LCSD INDOOR ATHLETIC FACILITY

114 EAST 1000 NORTH
LOGAN UT 84321

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CONSTRUCTION DOCUMENTS

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SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK: | DATE: | DESCRIPTION:

PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
6428805-2301
LICENSED ARCHITECT

COVER SHEET
G-001

SHEET INDEX

NOTE: THE CONSTRUCTION DOCUMENTS FOR THIS PROJECT ARE COMPOSED OF SETS OF DRAWINGS AND SPECIFICATIONS, AND THEREFORE SHALL BE USED AND MAINTAINED IN THEIR ENTIRETY. ANY CONTRACTOR, SUBCONTRACTOR, VENDOR OR PARTY PARTICIPATING IN OR BIDDING ON THIS PROJECT SHALL BE EXPECTED TO PERFORM DUE DILIGENCE TO ENSURE THEIR BID, WORK PERFORMED, AND MATERIALS PROVIDED CONFORMS TO THE INFORMATION PROVIDED WITHIN ANY AND ALL SHEETS OF DRAWINGS AND SPECIFICATIONS, INCLUDING, BUT NOT LIMITED TO, ANY SUBSEQUENT ADDENDA OR CLARIFICATIONS THAT MAY BE ISSUED RELEVANT TO THEIR SCOPE OF WORK. PROJECT SCOPE MAY BE DEFINED WITHIN SPECIFICATIONS AND/OR DRAWINGS.

ADDITIONALLY, DRAWINGS MAY NOT BE RE-SCALED WHEN PRINTED, WRITTEN DIMENSIONS SHALL HAVE PRECEDENCE, AND LARGER SCALE DRAWINGS SHALL HAVE PRECEDENCE OVER SMALLER SCALE DRAWINGS.

ANY DEVIATION FROM OR CONFLICT WITHIN THE DRAWINGS AND/OR SPECIFICATIONS, MUST BE SUBMITTED VIA REQUEST FOR INFORMATION (RFI) AND RESPONDED TO BY THE ARCHITECT PRIOR TO BID OR BEFORE CONTINUING THAT PORTION OF WORK.

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BID ALTERNATES

(REFER TO SPECIFICATIONS 01 2300-ALTERNATES FOR FULL DESCRIPTION OF ALTERNATES)
SEE SHEETS A-821.0 AND A-821.1

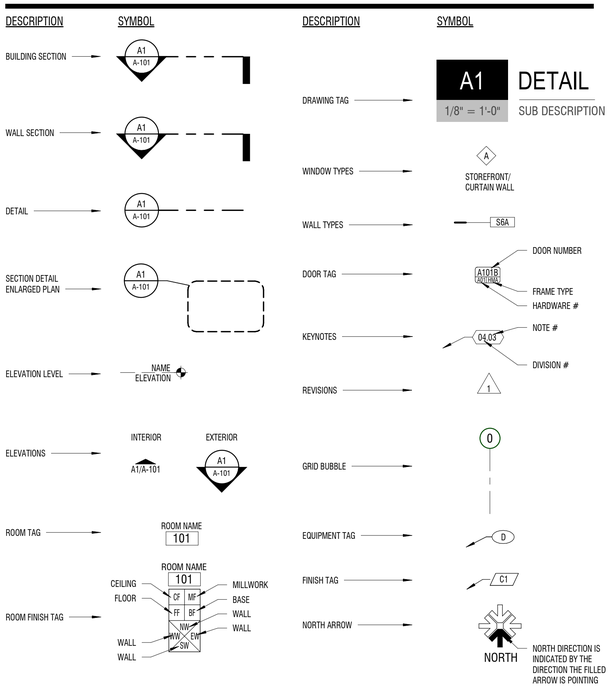
BID ALTERNATE 1
- SPORTS PADDING TO BE ADDED TO MASONRY WALLS AROUND THE NEW PLAYING FIELD

BID ALTERNATE 2
- SAFETY NETTING TO BE ADDED TO WEST WALL OF NEW PLAYING FIELD

ABBREVIATIONS

ABR.	DESCRIPTION	ABR.	DESCRIPTION	ABR.	DESCRIPTION
AB	ANCHOR BOLT	EXIST	EXISTING	PART BD	PARTICLE BOARD
ABS	ACRYLONITRILE-BUTADIENE -STYRENE	EXP	EXPANSION	PARTN	PARTITION
		EXT	EXTERIOR	P-LAM	PLASTIC LAMINATE PLATE
AC	ACOUSTIC, ACOUSTICAL	FD	FLOOR DRAIN	PLYWD	PLYWOOD
ACC STA	ACCESSIBLE STATION	FDN	FOUNDATION	PREFAB	PREFABRICATED
AD	ADDENDUM	FEC	FIRE EXTINGUISHER CABINET	PROJ	PROJECTION
ADJ	ADJUSTABLE	FIN	FINISH	PT	PRESERVATIVE TREATED
AFF	ABOVE FINISH FLOOR	FLR	FLOOR	PVC	POLYVINYL CHLORIDE
ALT	ALTERNATE	FTG	FOOTING	QT	QUARRY TILE
ALUM	ALUMINUM	GA	GAUGE	R/	ROUND
ASI	ARCHITECT SUPPLEMENTAL INSTRUCTION	GALV	GALVANIZED	RAD	RADIUS
		GI	GALVANIZED IRON	RD	ROOF DRAIN
ASPH	ASPHALT	GYP BD	GYPSUM BOARD	REF	REFRIGERATOR
		HDWD	HARDWOOD	REINF	REINFORCE
BB	BASKETBALL	HM	HOLLOW METAL	REV	REVISION
BD	BOARD	HORIZ	HORIZONTAL	RFI	REQUEST FOR INFORMATION
BLDG	BUILDING	HT	HEIGHT	RO	ROUGH OPENING
BLKG	BLOCKING	ID	INSIDE DIAMETER	SCHED	SCHEDULE
BM	BENCH MARK	INSUL	INSULATION	SHT	SHEET
B.O.	BOTTOM OF	INT	INTERIOR	SIM	SIMILAR
BRG	BEARING	JT	JOINT	SPEC	SPECIFICATION
BSMT	BASEMENT	KD	KNOCK DOWN	SQ	SQUARE
B.U.R.	BUILT UP ROOF	KO	KNOCK OUT	SS	STAINLESS STEEL
C	CHANNEL	L	ANGLE	STD	STANDARD
CB	CHALKBOARD	LLV	LONG LEG VERTICAL	STL	STEEL
C	CENTER LINE	MAX	MAXIMUM	STOR	STORAGE
CLG	CEILING	MB	MARKER BOARD	STRUCT	STRUCTURAL
CMU	CONCRETE MASONRY UNIT	MECH	MECHANICAL	SUSP	SUSPENDED, SUSPENSION
CO	CLEAN OUT	MFR	MANUFACTURER	SYS	SYSTEM
COL	COLUMN	MH	MANHOLE	T & B	TOP AND BOTTOM
CONC	CONCRETE	MIN	MINIMUM	TB	TACKBOARD
CONN	CONNECTION	MISC	MISCELLANEOUS	TEMP	TEMPORARY
CONT	CONTINUOUS	MO	MASONRY OPENING	TEL	TELEPHONE
CONTR	CONTRACTOR	MT	MOUNT	THRES	THRESHOLD
CT	CERAMIC TILE	MTL	METAL	TS	TUBE STEEL
d	PENNY	(N)	NEW	T.O.	TOP OF
DIM	DIMENSION	NIC	NOT IN CONTRACT	TOIL	TOILET
DS	DOWNSPOUT	NTS	NOT TO SCALE	TV	TELEVISION
DWG	DRAWING	O.C.	ON CENTER	TYP	TYPICAL
(E)	EXISTING	OD	OUTSIDE DIAMETER	VERT	VERTICAL
EA	EACH	OH	OVERHEAD	U.N.O.	UNLESS NOTED OTHERWISE
EIFS	EXTERIOR INSULATION FINISH SYSTEM	OF/CI	OWNER FURNISHED / CONTRACTOR INSTALLED	W	WIDE FLANGE
				W/	WITH
ELECT	ELECTRICAL	OF/OI	OWNER FURNISHED / OWNER INSTALLED	WC	WATER CLOSET
ELEV	ELEVATION			WD	WOOD
EQ	EQUAL	OPNG	OPENING	WM	WATER METER
EQUIP	EQUIPMENT	OPP	OPPOSITE	W/O	WITHOUT
EWC	ELECTRIC WATER COOLER	O.T.S.	OPEN TO STRUCTURE	WWF	WELDED WIRE FABRIC

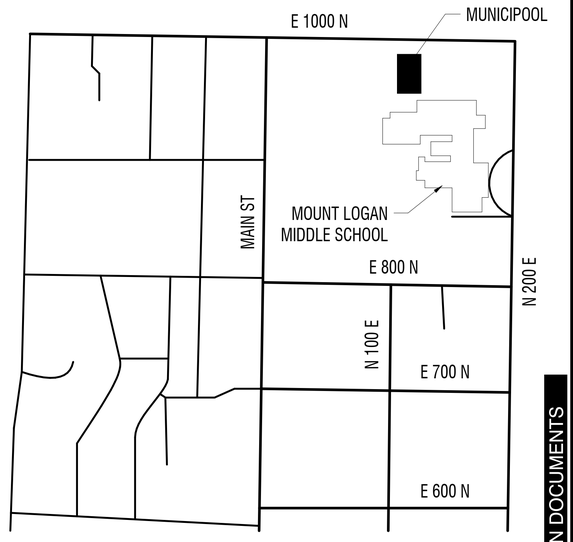
SYMBOLS LEGEND



MATERIALS LEGEND

MATERIAL	SYMBOL
EARTH	
ASPHALT PAVING	
COMPACTED GRANULAR FILL	
CONCRETE	
CONCRETE MASONRY UNITS	
BRICK	
STEEL	
CONTINUOUS WOOD	
WOOD BLOCKING	
PLYWOOD / OSB	
PARTICLE BOARD	
INSULATION	
RIGID INSULATION	
GYPSUM BOARD	
GLU-LAMINATE BEAM	
GLASS	
FINISH WOOD	
ALUMINUM	
WOOD STUD WALL	

VICINITY MAP



LOGAN, UT

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LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
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LOGAN CITY SCHOOL DISTRICT

CONSTRUCTION DOCUMENTS

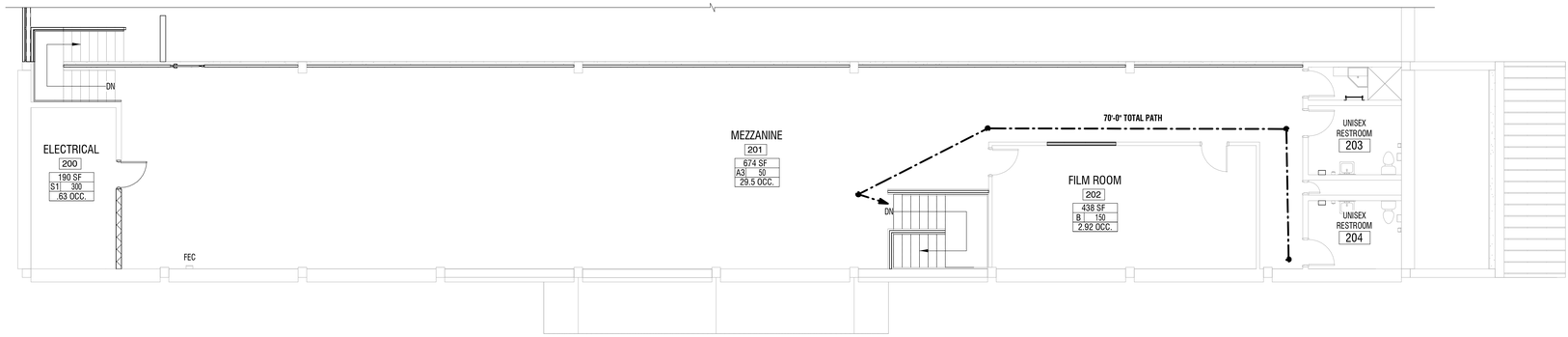
MARK: DESCRIPTION: DATE:

PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
6842805-2301
LICENSED ARCHITECT

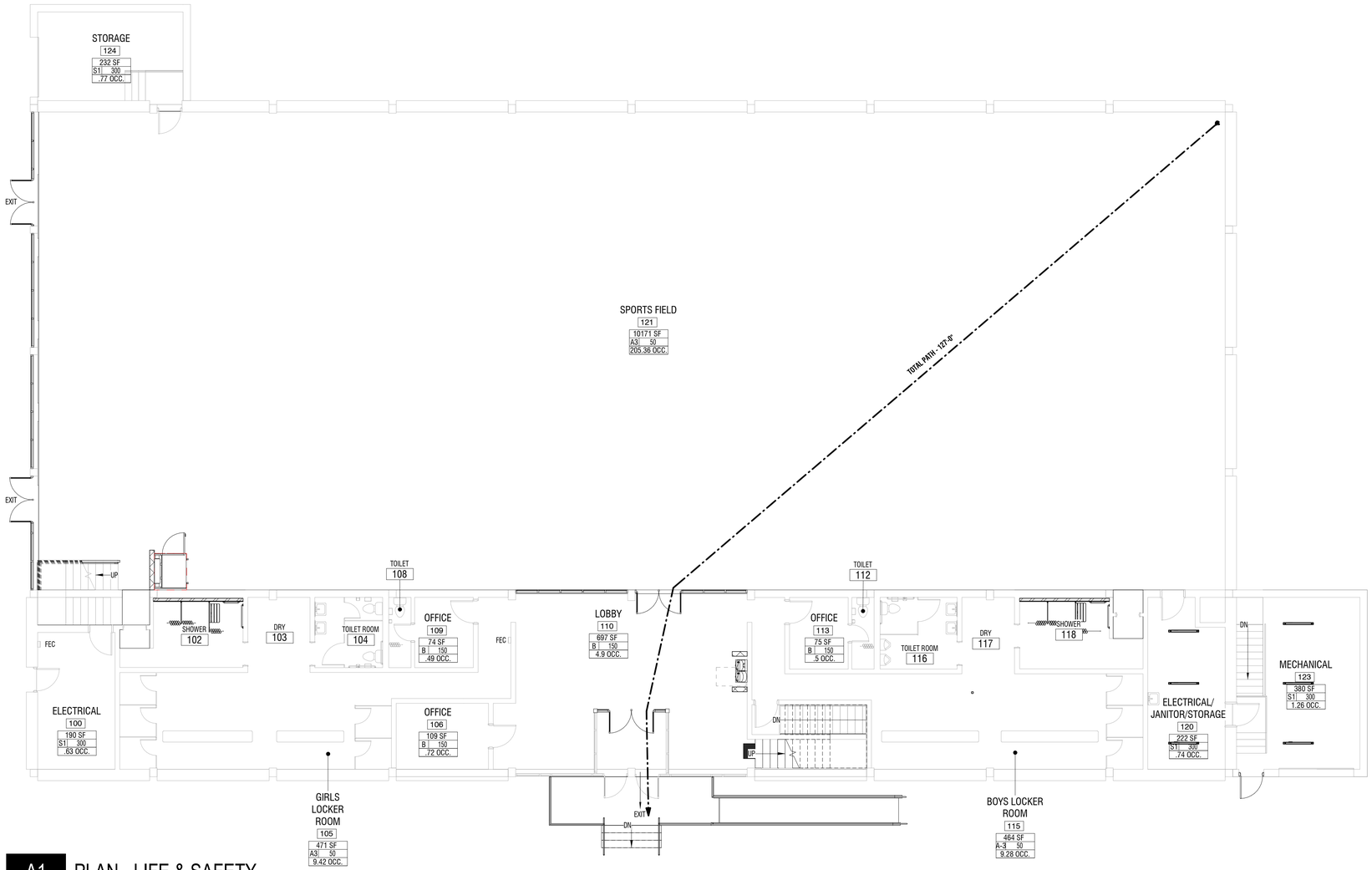
PROJECT INFORMATION

G-002



D1 PLAN - LIFE & SAFETY

1/8" = 1'-0" MEZZANINE



A1 PLAN - LIFE & SAFETY

1/8" = 1'-0" LEVEL 01

CODE REVIEW

JURISDICTION
LOGAN CITY SCHOOL DISTRICT

CODE
2021 INTERNATIONAL EXISTING BUILDING CODE **(ALTERATION - LEVEL 2)**
2021 INTERNATIONAL BUILDING CODE
2021 INTERNATIONAL MECHANICAL CODE
2021 INTERNATIONAL PLUMBING CODE
2020 NATIONAL ELECTRICAL CODE
2009 ICC ANSI A117.1-09

OCCUPANCY CLASSIFICATION *(301)*
A-3 ASSEMBLY (UNCHANGED)
B Business Areas Accessory to A-3 < 10% (508.2.3)

REQUIRED SEPARATION OF OCCUPANCIES *(508.4, CH4, CH7)*
NONE

TYPE OF CONSTRUCTION *(601)*
VB

AUTOMATIC SPRINKLER SYSTEM *(CH9)*
YES

BUILDING HEIGHT *(504.3)*
EXISTING (SHALL REMAIN UNCHANGED)

NUMBER OF STORIES *(504.4)*

GROUP	ALLOWABLE	PROPOSED
A-3	3	SHALL REMAIN UNCHANGED- EXISTING 1 STORIES

BUILDING AREA *(506)*

GROUP	ALLOWABLE w/INCREASE(S)	PROPOSED
LEVEL 1	24,000	15,301 (SHALL REMAIN UNCHANGED)
A-3	15,301	SHALL REMAIN UNCHANGED
MEZZANINE	<1/3 AREA SERVED (505.2.1)	

* (NON-SEPARATED OCCUPANCY) INDICATES MOST RESTRICTIVE ALLOWANCES *(508.3.2)*

FIRE RESISTIVE REQUIREMENTS *(TABLE 601)*
CONSTRUCTION TYPE: VB

PRIMARY STRUCTURAL FRAME	0 HR RATING
BEARING WALLS	
EXTERIOR	0 HR RATING *(601, 602 EXTERIOR WALL 705)*
INTERIOR	0 HR RATING *(FIRE PARTIONS 708)*
NON BEARING WALLS	0 HR RATING *(2304.11.2)*
FLOOR CONSTRUCTION	0 HR RATING *(601, HORIZONTAL ASSEMBLY 711)*
ROOF CONSTRUCTION	0 HR RATING
SHAFT WALLS	0 HR RATING *(713.4, FIRE BARRIER 707)*
CORRIDORS	0 HR RATING *(1020.1, FIRE PARTIONS 708, 708.3, 713)*

OCCUPANT LOAD CALCULATION *(1004.1.2)*
TOTAL = 265 OCCUPANTS

EGRESS WIDTH *(1005.1, 1010.1.1, 1011.2, 1020.2)*

TYPE	CODE	REQUIRED	PROVIDED
STAIRWAYS	.3" x OCCUPANT	13.2" OR 44" EA.	48" EA.
OTHER EGRESS			
EXIT DOORS	.2" x OCCUPANT	32" OR 32" EA.	36" EA.
COORIDORS	.2" x OCCUPANT	44" OR 44" EA.	48" EA.

PLUMBING FIXTURE REQUIREMENTS *(2902.1)*
FIXTURE CALCULATIONS (2902.1.1)

GROUP	CALCULATION
A-3	268 OCCUPANTS = 134 MALE / 134 FEMALE

WATER CLOSETS

GROUP	TABLE VALUE / CALCULATION	REQUIRED	PROVIDED
A-3	1:75 M / 1:40 F	2 M / 4 F	4 M / 4 F
	TOTALS	2 M / 4 F	2 M / 2 F / 2 UNISEX

LAVATORIES

GROUP	TABLE VALUE / CALCULATION	REQUIRED	PROVIDED
A-3	1:200 M / 1:150 F	1 M / 1 F	4 M / 4 F
	TOTALS	1 M / 1 F	2 M / 2 F / 2 UNISEX

DRINKING FOUNTAINS

GROUP	TABLE VALUE / CALCULATION	REQUIRED	PROVIDED
A-3	1:1000	1	2

SERVICE SINKS

REQUIRED	PROVIDED
1	2

GENERAL NOTES

→	EGRESS PATH
EXIT	EXIT LOCATION
FEC	SEMI-RECESSED FIRE EXTINGUISHER CABINET

DEFERRED SUBMITTALS

FIRE SPRINKLER DESIGN

CONSTRUCTION DOCUMENTS

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LOGAN UT 84321
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STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
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CODE REVIEW
G-003

SECTION 00 5000
CONTRACTING FORMS AND SUPPLEMENTS

PART 1 GENERAL

1.01 CONTRACTOR IS RESPONSIBLE FOR OBTAINING A VALID LICENSE TO USE ALL COPYRIGHTED DOCUMENTS SPECIFIED BUT NOT INCLUDED IN THE PROJECT MANUAL.

1.02 AGREEMENT AND CONDITIONS OF THE CONTRACT

A. See Section 00 5200 - Agreement Form for the Agreement form to be executed.

B. See Section 00 7200 - General Conditions for the General Conditions.

C. The Agreement is based on AIA A132.

D. The General Conditions are based on AIA A232.

1.03 FORMS

A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in Contract Documents.

B. Post-Award Certificates and Other Forms:
1. Application for Payment Forms: AIA G702 with AIA G703 (for Contractors).

C. Clarification and Modification Forms:
1. Construction Change Directive Form (for Construction Manager as Adviser): AIA G714CMa.
2. Change Order Form: AIA G701.

D. Closeout Forms:
1. Certificate of Substantial Completion Form: AIA G704.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

SECTION 01 2000
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SCHEDULE OF VALUES

1.02 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.

C. Execute certification by signature of authorized officer.

D. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

E. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.

F. Submit one electronic and three hard-copies of each Application for Payment.

1.03 MODIFICATION PROCEDURES

A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.

B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.

C. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

D. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

1.04 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

SECTION 01 2300
ALTERNATES

PART 1 GENERAL

1.01 ACCEPTANCE OF ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.02 SCHEDULE OF ALTERNATES

A. Alternate No. One - Sports padding to be added to masonry walls around the new playing field.:
1. Alternate Item: Section 11 6623 - Gymnasium Equipment and Sheet numbersA-821.0 & A-821.1.

B. Alternate No. Two - Safety netting to be added to West wall of new playing field:
1. Alternate Item: Section 11 6653 - Suspended Backstop Safety Netting and Sheet number A-822.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

SECTION 01 2500
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 DEFINITIONS

A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
   a. Unavailability.
   b. Regulatory changes.
2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
   a. Substitution requests offering advantages solely to the Contractor will not be considered.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
2. Agrees to provide the same warranty for the substitution as for the specified product.
3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
5. Waives claims for additional costs or time extension that may subsequently become apparent.
6. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.

B. A Substitution Request for specified installer constitutes a representation that the submitter:
1. Has acted in good faith to obtain services of specified installer, but was unable to come to commercial, or other terms.

C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.

D. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
1. No specific form is required. Contractor's Substitution Request documentation must include the following:
   a. Project Information:
      1) Official project name and number, and any additional required identifiers established in Contract Documents.
   b. Substitution Request Information:
      1) Discrete and consecutive Substitution Request number, and descriptive subject/title.
      2) Indication of whether the substitution is for cause or convenience.
      3) Issue date.
      4) Description of Substitution.
      5) Reason why the specified item cannot be provided.
      6) Differences between proposed substitution and specified item.
      7) Description of how proposed substitution affects other parts of work.
   c. Attached Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
      1) Physical characteristics.
      2) In-service performance.
      3) Expected durability.
      4) Visual effect.
      5) Warranties.
      6) Other salient features and requirements.
      7) Include, as appropriate or requested, the following types of documentation:
         (a) Product Data:
         (b) Samples.
         (c) Certificates, test, reports or similar qualification data.
   d. Impact of Substitution:
      1) Savings to Owner for accepting substitution.
      2) Change to Contract Time due to accepting substitution.

E. Limit each request to a single proposed substitution item.
1. Submit an electronic document, combining the request form with supporting data into single document.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

A. Submittal Time Restrictions:
1. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than [7] days prior to time required for review and approval by Architect, in order to stay on approved bidding schedule.

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

A. Architect will consider requests for substitutions only within 15 days after date of Agreement.

B. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 7 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.

C. Submit request for Substitution for Convenience are not permitted during construction.

D. Substitutions will not be considered under one or more of the following circumstances:
1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
2. Without a separate written request during the bidding period.

E. Failure to order product in a timely manner to meet project timeline requirements, does not constitute justification for a substitution. Any additional costs incurred related to obtaining the specified product in a expedited manner, as a result of this failure, will not be approved in Change Orders and are the responsibilty of the ordering party.

3.04 RESOLUTION

A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.

B. Architect will notify Contractor in writing of decision to accept or reject request.
1. Architect's decision following review of proposed substitution will be noted on the submitted form.

3.05 ACCEPTANCE

A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.06 CLOSEOUT ACTIVITIES

A. See Section 01 7800 - Closeout Submittals, for closeout submittals.

SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL - NOT USED

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

a. Access control for each entity and for each workflow process to determine each entity's digital rights to create, modify, view, and print documents.
b. Workflow planning, allowing customization of workflow for each project entity.
c. Creation, logging, tracking, and notification for project communications.
d. Tracking of project communication statuses in real time, including timestamped response log.
e. Procedures for viewing PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
f. Processing and tracking of payment applications.
g. Processing and tracking of contract modifications.
h. Creation and distribution of meeting minutes.
i. Document management for drawings, specifications, and coordination drawings, including revision control.
j. Management of construction progress photographs.
k. Mobile device compatibility.
l. Creation of data analytics reports.
m. Creation and export of editable logs for software functions. Provide Owner, Architect, and Architect's consultants with rights and ability to download logs when requested.

2. Project Closeout: Architect determines when to terminate the software service for the project and is responsible for obtaining archive copies of files for Owner.

3.02 WEB-BASED PROJECT SOFTWARE SERVICE

A. Web-Based Project Software Service: Provide, administer, and use web-based project software to host and manage project communication and documentation.
1. Include, at minimum, the following features:
   a. Project directory, including Owner, Contractor, subcontractors, Architect, Architect's consultants, and other entities involved in the project. Include names of contact persons and contact information for each entity.

3.03 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
2. Contractor and Architect are required to use this service.
3. It is Contractor's responsibility to submit documents in allowable format.
4. Subcontractors, suppliers, and Architect's consultants will be permitted to use the service at no extra charge.
5. Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
6. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
7. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.

B. Training: One, one-hour, web-based training session will be arranged for all participants, with representatives of Architect and Contractor participating; further training is the responsibility of the user of the service.

C. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.04 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the work at maximum weekly intervals.

B. Attendance Required:
1. Contractor.
2. Owner.
3. Architect.
4. Contractor's superintendent.
5. Major subcontractors.

C. Record minutes and distribute copies within four days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.05 CONSTRUCTION PROGRESS SCHEDULE - SEE SECTION 01 3216

A. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

B. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
1. Include written certification that major contractors have reviewed and accepted proposed schedule.

C. Within 10 days after joint review, submit complete schedule.

D. Submit updated schedule with each Application for Payment.

3.06 PROGRESS PHOTOGRAPHS

A. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.

3.07 REQUESTS FOR INTERPRETATION(RFI)

A. Definition: A request seeking one of the following:
1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
2. A resolution to an issue which has arisen due to field conditions and affects design intent.

B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
1. Prepare a separate RFI for each specific item.
   a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
   b. Do not forward requests which solely require internal coordination between subcontractors.
2. Prepare using an electronic version of the form appended to this section.
3. Prepare using software provided by the Electronic Document Submittal Service.
4. Combine RFI and its attachments into a single electronic file. PDF format is preferred.

D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.

E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.
2. Owner's, Architect's, and Contractor's names.
3. Discrete and consecutive RFI number, and descriptive subject/title.
4. Issue date, and requested reply date.
5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.

F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

G. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
1. Indicate current status of every RFI. Update log promptly and on a regular basis.
2. Note dates of when each request is made, and when a response is received.
3. Highlight items requiring priority or expedited response.
4. Highlight items for which a timely response has not been received to date.
5. Identify and include improper or frivolous RFIs.

H. Review Time: Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.

I. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
4. Notify Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.08 SUBMITTAL SCHEDULE

A. Submit to Architect for review a schedule for submittals in tabular format.
1. Format schedule to allow tracking of status of submittals throughout duration of construction.
2. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
3. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
   a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.09 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
1. Product data.
2. Shop drawings.
3. Samples for selection.
4. Samples for verification.

B. Contractor shall review and stamp all submittals prior to forwarding to Architect. Submittals not stamped by the Contractor will be rejected.

C. After reviewing and stamping the submittals, the Contractor shall submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.

D. Samples will be reviewed for aesthetic, color, or finish selection.

E. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - Closeout Submittals.

3.10 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
1. Design data.
2. Certificates.
3. Test reports.
4. Inspection reports.
5. Manufacturer's instructions.
6. Manufacturer's field reports.
7. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner.

3.11 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 7800 - Closeout Submittals:
1. Project record documents.
2. Operation and maintenance data.
3. Warranties.
4. Bonds.

D. Submit for Owner's benefit during and after project completion.

3.12 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
1. After review, produce duplicates.
2. Retained samples will not be returned to Contractor unless specifically so stated.

3.13 SUBMITTAL PROCEDURES

A. General Requirements:
1. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
2. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
3. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
4. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
   a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
5. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
   a. Upload submittals in electronic form to Electronic Document Submittal Service website.
6. Schedule submittals to expedite the Project, and coordinate submission of related items.
   a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
   b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
7. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
8. Provide space for Contractor and Architect review stamps.
9. When revised for resubmission, identify all changes made since previous submission.
10. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
11. Submittals not requested will be recognized, and will be returned "Not Reviewed",

B. Product Data Procedures:
1. Submit only information required by individual specification sections.
2. Collect required information into a single submittal.
3. Submit concurrently with related shop drawing submittal.
4. Do not submit (Material) Safety Data Sheets for materials or products.

C. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
2. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

D. Samples Procedures:
1. Transmit related items together as single package.
2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.

3.14 SUBMITTAL REVIEW

A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.

B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.

C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.

D. Architect's and consultants' actions on items submitted for review:
1. Authorizing purchasing, fabrication, delivery, and installation:
   a. "Approved as Noted, Resubmission not required", or language with same legal meaning.
      1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
   b. "Approved as Noted, Resubmit for Record", or language with same legal meaning.
2. Not Authorizing fabrication, delivery, and installation:
   a. "Revise and Resubmit".
      1) Resubmit revised item, with review notations acknowledged and incorporated.
   b. "Rejected".
      1) Submit item complying with requirements of Contract Documents.

E. Architect's and consultants' actions on items submitted for information:
1. Items for which no action was taken:
   a. "Received" - to notify the Contractor that the submittal has been received for record only.
2. Items for which action was taken:
   a. "Reviewed" - no further action is required from Contractor.

SECTION 01 3553
SECURITY PROCEDURES

PART 1 GENERAL

1.01 SECURITY PROGRAM

A. Protect Work , existing premises and Owner's operations from theft, vandalism, and unauthorized entry.

B. Maintain program throughout construction period until Owner occupancy.

1.02 ENTRY CONTROL

A. Restrict entrance of persons and vehicles into Project site and existing facilities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SUBMITTALS

A. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

B. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
1. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

E. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
1. Submit report in duplicate within 30 days of observation to Architect for information.
2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

1.02 QUALITY ASSURANCE

A. Testing Agency Qualifications:
1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
2. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.

1.03 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

D. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

A. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: LEIKIS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
6842805-2301
LICENSED ARCHITECT

CONSTRUCTION DOCUMENTS

SPECIFICATIONS

G-004

B. Notify Architect fifteen (15) working days in advance of dates and times when mock-ups will be constructed.
C. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
D. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
E. Architect will use accepted mock-ups as a comparison standard for the remaining Work.
F. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

3.03 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.
B. If, in the opinion of Owner, it is not practical to remove and replace the work, Owner will direct an appropriate remedy or adjust payment.

SECTION 01 4216
DEFINITIONS

PART 1 GENERAL

1.01 DEFINITIONS

A. Furnish: To supply, deliver, unload, and inspect for damage.
B. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.
C. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.
D. Provide: To furnish and install.
E. Supply: Same as Furnish.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 TEMPORARY UTILITIES - SEE SECTION 01 5100

A. Owner will provide the following:
1. Electrical power and metering, consisting of connection to existing facilities.
2. Water supply, consisting of connection to existing facilities.
B. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
C. Existing facilities may be used.

1.02 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.

1.03 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
B. Maintain daily in clean and sanitary condition.

1.04 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
B. Provide protection for plants designated to remain. Replace damaged plants.

1.05 FENCING

A. Construction: Contractor's option.
B. Provide 6 foot (1.8 m) high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.06 EXTERIOR ENCLOSURES

A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.07 SECURITY - SEE SECTION 01 3553

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.08 VEHICULAR ACCESS AND PARKING - SEE SECTION 01 5500

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
B. Coordinate access and haul routes with governing authorities and Owner.
C. Provide and maintain access to fire hydrants, free of obstructions.

1.09 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
B. Provide containers with lids. Remove trash from site periodically.

1.10 PROJECT IDENTIFICATION

A. Provide project identification sign of design and construction.
B. Erect on site at location as directed by Owner.

1.11 FIELD OFFICES - SEE SECTION 01 5213

A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with drawing display table.
B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

SECTION 01 5100
TEMPORARY UTILITIES

PART 1 GENERAL

1.01 TEMPORARY ELECTRICITY

A. Cost: By Owner.

1.02 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain LED, compact fluorescent, or high-intensity discharge lighting as suitable for the application for construction operations in accordance with requirements of 29 CFR 1926 and authorities having jurisdiction.

1.03 TEMPORARY HEATING

A. Cost of Energy: By Owner.
B. Maintain minimum ambient temperature of 50 degrees F (10 degrees C) in areas where construction is in progress, unless indicated otherwise in specifications.

1.04 TEMPORARY VENTILATION

A. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.05 TEMPORARY WATER SERVICE

A. Cost of Water Used: By Owner.
B. Provide and maintain suitable quality water service for construction operations at time of project mobilization.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

SECTION 01 5213
FIELD OFFICES AND SHEDS

PART 1 GENERAL

1.01 USE OF EXISTING FACILITIES

A. Existing facilities shall not be used for field offices.

1.02 USE OF PERMANENT FACILITIES

A. When permanent facilities are enclosed with operable utilities, relocate offices into building, with written agreement of Owner, and remove temporary buildings.

PART 2 PRODUCTS

2.01 CONSTRUCTION

A. Portable or mobile buildings, or buildings constructed with floors raised above ground, securely fixed to foundations, with steps and landings at entrance doors.
B. Construction: Structurally sound, secure, weather tight enclosures for office. Maintain during progress of Work; remove when no longer needed.

2.02 ENVIRONMENTAL CONTROL

A. Heating, Cooling, and Ventilating: Automatic equipment to maintain comfort conditions.

2.03 CONTRACTOR OFFICE AND FACILITIES

A. Size: For Contractor's needs and to provide space for project meetings.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install office spaces ready for occupancy 15 days after date fixed in Notice to Proceed.

SECTION 01 5713
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SUBMITTALS

A. Erosion and Sedimentation Control Plan:
1. Obtain the approval of the Plan by authorities having jurisdiction.
2. Obtain the approval of the Plan by Owner.

PART 2 PRODUCTS

2.01 MATERIALS

A. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
1. Average Opening Size: 30 U.S. Std. Sieve (0.600 mm), maximum, when tested in accordance with ASTM D4751.
2. Permittivity: 0.05 sec^-1, minimum, when tested in accordance with ASTM D4491/D4491M.
3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355/D4355M after 500 hours exposure.
4. Tensile Strength: 100 pounds-force (450 N), minimum, in cross-machine direction; 124 pounds-force (550 N), minimum, in machine direction; when tested in accordance with ASTM D4632/D4632M.
5. Tear Strength: 55 pounds-force (245 N), minimum, when tested in accordance with ASTM D4533/D4533M.
B. Silt Fence Posts: One of the following, minimum 5 feet (1500 mm) long:
1. Steel U- or T-section, with minimum mass of 1.33 pound per linear foot (1.98 kg per linear m).
2. Softwood, 4 by 4 inches (100 by 100 mm) in cross section.
3. Hardwood, 2 by 2 inches (50 by 50 mm) in cross section.

PART 3 EXECUTION

3.01 SCOPE OF PREVENTIVE MEASURES

A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.
B. Construction Entrances: Traffic-bearing aggregate surface.
1. Width: As required; 20 feet (7 m), minimum.
2. Length: 50 feet (16 m), minimum.
3. Provide at each construction entrance from public right-of-way.
4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.
C. Linear Sediment Barriers: Made of silt fences.
1. Provide linear sediment barriers:
a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
2. Space sediment barriers with the following maximum slope length upslope from barrier:
a. Slope of Less Than 2 Percent: 100 feet (30 m)..
b. Slope Between 2 and 5 Percent: 75 feet (23 m).
c. Slope Between 5 and 10 Percent: 50 feet (15 m).
d. Slope Between 10 and 20 Percent: 25 feet (7.5 m).
e. Slope Over 20 Percent: 15 feet (4.5 m).
D. Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:
1. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
2. Straw bale row blocking entire inlet face area; anchor into pavement.
E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.
F. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.
G. Soil Stockpiles: Protect using one of the following measures:
1. Cover with polyethylene film, secured by placing soil on outer edges.
2. Cover with mulch at least 4 inches (100 mm) thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches (150 mm) of straw or hay.
H. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
I. Temporary Seeding: Use where temporary vegetated cover is required.

3.02 MAINTENANCE

3.03 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.
B. Clean out temporary sediment control structures that are to remain as permanent measures.
C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

1.02 QUALITY ASSURANCE

A. Recycled Content: Determine percentage of post-consumer and pre-consumer (post-industrial) content separately, using the guidelines contained in 16 CFR 260.13.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by Contract Documents.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. See Section 01 2500 - Substitution Procedures.

SECTION 01 6116
VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 DEFINITIONS

A. Interior of Building: Anywhere inside the exterior weather barrier.

1.02 SUBMITTALS

A. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.

PART 2 PRODUCTS

2.01 MATERIALS

A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.

PART 3 EXECUTION - NOT USED

SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SUBMITTALS

A. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
1. Structural integrity of any element of Project.
2. Integrity of weather exposed or moisture resistant element.
3. Efficiency, maintenance, or safety of any operational element.
C. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.02 QUALIFICATIONS

A. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in Utah.

1.03 PROJECT CONDITIONS

A. Use of explosives is not permitted.
B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
C. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
D. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
E. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
F. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
G. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

PART 3 EXECUTION

3.01 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.
B. Promptly notify Architect of any discrepancies discovered.
C. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:

3.02 GENERAL INSTALLATION REQUIREMENTS

A. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
B. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
C. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
D. Make neat transitions between different surfaces, maintaining texture and appearance.

3.03 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.
B. Perform whatever cutting and patching is necessary to:
1. Complete the work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-complying work.
C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
D. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

3.04 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

3.05 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.
B. Provide special protection where specified in individual specification sections.
C. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.06 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.
B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

3.07 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
B. Notify Architect when work is considered ready for Architect's Substantial Completion observation.
C. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
D. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final observation.
E. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

SECTION 01 7800
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
B. Operation and Maintenance Data:
1. Submit an electronic copy of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
C. Warranties and Bonds:
1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
1. Drawings.
2. Addenda.
3. Change Orders and other modifications to the Contract.
4. Reviewed shop drawings, product data, and samples.
5. Manufacturer's instruction for assembly, installation, and adjusting.

3.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
1. Description of unit or system, and component parts.
2. Identify function, normal operating characteristics, and limiting conditions.
3. Include performance curves, with engineering data and tests.
4. Complete nomenclature and model number of replaceable parts.
B. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
C. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
C. Binders: Commercial quality, 8-1/2 by 11 inch (216 by 280 mm) three D side ring binders with durable plastic covers; 2 inch (50 mm) maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

SECTION 02 4100
DEMOLITION

PART 1 GENERAL

1.01 SUBMITTALS

A. Site Plan: Indicate:
B. Demolition Plan: Submit demolition plan as required by OSHA and local AHJs.
C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS

2.01 MATERIALS

A. Fill Material: See Section 31 2323.

PART 3 EXECUTION

3.01 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
1. Obtain required permits.
2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
3. Provide, erect, and maintain temporary barriers and security devices.
B. Do not begin removal until built elements to be salvaged or relocated have been removed.
C. Minimize production of dust due to demolition operations. Do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.02 EXISTING UTILITIES

A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.
B. Protect existing utilities to remain from damage.

3.03 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

CONCRETE REINFORCING

PART 1 GENERAL

1.01 SUBMITTALS

A. Shop Drawings: Comply with requirements of ACI MNL-66 Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

1.02 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI SPEC-301.

PART 2 PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) (420 MPa).
1. Deformed billet-steel bars.
2. Unfinished.

2.02 RE-BAR SPLICING:

A. Coupler Systems: Mechanical devices for splicing reinforcing bars.
1. Comply with ACI CODE-318 steel reinforcing design strength requirements for splices in tension and compression.
2. Comply with ACI CODE-318 steel reinforcing design strength requirements for splices in tension and compression.
B. Dowel Bar Splicer with Dowel-Ins: Mechanical devices for splicing reinforcing bars.
C. Taper Tie Hole Plug: Mechanical device for plugging tie holes; anchors optional flush or recessed grout.
D. Grout: Cementitious, non-metallic, non-shrink grout for use with manufacturer's grout sleeve reinforcing bar coupler system.

2.03 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.
B. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D3963/D3963M.
C. Locate reinforcing splices not indicated on drawings at point of minimum stress.

PART 3 EXECUTION

3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
B. Do not displace or damage vapor barrier.
C. Comply with applicable code for concrete cover over reinforcement.

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

design west | architects
LOGAN UT 84321
255 SOUTH 300 WEST
SALT LAKE CITY UT 84103
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DESCRIPTION:	DATE:

PROJECT #: 123998
DRAWN BY: LEIKIS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6428063301
LICENSED ARCHITECT

CONSTRUCTION DOCUMENTS

SPECIFICATIONS

G-005

1.01 SUBMITTALS

A. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.

1.02 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.

B. Follow recommendations of ACI PRC-305 when concreting during hot weather.

C. Follow recommendations of ACI PRC-306 when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

A. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
1. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
2. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches (38 mm) of concrete surface.

2.02 REINFORCEMENT MATERIALS

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) (420 MPa).
1. Type: Deformed billet-steel bars.
2. Finish: Unfinished, unless otherwise indicated.

B. Reinforcement Accessories:
1. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
2. Provide galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches (38 mm) of weathering surfaces.

2.03 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.

B. Fine and Coarse Aggregates: ASTM C33/C33M.

C. Water: Clean and not detrimental to concrete. ASTM C 94/C 94M and Potable

2.04 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

2.05 ACCESSORY MATERIALS

A. Underslab Vapor Retarder:

2.06 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.

B. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard (0.89 kg per cu m), or as recommended by manufacturer for specific project conditions.

C. Normal Weight Concrete:
1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on drawings.
2. Water-Cement Ratio: Maximum as noted on structural drawings.
3. Total Air Content: as noted on structural drawings, determined in accordance with ASTM C173/C173M.
4. Maximum Slump: 4 inches (100 mm).
5. Maximum Aggregate Size: As noted on structural drawings.

PART 3 EXECUTION

3.01 PREPARATION

A. Formwork: Comply with requirements of ACI SPEC-301. Design and fabricate forms to support all applied loads until concrete is cured and for easy removal without damage to concrete.

3.02 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

A. Comply with requirements of ACI SPEC-301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

3.03 PLACING CONCRETE

A. Place concrete in accordance with ACI PRC-304.

3.04 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch (6 mm) or more in height.

C. Concrete Slabs: Finish to requirements of ACI PRC-302.1 and as follows:
1. Decorative Exposed Surfaces: Trowel as described in ACI 302.1R; use steel-reinforced plastic trowel blades instead of steel blades to avoid black-burnish marks; decorative exposed surfaces include surfaces to be stained or dyed, pigmented concrete, surfaces to receive liquid hardeners, surfaces to be polished, and all other exposed slab surfaces.

3.05 CURING AND PROTECTION

A. Comply with requirements of ACI PRC-308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

SECTION 04 2000
UNIT MASONRY

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

B. Shop Drawings: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners, and accessories for brickwork support system.

C. Samples: Submit four samples of decorative block units to illustrate color, texture, and extremes of color range.

1.02 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
1. Size: Standard units with nominal face dimensions of 16 by 8 inches (400 by 200 mm) and nominal depth of 8 inches (200 mm).
2. Special Shapes: Provide nonstandard blocks configured for corners.
3. Load-Bearing Units: ASTM C90, medium weight.
a. Hollow block.

2.02 MORTAR AND GROUT MATERIALS

A. Masonry Cement: ASTM C91/C91M, Type S.
1. Colored Mortar: Premixed cement as required to match Architect's color sample.

B. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.

C. Hydrated Lime: ASTM C207, Type S.

D. Mortar Aggregate: ASTM C144.

E. Grout Aggregate: ASTM C404.

F. Water: Clean and potable.

G. Accelerating Admixture: Nonchloride type for use in cold weather.

H. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
1. Type: Type S.
2. Color: As selected by Architect.

I. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
1. Type: Fine.

2.03 REINFORCEMENT AND ANCHORAGE

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) (420 MPa), deformed billet bars; uncoated.

B. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
1. Vertical adjustment: Not less than 3-1/2 inches (89 mm).
2. Seismic Feature: Provide lip, hook, or clip on end of wire ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483 inch (3.8 mm) diameter.

C. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.

2.04 FLASHINGS

A. Metal Flashing Materials: Copper, as specified in Section 07 6200.

B. Factory-Fabricated Flashing Corners and End Dams: Stainless steel.

C. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.

D. Termination Bars: Stainless steel; compatible with membrane and adhesives.

E. Drip Edge: Copper; angled drip with hemmed edge; compatible with membrane and adhesives.

2.05 ACCESSORIES

2.06 MORTAR AND GROUT MIXING

A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
1. Masonry below grade and in contact with earth: Type S.
2. Exterior, loadbearing masonry: Type S.
3. Exterior, non-loadbearing masonry: Type N.
4. Interior, loadbearing masonry: Type S.
5. Interior, non-loadbearing masonry: Type O.

B. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.

PART 3 EXECUTION

3.01 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

3.02 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
1. Bond: Running.
2. Coursing: One unit and one mortar joint to equal 8 inches (200 mm).
3. Mortar Joints: Concave.

3.03 PLACING AND BONDING

A. Lay hollow masonry units with face shell bedding on head and bed joints.

B. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

3.04 REINFORCEMENT AND ANCHORAGE - GENERAL, SINGLE WYTHE MASONRY, AND CAVITY WALL MASONRY

A. See Structural Drawings.

3.05 LINTELS

A. Install loose steel lintels over openings.

B. Install reinforced unit masonry lintels over openings as indicated on structural drawings.

SECTION 05 5000
METAL FABRICATIONS

PART 1 GENERAL

1.01 SUBMITTALS

A. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

E. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

2.03 FABRICATED ITEMS

A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.

B. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; prime paint finish.

C. Lintels: As detailed; prime paint finish.

D. Recessed Mat Frames : As detailed; steel, galvanized finish.

2.04 FINISHES - STEEL

A. Prime paint steel items.
1. Exceptions: Galvanize items to be embedded in concrete, items to be embedded in masonry, and items specified for _____ finish.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

SECTION 05 5135
LADDERS

PART 1 GENERAL

1.01 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product.

C. Shop Drawings:
1. Detail fabrication and erection of each ladder indicated. Include plans, elevations, sections, and details of metal fabrications and their connections.

1.02 WARRANTY

A. Manufacturer has responsibility for an extended Corrective Period for work of this Section for a period of 5 years commencing on the shipment date of the product against all the conditions indicated below, and when notified in writing from Owner, manufacturer shall promptly and without inconvenience and cost to Owner correct said deficiencies.
1. Defects in materials and workmanship.
2. Deterioration of material and surface performance below minimum OSHA standards as certified by independent third party testing laboratory. Ordinary wear and tear, unusual abuse or neglect excepted.
3. Within the warranty period, the manufacturer shall, at its option, repair, replace, or refund the purchase price of defective ladder.

B. Manufacturer shall be notified immediately of defective products, and be given a reasonable opportunity to inspect the goods prior to return. Manufacturer will not assume responsibility, or compensation, for unauthorized repairs or labor. Manufacturer makes no other warranty, expressed or implied, to the merchantability, fitness for a particular purpose, design, sale, installation, or use, of the ladder; and shall not be liable for incidental or consequential damages, losses of or expenses, resulting from the use of ladder products.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: O'Keeffe's, Inc.; 100 N Hill Drive, Suite 12, Brisbane, CA 94005. Toll Free Tel: (888) 653-3333. Tel: (415) 824-4900. Fax: (415) 824-5900. Email: info@okeeffes.com. Web: http://www.okeeffes.com.

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.02 APPLICATIONS/SCOPE

A. Fixed Access Ladder:
1. Standard Duty Channel Rail.
a. Model 500 as manufactured by O'Keeffe's Inc.

2.03 FINISHES

A. Mill finish. As extruded.
1. Clear Anodic Finish: AA-M10C22A41 Mechanical finish as fabricated. Architectural Class I, clear coating 0.018 mm or thicker.

2.04 ACCESSORIES

A. Ladder Safety Post: Retractable hand hold and tie off.

B. Fall Arrest System: Provide Honeywell, Gridloc Fall Arrest System.

PART 3 EXECUTION

3.01 EXAMINATION

A. Coordinate anchorages. Furnish setting drawings, templates, and anchorage structural loads for fastener resistance.

B. Do not begin installation until supporting structure is complete and ladder installation will not interfere with supporting structure work.

C. If supporting structure is the responsibility of another installer, notify Architect of unsatisfactory supporting work before proceeding.

3.02 INSTALLATION

A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND IN PROPER RELATIONSHIP WITH ADJACENT CONSTRUCTION.

SECTION 05 5200
STEEL PIPE AND TUBE RAILINGS

PART 1- GENERAL

1.01 SUBMITTALS

A. Shop drawings which specify material sizes, shapes, plans, sections, install details and finishes per requirements.

B. Product data for rail systems and finishes.

C. Samples of rail materials and finish.

D. One year manufacturer's warranty for materials and installation at project completion.

E. Forward warranty on finish; when applicable; to owner at project completion.

PART 2 –PRODUCTS

2.01 MATERIALS

A. Provide metal free from pitting, seam marks, roller marks, grinding marks and stains at areas exposed to view on completed rail units.
1. Stainless Steel - Exterior
a. Pipe and tubing: ASTM A 269 Type 304 or Type 316.
b. Fittings: ASTM A 276/ A 479 Type 304 or Type 316.
2. Steel - Interior
a. Steel Tube: ASTM A500/A500MGrade B cold-formed structural tubing.
b. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.
c. Exposed Fasteners: No exposed bolts or screws.

2.02 FINISHES

A. Stainless Steel
1. #4 (180 grit) directional.

B. Steel
1. Primed and painted

2.03 FABRICATION

A. Fabricate handrails and guardrails in accordance to approved shop drawing and field dimensions using mitered and welded joints with bends where indicated on shop drawings.

B. Shop fabricate in greatest possible lengths to eliminate field splicing, but not to exceed 20'-0" in length.

C. Form bends to uniform radius, free of distortion, twists, cracks and grain separation.

D. Top rails shall be continuous over posts for strength with splices for expansion located within 6 to 12 inches of post.

E. Splices and expansion joints shall utilize internal splice connectors with set screws to allow for rail expansion over ambient temperature change.

F. Weld all shop assembled connections continuous without undercut and or distortion of rail materials.

G. Grind and/or dress exposed welds smooth and flush to corner or fillet without weakening rail connection.

H. Remove all burrs and sharp edges from exposed ends of final rail assemblies.

I. Lightly sand and blend with fine grit paper all light scratches prior to rail finishing.

J. Provide drainage and weep holes within rail assemblies to prevent entrapment of water within rail assemblies. Note that caution should be used when pressure washing rails assemblies to prevent water entry to non- vented areas under pressure.

K. Provide compatible radius anchor for surface mounting typical.

PART 3- EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and ready to receive work.

3.02 INSTALLATION

A. Install in accordance with shop drawings utilizing established working points.

B. Set railings with anchor bolts. Maintain slab edge distances and rail locations per shop drawings.

C. Assemble rails fitting splices together to form tight hairline joints while allowing for thermal expansion as required.

D. Make all adjustments to alignment for satisfactory rail appearance and to plumb posts prior to final tightening of fasteners or pouring of holes.

E. Locate wall brackets per shop drawings and set anchors within concrete or into blocking within sheetrock walls. Use wall rails to insure proper location and plumb at ends.

F. Install wall rail onto brackets using fasteners supplied per the drawings.

G. After installation is complete clean product using non-abrasive mild soap and water. Do not utilize any cleaners containing any type of acid.

H. Use touch up paint and touch up kit to repair any areas damaged during installation.

SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide technical data on wood preservative materials.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
1. Species: Douglas Fir, unless otherwise indicated.See structural dwgs
2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: S-dry or MC19.

C. Stud Framing (2 by 2 through 2 by 6 (50 by 50 mm through 50 by 150 mm)):
1. Grade: No. 2. or better

D. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16 (50 by 150 mm through 100 by 400 mm)):
1. Machine stress-rated (MSR) as follows:
2. Species: Douglas Fir.

E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
1. Lumber: S4S, No. 2 or Standard Grade.
2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Sheathing: See Drawings

2.04 ACCESSORIES

A. Fasteners and Anchors:
1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

B. Water-Resistive Barrier: See Section 07 2500.

2.05 UNDERLAYMENT:

A. Self adhering sheet underlaymentpolyethylene faced (ice and water shield): ASTM D 1970, min of 40 mils thick; slip-resisting, polyethylene-film-reinforced top surface laminated to SBS-modified asphalt adhesive, with release-paper backing; cold applied
1. Products: High temperature products only.
a. Carlile Coating.:
b. W.R.Grace
c. Henery Co.
2. Install a second 24 inch wide layer at the joint between asphalt shingles and standing seam metal roofing.

2.06 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

3.02 INSTALLATION OF CONSTRUCTION PANELS

A. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.

SECTION 07 9200
JOINT SEALANTS

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
2. List of backing materials approved for use with the specific product.
3. Substrates the product should not be used on.

B. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

C. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

PART 2 PRODUCTS

2.01 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

2.02 NONSAG JOINT SEALANTS

A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Nonstaining to Porous Stone: Nonstaining to light-colored natural stone when tested in accordance with ASTM C1248.
3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
4. Color: To be selected by Architect from manufacturer's full range.
5. Cure Type: Single-component, neutral moisture curing.
6. Service Temperature Range: Minus 20 to 180 degrees F (Minus 29 to 82 degrees C).

B. Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Color: To be selected by Architect from manufacturer's full range.

C. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: To be selected by Architect from manufacturer's full range..

D. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 50 percent, minimum.
2. Color: To be selected by Architect from manufacturer's full range.

E. Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface .
1. Movement Capability: Plus and minus 35 percent, minimum.
2. Color: To be selected by Architect from manufacturer's full range.

F. Non-Sag "Traffic-Grade" Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion and traffic without the necessity to recess sealant below traffic surface.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Color: To be selected by Architect from manufacturer's full range.

G. Polysulfide Sealant for Continuous Water Immersion: Polysulfide; ASTM C920, Grade NS, Uses M and A; single component; explicitly approved by manufacturer for continuous water immersion; not expected to withstand traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Color: To be selected by Architect from manufacturer's full range.

2.03 SELF-LEVELING JOINT SEALANTS

A. Flexible Polyurethane Foam: Single-component, gun grade, and low-expanding.
1. Color: White.

2.04 ACCESSORIES

A. Overlay Extrusion for Glazing System Joint Protection: Rubber profiled extrusions placed over joints in glazing system and provided with watertight seal.
1. Profile: As required to match existing metal glazing cap requirements.
2. Color: As required to match existing conditions.
3. Durometer Hardness, Type A: 65, minimum, when tested in accordance with ASTM D2240.
4. Tensile Strength: 1,139 psi (7.8 MPa), in accordance with ASTM D412.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
2. Notify Architect of date and time that tests will be performed, at least seven days in advance.
3. Record each test on Preinstallation Adhesion Test Log as indicated.
4. If any sample fails, review products and installation procedures, consult manufacturer, or take other measures that are necessary to ensure adhesion; retest in a different location; if unable to obtain satisfactory adhesion, report to Architect.
5. After completion of tests, remove remaining sample material and prepare joints for new sealant installation.

3.02 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Install bond breaker backing tape where backer rod cannot be used.

D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

E. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

SECTION 08 1113
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.

B. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

1.02 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
2. Accessibility: Comply with ICC A117.1 and ADA Standards.
3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
4. Door Edge Profile: Manufacturers standard for application indicated.

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255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DESCRIPTION:	DATE:

PROJECT #: 123998
DRAWN BY: LEIKIS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6842805-5301
LICENSED ARCHITECT

CONSTRUCTION DOCUMENTS

SPECIFICATIONS

G-006

5. Typical Door Face Sheets: Flush.
6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturer's standard.
7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
   a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.02 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. Exterior Door Frames: Full profile/continuously welded type.
1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
2. Frame Metal Thickness: 18 gauge, 0.042 inch (1.0 mm), minimum.
3. Weatherstripping: Separate, see Section 08 7100.

D. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
1. Frame Metal Thickness: 18 gauge, 0.042 inch (1.0 mm), minimum.

E. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.

F. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

G. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

H. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches (102 mm) high to fill opening without cutting masonry units.

2.03 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

B. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15 mil, 0.015 inch (0.4 mm) dry film thickness (DFT) per coat; provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.04 ACCESSORIES

A. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches (102 mm) as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.

B. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

C. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Coordinate frame anchor placement with wall construction.

SECTION 08 4313
ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.

B. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.

1.02 WARRANTY

A. Correct defective Work within a five year period after Date of Substantial Completion.

B. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

C. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 BASIS OF DESIGN -- FRAMING FOR INSULATING GLAZING

A. Center-Set Style, Wind-Borne-Debris Resistance Tested:
1. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep (50 mm wide by 114 mm deep).

2.02 BASIS OF DESIGN -- FRAMING FOR MONOLITHIC GLAZING

A. Center-Set Style, Wind-Borne-Debris Resistance Tested:
1. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep (51 mm wide by 114 mm deep).

2.03 BASIS OF DESIGN -- SWINGING DOORS

A. Wind-Borne-Debris Resistance Tested:
1. Thickness: 1-3/4 inches (43 mm).

B. Medium Stile, Monolithic Glazing:
1. Thickness: 1-3/4 inches (43 mm).

C. Medium Stile, Insulating Glazing, Thermally-Broken:
1. Thickness: 1-3/4 inches (43 mm).

2.04 ALUMINUM-FRAMED STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
1. Glazing Position: Front-set.
2. Finish: Superior performing organic coatings.
   a. Factory finish all surfaces that will be exposed in completed assemblies.
   b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
3. Finish Color: As selected by Architect from manufacturer's standard line.
4. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
5. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
6. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.

B. Performance Requirements
1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
   a. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
2. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8 psf (390 Pa).
3. Air Leakage: 0.06 cfm/sq ft (0.3 L/sec sq m) maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf (75 Pa) pressure difference.

2.05 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
1. Glazing Stops: Flush.
2. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member.

B. Swing Doors: Glazed aluminum.
1. Thickness: 1-3/4 inches (43 mm).
2. Top Rail: 4 inches (100 mm) wide.
3. Vertical Stiles: 4-1/2 inches (115 mm) wide.
4. Bottom Rail: 10 inches (254 mm) wide.
5. Glazing Stops: Square.
6. Finish: Same as storefront.

2.06 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Fasteners: Stainless steel.

2.07 HARDWARE

A. For each door, include weatherstripping, sill sweep strip, and threshold.

B. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.

C. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.

D. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all doors.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

SECTION 08 4523
FIBERGLASS SANDWICH PANEL ASSEMBLIES

PART 1 GENERAL

1.01 SUBMITTALS

A. Submit manufacturer's product data. Include construction details, material descriptions, profiles and finishes of components.

B. Submit shop drawings. Include plans, elevations and details.
1. Submit manufacturer's color charts showing the full range of colors available for factory finished aluminum. When requested, submit samples for each exposed finish, in 5" long sections for the same thickness and material indicated for the work.

1.02 WARRANTY

A. Provide manufacturer's and installer's written warranty agreeing to repair or replace panel system work, which fails in materials or workmanship within one year from the date of delivery. Failure of materials or workmanship shall include excessive deflection, deterioration of finish on metal in excess of normal weathering, defects in accessories, insulated translucent sandwich panels and other components of the work.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. The basis for this specification is for products manufactured by Kalwall Corporation. Other manufacturers may bid this project subject to compliance with the performance requirements of this specification and submission of evidence thereof. Listing other manufacturers' names in this specification does not constitute approval of their products or relieve them of compliance with all the performance requirements contained herein.

B. Kalwall Corporation, Tel: (800) 258-9777 - Fax: (603) 627-7905 - Email: info@kalwall.com
1. Distributed locally by Alder Sales Corporation, Tel: (801) 262-9700

2.02 PANEL COMPONENTS

A. Face Sheets:
1. Translucent faces: Manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.
2. Appearance:
   a. Exterior face sheet: Smooth, .070" thick and Crystal in color.
   b. Interior face sheet: Smooth, .045" thick and White in color.

2.03 PANEL CONSTRUCTION

A. Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge.
1. Thickness: 2-3/4 inches
2. Visible Light Transmittance (VLT):
   a. Visible LT (NFRC 202 - Center of Glazing (Panel)) by NFRC certified laboratory: 26%.
3. Solar heat gain coefficient 31
4. Panel U-factor by NFRC certified laboratory:
   a. 2-3/4" thermally broken grid 23
      1) 2-3/4" aluminum grid 29
5. Complete insulated panel system shall have NFRC certified U-factor of .28 for TB panels and .37 for non-TB
6. Grid pattern as viewed: Nominal size 12" x 24" ; pattern shoji.

B. Standard panels shall deflect no more than 1.9" at 30 PSF in 10'-0" span without a supporting frame by ASTM E 72.

2.04 BATTENS AND PERIMETER CLOSURE SYSTEM

A. Closure system (Wall):

B. Finish:
1. Manufacturer's factory applied finish, which meets the performance requirements of AAMA 2604. Color to be selected from manufacturer's standards.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install the panel system in accordance with the manufacturer's suggested installation instructions and approved shop drawings.
1. Anchor component parts securely in place by permanent mechanical attachment system.
2. Accommodate thermal and mechanical movements.
3. Set perimeter framing in a full bed of sealant compound, or with joint fillers or gaskets to provide weather-tight construction.

B. Install joint sealants at perimeter joints and within the panel system in accordance with manufacturer's suggested installation instructions and approved shop drawings.

SECTION 08 7100
DOOR HARDWARE

PART 1 GENERAL

1.01 SUBMITTALS

A. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
2. Provide complete description for each door listed.

B. Shop Drawings - Electrified Door Hardware: Submit diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
2. Elevations: Submit front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
3. Diagrams: Submit point-to-point wiring diagram that shows each device in door opening system with related colored wire connections to each device.

1.02 WARRANTY

A. Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Owner's name and register with manufacturer.
1. Locksets and Cylinders: Three years, minimum.
2. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
1. Applicable provisions of federal, state, and local codes.

2.02 FINISHES

A. Finishes: Provide door hardware of same finish, unless otherwise indicated.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.

C. Install hardware for smoke and draft control doors in accordance with NFPA 105.

D. Use templates provided by hardware item manufacturer.

E. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
1. Mounting heights in compliance with ADA Standards:
   a. Locksets: 40-5/16 inch (1024 mm).
   b. Push Plates/Pull Bars: 42 inch (1067 mm).
   c. Deadlocks (Deadbolts): 48 inch (1219 mm).
   d. Exit Devices: 40-5/16 inch (1024 mm).
   e. Door Viewer: 43 inch (1092 mm); standard height 60 inch (1524 mm).

SECTION 08 8000
GLAZING

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data on Insulating Glass Unit, Glazing Unit, Plastic Film, and Spandrel Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

B. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

C. Samples: Submit two samples 12 by 12 inch (304.8 by 304.8 mm) in size of glass units, showing coloration.

1.02 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1.03 WARRANTY

A. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glass Fabricators:
1. Trulite Glass & Aluminum Solutions, LLC: www.trulite.com/#sle.
2. Substitutions: See Section 01 6000 - Product Requirements.

B. Float Glass Manufacturers:
1. Guardian Glass, LLC: www.guardianglass.com/#sle.
2. Pilkington North America Inc: www.pilkington.com/na/#sle.
3. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
1. Design Pressure: Calculated in accordance with ASCE 7.
2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
3. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
4. Glass thicknesses listed are minimum.

B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
1. In conjunction with weather barrier related materials described in other sections, as follows:
2. To maintain a continuous vapor retarder and/or air barrier throughout glazed assembly from glass pane to heel bead of glazing sealant.

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
3. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.
4. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

2.04 INSULATING GLASS UNITS

A. Insulating Glass Units: Types as indicated.
1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Metal-Edge Spacers: Aluminum, bent and soldered corners.
4. Spacer Color: Black.
5. Edge Seal:
   a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
6. Color: Black.
7. Purge interpane space with dry air, hermetically sealed.
8. Capillary Tubes: Provide tubes from air space for insulating glass units without inert type gas that have a change of altitude greater than 2500 feet (762 m) between point of fabrication and point of installation to permit pressure equalization of air space.
   a. Breather Tubes: Seal or crimp breather tubes upon installation in accordance with insulating glass fabricator's requirements.
   b. Inert gas may be installed in the field into air space in accordance with insulating glass fabricator's and installer's requirements.

B. Insulating Glass Units: Vision glass, double glazed.
1. Applications: Exterior glazing unless otherwise indicated.
2. Space between lites filled with air.
3. Outboard Lite: Annealed float glass, 1/4 inch (6.4 mm) thick, minimum.
   a. Tint: Clear.
   b. Coating: Self-cleaning type, on #1 surface.
   c. Coating: Low-E (passive type), on #2 surface.
4. Inboard Lite: Annealed float glass, 1/4 inch (6.4 mm) thick, minimum.
   a. Tint: Clear.
5. Total Thickness: 1 inch (25.4 mm).
6. Thermal Transmittance (U-Value), Summer - Center of Glass: .26, nominal.
7. Visible Light Transmittance (VLT): 32% to 64% percent, nominal.
8. Solar Heat Gain Coefficient (SHGC): 0.19 to 0.27, nominal.
9. Visible Light Reflectance, Outside: 64 percent, nominal.

C. Insulating Glass Units: Safety glazing.
1. Applications:
   a. Glazed lites in exterior doors.
   b. Glazed sidelights and panels next to doors.
   c. Other locations required by applicable federal, state, and local codes and regulations.
   d. Other locations indicated on drawings.
2. Space between lites filled with air.
3. Glass Type: Same as Type IG-1 except use fully tempered float glass for both outboard and inboard lites.
4. Tint: Clear.
5. Total Thickness: 1 inch (25.4 mm).
6. Thermal Transmittance (U-Value), Summer - Center of Glass: .26, nominal.
7. Visible Light Transmittance (VLT): 32% to 64% percent, nominal.
8. Solar Heat Gain Coefficient (SHGC): 0.19 to 0.27, nominal.
9. Visible Light Reflectance, Outside: 64 percent, nominal.

2.05 BASIS OF DESIGN - INSULATING GLASS UNITS

A. Basis of Design - Insulating Glass Units: Vision glazing, with low-e coating.
1. Applications: Exterior insulating glass glazing unless otherwise indicated.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Spacer Color: Black.
4. Edge Seal:
5. Color: Black.
6. Purge interpane space with dry air, hermetically sealed.
7. Basis of Design - Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
8. Outboard Lite: Annealed float glass, 1/4 inch (6.4 mm) thick, minimum.
   a. Low-E Coating: Vitro Architectural Glass (formerly PPG Glass) Solarban 70 glass on #2 surface.
   b. Glass: Clear.
9. Inboard Lite: Heat-strengthened float glass, 1/4 inch (6.4 mm) thick.
10. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of another acceptable manufacturer.

2.06 GLAZING UNITS

A. Monolithic Exterior Vision Glazing:
1. Applications: As scheduled.
2. Glass Type: Annealed float glass.
3. Tint: Clear.
4. Thickness: 1/4 inch (6.4 mm), nominal.

B. Monolithic Interior Vision Glazing:
1. Applications: Interior glazing unless otherwise indicated.
2. Glass Type: Annealed float glass.
3. Tint: Clear.
4. Thickness: 1/4 inch (6.4 mm), nominal.
5. Butt-glazing (no interior mullions allowed):
   a. Thickness:
      1) 1/4" tempered for heights up to 5'-0"
      2) 3/8" tempered for heights over 5'-0" up to 8'-0"
      3) 1/2" tempered for heights over 8'-0" up to 10'-0"
      4) 5/8" tempered for heights over 10'-0" up to 12'-0"
      5) 3/4" tempered for heights over 12'-0" up to 14'-0"
      6) 7/8" tempered for heights over 14'-0" up to 16'-0"
      7) 1" tempered for heights over 16'-0" up to 18'-0"
   b. Provide engineering data with submittals for all butt glazed window units

2.07 GLAZING COMPOUNDS

A. Type GC-2 - Butyl Sealant: Single component; ASTM C920 Grade NS, Class 12-1/2, Uses M and A, Shore A hardness of 10 to 20; black color.

2.08 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot (25 mm for each square meter) of glazing or minimum 4 inch (100 mm) by width of glazing rabbet space minus 1/16 inch (1.5 mm) by height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Continuous by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.

C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.

D. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

E. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.01 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Place setting blocks at 1/4 points with edge block no more than 6 inch (152 mm) from corners.

B. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

C. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.02 INSTALLATION - WET GLAZING METHOD (SEALANT AND SEALANT)

A. Place setting blocks at 1/4 points and install glazing pane or unit.

B. Install removable stops with glazing centered in space by inserting spacer shims both sides at 24 inch (610 mm) intervals, 1/4 inch (6.4 mm) below sight line.

C. Fill gaps between glazing and stops with silicone type sealant to depth of bite on glazing, but not more than 3/8 inch (9 mm) below sight line to ensure full contact with glazing and continue the air and vapor seal.

D. Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.03 INSTALLATION - BUTT JOINT GLAZING METHOD (SEALANT ONLY)

A. Permit sealant to cure then remove foam backer rod, and then apply sealant to opposite side, tool smooth to concave profile.

3.04 INSTALLATION - PLASTIC FILM

A. Install plastic film with adhesive, applied in accordance with film manufacturer's instructions.

B. Place without air bubbles, creases or visible distortion.

SECTION 09 2116
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data:
1. Provide data on metal framing, gypsum board, accessories, and joint finishing system.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
1. Acoustic Attenuation: STC as indicated calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

C. Fire-Resistance-Rated Assemblies: Provide completed assemblies with the following characteristics:
1. Fire Rated Shaft Walls: where indicated on the drawings.
2. Gypsum Association File Numbers: Comply with requirements of GA-600 for the particular assembly.

2.02 BOARD MATERIALS

A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
4. Thickness:
   a. Vertical Surfaces: 5/8 inch (16 mm).
   b. Ceilings: 5/8 inch (16 mm).
   c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.

B. Impact Resistant Wallboard:
1. Application: High traffic areas: 4'-0" A.F.F. at Stairways and Corridors.
2. Surface Abrasion: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
4. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
5. Type: Fire-resistance-rated Type X, UL or WH listed.
6. Thickness: 5/8 inch (16 mm).
7. Edges: Tapered.

C. Backing Board For Wet Areas: One of the following products:
1. Application: Surfaces behind tile in wet areas including tub and shower surrounds and shower ceilings.
2. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.

D. Exterior Soffit Board: Exterior gypsum soffit board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings and soffits in protected exterior areas, unless otherwise indicated.
2. Types: Regular, in locations indicated.
3. Regular Type Thickness: 1/2 inch (13 mm).
4. Edges: Tapered.

2.03 GYPSUM BOARD ACCESSORIES

A. Acoustic Putty Packs installed at back boxes in sound rated walls and at interior of exterior fured walls. Products by 3M, Hilti, or equivilent.

B. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
1. Paper Tape: 2 inch (50 mm) wide, creased paper tape for joints and corners, except as otherwise indicated.

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255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DESCRIPTION:	DATE:

PROJECT #: 123998
DRAWN BY: LEIKIS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6842805-2301
LICENSED ARCHITECT

CONSTRUCTION DOCUMENTS

SPECIFICATIONS

G-007

C. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches (0.84 mm) in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.

PART 3 EXECUTION

3.01 FRAMING INSTALLATION

3.02 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

3.03 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.

C. Double-Layer, Nonrated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Use glass mat faced gypsum board at exterior walls and at other locations as indicated. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.

D. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

E. Exterior Soffits: Install exterior soffit board perpendicular to framing, with staggered end joints over framing members or other solid backing.

F. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

3.04 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
2. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
3. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

3.05 TEXTURE FINISH

A. Apply finish texture coating by means of spraying apparatus in accordance with manufacturer's instructions and to match approved sample.

SECTION 09 5100
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide data on suspension system components and acoustical units.

PART 2 PRODUCTS

2.01 ACOUSTICAL UNITS

A. Acoustical Units - General: ASTM E1264, Class A.

B. Acoustical Panels: Mineral fiber with scrubbable finish, with the following characteristics:
1. Classification: ASTM E1264 Type IX.
2. Panel Edge: Square.
3. Suspension System: Exposed grid.
4. Location: As indicated on drawings.

C. Acoustical Panels: Painted mineral fiber, ASTM E1264 Type III, with the following characteristics:
1. Size: 24 x 24 inches (600 x 600 mm).
2. Thickness: 5/8 inches (15 mm).
3. Light Reflectance: 87 percent, determined in accordance with ASTM E1264.
4. Edge: Tegular.
5. Surface Color: As indicated on drawings.
6. Surface Pattern: Beveled.
7. Location: General

2.02 SUSPENSION SYSTEM(S)

A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.

B. Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; heavy-duty.
1. Profile: Tee; 15/16 inch (24 mm) wide face.
2. Construction: Double web.
3. Finish: White.

2.03 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Hanger Wire: 12 gauge, 0.08 inch (2 mm) galvanized steel wire.

C. Perimeter Moldings: Same metal and finish as grid.

PART 3 EXECUTION

3.01 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, ASTM C636/C636M, ASTM E580/E580M, ASTM C636/C636M, and ASTM E580/E580M and as supplemented in this section.

3.02 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

SECTION 09 6813
TILE CARPETING

PART 1 GENERAL

1.01 SUBMITTALS

A. Sustainable Design Submittal: Submit VOC content documentation for adhesives.

B. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.02 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Warranty: Commercial Lifetime.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tile Carpeting:
1. See drawings and finish schedule for manufacturers and patterns.
2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Tile Carpeting: Tufted, manufactured in one color dye lot.
1. Basis of Design Product: See drawings and finish schedule for patterns manufactured by see drawings.
2. Color: See Finish Schedule.
3. Pattern: See Finish Schedule.
4. Critical Radiant Flux: Minimum of 0.22 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.
5. Surface Flammability Ignition: Pass ASTM D2859 (the "pill test").
6. Maximum Electrostatic Charge: 3 Kv. at 20 percent relative humidity.

2.03 ACCESSORIES

A. Edge Strips: Embossed aluminum, color as selected by Architect.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Concrete Slabs: Verify finishes comply with requirements specified in Section 03 3000 "Cast-in-Place Concrete" and surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.
1. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Blend carpet from different cartons to ensure minimal variation in color match.

B. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

3.03 PROTECTION

A. Protect installed carpet tile in compliance with CRI 104 "Standard for Installation of Commercial Carpet - September 2015."

B. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

SECTION 09 9123
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.

B. Do Not Paint or Finish the Following Items:
1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
2. Items indicated to receive other finishes.
3. Items indicated to remain unfinished.
4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
5. Floors, unless specifically indicated.
6. Glass.
7. Concealed pipes, ducts, and conduits.

1.02 SUBMITTALS

A. Product Data: Provide complete list of products to be used, with the following information for each:
1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
2. MPI product number (e.g., MPI #47).
3. Cross-reference to specified paint system products to be used in project; include description of each system.

B. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.
1. Where sheen is specified, submit samples in only that sheen.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions. See finish schedule in drawings for additional information.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
2. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
3. Supply each paint material in quantity required to complete entire project's work from a single production run.
4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Colors: See Finish Schedule.

2.03 PAINT SYSTEMS - INTERIOR

A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board and shop primed steel and excluding glazed CMU.
1. Two top coats and one coat primer.
2. Top Coat(s): Interior Latex; MPI #43, 44, 52, 53, 54, or 114.
3. Top Coat Sheen:
   a. Satin: MPI gloss level 4; use this sheen for items subject to frequent touching by occupants, including door frames and railings.
4. Primer: As recommended by top coat manufacturer for specific substrate.

B. Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals:
1. Two top coats and one coat primer.
2. Top Coat(s): DTM Acrylic.
3. Top Coat Sheen:
   a. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
4. Primer: As recommended by top coat manufacturer for specific substrate.

C. Dry Fall: Metals; exposed structure and overhead-mounted services, including shop primed steel deck, structural steel, metal fabrications, galvanized ducts, galvanized conduit, and galvanized piping.
1. Top Coat: Alkyd Dry Fall; MPI #55, 89, or 225.
2. Top Coat Sheen:
   a. Eggshell: MPI gloss level 3; use this sheen at all locations.
3. Primer: As recommended by top coat manufacturer for specific substrate.

D. Acoustic Sound Panel.
1. Waterborne Acrylic Dryfall.
2. Wet mils 3.5-5.0 dry mls 1.5-2.0.
3. Coverage 336-450 per gallon.
4. Cross spray at right angles if necessary.
5. Airless spray or conventional spray per manufacturer's recommendation.
6. Indicated surface brush or roller is not allowed.

E. Concrete Floors to be Painted.
1. Two top coats and one coat primer.
2. Top Coat(s): Alkyd Floor Enamel, Gloss; MPI #27.
3. Top Coat Sheen:
   a. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
4. Primer: As recommended by top coat manufacturer for specific substrate.

F. Epoxy Coating:
1. Number of coats: Two.
2. Product Characteristics:
3. Top Coat(s): Polyamide Epoxy; MPI #77.
   a. Sheen: Gloss.

2.04 PRIMERS

A. Primers: Provide primers as required or recommended by manufacturer of top coats.

PART 3 EXECUTION

3.01 EXAMINATION

A. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
1. Gypsum Wallboard: 12 percent.
2. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

SECTION 10 1400
SIGNAGE

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.

B. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.

C. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.

D. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

PART 2 PRODUCTS

2.01 SIGNAGE APPLICATIONS

A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 2017, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.

B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.
1. Sign Type: Flat signs with engraved panel media as specified.
2. Provide "tactile" signage, with letters raised minimum 1/32 inch (0.8 mm) and Grade II braille.
3. Office and Classroom: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section for replaceable occupant name.
4. Conference and Meeting Rooms: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section with sliding "In Use/Vacant" indicator.
5. Service Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings.
6. Rest Rooms: Identify with pictograms, the names "MEN" and "WOMEN", and braille.

C. Building Identification Signs:
1. Use individual metal letters.
2. Mount on outside wall in location indicated on drawings.

D. Plaque: See Allowance for details.

2.02 SIGN TYPES

A. Flat Signs: Signage media without frame.
1. Edges: Square.
2. Corners: Radiused.
3. Clear Cover: For customer produced sign media, provide clear cover of polycarbonate plastic, glossy on back, non-glare on front.
4. Wall Mounting of One-Sided Signs: Tape adhesive.

B. Color and Font: Unless otherwise indicated:
1. Character Font: Helvetica, Arial, or other sans serif font.
2. Character Case: Upper case only.
3. Background Color: manufactures full range of colors.
4. Character Color: Contrasting color.

2.03 PLAQUES

A. Metal Plaques:
1. Metal: Aluminum casting.
2. Metal Thickness: 1/8 inch (3 mm), minimum.

2.04 ACCESSORIES

A. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

SECTION 10 2119
SOLID PLASTIC SHOWER AND DRESSING COMPARTMENTS

PART 1 GENERAL

1.01 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Include dimensioned layout, elevations, trim, closures, and accessories.

1.02 WARRANTIES

A. Provide manufacturer's 25 year warranty against breakage, corrosion, and delamination under normal conditions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Scranton Products.

B. Substitutions: See Section 01 6000 Product Requirements.

2.02 MATERIALS

A. Doors, Panels and Pilasters:
1. High density polyethylene (HDPE), fabricated from polymer resins compounded under high pressure, forming single thickness panel.
2. Waterproof and nonabsorbent, with self-lubricating surface, resistant to marks by pens, pencils, markers, and other writing instruments.
3. 1 inch thick with radiused edges.
4. Fire hazard classification: Not required.

B. Aluminum Extrusions: ASTM B221, 6463-T5 alloy and temper.

C. Shower Curtains: Vinyl, 42 inches wide x 72 inches high, hung with aluminum curtain hooks with self-lubricating Delrin slides.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install compartments in accordance with manufacturer's instructions and approved Shop Drawings.

B. Install rigid, straight, plumb, and level.

C. Not Acceptable: Evidence of cutting, drilling, or patching.

SECTION 10 2800
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

B. Samples: Submit two samples of each accessory, illustrating color and finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide products of each category type by single manufacturer.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.

B. Keys: Provide 2 keys for each accessory to Owner; master key lockable accessories.

C. Stainless Steel Sheet: ASTM A666, Type 304.

D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

F. Zinc Alloy: Die cast, ASTM B86.

G. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

B. Chrome/Nickel Plating: ASTM B456, SC 2, polished finish, unless otherwise noted.

C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.

2.04 COMMERCIAL TOILET ACCESSORIES

A. Toilet Paper Dispenser: Owner furnished, Contractor installed.

B. Paper Towel Dispenser: Owner furnished, Contractor installed.

C. Soap Dispenser: Owner furnished, Contractor installed.

D. Mirrors: Stainless steel framed, 1/4 inch (6 mm) thick annealed float glass; ASTM C1036.
1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
2. Size: as shown on the drawings.
3. Frame: 0.05 inch (1.3 mm)angle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.

E. Grab Bars: Stainless steel, smooth surface.
1. Heavy Duty Grab Bars: Floor supports are not acceptable.
   a. Push/Pull Point Load: Minimum 1000 pound-force (4448.2 N), minimum.
   b. Dimensions: 1-1/2 inch (38 mm) outside diameter, minimum 0.125 inch (3.17 mm) wall thickness, exposed flange mounting, 1-1/2 inch (38 mm) clearance between wall and inside of grab bar.
   c. Length and Configuration: As indicated on drawings.

2.05 UNDER-LAVATORY PIPE AND SUPPLY COVERS

A. Specified in 22 4000 - Plumbing Fixtures.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

SECTION 11 6623
GYMNASIUM EQUIPMENT

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's data showing configuration, sizes, materials, finishes, hardware, and accessories; include:
1. Fire rating certifications.
2. Manufacturer's installation instructions.

B. Shop Drawings: For custom fabricated equipment indicate, in large scale detail, construction methods; method of attachment or installation; type and gage of metal, hardware, and fittings; plan front elevation; elevations and dimensions; minimum one cross section.

1.02 WARRANTY

A. Provide 3 year manufacturer warranty for parts, finshes, and labor.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Provide mounting plates, brackets, and anchors of sufficient size and strength to securely attach equipment to building structure; comply with requirements of Contract Documents.

B. Hardware: Heavy duty steel hardware, as recommended by manufacturer.

2.02 INDOOR CONTAINMENT

A. Indoor Batting Cages:
1. Enclosure Material: Netting on top and sides with sewn rope border allowing for additional material on sides to rest on floor to retain balls within batting cage.
2. Netting: Black, No.36 nylon, 1-3/4 inches (44 mm) square.
3. Size: See drawings.
4. Upper Support Frame: At least 1-1/2 inches (38 mm) diameter aluminum pipe and necessary fittings to provide symmetrical layout with uniform spacing.
5. Support Cables: Steel cables at least 1/8 inch (3.2 mm) in diameter with minimum of 1800 pounds (816 kg) tensile strength spaced to align with support frame horizontal members providing uniform load distribution and stability.

2.03 WALL PADDING

A. Wall Padding: Foam filling bonded to backing board, wrapped in covering; each panel fabricated in one piece.
1. Surface Burning Characteristics: Flame spread index (FSI) of 25 or less, smoke developed index (SDI) of 450 or less, Class A, when tested in accordance with ASTM E84 as a complete panel.
2. Flammability: Comply with NFPA 286.
3. Covering: Vinyl-coated polyester fabric, mildew and rot resistant; stapled to back of board.
   a. Color: As selected from manufacturer's standard range.
   b. Color: As selected by the Architect from manufacturer's standard range.
   c. Texture: As selected by the Architect from manufacturer's standard range..
4. Foam: Soft, urethane or polyurethane, with 3.5 pcf (55 kg/cu m) nominal density.
5. Foam, Fire-Rated: Open cell polychloroprene (Neoprene), with 5.5 pcf (90 kg/cu m) nominal density.
6. Foam Thickness: 1-1/2 inches (38 mm).
7. Backing Board: Plywood.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with Contract Documents and manufacturer's instructions.

B. Install equipment rigid, straight, plumb, and level.

C. Secure equipment with manufacturer's recommended anchoring devices.

D. Install wall padding securely, with edges tight to wall and without wrinkles in fabric covering.

E. Separate dissimilar metals to prevent electrolytic corrosion.

SECTION 11 6653
SUSPENDED BACKSTOP SAFETY NETTING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide all equipment and materials, and do all work necessary to furnish and install the athletic equipment, as indicated on the drawings and as specified herein. Athletic equipment shall include, but not be limited to:

1.02 SUBMITTALS

A. Manufacturers Product Data
1. Provide manufacturers product data prior to actual field installation work, for Architects or Owners representatives review.

B. Shop Drawings
1. Provide drawings of the manufacturers recommended installation and foundation requirements prior to actual field installation work, for Architects or Owners representatives review.

1.03 QUALITY ASSURANCE

A. Manufacturers warranties shall pass to the Owner and certification made that the product materials meet all applicable grade trademarks or conform to industry standards and inspection requirements.

1.04 PRODUCT DELIVERY AND STORAGE

A. Materials delivered to the site shall be examined for damage or defects in shipping. Any defects shall be noted and reported to the Owners representative. Replacements, if necessary, shall be immediately re-ordered, so as to minimize any conflict with the construction schedule. Sound materials shall be stored above ground under protective cover or indoors so as to provide proper protection.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. InCord, https://incord.com/sports-division/indoor-sports-netting/

B. Douglas Industries, Inc., www.douglas-sports.com
1. Suspended Backstop Netting Systems, #66805

C. Substitutions: See Section 016000 Product Requirements

PART 3 - EXECUTION

3.01 INSTALLATION OF EQUIPMENT

A. All athletic equipment shall be installed as recommended with manufacturer's written directions, and as indicated on the drawings.

SECTION 14 4200
WHEELCHAIR LIFTS

PART 1 GENERAL

1.01 QUALITY ASSURANCE

A. Designer Qualifications: Provide wheelchair lift design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in Utah.

B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of type specified in this section.

1.02 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with ASME A18.1, ASME A17.1, applicable local codes, and authorities having jurisdiction (AHJ).

B. Accessibility Requirements: Comply with ADA Standards and ICC A117.1.

C. Structural Performance: Comply with ASCE 7 for loading of wheelchair lift components and assemblies.

D. Perform welding of steel in accordance with AWS D1.1/D1.1M.

E. Perform electrical work in accordance with NFPA 70.

2.02 VERTICAL PLATFORM WHEELCHAIR LIFTS

A. Manufacturers:
1. Basis of Design: Ameriglide, Stratos 750 Commercial VPL, https://www.ameriglide.com/
2. Substitutions: See Section 01 6000 - Product Requirements.

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LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK: DESCRIPTION: DATE:

PROJECT #: 123998
DRAWN BY: LEIKIS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
8428805-2301
LICENSED ARCHITECT

CONSTRUCTION DOCUMENTS

SPECIFICATIONS

G-008

B. Vertical Platform Wheelchair Lifts: Provide manufacturer's standard type that complies with indicated requirements. Use manufacturer's standard components for vertical platform wheelchair lifts as required for complete system unless otherwise indicated.
   1. Type of Vertical Platform Wheelchair Lift:
   2. Configuration: As indicated on drawings.
   3. Location: As indicated on drawings.
   4. Lift Load Capacity: 750 lb (340 kg), maximum.
   5. Lifting Height from Bottom to Upper Floor Level: 120 inches (3048 mm).
   6. Platform Width Clearance: 36 inches (914 mm).
   7. Platform Length Clearance: 54 inches (1372 mm).
   8. Platform Side Wall Panels: Nominal height of 42 inches (1067 mm), with galvanized steel sheet panels, and enclosed within rectangular extruded aluminum framework.
   9. Platform Floor: Steel sheet with matte finish, having overall thickness not greater than 1-1/2 inches (38 mm).
   10. Drive System: Belt Driven Ball Screw
   11. Drive System Enclosure: Provide rectangular tube frame with flush steel sheet panels on sides and top to enclose drive system components; securely attach enclosure to adjacent substrate.

2.03 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Electrical Components, Boxes, Conduit, Wiring, and Devices: Comply with NFPA 70 and UL (DIR) or ITS (DIR) listed and labeled, and marked as applicable for proposed locations.

2.04 MATERIALS

A. Rolled Steel Sections, Shapes, and Rods: Comply with ASTM A36/A36M.

B. Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, Designation SS (structural steel), Grade 33 (230), with G90/Z275 coating.

C. Rolled Steel Floor Plates: Comply with ASTM A786/A786M, 1/8 inch (3.2 mm) thick, with manufacturer's standard surface pattern; rolled from steel plate complying with ASTM A572/A572M, Grade 55 (380).

D. Steel Tubing: Comply with ASTM A500/A500M, cold formed.

E. Anchor Bolts and Rods: Comply with ASTM F1554, Grade 55.

F. Welding: Comply with applicable requirements of AWS D1.1/D1.1M and AWS D1.3/D1.3M.

2.05 EQUIPMENT

A. Lubrication of Equipment: Provide grease fittings for lubricating bearings requiring periodic lubrication, automatic feed type grease cups, and visible and easily accessible lubrication points.

B. Guide Rails, Ropes, Counterweights, Sheaves, Attachment Brackets, and Anchors: Sized in accordance with local building code, including safety factors.

C. Maintenance Devices: Provide as necessary within wheelchair lift system, supported on structural members within accessible locations.

2.06 FINISHES

A. Baked-On Factory Finish for Structural Metal Surfaces: Clean surfaces of rust, oil, or grease and wipe clean with solvent; apply manufacturer's standard two-coat, baked-on finish consisting of primer and thermosetting top coat.
   1. Color: As selected by Architect from manufacturer's standard line.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install wheelchair lift system and components in accordance with manufacturer's written installation instructions.

B. Install wheelchair lift system securely to supporting structure, and flush with adjacent surfaces.

C. Install structural components using methods that comply with requirements indicated relative to layout and structural position.

SECTION 32 1813
SYNTHETIC GRASS SURFACING

PART 1 GENERAL

1.01 SUBMITTALS

A. Submit with bid resumes of both the Project Manager and Turf Installation Foreman that will be on the project.

1.02 WARRANTY

A. Provide 10 year minimum warranty from date of substantial completion for materials and installation covering:
   1. Excessive wear.
   2. Fiber tensile strength.
   3. Deterioration or fading from UV light.

PART 2 PRODUCTS

2.01 SYNTHETIC GRASS SURFACING

A. Synthetic Grass Carpet: Yarn fibers tufted through and adhered to porous fiber backing.
   1. Primary Backing:
   2. Grab Tear Strength: 200 pounds.
   3. Yarn Denier: 8,000 - 11,000
   4. Face Weight: MInimum 40 ounces per square yard.
   5. Permeability: 10 inches (254 mm) of water per hour, minimum.
   6. Lead Content: 100 ppm, maximum, in accordance with ASTM F2765.
   7. Roll: 15 feet (4.6 m) feet wide, minimum.
   8. Noncombustible: Pass ASTM D2859 for flammability.
   9. Field Graphics:

B. Synthetic Grass Infill: 8.4 pounds per square foot to be verified by architect with information provided by installer. Information shall be number and weight of rubber infill bags received from rubber supplier.
   1. Sand/Rubber System Infill Option: Sand ballasted layer shall be washed dust free silica sand and the infill layer of Rubber shall be of granular ground SBR granules free of toxins and heavy metals.
   2. Rubber infill shall be added until no more than ½ to ¾ in. of fiber is exposed.

C. Shock Absorbing Course:

2.02 MATERIALS

A. Edge Anchoring: Wood-polymer composite lumber complying with ASTM D6662; factory finished, free of sharp vertical edges, protruding elements, and trip hazards, capable of being secured to border.

B. Border: Permanent element surrounding edge anchoring, consisting of exterior walls:

2.03 FURNISHED MATERIALS/EQUIPMENT

A. Upon completion of the turf installation, furnish 2,000 lbs. of infill material and all pieces of scrap turf selected by the owner.

B. Attic stock requirements of twenty (20) linear feet of (1) nominal roll width for each green and 10 lineal feet of each additional color used on the installation.

C. Contractor shall supply one field groomer and one sweeper. Sweeper to have a debris collection attachment that shall pick up ½" diameter (and larger) surface debris/material, but leave infill material or have a mechanism/screen to allow the infill to fall back to the surface. The groomer shall have plastic brushes that are adjustable and shall be designed to de-compact and level the surface of the infill without damaging the field.

D. Groomer and sweeper shall be approved by the manufacturer of the turf system proposed. It is the responsibility of the bidding contractor to ensure the equipment selected within their proposal meets these requirements.

E. Acceptable manufacturers are Greensgroomer, Sportsfield Specialties and FieldTurf GroomRight.

2.04 TUFTING AND INLAYS

A. The following markings shall be inlaid or tufted (specify which for each):
   1. See sports field layout design drawings.

2.05 ACCESSORIES

A. Fasteners, Synthetic Grass to Edging: 1/2 inch (13 mm) stainless steel staples, in compliance with ASTM F1667.

B. Fasteners, Edging to Border: Self drilling, stainless steel screws, in compliance with ASTM F1667.

C. Fasteners, Seams:

PART 3 EXECUTION

3.01 SHOCK ABSORBING COURSE

A. Impact Mats:

3.02 EDGE ANCHORING

A. The perimeter shall be anchored to a nailer attached to the concrete curb. The nailer shall be installed by the turf contractor so that the height of the infill matches the top of curb.

3.03 BORDER

A. Verify that site furnishings and composite nailer boards located within project area are complete.

3.04 SYNTHETIC GRASS

A. Carpet Rolls:
   1. Turf rolls shall be installed directly over the graded and compacted stone base. Care shall be taken to avoid disturbing the base. Equipment shall be available during installation to correct the base ahead of the placement of each roll.
   2. Unroll all carpet in same direction.
   3. Prevent seams from being located over impact mats.
   4. Allow carpet to rest for at least 4 hours after unrolling and prior to seaming.
   5. Smooth seams and edges, eliminate overlaps and gaps.

B. Securing: Staple carpet to edging 1 inch (25 mm) on center.

3.05 INFILL

A. Installation of infill material shall begin immediately following turf installation. Infill material shall be spread in lifts and properly groomed to ensure uniformity of depth. Final surface texture and appearance shall be uniform and shall replicate natural turf as closely as possible. The infill material shall only be applied when the synthetic turf fabric is dry.

B. Apply during dry weather without signs of moisture on synthetic grass.

C. Thoroughly brush synthetic grass prior to infill installation.

D. Apply infill uniformly in multiple lifts, brush fibers between each application.

E. Measure depth to confirm accordance with plans.

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LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

CONSTRUCTION DOCUMENTS

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: LEIKIS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
6842805-0301
LICENSED ARCHITECT

SPECIFICATIONS

G-009

SECTION 02 4119
SELECTIVE SITE DEMOLITION

PART 1 GENERAL

1.01 RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND OTHER DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.02 SECTION INCLUDES
A. DEMOLITION AND REMOVAL OF SELECTED SITE ELEMENTS.
B. SALVAGE OF EXISTING ITEMS TO BE REUSED OR RECYCLED.

1.03 RELATED SECTIONS
A. DIVISION 01 1000 "SUMMARY" FOR USE OF PREMISES, AND PHASING, AND OWNER-OCCUPANCY REQUIREMENTS.
B. DIVISION 017329 "CUTTING AND PATCHING" FOR CUTTING AND PATCHING PROCEDURES.
C. DIVISION 31 2300 "EARTHWORK" FOR SITE CLEARING AND REMOVAL OF ABOVE- AND BELOW-GRADE IMPROVEMENTS.

1.04 DEFINITIONS
A. REMOVE: DETACH ITEMS FROM EXISTING CONSTRUCTION AND LEGALLY DISPOSE OF THEM OFF-SITE, UNLESS INDICATED TO BE REMOVED AND SALVAGED OR REMOVED AND REINSTALLED.
B. REMOVE AND SALVAGE: DETACH ITEMS FROM EXISTING CONSTRUCTION AND DELIVER THEM TO OWNER READY FOR REUSE.
C. REMOVE AND REINSTALL: DETACH ITEMS FROM EXISTING CONSTRUCTION, PREPARE THEM FOR REUSE, AND REINSTALL THEM WHERE INDICATED.
D. EXISTING TO REMAIN: EXISTING ITEMS OF CONSTRUCTION THAT ARE NOT TO BE REMOVED AND THAT ARE NOT OTHERWISE INDICATED TO BE REMOVED, REMOVED AND SALVAGED, OR REMOVED AND REINSTALLED.

1.05 MATERIALS OWNERSHIP
A. HISTORIC ITEMS, RELICS, AND SIMILAR OBJECTS INCLUDING, BUT NOT LIMITED TO, CORNERSTONES AND THEIR CONTENTS, COMMEMORATIVE PLAQUES AND TABLETS, ANTIQUES, AND OTHER ITEMS OF INTEREST OR VALUE TO OWNER THAT MAY BE ENCOUNTERED DURING SELECTIVE DEMOLITION REMAIN OWNER'S PROPERTY. CAREFULLY REMOVE AND SALVAGE EACH ITEM OR OBJECT IN A MANNER TO PREVENT DAMAGE AND DELIVER PROMPTLY TO OWNER.
1. COORDINATE WITH OWNER WHO WILL ESTABLISH SPECIAL PROCEDURES FOR REMOVAL AND SALVAGE.

1.06 SUBMITTALS
A. QUALIFICATION DATA: FOR DEMOLITION FIRM.
B. SCHEDULE OF SELECTIVE DEMOLITION ACTIVITIES: INDICATE THE FOLLOWING:
1. DETAILED SEQUENCE OF SELECTIVE DEMOLITION AND REMOVAL WORK, WITH STARTING AND ENDING DATES FOR EACH ACTIVITY. ENSURE OWNER'S OTHER TENANTS' ON-SITE OPERATIONS ARE UNINTERRUPTED.
2. INTERRUPTION OF UTILITY SERVICES. INDICATE HOW LONG UTILITY SERVICES WILL BE INTERRUPTED.
3. COORDINATION FOR SHUTOFF, CAPPING, AND CONTINUATION OF UTILITY SERVICES.
4. LOCATIONS OF PROPOSED DUST AND NOISE CONTROL, TEMPORARY PARTITIONS AND MEANS OF EGRESS, INCLUDING FOR OTHER TENANTS AFFECTED BY SELECTIVE DEMOLITION OPERATIONS.
5. COORDINATION OF OWNER'S CONTINUING OCCUPANCY OF PORTIONS OF EXISTING SITE AND OF OWNER'S PARTIAL OCCUPANCY OF COMPLETED WORK.
6. MEANS OF PROTECTION FOR ITEMS TO REMAIN AND ITEMS IN PATH OF WASTE REMOVAL FROM SITE.
C. INVENTORY: AFTER SELECTIVE DEMOLITION IS COMPLETE, SUBMIT A LIST OF ITEMS THAT HAVE BEEN REMOVED AND SALVAGED.
D. PREDEMOLITION PHOTOGRAPHS OR VIDEOTAPES: SHOW EXISTING CONDITIONS OF ADJOINING CONSTRUCTION AND SITE IMPROVEMENTS, INCLUDING FINISH SURFACES, THAT MIGHT BE MISCONSTRUED AS DAMAGE CAUSED BY SELECTIVE DEMOLITION OPERATIONS.
E. LANDFILL RECORDS: INDICATE RECEIPT AND ACCEPTANCE OF HAZARDOUS WASTES BY A LANDFILL FACILITY LICENSED TO ACCEPT HAZARDOUS WASTES.

1.07 QUALITY ASSURANCE
A. DEMOLITION FIRM QUALIFICATIONS: AN EXPERIENCED FIRM THAT HAS SPECIALIZED IN DEMOLITION WORK SIMILAR IN MATERIAL AND EXTENT TO THAT INDICATED FOR THIS PROJECT.
B. REGULATORY REQUIREMENTS: COMPLY WITH GOVERNING EPA NOTIFICATION REGULATIONS BEFORE BEGINNING SELECTIVE DEMOLITION. COMPLY WITH HAULING AND DISPOSAL REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
C. STANDARDS: COMPLY WITH ANSI A10.6 AND NFPA 241
D. PREDEMOLITION CONFERENCE: CONDUCT CONFERENCE AT PROJECT SITE. REVIEW METHODS AND PROCEDURES RELATED TO SELECTIVE DEMOLITION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
1. INSPECT AND DISCUSS CONDITION OF CONSTRUCTION TO BE SELECTIVELY DEMOLISHED.
2. REVIEW AND FINALIZE SELECTIVE DEMOLITION AND VERIFY AVAILABILITY OF MATERIALS, DEMOLITION PERSONNEL, EQUIPMENT, AND FACILITIES NEEDED TO MAKE PROGRESS AND AVOID DELAYS.
3. REVIEW REQUIREMENTS OF WORK PERFORMED BY OTHER TRADES THAT RELY ON SUBSTRATES EXPOSED BY SELECTIVE DEMOLITION OPERATIONS.
4. REVIEW AREAS WHERE EXISTING CONSTRUCTION IS TO REMAIN AND REQUIRES PROTECTION.

1.08 PROJECT CONDITIONS
A. CONDITIONS EXISTING AT TIME OF INSPECTION FOR BIDDING PURPOSE WILL BE MAINTAINED BY OWNER AS FAR AS PRACTICAL.
1. BEFORE SELECTIVE DEMOLITION, OWNER WILL REMOVE THE ITEMS TO BE SALVAGED BY THE OWNER. COORDINATE OTHER ITEMS WITH THE ARCHITECT.
B. NOTIFY ARCHITECT OF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND DRAWINGS BEFORE PROCEEDING WITH SELECTIVE DEMOLITION.
C. HAZARDOUS MATERIALS: IT IS NOT EXPECTED THAT HAZARDOUS MATERIALS WILL BE ENCOUNTERED IN THE WORK.
1. HAZARDOUS MATERIALS WILL BE REMOVED BY OWNER BEFORE START OF THE WORK OR HAVE BEEN REMOVED BY OWNER UNDER A SEPARATE CONTRACT.
2. IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; IMMEDIATELY NOTIFY ARCHITECT AND OWNER. OWNER WILL REMOVE HAZARDOUS MATERIALS UNDER A SEPARATE CONTRACT.
D. STORAGE OR SALE OF REMOVED ITEMS OR MATERIALS ON-SITE IS NOT PERMITTED.
E. UTILITY SERVICE: MAINTAIN EXISTING UTILITIES INDICATED TO REMAIN IN SERVICE AND PROTECT THEM AGAINST DAMAGE DURING SELECTIVE DEMOLITION OPERATIONS.
1. MAINTAIN FIRE-PROTECTION FACILITIES IN SERVICE DURING SELECTIVE DEMOLITION OPERATIONS.

1.09 WARRANTY
A. EXISTING WARRANTIES: REMOVE, REPLACE, PATCH, AND REPAIR MATERIALS AND SURFACES CUT OR DAMAGED DURING SELECTIVE DEMOLITION, BY METHODS AND WITH MATERIALS SO AS NOT TO VOID EXISTING WARRANTIES.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION
A. VERIFY THAT UTILITIES HAVE BEEN SHUT OFF AND READY TO BE CAPPED.
B. SURVEY EXISTING CONDITIONS AND CORRELATE WITH REQUIREMENTS INDICATED TO DETERMINE EXTENT OF SELECTIVE DEMOLITION REQUIRED.
C. INVENTORY AND RECORD THE CONDITION OF ITEMS TO BE REMOVED AND REINSTALLED AND ITEMS TO BE REMOVED AND SALVAGED.
D. SURVEY OF EXISTING CONDITIONS: RECORD EXISTING CONDITIONS BY USE OF MEASURED DRAWINGS, PRECONSTRUCTION PHOTOGRAPHS, PRECONSTRUCTION VIDEOTAPES, AND TEMPLATES.
E. PERFORM SURVEYS AS THE WORK PROGRESSES TO DETECT HAZARDS RESULTING FROM SELECTIVE DEMOLITION ACTIVITIES.

3.02 UTILITY SERVICES
A. EXISTING SERVICES/SYSTEMS: MAINTAIN SERVICES/SYSTEMS INDICATED TO REMAIN AND PROTECT THEM AGAINST DAMAGE DURING SELECTIVE DEMOLITION OPERATIONS.
B. SERVICE/SYSTEM REQUIREMENTS: LOCATE, IDENTIFY, DISCONNECT, AND SEAL OR CAP OFF INDICATED UTILITY SERVICES AND OTHER SYSTEMS SERVING AREAS TO BE SELECTIVELY DEMOLISHED.
1. OWNER WILL ARRANGE TO SHUT OFF INDICATED SERVICES/SYSTEMS WHEN REQUESTED BY CONTRACTOR.
2. ARRANGE TO SHUT OFF INDICATED UTILITIES WITH THE OWNER.
3. IF SERVICES/SYSTEMS ARE REQUIRED TO BE REMOVED, RELOCATED, OR ABANDONED, BEFORE PROCEEDING WITH SELECTIVE DEMOLITION PROVIDE TEMPORARY SERVICES/SYSTEMS THAT BYPASS AREA OF SELECTIVE DEMOLITION AND THAT MAINTAIN CONTINUITY OF SERVICES/SYSTEMS.

3.03 PREPARATION
A. SITE ACCESS AND TEMPORARY CONTROLS: CONDUCT SELECTIVE DEMOLITION AND DEBRIS-REMOVAL OPERATIONS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS, WALKWAYS, AND OTHER ADJACENT OCCUPIED AND USED FACILITIES.
B. TEMPORARY FACILITIES: PROVIDE TEMPORARY BARRICADES AND OTHER PROTECTION REQUIRED TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT BUILDINGS AND FACILITIES TO REMAIN.
1. PROVIDE PROTECTION TO ENSURE SAFE PASSAGE OF PEOPLE AROUND SELECTIVE DEMOLITION AREA AND TO AND FROM OCCUPIED PORTIONS OF THE SITE.
2. PROVIDE TEMPORARY WEATHER PROTECTION, DURING INTERVAL BETWEEN SELECTIVE DEMOLITION OF EXISTING CONSTRUCTION ON EXTERIOR SURFACES, TO PREVENT WATER DAMAGE TO CRITICAL AREAS.
C. TEMPORARY SHORING: PROVIDE AND MAINTAIN SHORING, BRACING, AND STRUCTURAL SUPPORTS AS REQUIRED TO PRESERVE STABILITY AND PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF CONSTRUCTION AND ITEMS TO REMAIN, AND TO PREVENT UNEXPECTED OR UNCONTROLLED MOVEMENT OR COLLAPSE OF CONSTRUCTION BEING DEMOLISHED.
1. STRENGTHEN OR ADD NEW SUPPORTS WHEN REQUIRED DURING PROGRESS OF SELECTIVE DEMOLITION.
D. NO CLEARING, DEMOLITION, OR REMOVAL OF ANY KIND SHALL PROCEED UNTIL ALL EXISTING TREES, IMPROVEMENTS, ETC. TO BE REMOVED HAVE BEEN ESTABLISHED AND ARE INSPECTED AND DOCUMENTED BY THE OWNER.
E. ESTABLISH NECESSARY CLEARING LIMITS WITHIN THE CONSTRUCTION LIMITS. MARK ALL TREES, SHRUBS, STRUCTURES, FENCES, CONCRETE, AND OTHER IMPROVEMENTS TO BE REMOVED.
F. WITHIN 10 FEET OF CLEARING LIMITS, INSPECT, PHOTOGRAPH WITH VIDEO TAPE, AND RECORD CONDITION OF CONCRETE SLABS, STRUCTURES, LANDSCAPING AND OTHER FEATURES TO REMAIN WHICH MIGHT BE AFFECTED BY WORK. ALLOW OWNER TO VIEW TAPE AND APPROVE PRIOR TO PROCEEDING WITH THE WORK.
G. TREES, SHRUBS AND LAWN, AREAS TO RECEIVE PLANTING, ROCK OUTCROPPINGS, FENCES, SPRINKLERS AND OTHER IMPROVEMENTS THAT ARE NOT TO BE REMOVED SHALL BE PROTECTED FROM DAMAGE OR INJURY. IF DAMAGED OR REMOVED, THEY SHALL BE RESTORED OR REPLACED IN AS NEARLY THE ORIGINAL CONDITION AND LOCATION AS IS REASONABLY POSSIBLE. TREES, SHRUBS, AND IMPROVEMENTS NOT TO BE REMOVED SHALL BE MARKED IN FIELD BY OWNER AND/OR SHOWN ON THE DRAWINGS.
H. GIVE REASONABLE NOTICE TO OWNER TO PERMIT HIM TO SALVAGE PLANTS, TREES, FENCES, SPRINKLERS AND OTHER IMPROVEMENTS WITHIN THE CONSTRUCTION LIMITS THAT MAY BE DESTROYED BECAUSE OF THE WORK.
I. NOTIFY INTERESTED UTILITY COMPANIES TO BE PRESENT IF DISTURBING GROUND IN THE VICINITY OF UTILITIES.
J. PROTECT ACTIVE UTILITY SYSTEMS ADJACENT TO OR UNCOVERED BY ANY EXCAVATION DURING SITE PREPARATION.
K. MAINTAIN BENCHMARKS, MONUMENTS AND OTHER REFERENCE POINTS AND CONSTRUCTION STAKES.
L. PROTECT ALL IMPROVEMENTS TO REMAIN OR OUTSIDE OF CONSTRUCTION FROM TREE REMOVAL AND/OR PRUNING WORK.

3.04 CLEARING AND GRUBBING
A. ALL TRIMMING SHALL BE DONE IN ACCORDANCE WITH RECOGNIZED TREE SURGERY STANDARDS. REMOVE ADDITIONAL TREE BRANCHES UNDER THE DIRECTION OF THE OWNER IN SUCH A MANNER THAT THE TREE WILL PRESENT A BALANCED APPEARANCE.

3.05 SELECTIVE DEMOLITION, GENERAL
A. GENERAL: DEMOLISH AND REMOVE EXISTING CONSTRUCTION ONLY TO THE EXTENT REQUIRED BY NEW CONSTRUCTION AND AS INDICATED. USE METHODS REQUIRED TO COMPLETE THE WORK WITHIN LIMITATIONS OF GOVERNING REGULATIONS AND AS FOLLOWS:
1. PROCEED WITH SELECTIVE DEMOLITION SYSTEMATICALLY.
2. NEATLY CUT OPENINGS AND HOLES PLUMB, SQUARE, AND TRUE TO DIMENSIONS REQUIRED. USE CUTTING METHODS LEAST LIKELY TO DAMAGE CONSTRUCTION TO REMAIN OR ADJOINING CONSTRUCTION. USE HAND TOOLS OR SMALL POWER TOOLS DESIGNED FOR SAWING OR GRINDING, NOT HAMMERING AND CHOPPING, TO MINIMIZE DISTURBANCE OF ADJACENT SURFACES. TEMPORARILY COVER OPENINGS TO REMAIN.
3. DISPOSE OF DEMOLISHED ITEMS AND MATERIALS PROMPTLY.
B. REMOVED AND SALVAGED ITEMS:
1. CLEAN SALVAGED ITEMS.
2. PACK OR CRATE ITEMS AFTER CLEANING. IDENTIFY CONTENTS OF CONTAINERS.
3. STORE ITEMS IN A SECURE AREA UNTIL DELIVERY TO OWNER.
4. TRANSPORT ITEMS TO OWNER'S STORAGE AREA ON-SITE.
5. PROTECT ITEMS FROM DAMAGE DURING TRANSPORT AND STORAGE.
C. REMOVED AND REINSTALLED ITEMS:
1. CLEAN AND REPAIR ITEMS TO FUNCTIONAL CONDITION ADEQUATE FOR INTENDED REUSE. PAINT EQUIPMENT TO MATCH NEW EQUIPMENT.
2. PACK OR CRATE ITEMS AFTER CLEANING AND REPAIRING. IDENTIFY CONTENTS OF CONTAINERS.
3. PROTECT ITEMS FROM DAMAGE DURING TRANSPORT AND STORAGE.
4. REINSTALL ITEMS IN LOCATIONS INDICATED. COMPLY WITH INSTALLATION REQUIREMENTS FOR NEW MATERIALS AND EQUIPMENT. PROVIDE CONNECTIONS, SUPPORTS, AND MISCELLANEOUS MATERIALS NECESSARY TO MAKE ITEM FUNCTIONAL FOR USE INDICATED.
D. EXISTING ITEMS TO REMAIN: PROTECT CONSTRUCTION INDICATED TO REMAIN AGAINST DAMAGE AND SOILING DURING SELECTIVE DEMOLITION. WHEN PERMITTED BY ARCHITECT, ITEMS MAY BE REMOVED TO A SUITABLE, PROTECTED STORAGE LOCATION DURING SELECTIVE DEMOLITION AND CLEANED AND REINSTALLED IN THEIR ORIGINAL LOCATIONS AFTER SELECTIVE DEMOLITION OPERATIONS ARE COMPLETE.

3.06 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS
A. TOPSOIL:
1. BEFORE ANY CONSTRUCTION ACTIVITY BEGINS, REMOVE TOPSOIL AND STOCKPILE FOR RE-USE.
2. TOPSOIL SHALL BE PROTECTED FROM CONTAMINATION BY WEEDS, DEBRIS, ETC. AND SHALL BE REPLACED, GRADED AND LIGHTLY COMPACTED BY CONTRACTOR AT COMPLETION OF PROJECT.
B. CONCRETE:
1. DEMOLISH IN SECTIONS. CUT CONCRETE FULL DEPTH AT JUNCTURES WITH CONSTRUCTION TO REMAIN AND AT REGULAR INTERVALS, USING POWER-DRIVEN SAW, THEN REMOVE CONCRETE BETWEEN SAW CUTS.
2. CONCRETE SLABS-ON-GRADE: SAW-CUT PERIMETER OF AREA TO BE DEMOLISHED, THEN BREAK UP AND REMOVE.
3. CONCRETE SHALL BE REMOVED TO NEATLY SAWED EDGES WITH SAW CUTS MADE TO A MINIMUM DEPTH OF 4 INCHES.
4. CONCRETE SIDEWALK OR DRIVEWAY TO BE REMOVED SHALL BE NEATLY SAWED IN STRAIGHT LINES EITHER PARALLEL TO THE CURB OR AT RIGHT ANGLES TO THE ALIGNMENT OF THE SIDEWALK. NO SECTION TO BE REPLACED SHALL BE SMALLER THAN 30 INCHES IN EITHER LENGTH OR WIDTH.
5. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, IF THE SAWCUT WOULD FALL WITHIN 30 INCHES OF A CONSTRUCTION JOINT, EXPANSION JOINT, OR EDGE, THE CONCRETE SHALL BE REMOVED TO THE JOINT OR EDGE, EXCEPT THAT WHERE THE SAW CUT WOULD FALL WITHIN 12 INCHES OF A SCORE MARK, THE SAW CUT SHALL BE MADE IN AND ALONG THE SCORE MARK.
6. CURB AND GUTTER TO BE REMOVED SHALL BE SAWED TO A DEPTH OF 1-1/2 INCHES ON A NEAT LINE AT RIGHT ANGLES TO THE CURB FACE.
C. FENCES AND MISCELLANEOUS OBSTRUCTIONS
1. NO DEMOLITION OR REMOVAL OF FENCES OR MISCELLANEOUS OBSTRUCTIONS SHALL PROCEED UNTIL CLEARANCE IS OBTAINED FROM THE OWNER.

3.07 DISPOSAL OF DEMOLISHED MATERIALS
A. GENERAL: EXCEPT FOR ITEMS OR MATERIALS INDICATED TO BE RECYCLED, REUSED, SALVAGED, REINSTALLED, OR OTHERWISE INDICATED TO REMAIN OWNER'S PROPERTY, REMOVE DEMOLISHED MATERIALS FROM PROJECT SITE AND LEGALLY DISPOSE OF THEM IN AN EPA-APPROVED LANDFILL.
1. DO NOT ALLOW DEMOLISHED MATERIALS TO ACCUMULATE ON-SITE.
2. REMOVE AND TRANSPORT DEBRIS IN A MANNER THAT WILL PREVENT SPILLAGE ON ADJACENT SURFACES AND AREAS.
B. BURNING: DO NOT BURN DEMOLISHED MATERIALS.
C. DISPOSAL: TRANSPORT DEMOLISHED MATERIALS OFF OWNER'S PROPERTY AND LEGALLY DISPOSE OF THEM.

3.08 CLEANING
A. CLEAN ADJACENT STRUCTURES AND IMPROVEMENTS OF DUST, DIRT, AND DEBRIS CAUSED BY SELECTIVE DEMOLITION OPERATIONS. RETURN ADJACENT AREAS TO CONDITION EXISTING BEFORE SELECTIVE DEMOLITION OPERATIONS BEGAN.

