKED WITH EF-2 AND LR-1. EXHAUST FANS SHALL TURN ON AT DETECTION OF 10PPM FOR CO & 50 PPB FOR NO2. ALARMS SHALL BE TRIGGERED AT DETECTION OF 25 PPM FOR CO & 100 PPB FOR NO2. LOUVERS TO OPEN UPON ACTIVATION OF EXHAUST FAN. LOUVERS ARE TO FAIL OPEN. INSTALL CO & NO2 DETECTORS PER MANUFACTURER'S INSTRUCTIONS, EACH SENSOR COVERS A CIRCULAR AREA OF APPROXIMATELY 5,000 SQF. RADIUS OF 39'. INSTALL PER MANUFACTURERS REQUIREMENTS.

2. EF-2 TO BE INTERLOCKED WITH VARIABLE SPEED WALL MOUNTED SWITCH.

3. INFRARED HEATER, MAINTAIN MANUFACTURER'S REQUIRED CLEARANCES FROM ALL COMBUSTIBLES. INSTALL INFRARED HEATER PER MANUFACTURER'S RECOMMENDATIONS.

4. ROUTE COMPRESSED AIR TO MEZZANINE

5. COMPRESSED AIR FROM LOOP BELOW. PROVIDED WITH QUICK CONNECT FITTING.

6. COMPRESSED AIR DROP.

7. CIRCLE TO SHOW THE EFFECTIVE RANGE OF CO AND NO2 SENSORS.

require black iron pipe above 8' and aluminum quick connect below 8'