3.09 SELECTIVE DEMOLITION SCHEDULE
A. COORDINATE WITH ARCHITECT'S PLANS.

END OF SECTION

SECTION 31 0700
GENERAL SITE CONSTRUCTION REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY
A. SECTION INCLUDES:
1. GENERAL PROCEDURES AND REQUIREMENTS FOR SITE WORK.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PREPARATION
A. SITE VERIFICATION OF CONDITIONS
1. 48 HOURS MINIMUM PRIOR TO PERFORMING ANY WORK ON SITE, CONTACT BLUE STAKES TO ARRANGE FOR UTILITY LOCATION SERVICES.
2. PERFORM MINOR, INVESTIGATIVE EXCAVATIONS TO VERIFY LOCATION OF VARIOUS EXISTING UNDERGROUND FACILITIES AT SUFFICIENT LOCATIONS TO ASSURE THAT NO CONFLICT WITH THE PROPOSED WORK EXISTS AND SUFFICIENT CLEARANCE IS AVAILABLE TO AVOID DAMAGE TO EXISTING FACILITIES.
3. PERFORM INVESTIGATIVE EXCAVATING FIVE (5) DAYS MINIMUM IN ADVANCE OF PERFORMING ANY EXCAVATION OR UNDERGROUND WORK.
4. UPON DISCOVERY OF CONFLICTS OR PROBLEMS WITH EXISTING FACILITIES, NOTIFY ARCHITECT BY PHONE WITHIN 24 HOURS. FOLLOW TELEPHONE NOTIFICATION WITH LETTER AND DIAGRAMS INDICATING CONFLICT OR PROBLEM AND SUFFICIENT MEASUREMENTS AND DETAILS TO EVALUATE PROBLEM.
5. NOTIFY OWNER OF UTILITIES WORK A MINIMUM OF 48 HOURS PRIOR TO ANY WORK TAKING PLACE.
6. PROVIDE UTILITY LOCATOR SERVICE FOR ALL AREAS IDENTIFIED WITHIN CONSTRUCTION LIMITS. REVIEW RESULTS WITH ARCHITECT, ENGINEER AND OWNER PRIOR TO BEGINNING ANY CONSTRUCTION

3.02 INSTALLATION
A. PROTECTION
1. SPILLAGE
a. AVOID SPILLAGE BY COVERING AND SECURING LOADS WHEN HAULING ON OR ADJACENT TO PUBLIC STREETS OR HIGHWAYS.
b. REMOVE SPILLAGE AND SWEEP, WASH, OR OTHERWISE CLEAN PROJECT, STREETS, AND HIGHWAYS.
2. DUST CONTROL
a. TAKE PRECAUTIONS NECESSARY TO PREVENT DUST NUISANCE, BOTH ON-SITE AND ADJACENT TO PUBLIC AND PRIVATE PROPERTIES.
b. CORRECT OR REPAIR DAMAGE CAUSED BY DUST.
3. EROSION CONTROL
a. TAKE PRECAUTIONS NECESSARY TO PREVENT EROSION AND TRANSPORTATION OF SOIL DOWNSTREAM, TO ADJACENT PROPERTIES, AND INTO ON-SITE OR OFF-SITE DRAINAGE SYSTEMS.
b. DEVELOP, INSTALL, AND MAINTAIN AN EROSION CONTROL PLAN, IF REQUIRED BY LAW.
c. REPAIR AND CORRECT DAMAGE CAUSED BY EROSION.
4. EXISTING PLANTS AND FEATURES
a. DO NOT DAMAGE TOPS, TRUNKS, OR ROOTS OF EXISTING TREES AND SHRUBS ON SITE WHICH ARE INTENDED TO REMAIN.
b. DO NOT USE HEAVY EQUIPMENT WITHIN BRANCH SPREAD. INTERFERING BRANCHES MAY BE REMOVED ONLY WITH PERMISSION OF ARCHITECT.
c. DO NOT DAMAGE OTHER PLANTS AND FEATURES WHICH ARE TO REMAIN.
5. PROTECT SITE FROM FIRE CAUSED BY WELDING, CUTTING, SMOKING, OR OTHER SOURCES OF IGNITION.
B. IF SPECIFIED PRECAUTIONS ARE NOT TAKEN, OR CORRECTIONS AND REPAIRS MADE PROMPTLY, OWNER MAY TAKE SUCH STEPS AS MAY BE DEEMED NECESSARY, AND DEDUCT COSTS OF SUCH FROM MONIES DUE TO CONTRACTOR. SUCH ACTION, OR LACK OF ACTION, ON OWNER'S PART DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR PROPER PROTECTION OF THE WORK.
C. FEES
1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OFF-SITE STREET CUT FEES, ENCROACHMENT PERMIT FEES, AND BONDING ASSOCIATED WITH THE CONSTRUCTION OF THE PROPOSED FACILITY.

3.03 REPAIR / RESTORATION
A. ADJUST EXISTING COVERS, BOXES, AND VAULTS TO GRADE.
B. REPLACE BROKEN OR DAMAGED COVERS, BOXES, AND VAULTS.
C. INDEPENDENTLY CONFIRM SIZE, LOCATION, AND NUMBER OF COVERS, BOXES, AND VAULTS WHICH REQUIRE ADJUSTMENT.

3.04 FIELD QUALITY CONTROL
A. NOTIFY ARCHITECT 48 HOURS PRIOR TO PERFORMING EXCAVATION OR FILL WORK.
B. IF WORK HAS BEEN INTERRUPTED BY WEATHER, SCHEDULING, OR OTHER REASON, NOTIFY ARCHITECT 24 HOURS MINIMUM PRIOR TO INTENDED RESUMPTION OF GRADING OR COMPACTING.
C. OWNER RESERVES RIGHT TO REQUIRE ADDITIONAL TESTING TO RE-AFFIRM SUITABILITY OF COMPLETED WORK INCLUDING COMPACTED SOILS WHICH HAVE BEEN EXPOSED TO ADVERSE WEATHER CONDITIONS.

END OF SECTION

SECTION 31 1000
SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES
A. CLEARING AND PROTECTION OF VEGETATION.
B. CLEARING AND GRUBBING.
C. STRIPPING AND STOCKPILING TOPSOIL.
D. REMOVING ABOVE- AND BELOW- GRADE SITE IMPROVEMENTS.
E. TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES.
F. REMOVAL OF EXISTING DEBRIS.

1.02 RELATED REQUIREMENTS
A. SECTION 01 1000 - SUMMARY: LIMITATIONS ON CONTRACTOR'S USE OF SITE AND PREMISES.
B. SECTION 01 1000 - SUMMARY: SEQUENCING AND STAGING REQUIREMENTS.
C. SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS: SITE FENCES, SECURITY, PROTECTIVE BARRIERS, AND WASTE REMOVAL.
D. SECTION 01 5713 - TEMPORARY EROSION AND SEDIMENT CONTROL.
E. SECTION 01 7000 - EXECUTION AND CLOSEOUT REQUIREMENTS: PROJECT CONDITIONS; PROTECTION OF BENCH MARKS, SURVEY CONTROL POINTS, AND EXISTING CONSTRUCTION TO REMAIN; REINSTALLATION OF REMOVED PRODUCTS.
F. SECTION 31 2200 - GRADING: TOPSOIL REMOVAL.
G. SECTION 31 2200 - GRADING: FILL MATERIAL FOR FILLING HOLES, PITS, AND EXCAVATIONS GENERATED AS A RESULT OF REMOVAL OPERATIONS.

1.03 DEFINITIONS
A. TOPSOIL: NATURAL OR CULTIVATED SURFACE-SOIL LAYER CONTAINING ORGANIC MATTER AND SAND, SILT, AND CLAY PARTICLES; FRIABLE, PERVIOUS, AND BLACK OR A DARKER SHADE OF BROWN, GRAY, OR RED THAN UNDERLYING SUBSOIL; REASONABLY FREE OF SUBSOIL, CLAY LUMPS, GRAVEL, AND OTHER OBJECTS MORE THAN 2 INCHES IN DIAMETER; AND FREE OF SUBSOIL AND WEEDS, ROOTS, TOXIC MATERIALS, OR OTHER NON-SOIL MATERIALS.

1.04 MATERIAL OWNERSHIP
A. EXCEPT FOR STRIPPED TOPSOIL OR OTHER MATERIALS INDICATED TO REMAIN OWNER'S PROPERTY, CLEARED MATERIALS SHALL BECOME CONTRACTOR'S PROPERTY AND SHALL BE REMOVED FROM PROJECT SITE.

1.05 SUBMITTALS
A. PHOTOGRAPHS OR VIDEOTAPE, SUFFICIENTLY DETAILED, OF EXISTING CONDITIONS OF TREES AND PLANTINGS, ADJOINING CONSTRUCTION, AND SITE IMPROVEMENTS THAT MIGHT BE MISCONSTRUED AS DAMAGE CAUSED BY SITE CLEARING.
B. RECORD DRAWINGS, ACCORDING TO SECTION 017823 PROJECT RECORD DOCUMENTS, IDENTIFYING AND ACCURATELY LOCATING CAPPED UTILITIES AND OTHER SUBSURFACE STRUCTURAL, ELECTRICAL, AND MECHANICAL CONDITIONS.

1.06 QUALITY ASSURANCE
A. PRE-INSTALLATION CONFERENCE: CONDUCT CONFERENCE AT PROJECT SITE TO COMPLY WITH REQUIREMENTS IN SECTION 017823 PROJECT MANAGEMENT AND COORDINATION.

1.07 PROJECT CONDITIONS
A. TRAFFIC: MINIMIZE INTERFERENCE WITH ADJOINING ROADS, STREETS, WALKS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES DURING SITE-CLEARING OPERATIONS.
1. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER ADJACENT OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM OWNER AND AUTHORITIES HAVING JURISDICTION.
2. PROVIDE ALTERNATE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS IF REQUIRED BY AUTHORITIES HAVING JURISDICTION.
B. SALVABLE IMPROVEMENTS: CAREFULLY REMOVE ITEMS INDICATED TO BE SALVAGED AND STORE ON OWNER'S PREMISES WHERE APPROVED.
C. UTILITY LOCATOR SERVICE: NOTIFY UTILITY LOCATOR SERVICE FOR AREA WHERE PROJECT IS LOCATED BEFORE SITE CLEARING.
D. DO NOT COMMENCE SITE CLEARING OPERATIONS UNTIL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES ARE IN PLACE.

PART 2 PRODUCTS

2.01 SOIL MATERIALS
A. SATISFACTORY SOIL MATERIAL: AS SPECIFIED IN SECTION 31 2000 - EARTH MOVING
1. OBTAIN APPROVED BORROW SOIL MATERIALS OFF-SITE WHEN SATISFACTORY SOIL MATERIALS ARE NOT AVAILABLE ON-SITE.

PART 3 EXECUTION

3.01 PREPARATION
A. PROTECT AND MAINTAIN BENCHMARKS AND SURVEY CONTROL POINTS FROM DISTURBANCE DURING CONSTRUCTION.
B. PROTECT EXISTING SITE IMPROVEMENTS TO REMAIN FROM DAMAGE DURING CONSTRUCTION.
1. RESTORE DAMAGED IMPROVEMENTS TO THEIR ORIGINAL CONDITION, AS ACCEPTABLE TO OWNER.

3.02 TEMPORARY EROSION AND SEDIMENTATION CONTROL
A. PROVIDE TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES TO PREVENT SOIL EROSION AND DISCHARGE OF SOIL-BEARING WATER RUNOFF OR AIRBORNE DUST TO ADJACENT PROPERTIES AND WALKWAYS, ACCORDING TO REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION, SEDIMENT AND EROSION CONTROL DRAWINGS, A SEDIMENT AND EROSION CONTROL PLAN, SPECIFIC TO THE SITE, THAT COMPLIES WITH EPA 832/R-92-005 OR REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION, WHICHEVER IS MORE STRINGENT.
B. INSPECT, REPAIR, AND MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION UNTIL PERMANENT VEGETATION HAS BEEN ESTABLISHED.
C. REMOVE EROSION AND SEDIMENTATION CONTROLS AND RESTORE AND STABILIZE AREAS DISTURBED DURING REMOVAL.

3.03 SITE CLEARING AND GRUBBING
A. COMPLY WITH OTHER REQUIREMENTS SPECIFIED IN SECTION 01 7000.
B. REMOVE OBSTRUCTIONS, GRASS, AND OTHER VEGETATION TO PERMIT INSTALLATION OF NEW CONSTRUCTION.
C. FILL DEPRESSIONS CAUSED BY CLEARING AND GRUBBING OPERATIONS WITH SATISFACTORY SOIL MATERIAL UNLESS FURTHER EXCAVATION OR EARTHWORK IS INDICATED.
1. PLACE FILL MATERIAL IN HORIZONTAL LAYERS NOT EXCEEDING A LOOSE DEPTH OF 8 INCHES AND COMPACT EACH LAYER TO A DENSITY EQUAL TO ADJACENT ORIGINAL GROUND.
D. MINIMIZE PRODUCTION OF DUST DUE TO CLEARING OPERATIONS; DO NOT USE WATER IF THAT WILL RESULT IN ICE, FLOODING, SEDIMENTATION OF PUBLIC WATERWAYS OR STORM SEWERS, OR OTHER POLLUTION.

3.04 EXISTING UTILITIES AND BUILT ELEMENTS
A. COORDINATE WORK WITH UTILITY COMPANIES; NOTIFY BEFORE STARTING WORK AND COMPLY WITH THEIR REQUIREMENTS; OBTAIN REQUIRED PERMITS.
1. OWNER WILL ARRANGE TO SHUT OFF INDICATED UTILITIES WHEN REQUESTED BY CONTRACTOR.
B. PROTECT EXISTING UTILITIES TO REMAIN FROM DAMAGE.
C. DO NOT DISRUPT PUBLIC UTILITIES WITHOUT PERMIT FROM AUTHORITY HAVING JURISDICTION.
1. NOTIFY ARCHITECT NOT LESS THAN TWO DAYS IN ADVANCE OF PROPOSED UTILITY INTERRUPTIONS.
2. DO NOT PROCEED WITH UTILITY INTERRUPTIONS WITHOUT ARCHITECT'S WRITTEN PERMISSION.
D. PROTECT EXISTING STRUCTURES AND OTHER ELEMENTS THAT ARE NOT TO BE REMOVED.

3.05 TOPSOIL STRIPPING
A. REMOVE SOD AND GRASS BEFORE STRIPPING TOPSOIL.
B. STRIP TOPSOIL TO WHATEVER DEPTHS ARE ENCOUNTERED IN A MANNER TO PREVENT INTERMINGLING WITH UNDERLYING SUBSOIL OR OTHER WASTE MATERIALS.
1. REMOVE SUBSOIL AND NON-SOIL MATERIALS FROM TOPSOIL, INCLUDING TRASH, DEBRIS, WEEDS, ROOTS, AND OTHER WASTE MATERIALS.
C. STOCKPILE TOPSOIL MATERIALS AWAY FROM EDGE OF EXCAVATIONS WITHOUT INTERMIXING WITH SUBSOIL. GRADE AND SHAPE STOCKPILES TO DRAIN SURFACE WATER. COVER TO PREVENT WINDBLOWN DUST.
1. LIMIT HEIGHT OF TOPSOIL STOCKPILES TO 120 INCHES.
2. DISPOSE OF EXCESS TOPSOIL AS SPECIFIED FOR WASTE MATERIAL DISPOSAL.
3. STOCKPILE SURPLUS TOPSOIL TO ALLOW FOR RE-SPREADING DEEPER TOPSOIL.

3.06 VEGETATION
A. INSTALL SUBSTANTIAL, HIGHLY VISIBLE FENCES PER DRAWINGS TO PREVENT INADVERTENT DAMAGE TO VEGETATION TO REMAIN:
1. AROUND TREES TO REMAIN WITHIN VEGETATION REMOVAL LIMITS; LOCATE NO CLOSER TO TREE THAN AT THE DRIP LINE.
B. IN AREAS WHERE VEGETATION MUST BE REMOVED BUT NO CONSTRUCTION WILL OCCUR OTHER THAN PERVIOUS PAVING, REMOVE VEGETATION WITH MINIMUM DISTURBANCE OF THE SUBSOIL.
C. VEGETATION REMOVED: DO NOT BURN, BURY, LANDFILL, OR LEAVE ON SITE, EXCEPT AS INDICATED.
1. CHIP, GRIND, CRUSH, OR SHRED VEGETATION FOR MULCHING, COMPOSTING, OR OTHER PURPOSES; PREFERENCE SHOULD BE GIVEN TO ON-SITE USES.
2. TREES: SELL IF MARKETABLE; IF NOT, TREAT AS SPECIFIED FOR OTHER VEGETATION REMOVED; REMOVE STUMPS AND ROOTS TO DEPTH OF 18 INCHES (450 MM).
D. RESTORATION: IF VEGETATION OUTSIDE REMOVAL LIMITS OR WITHIN SPECIFIED PROTECTIVE FENCES IS DAMAGED OR DESTROYED DUE TO SUBSEQUENT CONSTRUCTION OPERATIONS, REPLACE AT NO COST TO OWNER.

3.07 SITE IMPROVEMENTS
A. REMOVE EXISTING ABOVE-GRADE AND BELOW-GRADE IMPROVEMENTS AS INDICATED AND AS NECESSARY TO FACILITATE NEW CONSTRUCTION. REFER TO PROJECT PLANS FOR IMPROVEMENTS TO BE ABANDONED IN PLACE.
B. REMOVE SLABS, PAVING, CURBS, GUTTERS, AND AGGREGATE BASE AS INDICATED.
1. UNLESS EXISTING FULL-DEPTH JOINTS COINCIDE WITH LINE OF DEMOLITION, NEATLY SAW-CUT LENGTH OF EXISTING PAVEMENT TO REMAIN BEFORE REMOVING EXISTING PAVEMENT. SAW-CUT FACES VERTICALLY.
2. PAINT CUT ENDS OF STEEL REINFORCEMENT IN CONCRETE TO REMAIN TO PREVENT CORROSION.

3.08 DEBRIS
A. REMOVE DEBRIS, JUNK, AND TRASH FROM SITE.
B. LEAVE SITE IN CLEAN CONDITION, READY FOR SUBSEQUENT WORK.
C. CLEAN UP SPILLAGE AND WIND-BLOWN DEBRIS FROM PUBLIC AND PRIVATE LANDS.

3.09 DISPOSAL
A. REMOVE SURPLUS SOIL MATERIAL, UNSUITABLE TOPSOIL, OBSTRUCTIONS, DEMOLISHED MATERIALS, AND WASTE MATERIALS INCLUDING TRASH AND DEBRIS, AND LEGALLY DISPOSE OF THEM OFF OWNER'S PROPERTY.
1. SEPARATE RECYCLABLE MATERIALS PRODUCED DURING SITE CLEARING FROM OTHER NON-RECYCLABLE MATERIALS. STORE OR STOCKPILE WITHOUT INTERMIXING WITH OTHER MATERIALS AND TRANSPORT THEM TO RECYCLING FACILITIES.

END OF SECTION

SECTION 31 2200
SITE EXCAVATION AND ROUGH GRADING

PART 1 -GENERAL

1.01 DESCRIPTION
A. DEFINITIONS:
1. UNSUITABLE MATERIAL: DEBRIS AND/OR SOIL MATERIAL JUDGED UNSUITABLE BY ENGINEER FOR SUPPORT OF SLABS OR OTHER SITE IMPROVEMENTS.
a. ENGINEER: SOILS ENGINEER EMPLOYED BY OWNER, EMPOWERED TO CONDUCT INSPECTIONS AND MAKE APPROVALS.

1.02 QUALITY ASSURANCE
A. COMPACTION DENSITY TEST:
1. MODIFIED PROCTOR, ASTM-D 1557.
B. LAYOUT WORK BY SURVEYOR OR CIVIL ENGINEER REGISTERED IN THE STATE OF UTAH. IDENTIFY BENCHMARK TO BE USED IN ESTABLISHING GRADES.
C. TOLERANCES OF SUB-GRADE:
1) UNSURFACED AREAS: PLUS/MINUS 0.20 FT FROM REQUIRED ELEVATIONS.
2) PAVED AREAS: PLUS/MINUS 0.10 FT FROM REQUIRED ELEVATIONS.

1.03 JOB CONDITIONS
A. PROTECT EXISTING FACILITIES, UTILITIES (OVERHEAD AND UNDERGROUND), SIDEWALKS, PAVEMENT.
1. REPAIR DAMAGED ITEMS.
2. NOTIFY OWNER AND MAKE EMERGENCY REPAIR AS DIRECTED.
B. PROTECT GRADED AREAS AGAINST EROSION.
1. RE-ESTABLISH GRADE WHERE SETTLEMENT OR WASHING OCCURS AT NO EXTRA COST.

PART 2 -PRODUCTS

2.01 MATERIALS
A. FILL MATERIALS:
1. REASONABLY FREE OF ROOTS, ORGANIC MATERIAL, TRASH, FROZEN MATTER, AND STONES LARGER THAN 6-INCHES.
2. ADD WATER TO DRY MATERIAL, AS REQUIRED.
3. ALLOW WET MATERIAL TO DRY, AS REQUIRED.
4. FILL CAN ONLY BE OBTAINED ON SITE WHERE REMOVED FROM EXCAVATING AND GRADING.
5. PROVIDE ADDITIONAL OFF-SITE BORROW OR FILL AS REQUIRED.
B. SURPLUS MATERIAL:
1. REMOVE FROM SITE.

PART 3 -EXECUTION

3.01 PREPARATION
A. LAYOUT WALKS AND ESTABLISH THEIR ELEVATIONS.
B. PERFORM OTHER LAYOUT WORK REQUIRED.

3.02 GENERAL
A. EXCAVATE AND GRADE MATERIALS TO DESIGN ELEVATIONS.
B. EXCAVATE AND GRADE SITE TO SUBGRADES OF PAVED AND UNPAVED AREAS AS INDICATED.
C. EXCAVATE FOR MISCELLANEOUS FOOTINGS, SLABS, WALKS AND OTHER STRUCTURES.
D. CUT AND FILL AS REQUIRED TO BRING EXISTING GRADES TO ROUGH GRADES.
E. FURNISH AND PLACE ADDITIONAL APPROVED MATERIAL REQUIRED TO BRING SUBGRADE TO PROPER LINE AND GRADE.
F. DURING CONSTRUCTION, SHAPE AND DRAIN EMBANKMENTS AND EXCAVATION.
G. MAINTAIN DITCHES AND DRAINS TO PROVIDE DRAINAGE.
H. PROVIDE PUMPING IF REQUIRED.
I. REMOVE UNSUITABLE MATERIALS WHICH CANNOT BE COMPACTED AS SPECIFIED AND REPLACE WITH SUITABLE MATERIAL.
1. DISPOSE MATERIAL ON SITE AS DIRECTED.
2. DISPOSE MATERIAL OFF SITE AS DIRECTED.
J. REMOVE MATERIALS UNSUITABLE TO RECEIVE FILL AND REPLACE WITH SUITABLE MATERIAL.

END OF SECTION

SECTION 31 2300
EARTHWORK

PART 1 GENERAL

1.01 RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.02 SUMMARY
A. THIS SECTION INCLUDES THE FOLLOWING:
1. PREPARING SUBGRADES FOR SLABS-ON-GRADE, WALKS, PAVEMENTS, LAWNS, AND PLANTINGS.
2. EXCAVATING AND BACKFILLING FOR BUILDINGS AND STRUCTURES.
3. SUBBASE COURSE FOR CONCRETE WALKS AND PAVEMENTS.
B. RELATED SECTIONS INCLUDE THE FOLLOWING:
1. DIVISION 2 SECTION 02 4119 "SELECTIVE SITE DEMOLITION" FOR TEMPORARY CONTROLS AND SITE STRIPPING, GRUBBING, REMOVING TOPSOIL, AND PROTECTING TREES TO REMAIN.

1.03 DEFINITIONS
A. BACKFILL: SOIL MATERIALS USED TO FILL AN EXCAVATION.
1. INITIAL BACKFILL: BACKFILL PLACED BESIDE AND OVER PIPE IN A TRENCH, INCLUDING HAUNCHES TO SUPPORT SIDES OF PIPE.
2. FINAL BACKFILL: BACKFILL PLACED OVER INITIAL BACKFILL TO FILL A TRENCH.
B. BORROW: SATISFACTORY SOIL IMPORTED FROM OFF-SITE FOR USE AS FILL OR BACKFILL.
C. DRAINAGE COURSE: LAYER SUPPORTING SLAB-ON-GRADE USED TO MINIMIZE CAPILLARY FLOW OF PORE WATER.
D. EXCAVATION: REMOVAL OF MATERIAL ENCOUNTERED ABOVE SUBGRADE ELEVATIONS.
1. BULK EXCAVATION: EXCAVATIONS MORE THAN 10 FEET (3 M) IN WIDTH AND PITS MORE THAN 30 FEET (9 M) IN EITHER LENGTH OR WIDTH.
2. UNAUTHORIZED EXCAVATION: EXCAVATION BELOW SUBGRADE ELEVATIONS OR BEYOND INDICATED DIMENSIONS WITHOUT DIRECTION BY ARCHITECT. UNAUTHORIZED EXCAVATION, AS WELL AS REMEDIAL WORK DIRECTED BY ARCHITECT, SHALL BE WITHOUT ADDITIONAL COMPENSATION.
E. FILL: SOIL MATERIALS USED TO RAISE EXISTING GRADES.
F. STRUCTURES: BUILDINGS, FOOTINGS, FOUNDATIONS, RETAINING WALLS, SLABS, TANKS, CURBS, MECHANICAL AND ELECTRICAL APPURTENANCES, OR OTHER MAN-MADE STATIONARY FEATURES CONSTRUCTED ABOVE OR BELOW THE GROUND SURFACE.
G. SUBBASE COURSE: LAYER PLACED BETWEEN THE SUBGRADE AND BASE COURSE FOR ASPHALT PAVING, OR LAYER PLACED BETWEEN THE SUBGRADE AND A CONCRETE PAVEMENT OR WALK.
H. SUBGRADE: SURFACE OR ELEVATION REMAINING AFTER COMPLETING EXCAVATION, OR TOP SURFACE OF A FILL OR BACKFILL IMMEDIATELY BELOW SUBBASE, DRAINAGE FILL, OR TOPSOIL MATERIALS.
I. UTILITIES: UTILITIES INCLUDE ON-SITE UNDERGROUND PIPES, CONDUITS, DUCTS, AND CABLES, AS WELL AS UNDERGROUND SERVICES WITHIN BUILDINGS.

1.04 SUBMITTALS
A. MATERIAL TEST REPORTS: FROM A QUALIFIED TESTING AGENCY INDICATING AND INTERPRETING TEST RESULTS FOR COMPLIANCE OF THE FOLLOWING WITH REQUIREMENTS INDICATED:
1. CLASSIFICATION ACCORDING TO ASTM D 2487 OF EACH ON-SITE OR BORROW SOIL MATERIAL PROPOSED FOR FILL AND BACKFILL.
2. LABORATORY COMPACTION CURVE ACCORDING TO ASTM D 1557 FOR EACH ON-SITE OR BORROW SOIL MATERIAL PROPOSED FOR FILL AND BACKFILL.

1.05 PROJECT CONDITIONS
A. EXISTING UTILITIES: LOCATE EXISTING UNDERGROUND UTILITIES IN AREAS OF WORK. IF UTILITIES ARE TO REMAIN IN PLACE, PROVIDE ADEQUATE MEANS OF SUPPORT AND PROTECTION DURING EARTHWORK OPERATIONS.
1. SHOULD UNCHARTED, OR INCORRECTLY CHARTED, PIPING OR OTHER UTILITIES BE ENCOUNTERED DURING EXCAVATION, CONSULT UTILITY OWNER IMMEDIATELY FOR DIRECTIONS. COOPERATE WITH OWNER AND UTILITY COMPANIES IN KEEPING RESPECTIVE SERVICES AND FACILITIES IN OPERATION. REPAIR DAMAGED UTILITIES TO SATISFACTION OF UTILITY OWNER.
2. DO NOT INTERRUPT UTILITIES SERVING FACILITIES OCCUPIED BY OWNER OR OTHERS UNLESS PERMITTED IN WRITING BY ARCHITECT AND THEN ONLY AFTER ARRANGING TO PROVIDE TEMPORARY UTILITY SERVICES ACCORDING TO REQUIREMENTS INDICATED:
3. NOTIFY ARCHITECT NOT LESS THAN SEVEN (7) DAYS IN ADVANCE OF PROPOSED UTILITY INTERRUPTIONS.
4. DO NOT PROCEED WITH UTILITY INTERRUPTIONS WITHOUT ARCHITECT'S WRITTEN PERMISSION.
5. CONTACT UTILITY-LOCATOR SERVICE FOR AREA WHERE PROJECT IS LOCATED BEFORE EXCAVATING.
B. PROTECTION OF PERSONS AND PROPERTY: BARRICADE OPEN EXCAVATIONS OCCURRING AS PART OF THIS WORK AND POST WITH WARNING LIGHTS.
1. OPERATE WARNING LIGHTS AS RECOMMENDED BY AUTHORITIES HAVING JURISDICTION.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS
A. GENERAL: PROVIDE BORROW SOIL MATERIALS WHEN SUFFICIENT SATISFACTORY SOIL MATERIALS ARE NOT AVAILABLE FROM EXCAVATIONS.
B. SATISFACTORY SOILS: ASTM D 2487 SOIL CLASSIFICATION GROUPS GW, GP, GM, SW, SP, AND SM, OR A COMBINATION OF THESE GROUP SYMBOLS; FREE OF ROCK OR GRAVEL LARGER THAN 4 INCHES (100 MM) IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS, VEGETATION, AND OTHER DELETERIOUS MATTER.
C. UNSATISFACTORY SOILS: ASTM D 2487 SOIL CLASSIFICATION GROUPS GC, SC, ML, MH, CL, CH, OL, OH, AND PT, OR A COMBINATION OF THESE GROUP SYMBOLS.
1. UNSATISFACTORY SOILS ALSO INCLUDE SATISFACTORY SOILS NOT MAINTAINED WITHIN 2 PERCENT OF OPTIMUM MOISTURE CONTENT AT TIME OF COMPACTION.
D. BACKFILL AND FILL: SATISFACTORY SOIL MATERIALS.
E. SUBBASE: NATURALLY OR ARTIFICIALLY WELL GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, CRUSHED STONE, AND NATURAL OR CRUSHED SAND; ASTM D 2940; WITH AT LEAST 70 PERCENT PASSING A 3/4- INCH (18-MM) SIEVE AND NOT MORE THAN 25 PERCENT PASSING A NO. 200 (0.075-MM) SIEVE.
F. BASE COURSE: NATURALLY OR ARTIFICIALLY GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, CRUSHED STONE, AND NATURAL OR CRUSHED SAND; ASTM D 2940; CONFORMING TO THE 1 INCH GRADATION REQUIREMENTS OF SECTION 301 OF THE UDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION.
G. ENGINEERED FILL: NATURALLY OR ARTIFICIALLY GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, CRUSHED STONE, AND NATURAL OR CRUSHED SAND; ASTM D 2940; WITH AT LEAST 70 PERCENT PASSING A 3/4-INCH (18-MM) SIEVE AND NOT MORE THAN 25 PERCENT PASSING A NO. 200 (0.075-MM) SIEVE.
H. BEDDING: NATURALLY OR ARTIFICIALLY GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, CRUSHED STONE, AND NATURAL OR CRUSHED SAND; ASTM D 2940; EXCEPT WITH 100 PERCENT PASSING A 1-INCH (25-MM) SIEVE AND NOT MORE THAN 8 PERCENT PASSING A NO. 200 (0.075-MM) SIEVE.
I. DRAINAGE FILL: WASHED, NARROWLY GRADED MIXTURE OF CRUSHED STONE, OR CRUSHED OR UNCRUSHED GRAVEL; ASTM D 448; COARSE-AGGREGATE GRADING SIZE 57; WITH 100 PERCENT PASSING A 1-1/2- INCH (38-MM) SIEVE AND 0 TO 5 PERCENT PASSING A NO. 8 (2.36-MM) SIEVE.
J. FILTER MATERIAL: NARROWLY GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, OR CRUSHED STONE AND NATURAL SAND; ASTM D 448; COARSE-AGGREGATE GRADING SIZE 67; WITH 100 PERCENT PASSING A 1-INCH (25-MM) SIEVE AND 0 TO 5 PERCENT PASSING A NO. 4 (4.75-MM) SIEVE.
K. IMPERVIOUS FILL: CLAYEY GRAVEL AND SAND MIXTURE CAPABLE OF COMPACTING TO A DENSE STATE.

2.02 ACCESSORIES
A. WARNING TAPE: ACID- AND ALKALI-RESISTANT POLYETHYLENE FILM WARNING TAPE MANUFACTURED FOR MARKING AND IDENTIFYING UNDERGROUND UTILITIES, 6 INCHES (150 MM) WIDE AND 4 MILS (0.1 MM) THICK, CONTINUOUSLY INSCRIBED WITH A DESCRIPTION OF THE UTILITY; COLORED AS FOLLOWS:
B. DETECTABLE WARNING TAPE: ACID- AND ALKALI-RESISTANT POLYETHYLENE FILM WARNING TAPE MANUFACTURED FOR MARKING AND IDENTIFYING UNDERGROUND UTILITIES, MINIMUM 6 INCHES (150 MM) WIDE AND 4 MILS (0.1 MM) THICK, CONTINUOUSLY INSCRIBED WITH A DESCRIPTION OF UTILITY, WITH METALLIC CORE ENCASED IN A PROTECTIVE JACKET FOR CORROSION PROTECTION, DETECTABLE BY METAL DETECTOR WHEN TAPE IS BURIED UP TO 30 INCHES (750 MM) DEEP; COLORED AS FOLLOWS:
1. RED: ELECTRIC.
2. YELLOW: GAS, OIL, STEAM, AND DANGEROUS MATERIALS.
3. ORANGE: TELEPHONE AND OTHER COMMUNICATIONS.
4. BLUE: WATER SYSTEMS.
5. GREEN: SEWER SYSTEMS.
C. TRACE WIRE: INSULATED 10 GAGE COPPER, SUITABLE FOR DIRECT BURY.

PART 3 - EXECUTION

3.01 PREPARATION
A. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, AND OTHER FACILITIES FROM DAMAGE CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT, AND OTHER HAZARDS CREATED BY EARTHWORK OPERATIONS.
B. PROTECT SUBGRADES AND FOUNDATION SOILS AGAINST FREEZING TEMPERATURES OR FROST. PROVIDE PROTECTIVE INSULATING MATERIALS AS NECESSARY.
C. PROVIDE EROSION-CONTROL MEASURES TO PREVENT EROSION OR DISPLACEMENT OF SOILS AND DISCHARGE OF SOIL-BEARING WATER RUNOFF OR AIRBORNE DUST TO ADJACENT PROPERTIES AND WALKWAYS.

3.02 DEWATERING
A. PREVENT SURFACE WATER AND GROUND WATER FROM ENTERING EXCAVATIONS, FROM PONDING ON PREPARED SUBGRADES, AND FROM FLOODING PROJECT SITE AND SURROUNDING AREA.
B. PROTECT SUBGRADES FROM SOFTENING, UNDERMINING, WASHOUT, AND DAMAGE BY RAIN OR WATER ACCUMULATION.
1. REROUTE SURFACE WATER RUNOFF AWAY FROM EXCAVATED AREAS. DO NOT ALLOW WATER TO ACCUMULATE IN EXCAVATIONS. DO NOT USE EXCAVATED TRENCHES AS TEMPORARY DRAINAGE DITCHES.
2. INSTALL A DEWATERING SYSTEM TO KEEP SUBGRADES DRY AND CONVEY GROUND WATER AWAY FROM EXCAVATIONS. MAINTAIN UNTIL DEWATERING IS NO LONGER REQUIRED.

3.03 EXPLOSIVES - NOT ALLOWED

3.04 EXCAVATION, GENERAL
A. UNCLASSIFIED EXCAVATION: EXCAVATION TO SUBGRADE ELEVATIONS REGARDLESS OF THE CHARACTER OF SURFACE AND SUBSURFACE CONDITIONS ENCOUNTERED, INCLUDING ROCK, SOIL MATERIALS, AND OBSTRUCTIONS.
1. IF EXCAVATED MATERIALS INTENDED FOR FILL AND BACKFILL INCLUDE UNSATISFACTORY SOIL MATERIALS AND ROCK, REPLACE WITH SATISFACTORY SOIL MATERIALS.

3.05 EXCAVATION FOR STRUCTURES
A. EXCAVATE TO INDICATED ELEVATIONS AND DIMENSIONS WITHIN A TOLERANCE OF PLUS OR MINUS 0.1 FT (25 MM). EXTEND EXCAVATIONS A SUFFICIENT DISTANCE FROM STRUCTURES FOR PLACING AND REMOVING CONCRETE FORMWORK, FOR INSTALLING SERVICES AND OTHER CONSTRUCTION, AND FOR INSPECTIONS.
1. EXCAVATIONS FOR FOOTINGS AND FOUNDATIONS: DO NOT DISTURB BOTTOM OF EXCAVATION. IF REQUIRED TO NOT DISTURB BOTTOM OF EXCAVATION, EXCAVATE BY HAND TO FINAL GRADE JUST BEFORE PLACING CONCRETE REINFORCEMENT. TRIM BOTTOMS TO REQUIRED LINES AND GRADES TO LEAVE SOLID BASE TO RECEIVE OTHER WORK.
2. EXCAVATION FOR UNDERGROUND MECHANICAL OR ELECTRICAL UTILITY STRUCTURES: EXCAVATE TO ELEVATIONS AND DIMENSIONS INDICATED WITHIN A TOLERANCE OF PLUS OR MINUS 0.1 FT (25 MM). DO NOT DISTURB BOTTOM OF EXCAVATIONS INTENDED FOR BEARING SURFACE.

3.06 EXCAVATION FOR WALKS AND PAVEMENTS
A. EXCAVATE SURFACES UNDER WALKS AND PAVEMENTS TO INDICATED CROSS SECTIONS, ELEVATIONS, AND GRADES.

3.07 EXCAVATION FOR UTILITY TRENCHES
A. TRENCH EXCAVATION: EXCAVATE TRENCHES TO INDICATED GRADIENTS, LINES, DEPTHS, AND ELEVATIONS.
1. BEYOND BUILDING PERIMETER, EXCAVATE TRENCHES TO ALLOW INSTALLATION OF TOP OF PIPE BELOW FROST LINE.
2. TRENCH CLEARANCE: EXCAVATE TRENCHES TO UNIFORM WIDTHS TO PROVIDE A WORKING CLEARANCE ON EACH SIDE OF PIPE OR CONDUIT. EXCAVATE TRENCH WALLS VERTICALLY FROM TRENCH BOTTOM TO 12 INCHES (300 MM) HIGHER THAN TOP OF PIPE OR CONDUIT, UNLESS OTHERWISE INDICATED.
3. CLEARANCE: 12 INCHES (300 MM) ON EACH SIDE OF PIPE OR CONDUIT.
B. TRENCH BOTTOMS: EXCAVATE AND SHAPE TRENCH BOTTOMS TO PROVIDE UNIFORM BEARING AND SUPPORT OF PIPES AND CONDUIT. SHAPE SUBGRADE TO PROVIDE CONTINUOUS SUPPORT FOR BELLS, JOINTS, AND BARRELS OF PIPES AND FOR JOINTS, FITTINGS, AND BODIES OF CONDUITS. REMOVE PROJECTING STONES AND SHARP OBJECTS ALONG TRENCH SUBGRADE.
1. FOR PIPES AND CONDUIT LESS THAN 6 INCHES (150 MM) IN NOMINAL DIAMETER AND FLAT-BOTTOMED, MULTIPLE-DUCT CONDUIT UNITS, HAND-EXCAVATE TRENCH BOTTOMS AND SUPPORT PIPE AND CONDUIT ON AN UNDISTURBED SUBGRADE.
2. FOR PIPES AND CONDUIT 6 INCHES (150 MM) OR LARGER IN NOMINAL DIAMETER, SHAPE BOTTOM OF TRENCH TO SUPPORT BOTTOM 90 DEGREES OF PIPE CIRCUMFERENCE. FILL DEPRESSIONS WITH TAMPED SAND BACKFILL.
3. EXCAVATE TRENCHES 6 INCHES (150 MM) DEEPER THAN ELEVATION REQUIRED IN ROCK OR OTHER UNYIELDING BEARING MATERIAL TO ALLOW FOR BEDDING COURSE.
C. TRENCH BOTTOMS: EXCAVATE TRENCHES 4 INCHES (100 MM) DEEPER THAN BOTTOM OF PIPE ELEVATION TO ALLOW FOR BEDDING COURSE. HAND EXCAVATE FOR BELL OF PIPE.
1. EXCAVATE TRENCHES 6 INCHES (150 MM) DEEPER THAN ELEVATION REQUIRED IN ROCK OR OTHER UNYIELDING BEARING MATERIAL TO ALLOW FOR BEDDING COURSE.

3.08 TRENCH SUPPORT SYSTEMS
A. TRENCH SUPPORT SYSTEM SHALL BE SUITABLE FOR THE SOIL STRUCTURE, DEPTH OF CUT, WATER CONTENT OF SOIL, WEATHER CONDITIONS, SUPERIMPOSED LOADS AND VIBRATION. CONTRACTOR MAY SELECT ONE OF THE FOLLOWING METHODS OF ENSURING THE SAFETY OF WORKERS IN THE TRENCH, AS APPROVED BY THE UTAH STATE INDUSTRIAL COMMISSION OR ITS SAFETY INSPECTORS:
1. SLOPING THE SIDES OF THE TRENCH TO THE ANGLE OF REPOSE AT WHICH THE SOIL WILL REMAIN SAFELY AT REST.
2. SHORING TRENCH SIDES BY PLACING SHEETING, TIMBER SHORES, TRENCH JACKS, BRACING, PILES, OR OTHER MATERIALS TO RESIST PRESSURES SURROUNDING THE EXCAVATION.
3. USING A MOVABLE TRENCH BOX BUILT-UP OF STEEL PLATES AND HEAVY STEEL FRAME OF SUFFICIENT STRENGTH TO RESIST THE PRESSURES SURROUNDING THE EXCAVATION.

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LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 E 1000 N, LOGAN, UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DATE:	DESCRIPTION:

PROJECT #:	123998
DRAWN BY:	J. CLEMENTS
CHECKED BY:	B. WRIGHT
ISSUED:	02.05.2024

STATE OF UTAH
BLAKE C. WRIGHT
02.05.2024
105101-5301
LICENSED LANDSCAPE ARCHITECT

CONSTRUCTION DOCUMENTS

SITE SPECIFICATIONS
C-001

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3.09 APPROVAL OF SUBGRADE
A. NOTIFY ARCHITECT WHEN EXCAVATIONS HAVE REACHED REQUIRED SUBGRADE.
B. IF ARCHITECT DETERMINES THAT UNSATISFACTORY SOIL IS PRESENT, CONTINUE EXCAVATION AND REPLACE WITH COMPACTED BACKFILL OR FILL MATERIAL AS DIRECTED.
C. PROOF ROLL SUBGRADE WITH HEAVY PNEUMATIC-TIRED EQUIPMENT TO IDENTIFY SOFT POCKETS AND AREAS OF EXCESS YIELDING. DO NOT PROOF ROLL WET OR SATURATED SUBGRADES.
D. RECONSTRUCT SUBGRADES DAMAGED BY FREEZING TEMPERATURES, FROST, RAIN, ACCUMULATED WATER, OR CONSTRUCTION ACTIVITIES, AS DIRECTED BY ARCHITECT.

3.10 UNAUTHORIZED EXCAVATION
A. FILL UNAUTHORIZED EXCAVATION UNDER FOUNDATIONS OR WALL FOOTINGS BY EXTENDING BOTTOM ELEVATION OF CONCRETE FOUNDATION OR FOOTING TO EXCAVATION BOTTOM, WITHOUT ALTERING TOP ELEVATION. LEAN CONCRETE FILL MAY BE USED WHEN APPROVED BY ARCHITECT.
1. FILL UNAUTHORIZED EXCAVATIONS UNDER OTHER CONSTRUCTION OR UTILITY PIPE AS DIRECTED BY ARCHITECT.

3.11 STORAGE OF SOIL MATERIALS
A. STOCKPILE BORROW MATERIALS AND SATISFACTORY EXCAVATED SOIL MATERIALS. STOCKPILE SOIL MATERIALS WITHOUT INTERMIXING. PLACE, GRADE, AND SHAPE STOCKPILES TO DRAIN SURFACE WATER. COVER TO PREVENT WINDBLOWN DUST.
1. STOCKPILE SOIL MATERIALS AWAY FROM EDGE OF EXCAVATIONS. DO NOT STORE WITHIN DRIP LINE OF REMAINING TREES.

3.12 BACKFILL
A. PLACE AND COMPACT BACKFILL IN EXCAVATIONS PROMPTLY, BUT NOT BEFORE COMPLETING THE FOLLOWING:
1. CONSTRUCTION BELOW FINISH GRADE INCLUDING, WHERE APPLICABLE, DAMPPROOFING, WATERPROOFING, AND PERIMETER INSULATION.
2. SURVEYING LOCATIONS OF UNDERGROUND UTILITIES FOR RECORD DOCUMENTS.
3. INSPECTING AND TESTING UNDERGROUND UTILITIES.
4. REMOVING CONCRETE FORMWORK.
5. REMOVING TRASH AND DEBRIS.
6. REMOVING TEMPORARY SHORING AND BRACING, AND SHEETING.
7. INSTALLING PERMANENT OR TEMPORARY HORIZONTAL BRACING ON HORIZONTALLY SUPPORTED WALLS.

3.13 UTILITY TRENCH BACKFILL
A. PLACE AND COMPACT BEDDING COURSE ON TRENCH BOTTOMS AND WHERE INDICATED. SHAPE BEDDING COURSE TO PROVIDE CONTINUOUS SUPPORT FOR BELLS, JOINTS, AND BARRELS OF PIPES AND FOR JOINTS, FITTINGS, AND BODIES OF CONDUITS.
B. BACKFILL TRENCHES EXCAVATED UNDER FOOTINGS AND WITHIN 18 INCHES (450 MM) OF BOTTOM OF FOOTINGS; FILL WITH CONCRETE TO ELEVATION OF BOTTOM OF FOOTINGS.
C. PROVIDE 4-INCH- (100-MM-) THICK, CONCRETE-BASE SLAB SUPPORT FOR PIPING OR CONDUIT LESS THAN 30 INCHES (750 MM) BELOW SURFACE OF ROADWAYS. AFTER INSTALLING AND TESTING, COMPLETELY ENCASE PIPING OR CONDUIT IN A MINIMUM OF 4 INCHES (100 MM) OF CONCRETE BEFORE BACKFILLING OR PLACING ROADWAY SUBBASE.
D. PLACE AND COMPACT INITIAL BACKFILL OF SUBBASE MATERIAL, FREE OF PARTICLES LARGER THAN 1 INCH (25 MM), TO A HEIGHT OF 12 INCHES (300 MM) OVER THE UTILITY PIPE OR CONDUIT.
1. CAREFULLY COMPACT MATERIAL UNDER PIPE HAUNCHES AND BRING BACKFILL EVENLY UP ON BOTH SIDES AND ALONG THE FULL LENGTH OF UTILITY PIPING OR CONDUIT TO AVOID DAMAGE OR DISPLACEMENT OF UTILITY SYSTEM.
E. COORDINATE BACKFILLING WITH UTILITIES TESTING.
F. PLACE AND COMPACT FINAL BACKFILL OF SATISFACTORY SOIL MATERIAL TO FINAL SUBGRADE.
G. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES, 12 INCHES (300 MM) BELOW FINISHED GRADE, EXCEPT 6 INCHES (150 MM) BELOW SUBGRADE UNDER PAVEMENTS AND SLABS.

3.14 FILL
A. PREPARATION: REMOVE VEGETATION, TOPSOIL, DEBRIS, UNSATISFACTORY SOIL MATERIALS, OBSTRUCTIONS, AND DELETERIOUS MATERIALS FROM GROUND SURFACE BEFORE PLACING FILLS.
B. PLOW, SCARIFY, BENCH, OR BREAK UP SLOPED SURFACES STEEPER THAN 1 VERTICAL TO 4 HORIZONTAL SO FILL MATERIAL WILL BOND WITH EXISTING MATERIAL.
C. PLACE AND COMPACT FILL MATERIAL IN LAYERS TO REQUIRED ELEVATIONS AS FOLLOWS:
1. UNDER GRASS AND PLANTED AREAS, USE SATISFACTORY SOIL MATERIAL.
2. UNDER WALKS AND PAVEMENTS, USE SATISFACTORY SOIL MATERIAL.
3. UNDER STEPS AND RAMPS, USE ENGINEERED FILL.
4. UNDER BUILDING SLABS, USE ENGINEERED FILL.
5. UNDER FOOTINGS AND FOUNDATIONS, USE ENGINEERED FILL.

3.15 MOISTURE CONTROL
A. UNIFORMLY MOISTEN OR AERATE SUBGRADE AND EACH SUBSEQUENT FILL OR BACKFILL LAYER BEFORE COMPACTION TO WITHIN 2 PERCENT OF OPTIMUM MOISTURE CONTENT.
1. DO NOT PLACE BACKFILL OR FILL MATERIAL ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAIN FROST OR ICE.
2. REMOVE AND REPLACE, OR SCARIFY AND AIR-DRY, OTHERWISE SATISFACTORY SOIL MATERIAL THAT EXCEEDS OPTIMUM MOISTURE CONTENT BY 2 PERCENT AND IS TOO WET TO COMPACT TO SPECIFIED DRY UNIT WEIGHT.

3.16 COMPACTION OF BACKFILLS AND FILLS
A. PLACE BACKFILL AND FILL MATERIALS IN LAYERS NOT MORE THAN 8 INCHES (200 MM) IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, AND NOT MORE THAN 4 INCHES (100 MM) IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND-OPERATED TAMPERS.
B. PLACE BACKFILL AND FILL MATERIALS EVENLY ON ALL SIDES OF STRUCTURES TO REQUIRED ELEVATIONS, AND UNIFORMLY ALONG THE FULL LENGTH OF EACH STRUCTURE.
C. COMPACT SOIL TO NOT LESS THAN THE FOLLOWING PERCENTAGES OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D 1557:
1. UNDER STRUCTURES, BUILDING SLABS, STEPS, AND PAVEMENTS, SCARIFY AND RECOMPACT TOP 6 INCHES (150 MM) OF EXISTING SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL AT 95 PERCENT. COMPACT TO 98 PERCENT FOR FILLS THICKER THAN 6 FEET DEEP.
2. UNDER WALKWAYS, SCARIFY AND RECOMPACT TOP 6 INCHES (150 MM) BELOW SUBGRADE AND COMPACT EACH LAYER OF BACKFILL OR FILL MATERIAL AT 95 PERCENT.
3. UNDER LAWN OR UNPAVED AREAS, SCARIFY AND RECOMPACT TOP 6 INCHES (150 MM) BELOW SUBGRADE AND COMPACT EACH LAYER OF BACKFILL OR FILL MATERIAL AT 90 PERCENT.

3.17 GRADING
A. GENERAL: UNIFORMLY GRADE AREAS TO A SMOOTH SURFACE, FREE FROM IRREGULAR SURFACE CHANGES. COMPLY WITH COMPACTION REQUIREMENTS AND GRADE TO CROSS SECTIONS, LINES, AND ELEVATIONS INDICATED.
1. PROVIDE A SMOOTH TRANSITION BETWEEN ADJACENT EXISTING GRADES AND NEW GRADES.
2. CUT OUT SOFT SPOTS, FILL LOW SPOTS, AND TRIM HIGH SPOTS TO COMPLY WITH REQUIRED SURFACE TOLERANCES.
B. SITE GRADING: SLOPE GRADES TO DIRECT WATER AWAY FROM BUILDINGS AND TO PREVENT PONDING. FINISH SUBGRADES TO REQUIRED ELEVATIONS WITHIN THE FOLLOWING TOLERANCES:
1. LAWN OR UNPAVED AREAS: PLUS OR MINUS 0.2 FT (25 MM).
2. WALKS: PLUS OR MINUS 0.1 FT (13 MM).
3. PAVEMENTS: PLUS OR MINUS 0.1 FT (13 MM).

3.18 SUBBASE AND BASE COURSES
A. UNDER PAVEMENTS AND WALKS, PLACE SUBBASE COURSE ON PREPARED SUBGRADE AND AS FOLLOWS:
1. PLACE BASE COURSE MATERIAL OVER SUBBASE.
2. COMPACT SUBBASE AND BASE COURSES AT OPTIMUM MOISTURE CONTENT TO REQUIRED GRADES, LINES, CROSS SECTIONS, AND THICKNESS TO NOT LESS THAN 95 PERCENT OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D 1557.
3. SHAPE SUBBASE AND BASE TO REQUIRED CROWN ELEVATIONS AND CROSS-SLOPE GRADES.
4. WHEN THICKNESS OF COMPACTED SUBBASE OR BASE COURSE IS 6 INCHES (150 MM) OR LESS, PLACE MATERIALS IN A SINGLE LAYER.
5. WHEN THICKNESS OF COMPACTED SUBBASE OR BASE COURSE EXCEEDS 6 INCHES (150 MM), PLACE MATERIALS IN EQUAL LAYERS, WITH NO LAYER MORE THAN 6 INCHES (150 MM) THICK OR LESS THAN 3 INCHES (75 MM) THICK WHEN COMPACTED.
B. PAVEMENT SHOULDERS: PLACE SHOULDERS ALONG EDGES OF SUBBASE AND BASE COURSE TO PREVENT LATERAL MOVEMENT. CONSTRUCT SHOULDERS, AT LEAST 12 INCHES (300 MM) WIDE, OF SATISFACTORY SOIL MATERIALS AND COMPACT SIMULTANEOUSLY WITH EACH SUBBASE AND BASE LAYER TO NOT LESS THAN 95 PERCENT OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D 1557.

3.19 DRAINAGE COURSE
A. UNDER SLABS-ON-GRADE, PLACE DRAINAGE COURSE ON PREPARED SUBGRADE AND AS FOLLOWS:
1. COMPACT DRAINAGE COURSE TO REQUIRED CROSS SECTIONS AND THICKNESS TO NOT LESS THAN 95 PERCENT OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D 698.
2. WHEN COMPACTED THICKNESS OF DRAINAGE COURSE IS 6 INCHES (150 MM) OR LESS, PLACE MATERIALS IN A SINGLE LAYER.
3. WHEN COMPACTED THICKNESS OF DRAINAGE COURSE EXCEEDS 6 INCHES (150 MM), PLACE MATERIALS IN EQUAL LAYERS, WITH NO LAYER MORE THAN 6 INCHES (150 MM) THICK OR LESS THAN 3 INCHES (75 MM) THICK WHEN COMPACTED.

3.20 PROTECTION
A. PROTECTING GRADED AREAS: PROTECT NEWLY GRADED AREAS FROM TRAFFIC, FREEZING, AND EROSION. KEEP FREE OF TRASH AND DEBRIS.
B. REPAIR AND REESTABLISH GRADES TO SPECIFIED TOLERANCES WHERE COMPLETED OR PARTIALLY COMPLETED SURFACES BECOME ERODED, RUTTED, SETTLED, OR WHERE THEY LOSE COMPACTION DUE TO SUBSEQUENT CONSTRUCTION OPERATIONS OR WEATHER CONDITIONS.
1. SCARIFY OR REMOVE AND REPLACE SOIL MATERIAL TO DEPTH AS DIRECTED BY ARCHITECT; RESHAPE AND RECOMPACT.
C. WHERE SETTLING OCCURS BEFORE PROJECT CORRECTION PERIOD ELAPSES, REMOVE FINISHED SURFACING, BACKFILL WITH ADDITIONAL SOIL MATERIAL, COMPACT, AND RECONSTRUCT SURFACING.
1. RESTORE APPEARANCE, QUALITY, AND CONDITION OF FINISHED SURFACING TO MATCH ADJACENT WORK, AND ELIMINATE EVIDENCE OF RESTORATION TO THE GREATEST EXTENT POSSIBLE.

3.21 DISPOSAL OF SURPLUS AND WASTE MATERIALS
A. DISPOSAL: REMOVE SURPLUS SATISFACTORY SOIL AND WASTE MATERIAL, INCLUDING UNSATISFACTORY SOIL, TRASH, AND DEBRIS, AND LEGALLY DISPOSE OF IT OFF OWNER'S PROPERTY.

END OF SECTION

SECTION 32 1313
CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES
A. CONCRETE SIDEWALKS AND STAIR STEPS.

1.02 RELATED REQUIREMENTS
A. SECTION 03 1000 - CONCRETE FORMING AND ACCESSORIES.
B. SECTION 03 3000 - CAST-IN-PLACE CONCRETE.
C. SECTION 31 2200 - GRADING: PREPARATION OF SITE FOR PAVING AND BASE AND PREPARATION OF SUBSOIL AT PAVEMENT PERIMETER FOR PLANTING.

1.03 SUBMITTALS
A. PRODUCT DATA: PROVIDE DATA ON JOINT FILLER, ADMIXTURES, AND CURING COMPOUND.

PART 2 PRODUCTS

2.01 PAVING ASSEMBLIES
A. COMPLY WITH APPLICABLE REQUIREMENTS OF ACI 301.

2.02 FORM MATERIALS
A. FORM MATERIALS: AS SPECIFIED IN SECTION 03 1000, COMPLY WITH ACI 301.
B. WOOD FORM MATERIAL, PROFILED TO SUIT CONDITIONS.

2.03 REINFORCEMENT
A. REINFORCING STEEL: ASTM A615/A615M, GRADE 80 (80,000 PSI) (550 MPA) YIELD STRENGTH; DEFORMED BILLET STEEL BARS; UNFINISHED.
B. DOWELS: ASTM A615/A615M, GRADE 40 - 40,000 PSI (280 MPA) YIELD STRENGTH; DEFORMED BILLET STEEL BARS; UNFINISHED FINISH.

2.04 CONCRETE MATERIALS
A. OBTAIN CEMENTITIOUS MATERIALS FROM SAME SOURCE THROUGHOUT.
B. CEMENT: ASTM C150/C150M, NORMAL - TYPE I PORTLAND CEMENT, GRAY COLOR.
C. FINE AND COARSE MIX AGGREGATES: ASTM C33/C33M.
D. FLY ASH: ASTM C618, CLASS C OR F.
E. WATER: CLEAN, AND NOT DETRIMENTAL TO CONCRETE.

2.05 CONCRETE MIX DESIGN
A. PROPORTIONING NORMAL WEIGHT CONCRETE: COMPLY WITH ACI 211.1 RECOMMENDATIONS.
B. CONCRETE PROPERTIES:
1. COMPRESSIVE STRENGTH, WHEN TESTED IN ACCORDANCE WITH ASTM C39/C39M AT 28 DAYS; 3000 PSI (20.68 MPA).
2. FLY ASH CONTENT: MAXIMUM 15 PERCENT OF CEMENTITIOUS MATERIALS BY WEIGHT.
3. WATER-CEMENT RATIO: MAXIMUM 40 PERCENT BY WEIGHT.
4. TOTAL AIR CONTENT: 4 PERCENT, DETERMINED IN ACCORDANCE WITH ASTM C173/C173M.

2.06 MIXING
A. TRANSIT MIXERS: COMPLY WITH ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION
A. VERIFY COMPACTED SUBGRADE IS ACCEPTABLE AND READY TO SUPPORT PAVING AND IMPOSED LOADS.
B. VERIFY GRADIENTS AND ELEVATIONS OF BASE ARE CORRECT.

3.02 PREPARATION
A. MOISTEN BASE TO MINIMIZE ABSORPTION OF WATER FROM FRESH CONCRETE.
B. NOTIFY ARCHITECT MINIMUM 24 HOURS PRIOR TO COMMENCEMENT OF CONCRETING OPERATIONS.

3.03 FORMING
A. PLACE AND SECURE FORMS TO CORRECT LOCATION, DIMENSION, PROFILE, AND GRADIENT.
B. ASSEMBLE FORMWORK TO PERMIT EASY STRIPPING AND DISMANTLING WITHOUT DAMAGING CONCRETE.
C. PLACE JOINT FILLER VERTICAL IN POSITION, IN STRAIGHT LINES. SECURE TO FORMWORK DURING CONCRETE PLACEMENT.

3.04 REINFORCEMENT
A. PLACE REINFORCEMENT AS INDICATED.

3.05 COLD AND HOT WEATHER CONCRETING
A. FOLLOW RECOMMENDATIONS OF ACI 305R WHEN CONCRETING DURING HOT WEATHER.
B. FOLLOW RECOMMENDATIONS OF ACI 306R WHEN CONCRETING DURING COLD WEATHER.

3.06 PLACING CONCRETE
A. PLACE CONCRETE IN ACCORDANCE WITH ACI 304R.
B. DO NOT PLACE CONCRETE WHEN BASE SURFACE IS WET.
C. PLACE CONCRETE CONTINUOUSLY OVER THE FULL WIDTH OF THE PANEL AND BETWEEN PREDETERMINED CONSTRUCTION JOINTS. DO NOT BREAK OR INTERRUPT SUCCESSIVE POURS SUCH THAT COLD JOINTS OCCUR.

3.07 JOINTS
A. PLACE 3/8 INCH (10 MM) WIDE EXPANSION JOINTS AT 30 FOOT INTERVALS AND TO SEPARATE PAVING FROM VERTICAL SURFACES AND OTHER COMPONENTS.
1. FORM JOINTS WITH JOINT FILLER EXTENDING FROM BOTTOM OF PAVEMENT TO WITHIN 1/2 INCH (13 MM) OF FINISHED SURFACE.
2. SECURE TO RESIST MOVEMENT BY WET CONCRETE.
B. PROVIDE SCORED JOINTS TO MATCH EXISTING CONCRETE TO TIE INTO.

3.08 FINISHING
A. SIDEWALK PAVING: LIGHT BROOM, TEXTURE PERPENDICULAR TO DIRECTION OF TRAVEL WITH TROWELED AND RADIUSED EDGE 1/4 INCH RADIUS (6 MM RADIUS).
B. INCLINED VEHICULAR RAMPS: BROOMED PERPENDICULAR TO SLOPE.

3.09 TOLERANCES
A. MAXIMUM VARIATION OF SURFACE FLATNESS: 1/4 INCH (6 MM) IN 10 FT (3 M).
B. MAXIMUM VARIATION FROM TRUE POSITION: 1/4 INCH (6 MM).

3.10 FIELD QUALITY CONTROL
A. MAINTAIN RECORDS OF PLACED CONCRETE ITEMS. RECORD DATE, LOCATION OF POUR, QUANTITY, AIR TEMPERATURE, AND TEST SAMPLES TAKEN.

3.11 PROTECTION
A. IMMEDIATELY AFTER PLACEMENT, PROTECT PAVEMENT FROM PREMATURE DRYING, EXCESSIVE HOT OR COLD TEMPERATURES, AND MECHANICAL INJURY.
B. DO NOT PERMIT PEDESTRIAN TRAFFIC OVER PAVEMENT FOR 7 DAYS MINIMUM AFTER FINISHING.

END OF SECTION

SECTION 32 1373
CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.02 SUMMARY
A. SECTION INCLUDES:
1. COLD-APPLIED JOINT SEALANTS.
2. HOT-APPLIED JOINT SEALANTS.
3. COLD-APPLIED, FUEL-RESISTANT JOINT SEALANTS.
4. HOT-APPLIED, FUEL-RESISTANT JOINT SEALANTS.
5. JOINT-SEALANT BACKER MATERIALS.
6. PRIMERS.
B. RELATED REQUIREMENTS:
1. SECTION 079200 "JOINT SEALANTS" FOR SEALING NONTRAFFIC AND TRAFFIC JOINTS IN LOCATIONS NOT SPECIFIED IN THIS SECTION.

1.03 PREINSTALLATION MEETINGS
A. PREINSTALLATION CONFERENCE: CONDUCT CONFERENCE AT THE SITE.

1.04 ACTION SUBMITTALS
A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT.
B. PAVING-JOINT-SEALANT SCHEDULE: INCLUDE THE FOLLOWING INFORMATION:
1. JOINT-SEALANT APPLICATION, JOINT LOCATION, AND DESIGNATION.
2. JOINT-SEALANT MANUFACTURER AND PRODUCT NAME.
3. JOINT-SEALANT FORMULATION.
4. JOINT-SEALANT COLOR.

1.05 INFORMATIONAL SUBMITTALS
A. PRODUCT CERTIFICATES: FOR EACH TYPE OF JOINT SEALANT AND ACCESSORY.

1.06 QUALITY ASSURANCE
A. INSTALLER QUALIFICATIONS: AN ENTITY THAT EMPLOYS INSTALLERS AND SUPERVISORS WHO ARE TRAINED AND APPROVED BY MANUFACTURER.
B. PRODUCT TESTING: TEST JOINT SEALANTS USING A QUALIFIED TESTING AGENCY.

1.07 FIELD CONDITIONS
A. DO NOT PROCEED WITH INSTALLATION OF JOINT SEALANTS UNDER THE FOLLOWING CONDITIONS:
1. WHEN AMBIENT AND SUBSTRATE TEMPERATURE CONDITIONS ARE OUTSIDE LIMITS PERMITTED BY JOINT- SEALANT MANUFACTURER OR ARE BELOW 40 DEG F.
2. WHEN JOINT SUBSTRATES ARE WET.
3. WHERE JOINT WIDTHS ARE LESS THAN THOSE ALLOWED BY JOINT-SEALANT MANUFACTURER FOR APPLICATIONS INDICATED.
4. WHERE CONTAMINANTS CAPABLE OF INTERFERING WITH ADHESION HAVE NOT YET BEEN REMOVED FROM JOINT SUBSTRATES.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL
A. COMPATIBILITY: PROVIDE JOINT SEALANTS, BACKING MATERIALS, AND OTHER RELATED MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER AND WITH JOINT SUBSTRATES UNDER CONDITIONS OF SERVICE AND APPLICATION, AS DEMONSTRATED BY JOINT-SEALANT MANUFACTURER, BASED ON TESTING AND FIELD EXPERIENCE.

2.02 COLD-APPLIED JOINT SEALANTS
A. SINGLE-COMPONENT, NONSAG, SILICONE JOINT SEALANT: ASTM D 5893/D 5893M, TYPE NS.
1. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS:
a. CRAFCO INC; ROADSAVER SILICONE.
b. DOW CORNING CORPORATION; 888.
c. PECORA CORPORATION; 301 NS.
B. SINGLE-COMPONENT, SELF-LEVELING, SILICONE JOINT SEALANT: ASTM D 5893/D 5893M, TYPE SL.
1. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS:
a. CRAFCO INC; ROADSAVER SILICONE SL.
b. DOW CORNING CORPORATION; 890-SL.
c. PECORA CORPORATION; 300 SL.
C. ASTM C 920, TYPE M, GRADE NS, CLASS 25, FOR USE T.
1. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS:
a. MEADOWS, W.R.,INC; POURTHANE NS.
D. ASTM C 920, TYPE S, GRADE P, CLASS 25, FOR USE T.
1. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS:
a. MEADOWS, W.R.,INC; POURTHANE SL.
E. ASTM C 920, TYPE M, GRADE P, CLASS 25, FOR USE T.
1. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS:
a. PECORA CORPORATION; DYNATRED, DYNATROL II-SG, UREXPAN NR-200.

2.03 HOT-APPLIED JOINT SEALANTS
A. HOT-APPLIED, SINGLE-COMPONENT JOINT SEALANT: ASTM D 6690, TYPE I, II, OR III.
1. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS:
a. MEADOWS, W.R.,INC; SEALTIGHT 3405.
b. RIGHT POINTE; JTS 3405 REGULAR 003
B. HOT-APPLIED, SINGLE-COMPONENT JOINT SEALANT: ASTM D 6690, TYPE IV.
1. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS:
a. CRAFCO INC; ROADSAVER 231.
b. MEADOWS, W.R.,INC; SEALTIGHT 3405M.

2.04 JOINT-SEALANT BACKER MATERIALS
A. JOINT-SEALANT BACKER MATERIALS: NONSTAINING; COMPATIBLE WITH JOINT SUBSTRATES, SEALANTS, PRIMERS, AND OTHER JOINT FILLERS; AND APPROVED FOR APPLICATIONS INDICATED BY JOINT-SEALANT MANUFACTURER, BASED ON FIELD EXPERIENCE AND LABORATORY TESTING.
B. ROUND BACKER RODS FOR COLD- AND HOT-APPLIED JOINT SEALANTS: ASTM D 5249, TYPE 1, OF DIAMETER AND DENSITY REQUIRED TO CONTROL SEALANT DEPTH AND PREVENT BOTTOM-SIDE ADHESION OF SEALANT.
C. ROUND BACKER RODS FOR COLD-APPLIED JOINT SEALANTS: ASTM D 5249, TYPE 3, OF DIAMETER AND DENSITY REQUIRED TO CONTROL JOINT-SEALANT DEPTH AND PREVENT BOTTOM-SIDE ADHESION OF SEALANT.
D. BACKER STRIPS FOR COLD- AND HOT-APPLIED JOINT SEALANTS: ASTM D 5249; TYPE 2; OF THICKNESS AND WIDTH REQUIRED TO CONTROL JOINT-SEALANT DEPTH, PREVENT BOTTOM-SIDE ADHESION OF SEALANT, AND FILL REMAINDER OF JOINT OPENING UNDER SEALANT.

2.05 PRIMERS
A. PRIMERS: PRODUCT RECOMMENDED BY JOINT-SEALANT MANUFACTURER WHERE REQUIRED FOR ADHESION OF SEALANT TO JOINT SUBSTRATES INDICATED.

PART 3 - EXECUTION

3.01 EXAMINATION
A. EXAMINE JOINTS TO RECEIVE JOINT SEALANTS, WITH INSTALLER PRESENT, FOR COMPLIANCE WITH REQUIREMENTS FOR JOINT CONFIGURATION, INSTALLATION TOLERANCES, AND OTHER CONDITIONS AFFECTING JOINT-SEALANT PERFORMANCE.
B. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

3.02 PREPARATION
A. SURFACE CLEANING OF JOINTS: BEFORE INSTALLING JOINT SEALANTS, CLEAN OUT JOINTS IMMEDIATELY TO COMPLY WITH JOINT-SEALANT MANUFACTURER'S WRITTEN INSTRUCTIONS.
1. REMOVE ALL FOREIGN MATERIAL FROM JOINT SUBSTRATES THAT COULD INTERFERE WITH ADHESION OF JOINT SEALANT, INCLUDING DUST, OLD JOINT SEALANTS, OIL, GREASE, WATERPROOFING, WATER REPELLENTS, WATER, SURFACE DIRT, AND FROST.
B. JOINT PRIMING: PRIME JOINT SUBSTRATES WHERE INDICATED OR WHERE RECOMMENDED IN WRITING BY JOINT- SEALANT MANUFACTURER, BASED ON PRECONSTRUCTION JOINT-SEALANT-SUBSTRATE TESTS OR PRIOR EXPERIENCE. APPLY PRIMER TO COMPLY WITH JOINT-SEALANT MANUFACTURER'S WRITTEN INSTRUCTIONS. CONFINE PRIMERS TO AREAS OF JOINT-SEALANT BOND; DO NOT ALLOW SPILLAGE OR MIGRATION ONTO ADJOINING SURFACES.

3.03 INSTALLATION OF JOINT SEALANTS
A. COMPLY WITH JOINT-SEALANT MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS FOR PRODUCTS AND APPLICATIONS INDICATED UNLESS MORE STRINGENT REQUIREMENTS APPLY.
B. JOINT-SEALANT INSTALLATION STANDARD: COMPLY WITH RECOMMENDATIONS IN ASTM C 1193 FOR USE OF JOINT SEALANTS AS APPLICABLE TO MATERIALS, APPLICATIONS, AND CONDITIONS.
C. INSTALL JOINT-SEALANT BACKINGS TO SUPPORT JOINT SEALANTS DURING APPLICATION AND AT POSITION REQUIRED TO PRODUCE CROSS-SECTIONAL SHAPES AND DEPTHS OF INSTALLED SEALANTS RELATIVE TO JOINT WIDTHS THAT ALLOW OPTIMUM SEALANT MOVEMENT CAPABILITY.
1. DO NOT LEAVE GAPS BETWEEN ENDS OF JOINT-SEALANT BACKINGS.
2. DO NOT STRETCH, TWIST, PUNCTURE, OR TEAR JOINT-SEALANT BACKINGS.
3. REMOVE ABSORBENT JOINT-SEALANT BACKINGS THAT HAVE BECOME WET BEFORE SEALANT APPLICATION AND REPLACE THEM WITH DRY MATERIALS.
D. INSTALL JOINT SEALANTS IMMEDIATELY FOLLOWING BACKING INSTALLATION, USING PROVEN TECHNIQUES THAT COMPLY WITH THE FOLLOWING:
1. PLACE JOINT SEALANTS SO THEY FULLY CONTACT JOINT SUBSTRATES.
2. COMPLETELY FILL RECESSES IN EACH JOINT CONFIGURATION.
3. PRODUCE UNIFORM, CROSS-SECTIONAL SHAPES AND DEPTHS RELATIVE TO JOINT WIDTHS THAT ALLOW OPTIMUM SEALANT MOVEMENT CAPABILITY.
E. TOOLING OF NONSAG JOINT SEALANTS: IMMEDIATELY AFTER JOINT-SEALANT APPLICATION AND BEFORE SKINNING OR CURING BEGINS, TOOL SEALANTS ACCORDING TO THE FOLLOWING REQUIREMENTS TO FORM SMOOTH, UNIFORM BEADS OF CONFIGURATION INDICATED; TO ELIMINATE AIR POCKETS; AND TO ENSURE CONTACT AND ADHESION OF SEALANT WITH SIDES OF JOINT:
1. REMOVE EXCESS JOINT SEALANT FROM SURFACES ADJACENT TO JOINTS.
2. USE TOOLING AGENTS THAT ARE APPROVED IN WRITING BY JOINT-SEALANT MANUFACTURER AND THAT DO NOT DISCOLOR SEALANTS OR ADJACENT SURFACES.
F. PROVIDE JOINT CONFIGURATION TO COMPLY WITH JOINT-SEALANT MANUFACTURER'S WRITTEN INSTRUCTIONS UNLESS OTHERWISE INDICATED.

3.04 CLEANING AND PROTECTION
A. CLEAN OFF EXCESS JOINT SEALANT AS THE WORK PROGRESSES, BY METHODS AND WITH CLEANING MATERIALS APPROVED IN WRITING BY JOINT-SEALANT MANUFACTURERS.
B. PROTECT JOINT SEALANTS, DURING AND AFTER CURING PERIOD, FROM CONTACT WITH CONTAMINATING SUBSTANCES AND FROM DAMAGE RESULTING FROM CONSTRUCTION OPERATIONS OR OTHER CAUSES SO SEALANTS ARE WITHOUT DETERIORATION OR DAMAGE AT TIME OF SUBSTANTIAL COMPLETION. IF, DESPITE SUCH PROTECTION, DAMAGE OR DETERIORATION OCCURS, CUT OUT AND REMOVE DAMAGED OR DETERIORATED JOINT SEALANTS IMMEDIATELY AND REPLACE WITH JOINT SEALANT SO INSTALLATIONS IN REPAIRED AREAS ARE INDISTINGUISHABLE FROM THE ORIGINAL WORK.

3.05 PAVING-JOINT-SEALANT SCHEDULE
A. JOINT-SEALANT APPLICATION: JOINTS WITHIN CONCRETE PAVING.
1. JOINT LOCATION:
a. EXPANSION AND ISOLATION JOINTS IN CONCRETE PAVING.
b. CONTRACTION JOINTS IN CONCRETE PAVING.
2. JOINT SEALANT: SINGLE-COMPONENT, SELF-LEVELING, SILICONE JOINT SEALANT
3. JOINT-SEALANT COLOR: MANUFACTURER'S STANDARD

END OF SECTION

SECTION 32 3113
CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. POSTS, RAILS, AND FRAMES.
B. WIRE FABRIC.
C. CONCRETE.
D. MANUAL GATES WITH RELATED HARDWARE.
E. ACCESSORIES.

1.02 REFERENCE STANDARDS
A. ACI 301 - SPECIFICATIONS FOR CONCRETE CONSTRUCTION; 2020.
B. ASTM A123/A123M - STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS; 2017.
C. ASTM A153/A153M - STANDARD SPECIFICATION FOR ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE; 2023.
D. ASTM A392 - STANDARD SPECIFICATION FOR ZINC-COATED STEEL CHAIN-LINK FENCE FABRIC; 2011A (REAPPROVED 2017).
E. ASTM C33/C33M - STANDARD SPECIFICATION FOR CONCRETE AGGREGATES; 2023.
F. ASTM C150/C150M - STANDARD SPECIFICATION FOR PORTLAND CEMENT; 2022.
G. ASTM F567 - STANDARD PRACTICE FOR INSTALLATION OF CHAIN-LINK FENCE; 2014A.
H. ASTM F1043 - STANDARD SPECIFICATION FOR STRENGTH AND PROTECTIVE COATINGS ON STEEL INDUSTRIAL FENCE FRAMEWORK; 2017A.
I. ASTM F1083 - STANDARD SPECIFICATION FOR PIPE, STEEL, HOT-DIPPED ZINC-COATED (GALVANIZED) WELDED, FOR FENCE STRUCTURES; 2016.
J. CLFMI CLF-PM0610 - PRODUCT MANUAL; 2017.
K. CLFMI CLF-SFR0111 - SECURITY FENCING RECOMMENDATIONS; 2014.

1.03 SUBMITTALS
A. PRODUCT DATA: PROVIDE DATA ON FABRIC, POSTS, ACCESSORIES, FITTINGS AND HARDWARE.
B. SHOP DRAWINGS: SHOW LOCATIONS, DETAILS, MATERIALS, DIMENSIONS, SIZES, WEIGHTS, FINISHES, OPERATIONAL CLEARANCES, AND INSTALLATION OF COMPONENTS. SEE CLFMI CLF-SFR0111 FOR PLANNING AND DESIGN RECOMMENDATIONS.

1.04 WARRANTY
A. SEE SECTION 01 7800 - CLOSEOUT SUBMITTALS, FOR ADDITIONAL WARRANTY REQUIREMENTS.

PART 2 PRODUCTS

2.01 MATERIALS
A. POSTS, RAILS, AND FRAMES: COMPLY WITH THE FOLLOWING:
1. LINE, TERMINAL, CORNER, RAIL, BRACE, AND GATE POSTS: TYPE I ROUND.
a. TYPE I ROUND: LG 40 OR SCHEDULE 40 GALVANIZED STEEL PIPE COMPLYING WITH ASTM F1083. COMPLY WITH ASTM F1043, MATERIAL DESIGN GROUP IA, EXTERNAL AND INTERNAL COATING TYPE A, CONSISTING OF NOT LESS THAN 1.8-OZ./SQ. FT. ZINC; AND LINE, END, CORNER, AND PULL POSTS AND TOP RAIL PER REQUIREMENTS.
b. POST BRACE RAILS: MATCH TOP RAIL FOR COATING AND STRENGTH AND STIFFNESS REQUIREMENTS. PROVIDE BRACE RAIL WITH TRUSS ROD ASSEMBLY FOR EACH GATE, END, AND PULL POST. PROVIDE TWO BRACE RAILS EXTENDING IN OPPOSING DIRECTIONS, EACH WITH TRUSS ROD ASSEMBLY FOR EACH CORNER POST AND FOR PULL POSTS. PROVIDE RAIL ENDS AND CLAMPS FOR ATTACHING RAILS TO POSTS.
2. COMPLY WITH CLFMI CLF-PM0610.
B. WIRE FABRIC: COMPLY WITH CLFMI'S "PRODUCT MANUAL" :
1. NINE GAUGE CORE, MINIMUM WALL THICKNESS OF .015 INCHES OVER A GALVANIZED SUBSTRATE. THE BASE METAL SHALL HAVE A MINIMUM BREAKING STRENGTH OF FIVE HUNDRED FIFTY POUNDS (550 LBS.) AND A ZINC COAT WEIGHT OF .1503 POUNDS PER SQUARE FOOT OF UN-COATED WIRE SURFACE. TOP AND BOTTOM SELVAGE OF THE FABRIC SHALL BE KNUCKLED.
2. ASTM A392 ZINC COATED APPLIED TO STEEL WIRE MESH FABRIC AFTER WEAVING WITH CLASS 1. 1.2-OZ./SQ. FT. MINIMUM COATING WEIGHT.
3. THE TENSIONING STRANDS SHALL CONSIST OF ONE-HALF INCH (1/2") DIAMETER, 7-WIRE, STRESS RELIEVED STRANDS, HAVING A GUARANTEED ULTIMATE TENSILE STRENGTH OF 270,000 PSI (270 KIPS). STRANDS SHALL CONFORM TO ASTM-416. CABLES SHALL BE FABRICATED TO PROPER LENGTH FOR EACH SLAB, COATED WITH A PERMANENT RUST PREVENTATIVE LUBRICANT AND ENCASED IN SLIP-AGE SHEATHING AND SHALL BE REPAIRED WITH TAPE PRIOR TO CONCRETE PLACEMENT AS NECESSARY. A MAXIMUM OF SIX INCHES (6") EXPOSED STRANDS IS PERMITTED AT THE DEAD-END ANCHOR.
4. FENCE FABRIC SHALL BE VINYL-COATED TO MEET REQUIREMENTS OF ASTM F668 FOR CLASS 2B CHAIN LINK FABRIC. THICKNESS OF THE FUSION BONDED COATING SHALL BE 7-10 MILS, COLOR TO BE BLACK.
5. THE VINYL COATING SHALL BE EVENLY APPLIED AND FREE OF BLISTERS. THE BOND BETWEEN THE VINYL COATING AND THE STEEL FABRIC TO BE EQUAL OR GREATER THAN THE COHESIVE STRENGTH OF THE VINYL.
6. COMPLY WITH CLFMI CLF-PM0610.
C. CAST-IN-PLACE CONCRETE: NORMAL-WEIGHT CONCRETE AIR ENTRAINED WITH NOT LESS THAN 3,000-PSI COMPRESSIVE STRENGTH (28 DAYS), 3-INCH SLUMP, AND 1-INCH MAXIMUM SIZE AGGREGATE:
1. CAST-IN-PLACE CONCRETE COMPLYING WITH ACI 301.
2. MATERIALS CONSISTING OF PORTLAND CEMENT COMPLYING WITH ASTM C150/C150M.
3. AGGREGATES COMPLYING WITH ASTM C33/C33M.
4. POTABLE WATER.

2.02 COMPONENTS
A. LINE POSTS: PER DETAIL ON APPROVED DRAWINGS.
B. CORNER AND TERMINAL POSTS: PER DETAIL ON APPROVED DRAWINGS.
C. GATE POSTS: PER DETAIL ON APPROVED DRAWINGS.
D. TOP AND BRACE RAIL: PER DETAIL ON APPROVED DRAWINGS. SWEDGED-END OR FABRICATED FOR EXPANSION-TYPE COUPLING.
E. GATE FRAME: PER DETAIL ON APPROVED DRAWINGS FOR WELDED FABRICATION.
F. FABRIC: 2 INCH (51 MM) DIAMOND MESH INTERWOVEN WIRE, 7 GUAGE THICK, TOP SELVAGE KNUCKLE END CLOSED, BOTTOM SELVAGE KNUCKLE END CLOSED.
G. TENSION WIRE: 7 GUAGE THICK STEEL, SINGLE STRAND, METALLIC-COATED. MATCH COATING AND COLOR ON CHAIN LINK FENCE FABRIC.
H. TIE WIRE: ALUMINUM ALLOY STEEL WIRE.

2.03 MANUAL GATES AND RELATED HARDWARE
A. COMPLY WITH ASTM F900 FOR SINGLE GATES, MADE FROM GALVANIZED STEEL PIPE AND TUBING COMPLYING WITH ASTM F1043, COMPLETE WITH HARDWARE.
1. HARDWARE FOR SINGLE SWINGING GATES: 180 DEGREE HINGES, 2 FOR GATES UP TO 60 INCHES (1,525 MM) HIGH, 3 FOR TALLER GATES; FORK LATCH WITH GRAVITY DROP AND PADLOCK HASP.
2. FRAMES AND BRACING: FOR GATE FABRIC HEIGHT 6 FEET OR LESS WITH WELDED CORNERS.
3. GATE POSTS: FABRICATE MEMBERS FROM ROUND GALVANIZED STEEL PIPE FOR THE FOLLOWING GATE FABRIC HEIGHTS BY LEAF WIDTHS: 6 FEET OR LESS BY 4 FEET OR LESS.
B. HINGES: FINISHED TO MATCH FENCE COMPONENTS.
1. BRACKETS: ROUND.
2. MOUNTING: CENTER.
3. CLOSING: MANUAL.
C. LATCHES: FINISHED TO MATCH FENCE COMPONENTS.
1. BRACKETS: ROUND.

2.04 ACCESSORIES
A. CAPS: CAST STEEL GALVANIZED; SIZED TO POST DIAMETER, SET SCREW RETAINER.

2.05 FINISHES
A. COMPONENTS (OTHER THAN FABRIC): GALVANIZED IN ACCORDANCE WITH ASTM A123/A123M, AT 1.7 OUNCES PER SQUARE FOOT (530 G/SQ M).
B. HARDWARE: HOT-DIP GALVANIZED TO WEIGHT REQUIRED BY ASTM A153/A153M.
C. ACCESSORIES: SAME FINISH AS FRAMING.

PART 3 EXECUTION

3.01 EXAMINATION
A. VERIFICATION OF CONDITIONS: VERIFY THAT AREAS ARE CLEAR OF OBSTRUCTIONS OR DEBRIS.

3.02 PREPARATION
A. REMOVAL: OBSTRUCTIONS OR DEBRIS.

3.03 INSTALLATION
A. GENERAL INSTALLATION: INSTALL FRAMEWORK, FABRIC, ACCESSORIES AND GATES IN ACCORDANCE WITH ASTM F567. DO NOT BEGIN INSTALLATION BEFORE FINAL GRADING IS COMPLETED, UNLESS OTHERWISE PERMITTED BY ARCHITECT.
B. CORNER, GATE AND TERMINAL POST FOOTING DEPTH BELOW FINISH GRADE: ASTM F567.
C. POST EXCAVATION: DRILL OR HAND-EXCAVATE HOLES FOR POSTS TO DIAMETERS AND SPACINGS INDICATED, IN FIRM, UNDISTURBED OR COMPACTED SOIL.
D. POST SETTING: HAND-EXCAVATE HOLES FOR POST FOUNDATIONS IN FIRM, UNDISTURBED OR COMPACTED SOIL. SET TERMINAL AND GATE POSTS PLUMB, IN CONCRETE FOOTINGS WITH TOP OF FOOTING 2 INCHES ABOVE FINISH GRADE. SLOPE TOP OF CONCRETE FOR WATER RUNOFF. PROTECT PORTION OF POSTS ABOVE GROUND FROM CONCRETE SPLATTER. PLACE CONCRETE AROUND POSTS AND VIBRATE OR TAMP FOR CONSOLIDATION. USING MECHANICAL DEVICES TO SET POSTS PER ASTM F567 IS NOT PREMITTED. VERIFY THAT POSTS ARE SET PLUMB, ALIGNED, AND AT CORRECT HEIGHT AND SPACING, AND HOLD IN POSITION DURING PLACEMENT AND FINISHING OPERATIONS UNTIL CONCRETE IS SUFFICIENTLY CURED.
E. TERMINAL POSTS: LOCATE TERMINAL END, CORNER, AND GATE POSTS PER ASTM F567 AND TERMINAL PULL POSTS AT CHANGES IN HORIZONTAL OR VERTICAL ALIGNMENT.
F. LINE POSTS: SPACE LINE POSTS UNIFORMLY AT 8 FEET O.C.
G. INTERMEDIATE RAILS: INSTALL IN ONE PIECE AT POST-HEIGHT CENTER SPAN, SPANNING BETWEEN POSTS, USING FITTINGS, SPECIAL OFFSET FITTINGS, AND ACCESSORIES.
H. CHAIN-LINK FABRIC: PLACE FABRIC ON OUTSIDE OF POSTS AND RAILS.
1. POSITION BOTTOM OF FABRIC 2 INCHES (50 MM) ABOVE CONCRETE.
2. FASTEN FABRIC TO TOP RAIL, LINE POSTS, BRACES, AND BOTTOM TENSION WIRE WITH TIE WIRE AT MAXIMUM 15 INCHES (380 MM) ON CENTERS.
3. DO NOT STRETCH FABRIC UNTIL CONCRETE FOUNDATION HAS CURED 28 DAYS.
4. INSTALL BOTTOM TENSION WIRE STRETCHED TAUT BETWEEN TERMINAL POSTS.
I. PROVIDE A MINIMUM OF SIX (6) TIES FOR EACH TEN FEET (10') OF RAIL AND ONE (1) TIE TO EACH FOOT OF POST HEIGHT. TIES TO TENSION WIRE SHALL BE MADE WITH HEAVY GALVANIZED HOG RINGS AT SIX (6) PER TEN FEET (10') OF TENSION WIRE.
J. TENSION BANDS: PROVIDE ONE (1) FASTENER FOR EACH ONE FOOT (1') OF FABRIC HEIGHT (MINIMUM OF 8 BANDS FOR 10 FT., 3 BANDS FOR 42").
K. SET TERMINAL AND GATE POSTS PLUMB, IN CONCRETE FOOTINGS WITH TOP OF FOOTING 2 INCHES ABOVE FINISH GRADE. SLOPE TOP OF CONCRETE FOR WATER RUNOFF.
L. LINE POST FOOTING DEPTH BELOW FINISH GRADE: ASTM F567.
M. CORNER, GATE AND TERMINAL POST FOOTING DEPTH BELOW FINISH GRADE: ASTM F567.
N. BRACE EACH GATE AND CORNER POST TO ADJACENT LINE POST WITH HORIZONTAL CENTER BRACE RAIL. INSTALL BRACE RAIL ONE BAY FROM END AND GATE POSTS.
O. DO NOT STRETCH FABRIC UNTIL CONCRETE FOUNDATION HAS CURED 28 DAYS.
P. POSITION BOTTOM OF FABRIC 2 INCHES (50 MM) ABOVE CONCRETE MOWSTRIP.
Q. ATTACH FABRIC TO END, CORNER, AND GATE POSTS WITH TENSION BARS AND TENSION BAR CLIPS.
R. INSTALL BOTTOM TENSION WIRE STRETCHED TAUT BETWEEN TERMINAL POSTS.
S. DO NOT ATTACH THE HINGED SIDE OF GATE TO BUILDING WALL; PROVIDE GATE POSTS.

3.04 TOLERANCES
A. MAXIMUM VARIATION FROM PLUMB: 1/4 INCH (6 MM).
B. MAXIMUM OFFSET FROM TRUE POSITION: 1 INCH (25 MM).

3.05 FIELD QUALITY CONTROL
A. LAYOUT: VERIFY THAT FENCE INSTALLATION MARKINGS ARE ACCURATE TO DESIGN, PAYING ATTENTION TO GATE LOCATIONS, UNDERGROUND UTILITIES, AND PROPERTY LINES.
B. FENCE HEIGHT: RANDOMLY MEASURE FENCE HEIGHT AT THREE LOCATIONS OR AT AREAS THAT APPEAR OUT OF COMPLIANCE WITH DESIGN.
C. GATES: INSPECT FOR LEVEL, PLUMB, AND ALIGNMENT.

3.06 CLEANING
A. LEAVE IMMEDIATE WORK AREA NEAT AT END OF EACH WORK DAY.
B. CLEAN JOBSITE OF EXCESS MATERIALS; SCATTER EXCESS MATERIAL FROM POST HOLE EXCAVATIONS UNIFORMLY AWAY FROM POSTS. REMOVE EXCESS MATERIAL IF REQUIRED.
C. CLEAN FENCE WITH MILD HOUSEHOLD DETERGENT AND CLEAN WATER RINSE WELL.
D. REMOVE MORTAR FROM EXPOSED POSTS AND OTHER FENCING MATERIAL USING A 10 PERCENT SOLUTION OF MURIATIC ACID FOLLOWED IMMEDIATELY BY SEVERAL RINSES WITH CLEAN WATER.
E. TOUCH UP SCRATCHED SURFACES USING MATERIALS RECOMMENDED BY MANUFACTURER. MATCH TOUCHED-UP PAINT COLOR TO FACTORY-APPLIED FINISH.

3.07 CLOSEOUT ACTIVITIES
A. DEMONSTRATE PROPER OPERATION OF EQUIPMENT TO OWNER'S DESIGNATED REPRESENTATIVE.

END OF SECTION

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255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 E 1000 N, LOGAN, UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: J. CLEMENTS
CHECKED BY: B. WRIGHT
ISSUED: 02.05.2024

STATE OF UTAH
LICENSED LANDSCAPE ARCHITECT
BLAKE C. WRIGHT
02.05.2024
105101-5301

CONSTRUCTION DOCUMENTS

SITE SPECIFICATIONS
C-002

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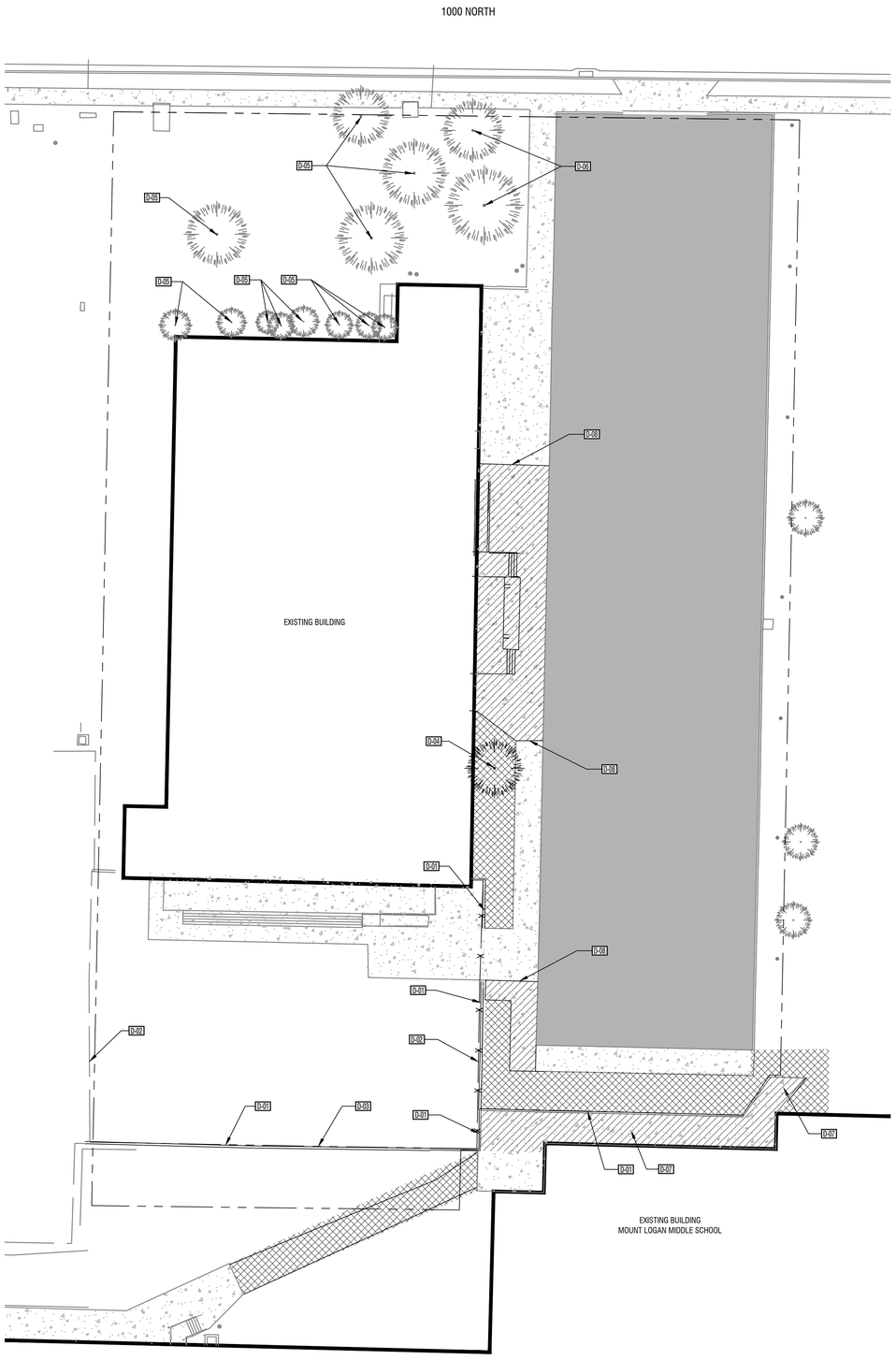


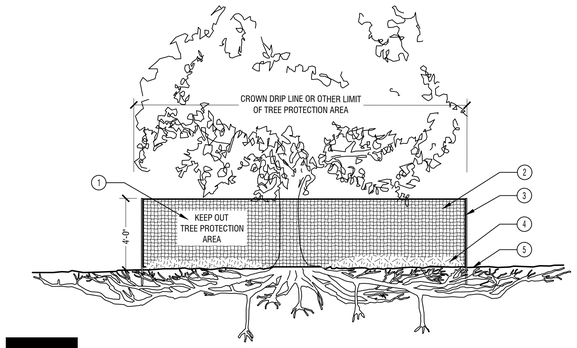
DEMOLITION NOTES

1. REMOVE OBSTRUCTIONS, TREES, SHRUBS, GRASS, AND OTHER VEGETATION TO PERMIT INSTALLATION OF NEW CONSTRUCTION.
2. CUT MINOR ROOTS AND BRANCHES OF TREES INDICATED TO REMAIN IN A CLEAN AND CAREFUL MANNER WHERE SUCH ROOTS AND BRANCHES OBSTRUCT INSTALLATION OF NEW CONSTRUCTION.
3. GRIND STUMPS AND REMOVE ROOTS, OBSTRUCTIONS, AND DEBRIS EXTENDING TO A DEPTH OF 18 INCHES BELOW EXPOSED SUBGRADE.
4. FILL DEPRESSIONS CAUSED BY CLEARING AND GRUBBING OPERATIONS WITH SATISFACTORY SOIL MATERIALS IN HORIZONTAL LAYERS NOT EXCEEDING 8-INCH LOOSE DEPTH, AND COMPACT EACH LAYER TO A DENSITY EQUAL TO ADJACENT GROUND.
5. STRIP SUITABLE TOPSOIL TO WHATEVER DEPTHS ARE ENCOUNTERED IN A MANNER TO PREVENT INTERMINGLING WITH UNDERLYING SUBSOIL OR OTHER WASTE MATERIALS.
6. STOCKPILE SURPLUS TOPSOIL MATERIALS AWAY FROM EDGE OF EXCAVATIONS WITHOUT INTERMIXING WITH SUBSOIL. GRADE AND SHAPE STOCKPILES TO DRAIN SURFACE WATER. COVER TO PREVENT WINDBLOWN DUST. COORDINATE LOCATION WITH OWNER'S REPRESENTATIVE OR AT LOCATION SHOWN ON PLANS.
7. REMOVE EXISTING ABOVE- AND BELOW-GRADE STRUCTURES AS INDICATED AND AS NECESSARY TO FACILITATE NEW CONSTRUCTION.
8. AT ALL LOCATIONS WHERE EXISTING PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING PAVEMENT SHALL BE SAW CUT TO A CLEAN SMOOTH EDGE.
9. PROTECT EXISTING BUILDINGS, WALKS, DRIVES, CURBS, EXISTING VEGETATION, ETC. THAT ARE TO REMAIN. REPAIR ANY DAMAGES THAT MAY OCCUR TO EXISTING ITEMS TO BE PROTECTED.
10. ALL ITEMS TO BE REMOVED FROM THE PROJECT AND EXCESS MATERIALS SHALL BE LEGALLY DISPOSED OF OFFSITE BY THE CONTRACTOR
11. CONTINUOUSLY CLEAN-UP AND REMOVE WASTE MATERIALS FROM SITE. DO NOT ALLOW MATERIALS TO ACCUMULATE ON SITE.
12. DO NOT BURN OR BURY MATERIALS ON SITE. LEAVE SITE IN CLEAN CONDITION.

LEGEND

SYMBOL	DESCRIPTION	QTY	DETAIL
D-01	DEMOLISH AND REMOVE RETAINING WALL - clear and grub		
D-02	FENCE TO REMAIN - preserve and protect		
D-03	DEMOLISH AND REMOVE FENCE - clear and grub		
D-04	DEMOLISH AND REMOVE TREE - clear and grub		
D-05	PRESERVE & PROTECT EXISTING TREE - do not disturb root system within drip line of tree		1/C-101
D-06	PRESERVE TREE IF POSSIBLE WITH INSTALLATION OF NEW FIRE LINE - if excavation is necessary within dripline of tree, remove and grind stumb to depth of 18" and fill with specified topsoil and install grass sod		
D-07	DEMOLISH AND REMOVE RAMP - clear and grub		
D-08	DEMOLISH CONCRETE TO THE NEAREST EXPANSION JOINT		

SYMBOL	DESCRIPTION	QTY	DETAIL
	DEMOLISH AND REMOVE CONCRETE - clear and grub	2,924 sf	
	DEMOLISH AND REMOVE VEGETATION - clear and grub	2,992 sf	



1. 8.5"X11" LAMINATED SIGN IN PLASTIC SPACED EVERY 50' ALONG FENCE
2. TREE PROTECTION FENCE. HIGH DENSITY POLYETHYLENE FENCING WITH 3.5"X1.5" OPENINGS; COLOR = ORANGE
3. 2"X6" STEEL POSTS OR APPROVED EQUAL AT 8'-0" O.C.
4. 5" THICK LAYER OF MULCH TO PROTECT TREE ROOTS IF VEHICLES MUST CROSS ROOT ZONE
5. MAINTAIN EXISTING GRADE WITH TREE PROTECTION FENCE UNLESS OTHERWISE INDICATED ON PLANS

NOTES:
1. SEE SPECIFICATION FOR ADDITIONAL TREE PROTECTION REQUIREMENTS.
2. IF THERE IS NO EXISTING IRRIGATION OR IRRIGATION IS CUT OFF, SEE SPECIFICATION FOR WATERING REQUIREMENTS.
3. NO PRUNING SHALL BE PERFORMED EXCEPT BY AN APPROVED ARBORIST.
4. NO EQUIPMENT SHALL OPERATE INSIDE THE PROTECTIVE FENCING INCLUDING DURING FENCE INSTALLATION AND REMOVAL.
5. GRUBBING AND CLEARING WITHIN TREE PROTECTION AREAS TO BE COMPLETED BY HAND.

1
1/4" = 1'-0"

TREE PROTECTION

P-1-LCSD-MPR-59

0 20 40 60 feet
SCALE: 1" = 20'

NORTH

CONSTRUCTION DOCUMENTS

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LOGAN UT 84321
255 SOUTH 300 WEST
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793 NORTH 400 WEST

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STATE OF UTAH
BLAKE C. WRIGHT
LICENSED LANDSCAPE ARCHITECT
02.05.2029
10510I-5301

DEMOLITION PLAN

C-101

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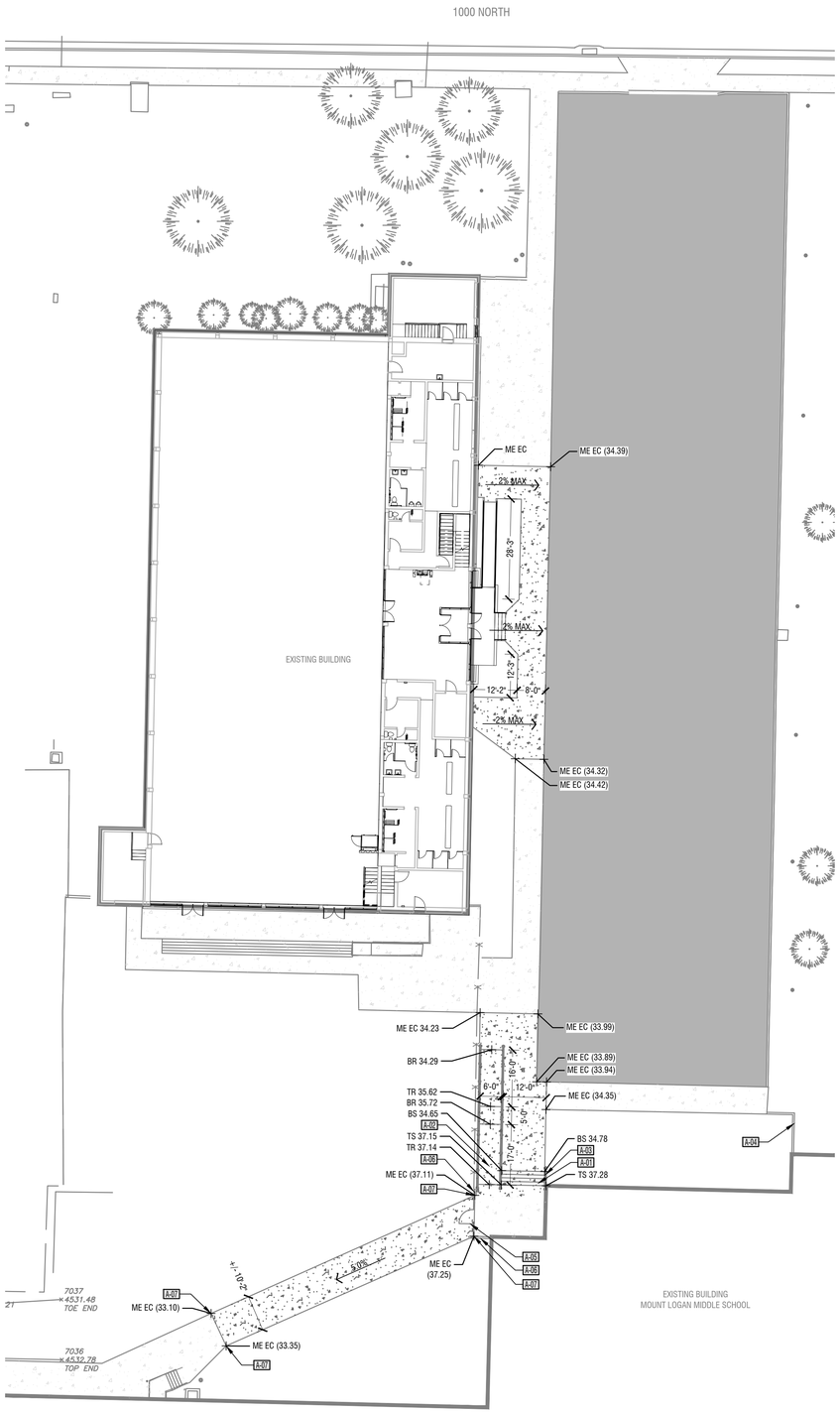

SITE NOTES

1. THE CONTRACTOR SHALL INSPECT THE SITE TO BE FULLY AWARE OF ALL PERTINENT EXISTING CONDITIONS PRIOR TO SUBMITTING BID OR PROPOSAL.
2. NO WORK IS TO BEGIN UNTIL NECESSARY PERMITS HAVE BEEN OBTAINED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AND PAY FOR ALL PERMITS.
3. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL MEET WITH THE OWNER'S REPRESENTATIVE TO DETERMINE METHOD OF MAINTAINING PUBLIC ACCESS TO THE BUILDING DURING CONSTRUCTION. CONTRACTOR SHALL MAINTAIN APPROVED ACCESS TO THE BUILDING THROUGHOUT THE DURATION OF CONSTRUCTION AND SHALL PROVIDE ALL TEMPORARY RAMPS, BARRIERS, ETC. AS REQUIRED TO MAINTAIN PUBLIC SAFETY.
4. PRIOR TO THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES THAT MAY BE AFFECTED BY HIS WORK. THE CONTRACTOR SHALL PROTECT THOSE UTILITIES THAT ARE TO REMAIN AND BE RESPONSIBLE FOR THE REPAIR OF DAMAGES TO SUCH UTILITIES.
5. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES WHEN CONSTRUCTION WORK BEGINS NEAR ANY UTILITY LINES AND ARRANGE FOR A UTILITY REPRESENTATIVE TO BE PRESENT IF THE CONTRACTOR'S CLOSE OPERATIONS COULD CREATE A HAZARDOUS CONDITION.
6. THE CONTRACTOR SHALL PROTECT EXISTING BUILDINGS, WALKS, DRIVES, CURBS, ETC. THAT ARE TO REMAIN AND SHALL REPAIR ANY DAMAGE THAT MAY RESULT FROM THE WORK.
7. THE LANDSCAPE AND IRRIGATION CONTRACTORS SHALL COORDINATE THEIR WORK WITH ANY OTHER CONTRACTORS AND TRADES WORKING ON THIS PROJECT. PROVIDE SLEEVES AS REQUIRED FOR DRAINAGE, IRRIGATION AND ELECTRICAL LINES, ETC. PRIOR TO PAVING AND LANDSCAPE WORK.
8. THE CONTRACTOR HAS THE RESPONSIBILITY OF VERIFYING ALL GRADES, ELEVATIONS, DIMENSIONS, MEASUREMENTS, CORNERS, CURBS AND ANGLES FOR WORK TO BE PERFORMED WITHIN THIS CONTRACT. REPORT ANY DISCREPANCIES BETWEEN PLANS AND ACTUAL CONDITION TO THE OWNER'S REPRESENTATIVE IMMEDIATELY.
9. THE CONTRACTOR IS RESPONSIBLE FOR ANY UNAUTHORIZED DAMAGE INSIDE AND OUTSIDE THE LIMIT OF WORK LINE DUE TO CONSTRUCTION OPERATIONS AND SHALL RESTORE DAMAGED AREAS TO ORIGINAL CONDITION AT NO COST.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR YARD AND BUILDING CLEANUP AT THE COMPLETION OF WORK.

LEGEND

SYMBOL	DESCRIPTION	QTY	DETAIL
A-01	CONCRETE STAIRS		A3/C-501
A-02	CONCRETE ADA RAMP - 8.33% maximum slope		A1/C-501
A-03	HANDRAIL AND CHEEKWALL		A5/C-501
A-04	6" x 6" MOWSTRIP		B5/C-501
A-05	6' TALL X 4' WIDE CHAINLINK PEDESTRIAN GATE		B4/C-501
A-06	6' TALL CHAINLINK FENCE WITH 12" MOWSTRIP BENEATH		B2/C-501
A-07	TIE NEW SIDEWALK INTO CORNER OF EXISTING PAD TO REMAIN		

SYMBOL	ARCHITECTURAL SITE DESCRIPTION	QTY	DETAIL
	CONCRETE FLATWORK, STAIRS, & RAMP - for concrete adjacent to asphalt parking lot, install thickened edge slab per detail C1/C-501	2,723 sf	B1/C-501

ABBREVIATIONS

TS = TOP OF STAIR
BS = BOTTOM OF STAIR
TR = TOP OF RAMP
BR = BOTTOM OF RAMP
EC = EDGE OF CONCRETE
ME = MATCH EXISTING

GRADING NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ON-SITE VERIFICATION OF EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF ANY WORK AND IMMEDIATELY REPORT ANY DISCREPANCIES TO THE ARCHITECT.
2. PRIOR TO THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES THAT MAY BE AFFECTED BY HIS WORK. THE CONTRACTOR SHALL PROTECT THOSE UTILITIES THAT ARE TO REMAIN AND BE RESPONSIBLE FOR THE REPAIR OF DAMAGES TO SUCH UTILITIES.
3. THE CONTRACTOR SHALL NOTIFY ALL UTILITIES WHEN CONSTRUCTION WORK BEGINS NEAR ANY UTILITY LINES AND ARRANGE FOR A UTILITY REPRESENTATIVE BE PRESENT IF THE CONTRACTOR'S CLOSE OPERATIONS COULD CREATE A HAZARDOUS CONDITION.
4. CUT AND CAP UTILITY LINES TO BE ABANDONED AS REQUIRED. REMOVE ALL UTILITIES NECESSARY FOR NEW CONSTRUCTION AND COORDINATE WITH OTHER DISCIPLINES AND UTILITY PURVEYORS.
5. CONTRACTOR SHALL FIELD LOCATE ALL EXISTING IRRIGATION MAINLINE AND PRESERVE AND PROTECT THE LINES OR REROUTE THEM AS NECESSARY. COORDINATE WITH GROUNDS PERSONNEL.
6. CONTRACTOR SHALL REPAIR ALL DAMAGES CAUSED BY OPERATIONS (WHICH OCCUR ON OR OFF SITE) TO THE ARCHITECT'S AND OWNER'S SATISFACTION.
7. CONTRACTOR SHALL PATCH OR REPLACE EXISTING ASPHALT, CONCRETE, LANDSCAPING, ETC. AS REQUIRED WHERE NEW CONSTRUCTION MEETS EXISTING.
8. PROVIDE SMOOTH GRADE TRANSITION IN ALL LANDSCAPE AREAS AND BETWEEN NEW EARTH WORK AREA AND EXISTING.
9. ALL IRRIGATION SLEEVING SHALL BE COORDINATED WITH CONCRETE AND ASPHALT CONTRACTORS.
10. THE ELEVATION OF THE SUB-GRADE SHALL BE SET SO THE FINAL GRADE CAN BE MET BY THE ADDITION OF THE SPECIFIED DEPTH OF TOP SOIL OR PAVEMENT CROSS SECTION. PROVIDE TWELVE INCHES OF TOP SOIL IN PLANTER BEDS AND FOUR INCHES IN LAWN AREAS.
11. CURB RAMPS ARE NOT TO EXCEED 1:12 SLOPE. LANDINGS AND TOP AND BOTTOM OF RAMPS ARE TO BE A MAXIMUM OF TWO PERCENT IN ANY DIRECTION FOR AN AREA OF FIVE-FEET BY FIVE-FEET.
12. RAMPED WALK WAYS BETWEEN 1:12 AND 1:20 SHALL HAVE HANDRAILS AND AREAS ADJACENT TO TOP AND BOTTOM OF RAMP SLOPED AT TWO PERCENT OR LESS IN ANY DIRECTION FOR AN AREA OF FIVE-FEET BY FIVE-FEET.
13. SLOPE AWAY FROM BUILDING AT A MINIMUM OF TWO PERCENT.
14. WALKS SHALL NOT EXCEED FIVE PERCENT SLOPE IN THE DIRECTION OF TRAVEL. THE CROSS SLOPE ON WALKS SHALL NOT EXCEED TWO PERCENT.

0 20 40 60 feet
SCALE: 1" = 20'

NORTH

CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 E 1000 N, LOGAN, UT 84321

LOGAN CITY SCHOOL DISTRICT

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STATE OF UTAH
BLAKE C. WRIGHT
02.05.2029
105101-5301
LICENSED LANDSCAPE ARCHITECT

SITE AND GRADING PLAN

C-201

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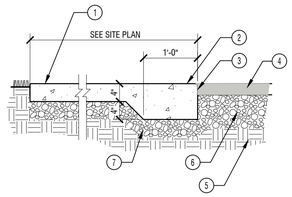
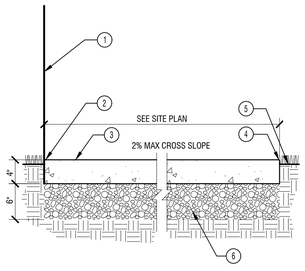


1. 4" CONCRETE WALK ON 4" MIN. COMPACTED GRANULAR FILL
2. THICKENED CONCRETE EDGE
3. PRIME
4. 3" MIN. ASPHALT SURFACE
5. PROPERLY PREPARED SUB-GRADE AND/OR ENGINEERED SOIL
6. BASE COURSE
7. 4" MIN. COMPACTED GRANULAR FILL

C1 THICKENED EDGE CONCRETE WALK

3/4" = 1'-0"

P-1-LCSD-MPR-20

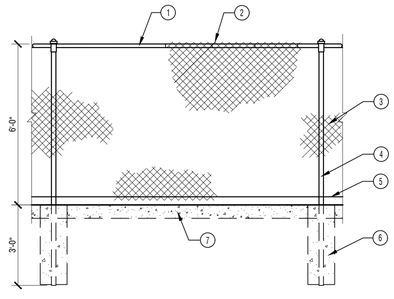


1. LINE OF BUILDING WHERE OCCURS
2. EXPANSION JOINT WHERE BUILDING OCCURS
3. 4" CONCRETE PAVEMENT, ROUGH BROOM FINISH
4. TOOL EDGES
5. FINISH GRADE 1" BELOW TOP OF WALK FOR SOD; 1-1/2" FOR SEEDED LAWN
6. 6" AGGREGATE BASE

B1 CONCRETE WALK

1" = 1'-0"

P-1-LCSD-MPR-04

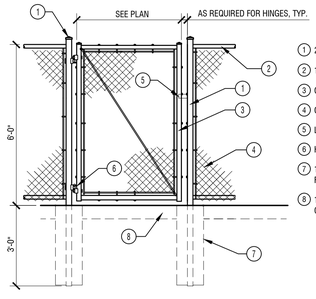


1. 1-5/8" TOP RAIL
2. KNUCKLED SELVAGE TOP & BOTTOM
3. CHAIN LINK FABRIC
4. 1-7/8" DIA. LINE POSTS. PROVIDE AND INSTALL TENSION BAR ATTACHED TO CORNER AND END POST WITH TENSION BANDS WHERE OCCURS
5. TENSION WIRE
6. 12" DIA. X 36" DEEP CONCRETE FOOTINGS ON 4" BASE COURSE
7. 12" WIDE CONCRETE MOWSTRIP

B2 CHAIN LINK FENCE - 6'

3/8" = 1'-0"

P-1-LCSD-MPR-06

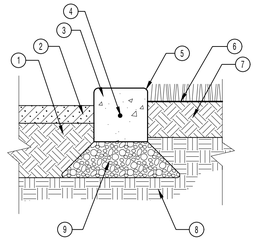


1. 2-7/8" POST
2. 1-5/8" TOP RAIL
3. GATE
4. CHAIN LINK FABRIC
5. LATCH
6. HINGE
7. 16" DIA. X 36" CONCRETE FOOTING ON 4" BASE COURSE
8. 16" WIDE MOWSTRIP WHERE OCCURS

B4 CHAIN LINK SINGLE GATE - 6'

3/8" = 1'-0"

P-1-LCSD-MPR-12



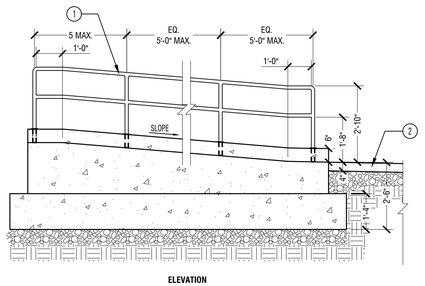
1. SPECIFIED TOPSOIL MIX
2. PLANTER BED, SEE PLANS FOR MATERIAL
3. 6" SQUARE CONCRETE MOWSTRIP
4. #3 REINFORCING BAR CONT. (OVERLAP 12" AT SPLICES)
5. 1/2" RADIUS TROWELED EDGE
6. FINISH GRADE 1" BELOW TOP OF MOWSTRIP
7. TOP SOIL
8. UNDISTURBED OR COMPACTED SUBGRADE
9. 6" COMPACTED AGGREGATE BASE

NOTE: PROVIDE CONSTRUCTION OR CONTROL JOINTS AT 5' O.C. MAX.

B5 CONCRETE MOWSTRIP - 6"

1 1/2" = 1'-0"

P-1-LCSD-MPR-49



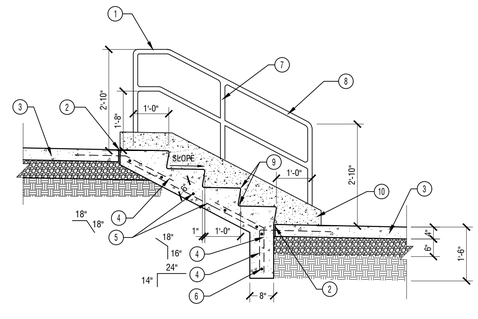
1. 1-1/2" DIAMETER STEEL PIPE HANDRAIL, STAINLESS STEEL
2. CONCRETE WALK
3. #4 CONT. REINFORCED BAR AT 12" O.C.
4. #4 CONT. REINFORCED BAR AT 16" O.C. HORIZONTAL
5. #4 CONT. REINFORCED BAR AT 16" O.C.
6. (5) #4 CONT. REINFORCED BAR TOP AND BOTTOM

NOTES:
1. HANDRAIL SHALL EXTEND A MINIMUM OF 12 INCHES HORIZONTALLY AT THE TOP AND BOTTOM OF THE RAMP

A1 BUILDING RAMP

3/8" = 1'-0"

P-1-LCSD-MPR-01



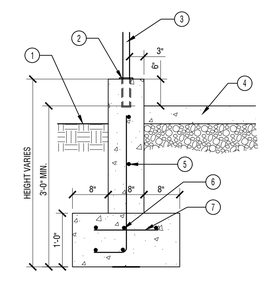
1. RAILING HORIZONTAL FOR 12"
2. EXPANSION JOINT
3. CONCRETE WALK
4. #3 REINFORCING BAR AT 16" O.C.
5. #3 REINFORCING BAR AT 12" O.C. EACH WAY
6. #4 CONTINUOUS REINFORCED BAR, TOP AND BOTTOM
7. 1 1/2" DIAMETER STEEL POST, STAINLESS STEEL
8. 1-1/2" DIAMETER STEEL RAIL, STAINLESS STEEL
9. 1/2" RADIUS (TYP)
10. CONCRETE CHEEKWALL AND HANDRAIL BOTH SIDES OF WALK, SEE A5/C-501

NOTES:
1. INTERUM POST SHALL BE MAXIMUM OF 5' O.C.

A3 STAIR WITH CHEEKWALL DETAIL

1/2" = 1'-0"

P-1-LCSD-MPR-81



1. FINISH GRADE. SEE GRADING PLANS
2. CORE DRILL CONCRETE. EPOXY GROUT STEEL POST IN PLACE. GROUT COLOR TO MATCH CONCRETE
3. 1-1/2" DIA. STEEL POST
4. CONCRETE WALK OR STAIRS
5. #4 VERTICAL REINFORCED BAR AT 16" O.C.
6. #4 CONT. REINFORCED BAR, TOP AND BOTTOM
7. #4 HORIZONTAL REINFORCED BAR AT 16" O.C.

A5 CONCRETE CHEEK WALL

3/4" = 1'-0"

P-1-LCSD-MPR-03

CONSTRUCTION DOCUMENTS

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
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LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

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LOGAN CITY SCHOOL DISTRICT

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DRAWN BY: J. CLEMENTS
CHECKED BY: B. WRIGHT
ISSUED: 02.05.2024

STATE OF UTAH
BLAKE C. WRIGHT
02.05.2024
105101-5301
LICENSED LANDSCAPE ARCHITECT

SITE DETAILS

C-501

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SECTION 32 8423
UNDERGROUND SPRINKLERS

PART 1 GENERAL

1.01 SUMMARY

A. THE WORK COVERED BY THESE SPECIFICATIONS CONSISTS OF FURNISHING ALL LABOR, MATERIAL, EQUIPMENT AND SUPPLIES IN PERFORMING ALL OPERATIONS IN CONNECTION WITH PROVIDING AN IRRIGATION SYSTEM AND ALL SITE WORK IN STRICT ACCORDANCE WITH PROVIDED SPECIFICATIONS, DETAILS, AND DRAWINGS.
B. ANY MINOR ITEMS OF LABOR AND/OR MATERIALS NOT SPECIFICALLY NOTED ON THE DRAWINGS OR SPECIFICATIONS; BUT OBVIOUSLY NECESSARY FOR THE PROPER COMPLETION OF THE WORK, ARE TO BE CONSIDERED AS INCIDENTAL TO AND ARE TO BE INCLUDED IN THE CONTRACT. CONTRACTOR SHALL NOTE SUCH ITEMS AND PRESENT THEM TO OWNER BEFORE BID OPENING.
C. CONTRACTOR SHOULD SUBMIT CONSTRUCTION SCHEDULE OF ANTICIPATED WORK TIME TO FACILITATE TIMELY VISITS FOR REVIEW OF WORK. SUCH PROPOSAL SHALL INCLUDE A PROJECTED TIME FRAME FOR INSTALLING THE SYSTEM. IT SHOULD REFLECT, IN CALENDAR DAYS, THE ANTICIPATED TIME REQUIRED FROM THE DAY OF THE AWARD TO COMPLETION OF THE SYSTEM IN A FULLY OPERATIONAL MODE. THIS SCHEDULE SHOULD REFLECT ANTICIPATED TIME FOR ORDERING AND RECEIVING ALL COMPONENTS, STARTING AND ENDING TIMES FOR INSTALLATION, SYSTEM START-UP, ETC.

1.02 SECTION INCLUDES

A. PIPE AND FITTINGS, VALVES, SPRINKLER HEADS, EMITTERS, AND ACCESSORIES.

1.03 DEFINITION

A. CIRCUIT PIPING: DOWNSTREAM FROM CONTROL VALVES TO SPRINKLERS, SPECIALTIES, AND DRAIN VALVES. PIPING IS UNDER PRESSURE DURING FLOW.
B. DRAIN PIPING: DOWNSTREAM FROM CIRCUIT-PIPING DRAIN VALVES. PIPING IS NOT UNDER PRESSURE.
C. MAINLINE PIPING: DOWNSTREAM FROM POINT OF CONNECTION TO WATER DISTRIBUTION PIPING TO AND INCLUDING CONTROL VALVES. PIPING IS UNDER WATER DISTRIBUTION SYSTEM PRESSURE.

1.04 PROJECT CONDITIONS

A. IRRIGATION WATER SHALL BE PROVIDED BY THE FOLLOWING:
1. WATER SYSTEM TO BE CONNECTED TO EXISTING MAINLINE.
2. DESIGN PRESSURE OF THE IRRIGATION DESIGN IS 65 PSI.
3. STATIC PRESSURE IN MAINLINE SHALL BE VERIFIED BY THE CONTRACTOR. IF PRESSURE IS 5 PSI HIGHER OR LOWER AS SPECFIED, THE INSTALLER SHALL NOTIFY THE PROJECT REPRESENTATIVE.

1.05 SYSTEM PERFORMANCE REQUIREMENTS

A. MINIMUM WATER COVERAGE:
1. IRRIGATION HEADS IN LAWN AREAS SHALL BE SPACED 85% OF THE RADIUS FOR ROTORS AND 90% OF THE RADIUS FOR SPRAY HEADS.
2. SHRUBS, AND PERENNIALS SHALL HAVE ADEQUATE WATER APPLIED TO THE ROOT ZONES TO ENSURE PLANT HEALTH AND DEVELOPMENT.
B. THE IRRIGATION SYSTEM SHALL PROVIDE THE MANUFACTURER'S RECOMMENDED MINIMUM OPERATION PRESSURE TO EVERY IRRIGATION HEAD.
C. MINIMUM WORKING PRESSURES: THE FOLLOWING ARE MINIMUM PRESSURE REQUIREMENTS FOR PIPING, VALVES, AND SPECIALTIES, UNLESS OTHERWISE INDICATED:
1. PRESSURE PIPING: 200 PSIG.
2. CIRCUIT PIPING: 150 PSIG.
3. DRAIN PIPING: 100 PSIG.

1.06 REFERENCE STANDARDS

A. ASTM D2241 - STANDARD SPECIFICATION FOR POLY (VINYL CHLORIDE) (PVC) PRESSURE-RATED PIPE (SDR SERIES); 2015.

1.07 SUBMITTALS

A. SEE SECTION 01 3000 - ADMINISTRATIVE REQUIREMENTS, FOR SUBMITTAL PROCEDURES.
B. PRODUCT DATA: SUBMIT TECHNICAL PRODUCT DATA AND INSTALLATION INSTRUCTIONS FOR IRRIGATION SYSTEM MATERIALS AND PRODUCTS.
C. SHOP DRAWINGS: SUBMIT SHOP DRAWINGS OR "AS BUILT" DRAWINGS FOR IRRIGATION SYSTEMS SHOWING PIPING MATERIALS, SIZES, LOCATIONS, AND ELEVATIONS. INCLUDE DETAILS OF UNDERGROUND STRUCTURES, CONNECTIONS, THRUST BLOCKS, AND ANCHORING. SHOW INTERFACE AND SPATIAL RELATIONSHIP BETWEEN PIPING AND PROXIMATE STRUCTURES.
D. OPERATION AND MAINTENANCE DATA: INCLUDE IN MAINTANENCE MANUALS SPECIFIED IN DIVISION 1. INCLUDE DATA FOR THE FOLLOWING:
1. PROVIDE TYPEWRITTEN INSTRUCTIONS FOR OPERATION AND MAINTENANCE OF SYSTEM AND CONTROLS, SEASONAL ACTIVATION AND SHUTDOWN, AND MANUFACTURER'S PARTS CATALOG.
2. SUBMIT MANUALS WITH RECORD DRAWINGS. THE MANUAL SHALL ALSO CONTAIN:
a. IDENTIFICATION READABLE FROM THE OUTSIDE OF THE COVER STATING BY WHOM THE INFORMATION WAS COMPILED.
b. NEATLY TYPE-WRITTEN INDEX NEAR THE FRONT OF THE MANUAL, FURNISHING IMMEDIATE INFORMATION AS TO THE LOCATION IN THE MANUAL OF ALL EMERGENCY DATA REGARDING THE INSTALLATION.
c. COMPLETE NOMENCLATURE OF ALL REPLACEABLE PARTS, THEIR PART NUMBERS, CURRENT COST, AND NAME AND ADDRESS OF THE NEAREST VENDOR OF REPLACEMENT PARTS.
d. COMPLETE OUTLINE OF FUTURE WATERING SCHEDULES AND WHEN THEY SHOULD BE CHANGED FROM THE INITIAL INSTALLATION SCHEDULE. THE INITIAL SCHEDULE IS CALCULATED FOR A WATERING RATE TO ESTABLISH LAWN.
e. COPY OF ALL GUARANTEES AND WARRANTIES ISSUED ON THE INSTALLATION SHOWING ALL DATES OF EXPIRATION.
E. RECORD DRAWINGS: AS INSTALLATION OCCURS, PREPARE ACCURATE RECORD DRAWINGS OF PIPING SYSTEM TO BE SUBMITTED PRIOR TO FINAL INSPECTION THAT ALSO INCLUDES:
1. DETAIL AND DIMENSION CHANGES MADE DURING CONSTRUCTION
2. SIGNIFICANT DETAILS AND DIMENSIONS NOT SHOWN IN THE APPROVED CONTRACT DOCUMENTS.
3. FIELD DIMENSIONED LOCATIONS OF VALVE BOXES, MANUAL DRAINS, CONTROL WIRE RUNS NOT IN MAINLINE DITCH, AND BOTH ENDS OF SLEEVES.
4. TAKE DIMENSIONS FROM PERMANENT CONSTRUCTED SURFACES OR EDGES LOCATED AT OR ABOVE FINISH GRADE.
5. TAKE AND RECORD DIMENSIONS AT TIME OF INSTALLATION.
F. MAINTENANCE MATERIALS: PROVIDE THE FOLLOWING FOR OWNER'S USE IN MAINTENANCE OF PROJECT.
1. EXTRA SPRINKLER HEADS: ONE OF EACH TYPE AND SIZE.
2. EXTRA VALVE BOX KEYS: ONE.
3. WRENCHES: ONE FOR EACH TYPE HEAD CORE AND FOR REMOVING AND INSTALLING EACH TYPE HEAD.
G. WARRANTY DOCUMENTS: WARRANTY DOCUMENTS SHALL BE SUBMITTED TO OWNER AT THE TIME OF FINAL INSPECTION.

1.08 QUALITY ASSURANCE

A. MANUFACTURER QUALIFICATIONS: LICENSED FIRMS REGULARLY ENGAGED IN MANUFACTURE OF IRRIGATION SYSTEM PRODUCTS OF TYPES, MATERIALS AND SIZES SPECIFIED, WHOSE PRODUCTS HAVE BEEN IN USE IN SIMILAR SERVICE.
B. WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH LATEST RULES AND REGULATIONS, AND OTHER APPLICABLE STATE OR LOCAL LAWS. NOTHING IN APPROVED CONTRACT DOCUMENTS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.
C. PRE-INSTALLATION MEETING: SCHEDULE MEETING AFTER EXCAVATION OF TRENCHES AND INSTALLATION OF SLEEVES, BUT PRIOR TO INSTALLATION OF PIPE.
D. INSTALLER QUALIFICATIONS: LICENSED CONTRACTING FIRM REGULARLY ENGAGED IN SUCCESSFUL INSTALLATION OF IRRIGATION SYSTEMS SIMILAR IN SIZE AND SCOPE OF THIS CONTRACT. OWNER RESERVES THE RIGHT TO ASK FOR AND VERIFY REFERENCES FROM CONTRACTORS PAST PORTFOLIO OF WORK BEFORE AWARD OF CONTRACT.

1.09 CODES AND STANDARDS

A. PLUMBING CODE COMPLIANCE: COMPLY WITH ANY APPLICABLE PORTIONS OF THE UTAH STATE PLUMBING CODE PERTAINING TO THE SELECTION OF MATERIALS AND THE INSTALLATION OF IRRIGATION SYSTEMS.
B. WATER PURVEYOR COMPLIANCE: COMPLY WITH REQUIREMENTS OF PURVEYOR SUPPLYING WATER TO THE PROJECT.
C. ANY PERMITS THAT ARE NEEDED FOR THE INSTALLATION OF CONSTRUCTION OF ANY WORK INCLUDED UNDER THIS CONTRACT, WHICH ARE REQUIRED BY THE AUTHORITIES OF JURISDICTION, SHALL BE OBTAINED AND PAID FOR BY THE CONTRACTOR FOLLOWING WHATEVER ORDINANCES, REGULATIONS AND CODES REQUIRING THE PERMITS. IF THE AUTHORITIES OF THE JURISDICTION REQUIRE INSPECTION AT SAID POINTS OF THE INSTALLATION, THE CONTRACTOR SHALL ARRANGE FOR, AND BE PRESENT AT, ANY SUCH INSPECTIONS.
D. ADDITIONAL WORK OR FURNISHING OF MATERIALS REQUIRED DUE TO INSPECTION BY THE AUTHORITIES OF JURISDICTION SHALL BE FURNISHED AT NO COST TO THE OWNER. IN THE EVENT THAT THE SPECIFICATIONS FOR THIS PROJECT AND EXISTING ORDINANCES, REGULATIONS OR CODES ARE IN CONFLICT, THE CONFLICT SHALL BE NOTED IN WRITING BY THE CONTRACTOR TO THE OWNER'S AUTHORIZED REPRESENTATIVE, AND ANY NECESSARY CHANGES IN WORK SHALL FOLLOW AN ESTABLISHED PROCEDURE FOR CLAIMS FOR EXTRA COMPENSATION.

1.10 CONTRACTORS USE OF PREMISES

A. CONTRACTOR IS RESPONSIBLE FOR DAMAGES AND INTERRUPTION OF ALL EXISTING UTILITIES.
B. CONTRACTOR SHALL NOT UNREASONABLY ENCUMBER SITE WITH MATERIALS AND EQUIPMENT.
C. CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR PROTECTION AND SECURITY OF MATERIALS AND EQUIPMENT STORED ON JOB SITE.
D. CONTRACTOR SHALL CONFINE OPERATIONS TO AREAS WITHIN HIS CONTRACT LIMITS.
E. ANY DAMAGES TO EXISTING STRUCTURES, SURFACES, OR UTILITIES CAUSED BY CONTRACTOR OR CONTRACTOR'S EMPLOYEES SHALL BE CONSIDERED CONTRACTOR'S RESPONSIBILITY AND WILL BE PART OF THIS CONTRACT TO BE CORRECTED TO SATISFACTION OF OWNER.
F. CONTRACTOR IS RESPONSIBLE FOR CONTACTING UTILITY LOCATING SERVICES AND KEEPING UTILITIES CLEARLY MARKED ON THE JOB SITE. SCHOOL-OWNED UTILITIES AND PIPING WILL BE MARKED BY UNIVERSITY PERSONNEL; HOWEVER, CONTRACTOR IS RESPONSIBLE TO CONTACT THE UNIVERSITY MAINTENANCE DEPARTMENT TO SCHEDULE LOCATING AND MUST GIVE ADEQUATE TIME FOR LOCATING TO BE DONE. ANY UTILITIES, WIRING, OR PIPING DAMAGED BY CONTRACTOR WITHOUT FOLLOWING THESE GUIDELINES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.
G. CONTRACTOR IS RESPONSIBLE FOR SAFETY ON JOB SITE. BARRICADING OR COVERING OPEN TRENCHES, ELIMINATING TRIP HAZARDS, AND OTHER SAFETY ISSUES ARE A PRIORITY. RENTAL OR SUPPLYING OF BARRICADES IS CONTRACTOR'S RESPONSIBILITY.

1.11 PERFORMANCE BOND/BID BOND/INSURANCE

A. SUCCESSFUL CONTRACTOR MUST MEET FEDERAL, STATE, COUNTY AND CITY CODES AND REGULATIONS. PROOF OF LIABILITY INSURANCE AND WORKMEN'S COMPENSATION MUST BE SUBMITTED WITH BID.

1.12 SUPERVISION

A. THE CONTRACTOR SHALL PROVIDE A COMPETENT SUPERINTENDENT AND ANY NECESSARY ASSISTANTS ON THE PROJECT WHEN WORK IS IN PROGRESS. THE SUPERINTENDENT SHALL NOT BE CHANGED DURING THE PROJECT WITHOUT THE CONSENT OF THE OWNER'S REPRESENTATIVE UNLESS THE SUPERINTENDENT CEASES HIS STATUS AS AN EMPLOYEE OF THE CONTRACTOR. THE SUPERINTENDENT SHALL REPRESENT THE CONTRACTOR IN THE CONTRACTOR'S ABSENCE, AND ALL DIRECTIONS GIVEN TO HIM BY THE OWNER'S REPRESENTATIVE SHALL BE BINDING AS IF THEY WERE GIVEN TO THE CONTRACTOR.
B. THE CONTRACTOR'S SUPERINTENDENT SHALL SUPERVISE THE CONTRACTOR'S EMPLOYEES ON THE JOB SITE AND BE RESPONSIBLE FOR THEIR ACTIONS AND CONDUCT ON THE JOB SITE.

1.13 GUARANTEE

A. SUBMIT ONE-YEAR WRITTEN GUARANTEE SIGNED BY UNDERGROUND SPRINKLER CONTRACTOR, AGREEING TO REPAIR OR REPLACE ALL DEFECTS IN MATERIAL, EQUIPMENT, AND WORKMANSHIP.
B. GUARANTEE SHALL ALSO COVER REPAIR OF DAMAGE TO ANY PART OF THE PREMISES RESULTING FROM LEAKS OR OTHER DEFECTS IN MATERIAL, EQUIPMENT, AND WORKMANSHIP TO THE SATISFACTION OF THE OWNER. REPAIRS IF REQUIRED, SHALL BE DONE PROMPTLY AT NO COST TO THE OWNER.

1.14 SEQUENCING AND SCHEDULING

A. MAINTAIN UNINTERRUPTED WATER SERVICE TO BUILDING DURING NORMAL WORKING HOURS. ARRANGE FOR TEMPORARY WATER SHUTOFF WITH OWNER.
B. COORDINATE LAWN IRRIGATION PIPING WITH WORK SPECIFIED IN DIVISION 32 9223 "SODDING" AND 32 9300 "PLANTS".
C. COORDINATE LAWN IRRIGATION PIPING WITH UTILITY WORK.

PART 2 PRODUCTS

2.01 IRRIGATION SYSTEM

A. MANUFACTURERS:
1. RAIN BIRD SALES, INC; N/A: WWW.RAINBIRD.COM/#SLE.

2.02 FILL MATERIAL

A. BACKFILL MATERIAL
1. BACKFILL MATERIAL FOR IRRIGATION PIPE SHALL CONSIST OF SAND, NATIVE MATERIAL OR TOPSOIL WITH NO ROCKS LARGER THAN 1/4 INCH IN ANY DIMENSION FOR PIPE BEDDING HAUNCHES AND INITIAL BACKFILL ABOVE THE PIPE. ABOVE THE INITIAL BACKFILL, THE TRENCH SHALL BE FILLED WITH SOIL WITH NO DEBRIS OR ROCKS GREATER THAN 1-1/2 INCH IN ANY DIRECTION. LANDSCAPE ARCHITECT SHALL APPROVE ON-STIE MATERIAL FOR BACKFILL OPERATION.
2. BACKFILL FOR IRRIGATION SLEEVES UNDER PAVEMENT SHALL CONSIST OF GRANULAR MATERIAL WITH NO ROCK SIZE LARGER THAN 1/4 INCH IN ANY DIMENSION UP TO THE BASE FOR THE PAVING ABOVE THE PIPE.
3. IMPORTED BACKFILL MATERIAL SHALL BE CLEAN SOIL, FREE FROM ORGANIC MATERIAL, TRASH, DEBRIS, RUBBISH, BROKEN CEMENT, ASPHALT MATERIAL, OR OTHER OBJECTIONABLE SUBSTANCES AND APPROVED BY THE LANDSCAPE ARCHITECT.
B. DRAINAGE FILL MATERIAL
1. WASHED, EVENLY GRADED MIXTURE OF CRUSHED STONE, OR CRUSHED OR UNCRUSHED GRAVEL, WITH 100% PASSING A 1-1/2 INCH SIEVE AND NOT MORE THAN 5% PASSING A NO. 4 SIEVE.

2.03 PIPE MATERIALS

A. PVC PIPE: ASTM D2241; 200 PSI (1.38 MPA) PRESSURE RATED UPSTREAM FROM CONTROLS, 160 PSI (1.10 MPA) DOWNSTREAM; SOLVENT WELDED SOCKETS.
1. ALL LATERAL PIPING SMALLER THAN 3", SHALL BE SCHEDULE 40 PRESSURE RATED PVC GLUE JOINT PIPE WITH RATINGS PRINTED ON OUTSIDE OF PIPE.
2. ALL MAIN LINE PIPE 3" AND LARGER SHALL BE CLASS 200 PRESSURE RATED PVC GASKET JOINT PIPE WITH RATINGS PRINTED ON OUTSIDE OF PIPE, UNLESS OTHERWISE NOTED ON DRAWINGS OR DETAILS.
3. ALL LATERAL PIPE AND FITTINGS SHALL BE SCHEDULE 40 PRESSURE RATED PVC UNLESS SPECIFICALLY NOTED ON DRAWINGS.
4. ALL MAIN PRESSURE SIDE VALVE MANIFOLD PIPING SHALL BE DOMESTIC GALVANIZED IRON PIPE AND FITTINGS. ALL GALVANIZED IRON PIPE AND FITTING CONFIGURATIONS SHALL MATCH DETAIL DRAWINGS EXACTLY.
B. FITTINGS:
1. MAINLINES SHALL HAVE PVC SCH. 40 FITTINGS FOR PIPE SIZES 3/4 INCH THROUGH 1-1/2 INCH, PVC SCH. 80 FOR PIPE SIZES 2 INCH THROUGH 3 INCH AND PUSH ON DUCTILE OR MECHANICAL CAST IRON FITTINGS ON PVC MAINLINE 4 INCH AND LARGER.
2. MAIN LINE PRESSURE FITTINGS SHALL BE CAST IRON MANUFACTURED BY HARCO OR APPROVED EQUAL.
3. ALL POLYETHELENE PIPE FITTINGS SHALL BE COMPRESSION FITTINGS OR INSERT BARBED FITTINGS SECURED WITH STAINLESS STEEL CLAMPS.
4. REMOTE CONTROL VALVE CONNECTION TO MAINLINE SHALL BE PVC SST TEE, EPOXY COATED DOUBLE STRAP SADDLE, M.J. TEE, OR HARCO DUCTILE IRONS SERVICE TEES.
5. JOINT RESTRAINT SHALL BE LEEMCO OR APPROVED EQUAL.
C. SLEEVE MATERIAL:
1. SLEEVE DIAMETER SHALL BE TWO TIMES LARGER THAN PIPE THAT IS TO BE INSTALLED IN SLEEVE. SLEEVES 4" AND SMALLER DIAMETER SHALL BE PVC SCHEDULE 40. SLEEVES 4 INCH AND LARGER SHALL BE CLASS 200 PVC OR PVC SEWER PIPE.
2. PIPING AND CONTROL WIRES UNDER WALKS, ROADS, OR OTHER HARD SURFACES SHALL BE INSTALLED IN CLASS 200 PVC SLEEVES OF ADEQUATE SIZE OR AS NOTED ON DRAWINGS.
3. SLEEVES FOR ELECTRICAL CONDUIT SHALL BE ADEQUATE TO ACCOMMODATE MINIMUM CONDUIT SIZES AS REQUIRED BY UNIFORM ELECTRICAL CODE.
4. WIRE SLEEVES SHALL BE PVC PIPE OR ELECTRICAL TUBING. MAZIMUM NUMBER OF 14-GAUGE WIRE IN SLEEVE SHALL BE AS FOLLOWS:
a. 1-10 WIRES IN A 1 INCH SLEEVE
b. 11-18 WIRES IN A 1-1/4 INCH SLEEVE
c. 19-25 WIRES IN A 1-1/2" SLEEVE
d. 26-40 WIRES IN A 2" SLEEVE
e. 41-56 WIRES IN A 2-1/2" SLEEVE
f. 57-88 WIRES IN A 3" SLEEVE
D. PIPE CONNECTION MATERIAL
1. P-70 PRIMER
2. 711 SOLVENT/GLUE
3. TEFLON TAPE

2.04 OUTLETS

A. MANUFACTURERS:
1. RAIN BIRD.
B. ALL SPRINKLER HEADS SHALL BE THE BRAND, MODEL, SIZE, AND TYPE SHOWN ON DRAWINGS.
C. ALL SPRINKLER HEADS SHALL BE INSTALLED ON A "SWING JOINT" ASSEMBLY. LAWN SPRAY HEADS AND SMALL ROTORS WITH AN INLET SIZE 3/4'" AND SMALLER SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS WITH "FUNNY PIPE" AND "SWING ELLS" AS MANUFACTURED BY HUNTER OR APPROVED EQUAL. ALL LARGE STREAM ROTOR AND IMPACT HEADS SHALL BE INSTALLED WITH THREE 1" SCHEDULE 40 MARLEX STREET ELLS AND ONE SCHEDULE 80 1"X12" NIPPLE. PREFABRICATED SWING JOINT ASSEMBLIES BY SPEARS MANUFACTURING OR OTHER APPROVED EQUAL CAN BE SUBSTITUTED IF DESIRED. ALL "SWING JOINT" CONFIGURATIONS SHALL MATCH DETAIL DRAWINGS EXACTLY.
D. ROTARY TYPE SPRINKLER HEAD: POP-UP TYPE WITH SCREENS; FULLY ADJUSTABLE FOR FLOW AND PRESSURE; SIZE AS INDICATED; WITH LETTER OR SYMBOL DESIGNATING DEGREE OF ARC AND ARROW INDICATING CENTER OF SPRAY PATTERN.
1. RAIN BIRD ROTORS: 3500, 5000, 6504, AND 8005.
E. SPRAY TYPE SPRINKLER HEAD: POP-UP HEAD WITH FULL CIRCLE PATTERN OR HEAD PER PLAN.
F. DRIP EMITTER: ADJUSTABLE OUTLET, NON-CLOGGING, WITH TWO TRICKLE TUBES.
1. RAIN BIRD XERIBUG XB-PC.
G. QUICK COUPLER & HOSE BIBS PER APPROVED DRAWINGS.

2.05 VALVES

A. MANUFACTURERS:
1. RAIN BIRD.
2. CARSON
3. SUBSTITUTIONS: SEE SECTION 01 6000 - PRODUCT REQUIREMENTS.
B. ALL CONTROL/MASTER VALVE/QUICK COUPLER VALVES
C. REMOTE CONTROL VALVES:
1. ALL CONTROL VALVES USED SHALL BE SCRUBBER VALVES.
2. RAIN BIRD PEB.
D. DRIP IRRIGATION VALVES:
1. RAIN BIRD LFV-100.
E. VALVE BOX AND COVER: ALL BOXES TO HAVE LOCKING LIDS.
1. CONTROL VALVE BOXES SHALL BE APPROPRIATE SIZE, MADE OF HDPE PLASTIC, GREEN OR TAN IN COLOR DEPENDING ON SURROUNDING SURFACE MATERIAL, WITH BOLT DOWN LID. VALVE BOXES SHALL BE MADE BY CARSON INDUSTRIES OR APPROVED EQUAL. NO MORE THAN ONE VALVE SHALL BE LOCATED IN EACH PLASTIC BOX.
2. CIRCUIT OR ISOLATION VALVE: CARSON 1220 JUMBO BOX OR APPROVED EQUAL.
3. VALVE BOX SUPPORTS: STANDARD SIZE FIRED CLAY PAVING BRICKS WITHOUT HOLES.
F. ISOLATION VALVES:
1. VALVE BANK ISOLATION VALVE SHALL BE A DOMESTIC BRASS BALL VALVE WITH AT LEAST A 200-PSI RATING. VALVE SHALL BE SAME SIZE AS THE LINE IT IS INSTALLED ON AND BE LOCATED AS SHOWN ON DRAWINGS OR DETAILS. VALVE SHALL BE AN APOLLO MODEL 70 SERIES BALL VALVE OR AN APPROVED EQUAL.
2. ALL MAINLINE ISOLATION OR ZONE VALVES SHALL BE DOMESTIC RESILIENT WEDGE SQUARE NUT OPERATED GATE VALVES. VALVES SHALL BE SAME SIZE AS LINE THEY ARE INSTALLED ON AND BE LOCATED AS SHOWN ON DRAWINGS OR DETAILS. VALVE SHALL BE A MUELLER CO. 2500 SERIES OR AN APPROVED EQUAL.
3. ALL ISOLATION VALVES WILL BE INSTALLED IN AN APPROPRIATE VALVE BOX AS SPECIFIED IN SECTION
4. APOLLO INTERNATIONAL, FULL PORT BRASS BALL VALVE OR APPROVED EQUAL AS SHOWN ON DRAWINGS.
5. 2" OR LESS WITH CROSS HANDLES - MATCO-NORCA 513T BRONZE GATE VALVE.
6. 2.5" AND LARGER WITH OPERATIONAL NUT - NATCO-NORCA 200WDN RESILIENT WEDGE, NON-RISING STEM, FULL PORT FLOW GATE VALVE OR APPROVED EQUAL.
G. DRAIN VALVES:
1. NIBCO BRASS BALL GAS COCK WITH TEFLON SEAT OR APPROVED EQUAL. BRASS BALL VALVE SHALL HAVE "T" HANDLE ON MAIN LINES AND SHALL BE IN VALVE BOXES ON LATERAL LINES.

2.06 CONTROLS

A. CONTROLLER: CONNECT INTO EXISTING CONTROLLER.
B. WIRE CONDUCTORS:
1. ELECTRICAL WIRE:
a. ALL WIRING SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE.
2. TRADITIONAL WIRING:
a. CONTROL WIRE SHALL BE UL LISTED DIRECT BURIAL CABLE NOT SMALLER THAN 14 GAUGE. IN SOME CASES 18-GAUGE MULTI-STRAND WIRE IS USED IN SPECIAL SITUATIONS AS SHOWN ON DRAWINGS AND APPROVED BY OWNER.
b. COLORS OF WIRE SHALL BE AS FOLLOWS:

1) CONTROL WIRE FOR TURF AREAS:	RED
2) CONTROL WIRE FOR SHRUB AREAS:	YELLOW
3) CONTROL WIRE TO MASTER VALVE:	BLUE
4) CONTROL WIRE TO FILTER BLOWOUT VALVE:	BROWN
5) COMMON WIRE:	WHITE
6) EXTRA WIRES	ORANGE

3. SINGLE WIRE:
a. SHALL BE UF-UL LISTED, COLOR CODED COPPER CONDUCTOR DIRECT BURIAL SIZE 14. DO NOT USE GREEN COLOR-CODED WIRE.
b. USE DBY-6 OR DBR-6 BY 3M OR EQUAL AS APPROVED BY LANDSACPE ARCHITECT BEFORE INSTALLATION.
4. EXPANSION CURLS: SHALL BE PROVIDED WITHIN THREE (3) FEET OF EACH WIRE CONNECTION TO SOLENOID AND AT LEAST EVERY THREE HUNDRED (300) FEET IN LENGTH. (EXPANSION CURLS ARE FORMED BY WRAPPING 36" OF WIRE AROUND A ROD OR PIPE 1" OR MORE IN DIAMETER, THEN WITHDRAWING THE ROD FOR SINGLE STRAND WIRE AND LOOSELY COILED FOR TWO WIRE CABLE).

2.07 OTHER COMPONENTS

A. MIXES: CONCRETE FOR THRUST BLOCKS ON IRRIGATION PIPE 3" OR LARGER.
1. ONE CU. FT. CEMENT, 2 CU. FT. SAND, 4 CU. FT. GRAVEL, AND 5 GALLONS MINIMUM TO 6 GALLONS MAXIMUM WATER.
2. MIX THOROUGHLY BEFORE PLACING.
B. SUBMIT OTHER COMPONENTS RECOMMENDED BY MANUFACTURER FOR ARCHITECT'S REVIEW AND ACCEPTANCE PRIOR TO INSTALLATION.
C. PROVIDE COMPONENTS NECESSARY TO COMPLETE AND MAKE SYSTEM OPERATIONAL.
D. FURNISH EXTRA MATERIALS DESCRIBED BELOW THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR STORAGE AND IDENTIFIED WITH LABELS DESCRIBING CONTENTS. DELIVER EXTRA MATERIALS TO OWNER.
1. TWO VALVE BOX COVER KEYS.
2. TWO QUICK COUPLER KEYS WITH BRASS HOSE SWIVEL.
3. TWO MANUAL DRAIN VALVE KEYS.
4. TWO SETS OF SPRINKLER WRENCHES FOR ADJUSTING, CLEANING OR DISASSEMBLY OF EACH TYPE OF SPRINKLER.
5. TWO EACH OF ANY OTHER TOOLS REQUIRED FOR ANY OTHER EQUIPMENT.

PART 3 EXECUTION

3.01 OWNERS SALVAGE RIGHTS

A. ANY ITEMS REMOVED AND NOT REUSED IN CONTRACT WILL REMAIN OWNER'S PROPERTY AND WILL BE RETURNED TO OWNER AT HIS DISCRETION.

3.02 EXAMINATION

A. VERIFY LOCATION OF EXISTING UTILITIES.
B. VERIFY THAT REQUIRED UTILITIES ARE AVAILABLE, IN PROPER LOCATION, AND READY FOR USE.
C. PRIOR TO INSTALLATION OF IRRIGATION SYSTEM, THE CONTRACTOR MUST VERIFY THE SUPPLY PRESSURE AT THE WORK SITE. IF THERE IS A FAILURE TO OBTAIN THE NEEDED PRESSURE OR IF AN EXCESS PRESSURE SITUATION EXISTS FOR NORMAL OPERATION, THE CONTRACTOR MUST CONTACT THE OWNER FOR ANY ADJUSTMENTS TO THE SUPPLY OR IRRIGATION SYSTEM DESIGN. FAILURE TO REPORT ANY DISCREPANCIES IN PRESSURE DUE TO ANY REASON, AND ANY INSTALLATION DONE PRIOR TO NOTIFICATION OF OWNER SHALL BE DONE AT THE EXPENSE OF THE CONTRACTOR.

3.03 PREPARATION

A. DURING CONSCTRUCTION AND STORAGE, PROTECT MATERIALS FROM DAMAGE AND PROLONGED EXPOSURE TO SUNLIGHT.
B. WORK DAMAGED DURING COURSE OF WORK IN THIS SECTION SHALL BE REPLACED OR REPAIRED AT NO ADDITIONAL COST TO OWNER. IF DAMAGED WORK IS NEW, REPAIR OR REPLACEMENT SHALL BE PERFORMED BY INSTALLER OF ORIGINAL WORK.
C. LAYOUT AND STAKE LOCATIONS OF SYSTEM COMPONENTS.
D. REVIEW LAYOUT REQUIREMENTS WITH OTHER AFFECTED WORK. COORDINATE LOCATIONS OF SLEEVES UNDER PAVING TO ACCOMMODATE SYSTEM.
E. ALL LATERAL LINES SHALL RUN PARALLEL WITH PLANTING AREAS AND AVOID CONFLICT WITH THE LOCATION OF PLANT MATERIALS. WHERE TRENCHING IS REQUIRED IN PROXIMITY TO PLANT MATERIALS CARE SHALL BE TAKEN TO AVOID DAMAGE TO ROOTS. DO NOT CUT EXISTING TREE ROOTS MEASURING OVER 2 INCHES IN DIAMETER.

3.04 TRENCHING

A. TRENCH SIZE:
1. MINIMUM COVER OVER INSTALLED SUPPLY PIPING: 18 INCHES (457 MM).
2. MINIMUM COVER OVER INSTALLED BRANCH PIPING: 12 INCHES (305 MM).
B. TRENCH TO ACCOMMODATE GRADE CHANGES AND SLOPE TO DRAINS.
C. MAINTAIN TRENCHES FREE OF DEBRIS, MATERIAL, OR OBSTRUCTIONS THAT MAY DAMAGE PIPE.
D. PULLING OF PIPE IS NOT PERMITTED.
E. WHEN DIGGING ON PROJECT SITE, THE AREA SHALL BE STAKED TO IDENTIFY THE APPROXIMATE LCOATION OF ALL KNOWN UNDERGROUND UTILITIES AND STRUCTURES.
F. EXCAVATION WORK SHALL BE AS DEEP AND AS WIDE AS REQUIRED TO SAFELY PERFORM THE WORK, SUCH AS MAKING MAINLINE CONNECTIONS OR FORMING VAULTS. WHERE TRENCHING IS DONE IN ESTABLISHED LAWN, CARE MUST BE TAKEN TO KEEP THE TRENCHES ONLY AS WIDE AS IS NECESSARY TO ACCOMPLISH THE WORK.
G. IF MORE THAN ONE LINE IS REQUIRED IN A SINGLE TRENCH, THAT TRENCH SHALL BE DEEP AND WIDE ENOUGH TO ALLOW FOR AT LEAST 3 INCHES OF SEPERATION BETWEEN PIPES. INSTALL THE PIPING IN A MANNER FOR EASY REPAIR IN THE FUTURE.
H. OVER-EXCAVATE TRENCHES 2 INCHES AND BRING BACK TO INDICATED DEPTH BY FILLING WITH BACKFILL MATERIAL AS SPECIFIED UNDER PART 2 - PRODUCTS. SEPARATE OUT ROCKS LARGER THAN 1-1/2 INCH IN ANY DIRECTION UNCOVERED IN TRENCHING OPERATION FROM EXCAVATED MATERIAL AND REMOVE FROM AREAS TO RECEIVE LANDSCAPING.
I. WHERE IS BECOMES NECESSARY TO EXCAVATE BEYOND THE LIMITS OF NORMAL EXCAVATION LINES TO REMOVE ROCK OR OTHER INTERFERING OBJECTS, THE VOID REMAINING AFTER THE REMOVAL OF THE OBJECT SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED AS PER THE "EARTHWORK" SECTION. THE REMOVAL OF ALL ROCK OR OTHER INTERFERING OBJECTS AND THE BACKFILLING OF VOIDS LEFT BY SUCH REMOVALS SHALL BE AT THE EXPENSE OF THE CONTRACTOR.
J. ANY EXISTING UTILITY LINES DAMAGED DURING EXCAVATING OR TRENCHING SHALL BE REPAIRED IMMEDIATELY AFTER NOTIFICATION OF THE UTILITY OWNER AND TO HIS/HER SATISFACTION. SHOULD UTILITY LINES BE ENCOUNTERED, WHICH ARE NOT INDICATED ON PLANS, THE PROJECT REPRESENTATIVE SHALL BE NOTIFIED. THE REPAIR OF ANY DAMAGE SHALL BE DONE AS SOON AS POSSIBLE BY THE CONTRACTOR OR THE UTILITY OWNER AND PROPER COMPENSATION WILL BE NEGOTIATED BY THE OWNER. SUCH UTILITY LOCATIONS SHALL BE NOTED ON THE "AS-BUILT" DRAWINGS.

3.05 INSTALLATION

A. GENERAL:
1. INSTALL PIPE, VALVES, CONTROLS, AND OUTLETS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. CONNECT TO UTILITIES.
3. SET OUTLETS AND BOX COVERS AT FINISH GRADE ELEVATIONS.
4. PROVIDE FOR THERMAL MOVEMENT OF COMPONENTS IN SYSTEM.
B. PIPES:
1. INSTALL PIPE IN MANNER TO PROVIDE FOR EXPANSION AND CONTRACTIONS AS RECOMMENDED BY MANUFACTURER.
2. UNLESS OTHERWISE INDICATED ON APPROVED DRAWINGS, INSTALL MAIN LINES AND LATERAL LINES CONNECTING ROTOR POP-UP SPRINKLERS WITH MINIMUM COVER OF 18 INCHES BASED ON FINISHED GRADE. INSTALL REMAINING LATERAL LINES WITH MINIMUM OF 12 INCHES OF COVER BASED ON FINISH GRADE.
3. INSTALL PIPE AND WIRES UNDER DRIVEWAYS OR PARKING AREAS IN SPECIFIED SLEEVES 18 INCHES MINIMUM BELOW FINISH GRADE OR AS SHOWN ON APPROVED DRAWINGS.
4. SLOPE PIPES UNDER PARKING AREAS OR DRIVEWAYS TO DRAIN OUTSIDE THESE AREAS.
5. LOCATE SPRINKLER HEADS NO CLOSER THAN 12 INCHES FROM BUILDING FOUNDATION. HEADS IMMEDIATELY ADJACENT TO MOW STRIPS, WALKS, OR CURBS SHALL BE ONE INCH BELOW TOP OF MOW STRIP, WALK, OR CURB AND HAVE 1 TO 3 INCHES CLEARANCE BETWEEN HEAD AND MOW STRIP, WALK, OR CURB.
6. SLOPE PIPING FOR SELF DRAINAGE TO CONTROL BOX WHERE POSSIBLE.
7. WHERE THIS IS NOT POSSIBLE, SLOPE PIPE TO A MINIMUM NUMBER OF LOW POINTS. INSTALL AT THESE LOW POINTS:
a. 3/4 INCH MANUAL DRAIN
b. INSTALL 2 INCH CLASS 200 PVC PIPE OVER TOP OF MANUAL DRAIN AND CUT AT FINISH GRADE,
c. INSTALL RUBBER VALVE CAP MARKER FLUSH WITH FINISHED GRADE.
d. DO NOT USE AUTOMATIC DRAIN VALVES.
8. CUT PLASTIC PIPE SQUARE. REMOVE BURRS AT CUT ENDS PRIOR TO INSTALLATION SO UNOBSTRUCTED FLOW WILL RESULT.
9. MAKE SOLVENT WELD JOINTS AS FOLLOWS:
a. DO NOT MAKE SOLVENT WELD JOINTS IF AMBIENT TEMPERATURE IS BELOW 40 DEGREES F.
b. CLEAN MATING PIPE AND FITTING WITH CLEAN, DRY CLOTH AND APPLY ONE COAT OF P-70 PRIMER TO EACH.
c. APPLY UNIFORM COAT OF 711 SOLVENT TO OUTSIDE OF PIPE.
d. APPLY SOLVENT TO FITTING IN A SIMILAR MANNER.
e. RE-APPLY LIGHT COAT OF SOLVENT TO PIPE AND QUICKLY INSERT INTO FITTING.
f. GIVE PIPE OR FITTING A QUARTER TURN TO ENSURE EVEN DISTRIBUTION OF SOLVENT AND MAKE SURE PIPE IS INSTERTED TO FULL DEPTH OF FITTING SOCKET.
g. HOLD IN POSITION FOR 15 SECONDS MINIMUM OR LONG ENOUGH TO SECURE JOINT.
h. WIPE OFF SOLVENT APPEARNING AT OUTER SHOULDER OF FITTING.
i. DO NOT USE EXCESSIVE AMOUNT OF SOLVENT THEREBY CAUSING OBSTRUCTION TO FORM ON INSIDE OF PIPE.
j. ALLOW JOINTS TO SET AT LEAST 24 HOURS BEFORE APPLYING PRESSURE TO PVC PIPE.
10. THREADED CONNECTIONS SHALL BE MADE WITH TEFLON TAPE.
C. SLEEVING:
1. CONTRACTOR IS REPONSIBLE TO COORDINATE THE INSTALLATION OF SLEEVING WITH THE WORK OF OTHER TRADES (I.E. CONCRETE, ASPHALT PAVING, ETC.)
2. SLEEVE IRRIGATION WATER LINES AND CONTROL WIRES UNDER WALKS AND PAVING. EXTEND SLEEVES 6 INCHES MINIMUM BEYOND WALK OR PAVEMENT EDGE. CAP SLEEVES UNTIL PIPES AND WIRES ARE INSTALLED TO KEEP SLEEVE CLEAN AND FREE OF DIRT AND DEBRIS.
3. USE ONE WATER PIPE MAXIMUM PER SLEEVE. SLEEVE CONTROL WIRING IN SEPERATE SLEEVE.
4. POSITION SLEEVES WITH RESPECT TO BUILDINGS AND OTHER OBSTRUCTIONS SO PIPE CAN BE EASILY REMOVED.
D. OUTLETS:
1. USE THREADED NIPPLES FOR RISERS TO EACH OUTLET.
2. SPRINKLER HEADS:
a. PRIOR TO INSTALLATION OF SPRINKLER HEADS, OPEN CONTROL VALVES AND USE FULL HEAD OF WATER TO FLUSH OUT SYSTEM.
b. SET SPRINKLER HEADS AND QUICK-COUPLING VALVES PERPENDICULAR TO FINISH GRADE.
c. DO NOT INSTALL SPRINKLERS USING SIDE INLETS. INSTALL USING BASE INLETS ONLY.
d. SET SPRINKLERS AT A CONSISTENT DISTANCE FROM EXISTING WALKS, CURBS, AND OTHER PAVED AREAS AND TO GRADE.
3. POINT SOURCE DRIP LINE EMITTERS INSTALLATION SHALL CONFORM TO THE FOLLOWING:
a. ALL DRIP TUBING SHALL HAVE BUG CAP AT END OF 1/4 INCH DISTRIBUTION TUBING.
b. ALL DRIP TUBING SHALL BE HELD ABOVE MULCH BY 1/4 INCH TUBING STAKE.
c. SPACE THE POINT OF WATER APPLICATION EVENLY AROUND THE PLANTS.
d. FOR TREES REQUIRING EMITTER FLOWS GREATER THAN 2 GPH INSTALL A WATER WELL TO HOLD THE WATER SO IT CAN ADEQUATELY SOAK IN.
E. VALVES & VALVE BOXES:
1. INSTALL CONTROL WIRES, AND VALVES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND PER ELECTRICAL CODE.
2. INSTALL VALVES, IN PLASTIC BOXES WITH LOCKING REINFORCED HEAVY-DUTY PLASTIC COVERS. LOCATE VALVE BOX TOPS AT FINISH GRADE. DO NOT INSTALL MORE THAN TWO VALVES IN A SINGLE BOX.
3. PLACE PEA GRAVEL A MINIMUM OF 6 INCHES DEEP BELOW VALVE FOR DRAINAGE. EXTEND WASHED GRAVEL 3 INCH MINIMUM BEYOND LIMITS OF VALVE BOX. MAINTAIN 4 INCH MINIMUM BETWEEN BOTTOM OF VALVE AND TOP OF GRAVEL AND 3 INCHES MINIMUM CLEARANCE BETWEEN THE TOP OF THE VALVE TO THE BOTTOM OF VALVE COVER. SET VALVE BOXES OVER VALVE SO ALL PARTS OF VALVE CAN BE REACHED FOR SERVICE. SET COVER OF VALVE BOX EVEN WITH FINISH GRADE. VALVE BOX SHALL BE REASONABLY FREE FROM DIRT AND DEBRIS.
4. INSTALL 3/4 INCH BRASS BALL VALVE IN VALVE BOX ON DOWNSTREAM SIDE OF AUTOMATIC VALVES IF LATERAL LINE SLOPES TOWARD VALVE BOX.
5. INSTALL QUICK COUPLING VALVES IN APPROPRIATE LOCATIONS IN VALVE BOXES.
6. ISOLATION VALVES, AND ANY OTHER EQUIPMENT REQUIRED BY LOCAL AUTHORITIES SHALL BE INSTALLED ACCORDING TO LOCAL CODES AND REQUIREMENTS IN ORDER TO MAKE THIS SYSTEM COMPLETE.
7. INSTALL ISOLATION VALVES, AIR RELEASE VALVE, MASTER CONTROL VALVES AND FLOW SENSORS ACCORDING TO DETAILS PLANS AND MANUFACTURES RECOMMENDATIONS.
8. INSTALL ANY OTHER EQUIPMENT REQUIRED BY LOCAL AUTHORITIES ACCORDING TO LOCAL CODES AND REQUIREMENTS IN ORDER TO MAKE THIS SYSTEM COMPLETE.
F. WIRING:
1. STANDARD WIRE:
a. TAPE CONTROL WIRE TO SIDE OF MAIN LINE EVERY 10 FEET. WHERE CONTROL WIRE LEAVES MAIN OR LATERAL LINE, ENCLOSE IT IN CLASS 200 PVC CONDUIT.
b. PLACE ALL WATERPROOF WIRE SPLICE CONNECTORS INSIDE VALVE BOXES.
c. USE WHITE OR GRAY COLOR FOR COMMON WIRE AND OTHER COLORS FOR ALL OTHER WIRE. EACH COMMON WIRE MAY SERVE ONLY ONE CONTROLLER. PROVIDE 12 INCHES OF EXPANSION LOOP SLACK WIRE AT ALL CONNECTIONS INSIDE VALVE BOX.
d. RUN ONE EXTRA CONTROL WIRE FROM PANEL CONTINUOUSLY FROM VALVE TO VALVE THROUGHOUT SYSTEM LIKE THE COMMON WIRE FOR USE IF THE COMMON WIRE FAILS. WIRE SHALL BE A DIFFERENT COLOR THAN ALL OTHER WIRES AND SHALL BE MARKED IN CONTROL BOX AS AN EXTRA WIRE. EXTEND EXTRA CONTROL WIRES 24 INCHES AND LEAVE COILED IN EACH VALVE BOX.
G. AFTER PIPING IS INSTALLED, BUT BEFORE OUTLETS ARE INSTALLED AND BACKFILLING COMMENCES, OPEN VALVES AND FLUSH SYSTEM WITH FULL HEAD OF WATER.

3.06 FIELD QUALITY CONTROL

A. NOTIFY LANDSCAPE ARCHITECT TWO WORKING DAYS MINIMUM PRIOR TO TESTING.
B. FIELD INSPECTION AND TESTING WILL BE PERFORMED UNDER PROVISIONS OF SECTION 01 4000 - QUALITY REQUIREMENTS.
C. PRIOR TO BACKFILLING, TEST SYSTEM FOR LEAKAGE AT MAIN PIPING TO MAINTAIN 100 PSI (690 KPA) PRESSURE FOR SIX HOURS MINIMUM.
D. SYSTEM IS ACCEPTABLE IF NO LEAKAGE OR LOSS OF PRESSURE OCCURS AND SYSTEM SELF DRAINS DURING TEST PERIOD.

3.07 BACKFILLING

A. COVER BOTH TOP AND SIDES OF PIPE WITH 3 INCH (75 MM) OF BACKFILL MATERIAL AS SPEFICIED UNDER PART 2 - PRODUCTS.
B. BACKFILL TRENCH AND COMPACT TO WITHIN 5 INCHES (127 MM) OF FINISH GRADE AS SPECIFIED IN RELATED SECTIONS. PROTECT PIPING FROM DISPLACEMENT. TOP 5 INCHES (127 MM) OF BACKFILL SHALL BE TOPSOIL AS SPECIFIED IN RELATED SECTION.
C. DO NOT COVER PRESSURE MAIN, SPRINKLER PIPE, OR FITTINGS UNTIL PRESSURE TEST HAS BEEN COMPLETED AND ARCHITECT HAS INSPECTED AND APPROVED THE SYSTEM
D. AFTER BACKFILLING, PERFORM AN OPERATING TEST OF THE ENTIRE SYSTEM. OPERATE THE ENTIRE SYSTEM THROUGH ONE CYCLE OF THE CONTROLLER FOR THE PURPOSE OF CHECKING COVERAGE AND ASSURING THE ABSENCE OF LEAKS. REPAIR WATER LINES, VALVES, OR CONNECTIONS WHICH SHOW EVIDENCE OF LEAKAGE.
E. ALL TRENCHES SHALL BE BACKFILLED AND THEN SATURATED WITH WATER SUFFICIENTLY TO ENSURE NO SETTLING OF THE SURFACE AFTER LAWN IN PLANTED.
F. ANY PORTION OF THE SYSTEM WHICH SHOWS DEFECTS OR LEAKAGE SHALL BE REPAIRED TO THE SATISFACTION OF THE LANDSCAPE ARCHITECT AND OWNER OR BE REPLACED. AFTER ALL REPAIRS OR REPLACEMENTS HAVE BEEN MADE AND APPROVED BY THE LANDSCAPE ARCHITECT, THE ABOVE REQUIRED TEST SHALL BE MADE AGAIN.

3.08 SYSTEM STARTUP

A. PREPARE AND START SYSTEM IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. ADJUST CONTROL SYSTEM TO ACHIEVE TIME CYCLES REQUIRED TO PROVIDE PROPER AMOUNTS OF WATER TO ALL PLANTS.
C. ADJUST HEADS TO PROPER GRADE WHEN TURF IS SUFFICIENTLY ESTABLISHED TO ALLOW WALKING ON IT WITHOUT APPRECIABLE HARM. SUCH LOWERING OR RAISING OF HEADS SHALL BE PART OF ORIGINAL CONTRACT WITH NO ADDITIONAL COST TO OWNER.
D. ADJUST SPRINKLER HEADS FOR PROPER DISTRIBUTION AND SO SPRAY DOES NOT FALL ON BUILDING.

3.09 CLOSEOUT ACTIVITIES

A. AT THE POINT OF SUBSTANTIAL COMPLETION OF WORK OUTLINED IN THESE PLANS, THE LANDSCAPE CONTRACTOR SHALL CONTACT THE OWNER'S REPRESENTATIVE AND ARRANGE FOR A WALK THROUGH TO VERIFY THE INSTALLATION OF THE SYSTEM. A COVERAGE TEST WILL BE COMPLETED AND THE SYSTEM INSTALLATION INSPECTED AND A PUNCH LIST OF FINAL ITEMS NEEDING COMPLETION MADE.
B. AT THE TIME OF FINAL INSPECTION, THE ENTIRE SYSTEM MUST BE TESTED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. IT MUST BE FULLY OPERATIONAL IN A SATISFACTORY CONDITION, WITH FULL UNIFORM COVERAGE OF THE AREAS INDICATED TO BE IRRIGATED. ALL HEADS SHALL BE ADJUSTED TO PATTERN, RADIUS, AND GRADE LEVEL.
C. BEFORE THE INSPECTION IS COMPLETE, THE CONTRACTOR MUST FURNISH THE "AS BUILT" DRAWINGS. THESE DRAWINGS SHOULD BE UPDATED ON A DAILY BASIS TO ENSURE ACCURACY. THESE DRAWINGS MUST SHOW THE LOCATION OF ALL PIPING, VALVES, HEADS, WIRE SPLICES AND OTHER PERTINENT INFORMATION. THESE DRAWINGS AND ALL MAINTENANCE MANUALS MUST BE SUBMITTED AT THE TIME OF FINAL INSPECTION IN ACCORDANCE WITH THESE SPECIFICATIONS.
D. IF AT THE TIME OF THE FINAL INSPECTION THERE IS ANY ADDITIONAL WORK TO SATISFY CONTRACT REQUIREMENTS, IT WILL BE NOTED ON A "PUNCH LIST". CONTRACTOR WILL HAVE 10 DAYS IN ORDER TO SATISFY, OR MAKE SUITABLE ARRANGEMENTS WITH OWNER TO SATISFY ITEMS ON THE "PUNCH LIST". AT OWNER'S DISCRETION FINAL PAYMENT OR A PORTION THEREOF, COULD BE HELD PENDING COMPLETION OF "PUNCH LIST" ITEMS.
E. INSTRUCT OWNER'S PERSONNEL IN OPERATION AND MAINTENANCE OF THE SYSTEM, INCLUDING ADJUSTING OF SPRINKLER HEADS. USE OPERATION AND MAINTENANCE DATA AS BASIS FOR DEMONSTRATION.

3.10 CLEAN-UP AND MAINTENANCE

A. REMOVE FROM SITE ALL DEBRIS RESULTING FROM WORK OF THIS SECTION.
B. SEE SECTION 01 7000 - EXECUTION AND CLOSEOUT REQUIREMENTS, FOR ADDITIONAL REQUIREMENTS RELATING TO MAINTENANCE SERVICE.
C. PROVIDE ONE COMPLETE SPRING START-UP AND A FALL SHUTDOWN BY INSTALLER, AT NO EXTRA COST TO OWNER.

3.11 WARRANTY

A. ALL WORK SHALL BE WARRANTED FOR COMPLIANCE WITH THE CONTRACT REQUIREMENTS, INCLUDING REPLACEMENT, FOR A PERIOD OF ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION. IF AN UNSATISFACTORY CONDITION DEVELOPS DURING THE WARRANTY PERIOD AND IS DUE TO NEGLIGENCE, FAULTY MATERIALS, OR WORKMANSHIP, CONTRACTOR SHALL IMMEDIATELY REPLACE SUCH ITEMS IN A SATISFACTORY CONDITION. ALL WARRANTEES SHALL BE IN WRITING, SIGNED BY CONTRACTOR OR LEGAL REPRESENTATIVE, AND WORDED AS APPROVED BY OWNER. WARRANTY DOCUMENTS SHALL BE PRESENTED TO OWNER AT THE TIME OF FINAL INSPECTION.
B. DURING ONE-YEAR WARRANTY PERIOD, CONTRACTOR WILL COMPLY WITH THE FOLLOWING:
1. FILL AND REPAIR LOW AREAS AND REPLACE PLANTINGS DUE TO SETTLEMENT OF EXCAVATED AREAS.
2. AT THE END OF THE FIRST WATERING SEASON, CONTRACTOR SHALL SHUT OFF AND WINTERIZE THE SYSTEM.
3. AT THE BEGINNING OF THE NEXT SEASON, CONTRACTOR SHALL RESTART SYSTEM AND MAKE ANY REPAIRS OR ADJUSTMENTS NEEDED TO MAKE SYSTEM FULLY OPERATIONAL.

END OF SECTION

SECTION 32 9113
SOIL PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. PERFORM SOIL PREPARATION WORK.
B. FURNISH AND APPLY SOIL AMENDMENTS.
C. PERFORM FINE GRADING WORK REQUIRED TO PREPARE SITE FOR PAVING FINISH GRADING AND FOR LANDSCAPE FINISH GRADING.

1.02 REFERENCES

A. ASTM D1557 - STANDARD TEST METHODS FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING MODIFIED EFFORT.

1.03 SUBMITTALS

A. PRODUCT DATA: PRODUCT LITERATURE AND CHEMICAL /NUTRIENT ANALYSIS OF SOIL AMENDMENTS AND FERTILIZERS.
B. INFORMATIONAL SUBMITTALS:
1. FIELD QUALITY CONTROL SUBMITTALS:
a. SUBMIT TESTS ON IMPORTED AND SITE TOPSOIL BY LICENSED LABORATORY BEFORE USE.
1) BEFORE USE, TOPSOIL SHALL MEET MINIMUM SPECIFIED REQUIREMENTS AND BE APPROVED BY ARCHITECT.
2) IF NECESSARY, SUBMIT PROPOSED AMENDMENTS AND APPLICATION RATES NECESSARY TO BRING TOPSOIL UP TO MINIMUM SPECIFIED REQUIREMENTS.
b. SUBMIT REPORT STATING LOCATION OF SOURCE OF IMPORTED TOPSOIL AND ACCOUNT OF RECENT USE.

PART 2 PRODUCTS

2.01 MATERIALS

A. TOPSOIL:
1. TOPSOIL USED IN LANDSCAPED AREAS, WHETHER IMPORTED, STOCKPILED, OR IN PLACE, SHALL BE FERTILE, LOOSE, FRIABLE SOIL MEETING THE FOLLOWING CRITERIA:
a. CHEMICAL CHARACTERISTICS:
1) ACIDITY / ALKALINITY RANGE: PH 5.5 TO 8.0.
2) SOLUBLE SALTS: LESS THAN 3.0 MMHOS/CM.
3) SODIUM ABSORPTION RATIO (SAR): LESS THAN 6.0.
4) ORGANIC MATTER: GREATER THAN ONE PERCENT.
b. PHYSICAL CHARACTERISTICS:
1) GRADATION AS DEFINED BY USDA TRIANGLE OF PHYSICAL CHARACTERISTICS AS MEASURED BY HYDROMETER.
(a) SAND: 15 TO 60 PERCENT
(b) SILT: 10 TO 60 PERCENT
(c) CLAY: 5 TO 30 PERCENT
2) CLEAN AND FREE FROM TOXIC MINERALS AND CHEMICALS, NOXIOUS WEEDS, ROCKS LARGER THAN 1-1/2 INCH IN ANY DIMENSION, AND OTHER OBJECTIONABLE MATERIALS.
3) SOIL SHALL NOT CONTAIN MORE THAN 2 PERCENT BY VOLUME OF ROCKS MEASURING OVER 3/32 INCH IN LARGEST SIZE.
c. FERTILITY REQUIREMENTS:
1) NITRATE-NITROGEN PPM > 20
2) PHOSPHOROUS PPM > 15
3) POTASSIUM PPM > 150
4) IRON PPM > 10
2. TOPSOIL DEPTHS FOR THE PLANTING AREAS ARE AS FOLLOWS:
a. SOD/SEED AREAS: 4 INCHES
b. PLANTER BEDS: 12 INCHES
B. SOIL AMENDMENTS:
1. AMEND TOPSOIL, EITHER IMPORTED OR STOCKPILED, TO BRING IT IN COMPLIANCE WITH SOILS TEST.
a. ACCEPTABLE FERTILIZERS AND APPLICATION RATES:
1) LAWNS: PHOSPHORUS 1-2 LBS PER 1000 SQ. FT., POTASSIUM 2 LBS. PER 1000 SQ.FT., AND NITROGEN 2-4 LBS. PER 1000 SQ. FT.
2) SHRUBS: PHOSPHORUS 1-2 LBS PER 1000 SQ. FT., POTASSIUM 2 LBS. PER 1000 SQ.FT., AND NITROGEN 1-2 LBS. PER 1000 SQ. FT.
3) EQUAL AS APPROVED BY ARCHITECT BEFORE INSTALLATION.
b. ACCEPTABLE SOIL CONDITIONERS AND APPLICATION RATES:
1) TYPE ONE ACCEPTABLE PRODUCTS.
(a) SOIL CONDITIONER THAT MEETS THE REQUIRED FERTILIZER AND SOIL AMENDMENTS STATED ABOVE CAN BE USED AT THE DISCRETION OF THE CONTRACTOR.

PART 3 EXECUTION

3.01 PERFORMANCE

A. PROTECTION OF IN-PLACE CONDITIONS: PROTECT UTILITIES AND SITE ELEMENTS FROM DAMAGE.
B. SOIL AMENDMENTS:
1. ADD SPECIFIED SOIL AMENDMENTS AT SPECIFIED RATES TO LAWN AREAS.
2. ROTO-TILL OR OTHERWISE MIX AMENDMENTS EVENLY INTO TOP 4 INCHES OF TOPSOIL.
3. INCORPORATE AND LEACH SOIL AMENDMENTS WHICH REQUIRE LEACHING, SUCH AS GYPSUM, WITHIN SUCH TIME LIMITS THAT SOIL IS SUFFICIENTLY DRY TO ALLOW PROPER APPLICATION OF FERTILIZER AND SOIL CONDITIONERS.
C. SURFACE PREPARATION:
1. LANDSCAPING AND PLANTING AREAS:
a. BEFORE GRADING, DIG OUT WEEDS FROM PLANTING AREAS BY THEIR ROOTS AND REMOVE FROM SITE. REMOVE ROCKS LARGER THAN 1-1/2 INCHES IN SIZE AND FOREIGN MATTER SUCH AS BUILDING RUBBLE, WIRE, CANS, STICKS, CONCRETE, ETC.
b. BEFORE BEGINNING MAINTENANCE PERIOD, PLANTS SHALL BE IN AT LEAST AS SOUND, HEALTHY, VIGOROUS, AND IN APPROVED CONDITION AS WHEN DELIVERED TO SITE, UNLESS ACCEPTED BY ARCHITECT IN WRITING AT FINAL LANDSCAPE INSPECTION.
c. REMOVE IMPORTED PAVING BASE MATERIAL PRESENT IN PLANTING AREAS DOWN TO NATURAL SUBGRADE OR OTHER MATERIAL ACCEPTABLE TO ARCHITECT.
D. PERFORMANCE:
1. DO NOT EXPOSE OR DAMAGE EXISTING SHRUB OR TREE ROOTS.
2. TOLERANCES:
a. LANDSCAPING AND PLANTING TOLERANCES:
1) MAXIMUM VARIATION FROM REQUIRED GRADES SHALL BE 1/10 OF ONE FOOT.
2) TO ALLOW FOR FINAL FINISH GRADES OF PLANTING AREAS, FINE GRADE ELEVATIONS BEFORE PLACING TOPSOIL AND MULCH ARE:
(a) SOD AREAS: 5.5 INCHES BELOW TOP OF WALK OR CURB.
(b) PLANTER BED AREAS: 16 INCHES BELOW TOP OF WALK OR CURB.
3. DO NOT EXPOSE OR DAMAGE EXISTING SHRUB OR TREE ROOTS. REDISTRIBUTE APPROVED EXISTING TOPSOIL STORED ON SITE. REMOVE ORGANIC MATERIAL, ROCKS AND CLODS GREATER THAN 1-1/2 INCH IN ANY DIMENSION, AND OTHER OBJECTIONABLE MATERIALS.
4. SLOPE GRADE AWAY FROM BUILDING AS SPECIFIED. DIRECT SURFACE DRAINAGE IN MANNER INDICATED ON DRAWINGS BY MOLDING SURFACE TO FACILITATE NATURAL RUN-OFF. FILL LOW SPOTS AND POCKETS WITH SPECIFIED FILL MATERIAL AND GRADE TO DRAIN PROPERLY.

END OF SECTION

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CONSTRUCTION DOCUMENTS

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 E 1000 N, LOGAN, UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK: | DATE: | DESCRIPTION:

PROJECT #: 123998
DRAWN BY: J. CLEMENTS
CHECKED BY: B. WRIGHT
ISSUED: 02.05.2024

STATE OF UTAH – LICENSED LANDSCAPE ARCHITECT – BLAKE C. WRIGHT – 105101-5301 – 02.05.2024

LANDSCAPE SPECIFICATIONS
L-001

SECTION 32 9223
SODDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. PLACING TOPSOIL.
B. FERTILIZING.
C. SOD INSTALLATION.
D. MAINTENANCE.

1.02 RELATED REQUIREMENTS

A. SECTION 31 2200 - GRADING: PREPARATION OF SUBSOIL AND PLACEMENT OF TOPSOIL IN PREPARATION FOR THE WORK OF THIS SECTION.

1.03 DEFINITIONS

A. WEEDS: INCLUDES DANDELION, JIMSONWEED, QUACKGRASS, HORSETAIL, MORNING GLORY, RUSH GRASS, MUSTARD, LAMBSQUARTER, CHICKWEED, CRESS, CRABGRASS, CANADIAN THISTLE, NUTGRASS, POISON OAK, BLACKBERRY, TANSY RAGWORT, BERMUDA GRASS, JOHNSON GRASS, POISON IVY, NUT SEDGE, NIMBLE WILL, BINDWEED, BENT GRASS, WILD GARLIC, PERENNIAL SORREL, AND BROME GRASS.

1.04 REFERENCE STANDARDS

A. 21 CFR 11 - PART 11, ELECTRONIC RECORDS; ELECTRONIC SIGNATURES -- SCOPE AND APPLICATION; CURRENT EDITION.
B. TPI (SPEC) - GUIDELINE SPECIFICATIONS TO TURFGRASS SODDING; 2006.

1.05 QUALITY ASSURANCE

A. SOD PRODUCER: COMPANY SPECIALIZING IN SOD PRODUCTION AND HARVESTING WITH MINIMUM FIVE YEARS EXPERIENCE, AND CERTIFIED BY THE STATE OF UTAH.
B. INSTALLER QUALIFICATIONS: ENGAGE AN EXPERIENCED INSTALLER WHO HAS COMPLETED LANDSCAPING WORK SIMILAR IN MATERIAL, DESIGN, AND EXTENT TO THAT INDICATED FOR THIS PROJECT AND WITH A RECORD OF SUCCESSFUL LANDSCAPE ESTABLISHMENT.

1.06 DELIVERY, STORAGE, AND HANDLING

A. DELIVER SOD IN ROLLS. PROTECT EXPOSED ROOTS FROM DEHYDRATION.
B. DO NOT DELIVER MORE SOD THAN CAN BE LAID WITHIN 24 HOURS.
C. HARVEST, DELIVER, STORE, AND HANDLE SOD ACCORDING TO THE REQUIREMENTS OF THE AMERICAN SOD PRODUCER'S ASSOCIATION (ASPA) "SPECIFICATIONS FOR TURFGRASS SOD MATERIALS AND TRANSPLANTING/INSTALLING".

1.07 PROJECT CONDITIONS

A. UTILITIES: DETERMINE LOCATION OF ABOVE GRADE AND UNDERGROUND UTILITIES AND PERFORM WORK IN A MANNERS WHICH WILL AVOILD DAMAGE. HAND EXCAVATE AS REQUIRED. MAINTAIN GRADE STAKES UNTIL REMOVAL IS MUTUALLY AGREED UPON BY PARTIES CONCERNED.
B. EXCAVATION: WHEN CONDITIONS DETRIMENTAL TO PLANT GROWTH ARE ENCOUNTERED SUCH AS RUBBLE FILL, ADVERSE DRAINAGE CONDITIONS, OR OBSTRUCTIONS, NOTIFY LANDSCAPE ARCHITECT BEFORE PLANTING.

1.08 COORDINATION AND SCHEDULING

A. COODINATE INSTALLATION OF PLANTING MATERIALS DURING NORMAL PLANTING SEASONS FOR EACH TYPE OF PLANT MATERIAL REQUIRED.

1.09 WARRANTY

A. GENERAL WARRANTY: THE SPECIAL WARRANTY SPECIFIED IN THIS ARTICLE SHALL NOT DEPRIVE THE OWNER OF OTHER RIGHTS THE OWNER MAY HAVE UNDER OTHER PROVISIONS OF THE CONTRACT DOCUMENTS AND SHALL BE IN ADDITION TO AND RUN CONCURRENT WITH OTHER WARRANTIES MADE BY THE CONTRACTOR UDNER REQUIREMENTS OF THE CONTRACT DOCUMENTS.
B. SPECIAL WARRANTY: WARRANT ALL LAWN AREAS FOR A PERIOD OF ONE YEAR AFTER DATE OF SUBSTANTIAL COMPLETION AGAINST DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH, EXCEPT FOR DEFECTS RESULTING FROM LACK OF ADEQUATE MAINTENANCE, NEGLECT, OR ABUSE BY OWNER, ABNORMAL WEATHER CONDITIONS UNUSUAL FOR WARRANTY PERIOD, OR INCIDENTS THAT ARE BEYOND CONTRACTOR'S CONTROL.
C. REMOVE AND REPLACE DEAD MATERIALS IMMEDIATLEY UNLESS REQUIRED TO PLANT IN THE SUCCEEDING PLANTING SEASON.
D. A LIMIT OF ONE REPLACEMENT OF EACH PLANT MATERIAL WILL BE REQUIRED, EXCEPT FOR LOSSES OR REPLACEMENTS DUE TO FAILURE TO COMPLY WITH REQUIREMENTS.

PART 2 PRODUCTS

2.01 MATERIALS

A. SOD: TPI (SPEC), CERTIFIED TURFGRASS SOD QUALITY; CULTIVATED GRASS SOD; TYPE INDICATED IN PLANT SCHEDULE ON DRAWINGS; WITH STRONG FIBROUS ROOT SYSTEM, FREE OF STONES, BURNED OR BARE SPOTS; CONTAINING NO MORE THAN 5 WEEDS PER 1000 SQ FT (100 SQ M). MINIMUM AGE OF 18 MONTHS, WITH ROOT DEVELOPMENT THAT WILL SUPPORT ITS OWN WEIGHT WITHOUT TEARING, WHEN SUSPENDED VERTICALLY BY HOLDING THE UPPER TWO CORNERS.
1. KENTUCKY BLUE GRASS TYPE: 3 CULTIVAR MINIMUM.
2. THICKNESS: MINIMUM 1 INCH (25 MM) AND MAXIMUM 1-3/8 INCH (35 MM) TOPSOIL BASE.
3. CUT SOD IN AREA NOT EXCEEDING 1 SQ YD (1 SQ M).
4. MACHINE CUT SOD AND LOAD ON PALLETS IN ACCORDANCE WITH TPI (SPEC) GUIDELINES.

B. TOPSOIL: FERTILE, AGRICULTURAL SOIL, TYPICAL FOR LOCALITY, CAPABLE OF SUSTAINING VIGOROUS PLANT GROWTH, TAKEN FROM DRAINED SITE; FREE OF SUBSOIL, CLAY, OR IMPURITIES, PLANTS, WEEDS AND ROOTS; PH VALUE OF MINIMUM 5.4 AND MAXIMUM 7.0. BRING SURFACE TO SPECIFIED ELEVATION RELATIVE TO WALK OR CURB.
C. COMMERCIAL FERTILIZER: COMPLETE FERTILIZER OF NEUTRAL CHARACTER; RECOMMENDED FOR GRASS, WITH FIFTY PERCENT OF THE ELEMENTS DERIVED FROM ORGANIC SOURCES; OF PROPORTION NECESSARY TO ELIMINATE ANY DEFICIENCIES OF TOPSOIL, TO THE FOLLOWING PROPORTIONS:
1. NITROGEN: >16% (OF WHICH 50% WILL BE ORGANIC). PROVIDE NITROGEN IN A FORM THAT WILL BE AVAILABLE TO LAWN DURING INITIAL PERIOD OF GROWTH.
2. PHOSPHORIC ACID: 16%
3. SOLUBLE POTASH: 8%

D. WATER: CLEAN, FRESH AND FREE OF SUBSTANCES OR MATTER THAT COULD INHIBIT VIGOROUS GROWTH OF GRASS.

PART 3 EXECUTION

3.01 EXAMINATION

A. VERIFY THAT PREPARED SOIL BASE IS READY TO RECEIVE THE WORK OF THIS SECTION. EXAMINE AREAS TO RECEIVE LANDSCAPING FOR COMPLIANCE WITH REQUIREMENTS AND FOR CONDITIONS AFFECTING PERFORMANCE OF WORK IF THIS SECTION. DO NOT PROCEED WITH INSTALLATION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

3.02 PREPARATION

A. PLACE TOPSOIL IN ACCORDANCE WITH SECTION 31 2200.
B. LOOSEN SUB-GRADE TO A MINIMUM DEPTH OF 4 INCHES. REMOVE STONES LARGER THAN 1-1/2 INCHES IN ANY DIMENSION, STICKS, ROOTS, RUBBISH, AND OTHER EXTRANEOUS MATERIALS.
C. SPREAD PLANTING SOIL MIXTURE TO DEPTH REQUIRED TO MEET THICKNESS, GRADES, AND ELEVATIONS SHOWN, AFTER LIGHT ROLLING AND NATURAL SETTLEMENT. DO NOT SPREAD IF PLANTING SOIL OR SUB-GRADE IS FROZEN.
1. PLACE APPROXIMATELY 1/2 THE THICKNESS OF PLANTING SOIL MIXTURE REQUIRED. WORK INTO TOP OF LOOSENED SUB-GRADE TO CREATE TRANSITION LAYER AND THEN PLACE REMAINDER OF PLANTING SOIL MIXTURE.
2. ALLOW FOR SOD THICKNESS IN AREAS TO BE SODDED.

D. PREPARATION OF UNCHANGED GRADES: WHERE LAWNS ARE TO BE PLANTED IN AREAS UNALTERED OR UNDISTURBED BY EXCAVATING, GRADING, OR SURFACE SOIL STRIPPING OPERATIONS, PREPARE SOIL AS FOLLOWS:
1. TILL SURFACE SOIL TO A DEPTH OF AT LEAST 6 INCHES. APPLY REQUIRED SOIL AMENDMENTS AND INITIAL FERTILIZERS AND MIX THOROUGHLY INTO TOP 4 INCHES OF SOIL. TRIM HIGH AREAS AND FILL IN DEPRESSIONS. TILL SOIL TO A HOMOGENOUS MIXTURE OF FINE TEXTURE.
2. CLEAN SURFACE SOIL OF ROOTS, PLANTS, SOD, STONES, CLAY LUMPS, AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH.

E. GRADE LAWN AND GRASS AREAS TO A SMOOTH, EVEN SURFACE WITH LOOSE, UNIFORMLY FINE TEXTURE. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES. LIMIT FINE GRADING TO AREAS THAT CAN BE PLANTED IN THE IMMEDIATE FUTURE. REMOVE TRASH, DEBRIS, STONES LARGER THAN 1-1/2 INCHES IN ANY DIMENSION, AND OTHER OBJECTS THAT MAY INTERFERE WITH PLANTING OR MAINTENANCE OPERATIONS.
F. MOISTEN PREPARED LAWN AREAS BEFORE PLANTING WHEN SOIL IS DRY. WATER THOROUGHLY AND ALLOW SURFACE TO DRY BEFORE PLANTING. DO NOT CREATE MUDDY SOIL.
G. RESTORE PREPARED AREAS IF ERODED OR OTHERWISE DISTURBED AFTER FINE GRADING AND BEFORE PLANTING.
H. TOPSOIL DEPTH SHALL BE A MINIMUM OF 4 INCHES.

3.03 FERTILIZING

A. APPLY FERTILIZER IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. APPLY AFTER SMOOTH RAKING OF TOPSOIL AND PRIOR TO INSTALLATION OF SOD.
C. APPLY FERTILIZER NO MORE THAN 48 HOURS BEFORE LAYING SOD.
D. MIX THOROUGHLY INTO UPPER 2 INCHES (50 MM) OF TOPSOIL.
E. LIGHTLY WATER TO AID THE DISSIPATION OF FERTILIZER.

3.04 LAYING SOD

A. MOISTEN PREPARED SURFACE IMMEDIATELY PRIOR TO LAYING SOD.
B. LAY SOD WITHIN 24 HOURS AFTER HARVESTING TO PREVENT DETERIORATION. DO NOT LAY SOD IF DORMANT OR IF GROUND IS FROZEN.
C. LAY SOD SMOOTH AND TIGHT WITH NO OPEN JOINTS VISIBLE, AND NO OVERLAPPING; STAGGER END JOINTS 12 INCHES (300 MM) MINIMUM. DO NOT STRETCH OR OVERLAP SOD PIECES.
D. WHERE NEW SOD ADJOINS EXISTING GRASS AREAS, ALIGN TOP SURFACES.
E. WHERE SOD IS PLACED ADJACENT TO HARD SURFACES, SUCH AS CURBS, PAVEMENTS, ETC., PLACE TOP ELEVATION OF SOD 1/2 INCH (13 MM) BELOW TOP OF HARD SURFACE.
F. LAY SOD ACCROSS ANGLE OF SLOPES EXEEDING 1:3.
G. ON SLOPES 6 INCHES PER FOOT (500 MM PER M) AND STEEPER, LAY SOD PERPENDICULAR TO SLOPE AND SECURE EVERY ROW WITH WOODEN PEGS AT MAXIMUM 2 FEET (600 MM) ON CENTER. DRIVE PEGS FLUSH WITH SOIL PORTION OF SOD.
H. WATER SODDED AREAS IMMEDIATELY AFTER INSTALLATION. SATURATE SOD TO 4 INCHES (100 MM) OF SOIL. DURING FIRST WEEK, WATER DAILY OR MORE FREQUENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A MINIMUM DEPTH OF 1-1/2 INCHES BELOW THE SOD.
I. AFTER SOD AND SOIL HAVE DRIED, ROLL SODDED AREAS TO ENSURE GOOD BOND BETWEEN SOD AND SOIL AND TO REMOVE MINOR DEPRESSIONS AND IRREGULARITIES.

3.05 CLEAN-UP AND PROTECTION

A. DURING LANDSDCAPING, KEEP PAVEMENT CLEAN AND WORK AREA IN AN ORDERLY CONDITION.
B. PROTECT LANDSCAPING FROM DAMAGE DUE TO LANDSCAPE OPERATIONS, OPERATIONS BY OTHER CONTRACTORS AND TRADES, AND TRESPASSERS. MAINTAIN PROTECTION DURING INSTALLATION AND MAINTENANCE PERIODS. TREAT, REPAIR, OR REPLACE DAMAGED LANDSCAPE WORK AS DIRECTED.

3.06 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. REMOVE SURPLUS SOIL AND WASTE MATERIAL, INCLUDING EXCESS SUBSOIL, UNSUITABLE SOIL, TRASH, AND DEBRIS, AND LEGALLY DISPOSE OF IT OFF THE OWNER'S PROPERTY.

3.07 MAINTENANCE

A. PROVIDE MAINTENANCE AT NO EXTRA COST TO OWNER; OWNER WILL PAY FOR WATER.
B. MAINTAIN SODDED AREAS IMMEDIATELY AFTER PLACEMENT UNTIL GRASS IS WELL ESTABLISHED AND EXHIBITS A VIGOROUS GROWING CONDITION, BUT NOT LESS THAN 30 DAYS AFTER DATE OF SUBSTANTIAL COMPLETION AND SECOND FULL MOWING HAS BEEN PERFORMED.
C. MOW GRASS AT REGULAR INTERVALS TO MAINTAIN AT A MAXIMUM HEIGHT OF 2-1/2 INCHES (65 MM). DO NOT CUT MORE THAN 1/3 OF GRASS BLADE AT ANY ONE MOWING. DO NOT DELAY MOWING UNTIL GRASS BLADES BEND OVER AND BECOME MATTED. DO NOT MOW GRASS WHEN WET.
D. APPLY FERTILIZER TO LAWN AFTER FIRST MOWING AND WHEN GRASS IS DRY. USE FERTILZER THAT WILL PROVIDE ACTUAL NITROGEN OF AT LEAST 1 LB. PER 1000 SQ. FT. OF LAWN AREA.
E. NEATLY TRIM EDGES AND HAND CLIP WHERE NECESSARY.
F. IMMEDIATELY REMOVE CLIPPINGS AFTER MOWING AND TRIMMING.
G. WATER TO PREVENT GRASS AND SOIL FROM DRYING OUT TO A UNIFORM DEPTH OF 4 INCHES. WATER LAWN AT THE MINIMUM RATE OF 1 INCH PER WEEK.
H. ROLL SURFACE TO REMOVE IRREGULARITIES.
I. CONTROL GROWTH OF WEEDS. APPLY HERBICIDES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. REMEDY DAMAGE RESULTING FROM IMPROPER USE OF HERBICIDES.
J. IMMEDIATELY REPLACE SOD TO AREAS THAT SHOW DETERIORATION OR BARE SPOTS.
K. PROTECT SODDED AREAS WITH WARNING SIGNS DURING MAINTENANCE PERIOD.

END OF SECTION

SECTION 32 9300
PLANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. PREPARATION OF SUBSOIL.
B. TOPSOIL BEDDING.
C. NEW TREES AND PLANTS.
D. FERTILIZER.
E. MAINTENANCE.
F. TREE AND SHRUB PRUNING.

1.02 DEFINITIONS

A. WEEDS: ANY PLANT LIFE NOT SPECIFIED OR SCHEDULED.
B. PLANTS: LIVING TREES, PLANTS, AND GROUND COVER SPECIFIED IN THIS SECTION , AND DESCRIBED IN ANSI Z60.1.

1.03 REFERENCE STANDARDS

A. ANSI A300 PART 1 - AMERICAN NATIONAL STANDARD FOR TREE CARE OPERATIONS -- TREE, SHRUB AND OTHER WOODY PLANT MAINTENANCE -- STANDARD PRACTICES; 2017.
B. ANSI/AHIA Z60.1 - AMERICAN NATIONAL STANDARD FOR NURSERY STOCK; 2014.

1.04 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: ENGAGE AN EXPERIENCED INSTALLER WHO HAS COMPLETED LANDSCAPING WORK SIMILAR IN MATERIAL, DESIGN, AND EXTENT TO THAT INDICATED FOR THIS PROJECT WITH AT LEAST 3 YEARS EXPERIENCE AND A RECORD OF SUCCESSFUL LANDSCAPE ESTABLISHMENT.
B. PROVIDE QUALITY, SIZE, GENUS, SPECIES, AND VARIETY OF TREES, SHRUBS, AND PLANTS INDICATED COMPLYING WITH THE APPLICABLE REQUIREMENTS OF ANSI/AHIA Z60.1.
C. MEASURE TREES AND SHRUBS ACCORDING TO ANSI/AHIA Z60.1 WITH BRANCHES AND TRUNKS OR CANES IN THEIR NORNAL POSITION. DO NOT PRUNE TO OBTAIN REQUIRED SIZES. TAKE CALIPER MEASUREMENTS 6 INCHES ABOVE GROUND FOR TREES UP TO 4 INCH CALIPER SIZE AND 12 INCHES ABOVE GROUND FOR LARGER SIZES. MEASURE MAIN BODY OF TREE OR SHRUB FOR HEIGHT AND SPREAD; DO NOT MEASURE BRANCHES OR ROOTS TIP-TO-TIP.
D. TREE PRUNING: COMPLY WITH ANSI A300 PART 1.

1.05 DELIVERY, STORAGE, AND HANDLING

A. TREES AND SHRUBS: DELIVER FRESHLY DUG TREES AND SHRUBS. DO NOT PRUNE BEFORE DELIVERY, EXCEPT AS APPROVED BY LANDSCAPE ARCHITECT. PROTECT BARK, BRANCHES, AND ROOT SYSTEMS FROM SUN SCALD, DRYING, SWEATING, WHIPPING, AND OTHER HANDLING AND TYING DAMAGE. DO NOT BEND OR BIND-TIE TREES OR SHRUBS IN SUCH A MANNER AS TO DESTROY NATURAL SHAPE. PROVIDE PROTECTIVE COVERING DURING DELIVERY. DO NOT DROP TREES AND SHRUBS DURING DELIVERY.
B. HANDLE BALLED AND BURLAPPED STOCK BY THE ROOT BALL.
C. DELIVER FERTILIZER IN WATERPROOF BAGS SHOWING WEIGHT, CHEMICAL ANALYSIS, AND NAME OF MANUFACTURER.
D. DELIVER TREES, SHRUBS, AND PLANTS AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED AND INSTALL IMMEDIATELY. IF PLANTING IS DELAYED MORE THAN 6 HOURS AFTER DELIVERY, SET PLANTING MATERIALS IN SHADE, PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST.
1. SET BALLED STOCK ON GROUND AND COVER BALL WITH SOIL, PEAT MOSS, SAWDUST, OR OTHER ACCEPTABLE MATERIAL.
2. DO NOT REMOVE CONTAINER-GROWN STOCK FROM CONTAINERS BEFORE TIME OF PLANTING.
3. WATER ROOT SYSTEMS OF TREES AND SHRUBS STORED ON SITE WITH A FINE-MIST SPRAY. WATER AS OFTEN AS NECESSARY TO MAINTAIN ROOT SYSTEMS IN A MOIST CONDITION.

E. PROTECT AND MAINTAIN PLANT LIFE UNTIL PLANTED.
F. DELIVER PLANT LIFE MATERIALS IMMEDIATELY PRIOR TO PLACEMENT. KEEP PLANTS MOIST.

1.06 FIELD CONDITIONS

A. DO NOT INSTALL PLANT LIFE WHEN AMBIENT TEMPERATURES MAY DROP BELOW 35 DEGREES F (2 DEGREES C) OR RISE ABOVE 90 DEGREES F (32 DEGREES C).
B. DO NOT INSTALL PLANT LIFE WHEN WIND VELOCITY EXCEEDS 30 MPH (48 K/HR).
C. UTILITIES: DETERMINE LOCATION OF ABOVE GRADE AND UNDERGROUND UTILITIES AND PERFORM WORK IN A MANNER WHICH WILL AVOID DAMAGE. HAND EXCAVATE AS REQUIRED. MAINTAIN GRADE STAKES UNTIL REMOVAL IS MUTUALLY AGREED UPON BY PARTIES CONCERNED.
D. EXCAVATION: WHEN CONDITIONS DETRIMENTAL TO PLANT GROWTH ARE ENCOUNTERED, SUCH AS RUBBLE FILL, ADVERSE DRAINAGE CONDITIONS, OR OBSTRUCTIONS, NOTIFY LANDSCAPE ARCHITECT BEFORE PLANTING.

1.07 COORDINATION AND SCHEDULING

A. COORDINATE INSTALLATION OF PLANTING MATERIALS DURING NORMAL PLANTING SEASONS FOR EACH TYPE OF PLANT MATERIAL REQUIRED.

1.08 WARRANTY

A. GENERAL WARRANTY: THE SPECIAL WARRANTY SPECIFIED IN THIS ARTICLE SHALL NOT DEPRIVE THE OWNER OF OTHER RIGHTS THE OWNER MAY HAVE UNDER OTHER PROVISIONS OF THE CONTRACT DOCUMENTS AND SHALL BE IN ADDITION TO AND RUN CONCURRENT WITH OTHER WARRANTIES MADE BY THE CONTRACTOR UDNER REQUIREMENTS OF THE CONTRACT DOCUMENTS.
B. SPECIAL WARRANTY: WARRANT TREES, SHRUBS, AND PLANTS FOR A PERIOD OF ONE YEAR AFTER DATE OF SUBSTANTIAL COMPLETION AGAINST DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH, EXCEPT FOR DEFECTS RESULTING FROM LACK OF ADEQUATE MAINTENANCE, NEGLECT, OR ABUSE BY OWNER, ABNORMAL WEATHER CONDITIONS UNUSUAL FOR WARRANTY PERIOD, OR INCIDENTS THAT ARE BEYOND CONTRACTOR'S CONTROL.
C. REPLACEMENTS: PLANTS OF SAME SIZE AND SPECIES AS SPECIFIED, PLANTED IN THE NEXT GROWING SEASON, WITH A NEW WARRANTY COMMENCING ON DATE OF REPLACEMENT.
1. REMOVE AND REPLACE DEAD PLANTING MATERIALS IMMEDIATELY UNLESS REQUIRED TO PLANT IN THE SUCCEEDING PLANTING SEASON.
2. REPLACE PLANTING MATERIALS THAT ARE MORE THAN 25% DEAD OR IN AN UNHEALTHY CONDITION AT END OF WARRANTY PERIOD.
3. A LIMIT OF ONE REPLACEMENT OF EACH PLANT MATERIAL WILL BE REQUIRED, EXCEPT FOR LOSSES OR REPLACEMENTS DUE TO FAILURE TO COMPLY WITH REQUIREMENTS.

PART 2 PRODUCTS

2.01 TREE AND SHRUB MATERIAL

A. PLANTS: SPECIES AND SIZE IDENTIFIED IN PLANT SCHEDULE, GROWN IN CLIMATIC CONDITIONS SIMILAR TO THOSE IN LOCALITY OF THE WORK.
B. GENERAL: FURNISH NURSERY-GROWN TREES AND SHRUBS CONFORMING TO ANSI/AHIA Z60.1, WITH HEALTHY ROOT SYSTEMS, DEVELOPED BY TRANSPLANTING OR ROOT PRUNING. PROVIDE WELL SHAPED, FULLY-BRANCHED, HEALTHY, VIGOROUS STOCK FREE OF DISEASE, INSECTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SUN SCALD, INJURIES, ABRASIONS, AND DISFIGUREMENT.
C. GRADE: PROVIDE TREES AND SHRUBS OF SIZES AND GRADES CONFORMING TO ANSI/AHIA Z60.1 FOR TYPE OF TREES AND SHRUBS REQUIRED. TREES AND SHRUBS OF A LARGER SIZE MAY BE USED IF ACCEPTABLE TO LANDSCAPE ARCHITECT WITH PROPORTIONATE INCREASE IN SIZE OF ROOTS AND BALL.
D. LABEL AT LEAST 1 TREE AND 1 SHRUB OF EACH VARIETY AND CALIPER WITH A SECURELY ATTACHED, WATERPROOF TAG BEARING LEGIBLE DESIGNATION OF BOTANNICAL AND COMMON NAME.

2.02 SHRUBS AND PERENNIALS

A. FORM AND SIZE: SHRUBS WITH NOT LESS THAN THE MINIMUM NUMBER OF CANES REQUIRED BY AND MEASURED ACCORDING TO ANSI/AHIA Z60.1 FOR TYPE, SHAPE, AND HEIGHT OF SHRUB.
B. PROVIDE BALLED AND BURLAPPED OR CONTAINER SHRUBS AND PERENNIALS.

2.03 SOIL MATERIALS

A. PROVIDE APPROVED IMPORTED TOPSOIL REQUIRED TO BRING SURFACE TO SPECIFIED ELEVATION RELATIVE TO WALK OR CURB.
B. TOPSOIL: FERTILE, AGRICULTURAL SOIL, TYPICAL FOR LOCALITY, CAPABLE OF SUSTAINING VIGOROUS PLANT GROWTH, TAKEN FROM DRAINED SITE; FREE OF SUBSOIL, CLAY OR IMPURITIES, PLANTS, WEEDS AND ROOTS; SEE SECTION 32 9113: SOIL PREPARATION FOR REQUIRED CHEMICAL AND PHYSICAL CHARACTERISTICS.

2.04 SOIL AMENDMENT MATERIALS

A. FERTILIZER FOR TREES AND SHRUBS: CONTAINING FIFTY PERCENT OF THE ELEMENTS DERIVED FROM ORGANIC SOURCES; OF PROPORTION NECESSARY TO ELIMINATE ANY DEFICIENCIES OF TOPSOIL, TO THE FOLLOWING PROPORTIONS:
1. NITROGEN: >20% (OF WHICH 50% WILL BE ORGANIC).
2. PHOSPHORIC ACID: 10%.
3. SOLUBLE POTASH: 5%.

B. WATER: CLEAN, FRESH, AND FREE OF SUBSTANCES OR MATTER THAT COULD INHIBIT VIGOROUS GROWTH OF PLANTS.

PART 3 EXECUTION

3.01 EXAMINATION

A. EXAMINE AREAS TO RECEIVE LANDSCAPING FOR COMPLIANCE WITH REQUIREMENTS AND FOR CONDITIONS AFFECTING PERFORMANCE OF WORK OF THIS SECTION. DO NOT PROCEED WITH INSTALLATION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
B. VERIFY THAT PREPARED SUBSOIL AND PLANTERS ARE READY TO RECEIVE WORK.
C. SATURATE SOIL WITH WATER TO TEST DRAINAGE.

3.02 PREPARATION OF SUBSOIL

A. PREPARE SUBSOIL TO ELIMINATE UNEVEN AREAS. MAINTAIN PROFILES AND CONTOURS. MAKE CHANGES IN GRADE GRADUAL. BLEND SLOPES INTO LEVEL AREAS.
B. REMOVE STONES LARGER THAN 1 INCH IN ANY DIMENSION, FOREIGN MATERIALS, STICKS, RUBBISH, WEEDS AND UNDESIRABLE PLANTS AND THEIR ROOTS. REMOVE CONTAMINATED SUBSOIL.
C. SCARIFY SUBSOIL TO A DEPTH OF 6 INCHES (150 MM) WHERE PLANTS ARE TO BE PLACED. REPEAT CULTIVATION IN AREAS WHERE EQUIPMENT, USED FOR HAULING AND SPREADING TOPSOIL, HAS COMPACTED SUBSOIL.

3.03 PLACING TOPSOIL

A. TOPSOIL DEPTH SHALL BE A MINIMUM OF 12 INCHES.
B. SPREAD TOPSOIL TO A MINIMUM DEPTH OF 6 INCHES (150 MM) OVER AREA TO BE PLANTED. WORK INTO TOP OF LOOSENED SUB GRADE TO CREATE A TRANSITION LAYER AND HTEN PLACE REMAINDER OF PLANTING SOIL MIXTURE.
C. TILL SOIL IN BEDS TO A MINIMUM DEPTH OF 8 INCHES AND MIX WITH SPECIFIED SOIL AMENDMENTS AND FERTILIZERS.
D. PLACE TOPSOIL DURING DRY WEATHER AND ON DRY UNFROZEN SUBGRADE.
E. REMOVE VEGETABLE MATTER AND FOREIGN NON-ORGANIC MATERIAL FROM TOPSOIL WHILE SPREADING.
F. GRADE TOPSOIL TO ELIMINATE ROUGH, LOW OR SOFT AREAS, AND TO ENSURE POSITIVE DRAINAGE.

3.04 FERTILIZING

A. APPLY FERTILIZER IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. APPLY AFTER INITIAL RAKING OF TOPSOIL AND TILL IN TO BEDS.
C. MIX THOROUGHLY INTO UPPER 8 INCHES (203 MM) OF TOPSOIL.
D. LIGHTLY WATER TO AID THE DISSIPATION OF FERTILIZER.

3.05 EXCAVATION FOR TREES AND SHRUBS

A. PITS AND TRENCHES: EXCAVATE WITH BOTTOM OF EXCAVATION SLIGHTLY RAISED AT CENTER TO ASSIST DRAINAGE. LOOSEN HARD SUBSOIL IN BOTTOM OF EXCAVATION.
1. BALLED AND BURLAPPED TREES AND SHRUBS: EXCAVATE APPROXIMATELY 3 TIMES AS WIDE AS BALL DIAMETER AND EQUAL TO BALL DEPTH.
2. CONTAINER-GROWN TREES AND SHRUBS: EXCAVATE APPROXIMATELY 3 TIMES AS WIDE AS CONTAINER DIAMTER AND EQUAL TO ROOT MASS DEPTH.

B. DISPOSE OF SUBSOIL REMOVED FROM LANDSDCAPE EXCAVATIONS. DO NOT MIX WITH PLANTING SOIL OR USE AS BACKFILL.
C. OBSTRUCTIONS: NOTIFY LANDSCAPE ARCHITECT IF UNEXPECTED ROCK OR OBSTRUCTIONS DETRIMENTAL TO TREES OR SHRUBS ARE ENCOUNTERED IN EXCAVATIONS.
D. DRAINAGE: NOTIFY LANDSCAPE ARCHITECT IF SUBSOIL CONDITIONS EVIDENCE UNEXPECTED WATER SEEPAGE OR RETENTION IN TREE OR SHRUB PITS.
E. FILL EXCAVATION WITH WATER AND ALLOW TO PERCOLATE OUT BEFORE PLACING SETTING LAYER AND POSITIONING TREES AND SHRUBS.

3.06 PLANTING

A. LAYOUT INDIVIDUAL TREE AND SHRUB LOCATIONS AND AREAS FOR MULTIPLE PLANTINGS. STAKE LOCATIONS, OUTLINE AREAS, AND SECURE LANDSCAPE ARCHITECTS ACCEPTANCE BEFORE THE START OF PLANTING WORK. MAKE MINOR ADJUSTMENTS AS NEEDED.
B. SET BALLED AND BURLAPPED STOCK PLUMB AND IN CENTER OF PIT OR TRENCH WITH TOP OF BALL RAISED ABOVE ADJACENT FINISH GRADES AS INDICATED.
1. PLACE STOCK ON UNDISTURBED OR COMPACTED TOPSOIL.
2. REMOVE BURLAP AND WIRE BASKETS FROM TOPS AND AT LEAST UPPER HALF OF ROOT BALL (MORE IF THE ROOT BALL IS STABLE), BUT DO NOT REMOVE FROM UNDER ROOT BALL. REMOVE PALLETS, IF ANY, BEFORE SETTING. DO NOT USE PLANTING STOCK IF BALL IS CRACKED OR BROKEN BEFORE OR DURING PLANTING OPERATION.
3. PLACE BACKFILL AROUND BALL IN LAYERS, TAMPING TO SETTLE BACKFILL AND ELIMINATE VOIDS AND AIR POCKETS.
4. BACKFILL TO CONSIST OF ONE (1) PART TOPSOIL AND ONE (1) PART NATIVE SOIL CLEAN AND FREE FROM TOXIC MINERAL AND CHEMICALS, NOXIOUS WEEDS, ROCKS LARGER THAN 1-1/2 INCH IN ANY DIMENSION, AND OTHER OBJECTIONABLE MATERIALS.
5. WHEN PIT IS APPROXIMATELY 1/2 BACKFILLED, WATER THOROUGHLY BEFORE PLACING REMAINDER OF BACKFILL. REPEAT WATERING UNTIL NO MORE IS ABSORBED. WATER AGAIN AFTER PLACING AND TAMPING FINAL LAYER OF BACKFILL.

C. SET CONTAINER-GROWN STOCK PLUMB IN CENTER OF PIT OR TRENCH WITH TOP OF BALL RAISED ABOVE ADJACENT FINISH GRADES AS INDICATED.
1. CAREFULLY REMOVE CONTAINERS SO AS NOT TO DAMAGE ROOT BALLS.
2. PLACE STOCK ON UNDISTURBED OR COMPACTED TOPSOIL.
3. PLACE BACKFILL AROUND BALL IN LAYERS, TAMPING TO SETTLE BACKFILL AND ELIMINATE VOIDS AND AIR POCKETS.
4. BACKFILL TO CONSIST OF ONE (1) PART TOPSOIL AND ONE (1) PART NATIVE SOIL CLEAN AND FREE FROM TOXIC MINERAL AND CHEMICALS, NOXIOUS WEEDS, ROCKS LARGER THAN 1-1/2 INCH IN ANY DIMENSION, AND OTHER OBJECTIONABLE MATERIALS.
5. WHEN PIT IS APPROXIMATELY 1/2 BACKFILLED, WATER THOROUGHLY BEFORE PLACING REMAINDER OF BACKFILL. REPEAT WATERING UNTIL NO MORE IS ABSORBED. WATER AGAIN AFTER PLACING AND TAMPING FINAL LAYER OF BACKFILL.

D. DISH AND TAMP TOP OF BACKFILL TO FORM A 3 INCH HIGH MOUND AROUND THE RIM OF THE PIT. DO NOT COVER TOP OF ROOT BALL WITH BACKFILL.

3.07 FIELD QUALITY CONTROL

A. PLANTS WILL BE REJECTED IF A BALL OF EARTH SURROUNDING ROOTS HAS BEEN DISTURBED OR DAMAGED PRIOR TO OR DURING PLANTING.

3.08 CLEAN-UP AND PROTECTION

A. DURING LANDSCAPING, KEEP PAVEMENT CLEAN AND WORK AREA IN ORDERLY CONDITION.
B. PROTECT LANDSCAPING FROM DAMAGE DUE TO LANDSCAPE OPERATIONS, OPERATIONS BY OTHER CONTRACTORS AND TRADES, AND TRESPASSERS. MAINTAIN PROTECTION DURING INSTALLATION AND MAINTENANCE PERIODS. TREAT, REPAIR, OR REPLACE DAMAGED LANDSCAPE WORK AS DIRECTED.

3.09 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. REMOVE SURPLUS SOIL AND WASTE MATERIAL, INCLUDING EXCESS SUBSOIL, UNSUITABLE SOIL, TRASH, AND DEBRIS, AND LEGALLY DISPOSE OF IT OFF THE OWNER'S PROPERTY.

3.10 MAINTENANCE

A. PROVIDE MAINTENANCE AT NO EXTRA COST TO OWNER; OWNER WILL PAY FOR WATER.
B. MAINTAIN PLANT LIFE FOR 60 DAYS AFTER DATE OF SUBSTANTIAL COMPLETION.
C. IRRIGATE SUFFICIENTLY TO SATURATE ROOT SYSTEM AND PREVENT SOIL FROM DRYING OUT.
D. REMOVE DEAD OR BROKEN BRANCHES AND TREAT PRUNED AREAS OR OTHER WOUNDS.
E. NEATLY TRIM PLANTS WHERE NECESSARY.
F. IMMEDIATELY REMOVE CLIPPINGS AFTER TRIMMING.
G. CONTROL GROWTH OF WEEDS. APPLY HERBICIDES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
H. CONTROL INSECT DAMAGE AND DISEASE. APPLY PESTICIDES IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
I. REMEDY DAMAGE FROM USE OF HERBICIDES AND PESTICIDES.

END OF SECTION

SECTION 32 9419
LANDSCAPE SURFACING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. MULCH.
B. WEED BARRIER
C. MAINTENANCE.

1.02 SUBMITTALS

A. SEE SECTION 01 3000 - ADMINISTRATIVE REQUIREMENTS, FOR SUBMITTAL PROCEDURES.

1.03 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: ENGAGE AN EXPERIENCED INSTALLER WHO HAS COMPLETED LANDSCAPING WORK SIMILAR IN MATERIAL, DESIGN, AND EXTENT TO THAT INDICATED FOR THIS PROJECT WITH AT LEAST 3 YEARS EXPERIENCE AND A RECORD OF SUCCESSFUL LANDSCAPE ESTABLISHMENT.

1.04 FIELD CONDITIONS

A. DO NOT INSTALL MULCH WHEN WIND VELOCITY EXCEEDS 30 MPH (48 K/HR).

1.05 WARRANTY

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

PART 2 PRODUCTS

2.01 MULCH MATERIALS

A. CRUSHED ROCK: 2" MINUS, CRUSHED AND WASHED. COLOR TO BE CHOSEN BY OWNER.

2.02 ACCESSORIES

A. WEED CONTROL BARRIER: 5 OZ. WOVEN, NEEDLE-PUNCHED POLYPROPYLENE FABRIC. DEWITT PRO 5 WEED BARRIER OR LANDSCAPE ARCHITECT'S APPROVED EQUAL.
B. ANTIDESICCANT: WATER-INSOLUBLE EMULSION, PERMEABLE MOISTURE RETARDER, FILM FORMING, FOR TREES AND SHRUBS. DELIVER IN ORIGINAL, SEALED, AND FULLY LABELED CONTAINERS AND MIX ACCORDING TO MANUFACTURER'S INSTRUCTIONS.

PART 3 EXECUTION

3.01 EXAMINATION

A. EXAMINE AREAS TO RECEIVE LANDSCAPING FOR COMPLIANCE WITH REQUIREMENTS AND FOR CONDITIONS AFFECTING PERFORMANCE OF WORK OF THIS SECTION. DO NOT PROCEED WITH INSTALLATION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
B. VERIFY THAT PREPARED SUBSOIL AND PLANTERS ARE READY TO RECEIVE WORK.

3.02 MULCHING

A. MULCH BACKFILLED SURFACES OF PITS, TRENCHES, PLANTED AREAS, AND OTHER AREAS INDICATED.
B. WEED CONTROL BARRIERS: INSTALL WEED CONTROL BARRIERS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND BEFORE MULCHING. COMPLETELY COVER AREA TO BE MULCHED, LAPPING EDGES A MINIMUM OF 6 INCHES.
C. CRUSHED ROCK: PLACE 3 INCH DEPTH ROCK IN AREAS AS SHOWN ON PLANS.

3.03 ACCESSORIES

A. APPLY ANTIDESICCANT USING POWER SPRAY TO PROVIDE AN ADEQUATE FILM OR TRUNKS, BRANCHES, STEMS, TWIGS, AND FOLIAGE. WHEN DECIDUOUS TREES OR SHRUBS ARE MOVED IN FULL-LEAF, SPRAY WITH ANTIDESICCANT AT NURSERY BEFORE MOVING AND AGAIN 2 WEEKS AFTER PLANTING.

3.04 CLEAN-UP AND PROTECTION

A. DURING LANDSCAPING, KEEP PAVEMENT CLEAN AND WORK AREA IN ORDERLY CONDITION.
B. PROTECT LANDSCAPING FROM DAMAGE DUE TO LANDSCAPE OPERATIONS, OPERATIONS BY OTHER CONTRACTORS AND TRADES, AND TRESPASSERS. MAINTAIN PROTECTION DURING INSTALLATION AND MAINTENANCE PERIODS. TREAT, REPAIR, OR REPLACE DAMAGED LANDSCAPE WORK AS DIRECTED.

3.05 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. REMOVE SURPLUS SOIL AND WASTE MATERIAL, INCLUDING EXCESS SUBSOIL, UNSUITABLE SOIL, TRASH, AND DEBRIS, AND LEGALLY DISPOSE OF IT OFF THE OWNER'S PROPERTY.

3.06 MAINTENANCE

A. REPLACE MULCH WHEN DETERIORATED.

END OF SECTION

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255 SOUTH 300 WEST LOGAN UT 84321
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LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 E 1000 N, LOGAN, UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: J. CLEMENTS
CHECKED BY: B. WRIGHT
ISSUED: 02.05.2024

STATE OF UTAH
BLAKE C. WRIGHT
02.05.2024
105101-5301
LICENSED LANDSCAPE ARCHITECT

CONSTRUCTION DOCUMENTS

LANDSCAPE SPECIFICATIONS
L-002

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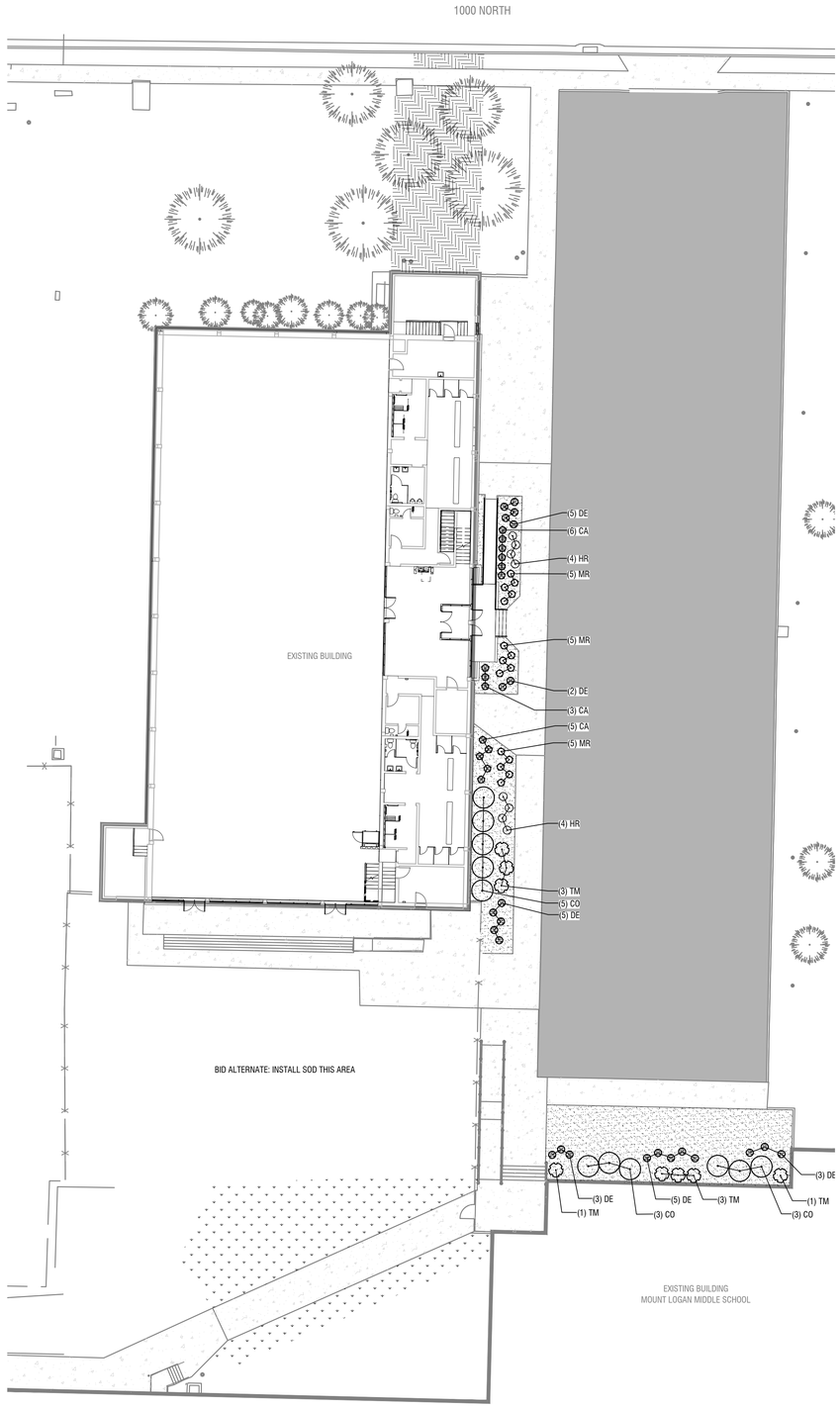

PLANTING NOTES

1. CONTRACTOR TO VERIFY ALL CONDITIONS PERTAINING TO THIS PLAN AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE LANDSCAPE ARCHITECT.
2. THE CONTRACTOR SHALL LOCATE AND VERIFY ALL UTILITIES LINES PRIOR TO PLANTING AND SHALL REPORT ANY CONFLICTS TO THE LANDSCAPE ARCHITECT.
3. CONTRACTOR SHALL REPAIR ALL DAMAGES CAUSED BY OPERATIONS (WHICH OCCUR ON OR OFF SITE) TO THE ARCHITECT'S AND OWNER'S SATISFACTION.
4. ALL QUANTITIES SHOWN ARE APPROXIMATE AND ARE FURNISHED SOLELY FOR THE CONTRACTOR'S CONVENIENCE. THEY DO NOT NECESSARILY CORRESPOND TO BID SCHEDULE ITEMS. IN THE CASE OF ANY DISCREPANCIES, PLANS SHALL OVERRIDE THE LANDSCAPE AND BID SCHEDULE QUANTITIES. CONTRACTOR SHALL VERIFY QUANTITIES SHOWN ON THE PLANS AND BASE THEIR BID ACCORDINGLY.
5. DO NOT MAKE UNAPPROVED SUBSTITUTIONS. IF SPECIFIED LANDSCAPE MATERIAL IS NOT OBTAINABLE, SUBMIT PROOF OF NON-AVAILABILITY FROM AT LEAST FIVE SOURCES TO LANDSCAPE ARCHITECT, TOGETHER WITH PROPOSAL FOR USE OF EQUIVALENT MATERIAL FOR FINAL APPROVAL.
6. LAYOUT INDIVIDUAL TREE AND PLANT LOCATIONS AND AREAS FOR MULTIPLE PLANTINGS, STAKE LOCATIONS, AND OUTLINE AREAS AND SECURE ARCHITECT'S ACCEPTANCE BEFORE START OF PLANTING WORK. MAKE MINOR ADJUSTMENTS AS MAY BE DIRECTED.
7. INSTALL DEWITT PRO-5 WEED BARRIER UNDER MULCH. FABRIC SHALL BE INSTALLED AFTER PRE-EMERGENT HAS BEEN APPLIED. CUT AN "X" SHAPE IN WEED BARRIER FOR PLANTS AND STAPLE FOLDS DOWN INTO SOIL. USE FABRIC STAPLES EVERY FIVE FEET ON CENTER IN PLANTER BED.
8. REPAIR ALL LANDSCAPING WHERE NEW CONSTRUCTION MEETS EXISTING.
9. PERFORM PERCOLATION TEST ON ALL TREE PLANTING HOLES AND PLANTING BEDS PRIOR TO PLANTING. INFORM LANDSCAPE ARCHITECT OF CONDITIONS OF POOR DRAINAGE.
10. LANDSCAPE CONTRACTOR SHALL COORDINATE AND ADJUST PLANT PLACEMENT WITH SPRINKLERS. PLANTS SHALL NOT BE PLACED WITHIN 12 INCHES OF A SPRINKLER HEAD.
11. CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN ALL PLANT MATERIALS INCLUDING SOD AREAS IN A HEALTHY STATE DURING CONSTRUCTION. ANY DAMAGE TO PLANT MATERIAL DUE TO NEGLECT BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
12. SEE SHEET L-501 FOR LANDSCAPE DETAILS.