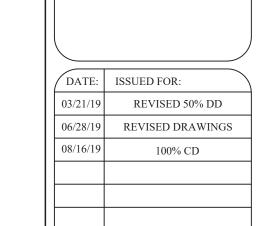
Need a manual

so town can use

the exhaust fans

when they want

override with timer



M

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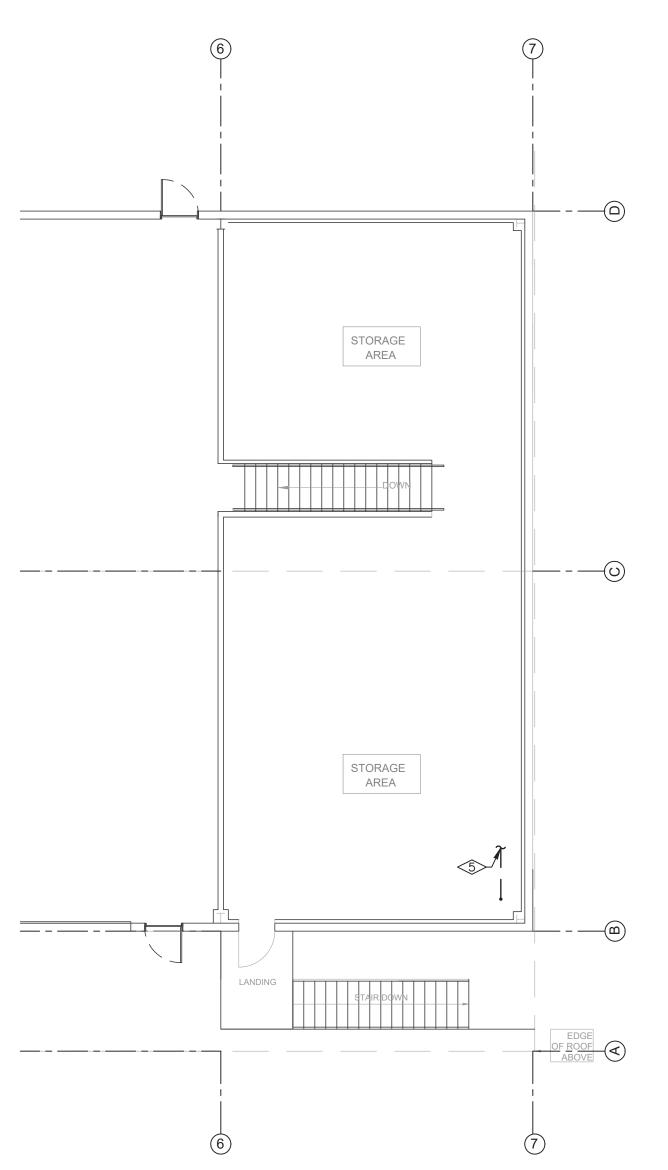
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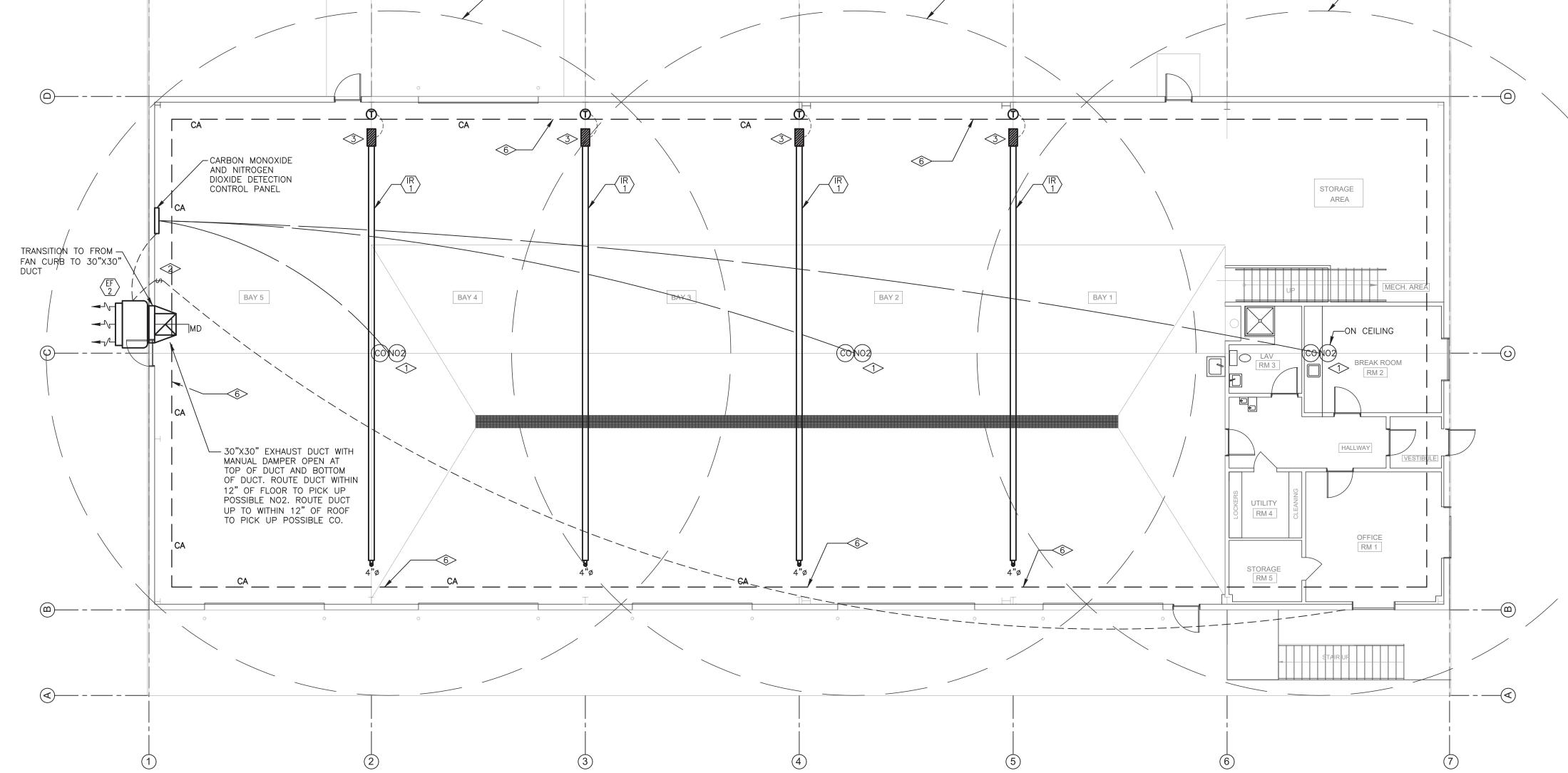