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CONT
SHRUBS				
	CO	11	Cornus alba 'Bailhalo' / Ivory Halo® Tatarian Dogwood	5 gal
	MR	15	Mahonia repens / Creeping Mahonia	1 gal
	TM	8	Taxus x media `Hicksii` / Hicks Yew	5 gal
GRASSES				
	CA	14	Calamagrostis x acutiflora 'El Dorado' / El Dorado Feather Reed Grass	2 gal
	DE	23	Deschampsia cespitosa 'Schottland' / Schottland Tufted Hair Grass	2 gal
PERENNIALS				
	HR	8	Hemerocallis x 'Happy Returns' / Happy Returns Daylily	1 gal

LEGEND

SYMBOL	DESCRIPTION	QTY	DETAIL
	PLANTER BED - crushed rock, 2" minus, 3" depth, weed barrier beneath, color by owner	2,576 sf	
	TURF GRASS - sod, kentucky bluegrass mix, patch and repair where meets existing	2,282 sf	D2/L-501
	REPLACE TURF GRASS - in this area that is removed for installation of fire hydrant and fire line to building	1,394 sf	D2/L-501

0 20 40 60 feet

SCALE: 1" = 20'

NORTH

CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
255 SOUTH 300 WEST
SALT LAKE CITY UT 84103
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 E 1000 N, LOGAN, UT 84321

LOGAN CITY SCHOOL DISTRICT

DESCRIPTION:
DATE:
MARK:

PROJECT #: 123998
DRAWN BY: J. CLEMENTS
CHECKED BY: B. WRIGHT
ISSUED: 02.05.2024

STATE OF UTAH
BLAKE C. WRIGHT
(02.05.2024)
105101-5301
LICENSED LANDSCAPE ARCHITECT

PLANTING PLAN

L-101

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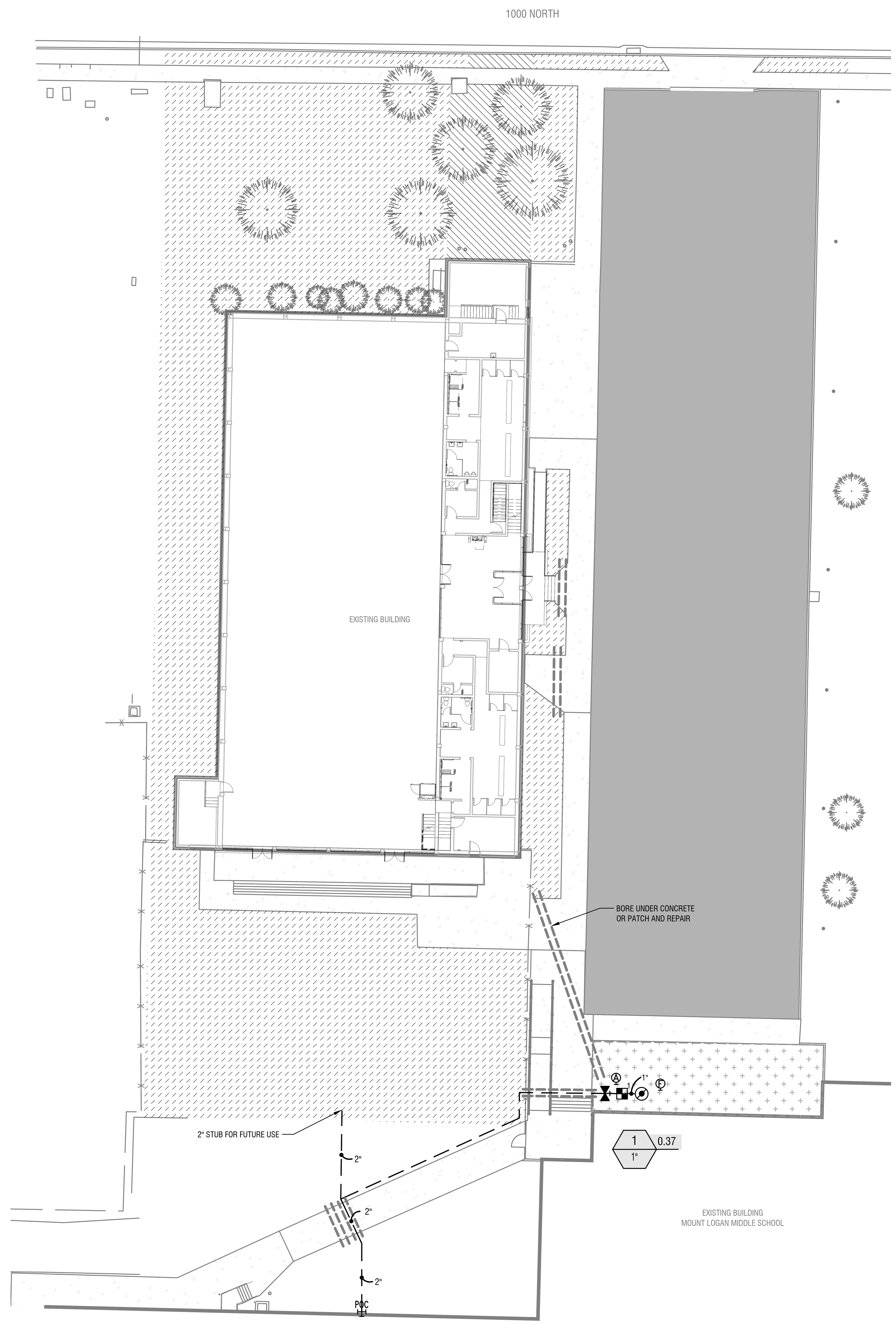

VALVE SCHEDULE

1	Rain Bird LFV-100	1"	Area for Drip Emitters	0.37	33.0	33.0	0.13 in/h

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Rain Bird LFV-100 1in. Low Flow DV Valve	1
	Pipe Transition Point in Drip Box Pipe transition point from PVC lateral to drip tubing with riser in 6in. drip box.	1
F	Flush Valve	1
A	Rain Bird ARV050 1/2in. Air Relief Valve, made of quality rust-proof materials, with a 6in. drip valve box (SEB 7XB emitter box). Use with installation below soil. The valve will allow air to escape the pipeline, thus preventing water hammer or blockage.	1
	Area to Receive Drip Emitters Rain Bird XB-PC Single Outlet, Pressure Compensating Drip Emitters. Flow rates of 0.5 GPH=blue, 1.0 GPH=black, and 2.0 GPH=red. Comes with a self-piercing barb inlet x barb outlet. Emitter Notes: 05PC emitters (2 assigned to each 1 gal plant) 05PC emitters (2 assigned to each 2 gal plant) 05PC emitters (2 assigned to each 5 gal plant)	1,491 s.f.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Isolation Valve	1
POC	Point of Connection 2" BID ALTERNATE: Tie into middle school system. Field Verify Water Pressure.	1
	Irrigation Lateral Line: PVC Schedule 40	5.9 l.f.
	Irrigation Mainline: PVC Schedule 40	159.6 l.f.
	Pipe Sleeve: PVC Schedule 40	144.7 l.f.

Valve Callout
Valve Number
Valve Flow
Valve Size

LEGEND

SYMBOL	DESCRIPTION	QTY
	MODIFY EXISTING IRRIGATION SYSTEM TO PROVIDE FULL COVERAGE THIS AREA - provide as-built drawings of changes made	18,365 sf
	REPAIR IRRIGATION FOR FULL COVERAGE - in this area that is removed for installation of fire hydrant and fire line to building	1,394 sf

IRRIGATION NOTES

1. CONTRACTOR TO VERIFY ALL CONDITIONS PERTAINING TO THIS PLAN AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE LANDSCAPE ARCHITECT.
2. CONTRACTOR SHALL OBTAIN ALL PERMITS AND PAY REQUIRED FEES TO ANY GOVERNMENTAL AGENCY HAVING JURISDICTION OVER THE WORK. INSPECTIONS REQUIRED BY LOCAL ORDINANCES DURING CONSTRUCTION SHALL BE ARRANGED AND CONDUCTED BY THE CONTRACTOR.
3. BEFORE ANY TRENCHING, EXCAVATION OR DIGGING BELOW THE SURFACE FOR ANY REASON IS BEGUN, THE CONTRACTOR SHALL HAVE THE AREA “BLUE STAKED” IN ORDER TO DETERMINE AS CLOSE AS POSSIBLE THE LOCATIONS OF ALL UNDERGROUND UTILITIES. SHOULD UTILITIES NOT SHOWN ON THE PLANS BE FOUND DURING EXCAVATIONS THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT.
4. THE DESIGN PRESSURE FOR THE IRRIGATION SYSTEM IS 30 PSI AT THE FARTHEST ROTOR HEAD. REPORTED AVAILABLE STATIC PRESSURE IS 65 PSI. CONTRACTOR SHALL VERIFY THE AVAILABLE STATIC PRESSURE AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT.
5. IRRIGATION DESIGN IS DIAGRAMMATIC. PIPING, IRRIGATION VALVES AND OTHER IRRIGATION EQUIPMENT ARE OFTEN SHOWN FOR CLARITY IN AREAS ADJACENT TO LOCATIONS WHERE THEY WILL BE INSTALLED. IRRIGATION LINES AND EQUIPMENT MAY BE SHOWN ON PAVEMENT, INSIDE BUILDINGS OR ACROSS PROPERTY LINES. THE CONTRACTOR SHALL PLACE ALL IRRIGATION LINES, VALVES, ETC. IN PLANTING AREAS AND ON THE PROPERTY WHEN POSSIBLE.
6. INSTALL A PRESSURE REGULATOR IF STATIC PRESSURE IN THE SERVICE LINE EXCEEDS THE IRRIGATION SYSTEM OPERATING DESIGN PRESSURE. SIZE AND INSTALL PRESSURE REGULATOR ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
7. PROTECT EXISTING TREES AND THEIR ROOT SYSTEMS. ROUTE IRRIGATION LINES AS NECESSARY TO MINIMIZE THE CUTTING OF TREE ROOTS.
8. THE CONTRACTOR SHALL CONDUCT WORK IN SUCH A MANNER TO PROTECT ALL SITE CONDITIONS AND UTILITIES TO REMAIN FROM DAMAGE. WHEN OCCURS, THE CONTRACTOR SHALL REPAIR THE DAMAGE AT THE CONTRACTOR'S EXPENSE.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTINUED WATERING OF ALL AREAS AFFECTED BY CONSTRUCTION. THIS CAN BE COMPLETED BY HAND WATERING, THE USE OF TEMPORARY IRRIGATION SYSTEMS, OR THE CONTINUED OPERATION OF EXISTING SYSTEMS NOT DISTURBED BY CONSTRUCTION.
10. ALL LINE SIZES SHOWN ARE FOR IRRIGATION PIPE. SEE SPECIFICATIONS AND DETAILS FOR SLEEVE SIZES.
11. SLEEVE CONTROL WIRES IN A 2 INCH CONDUIT NEXT TO, OR UNDER, IRRIGATION MAINLINE AS SHOWN IN DETAILS. CONTROL WIRES NOT SLEEVED SHALL FOLLOW MAINLINE AND BE BUNDLED EVERY 10 FEET.
12. INSTALL MANUAL DRAINS AT ALL LOW POINTS ON THE MAINLINE.
13. ADJUST ALL RADII ON SPRINKLERS TO NOT SPRAY ONTO BUILDINGS, WALLS, WALKS, SIGNS, OR FENCES.
14. LANDSCAPE CONTRACTOR TO COORDINATE PLANT PLACEMENT WITH SPRINKLERS.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING PROPER COVERAGE OF ALL IRRIGATED AREAS.
16. USE EXISTING CONTROLLER.
17. SEE SHEET L-501 FOR LANDSCAPE DETAILS.

0 20 40 60 feet
SCALE: 1" = 20'
NORTH

CONSTRUCTION DOCUMENTS

design west | architects
255 SOUTH 300 WEST
LOGAN UT 84321
795 NORTH 400 WEST
SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
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LOGAN CITY SCHOOL DISTRICT

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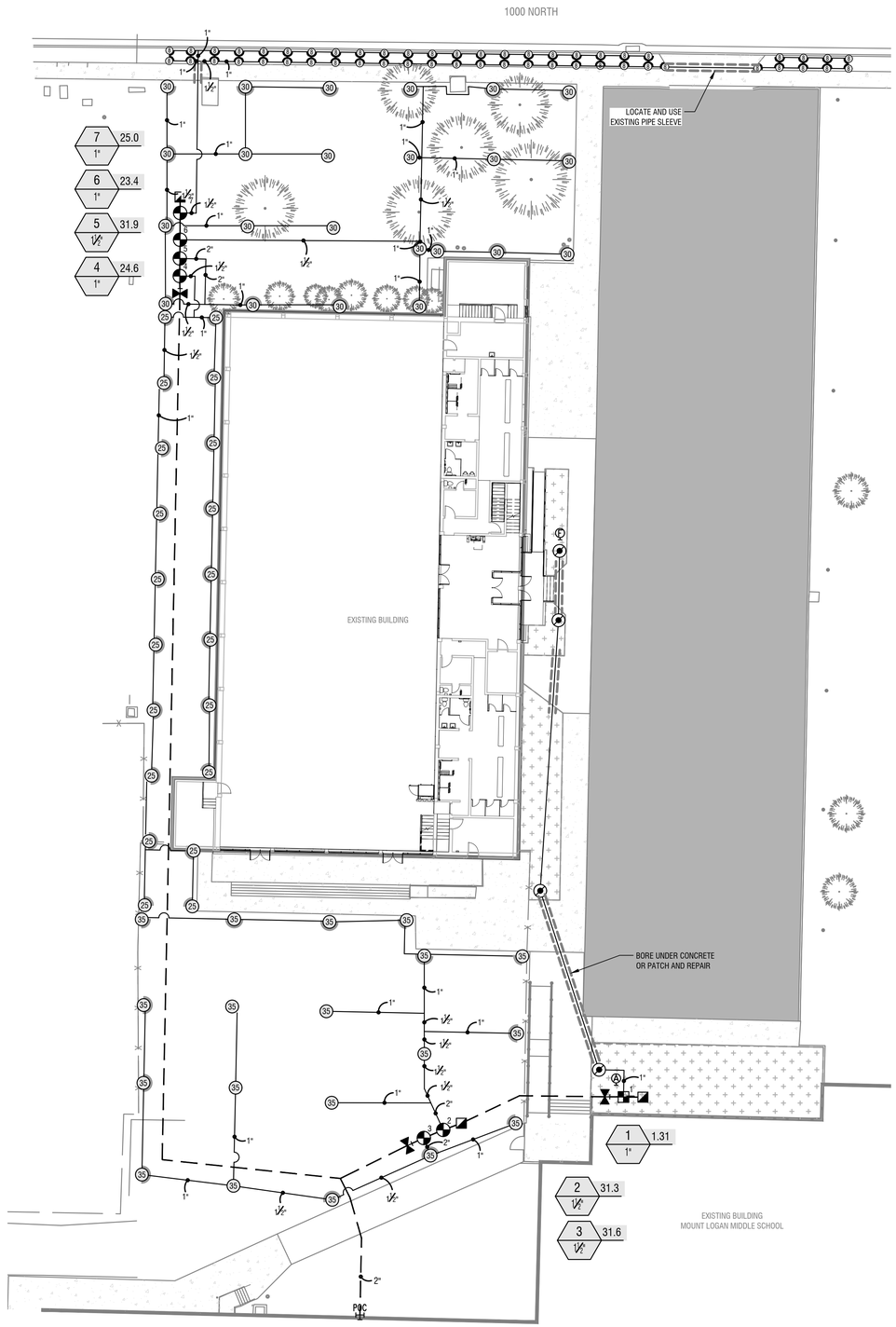
CHECKED BY: B. WRIGHT
ISSUED: 02.05.2024

STATE OF UTAH
BLAKE C. WRIGHT
105101-5301
LICENSED LANDSCAPE ARCHITECT
02.05.2024

IRRIGATION PLAN
L-201



BID ALTERNATE VALVE SCHEDULE

NUMBER	MODEL	SIZE	TYPE	GPM	PSI	PSI @ POC	PRECIP
1	Rain Bird LFV-100	1"	Area for Drip Emitters	1.31	33.3	33.3	0.13 in/h
2	Rain Bird PEB	1-1/2"	Turf Rotor	31.28	33.4		0.66 in/h
3	Rain Bird PEB	1-1/2"	Turf Rotor	31.6	33.7	34.3	0.64 in/h
4	Rain Bird PEB	1"	Turf Rotor	24.6	32.5	34.5	0.7 in/h
5	Rain Bird PEB	1-1/2"	Turf Rotor	31.92	33.9	37.2	0.64 in/h
6	Rain Bird PEB	1"	Turf Rotor	23.35	30.5	32.4	0.69 in/h
7	Rain Bird PEB	1"	Turf Spray	24.96	38.5	40.6	1.6 in/h

BID ALTERNATE IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI
Q T H F	Rain Bird 1806-U-SAM-PRS U8 Series Turf Spray 6in. Pop-Up Sprinkler with Co-Molded Wiper Seal. 1/2in. NPT Female Threaded Inlet. With Seal-A-Matic Check Valve, and Pressure Regulating.	52	30

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	GPM	RADIUS
25	Rain Bird 5006-PL-PC-MPR 25 Turf Rotor, 6in. Pop-Up, Plastic Riser, with Flow Shut-Off Device. Matched Precipitation Rotor (MPR Nozzle), Arc and Radius as per Symbol. 25 ft=red, 30 ft=green, 35ft=beige.	20	25		21'
30	Rain Bird 5006-PL-PC-MPR 30 Turf Rotor, 6in. Pop-Up, Plastic Riser, with Flow Shut-Off Device. Matched Precipitation Rotor (MPR Nozzle), Arc and Radius as per Symbol. 25 ft=red, 30 ft=green, 35ft=beige.	23	25		26'
35	Rain Bird 5006-PL-PC-MPR 35 Turf Rotor, 6in. Pop-Up, Plastic Riser, with Flow Shut-Off Device. Matched Precipitation Rotor (MPR Nozzle), Arc and Radius as per Symbol. 25 ft=red, 30 ft=green, 35ft=beige.	19	25		29'

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Rain Bird LFV-100 1in. Low Flow DV Valve	1
	Pipe Transition Point in Drip Box Pipe transition point from PVC lateral to drip tubing with riser in 6in. drip box.	4
F	Flush Valve	1
A	Rain Bird ARV050 1/2in. Air Relief Valve, made of quality rust-proof materials, with a 6in. drip valve box (SEB 7XB emitter box). Use with installation below soil. The valve will allow air to escape the pipeline, thus preventing water hammer or blockage.	1
	Area to Receive Drip Emitters Rain Bird XB-PC Single Outlet, Pressure Compensating Drip Emitters. Flow rates of 0.5 GPH=blue, 1.0 GPH=black, and 2.0 GPH=red. Comes with a self-piercing barb inlet x barb outlet. Emitter Notes: 05PC emitters (2 assigned to each 1 gal plant) 05PC emitters (2 assigned to each 2 gal plant) 05PC emitters (2 assigned to each 5 gal plant)	2,536 s.f.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Rain Bird PEB 1in., 1-1/2in., 2in. Plastic Industrial Valves. Low Flow Operating Capability, Globe Configuration.	6
	Rain Bird 44-RC 1in. Brass Quick-Coupling Valve, with Corrosion-Resistant Stainless Steel Spring, Thermoplastic Rubber Cover, and 2-Piece Body.	3
	Isolation Valve	3
POC	Point of Connection 2" BID ALTERNATE: Tie into middle school system. Field Verify Water Pressure.	1
	Irrigation Lateral Line: PVC Schedule 40	2,087 l.f.
	Irrigation Mainline: PVC Schedule 40	481.0 l.f.
	Pipe Sleeve: PVC Schedule 40	120.7 l.f.

Valve Callout
Valve Number
Valve Flow
Valve Size

BID ALTERNATE IRRIGATION NOTES

1. REBUILD, RECONFIGURE AND ADJUST THE IRRIGATION SYSTEM TO PROVIDE 100% COVERAGE IN TURF AREAS. THE INSTALLED SYSTEM SHALL NOT SPRAY ONTO BUILDINGS, WALLS, WALKS, SIGNS, OR FENCES.
2. INSTALL NEW IRRIGATION MATERIAL SIMILAR TO THE EXISTING IRRIGATION MATERIALS USED ON SITE. MATCH HEADS, REMOTE VALVES, QUICK COUPLERS, ETC. AS NECESSARY TO MAKE SYSTEM OPERATIONAL.
3. THE IRRIGATION PIPING SHALL BE SIZED TO HAVE WATER SPEEDS UNDER FIVE FEET PER SECOND. NEW PIPING SHALL NOT CAUSE WATER SPEEDS IN THE EXISTING PIPE SYSTEM TO EXCEED FIVE FEET PER SECOND. PIPING SHALL BE PLACED SO THAT THERE IS 12 INCHES OF COVER ON LATERAL LINES AND 18 INCHES OF COVER ON MAINLINES AND ROTOR CIRCUIT LATERAL LINES.
4. IRRIGATION SLEEVES SHALL BE PLACED UNDER PAVEMENT. SLEEVE SIZE SHALL BE TWO TIMES THE SIZE OF THE PIPE TO BE SLEEVED. IRRIGATION WIRES SHALL BE IN SEPARATE SLEEVE FROM WATER LINES. WIRE SLEEVES SHALL BE TWO TIMES THE SIZE OF THE WIRE BUNDLE WITH A MINIMUM SIZE OF TWO INCH. CONTROL WIRES NOT SLEEVED SHALL FOLLOW THE MAINLINE AND BE BUNDLED EVERY 10 FEET AS SHOWN IN DETAILS.
5. FIELD VERIFY HEAD SPACING IN AREAS WHERE NEW AND OLD IRRIGATION SYSTEMS JOIN. ADJUST IRRIGATION SYSTEM HEAD SPACING TO PROVIDE COVERAGE AS REQUIRED IN SPECIFICATIONS.
6. RECONNECT THE IRRIGATION CONTROL WIRES AS REQUIRED TO CREATE AN OPERATIONAL SYSTEM. PUT ALL WIRE SPLICES IN SPLICE BOXES OR IN REMOTE CONTROL BOXES.
7. SEE SHEET L-501 FOR LANDSCAPE DETAILS.

0 20 40 60 feet
SCALE: 1" = 20'

NORTH

CONSTRUCTION DOCUMENTS

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10510-5301
LICENSED LANDSCAPE ARCHITECT

IRRIGATION PLAN - BID ALT

L-202

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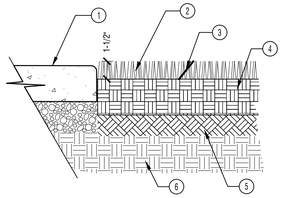
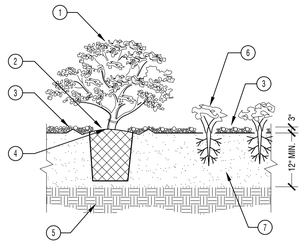


1. ADJACENT HARDSCAPE, SEE PLAN FOR MATERIAL
2. SOD
3. TIGHT BEVELED JOINTS
4. TOP SOIL (4" MINIMUM)
5. TRANSITION LAYER TOPSOIL AND NATIVE SOIL MIX
6. UNISTURBED OR COMPACTED SUBGRADE

NOTES:
1. ENSURE SMOOTH TRANSITION WHEN PATCHING OR TYING INTO EXISTING LAWNS.
2. MATCH SPECIES OF ADJACENT TURF.

D2 SOD PLANTING

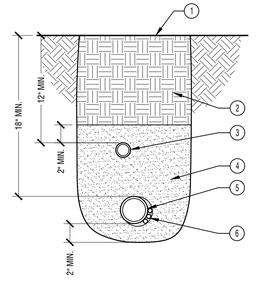
1 1/2" = 1'-0"



1. SHRUB (SEE PLANT SCHEDULE)
2. KEEP MULCH 3" AWAY FROM SHRUB AND PERENNIAL STEMS
3. MULCH PER PLAN
4. SOIL BACKFILL SHALL NOT BE ABOVE ROOT COLLAR
5. EXISTING SUBGRADE
6. PERENNIAL (SEE PLANT SCHEDULE)
7. BACKFILL WITH SPECIFIED TOPSOIL

D3 SHRUB AND PERENNIAL PLANTING

3/4" = 1'-0"



1. FINISH GRADE
2. COMPACTED BACKFILL
3. LATERAL PVC LINE (18" DEEP FOR ROTOR HEAD INSTALLATIONS)
4. 2" SAND OR ROCK-FREE SOIL AROUND ALL PIPE
5. PVC MAINLINE
6. TAPE WIRES TO SIDE OF MAINLINE AT 10'-0" O.C.

D4 TRENCH SECTION

1 1/2" = 1'-0"

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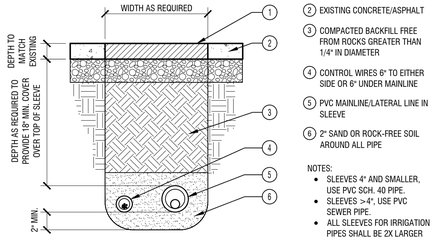


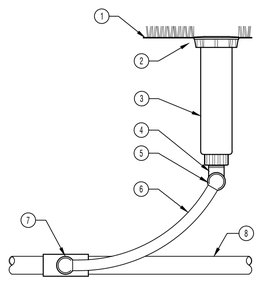
1. SAWCUT AND PATCH CONCRETE/ASPHALT AS REQUIRED
2. EXISTING CONCRETE/ASPHALT
3. COMPACTED BACKFILL FREE FROM ROCKS GREATER THAN 1/4" IN DIAMETER
4. CONTROL WIRES 6" TO EITHER SIDE OR 6" UNDER MAINLINE
5. PVC MAINLINE/LATERAL LINE IN SLEEVE
6. 2" SAND OR ROCK-FREE SOIL AROUND ALL PIPE

NOTES:
- SLEEVES 4" AND SMALLER, USE PVC SCH. 40 PIPE.
- SLEEVES >4", USE PVC SEWER PIPE.
- ALL SLEEVES FOR IRRIGATION PIPES SHALL BE 2X LARGER THAN PIPE TO BE SLEEVED.
- WIRE SLEEVES TO BE MINIMUM OF 2".
- SLEEVES TO EXTEND 12" INTO PLANTING AREA.

D5 PAVEMENT SLEEVE SECTION

1 1/2" = 1'-0"

P-1-LCSD-MPR-10



1. FINISH GRADE
2. FIRM SOIL IMMEDIATELY AROUND HEAD
3. POP-UP SPRAY HEAD
4. 90° MARLEX STREET ELL
5. 90° MARLEX ELL BARBED INSERT FITTING
6. LINEAR LOW DENSITY POLYETHYLENE PIPE (14" LONG MINIMUM, 24" LONG MAXIMUM)
7. 90° MARLEX ELL BARBED INSERT FITTING
8. PVC LATERAL LINE

C1 4-6 IN. POP-UP SPRAY HEAD

3" = 1'-0"

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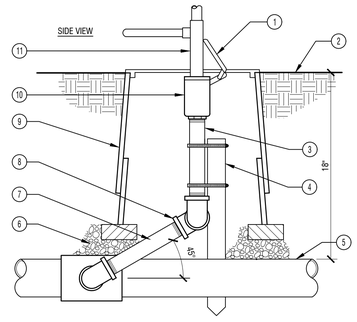
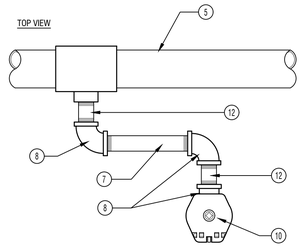


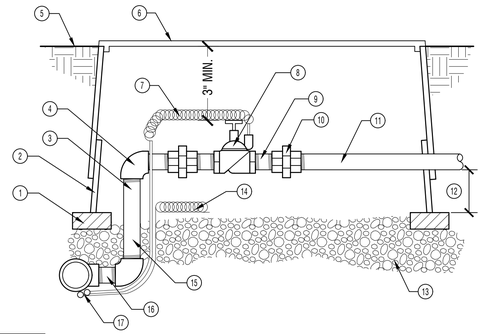


1. VALVE COVER
2. FINISH GRADE
3. 1" SCH. 80 PVC NIPPLE (LENGTH AS REQUIRED)
4. 2" X 2" X 24" WOOD STAKE WITH CLAMPS
5. SCH. 40 MAINLINE PVC PLASTIC PIPE
6. 3/4" GRAVEL
7. 1" SCH. 80 PVC NIPPLE (LENGTH AS REQUIRED)
8. 1" SCH. 40 PVC ELL
9. ROUND VALVE BOX WITH EXTENSIONS
10. ONE PIECE BODY QUICK COUPLING VALVE
11. VALVE COUPLING KEY
12. 1" SCH. 80 PVC NIPPLE (2" LONG)

C2 QUICK COUPLING VALVE WITH WOOD STAKE

1 1/2" = 1'-0"

P-1-LCSD-MPR-16

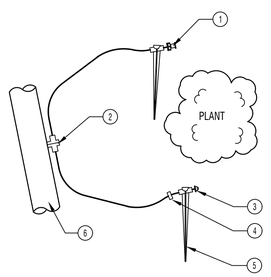


1. PAVING BRICK (TYP.)
2. VALVE BOX EXTENSION AS REQUIRED
3. SCH. 80 PVC SS T.O.E. NIPPLE (TYP.)
4. SCH. 80 TT90 (TYP.)
5. FINISH GRADE
6. RECTANGULAR HEAVY DUTY PLASTIC VALVE BOX
7. 24" COILED WIRE
8. REMOTE CONTROL VALVE
9. SCH. 80 PVC THREADED NIPPLE
10. SCH. 80 PVC UNION
11. SCH. 40 PVC LATERAL LINE (12" DEEP MIN.)
12. 4" CLEARANCE BETWEEN GRAVEL AND VALVE
13. 6" DEEP PEA GRAVEL SUMP
14. 24" COILED EXTRA WIRE (DIFFERENT COLOR) INSTALL COIL IN EACH VALVE BOX
15. SCH. 40 PVC MAINLINE (18" DEEP MIN.)
16. 2" SCH. 80 NIPPLE
17. TAPE WIRE TO SIDE OF MAINLINE AT 10'-0" O.C.

C4 REMOTE CONTROL VALVE

1 1/2" = 1'-0"

P-1-LCSD-MPR-19



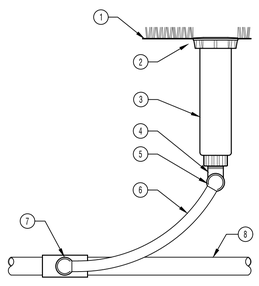
1. PRESSURE COMPENSATING MODULE WITH DIFFUSING CAP
2. 1/4" BARB TRANSFER TEE
3. DIFUSSER BUG CAP
4. SINGLE OUTLET EMITTER: RAIN BIRD XERI-BUG
5. 1/4" TUBING STAKE
6. 1/2" OR 3/4" SUPPLY TUBING

NOTE:
1. BOTH PRESSURE COMPENSATION EMITTER WITH DIFFUSION CAP OR XERI-BUG EMITTER WITH DIFFUSER BUG CAP ARE SHOWN. SEE IRRIGATION EQUIPMENT SCHEDULE FOR WHICH DEVICE TO BE USED.
2. MORE EMITTERS MAY BE REQUIRED. SEE IRRIGATION EQUIPMENT SCHEDULE.

B1 DRIP EMITTERS AROUND PLANT

6" = 1'-0"

P-1-LCSD-MPR-09

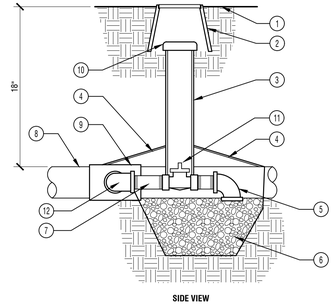


1. FINISH GRADE
2. FIRM SOIL IMMEDIATELY AROUND HEAD
3. POP-UP SPRAY HEAD
4. 90° MARLEX STREET ELL
5. 90° MARLEX ELL BARBED INSERT FITTING
6. LINEAR LOW DENSITY POLYETHYLENE PIPE (14" LONG MINIMUM, 24" LONG MAXIMUM)
7. 90° MARLEX ELL BARBED INSERT FITTING
8. PVC LATERAL LINE

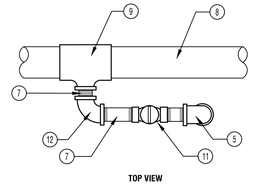
B2 4-6 IN. POP-UP SPRAY HEAD

3" = 1'-0"

P-1-LCSD-MPR-07



SIDE VIEW



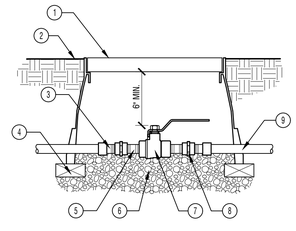
TOP VIEW

1. FINISH GRADE
2. 12" DIA. ROUND VALVE BOX
3. 2" CLASS 200 PVC SLEEVE
4. 10 MIL. BLACK PLASTIC
5. MARLEX STREET ELL
6. 1 CU. FT. GRAVEL SUMP
7. 3/4" SCH. 80 PVC THREADED NIPPLE
8. MAINLINE
9. TEE IN MAINLINE
10. CAP
11. 3/4" BRASS BALL VALVE
12. 3/4" ELBOW

B3 MANUAL DRAIN VALVE

1 1/2" = 1'-0"

P-1-LCSD-MPR-17

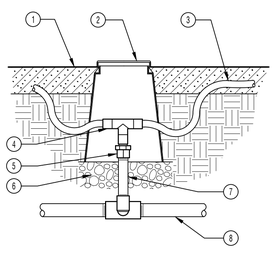


1. RECTANGULAR VALVE BOX
2. FINISH GRADE
3. TOE NIPPLE (TYP.)
4. BRICK PAVERS (TYP.)
5. CLOSE NIPPLE (TYP.)
6. 3/4" ROCK
7. ISOLATION BALL VALVE
8. PVC SCH. 80 UNION. SIZE AS REQUIRED (TYP.)
9. PVC MAINLINE

B5 ISOLATION BALL VALVE

1 1/2" = 1'-0"

P-1-LCSD-MPR-18

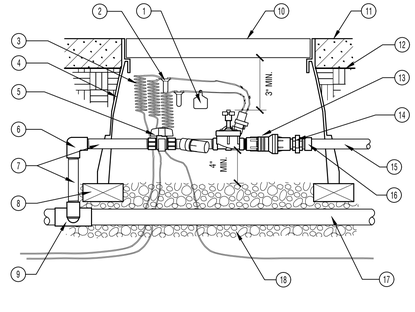


1. TOP OF MULCH
2. 6" ROUND BOX
3. DRIP TUBING
4. COMPRESSION TEE
5. 3/4" FPT X 1/2" DRIP TUBING ADAPTER
6. 3" LAYER OF WASHED GRAVEL. THE BOX SHALL REST ON THE ROCK BED. DO NOT EXTEND GRAVEL INTO BOX
7. 3/4" SCHEDULE 80 NIPPLE, LENGTH AS REQUIRED
8. PVC LATERAL LINE

A1 DRIPLINE CONNECTION IN BOX

1 1/2" = 1'-0"

P-1-LCSD-MPR-30

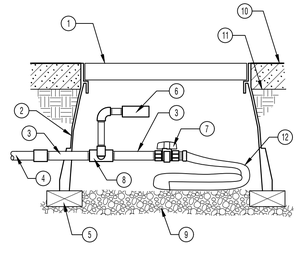


1. VALVE ID TAG
2. WATER PROOF CONNECTORS
3. 24" COILED WIRE (TYP.)
4. VALVE BOX EXTENSION AS REQUIRED
5. BALL VALVE
6. SCH. 80 PVC ELL
7. SCH. 80 PVC NIPPLE (LENGTH AS REQUIRED)
8. PAVING BRICK (TYP.)
9. SCH. 40 PVC TEE OR ELL AND SCH. 80 PVC NIPPLE (2" LENGTH, HIDDEN)
10. RECTANGULAR HEAVY DUTY PLASTIC VALVE BOX
11. TOP OF MULCH
12. FINISH GRADE
13. DRIP IRRIGATION ZONE ASSEMBLY
14. SCH. 80 PVC NIPPLE AND UNION
15. PVC LATERAL
16. SCH. 40 PVC MALE ADAPTER
17. MAINLINE
18. 6" DEEP GRAVEL SUMP

A2 DRIP REMOTE CONTROL VALVE

1 1/2" = 1'-0"

P-1-LCSD-MPR-11

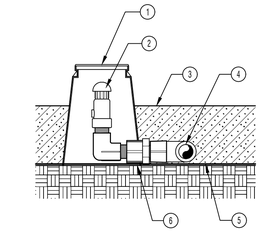


1. RECTANGULAR PLASTIC VALVE BOX
2. VALVE BOX EXTENSION AS REQUIRED
3. PVC SCH. 80 NIPPLE
4. PVC DRIPLINE HEADER
5. PAVING BRICK (TYP.)
6. PRESSURE GAUGE FACE UP
7. BALL VALVE
8. PVC SCH. 40 TEE
9. 4" DEEP GRAVEL SUMP
10. TOP OF MULCH
11. FINISH GRADE
12. 18" MINIMUM FLEXIBLE HOSE

A4 DRIPLINE FLUSHING VALVE

1" = 1'-0"

P-1-LCSD-MPR-15



1. 6" ROUND VALVE BOX
2. AIR RELIEF VALVE
3. TOP OF MULCH
4. DRIPLINE BARBED OR COMPRESSION TEE
5. LANDSCAPE FABRIC
6. FINISH GRADE

A5 DRIPLINE AIR RELEASE VALVE

1 1/2" = 1'-0"

P-1-LCSD-MPR-

design west | architects
LOGAN UT 84321
255 SOUTH 300 WEST
SALT LAKE CITY UT 84103
793 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 E 1000 N, LOGAN, UT 84321

LOGAN CITY SCHOOL DISTRICT

DESCRIPTION:
DATE:
MARK:

CONSTRUCTION DOCUMENTS

PROJECT #: 123998
DRAWN BY: J. CLEMENTS
CHECKED BY: B. WRIGHT
ISSUED: 02.05.2024

STATE OF UTAH
BLAKE C. WRIGHT
(12.05.2024)
(10510-5301)
LICENSED LANDSCAPE ARCHITECT

LANDSCAPE DETAILS

L-501

3/8/2013 3:28:36 PM

STRUCTURAL NOTES :

A. GENERAL

1. THE STRUCTURAL NOTES ARE INTENDED TO COMPLEMENT THE PROJECT SPECIFICATIONS WHICH ARE PART OF THE CONSTRUCTION DOCUMENTS. SPECIFIC NOTES AND DETAILS ON THE DRAWINGS SHALL GOVERN OVER THE STRUCTURAL NOTES AND TYPICAL DETAILS.
2. THESE DRAWINGS (AND, WHERE APPLICABLE, ACCOMPANYING WRITTEN SPECIFICATIONS) ARE THE ONLY CONTRACT DOCUMENTS PROVIDED BY ARW ENGINEERS FOR THE PROJECT REPRESENTED HEREIN. NOTHING IN ANY DIGITAL MODEL OR DIGITAL FILE RELATED TO THIS PROJECT SHALL BE TAKEN TO SUPERSEDE ANY INFORMATION SHOWN IN THESE DRAWINGS (INCLUDING, BUT NOT LIMITED TO, DIMENSIONS, SIZES, ETC).
3. THE ARCHITECTURAL DRAWINGS ARE THE PRIME CONTRACT DRAWINGS. THE STRUCTURAL DRAWINGS ARE SUPPLEMENTARY TO AND MUST BE USED IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS AND OTHER CONSULTANTS DRAWINGS. ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND/OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND STRUCTURAL ENGINEER BEFORE PROCEEDING WITH ANY WORK INVOLVED. IN CASE OF CONFLICT, FOLLOW THE MOST STRINGENT REQUIREMENT AS DIRECTED BY THE ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.
4. SEE SPECIFICATIONS FOR REQUIRED SUBMITTALS. SUBMITTALS SHALL BE MADE IN A TIMELY MANNER AS INDICATED IN SPECIFICATIONS. REVIEW OF SUBMITTALS BY ARW ENGINEERS IS FOR GENERAL COMPLIANCE ONLY AND IS NOT INTENDED AS APPROVAL. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL SIZES, DIMENSIONS, AND ELEVATIONS ON SUBMITTALS AS RELATED TO DESIGN DOCUMENTS. PREPARATION OF SHOP DRAWINGS FOR STRUCTURAL ELEMENTS WILL REQUIRE INFORMATION (I.E. DIMENSIONS, ETC.) FOUND IN THE ARCHITECTURAL, STRUCTURAL, AND OTHER CONSULTANTS DRAWINGS.
5. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AT THE SITE. IF ACTUAL CONDITIONS DIFFER FROM THOSE SHOWN ON CONTRACT DOCUMENTS, CONTRACTOR SHALL NOTIFY ARCHITECT PRIOR TO FABRICATION OR CONSTRUCTION OF ANY AFFECTED ELEMENTS.
6. THE CONTRACTOR SHALL COORDINATE AND VERIFY ALL LOCATIONS AND SIZES OF MECHANICAL EQUIPMENT OR OTHER EQUIPMENT BEFORE FABRICATING AND ERECTING STRUCTURAL ELEMENTS. SIZES AND LOCATIONS THAT DIFFER FROM THOSE SHOWN ON THE CONTRACT DOCUMENTS SHALL BE REPORTED TO THE ARCHITECT.
7. THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST TO THE ARCHITECT FOR ARCHITECT AND/OR ENGINEER APPROVAL BEFORE PROCEEDING WITH ANY CHANGES, MODIFICATIONS, OR SUBSTITUTIONS.
8. OBSERVATION VISITS TO THE SITE BY ARW ENGINEERS FIELD REPRESENTATIVES SHALL NEITHER BE CONSTRUED AS INSPECTION NOR APPROVAL OF CONSTRUCTION.
9. DURING AND AFTER CONSTRUCTION, BUILDER AND/OR OWNER SHALL KEEP LOADS ON STRUCTURE WITHIN THE LIMITS OF DESIGN LOADS AS NOTED IN THESE DOCUMENTS.
10. TYPICAL OR SIMILAR DETAILS AND SECTIONS SHALL APPLY WHERE SPECIFIC DETAILS ARE NOT SHOWN. TYPICAL OR SIMILAR DETAILS REFER TO THE CONDITION ADDRESSED AND ARE NOT NECESSARILY DETAILS LABELED “TYPICAL” OR “SIMILAR” IN THE PLANS AND DOCUMENTS.
11. DRAWINGS AND DETAILS HAVE BEEN PREPARED WITH THE INTENT TO VISUALLY REPRESENT INFORMATION PROVIDED IN SCALED FORM; HOWEVER CONTRACTOR/SUPPLIERS SHOULD NOT SCALE PLANS OR DETAILS FOR DIMENSIONAL INFORMATION.
12. THE CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY SHORING AND BRACING FOR ALL STRUCTURAL ELEMENTS UNTIL THE ENTIRE STRUCTURAL SYSTEM IS COMPLETED. DESIGN OF ALL SHORING AND BRACING IS BY OTHERS AT NO ADDITIONAL COST TO THE OWNER.
13. ENGINEER SHALL NOT BE RESPONSIBLE FOR ACTIVITIES UNDER CONTROL OF THE CONTRACTOR SUCH AS CONSTRUCTION SITE SAFETY, MEANS, METHODS AND SEQUENCING OF CONSTRUCTION. ENGINEER SHALL NOT BE RESPONSIBLE FOR FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS AS PRESCRIBED BY OSHA OR OTHER REGULATORY AGENCIES REGARDLESS OF INDICATIONS IN THESE DOCUMENTS.
14. NOTICE OF COPYRIGHT: THESE STRUCTURAL DRAWINGS ARE HEREBY COPYRIGHTED BY ARW ENGINEERS, ALL RIGHTS RESERVED. THESE DOCUMENTS DEFINE A STRUCTURE AND ARE INSTRUMENTS OF SERVICE, FOR ONE USE ONLY. REPRODUCTION AND DISTRIBUTION OF THESE DRAWINGS IS ONLY ALLOWED AS REQUIRED FOR REGULATORY AGENCIES AND FOR CONVEYANCE OF INFORMATION TO PARTIES INVOLVED IN THE CONSTRUCTION OF THIS PROJECT. THESE DOCUMENTS SHALL NOT BE REPRODUCED OR COPIED, IN PART OR WHOLE BY ANY PARTY FOR USE IN PREPARATION OF SHOP DRAWINGS OR OTHER SUBMITTALS.
15. WHERE THE WORD "SHALL" OCCURS IN THESE DRAWINGS AND ANY ACCOMPANYING SPECIFICATIONS, IT IS CONSIDERED A MANDATORY OBLIGATION AND SYNONYMOUS WITH THE PHRASE "HAS DUTY TO".

B. STATEMENT OF SPECIAL INSPECTIONS AND SPECIAL INSPECTIONS

1. SPECIAL INSPECTIONS AND TESTING ARE TO BE PROVIDED AS REQUIRED BY IBC SECTIONS 1704 THROUGH 1705 AND OTHER APPLICABLE SECTIONS OF THE IBC. THE TYPE AND FREQUENCY OF TESTING AND SPECIAL INSPECTIONS SHALL BE AS NOTED IN THE SPECIAL INSPECTION SCHEDULE, JOB SPECIFICATIONS, AND ACCORDANCE WITH IBC SECTION 110 AND CHAPTER 17. CONTRACTOR SHALL COORDINATE AND COOPERATE WITH REQUIRED INSPECTIONS.
2. ALL TESTING AND SPECIAL INSPECTION SHALL BE PROVIDED BY A QUALIFIED INDEPENDENT SPECIAL INSPECTION AGENCY IN ACCORDANCE WITH IBC 1704 AND AS OUTLINED IN THE JOB SPECIFICATIONS. REPORTS OF FINDINGS OR DISCREPANCIES SHALL BE NOTED AND FORWARDED TO THE CONTRACTOR, ARCHITECT, ENGINEERS, AND BUILDING OFFICIAL IN A TIMELY MANNER.
3. STRUCTURAL OBSERVATION VISITS SHALL BE PERFORMED BY A REPRESENTATIVE FROM ARW ENGINEERS IN ACCORDANCE WITH THE CONTRACT AS NEEDED TO OBSERVE THE CONSTRUCTION OF CRITICAL BUILDING ELEMENTS (I.E. FOOTINGS, BRACED FRAMES, MOMENT FRAMES, DRAG STRUTS AND THEIR CONNECTIONS, COLLECTORS, AND ROOF AND FLOOR DIAPHRAGMS). STRUCTURAL OBSERVATION REPORTS FOR EACH VISIT SHALL BE SENT DIRECTLY TO THE ARCHITECT FOR DISTRIBUTION TO THE CONTRACTOR AND BUILDING OFFICIAL. STRUCTURAL OBSERVATION VISITS SHALL NEITHER BE CONSTRUED AS SPECIAL INSPECTION NOR APPROVAL OF COMPLETED CONSTRUCTION.
4. IN ACCORDANCE WITH IBC 1704.4, THE CONTRACTOR SHALL SUBMIT A WRITTEN CONTRACTOR’S STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND OWNER.

C. BASIS OF DESIGN

1. GOVERNING BUILDING CODE : INTERNATIONAL BUILDING CODE (IBC) 2021
   SUSPENDED FLOOR LOADS (FRONT ENTRY)
   a. LIVE LOAD = 100 PSF UNREDUCED
   b. DEAD LOAD = 75 PSF
2. WIND DESIGN
   a. BASIC WIND SPEED (3 SECOND GUST) : 120 MPH
   b. WIND EXPOSURE : C
   c. COMPONENT AND CLADDING DESIGN WIND PRESSURE SHALL BE AS REQUIRED PER ASCE 7-16.

D. FOUNDATION

1. GENERAL
   a. DESIGN SOIL PRESSURE : 1500 PSF
   b. ALL FOOTINGS SHALL BE PLACED ON MECHANICALLY COMPACTED FILL COMPACTED TO NOT LESS THAN 95% OF MODIFIED PROCTOR DENSITY (ASTM D-1557).
   c. UNLESS NOTED OTHERWISE, ALL CONCRETE SLABS ON EARTH SHALL BEAR ON STRUCTURAL FILL COMPACTED TO 90% OF MODIFIED PROCTOR DENSITY (ASTM D-1557).
   d. TOP OF FOOTING ELEVATIONS SHOWN ON THE FOOTING AND FOUNDATION PLAN ARE BASED ON PRELIMINARY GRADING INFORMATION AND SHALL BE VERIFIED PRIOR TO CONSTRUCTION. STEPS WHERE SHOWN ARE AT APPROXIMATE LOCATIONS. ACTUAL STEP LOCATIONS SHALL BE AT THE CONTRACTOR’S DISCRETION BASED UPON FIELD CONDITIONS. ALL EXTERIOR FOUNDATIONS SHALL BEAR A MINIMUM OF 30 INCHES BELOW LOWEST ADJACENT FINAL GRADE.
   e. ALL WALLS (EXCEPT CANTILEVERED RETAINING WALLS) SHALL BE ADEQUATELY BRACED AGAINST LATERAL MOVEMENT PRIOR TO BACKFILLING. DESIGN AND ERECTION OF BRACING/SHORING SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. BRACING SHALL REMAIN IN PLACE UNTIL SUPPORTING STRUCTURAL ELEMENTS ARE IN PLACE AND HAVE ATTAINED FULL STRENGTH.
   f. UNLESS NOTED OTHERWISE, ALL FOOTINGS AT COLUMNS SHALL BE CENTERED BELOW COLUMNS.
   g. UNLESS NOTED OTHERWISE, ALL FOOTINGS SHALL HAVE VERTICAL FACES FORMED WITH STANDARD FORMING MATERIALS (WOOD, METAL, ETC.). WITH PRIOR APPROVAL OF ARCHITECT AND ENGINEER, CONCRETE FOR FOOTINGS CAN BE PLACED IN EXCAVATED SOIL “FORMS” PROVIDED THAT THE DIMENSIONS ARE INCREASED 3” ON ALL SIDE.

E. CONCRETE

1. ALL CONCRETE MIX DESIGNS SHALL COMPLY WITH THE PROJECT SPECIFICATIONS AND THE REQUIREMENTS LISTED BELOW :
   a. FOOTINGS, GRADE BEAMS, FOUNDATION WALLS :
      a. 28 DAY COMPRESSIVE STRENGTH : 4500 PSI
      b. MAXIMUM W/C RATIO : 0.45
      c. MAXIMUM AGGREGATE SIZE : 1”
      d. AIR CONTENT : SEE SCHEDULE BELOW
   b. TOTAL AIR CONTENT FOR CONCRETE EXPOSED TO CYCLES OF FREEZING AND THAWING SHALL BE DETERMINED IN ACCORDANCE WITH THIS SCHEDULE. TOLERANCE ON AIR CONTENT AS DELIVERED SHALL BE +/- 1.5 PERCENT.

NOMINAL MAXIMUM AGGREGATE SIZE, IN.	TARGET AIR CONTENT, PERCENT F1	F2 AND F3
3/8	6	7.5
1/2	5.5	7
3/4	5	6
1	4.5	6
1-1/2	4.5	5.5
2	4	5
3	3.5	4.5

2. WATER USED IN MIXING CONCRETE SHALL CONFORM TO ASTM C1602.
3. NO CONDUIT, PIPES, DUCTS, SLEEVES, ETC. SHALL BE PLACED IN STRUCTURAL CONCRETE UNLESS SPECIFICALLY DETAILED OR APPROVED BY THE STRUCTURAL ENGINEER. NO ALUMINUM PRODUCTS SHALL BE EMBEDDED IN CONCRETE. PENETRATIONS THRU STRUCTURAL CONCRETE ELEMENTS MUST BE APPROVED BY THE ENGINEER AND SHALL BE BUILT INTO THE ELEMENT PRIOR TO CONCRETE PLACEMENT.
4. REFER TO ARCHITECTURAL DRAWINGS FOR MOLDS, GROOVES, ORNAMENTS, ETC. TO BE CAST IN TO CONCRETE, AND FOR EXTENT AND LOCATION OF DEPRESSIONS, CURBS, RAMPS, ETC.
5. UNLESS NOTED OTHERWISE, MINIMUM REINFORCING IN ALL CONCRETE FOUNDATION WALLS SHALL BE AS FOLLOWS:

THICKNESS	TOP & BOTTOM BARS	VERTICAL	HORIZONTAL
8”	(2) #5	#4 AT 18”O.C.	#4 AT 12”O.C..

6. UNLESS NOTED OTHERWISE, FOR NON-DETAILED OPENINGS IN CONCRETE WALLS LARGER THAN 12” AND SMALLER THAN 24” IN ANY DIRECTION ADD (2) #5 BARS ON ALL SIDES IN ADDITION TO REGULAR WALL REINFORCING AND EXTEND 24” EACH WAY BEYOND OPENING. IF 24” IS NOT AVAILABLE ON EVERY SIDE, NOTIFY STRUCTURAL ENGINEER FOR FURTHER DIRECTION. OPENINGS SHALL HAVE A MINIMUM OF 12" OF CONCRETE ABOVE THE OPENING, TYP.
7. CONSTRUCTION JOINTS NOT SHOWN ON THE PLANS SHALL BE MADE AND LOCATED SO AS TO NOT IMPAIR THE STRENGTH OF THE STRUCTURE AND AS APPROVED BY THE STRUCTURAL ENGINEER. PROVIDE 2 X 4 (SHAPED) KEYWAY IN ALL VERTICAL AND HORIZONTAL JOINTS UNLESS NOTED OR DETAILED OTHERWISE. ALL STEEL REINFORCING SHALL BE CONTINUOUS THROUGH COLD JOINTS UNLESS NOTED OTHERWISE. SEE TYPICAL DETAILS FOR COLD/CONSTRUCTION JOINTS FOR SLABS ON GRADE.
8. WHERE NEW CONCRETE IS PLACED AGAINST PREVIOUSLY HARDENED CONCRETE, THE JOINT SHALL BE CLEAN AND FREE OF LAITANCE. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, CONSTRUCTION JOINTS SHALL BE PREWETTED AND STANDING WATER REMOVED.

F. ADHESIVE/MECHANICAL ANCHORS

1. WITHOUT WRITTEN APPROVAL OF THE ENGINEER, CONTRACTOR SHALL NOT SUBSTITUTE POST-INSTALLED ANCHORS WHERE CAST-IN-PLACE ANCHORS ARE SPECIFIED IN THE DRAWINGS.
2. WHERE STRUCTURAL DETAILS SPECIFY SPECIFIC BRANDS AND/OR TYPES OF ADHESIVES OR ANCHORS, SUBSTITUTIONS OF OTHER BRANDS AND/OR TYPES IS NOT ALLOWED, WITHOUT WRITTEN APPROVAL OF THE ENGINEER.
3. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS SHALL BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. SUBSTITUTION REQUESTS SHALL INCLUDE AN ICC ESR OR IAPMO REPORT AND SUPPORTING CALCULATIONS INDICATING COMPLIANCE WITH DESIGN INTENT.
4. ALL ADHESIVE/MECHANICAL ANCHORS SHALL BE INSTALLED, INCLUDING HOLE DRILLING AND PREPARATION, IN ACCORDANCE WITH AN APPROVED INDEPENDENT EVALUATION REPORT (ICC-ES, IAPMO, OR APPROVED EQUAL), AS INDICATED BELOW, AND IN ACCORDANCE WITH ALL MANUFACTURER’S PRINTED INSTALLATION INSTRUCTIONS (MPII).
5. INSTALLERS SHALL BE, AT A MINIMUM, TRAINED FOR THE SPECIFIC APPLICATION INSTALLATION TECHNIQUE FOR THE SPECIFIC PRODUCT BY THE PRODUCT MANUFACTURERS FIELD EMPLOYEE OR SHALL POSSESS A TRAINING CARD OBTAINED BY THE MANUFACTURERS ONLINE TRAINING PROGRAM.
6. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING A MINIMUM AGE OF 21 DAYS AT TIME OF ANCHOR INSTALLATION. ADHESIVE ANCHORS SHALL NOT BE FULLY LOADED UNTIL CONCRETE HAS REACHED DESIGN STRENGTH.
7. ADHESIVE ANCHORS SHALL CONSIST OF REINFORCING BAR OR THREADED RODS AS INDICATED IN THESE DOCUMENTS.
8. UNLESS APPROVED BY THE ENGINEER OF RECORD, CONCRETE AND DRILLED ANCHOR HOLES SHALL BE DRY AND FREE OF WATER FOR 14 DAYS PRIOR TO ADHESIVE INSTALLATION. CONTACT THE ENGINEER OF RECORD FOR GUIDANCE IF THE CONTRACTOR CHOOSES TO INSTALL IN DAMP, WATER-SATURATED, OR WATER-FILLED HOLES.
9. CONCRETE TEMPERATURE AT THE TIME OF INSTALLATION SHALL BE MONITORED BY THE CONTRACTOR. CONTRACTOR SHALL COMPLY WITH ALL MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII) RELATIVE TO SUBSTRATE TEMPERATURE.
10. INSTALLATION OF ADHESIVE ANCHORS HORIZONTALLY OR UPWARDLY INCLINED TO SUPPORT SUSTAINED TENSION LOADS SHALL BE PERFORMED BY PERSONNEL CERTIFIED BY AN APPLICABLE CERTIFICATION PROGRAM. CERTIFICATION SHALL INCLUDE WRITTEN AND PERFORMANCE TESTS IN ACCORDANCE WITH THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM, OR EQUIVALENT IN ACCORDANCE WITH ACI 318-19 26.7.2 (e) PROOF OF CURRENT CERTIFICATION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. CONTINUOUS SPECIAL INSPECTION SHALL BE PROVIDED FOR THESE ANCHORS.
11. UNLESS NOTED OTHERWISE, ALL ADHESIVE ANCHORS INTO CONCRETE SHALL BE:
    a. HILTI HIT-RE 500V3 (ESR-3814), OR HILTI HIT-HY 200-V3 (ESR-4868).
    b. SIMPSON SET-3G (ESR-4057), OR AT-XP (ER-263).
    c. DEWALT PURE 110+ (ESR-3298), OR AC200+ GOLD (ESR-4027-COLD WEATHER).
12. UNLESS NOTED OTHERWISE, ALL ADHESIVE ANCHORS INTO GROUTED MASONRY (CMU) SHALL BE:
    a. HILTI HIT-HY 270 (ESR-4143).
    b. SIMPSON SET-XP (ER-265), OR AT-XP (ER-281).
    c. DEWALT AC100+ GOLD (ESR-3200).
13. UNLESS NOTED OTHER WISE, ALL MECHANICAL ANCHORS INTO CONCRETE SHALL BE:
    a. HILTI KWIK BOLT-TZ2 (ESR-4266).
    b. SIMPSON STRONG-BOLT 2 (ESR-3037).
14. UNLESS NOTED OTHERWISE, ALL MECHANICAL ANCHORS INTO GROUTED MASONRY (CMU) SHALL BE:
    a. HILTI KWIK BOLT-TZ2 (ESR-4561).
    b. SIMPSON STRONG BOLT 2 (ER-240).
    c. DEWALT SCREWBOLT+ (ESR-4042).
15. ALL MASONRY CELLS WITHIN 8” OF THE ANCHOR SHALL BE SOLID GROUTED.
16. THE TESTING LABORATORY WILL PERFORM VISUAL INSPECTION OF ANCHORS AND DOWELS AS SPECIFIED IN THE SPECIAL INSPECTION SCHEDULE AND THE APPROVED INDEPENDENT EVALUATION REPORT. TENSION TESTING CAN BE REQUIRED AT THE DIRECTION OF THE STRUCTURAL ENGINEER OF RECORD OR THE SPECIAL INSPECTOR.
17. IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, ABANDON THAT HOLE AND SHIFT THE ANCHOR LOCATION TO AVOID THE REINFORCEMENT. PROVIDE A MINIMUM SPACE OF (2) ANCHOR HOLE DIAMETERS OR 2 INCHES, WHICH EVER IS LARGER, OF SOUND CONCRETE/MASONRY BETWEEN THE ANCHOR AND THE ABANDONED HOLE. FILL THE ABANDONED HOLE WITH NON-SHRINK GROUT OR AN APPROVED ANCHORING ADHESIVE. AT CONTRACTORS OPTION, LOCATE EXISTING REINFORCEMENT PRIOR TO DRILLING/CORING. IF THE ANCHOR OR DOWEL CANNOT BE SHIFTED AS NOTED ABOVE, THE ENGINEER WILL DETERMINE A NEW LOCATION.
18. LOCATE REINFORCEMENT AND CONFIRM FINAL ANCHOR LOCATIONS PRIOR TO FABRICATING PLATES, MEMBERS, OR OTHER STEEL ASSEMBLIES ATTACHED WITH MECHANICAL ANCHORS.

G. REINFORCING STEEL

1. REINFORCING BAR STRENGTH REQUIREMENTS:
   a. ALL REINFORCING BARS SHALL CONFORM TO ASTM STANDARD A-615 GRADE 60 AND ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM STANDARD A-1064 AND SHALL BE SUPPLIED IN FLAT SHEETS. ADEQUATELY TIE AND SUPPORT ALL REINFORCING STEEL AS SPECIFIED BY ACI 117, TO MAINTAIN EXACT REQUIRED POSITION.
2. ALL REINFORCING STEEL SHALL BE TIED IN PLACE AND ADEQUATELY SUPPORTED PRIOR TO PLACING CONCRETE. WET STABBING OF ANY REINFORCING STEEL IS NOT PERMITTED, UNLESS SPECIFICALLY DETAILED OTHERWISE OR APPROVED BY THE ENGINEER.
3. ALL FIELD BENT DOWELS SHALL BE GRADE 40 WITH SPACING INDICATED REDUCED BY 1/3.
4. UNLESS NOTED OTHERWISE, REINFORCEMENT SHALL HAVE THE FOLLOWING CONCRETE COVERAGE :
   a. CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH ….. 3”
   b. EXPOSED TO EARTH OR WEATHER :
      1. #6 & LARGER ….. 2”
      2. #5 & SMALLER …..1-1/2”
   c. NOT EXPOSED TO WEATHER OR EARTH :
      1. SLABS, WALLS, JOISTS, #11 & SMALLER ….. 3/4”
      2. BEAMS, COLUMNS: MAIN REINFORCING OR TIES ….. 1-1/2”
   d. SLAB ON GRADE :
      1. PLACE REINFORCING AT CENTER OF SLAB UNLESS INDICATED OTHERWISE.
5. EXCEPT WHERE NOTED ON PLANS OR DETAILS CONTINUOUS REINFORCEMENT SHALL BE SPLICED AT POINTS OF MINIMUM STRESS BY LAPPING PER THE REBAR LAP SCHEDULE.
6. REINFORCING STEEL MAY BE SPLICED WITH MECHANICAL COUPLERS THAT HAVE A TENSION CAPACITY OF AT LEAST 125% OF THE STRENGTH OF THE BAR. MECHANICAL COUPLERS SHALL BE A POSITIVE CONNECTING TYPE COUPLER, AND SHALL BE INSTALLED IN ACCORDANCE WITH AN APPROVED ICC RESEARCH REPORT. WHERE THESE ARE USED, SPLICES ON ADJACENT BARS SHALL BE STAGGERED AT LEAST 24 INCHES ALONG THE LENGTH OF THE BARS.
7. ALL VERTICAL REINFORCING IN STRUCTURAL ELEMENTS ABOVE SHALL BE SPLICED WITH MATCHING DOWELS EMBEDDED WITHIN THE FOOTINGS OR STRUCTURE BELOW. SPLICE LENGTHS SHALL COMPLY WITH REBAR LAP SCHEDULE. DOWELS INTO FOOTINGS SHALL TERMINATE WITH A STANDARD HOOK, AND SHALL EXTEND TO WITHIN 4” OF THE BOTTOM OF THE FOOTING, BUT NEED NOT EXTEND MORE THAN 20” INTO FOOTING.
8. DO NOT WELD REINFORCING EXCEPT AS NOTED ON PLANS, WHERE REINFORCING IS WELDED, USE ASTM A-706 REINFORCING.
9. REINFORCING BARS, TIES, AND TENDONS SHALL BE SUPPORTED BY NYLON CONES, PLASTIC-COATED TIE-WIRES, OR PLASTIC-COATED CHAIRS. REINFORCING IN FOOTINGS IS PERMITTED TO BE SUPPORTED ON CONCRETE DOBIES.
10. UNLESS NOTED OTHERWISE, HOOKS, STIRRUPS, TIES, AND OTHER BENDS IN REINFORCING STEEL SHALL MEET THE STANDARDS SET FORTH IN ACI 318/318R-19. UNLESS OTHERWISE PERMITTED BY THE ENGINEER, ALL REINFORCEMENT SHALL BE BENT COLD. REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT, EXCEPT AS SHOWN ON THESE DRAWINGS OR OTHERWISE PERMITTED BY THE ENGINEER.
11. UNLESS SPECIFICALLY NOTED AND/OR DETAILED IN THE STRUCTURAL DRAWINGS CONDUIT SHALL NOT BE IN CONTACT WITH REINFORCING STEEL.

H. STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING:
   a. ANSI/AISC 360-16 “SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS”, WITH “COMMENTARY” AND “SUPPLEMENTS” AS REQUIRED BY BUILDING CODE.
   b. AISC 303-16 “CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES” EXCLUDING THE FOLLOWING SECTIONS: 4.4, 4.4.1, AND 4.4.2.
   c. AISI “SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS”.
   d. AISC “SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS”.
   e. AWS D1.1 AND 1.3, “STRUCTURAL WELDING CODE” (EXCEPT SPECIFIC ITEMS DO NOT APPLY IF THEY CONFLICT WITH AISC).
   f. ANSI/AISC 341-16 “SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS”.
   g. AWS D1.8, "STRUCTURAL WELDING CODE - SEISMIC".
2. STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING:
   a. WIDE FLANGE SHAPES, CHANNELS, AND WT SHAPES - ASTM A992 (Fy = 50 ksi)
   b. OTHER SHAPES, PLATES, ANGLES, AND BARS - ***ASTM A572 (Fy = 50 ksi)*** (UNO)
   c. HOLLOW STRUCTURAL SECTIONS (HSS) - ASTM A500, GRADE C (Fy = 50 ksi)
   d. THREADED ROD - ASTM A-449.
   e. NON-SHRINK GROUT - ASTM C1107. NON-SHRINK GROUT SHALL BE PRE-PACKAGED, NON-METALLIC, WITH A 28-DAY COMPRESSIVE STRENGTH OF 6,000 PSI.
3. CONNECTIONS SHALL COMPLY WITH THE STRUCTURAL DRAWINGS UNLESS WRITTEN APPROVAL TO CHANGE IS GIVEN BY THE STRUCTURAL ENGINEER.
4. ALL SHOP FABRICATIONS SHALL BE PERFORMED BY AN APPROVED FABRICATOR IN ACCORDANCE WITH SECTIONS 1702 AND 1704 OF THE IBC OR WITH SHOP INSPECTION BY AN INDEPENDENT AGENCY IN ACCORDANCE WITH SECTION 1704.2.5 OF THE IBC.
5. WELDING
   a. ALL WELDING AND CUTTING SHALL BE PERFORMED BY AWS QUALIFIED WELDERS IN ACCORDANCE WITH ANSI/AWS D1.1 (LATEST EDITION).
   b. USE E-70XX ELECTRODES UNLESS NOTED OTHERWISE. E-60XX MAY BE USED FOR WELDING STEEL DECKS.
   c. ALL INTERSECTING STEEL SHAPES WHICH ARE NOT CONNECTED WITH BOLTS SHALL BE WELDED TOGETHER WITH A FILLET WELD ALL AROUND UNLESS NOTED OTHERWISE. WHERE WELD SIZES ARE NOT SHOWN, USE THE FOLLOWING:
      1. WHERE THE THICKNESS OF THE CONNECTED PARTS IS EQUAL TO OR THICKER THAN 1/4”, WELD SIZE SHALL BE 1/16” LESS THAN THE THICKNESS OF THE THINNEST PART.
      2. WHERE ANY OF THE CONNECTED PARTS IS LESS THAN 1/4” THICK, WELD SIZE SHALL BE THE SAME AS THE THICKNESS OF THE THINNEST PART.
   d. WELDING OF HSA’S (HEADED STUD ANCHORS) AND DBA’S (DEFORMED BAR ANCHORS) SHALL CONFORM TO THE MANUFACTURER’S SPECIFICATIONS AND AWS D1.1 REINFORCING BARS SHALL NOT BE SUBSTITUTED FOR HSA'S OR DBA'S.
   e. WHEREVER POSSIBLE, WELDS SHALL BE SHOP WELDS. SPECIAL CONSIDERATIONS, SUCH AS ITEMS WHICH MAY NEED ADJUSTMENT AT THE SITE, REQUIRE THAT SOME WELDS BE FIELD WELDS. WHERE QUESTIONS OR DISCREPANCIES OCCUR THE CONTRACTOR SHALL COORDINATE THE WORK BETWEEN THE SHOP FABRICATOR AND THE STEEL ERECTOR.
6. BOLTING
   a. UNLESS NOTED OTHERWISE, ALL STRUCTURAL STEEL TO STEEL CONNECTIONS SHALL USE HIGH STRENGTH BOLTS CONFORMING TO ASTM F3125 GR. A325.
   b. UNLESS NOTED OTHERWISE, ALL BOLTING IS CLASSIFIED AS NON-SLIP CRITICAL BEARING TYPE CONNECTIONS WITH THREADS INCLUDED IN SHEAR PLANE. TIGHTEN BOLTS TO A SNUG TIGHT CONDITION, WITH ALL PLIES OF THE JOINT IN FIRM CONTACT.
   c. WHERE OVERSIZED OR SLOTTED HOLES OCCUR IN THE OUTER PLY, AN ASTM F436 WASHER OR 5/16” THICK COMMON PLATE WASHER SHALL BE USED AS REQUIRED TO COMPLETELY COVER THE HOLE.
   d. BOLTS SHALL BE CENTERED IN SLOTTED HOLES, UNLESS NOTED OTHERWISE.
7. WHERE A STEEL BEAM TO BEAM CONNECTION IS NOT SHOWN, PROVIDE AN AISC STANDARD FRAMED CONNECTION SIZED FOR 1/2 OF THE TOTAL LOAD CAPACITY OF THE BEAM FOR THE SPAN FABRICATORS AND SUPPLIERS SHALL COORDINATE PAINT/FINISHES WITH REQUIREMENTS FOR DIRECT APPLIED INSULATION, FIREPROOFING, ETC. AS NOTED IN THE PROJECT SPECIFICATIONS.
8. UNLESS NOTED OTHERWISE, ALL HORIZONTAL FRAMING MEMBERS SHALL BE ERECTED WITH THE NATURAL CROWN UP.
9. UNLESS OTHERWISE SHOWN OR DETAILED IN THE PLANS, ALL STEEL COLUMNS, BEAMS, BRACES, STRUTS, ETC. SHALL BE CONTINUOUS BETWEEN CONNECTIONS OR SUPPORTS. SPLICES IN MEMBERS SHALL NOT BE PERMITTED WITHOUT WRITTEN APPROVAL BY THE ENGINEER OF RECORD.

Structural Sheet Index

SHEET NUMBER	SHEET NAME
S001	STRUCTURAL NOTES
S010	SCHEDULES
S101	FOUNDATION AND FRAMING PLANS
S201	TYPICAL DETAILS

J. NON-STRUCTURAL DELEGATED DESIGNS AND DEFERRED SUBMITTALS

1. NON-STRUCTURAL DELEGATED DESIGNS AND SUBSEQUENT DEFERRED SUBMITTALS ARE FOR ITEMS NOT INCLUDED IN THE STRUCTURAL DELEGATED DESIGN SECTION. THESE ARE ITEMS THAT ARE NOT CRITICAL TO THE OVERALL PERFORMANCE OF THE STRUCTURAL SYSTEM BUT THAT IMPART LOADS AND FORCES TO THE STRUCTURAL SYSTEM.
2. NON-STRUCTURAL DEFERRED SUBMITTALS SHALL BEAR THE STAMP AND SIGNATURE OF THE DESIGN PROFESSIONAL RESPONSIBLE FOR THE DESIGN.
3. ARW ENGINEERS WILL REVIEW NON-STRUCTURAL DEFERRED SUBMITTALS TO VERIFY DESIGN CRITERIA IS COMPLIANT WITH THE APPROVED CONSTRUCTION DOCUMENTS.
4. IF THE STRUCTURAL DRAWINGS INCLUDE LOADS TO ACCOMMODATE NON-STRUCTURAL ELEMENTS, THE CONTRACTOR SHALL SUBMIT DOCUMENTATION INDICATING THAT THE NON-STRUCTURAL ELEMENTS COMPLY WITH THE LOADING CRITERIA PROVIDED HEREIN. SUCH DOCUMENTATION SHALL BEAR THE STAMP AND SIGNATURE OF THE DESIGN PROFESSIONAL RESPONSIBLE FOR THE DESIGN.
5. WHEN THE NON-STRUCTURAL DEFERRED SUBMITTAL INDICATES THAT THE ELEMENT WILL IMPART FORCES IN EXCESS OF LOADS THAT ARE INDICATED ON THE STRUCTURAL DRAWINGS, THE CONTRACTOR SHALL SUBMIT A DETAILED GRAPHICAL REPRESENTATION OF THOSE DESIGN LOADS, INCLUDING MAGNITUDE, AND LOCATION. THE GRAPHIC SHALL BE ACCOMPANIED BY DOCUMENTATION INDICATING THAT THE NON-STRUCTURAL ELEMENT DESIGN COMPLIES WITH THE LOADING CRITERIA PROVIDED HEREIN. THE LETTER SHALL BEAR THE STAMP AND SIGNATURE OF THE DESIGN PROFESSIONAL RESPONSIBLE FOR THE DESIGN.
6. NON-STRUCTURAL DELEGATED DESIGN ITEMS REQUIRING DEFERRED SUBMITTALS SHALL INCLUDE, BUT ARE NOT LIMITED TO :
   a. SEISMIC BRACING OF ALL ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL ITEMS WHERE REQUIRED BY THE MOST RECENT VERSION OF ASCE 7 AND THE PROJECT CONTRACT DOCUMENTS.

K. EXISTING BUILDING NOTES

1. ARW ENGINEERS EXPRESSLY DISCLAIMS RESPONSIBILITY FOR ANY PORTION OF THE EXISTING BUILDING NOT SPECIFICALLY ADDRESSED IN THESE DRAWINGS.
2. DRAWINGS AND DETAILS HAVE BEEN PREPARED TO REFLECT THE EXISTING CONDITIONS AND CONFIGURATIONS OF STRUCTURAL ELEMENTS. HOWEVER, THE CONTRACTOR IS ULTIMATELY RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS AND ALERTING THE ENGINEER OF ANY DISCREPANCIES FOUND PRIOR TO FABRICATING OR INSTALLING STRUCTURAL ELEMENTS.
3. THE CONTRACTOR IS RESPONSIBLE FOR MAKING SURE THAT THE BUILDING AND ELEMENTS WITHIN THE BUILDING REMAIN STABLE UNTIL CONSTRUCTION IS COMPLETE. AT NO ADDITIONAL COST TO THE OWNER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SHORING OR OTHER TEMPORARY SUPPORT OF STRUCTURAL MEMBERS UNTIL THE FINAL CONFIGURATION HAS BEEN COMPLETED.

CONSTRUCTION DOCUMENTS

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

ARW ENGINEERS
structural consultants
1594 W. Park Circle Ogden, Utah 84404
+1 801 782 6008 arwengineers.com

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 EAST 1000 NORTH. LOGAN UT, 84321
LOGAN CITY SCHOOL DISTRICT

MARK: DATE: DESCRIPTION:

PROJECT #: 123998
DRAWN BY: LEE
CHECKED BY: JLB
ISSUED: 02.02.2024

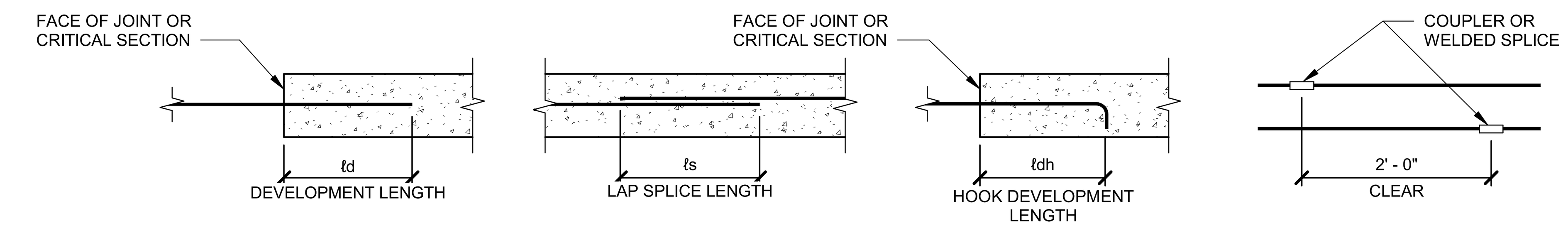
PROFESSIONAL STRUCTURAL ENGINEER
Joshua L. Blazzard
No. 5251609
2/2/24
STATE OF UTAH

STRUCTURAL NOTES
S001

2/2/2024 4:05:39 PM Autodesk Docs://123998 - LCSD - Indoor Athletic Facility - Municipool Remodel/S-23924-LCSD Indoor Athletic Facility-2024.rvt

2021 IBC CONCRETE REBAR LAP SPLICE SCHEDULE (60KSI REBAR)

FOR CONCRETE APPLICATIONS (ACI 318 - 19)

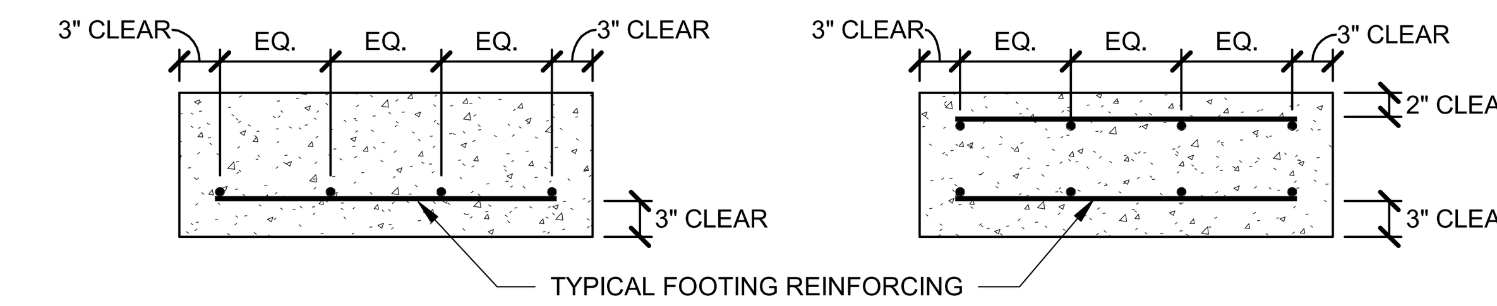


CONCRETE REINFORCING & SPLICE LENGTHS (IN)

BAR LOCATION	CONCRETE TYPE	CONCRETE STRENGTH	#3 ℓd	#3 ℓs	#3 ℓdh	#4 ℓd	#4 ℓs	#4 ℓdh	#5 ℓd	#5 ℓs	#5 ℓdh	#6 ℓd	#6 ℓs	#6 ℓdh	#7 ℓd	#7 ℓs	#7 ℓdh	#8 ℓd	#8 ℓs	#8 ℓdh	#9 ℓd	#9 ℓs	#9 ℓdh	#10 ℓd	#10 ℓs	#10 ℓdh	#11 ℓd	#11 ℓs	#11 ℓdh	COMMENTS
VERT. WALL BARS, FILL ON METAL DECK	NWC	4500 PSI	14	18	6	18	23	6	23	30	8	27	35	10	40	52	12	45	59	15	51	66	18	57	74	21	64	83	25	
HORIZ. WALL BARS, FOOTING TOP BARS	NWC	4500 PSI	18	23	6	24	31	6	30	39	8	35	46	10	51	66	12	59	77	15	66	86	18	74	96	21	82	107	25	
BEAM BOTTOM BARS, COLUMN BARS	NWC	4500 PSI	14	18	6	18	23	9	23	30	12	27	35	16	40	52	20	45	59	24	51	66	29	57	74	34	64	83	40	
FOOTING BOTTOM BARS, SLAB ON GRADE	NWC	4500 PSI	12	16	6	12	16	6	13	17	8	16	21	10	23	30	12	26	34	15	29	38	18	33	43	21	36	47	25	
SLAB TOP BARS[5] BEAM TOP BARS	NWC	4500 PSI	18	23	6	24	31	9	30	39	12	35	46	16	51	66	20	59	77	24	66	86	29	74	96	34	82	107	40	

NOTES :
1. MECHANICAL COUPLERS MAY BE USED IN LIEU OF LAP SPLICES SHOWN. SEE STRUCTURAL NOTES FOR MINIMUM COUPLER CAPACITY. WHERE MECHANICAL COUPLERS ARE USED, STAGGER ADJACENT SPLICES A MINIMUM OF 24" AS INDICATED ABOVE.
2. LENGTHS INDICATED IN THIS SCHEDULE SHALL BE INCREASED BY 50% FOR STRAIGHT BAR DEVELOPMENT AND 20% FOR HOOKED BARS WHERE EPOXY COATING IS USED.
3. WHEN SPLICING BARS OF DIFFERENT SIZES, USE LAP SPLICE LENGTH OF LARGER BARS UNO.
4. SPLICE BARS LARGER THAN #11 USING MECHANICAL COUPLERS.
5. SLAB TOP BARS ONLY FOR SLABS 12" OR GREATER IN THICKNESS.

FOOTING SCHEDULE



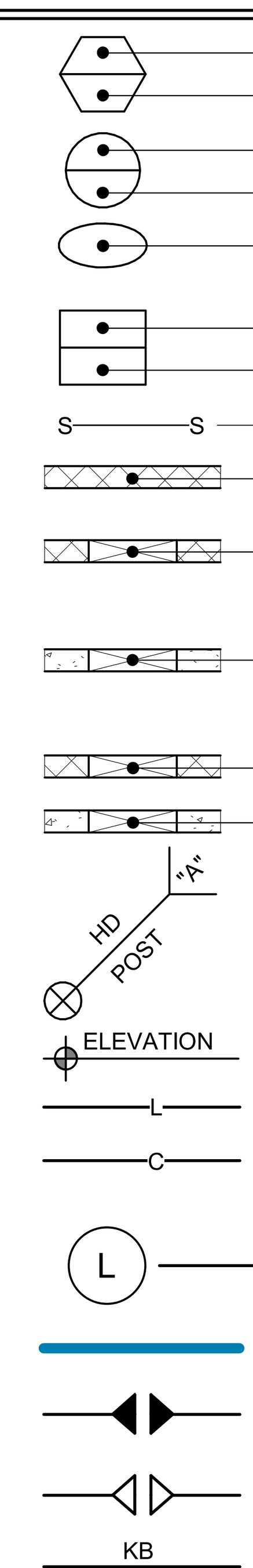
TYP. FOOTING SECTION

TYP. FOOTING SECTION W/ TOP & BOTTOM REINF.

MARK	WIDTH	LENGTH	THICK	LENGTHWISE REINF.	CROSSWISE REINF.	REMARKS
FC2	2' - 0"	CONT.	1' - 0"	(2) #5		

LEGEND OF SYMBOLS AND ABBREVIATIONS

AB = ANCHOR BOLT
ABV = ABOVE
ARCH = ARCHITECT
BLW = BELOW
BN = BOUNDARY NAILING
BS = BOUNDARY SCREW
BRB = BUCKLING RESTRAINED BRACE
BRBF = BUCKLING RESTRAINED BRACE FRAME
CJP = COMPLETE JOINT PENETRATION
CL = CENTERLINE
CMU = CONCRETE MASONRY UNIT
COL = COLUMN
CONC = CONCRETE
CP = CONCRETE PIER
DC = DEMAND CRITICAL
DIA / Ø = DIAMETER
DBA = DEFORMED BAR ANCHOR
DBE = DECK BEARING ELEVATION
ELEV = ELEVATION
EN = EDGE NAILING
EOD = EDGE OF DECK
FDN = FOUNDATION
FTG = FOOTING
FFE = FINISHED FLOOR ELEVATION
GB = CONCRETE GRADE BEAM
HSA = HEADED STUD ANCHOR
JBE = JOIST BEARING ELEVATION
KB = KICKER BRACE
MAX = MAXIMUM
MB = MASONRY BEAM
MC = MASONRY COLUMN
MECH = MECHANICAL
MEZZ = MEZZANINE
MIN = MINIMUM
MJ = MASONRY JAMB
MW = MASONRY WALL
NS, FS = NEAR SIDE, FAR SIDE
OAE = OR APPROVED EQUAL
OPP = OPPOSITE
PAF = POWDER ACTUATED FASTENER
PL = PLATE
REINF = REINFORCING
REQ'D = REQUIRED
SIM = SIMILAR
SSH = STEEL STUD HEADER
SSJ = STEEL STUD JAMB
SSS = STEEL STUD SILL
SSW = STEEL STUD WALL
TOB = TOP OF BEAM ELEVATION
TOC = TOP OF CONCRETE SLAB
TOF = TOP OF FOOTING
TOG = TOP OF GIRDER ELEVATION
TOM = TOP OF MASONRY
TOS = TOP OF STEEL ELEVATION
TYP = TYPICAL
UNO = UNLESS NOTED OTHERWISE



FOOTING MARK
TOP OF FOOTING ELEVATION
SECTION MARK
SHEET NUMBER
TOP OF FOUNDATION WALL OR COLUMN PIER ELEVATION
SHEAR WALL - SEE SCHEDULE
MIN. LENGTH OF SHEAR WALL
FOOTING STEP
MASONRY WALL
DEPRESS FDN./WALL AND POUR FLOOR SLAB OVER AT MASONRY FOUNDATION WALL
DEPRESS FDN./WALL AND POUR FLOOR SLAB OVER AT CONCRETE FOUNDATION WALL
MASONRY BEAM
CONCRETE BEAM
HD - SIMPSON HOLDOWN SIZE
POST - SIZE OF END POST CONNECTED TO HOLDOWN
"A" - PLAN CONFIGURATION AT HOLDOWN AT FOUNDATION
ELEVATION
FRAMING ANGLE SEE TYPICAL DETAIL
FRAMING CHANNEL SEE TYPICAL DETAIL
ITEMS, DETAILS, & SYSTEMS WHICH ARE PART OF THE LATERAL FORCE RESISTING SYSTEM.
BRACED FRAME
MOMENT RESISTING CONNECTIONS - SEE DETAIL
MOMENT RESISTING CANTILEVER CONNECTIONS - SEE DETAIL
KICKER BRACE

SPECIAL INSPECTION SCHEDULE [1, 2]

ESTABLISHED PER 2021 IBC SECTION 110 AND CHAPTER 17

ITEM	CONTINUOUS[3]	PERIODIC[3]	REFERENCE
PRE-FAB CONSTRUCTION (IBC 1704.2)			REFERENCE NOTES P1 & P2
CONCRETE CONSTRUCTION (IBC 1705.3)			SEE IBC TABLE 1705.3 - REF. NOTE C1
REINFORCING STEEL PLACEMENT		●	
WELDING OF REINFORCING STEEL	●	●	REFERENCE NOTE C2
ANCHORS CAST IN CONCRETE	●		
VERIFYING REQUIRED DESIGN MIX		●	
CONCRETE PLACEMENT / SAMPLING	●		REFERENCE NOTE C3
CURING TEMPERATURE / TECHNIQUES		●	
VERIFICATION OF IN-SITU STRENGTH		●	REFERENCE NOTE C4
POST-INSTALLED ANCHOR PLACEMENT	●	●	REFERENCE NOTE C5
FORMWORK		●	REFERENCE NOTE C8
SOILS (IBC 1705.6)			REFERENCE NOTE F1
VERIFY ADEQUATE MATERIALS BELOW FOOTINGS		●	REFERENCE NOTE F1
EXCAVATIONS EXTEND TO PROPER DEPTH AND REACH PROPER MATERIAL		●	REFERENCE NOTE F2
CLASSIFY & TEST CONTROLLED FILL MATERIALS		●	REFERENCE NOTE F2
FILL MATERIAL AND PLACEMENT	●		REFERENCE NOTE F3
PROPERLY PREPARED SITE AND SUB-GRADE PRIOR TO FILL.		●	REFERENCE NOTE F1

COMMENTS

P1. SPECIAL INSPECTION IS NOT REQUIRED WHERE THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION, PROVIDED THE FABRICATOR COMPLIES WITH IBC.
P2. INSPECTION FOR PREFABRICATED CONSTRUCTION SHALL BE THE SAME AS IF THE MATERIAL USED IN THE CONSTRUCTION TOOK PLACE ON SITE. SPECIAL INSPECTION WILL NOT BE REQUIRED DURING PREFABRICATION IF THE APPROVED AGENCY CERTIFIES THE CONSTRUCTION AND FURNISHES EVIDENCE OF COMPLIANCE. (SEE NOTE 2).

C 1. SPECIAL INSPECTION IS NOT REQUIRED FOR CONC. ISOLATED SPREAD FOOTINGS, CONTINUOUS FOOTINGS, NON-STRUCTURAL SLABS, FOUNDATION WALLS, PATIOS, DRIVEWAYS, AND SIDEWALKS PROVIDED THE REQUIREMENTS OF IBC 1705.3 ARE MET.
C 2. PERIODIC SPECIAL INSPECTION IS ALLOWED FOR VERIFICATION OF THE WELDABILITY OF REINFORCING STEEL RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, BOUNDARY ELEMENTS OF SPECIAL REINFORCED CONCRETE SHEAR WALLS, AND SHEAR REINFORCEMENT. PERIODIC SPECIAL INSPECTION IS ALLOWED FOR WELDING OF OTHER ASTM A 706 REINFORCING STEEL NOT INCLUDED IN THE CONTINUOUS SPECIAL INSPECTION REQUIREMENTS NOTED ABOVE.
C 3. PERFORM AIR, SLUMP AND TEMP. TESTS WHEN CONCRETE SAMPLES ARE CAST.
C 4. PERIODIC SPECIAL INSPECTION IS REQUIRED FOR VERIFICATION OF IN-SITU CONCRETE STRENGTH PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.
C 5. EPOXY AND EXPANSION ANCHORS INTO MASONRY OR CONCRETE MAY BE USED ONLY WHEN APPROVED BY ARCHITECT. AND/OR ENGINEER USING AN APPROVED PRODUCT WITH CURRENT PUBLISHED ICC RESEARCH REPORT NUMBERS. COORDINATE CONTINUOUS/PERIODIC SPECIAL INSPECTION REQUIREMENTS WITH ICC REPORT AND ACI 318: 17.8.2.4.
C 6. CONTINUOUS SPECIAL INSPECTION IS REQUIRED FOR PRECAST CONCRETE DIAPHRAGM CONNECTIONS OR REINFORCEMENT AT JOINTS CLASSIFIED AS MODERATE OR HIGH DEFORMABILITY ELEMENTS IN STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY C, D, E, OR F.
C 7. PERIODIC SPECIAL INSPECTION IS REQUIRED FOR THE INSTALLATION TOLERANCES OF PRECAST CONCRETE DIAPHRAGM CONNECTIONS FOR COMPLIANCE WITH ACI 550.5.
C 8. PERIODIC SPECIAL INSPECTION IS REQUIRED FOR FORMWORK SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.

F 1. SPECIAL INSPECTION OF SOILS SHALL REFERENCE THE APPROVED GEOTECHNICAL REPORT TO DETERMINE COMPLIANCE.
F 2. WHERE GEOTECHNICAL REPORT IS NOT PROVIDED SPECIAL INSPECTIONS ARE REQUIRED TO VERIFY THAT THE IN-PLACE DRY DENSITY OF THE COMPACTED FILL IS NOT LESS THAN 90 PERCENT OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT DETERMINED IN ACCORDANCE WITH ASTM D1557.
F 3. CONTINUOUS SPECIAL INSPECTION IS REQUIRED DURING FILL PLACEMENT. VERIFY USE OF PROPER MATERIALS AND PROCEDURES IN ACCORDANCE WITH THE PROVISIONS OF THE APPROVED GEOTECHNICAL REPORT. VERIFY DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.

GENERAL SPECIAL INSPECTION NOTES :

1. THE ITEMS MARKED WITH A "●" IN THE SPECIAL INSPECTION SCHEDULE SHALL BE INSPECTED IN ACCORDANCE WITH IBC CHAPTER 17 BY A CERTIFIED SPECIAL INSPECTOR FROM AN ESTABLISHED TESTING AGENCY. FOR MATERIAL SAMPLING AND TESTING REQUIREMENTS, REFER TO THE MATERIAL SAMPLING AND TESTING SECTION, THE PROJECT SPECIFICATIONS, AND THE SPECIFIC GENERAL NOTES SECTIONS. THE TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS DIRECTLY TO THE ARCHITECT, ENGINEER, CONTRACTOR, AND BUILDING OFFICIAL. ANY ITEMS WHICH FAIL TO COMPLY WITH THE APPROVED CONSTRUCTION DOCUMENTS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF DISCREPANCIES ARE NOT CORRECTED, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL, ARCHITECT, AND ENGINEER PRIOR TO COMPLETION OF THAT PHASE OF WORK. SPECIAL INSPECTION TESTING REQUIREMENTS APPLY EQUALLY TO ALL BIDDER DESIGNED COMPONENTS.
2. ANY CONSTRUCTION OR MATERIAL THAT HAS FAILED INSPECTION SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT.
3. CONTINUOUS SPECIAL INSPECTION MEANS THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED. PERIODIC SPECIAL INSPECTION MEANS THE PART-TIME OR INTERMITTENT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF THE WORK. (IBC SECTION 202)

design west | architects
255 SOUTH 300 WEST, SALT LAKE CITY UT 84103
795 NORTH 400 WEST, LOGAN UT 84321
ARW ENGINEERS

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 EAST 1000 NORTH. LOGAN UT, 84321
LOGAN CITY SCHOOL DISTRICT

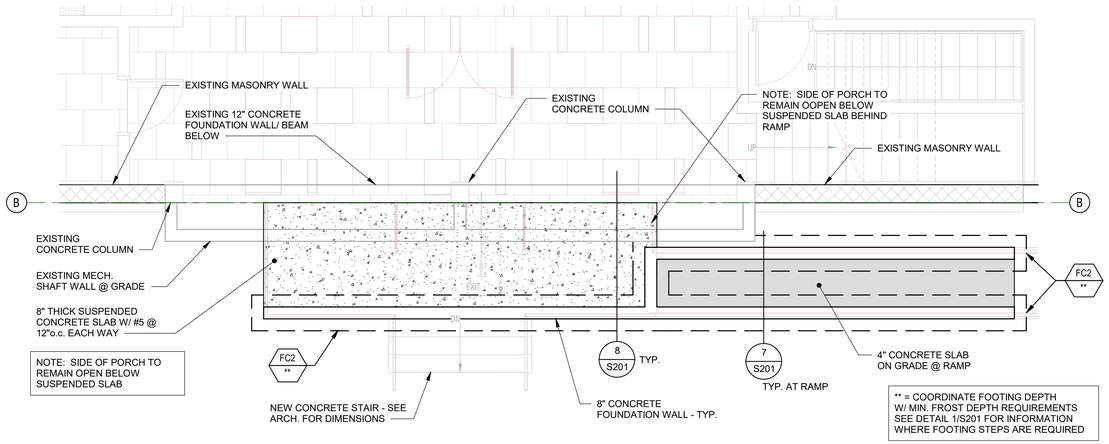
MARK: DATE: DESCRIPTION:

PROJECT #: 123998
DRAWN BY: LEE
CHECKED BY: JLB
ISSUED: 02.02.2024

CONSTRUCTION DOCUMENTS

SCHEDULES

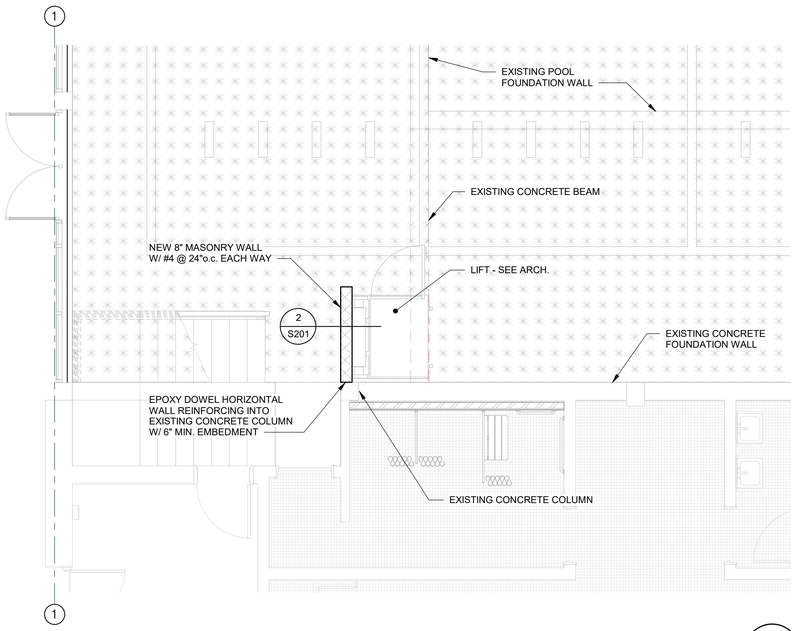
S010



FOOTING AND FOUNDATION PLAN - AREA A

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

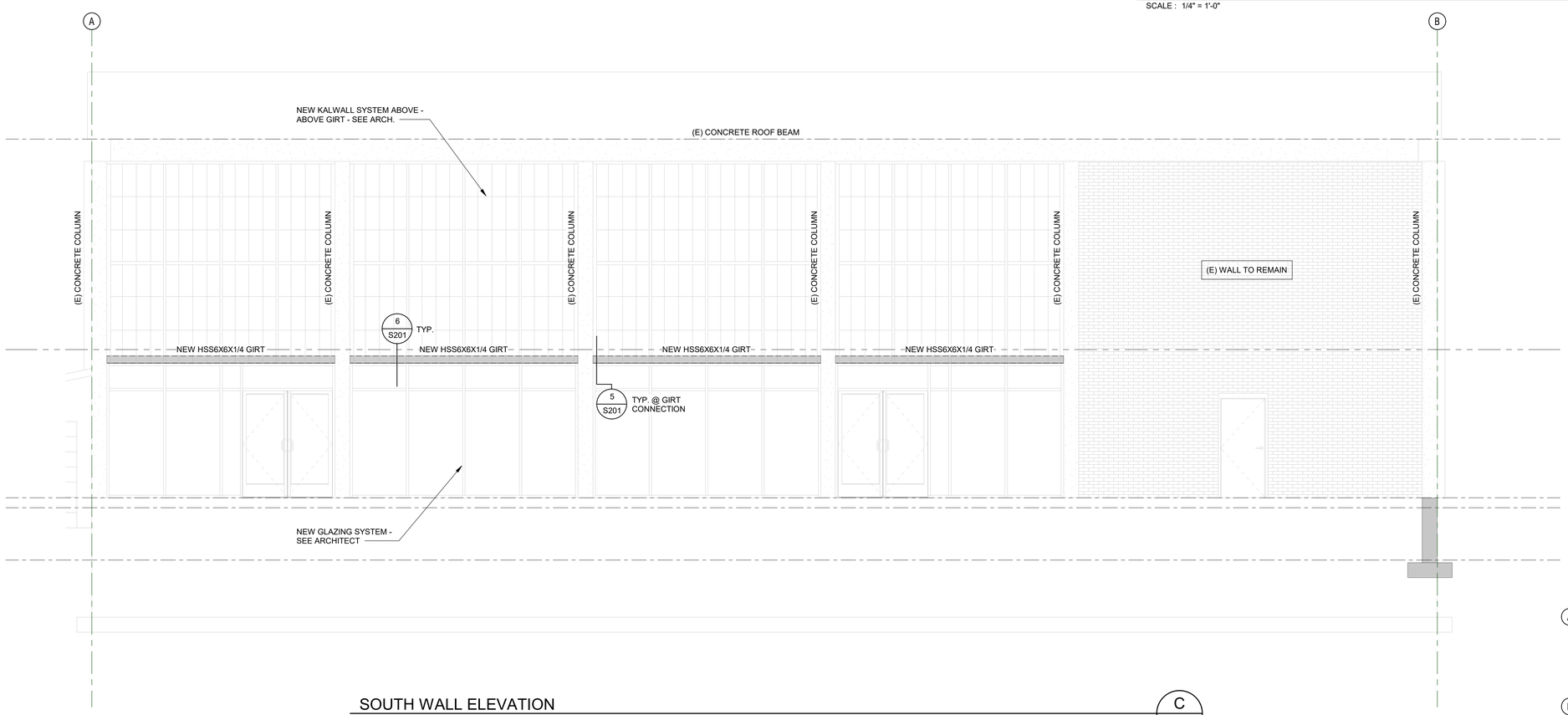
A S101



CHAIR LIFT SUPPORT FRAMING PLAN - AREA B

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

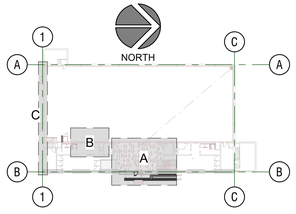
B S101



SOUTH WALL ELEVATION

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

C S101



KEY PLAN

CONSTRUCTION DOCUMENTS

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LOGAN UT 84321
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795 NORTH 400 WEST

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Lehi, Utah 84043
+1 801 782 8058

LCSD INDOOR ATHLETIC FACILITY

MUNICIPOOL REMODEL

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LOGAN CITY SCHOOL DISTRICT

MARK:	DESCRIPTION:	DATE:

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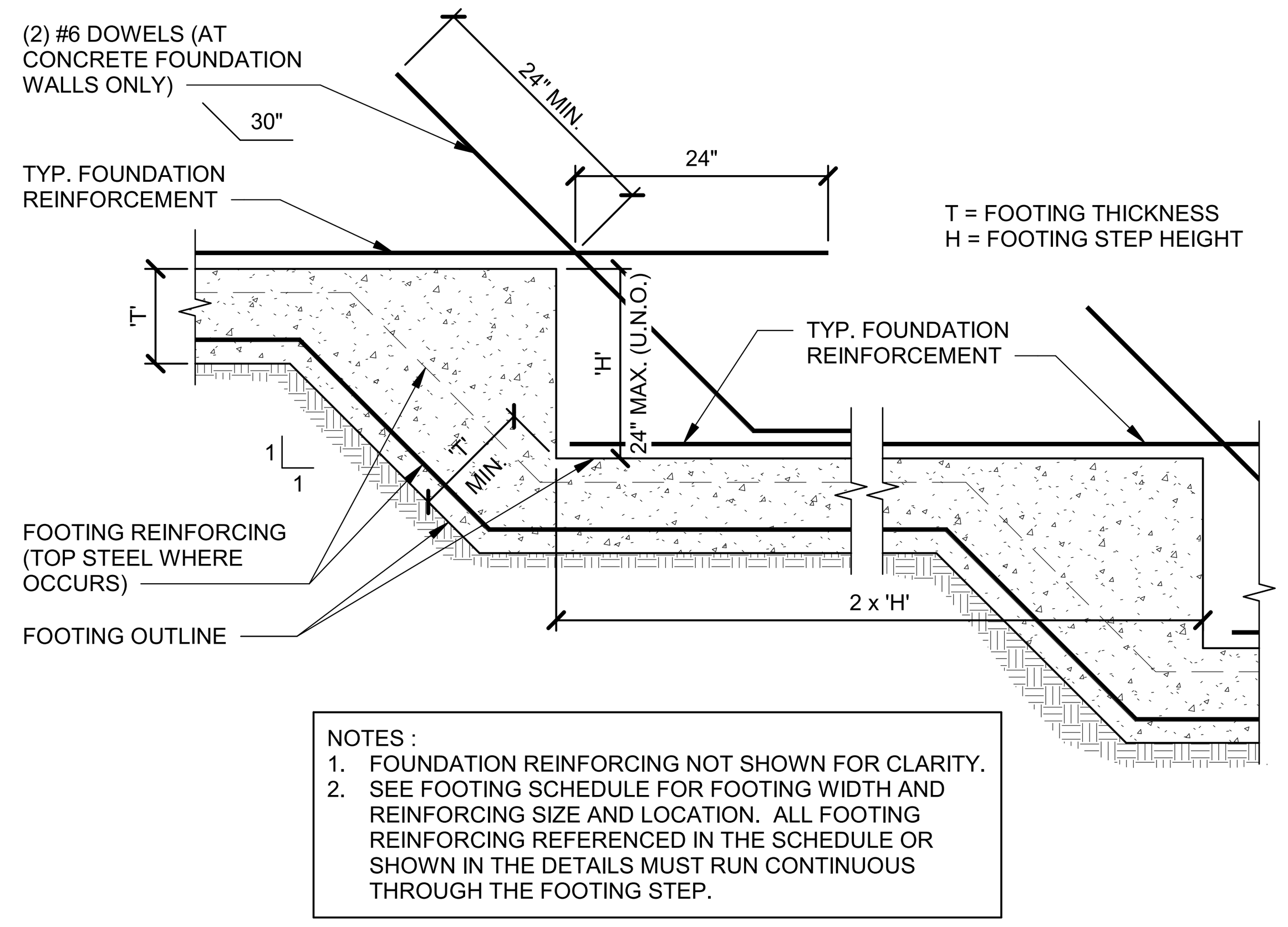
ISSUED: 02.02.2024

PROFESSIONAL STRUCTURAL ENGINEER
Joshua L. Blazzard
No. 5251609
STATE OF UTAH

FOUNDATION AND FRAMING PLANS

S101

2/2/2024 4:05:41 PM Autodesk Docs://123998 - LCSD - Indoor Athletic Facility - Municipool Remodel/S-23024-LCSD Indoor Athletic Facility-2024.rvt



TYPICAL STEPPED FOOTING
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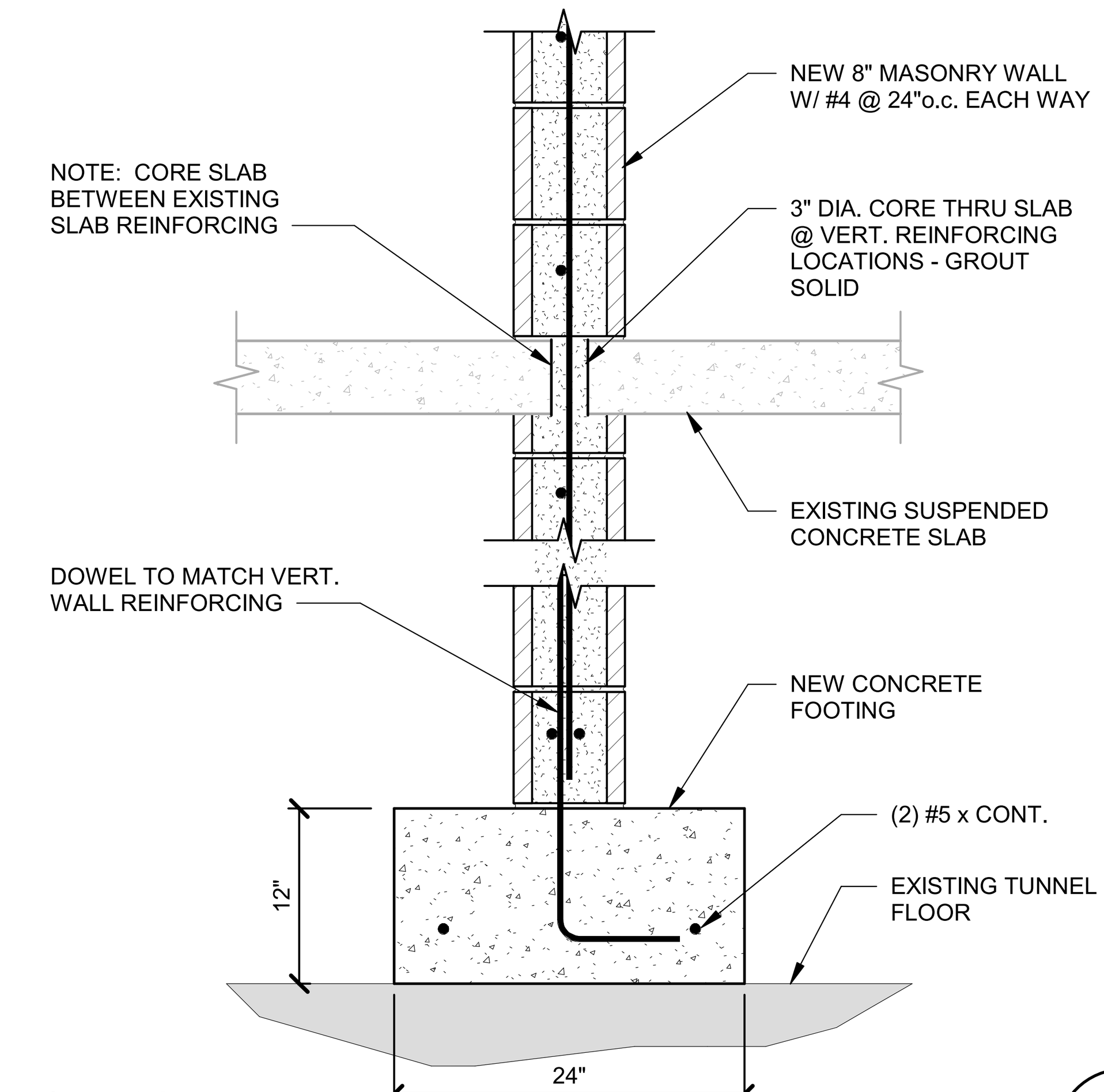
S201



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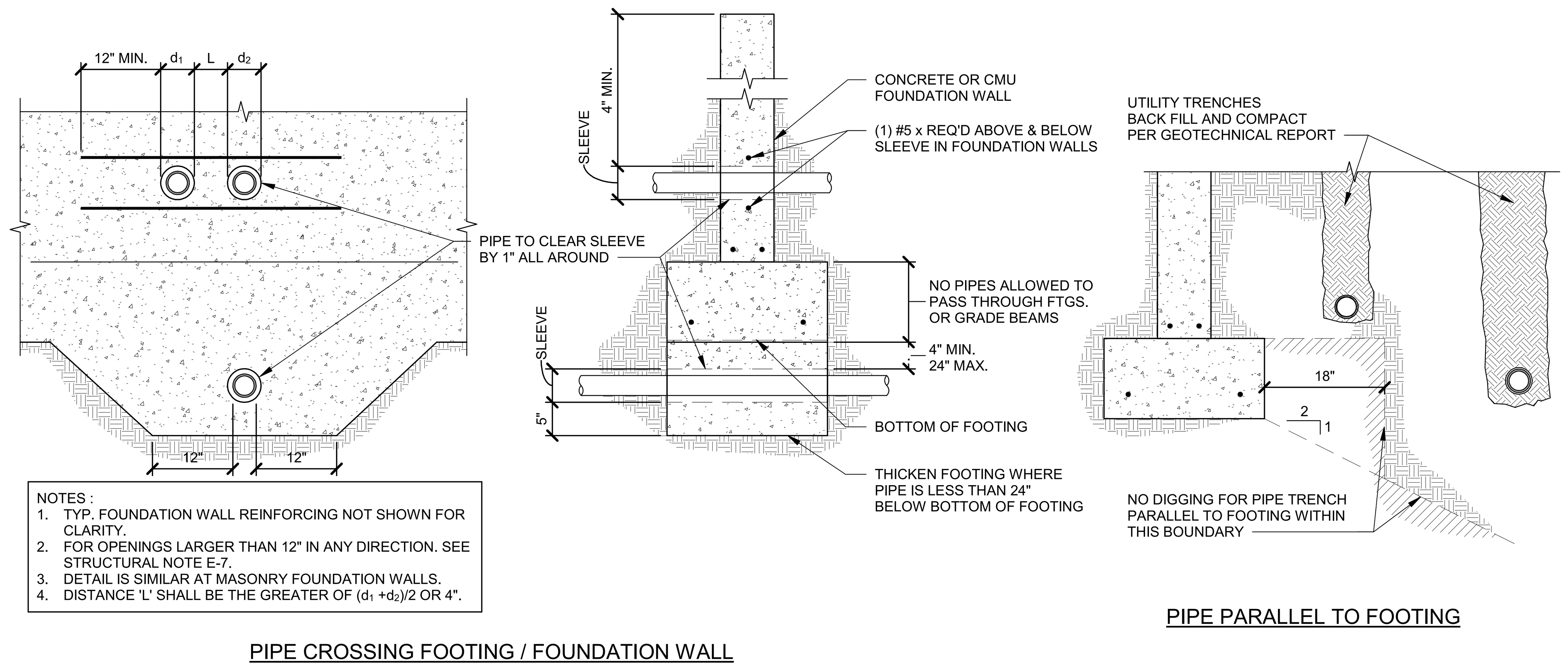

ALLOWABLE PIPING LOCATIONS @ FOOTING DETAIL
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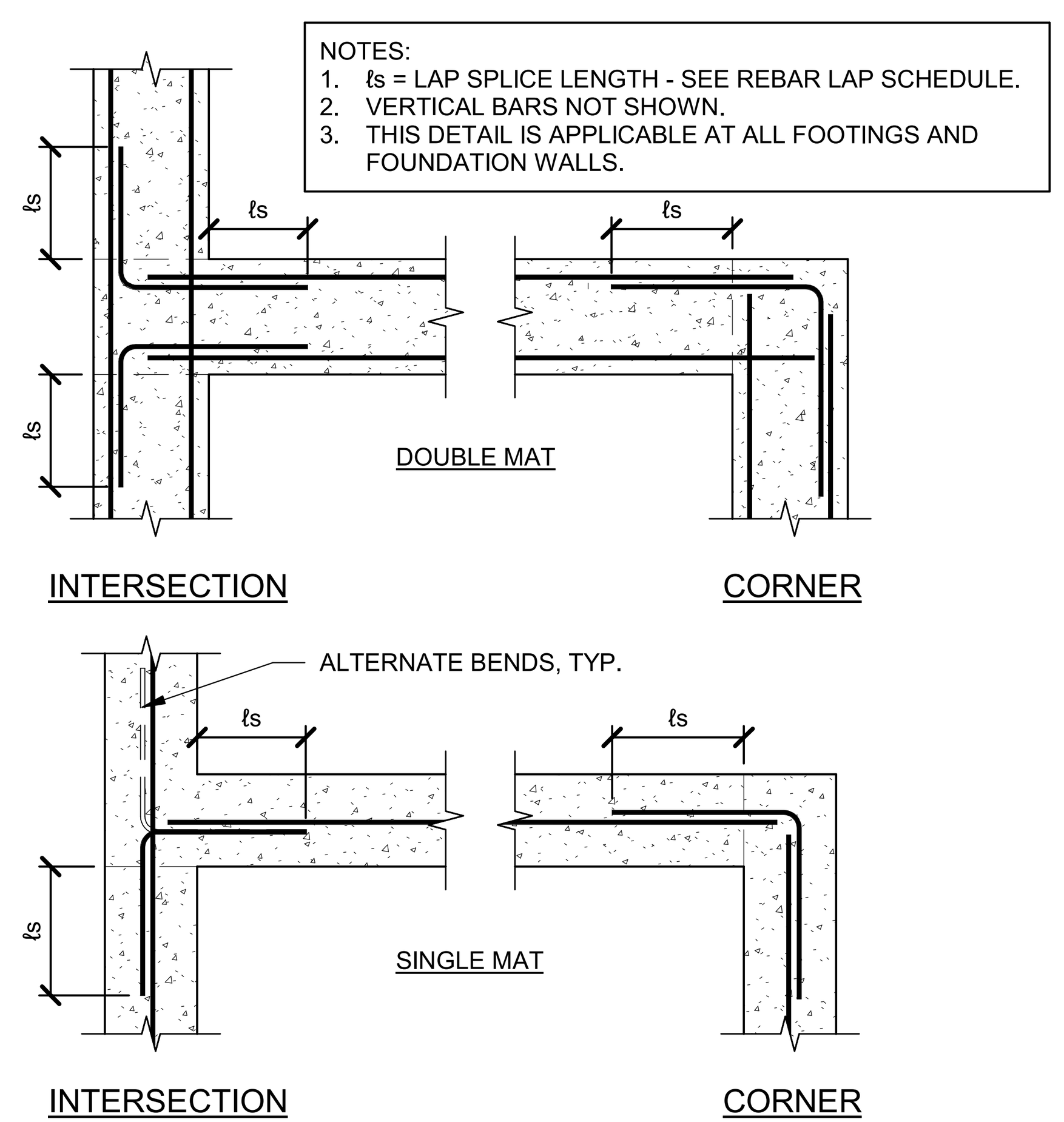
S201



TYPICAL REINFORCING @ INTERSECTIONS IN CONCRETE DETAIL
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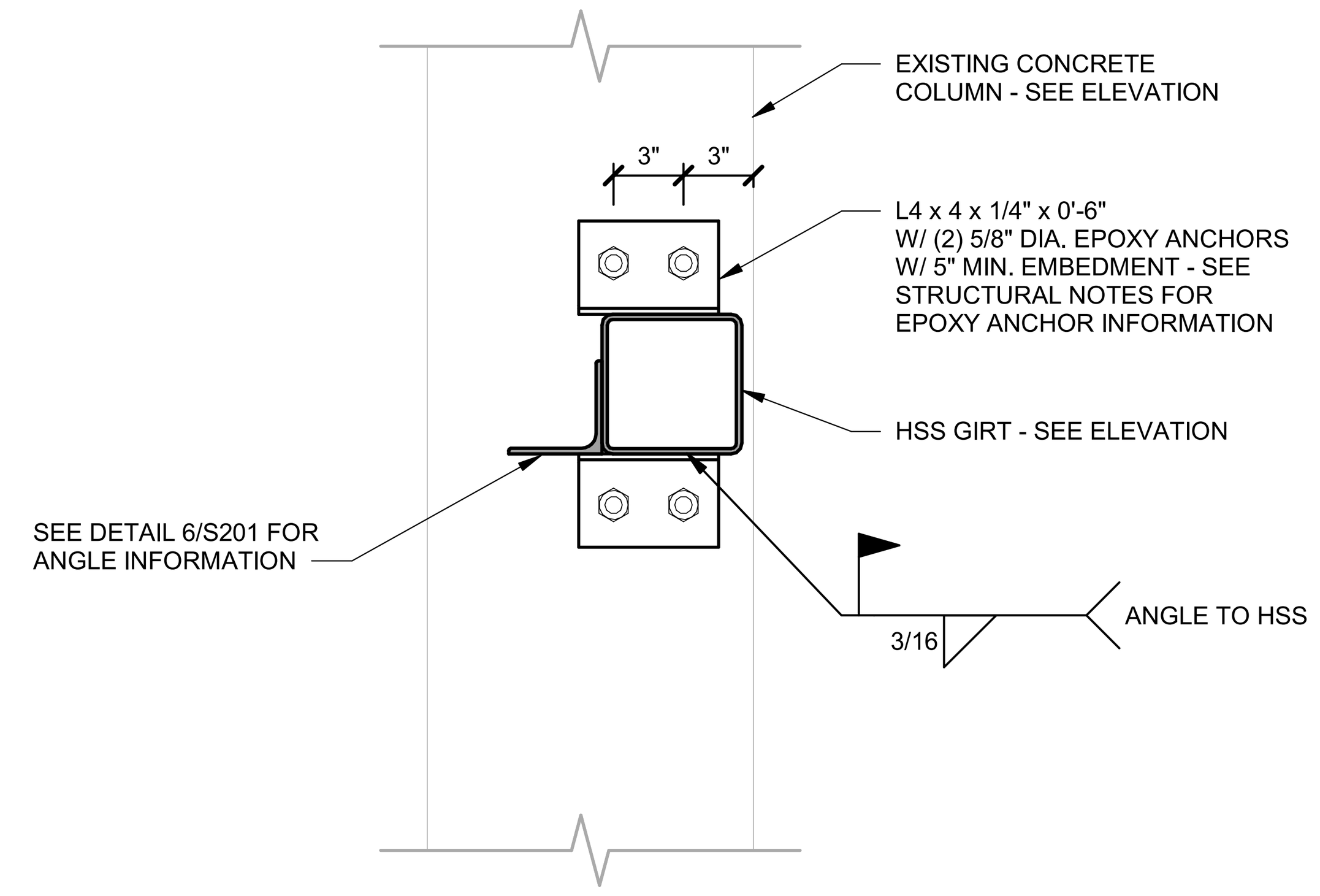
S201



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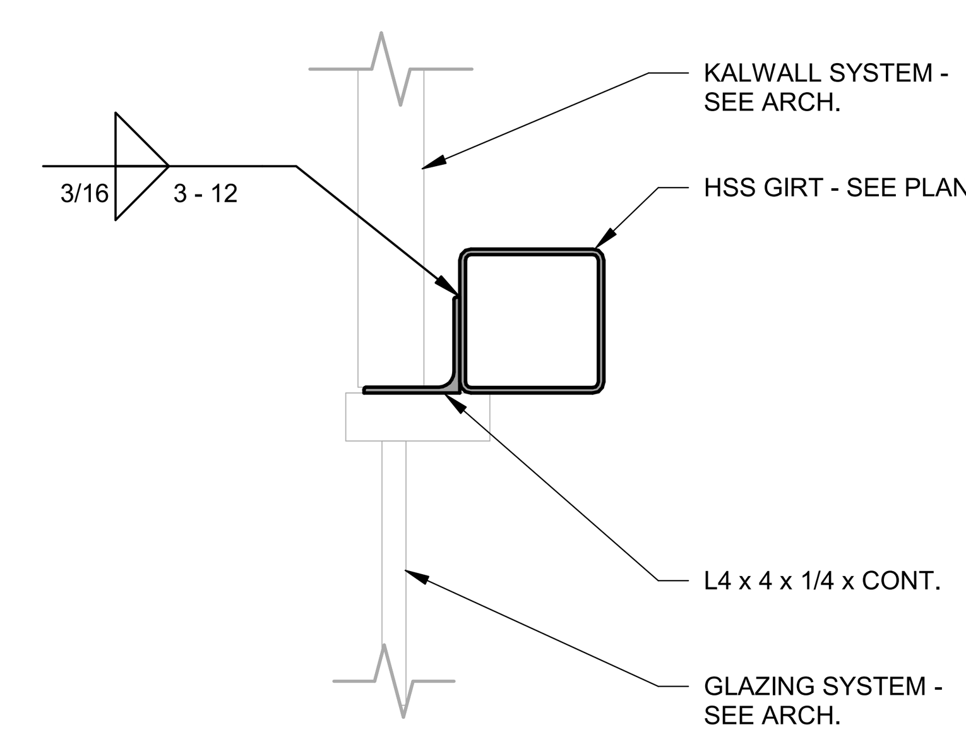

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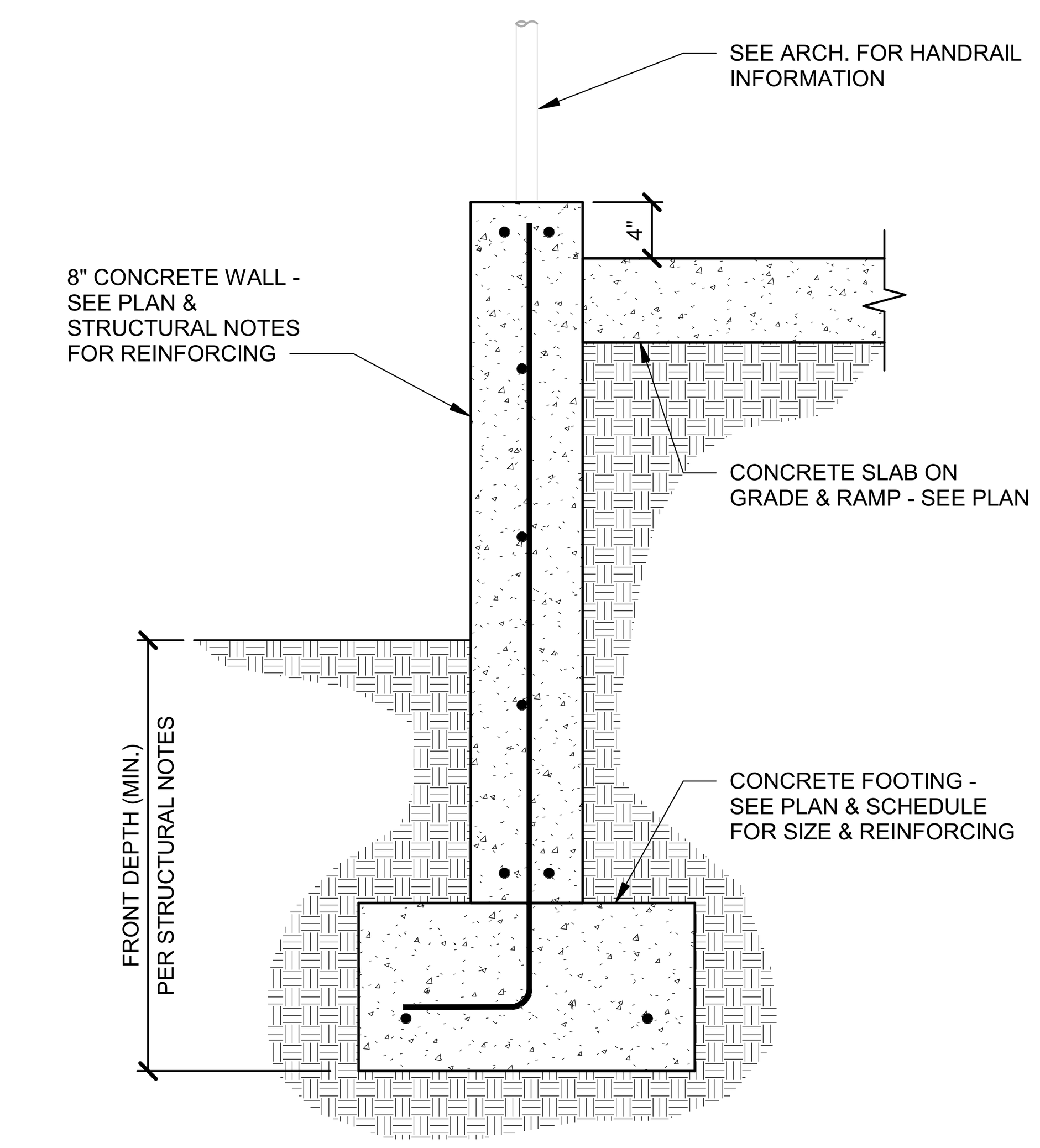

TYP. RAMP DETAIL
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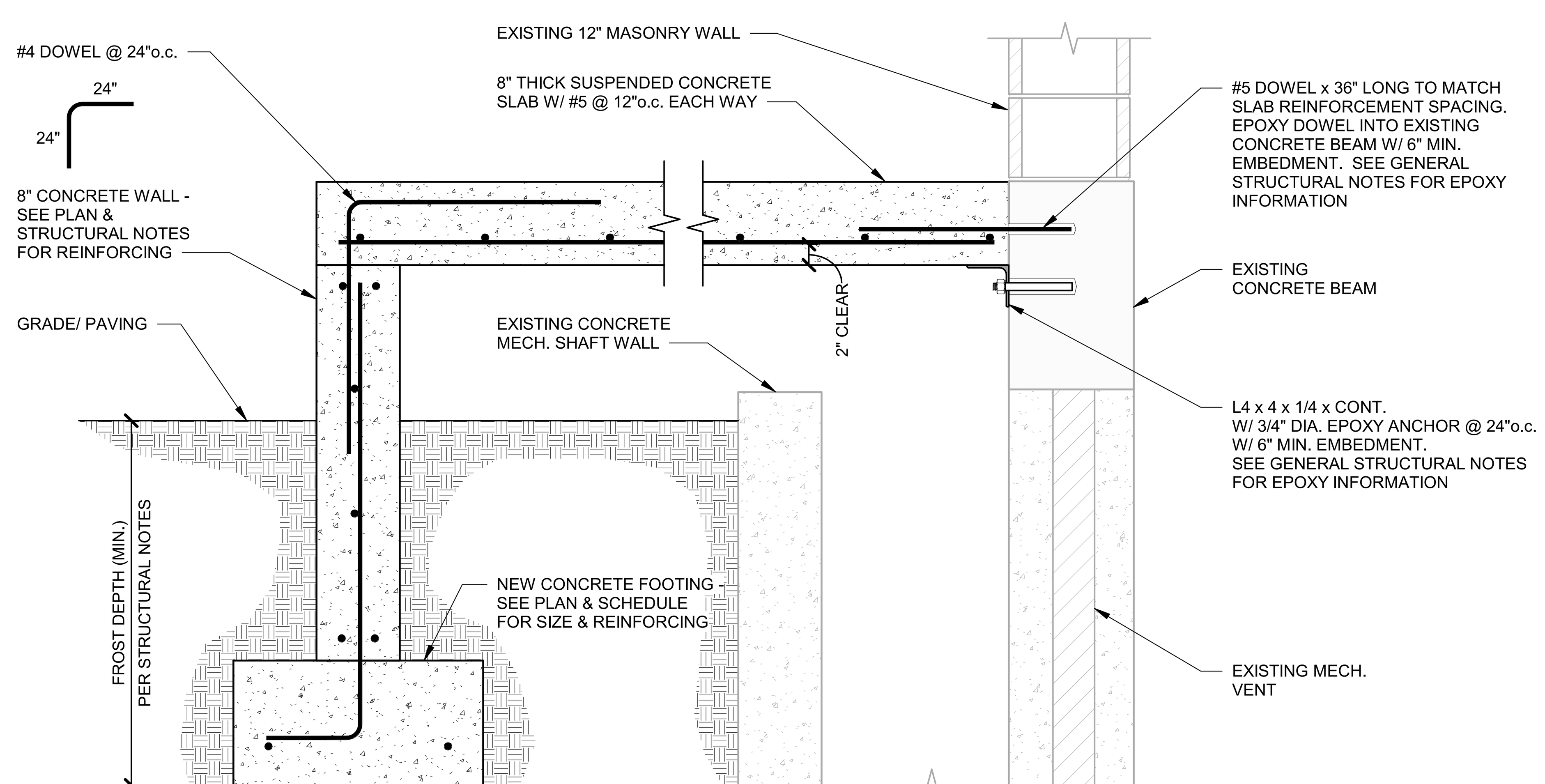
S201



DETAIL
SCALE : NONE
8
S201

CONSTRUCTION DOCUMENTS

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255 SOUTH 300 WEST LOGAN UT 84321
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structural consultants
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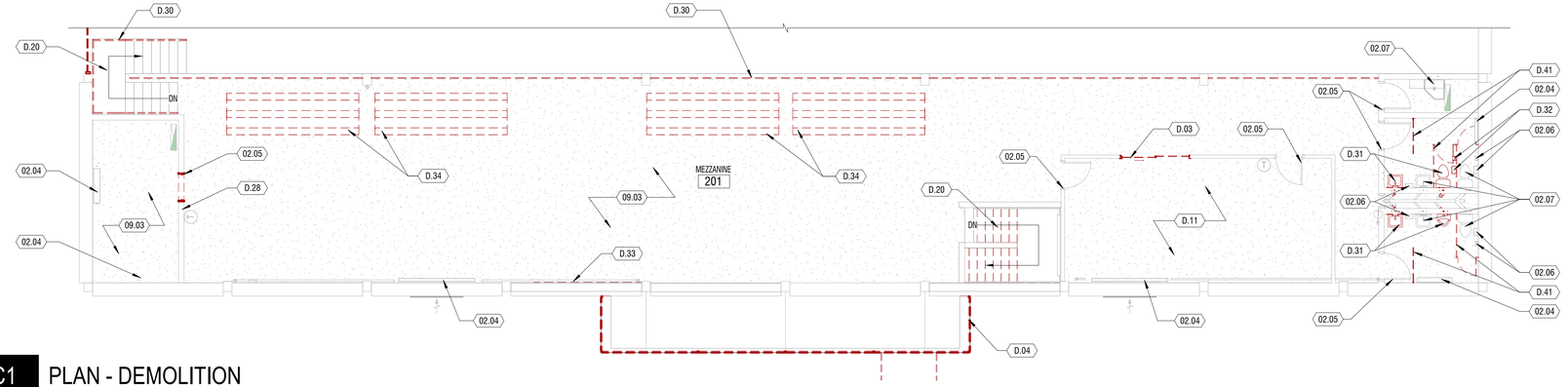
LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 EAST 1000 NORTH. LOGAN UT, 84321
LOGAN CITY SCHOOL DISTRICT

MARK: DATE: DESCRIPTION:

PROJECT #:	123998
DRAWN BY:	LEE
CHECKED BY:	JLB
ISSUED:	02.02.2024

PROFESSIONAL STRUCTURAL ENGINEER
Joshua L. Blazzard
No. 5251609
2/2/24
STATE OF UTAH

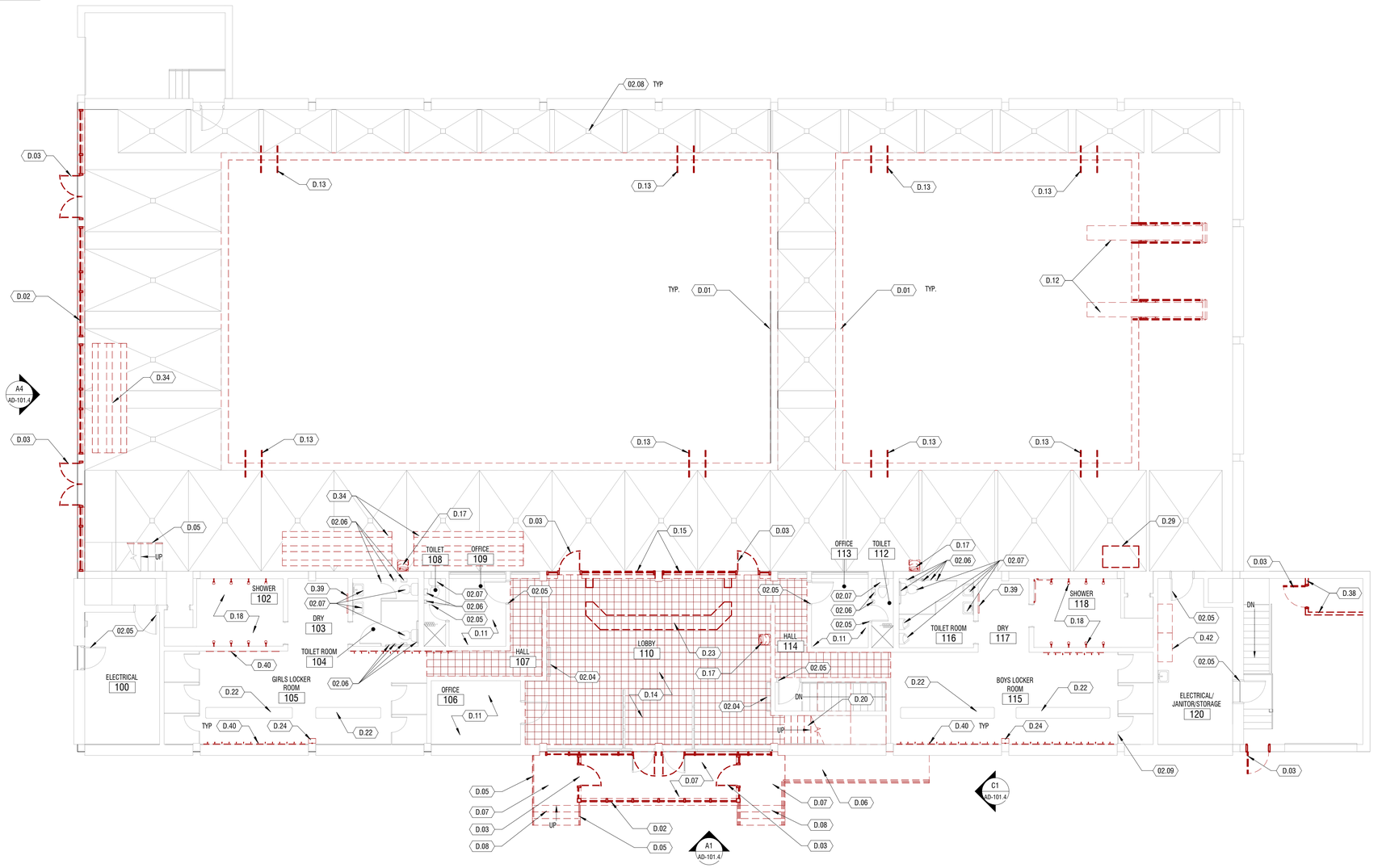
TYPICAL DETAILS
S201



C1 PLAN - DEMOLITION

1/8" = 1'-0" MEZZANINE

NORTH



A1 PLAN - DEMOLITION

1/8" = 1'-0" LEVEL 01

NORTH

GENERAL NOTES:

1. THE DEMOLITION DRAWINGS ARE INTENDED TO SHOW THE GENERAL NATURE & SCOPE OF THE WORK REQUIRED. ON-SITE OBSERVATIONS SHOULD BE MADE AND REPORT ANY ABNORMAL CONDITIONS TO ARCHITECT. SOME INCIDENTAL ITEMS REQUIRING REMOVAL MAY NOT BE SPECIFICALLY CALLED OUT. REMOVAL OF ALL ITEMS NECESSARY FOR THE COMPLETION OF WORK IS THE RESPONSIBILITY OF THE CONTRACTOR.

   FIELD VERIFY EXISTING CONDITIONS AND THEIR COMPATIBILITY WITH NEW CONSTRUCTION PRIOR TO THE COMMENCEMENT OF WORK. SEE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING DRAWINGS FOR ADDITIONAL DEMOLITION PLANS AND SCOPE. REFER TO SHEET INDEX FOR DEMOLITION DRAWINGS. COORDINATE DISCREPANCIES WITH ARCHITECT PRIOR TO PROCEEDING WITH WORK.
2. KEYNOTES: (#) THE FIRST TWO NUMBERS REPRESENT THE RELATED CS MASTER FORMAT DIVISION. THE SECOND SET OF NUMBERS REPRESENTS AN IDENTIFYING MARK VALUE. NOT ALL VALUES MAY BE USED OR OCCUR IN THE DOCUMENT SET.

   ADDITIONALLY, KEYNOTES RETAIN THEIR ASSIGNED VALUE UNIVERSALLY THROUGHOUT THE ARCHITECTURAL SET. THE KEYNOTES LISTED BELOW, REPRESENT THE KEYNOTES FOUND AND UTILIZED ON THIS SHEET AND EACH LIST WILL DIFFER RESPECTIVE TO ITS' SHEET. THEREFORE, BASED ON ACTUAL KEYNOTES UTILIZED ON A GIVEN SHEET OF DRAWINGS, GAPS IN THE SEQUENCING WILL OCCUR.
3. ALL INTERIOR DIMENSIONS ARE TO/FROM FACE OF FINISH. ALL EXTERIOR DIMENSIONS ARE TO/FROM FACE OF FINISH MATERIAL OR GRID WHERE SHOWN. CONTRACTOR SHALL COORDINATE EXISTING DIMENSIONS WITH PROPOSED SCOPE AND REPORT DISCREPANCIES WHERE FOUND.
4. PROTECT ALL SURFACES THAT ARE TO REMAIN OR THAT ARE EXPOSED, AND PROVIDE DUST BARRIERS TO PROTECT ADJACENT AREAS FROM DUST AND DEBRIS DURING SELECTIVE DEMOLITION OPERATIONS.
5. PATCH AND REPAIR DAMAGE IN WALLS, CEILINGS, AND FLOORS RESULTING FROM DEMOLITION OF EXISTING ITEMS OR CONSTRUCTION OF NEW ITEMS AND/OR REPLACE WITH NEW TO MATCH EXISTING. CLEAN AND PREPARE TO RECEIVE NEW FINISH. PROVIDE PAINT/FINISH TOUCHUP AT ALL DEMO LOCATIONS. CLEAN WORK AREA OF DUST, DIRT, AND DEBRIS CAUSED BY SELECTIVE DEMOLITION OPERATIONS. RETURN ADJACENT AREAS TO CONDITION EXISTING BEFORE SELECTIVE DEMOLITION OPERATIONS BEGAN.
6. TRANSPORT DEMOLISHED MATERIALS OFF OWNER'S PROPERTY AND LEGALLY DISPOSE OF DEBRIS.
7. ASBESTOS TESTING AND REMOVAL BY OWNER. ANY ASBESTOS CONTAINING MATERIAL (ACM) OR LEAD-BASED PAINT (LBP) REMOVAL SHALL BE COORDINATED WITH AUTHORITY HAVING JURISDICTION. REMOVAL SHALL BE DONE THROUGH A QUALIFIED ACM AND LBP CONTRACTORS. DIVISION OF AIR QUALITY RULE R307-801-9: THE ASBESTOS PROJECT OPERATOR SHALL ENSURE THAT THE STRUCTURE OR FACILITY TO BE DEMOLISHED OR RENOVATED IS INSPECTED FOR ACM BY AN INSPECTOR CERTIFIED UNDER THE PROVISIONS OF R307-801-6. AN ASBESTOS SURVEY REPORT SHALL BE GENERATED ACCORDING TO THE PROVISIONS OF R307-801-10. THE ASBESTOS PROJECT OPERATOR SHALL MAKE THE ASBESTOS SURVEY REPORT AVAILABLE ON SITE TO ALL PERSONS WHO HAVE ACCESS TO THE SITE FOR THE DURATION OF THE RENOVATION OR DEMOLITION ACTIVITIES.
8. ALL SUSPECT ASBESTOS CONTAINING MATERIALS OR LEAD BASED PAINT NOT IDENTIFIED MUST BE SAMPLED TO DETERMINE CONTENT. IF MATERIALS ARE ENCOUNTERED WHICH HAVE NOT BEEN PREVIOUSLY IDENTIFIED/SAMPLED, STOP WORK AND CONTACT THE AUTHORITY HAVING JURISDICTION.
9. DEMOLISH EXISTING FLOORING WHERE SHOWN, INCLUDING: SETTING BEDS, ADHESIVES AND OTHER VARIANCES IN THE EXISTING FLOOR. PREPARE FLOOR TO RECEIVE NEW FLOORING AS REQUIRED BY CONTRACT DOCUMENTS.
10. ALL OWNER FURNISHINGS AND EQUIPMENT SHALL BE REMOVED BY OWNER. ITEMS IDENTIFIED AS "REMOVED AND STORED" / "TO BE SALVAGED" SHALL BE REMOVED AND STORED IN A SAFE LOCATION PRIOR TO DEMOLITION.
11. WALLS, DOORS, CABINETS, WINDOWS, CEILINGS, ETC. WHERE SHOWN DASHED ARE TO BE REMOVED. AREAS TO RECIEVE NEW FINISH NEED EXISTING FINISH TO BE REMOVED. SEE FINISH PLANS
12. REMOVE ALL ABANDONED POWER AND SIGNAL CABLING BACK TO SOURCE AND SAFE OFF.
13. REMOVE GENERAL FINISHES, SIGNAGE, FIXTURES, HARDWARE, ETC. THROUGHOUT AREA OF WORK, U.N.O. EXIT SIGNS ARE TO BE REMOVED AND STORED FOR REINSTALLATION.
14. CONTRACTOR TO PATCH AND REPAIR DAMAGED FIRE PROOFING ON STRUCTURAL AND FIRE RATED ASSEMBLIES. MATCH EXISTING FIRE RATING.
15. REMOVE OR COVER ALL EXISTING PERIMETER WINDOW COVERINGS PRIOR TO COMMENCEMENT OF DEMOLITION. CLEAN AND UNCOVER OR REINSTALL AT COMPLETION OF CONSTRUCTION.
16. ALL EXISTING SPRINKLER / FIRE ALARM WORK SHALL BE SEPARATE SUBMITTAL. CONTRACTOR SHALL PROVIDE FINAL DESIGN AND PERMITTING.
17. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE TO DETERMINE IF ANY PARTS OR EQUIPMENT ARE DESIRED TO BE KEPT BY THE OWNER. THE OWNER SHALL HAVE THE RIGHT OF FIRST REFUSAL. ANY ITEM NOT WISHED TO BE RETAINED, SHALL BE DISPOSED OF AT THE RESPONSIBILITY OF THE CONTRACTOR.

KEYNOTES

(#)

MARK	DESCRIPTION
02.04	FLOOR CABINET HEATERS TO BE PROTECTED DURING CONSTRUCTION
02.05	(E) DOOR TO BE PREPARED FOR NEW FINISH
02.06	(E) BATHROOM ACCESSORIES TO REMAIN, PROTECT DURRING CONSTRUCTION
02.07	(E) BATHROOM FIXTURES TO REMAIN, PROTECT DURRING CONSTRUCTION
02.08	(E) DRAINS TO BE SEALED
02.09	(E) PARTITIONS TO BE PROTECTED DURRING CONSTRUCTION
09.03	PREPARE SLAB TO RECIEVE NEW FINISH, CLEAN AND PATCH AND REQUIRED FOR NEW FLOOR ADDHESION REQUIERMENTS
D.01	(E) TILE EDGE TO BE REMOVED, GROUND FLUSH
D.02	(E) STOREFRONT SYSTEM TO BE REMOVED
D.03	(E) DOOR SYSTEM TO BE REMOVED
D.04	CANOPY OVERBUILD TO BE DEMOLISHED DOWN TO PREVIOUS CAST ARCH CANOPY, SEE ELEVATIONS. ARCH CANOPY TO BE PROTECTED DURING CONSTRUCTION
D.05	(E) GUARD RAIL/HAND RAIL TO BE REMOVED
D.06	(E) CONCRETE RAMP TO BE REMOVED
D.07	(E) CONCRETE SLAB TO BE REMOVED
D.08	(E) CONCRETE STAIRS TO BE REMOVED
D.11	FLOOR FINISH TO BE REMOVED. PREPARE SLAB FOR NEW FINISH.
D.12	(E) DIVING BOARD TO BE REMOVED
D.13	(E) POOL RAILING TO BE DEMOLISHED. PATCH AND REPAIR CONCRETE FOR NEW FINISH
D.14	EXISTING TILE TO BE REMOVED
D.15	(E) HOLLOW METAL FRAMES AND GLAZING TO BE REMOVED
D.17	REMOVE EXISTING DRINKING FOUNTAIN
D.18	REMOVE EXISTING SHOWER FIXTURES
D.20	REMOVE STAIR FINISH, PREPARE FOR NEW FINISH
D.22	DEMO ALL EXISTING TILE ON BENCHES PATCH AND REPAIR BENCH FOR NEW FINISH
D.23	DEMO EXISTING CASEWORK
D.24	(E) HOSE HANGER TO BE REMOVED
D.28	PREP AREA FOR FINISHED WALL CONSTRUCTION AND DOOR IN FRAME
D.29	REMOVE EXISTING COVER AND FRAME
D.30	REMOVE RAILING, PREPARE CONNECTION FOR NEW RAILING
D.31	(E) PLUMBING FIXTURES TO BE REMOVED. PATCH AND REPAIR AS NEEDED, CAP PIPE
D.32	(E) BATHROOM ACCESORIES TO BE REMOVED. PATCH AND REPAIR AS NEEDED
D.33	(E) WHITE BOARD/TACK BOARD TO BE REMOVED
D.34	(E) BLEACHER SEATS TO BE REMOVED
D.38	REMOVE EXISTING WALL
D.39	(E) BABY CHANGING STATION, TO BE REMOVED, PATCH WALL TO RECEIVE NEW PAINT
D.40	(E) HOOKS AND BOARD RAILS TO BE REMOVED
D.41	(E) PARTITIONS TO BE REMOVED
D.42	(EXISTING) CASEWORK TO BE REMOVED

LEGEND

EXISTING TO REMAIN

TO BE DEMOLISHED

CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

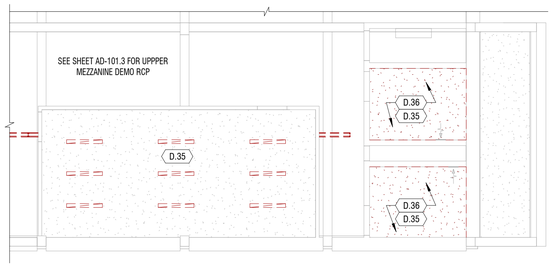
MARK:	DESCRIPTION:	DATE:

PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6842605-2301
LICENSED ARCHITECT

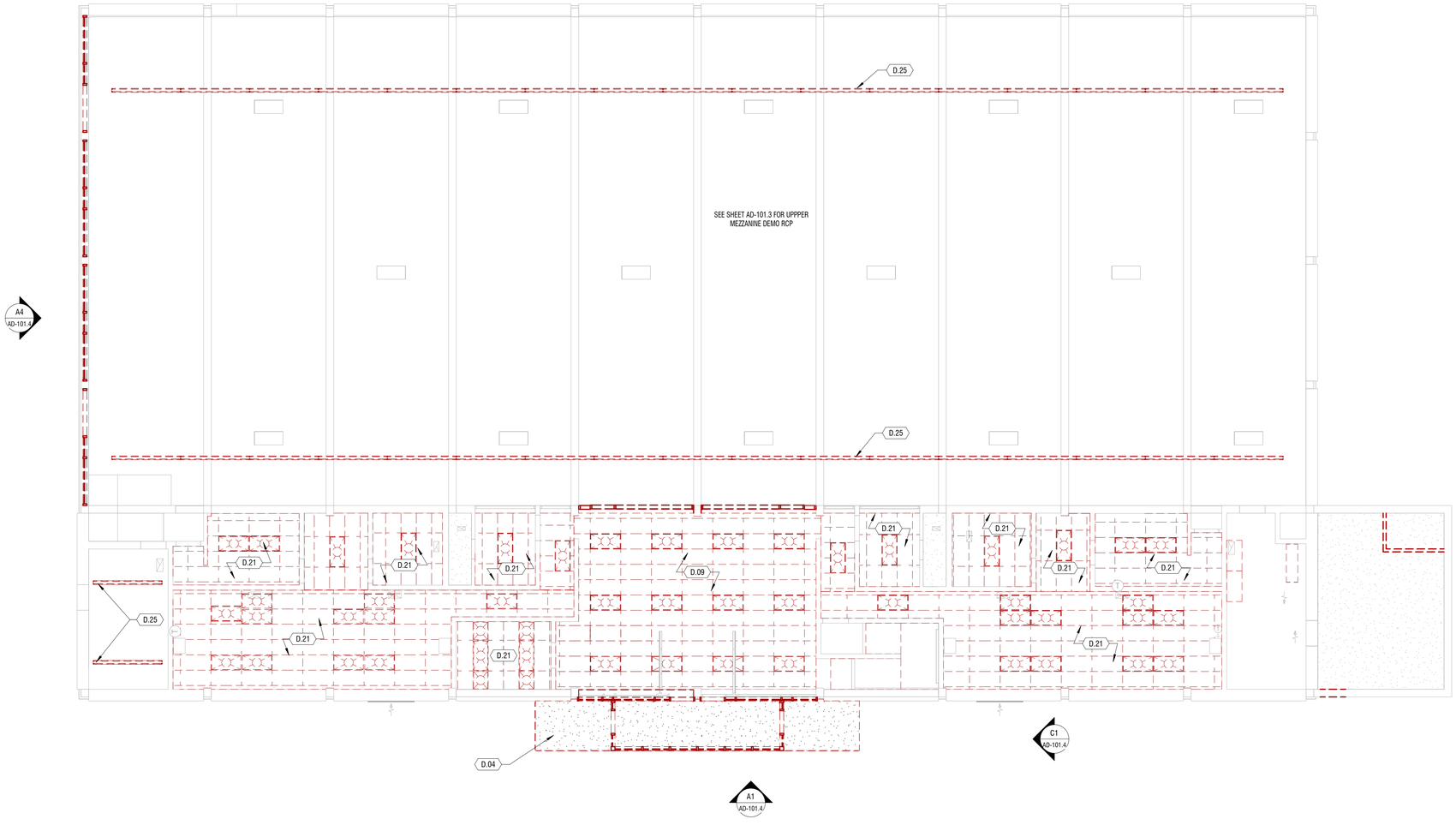
PLAN - DEMOLITION

AD-101.1



C1 REFLECTED CEILING - MEZZANINE DEMOLITION

1/8" = 1'-0"



A1 DEMOLITION - REFLECTED CEILING PLAN

1/8" = 1'-0"

GENERAL NOTES:

1. THE DEMOLITION DRAWINGS ARE INTENDED TO SHOW THE GENERAL NATURE & SCOPE OF THE WORK REQUIRED. ON-SITE OBSERVATIONS SHOULD BE MADE AND REPORT ANY ABNORMAL CONDITIONS TO ARCHITECT. SOME INCIDENTAL ITEMS REQUIRING REMOVAL MAY NOT BE SPECIFICALLY CALLED OUT. REMOVAL OF ALL ITEMS NECESSARY FOR THE COMPLETION OF WORK IS THE RESPONSIBILITY OF THE CONTRACTOR.

   FIELD VERIFY EXISTING CONDITIONS AND THEIR COMPATIBILITY WITH NEW CONSTRUCTION PRIOR TO THE COMMENCEMENT OF WORK. SEE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING DRAWINGS FOR ADDITIONAL DEMOLITION PLANS AND SCOPE. REFER TO SHEET INDEX FOR DEMOLITION DRAWINGS. COORDINATE DISCREPANCIES WITH ARCHITECT PRIOR TO PROCEEDING WITH WORK.

2. KEYNOTES: ⟨#⟩ THE FIRST TWO NUMBERS REPRESENT THE RELATED CS MASTER FORMAT DIVISION. THE SECOND SET OF NUMBERS REPRESENTS AN IDENTIFYING MARK VALUE. NOT ALL VALUES MAY BE USED OR OCCUR IN THE DOCUMENT SET.

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3. ALL INTERIOR DIMENSIONS ARE TO/FROM FACE OF FINISH. ALL EXTERIOR DIMENSIONS ARE TO/FROM FACE OF FINISH MATERIAL OR GRID WHERE SHOWN. CONTRACTOR SHALL COORDINATE EXISTING DIMENSIONS WITH PROPOSED SCOPE AND REPORT DISCREPANCIES WHERE FOUND.

4. PROTECT ALL SURFACES THAT ARE TO REMAIN OR THAT ARE EXPOSED, AND PROVIDE DUST BARRIERS TO PROTECT ADJACENT AREAS FROM DUST AND DEBRIS DURING SELECTIVE DEMOLITION OPERATIONS.

5. PATCH AND REPAIR DAMAGE IN WALLS, CEILINGS, AND FLOORS RESULTING FROM DEMOLITION OF EXISTING ITEMS OR CONSTRUCTION OF NEW ITEMS AND/OR REPLACE WITH NEW TO MATCH EXISTING. CLEAN AND PREPARE TO RECEIVE NEW FINISH. PROVIDE PAINT/FINISH TOUCHUP AT ALL DEMO LOCATIONS. CLEAN WORK AREA OF DUST, DIRT, AND DEBRIS CAUSED BY SELECTIVE DEMOLITION OPERATIONS. RETURN ADJACENT AREAS TO CONDITION EXISTING BEFORE SELECTIVE DEMOLITION OPERATIONS BEGAN.

6. TRANSPORT DEMOLISHED MATERIALS OFF OWNER'S PROPERTY AND LEGALLY DISPOSE OF DEBRIS.

7. ASBESTOS TESTING AND REMOVAL BY OWNER. ANY ASBESTOS CONTAINING MATERIAL (ACM) OR LEAD-BASED PAINT (LBP) REMOVAL SHALL BE COORDINATED WITH AUTHORITY HAVING JURISDICTION. REMOVAL SHALL BE DONE THROUGH A QUALIFIED ACM AND LBP CONTRACTORS. DIVISION OF AIR QUALITY RULE R307-801-9: THE ASBESTOS PROJECT OPERATOR SHALL ENSURE THAT THE STRUCTURE OR FACILITY TO BE DEMOLISHED OR RENOVATED IS INSPECTED FOR ACM BY AN INSPECTOR CERTIFIED UNDER THE PROVISIONS OF R307-801-6. AN ASBESTOS SURVEY REPORT SHALL BE GENERATED ACCORDING TO THE PROVISIONS OF R307-801-10. THE ASBESTOS PROJECT OPERATOR SHALL MAKE THE ASBESTOS SURVEY REPORT AVAILABLE ON SITE TO ALL PERSONS WHO HAVE ACCESS TO THE SITE FOR THE DURATION OF THE RENOVATION OR DEMOLITION ACTIVITIES.

8. ALL SUSPECT ASBESTOS CONTAINING MATERIALS OR LEAD BASED PAINT NOT IDENTIFIED MUST BE SAMPLED TO DETERMINE CONTENT. IF MATERIALS ARE ENCOUNTERED WHICH HAVE NOT BEEN PREVIOUSLY IDENTIFIED/SAMPLED, STOP WORK AND CONTACT THE AUTHORITY HAVING JURISDICTION.

9. DEMOLISH EXISTING FLOORING WHERE SHOWN, INCLUDING: SETTING BEDS, ADHESIVES AND OTHER VARIANCES IN THE EXISTING FLOOR. PREPARE FLOOR TO RECEIVE NEW FLOORING AS REQUIRED BY CONTRACT DOCUMENTS.

10. ALL OWNER FURNISHINGS AND EQUIPMENT SHALL BE REMOVED BY OWNER. ITEMS IDENTIFIED AS "REMOVED AND STORED" / "TO BE SALVAGED" SHALL BE REMOVED AND STORED IN A SAFE LOCATION PRIOR TO DEMOLITION.

11. WALLS, DOORS, CABINETS, WINDOWS, CEILINGS, ETC. WHERE SHOWN DASHED ARE TO BE REMOVED. AREAS TO RECIEVE NEW FINISH NEED EXISTING FINISH TO BE REMOVED. SEE FINISH PLANS

12. REMOVE ALL ABANDONED POWER AND SIGNAL CABLING BACK TO SOURCE AND SAFE OFF.

13. REMOVE GENERAL FINISHES, SIGNAGE, FIXTURES, HARDWARE, ETC. THROUGHOUT AREA OF WORK, U.N.O. EXIT SIGNS ARE TO BE REMOVED AND STORED FOR REINSTALLATION.

14. CONTRACTOR TO PATCH AND REPAIR DAMAGED FIRE PROOFING ON STRUCTURAL AND FIRE RATED ASSEMBLIES. MATCH EXISTING FIRE RATING.

15. REMOVE OR COVER ALL EXISTING PERIMETER WINDOW COVERINGS PRIOR TO COMMENCEMENT OF DEMOLITION. CLEAN AND UNCOVER OR REINSTALL AT COMPLETION OF CONSTRUCTION.

16. ALL EXISTING SPRINKLER / FIRE ALARM WORK SHALL BE SEPARATE SUBMITTAL. CONTRACTOR SHALL PROVIDE FINAL DESIGN AND PERMITTING.

17. THE CONTRACTOR SHALL COORDINATE WITH THE OWNERS REPRESENTATIVE TO DETERMINE IF ANY PARTS OR EQUIPMENT ARE DESIRED TO BE KEPT BY THE OWNER. THE OWNER SHALL HAVE THE RIGHT OF FIRST REFUSAL. ANY ITEM NOT WISHED TO BE RETAINED, SHALL BE DISPOSED OF AT THE RESPONSIBILITY OF THE CONTRACTOR.

KEYNOTES

⟨#⟩

MARK	DESCRIPTION
D.04	CANOPY OVERBUILD TO BE DEMOLISHED DOWN TO PREVIOUS CAST ARCH CANOPY, SEE ELEVATIONS. ARCH CANOPY TO BE PROTECTED DURING CONSTRUCTION
D.09	(E) CEILING SYSTEM TO BE REMOVED TO DECK ABOVE. SEE RCP
D.21	DEMO CEILING TILES AND LIGHT FIXTURES. MAINTAIN GRID AND REPAIR AS REQUIRED FOR NEW TILES AND LIGHT FIXTURES
D.25	(E) LIGHTS TO BE REMOVED
D.35	(E) LIGHT FIXTURES TO BE REMOVED. PATCH AND REPAIR CEILING AS REQUIRED TO RECIEVE NEW FIXTURES AND FINISH
D.36	(E) CEILING TILES TO BE REMOVED, PREPARE SUBSTRATE FOR NEW FINISH AND FIXTURES

LEGEND

EXISTING TO REMAIN

TO BE DEMOLISHED

CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

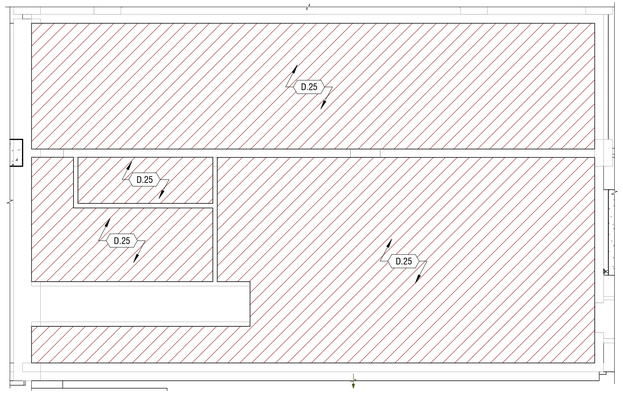
MARK: DATE: DESCRIPTION:

PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
6842805-2301
LICENSED ARCHITECT

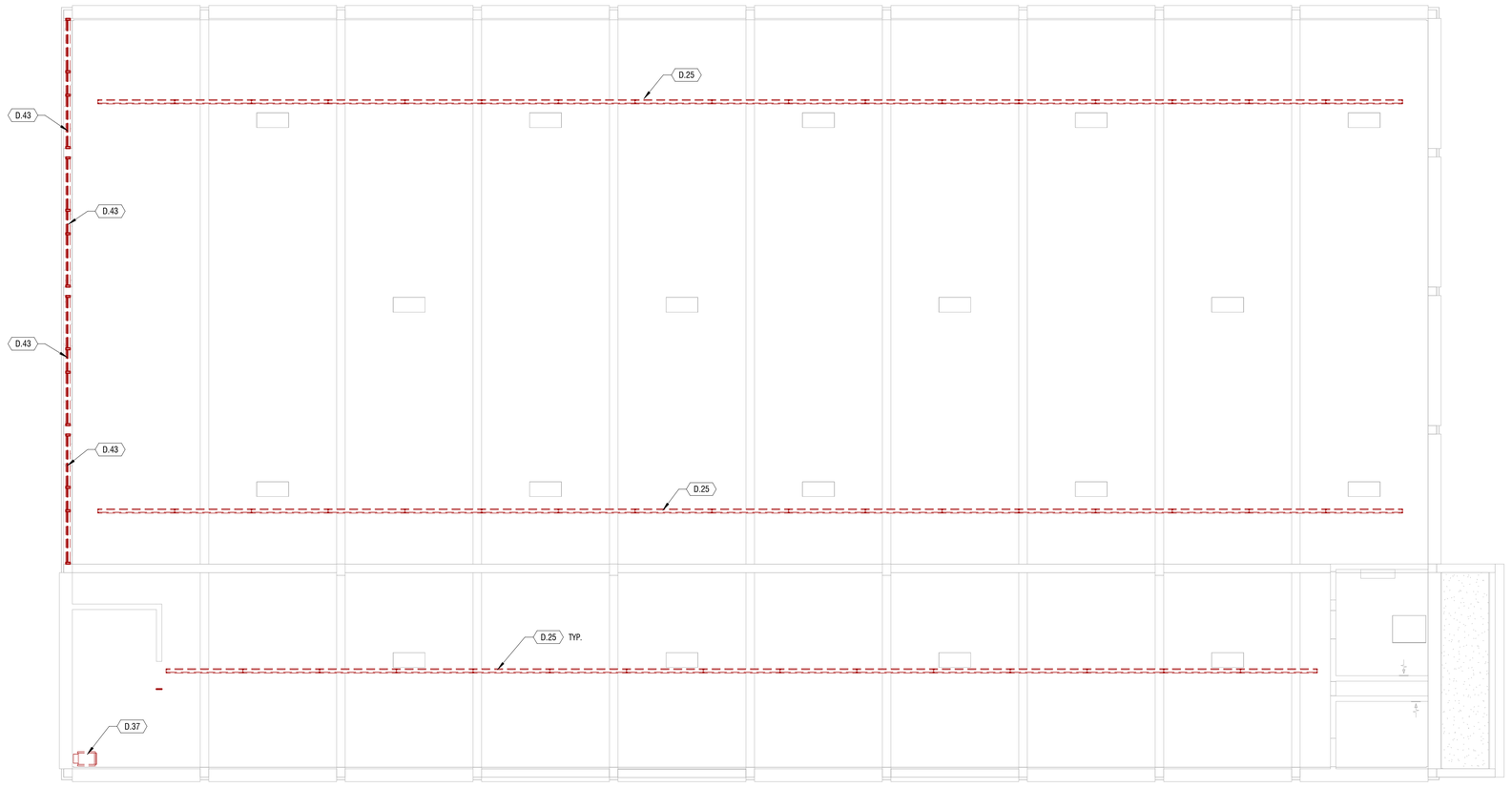
PLAN - DEMO - REFLECTED CEILINGS

AD-101.2



C1 BASEMENT REFLECTED CEILING PLAN - DEMOLITION

1/8" = 1'-0"



A1 REFLECTED CEILING - MEZZANINE DEMOLITION

1/8" = 1'-0"

GENERAL NOTES:

1. THE DEMOLITION DRAWINGS ARE INTENDED TO SHOW THE GENERAL NATURE & SCOPE OF THE WORK REQUIRED. ON-SITE OBSERVATIONS SHOULD BE MADE AND REPORT ANY ABNORMAL CONDITIONS TO ARCHITECT. SOME INCIDENTAL ITEMS REQUIRING REMOVAL MAY NOT BE SPECIFICALLY CALLED OUT. REMOVAL OF ALL ITEMS NECESSARY FOR THE COMPLETION OF WORK IS THE RESPONSIBILITY OF THE CONTRACTOR.

   FIELD VERIFY EXISTING CONDITIONS AND THEIR COMPATIBILITY WITH NEW CONSTRUCTION PRIOR TO THE COMMENCEMENT OF WORK. SEE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING DRAWINGS FOR ADDITIONAL DEMOLITION PLANS AND SCOPE. REFER TO SHEET INDEX FOR DEMOLITION DRAWINGS. COORDINATE DISCREPANCIES WITH ARCHITECT PRIOR TO PROCEEDING WITH WORK.

2. KEYNOTES: ⟨#⟩ THE FIRST TWO NUMBERS REPRESENT THE RELATED CS MASTER FORMAT DIVISION. THE SECOND SET OF NUMBERS REPRESENTS AN IDENTIFYING MARK VALUE. NOT ALL VALUES MAY BE USED OR OCCUR IN THE DOCUMENT SET.

   ADDITIONALLY, KEYNOTES RETAIN THEIR ASSIGNED VALUE UNIVERSALLY THROUGHOUT THE ARCHITECTURAL SET. THE KEYNOTES LISTED BELOW, REPRESENT THE KEYNOTES FOUND AND UTILIZED ON THIS SHEET AND EACH LIST WILL DIFFER RESPECTIVE TO ITS' SHEET. THEREFORE, BASED ON ACTUAL KEYNOTES UTILIZED ON A GIVEN SHEET OF DRAWINGS, GAPS IN THE SEQUENCING WILL OCCUR.

3. ALL INTERIOR DIMENSIONS ARE TO/FROM FACE OF FINISH. ALL EXTERIOR DIMENSIONS ARE TO/FROM FACE OF FINISH MATERIAL OR GRID WHERE SHOWN. CONTRACTOR SHALL COORDINATE EXISTING DIMENSIONS WITH PROPOSED SCOPE AND REPORT DISCREPANCIES WHERE FOUND.

4. PROTECT ALL SURFACES THAT ARE TO REMAIN OR THAT ARE EXPOSED, AND PROVIDE DUST BARRIERS TO PROTECT ADJACENT AREAS FROM DUST AND DEBRIS DURING SELECTIVE DEMOLITION OPERATIONS.

5. PATCH AND REPAIR DAMAGE IN WALLS, CEILINGS, AND FLOORS RESULTING FROM DEMOLITION OF EXISTING ITEMS OR CONSTRUCTION OF NEW ITEMS AND/OR REPLACE WITH NEW TO MATCH EXISTING. CLEAN AND PREPARE TO RECEIVE NEW FINISH. PROVIDE PAINT/FINISH TOUCHUP AT ALL DEMO LOCATIONS. CLEAN WORK AREA OF DUST, DIRT, AND DEBRIS CAUSED BY SELECTIVE DEMOLITION OPERATIONS. RETURN ADJACENT AREAS TO CONDITION EXISTING BEFORE SELECTIVE DEMOLITION OPERATIONS BEGAN.

6. TRANSPORT DEMOLISHED MATERIALS OFF OWNER'S PROPERTY AND LEGALLY DISPOSE OF DEBRIS.

7. ASBESTOS TESTING AND REMOVAL BY OWNER. ANY ASBESTOS CONTAINING MATERIAL (ACM) OR LEAD-BASED PAINT (LBP) REMOVAL SHALL BE COORDINATED WITH AUTHORITY HAVING JURISDICTION. REMOVAL SHALL BE DONE THROUGH A QUALIFIED ACM AND LBP CONTRACTORS. DIVISION OF AIR QUALITY RULE R307-801-9: THE ASBESTOS PROJECT OPERATOR SHALL ENSURE THAT THE STRUCTURE OR FACILITY TO BE DEMOLISHED OR RENOVATED IS INSPECTED FOR ACM BY AN INSPECTOR CERTIFIED UNDER THE PROVISIONS OF R307-801-6. AN ASBESTOS SURVEY REPORT SHALL BE GENERATED ACCORDING TO THE PROVISIONS OF R307-801-10. THE ASBESTOS PROJECT OPERATOR SHALL MAKE THE ASBESTOS SURVEY REPORT AVAILABLE ON SITE TO ALL PERSONS WHO HAVE ACCESS TO THE SITE FOR THE DURATION OF THE RENOVATION OR DEMOLITION ACTIVITIES.

8. ALL SUSPECT ASBESTOS CONTAINING MATERIALS OR LEAD BASED PAINT NOT IDENTIFIED MUST BE SAMPLED TO DETERMINE CONTENT. IF MATERIALS ARE ENCOUNTERED WHICH HAVE NOT BEEN PREVIOUSLY IDENTIFIED/SAMPLED, STOP WORK AND CONTACT THE AUTHORITY HAVING JURISDICTION.

9. DEMOLISH EXISTING FLOORING WHERE SHOWN, INCLUDING: SETTING BEDS, ADHESIVES AND OTHER VARIANCES IN THE EXISTING FLOOR. PREPARE FLOOR TO RECEIVE NEW FLOORING AS REQUIRED BY CONTRACT DOCUMENTS.

10. ALL OWNER FURNISHINGS AND EQUIPMENT SHALL BE REMOVED BY OWNER. ITEMS IDENTIFIED AS "REMOVED AND STORED" / "TO BE SALVAGED" SHALL BE REMOVED AND STORED IN A SAFE LOCATION PRIOR TO DEMOLITION.

11. WALLS, DOORS, CABINETS, WINDOWS, CEILINGS, ETC. WHERE SHOWN DASHED ARE TO BE REMOVED. AREAS TO RECIEVE NEW FINISH NEED EXISTING FINISH TO BE REMOVED. SEE FINISH PLANS

12. REMOVE ALL ABANDONED POWER AND SIGNAL CABLING BACK TO SOURCE AND SAFE OFF.

13. REMOVE GENERAL FINISHES, SIGNAGE, FIXTURES, HARDWARE, ETC. THROUGHOUT AREA OF WORK, U.N.O. EXIT SIGNS ARE TO BE REMOVED AND STORED FOR REINSTALLATION.

14. CONTRACTOR TO PATCH AND REPAIR DAMAGED FIRE PROOFING ON STRUCTURAL AND FIRE RATED ASSEMBLIES. MATCH EXISTING FIRE RATING.

15. REMOVE OR COVER ALL EXISTING PERIMETER WINDOW COVERINGS PRIOR TO COMMENCEMENT OF DEMOLITION. CLEAN AND UNCOVER OR REINSTALL AT COMPLETION OF CONSTRUCTION.

16. ALL EXISTING SPRINKLER / FIRE ALARM WORK SHALL BE SEPARATE SUBMITTAL. CONTRACTOR SHALL PROVIDE FINAL DESIGN AND PERMITTING.

17. THE CONTRACTOR SHALL COORDINATE WITH THE OWNERS REPRESENTATIVE TO DETERMINE IF ANY PARTS OR EQUIPMENT ARE DESIRED TO BE KEPT BY THE OWNER. THE OWNER SHALL HAVE THE RIGHT OF FIRST REFUSAL. ANY ITEM NOT WISHED TO BE RETAINED, SHALL BE DISPOSED OF AT THE RESPONSIBILITY OF THE CONTRACTOR.

KEYNOTES

⟨#⟩

MARK	DESCRIPTION
D.25	(E) LIGHTS TO BE REMOVED
D.37	(E) WALL MOUNTED HEATER TO BE REMOVED
D.43	(E) STOREFRONT TO BE REMOVED

LEGEND

EXISTING TO REMAIN

TO BE DEMOLISHED

CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

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LOGAN CITY SCHOOL DISTRICT

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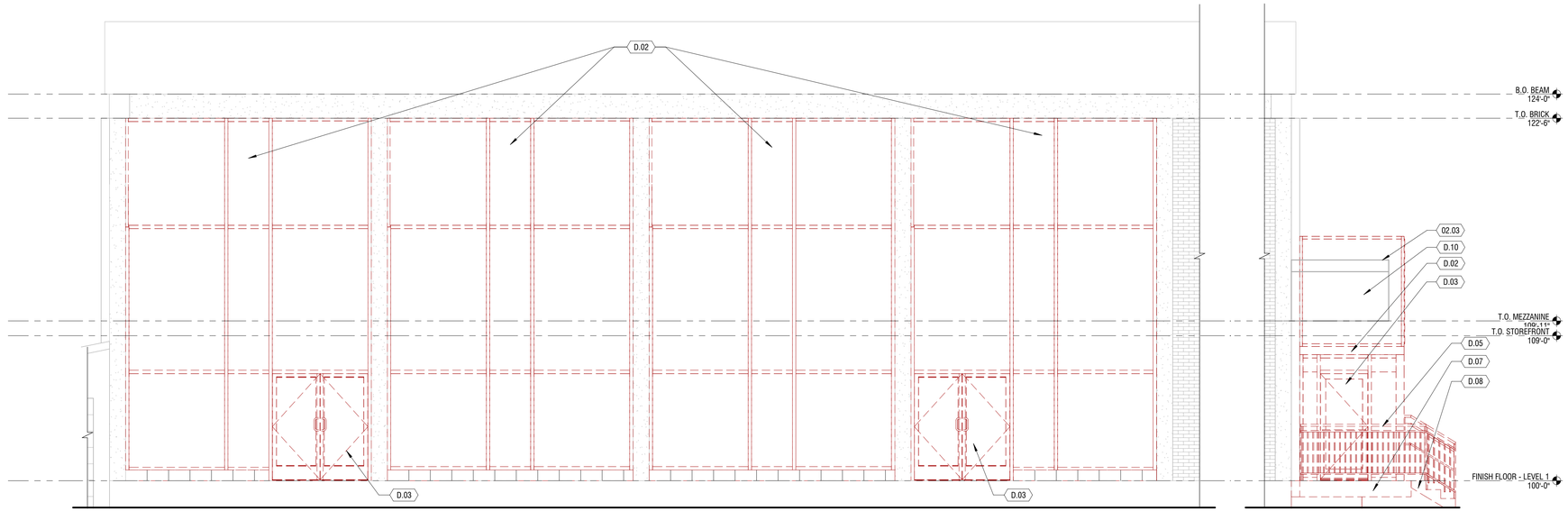
STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
6842805-2301
LICENSED ARCHITECT

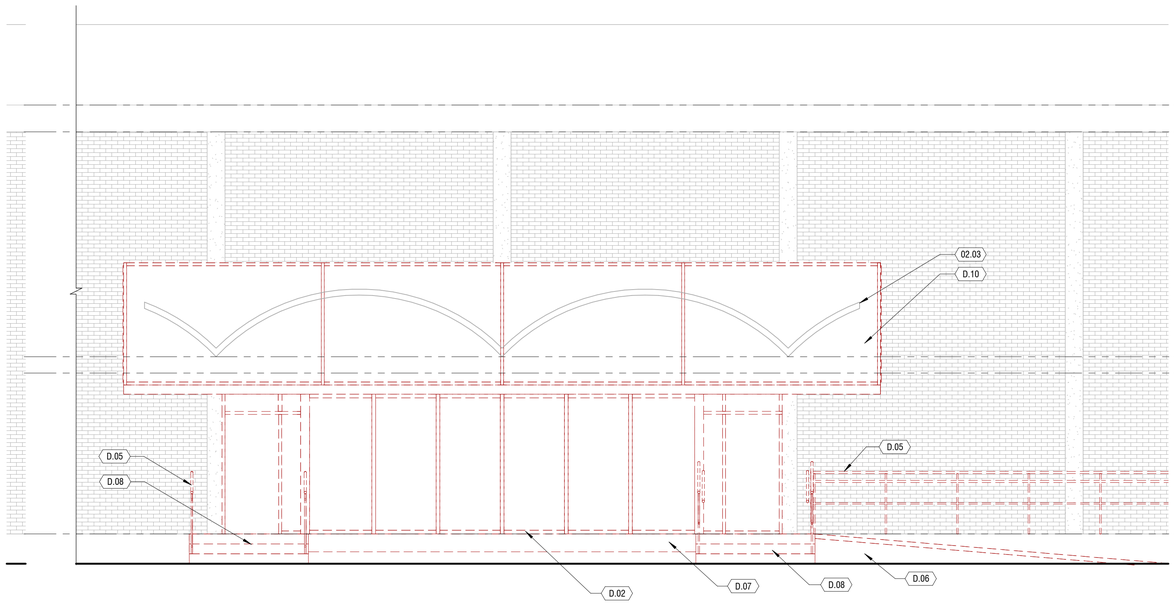
PLAN - DEMO - RCP - BASEMENT/UPPER MEZZANINE

AD-101.3



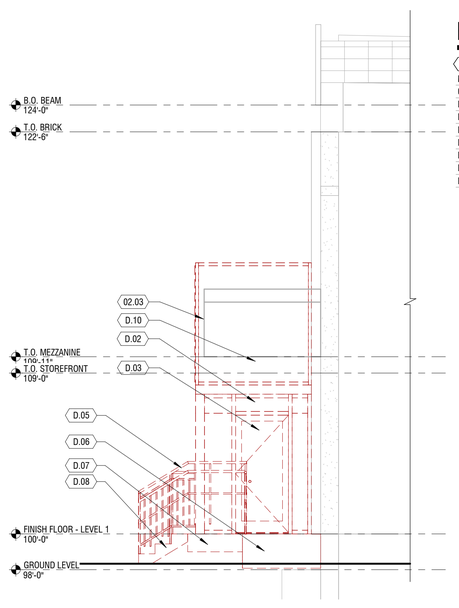
A4 ELEVATION - DEMOLITION SOUTH

1/4" = 1'-0"



A1 ELEVATION - DEMOLITION EAST

1/4" = 1'-0"



C1 ELEVATION - DEMOLITION NORTH

1/4" = 1'-0"

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KEYNOTES

(#)

MARK	DESCRIPTION
02.03	(E) CONCRETE CANOPY, PROTECT AND PRESERVE DURING DEMOLITION
D.02	(E) STOREFRONT SYSTEM TO BE REMOVED
D.03	(E) DOOR SYSTEM TO BE REMOVED
D.05	(E) GUARD RAIL/HAND RAIL TO BE REMOVED
D.06	(E) CONCRETE RAMP TO BE REMOVED
D.07	(E) CONCRETE SLAB TO BE REMOVED
D.08	(E) CONCRETE STAIRS TO BE REMOVED
D.10	(E) CANOPY TO BE REMOVED

LEGEND

EXISTING TO REMAIN

TO BE DEMOLISHED

CONSTRUCTION DOCUMENTS

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

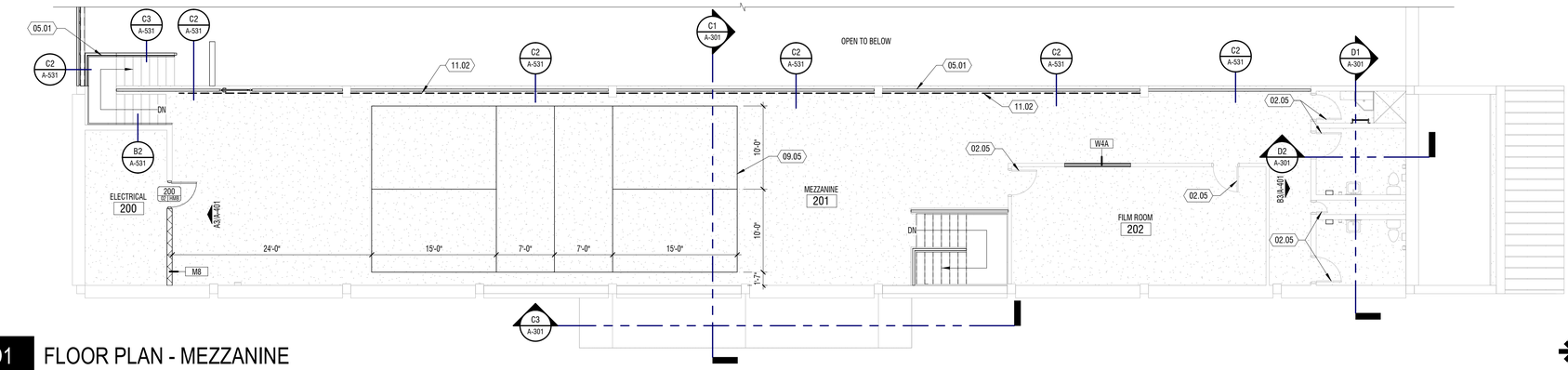
MARK: DESCRIPTION: DATE:

PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6842805-2301
LICENSED ARCHITECT

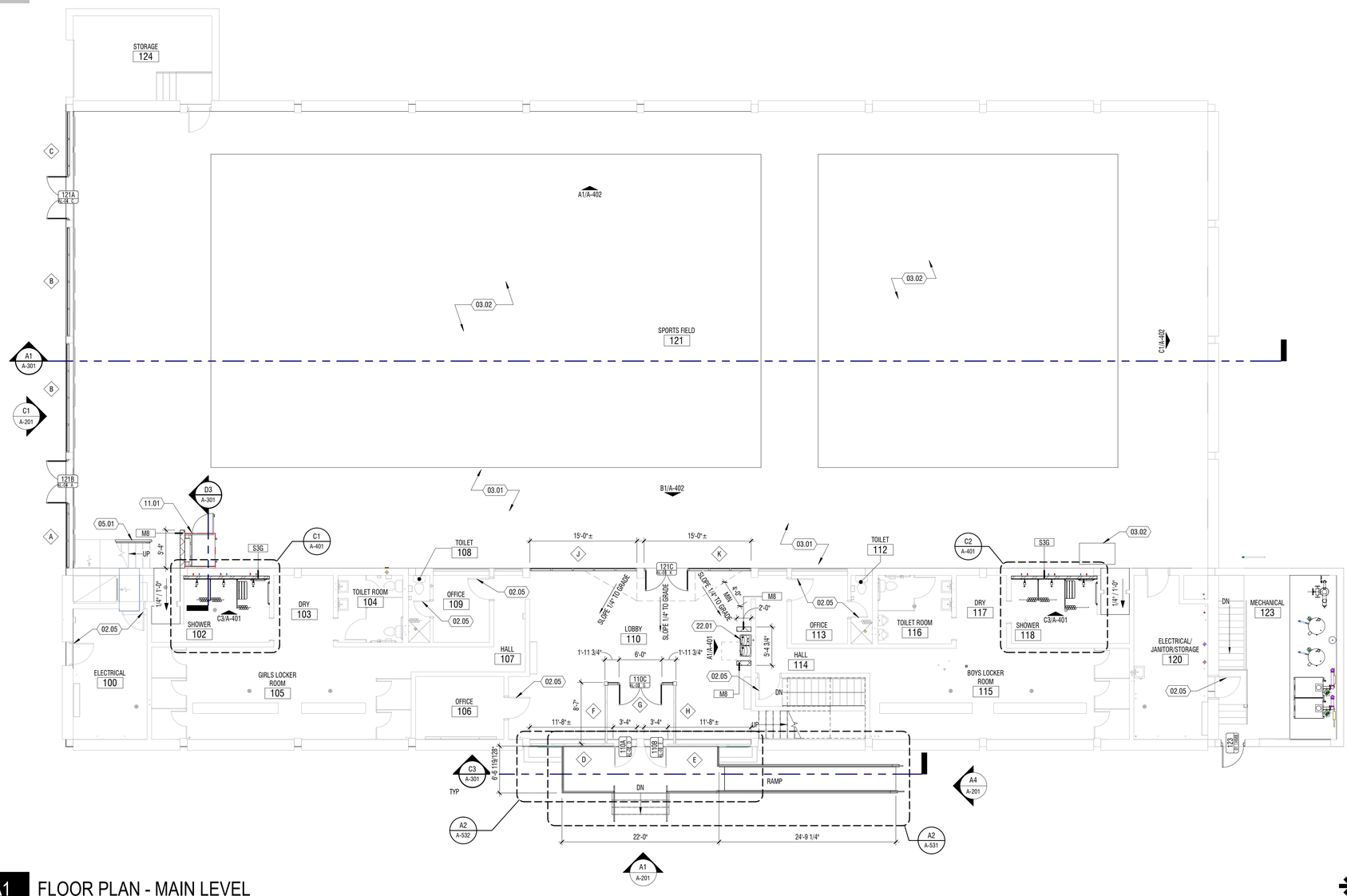
ELEVATIONS - DEMOLITION

AD-101.4



D1 FLOOR PLAN - MEZZANINE

1/8" = 1'-0"



A1 FLOOR PLAN - MAIN LEVEL

1/8" = 1'-0"

GENERAL NOTES

1. KEYNOTES: (#) THE FIRST TWO NUMBERS REPRESENT THE RELATED CSI MASTER FORMAT DIVISION. THE SECOND SET OF NUMBERS REPRESENTS AN IDENTIFYING MARK VALUE. NOT ALL VALUES MAY BE USED OR OCCUR IN THE DOCUMENT SET.

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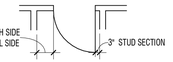
2. CONTRACTOR SHALL BE FAMILIARIZED WITH THE LAY-OUT OF STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS. ANY QUESTIONS SHALL BE SUBMITTED VIA REQUEST FOR INFORMATION (RFI).
3. MIN CLEARANCE REQUIRED ON LATCH SIDE OF DOORS SHALL CONFORM TO ADA REQUIREMENTS



4. HINGE SIDE OF DOORS AT PERPENDICULAR WALLS TO HAVE 3" STUD SECTION U.N.O.
5. ALIGN FURRED WALLS AND STUD WALL FINISH FACE TYPICAL U.N.O.
6. ADA RESTROOMS MUST COMPLY WITH ADA WATER CLOSET MEASUREMENTS ON SHEET A-???
7. DOOR AND WINDOWS OPENINGS ARE INDICATED WITH ANNOTATION SYSMBOLS AND ARE FURTHER IDENTIFIED ON DOOR AND WINDOW SCHEDULES. SEE BOTH FLOOR PLANS AND EXTERIOR ELEVATIONS FOR ALL REFERENCES.
8. FEC = FIRE EXTINGUISHER IN SEMI-RECESSED CABINET.
9. A1/A-101 INDICATES INTERIOR ROOM ELEVATIONS ON SHEET REFERENCED.
10. WALL TYPES SHOWN AS — WWW — ARE SHOWN ON SHEET A-111.1. FOR EXTERIOR WALLS SEE BUILDING & WALL SECTIONS.
11. SEE SHEET SERIES G-003 FOR ALL FIRE WALLS, SMOKE WALLS, WALLS TO CEILING LEVEL, SOUND WALLS.
12. SEE FINISH PLANS FOR SIGNAGE LOCATION, SIGNAGE SYMBOL.
13. SEE SITE PLANS FOR EXTERIOR STAIRS, RAILING AND RAMP DETAILS.
14. ROLLER SHADES PER FINISH PLANS.
15. EXTEND ALL WALLS SURROUNDING AN OPEN CEILING AREA TO DECK.
16. SLOPE ALL SETTING BEDS TO FLOOR DRAINS U.N.O.
17. PROVIDE 5/8" PLYWOOD BACKING PANELS AT ELECTRICAL ROOMS AND TELEVISION LOCATIONS FOR EQUIPMENT MOUNTING. PAINT TO MATCH WALLS.
18. AT RECESSED CABINETS (IE: ELECTRICAL PANELS, FEC AND ETC) IN FIRE RATED WALLS PROVIDE 5 SIDE COVERAGE OF GYP BD IN STUD WALLS TO MAINTAIN INTEGRITY OF FIRE WALL RATING PER ??/A-???
19. BLOCKING TO BE PROVIDED AT SHELVING, CASEWORK, RAILINGS, LIGHT FIXTURE, COUNTERTOP, ACCESSORIES AND MORE

KEYNOTES

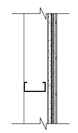
(#)

MARK	DESCRIPTION
02.05	(E) DOOR TO BE PREPARED FOR NEW FINISH
03.01	LEVEL SLAB AREA WITH LEVELING CEMENT
03.02	STRUCTURAL FILL TO TURF GRADE
05.01	GALVANIZED STEEL BAR GRATING 19-W-4 SPACING, 1" x 3/16" RECTANGULAR BAR. SIZE 1'-6" x 4'-10" FIELD VERIFY
09.05	PICKLEBALL COURTLINES - EPOXY PAINTING
11.01	CHAIR LIFT - CONTRACTOR FURNISHED AND INSTALLED
11.02	CABLE HUNG NETTING UP TO 20'-0" A.F.F. MEZZANINE
22.01	DRINKING FOUNTAIN - SEE PLUMBING DRAWINGS

WALL TYPES

S3G

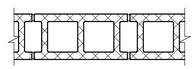
DESCRIPTION	ASSEMBLY	FIRE RATING
N/A	3 5/8" METAL STUD 5/8" CEMENTITIOUS BACKER BOARD 1/4" THINSET MORTAR 1/4" TILE	N/A
		TESTING SOURCE: N/A
		STC RATING: N/A
		TESTING SOURCE: N/A



NOTE: SEE CODE PLAN FOR CAVITY INSULATION LAYOUT.

M8

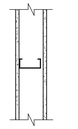
DESCRIPTION	ASSEMBLY	FIRE RATING
N/A	8" CMU SEE STRUCTURAL DRAWINGS FOR GROUTING AND REINFORCING	N/A
		TESTING SOURCE: N/A
		STC RATING: N/A
		TESTING SOURCE: N/A



NOTE: SEE CODE PLAN FOR CAVITY INSULATION LAYOUT.

W4A

DESCRIPTION	ASSEMBLY	FIRE RATING
N/A	5/8" GYPSUM BOARD 3 5/8" METAL STUD 5/8" GYPSUM BOARD	N/A
		TESTING SOURCE: N/A
		STC RATING: N/A
		TESTING SOURCE: N/A



NOTE: SEE CODE PLAN FOR CAVITY INSULATION LAYOUT.

CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
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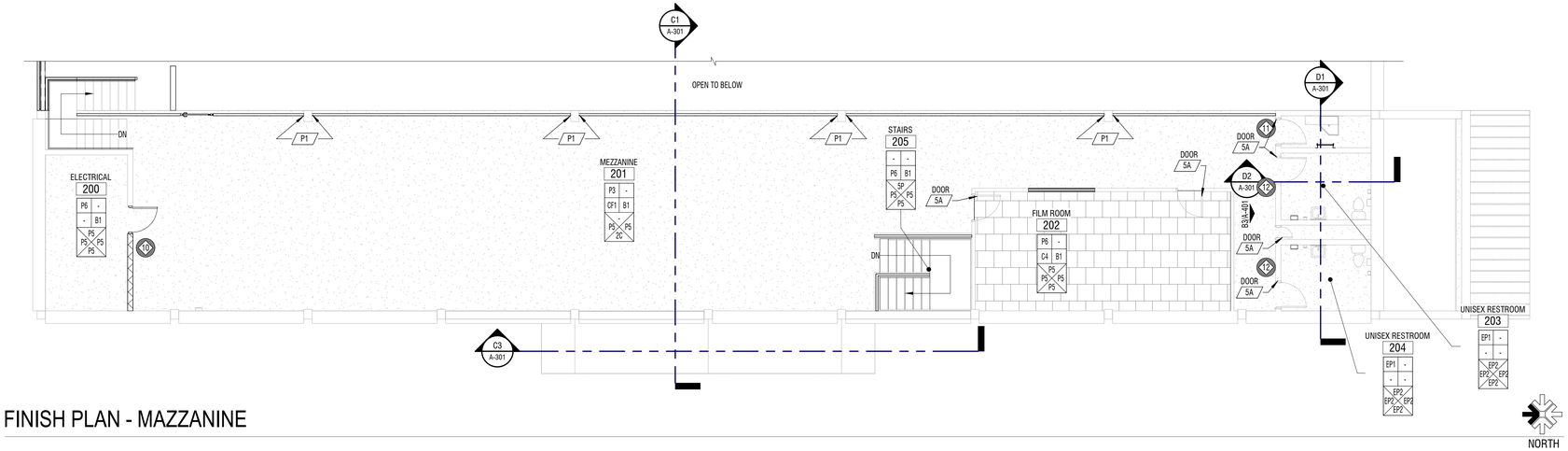
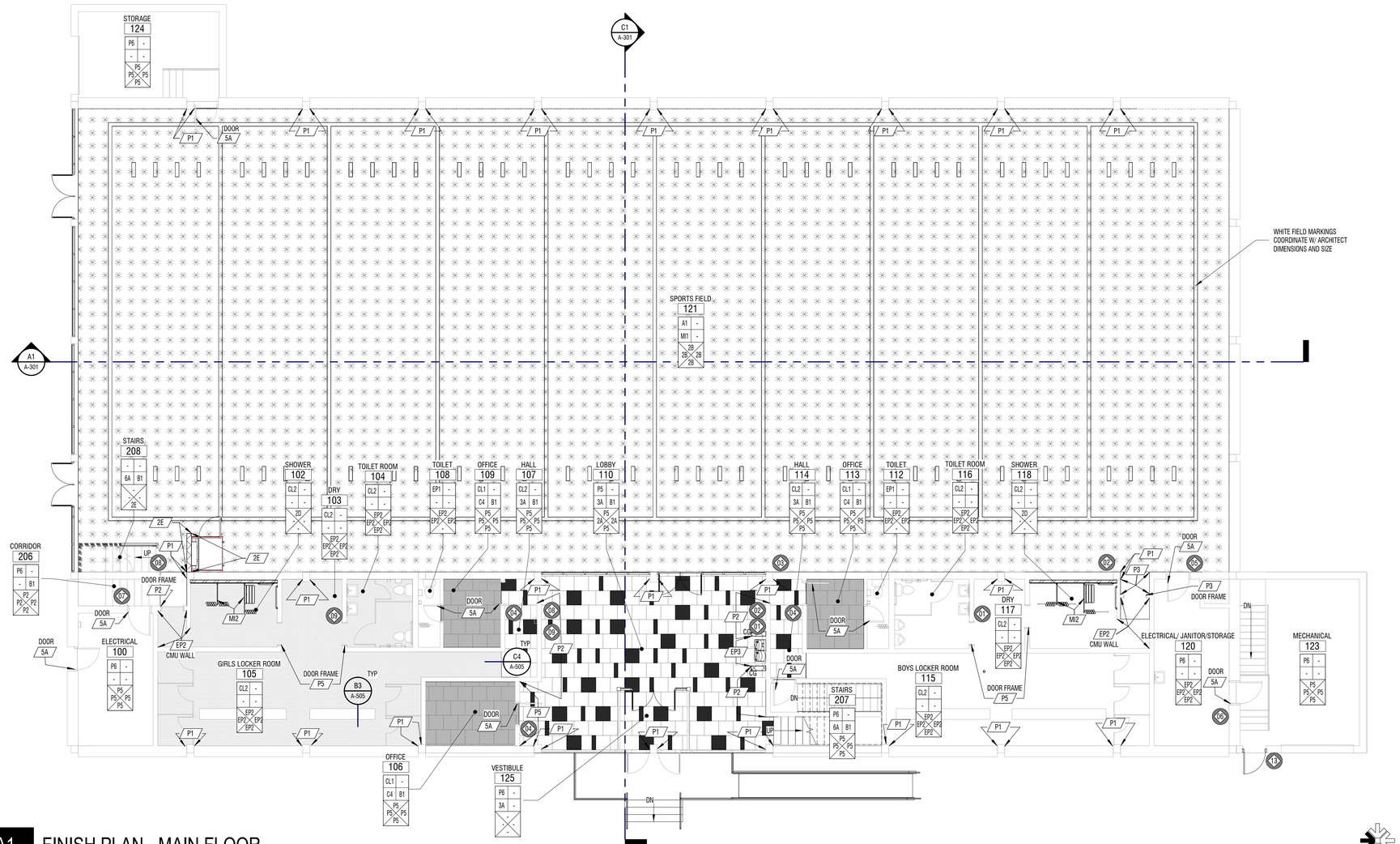
PLAN - DIMENSIONS & ANNOTATIONS

A-111.1



C1 FINISH PLAN - MAZZANINE

1/8" = 1'-0"



A1 FINISH PLAN - MAIN FLOOR

1/8" = 1'-0"

GENERAL NOTES

1. ROOM FINISH TAGS FOR EACH ROOM REPRESENT TYPICAL FINISHES. SPECIFIC WALLS IN SELECTED AREAS MAY HAVE MULTIPLE FINISHES WHICH WILL BE INDICATED IN INTERIOR ELEVATIONS.
2. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OF CASEWORK AND FINISH ASSEMBLIES
3. SEE INTERIOR ELEVATIONS FOR ADDITIONAL FINISH INFORMATION
4. SEE REFLECTED CEILING PLANS FOR ADDITIONAL FINISH INFORMATION
5. FOR FINISH LEGEND SEE SHEET A-111.2
6. FLOOR MATERIAL TRANSITIONS WILL OCCUR BELOW DOORS. U.N.O.
7. FOR TYPICAL TRANSITION/FINISH DETAILS SEE SHEET A-505
8. SEE SHEET A-611 FOR SIGNAGE TYPES AND DESCRIPTIONS
9. TILED WALLS TO BE FULL HEIGHT OF WALL, U.N.O.
10. POLISHED OR SEALED CONCRETE DOES EXTEND UNDER CASEWORK OR MILLWORK
11. FLOOR COVERING DOES NOT EXTEND UNDER MILLWORK OR CASEWORK, U.N.O.
12. FLOOR TILE EXPANSION JOINTS INSTALLED.
13. ALL EXPOSED STRUCTURE TO BE PAINTED U.N.O.

LEGEND

CEILING / FLOOR / WALL / WALL — MILLWORK / BASE / WALL / WALL — ROOM FINISH TAG

C1 — FINISH TAG - INDICATES SPECIFIC APPLIED FINISH

C1 — INDICATES FINISH IS APPLIED TO AREA BETWEEN ARROWS

C1 — INDICATES FINISH IS APPLIED TO FACE OF SURFACE(S)

01 — INDICATES SIGNAGE LOCATION

CG — INDICATES CORNER GUARD

FINISH MATERIAL LEGEND

C1 C2 C5

C4

MI1

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LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

CONSTRUCTION DOCUMENTS

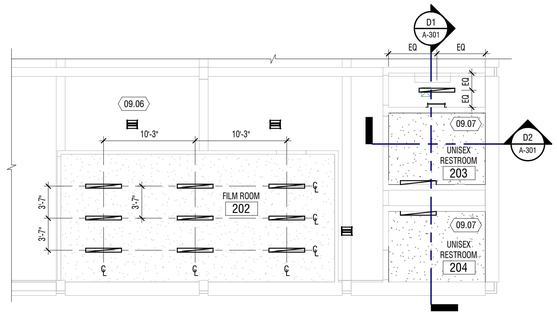
MARK:	DESCRIPTION:	DATE:

PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6842805-0301
LICENSED ARCHITECT

PLAN - FINISHES

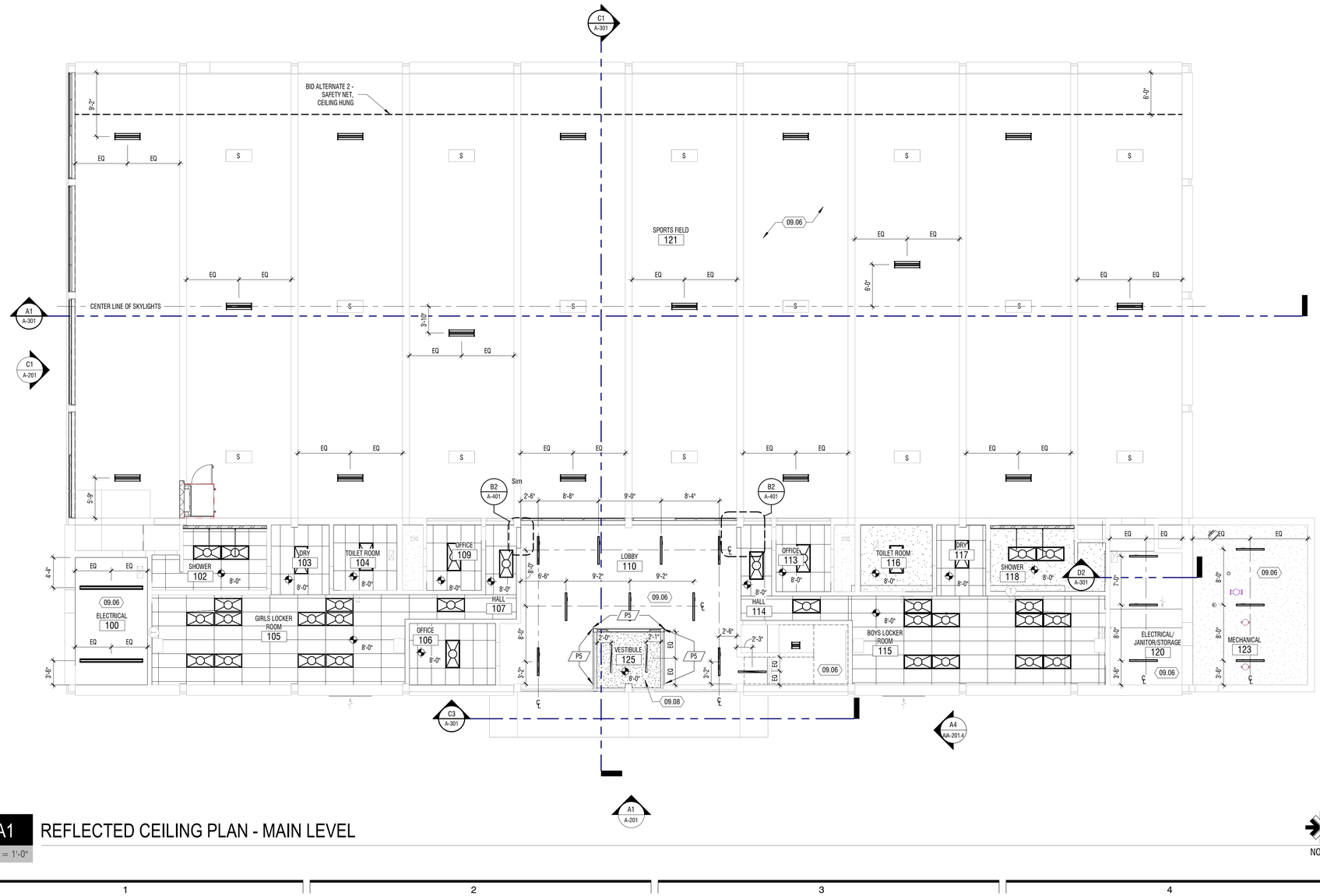
A-111.2



C4 1/8" = 1'-0"

REFLECTED CEILING - MEZZANINE

NORTH



A1 1/8" = 1'-0"

REFLECTED CEILING PLAN - MAIN LEVEL

NORTH

GENERAL NOTES

1. KEYNOTES: (#) THE FIRST TWO NUMBERS REPRESENT THE RELATED CSI MASTER FORMAT DIVISION. THE SECOND SET OF NUMBERS REPRESENTS AN IDENTIFYING MARK VALUE. NOT ALL VALUES MAY BE USED OR OCCUR IN THE DOCUMENT SET.

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2. CONTRACTOR SHALL COORDINATE LAY-OUT OF STRUCTURAL, MECHANICAL, SPRINKLER AND ELECTRICAL. NOTIFY ARCHITECT OF ANY CONFLICTS.
3. ALL INTERIOR DIMENSIONS ARE TO/FROM FACE OF STUD / MASONRY. ALL EXTERIOR DIMENSIONS ARE TO/FROM FACE OF GRID/FOUNDATION. DIMENSIONS MARKED 'CLEAR' OR 'CLR' ARE FROM FACE OF FINISH TO FACE OF FINISH AND SHALL BE MAINTAINED AND CANNOT BE FIELD ADJUSTED WITHOUT PRIOR APPROVAL OF THE ARCHITECT.
4. SEE A-111.2 LEGEND FOR FINISH LEGEND
5. CEILING HEIGHT IS B.O. FINISHED CEILING HEIGHT ABOVE FINISHED FLOOR
6. MEASUREMENTS SPECIFYING "EQ" = EQUAL LENGTH OR WIDTH TO FILL REMAINDER OF LENGTH REQUIRED
7. LIGHT FIXTURES WITH NO DIMENSIONS ARE TO BE CENTERED ON ROOM UNLESS OTHERWISE NOTED
8. ROLLER SHADES PER FINISH PLANS, COORDINATE MANUAL AND POWER LOCATIONS WITH THE ELECTRICAL AND FINISH PLANS.
9. CEILINGS WITH NO DIRECT MEASUREMENTS, ASSUME CEILING TO BE EQUALLY DISTANCED ON ALL SIDES OF ROOM
10. FIXTURES IN OPEN TO STRUCTURE AREAS ARE DIMENSIONED FROM WALL OR CENTERLINE OF ROOM
11. LIGHT FIXTURES WITH NO DIMENSIONS ARE TO BE CENTERED ON ROOM UNLESS OTHERWISE NOTED
12. FIXTURES WITHIN A.C.T. TO BE CENTERED IN GRID UNLESS OTHERWISE NOTED
13. FIXTURES ON GRID SHALL BE IN LINE WITH GRID CENTER ON CENTER UNLESS OTHERWISE NOTED
14. FIRE SPRINKLER HEADS, MOTION DETECTORS, LIGHT SENSORS, ETC. ARE TO BE CENTERED IN THE PANEL.

KEYNOTES

(#)

MARK	DESCRIPTION
09.06	PAINT EXISTING STRUCTURE/CEILING
09.07	NEW GYPSUM BOARD CEILING
09.08	PREPARE EXISTING GYPSUM BOARD FOR NEW PAINT

LEGEND

- 2'-0" x 2'-0" SUSPENDED ACOUSTICAL LAY-IN CEILING SYSTEM, PROVIDE SCRUBBABLE TILE FINISH IN WET AREAS: RESTROOMS, SHOWERS, AND DRY ROOMS
- PAINTED GYPSUM BOARD CEILINGS ON METAL STUD FRAMING
- S — (E) SKYLIGHT

SYMBOLS

LIGHTING FIXTURES:
- 2'x2' / 2'x4' TROFFERS
- LINEAR PENDANT
- HIGHBAY

SENSORS/SIGNS/ELEC./DATA:
- EXIT SIGN - SEE ELECTRICAL DRAWINGS

AIR GRILLES/ACCESS PANELS:
- EXHAUST
- SUPPLY / FRESH
- RETURN / RELIEF
- ACCESS PANEL

CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

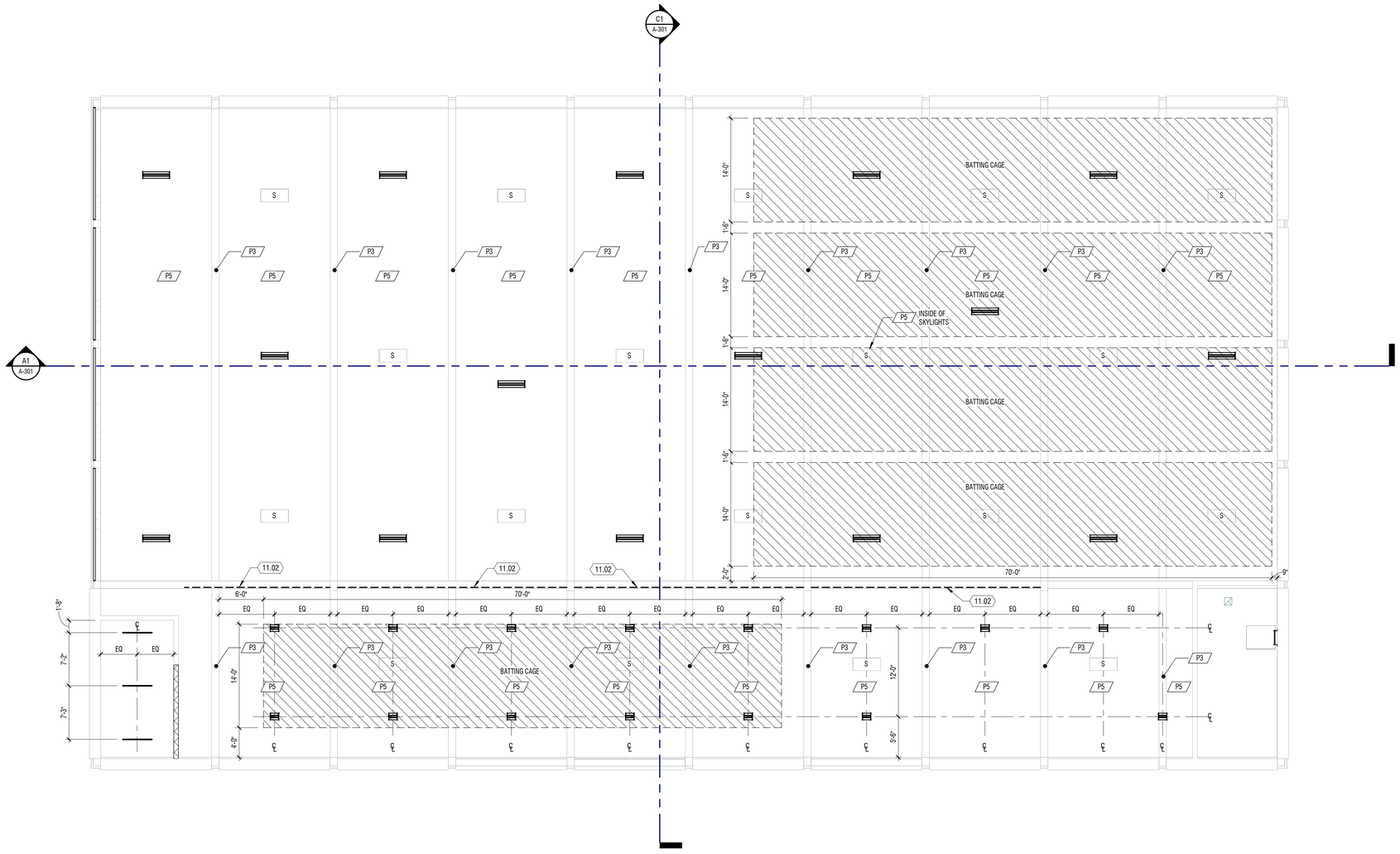
MARK: DESCRIPTION: DATE:

PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6842805-2301
LICENSED ARCHITECT

PLAN - REFLECTED CEILINGS

A-111.3



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14. FIRE SPRINKLER HEADS, MOTION DETECTORS, LIGHT SENSORS, ETC. ARE TO BE CENTERED IN THE PANEL.

KEYNOTES

⟨#⟩

MARK	DESCRIPTION
11.02	CABLE HUNG NETTING UP TO 20'-0" A.F.F. MEZZANINE

LEGEND

- 2'-0" x 2'-0" SUSPENDED ACOUSTICAL LAY-IN CEILING SYSTEM, PROVIDE SCRUBBABLE TILE FINISH IN WET AREAS: RESTROOMS, SHOWERS, AND DRY ROOMS
- PAINTED GYPSUM BOARD CEILINGS ON METAL STUD FRAMING
- S — (E) SKYLIGHT

SYMBOLS

LIGHTING FIXTURES:
- 2'x2' / 2'x4' TROFFERS
- LINEAR PENDANT
- HIGHBAY

SENSORS/SIGNS/ELEC./DATA:
- EXIT SIGN - SEE ELECTRICAL DRAWINGS

AIR GRILLES/ACCESS PANELS:
- EXHAUST
- SUPPLY / FRESH
- RETURN / RELIEF
- ACCESS PANEL

A1 REFLECTED CEILING - MEZZANINE

1/8" = 1'-0"

NORTH

CONSTRUCTION DOCUMENTS

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DESCRIPTION:	DATE:

PROJECT #: 123998
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CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6542605-2301
LICENSED ARCHITECT

PLAN - REFLECTED CEILINGS - UPPER

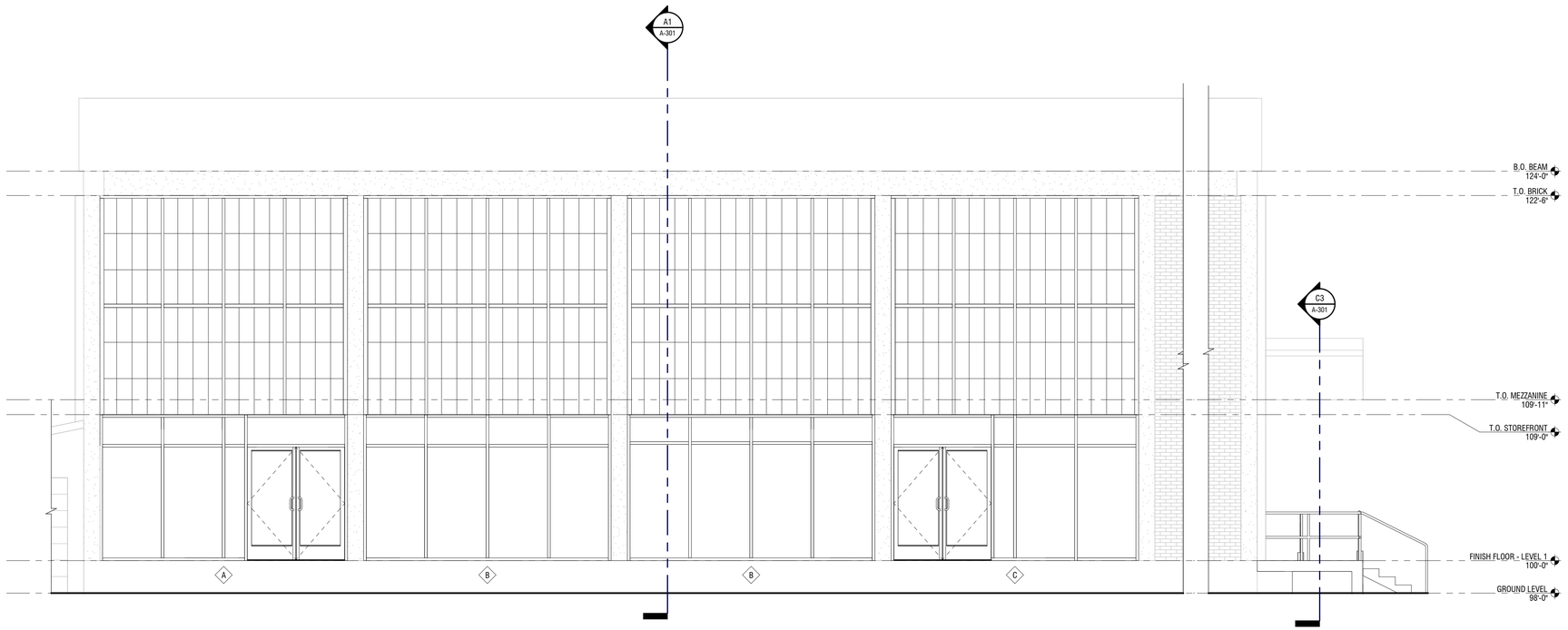
A-121.3

GENERAL NOTES

1. LOCATION OF ADDRESS TO BE PROVIDED BY ARCHITECT

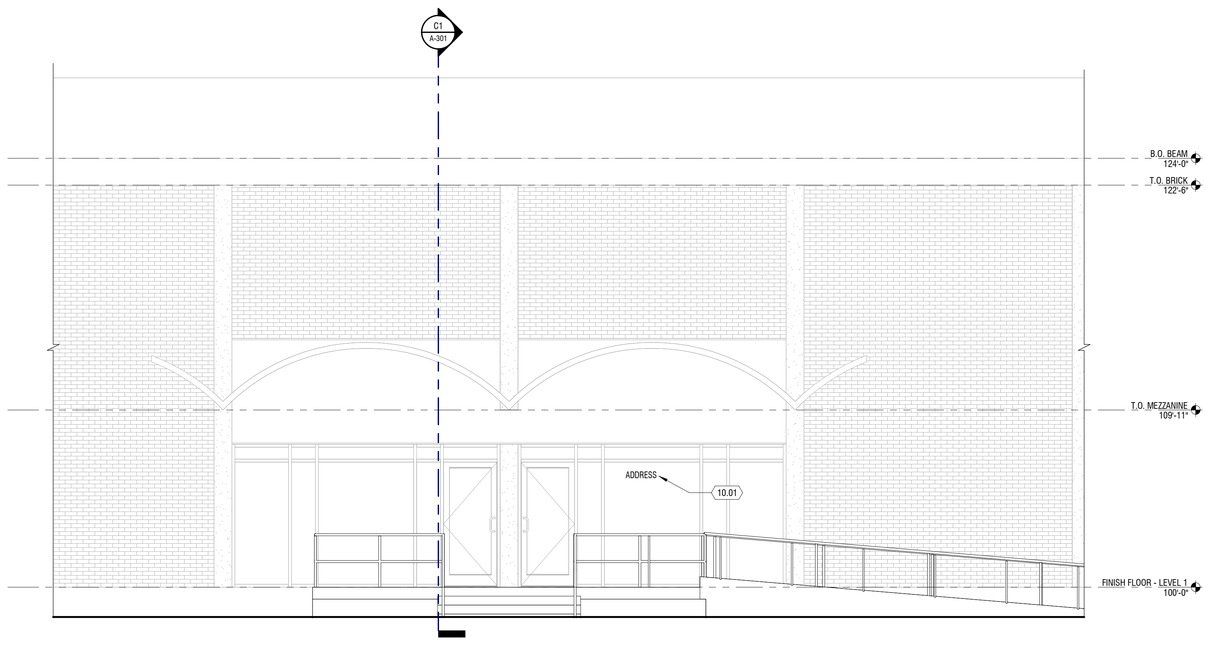
KEYNOTES

#	MARK	DESCRIPTION
	10.01	VINYL SIGN, SEE SIGNAGE SCHEDULE.



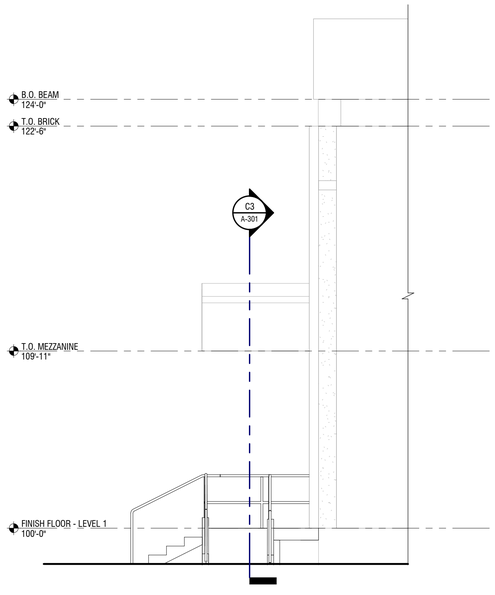
C1 ELEVATION - SOUTH

1/4" = 1'-0"



A1 ELEVATION - EAST

1/4" = 1'-0"



A4 ELEVATION - NORTH

1/4" = 1'-0"

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

CONSTRUCTION DOCUMENTS

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6842805-2301
LICENSED ARCHITECT

ELEVATIONS

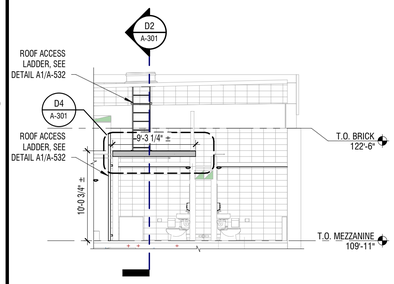
A-201

GENERAL NOTES

1. GENERAL NOTES FOR BUILDING SECTIONS GO HERE

KEYNOTES

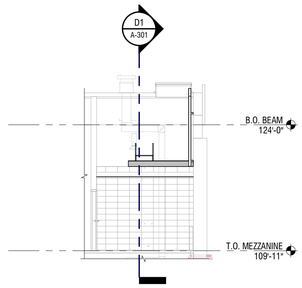
#	MARK	DESCRIPTION
	03.01	LEVEL SLAB AREA WITH LEVELING CEMENT
	03.02	STRUCTURAL FILL TO TURF GRADE
	08.01	GATE - MATCH RAILINGS
	11.01	CHAIR LIFT - CONTRACTOR FURNISHED AND INSTALLED
	31.01	STRUCTURAL FILL



D1 BUILDING SECTION

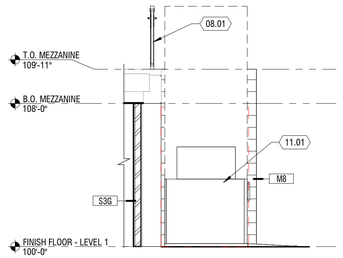
1/8" = 1'-0"

ROOF ACCESS PLATFORM



D2 BUILDING SECTION

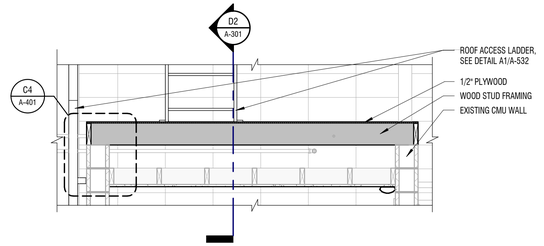
1/8" = 1'-0"



D3 BUILDING SECTION

1/4" = 1'-0"

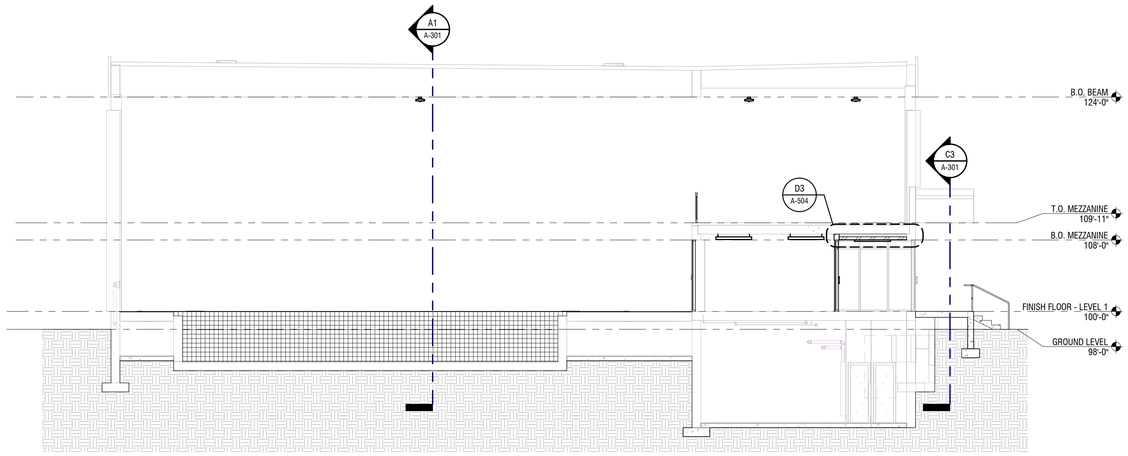
WHEEL CHAIR LIFT



D4 BUILDING DETAIL

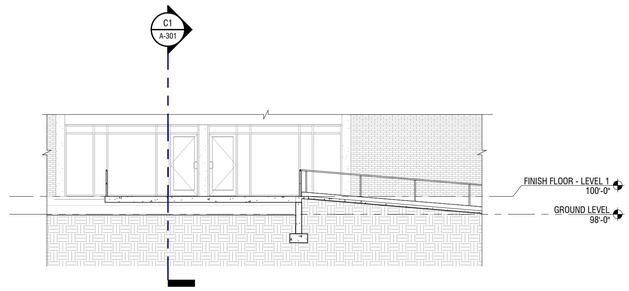
1/2" = 1'-0"

ROOF ACCESS PLATFORM



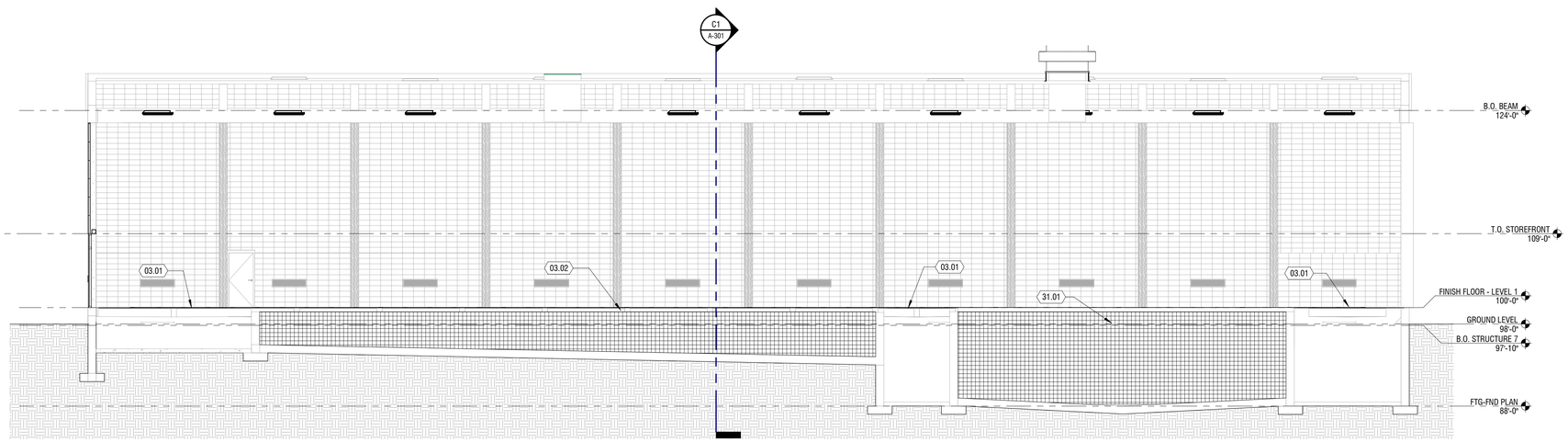
C1 BUILDING SECTION

1/8" = 1'-0"



C3 BUILDING SECTION

1/8" = 1'-0"



A1 BUILDING SECTION

1/8" = 1'-0"

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

CONSTRUCTION DOCUMENTS

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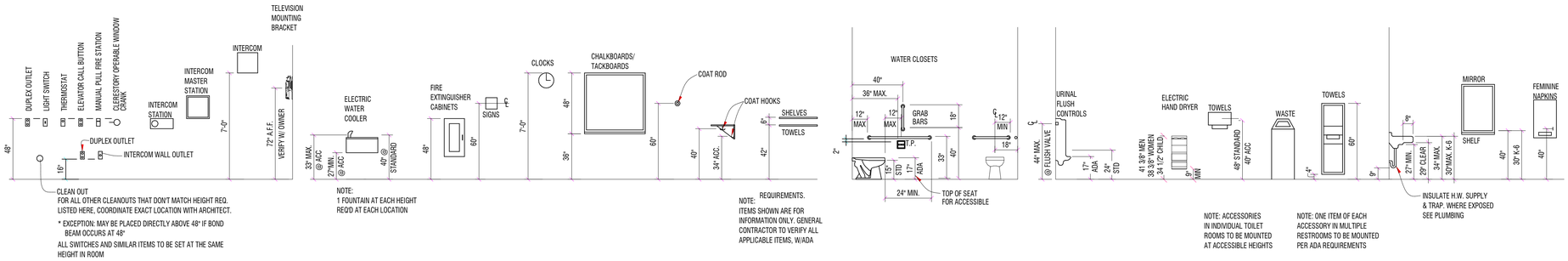
PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
6842805-2301
LICENSED ARCHITECT

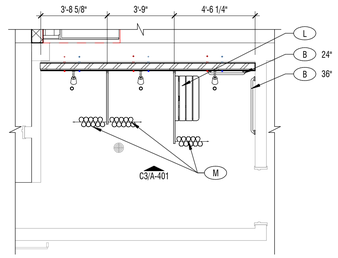
SECTIONS - BUILDING

A-301



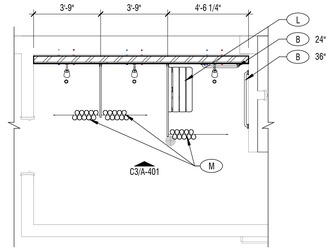
D1 ACCESSIBILITY DETAILS

1/4" = 1'-0"



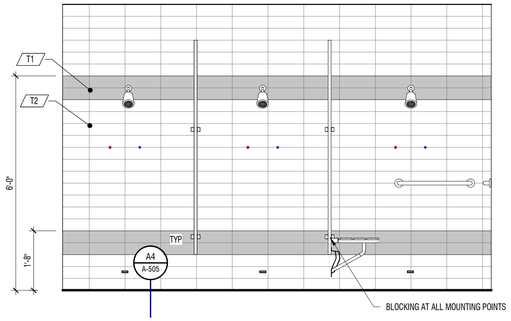
C1 ENLARGED PLAN

1/4" = 1'-0"



C2 ENLARGED PLAN

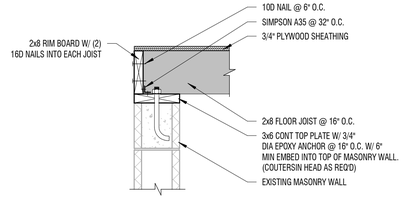
1/4" = 1'-0"



C3 INTERIOR ELEVATION

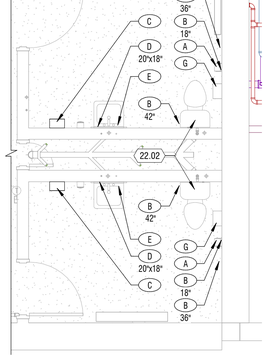
1/2" = 1'-0"

SHOWER 102 & 116



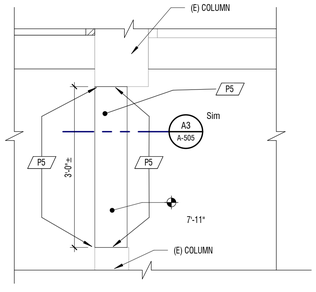
C4 PLATFORM DETAIL

1" = 1'-0"



B1 ENLARGED PLAN

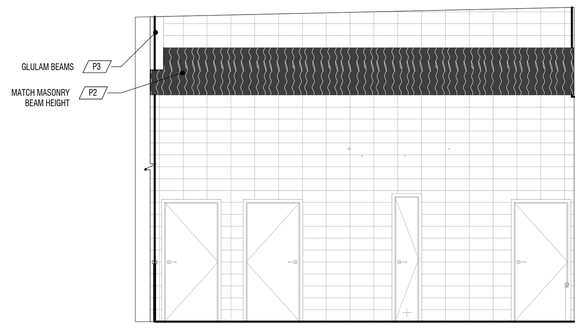
1/4" = 1'-0"



B2 ENLARGED PLAN

3/4" = 1'-0"

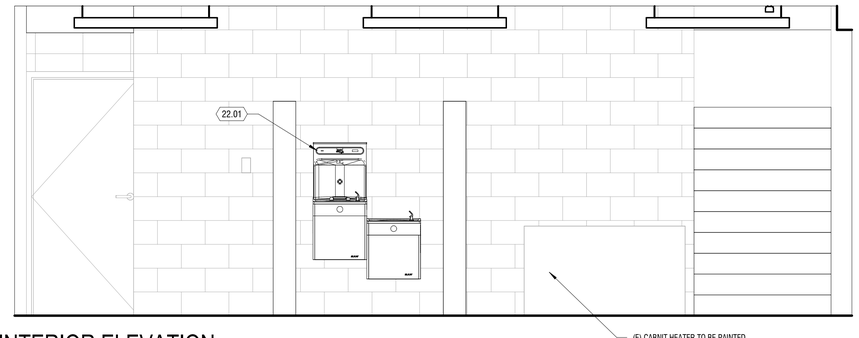
LOBBY 110



B3 INTERIOR ELEVATION

1/4" = 1'-0"

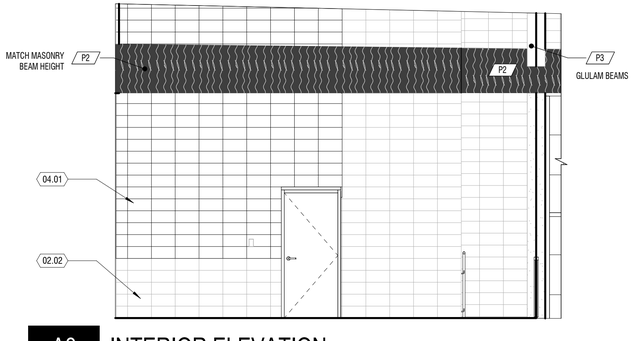
MEZZANINE 201



A1 INTERIOR ELEVATION

1/2" = 1'-0"

LOBBY 110



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MEZZANINE 201

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4. ALL SURFACES TO RECIVE NEW FINISHES NEED TO BE PREPPED TO RECIVE NEW FINISH AS PER MANUFACTURER. THIS INCLUDES BUT IS NOT LIMITED TO DOORS, DOOR FRAMES FLOORS, CEILINGS, ETC.
5. ALL HOLLOW METAL FRAMES TO BE PAINTED. NEW AND EXISTING

KEYNOTES

#	MARK	DESCRIPTION
	02.02	(E) CMU WALL, VERIFY EXITING LOCATION IN FIELD
	04.01	NEW CMU WALL
	22.01	DRINKING FOUNTAIN - SEE PLUMBING DRAWINGS
	22.02	TOILET - SEE PLUMBING

LEGEND

- (A) TOILET TISSUE DISPENSER — OWNER FURNISHED, CONTRACTOR INSTALLED
- (B) GRAB BAR — LENGTH INDICATED ON PLAN
- (C) PAPER TOWEL DISPENSER — OWNER FURNISHED, CONTRACTOR INSTALLED
- (D) MIRROR — SIZE INDICATED ON PLAN
- (E) UNDER-COUNTER SOAP DISPENSER — OWNER FURNISHED, CONTRACTOR INSTALLED
- (F) FEMININE NAPKIN VENDOR
- (G) FEMININE NAPKIN DISPOSAL
- (H) MOP & BROOM HOLDER — LENGTH INDICATED ON PLANS
- (J) DIAPER CHANGING STATION
- (K) DRAIN PIPE PROTECTION
- (L) FOLD DOWN SHOWER SEAT
- (M) SHOWER CURTAIN

CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
255 SOUTH 300 WEST
SALT LAKE CITY UT 84103
795 NORTH 400 WEST

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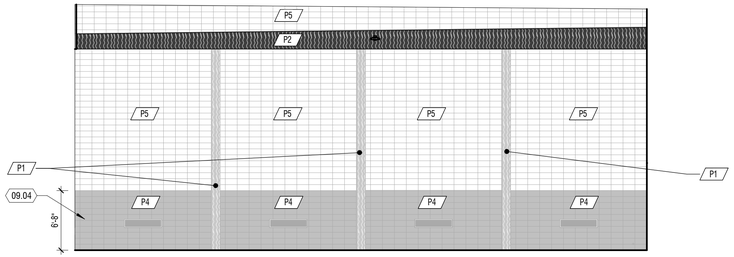
STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6842805-2301
LICENSED ARCHITECT

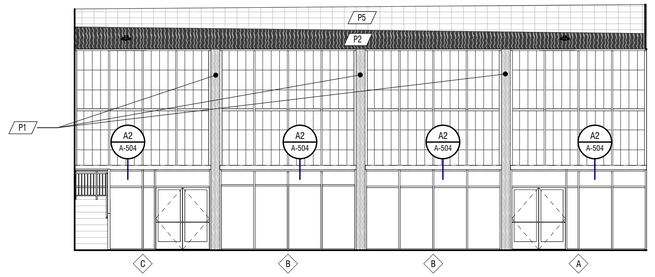
ENLARGED VIEWS & INTERIOR ELEVATIONS

A-401



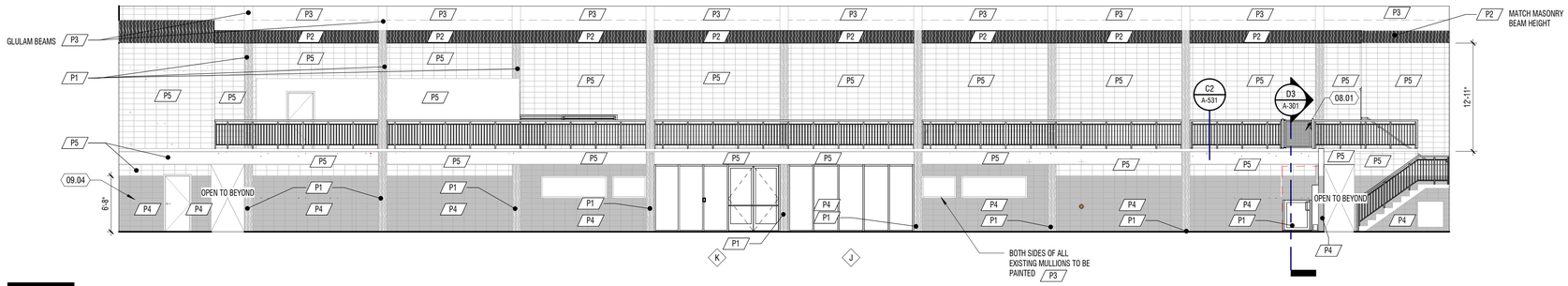
C1 INTERIOR ELEVATION

1/8" = 1'-0" SPORTS FIELD 121



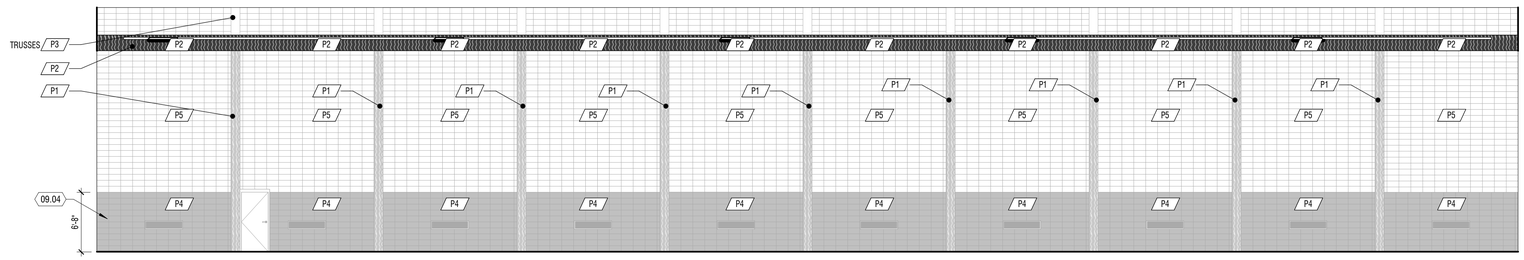
C3 INTERIOR ELEVATION

1/8" = 1'-0" SPORTS FIELD 121



B1 INTERIOR ELEVATION

1/8" = 1'-0" SPORTS FIELD 121



A1 INTERIOR ELEVATION

1/8" = 1'-0" SPORTS FIELD 121

GENERAL NOTES

1. KEYNOTES: THE FIRST TWO NUMBERS REPRESENT THE RELATED CSI MASTERFORMAT DIVISION. THE SECOND SET OF NUMBERS REPRESENTS AN IDENTIFYING MARK VALUE. NOT ALL VALUES MAY BE USED OR OCCUR IN THE DOCUMENT SET.