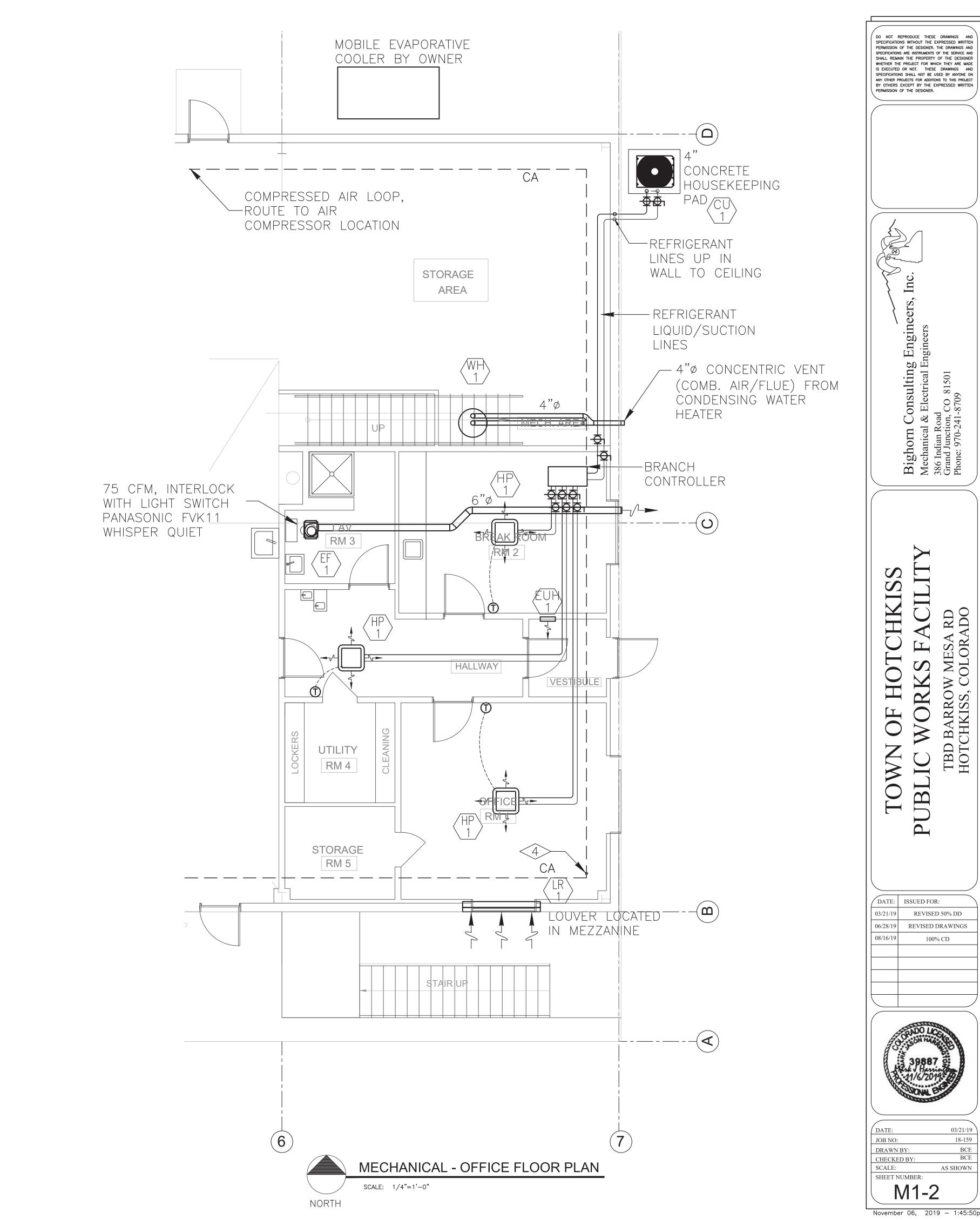
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MECHANICAL - MEZZANINE FLOOR PLAN

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





03/21/19 REVISED 50% DD 06/28/19 REVISED DRAWINGS 08/16/19 100% CD



1. SCOPE OF WORK

- A. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER
- SPECIFIED OR IMPLIED. ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH ALL LOCAL CODES AND ALL OTHER REGULATION GOVERNING WORK
- OF THIS NATURE C. THE CONTRACTOR SHALL, BEFORE SUBMITTING ANY PROPOSAL EXAMINE THE PROPOSED SITE AND SHALL DETERMINE FOR HIMSELF
- THE CONDITIONS THAT MAY EFFECT THE WORK. NO ALLOWANCE SHALL BE MADE IF THE CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS. D. ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR

"APPROVED EQUAL" BY THE ENGINEER OR ARCHITECT.