   ADDITIONALLY, KEYNOTES RETAIN THEIR ASSIGNED VALUE UNIVERSALLY THROUGHOUT THE SET. THE KEYNOTES LISTED BELOW, REPRESENT THE KEYNOTES FOUND AND UTILIZED ON THIS SHEET AND EACH LIST WILL DIFFER RESPECTIVE TO ITS' SHEET. THEREFORE, BASED ON ACTUAL KEYNOTES UTILIZED ON A GIVEN SHEET OF DRAWINGS, GAPS IN THE SEQUENCING WILL OCCUR.
2. CONTRACTOR SHALL VERIFY LAY-OUT OF STRUCTURAL, MECHANICAL, AND ELECTRICAL.
3. ALL INTERIOR DIMENSIONS ARE TO/FROM FACE OF STUD / MASONRY. ALL EXTERIOR DIMENSIONS ARE TO/FROM FACE OF GRID/FOUNDATION. DIMENSIONS MARKED 'CLEAR' OR 'CLR' ARE FROM FACE OF FINISH TO FACE OF FINISH AND SHALL BE MAINTAINED AND CANNOT BE FIELD ADJUSTED WITHOUT PRIOR APPROVAL OF THE ARCHITECT.
4. ALL SURFACES TO RECIVE NEW FINISHES NEED TO BE PREPPED TO RECIVE NEW FINISH AS PER MANUFACTURER. THIS INCLUDES BUT IS NOT LIMITED TO DOORS, DOOR FRAMES FLOORS, CEILINGS, ETC.
5. ALL HOLLOW METAL FRAMES TO BE PAINTED. NEW AND EXISTING

KEYNOTES

(#)

MARK	DESCRIPTION
08.01	GATE - MATCH RAILINGS
09.04	GLAZED CMU NEEDS TO BE PREPPED TO RECIEVE NEW PAINT

LEGEND

- (A) TOILET TISSUE DISPENSER — OWNER FURNISHED, CONTRACTOR INSTALLED
- (B) GRAB BAR — LENGTH INDICATED ON PLAN
- (C) PAPER TOWEL DISPENSER — OWNER FURNISHED, CONTRACTOR INSTALLED
- (D) MIRROR — SIZE INDICATED ON PLAN
- (E) UNDER-COUNTER SOAP DISPENSER — OWNER FURNISHED, CONTRACTOR INSTALLED
- (F) FEMININE NAPKIN VENDOR
- (G) FEMININE NAPKIN DISPOSAL
- (H) MOP & BROOM HOLDER — LENGTH INDICATED ON PLANS
- (J) DIAPER CHANGING STATION
- (K) DRAIN PIPE PROTECTION
- (L) FOLD DOWN SHOWER SEAT
- (M) SHOWER CURTAIN

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LCSD INDOOR ATHLETIC FACILITY
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114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK: DESCRIPTION: DATE:

PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
6842805-0301
LICENSED ARCHITECT

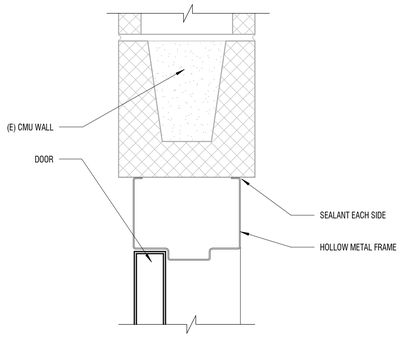
CONSTRUCTION DOCUMENTS

ENLARGED VIEWS & INTERIOR ELEVATIONS

A-402

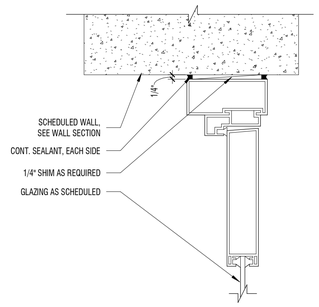
DOOR SCHEDULE

	LEAF SIZING (1)									DETAILS (8)					
E	W	H	D	DOOR TYPE (2)	CONSTRUCTION (3)	FINISH (4)	GLAZING (5)	RATING (6)	FRAME TYPE (7)	HEAD	JAMB	SILL	HARDWARE (9)	NOTES (10)	Comments
110A	3'-0"	7'-0"	1 3/4"	AL01	AL	MFR	SGI		D			A2/A-501	AL-02		
110B	3'-0"	7'-0"	1 3/4"	AL01	AL	MFR	SGI		E			A2/A-501	AL-01		
110C	6'-0"	7'-0"	1 3/4"	AL02	AL	MFR	SG	-	G				AL-03		
121A	6'-0"	7'-0"	1 3/4"	AL02	AL	MFR	-	-	C	C2/A-501	B2/A-501	A1/A-501	AL-04		
121B	6'-0"	7'-0"	1 3/4"	AL02	AL	MFR	-	-	A	C2/A-501	B2/A-501	A1/A-501	AL-04		
121C	6'-0"	7'-10"	1 3/4"	AL02	AL			-	K	C2/A-501	B2/A-501	A1/A-501	AL-05		
123	3'-0"	7'-0"	1 3/4"	HM01	HM	5A		-	HMB	C1/A-501	B1/A-501		01		
200	3'-0"	7'-0"	1 3/4"	HM01	HM	5A		-	HMB	C1/A-501	B1/A-501		02		



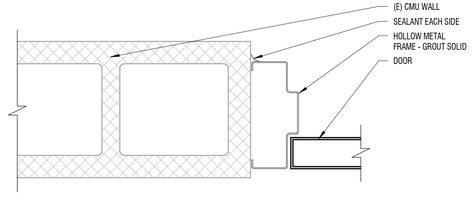
C1 DETAIL - HEAD

3" = 1'-0"



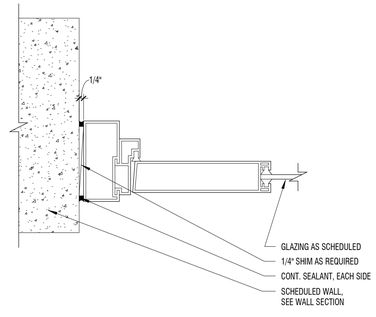
C2 DETAIL - HEAD

3" = 1'-0"



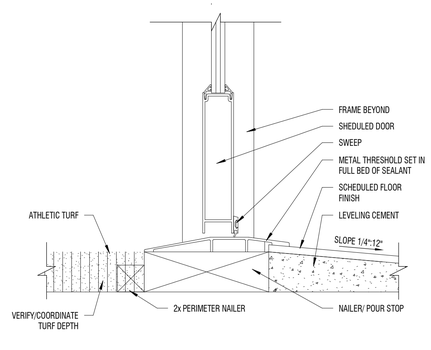
B1 DETAIL - JAMB

3" = 1'-0"



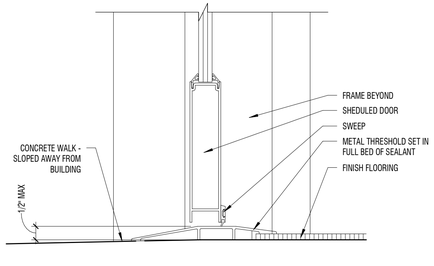
B2 DETAIL - JAMB

3" = 1'-0"



A1 DETAIL -TURF SILL THRESHOLD

3" = 1'-0"



A2 DETAIL - THRESHOLD

3" = 1'-0"

DOOR HARDWARE

HARDWARE GROUP NO. 01 DOORS: 123

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	ND80BD SPA	605	SCH
1	EA	FURNISHED AND PINNED THROUGH GC	MEDECO SFIC	626	SCH
1	EA	SURFACE CLOSER	4040XP DEL SCUSH	630	LCN
1	EA	KICK PLATE	8400 36" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	429AA-S	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	565A-223	A	ZER

HARDWARE GROUP NO. 02 DOORS: 200

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	ND80BD SPA	605	SCH
1	EA	FURNISHED AND PINNED THROUGH GC	MEDECO SFIC	626	SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. AL-01 DOOR: 110B

1	EA	CONT. HINGE	112XY	628	IVE
1	EA	ELECTRIC STRIKE	9600	630	HES
1	EA	PANIC HARDWARE	CDSI-98-NL-OP-110MD	626	VON
2	EA	FURNISHED AND PINNED THROUGH GC	MEDECO SFIC	626	SCH
1	EA	SFIC MORTISE CYL.	80-105 (CAM AS REQ'D	626	SCH
1	EA	SFIC RIM HOUSING	80-129	626	SCH
1	EA	DOOR PULL	VR910 NL	630	IVE
1	EA	OH STOP	100S ADJ	630	GLY
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	WEATHER STRIPPING	BY ALUMINUM DOOR MANUFACTURER		
1	EA	MULTITIECH READER	MT15	BLK	SCE
1	EA	POWER SUPPLY	PS902 BBK 900-2RS	LGR	SCE

HARDWARE GROUP NO. AL-02 DOORS: 110A

1	EA	CONT. HINGE	112XY	628	IVE
1	EA	PANIC HARDWARE	CDSI-98-NL-OP-110MD	626	VON
1	EA	FURNISHED AND PINNED THROUGH GC	MEDECO SFIC	626	SCH
1	EA	SFIC MORTISE CYL.	80-105 (CAM AS REQ'D	626	SCH
1	EA	DOOR PULL	VR910 NL	630	IVE
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	WEATHER STRIPPING	BY ALUMINUM DOOR MANUFACTURER		
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	565A-223	A	ZER

HARDWARE GROUP NO. AL-03 DOOR: 110C

3	EA	CONT. HINGE	112HD	652	IVE
1	EA	PUSH/PULL BAR	9103EZHD-12"-NO	630-316	FAL
1	EA	OH STOP	100S ADJ	630	GLY
3	EA	SURFACE CLOSER	4040XP EDA	689	LCN
3	EA	WEATHER STRIPPING	BY ALUMINUM DOOR MANUFACTURER		

HARDWARE GROUP NO. AL-04 DOORS: 121A,121B

2	EA	CONT. HINGE	112XY	628	IVE
1	EA	REMOVABLE MULLION	KR4954 STAB	689	VON
2	EA	PANIC HARDWARE	CDSI-98-EO	626	VON
1	EA	FURNISHED AND PINNED THROUGH GC	987 008876-000	626	FAL
1	EA	SFIC MORTISE CYL.	80-105 (CAM AND REQ'D)	626	SCH
2	EA	DOOR PULL	VR910 DT	630	IVE
2	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	WEATHER STRIPPING	BY ALUMINUM DOOR MANUFACTURER		
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	565A-223	A	ZER

HARDWARE GROUP NO. AL-05 DOORS: 121C - TO BE PREPPED FOR FUTURE CARD READER

2	EA	CONT. HINGE	112XY	628	IVE
1	EA	ELECTRIC STRIKE	9600	630	HES
1	EA	REMOVABLE MULLION	KR4954 STAB	689	VON
2	EA	PANIC HARDWARE	CDSI-98-NL-OP-110MD	626	VON
2	EA	FURNISHED AND PINNED THROUGH GC	MEDECO SFIC	626	SCH
1	EA	SFIC MORTISE CYL.	80-105 (CAM AS REQ'D	626	SCH
1	EA	SFIC RIM HOUSING	80-129	626	SCH
2	EA	DOOR PULL	VR910 NL	630	IVE
1	EA	OH STOP	100S ADJ	630	GLY
2	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	MULTITIECH READER	MT15	BLK	SCE
1	EA	POWER SUPPLY	PS902 BBK 900-2RS	LGR	SCE

Manufacturers
Subject to compliance with requirements, provided products by one of thew following:

Hinges:	Ives, Hager, Stanley, McKinney
Locks and Latches:	Falcon, Sargent, Schlage, Adams Rite
Cylinders and Cores:	Falcon, Sargent, Schlage
Mechanical Door Closers:	Falcon, Sargent, LCN
Accessories and Trim:	Ives, Rockwood, Hager, Trinco
Overhead Stops and Holders:	Glynn Johnson, ABH
Saddle and Panic Thresholds:	Zero, National Guard, Pemko
Weather Strip and Gasket:	Zero, National Guard, Pemco
Miscellaneous Hardware:	Ives, Rockwood, Hager, Trimco
Emergency Access Key Box:	Knox, Inc

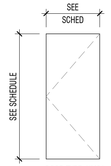
GENERAL NOTES

1. PROVIDE SEALANT AT JOINTS AT DISSIMILAR MATERIAL CONNECTIONS, ISOLATE DISSIMILAR METALS.
2. ALL DIMENSIONS FOR DOOR AND WINDOW OPENINGS TO BE FIELD VERIFIED PRIOR TO MANUFACTURING AND INSTALLATION.
3. UNLESS NOTED OTHERWISE, WHERE OCCURS ALL WINDOWS AND TRANSOMS THAT OCCUR IN RATED CORRIDOR WALL TO BE RATED 45 MIN.
4. PRE-PAINT ALL FRAMES PRIOR TO INSTALLATION.
5. BRAILLE SIGNAGE REQUIRED ON STRIKE SIDE OF FRAME.

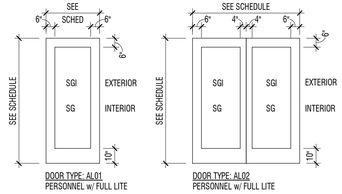
SCHEDULE NOTES

- IF SCHEDULE FIELD SHOWS A HYPHEN (-) OR IS BLANK, THERE ARE NO ITEMS APPLICABLE OR IS DETERMINED BY MANUFACTURER.
- SWING LINES SHOWN BELOW ARE REPRESENTATIONAL AND DO NOT INDICATE ACTUAL SWING. SEE PLANS FOR INDIVIDUAL SWINGS.

1. LEAF SIZING: SEE SCHEDULE
2. DOOR TYPES:



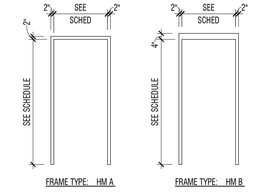
DOOR TYPE: HM01
PERSONNEL



DOOR TYPE: AL01
PERSONNEL w/ FULL LITE

DOOR TYPE: AL02
PERSONNEL w/ FULL LITE

3. CONSTRUCTION:
   GL GLASS
   AL ALUMINUM
   HMI HOLLOW METAL, INSULATED
   HM HOLLOW METAL
   SC SOLID CORE
4. FINISH: SEE DOOR FINISHES ON SHEET A-691
5. GLAZING: (DOOR AND WINDOW)
   SG SAFETY GLASS (TEMPERED OR LAMINATED)
   SGI SAFETY GLASS INSULATED, LOW E
   CG CLEAR FLOAT GLASS
   CGI CLEAR FLOAT GLASS INSULATED - LOW E
   SP SPANDREL PANEL
6. RATING: 20, 45, 60 AND ETC. INDICATES FIRE RATING
   NOTE: ALL FIRE RATED DOORS SHALL BE AUTOMATIC CLOSING OR SELF-CLOSING AS PROVIDED IN THE IBC, IN ADDITION SEE THE IBC FOR SPECIAL PROVISIONS RELATING TO DOORS.
7. FRAME TYPE: (NUMBER(S) INDICATE(S) FRAME TYPE(S) SHOWN



FRAME TYPE: HM A

FRAME TYPE: HM B

8. DETAILS: (REFER TO SHEETS INDICATED FOR DOOR AND WINDOW DETAILS)
9. HARDWARE: (GROUP #, SEE SPECIFICATIONS FOR HARDWARE GROUPS)
10. NOTES:
    A:

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LCSD INDOOR ATHLETIC FACILITY
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LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6842805-0301
LICENSED ARCHITECT

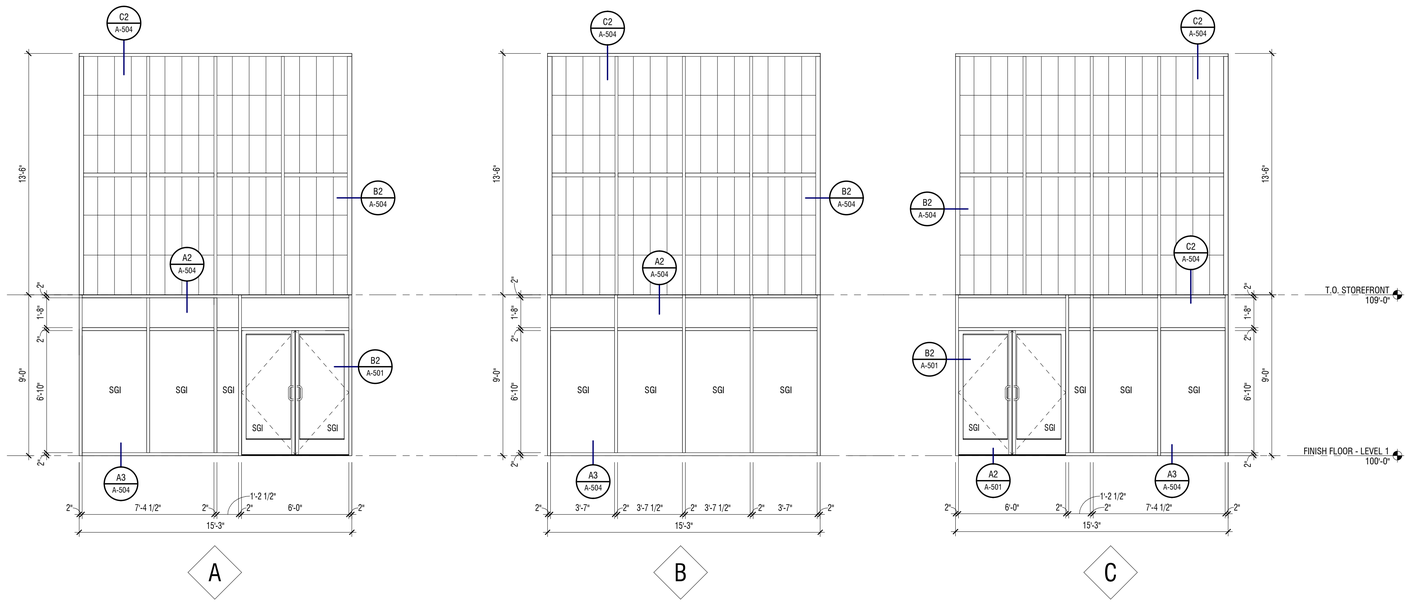
CONSTRUCTION DOCUMENTS

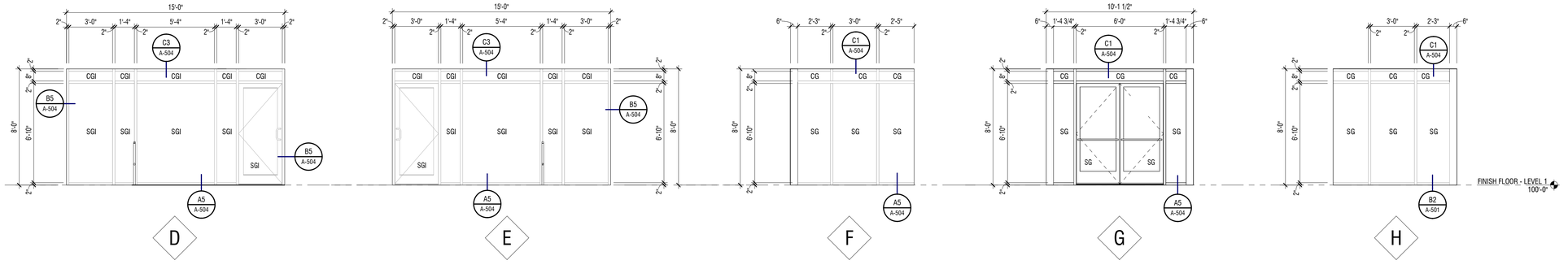
SCHEDULE - DOOR & DETAILS

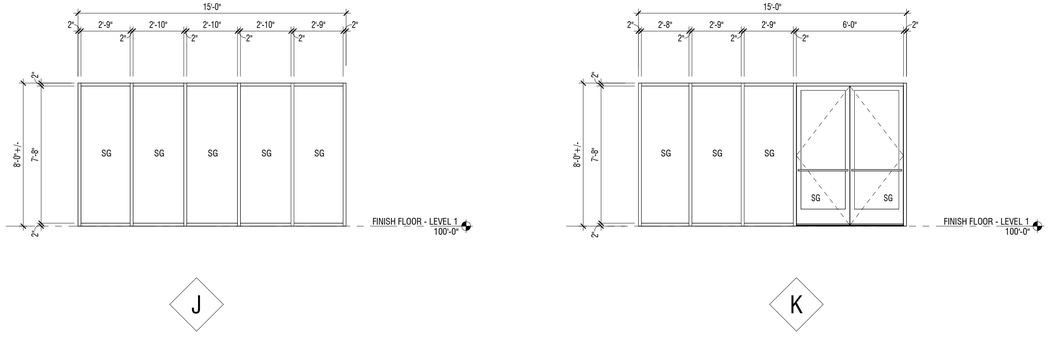
A-501

WINDOW GENERAL NOTES

1. PROVIDE SEALANT AT JOINTS AT DISSIMILAR MATERIAL CONNECTIONS, ISOLATE DISSIMILAR METALS.
2. ALL DIMENSIONS FOR WINDOW OPENINGS TO BE FIELD VERIFIED PRIOR TO MANUFACTURING AND INSTALLATION.
3. ALL WINDOWS AND TRANSOMS THAT OCCUR IN RATED CORRIDOR WALL TO BE RATED 45 MIN.
4. PRE-PAINT ALL FRAMES PRIOR TO INSTALLATION.
5. BRAILLE SIGNAGE REQUIRED ON STRIKE SIDE OF FRAME.







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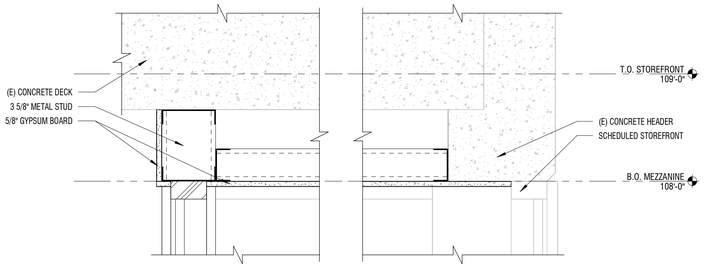
STEPHEN M WILLIAMS
12/5/2024
6842805-0301
LICENSED ARCHITECT

CONSTRUCTION DOCUMENTS

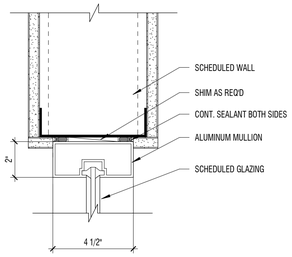
ASSEMBLIES - STOREFRONTS

A-503



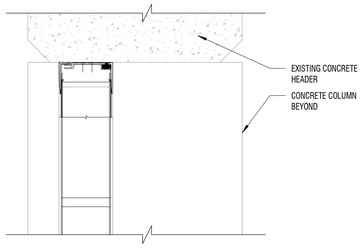
D3 DETAIL - VESTIBULE

1 1/2" = 1'-0"



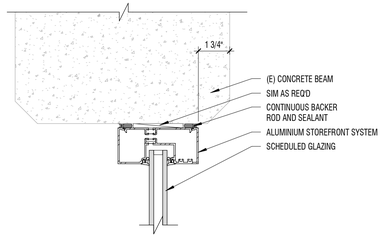
C1 DETAIL - HEAD

3" = 1'-0"



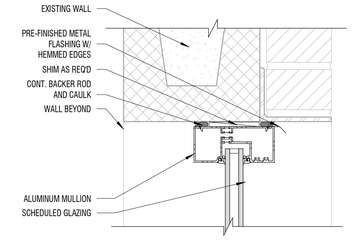
C2 DETAIL - KALWALL HEAD

3" = 1'-0"



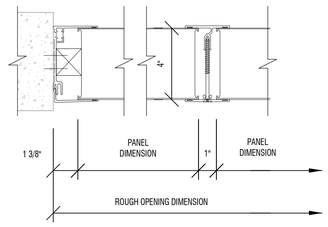
C3 WINDOW HEAD WEST SIDE

3" = 1'-0"



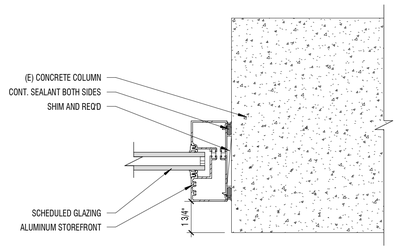
C5 DETAIL - HEAD

3" = 1'-0"



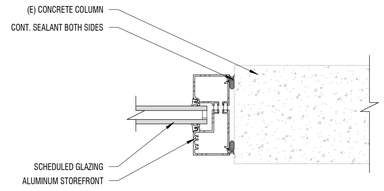
B2 DETAIL - KALWALL JAMB

3" = 1'-0"



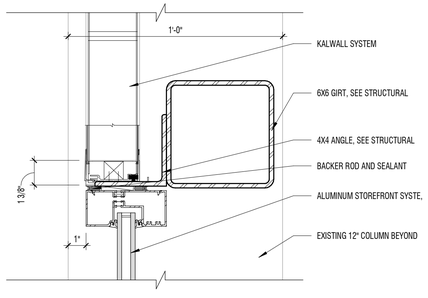
B3 WINDOW JAMB WEST SIDE

3" = 1'-0"



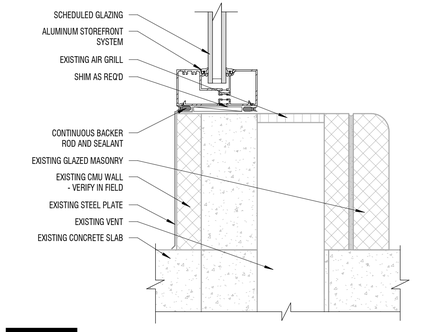
B5 DETAIL - JAMB

3" = 1'-0"



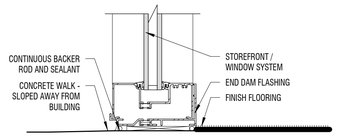
A2 DETAIL - KALWALL SILL

3" = 1'-0"



A3 DETAIL - SILL

3" = 1'-0"



A5 DETAIL - SILL

3" = 1'-0"

CONSTRUCTION DOCUMENTS

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LOGAN CITY SCHOOL DISTRICT

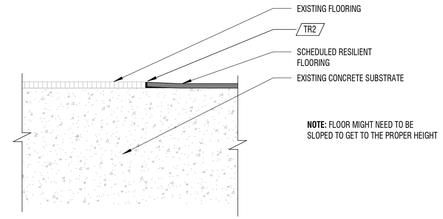
MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6842805-2301
LICENSED ARCHITECT

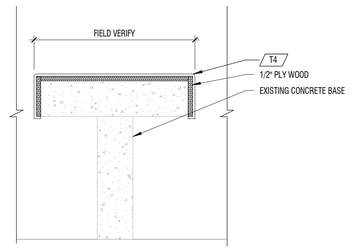
DETAILS - STOREFRONTS AND DOORS

A-504



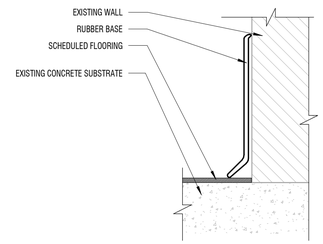
C4 FLOOR FINISH TRANSITION

6" = 1'-0"



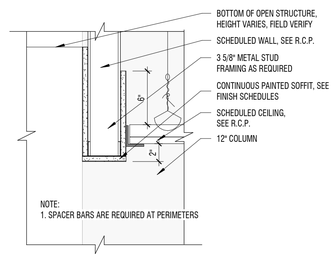
B3 LOCKER BENCH DETAIL

1 1/2" = 1'-0"



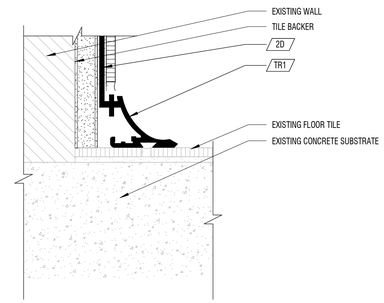
B4 BASE DETAIL

6" = 1'-0"



A3 CEILING DETAIL

1 1/2" = 1'-0"



A4 BASE DETAIL

6" = 1'-0"

CONSTRUCTION DOCUMENTS

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

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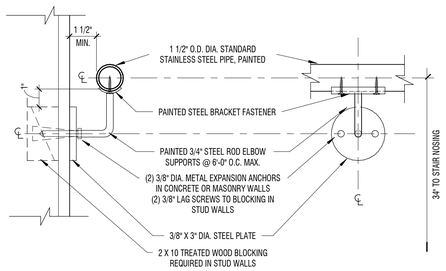
STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
6842805-0301
LICENSED ARCHITECT

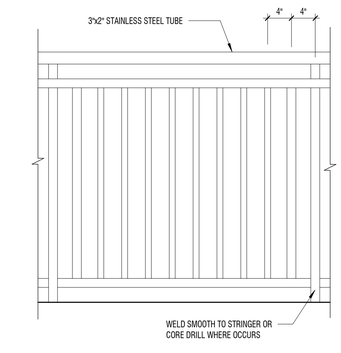
DETAILS - INTERIORS

A-505



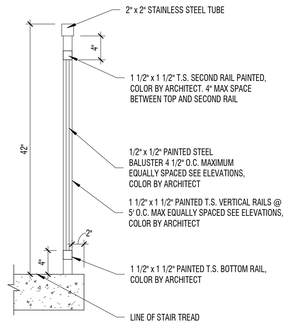
C1 MID-RAIL DETAIL

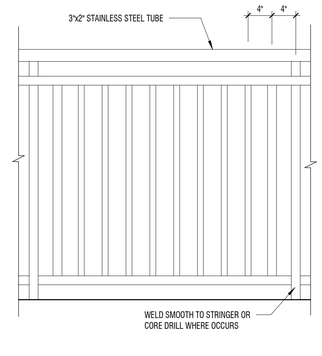
3" = 1'-0"



C2 RAIL DETAIL

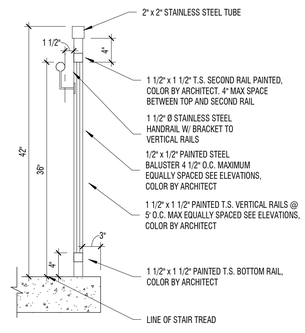
1" = 1'-0"

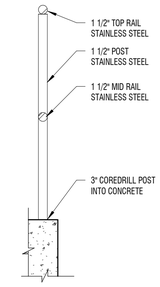




C3 RAIL/HANDRAIL DETAIL

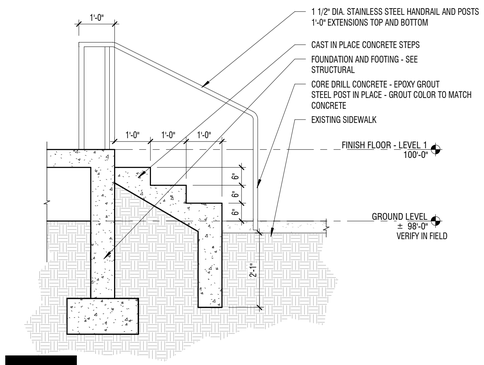
1" = 1'-0"





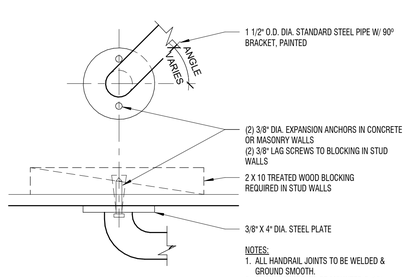
C5 RAILING DETAIL

1" = 1'-0"



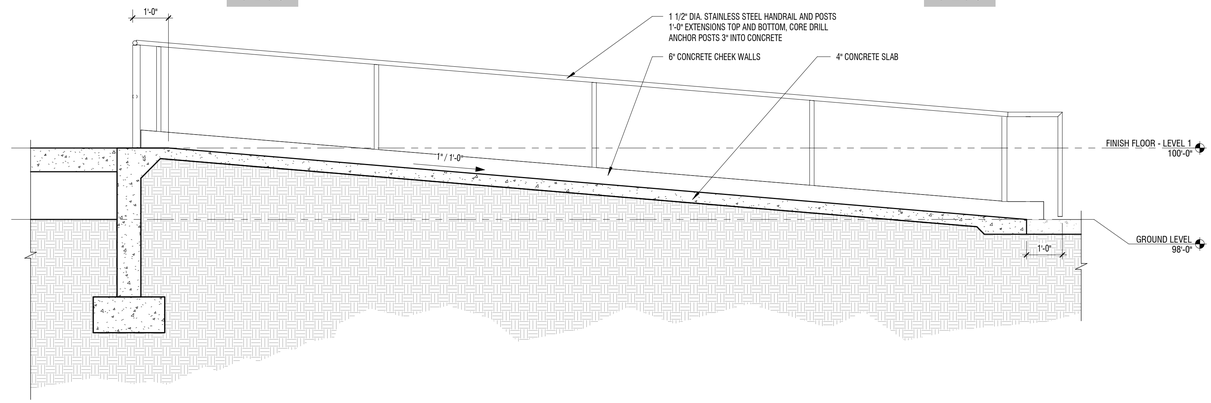
B1 STAIR DETAILS

1/2" = 1'-0"



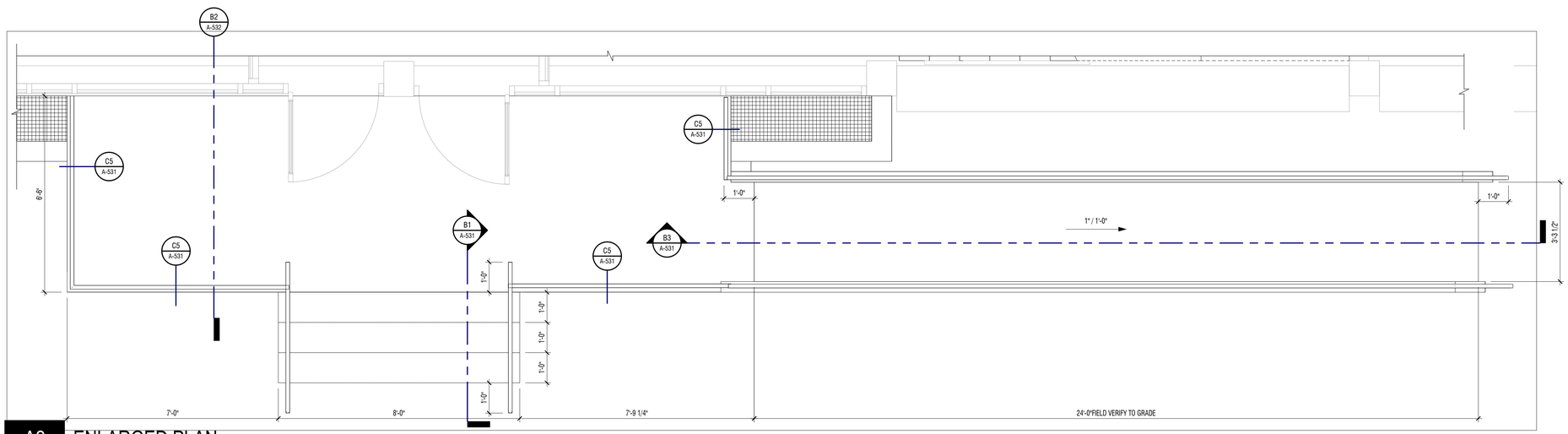
B2 HANDRAIL DETAIL

3" = 1'-0"



B3 RAMP SECTION

1/2" = 1'-0"



A2 ENLARGED PLAN

1/2" = 1'-0"

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

CONSTRUCTION DOCUMENTS

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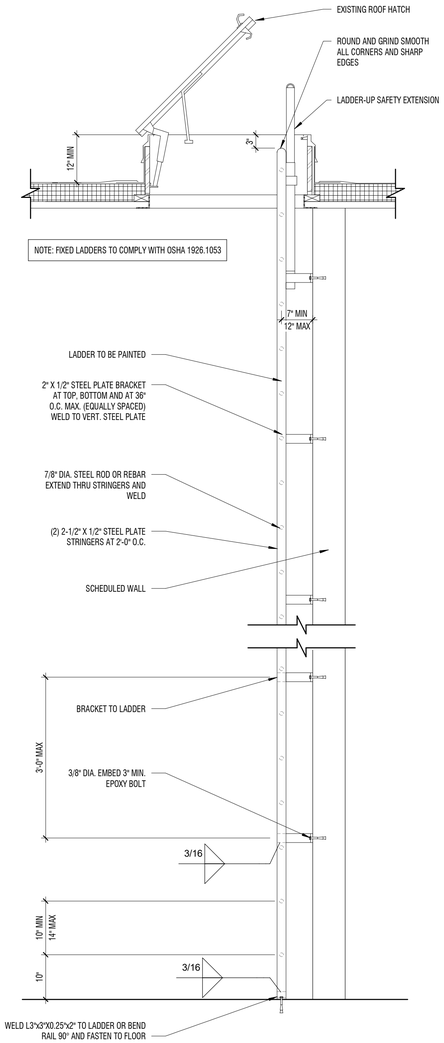
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
6842805-2301
LICENSED ARCHITECT

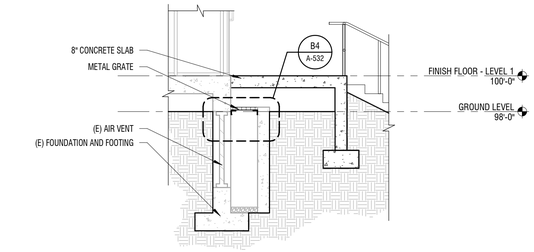
DETAILS - STAIR AND RAMP

A-531



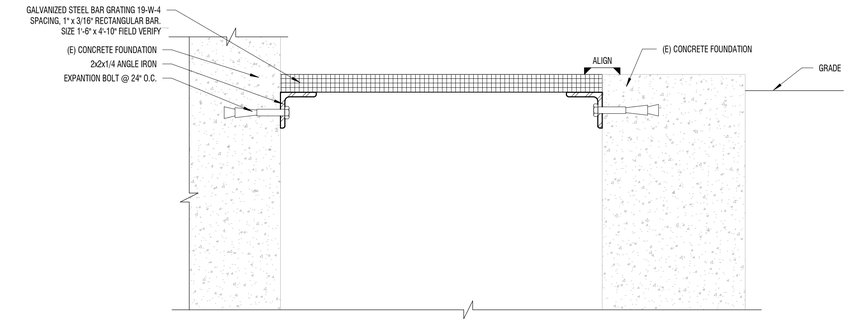
A1 ROOF HATCH LADDER

3/4" = 1'-0"



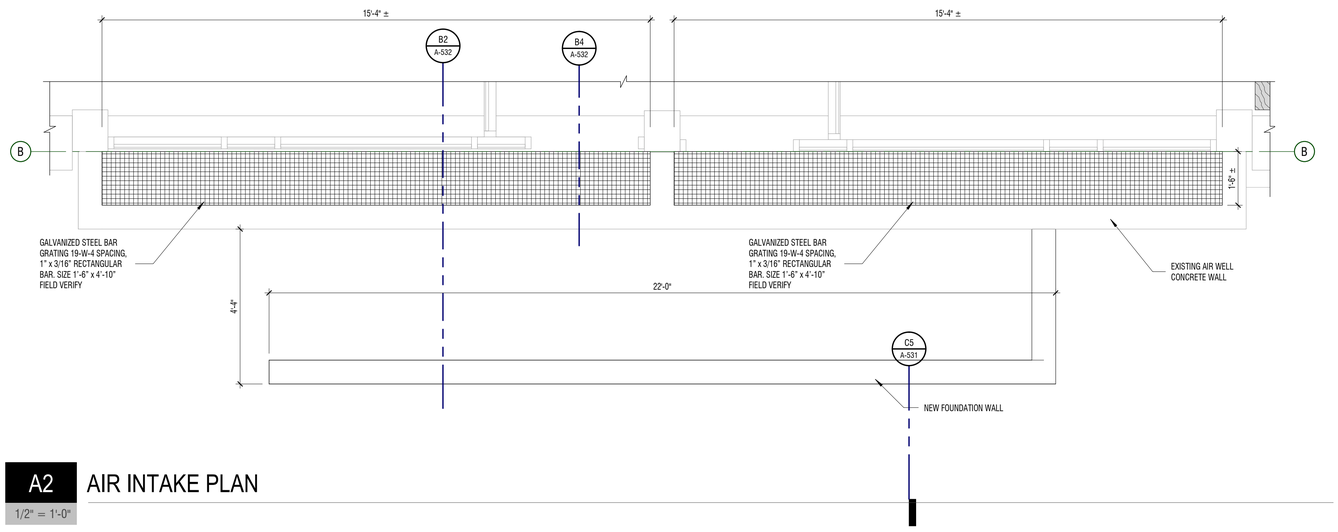
B2 PORCH SECTION

1/4" = 1'-0"



B4 GRATE DETAIL

3" = 1'-0"



A2 AIR INTAKE PLAN

1/2" = 1'-0"

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

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STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
6842805-2301
LICENSED ARCHITECT

BUILDING DETAILS

A-532

FINISH SCHEDULE

CARPET

MARK:	C1	C2	C3	C4
TYPE:	CARPET TILE	CARPET TILE	CARPET TILE	CARPET TILE
MANUFACTURER:	PATCRAFT	PATCRAFT	PATCRAFT	TARKETT
COLLECTION:	BEYOND THE DOOR	BEYOND THE DOOR	BEYOND THE DOOR	URBAN VIEW
SERIES:	PRADO	PRADO	PRADO	
COLOR:	OBSIDIAN 00595	GARNET 00875	GARNET 00875	NIGHT OUT 19808
SIZE:	24" x 24"	24" x 24"	6" x 12"	24" x 24"
INSTALL:	ASHLAR	ASHLAR	ASHLAR	ASHLAR
NOTES:	BLACK	RED	BLACK	OFFICE

RESILIENT FLOORING

MARK:	RF1	RF2
TYPE:	RUBBER TREAD	RUBBER RISER
MANUFACTURER:	ROPPE	ROPPE
COLLECTION:	-	-
SERIES:	-	-
COLOR:	SYMMETRY AS186 RED	123 CHARCOAL
SIZE:	-	-
INSTALL:	-	-
NOTES:	#93 TEXTURED DESIGN	

TILE

MARK:	T1	T2	T3	T4
MANUFACTURER:	DALTILE	DALTILE	DALTILE	CORIAN
COLLECTION:	COLOR WHEEL	COLOR WHEEL	COLOR WHEEL	SOLID SURFACE
SERIES:	COLOR WHEEL LINEAR	COLOR WHEEL LINEAR	COLOR WHEEL LINEAR	-
COLOR:	CURRANT SH17	ARCTIC WHITE 0190	DESERT GRAY 0109	ROYAL RED
SIZE:	4" x 12"	4" x 12"	4" x 12"	-
INSTALL:	STACKED BOND	STACKED BOND	STACKED BOND	-
GROUT:	MAPEI FROST 77, 1/8"	MAPEI FROST 77, 1/8"	RAIN 101	-
NOTES:	RED	WHITE	GREY	

CONCRETE FINISH

MARK:	CF1
TYPE:	SEALED CONCRETE
MANUFACTURE:	-
COLOR:	CLEAR
SHEEN:	-
NOTES:	

TRANSITIONS

MARK:	TR1	TR2	TR3
TYPE:	COVE BASE	TRANSITION	TRIM
MANUFACTURER:	SCHLUTER	POWERHOLD	SCHLUTER
COLOR:	SATIN ANODIZED	MF	STAINLESS STEEL
MODEL:	DILEX - AHKA	LVT NO LIP RAMP	JOLLY EDGE TRIM
LOCATION:	SHOWER WALL	CARPET TILE TO FLOOR TILE	LOBBY DRINKING FOUNTAIN WALLS
NOTES:		FEILD VERIFY TRANSITION HEIGHT	

BASE

MARK:	B1
TYPE:	VINYL WALL BASE
MANUFACTURER:	ROPPE
COLOR:	123 CHARCOAL
SIZE:	4" H
STYLE:	STANDARD TOE BASE 5/8"
NOTES:	

EPOXY PAINT

MARK:	EP1	EP2	EP3
MANUFACTURER:	SHERWIN WILLIMAS	SHERWIN WILLAIMS	BENJAMIN MOORE
COLOR:	PURE WHITE	SNOWBOUND 7004	CALIENTE AF-290
SHEEN:	EGGSHELL	SATIN	SATIN
NOTES:	RESTROOM CEILING	RESTROOM WALLS	RED

MISCELLANEOUS

MARK:	MI1	MI2
TYPE:	ATHLETIC SPORTS TURF	SHOWER PARTITION
MANUFACTURER:	FIELD TURF (BASIS OF DESIGN)	SCRANTON
MODEL:	FIELDTURF CLASSIC HD (BASIS OF DESIGN)	SHOWER STALL WITH CURTAIN
COLOR:	-	GLACIER GREY
SIZE:	-	-
INSTALL:	-	-
NOTES:		

CEILING

MARK:	CL1	CL2
TYPE:	ACT	ACT
MANUFACTURER:	ARMSTRONG	ARMSTRONG
MODEL:	CALLA	CLEAN ROOM FL
SIZE:	2' X 4'	2' X 4'
COLOR:	WHITE	WHITE
NOTES:		

PAINT

MARK:	P1	P2	P3	P4
MANUFACTURER:	BENJAMIN MOORE	BENJAMIN MOORE	SHERWIN WILLIAMS	SHERWIN WILLIAMS
COLOR:	PRINCTON GOLD H-14	CALIENTE AF-290	TRICORN BLACK SW 6258	ZIRCON 282-C1
SHEEN:	SATIN	SATIN	SEMI-GLOSS	SATIN
NOTES:	YELLOW	RED	BLACK	GRAY

MARK:	P5	P6
MANUFACTURER:	SHERWIN WILLIAMS	SHERWIN WILLIAMS
COLOR:	SNOWBOUND 7004	PURE WHITE
SHEEN:	SATIN	EGGSHELL
NOTES:	WHITE	

FINISH COMBINATIONS

CEILING COMBINATIONS

MARK:	1A
LOCATION:	SPORTS FIELD
DESCRIPTION:	PAINT BOTTOM OF STRUCTER P6, PAINT WOOD GLULAM P3

WALL COMBINATIONS

MARK:	2A	2B	2C	2D
LOCATION:	LOBBY	FIELD	MEZZANINE	SHOWER WALLS
DESCRIPTION:	P2 AND P5, SEE FINISH PLAN FOR LOCAITONS	P1, P2, P4, AND P5, SEE ELEVATIONS	P1 AND P5, SEE FINISH PLAN AND ELEVATIONS	T1 AND T2, SEE ELEVATIONS

MARK:	2E
LOCATION:	P1 AND P4, SEE FLOOR PLANS AND
DESCRIPTION:	ELEVATIONS

FLOOR COMBINATIONS

MARK:	3A
LOCATION:	LOBBY AND VESTIBULE
DESCRIPTION:	C1, C2, AND C3, SEE FLOOR PLAN FOR PATTERN

DOOR FINISHES

MARK:	5A
DOOR FINISH:	P3
FRAME FINISH:	P3
HARDWARE COLOR:	BRUSHED STAINLESS STEEL
NOTES:	

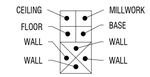
STAIR FINISHES

MARK:	6A
RISER FINISH:	RF2
TREAD FINISH:	RF1
STRINGER FINISH:	P3
GUARDRAIL FINISH:	P3
HANDRAIL FINISH:	P3
NOTES:	

GENERAL NOTES

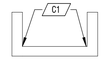
1. ROOM FINISH TAGS FOR EACH ROOM REPRESENT TYPICAL FINISHES. SPECIFIC WALLS IN SELECTED AREAS MAY HAVE MULTIPLE FINISHES WHICH WILL BE INDICATED IN INTERIOR ELEVATIONS.
2. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OF CASEWORK AND FINISH ASSEMBLIES
3. SEE INTERIOR ELEVATIONS FOR ADDITIONAL FINISH INFORMATION
4. SEE REFLECTED CEILING PLANS FOR ADDITIONAL FINISH INFORMATION
5. FOR FINISH LEGEND SEE SHEET A-111.2
6. FLOOR MATERIAL TRANSITIONS WILL OCCUR BELOW DOORS. U.N.O.
7. FOR TYPICAL TRANSITION/FINISH DETAILS SEE SHEET A-505
8. SEE SHEET A-611 FOR SIGNAGE TYPES AND DESCRIPTIONS
9. TILED WALLS TO BE FULL HEIGHT OF WALL, U.N.O.
10. POLISHED OR SEALED CONCRETE DOES EXTEND UNDER CASEWORK OR MILLWORK
11. FLOOR COVERING DOES NOT EXTEND UNDER MILLWORK OR CASEWORK, U.N.O.
12. FLOOR TILE EXPANSION JOINTS INSTALLED.
13. ALL EXPOSED STRUCTURE TO BE PAINTED U.N.O.

LEGEND

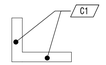


ROOM FINISH TAG

FINISH TAG - INDICATES SPECIFIC APPLIED FINISH



INDICATES FINISH IS APPLIED TO AREA BETWEEN ARROWS



INDICATES FINISH IS APPLIED TO FACE OF SURFACE(S)

INDICATES SIGNAGE LOCATION

CG L
INDICATES CORNER GUARD

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

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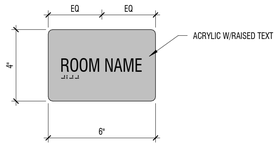
STEPHEN M WILLIAMS
12/5/2024
8428805-2301
LICENSED ARCHITECT

SCHEDULE - FINISH

A-601

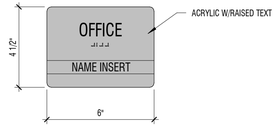
SIGNAGE TYPES

TYPE A
ROOM NAME



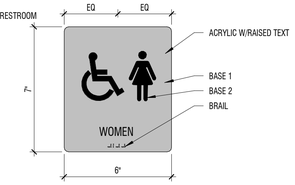
TEXT HEIGHT: 1
TEXT FONT: ARIAL
TEXT COLOR: BRIGHT WHITE 3X1-204
BASE COLOR: MATTE CEMENT 3X2-241

TYPE B
TYPE TITLE



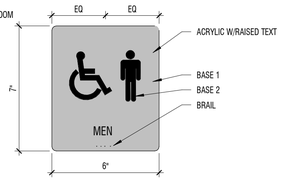
TEXT HEIGHT: 1"
TEXT FONT: ARIAL
TEXT COLOR: BRIGHT WHITE 3X1-204
BASE COLOR: MATTE CEMENT 3X2-241

TYPE C
WOMEN'S RESTROOM



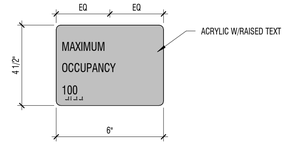
TEXT HEIGHT: 1"
TEXT FONT: ARIAL
TEXT COLOR: BRIGHT WHITE 3X1-204
BASE 1 COLOR: MATTE CEMENT 3X2-241
BASE 2 COLOR: BRIGHT WHITE 3X1-204

TYPE D
MEN'S RESTROOM



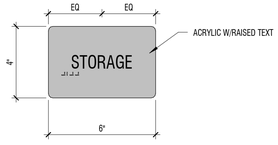
TEXT HEIGHT: 1"
TEXT FONT: ARIAL
TEXT COLOR: BRIGHT WHITE 3X1-204
BASE 1 COLOR: MATTE CEMENT 3X2-241
BASE 2 COLOR: BRIGHT WHITE 3X1-204

TYPE E
TYPE TITLE



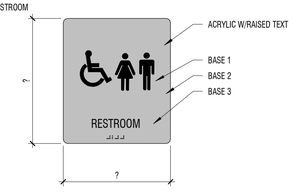
TEXT HEIGHT: 1/8"
TEXT FONT: ARIAL
TEXT COLOR: BRIGHT WHITE 3X1-204
BASE COLOR: MATTE CEMENT 3X2-241

TYPE F
STORAGE



TEXT HEIGHT: 1"
TEXT FONT: ARIAL
TEXT COLOR: BRIGHT WHITE 3X1-204
BASE COLOR: MATTE CEMENT 3X2-241

TYPE G
UNISEX RESTROOM



TEXT HEIGHT: 1/8"
TEXT FONT: ARIAL
TEXT COLOR: BRIGHT WHITE 3X1-204
BASE COLOR: MATTE CEMENT 3X2-241

TYPE H
VINYL MEDIUM

VINYL ON DOOR

ROOM NAME VINYL LETTERING, 4" TALL TEXT
COLOR: WHITE

TYPE I
NOT USED

TYPE J
VINYL MEDIUM

VINYL ON EXTERIOR
GLASS SIGNAGE

ROOM NAME VINYL LETTERING, 8" TALL TEXT
COLOR: WHITE

SIGNAGE SCHEDULE

Mark	SIGNAGE TYPE	DESCRIPTION
01	TYPE D	MEN'S RESTROOM
02	TYPE A	BOYS LOCKER ROOM
03	TYPE E	MAXIMUM OCCUPANCY
04	TYPE B	OFFICE
05	TYPE F	ELECTRICAL
06	TYPE F	MECHANICAL
07	TYPE F	ELECTRICAL ROOM
08	TYPE A	GIRL'S LOCKER ROOM
09	TYPE C	WOMEN'S RESTROOM
10	TYPE F	ELECTRICAL
11	TYPE H	ROOF ACCESS
12	TYPE G	RESTROOM
13	TYPE H	FIRE RISER

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255 SOUTH 300 WEST
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STATE OF UTAH
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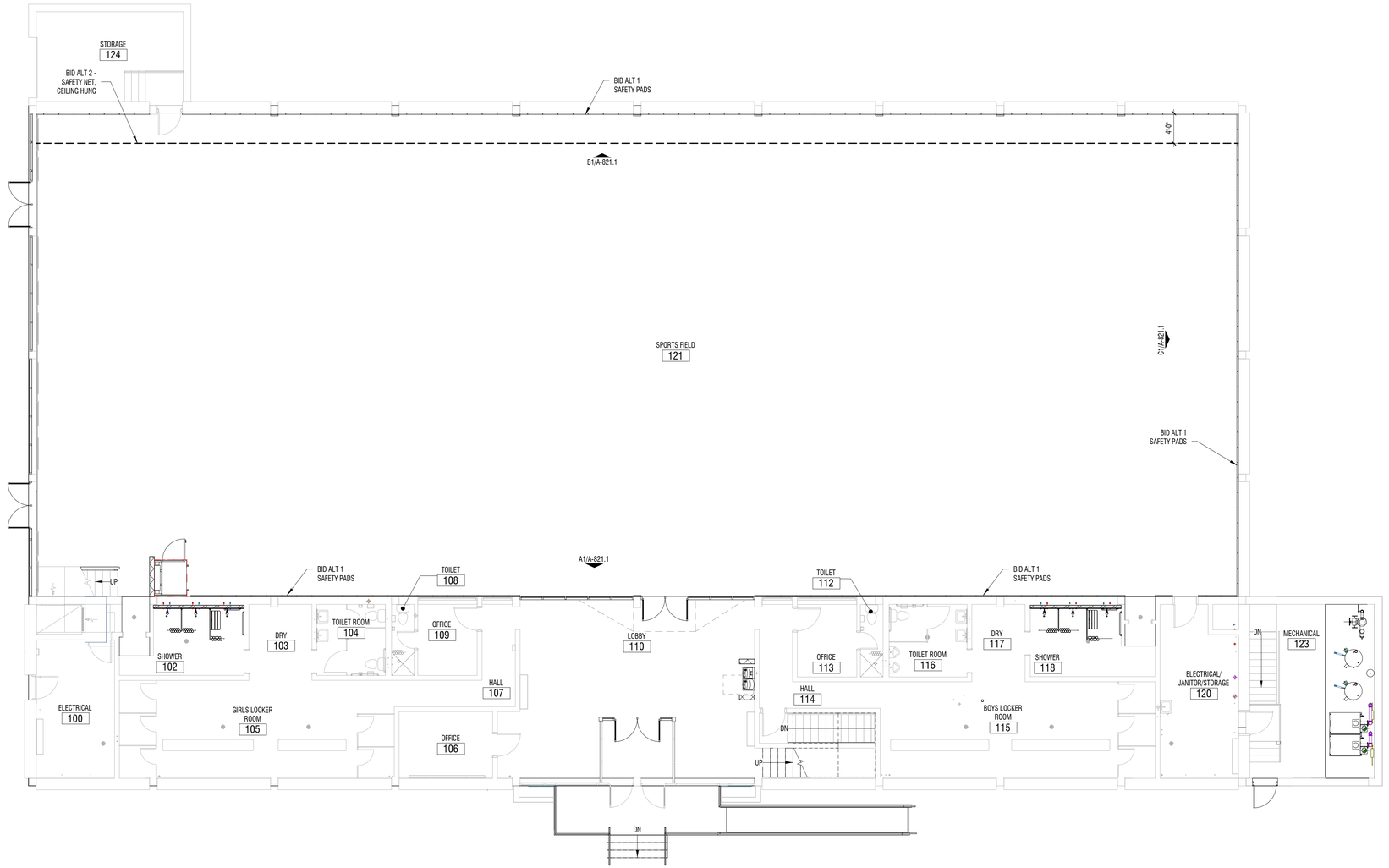
12/5/2024
6842805-2301
LICENSED ARCHITECT

CONSTRUCTION DOCUMENTS

SIGNAGE
A-611



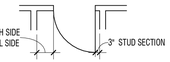
A1 FLOOR PLAN - MAIN LEVEL

1/8" = 1'-0"

GENERAL NOTES

1. KEYNOTES: (#) THE FIRST TWO NUMBERS REPRESENT THE RELATED CSI MASTER FORMAT DIVISION. THE SECOND SET OF NUMBERS REPRESENTS AN IDENTIFYING MARK VALUE. NOT ALL VALUES MAY BE USED OR OCCUR IN THE DOCUMENT SET.

   ADDITIONALLY, KEYNOTES RETAIN THEIR ASSIGNED VALUE UNIVERSALLY THROUGHOUT THE SET. THE KEYNOTES LISTED BELOW, REPRESENT THE KEYNOTES FOUND AND UTILIZED ON THIS SHEET AND EACH LIST WILL DIFFER RESPECTIVE TO ITS' SHEET. THEREFORE, BASED ON ACTUAL KEYNOTES UTILIZED ON A GIVEN SHEET OF DRAWINGS, GAPS IN THE SEQUENCING WILL OCCUR.
2. CONTRACTOR SHALL BE FAMILIARIZED WITH THE LAY-OUT OF STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS. ANY QUESTIONS SHALL BE SUBMITTED VIA REQUEST FOR INFORMATION (RFI).
3. MIN CLEARANCE REQUIRED ON LATCH SIDE OF DOORS SHALL CONFORM TO ADA REQUIREMENTS

4. HINGE SIDE OF DOORS AT PERPENDICULAR WALLS TO HAVE 3" STUD SECTION U.N.O.
5. ALIGN FURRED WALLS AND STUD WALL FINISH FACE TYPICAL U.N.O.
6. ADA RESTROOMS MUST COMPLY WITH ADA WATER CLOSET MEASUREMENTS ON SHEET A-???
7. DOOR AND WINDOWS OPENINGS ARE INDICATED WITH ANNOTATION SYSMBOLS AND ARE FURTHER IDENTIFIED ON DOOR AND WINDOW SCHEDULES. SEE BOTH FLOOR PLANS AND EXTERIOR ELEVATIONS FOR ALL REFERENCES.
8. FEC = FIRE EXTINGUISHER IN SEMI-RECESSED CABINET.

   A1/A-101 INDICATES INTERIOR ROOM ELEVATIONS ON SHEET REFERENCED.
10. WALL TYPES SHOWN AS — WWW — ARE SHOWN ON SHEET A-111.1. FOR EXTERIOR WALLS SEE BUILDING & WALL SECTIONS.
11. SEE SHEET SERIES G-003 FOR ALL FIRE WALLS, SMOKE WALLS, WALLS TO CEILING LEVEL, SOUND WALLS.
12. SEE FINISH PLANS FOR SIGNAGE LOCATION, SIGNAGE SYMBOL.
13. SEE SITE PLANS FOR EXTERIOR STAIRS, RAILING AND RAMP DETAILS.
14. ROLLER SHADES PER FINISH PLANS.
15. EXTEND ALL WALLS SURROUNDING AN OPEN CEILING AREA TO DECK.
16. SLOPE ALL SETTING BEDS TO FLOOR DRAINS U.N.O.
17. PROVIDE 5/8" PLYWOOD BACKING PANELS AT ELECTRICAL ROOMS AND TELEVISION LOCATIONS FOR EQUIPMENT MOUNTING. PAINT TO MATCH WALLS.
18. AT RECESSED CABINETS (IE: ELECTRICAL PANELS, FEC AND ETC) IN FIRE RATED WALLS PROVIDE 5 SIDE COVERAGE OF GYP BD IN STUD WALLS TO MAINTAIN INTEGRITY OF FIRE WALL RATING PER ??/A-???
19. BLOCKING TO BE PROVIDED AT SHELVING, CASEWORK, RAILINGS, LIGHT FIXTURE, COUNTERTOP, ACCESSORIES AND MORE

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LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

CONSTRUCTION DOCUMENTS

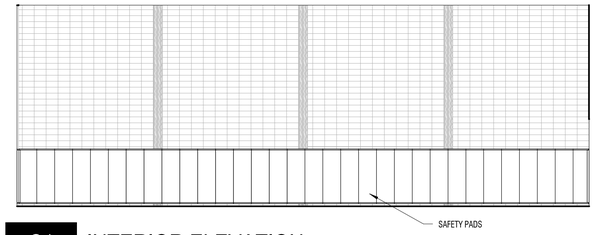
MARK:	DESCRIPTION:	DATE:

PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
2/5/2024
6428805-0301
LICENSED ARCHITECT

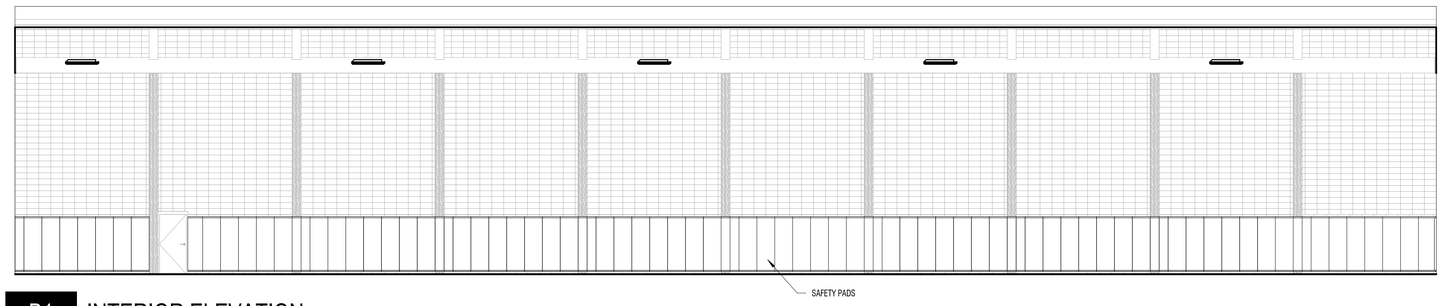
BID ALTS - MAIN FLOOR PLAN

A-821.0



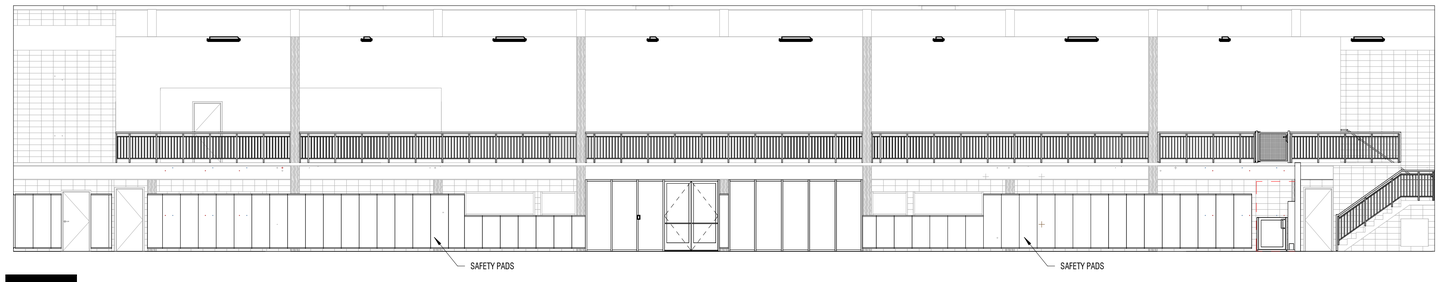
C1 INTERIOR ELEVATION

1/8" = 1'-0"



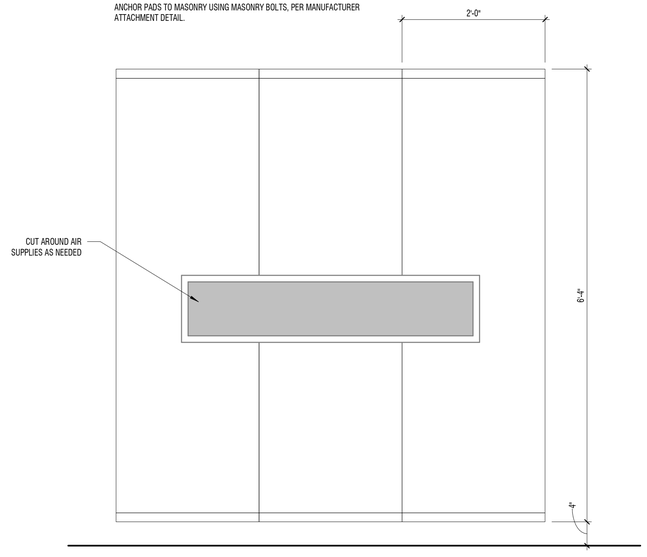
B1 INTERIOR ELEVATION

1/8" = 1'-0"



A1 INTERIOR ELEVATION

1/8" = 1'-0"



A4 SAFETY PAD DETIAL

1" = 1'-0"

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LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

CONSTRUCTION DOCUMENTS

MARK:	DESCRIPTION:	DATE:

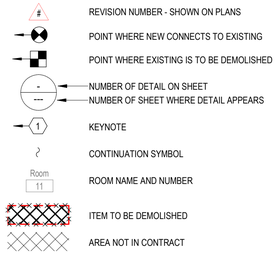
PROJECT #: 123998
DRAWN BY: FRANKS
CHECKED BY: RIGBY
ISSUED: 02.05.2024

STATE OF UTAH
STEPHEN M WILLIAMS
12/5/2024
6842805-2301
LICENSED ARCHITECT

BID ALTS - INTERIOR ELEVATIONS/DETAILS

A-821.1

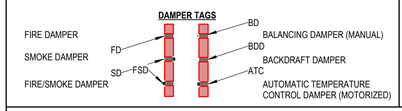
GENERAL MECHANICAL SYMBOLS



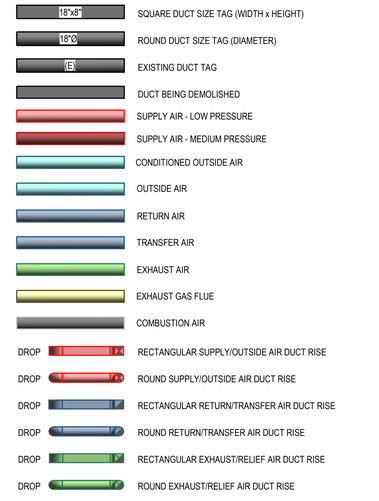
ABBREVIATIONS

Ø	ROUND	M/A	MIXED AIR
ABV	ABOVE	MAX	MAXIMUM
AC	AIR CONDITIONING	MBH	ONE THOUSAND BTU PER HOUR
ADD	ADDENDUM	MCF	ONE THOUSAND CUBIC FEET
AFF	ABOVE FINISHED FLOOR	MD	MOTORIZED DAMPER
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	MECH	MECHANICAL
ALT	ALTERNATE	MFR	MANUFACTURER
AP	ACCESS PANEL	MIN	MINIMUM
ARCH	ARCHITECT/ARCHITECTURAL	MISC	MISCELLANEOUS
BFF	BELOW FINISHED FLOOR	MTR	MOTOR
BLW	BELOW	MU/A	MAKE-UP/AIR
BTU	BRITISH THERMAL UNITS	NC	NOISE CRITERIA
BTUH	BRITISH THERMAL UNITS PER HOUR	NC	NORMALLY CLOSED
CAP	CAPACITY	NIC	NOT IN CONTRACT
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
CLG	CEILING	NO	NORMALLY OPEN
D	DEGREE	NTS	NOT TO SCALE
DB	DRY BULB	O	OXYGEN
DIA	DIAMETER	O/A	OUTSIDE AIR
DN	DOWN	PD	PRESSURE DROP
EA	EACH	PIV	POST INDICATOR VALVE
EAT	ENTERING AIR TEMPERATURE	PLBG	PLUMBING
ELEC	ELECTRICAL	PRESS	PRESSURE
EQUIP	EQUIPMENT	PRV	PRESSURE REDUCING VALVE
EWT	ENTERING WATER TEMPERATURE	PSI	POUNDS PER SQUARE INCH
E/A	EXHAUST AIR	PSIG	POUNDS PER SQUARE INCH GAUGE
EXIST	EXISTING	PWR	POWER
F	DEGREES FAHRENHEIT	R	DUCT RISER
FL	FLOOR	R/A	RETURN AIR
FPM	FEET PER MINUTE	REC	RECESSED
FT	FOOT/FEET	RED	REDUCER
FTR	FIN TUBE RADIATION	RH	RELATIVE HUMIDITY
GAL	GALLON	RL/A	RELIEF AIR
GC	GENERAL CONTRACTOR	RM	ROOM
GPM	GALLONS PER MINUTE	RPM	REVOLUTIONS PER MINUTE
HP	HORSE POWER	SF	SQUARE FOOT
HTG	HEATING	S/A	SUPPLY AIR
HTR	HEATER	SF	SQUARE FOOT
ID	INDIRECT	SM	SURFACE MOUNT
IN	INCH	SP	STATIC PRESSURE
INV	INVERT	STM	STEAM
LB	POUND	T	THERMOSTAT
LB/HR	POUNDS PER HOUR	TDR	TEMPERATURE DROP
LAT	LEAVING AIR TEMPERATURE	TEMP	TEMPERATURE
LP	LOW PRESSURE	TYP	TYPICAL
LVR	LOUVER	UG	UNDERGROUND
LWT	LEAVING WATER TEMPERATURE	VENT	VENTILATION
		WB	WET BULB

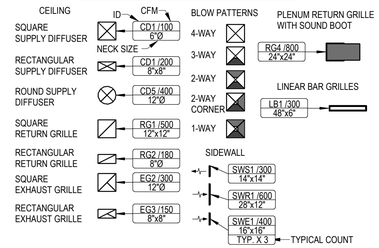
HVAC SYMBOLS



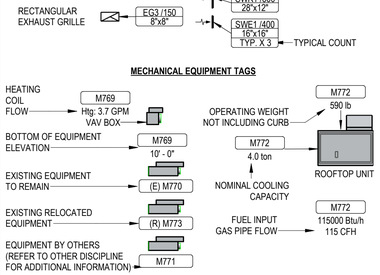
HVAC SYMBOLS



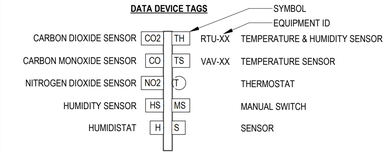
GRILLES, REGISTERS & DIFFUSERS SYMBOLS AND TAGS



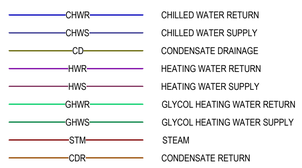
MECHANICAL EQUIPMENT TAGS



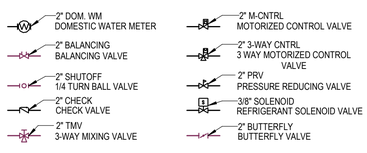
DATA DEVICE TAGS



PIPING SYMBOLS



PIPE ACCESSORY TAGS



* NOTE *
ALL OF THE GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL OTHER DRAWINGS IN THIS SET.
THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

PROJECT GENERAL NOTES

1. THE PROJECT GENERAL NOTES APPLY TO ALL DISCIPLINES.
2. REMOVE ALL UNUSED PIPING, DUCTWORK, EQUIPMENT, AND ACCESSORIES.
3. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS FOR PLUMBING AND MECHANICAL SYSTEMS WITHIN THE TENANT SPACE AND WITHIN CLOSE PROXIMITY TO THE TENANT SPACE. THE CONTRACTOR WILL FIELD VERIFY AS MUCH AS IS REASONABLE BEFORE THE FINAL BID. AFTER THE FINAL BID THE CONTRACTOR WILL NOTIFY THE OWNER, ARCHITECT, AND MECHANICAL DESIGN ENGINEER IMMEDIATELY UPON DISCOVERY OF EXISTING CONDITIONS THAT MAY AFFECT THE DESIGN.
4. THE MECHANICAL CONTRACTOR SHALL PERFORM SERVICE AND REPAIR ON THE EXISTING EQUIPMENT AND ITS ACCESSORIES AS FOLLOWS: CLEAN ALL COILS, REPLACE THE FILTERS AND BELTS, INSPECT, REPAIR, OR REPLACE THE ECONOMIZERS, DRIVERS AND FAN BEARINGS, MOTORS, CONTROL COMPONENTS, VALVES, AND ANY OTHER ITEM NECESSARY FOR A COMPLETE AND PROPER OPERATING SYSTEM. THIS CONTRACTOR SHALL ALSO VISIT THE SITE, PRIOR TO FINAL BIDDING, AND VERIFY ALL EXISTING SITE CONDITIONS. PROVIDE ALL MATERIAL AND COMPONENTS AS NEEDED TO BRING THE UNITS TO FULL COMPLIANCE OF THE LANDLORD'S CRITERIA AND LOCAL AUTHORITY HAVING JURISDICTION.
5. WHERE FLOOR DRAINS OCCUR WITHIN THE LIMITS OF CONSTRUCTION, PREVENT CONSTRUCTION DEBRIS FROM ENTERING DRAIN BODY BY SEALING DRAIN OPENING PRIOR TO START OF WORK. UNSEAL DRAINS AT COMPLETION OF CONSTRUCTION.
6. COORDINATE INSTALLATION OF PIPING, DUCTWORK, CONDUIT, LIGHTS, CABLE TRAY, STRUCTURE, EQUIPMENT, CEILINGS, ARCHITECTURAL COMPONENTS, AND ANYTHING ELSE PERTAINING TO THE PROJECT TO PREVENT CONFLICTS.
7. THE CONTRACTOR SHALL BE FAMILIAR WITH ALL THE CONDITIONS BOTH EXISTING AND THOSE ILLUSTRATED BY THESE DOCUMENTS AND THOSE OF OTHER DISCIPLINES, INCLUDING, BUT NOT LIMITED TO ARCHITECTURAL, CIVIL, ELECTRICAL, VENTILATION, PLUMBING, AND OTHER SYSTEMS INVOLVED ON THIS PROJECT.
8. FINAL PRODUCT SHALL BE A COMPLETE AND FUNCTIONING SYSTEM, AND SHALL CONFORM TO ALL REQUIREMENTS OF APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING BUT NOT LIMITED TO THE INTERNATION BUILDING CODE, INTERNATIONAL MECHANICAL CODE, AND INTERNATIONAL PLUMBING CODE.
9. LOCATE EQUIPMENT REQUIRING ACCESS 2'-0" MAXIMUM ABOVE CEILING.
10. ALL ROOF MOUNTED EQUIPMENT SHALL BE A MINIMUM 10'-0" FROM EDGE OF ROOF.
11. COORDINATE INSTALLATION OF DUCTWORK, PIPING AND MECHANICAL EQUIPMENT WITH NEC CLEARANCES INCLUDING THE SPACE ABOVE ELECTRICAL PANELS, TRANSFORMERS AND OTHER ELECTRICAL EQUIPMENT. NO PIPING OR DUCTWORK TO RUN OVER ELECTRICAL PANELS, VFD'S OR MCC'S. PROTECT EQUIPMENT WITH A 42" DEEP ZONE IN FRONT OF PANELS, VFD'S AND MCC'S. PROVIDE PANS IF REQUIRED UNDER PIPING.
12. FIRE SEAL AROUND DUCT AND PIPING PENETRATIONS OF FIRE RATED WALLS. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CAULKING AND SEALING ALL PENETRATIONS IN FIRE AND SMOKE RATED PARTITIONS TO MAINTAIN RATINGS. REFER TO SPECIFICATION.
13. PROVIDE SLEEVES AND/OR OPENINGS TO RUN PIPES AND DUCTS THROUGH FOUNDATIONS, FLOORS, WALLS, AND ROOF.
14. TRANSITION PIPING AND DUCTWORK SIZES TO MATCH THE SIZE OF EQUIPMENT CONNECTION.
15. REFER TO PLUMBING SERIES DRAWINGS FOR GAS PIPING.
16. ALL PIPE AND DUCT SIZES SHOWN SHALL BE CONTINUED IN THE DIRECTION OF FLOW UNTIL ANOTHER SIZE IS SHOWN.
17. FOR DETAILS, EQUIPMENT CONNECTIONS, AND PIPE SIZES NOT SHOWN ON THE SEGMENTS, REFER TO DETAILS, SCHEDULES, AND SPECIFICATIONS.
18. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE RESPECTIVE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, AT A LEVEL OF WORKMANSHIP CONSISTENT WITH THE SPECIFICATIONS.
19. MECHANICAL CONTRACTOR SHALL ENSURE THAT ALL EQUIPMENT IS PROVIDED AND INSTALLED WITH CLEARANCES PER MANUFACTURERS RECOMMENDATIONS. THE CONTRACTOR SHALL MAINTAIN PROPER SERVICE SPACE FOR COIL PULLS, BAS DEVICES, MAINTENANCE ACCESS, ETC.
20. INSTALL EXPOSED PIPING AND DUCTWORK AS HIGH AS PRACTICAL IN ROOMS WITHOUT CEILINGS.
21. LOCATIONS OF PIPING, DUCTWORK AND EQUIPMENT AS INDICATED ON THE DRAWING, ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS IN THE FIELD, INCLUDING, BUT NOT LIMITED TO, OFFSETS AND TRANSITIONS. NEW DUCTWORK, PIPING AND EQUIPMENT SHALL BE COORDINATED WITH STRUCTURE, LIGHTS, REFLECTED CEILING PLANS, CABLE TRAY, ELECTRICAL CONDUIT, PLUMBING, MECHANICAL AND FIRE PROTECTION PIPING, MEDICAL GASES, ALL OTHER TRADES AND ALL OTHER EXISTING CONDITIONS TO AVOID INTERFERENCE IN THE FIELD.
22. THE CONTRACTOR SHALL INFORM THE DESIGNER OF ANY PROPOSED DEVIATIONS FROM THE CONTRACT DOCUMENTS.
23. IF CONTRACTOR ENCOUNTERS MATERIAL WHICH MAY CONTAIN ASBESTOS, IMMEDIATELY STOP WORK IN THIS AREA AND NOTIFY THE OWNER.
24. DETAILS REFERENCE ALL SHEETS.
25. INSTALL ALL PIPING AND DUCTWORK WITHOUT FORCING OR SPRINGING.
26. ROUTE DOMESTIC WATER, FIRE PROTECTION, SANITARY WASTE, ROOF DRAIN, CAMPUS CHILLED OR HOT WATER, AND ANY OTHER UTILITY SERVICES TO SITE UTILITIES 5'-0" FROM BUILDING UNLESS NOTED OTHERWISE. REFER TO CIVIL PLANS.
27. LOCATE VALVING, ACCESSORIES, AND EQUIPMENT IN ACCESSIBLE LOCATIONS. WHERE LOCATED ABOVE HARD CEILING PROVIDE AN ACCESS DOOR IN CEILING. MINIMUM ACCESS DOOR SIZE OF 24" X 24". COORDINATE EXACT LOCATION AND STYLE WITH ARCHITECT. EQUIPMENT SHALL BE LOCATED IN THE CEILING CAVITY SO IT CAN BE SAFELY SERVICED FROM SOMEONE STAND ON A LADDER PLACED BELOW THE CEILING ACCESS.
28. WHERE VALVING, ACCESSORIES, OR EQUIPMENT IS LOCATED IN A WALL, PROVIDE AN APPROPRIATELY SIZED ACCESS DOOR. COORDINATE ACCESS DOOR SIZE, LOCATION, AND STYLE WITH ARCHITECT.
29. CONTRACTOR TO PROVIDE VALVE IDENTIFICATION AND LOCATION ON ALL CEILING TILES WHERE VALVES ARE LOCATED.

MECHANICAL PIPING GENERAL NOTES

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PIPING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
2. UNLESS OTHERWISE NOTED: ALL MECHANICAL PIPING IS OVERHEAD TO RUN ABOVE DUCTWORK AND TIGHT TO UNDERSIDE OF STRUCTURE.
3. INSTALL PIPING SO THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.
4. ALL VALVES SHALL BE INSTALLED SO THAT VALVES REMAINS IN SERVICE WHEN EQUIPMENT OR PIPING ON EQUIPMENT SIDE OF VALVE IS REMOVED.
5. PROVIDE AIR VENT AT HIGH POINT OF EACH DROP IN THE HEATING AND CHILLED WATER PIPING SYSTEM.
6. ALL VALVES SHALL BE ADJUSTED FOR SMOOTH AND EASY OPERATION AND TAGGED.
7. PROVIDE ISOLATION VALVES AT EACH EXIST/ENTRANCE INTO SHAFT WHETHER OR NOT SHOWN.

MECHANICAL SHEET INDEX

M001	MECHANICAL TITLE SHEET
M002	MECHANICAL SPECIFICATIONS
M003	MECHANICAL SPECIFICATIONS
M004	BUILDING AUTOMATION SPECIFICATIONS
M005	BUILDING AUTOMATION SPECIFICATIONS
M006	BUILDING AUTOMATION SPECIFICATIONS
MD100	BASEMENT MECHANICAL DEMOLITION PLAN
MD101	LEVEL 1 & MEZZANINE MECHANICAL DEMOLITION PLAN
MD102	ROOF MECHANICAL DEMOLITION PLAN
MD111	LEVEL 1 & MEZZANINE MECHANICAL PIPING DEMOLITION PLAN
M010	BASEMENT THERMAL ZONE PLAN
M011	LEVEL1 & MEZZANINE THERMAL ZONE PLANS
M100	BASEMENT HVAC PLAN
M101	LEVEL 1 & MEZZANINE HVAC PLANS
M102	ROOF MECHANICAL PLAN
M110	BASEMENT MECHANICAL PIPING PLAN
M111	LEVEL 1 & MEZZANINE MECHANICAL PIPING PLAN
M401	ENLARGED HVAC PLANS
M501	MECHANICAL DETAILS
M601	MECHANICAL SCHEDULES
M602	MECHANICAL SCHEDULES
M701	AIRFLOW SCHEMATIC
M702	HEATING WATER SCHEMATIC

MECHANICAL GENERAL NOTES

1. COORDINATE EXACT PLACEMENT OF DIFFUSERS, GRILLES AND REGISTERS WITH ARCHITECTURAL REFLECTED CEILING PLAN, TYPICAL.
2. SEE DETAIL FOR DIFFUSER CONNECTIONS TO DUCTWORK, TYPICAL.
3. BRANCH DUCTWORK SHALL BE SIZED TO MATCH THE NECK INLET SIZE OF THE DIFFUSERS, REGISTER OR GRILLE IT SERVES UNLESS NOTED OTHERWISE, TYPICAL.
4. COORDINATE EXACT MOUNTING LOCATION OF ALL THERMOSTATS WITH LATEST REVISION OF ARCHITECTURAL ELEVATION AND FURNISHINGS PLANS, TYPICAL.
5. THE MECHANICAL CONTRACTOR SHALL PROVIDE FIRE, SMOKE OR COMBINATION FIRE/SMOKE DAMPERS AT ALL LOCATIONS SHOWN ON THE CONTRACT DOCUMENTS AND AS REQUIRED TO MEET THE INTEGRITY OF ALL SMOKE AND FIRE PARTITIONS. THE CONTRACTOR SHALL REFER TO THE LATEST ARCHITECTURAL LIFE SAFETY PLANS FOR ALL FIRE AND SMOKE PARTITION LOCATIONS. DAMPERS ARE TO BE PROVIDED WITH SHUTOFF/TEST SWITCH AT EACH LOCATION.
6. PROVIDE AND INSTALL TURNING VANES IN ALL SQUARE LOW PRESSURE DUCTWORK AT ELBOWS OR TEES, TYPICAL.
7. DUCTWORK SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS. REFER TO MECHANICAL SPECIFICATIONS FOR EXTENT OF DUCT INSULATION AND LINER AND ADJUST SHEET METAL DIMENSION.
8. PROVIDE AND INSTALL REMOTE DAMPER OPERATORS FOR ALL DAMPERS INSTALLED ABOVE INACCESSIBLE CEILING, SEE MECHANICAL SPECIFICATIONS FOR EQUIPMENT REQUIREMENTS, TYPICAL.
9. PROVIDE AND INSTALL HIGH EFFICIENCY TAKE-OFF FITTINGS AND BALANCING DAMPER AT ALL BRANCH CONNECTIONS TO LOW PRESSURE DUCTWORK. PROVIDE BALANCING DAMPERS AT EACH BRANCH TAKE OFF TO SERVE DIFFUSER OR GRILLE AS WELL AS WHERE INDICATED.
10. WHERE DUCTWORK CROSSES, SUPPLY DUCTWORK IS USUALLY BELOW RETURN AND EXHAUST DUCT. RETURN DUCTWORK IS USUALLY BELOW EXHAUST DUCTS.
11. AT LOCATIONS WHERE DIFFUSERS OR GRILLES ARE UNDER DUCTWORK, CONTRACTOR TO FABRICATE TRANSITION BOOT FROM FLEX CONNECTION TO DIFFUSER OR GRILLE WITH BALANCING DAMPER, TYPICAL.
12. THE MECHANICAL CONTRACTOR SHALL PROVIDE CEILING MOUNTED ACCESS DOORS FOR ALL FIRE, SMOKE AND COMBINATION FIRE/SMOKE DAMPERS INSTALLED ABOVE INACCESSIBLE CEILING. FIELD VERIFY EXACT INSTALLATION LOCATIONS PRIOR TO COMMENCING WORK AND COORDINATE INSTALLATIONS WITH LATEST ARCHITECTURAL REFLECTED CEILING PLANS.
13. FLEX DUCT IS REQUIRED FOR ALL DIFFUSERS AND GRILLES INSTALLED IN LAY-IN CEILINGS. FOR DIFFUSERS AND GRILLES IN HARD LID CEILINGS, THE DUCTWORK SHALL BE EXTENDED ALL THE WAY TO THE DIFFUSER AND SHALL BE CONNECTED WITH A HARD CONNECTION OR A FLEX DUCT CONNECTION WITH A MUD RING AND LAY-IN DIFFUSER AS SHOWN ON PLANS.
14. THE CONTRACTOR SHALL INFORM THE DESIGNER OF ANY PROPOSED DEVIATIONS FROM THE CONTRACT DOCUMENTS.
15. PROVIDE ACCESS TO ALL TEMPERATURE CONTROLS ABOVE CEILING. LOCATE IN ACCESSIBLE LOCATION. WHERE THERE ARE HARD CEILINGS THE CONTRACTOR SHALL PROVIDE 24" X 24" ACCESS DOOR.
16. SUPPLY AND RETURN PIPING TO COILS ARE THE SAME SIZE.
17. CONTRACTOR SHALL LOCATE THERMOSTATS AND TEMPERATURE SENSORS AT 5'-0" AFF, A MINIMUM OF 8" FROM LIGHT SWITCH, UNLESS OTHERWISE NOTED ON THE ARCHITECT'S ELEVATIONS. COORDINATE EXACT LOCATIONS WITH ARCHITECT.
18. REFER TO MECHANICAL PIPING OR ZONING DRAWINGS FOR THERMOSTAT AND TEMPERATURE SENSOR LOCATIONS.
19. CONDENSATE DRAINS SHALL BE SUPPLIED FOR ALL COOLING EQUIPMENT. CONTRACTOR SHALL ENSURE PROPER INSTALLATION AND DRAINAGE AS REQUIRED BY FEDERAL, STATE, AND LOCAL CODES. CONDENSATE PIPINE SHALL BE TYPE "L" COPPER UNLESS OTHERWISE NOTED IN THE SPECIFICATIONS.
20. PROVIDE A 4' HOUSEKEEPING PAD FOR EACH PIECE OF MECHANICAL EQUIPMENT THAT IS FLOOR MOUNTED. COORDINATE SIZES WITH MECHANICAL EQUIPMENT SELECTED.
21. ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK SHALL BE RATED FOR PRESSURE CLASS OF 2" W.G. UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS.
22. THIS CONTRACTOR SHALL BE REQUIRED TO REPLACE FILTERS ON HVAC EQUIPMENT AFTER ALL DUST PRODUCING CONSTRUCTION HAS BEEN COMPLETED AND PRIOR TO THE FINAL PUNCH.

VBFA
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CONSTRUCTION DOCUMENTS

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LICENSED PROFESSIONAL ENGINEER
02/01/24
No. 8388845
JEDEDIAH JENKINS
STATE OF UTAH

MECHANICAL TITLE SHEET

M001

DIVISION 23 MECHANICAL
PART 1 - GENERAL

1.01 DESCRIPTION

A. WORK INCLUDED: FURNISH ALL LABOR, MATERIALS, EQUIPMENT, APPLIANCES AND NECESSARY INCIDENTALS FOR THE COMPLETE INSTALLATION OF ALL HEATING, VENTILATION AND AIR CONDITIONING AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN.

1. AIR CONDITIONING AND HEATING TO EXISTING A/C UNITS AS INDICATED ON PLANS COMPLETE WITH DUCTWORK, AND CONTROLS.

B. RELATED WORK INCLUDED IN THIS SECTION:

1. FURNISHING ELECTRICAL EVICES NECESSARY FOR MECHANICAL WORK, EXCEPT DISCONNECTS UNLESS INDICATED OTHERWISE

2. LINE AND LOW VOLTAGE WIRING FOR MECHANICAL CONTROLS INCLUDING FINAL CONNECTIONS AS INDICATED ON WIRING DIAGRAMS

3. CONDUIT FOR LINE AND LOW VOLTAGE WIRING FOR MECHANICAL CONTROLS AS INDICATED ON WIRING DIAGRAMS

4. RESPONSIBILITY FOR OBTAINING CLARIFICATION OF DISCREPANCIES BETWEEN MECHANICAL AND ELECTRICAL WORK FROM ARCHITECT PRIOR TO PROCEEDING WITH THE WORK.

5. RESPONSIBILITY FOR PROPER OPERATION OF AUTOMATIC ELECTRICAL CONTROLS AND EQUIPMMENT, AND OF ELECTRIC POWER DRIVEN EQUIPMENT FURNISHED UNDER THIS SECTION.

C. RELATED WORK IN OTHER SECTIONS:

1. ELECTRICAL WORK AS FOLLOWS WILL BE PROVIDED UNDER ELECTRICAL DIVISION:

A. CONDUIT FOR LINE VOLTAGE WIRING FOR EQUIPMENT AND DEVICES AS INDICATED OR SPECIFIED EXCEPT CONDUIT FOR LINE AND LOW VOLTAGE WIRING FOR MECHANICAL CONTROLS AS SPECIFIED UNDER DIVISION 15.

B. LINE VOLTAGE WIRING FOR EQUIPMENT AND DEVICES AS INDICATED OR SPECIFIED HEREIN EXCEPT LINE AND LOW VOLTAGE WIRING FOR MECHANICAL CONTROLS AS SPECIFIED UNDER DIVISION 15.

C. PROVIDING DISCONNECT SWITCHES

D. INSTALLING ELECTRICAL DEVICES SUCH AS STARTERS AND DISCONNECTS, AND WHEN INDICATED, FURNISHING ALL SUCH DEVICES.

D. CODES AND STANDARDS:

1. IN ADDITION TO THE REQUIREMENTS OF ALL GOVERNING CODES, ORDINANCES AND AGENCIES, CONFORM TO THE REQUIREMENTS OF THE FOLLOWING CODES AND STANDARDS:

a. 2021 INTERNATIONAL MECHANICAL CODE
b. 2021 INTERNATIONAL BUILDING CODE
c. 2021 INTERNATIONAL PLUMBING CODE
d. 2021 INTERNATIONAL ENERGY CONSERVATION CODE
e. 2021 INTERNATIONAL FUEL AND GAS CODE
f. ASHRAE 90.1 - 2019

E. ALL GAS FIRED EQUIPMENT SHALL INCLUDE A LABEL INDICATING THAT THE APPLIANCE HAS BEEN ADJUSTED, MODIFIED OR RE-CALIBRATED FOR THE ALTITUDE WHEREIN THE PROJECT IS TO BE LOCATED. THE APPLIANCESHLL ALSO INCLUDE A COMPLIANCE STATEMENT INDICATING THAT THE APPLIANCE HAD BEEN ADJUSTED, MODIFIED OR RE-CALIBRATED FOR THE PROPER OPERATION AT THE ALTITUDE OF THE PROJECT AND SHALL BE LISTED CAPABLE FOR THE USE WITH NATURAL GAS OR PROPANE GAS IF PROPANE IS LISTED ON THE DRAWINGS.

1.02 PRODUCT HANDLING

A. PROTECTION: TAKE ALL PRECAUTIONS NECESSARY TO PROTECT THE MATERIALS OF THIS SECTION BEFORE, DURING AND AFTER INSTALLATION.

B. REPLACEMENTS: IN THE EVENT OF DAMAGE, IMMEDIATELY REPAIR ALL DAMAGED AND DEFECTIVE WORK TO THE APPROVAL OF THE ENGINEER, AT NO ADDITIONAL COST TO THE OWNER.

1.03 JOB CONDITIONS

A. EXAMINATION OF SITE: EXAMINE THE SITE AND INCLUDE IN BID PROPOSAL ALL CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED.

1.04 MISCELLANEOUS

A. PERMIT AND FEES: ARRANGE, APPLY AND PAY FOR ALL NECESSARY PERMITS, INSPECTIONS, EXAMINATIONS AND FEES OR CHARGES REQUIRED BY PUBLIC AUTHORITIES HAVING JURISDICTION.

B. LOCATIONS AND ACCESSIBILITY: CONTRACTOR SHALL FULLY INFORM HIMSELF REGARDING PECULIARITIES AND LIMITATIONS OF SPACE AVAILABLE FOR INSTALLATION OF WORK UNDER THIS SECTION. VALVES, MOTORS, CONTROLS AND OTHER DEVICES REQUIRING SERVICE MAINTENANCE AND ADJUSTMENT SHALL BE PLACED IN FULLY ACCESSIBLE POSITIONS AND LOCATIONS. PROVIDE ACCESS DOORS WHERE REQUIRED IN DUCTWORK AND/OR CONSTRUCTION WHETHER SPECIALLY DETAILED OR NOT, AND RENDER ALL SUCH DEVICES ACCESSIBLE.

C. SCAFFOLDING: FURNISH ALL SCAFFOLDING, RIGGING AND HOISTING AS REQUIRED FOR THE PROPER EXECUTION OF THE WORK.

D. DRAWINGS: DRAWINGS INDICATE DESIRED LOCATION AND ARRANGEMENT OF DUCTWORK, EQUIPMENT, AND OTHER ITEMS, AND ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE. ALL OFFSETS AND INTERFERENCES MAY NOT BE SHOWN BECAUSE OF THE SCALE OF DRAWINGS. ASSUME THE RESPONSIBILITY FOR COORDINATING THE WORK WITH ALL OTHER TRADES. WORK SPECIFIED AND NOT CLEARLY DEFINED BY THE DRAWINGS SHALL BE INSTALLED AND ARRANGED IN A MANNER SATISFACTORY TO THE ENGINEER. IN THE EVENT CHANGES IN INDICATED LOCATION AND ARRANGEMENTS ARE DEEMED NECESSARY BY THE ENGINEER, THEY SHALL BE MADE BY THIS CONTRACTOR WITHOUT ADDITIONAL CHARGES.

E. ALL HVAC EQUIPMENT SHALL BE LABELED. INFORMATION ON LABELS SHALL INCLUDE: IDENTIFICATION NUMBER AND NAME SAME AS THE DRAWINGS, FLOW AND STATIC PRESSURE AND THE AREA TO WHICH THE UNIT SERVES. LABELS SHALL BE BLACK FACED FORMICA WITH WHILE ENGRAVED LETTERING AT LEAST 3/16 INCH HIGH.

1.06 EQUIPMENT IDENTIFICATION

A. EXCEPT FOR INDIVIDUAL ROOM HEATING UNITS AND ITEMS FURNISHED UNDER TEMPERATURE CONTROL, ALL ITEMS OF MECHANICAL EQUIPMENT, INCLUDING FANS, PUMPS, BOILERS, AND ELECTRICAL SWITCHES AND STARTERS FOR MECHANICAL EQUIPMENT AND GAUGES SHALL BE LABELED.

B. INFORMATION ON LABELS SHALL INCLUDE THE FOLLOWING:

1. IDENTIFICATION NUMBER AND NAME. GENERALLY THIS NUMBER AND NAME SHALL BE THE SAME AS THAT SHOWN ON THE DRAWINGS OR IN THE SPECS.

2. IF THE ITEM IS A FAN OR PUMP, THE FLOW AND HEAD SHALL BE INDICATED.

3. IF THE ITEM IS PART OF A UNIT, THE LABEL SHALL HAVE, IN ADDITION TO ITS NUMBER, THE NUMBER OF THE MAIN ITEM IT IS SERVING.

4. VALVES SHALL BE TAGGED WITH THE AREA SERVED AND THEIR NORMAL OPERATING POSITIONS SHALL BE INDICATED.

5. WHERE THE MAIN UNIT IS SERVED BY THE VALVE IS APPARENT, ONLY THE VALVE FUNCTION NEEDS TO BE INCLUDED ON THE NAMEPLATE.

C. THE TYPES OF NAMEPLATES SHALL BE AS FOLLOWS:

1. VALVE TAGS SHALL BE 1/2" EMBOSSED ALUMINUM TAPES WITH IDENTIFICATION ON ONE SIDE FOR VALVES. TAGS FOR MAGNETIC STARTERS SHALL BE SCREWED TO THE METAL STARTER COVER. TAGS SHALL BE ADDRESSOGRAPH NO. B-5300.

2. EQUIPMENT NAMEPLATES SHALL BE BLACK FACED FORMICA WITH WHITE ENGRAVED LETTERING AT LEAST 3/16" HIGH.

D. VALVE TAGS SHALL BE CONNECTED TO VALVE STEMS BY STEEL RINGS OR CHAINS. SCREWS SHALL BE USED FOR EQUIPMENT LABELS. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A COMPLETE LIST OF ALL VALVES AND EACH ITEM OF EQUIPMENT TO BE IDENTIFIED WITH THE PROPER IDENTIFICATION.

1.05 SUBMITTALS

A. SHOP DRAWINGS: WITHIN 15 DAYS AFTER AWARD OF CONTRACT, AND BEFORE ANY OF THE MATERIALS OF THIS SECTION ARE FABRICATED AND DELIVERED TO THE JOBSITE, SUBMIT COMPLETE SHOP DRAWINGS AND EQUIPMENT SUBMITTALS FOR ENGINEER TO REVIEW IN ACCORDANCE WITH THESE SPECIFICATIONS. SHOW ALL DETAILS OF ALL DUCTWORK, AND EQUIPMENT PADS.

B. PRODUCT DATA:

1. SUBMIT SIX COPIES OF ALL MANUFACTURER'S PRODUCT DATA SIMULTANEOUSLY WITH ALL SHOP DRAWING SUBMITTALS.

2. PRODUCT DATA TO INCLUDE ALL AIR CONDITIONING EQUIPMENT, HANGERS, FANS AND OTHER STANDARD ITEMS AS REQUIRED TO COMPLEMENT SHOP DRAWINGS FOR A SUBMITTAL INDICATING PRODUCTS TO BE USED ON THIS WORK.

3. MANUFACTURERS AND SUPPLIERS OF EQUIPMENT SHALL PROVIDE ALL DATA NECESSARY FOR COMPLIANCE WITH THE STATE OF CALIFORNIA ENERGY CONSERVATION STANDARDS. COMPLIANCE CERTIFICATION FOR ALL EQUIPMENT SHALL BE INCLUDED IN EQUIPMENT SUBMITTALS.

C. RECORD DRAWINGS: MAINTAIN THROUGHOUT THE PROGRESS OF THE WORK PROJECT RECORD DRAWINGS AND SUBMIT TO THE OWNER.
I

D. OPERATING MANUALS AND MAINTENANCE MANUALS:

1. SUBMIT FOUR COPIES OF ALL OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS.

2. FULLY INSTRUCT OWNER'S OPERATING PERSONNEL AND DEMONSTRATE PERFORMANCE, OPERATION AND MAINTENANCE OF EQUIPMENT. AMOUNT OF TIME ALLOCATED FOR SAID INSTRUCTION AND DEMONSTRATION OF EQUIPMENT AND SYSTEMS SHALL BE PART OF THESE OBLIGATIONS. SUBMIT TO ENGINEER A LETTER SIGNED BY OWNER'S REPRESENTATIVE WHO WILL OPERATE SYSTEM STATING THAT HE HAS BEEN FULLY INSTRUCTED BY CONTRACTOR ABOUT OPERATION AND MAINTENANCNE OF EQUIPMENT AND SYSTEM.

3. SUBMIT ONE (1) ADDITIONAL SET OF APPROVED INSTRUCTIONS AND ONE (1) ADDITIONAL SET OF APPROVED CONTROL DIAGRAMS.

E. GUARANTEES: IN ADDITION TO EQUIPMENT WARRANTIES, FURNISH A WRITTEN GUARANTEE AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR ON YEAR. GUARANTEE SHALL INCLUDE REPAIR OF DAMAGE TO, OR REPLACEMENT OF, ANY PART OF EQUIPMENT OR PREMISES CAUSED BY LEAKS OR BREAKS IN PIPE OR EQUIPMENT PROVIDED UNDER THIS SECTION.

1.07 FIRESTOPPING

A. ONLY TESTED FIRESTOP SYSTEMS SHALL BE USED.
B. FIRESTOP SYSTEM INSTALLATION MUST MEET REQUIREMENTS OF ASTM E-814, UL 1479 OR UL 2079 TESTED ASSEMBLIES THAT PROVIDE A FIRE RATING EQUAL TO THAT OF CONSTRUCTION BEING PENETRATED.

C. PROPOSED FIRESTOP MATERIALS AND METHODS SHALL CONFORM TO APPLICABLE GOVERNING CODES HAVING LOCAL JURISDICTION.

D. FIRESTOP SYSTEMS DO NOT REESTABLISH THE STRUCTURAL INTEGRITY OF LOAD BEARING PARTITIONS/ASSEMBLIES, OR SUPPORT LIVE LOADS AND TRAFFIC. INSTALLER SHALL CONSULT THE STRUCTURAL ENGINEER PRIOR TO PENETRATING ANY LOAD BEARING ASSEMBLY.

E. FOR THOSE FIRESTOP APPLICATIONS THAT EXIST FOR WHICH NO UL TESTED SYSTEM IS AVAILABLE THROUGH A MANUFACTURER, AN ENGINEERING JUDGMENT DERIVED FROM SIMILAR UL SYSTEM DESIGNS OR OTHER TESTS WILL BE SUBMITTED TO LOCAL AUTHORITIES HAVING JURISDICTION FOR THEIR REVIEW AND APPROVAL PRIOR TO INSTALLATION. ENGINEER JUDGMENT DRAWINGS MUST FOLLOW REQUIREMENTS SET FORTH BY THE INTERNATIONAL FIRESTOP COUNCIL (SEPTEMBER 7, 1994, AS MAY BE AMENDED FROM TIME TO TIME).

F. THE WORK OF THIS SECTION SHALL BE ACCOMPLISHED BY A SINGLE SOURCE CONTRACTOR OR BY THOSE CONTRACTORS WHO, BY THEIR CONTRACT, ARE PENETRATING RATED CONSTRUCTION WITH THEIR WORK. REGARDLESS OF RESPONSIBILITY, THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO ASSURE AND VERIFY THAT ALL PRODUCTS, SYSTEMS, ETC., USED UNDER THIS SECTION ARE APPROPRIATE AND MEET THE INTENT OF THIS SPECIFICATION AND IS ACCOMPLISHED BY FACTORY TRAINED WORKMEN.

G. ACCEPTABLE MANUFACTURERS AREA SUBJECT TO COMPLIANCE WITH THROUGH PENETRATION FIRESTOP SYSTEMS (XHEZ) AND JOINT SYSTEMS (XHBN) LISTED IN VOLUME 2 OF THE UL FIRE RESISTANCE DIRECTORY, PROVIDE PRODUCTS OF THE FOLLOWING MANUFACTURERS AS IDENTIFIED:

1. HILTI, INC., TULSA, OKLAHOMA (800) 879-8000 WWW.US.HILTI.COM.
2. 3M CORPORATION.
3. SPECIFIED TECHNOLOGIES INC.
4. METACAULK, RECTORSEAL CORP.
5. TREMCO.
6. CAFCO, ISOLATEK INTERNATIONAL.
7. NELSON FIRESTOP PRODUCTS.

H. USE ONLY FIRESTOP PRODUCTS THAT HAVE BEEN UL 1479, ASTM E-814, OR UL 2079 TESTED FOR SPECIFIC FIRE-RATED CONSTRUCTION CONDITIONS CONFORMING TO CONSTRUCTION ASSEMBLY TYPE, PENETRATING ITEM TYPE, ANNULAR SPACE REQUIREMENTS, AND FIRE-RATING INVOLVED FOR EACH SEPARATE INSTANCE.

I. CAST-IN-PLACE FIRESTOP DEVICES FOR USE WITH NON-COMBUSTIBLE AND COMBUSTIBLE PLASTIC PIPE (CLOSED AND OPEN PIPING SYSTEMS) PENETRATING CONCRETE FLOORS, THE FOLLOWING PRODUCTS ARE ACCEPTABLE:

1. HILTI CP 680 CAST-IN-PLACE FIRESTOP DEVICE.

J. ADD AERATOR ADAPTOR WHEN USED IN CONJUNCTION WITH AERATOR ("SOVENT") SYSTEM.

1. HILTI CP 681 TUB BOX KIT FOR USE WITH TUB INSTALLATIONS.

K. SEALANTS, CAULKING MATERIALS, OR FOAMS FOR USE WITH NON-COMBUSTIBLE ITEMS INCLUDING STEEL PIPE, COPPER PIPE, RIGID STEEL CONDUIT AND ELECTRICAL METALLIC TUBING (EMT), THE FOLLOWING PRODUCTS ARE ACCEPTABLE:

1. HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT
2. HILTI CP 604 SELF-LEVELING FIRESTOP SEALANT
3. HILTI CP 620 FIRE FOAM
4. HILTI CP 606 FLEXIBLE FIRESTOP SEALANT
5. HILTI CP 601S ELASTOMERIC FIRESTOP SEALANT

L. SEALANTS OR CAULKING MATERIALS FOR USE WITH SHEET METAL DUCTS, THE FOLLOWING PRODUCTS ARE ACCEPTABLE:

1. HILTI CP 601S ELASTOMERIC FIRESTOP SEALANT
2. HILTI CP 606 FLEXIBLE FIRESTOP SEALANT
3. HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT

M. INTUMESCENT SEALANTS, CAULKING MATERIALS FOR USE WITH COMBUSTIBLE ITEM (PENETRANTS CONSUMED BY HIGH HEAT AND FLAME) INCLUDING INSULATED METAL PIPE, PVC JACKETED, FLEXIBLE CABLE OR CABLE BUNDLES AND PLASTIC PIPE, THE FOLLOWING PRODUCTS ARE ACCEPTABLE:

1. HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT

N. FIRESTOP COLLAR OR WRAP DEVICES ATTACHED TO ASSEMBLY AROUND COMBUSTIBLE PLASTIC PIPE (CLOSED AND OPEN PIPING SYSTEMS), THE FOLLOWING PRODUCTS ARE ACCEPTABLE:

1. HILTI CP 642 FIRESTOP COLLAR
2. HILTI CP 643 FIRESTOP COLLAR
3. HILTI CP 645 WRAP STRIPS

O. MATERIALS USED FOR COMPLEX PENETRATIONS MADE TO ACCOMMODATE CABLE TRAYS, MULTIPLE STEEL AND COPPER PIPES, ELECTRICAL BUSWAYS IN RACEWAYS, THE FOLLOWING PRODUCTS ARE ACCEPTABLE:

1. HILTI CP 637 TROWELABLE FIRESTOP COMPOUND
2. HILTI FS 657 FIRE BLOCK
3. HILTI CP 620 FIRE FOAM

P. NON-CURING, RE-PENETRABLE MATERIALS USED FOR LARGE SIZE/COMPLEX PENETRATIONS MADE TO ACCOMMODATE CABLE TRAYS, MULTIPLE STEEL AND COPPER PIPES, ELECTRICAL BUSWAYS IN RACEWAYS, THE FOLLOWING PRODUCTS ARE ACCEPTABLE:

1. HILTI FS 657 FIRE BLOCK.

PART 2 - PRODUCTS

M2.02 - DIFFUSERS, REGISTERS AND GRILLES

AIR DISTRIBUTION EQUIPMENT SHALL BE OF SIZES AND CAPACITIES INDICATED.

A. REGISTERS, GRILLES, AND DIFFUSERS OF THE SIZES SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN SHALL BE FURNISHED AND INSTALLED. ALL GRILLES, DIFFUSERS, AND REGISTERS SHALL BE COMPLETE WITH FRAMES WITH RUBBER GASKETS SUITABLE FOR THE AREA AND WALL CONSTRUCTION WHERE SHOWN ON THE DRAWINGS.

B. SUPPLY AIR SHALL BE INTRODUCED INTO CONDITIONED SPACE IN SUCH A MANNER THAT CONDITIONED AIR AND ROOM AIR IS RAPIDLY AND EVENLY MIXED, RESULTING IN EQUALIZATION OF TEMPERATURE AND DRAFTLESS AIR DISTRIBUTION THROUGHOUT ZONES OF OCCUPANCY WITH TEMPERATURE DIFFERENTIALS UP TO 25 DEGREES F FOR BOTH COOLING AND HEATING AIR. QUANTITIES AND THROWS SHALL BE AS INDICATED.

C. VELOCITY OF MOVING AIR BELOW 5 FOOT LEVEL, DURING COOLING CYCLE, SHALL NOT EXCEED LIMITS OF EITHER 50 FPM AT 1.5 DEGREES F BELOW AVERAGE ROOM TEMPERATURE OR 70 FPM AT 1 DEGREE F BELOW AVERAGE ROOM TEMPERATURE. VELOCITY OF MOVING AIR AT THE 1FOOT LEVEL, DURING HEATING CYCLE, SHALL NOT BE LESS THAN 10 FPM. TEMPERATURE DIFFERENCE AT OR BELOW THE 5 FOOT LEVEL SHALL NOT EXCEED THE FOLLOWING: 2 DEGREES F BELOW AVERAGE ROOM TEMPERATURE AT 30 FPM, 1.5 DEGREES F BELOW AVERAGE ROOM TEMPERATURE AT 50 FPM, 1.0 DEGREES F BELOW AVERAGE ROOM TEMPERATURE AT 70 FPM. SOUND PRESSURE LEVEL IN ALL OCTAVE BANDS FOR EACH DIFFUSER SHALL NOT EXCEED NC35 NOISE CRITERIA CURVE AT TASK LEVEL WHEN UNITS OPERATE AT DESIGNED CAPACITIES.