2. PERMITS

A. THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES.

3. SHOP DRAWINGS

A. SUBMIT MATERIAL LIST AND SHOP DRAWINGS FOR MAJOR EQUIPMENT TO THE ACHITECT/ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL SUBMIT FIVE SETS OF SHOP DRAWINGS AND THEY SHALL BE CLEARLY

4. FLEXIBLE DUCT WORK

- A. FLEXIBLE TYPE DUCT SHALL BE OF TWO ELEMENT SPIRAL CONSTRUCTION COMPOSED OF A CORROSION RESISTANT METAL SUPPORTING SPIRAL AND COATED FABRIC WITH A MINERIAL BASE. FLEXIBLE DUCT CONNECTORS SHALL BE LISTED BY U.L., CLASS 1 DUCTS, AND SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50.
- USE OF FLEXIBLE DUCTWORK SHALL BE LIMITED TO NO MORE THAN
- 6 LINEAR FEET PER RUN. CONTRACTOR SHALL BE CAREFUL SO AS NOT TO KINK OR COLLAPSE FLEXIBLE DUCT.

REFRIGERENT

- A. PIPING CONTRACTOR SHALL PROVIDE AND INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND IN SUCH A WAY AS TO BE INCONSPICIOUS AND FREE FROM ANY POSSIBLE CONDENSATION.
- INSULATE REFRIGERANT LINES WITH ARMOUR-FLEX TYPE INSULATION, SHALL BE TYPE "K" COPPER TUBING, WITH WROUGHT COPPER SOLDER TYPE FITTINGS SUITABLE FOR CONNECTION WITH SILVER SOLDER.

6. DUCTWORK

- THE DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE
- WITH THE "SMACNA" APPLICABLE MANUALS. B. ALL DUCTWORK SHALL BE THE LOW VELOCITY TYPE, UNLESS SPECIFIED
- OTHERWISE. CONTRACTOR SHALL PROVIDE AND INSTALL APPROVED FIRE DAMPERS AND ACCESS PANELS IN ANY AND ALL DUCTWORK WHICH
- PENETRATES A HORIZONTAL OR VERTICAL FIRE PARTITION, OR AS OTHERWISE SHOWN ON DRAWINGS. D. ALL BRANCH DUCTS TO HAVE VOLUME DAMPERS, SMOOTH TURN RADIUS DUCTWORK OR TURNING VANES SHALL BE USED THROUGHOUT WHERE FLOW
- ALL DUCT JOINTS TO BE SEALED IN ACCORDANCE WITH "SMACNA"
- STANDARDS AND ACCEPTED GOOD PRACTICE. ALL DUCT DIMENSIONS SHOWN ARE NET INSIDE VALUES.DIMENSIONS MAY BE
- CHANGED SO LONG AS THE NET FREE FACE AREA IS MAINTAINED. ALL CONCEALED DUCTWORK SHALL BE INSULATED WITH 1-1/2"
- FIBERGLASS INSULATING BLANKET WITH ALUMINUM FOIL FACING. ALL SUPPLY AND RETURN DUCTWORK 15 FEET DOWNSTREAM OF THE HVAC

UNIT SHALL BE INTERNALLY LINED WITH A 1/2" ACOUSTICAL DUCT LINER

UNLESS OTHERWISE NOTED ON THE DRAWINGS. 7. DRAINAGE PIPING

(CONDENSATE) SHALL BE SCHEDULE 40 PVC OR TYPE L COPPER PER ASTM B306 PIPE PITCH HORIZONTAL LINES 1" IN 10'-0". CONDENSATE DRAINS SHALL BE ROUTED TO FLOOR DRAIN, ROOF DRAIN OR INDIRECT WASTE DRAIN.

8. HVAC CONTROLS

CONTRACTOR TO SUPPLY AND INSTALL ALL CONTROL WIRING AND THERMOSTATS AS REQUIRED.

9. ELECTRICAL

CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR FOR LOCATION OF WIRING FOR EACH HVAC UNIT.

10. PIPE SUPPORTS

A. ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE OR METAL STRAP TO SUPPORT PIPES WILL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL NOT EXCEED 8 FEET FOR ALL PIPING. PLASTIC PIPING TO BE SUPPORTED EVERY 4 FEET.

11. GAS PIPING

A. PIPING SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH MALLEABLE IRON FITTINGS. WHERE GAS PIPE CONNECTS TO EQUIPMENT, IT SHALL BE PROVIDED WITH A DRIP LEG THE FULL SIZE OF THE RUNOUT, A 100% SHUT-OFF VALVE AND A UNION. GAS PIPING CONTAINING PRESSURE GREATER THAN 9" W.G. SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH WELDED JOINTS.