D. CEILING DUFFUSERS MAY BE ROUND NECKED OR EQUIVALENT SIZE SQUARE NECK. PROVIDE SQUARE TO ROUND NECK ADAPTER AS NECESSARY. FLEX DUCT SHALL TYPICALLY CONNECT DIRECTLY TO THE DIFFUSER USING A 1-1/2" RADIUS FLEXIBLE DUCT ELBOW. IF SPACE DOES NOT ALLOW FOR A FULL 1-1/2" RADIUS TO BE PROVIDED, THEN A LINED SHEET METAL BOOT SHALL BE PROVIDED. THE FLEXIBLE DUCT SHALL BE CONNECTED TO THE SIDE OF THE SHEET METAL BOOT. THE FLEXIBLE DUCT SHALL NOT BE CONNECT TO THE TOP OF THE SHEET METAL BOOT.

M2.03 - DUCTS AND SHEET METAL WORK

A. PROVIDE DUCTS, PLENUMS, ACCESS DOORS, FRESH AIR INTAKES, AND EXHAUSTS AS INDICATED AND REQUIRED. ALL DUCTWORK SHALL BE CONSTRUCTED, ERECTED AND TESTED IN ACCORDANCE WITH THE MOST RESTRICTIVE OF LOCAL REGULATIONS, PROCEDURES DETAILED IN THE ASHRAE HANDBOOK OF FUNDAMENTALS OR THE APPLICABLE STANDARDS ADOPTED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION. PROVIDE PREFABRICATED SPIRAL LOCKSEAM DUCTS AND FITTINGS AND RECTANGULAR DUCTS OF GALVANIZED STEEL. ALUMINUM FLEXIBLE DUCTWORK OR GYPSUM BOARD DUCTWORK IS NOT ACCEPTABLE.

B. ALL CONNECTIONS TO MAIN DUCTS SHALL BE MADE WITH LOW LOSS FITTINGS.

C. FLAT DUCT SURFACES SHALL BE CRIMPED DIAGONALLY REGARDLESS OF SIZE. LONGITUDINAL JOINTS IN ALL DUCT SIZES MAY BE FLAT LOCK JOINTS. TRANSVERSE JOINTS AND INTERMEDIATE BRACING SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL OR GALVANIZED STRUCTURAL ANGLES IN ACCORDANCE WITH REQUIREMENTS OF ASHRAE GUIDE AND PUBLIC AUTHORITIES HAVING JURISDICTION.

D. TRANSVERSE JOINTS ON ALL DUCTS SHALL BE SEALED WITH MASTIC OR TAPE.

E. LONGITUDINAL JOINTS ON DUCTS WITH INTERNAL STATIC PRESSURES IN EXCESS OF 0.75 INCHES OF WATER PRESSURE SHALL BE SEALED WITH MASTIC OR TAPE.

F. LOCK JOINTS SHALL BE HAMMERED TO MAKE THEM AIRTIGHT. INSIDE OF DUCT SHALL PRESENT A SMOOTH SURFACE TO FLOW AIR.

G. CHANGES IN SIZE OF DUCTS SHALL INCREASE GRADUALLY WITH A SLOPE OF NOT MORE THAN 12 INCHES IN 5 FEET WHERE POSSIBLE, BUT NOT MORE THAN 12 INCHES IN 3 FEET IN ANY EVENT.

H. TURNS SHALL BE MADE WITH A THROAT RADIUS OF NOT LESS THAN THE DUCT WIDTH.

I. PLENUMS SHALL BE MADE OF 18 GAUGE GALVANIZED SHEET STEEL REINFORCED HORIZONTALLY ON A MAXIMUM OF 48" CENTERS BY 1-1/2" X 1-1/4" X 1/8" GALVANIZED ANGLES AND REINFORCED VERTICALLY BY 1-1/2" STANDING SEAMS.

M2.04 - VOLUME DAMPERS

A. DAMPERS USED IN LOW VELOCITY BRANCH DUCTS TO CONTROL THE VOLUME OR AIR FLOW SHALL BE YOUNG NO. 817 VOLUME DAMPER OR EQUAL. AN OPERATING HEAD SHALL BE PLACE ON THE SIDE OF THE DUCT AND SHALL BE LOCKED IN POSITION BY A SET KEY WHERE THE DAMPER IS ACCESSIBLE. WHERE THE DAMPER IS NOT ACCESSIBLE, YOUNG NO. 817A OR 817B VOLUME CONTROL DAMPER OR EQUAL, CONSISTING OF AN END BEARING OR MITER GEAR, COUPLING, 3/8-INCH SQUARE SHAFT, AND REGULATOR FOR OPERATING THE UNIT FROM THE CEILING SHALL BE PROVIDED.

M2.05 - INSULATION

A. THERMAL DUCT INSULATION: INSULATE ALL SUPPLY AND RETURN AIR DUCTS, UNLESS OTHERWISE SPECIFIED WITH KNAUF OR EQUAL, MICROLITE FIBERGLASS DUCT INSULATION, FOIL FACED, 3/4 LB. DENSITY, 1-1/2" THICK INSULATION WRAPPED ENTIRELY AROUND DUCT WITH JOINTS LAPPED AT LEAST 2" AND SECURED WITH 16 GAUGE GALVANIZED WIRE ON 12" CENTERS. INSULATION SHALL COVER ALL SURFACES INCLUDING STANDING SEAMS. THERMAL RESISTIVE VALUE OF DUCT WRAP SHALL BE A MINIMUM OF R-5.

B. RECTANGULAR SUPPLY DUCTS AND RETURN AIR DUCTS LOCATED IN UNCONDITIONED SPACES SHALL BE LINED WITH KNAUF LINACOUSTIC OR EQUAL, 1 INCH, 1-1/2 LB, THERMAL RESISTIVE VALUE OF DUCT LINER SHALL BE A MINIMUM OF R-4.2. RECTANGULAR SUPPLY DUCTS AND RETURN AIR DUCTS LOCATED OUTSIDE THE BUILDING ENVELOPE SHALL BE LINED WITH KNAUF LINACOUSTIC OR EQUAL, 2 INCH, 1-1/2 LB, THERMAL RESISTIVE VALUE OF DUCT LINER SHALL BE A MINIMUM OF R-8. DENSITY COATED FIBERGLASS DUCT LINER COMPLYING WITH FRICTION CORRECTION FACTOR NOT GREATER THAN 1.1 AT A VELOCITY OF 3000 FPM. APPLY INSULATION TO INSIDE OF DUCTS WITH AN APPROVED FIRE RETARDANT ADHESIVE TO PROVIDE 100% COVERAGE AND A SMOOTH SURFACE. IN DUCTS WITH ONE SIDE MORE THAN 12", SECURE INSULATION WITH MECHANICAL FASTENERS IN ADDITION TO ADHESIVE, SPACED AT 14" CENTERS IN BOTH DIRECTIONS. MECHANICAL FASTENERS SHALL BE FLUSH WITH THE LINER SURFACE AND SHALL START WITHIN 2" OF THE LEADING EDGE OF EACH SECTION, AND WITHIN 3" OF THE LEADING EDGE OF ALL CROSS JOINTS OF THE LINER SHALL BE HEAVILY COATED WITH AN APPROVED FIRE RESISTANT ADHESIVE. THE DUCT LINER SHALL BE CUT TO ASSURE SNUG CLOSING CORNER JOINTS, THE BLACK SURFACE OF THE LINER SHALL FACE THE AIR STREAM, TRANSVERSE JOINTS SHALL BE NEATLY BUTTED AND ALL DAMAGED AREAS SHALL BE HEAVILY COATED WITH AN APPROVED ADHESIVE.

C. ALL DUCT INSULATION SHALL HAVE AN NRC RATING OF NOT LESS THAN 0.60 AND A K FACTOR OF NOT MORE THAN 0.27. DUCT DIMENSIONS SHALL BE INCREASED 2 INCHES ON EACH SIDE FROM THOSE SHOWN ON DRAWINGS TO ACCOMODATE INSULATION.

M2.36 - MECHANICAL PIPE INSULATION

A. HOT WATER SUPPLY AND RETURN PIPING SHALL BE INSULATED WITH 1/2" THICK OWENS-CORNING ASJ-25 FIBERGLASS PIPE INSULATION WITH VAPOR SEAL JACKET. THE INSULATION SHALL BE APPLIED OVER CLEAN, DRY PIPE WITH ALL JOINTS FIRMLY BUTTED TOGETHER. FITTINGS SHALL BE SIMILARLY INSULATED WITH A FIBERGLASS BLANKET INSULATION COVERED WITH A PREMOLDED PVC COVER. PROVIDE AN ALUMINUM FITTING COVER WHERE PIPE IS COVERED WITH AN ALUMINUM JACKET.

B. PRIOR TO APPLICATION OF INSULATING MATERIALS, SURFACES TO BE INSULATED SHALL BE BRUSHED CLEAN AND MADE FREE FROM RUST, SCALE, GREASE, DIRT, AND OTHER DELETERIOUS MATERIALS. INSULATION SECTIONS OR BLOCKS SHALL BE PLACED SO THE LEAST POSSIBLE DAMAGE TO INSULATION WILL RESULT FROM INSPECTION OR REPAIR OF PIPING.

C. FOR ALL INSULATED PIPING NOT INSTALLED WITH PRE-INSULATED PIPE SUPPORTS, INSTALL HIGH DENSITY INSERTS (CALCIUM SILICATE) AT EACH PIPE SUPPORT OR HANGER. PROVIDE METAL SHIELD UNDER HANGER.

D. FOR ALL HOT WATER SYSTEMS, INSULATION SHALL BE BEVELED TO EXPOSE ALL FLANGES, UNIONS, VALVES, STRAINERS AND SPECIAL ACCESSORIES. RAW ENDS OF INSULATION SHALL BE COVERED WITH FINISHING CEMENT TO PROVIDE A SMOOTH WATER PROOF SURFACE.

E. INSULATION MATERIALS, ADHESIVES, COATINGS AND OTHER ACCESSORIES SHALL HAVE BURNING CHARACTERISTICS AS DETERMINED BY ASTM E 84 AND TESTED WITH UBC STANDARD 42-1 SHALL HAVE A FLAME SPREAD AND SMOKE CONTRIBUTION AS FOLLOWS: PIPE AND TUBING INSULATION SHALL HAVE A FLAME SPREAD OF 0 TO 25 AND A SMOKE CONTRIBUTION OF 0 TO 50.

M2.37 - MECHANICAL PIPE AND FITTING SCHEDULE

A. NO PIPE OF A FOREIGN MANUFACTURER WILL BE ACCEPTABLE.

B. BLACK AND GALVANIZED STEEL PIPE: ASTM A53 ERW GRADE B, STANDARD WEIGHT (SCHEDULE 40).

C. HEATING SYSTEM LINES SHALL BE STANDARD WEIGHT BLACK STEEL PIPE. PIPE 2-1/2 INCH AND LARGER SHALL EITHER HAVE WELDING OR MECHANICALLY GROOVED FITTINGS. PIPE 2-INCH AND SMALLER SHALL EITHER HAVE WELDING FITTINGS, MECHANICALLY GROOVED FITTINGS OR MALLEABLE IRON SCREWED FITTINGS.

D. UNIONS SHALL GENERALLY BE USED ON ALL CONNECTIONS TO AUTOMATIC VALVES AND EQUIPMENT.

E. IN GENERAL, UNIONS SHALL BE PROVIDED AT THE FOLLOWING LOCATIONS FOR ALL CONNECTING PIPING: ON EACH PIPE AT HEATING OR COOLING COIL, AT CONNECTIONS TO HEATING OR COOLING EQUIPMENT, ON ALL SIDES OF AUTOMATIC VALVES WHERE VALVES DO NOT HAVE UNION CONNECTIONS.

F. ALL VALVES IN CONNECTION WITH PIPING SHALL BE HAMMOND, MILWAUKEE, KEYSTONE, CRANE, CENTERLINE, WALWORTH, NIBCO, STOCKAM, WATTS, CENTRAL SPRINK, INC. OR GRINNELL. BALL VALVES SHALL BE BRONZE WITH BRONZE BALL, TEFLON SEAT, INDICATOR DIAL, INSULATED HANDLE, AND ADJUSTABLE PACKING. BALL OR GLOBE VALVES MAY BE USED ON ALL WATER PIPING 2 INCHES AND SMALLER. ALL VALVES 2 INCHES AND SMALLER SHALL BE ALL BRONZE CONSTRUCTION. COMPANION FLANGES SHALL BE PROVIDED FOR BUTTERFLY SCREWED CONNECTIONS. COMPANION FLANGES SHALL BE PROVIDED FOR BUTTERFLY VALVES AND NONSLAM CHECK VALVES.

G. VALVES SHALL BE INSTALLED WITH STEMS HORIZONTAL OR ABOVE.

H. GATE VALVES 2 INCHES AND SMALLER SHALL BE MILWAUKEE 1151 OR 1169; GRINNELL 3080 OR 3080SJ; NIBCO #T-134 OR S-134.

I. GLOBE VALVES 2 INCHES AND SMALLER SHALL BE MILWAUKEE 590-T OR 1590-T; CRANE NO. 7 OR NO. 1310; NIBCO #S-235-Y OR T-235-Y; GRINNELL 3240 OR 3240SJ.

J. CALIBRATED BALANCING VALVES 2 INCHES AND SMALLER SHALL BE BELL & GOSSETT CIRCUIT SETTER, EQUIPPED WITH BARCO SHUTOFF VALVES AND QUICK-DISCONNECTS.

K. CHECK VALVES 2 INCHES AND SMALLER SHALL BE MILWAUKEE 509 OR 1509; CRANE NO. 36 OR NO. 1342; NIBCO #T413-B OR S-413-B; GRINNELL 3300 OR 3300SJ.

L. BUTTERFLY VALVE 2" AND SMALLER SHALL BE MILWAUKEE BUTTERBALL BB2-100 OR BB2-350.

M. BALL VALVES SHALL BE MILWAUKEE BA-100 FULL PORTED TWO-PIECE CONSTRUCTION, OR MILWAUKEE BA-300 FULL PORTED THREE PIECE CONSTRUCTION OR WATTS B-6000.

N. BALANCING COCKS 2 INCHES AND SMALLER SHALL BE CRANE NO. 250 OR MILWAUKEE BUTTERBALL BB2-100 OR BB2-350 WITH MEMORY STOP.

O. AIR VENT VALVES SHALL BE CRANE NO. 88 OR MILWAUKEE 600, 200-PSI WORKING PRESSURE, 3/8 INCH BRONZE NEEDLE-POINT GLOBE.

P. VALVE ASSEMBLIES BY FLOWSET MAY BE USED WHERE APPROVED.

Q. FLOW CONTROL VALVES SHALL BE IN-LINE SIZE AND SHALL HAVE A MINIMUM OF 2-PSI PRESSURE DROP FOR FLOW TO 525 GPM AND 8 PSI IN EXCESS OF 525 GPM. VALVES SHALL BE PRESET AT FACTORY FOR FLOW CONDITIONS AND SHALL BE GRISWOLD.

R. STRAINERS SHALL BE KECKLEY, SARCO, VICTAULIC, CENTRAL SPRINK, INC. OR WEBSTER, OF THE SELF-CLEANING TYPE. PERFORATIONS IN STRAINERS SHALL BE 1/16 INCH IN DIAMETER. BLOWOFF BALL VALVES SHALL BE PROVIDED FOR ALL STRAINERS. A THREADED HOSE CONNECTION SHALL BE PROVIDED ON ALL STRAINERS LOCATED ABOVE CEILINGS. PRESSURE RATING OF STRAINERS SHALL BE EQUAL TO BUT IN NO CASE LESS THAN THE PRESSURE TESTING OF ADJOINING VALVES.

S. COMBINATION TEST PLUGS BY UNIVERSAL CONTROL OR TACO SHALL BE INSTALLED.

T. PIPING 2" AND SMALLER SHALL BE SCREWED. ALL CHANGES IN DIRECTION SHALL BE MADE WITH STANDARD THREADED FITTINGS. UNDER NO CONDITIONS WILL PIPING BE NOTCHED, MITERED OR SWAGED.

U. ALL PIPING SHALL BE ACCURATELY SIZED TO MEASUREMENTS ESTABLISHED AT THE BUILDING AND WORKED INTO PLACE WITHOUT SPRINGING OR FORCING. PROPER PROVISIONS SHALL BE MADE FOR THE EXPANSION AND CONTRACTION OF ALL PIPE LINES. SCREW JOINTS SHALL BE MADE WITH A LUBRICANT APPLIED TO THE MALE THREADS ONLY. THREADS SHALL BE FULL CUT AND NOT MORE THAN THREE THREADS ON THE PIPE SHALL REMAIN EXPOSED.

M2.38 - PIPING IDENTIFICATION

A. IDENTIFICATION OF PIPING SHALL BE DONE WITH "BRADY" OR "WESTLINE" LABELS. THE COLOR CODING SHALL COMPLY WITH OSHA ANSI SAFETY COLOR CODING REGULATIONS. THE MEANS OF IDENTIFICATION SHALL BE COLOR CODED BAND AND AN IDENTIFYING LEGEND TO INDICATE THE CONTENTS OF THE PIPE AND A DIRECTION OF FLOW ARROW.

B. THE IDENTIFYING COLOR CODED BANDS, LEGENDS, AND DIRECTIONAL ARROWS ON PIPING AND DUCT SYSTEMS SHALL BE LOCATED ADJACENT TO EACH VALVE, AT EVERY POINT OF ENTRY AND EXIT WHERE PIPING PASS THROUGH A WALL OR CEILING, ON EACH RISER AND JUNCTION, EVERY 50 FEET ON LONG CONTINUOUS LINES AND ADJACENT TO ALL SPECIAL FITTINGS (REGULATING VALVES, ETC.).

C. LEGENDS SHALL BE APPLIED ON THE COLOR BAND ON THE PERIMETER OF THE PIPE IN A LOCATION THAT WILL BE READILY VISIBLE TO OPERATING PERSONNEL FROM THE FLOOR IN THE AREA.

D. COLOR CODING SHALL FOLLOW ANSI STANDARDS:

MATERIAL	BACKGROUND	IDENTIFYING LEGEND	LETTERING
CHILLED WATER	GREEN	CHILLED WATER SUPPLY	WHITE
CHILLED WATER RETURN	GREEN	CHILLED WATER RETURN	WHITE
DOMESTIC COLD	GREEN	DOMESTIC COLD WATER	WHITE
DOMESTIC HOT	YELLOW	DOMESTIC HOT WATER	BLACK
DOMESTIC HOT RETURN	WHITE	DOMESTIC HOT WATER RETURN	BLACK
HEATING WATER RETURN	YELLOW	HEATING WATER RETURN	BLACK
HEATING WATER SUPPLY	YELLOW	HEATING WATER SUPPLY	BLACK
WASTE	YELLOW	WASTE WATER	BLACK
NATURAL GAS	YELLOW	NATURAL GAS	BLACK

M2.39 - PIPE HANGERS

A. ALL NECESSARY STRUCTURAL MEMBERS, HANGERS, AND SUPPORTS OF APPROVED DESIGN SHALL BE PROVIDED TO KEEP PIPING IN PROPER ALIGNMENT AND TO PREVENT TRANSMISSION OF INJURIOUS THRUSTS AND VIBRATIONS. PIPE HANGERS SHALL GENERALLY BE OF THE CLEVIS PIPE-CLAMP TYPE WITH SUSPENSION BOLTS. ALL BOLTS SHALL HAVE PROVISION FOR VERTICAL ADJUSTMENT AND SHALL BE EQUIPPED WITH LOCKNUTS.

B. NO HANGER SHALL BE WELDED DIRECTLY TO STEEL JOISTS. WHERE JOISTS OCCUR, CLIPS SHALL BE INSTALLED AND HANGER ROD ATTACHED TO CLIPS. ALL PIPING HUNG FROM JOISTS SHALL BE HUNG FROM JOIST PANEL POINTS. PROTECTIVE SADDLES SHALL BE PROVIDED ON ALL INSULATED PIPING AT POINT OF HANGER. HANGERS SHALL NOT CONTACT PIPE WHERE PIPE IS SPECIFIED TO BE INSULATED AND HANGERS SHALL NOT PENETRATE INSULATION.

C. THE FOLLOWING IS A SCHEDULE OF MAXIMUM SPACING FOR HANGERS OR OTHER SUPPORTS AND SIZES OF SUSPENSION RODS FOR PIPING. IN ADDITION TO THE SPACING LISTED, AN ADDITIONAL HANGER SHALL BE PROVIDED 1 FOOT 0 INCHES FROM EACH PIPE DROP, RISE, OR TURN.

PIPE SIZE	ROD DIAMETER	MAXIMUM SPACING
1-1/4 IN. AND SMALLER	1/2 IN.	6 FT.

D. PIPE HANGERS SHALL NOT BE WELDED TO METAL PAN FLOOR. PIPE HANGERS SHALL BE CONCRETE INSERTS INSTALLED IN HOLES DRILLED IN CONCRETE.

E. ALL HANGERS, SUPPORTS, AND ANCHORS SHALL BE ASSEMBLED WITH HEAVY PATTERN, HEXAGON CARBON STEEL NUTS.

F. PERFORATED METAL STRAP SHALL NOT BE PERMITTED.

G. ALL PIPE HANGERS, INSERTS, TRAPEZES, ETC., AND ALL NECESSARY ACCESSORIES REQUIRED TO SUPPORT THE PIPING SHALL BE PROVIDED BY THIS CONTRACTOR.

H. ALL PIPE HANGERS SHALL BE INSTALLED OUTSIDE OF INSULATION ON ALL INSULATED LINE.

I. MANUFACTURERS MAY BE BLAW-KNOX, GRINNELL, OR PIPE SHIELDS, INC.

M2.45 - BOILER FLUES

A. FURNISH AND INSTALL ONE OF THE FOLLOWING:

1. DOUBLE WALL STACK OF SIZE SHOWN ON DRAWINGS. STACK SHALL BE DOUBLE WALL METAL WITH AN OUTER JACKET OF ALUMINUM COATED STEEL WITH A MINIMUM OF ONE INCH AIR SPACE BETWEEN WALLS. THE INNER GAS-CARRYING PIPE SHALL BE TYPE 316 STAINLESS STEEL. STACK SHALL BE FOR POSITIVE PRESSURE APPLICATION WITH ALL JOINTS SEALED DURING ASSEMBLY WITH TRU SILICONE SEALANT FOR FLUE GAS TEMPERATURES UP TO 600 DEGREES F AND SEALED WITH A PAST OF SAUEREISEN NO. 33 CERAMIC JOINT CEMENT FOR TEMPERATURES ABOVE 600 DEGREES F. STACK SHALL BE COMPLETE WITH VENTILATED ROOF THIMBLE, STORM COLLAR, INSULATED EXIT CONE, FLASHING, WALL GUIDE AND ANY SPACERS, SUPPORTS, ADJUSTABLE SECTIONS AND CLAMPS OR FLANGES REQUIRED FOR A COMPLETE INSTALLATION. ALL EXPOSED METAL PARTS ARE TO BE PROTECTED BY A MINIMUM OF ONE BASE COAT OF HEAT AND CORROSION RESISTANT PRIMER AND PAINT. STACK TO BE METAL-FAB INC, AMPCO.

2. IF ALLOWED BY THE MANUFACTURER, BOILER FLUES AND COMBUSTION AIR PIPING MAY BE PROVIDED IN DOUBLE-WALL POLYPROPYLENE.

3. SIZING OF THE FLUES AND COMBUSTION AIR PIPING SHOWN ON THE DRAWINGS ARE TO BE VERIFIED BY THE MANUFACTURER BEFORE MATERIAL PURCHASE AND INSTALLATION.

M2.63 - ATC VALVES

A. ATC CONTRACTOR SHALL FURNISH A MOTORIZED, SPRING RETURN,2-WAY OR 3- WAY BALL VALVE OF PROPER SIZE TO BE MOUNTED IN THE SUPPLY WATER PIPING PRIOR TO EACH WATER SOURCE HEAT PUMP. ACTUATORS SHALL BE COMPATIBLE WITH THE HEAT PUMP CONTROLS, AND SHALL PROVIDE ON/OFF ACTION. MOUNTING OF EACH ATC VALVE SHALL BE BY THE INSTALLING MECHANICAL CONTRACTOR.

B. AUTOMATIC VALVES SHALL BE AVAILABLE IN EITHER FLANGED OR SCREWED CONNECTION. VALVES 2" AND SMALLER SHALL BE SCREWED AND LARGER VALVES SHALL BE FLANGED. SCREWED VALVES SHALL BE RATED AT 150 PSI AND HAVE CAST IRON, BRASS OR STEEL BODIES. FLANGED VALVES SHALL BE RATED AT 125 PSI MINIMUM AND SHALL HAVE CAST IRON OR STEEL BODIES. ALL TWO-WAY VALVES, EITHER NORMALLY OPEN OR NORMALLY CLOSED, SHALL BE FURNISHED WITH MODULATING PLUGS WHICH PRODUCE AN EQUAL PERCENTAGE FLOW CHARACTERISTIC. THREE-WAY MIXING VALVES SHALL BE FURNISHED WITH EQUAL PERCENTAGE PLUGS. WATER VALVES SHALL BE SIZED FOR 3-5 PSI P.D.

C. AUTOMATIC VALVES FOR HEAT PUMPS SHALL BE LINE SIZED (NOT CONNECTION SIZE). VALVES SHALL BE BELIMO OR HONEYWELL.

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INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL
114 EAST 1000 NORTH. LOGAN UTAH 84321
OWNER/ORG NAME

MARK: DATE: DESCRIPTION:

PROJECT #: 123998
DRAWN BY: Author
CHECKED BY: Checker
ISSUED: 12.07.2023

LICENSED PROFESSIONAL ENGINEER
02/01/24
No. 8388845
JEDEDIAH JENKINS
STATE OF UTAH

MECHANICAL SPECIFICATIONS
M002

3.01 DISCREPANCIES

A. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE OWNER.

B. DO NOT PROCEED WITH INSTALLATION IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED.

3.02 EQUIPMENT IDENTIFICATION

A. ALL MAJOR EQUIPMENT SHALL BEAR FIRMLY ATTACHED METAL NAMEPLATES WHICH STATE NAME OF MANUFACTURER, MODEL NUMBER AND ELECTRICAL DATA.

3.03 INITIAL LUBRICATION, ADJUSTING, AND FILLING SYSTEMS

A. BEFORE OPERATING ANY MECHANICAL SYSTEMS, EQUIPMENT BEARINGS SHALL BE LUBRICATED AND BOLTS, PULLEYS, AND OTHER MOVING PARTS CHECKED FOR ALIGNMENT AND TOLERANCES IN ACCORDANCE WITH MANUFACTURER'S OPERATING INSTRUCTIONS. VIBRATIONS AND NOISE SHALL BE SUPPRESSED.

3.04 CLEANING OF EQUIPMENT, MATERIALS, AND PREMISIS

A. BE PAINTED SMOOTH AND CLEAN, READY FOR PAINTERS. CLEAN ENTIRE PREMISES OF UNUSED MATERIALS, RUBBISH, DEBRIS, GREASE SPOTS AND DIRT LEFT BY SUBCONTRACTOR.

3.05 EQUIPMENT AND MATERIALS

A. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

3.06 ACCESSIBILITY

A. INSTALL WORK READILY ACCESSIBLE FOR NORMAL OPERATION, READING OF INSTRUMENTS, ADJUSTMENT, SERVICE, INSPECTION AND REPAIR, PROVIDE ACCESS PANELS WHERE INDICATED AND REQUIRED. ACCESS PANELS SHALL BE THE RESPONSIBILITY OF RESPECTIVE SUBCONTRACTORS.

3.07 SYSTEM BALANCING

A. BALANCING WORK INCLUDED:

1. COMPLETE TESTING AND BALANCING OF THE HVAC SYSTEM AS HEREIN SPECIFIED.

B. VERIFICTION OF CONDITIONS: PRIOR TO TESTING AND BALANCING, INSPECT EQUIPMENT AND MATERIALS AND ARRANGE WITH CONTRACTOR FOR SATISFACTORY CORRECTION OF ALL DEFECTS IN WORKMANSHIP AND/OR MATERIAL THAT COULD AFFECT THE WORK SPECIFIED HEREIN.

C. PROTECTION: AS SPECIFIED HEREIN.

D. SYSTEM OPERATION: CONTRACTOR SHALL PUT ALL PARTS OF SYSTEMS IN FULL OPERATION AND SHALL CONTINUE THE OPERATION OF SAME DURING EACH WORKING DAY OF TESTING AND BALANCING.

E. TEST DATA: SUBMIT COPY OF TEST DATA TO OWNER ON COMPLETION OF WORK UNDER THIS SECTION.

F. TEST AND BALANCE CONTRACTOR SHALL CERTIFY IN WRITING THAT SYSTEM HAS BEEN ADJUSTED AND BALANCED AND DESIGN CONDITIONS HAVE BEEN ATTAINED IN ALL AREAS OF THE BUILDING.

G. INSTRUMENTS: INSTRUMENTS USED BY CONTRACTOR SHALL BE ACCURATELY CALIBRATED AND MAINTAINED IN GOOD WORKING ORDER.

H. AIR DISTRIBUTION TESTING AND BALANCING:

1. TEST AND RECORD MOTOR FULL LOAD AMPERS AND RPM.
2. TEST AND RECORD SYSTEM STATIC PRESSURES, SUCTION AND DISCHARGE.
3. ADJUST ALL SUPPLY AND RETURN AIR DUCTS TO PROPER DESIGN CFM.
4. IN COOPERATION WITH THE CONTROL MANUFACTURER'S REPRESENTATIVE, THE SETTING ADJUSTMENT OF AUTOMATICALLY OPERATED CONTROLS TO OPERATE AS SPECIFIED, INDICATED AND/OR NOTED.

I. WITNESS: NOTIFY OWNER IN WRITING TWO WEEKS PRIOR TO TESTING AND BALANCING OF ALL MAJOR EQUIPMENT IN ORDER TO ARRANGE THAT OWNER,S REPRESENTATIVE WILL WITNESS THE TESTS.

3.08 OPERATION

A. PLACE SYSTEM IN OPERATION AND REGULATE AND ADJUST TO OWNER'S SATISFACTION. SYSTEMS SHALL OPERATE QUIETLY AND WITHOUT VIBRATION OR NOISE.

3.09 CERTIFICATION

A. UPON COMPLETION, THE CONTRACTOR SHALL INSPECT WORK OF THIS SECTION AND DELIVER TO OWNER A WRITTEN CERTIFICATION THAT INSTALLED MATERIALS AND WORKMANSHIP CONFORM TO SPECIFICATIONS.

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MECHANICAL SPECIFICATIONS

M003

2/2/2024 9:09:56 AM Autodesk Docs://123998 - LCCD - Indoor Athletic Facility - Municipool Remodel/23708 - LCCD - Indoor Athletic Facility - Municipool Remodel_MECH_v24.rvt

DIVISION 25 BUILDING AUTOMATION SYSTEM
PART 1 - GENERAL

1.01 SUMMARY

A. FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICE NECESSARY FOR A COMPLETE AND OPERATING TEMPERATURE CONTROL SYSTEM (TCS) AND BUILDING MANAGEMENT AND CONTROL SYSTEM (BMCS), UTILIZING DIRECT DIGITAL CONTROLS AS SHOWN ON THE DRAWINGS AND AS DESCRIBED HEREIN. DRAWINGS ARE DIAGRAMMATIC ONLY.

B. ALL LABOR, MATERIAL, EQUIPMENT AND SOFTWARE NOT SPECIFICALLY REFERRED TO HEREIN OR ON THE PLANS, THAT IS REQUIRED TO MEET THE FUNCTIONAL INTENT OF THIS SPECIFICATION, SHALL BE PROVIDED WITHOUT ADDITIONAL COST TO THE OWNER.

C. THE OWNER SHALL BE THE NAMED LICENSE HOLDER OF ALL SOFTWARE ASSOCIATED WITH ANY AND ALL INCREMENTAL WORK ON THE PROJECT(S) AND WILL BE PROVIDED WITH ADMINISTRATION PASSWORDS AND COPIES OF STATIONS.

D. SYSTEM PROVIDER:

1. CONTROLS SYSTEM PROVIDER FOR THIS PROJECT IS SHALL BE CERTIFIED WITH THE NIAGARA N4.13 SYSTEM AND IS RESPONSIBLE FOR THE CONTROL WORK DESCRIBED HEREIN, INCLUDING MATERIAL, LABOR, HARDWARE, SOFTWARE, WARRANTY, ETC. INCLUDING COST OF SYSTEM, DESIGN, PROGRAMMING, SOFTWARE SETUP AND INSTALLATION INCLUDING WIRE AND CONDUIT (SEE PART 3 EXECUTION OF THE SPECIFICATION), CHECKOUT, TEST AND DEMONSTRATION. ALL CONTROL WIRING SHALL BE IN METAL CONDUIT AND SHALL BE BY THE PROJECT ELECTRICAL CONTRACTOR.

E. ALL EQUIPMENT AND WORK PERFORMED WITH THE BMCS SHALL COMPLY TO AND SEAMLESSLY INTEGRATE WITH THE GRAPHICAL INTERFACE AS INSTALLED BY THE PRIMARY CONTROL CONTRACTOR.

1.02 SYSTEM DESCRIPTION

A. THE NEW TEMPERATURE CONTROL SYSTEM (TCS) SHALL BE COMPRISED OF A NETWORK OF INTEROPERABLE, STAND-ALONE DIGITAL CONTROLLERS COMMUNICATING VIA LONMARK/LONTALK COMMUNICATION PROTOCOLS. TEMPERATURE CONTROL SYSTEM PRODUCTS SHALL BE MANUFACTURED BY HONEYWELL AND SHALL BE AN EXTENSION OF THE EXISTING HONEYWELL N4 WEBS CONTROL SYSTEM. ALL SPYDER CONTROLLERS PROVIDED MUST BE LON CONTROLLERS. BACNET SPYDERS SHALL NOT BE ALLOWED.

B. THE BUILDING MANAGEMENT AND CONTROL SYSTEM (BMCS) SHALL BE COMPRISED OF NETWORK AREA CONTROLLER OR CONTROLLERS (BMS) WITHIN THE FACILITY. THE BMS SHALL CONNECT TO THE OWNER'S LOCAL OR WIDE AREA NETWORK, DEPENDING ON CONFIGURATION. ACCESS TO THE SYSTEM, EITHER LOCALLY IN EACH BUILDING, OR REMOTELY FROM A CENTRAL SITE OR SITES, SHALL BE ACCOMPLISHED THROUGH STANDARD WEB BROWSERS, VIA THE INTERNET AND/OR LOCAL AREA NETWORK. EACH BMS SHALL COMMUNICATE TO LONMARK/LONTALK (IDC) CONTROLLERS AND OTHER OPEN PROTOCOL SYSTEMS/DEVICES PROVIDED UNDER THIS SPECIFICATION.

C. THE BUILDING MANAGEMENT AND CONTROL SYSTEM (BMCS) AS PROVIDED IN THIS SPECIFICATION SHALL BE BASED ON THE NIAGARA N4 FRAMEWORK MINIMUM 4.13 REVISION.

1.03 SUBMITTAL

A. FOUR COPIES OF SHOP DRAWINGS OF THE COMPONENTS AND DEVICES FOR THE ENTIRE CONTROL SYSTEM SHALL BE SUBMITTED AND SHALL CONSIST OF A COMPLETE LIST OF EQUIPMENT AND MATERIALS, INCLUDING MANUFACTURERS CATALOG DATA SHEETS AND INSTALLATION INSTRUCTIONS FOR ALL CONTROLLERS, VALVES, DAMPERS, SENSORS, ROUTERS, ETC. SHOP DRAWINGS SHALL ALSO CONTAIN COMPLETE WIRING AND SCHEMATIC DIAGRAMS, SOFTWARE DESCRIPTIONS, CALCULATIONS, AND ANY OTHER DETAILS REQUIRED TO DEMONSTRATE THAT THE SYSTEM HAS BEEN COORDINATED AND WILL PROPERLY FUNCTION AS A SYSTEM. TERMINAL IDENTIFICATION FOR ALL CONTROL WIRING SHALL BE SHOWN ON THE SHOP DRAWINGS. A COMPLETE WRITTEN SEQUENCE OF OPERATION SHALL ALSO BE INCLUDED WITH THE SUBMITTAL PACKAGE. SPECIFICATION CONTRACTORS SUPPLYING PRODUCTS AND SYSTEMS, AS PART OF THEIR PACKAGES SHALL PROVIDE CATALOG DATA SHEETS, WIRING DIAGRAMS AND POINT LISTS FOR PROPER COORDINATION OF WORK.

B. SUBMITTAL SHALL ALSO INCLUDE A TRUNK CABLE SCHEMATIC DIAGRAM DEPICTING OPERATOR WORKSTATIONS, CONTROL PANEL LOCATIONS AND A DESCRIPTION OF THE COMMUNICATION TYPE, MEDIA AND PROTOCOL.

C. SUBMITTAL SHALL ALSO INCLUDE A COMPLETE POINT LIST OF ALL POINTS TO BE CONNECTED TO THE TCS AND BMCS.

D. SUBMITTAL SHALL ALSO INCLUDE A COPY OF EACH OF THE GRAPHICS DEVELOPED FOR THE GRAPHIC USER INTERFACE INCLUDING A FLOWCHART (SITE MAP) INDICATING HOW THE GRAPHICS ARE TO BE LINKED TO ONE ANOTHER FOR SYSTEM NAVIGATION. THE GRAPHICS ARE INTENDED TO BE 80% - 90% COMPLETE AT THIS STAGE WITH THE ONLY REMAINING CHANGES TO BE BASED ON REVIEW COMMENTS FROM THE A/E DESIGN TEAM AND/OR OWNER.

E. UPON COMPLETION OF THE WORK, PROVIDE A COMPLETE SET OF 'AS-BUILT' DRAWINGS AND APPLICATION SOFTWARE ON COMPACT DISK. DRAWINGS SHALL BE PROVIDED AS AUTOCAD™ OR VISIO™ COMPATIBLE FILES. FOUR COPIES OF THE 'AS-BUILT' DRAWINGS SHALL BE PROVIDED IN ADDITION TO THE DOCUMENTS ON COMPACT DISK OR USB FLASH DRIVE. ALL AS BUILT DRAWINGS SHALL ALSO BE INSTALLED INTO THE BMCS SERVER IN A DEDICATED DIRECTORY.

1.04 SPECIFICATION NOMENCLATURE

A. ACRONYMS USED IN THIS SPECIFICATION ARE AS FOLLOWS:

BMCS	BUILDING MANAGEMENT AND CONTROL SYSTEM
TCS	TEMPERATURE CONTROL SYSTEM
BMS	BUILDING MANAGEMENT SERVER
NAC	NETWORK AREA CONTROLLER
IDC	INTEROPERABLE DIGITAL CONTROLLER
IBC	INTEROPERABLE BACNET CONTROLLER
GUI	GRAPHICAL USER INTERFACE
WBI	WEB BROWSER INTERFACE
PMI	POWER MEASUREMENT INTERFACE
DDC	DIRECT DIGITAL CONTROLS
LAN	LOCAL AREA NETWORK
WAN	WIDE AREA NETWORK
OOT	OBJECT ORIENTED TECHNOLOGY
PICS	PRODUCT INTEROPERABILITY COMPLIANCE STATEMENT

1.5 DIVISION OF WORK

A. THE SPECIFIED CONTRACTORS SHALL BE RESPONSIBLE FOR ALL CONTROLLERS (NAC, IDC), CONTROL DEVICES, CONTROL PANELS, CONTROLLER PROGRAMMING, CONTROLLER PROGRAMMING SOFTWARE, CONTROLLER INPUT/OUTPUT AND POWER WIRING AND CONTROLLER NETWORK WIRING.

B. THE SPECIFIED CONTRACTOR SHALL BE RESPONSIBLE FOR THE NETWORK AREA CONTROLLER(S) (BMS), SOFTWARE AND PROGRAMMING OF THE BMS, GRAPHICAL USER INTERFACE SOFTWARE (GUI), DEVELOPMENT OF ALL GRAPHICAL SCREENS, WEB BROWSER PAGES, SETUP OF SCHEDULES, LOGS AND ALARMS, LONWORKS NETWORK MANAGEMENT AND CONNECTION OF THE BMS TO THE LOCAL OR WIDE AREA NETWORK.

C. PROVIDE SUPPORT FOR THE BALANCING CONTRACTOR.

D. INTERFACE AND WORK WITH COMMISSIONING AGENT (CXA)

1.6 AGENCY AND CODE APPROVALS

A. ALL PRODUCTS OF THE TCS AND BMCS SHALL BE PROVIDED WITH THE FOLLOWING AGENCY APPROVALS. VERIFICATION THAT THE APPROVALS EXIST FOR ALL SUBMITTED PRODUCTS SHALL BE PROVIDED WITH THE SUBMITTAL PACKAGE. SYSTEMS OR PRODUCTS NOT CURRENTLY OFFERING THE FOLLOWING APPROVALS ARE NOT ACCEPTABLE.

1. UL-916; ENERGY MANAGEMENT SYSTEMS

2. C-UL LISTED TO CANADIAN STANDARDS ASSOCIATION C22.2 NO. 205-M1983 "SIGNAL EQUIPMENT"

3. CE

4. FCC, PART 15, SUBPART J, CLASS A COMPUTING DEVICES

1.7 SOFTWARE LICENSE AGREEMENT

A. THE OWNER SHALL AGREE TO THE MANUFACTURER'S STANDARD SOFTWARE AND FIRMWARE LICENSING AGREEMENT AS A CONDITION OF THIS CONTRACT. SUCH LICENSE SHALL GRANT USE OF ALL PROGRAMS AND APPLICATION SOFTWARE TO OWNER AS DEFINED BY THE MANUFACTURER'S LICENSE AGREEMENT, BUT SHALL PROTECT MANUFACTURER'S RIGHTS TO DISCLOSURE OF TRADE SECRETS CONTAINED WITHIN SUCH SOFTWARE.

B. THE OWNER SHALL BE THE NAMED LICENSE HOLDER OF ALL SOFTWARE ASSOCIATED WITH ANY AND ALL INCREMENTAL WORK ON THE PROJECT(S). IN ADDITION, THE OWNER SHALL RECEIVE OWNERSHIP OF ALL JOB SPECIFIC CONFIGURATION DOCUMENTATION, DATA FILES, AND APPLICATION-LEVEL SOFTWARE DEVELOPED FOR THE PROJECT. THIS SHALL INCLUDE ALL CUSTOM, JOB SPECIFIC SOFTWARE CODE AND DOCUMENTATION FOR ALL CONFIGURATION AND PROGRAMMING THAT IS GENERATED FOR A GIVEN PROJECT AND/OR CONFIGURED FOR USE WITH THE BMS, BMCS SERVER(S), AND ANY RELATED LAN / WAN / INTRANET AND INTERNET CONNECTED ROUTERS AND DEVICES. ANY AND ALL REQUIRED IDS AND PASSWORDS FOR ACCESS TO ANY COMPONENT OR SOFTWARE PROGRAM SHALL BE PROVIDED TO THE OWNER. THE OWNER SHALL DETERMINE WHICH ORGANIZATIONS TO BE NAMED IN THE SI ORGANIZATION ID ("ORGID") OF ALL SOFTWARE LICENSES. OWNER SHALL BE FREE TO DIRECT THE MODIFICATION OF THE "ORGID" IN ANY SOFTWARE LICENSE, REGARDLESS OF SUPPLIER.

1.8 DELIVERY, STORAGE AND HANDLING

A. PROVIDE FACTORY-SHIPPING CARTONS FOR EACH PIECE OF EQUIPMENT AND CONTROL DEVICE. MAINTAIN CARTONS THROUGH SHIPPING, STORAGE, AND HANDLING AS REQUIRED TO PREVENT EQUIPMENT DAMAGE. STORE EQUIPMENT AND MATERIALS INSIDE AND PROTECTED FROM WEATHER.

1.9 JOB CONDITIONS

A. COOPERATION WITH OTHER TRADES: COORDINATE THE WORK OF THIS SECTION WITH THAT OF OTHER SECTIONS TO ENSURE THAT THE WORK WILL BE CARRIED OUT IN AN ORDERLY FASHION. IT SHALL BE THIS CONTRACTOR'S RESPONSIBILITY TO CHECK THE CONTRACT DOCUMENTS FOR POSSIBLE CONFLICTS BETWEEN HIS WORK AND THAT OF OTHER CRAFTS IN EQUIPMENT LOCATION, PIPE, DUCT AND CONDUIT RUNS, ELECTRICAL OUTLETS AND FIXTURES, AIR DIFFUSERS, AND STRUCTURAL AND ARCHITECTURAL FEATURES.

PART 2 - MATERIALS

2.01 GENERAL

A. THE TEMPERATURE CONTROL SYSTEM (TCS) AND BUILDING MANAGEMENT CONTROL SYSTEM (BMCS) SHALL BE COMPRISED OF A NETWORK OF INTEROPERABLE, STAND-ALONE DIGITAL CONTROLLERS, A COMPUTER SYSTEM (SERVER PROVIDED BY CUSTOMER), GRAPHICAL USER INTERFACE SOFTWARE, NETWORK DEVICES, VALVES, DAMPERS, SENSORS, AND OTHER DEVICES AS SPECIFIED HEREIN.

B. THE INSTALLED SYSTEM SHALL PROVIDE SECURE PASSWORD ACCESS TO ALL FEATURES, FUNCTIONS AND DATA CONTAINED IN THE OVERALL BMCS.

2.02 PRE-APPROVED INTALLERS

A. CURTIS ELECTRIC
B. HARRIS CONTROLS
C. ATKINSON ELECTRONICS

2.03 OPEN, INTEROPERABLE, INTEGRATED ARCHITECTURES

A. THE INTENT OF THIS SPECIFICATION IS TO PROVIDE A PEER-TO-PEER NETWORKED, STAND-ALONE, DISTRIBUTED CONTROL SYSTEM WITH THE CAPABILITY TO INTEGRATE ANSI/ASHRAE STANDARD 135-2001 BACNET, LONWORKS TECHNOLOGY, MODBUS, OPC, AND OTHER OPEN AND PROPRIETARY COMMUNICATION PROTOCOLS IN ONE OPEN, INTEROPERABLE SYSTEM.

B. THE SUPPLIED SUPERVISOR SOFTWARE WITH A 5-YEAR SOFTWARE MAINTENANCE AGREEMENT (SMA) SHALL EMPLOY OBJECT-ORIENTED TECHNOLOGY (OOT) FOR REPRESENTATION OF ALL DATA AND CONTROL DEVICES WITHIN THE SYSTEM. IN ADDITION, ADHERENCE TO INDUSTRY STANDARDS INCLUDING ANSI / ASHRAE™ STANDARD 135-2001, BACNET AND LONMARK TO ASSURE INTEROPERABILITY BETWEEN ALL SYSTEM COMPONENTS IS REQUIRED. FOR EACH LONWORKS DEVICE THAT DOES NOT HAVE LONMARK CERTIFICATION, THE DEVICE SUPPLIER MUST PROVIDE AN XIF FILE AND A RESOURCE FILE FOR THE DEVICE. FOR EACH BACNET DEVICE, THE DEVICE SUPPLIER MUST PROVIDE A PICS DOCUMENT SHOWING THE INSTALLED DEVICE'S COMPLIANCE LEVEL. MINIMUM COMPLIANCE IS LEVEL 3; WITH THE ABILITY TO SUPPORT DATA READ AND WRITE FUNCTIONALITY. PHYSICAL CONNECTION OF BACNET DEVICES SHALL BE VIA ETHERNET (BACNET ETHERNET/IP,) AND/OR RS-485 (BACNET MSTP) AS SPECIFIED.

C. ALL COMPONENTS AND CONTROLLERS SUPPLIED UNDER THIS SPECIFICATION SHALL BE TRUE "PEER-TO-PEER" COMMUNICATING DEVICES. COMPONENTS OR CONTROLLERS REQUIRING "POLLING" BY A HOST TO PASS DATA SHALL NOT BE ACCEPTABLE.

D. THE SUPPLIED SYSTEM MUST INCORPORATE THE ABILITY TO ACCESS ALL DATA USING STANDARD WEB BROWSERS WITHOUT REQUIRING PROPRIETARY OPERATOR INTERFACE AND CONFIGURATION PROGRAMS. AN OPEN DATABASE CONNECTIVITY (ODBC) OR STRUCTURED QUERY LANGUAGE (SQL) COMPLIANT SERVER DATABASE IS REQUIRED FOR ALL SYSTEM DATABASE PARAMETER STORAGE. THIS DATA SHALL RESIDE ON A SUPPLIER-INSTALLED SERVER FOR ALL DATABASE ACCESS. SYSTEMS REQUIRING PROPRIETARY DATABASE AND USER INTERFACE PROGRAMS SHALL NOT BE ACCEPTABLE.

E. A HIERARCHICAL TOPOLOGY IS REQUIRED TO ASSURE REASONABLE SYSTEM RESPONSE TIMES AND TO MANAGE THE FLOW AND SHARING OF DATA WITHOUT UNDULY BURDENING THE CUSTOMER'S INTERNAL INTRANET NETWORK. SYSTEMS EMPLOYING A "FLAT" SINGLE TIERED ARCHITECTURE SHALL NOT BE ACCEPTABLE.

1. MAXIMUM ACCEPTABLE RESPONSE TIME FROM ANY ALARM OCCURRENCE (AT THE POINT OF ORIGIN) TO THE POINT OF ANNUNCIATION SHALL NOT EXCEED 5 SECONDS FOR NETWORK CONNECTED USER INTERFACES.
2. MAXIMUM ACCEPTABLE RESPONSE TIME FROM ANY ALARM OCCURRENCE (AT THE POINT OF ORIGIN) TO THE POINT OF ANNUNCIATION SHALL NOT EXCEED 60 SECONDS FOR REMOTE OR DIAL-UP CONNECTED USER INTERFACES.

2.04 NETWORKS

A. THE LOCAL AREA NETWORK (LAN) SHALL BE A 100 MEGABITS/SEC OR GREATER ETHERNET NETWORK SUPPORTING LON, BACNET, JAVA, XML, HTTP, AND SOAP FOR MAXIMUM FLEXIBILITY FOR INTEGRATION OF BUILDING DATA WITH ENTERPRISE INFORMATION SYSTEMS.

B. LOCAL AREA NETWORK MINIMUM PHYSICAL AND MEDIA ACCESS REQUIREMENTS:

1. ETHERNET; IEEE STANDARD 802.3
2. CABLE; 100 BASE-T, UTP-8 WIRE, CATEGORY 5E OR GREATER.
3. MINIMUM THROUGHPUT; 100 MBPS.

C. ECHELON (LONWORKS) NETWORK SHALL BE FTT10 WITH HONEYWELL E-BUS CABLE OR CAT-5E EQUIVALENT

2.05 NETWORK ACCESS

A. REMOTE ACCESS.

1. FOR LOCAL AREA NETWORK INSTALLATIONS, PROVIDE ACCESS TO THE LAN FROM A REMOTE LOCATION, VIA THE INTERNET. THE OWNER SHALL PROVIDE A CONNECTION TO THE INTERNET TO ENABLE THIS ACCESS VIA HIGH SPEED CABLE MODEM, ASYNCHRONOUS DIGITAL SUBSCRIBER LINE (ADSL) MODEM, ISDN LINE, T1 LINE OR VIA THE CUSTOMER'S INTRANET TO A CORPORATE SERVER PROVIDING ACCESS TO AN INTERNET SERVICE PROVIDER (ISP). CUSTOMER AGREES TO PAY MONTHLY ACCESS CHARGES FOR CONNECTION AND ISP.

2.06 BUILDING MANAGEMENT SYSTEM

A. THE CONTRACTOR SHALL SUPPLY ALL CONTROL PANELS USING JACE AND SUB-CONTROLLERS (OPEN JACE WITH EMBEDDED WORKBENCH PROGRAMMING TOOL, COMMUNICATION DRIVERS, AND A 5-YEAR SOFTWARE MAINTENANCE AGREEMENT (SMA)) AS PART OF THIS CONTRACT. NUMBER OF AREA CONTROLLERS REQUIRED IS DEPENDENT ON THE TYPE AND QUANTITY OF DEVICES PROVIDED.

B. THE BUILDING MANAGER SERVER (NIAGARA SUPERVISOR WITH 5 YEAR SMA) SHALL PROVIDE THE INTERFACE BETWEEN THE LAN OR WAN AND THE FIELD CONTROL DEVICES, AND PROVIDE GLOBAL SUPERVISORY CONTROL FUNCTIONS OVER THE CONTROL DEVICES. IT SHALL BE CAPABLE OF EXECUTING APPLICATION CONTROL PROGRAMS TO PROVIDE:

1. CALENDAR FUNCTIONS
2. SCHEDULING
3. TRENDING
4. ALARM MONITORING AND ROUTING
5. TIME SYNCHRONIZATION
6. INTEGRATION OF LONWORKS OR BACNET CONTROLLER DATA AND NIAGARA-N4 CONTROLLER DATA
7. NETWORK MANAGEMENT FUNCTIONS FOR ALL LONWORKS OR BACNET BASED DEVICES

C. THE BMS MUST PROVIDE THE FOLLOWING HARDWARE FEATURES AS A MINIMUM:

1. SERVER PROVIDED BY CUSTOMER

D. THE BMS SHALL PROVIDE MULTIPLE USER ACCESS TO THE SYSTEM AND SUPPORT FOR ODBC OR SQL.

E. THE BMS SHALL SUPPORT STANDARD WEB BROWSER ACCESS VIA THE INTRANET/INTERNET.

F. EVENT ALARM NOTIFICATION AND ACTIONS

1. THE BMS SHALL PROVIDE ALARM RECOGNITION, STORAGE; ROUTING, MANAGEMENT, AND ANALYSIS TO SUPPLEMENT DISTRIBUTED CAPABILITIES OF EQUIPMENT OR APPLICATION SPECIFIC CONTROLLERS.
2. THE BMS SHALL BE ABLE TO ROUTE ANY ALARM CONDITION TO ANY DEFINED USER LOCATION WHETHER CONNECTED TO A LOCAL NETWORK OR REMOTE VIA WIDE-AREA NETWORK.
3. ALARM GENERATION SHALL BE SELECTABLE FOR ANNUNCIATION TYPE AND ACKNOWLEDGEMENT REQUIREMENTS INCLUDING BUT LIMITED TO:

a. TO ALARM
b. RETURN TO NORMAL
c. TO FAULT

G. CONTROL EQUIPMENT AND NETWORK FAILURES SHALL BE TREATED AS ALARMS AND ANNUNCIATED.

H. ALARMS SHALL BE ANNUNCIATED IN ANY OF THE FOLLOWING MANNERS AS DEFINED BY THE USER:

1. SCREEN MESSAGE TEXT
2. EMAIL OF THE COMPLETE ALARM MESSAGE TO MULTIPLE RECIPIENTS. PROVIDE THE ABILITY TO ROUTE AND EMAIL ALARMS BASED ON:

a. DAY OF WEEK
b. TIME OF DAY
c. RECIPIENT

3. PAGERS VIA PAGING SERVICES THAT INITIATE A PAGE ON RECEIPT OF EMAIL MESSAGE
4. GRAPHIC WITH FLASHING ALARM OBJECT(S)

I. THE FOLLOWING SHALL BE RECORDED BY THE BMS FOR EACH ALARM (AT A MINIMUM):
1. TIME AND DATE
2. LOCATION (BUILDING, FLOOR, ZONE, OFFICE NUMBER, ETC.)
3. EQUIPMENT (AIR HANDLER #, ACCESS WAY, ETC.)
4. ACKNOWLEDGE TIME, DATE, AND USER WHO ISSUED ACKNOWLEDGEMENT
5. NUMBER OF OCCURRENCES SINCE LAST ACKNOWLEDGEMENT.

J. ALARM ACTIONS MAY BE INITIATED BY USER DEFINED PROGRAMMABLE OBJECTS CREATED FOR THAT PURPOSE.

K. DEFINED USERS SHALL BE GIVEN PROPER ACCESS TO ACKNOWLEDGE ANY ALARM, OR SPECIFIC TYPES OR CLASSES OF ALARMS DEFINED BY THE USER.

L. A LOG OF ALL ALARMS SHALL BE MAINTAINED BY THE BMS AND/OR A SERVER (IF CONFIGURED IN THE SYSTEM) AND SHALL BE AVAILABLE FOR REVIEW BY THE USER.

M. PROVIDE A "QUERY" FEATURE TO ALLOW REVIEW OF SPECIFIC ALARMS BY USER DEFINED PARAMETERS.

N. A SEPARATE LOG FOR SYSTEM ALERTS (CONTROLLER FAILURES, NETWORK FAILURES, ETC.) SHALL BE PROVIDED AND AVAILABLE FOR REVIEW BY THE USER.

O. AN ERROR LOG TO RECORD INVALID PROPERTY CHANGES OR COMMANDS SHALL BE PROVIDED AND AVAILABLE FOR REVIEW BY THE USER.

2.07 DATA COLLECTION AND STORAGE

1. THE BMS SHALL HAVE THE ABILITY TO COLLECT DATA FOR ANY PROPERTY OF ANY OBJECT AND STORE THIS DATA FOR FUTURE USE.

2. THE DATA COLLECTION SHALL BE PERFORMED BY LOG OBJECTS, RESIDENT IN THE BMS THAT SHALL HAVE, AT A MINIMUM, THE FOLLOWING CONFIGURABLE PROPERTIES:

1. DESIGNATING THE LOG AS INTERVAL OR DEVIATION.
2. FOR INTERVAL LOGS, THE OBJECT SHALL BE CONFIGURED FOR TIME OF DAY, DAY OF WEEK AND THE SAMPLE COLLECTION INTERVAL.
3. FOR DEVIATION LOGS, THE OBJECT SHALL BE CONFIGURED FOR THE DEVIATION OF A VARIABLE TO A FIXED VALUE. THIS VALUE, WHEN REACHED, WILL INITIATE LOGGING OF THE OBJECT.
4. FOR ALL LOGS, PROVIDE THE ABILITY TO SET THE MAXIMUM NUMBER OF DATA STORES FOR THE LOG AND TO SET WHETHER THE LOG WILL STOP COLLECTING WHEN FULL, OR ROLLOVER THE DATA ON A FIRST-IN, FIRST-OUT BASIS.
5. EACH LOG SHALL HAVE THE ABILITY TO HAVE ITS DATA CLEARED ON A TIME-BASED EVENT OR BY A USER-DEFINED EVENT OR ACTION.

C. ALL LOG DATA SHALL BE STORED IN A RELATIONAL DATABASE IN THE BMS AND THE DATA SHALL BE ACCESSED FROM A SERVER (IF THE SYSTEM IS SO CONFIGURED) OR A STANDARD WEB BROWSER.

D. ALL LOG DATA, WHEN ACCESSED FROM A SERVER, SHALL BE CAPABLE OF BEING MANIPULATED USING STANDARD SQL STATEMENTS.

E. ALL LOG DATA SHALL BE AVAILABLE TO THE USER IN THE FOLLOWING DATA FORMATS:

1. HTML
2. XML
3. PLAIN TEXT
4. COMMA OR TAB SEPARATED VALUES

F. THE BMS SHALL HAVE THE ABILITY TO ARCHIVE ITS LOG DATA.

1. ARCHIVE ON TIME OF DAY
2. ARCHIVE ON USER-DEFINED NUMBER OF DATA STORES IN THE LOG (BUFFER SIZE)
3. ARCHIVE WHEN LOG HAS REACHED ITS USER-DEFINED CAPACITY OF DATA STORES
4. PROVIDE ABILITY TO CLEAR LOGS ONCE ARCHIVED

G. HISTORIES AND TRENDING.

1. HISTORIES SHALL INCLUDE ALL INPUT AND OUTPUT DEVICES AND THEIR ASSOCIATED CONTROL POINTS (I.E. SETPOINTS).
2. TRENDING SHALL BE ABLE TO BE DISPLAYED IN DASHBOARDS, CHARTS, OR GRAPHS.

2.08 AUDIT LOG

1. PROVIDE AND MAINTAIN AN AUDIT LOG THAT TRACKS ALL ACTIVITIES PERFORMED ON THE BMS. PROVIDE THE ABILITY TO SPECIFY A BUFFER SIZE FOR THE LOG AND THE ABILITY TO ARCHIVE LOG BASED ON TIME OR WHEN THE LOG HAS REACHED ITS USER-DEFINED BUFFER SIZE. PROVIDE THE ABILITY TO ARCHIVE THE LOG LOCALLY (TO THE BMS), TO ANOTHER BMS ON THE NETWORK, OR TO A SERVER. FOR EACH LOG ENTRY, PROVIDE THE FOLLOWING DATA:

1. TIME AND DATE
2. USER ID
3. CHANGE OR ACTIVITY: I.E., CHANGE SETPOINT, ADD OR DELETE OBJECTS, COMMANDS, ETC.

2.09 DATABASE BACKUP AND STORAGE

A. THE BMS SHALL HAVE THE ABILITY TO AUTOMATICALLY BACKUP ITS DATABASE. THE DATABASE SHALL BE BACKED UP BASED ON A USER-DEFINED TIME INTERVAL.

B. COPIES OF THE CURRENT DATABASE AND, AT THE MOST RECENTLY SAVED DATABASE SHALL BE STORED IN THE BMS. THE AGE OF THE MOST RECENTLY SAVED DATABASE IS DEPENDENT ON THE USER-DEFINED DATABASE SAVE INTERVAL.

C. THE BMS DATABASE SHALL BE STORED, AT A MINIMUM, IN XML FORMAT TO ALLOW FOR USER VIEWING AND EDITING, IF DESIRED. OTHER FORMATS ARE ACCEPTABLE AS WELL, AS LONG AS XML FORMAT IS SUPPORTED.

D. A COPY OF THE CURRENT DATABASE SHALL BE SENT TO CUSTOMER HEADQUARTERS.

2.10 INTEROPERABLE DIGITAL CONTROLLER (IDC)

A. CONTROLS SHALL BE THE LATEST HONEYWELL NIAGARA N4 MICROPROCESSOR BASED INTEROPERABLE LONWORKS CONTROLLERS (IDC) WITH ADD ON I/O MODULES OR USING UNITARY CONTROLLER ARCHITECTURE. WHERE POSSIBLE, ALL INTEROPERABLE DIGITAL CONTROLLERS SHALL BEAR THE APPLICABLE LONMARKÄ INTEROPERABILITY LOGO ON EACH PRODUCT DELIVERED.

B. HVAC CONTROL SHALL BE ACCOMPLISHED USING LONMARKÄ BASED DEVICES WHERE THE APPLICATION HAS A LONMARK PROFILE DEFINED. WHERE LONMARK DEVICES ARE NOT AVAILABLE FOR A PARTICULAR APPLICATION, DEVICES BASED ON LONWORKS SHALL BE ACCEPTABLE. FOR EACH LONWORKS DEVICE THAT DOES NOT HAVE LONMARK CERTIFICATION, THE DEVICE SUPPLIER MUST PROVIDE AN XIF FILE FOR THE DEVICE. PUBLICLY AVAILABLE SPECIFICATIONS FOR THE APPLICATIONS PROGRAMMING INTERFACE (API) MUST BE PROVIDED FOR EACH LONWORKS / LONMARK CONTROLLER DEFINING THE PROGRAMMING OR SETUP OF EACH DEVICE. THE CONTRACTOR SHALL PROVIDE ALL PROGRAMMING, DOCUMENTATION AND PROGRAMMING TOOLS NECESSARY TO SET UP AND CONFIGURE THE SUPPLIED DEVICES PER THE SPECIFIED SEQUENCES OF OPERATION.

C. THE SPECIFIED CONTRACTOR SHALL RUN THE LONWORKS OR BACNET NETWORK TRUNK TO THE NEAREST NETWORK AREA CONTROLLER (NAC). COORDINATE LOCATIONS OF THE BMS TO ENSURE THAT MAXIMUM NETWORK WIRING DISTANCES, AS SPECIFIED BY THE LONWORKS WIRING GUIDELINES, ARE NOT EXCEEDED. A MAXIMUM OF 126 DEVICES MAY OCCUPY ANY ONE LONWORKS TRUNK AND MUST BE INSTALLED USING THE APPROPRIATE TRUNK TERMINATION DEVICE. ALL LONWORKS AND LONMARK DEVICES MUST BE SUPPLIED USING FTT-10A LONWORKS COMMUNICATIONS TRANSCEIVERS.

D. THE NETWORK AREA CONTROLLER (NAC) WILL PROVIDE ALL SCHEDULING, ALARMING, TRENDING, AND NETWORK MANAGEMENT FOR THE LONMARK / LONWORKS OR BACNET BASED DEVICES.

E. THE IDCS SHALL COMMUNICATE WITH THE BMS AT A BAUD RATE OF NOT LESS THAN 78.8K BAUD. THE IDC SHALL PROVIDE LED INDICATION OF COMMUNICATION AND CONTROLLER PERFORMANCE TO THE TECHNICIAN, WITHOUT COVER REMOVAL.

F. ALL IDCS SHALL BE FULLY APPLICATION PROGRAMMABLE AND SHALL AT ALL TIMES MAINTAIN THEIR LONMARK CERTIFICATION, IF SO CERTIFIED. CONTROLLERS OFFERING APPLICATION SELECTION ONLY (NON-PROGRAMMABLE), REQUIRE A 10% SPARE POINT CAPACITY TO BE PROVIDED FOR ALL APPLICATIONS. ALL CONTROL SEQUENCES WITHIN OR PROGRAMMED INTO THE IDC SHALL BE STORED IN NON-VOLATILE MEMORY, WHICH IS NOT DEPENDENT UPON THE PRESENCE OF A BATTERY, TO BE RETAINED. PROVIDE 10% CAPACITY SPARE POINTS ON AL CONTROL POINTS.

G. THE SPECIFIED CONTRACTOR SUPPLYING THE IDC'S SHALL PROVIDE DOCUMENTATION FOR EACH DEVICE, WITH THE FOLLOWING INFORMATION AT A MINIMUM:

1. NETWORK VARIABLE INPUTS (NVI'S); NAME AND TYPE
2. NETWORK VARIABLE OUTPUTS (NVO'S); NAME AND TYPE
3. NETWORK CONFIGURATION PARAMETERS (NCI, NCO); NAME AND TYPE

H. IT IS THE RESPONSIBILITY OF THE SPECIFIED CONTRACTOR TO ENSURE THAT THE PROPER NETWORK VARIABLE INPUTS AND OUTPUTS (NVI AND NVO) ARE PROVIDED IN EACH IDC, AS REQUIRED BY THE POINT CHARTS.

2.11 GRAPHICAL USER INTERFACE SOFTWARE

A. OPERATING SYSTEM:

1. THE GUI SHALL RUN ON LATEST MICROSOFT WINDOWS OPERATING SYSTEM.

B. THE GUI SHALL EMPLOY BROWSER-LIKE FUNCTIONALITY FOR EASE OF NAVIGATION. IT SHALL INCLUDE A TREE VIEW (SIMILAR TO WINDOWS EXPLORER) FOR QUICK VIEWING OF, AND ACCESS TO, THE HIERARCHICAL STRUCTURE OF THE DATABASE. IN ADDITION, MENU-PULL DOWNS, AND TOOLBARS SHALL EMPLOY BUTTONS, COMMANDS AND NAVIGATION TO PERMIT THE OPERATOR TO PERFORM TASKS WITH A MINIMUM KNOWLEDGE OF THE HVAC CONTROL SYSTEM AND BASIC COMPUTING SKILLS. THESE SHALL INCLUDE, BUT ARE NOT LIMITED TO, FORWARD/BACKWARD BUTTONS, HOME BUTTON, AND A CONTEXT SENSITIVE LOCATOR LINE (SIMILAR TO A URL LINE), THAT DISPLAYS THE LOCATION AND THE SELECTED OBJECT IDENTIFICATION.

C. REAL-TIME DISPLAYS. THE GUI, SHALL AT A MINIMUM, SUPPORT THE FOLLOWING GRAPHICAL FEATURES AND FUNCTIONS:

1. GRAPHICS SHALL BE HONEYWELL PLATINUM QUALITY. GRAPHIC SCREENS SHALL BE DEVELOPED USING ANY DRAWING PACKAGE CAPABLE OF GENERATING A GIF, BMP, OR JPG FILE FORMAT. USE OF PROPRIETARY GRAPHIC FILE FORMATS SHALL NOT BE ACCEPTABLE. IN ADDITION TO, OR IN LIEU OF A GRAPHIC BACKGROUND, THE GUI SHALL SUPPORT THE USE OF SCANNED PICTURES.
2. GRAPHIC SCREENS SHALL HAVE THE CAPABILITY TO CONTAIN OBJECTS FOR TEXT, REAL-TIME VALUES, ANIMATION, COLOR SPECTRUM OBJECTS, LOGS, GRAPHS, HTML OR XML DOCUMENT LINKS, SCHEDULE OBJECTS, HYPERLINKS TO OTHER URL'S, AND LINKS TO OTHER GRAPHIC SCREENS.
3. GRAPHICS SHALL SUPPORT LAYERING AND EACH GRAPHIC OBJECT SHALL BE CONFIGURABLE FOR ASSIGNMENT TO A LAYER. A MINIMUM OF SIX LAYERS SHALL BE SUPPORTED.
4. MODIFYING COMMON APPLICATION OBJECTS, SUCH AS SCHEDULES, CALENDARS, AND SET POINTS SHALL BE ACCOMPLISHED IN A GRAPHICAL MANNER.
5. COMMANDS TO START AND STOP BINARY OBJECTS SHALL BE DONE BY SELECTING SELECTED OBJECT AND SELECTING THE APPROPRIATE COMMAND FROM THE POP-UP MENU.
6. ADJUSTMENTS TO ANALOG OBJECTS, SUCH AS SET POINTS, SHALL BE DONE BY SELECTING THE SELECTED OBJECT AND ADJUSTING THE VALUE.
7. ALL GRAPHICS TO BE APPROVED BY CE AND OR COMMISSIONING AGENT (CXA)

D. SYSTEM CONFIGURATION. AT A MINIMUM, THE GUI SHALL PERMIT THE OPERATOR TO PERFORM THE FOLLOWING TASKS, WITH PROPER PASSWORD ACCESS:

1. SELECT POINTS TO BE TRENDED OVER A PERIOD OF TIME AND INITIATE THE RECORDING OF VALUES AUTOMATICALLY.

E. ON-LINE HELP. PROVIDE A CONTEXT SENSITIVE, ON-LINE HELP SYSTEM TO ASSIST THE OPERATOR IN OPERATION AND EDITING OF THE SYSTEM. ON-LINE HELP SHALL BE AVAILABLE FOR ALL APPLICATIONS AND SHALL PROVIDE THE RELEVANT DATA FOR THAT PARTICULAR SCREEN. ADDITIONAL HELP INFORMATION SHALL BE AVAILABLE THROUGH THE USE OF HYPERTEXT. ALL SYSTEM DOCUMENTATION AND HELP FILES SHALL BE IN HTML FORMAT.

F. SECURITY. EACH OPERATOR SHALL BE REQUIRED TO LOG ON TO THAT SYSTEM WITH A USER NAME AND PASSWORD IN ORDER TO VIEW, EDIT, ADD, OR DELETE DATA. SYSTEM SECURITY SHALL BE SELECTABLE FOR EACH OPERATOR. THE SYSTEM ADMINISTRATOR SHALL HAVE THE ABILITY TO SET PASSWORDS AND SECURITY LEVELS FOR ALL OTHER OPERATORS. EACH OPERATOR PASSWORD SHALL BE ABLE TO RESTRICT THE OPERATORS' ACCESS FOR VIEWING AND/OR CHANGING EACH SYSTEM APPLICATION, FULL SCREEN EDITOR, AND OBJECT. EACH OPERATOR SHALL AUTOMATICALLY BE LOGGED OFF OF THE SYSTEM IF NO KEYBOARD OR MOUSE ACTIVITY IS DETECTED. THIS AUTO LOG-OFF TIME SHALL BE SET PER OPERATOR PASSWORD. ALL SYSTEM SECURITY DATA SHALL BE STORED IN AN ENCRYPTED FORMAT.

G. SYSTEM DIAGNOSTICS. THE SYSTEM SHALL AUTOMATICALLY MONITOR THE OPERATION OF ALL WORKSTATIONS, PRINTERS, MODEMS, NETWORK CONNECTIONS, BUILDING MANAGEMENT PANELS, AND CONTROLLERS. THE FAILURE OF ANY DEVICE SHALL BE ANNUNCIATED TO THE OPERATOR.

H. ALARM CONSOLE

1. THE SYSTEM WILL BE PROVIDED WITH A DEDICATED ALARM WINDOW OR CONSOLE. THIS WINDOW WILL NOTIFY THE OPERATOR OF AN ALARM CONDITION, AND ALLOW THE OPERATOR TO VIEW DETAILS OF THE ALARM AND ACKNOWLEDGE THE ALARM. THE USE OF THE ALARM CONSOLE CAN BE ENABLED OR DISABLED BY THE SYSTEM ADMINISTRATOR.
2. WHEN THE ALARM CONSOLE IS ENABLED, A SEPARATE ALARM NOTIFICATION WINDOW WILL SUPERSEDE ALL OTHER WINDOWS ON THE DESKTOP AND SHALL NOT BE CAPABLE OF BEING MINIMIZED OR CLOSED BY THE OPERATOR. THIS WINDOW WILL NOTIFY THE OPERATOR OF NEW ALARMS AND UN-ACKNOWLEDGED ALARMS. ALARM NOTIFICATION WINDOWS OR BANNERS THAT CAN BE MINIMIZED OR CLOSED BY THE OPERATOR SHALL NOT BE ACCEPTABLE.

2.12 SYSTEM PROGRAMMING

A. PROGRAMMER SHALL USE THE LATEST VERSION OF THE WORKBENCH OR EQUIVALENT PROGRAMMING TOOL.

2.13 LONWORKS NETWORK MANAGEMENT

A. THE GRAPHICAL USER INTERFACE SOFTWARE (GUI) SHALL PROVIDE A COMPLETE SET OF INTEGRATED LONWORKS NETWORK MANAGEMENT TOOLS FOR WORKING WITH LONWORKS NETWORKS. THESE TOOLS SHALL MANAGE A DATABASE FOR ALL LONWORKS DEVICES BY TYPE AND REVISION, AND SHALL PROVIDE A SOFTWARE MECHANISM FOR IDENTIFYING EACH DEVICE ON THE NETWORK. THESE TOOLS SHALL ALSO BE CAPABLE OF DEFINING NETWORK DATA CONNECTIONS BETWEEN LONWORKS DEVICES, KNOWN AS "BINDING". SYSTEMS REQUIRING THE USE OF THIRD PARTY LONWORKS NETWORK MANAGEMENT TOOLS SHALL NOT BE ACCEPTED.

B. NETWORK MANAGEMENT SHALL INCLUDE THE FOLLOWING SERVICES: DEVICE IDENTIFICATION, DEVICE I NSTALLATION, DEVICE CONFIGURATION, DEVICE DIAGNOSTICS, DEVICE MAINTENANCE AND NETWORK VARIABLE BINDING.

C. THE NETWORK CONFIGURATION TOOL SHALL ALSO PROVIDE DIAGNOSTICS TO IDENTIFY DEVICES ON THE NETWORK, TO RESET DEVICES, AND TO VIEW HEALTH AND STATUS COUNTERS WITHIN DEVICES.

D. THESE TOOLS SHALL PROVIDE THE ABILITY TO "LEARN" AN EXISTING LONWORKS NETWORK, REGARDLESS OF WHAT NETWORK MANAGEMENT TOOL(S) WERE USED TO INSTALL THE EXISTING NETWORK, SO THAT EXISTING LONWORKS DEVICES AND NEWLY ADDED DEVICES ARE PART OF A SINGLE NETWORK MANAGEMENT DATABASE.

E. THE NETWORK MANAGEMENT DATABASE SHALL BE RESIDENT IN THE NETWORK AREA CONTROLLER (BMS), ENSURING THAT ANYONE WITH PROPER AUTHORIZATION HAS ACCESS TO THE NETWORK MANAGEMENT DATABASE AT ALL TIMES. SYSTEMS EMPLOYING NETWORK MANAGEMENT DATABASES THAT ARE NOT RESIDENT, AT ALL TIMES, WITHIN THE CONTROL SYSTEM, SHALL NOT BE ACCEPTED

2.14 OTHER CONTROL SYSTEM HARDWARE

A. SPACE TEMPERATURE WALL MODULE. WALL MODULE SHALL BE HONEYWELL TR SERIES.

1. WALL MODULE SHALL HAVE A THERMISTOR TEMPERATURE SENSOR WITH OPERATING RANGE OF 45 TO 99 F WITH UL 916 LISTING DESIGNED FOR MOUNTING ON A STANDARD ELECTRICAL SWITCH BOX.
2. SPACE TEMPERATURE SENSORS SHALL BE ACCURATE TO PLUS OR MINUS ONE-DEGREE F.
3. ALL TEMPERATURE DEVICES SHALL USE PRECISION THERMISTORS ACCURATE TO +/- 1 DEGREE F OVER A RANGE OF –30 TO 230 DEGREES F. SPACE TEMPERATURE SENSORS SHALL BE ACCURATE TO +/- .5 DEGREES F OVER A RANGE OF 40 TO 100 DEGREES F.
4. STANDARD SPACE SENSORS SHALL BE AVAILABLE IN AN OFF WHITE ENCLOSURE FOR MOUNTING ON A STANDARD ELECTRICAL BOX.
5. DUCT TEMPERATURE SENSORS SHALL INCORPORATE A THERMISTOR BEAD EMBEDDED AT THE TIP OF A STAINLESS STEEL TUBE. PROBE STYLE DUCT SENSORS ARE USEABLE IN AIR HANDLING APPLICATIONS WHERE THE COIL OR DUCT AREA IS LESS THAN 14 SQUARE FEET.
6. AVERAGING SENSORS SHALL BE EMPLOYED IN DUCTS WHICH ARE LARGER THAN 14 SQUARE FEET. THE AVERAGING SENSOR TUBE MUST CONTAIN AT LEAST ONE THERMISTOR FOR EVERY 3 FEET, WITH A MINIMUM TUBE LENGTH OF 12 FEET.
7. IMMERSION SENSORS SHALL BE EMPLOYED FOR MEASUREMENT OF TEMPERATURE IN ALL HOT WATER APPLICATIONS. THERMAL WELLS SHALL BE BRASS OR STAINLESS STEEL FOR NON-CORROSIVE FLUIDS BELOW 250 DEGREES F AND 300 SERIES STAINLESS STEEL FOR ALL OTHER APPLICATIONS.
8. A PNEUMATIC SIGNAL SHALL NOT BE ALLOWED FOR SENSING TEMPERATURE.

B. CONTROL VALVES: (GLOBE TYPE) VALVES SHALL BE HONEYWELL. CONTROL VALVES SHALL BE 2-WAY OR 3-WAY PATTERN AS SHOWN CONSTRUCTED FOR TIGHT SHUTOFF AND SHALL OPERATE SATISFACTORY AGAINST SYSTEM PRESSURES AND DIFFERENTIALS.

1. TWO-POSITION VALVES SHALL BE 'LINE' SIZE. PROPORTIONAL CONTROL VALVES SHALL BE SIZED FOR A MAXIMUM PRESSURE DROP OF 5.0 PSI AT RATED FLOW (EXCEPT AS MAY BE NOTED ON THE DRAWINGS).
2. TWO-WAY WATER VALVES SHALL HAVE EQUAL PERCENTAGE FLOW CHARACTERISTICS AND THREE-WAY VALVES SHALL HAVE EQUAL PERCENTAGE FLOW CHARACTERISTICS STRAIGHT THROUGH AND LINEAR THROUGH THE BYPASS.
3. PROVIDE VALVE POSITION INDICATOR ON ALL VALVES. LEAKAGE RATE SHALL BE NO MORE THAN 0.05% OF CV.
4. VALVES 1/2 INCH THROUGH 1 1/2 INCH SHALL BE SCREWED PATTERN EXCEPT WHERE SOLDER CONNECTIONS ARE SPECIFIED FOR VALVES 1/2 OR 3/4 INCHES.
5. VALVE AND CARTRIDGE REPLACEMENT TOOL SHALL BE CONFIGURED FOR MAINTENANCE OR REPLACEMENT WITHOUT DRAINING THE COIL TO PREVENT WATER SPILL; HOWEVER, AN INTEGRAL ISOLATION VALVE ON THE CONTROL VALVE OUTLET WILL ALSO BE ACCEPTABLE.
6. VALVES SHALL CLOSE OFF AGAINST 58 PSI MINIMUM.
7. TWO-INCH VALVES SHALL BE "SCREWED" CONFIGURATION AND 2-1/2 INCH AND LARGER VALVES SHALL BE "FLANGED" CONFIGURATION AND ANSI-RATED TO WITHSTAND THE PRESSURES AND TEMPERATURES ENCOUNTERED.
8. VALVES SHALL HAVE STAINLESS-STEEL STEMS AND SPRING-LOADED TEFLON PACKAGING WITH REPLACEABLE DISCS.

C. CONTROL VALVES: (CHARACTERIZED BALL VALVES) VALVES SHALL BE HONEYWELL. ALL CONTROL VALVES UP TO 2" SHALL BE CHARACTERIZED BALL VALVES. CONTROL VALVES ½ TO 2 INCHES SHALL BE 2-WAY OR 3-WAY FORGED BRASS SCREWED PATTERN AS SHOWN CONSTRUCTED FOR TIGHT SHUTOFF AND SHALL OPERATE SATISFACTORY AGAINST SYSTEM PRESSURES AND DIFFERENTIALS.

1. TWO-POSITION VALVES SHALL BE 'LINE' SIZE. PROPORTIONAL CONTROL VALVES SHALL BE SIZED FOR A MAXIMUM PRESSURE DROP OF 5.0 PSI AT RATED FLOW (EXCEPT AS MAY BE NOTED ON THE DRAWINGS).
2. TWO-WAY WATER VALVES SHALL HAVE EQUAL PERCENTAGE FLOW CHARACTERISTICS AND THREE-WAY VALVES SHALL HAVE EQUAL PERCENTAGE FLOW CHARACTERISTICS STRAIGHT THROUGH AND LINEAR FLOW THROUGH THE BYPASS.
3. LEAKAGE RATE SHALL BE ANSI CLASS IV (NO MORE THAN 0.01% OF CV).
4. VALVES SHALL BE RATED FOR NO LESS THAN 350 PSIG AT NO LESS THAN 250 DEGREES F.
5. PROVIDE A REMOVABLE HANDLE TO OPERATE VALVES MANUALLY DURING ACTUATOR POWER LOSS OR FAILURE.
6. TWO-WAY VALVES SHALL CLOSE OFF AGAINST 100 PSI MINIMUM, AND THREE-WAY VALVES SHALL CLOSE OFF AGAINST 40 PSI MINIMUM.
7. VALVES SHALL HAVE STAINLESS-STEEL OR CHEMICALLY NICKEL-PLATED BRASS STEM AND THROTTLING PORT.
8. VALVES SHALL BE TAGGED WITH CV RATING AND MODEL NUMBER.

D. BUTTERFLY CONTROL VALVES: VALVES SHALL BE HONEYWELL. WHERE SPECIFIED BUTTERFLY CONTROL VALVES OVER 2" IN SIZE SHALL BE CAST IRON BODY TYPE FOR 2-WAY OR 3-WAY APPLICATIONS SPECIFIED CONSTRUCTED FOR TIGHT SHUTOFF AND SHALL OPERATE SATISFACTORY AGAINST SYSTEM PRESSURES AND DIFFERENTIALS.

1. VALVES SHALL HAVE TAPPED LUGS FOR STANDARD FLANGE CONNECTION, AND DESIGNED FOR ISOLATION AND REMOVAL OF DOWNSTREAM PIPING AT FULL RATED PRESSURE.
2. TWO-POSITION VALVES SHALL BE 'LINE' SIZE.
3. PROPORTIONAL CONTROL VALVES SHALL BE SIZED FOR A MAXIMUM PRESSURE DROP OF 5.0 PSI AT RATED FLOW (EXCEPT AS MAY BE NOTED ON THE DRAWINGS).
4. VALVES SHALL BE RATED FOR BUBBLE TIGHT SHUTOFF AT NO LESS THAN 150 PSI.
5. VALVE DISC SHALL BE ALUMINUM BRONZE.
6. VALVE STEMS SHALL BE STAINLESS STEEL, WITH INBOARD TOP AND BOTTOM BRONZE BEARINGS, AND AN EXTERNAL CORROSION RESISTANT TOP BEARING TO ABSORB ACTUATOR SIDE THRUST.

VBFA
40 W. Cache Valley Blvd.
Building 1, Suite B
Logan, UT
O: (435)752-5081
www.vbfa.com
VBFA Project #: 23708

CONSTRUCTION DOCUMENTS

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL
114 EAST 1000 NORTH. LOGAN UTAH 84321
OWNER/ORG NAME

MARK: DATE: DESCRIPTION:

PROJECT #:	123998
DRAWN BY:	Author
CHECKED BY:	Checker
ISSUED:	12.07.2023

LICENSED PROFESSIONAL ENGINEER
02/01/24
No. 8388845
JEDEDIAH JENKINS
STATE OF UTAH

BUILDING AUTOMATION SPECIFICATIONS

M004

E. CONTROL VALVES

1. PROVIDE AUTOMATIC CONTROL VALVES SUITABLE FOR THE SPECIFIED CONTROLLED MEDIA (STEAM, WATER OR GLYCOL). PROVIDE VALVES WHICH MATE AND MATCH THE MATERIAL OF THE CONNECTED PIPING. EQUIP CONTROL VALVES WITH THE ACTUATORS OF REQUIRED INPUT POWER TYPE AND CONTROL SIGNAL TYPE TO ACCURATELY POSITION THE FLOW CONTROL ELEMENT AND PROVIDE SUFFICIENT FORCE TO ACHIEVE REQUIRED LEAKAGE SPECIFICATION.
2. CONTROL VALVES SHALL MEET THE HEATING AND COOLING LOADS SPECIFIED, AND CLOSE OFF AGAINST THE DIFFERENTIAL PRESSURE CONDITIONS WITHIN THE APPLICATION. VALVES SHOULD BE SIZED TO OPERATE ACCURATELY AND WITH STABILITY FROM 10 TO 100% OF THE MAXIMUM DESIGN FLOW.
3. TRIM MATERIAL SHALL BE STAINLESS STEEL FOR STEAM AND HIGH DIFFERENTIAL PRESSURE APPLICATIONS.
4. ELECTRIC ACTUATION SHOULD BE PROVIDED ON ALL TERMINAL UNIT REHEAT APPLICATIONS.

B. DUCT MOUNT, PIPE MOUNT AND OUTSIDE AIR TEMPERATURE SENSORS: TEMPERATURE SENSORS WITH AN ACCURACY OF ± 0.3° F. TEMPERATURE SENSORS SHALL BE 20K NTC HONEYWELL.

1. OUTSIDE AIR SENSORS SHALL INCLUDE AN INTEGRAL SUN SHIELD.
2. DUCT SENSORS SHALL HAVE SENSOR APPROXIMATELY IN CENTER OF THE DUCT, AND SHALL HAVE SELECTABLE LENGTHS OF 6, 12, AND 18 INCHES.
3. MULTIPOINT AVERAGING ELEMENT SENSORS SHALL BE PROVIDED WHERE SPECIFIED AND SHALL HAVE A MINIMUM OF ONE FOOT OF SENSOR LENGTH FOR EACH SQUARE FOOT OF DUCT AREA (PROVIDE MULTIPLE SENSORS IF NECESSARY).
4. PIPE MOUNT SENSORS SHALL HAVE COPPER, OR STAINLESS STEEL SEPARABLE WELLS.

C. CURRENT SENSITIVE SWITCHES: SOLID STATE, SPLIT CORE CURRENT SWITCH THAT OPERATES WHEN THE CURRENT LEVEL (SENSED BY THE INTERNAL CURRENT TRANSFORMER) EXCEEDS THE ADJUSTABLE TRIP POINT SHALL BE PROVIDED WHERE SPECIFIED. CURRENT SWITCHES SHALL INCLUDE AN INTEGRAL LED FOR INDICATION OF TRIP CONDITION AND A CURRENT LEVEL BELOW TRIP SET POINT.

D. LOW TEMPERATURE LIMIT SWITCHES. LIMIT SWITCHES SHALL BE HONEYWELL. SAFETY LOW LIMIT DUAL CONTACT SHALL BE MANUAL RESET TWENTY-FOOT LIMITED FILL TYPE RESPONSIVE TO THE COOLEST SECTION OF ITS LENGTH.

E. HIGH TEMPERATURE LIMIT SWITCHES. LIMIT AND SAFETY SWITCHES SHALL BE HONEYWELL. SAFETY HIGH LIMIT (FIRE STATS) SHALL BE MANUAL RESET TYPE.

F. CO2 SENSORS. CO2 SENSORS SHALL BE COMPATIBLE WITH HONEYWELL.

1. CARBON DIOXIDE SENSORS SHALL BE 0-10 VDC ANALOG OUTPUT TYPE, WITH CORROSION FREE GOLD-PLATED NON-DISPERSIVE INFRARED SENSING, DESIGNED FOR DUCT MOUNTING.
2. SENSOR SHALL INCORPORATE INTERNAL DIAGNOSTICS FOR POWER, SENSOR, ANALOG AND OUTPUT CHECKING, AND AUTOMATIC BACKGROUND CALIBRATION ALGORITHM FOR REDUCED MAINTENANCE. SENSOR RANGE SHALL BE 0-2000 PPM WITH +/- 30 PPM ACCURACY.

G. PRESSURE SENSORS

1. AIR PRESSURE MEASUREMENTS IN THE RANGE OF 0 TO 10” WATER COLUMN WILL BE ACCURATE TO +/- 1% USING A SOLID-STATE SENSING ELEMENT.
2. DIFFERENTIAL PRESSURE MEASUREMENTS OF LIQUIDS OR GASES SHALL BE ACCURATE TO =/- 0.5% OF RANGE. THE HOUSING SHALL BE NEMA 4 RATED.

H. CURRENT AND KW SENSORS

1. CURRENT STATUS SWITCHES SHALL BE USED TO MONITOR FANS, PUMPS, MOTORS AND ELECTRICAL LOADS. CURRENT SWITCHES SHALL BE AVAILABLE IN SOLID AND SPLIT CORE MODELS, AND OFFER EITHER A DIGITAL OR AN ANALOG SIGNAL TO THE AUTOMATION SYSTEM. ACCEPTABLE MANUFACTURER IS VERIS OR APPROVED EQUAL.
2. MEASUREMENT OF THREE PHASE POWER SHALL BE ACCOMPLISHED WITH A KW/KWH TRANSDUCER. THIS DEVICE SHALL UTILIZE DIRECT CURRENT TRANSFORMER INPUTS TO CALCULATE THE INSTANTANEOUS VALUE (KW) AND A PULSED OUTPUT PROPORTIONAL TO THE ENERGY USAGE (KWH). PROVIDE VERIS MODEL 6000 POWER TRANSDUCER OR APPROVED EQUAL.

I. DAMPERS

1. AUTOMATIC DAMPERS, FURNISHED BY THE BUILDING AUTOMATION CONTRACTOR SHALL BE SINGLE OR MULTIPLE BLADE AS REQUIRED. DAMPERS ARE TO BE INSTALLED BY THE HVAC CONTRACTOR UNDER THE SUPERVISION OF THE BAS CONTRACTOR. ALL BLANK-OFF PLATES AND CONVERSIONS NECESSARY TO INSTALL SMALLER THAN DUCT SIZE DAMPERS ARE THE RESPONSIBILITY OF THE SHEET METAL CONTRACTOR.
2. DAMPER FRAMES ARE TO BE CONSTRUCTED OF 13 GAUGE GALVANIZED SHEET STEEL MECHANICALLY JOINED WITH LINKAGE CONCEALED IN THE SIDE CHANNEL TO ELIMINATE NOISE AS FRICTION. COMPRESSIBLE SPRING STAINLESS STEEL SIDE SEALS AND ACETAL OR BRONZE BEARINGS SHALL ALSO BE PROVIDED.
3. DAMPER BLADE WIDTH SHALL NOT EXCEED EIGHT INCHES. SEALS AND 3/8 INCH SQUARE STEEL ZINC PLATED PINS ARE REQUIRED. BLADE ROTATION IS TO BE PARALLEL OR OPPOSED AS SHOWN ON THE SCHEDULES.
4. FOR HIGH PERFORMANCE APPLICATIONS, CONTROL DAMPERS WILL MEET OR EXCEED THE UL CLASS I LEAKAGE RATING.
5. CONTROL AND SMOKE DAMPERS SHALL BE RUSKIN, OR APPROVED EQUAL.
6. PROVIDE OPPOSED BLADE DAMPERS FOR MODULATING APPLICATIONS AND PARALLEL BLADE FOR TWO POSITION CONTROL.

J. DAMPER ACTUATORS

1. DAMPER ACTUATORS SHALL BE ELECTRONIC, AND SHALL BE DIRECT COUPLED OVER THE SHAFT, WITHOUT THE NEED FOR CONNECTING LINKAGE. THE ACTUATOR SHALL HAVE ELECTRONIC OVERLOAD CIRCUITRY TO PREVENT DAMAGE. FOR POWER-FAILURE/SAFETY APPLICATIONS, AN INTERNAL MECHANICAL, SPRING RETURN MECHANISM SHALL BE BUILT INTO THE ACTUATOR HOUSING. NON-SPRING RETURN ACTUATORS SHALL HAVE AN EXTERNAL MANUAL GEAR RELEASE TO ALLOW POSITIONING OF THE DAMPER WHEN THE ACTUATOR IS NOT POWERED.

K. AIRFLOW MEASURING STATIONS

1. PROVIDE A THERMAL ANEMOMETER USING INSTRUMENT GRADE SELF HEATED THERMISTOR SENSORS WITH THERMISTOR TEMPERATURE SENSORS.
2. THE FLOW STATION SHALL OPERATE OVER A RANGE OF 0 TO 5,000 FEET/MIN WITH AN ACCURACY OF +/- 2% OVER 500 FEET/MIN AND +/- 10 FT/MIN FOR READING LESS THAN 500 FEET/MIN.
3. THE OUTPUT SIGNAL SHALL BE LINEAR WITH FIELD SELECTABLE RANGES INCLUDING 0-5 VDC, 0-10VDC AND 4-20 MA.
4. FLOW STATIONS SHALL BE EBTRON OR APPROVED EQUAL WITH LONTALK INTERFACE.

L. TEMPERATURE CONTROL PANELS: A COMPLETE SET OF ‘AS-BUILT’ CONTROL DRAWINGS (RELATING TO THE CONTROLS WITHIN THAT PANEL) SHALL BE FURNISHED WITHIN EACH CONTROL PANEL.

M. NCP FIELD DEVICES AND COMPONENTS SHALL BE AS SCHEDULED ON THE DRAWINGS OR REQUIRED CONTRACT DOCUMENTS.

N. FIELD DEVICES

1. ANALOG INPUT SENSORS:

a. TR21 SERIES – SPACE TEMPERATURE SENSOR.
b. C7041 SERIES – DUCT TEMPERATURE SENSOR.
c. C77041 SERIES – MIXED AIR AVERAGING TEMPERATURE SENSOR 144”.
d. C7041 SERIES – WATER TEMPERATURE SENSOR (MUST ORDER WELL SEPARATELY)
e. 50001774-001 – WATER TEMPERATURE SENSOR WELL
f. H7625B2006 – DUCT HUMIDITY/TEMPERATURE SENSOR & COVER 0-10VDC
g. C7232B1014 – RETURN AIR CO2 SENSOR 0-10VDC
h. C7041 SERIES – OA TEMPERATURE SENSOR.
i. P7640A HONEYWELL BUILDING STATIC PRESSURE TRANSDUCER 0-10 VDC (OR EQUIVALENT)
j. P7640B HONEYWELL DUCT STATIC PRESSURE TRANSDUCER 0-10 VDC (OR EQUIVALENT)
k. H7635C2015 – SYSTEM OUTSIDE AIR HUMIDITY/TEMP SENSOR 0-10 VDC
l. PHOTOCELL (2-STAGE DIGITAL INPUT)
m. PWT HONEYWELL WATER DIFFERENTIAL PRESSURE SENSOR
n. MLH300PSCDJ1237 – HONEYWELL TANK PRESSURE SENSOR 4-20MA (OR EQUIVALENT)

2. DIGITAL INPUT SENSORS:

a. TDIAP521030 – DUCT HIGH/LOW LIMIT PRESSURE SAFETY SWITCH (OR EQUIVALENT)
b. ADJUSTABLE HONEYWELL, MCSP-A .7-250A – RUN STATUS
c. ADJUSTABLE HONEYWELL, CSP-O-F10-001 1.5-250A – RUN STATUS.
d. FIXED FUNCTIONAL DEVICES, INC. R1BXGTF.35-150A – RUN STATUS.
e. ADJUSTABLE FUNCTIONAL DEVICES, INC. R1BXGTA.75-150A – RUN STATUS.
f. RIBU1C – FIELD RELAY FOR BYPASS INPUT
g. DH100ACDCLP – DUCT SMOKE DETECTOR
h. ST-3 – DUCT SMOKE DETECTOR SAMPLING TUBE
i. L482A - LOW LIMIT (OR EQUIVALENT)
j. C7057 PHOTOCELL SENSOR WITH CR7057 RELAY OUTPUT CONTROLLER.

3. DIGITAL OUTPUT DEVICES:

a. RIBU1C – REMOTE FIELD MOUNTED RELAY
b. RH2B-UL-24VAC – IDEC 24VAC RELAY
c. SH2B-05 – RELAY SOCKET
d. BND1000 - DIN RAIL
e. MS8120B10XX – 2 POSITION SPRING RETURN DAMPER ACTUATOR 175 IN-LB. (MODEL NUMBER SPECIFIED IS ONLY A FAMILY PART NUMBER RECOMMENDATION. DETERMINE MODEL NUMBER/QUANTITIES AND SIZE ACTUATORS FOR EACH DAMPER CONTROLLED.) PROVIDE DAMPER ACTUATOR OF EQUAL OR GREATER QUALITY.
f. MN6120A1002 – 2 POSITION NON-SPRING RETURN DAMPER ACTUATOR 175 IN-LB. (MODEL NUMBER SPECIFIED IS ONLY A FAMILY PART NUMBER RECOMMENDATION. DETERMINE MODEL NUMBER/QUANTITIES AND SIZE ACTUATORS FOR EACH DAMPER CONTROLLED.) PROVIDE DAMPER ACTUATOR OF EQUAL OR GREATER QUALITY.
g. RIB2401D – REMOTE FIELD MOUNTED RELAY (DPDT)

4. ANALOG OUTPUT DEVICES:

a. MS7520B2007 – MODULATING DAMPER MOTOR – SPRING RETURN (16VA) – 175 IN-LB. (MODEL NUMBER SPECIFIED IS ONLY A FAMILY PART NUMBER RECOMMENDATION. DETERMINE MODEL NUMBER/QUANTITIES AND SIZE ACTUATORS FOR EACH VALVE CONTROLLED.) PROVIDE VALVE ACTUATOR OF EQUAL OR GREATER QUALITY.
b. MN7220A2007 – MODULATING DAMPER MOTOR – NON SPRING RETURN (6VA) – 175 IN-LB. (MODEL NUMBER SPECIFIED IS ONLY A FAMILY PART NUMBER RECOMMENDATION. DETERMINE MODEL NUMBER/QUANTITIES AND SIZE ACTUATORS FOR EACH VALVE CONTROLLED.) PROVIDE VALVE ACTUATOR OF EQUAL OR GREATER QUALITY.
c. MN7234A2008 – MODULATING DAMPER MOTOR – NON-SPRING RETURN – 300 IN- LB. (MODEL NUMBER SPECIFIED IS ONLY A FAMILY PART NUMBER RECOMMENDATION. DETERMINE MODEL NUMBER/QUANTITIES AND SIZE ACTUATORS FOR EACH VALVE CONTROLLED.) PROVIDE VALVE ACTUATOR OF EQUAL OR GREATER QUALITY.
d. VGF21LSXX – 2-WAY GLOBE VALVE. PROVIDE HONEYWELL OR EQUIVALENT. SIZE VALVE ACCORDING TO VALVE SCHEDULE.
e. 3-WAY GLOBE VALVE. PROVIDE HONEYWELL OR EQUIVALENT. SIZE VALVE ACCORDING TO VALVE SCHEDULE.
f. Q5024 - GLOBE VALVE LINKAGE WITH NON-SPRING RETURN MN7534A10XX ACTUATOR
g. ML7421A1032 – GLOBE VALVE ACTUATOR – NON-SPRING RETURN (12VA) OR EQUIVALENT. (MODEL NUMBER SPECIFIED IS ONLY A FAMILY PART NUMBER RECOMMENDATION. DETERMINE MODEL NUMBER/QUANTITIES AND SIZE ACTUATORS FOR EACH VALVE CONTROLLED.) PROVIDE VALVE ACTUATOR OF EQUAL OR GREATER QUALITY.
h. VBN2X-CV-SD – 2-WAY BALL VALVE W/MS7505A2008 ACTUATOR (13 VA) OR EQUIVALENT. (MODEL NUMBER SPECIFIED IS ONLY A FAMILY PART NUMBER RECOMMENDATION. DETERMINE MODEL NUMBER/QUANTITIES AND SIZE ACTUATORS FOR EACH VALVE CONTROLLED.) PROVIDE VALVE ACTUATOR OF EQUAL OR GREATER QUALITY.
i. VBN3X-CV-SD – 3-WAY BALL VALVE W/MS7505A2008 ACTUATOR (13VA).
j. Q5024 - GLOBE VALVE LINKAGE WITH NON-SPRING RETURN MN7534A10XX ACTUATOR – FONT VALVE ACTUATOR
k. ML7421A1032 – FONT VALVE ACTUATOR – NON-SPRING RETURN (12VA) OR EQUIVALENT. (MODEL NUMBER SPECIFIED IS ONLY A FAMILY PART NUMBER RECOMMENDATION. DETERMINE MODEL NUMBER/QUANTITIES AND SIZE ACTUATORS FOR EACH VALVE CONTROLLED.)

5. VAV BOX & FAN COIL CONTROLLERS & COMPONENTS:

a. SPYDER OR EQUIVALENT – CFCU FAN COIL CONTROLLER
b. STRYKER OR EQUIVALENT FOR VAV BOXES WITH DAMPER ACTUATOR
c. C7041B SERIES – DUCT TEMPERATURE SENSOR WITH 6” PROBE.
d. TR21 SERIES – SPACE TEMPERATURE SENSOR WITH SET POINT
e. TR100VA004 – 100VA TRANSFORMER OR EQUIVALENTML7410F3006 - VAV REHEAT VALVE ACTUATOR.
f. VBN2XXXA & VBN3XXXA – VAV BOX REHEAT VALVE (BALL VALVE W/MVNA OR L ACTUATOR) OR EQUIVALENT. (MODEL NUMBER SPECIFIED IS ONLY A FAMILY PART NUMBER RECOMMENDATION. DETERMINE MODEL NUMBER/QUANTITIES AND SIZE ACTUATORS FOR EACH VALVE CONTROLLED.) PROVIDE VALVE ACTUATOR OF EQUAL OR GREATER QUALITY. HONEYWELL 3-WAY BALL VALVES DO NOT HAVE STAINLESS STEEL TRIMS.
g. 24VAC/100 VA TRANSFORMER PANEL HOUSING. EXISTING PANEL MAY BE USED.

6. VARIABLE FREQUENCY DRIVE
a. ABB OR EQUIVALENT

2.15 ACCESSORIES

A. SOFTWARE:

1. INTEGRATE WITH EXISTING NIAGARA N4.13 SUPERVISOR. COORDINATE WITH OWNER.

a. GRAPHIC DISPLAYS SHALL BE OF HIGH QUALITY, CONSISTENT WITH GRAPHICS FOUND IN OTHER RECENT TEMPLES, ON-LINE CREATED VIA OPERATOR STATION GRAPHICS PACKAGE, HONEYWELL PLATINUM GRAPHICS.
b. GRAPHICS TO BE APPROVED BY OWNER REPRESENTATIVE OR COMMISSIONING AGENT (CXA).

B. UN-INTERRUPTIBLE POWER SUPPLY (UPS)

1. PROVIDE A UPS FEATURE FOR EACH AHU, PLANT DDC PANEL, VAV TRANSFORMERS.

C. REMOTE COMMUNICATIONS

1. JACE 8000 (N4 TITAN JACE) CONNECTED TO CUSTOMER INTRANET. NETWORK I.D. TO BE PROVIDED BY CUSTOMER.

PART 3 - EXECUTION

3.01 INSTALLATION

A. ALL WORK DESCRIBED IN THIS SECTION SHALL BE PERFORMED BY SYSTEM INTEGRATORS OR CONTRACTORS THAT HAVE A SUCCESSFUL HISTORY IN THE DESIGN AND INSTALLATION OF INTEGRATED CONTROL SYSTEMS. THE INSTALLING OFFICE SHALL HAVE A MINIMUM OF FIVE YEARS OF INTEGRATION EXPERIENCE AND SHALL PROVIDE DOCUMENTATION IN THE SUBMITTAL PACKAGE VERIFYING THE COMPANY'S EXPERIENCE.

B. INSTALLATION OF THE BUILDING AUTOMATION SYSTEM SHALL BE PERFORMED BY THE CONTRACTOR OR A SUBCONTRACTOR. HOWEVER, ALL INSTALLATION SHALL BE UNDER THE PERSONAL SUPERVISION OF THE CONTRACTOR. THE CONTRACTOR SHALL CERTIFY ALL WORK AS PROPER AND COMPLETE. UNDER NO CIRCUMSTANCES SHALL THE DESIGN, SCHEDULING, COORDINATION, PROGRAMMING, TRAINING, AND WARRANTY REQUIREMENTS FOR THE PROJECT BE DELEGATED TO A SUBCONTRACTOR.

C. INSTALL SYSTEM AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, AND AS DETAILED ON THE PROJECT DRAWING SET.

D. DRAWINGS OF THE TCS AND BMCS NETWORK ARE DIAGRAMMATIC ONLY AND ANY APPARATUS NOT SHOWN BUT REQUIRED TO MAKE THE SYSTEM OPERATIVE TO THE COMPLETE SATISFACTION OF THE ENGINEER SHALL BE FURNISHED AND INSTALLED WITHOUT ADDITIONAL COST.

E. LOW VOLTAGE ELECTRICAL CONNECTIONS TO CONTROL EQUIPMENT SHOWN SPECIFIED OR SHOWN ON THE CONTROL DIAGRAMS SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR IN ACCORDANCE WITH THESE SPECIFICATIONS.

F. EQUIPMENT FURNISHED BY THE HVAC CONTROLS CONTRACTOR THAT IS NORMALLY WIRED BEFORE INSTALLATION SHALL BE FURNISHED COMPLETELY WIRED. CONTROL WIRING NORMALLY PERFORMED IN THE FIELD WILL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR.

G. SHOP FABRICATE AND ASSEMBLE ALL CONTROL PANELS. MOUNT AND WIRE BMCS FIELD DEVICES FOR DDC SYSTEMS. MAKE A COMPLETE INSTALLATION. SUCH DEVICES INCLUDE, BUT ARE NOT LIMITED TO:

1. DIRECT DIGITAL CONTROL (DDC) OF AIR AND WATER TEMPERATURE, STATIC AND DIFFERENTIAL PRESSURE SENSING AND CONTROL, DAMPER AND VALVE ACTUATION, VARIABLE VOLUME BOX CONTROL, ELECTRIC RELAYS, SWITCHES, TRANSFORMERS, AND ANY AND ALL OTHER DEVICES NEEDED TO MAKE A COMPLETE SYSTEM
2. FURNISH AND INSTALL WIRE, CONDUCTORS, CABLES, CONTROL DEVICES, PANELS, CONDUIT ETC. REQUIRED FOR COMPLETE INSTALLATION OF BMCS DEVICES. MAKE TERMINATIONS. CHECK ALL INSTALLATION FOR WIRING AND TERMINATION INTEGRITY.
3. PROVIDE CONTROL SYSTEM RELATED MATERIALS AND INSTALLATION RELATED TO HVAC CONTROLS.

H. PROVIDE NEW CONTROLS FOR ALL AIR HANDLERS, EXHAUST FANS, AND HVAC MECHANICAL SYSTEMS RELATED EQUIPMENT, ITS AIR HANDLING SYSTEMS, MISCELLANEOUS SYSTEMS AND CENTRAL PLANT.

I. AT THE COMPLETION OF THE WORK, ALL EQUIPMENT PERTINENT TO THIS CONTRACT SHALL BE CHECKED AND THOROUGHLY CLEANED, AND ALL OTHER AREAS SHALL BE CLEANED AROUND EQUIPMENT PROVIDED UNDER THIS CONTRACT.

3.02 WIRING

A. ALL ELECTRICAL CONTROL WIRING AND LOW VOLTAGE WIRING TO THE CONTROL PANELS, BMS, COMPUTERS AND NETWORK COMPONENTS SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.

B. THE ELECTRICAL CONTRACTOR (DIV. 26) SHALL FURNISH ALL POWER WIRING TO ELECTRICAL STARTERS, MOTORS & CONTROL PANELS.

C. ALL WIRING SHALL BE IN ACCORDANCE WITH THE PROJECT ELECTRICAL SPECIFICATIONS (DIVISION 26), THE NATIONAL ELECTRICAL CODE AND ANY APPLICABLE LOCAL CODES. ALL BMCS WIRING SHALL BE INSTALLED IN THE CONDUIT TYPES SPECIFIED IN THE PROJECT ELECTRICAL SPECIFICATIONS (DIVISION 26). NON-CONDUIT RUN WIRING IS NOT ALLOWED UNLESS APPROVED BEFORE HAND BY CUSTOMER.

3.03 WARRANTY

A. EQUIPMENT, MATERIALS AND WORKMANSHIP INCORPORATED INTO THE WORK SHALL BE WARRANTED FOR A PERIOD OF ONE YEAR FROM THE TIME OF SYSTEM ACCEPTANCE.

B. WITHIN THIS PERIOD, UPON NOTICE BY THE OWNER, ANY DEFECTS IN THE WORK PROVIDED UNDER THIS SECTION DUE TO FAULTY MATERIALS, METHODS OF INSTALLATION OR WORKMANSHIP SHALL BE PROMPTLY (WITHIN 48 HOURS AFTER RECEIPT OF NOTICE) REPAIRED OR REPLACED BY THIS CONTRACTOR AT NO EXPENSE TO THE OWNER

C. ALL WIRE WILL BE COPPER AND MEET THE MINIMUM WIRE SIZE AND INSULATION CLASS LISTED BELOW:

1. POWER AND CLASS ONE WIRING MAY BE RUN IN THE SAME CONDUIT. CLASS TWO AND THREE WIRING AND COMMUNICATIONS WIRING MAY BE RUN IN THE SAME CONDUIT.
2. WHERE DIFFERENT WIRING CLASSES TERMINATE WITHIN THE SAME ENCLOSURE, MAINTAIN CLEARANCES AND INSTALL BARRIERS PER THE NATIONAL ELECTRIC CODE.
3. WHERE WIRING IS REQUIRED TO BE INSTALLED IN CONDUIT, EMT SHALL BE USED. CONDUIT SHALL BE MINIMUM 1/2 INCH GALVANIZED EMT. SET SCREW FITTINGS ARE ACCEPTABLE FOR DRY INTERIOR LOCATIONS. WATERTIGHT COMPRESSION FITTINGS SHALL BE USED FOR EXTERIOR LOCATIONS AND INTERIOR LOCATIONS SUBJECT TO MOISTURE. PROVIDE CONDUIT SEAL-OFF FITTING WHERE EXTERIOR CONDUITS ENTER THE BUILDING OR BETWEEN AREAS OF HIGH TEMPERATURE/MOISTURE DIFFERENTIAL.
4. FLEXIBLE METALLIC CONDUIT (MAX. 3 FEET) SHALL BE USED FOR CONNECTIONS TO MOTORS, ACTUATORS, CONTROLLERS, AND SENSORS MOUNTED ON VIBRATION PRODUCING EQUIPMENT. LIQUID-TIGHT FLEXIBLE CONDUIT SHALL BE USE IN EXTERIOR LOCATIONS AND INTERIOR LOCATIONS SUBJECT TO MOISTURE.
5. JUNCTION BOXES SHALL BE PROVIDED AT ALL CABLE SPLICES, EQUIPMENT TERMINATION, AND TRANSITIONS FROM EMT TO FLEXIBLE CONDUIT. INTERIOR DRY LOCATION J-BOXES SHALL BE GALVANIZED PRESSED STEEL, NOMINAL FOUR-INCH SQUARE WITH BLANK COVER. EXTERIOR AND DAMP LOCATION JH-BOXES SHALL BE CAST ALLOY FS BOXES WITH THREADED HUBS AND GASKETED COVERS.
6. WHERE THE SPACE ABOVE THE CEILING IS A SUPPLY OR RETURN AIR PLENUM, THE WIRING SHALL BE PLENUM RATED. TEFLON WIRING CAN BE RUN WITHOUT CONDUIT ABOVE SUSPENDED CEILINGS. EXCEPTION: ANY WIRE RUN IN SUSPENDED CEILINGS THAT IS USED TO CONTROL OUTSIDE AIR DAMPERS OR TO CONNECT THE SYSTEM TO THE FIRE MANAGEMENT SYSTEM SHALL BE IN CONDUIT.
7. FIBER OPTIC CABLE SHALL INCLUDE THE FOLLOWING SIZES; 50/125, 62.5/125 OR 100/140.
8. ONLY GLASS FIBER IS ACCEPTABLE, NO PLASTIC.
9. FIBER OPTIC CABLE SHALL ONLY BE INSTALLED AND TERMINATED BY AN EXPERIENCED CONTRACTOR. THE BAS CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE NAME OF THE INTENDED CONTRACTOR OF THE FIBER OPTIC CABLE WITH HIS SUBMITTAL DOCUMENTS.

3.04 WARRANTY ACCESS

A. THE OWNER SHALL GRANT TO THIS CONTRACTOR, REASONABLE ACCESS TO THE TCS AND BMCS DURING THE WARRANTY PERIOD.

B. THE OWNER SHALL ALLOW THE CONTRACTOR TO ACCESS THE TCS AND BMCS FROM A REMOTE LOCATION FOR THE PURPOSE OF DIAGNOSTICS AND TROUBLESHOOTING, VIA THE INTERNET, DURING THE WARRANTY PERIOD.

3.05 SOFTWARE LICENSE

A. THE OWNER SHALL BE THE NAMED LICENSE HOLDER OF ALL SOFTWARE ASSOCIATED WITH ANY AND ALL INCREMENTAL WORK ON THE PROJECT.

B. THE OWNER, OR HIS APPOINTED AGENT, SHALL RECEIVE OWNERSHIP OF ALL JOB SPECIFIC SOFTWARE CONFIGURATION DOCUMENTATION, DATA FILES, AND APPLICATION-LEVEL SOFTWARE DEVELOPED FOR THE PROJECT. THIS SHALL INCLUDE ALL CUSTOM, JOB SPECIFIC SOFTWARE CODE AND DOCUMENTATION FOR ALL CONFIGURATION AND PROGRAMMING THAT IS GENERATED FOR A GIVEN PROJECT AND /OR CONFIGURED FOR USE WITHIN THE BMS. ANY AND ALL REQUIRED ID'S AND PASSWORDS FOR ACCESS TO ANY COMPONENT OR SOFTWARE PROGRAM SHALL BE PROVIDED TO THE OWNER.

3.06 ACCEPTANCE TESTING

A. THE SUPERVISOR STATION INCLUDING POINTS, GRAPHICS, AND HISTORIES SHALL BE COMPLETE AND INSTALLED BEFORE SITE WORK COMMENCES SO AS NOT TO HOLD UP WORK.

B. UPON COMPLETION OF THE INSTALLATION, THIS CONTRACTOR SHALL PERFORM ALL NECESSARY CALIBRATION, TESTING AND DE-BUGGING AND PERFORM ALL REQUIRED OPERATIONAL CHECKS TO ENSURE THAT THE SYSTEM IS FUNCTIONING IN FULL ACCORDANCE WITH THESE SPECIFICATIONS.

C. THIS CONTRACTOR SHALL PERFORM TESTS TO VERIFY PROPER PERFORMANCE OF COMPONENTS, ROUTINES, AND POINTS. REPEAT TESTS UNTIL PROPER PERFORMANCE RESULTS. THIS TESTING SHALL INCLUDE A POINT-BY-POINT LOG TO VALIDATE 100% OF THE INPUT AND OUTPUT POINTS OF THE DDC SYSTEM OPERATION. LOG TO BE SHOWN TO THE OWNER'S REPRESENTATIVE OR COMMISSIONING AGENT.

D. UPON COMPLETION OF THE PERFORMANCE TESTS DESCRIBED ABOVE, REPEAT THESE TESTS, POINT BY POINT AS DESCRIBED IN THE VALIDATION LOG ABOVE IN PRESENCE OF OWNER'S REPRESENTATIVE OR COMMISSIONING AGENT, AS REQUIRED. PROPERLY SCHEDULE THESE TESTS SO TESTING IS COMPLETE AT A TIME DIRECTED BY THE OWNER'S REPRESENTATIVE OR COMMISSIONING AGENT. DO NOT DELAY TESTS SO AS TO PREVENT DELAY OF OCCUPANCY PERMITS OR BUILDING OCCUPANCY.