12. MISCELLANEOUS

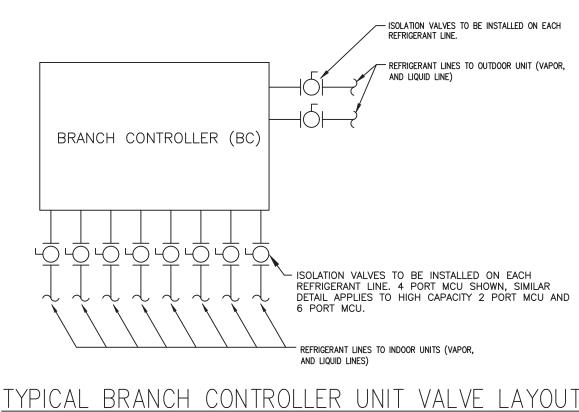
- ALL EXTERIOR OPENINGS TO BE PROPERLY CAULKED AND SEALED WITH A SEALANT OF HIGH QUALITY AND LONG LIFE, TO PREVENT INFILTRATION OF OUTSIDE AIR INTO CONDITIONED SPACE. COORDINATE INSTALLATION OF ALL ROOF FLASHING AT ROOF PENETRATION.
- DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, AND DIMENSIONS AT THE JOB SITE. THE MECHANICAL PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED
- ON ONE MANUFACTURE'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL THE DETAILS OF THE EQUIPMENT. THE CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT IN THE AVAILABLE

13. TESTING AND BALANCING

A. THE HVAC SYSTEM SHALL BE TESTED AND AND BALANCED BY AN INDEPENDENT AGENCY, UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. A SEALED TYPE WRITTEN REPORT SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL.

14. GUARANTEE

- MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE(1) YEAR FROM DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTOR'S
- FOR THE SAME PERIOD, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY HIM.



EXTERIOR WALL

—BIRDSCREEN

- INTERNAL WIRING

POST

- CAULK / SEAL WEATHER TIGHT

CENTRIFUGAL

WALL EXHAUST

- SAFETY DISCONNECT

SWITCH

- ALL THREAD ROD

-CLEVIS HANGER

-INSULATION

-INSULATION PROTECTIVE

SHEETMETAL SHIELD

-NUT (TOP & BOTTOM)

MOUNT AND SECURE TO

INSTALLATION PROCEDURES

BACKDRAFT

DAMPER

WALL IN ACCORDANCE

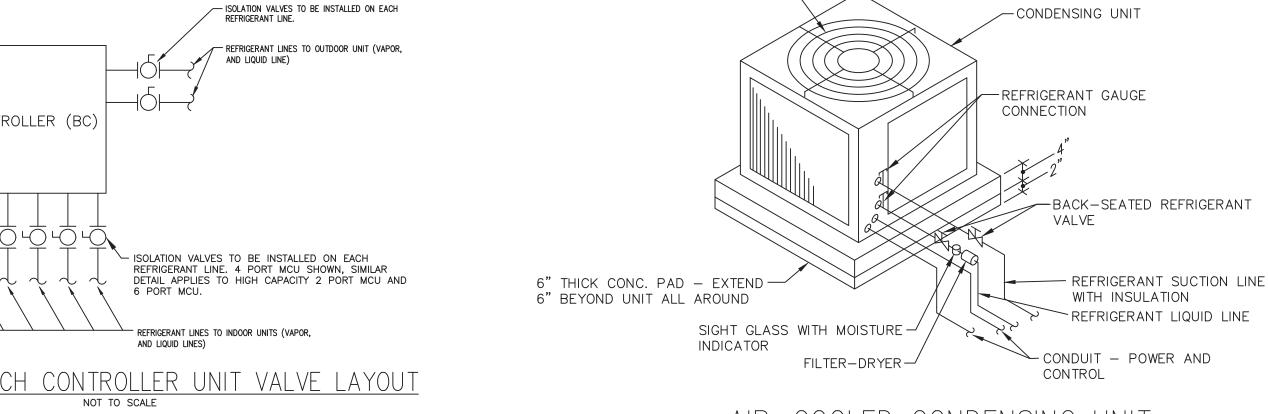
WITH MANUFACTURERS

EXHAUST DUCT -

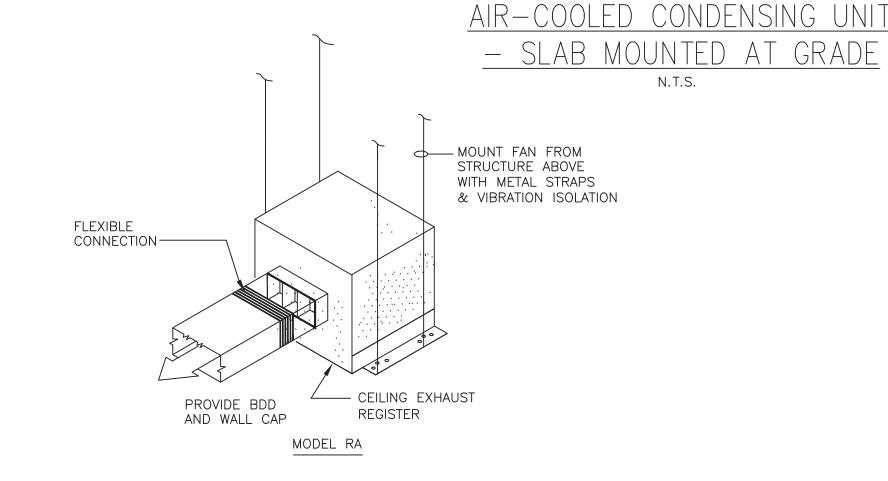
NOTE: FOR KITCHEN EXH.

HOOD APPLICATIONS, DUCT

TO BE OF 16 GA. WELDED



FAN GUARD —



CEILING EXHAUST FAN DETAIL

NOT TO SCALE

ISOLATION MOUNTING KIT

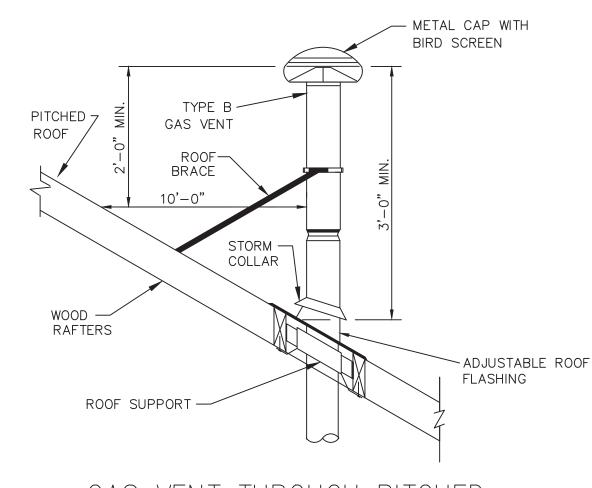
SEER = 18.9, EER = 12.0, HSPF = 11.

EF-2

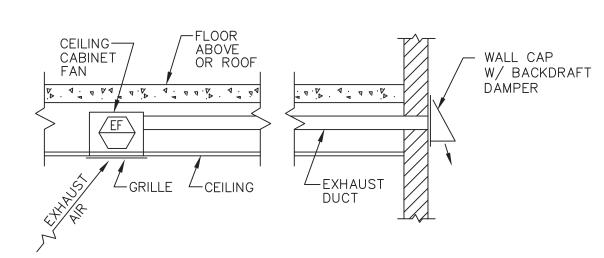
RESTROOM

SIDEWALL

9272



GAS VENT THROUGH PITCHED



CEILING MOUNTED EXHAUST FAN DETAIL - SIDEWALL DISCHARGE

RADIANT HEATER SCHEDULE OPTIONS/ACCES IGNITION TYPE TUBE LENGTH(FT) TUBE DIAMETER MIN. EFFICIENCY V./PH./H MANUFACTURER & EQUIPMENT NO. | SERVICE CAPACITY CAPACITY **AMPS** Z. (MBH) (MBH) SUPERIOR RADIANT 120/1/6 NATURAL GAS DIRECT SPARK 1.0 IR-1 205 78% PRODUCTS, UXR-205 0

1. PROVIDE WITH TERMINATION VENT KIT. POWER DISCONNECT. GAS SHUT-OFF VALVE, REFLECTORS, WALL MOUNTED INFRARED SENSOR/THERMOSTAT. HEAT TREATED ALUMINIZED STEEL HEAT EXCHANGER AND BURNER CONTROLS.

CENTRIFUGAL WALL EXHAUS

-WASHER (TOP & BOTTOM)

TYPICAL CLEVIS HANGER DETAIL NOT TO SCALE

AIR CONDITIONING EQUIPMENT SCHEDULE												
EQUIPMENT NO.	SERVICE	NOMINAL COOLING	NOMINAL HEATING	CFM	EER (EFFICIENCY)	REFRIGERANT PIPING		GERANT PIPING ELECTRICAL		MANUFACTURER & MODEL	OPTIONS/ACCESSORIES	
EQUIPMENT NO.	SERVICE	CAPACITY (BTU/HR.)	CAPACITY (BTU/HR.)	CFIVI	LER (LITIOILNOT)	LIQUID	SUCTION	MCA (AMPS)	V./PH./HZ.	MANUFACTURER & MODEL	OF HONS/ACCESSURIES	
HP-1	OFFICE	12,000	13,000	335	12	1/4	3/8	0.3	208-230/1/60	MITSUBISHI - SLZ-KF12NA	NOTE-1	

	AIR COOLED CONDENSING UNIT SCHEDULE												
EQUIPMENT	SEDVICE	NOMINAL COOLING	NOMINAL HEATING	CEED	REF	RIG. PIPING		ELECTRIC		MANUFACTURER &	OPTIONS/ACES SORIES		
NO.	SERVICE	CAPACITY (BTUH)	CAPACITY (BTUH)	SEER	LIQUID	VAPOR	V/PH/HZ	MOCP (A)	MCA (A)	MODEL	JORIES		
CU-1	OFFICE	48,000	54,000	19	3/8	5/8"	208-230/1/ 60	50	42	MITSUBISHI - MXZ-8C48NAHZ	NOTE-1		

1. PROVIDE LINE SET AS RECOMMENDED BY MANUFACTURER, POWER DISCONNECT, CONCRETE HOUSEKEEPING PAD, HYPER-HEAT OPERATION, 18" TALL ANGLE IRON STAND, VIBRATION ISOLATION, 5 PORT BRANCH BOX.

EXHAUST FAN SCHEDULE EXTERNAL STATIC PRESS (IN. EQUIPMENT NO. SERVICE LOCATION CFM MANUFACTURER & MODEL **OPTIONS/ACCESSORIES** W.G.) WATTS HP RPM VOLT/PH/HZ EF-1 RESTROOM CEILING 75 0.25 10.00 814 115/1/60 PANASONIC FV-05-11VK1 NOTE - 1

1. PROVIDE WITH POWER DISCONNECT, VIBRATION ISOLATION, GRAVITY BACKDRAFT DAMPER, INTERLOCK OPERATION WITH LIGHTSWITCH, EXHAUST TERMINATION

0.375

. DRAINABLE LOUVER, PROVIDE BIRDSCREEN AND KYNAR FINISH WITH COLOR TO BE SELECTED BY THE ARCHITECT

WITH UL LISTED CAP 2. PROVIDE WITH POWER DISCONNECT, HINGED CURB, BIRD SCREEN, ALUMINUM CONSTRUCTION, PERMATECTOR COATED, MECHANICAL BACKDRAFT DAMPER, MOTOR STARTER, VARIABLE SPEED BELT DRIVEN MOTOR. INTERLOCK OPERATION WITH WALL MOUNTED CO & NO2 MACURACO DETECTION CONTROL PANEL (FAN SHALL RAMP UP TO FULL SPEED AFTER RECIEVING SIGNAL FROM CONTROL PANEL). INTERLOCK OPERATION WITH WALL MOUNTED VARIABLE SPEED SWITCH

3/4

305

115/1/60

GREENHECK - CUBE-420

NOTE - 2

	LOUVER SCHEDULE												
EQUIPMENT NO.	SERVICE	WIDTH (IN)	HEIGHT (IN)	THICKNESS OF LOUVER	MATERIAL	INSECT/BIRD SCREEN	MANUFACTURER & MODEL	OPTIONS/ACCESSORIES					
LR-1	OUTSIDE/EXHAUST	72"	72"	4"	STEEL	1/2" BIRD	GREENHECK FDS-402	NOTE - 1, 2					
NOTES:													

2. PROVIDE LOW LEAKAGE MOTORIZED DAMPER IN SLEEVE BEHIND LOUVER. INTERLOCK DAMPER OPERATION WITH EF-2. LOUVER SHALL OPEN WHEN EF-2 IS ENERGIZED.

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Bighor Mechani 386 Indian Grand Jur

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