E. SYSTEM ACCEPTANCE: SATISFACTORY COMPLETION IS WHEN THIS CONTRACTOR HAS PERFORMED SUCCESSFULLY ALL THE REQUIRED TESTING TO SHOW PERFORMANCE COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE OR COMMISSIONING AGENT. SYSTEM ACCEPTANCE SHALL BE CONTINGENT UPON COMPLETION AND REVIEW OF ALL CORRECTED DEFICIENCIES.

F. THIS CONTRACTOR SHALL HAVE 30 DAYS TO COMPLETE OR REPAIR ANY ISSUES OR DEFICIENCIES FOUND DURING THE ACCEPTANCE TESTING.

3.07 OPERATOR INSTRUCTION, TRAINING

A. TRAINING:

1. USE SPECIFIED O&M MANUALS, RECORD DOCUMENTATION, COMPUTER-BASED TRAINING (CBT), AND ON-LINE HELP UTILITY. CBT TO BE THROUGH USE OF CD'S OR OTHER SOFTWARE DEVELOPED SPECIFICALLY FOR TRAINING.
2. PROVIDE FOLLOWING TRAINING:

a. INITIAL 2-HOUR SESSION COVER FOLLOWING TOPICS:
1. SEQUENCE OF OPERATION REVIEW.
2. SIGN ON-SIGN OFF.
3. SELECTION OF DISPLAYS AND REPORTS
4. COMMANDING OF POINTS, KEYBOARD AND MOUSE MODE.
5. USE OF DIALOG BOXES AND MENUS.
6. PASSWORD ASSIGNMENT / MODIFICATION.
7. PASSWORD MODIFICATION.
8. OPERATOR ASSIGNMENT / MODIFICATION.
9. OPERATOR AUTHORITY ASSIGNMENT / MODIFICATION.

B. PROVIDE SECOND 2-HOUR TRAINING SESSION COVERING FOLLOWING TOPICS:

1. MODIFYING WARNING LIMITS, ALARM LIMITS AND START-STOP TIMES.
2. SYSTEM INITIALIZATION.
3. TRENDING AND REPORTING.
4. COMPLETE USE OF PORTABLE OPERATORS TERMINAL FUNCTIONS.TROUBLESHOOTING OF SENSORS (DETERMINING BAD SENSORS).
5. MODIFICATION OF CONTROL SET POINTS.
6. POINTS DISABLE / ENABLE.
7. USE OF DIAGNOSTICS.

C. PROVIDE ADDITIONAL 2-HOUR SUPERVISOR TRAINING SESSION AND INCLUDE FOLLOWING:

1. SOFTWARE REVIEW OF SEQUENCE OF OPERATION.
2. GRAPHIC CREATION.
3. SYSTEM MAINTENANCE PROCEDURES.
4. REVIEW OF INITIALIZATION.

3.08 DATA CONTROL AND GRAPHIC SUMMARY

A. GENERAL:

1. LIST OF HARDWARE POINTS FOR EACH DDC CONTROLLER APPEARS ON MECHANICAL DRAWINGS. GRAPHICS SHOWING THESE POINTS, ALONG WITH APPROPRIATE PSEUDO POINTS (I.E. SET POINTS, ETC.) SHALL BE INCORPORATED INTO OPERATIONAL GRAPHICS.

B. PROVIDE SOFTWARE GRAPHICS AND PROGRAMMING REQUIRED TO ACCOMPLISH DETAILED SEQUENCE OF OPERATIONS.

3.09 POST INSTALLATION – SYSTEM SETUP, INSTALLATION AND CHECKOUT

A. GENERAL – ALL WORK IS THE RESPONSIBILITY OF THE CONTROLS SUBCONTRACTOR

B. ON-SITE SUPERVISION – PROVIDE:

1. RESPONSIBILITY FOR THE OVERALL CONTROL SYSTEM INSTALLATION.
2. OVERSIGHT SUPERVISION OF THE CONTROL HARDWARE AND WIRING INSTALLATION TEAM.

C. CONTROLS CONTRACTOR SHALL PROVIDE:

1. KEY PERSONNEL AS REQUIRED TO MEET THE FOLLOWING ON-SITE REQUIREMENTS:

a. GENERAL PROJECT SUPERVISION OF ON-SITE CONTROL WORK

1) MAINTAIN REGULAR CONTACT WITH BALANCING CONTRACTOR, AND FACILITY MANAGER TO ASCERTAIN ONGOING PROJECT STATUS.
2) PROVIDE INSTALLATION INFORMATION WHEN REQUESTED.
3) PROVIDE, AT MINIMUM, ON-SITE INSPECTIONS AT FOLLOWING INTERVALS

A) BEGINNING OF INSTALLATION PHASE (INITIAL KICK-OFF MEETING WITH CONTRACTORS)
B) SYSTEM CHECKOUT AND COMMISSIONING.

C. PARTICIPATE WITH TEST AND BALANCE CONTRACTOR TO AFFECT A COMPLETE AND FUNCTIONAL SYSTEM. PROVIDE MATERIAL TO MAKE A FULL AND COMPLETE REPORT OF WORK UNDERTAKEN AND FINAL CONDITIONS OBTAINED.

3.10 IDENTIFICATION

A. IDENTIFY ALL CONTROL WIRES WITH LABELING TAPE OR SLEEVES USING WORDS, LETTERS, OR NUMBERS THAT CAN BE EXACTLY CROSS-REFERENCED WITH AS-BUILT DRAWINGS.

B. ALL FIELD ENCLOSURES, OTHER THAN CONTROLLERS, SHALL BE IDENTIFIED WITH A BAKELITE NAMEPLATE. THE LETTERING SHALL BE IN WHITE AGAINST A BLACK OR BLUE BACKGROUND.

C. JUNCTION BOX COVERS WILL BE MARKED TO INDICATE THAT THEY ARE A PART OF THE BAS SYSTEM.

D. ALL I/O FIELD DEVICES (EXCEPT SPACE SENSORS) THAT ARE NOT MOUNTED WITHIN FIP'S SHALL BE IDENTIFIED WITH NAME PLATES.

E. ALL I/O FIELD DEVICES INSIDE FIP'S SHALL BE LABELED.

3.11 LOCATION

A. THE LOCATION OF SENSORS IS PER MECHANICAL AND ARCHITECTURAL DRAWINGS.

B. OUTDOOR AIR SENSORS WILL BE MOUNTED ON THE NORTH BUILDING FACE DIRECTLY IN THE OUTSIDE AIR. INSTALL THESE SENSORS SUCH THAT THE EFFECTS OF HEAT RADIATED FROM THE BUILDING OR SUNLIGHT IS MINIMIZED.

C. FIELD ENCLOSURES SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE CONTROLLER PANEL(S) TO WHICH IT IS BEING INTERFACED.

3.12 VALVES

A. ALL TEMPERATURE CONTROL VALVES SHALL BE OF THE PRESSURE INDEPENDENT CONTROL TYPE.

PART 4 - SEQUENCE OF OPERATION

4.01 SINGLE ZONE CONSTANT VOLUME FAN SYSTEM AH-1

A. THIS FAN SYSTEM CONSISTS OF TWO SECTIONS. THE FIRST SECTION CONSISTS OF A RETURN AIR PLENUM WITH A FRESH AIR INTAKE WITH FILTERS, MODULATING OPPOSED BLADE DAMPERS AND PREHEAT COILS. THE SECOND SECTION CONSISTS OF FILTERS, SUPPLY FAN, AND HEATING COILS.

B. THE SUPPLY FAN SHALL BE STARTED FROM A LOCAL DDC CONTROLLER.

C. THE SUPPLY FAN SHALL RUN DURING NORMAL OCCUPIED MODE AND CYCLE TO MAINTAIN MINIMUM SPACE TEMPERATURE AND MINIMUM DISCHARGE AIR TEMPERATURE DURING UNOCCUPIED. PERIMETER SPACES WITH RADIANT HEATING SHALL ATTEMPT TO MAINTAIN MINIMUM SPACE TEMPERATURE BY OPENING THE RADIANT HEAT VALVE BEFORE CYCLING ON THE SUPPLY FAN IN UNOCCUPIED MODE.

D. FAN SYSTEM OPERATION IN HAND OR AUTO MODE SHALL BE SUBJECT TO FREEZESTAT, BUILDING FIRE ALARM, SUPPLY DUCT HIGH STATIC PRESSURE IN RELATIONSHIP TO INLET HIGH NEGATIVE STATIC PRESSURE SWITCHES. IN THE AUTO MODE THE FAN SYSTEM SHALL ALSO BE SUBJECT TO BUILDING OPTIMAL START-STOP PROGRAMS, AND OTHER CONDITIONS OR LOGIC PRE-PROGRAMMED INTO THE DDC CONTROLLERS.

E. A DIFFERENTIAL PRESSURE MONITORING SWITCH SHALL BE INSTALLED ACROSS THE INTAKE AND DISCHARGE OF THE SUPPLY FAN. THE DIFFERENTIAL PRESSURE MONITORING SWITCH SHALL LIMIT THE TOTAL STATIC PRESSURE DIFFERENTIAL PRESSURE ACROSS THE SUPPLY FAN (ADJ.). PRESSURE LIMIT TO BE DETERMINED DURING TEST AND BALANCE.

F. THE CONTROL SYSTEM SHALL MONITOR THE AMP DRAW OF ALL VFD'S FOR ALL FAN SYSTEMS (SUPPLY, EXHAUST, RELIEF). FAN STATUS OF OPERATION SHALL BE DETERMINED BY THE AMP DRAW. AN ALARM SHALL BE GENERATED IF A FAN IS COMMANDED ON AND FAILS TO START.

G. A CURRENT MONITORING SWITCH SHALL BE INSTALLED ON EACH FAN.

H. IF THE FAN SYSTEM IS SHUT-DOWN, OR FAILS TO START DUE TO ABNORMAL CONDITIONS, A ‘SAFETIES ALARM’ SHALL BE SENT TO THE DDC SYSTEM. WHEN THE FAN IS STOPPED UNDER ANY CONDITION, THE OUTSIDE AIR DAMPERS AND RELIEF AIR DAMPERS SHALL CLOSE AND THE RELIEF FAN AND EXHAUST FANS SHALL STOP. A MANUAL RESET, HIGH LIMIT PRESSURE SWITCH WITHIN THE FAN ROOM NOTED ABOVE SENSING SUPPLY DUCT STATIC PRESSURE SHALL SHUT DOWN THE FAN AND ALARM THE DDC SYSTEM IF ITS SETTING IS EXCEEDED. A HIGH NEGATIVE PRESSURE SWITCH LOCATED AT THE FAN INLET SHALL SHUT DOWN THE FAN AND ALARM THE DDC SYSTEM IF ITS SET POINT IS EXCEEDED. A MANUAL RESET AVERAGING FREEZESTAT LOCATED DOWNSTREAM OF THE PREHEATING COIL SHALL SHUT DOWN THE OUTSIDE AIR DAMPER, OPEN THE COIL VALVE AND ALARM THE DDC SYSTEM IF THE COIL LEAVING TEMPERATURE BELOW 38 DEGREES F IS EXCEEDED. LABELED AND ILLUMINATED INDICATION SHALL BE PROVIDED INSIDE THE DDC PANEL TO INDICATE TO THE MAINTENANCE PERSONNEL THE NATURE OF THE MALFUNCTION.

I. THE FAN SYSTEM SHALL PERFORM AN OPTIMAL START PROGRAM THAT SHALL INCLUDE BUILDING WARM-UP AND BUILDING PURGE FEATURES. IN THE WARM-UP MODE, ALL OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL REMAIN CLOSED, THE EXHAUST FAN SHALL REMAIN OFF, AND THE AIR HANDLER SHALL OPEN THE HEATING COIL VALVE TO MAINTAIN SUPPLY AIR SETPOINT TEMPERATURE. IN THE PURGE MODE, THE PREHEAT COIL VALVE SHALL REMAIN CLOSED, THE OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL OPEN TO 100%, THE EXHAUST SHALL START TO ALLOW THE AIR HANDLER TO DISCHARGE THE COOLEST POSSIBLE TEMPERATURE INTO THE BUILDING. IN PURGE MODE, THE RELIEF FAN SYSTEM SHALL OPERATE AS IN THE OCCUPIED MODE. START UP PURGE MODE SHALL BE UTILIZED IF THE SPACE TEMPERATURE IS ABOVE 70°F (ADJ.) AND THE OUTSIDE AIR TEMPERATURE IS BETWEEN 55°F (ADJ.) AND 68°F (ADJ.). BUILDING SHALL BE COOLED TO 65°F (ADJ.) OR OPERATED FOR 20 MINUTES THEN SWITCH OVER TO OCCUPIED MODE.

J. OCCUPIED MODE: A SUPPLY AIR TEMPERATURE SENSOR, PREHEAT DISCHARGE AIR TEMPERATURE SENSOR, AND AN OUTDOOR AIR TEMPERATURE SENSOR, ACTING THROUGH DDC CONTROLLERS, SHALL MODULATE THE PRE-HEATING VALVE, AND HEATING VALVE TO MAINTAIN SUPPLY AIR TEMPERATURE ACCORDING TO THE FOLLOWING SCHEDULE:

PRIMARY RESET:

ROOM HEATING LOAD	SUPPLY AIR TEMPERATURE
0%	65°F (ADJ.)
100%	95°F (ADJ.)

THE PRE-HEATING VALVE SHALL MAINTAIN A MINIMUM DISCHARGE AIR TEMPERATURE OF 60°F (ADJ.). THE RELIEF AIR FAN EF-4 SHALL MODULATE TO MAINTAIN THE BUILDING PRESSURE SET POINT.

K. THE EXHAUST FANS SHALL OPERATE WHENEVER THE BUILDING IS IN THE OCCUPIED OR PURGE MODE.

L. THE OPERATING SEQUENCE FOR THE OUTSIDE AND RETURN AIR DAMPERS SHALL BE AS FOLLOWS: WHEN A CALL FOR MORE OUTSIDE AIR IS RECEIVED, THE OUTSIDE AIR DAMPERS SHALL MODULATE OPEN WHILE THE RETURN AIR DAMPERS REMAIN AT 100%. ONCE THE OUTSIDE AIR DAMPERS ARE 100% OPEN, THE RETURN AIR DAMPERS SHALL BEGIN TO MODULATE CLOSED. WHEN A CALL FOR LESS OUTSIDE AIR IS RECEIVED, THE ABOVE SEQUENCE SHALL BE REVERSED. THE PURPOSE IS TO KEEP THE DAMPERS OPEN AS MUCH AS POSSIBLE TO MINIMIZE THE PRESSURE DROP ACROSS THE DAMPERS TO SAVE FAN ENERGY AND PROVIDE BETTER CONTROLLABILITY.

M. OUTSIDE AIR IS THE ONLY STAGE OF COOLING. IF THE OUTSIDE AIR TEMPERATURE IS ABOVE 60°F (ADJ.) AND THE SPACE AIR TEMPERATURE SENSOR CALLS FOR COOLING THE HEATING VALVE AND PRE-HEAT VALVE SHALL CLOSE, THE OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN A SUPPLY AIR TEMPERATURE OF 65°F (ADJ.).

N. THE RELIEF AIR FAN SHALL MAINTAIN A MINIMUM FLOW SUFFICIENT TO MEET THE LOWER MINIMUM SCHEDULED CFM FRESH-AIR REQUIREMENTS. IF THE AIR-QUALITY SENSOR LOCATED IN THE MAIN ROOM DETECT CO2 LEVELS IN THE SPACE IN EXCESS OF THE CO2 SET POINT (PPM) (ADJ.), THE MINIMUM OUTSIDE AIRFLOW SET-POINT SHALL BE ADJUSTED UP TO REDUCE THE CO2 LEVELS BELOW SET POINT.

O. AIRFLOW SENSING SHALL BE A MATRIX ELEMENT EBTRON GOLD OR EQUIVALENT CFM SENSOR. TOTAL AIRFLOW SHALL BE REPORTED TO THE DDC SYSTEM. FLOW METERS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS:

1. OUTSIDE AIRFLOW INTAKE.

P. THE LOW-END MINIMUM FRESH-AIR SET-POINT SHALL BE MAINTAINED ANYTIME THE AIR HANDLER IS IN THE OCCUPIED MODE.

Q. ROOM SPACE TEMPERATURE SENSING SHALL BE FROM A WALL-MOUNTED TEMPERATURE SENSING ELEMENT. A PAINTED WOODEN BLOCK SHALL BE INSTALLED BEHIND THE TEMPERATURE SENSOR TO PROVIDE THERMAL ISOLATION FROM THE MASONRY WALL. A HEAVY DUTY THERMOSTAT GUARD SHALL BE PROVIDED FOR THE TEMPERATURE SENSOR IN THE MULTI-PURPOSE ROOM.

R. THE DDC CONTROLLER SHALL SET THE SUPPLY FAN VFD TO THE DESIGN SUPPLY AIRFLOW AND MODULATE THE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE SETPOINT TEMPERATURE. A PID LOOP SHALL DETERMINE THE APPROPRIATE DISCHARGE AIR TEMPERATURE TO MAINTAIN SPACE TEMPERATURE SETPOINT. THE SPACE TEMPERATURE SETPOINT SHALL CONTROL SIMILAR TO A CONSTANT VOLUME BOX.

S. INITIAL SPACE TEMPERATURE SET POINTS SHALL BE 70-DEGF (ADJ.) HEATING AND 74-DEGF (ADJ.) COOLING WHEN THE BUILDING IS OCCUPIED. UNOCCUPIED SET POINT SHALL BE 60-DEGF (ADJ.) HEATING WITH NO COOLING SETPOINT.

T. AN AVERAGING STYLE AIR TEMPERATURE SENSOR, ACTING THROUGH A DDC CONTROLLER, SHALL PROVIDE 45°F DISCHARGE AIR TEMPERATURE LOW LIMIT CONTROL OF THE AIR HANDLING SYSTEM ACTING AS A PRE-FREEZESTAT LOCATED AT THE PRE-HEAT COIL.

U. THE RELIEF AIR FAN EF-4 SHALL BE ENABLED WHEN THE BUILDING IS IN THE OCCUPIED OR PURGE MODES. RELIEF AIR AIRFLOW SHALL MAINTAIN A BUILDING STATIC PRESSURE OF 0.05” W.C.

V. WHEN UNOCCUPIED, ALL THE EXHAUST DAMPERS AND RELIEF AIR DAMPER SHALL BE CLOSED, THE EXHAUST FANS AND RELIEF AIR FAN SHALL REMAIN OFF AND OUTSIDE AIR DAMPER CLOSED.

W. WHEN OCCUPIED, THE ABOVE DAMPERS (EXHAUST, RELIEF & OUTSIDE AIR) SHALL BE OPEN, THE EXHAUST AIR FANS AND SUPPLY FAN SHALL ENERGIZE, AND THE RELIEF AIR FAN SHALL MODULATE TO CONTROL BUILDING STATIC PRESSURE. WHENEVER THE AIR-HANDLER IS DEACTIVATED, THE OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL SPRING RETURN CLOSED AND EXHAUST AND RELIEF AIR FANS SHUT OFF.

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MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: Author
CHECKED BY: Checker
ISSUED: 12.07.2023

LICENSED PROFESSIONAL ENGINEER
02/01/24
No. 8388845
JEDEDIAH JENKINS
STATE OF UTAH

BUILDING AUTOMATION SPECIFICATIONS

M005

X. A TEMPERATURE SENSOR SHALL BE INSTALLED APPROXIMATELY 2 FEET FROM THE OUTLET OF THE PREHEAT COIL. IN THE UNOCCUPIED MODE, IF THIS TEMPERATURE FALLS BELOW 50 DEGREES F, THE AIR HANDLER SHALL BE ENABLED (WITH THE EXHAUST FANS OFF) TO CIRCULATE AIR IN THE PLENUM TO PREVENT FREEZING.

Y. DAILY TOTAL RUNTIMES SHALL BE DISPLAYED ON THE AIR HANDLER GRAPHIC PAGE FOR EACH PIECE OF AIR HANDLER EQUIPMENT (SUPPLY FAN, EXHAUST FAN, RELIEF FAN, ETC). THE DAILY RUNTIME VALUE SHALL BE RECORDED FOR REPORTING PURPOSES THEN RESET AT THE END OF EACH DAY.

Z. THE DDC SYSTEM SHALL ALSO PROVIDE NEGATIVE BUILDING PRESSURE MONITORING. IF THE BUILDING STATIC PRESSURE BEGINS TO FALL BELOW THE MINIMUM BUILDING STATIC PRESSURE SET POINT OF NEGATIVE 0.1"W.C. (ADJ.), THE CONTROLLER SHALL SEND AN ALARM TO THE BAS.

AA. UNOCCUPIED MODE: THE AIR HANDLER, ACTING THROUGH A DDC CONTROLLER, SHALL CYCLE THE SUPPLY FAN TO MAINTAIN DESIRED MINIMUM SPACE TEMPERATURE. ALL PERIMETER ZONES HAVE HOT WATER RADIATION WHICH SHOULD BE USED AS THE FIRST STAGE OF HEAT TO MAINTAIN THE UNOCCUPIED SET POINT. THE FAN SHOULD BE ABLE TO REMAIN OFF DURING UNOCCUPIED HOURS AND SHOULD BE THE LAST STAGE OF HEAT USED TO MAINTAIN THE UNOCCUPIED SET POINT (EXCEPT DURING MORNING WARM-UP). THE OUTDOOR AIR & RELIEF AIR DAMPERS SHALL REMAIN CLOSED AND THE HEATING WATER COIL VALVE SHALL OPEN TO MAINTAIN SETPOINT TEMPERATURE.

4.02 AIR FLOW METERS (EBTRON OR EQUIVILENT)

A. ALL OUTSIDE AIR FLOW SHALL BE MONITORED BY A MATRIX ELEMENT STYLE EBTRON GOLD FLOW METER OR EQUIVALENT.

B. EBTRON METERS SHALL BE TIED TO THE CONTROL SYSTEM VIA LONTALK INTERFACE TO MONITOR ALL AVAILABLE DATA.

4.03 FIRE ALARM FAN SHUT DOWN (ALL FAN SYSTEMS)

A. ALL HEATING, VENTILATING AND AIR CONDITIONING SYSTEM SUPPLY FANS SHALL AUTOMATICALLY SHUT OFF WHEN THE BUILDING FIRE ALARM SYSTEM IS ENERGIZED. ALL FANS TO AUTOMATICALLY START UP AGAIN WHEN FIRE ALARM SYSTEM IS RESET. FIRE ALARM SYSTEM FAN RELAYS SHALL BE "NORMALLY ENERGIZED" AND SHALL BE INSTALLED BY DIVISION 26 AT EACH FAN SYSTEM.

4.04 BUILDING HEATING AND COOLING LOOPS

A. THERE IS ONE MAIN BUILDING WATER LOOP IN THE BUILDING. ONE GLYCOL HEAT LOOP AND SERVES THE PREHEAT COILS IN THE AIR HANDLERS, THE RADIANT HEATING PANELS, UNIT HEATERS, AND REHEAT COILS.

B. THE HEATING LOOP SHALL RECEIVE HEATING FROM THE TWO BOILERS B-1 & B-2 (SIZED AT 60% EACH) AND THE ASSOCIATED PRIMARY/STANDBY HEATING WATER PUMPS P-5 & P-6 (SIZED AT 100% EACH.)

4.05 HEATING LOOP CONTROL

A. THE MAIN LOOP PUMPS P-HW-1 AND P-HW-2 (PRIMARY/STANDBY) SHALL RUN AS FOLLOWS: THE LEAD HEATING PUMP SHALL RUN CONTINUOUSLY WHEN THE BUILDING IS OCCUPIED AND THE OUTSIDE AIR TEMPERATURE IS BELOW 58° (ADJUSTABLE) OR A ZONE SERVED BY THE AIR HANDLERS IS CALLING FOR HEAT. ALSO, IF THE BUILDING IS UNOCCUPIED AND ANY ZONE SERVED BY THE AIR HANDLERS IS CALLING FOR HEAT, IF AN AIR HANDLER IS OPERATING IN WARM-UP MODE, OR THE OUTSIDE AIR TEMPERATURE IS BELOW 30° THE LEAD PUMP SHALL BE ENABLED. THE LOCAL DDC CONTROLLERS SHALL ALTERNATE THE LEAD PUMP ON A MONTHLY BASIS. IF A PUMP DOES NOT RUN WHEN IT IS COMMANDED TO DO SO, THE SECOND PUMP SHALL START AND AN ALARM SHALL BE SENT TO THE DDC SYSTEM. THE PUMPS SHALL RUN ANYTIME B-1 OR B-2 ARE ENABLED.

B. THE TWO BUILDING HEATING WATER PUMPS ARE CONTROLLED BY VFD'S. THE DDC SYSTEM SHALL MODULATE THE PUMP VFD SPEED TO MAINTAIN A HEATING WATER DIFFERENTIAL PRESSURE SET POINT OF 10 PSI (ADJUSTABLE.) THIS SETPOINT SHALL BE COORDINATED WITH THE BALANCER TO MAKER SURE THE SETPOINT MEETS FIELD CONDITIONS.

1. A PRESSURE SENSOR FOR MONITORING THE HEATING LOOP PRESSURE WILL BE PROVIDED. THE SENSOR SHALL BE HARDWIRED BACK THE DDC CONTROLLER RESPONSIBLE FOR CONTROLLING THE HEATING WATER PUMP VFD SPEED. NO INDIRECT OR SOFTWARE POINTS WILL BE ACCEPTABLE. THE PRESSURE SENSOR SHALL BE LOCATED NEAR THE END OF THE MAIN BUILDING WATER LOOP AS INDICATED BY THE ENGINEER.

C. PROVIDE SUPPLY AND RETURN TEMPERATURE SENSORS IN THE HEATING LOOP CONNECTED TO THE DDC SYSTEM.

D. STATUS INDICATION OF PUMP OPERATION WILL BE FROM THE ANALOG CURRENT SIGNAL PROVIDED AT THE VFD FOR EACH PUMP. THE CONTROL SYSTEM WILL MONITOR THE AMPS AND PROVIDE PUMP STATUS FROM THE AMP SIGNAL. THE VFD STATUS SHALL ENABLE THE VFD CONTROL LOOP. LOSS OF VFD STATUS SHALL ENABLE THE LAG PUMP. VERIFICATION OF EITHER STATUS POINT SHALL ENABLE THE WATER TO WATER HEAT PUMP, BOILER, AND PUMPS AS REQUIRED TO CONTROL THE TEMPERATURE OF THE LOOP.

E. THE BASIS OF DESIGN BOILER IS FURNISHED WITH A HYDRONIC CONTROL SYSTEM. A LONTALK INTERFACE (COORDINATE WITH BOILER MANUFACTURER) FROM THE CONTROL SYSTEM TO THE BOILER WILL BE PROVIDED. THE CONTROLS SHALL MONITOR THE OPERATION OF B-1 & B-2 THROUGH THE INTERFACE BUT CONTROL OF THE BOILER WILL BE THROUGH PHYSICAL WIRING CONNECTIONS. SOFTWARE ENABLE AND CONTROL IS NOT PERMITTED.

F. THE BOILERS SHALL BE ENABLED ANYTIME THE HEATING LOOP IS ENABLED, AND TO MAINTAIN SETPOINT TEMPERATURE. THE SETPOINT TEMPERATURE SHALL RESET BASED ON OUTDOORAIR TEMPERATURE:

OUTDOOR AIR TEMPERATURE	HYDRONIC SETPOINT
BELOW 45°F	200°F (ADJUSTABLE)
ABOVE 45°F	160°F (ADJUSTABLE)

4.06 EMERGENCY SHUTDOWN SWITCHES (BOILERS & WATER HEATERS)

A. A REMOTE MUSHROOM TYPE, SINGLE ACTING, MANUALLY RESET, SHUTDOWN SWITCH SHALL BE LOCATED JUST INSIDE EACH BOILER ROOM DOOR AND MARKED FOR EASY IDENTIFICATION. A PILOT LIGHT SHALL ILLUMINATE WHENEVER THE PUSH BUTTON IS PRESSED. IF THERE IS MORE THAN ONE DOOR TO THE BOILER ROOM, THERE SHOULD BE A SWITCH LOCATED AT EACH DOOR.

B. THE EMERGENCY SHUTDOWN SWITCH(ES) WHEN ACTIVATED MUST DISCONNECT ALL POWER TO THE BOILER BURNER AND ALL HOT WATER HEATER CONTROLS. A VISUAL ALARM INDICATOR OF A DIFFERENT COLOR THAN THE BUILDING FIRE ALARM INDICATORS SHALL BE ACTIVATED WHEN THE BOILERS ARE SHUTDOWN.

4.07 DOMESTIC HOT WATER SYSTEMS

A. ALL DOMESTIC HOT WATER SYSTEMS AND ASSOCIATED BUILDING LOOP PUMPS SHALL BE ENABLED THROUGH THE DDC SYSTEM. ALL DOMESTIC HOT WATER PUMPS SHALL RUN DURING OCCUPIED HOURS AS SCHEDULED BY THE BAS AS NEEDED TO MAINTAIN A RETURN WATER TEMPERATURE OF 110 DEGREES F. A TEMPERATURE SENSOR SHALL BE CONNECTED TO EACH HOT WATER SYSTEM FOR REMOTE MONITORING CAPABILITY OF THE DOMESTIC HOT WATER TEMPERATURE. STATUS OF THE DOMESTIC WATER PUMPS SHALL BE MONITORED BY THE CONTROL SYSTEM AND AN ALARM SHALL BE GENERATED IF A PUMP FAILS TO OPERATE.

B. THE DOMESTIC HOT WATER HEATERS SHALL OPERATE 24 HOURS A DAY TO PREVENT BACTERIA BUILD-UP. ONCE ENABLED BY THE DDC SYSTEM, THE DOMESTIC HOT WATER HEATERS SHALL OPERATE UNDER THEIR FACTORY SUPPLIED CONTROLS.

C. TIE-IN WATER HEATERS LONTALK COMMUNICATION.

4.08 CABINET UNIT HEATER CONTROL

A. A ROOM TEMPERATURE SENSOR SHALL CYCLE THE UNIT HEATER FAN AND VALVE TO MAINTAIN DESIRED ROOM SPACE TEMPERATURE. THE UNIT HEATER FAN SHALL NOT BE CONTROLLED BY AN AQUA-STAT.

4.09 RADIANT HEATERS

A. A ROOM TEMPERATURE SENSOR SHALL CYCLE THE CONTROL VALVE TO MAINTAIN DESIRED ROOM SPACE TEMPERATURE.

4.10 SUMP PUMP CONTROL

A. SUMP PUMPS SHALL BE COMPLETE WITH STAND ALONE CONTROLS. THE ALARMS SHALL BE MONITORED BY THE BMS.

4.11 EXHAUST FANS

A. INDEPENDENT EXHAUST FANS SHALL BE ENABLED BY THE CONTROL SYSTEM. STATUS OF FAN OPERATION SHALL BE MONITORED VIA A CURRENT MONITORING SWITCH. IF THE EXHAUST FAN FAILS TO START AN ALARM SHALL BE GENERATED.

B. EXHAUST FANS WILL BE ENABLED TO OPERATE DURING BUILDING OCCUPIED OR BUILDING PURGE (COOL-DOWN) PERIODS.

4.12 FIRE RISER TEMPERATURE MONITORING

A. A TEMPERATURE SENSOR SHALL BE PROVIDED AND CONNECTED TO THE CONTROL SYSTEM TO MONITOR THE TEMPERATURE NEAR THE FIRE RISERS. IF THE TEMPERATURE FALLS BELOW 45° AN ALARM SHALL BE GENERATED AND AN EMAIL SHALL BE SENT TO DISTRICT PERSONNEL.

B. WHEN THE TEMPERATURE FALLS BELOW 45°, THE CONTROL SYSTEM SHALL ENABLE THE HVAC EQUIPMENT SERVING THE AREA TO WARM-UP THE SPACE.

4.13 OUTSIDE AIR TEMPERATURE MONITORING

A. THE OUTSIDE AIR TEMPERATURE SENSOR SHALL BE CONTAINED WITHIN A WOODEN INSTRUMENT ENCLOSURE. THE LOCATION AND DESIGN OF SUCH SHALL PROVIDE A SIGNAL TO THE DDC SYSTEM THAT IS ACCURATE TO WITHIN +/- 2 DEGREES F, REGARDLESS OF BUILDING MASS, SUN LOCATION OR OTHER ENVIRONMENTAL CONDITIONS.

4.14 GLYCOL FEED SYSTEMS

A. THE ATC CONTRACTOR SHALL WIRE ALL MISC. POWER AND PRESSURE SENSORS PROVIDED WITH THE EQUIPMENT TO MAKE THE SYSTEMS COMPLETELY OPERATIONAL.

4.15 HOST COMPUTER & BUILDING GRAPHIC DISPLAY

A. GRAPHICS PAGES SHALL BE MADE TO MATCH THE EXISTING GRAPHICS ON THE DISTRICTS HOST COMPUTER. FLOOR PLANS, AIR HANDLER SUMMARIES, AND ALARM PAGES SHALL ALL BE INCLUDED.

B. RUNTIMES OF ALL AIR HANDLERS, RELIEF FANS, EXHAUST FANS, BOILERS, CHILLERS, AND EQUIPMENT PUMPS SHALL BE LOGGED AT THE HOST COMPUTER. THE ATC CONTRACTOR SHALL PROVIDE RUNTIME REPORTS TO ENABLE MONITORING OF THE BUILDING PERFORMANCE.

4.16 CO2 CONCENTRATION SET POINTS

SPACE	CO2 CONCENTRATION SETPOINT (PPM)
RECEPTION	1600
MULTIUSE ASSEMBLY	1700

END OF SECTION

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PROJECT #: 123998
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ISSUED: 12.07.2023

LICENSED PROFESSIONAL ENGINEER
02/02/24
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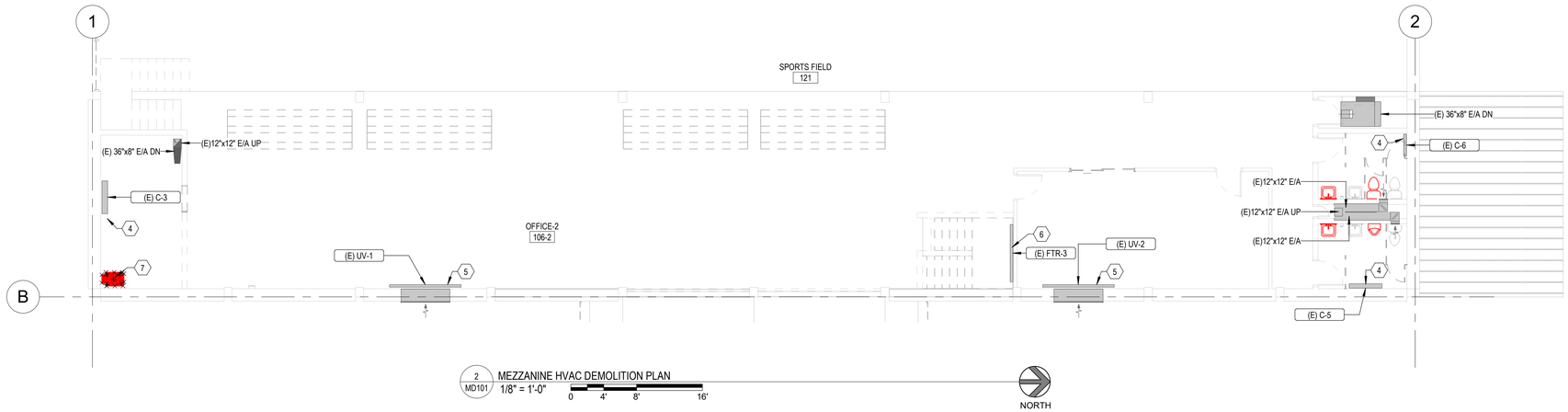
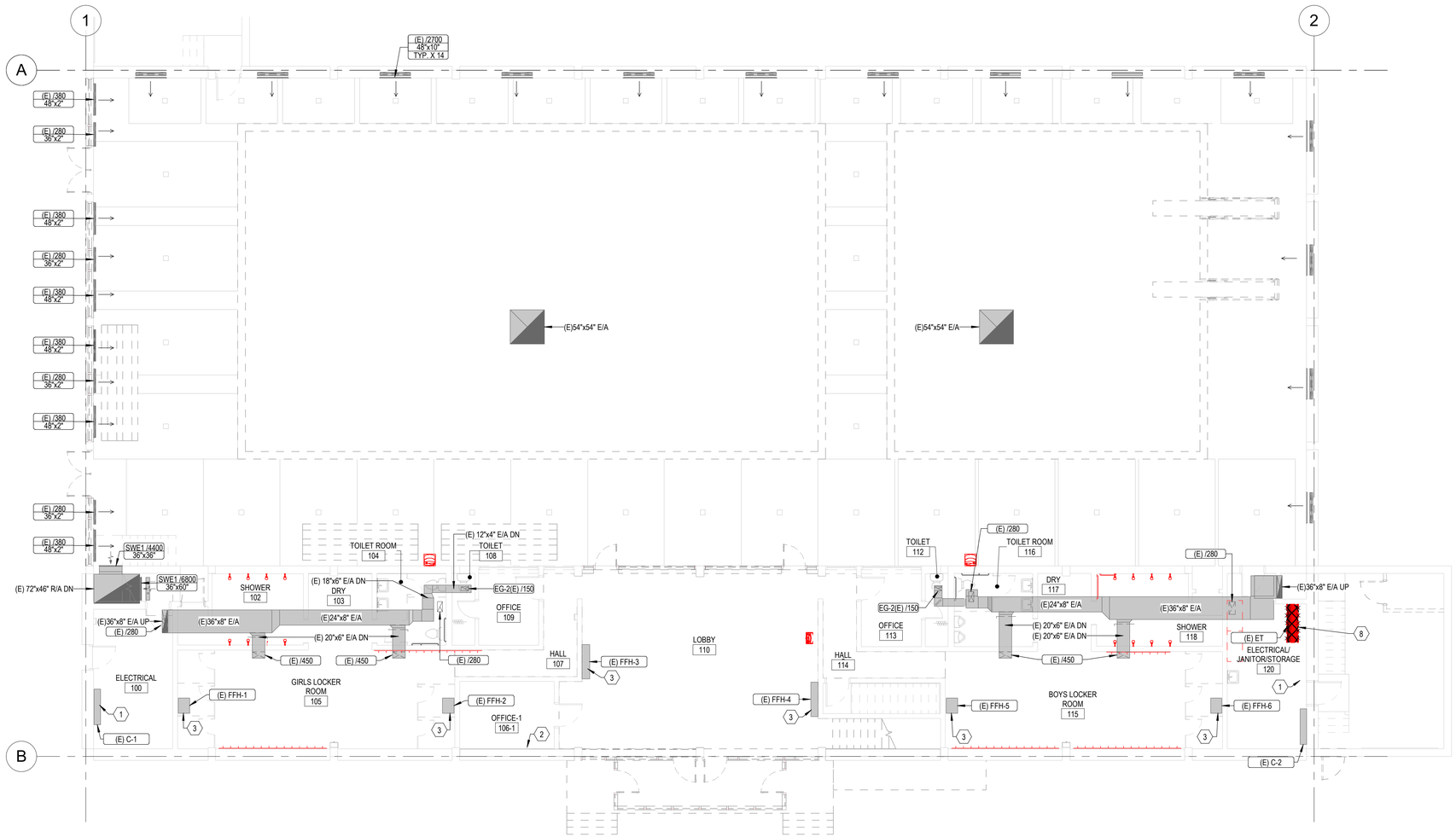
BUILDING AUTOMATION SPECIFICATIONS

M006



2 MD101 MEZZANINE HVAC DEMOLITION PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH



1 MD101 LEVEL 1 HVAC DEMOLITION PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH

KEYED NOTES

#	
1	EXISTING CONVECTOR TO REMAIN.
2	EXISTING FINNED TUBE RADIATOR TO REMAIN.
3	EXISTING FORCED FLOW HEATER TO REMAIN.
4	EXISTING CONVECTOR TO REMAIN.
5	EXISTING UNIT VENTILATOR TO REMAIN.
6	EXISTING FINNED TUBE RADIATOR TO REMAIN.
7	DEMOLISH AND REMOVE EXISTING GAS FIRED, CEILING HUNG, UNIT HEATER, AND ASSOCIATED FLUES THRU ROOF. PATCH AND REPARE ROOF TO MATCH EXISTING.
8	REMOVE THE EXISTING HORIZONTAL EXPANSION TANK.

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795 NORTH 400 WEST

INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

114 EAST 1000 NORTH. LOGAN UTAH 84321
OWNER/ORG NAME

CONSTRUCTION DOCUMENTS

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: Author
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ISSUED: 12.07.2023

LICENSED PROFESSIONAL ENGINEER
02/01/24
No. 8388845
JEDEDIAH JENKINS
STATE OF UTAH

LEVEL 1 & MEZZANINE MECHANICAL DEMOLITION PLAN

MD101

VBFA
40 W. Cache Valley Blvd.
Building 1, Suite B
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KEYED NOTES

1 REMOVE THE EXISTING POOL SAND FILTER.

2 REMOVE THE EXISTING POOL HEAT EXCHANGER.

3 REMOVE THE EXISTING POOL PUMP.

5 ABANDON IN PLACE EXISTING STEAM BOILER.

6 REMOVE EXISTING HEATING WATER HEAT EXCHANGER.

7 REMOVE THE EXISTING STEAM-TO-WATER DOMESTIC HEAT EXCHANGER

8 REMOVE THE EXISTING CONDENSATE AND FEEDWATER EQUIPMENT.

9 FAN MOTOR TO BE REMOVED AND REPLACED IN NEW CONSTRUCTION PHASE.

10 REMOVE THE EXISTING AIR HANDLER PRE-HEAT COIL

11 REMOVE THE EXISTING AIR HANDLER REHEAT COIL.

12 EXISITNG AIR HANDLER FILTER BANK TO REMAIN.

13 EXISTING CONCRETE PADS TO BE REMOVED.

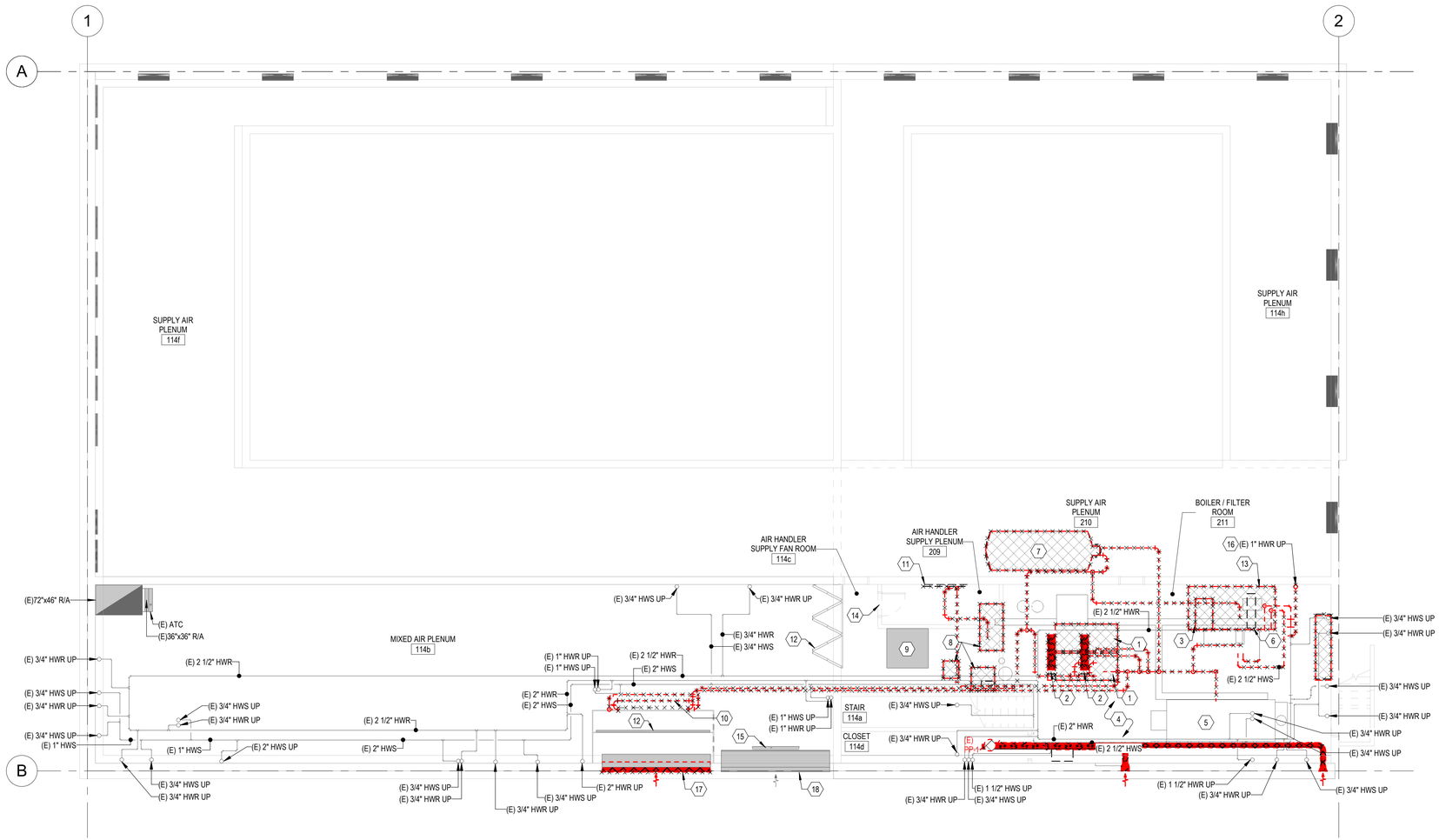
14 PATCH AND REPAIR GALVANIZED SUPPLY AIR PLENUM AFTER NEW CONSTRUCTION PHASE.

15 EXISITNG DAMPER TO REMAIN CLOSED.

16 REMOVE THE EXISTING LINE BETWEEN THE HORIZONTAL EXPANSION TANK ON LEVEL 1 AND THE EXISTING MECHANICAL PIPING IN THE BASEMENT. PATCH AND REPAIR THE EXISTING MECHANICAL PIPING AFTER REMOVING THE PIPE.

17 REMOVE EXISTING LOUVER AND IT'S ASSOCIATED ATC DAMPER.

18 EXISTING LOUVER TO REMAIN.



1 MD100 BASEMENT MECHANICAL DEMOLITION PLAN
1/8" = 1'-0"
0 4' 8' 16'

NORTH

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255 SOUTH 300 WEST LOGAN UT 84321
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STATE OF UTAH

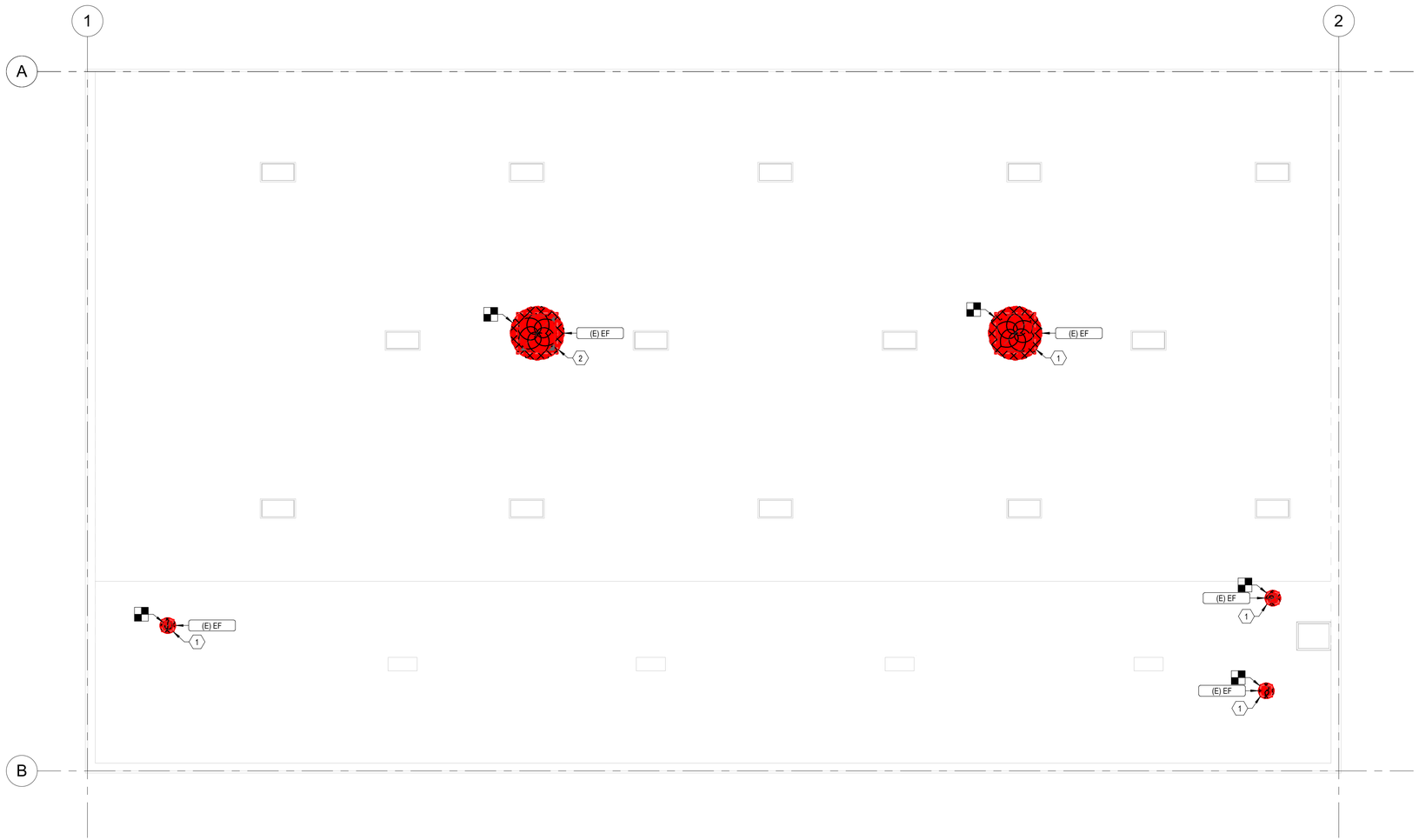
BASEMENT MECHANICAL DEMOLITION PLAN

MD100

KEYED NOTES

1 REMOVE EXISTING EXHAUST FAN AND ROOF CURB.

2 REMOVE EXISTING EXHAUST FAN. EXISTING ROOF CURB TO BE CAPPED AND SEALED.



1 MD102 ROOF HVAC PLAN
1/8" = 1'-0"
0 4' 8' 16'

NORTH

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INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

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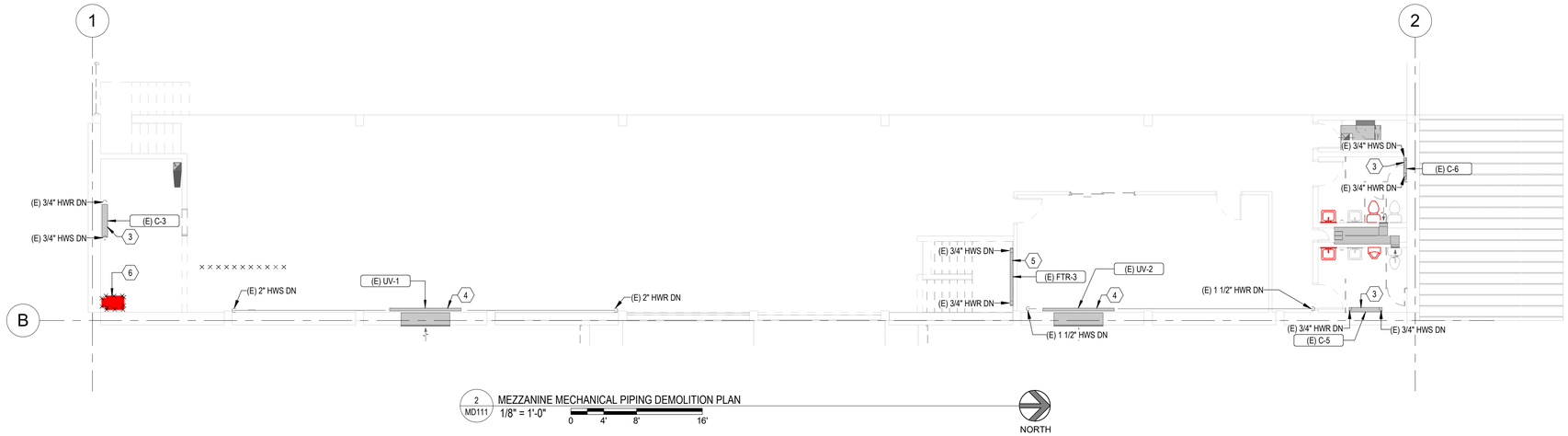
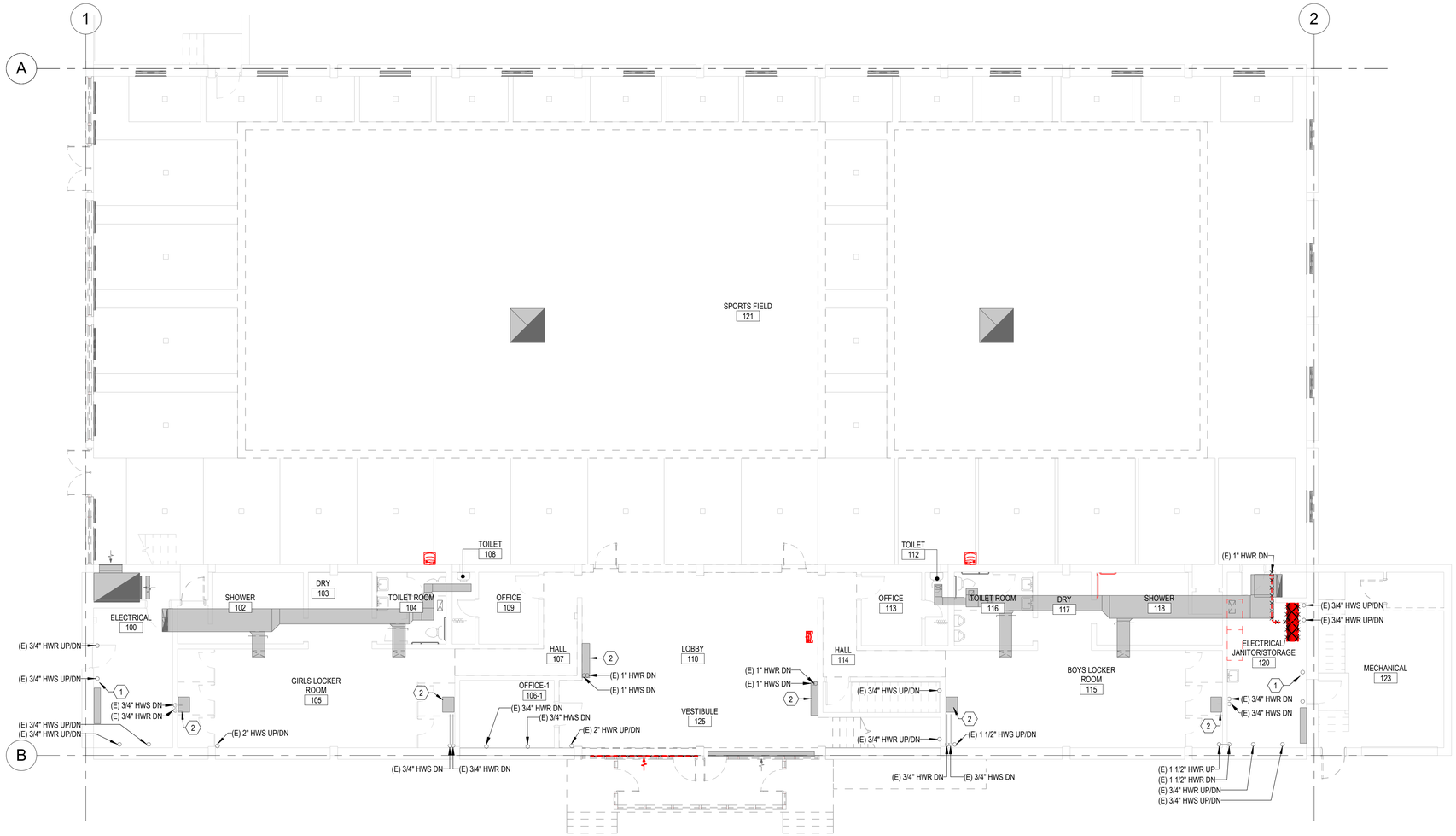
ROOF MECHANICAL DEMOLITION PLAN

MD102



2 MD111 MEZZANINE MECHANICAL PIPING DEMOLITION PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH



1 MD111 LEVEL 1 MECHANICAL PIPING DEMOLITION PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH

KEYED NOTES

1. EXISTING CONVECTOR TO REMAIN. REMOVE THE EXISTING CONTROL AND BALANCING VALVES.
2. EXISTING FORCED FLOW HEATER TO REMAIN. REMOVE THE EXISTING CONTROL AND BALANCING VALVES.
3. EXISTING CONVECTOR TO REMAIN. REMOVE THE EXISTING CONTROL AND BALANCING VALVES.
4. EXISTING UNIT VENTILATOR TO REMAIN. REMOVE THE EXISTING CONTROL AND BALANCING VALVES.
5. EXISTING FINNED TUBE RADIATOR TO REMAIN. REMOVE THE EXISTING CONTROL AND BALANCING VALVES.
6. DEMOLISH AND REMOVE EXISTING GAS FIRED, CEILING HUNG, UNIT HEATER, AND ASSOCIATED FLUES THRU ROOF. PATCH AND REPAIRE ROOF TO MATCH EXISTING.

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LEVEL 1 & MEZZANINE MECHANICAL PIPING DEMOLITION PLAN

MD111

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KEYED NOTES

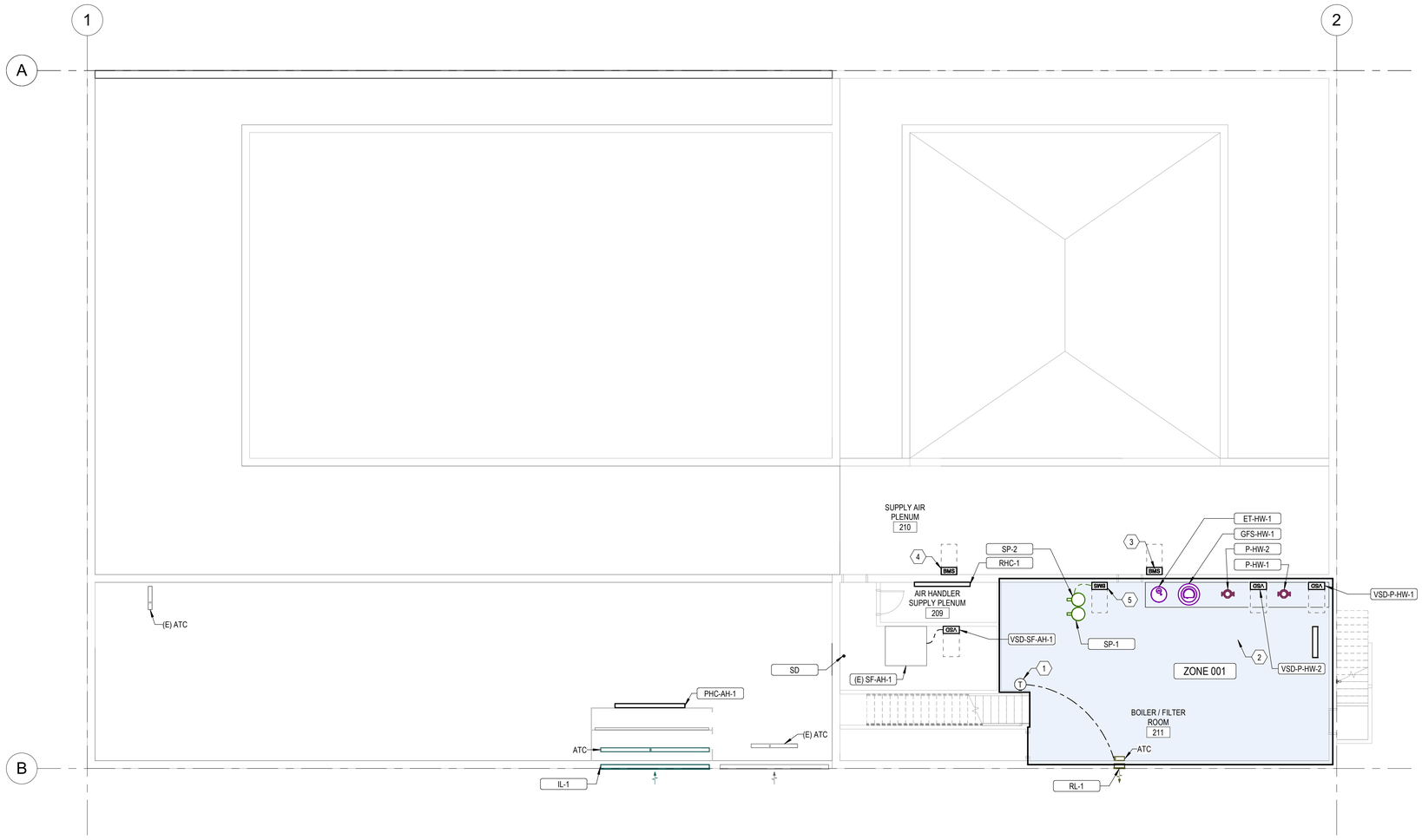
1 PROVIDE NEW THERMOSTAT TO CONTROL ATC DAMPER ASSOCIATED WITH RELIEF LOUVER, RL-1.

2 CONNECT EXISTING DOMESTIC WATER RECIRC PUMP TO THE NEW BMS SYSTEM.

3 PROVIDE NEW CONTROL PANEL FOR THE HEATING WATER SYSTEM. CONNECT TO THE NEW BMS SYSTEM.

4 PROVIDE NEW CONTROL PANEL FOR THE HEATING WATER SYSTEM. CONNECT TO THE NEW BMS SYSTEM.

5 PROVIDE A CONTROL PANEL WITH THE NEW SUMP .PUMPS AND CONNECT TO THE NEW BMS SYSTEM.



HVAC ZONE LEGEND

- ZONE 001
- ZONE 102
- ZONE 103
- ZONE 104
- ZONE 105
- ZONE 106
- ZONE 107
- ZONE 108
- ZONE 109
- ZONE 201
- ZONE 202
- ZONE 203
- ZONE 204
- ZONE 205

1 M010 BASEMENT THERMAL ZONE DIAGRAM
1/8" = 1'-0"
0 4' 8' 16'

NORTH

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BASEMENT THERMAL ZONE PLAN

M010

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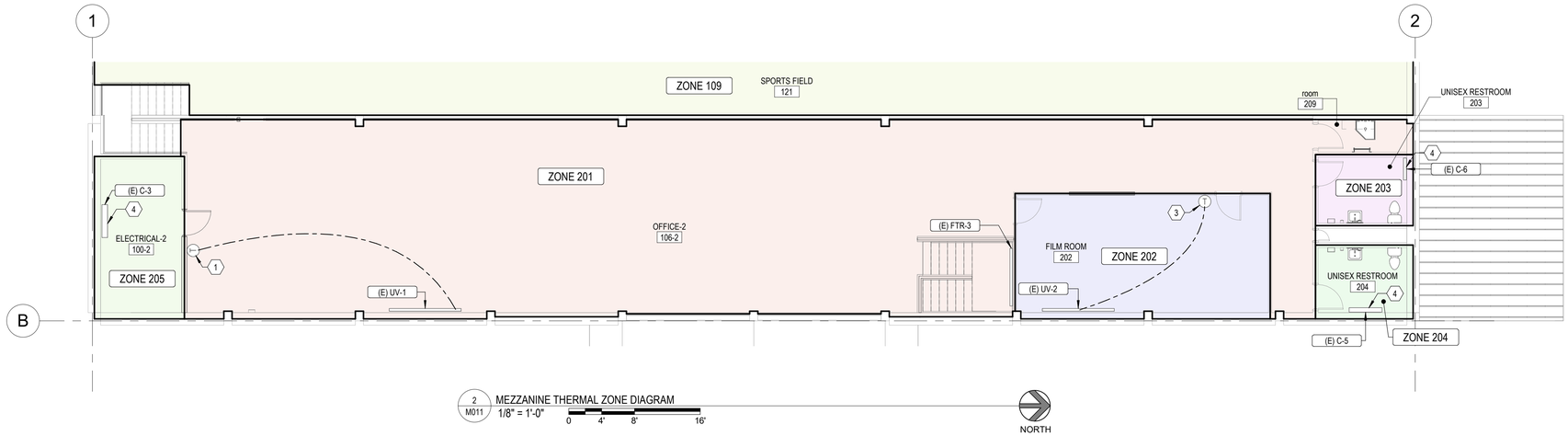
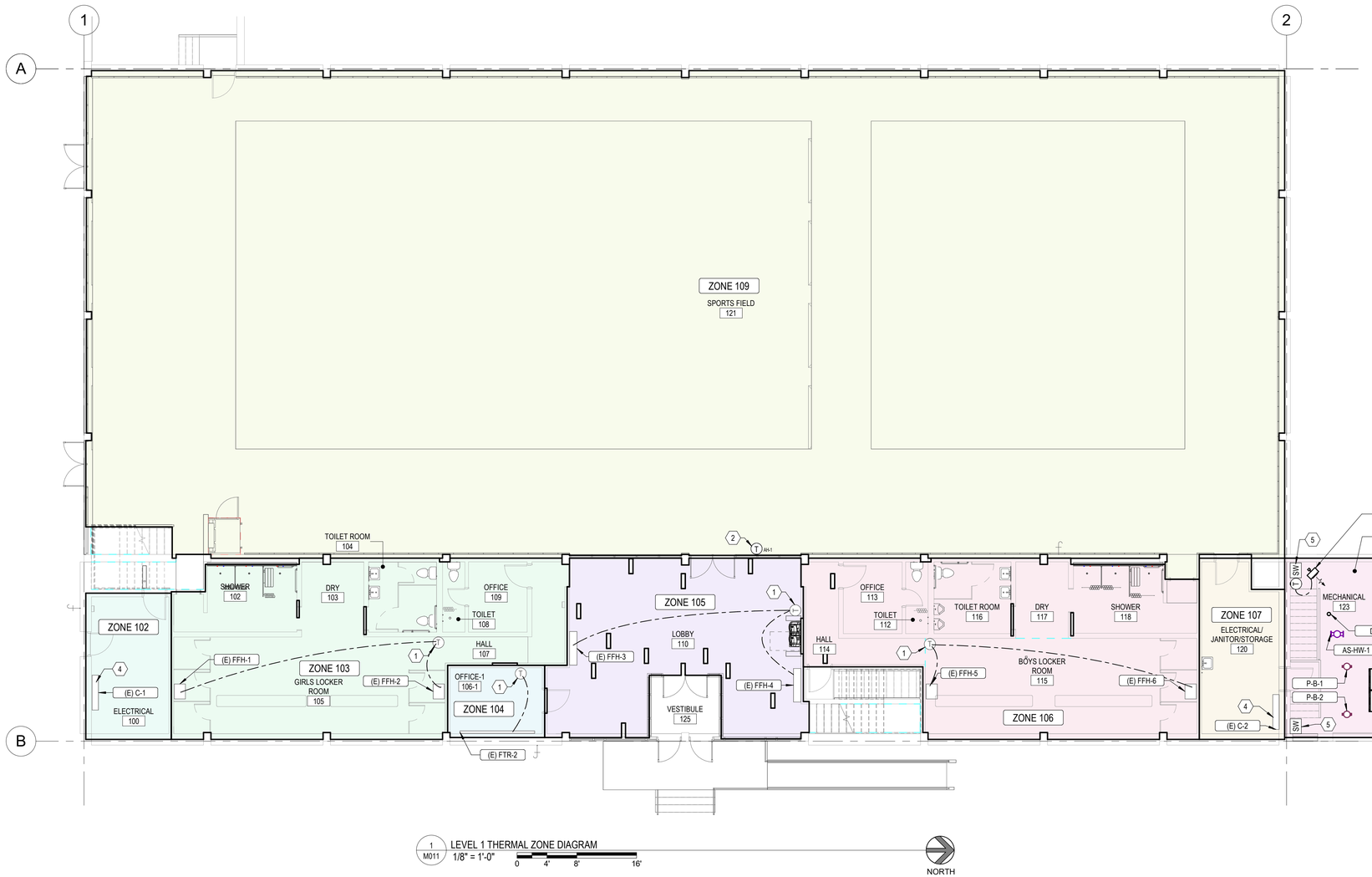
2/2/2024 9:09:23 AM Autodesk Docs://123998 - LCDD - Indoor Athletic Facility - Municipool Remodel/23708 - LCDD - Indoor Athletic Facility - Municipool Remodel_MECH_r24.rvt



2 M011 MEZZANINE THERMAL ZONE DIAGRAM
1/8" = 1'-0"
0 4' 8' 16'
NORTH



1 M011 LEVEL 1 THERMAL ZONE DIAGRAM
1/8" = 1'-0"
0 4' 8' 16'
NORTH

KEYED NOTES

1 REPLACE EXISTING THERMOSTAT.

2 PROVIDE NEW THERMOSTAT IN AREA DESIGNATED. TO BE CONNECTED TO AH-1.

3 PROVIDE NEW THERMOSTAT FOR ZONE 202 IN THIS AREA. WILL SERVE (E) UV-2.

4 REPLACE EXISTING CABINET MOUNTED THERMOSTAT.

5 ONE OF TWO BOILER KILL SWITCHES TO BE INSTALLED.

HVAC ZONE LEGEND

- ZONE 001
- ZONE 102
- ZONE 103
- ZONE 104
- ZONE 105
- ZONE 106
- ZONE 107
- ZONE 108
- ZONE 109
- ZONE 201
- ZONE 202
- ZONE 203
- ZONE 204
- ZONE 205

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INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

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02/01/24
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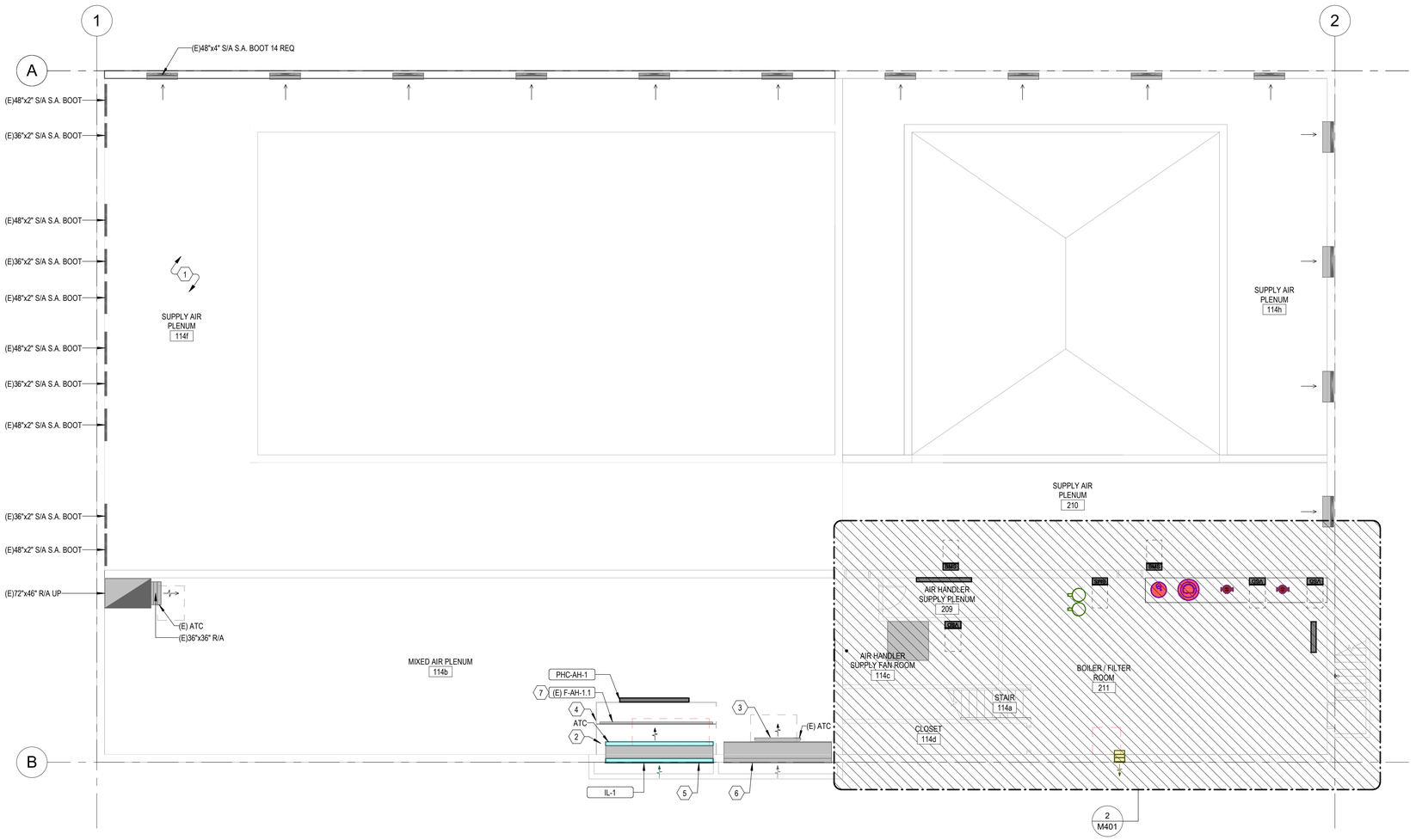
STATE OF UTAH

LEVEL1 & MEZZANINE THERMAL ZONE PLANS

M011

KEYED NOTES

1. ALL BOOT FOR ALL SYSTEMS WILL REMAIN THRU NEW CONSTRUCTION PROCESS. TYPICAL.
2. REPLACE EXISTING DAMPER
3. EXISITNG DAMPER TO REAMIN CLOSED.
4. EXISTING SHEETMETAL PLENUM.
5. INSTALL THE NEW LOUVER IN THE EXISTING WALL OPENING. CONTRACTOR TO FIELD-VERIFY EXACT OPENING MEASUREMENTS PRIOR TO ORDERING THE EQUIPMENT.
6. EXISTING LOUVER TO REMAIN IN PLACE
7. EXISTING FILTER BANK TO REMAIN. CONTRACTOR TO FIELD VERIFY THE CONDITION OF THE FILTER BANK AND PROVIDE REPAIRS AS NEEDED, IF ANY. FILTERS SHALL ALSO BE REPLACED AS PART OF THE SCOPE OF WORK.



1 M100 BASMEMENT HVAC PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH

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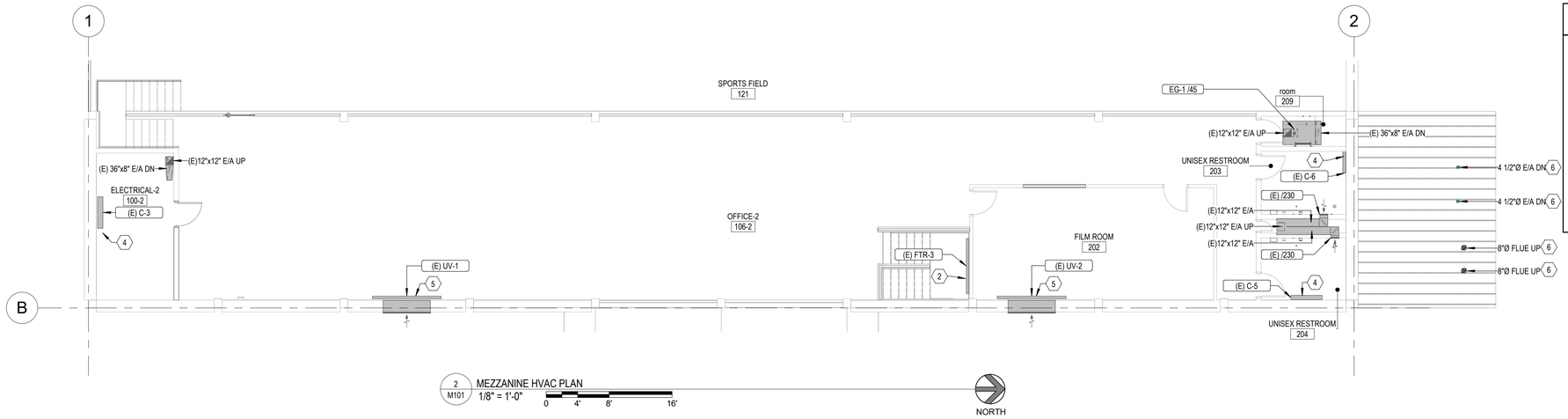
BASEMENT HVAC PLAN

M100



2 / M101 MEZZANINE HVAC PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH

1 / M101 LEVEL 1 HVAC PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH

KEYED NOTES

1. EXISTING CONVECTOR TO REMAIN. PROVIDE NEW CONTROL AND BALANCING VALVES. SEE SCHEDULES.
2. EXISTING FINNED TUBE RADIATOR TO REMAIN. PROVIDE NEW CONTROL AND BALANCING VALVES. SEE SCHEDULES
3. EXISTING FORCED FLOW HEATER TO REMAIN. PROVIDE NEW CONTROL AND BALANCING VALVES. SEE SCHEDULES.
4. EXISTING CONVECTOR TO REMAIN. PROVIDE NEW CONTROL AND BALANCING VALVES. SEE SCHEDULES.
5. EXISTING UNIT VENTILATOR TO REMAIN. PROVIDE NEW CONTROL AND BALANCING VALVES. SEE SCHEDULES.
6. PATCH AND SEAL ROOF PENETRATION.

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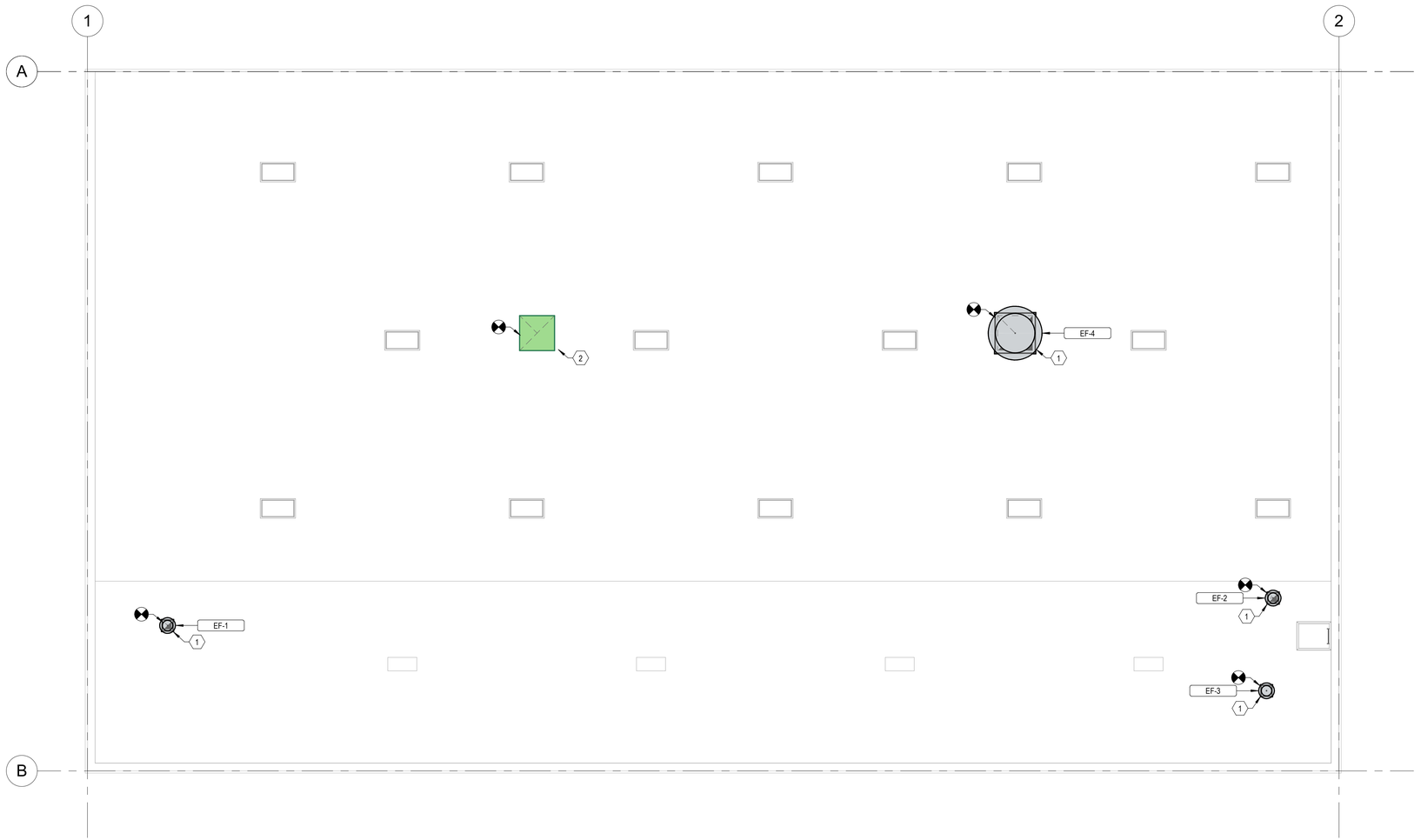
LEVEL 1 & MEZZANINE HVAC PLANS

M101

KEYED NOTES

1 INSTALL NEW EXHAUST FAN AND ROOF CURB.

2 CAP THE EXISTING ROOF CURB. INSULATE AND SEAL TO MATCH THE EXISTING ROOF.



1 / M102 ROOF HVAC PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH

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ROOF MECHANICAL PLAN

M102

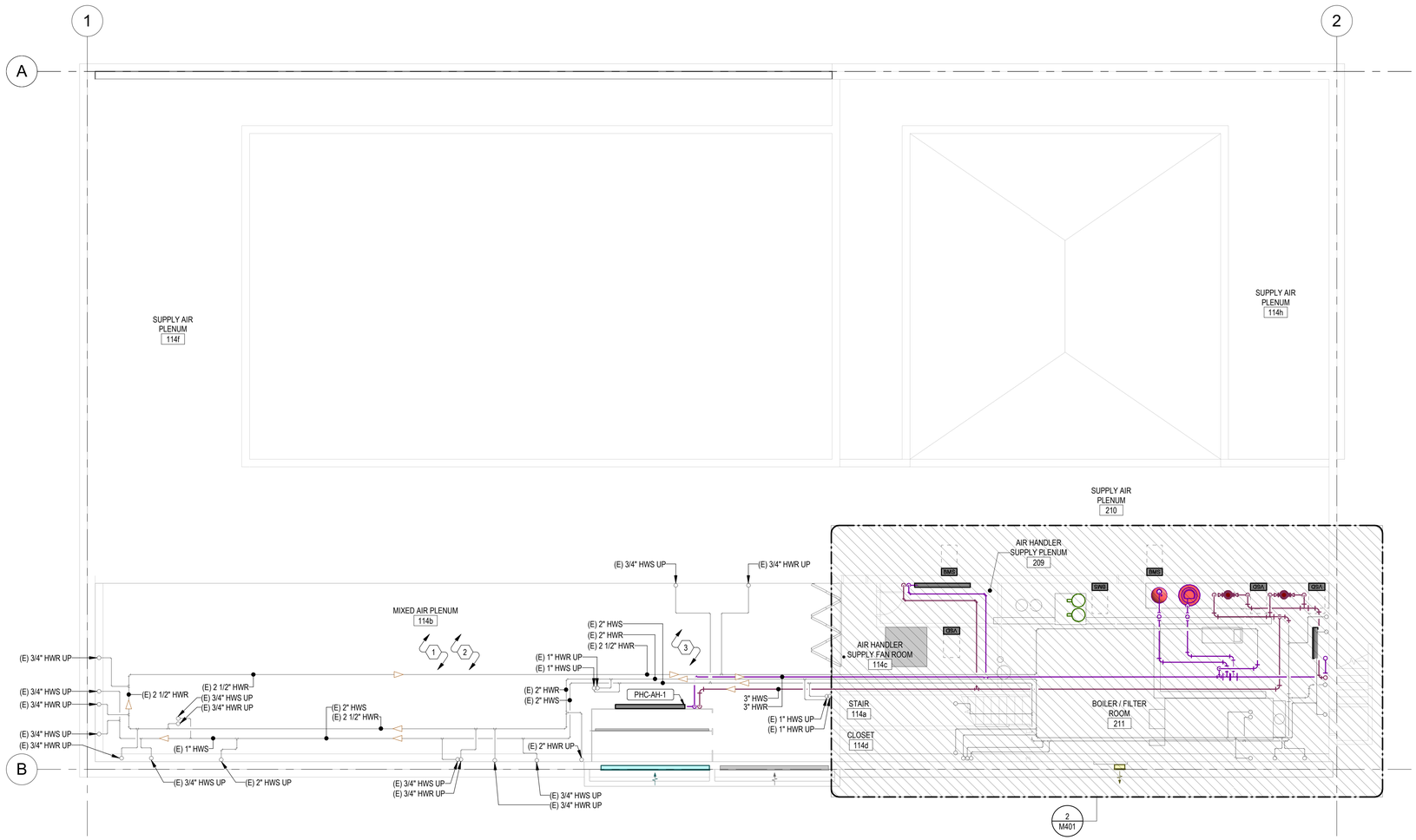
2/2/2024 8:06:29 AM Autodesk Docs://123998_LCID - Indoor Athletic Facility - Municipool Remodel/123708_LCID - Indoor Athletic Facility - Municipool Remodel_MECH_r24.rvt

KEYED NOTES

1 EXISTING EQUIPMENT TO REMAIN SHOWN LIGHT. TYPICAL.

2 NEW EQUIPMENT SHOWN SHADED, TYPICAL.

3 EXISTING HYDRONIC PIPING TO REMAIN. PROVIDE NEW CONTROL AND BALANCING VALVES TO HYDRONIC EQUIPMENT. TYPICAL.



1 M110 BASEMENT MECHANICAL PIPING PLAN

1/8" = 1'-0"

0 4' 8' 16'

NORTH

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BASEMENT MECHANICAL PIPING PLAN

M110

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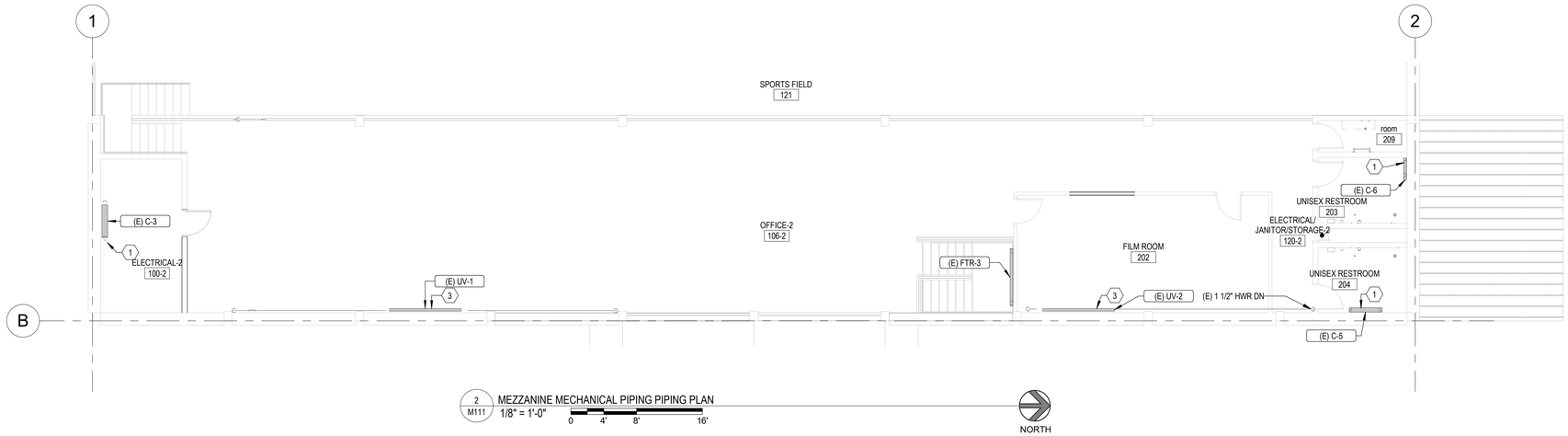
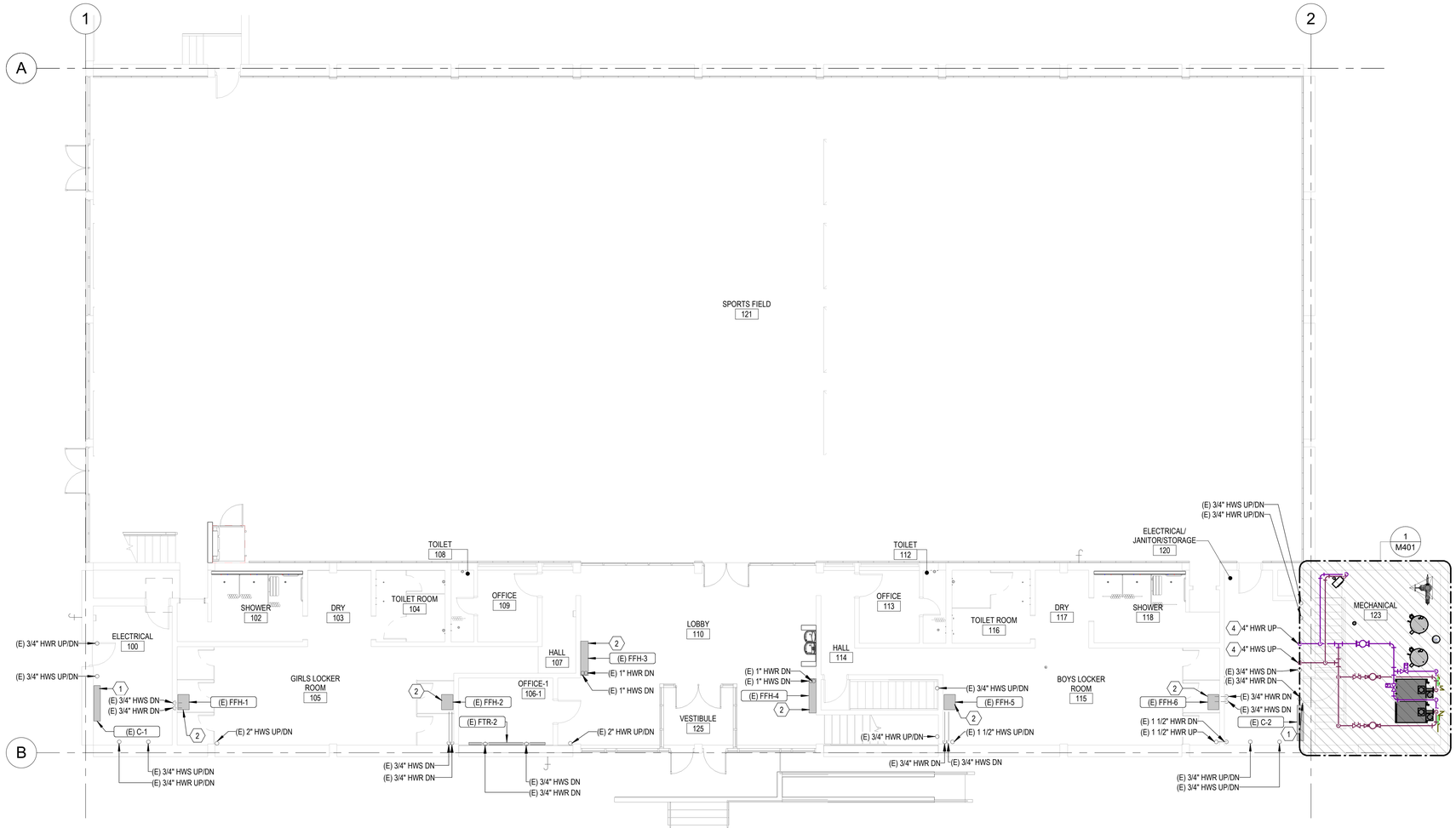


2 M111 MEZZANINE MECHANICAL PIPING PIPING PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH



1 M111 LEVEL 1 MECHANICAL PIPING PIPING PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH

KEYED NOTES

1. EXISTING CONVECTOR TO REMAIN. PROVIDE NEW CONTROL AND BALANCING VALVES. SEE SCHEDULES.
2. EXISTING FORCED FLOW HEATER TO REMAIN. PROVIDE NEW CONTROL AND BALANCING VALVES. SEE SCHEDULES.
3. EXISTING UNIT VENTILATOR TO REMAIN. PROVIDE NEW CONTROL AND BALANCING VALVES. SEE SCHEDULES.
4. CORE DRILLING WILL BE NEEDED FOR PIPES TO CONTINUE TO THE BASEMENT.

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LEVEL 1 & MEZZANINE MECHANICAL PIPING PLAN

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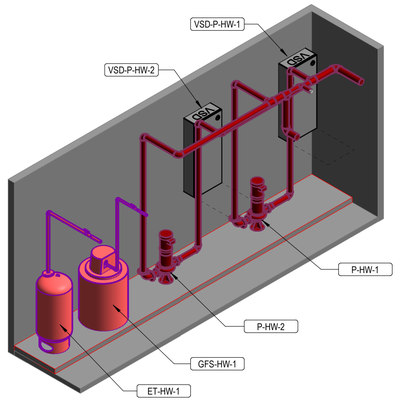
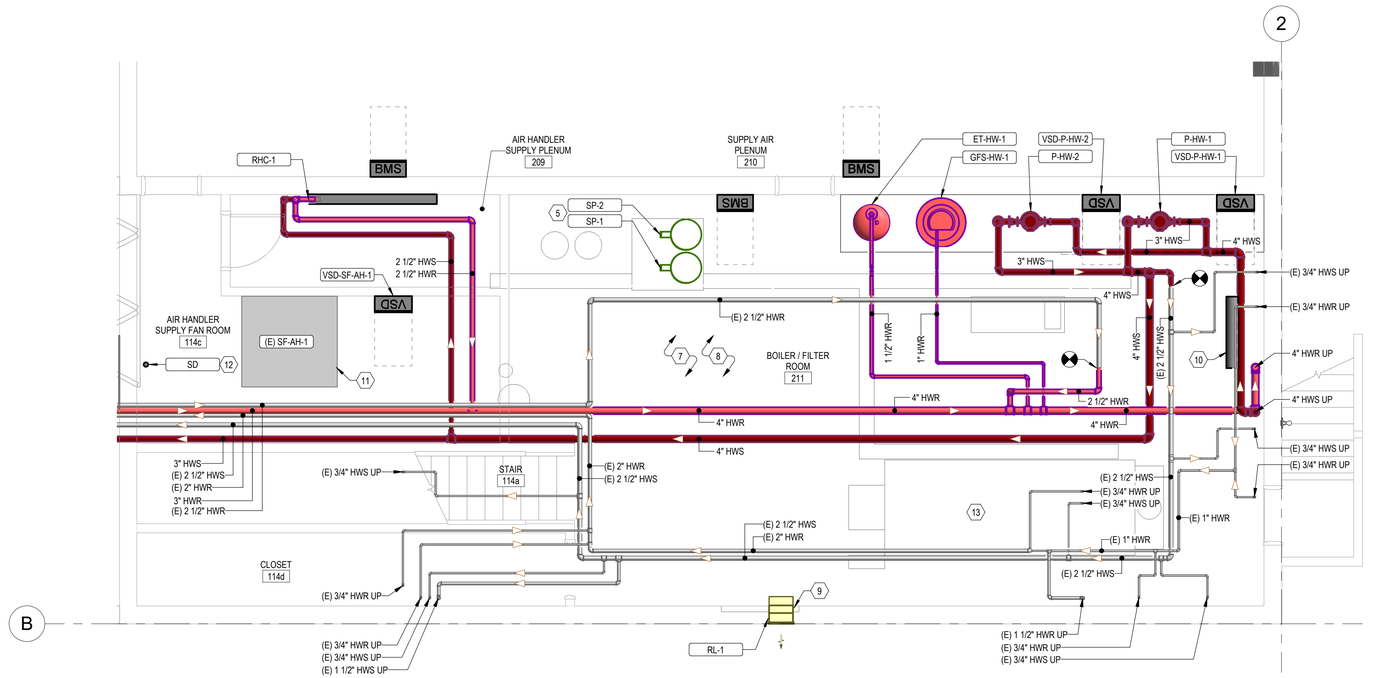
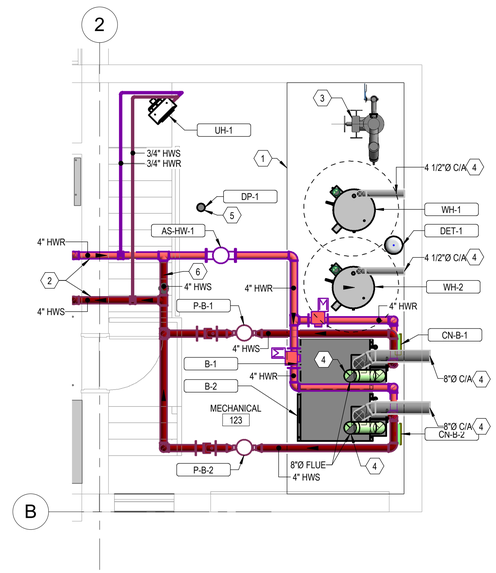


3 M401 MECHANICAL PIPING BOILER/FILTER ROOM ISOMETRIC



2 M401 BASEMENT ENLARGED MECHANICAL PLAN
1/4" = 1'-0"

NORTH



1 M401 ENLARGED MECHANICAL PLAN - STORAGE 123
1/4" = 1'-0"
0 2' 4' 8'

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KEYED NOTES

1 NEW 4" EQUIPMENT HOUSEKEEPING PAD.

2 CORE DRILLING OF MASONRY WALL NEEDED.

3 FIRE RISER TO BE INSTALLED IN THIS LOCATION. SEE FIRE PLANS FOR CONTINUATION.

4 DUCT AND FLUES TO EXIT TO THE OUTSIDE. PATCH AND REPAIR AREAS TO MATCH EXISTING.

5 PLUMBING EQUIPMENT. SEE PLUMBING DRAWINGS.

6 HYDRAULIC DECOUPLER PIPE BETWEEN THE PRIMARY AND SECONDARY PIPING LOOPS.

7 EXISTING EQUIPMENT TO REMAIN SHOWN LIGHT. TYPICAL.

8 NEW EQUIPMENT SHOWN SHADED, TYPICAL.

9 FILL IN HOLE WHERE LOUVER WAS DEMOLISHED MATCH TO EXISTING.

10 NEW DOMESTIC COLD WATER HEADER. SEE PLUMBING SHEETS..

11 REPLACE EXISTING 15HP FAN MOTOR WITH NEW VRD COMPATABLE FAN MOTOR.

12 SMOKE DETECTOR TO BE INSTALLED IN THE RETURN AREA FOR THE AIR HANDLER.

13 EXISTING STEAM BOILER ABANDONED IN PLACE

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INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

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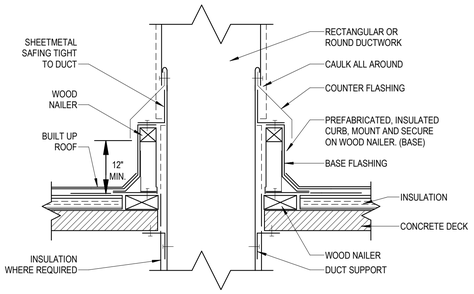
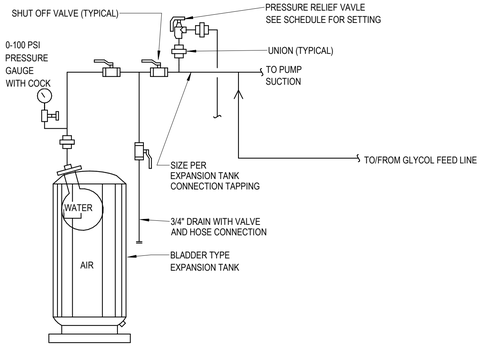
CONSTRUCTION DOCUMENTS

ENLARGED HVAC PLANS

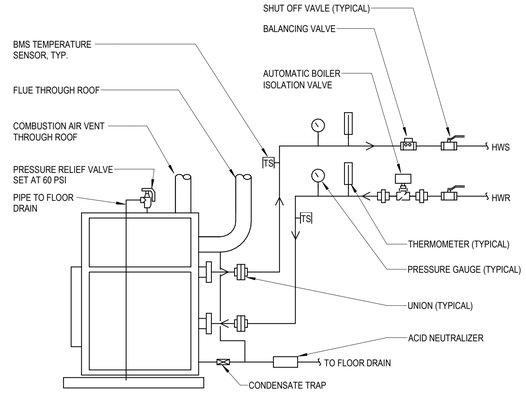
M401



7 M501 DUCT PENETRATION THRU ROOF DETAIL
NOT TO SCALE



4 M501 EXPANSION TANK - GLYCOL SYSTEM DETAIL
NOT TO SCALE

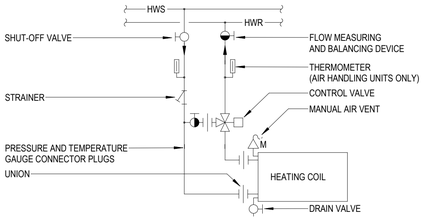


1 M501 CONDENSING BOILER DETAIL
NOT TO SCALE

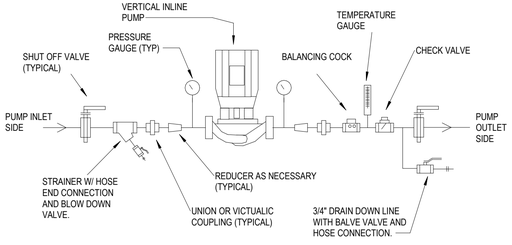
8 M501 RECTANGULAR DUCT DETAIL
NOT TO SCALE

5 M501 GLYCOL FEED UNIT DETAIL
NOT TO SCALE

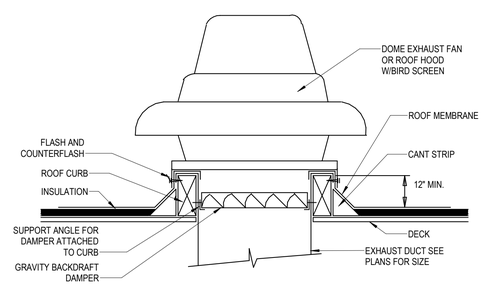
2 M501 AIR SEPARATOR PIPING DETAIL
NOT TO SCALE



9 M501 HOT WATER COIL PIPING W/ 3-WAY VALVE DETAIL
NOT TO SCALE



6 M501 PUMP DETAIL - VERTICAL INLINE DETAIL
NOT TO SCALE



3 M501 ROOF MOUNTED DOMED EXHAUST FAN DETAIL
NOT TO SCALE

VBFA
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CONSTRUCTION DOCUMENTS

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LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

114 EAST 1000 NORTH. LOGAN UTAH 84321
OWNER/ORG NAME

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: Author
CHECKED BY: Checker
ISSUED: 12.07.2023

LICENSED PROFESSIONAL ENGINEER
02/01/24
No. 8388845
JEDEDIAH JENKINS
STATE OF UTAH

MECHANICAL DETAILS

M501

CONDENSATE NEUTRALIZER SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	QTY	TYPE	CONDENSATE DEVICE		PHYSICAL				NOTES
						INPUT LOAD	EFFICIENCY	LENGTH	WIDTH	HEIGHT	NPT FITTING	
CN-B-1	Axiom	NT15	MECHANICAL 300	1	Standard	1689100 Btu/h	93.7%	17.5"	13.5"	6"	1"	
CN-B-2	Axiom	NT15	MECHANICAL 300	1	Standard	1689100 Btu/h	93.7%	17.5"	13.5"	6"	1"	

AIR SEPARATOR SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	TYPE	FLUID				PHYSICAL			NOTES
					FLOW	WORKING FLUID	HEAD LOSS	SYSTEM PRESSURE	DIAMETER	HEIGHT	ASME CERTIFIED	
AS-HW-1	Taco	4903ADT-125	MECHANICAL [301]	Tank, High Eff, Air/Dirt	194.4 gpm	30% P Gly	3 ft	60 psig	12"	25.12"	Yes	

VARIABLE SPEED DRIVE SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	TYPE	ELECTRICAL		PHYSICAL			NOTES
					MOTOR SIZE	MOTOR V/PH/HZ	LENGTH	WIDTH	HEIGHT	
VSD-P-HW-1	Siemens	BT300-00752-01X	P-HW-1	NEMA 1, Drive Only	7.5 hp	208/3/60	8.4"	5.7"	16.5"	1
VSD-P-HW-2	Siemens	BT300-00752-01X	P-HW-2	NEMA 1, Drive Only	7.5 hp	208/3/60	8.4"	5.7"	16.5"	1
VSD-SF-AH-1	Siemens	BT300-015X2-01X	SF-AH-1	NEMA 1, Drive Only	15 hp	208/3/60	9"	7.7"	21.9"	1

1. EQUIPMENT SHALL COMPLY WITH DIVISION 26 SPECIFICATIONS FOR PROVISION AND INSTALLATION.

2-WAY CONTROL VALVE SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	TYPE	CONSTRUCTION	CONTROL TYPE	ACTUATOR TYPE	FLUID			CONTROL CIRCUIT V/PH/HZ	CONNECTION SIZE	NOTES
								FLOW	HEAD LOSS	Cv			
CV-B-1	BELIMO	B2	B-1	Ball	Other	2-Position	Mechanical	116.6 gpm	0.03 ft	1106.6	24/1/60	3"	1
CV-B-2	BELIMO	B2	B-2	Ball	Other	2-Position	Mechanical	116.6 gpm	0.03 ft	1106.6	24/1/60	3"	1
CV-C-1	BELIMO	B2	C-1	Ball	Bronze	Modulating	Electronic	1 gpm	5 ft	0.7	24/1/60	1.5"	1
CV-C-2	BELIMO	B2	C-2	Ball	Bronze	Modulating	Electronic	1 gpm	5 ft	0.7	24/1/60	1.5"	1
CV-C-3	BELIMO	B2	C-3	Ball	Bronze	Modulating	Electronic	0.7 gpm	5 ft	0.5	24/1/60	1.5"	1
CV-C-5	BELIMO	B2	C-5	Ball	Bronze	Modulating	Electronic	0.6 gpm	5 ft	0.4	24/1/60	1.5"	1
CV-C-6	BELIMO	B2	C-6	Ball	Bronze	Modulating	Electronic	0.5 gpm	5 ft	0.4	24/1/60	1.5"	1
CV-FFH-2	BELIMO	B2	FFH-2	Ball	Bronze	Modulating	Electronic	1.6 gpm	5 ft	1.1	24/1/60	1.5"	1
CV-FFH-3	BELIMO	B2	FFH-3	Ball	Bronze	Modulating	Electronic	3.1 gpm	5 ft	2.1	24/1/60	1.5"	1
CV-FFH-4	BELIMO	B2	FFH-4	Ball	Bronze	Modulating	Electronic	3.1 gpm	5 ft	2.1	24/1/60	1.5"	1
CV-FFH-5	BELIMO	B2	FFH-5	Ball	Bronze	Modulating	Electronic	1.6 gpm	5 ft	1.1	24/1/60	1.5"	1
CV-FFH-6	BELIMO	B2	FFH-6	Ball	Bronze	Modulating	Electronic	1.6 gpm	5 ft	1.1	24/1/60	1.5"	1
CV-FTR-2	BELIMO	B2	FTR-2	Ball	Bronze	Modulating	Electronic	0.8 gpm	5 ft	0.6	24/1/60	1.5"	1
CV-FTR-3	BELIMO	B2	FTR-3	Ball	Bronze	Modulating	Electronic	1 gpm	5 ft	0.7	24/1/60	1.5"	1
CV-FTR-4	BELIMO	B2	FTR-4	Ball	Other	2-Position	Mechanical	1.1 gpm	0.01 ft	661.3	24/1/60	3"	1
CV-RHC-AH-1	BELIMO	B2	RHC-AH-1	Ball	Bronze	Modulating	Electronic	41.8 gpm	5 ft	28.4	24/1/60	1.5"	1
CV-UH-1	BELIMO	B2	UH-1	Ball	Bronze	Modulating	Electronic	2.3 gpm	11 ft	1	24/1/60	1.5"	1
CV-UV-1	BELIMO	B2	UV-1	Ball	Bronze	Modulating	Electronic	9.2 gpm	5 ft	6.2	24/1/60	1.5"	1
CV-UV-2	BELIMO	B2	UV-2	Ball	Bronze	Modulating	Electronic	9.2 gpm	5 ft	6.2	24/1/60	1.5"	1

1. CONTRACTOR TO CONFIRM CONNECTION SIZE.

3-WAY CONTROL VALVE SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	TYPE	CONSTRUCTION	CONTROL TYPE	ACTUATOR TYPE	FLUID			CONTROL CIRCUIT V/PH/HZ	CONNECTION SIZE	NOTES
								FLOW	HEAD LOSS	Cv			
CV-FFH-1	BELIMO	B3	FFH-1	Ball	Bronze	Modulating	Electronic	1.6 gpm	5 ft	1.1	24/1/60	0.5"	1,2
CV-PHC-AH-1	BELIMO	B3	PHC-AH-1	Ball	Bronze	Modulating	Electronic	112.7 gpm	5 ft	76.6	24/1/60	0.5"	1,2

1. PROVIDE BALANCING VALVE IN THE BYPASS LINE AT ALL 3-WAY VALVE LOCATIONS. SEE SHEET MP701 AND MP702.
2. CONTRACTOR TO CONFIRM CONNECTION SIZE.

BALANCING VALVE SCHEDULE

ID	MANUFACTURER	MODEL NUMBSS	LOCATION	TYPE	BODY CONSTRUCTION	FLUID		CONNECTION SIZE	NOTES
						FLOW	HEAD LOSS		
BV-B-1	Taco	ACUF-200-AC	B-1	Manual, Straight	Bronze	116.6 gpm	2.66 ft	2"	1
BV-B-2	Taco	ACUF-200-AC	B-2	Manual, Straight	Bronze	116.6 gpm	2.66 ft	2"	1
BV-C-1	Taco	ACUF-050-AC	C-1	Manual, Straight	Bronze	1 gpm	0.76 ft	0.5"	1
BV-C-2	Taco	ACUF-050-AC	C-2	Manual, Straight	Bronze	1 gpm	0.76 ft	0.5"	1
BV-C-3	Taco	ACUF-050-AC	C-3	Manual, Straight	Bronze	0.7 gpm	0.38 ft	0.5"	1
BV-C-5	Taco	ACUF-050-AC	C-5	Manual, Straight	Bronze	0.6 gpm	0.24 ft	0.5"	1
BV-C-6	Taco	ACUF-050-AC	C-6	Manual, Straight	Bronze	0.5 gpm	0.14 ft	0.5"	1
BV-FFH-1	Taco	ACUF-050-AC	FFH-1	Manual, Straight	Bronze	1.6 gpm	0.38 ft	0.5"	1,2
BV-FFH-2	Taco	ACUF-050-AC	FFH-2	Manual, Straight	Bronze	1.6 gpm	1.89 ft	0.5"	1
BV-FFH-3	Taco	ACUF-050-AC	FFH-3	Manual, Straight	Bronze	3.1 gpm	7.64 ft	0.5"	1
BV-FFH-4	Taco	ACUF-050-AC	FFH-4	Manual, Straight	Bronze	3.1 gpm	7.64 ft	0.5"	1
BV-FFH-5	Taco	ACUF-050-AC	FFH-5	Manual, Straight	Bronze	1.6 gpm	1.89 ft	0.5"	1
BV-FFH-6	Taco	ACUF-050-AC	FFH-6	Manual, Straight	Bronze	1.6 gpm	1.89 ft	0.5"	1
BV-FTR-2	Taco	ACUF-050-AC	FTR-2	Manual, Straight	Bronze	0.8 gpm	0.55 ft	0.5"	1
BV-FTR-3	Taco	ACUF-050-AC	FTR-3	Manual, Straight	Bronze	1 gpm	0.76 ft	0.5"	1
BV-FTR-4	Taco	ACUF-200-AC	FTR-4	Manual, Straight	Bronze	1.1 gpm	2.66 ft	2"	1
BV-P-RH-1	Taco	ACUF-250-F	P-RH-1	Manual, Straight	Cast Iron	192.1 gpm	2.74 ft	2.5"	1
BV-P-RH-2	Taco	ACUF-250-F	P-RH-1	Manual, Straight	Cast Iron	192.1 gpm	2.74 ft	2.5"	1
BV-PHC-AH-1	Taco	ACUF-125-AC	PHC-AH-1	Manual, Straight	Bronze	112.7 gpm	16.05 ft	1.25"	1,2
BV-RHC-AH-1	Taco	ACUF-150-AC	RHC-AH-1	Manual, Straight	Bronze	41.8 gpm	3.66 ft	1.5"	1
BV-UH-1	Taco	ACUF-150-AC	UH-1	Manual, Straight	Bronze	2.3 gpm	3.66 ft	1.5"	1
BV-UV-1	Taco	ACUF-100-AC	UV-1	Manual, Straight	Bronze	9.2 gpm	4.36 ft	1"	1
BV-UV-2	Taco	ACUF-100-AC	UV-2	Manual, Straight	Bronze	9.2 gpm	4.36 ft	1"	1

1. CONTRACTOR TO CONFIRM CONNECTION SIZE.
2. SEE PLANS FOR ADDITIONAL BALANCING VALVES.

PROJECT SCHEDULE

NAME	LOCATION	HEATING SEASON DB/WB/RH	COOLING SEASON DB/WB/RH	ECONOMIZER DB/WB/RH	ALTITUDE
INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL	LOGAN, UTAH	-20°F / -21.2°F / 10%	95°F / 65°F / 21.1%	50°F / 41.3°F / 50%	4537 FT

HYDRONIC BOILER SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	TYPE	FUEL	MINIMUM INPUT LOAD	MINIMUM OUTPUT LOAD	FLUID				ELECTRICAL			PHYSICAL					NOTES
								FLOW RATE	ENTERING TEMP	LEAVING TEMP	WORKING FLUID	HEAD LOSS	SINGLE POINT CIRCUIT	SINGLE POINT V/PH/HZ	CONTROL CIRCUIT V/PH/HZ	LENGTH	WIDTH	HEIGHT	COMBUST. AIR SIZE	FLUE SIZE	ASME CERT	
B-1	Fulton	EDR-2000	MECHANICAL [301]	Condensing	Nat Gas	1689100 Btu/h	1582700 Btu/h	116.6 gpm	171.6°F	200°F	30% P Gly	2 ft			120/1/60	60.6"	33.9"	80"	8"		Yes	1-10
B-2	Fulton	EDR-2000	MECHANICAL [301]	Condensing	Nat Gas	1689100 Btu/h	1582700 Btu/h	116.6 gpm	171.6°F	200°F	30% P Gly	2 ft			120/1/60	60.6"	33.9"	80"	8"		Yes	1-10

1. UNIT WITH CONDENSATE TRAP PIPED TO DRAIN
2. UNIT WITH MULTIPLE BOILER MANAGEMENT CONTROL PACKAGE AND COMMUNICATIONS GATEWAY
3. UNIT WILL BE SEALED COMBUSTION CAPABLE
4. FOR MULTIPLE BOILER INSTALLATIONS, PROVIDE BOILER REMOTE ACCESS AND CONTROL VIA MODBUS OPEN PROTOCOL OR CONVENTIONAL ANALOG SYSTEMS
5. FOR MULTIPLE BOILER INSTALLATIONS, PROVIDE A MULTI-PROTOCOL COMMUNICATIONS GATEWAY FOR CONNECTOR TO THE BMS
6. PROVIDE AN INTEGRAL AUTOMATED 2-WAY BUTTERFLY SHUT-OFF VALVE FOR BOILER ISOLATION
7. PROVIDE AN INTEGRAL BOILER VALVE CONTROLLER WHICH WILL PREVENT PUMP DEAD HEAD CONDITIONS
8. UNIT WITH 439 STAINLESS STEEL HEAT EXCHANGER
9. UNIT WILL HAVE FULLY MODULATING BURNER, MINIMUM 15:1 TURNDOWN
10. UNIT MUST BE CAPABLE OF VENTING IN POLYPROPYLENE

EXHAUST AIR FAN SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	QTY	TYPE	AIR		FAN					ELECTRICAL				PHYSICAL			NOTES
						MAXIMUM AIRFLOW	STATIC PRESSURE	MAX. AIR TEMP.	FAN SPEED	FAN WHEEL DIAMETER	STATIC EFFICIENCY	FAN CLASS	MOTOR SIZE	MOTOR BHP	MOTOR SPEED	MOTOR V/PH/HZ	LENGTH	WIDTH	HEIGHT	
EF-1	Cook	150C17D (VF)	ROOF	1	Roof, Downblast, Direct	1450 cfm	0.61 in. H2O	75°F	1082 rpm	15"	60%		0.33 hp	0.231 hp	1725 rpm	120/1/60	32.875"	32.875"	29.188"	1-3
EF-2	Cook	150C17D (VF)	ROOF	1	Roof, Downblast, Direct	1550 cfm	0.59 in. H2O	75°F	1091 rpm	15"	60%		0.33 hp	0.239 hp	1725 rpm	120/1/60	32.875"	32.875"	29.188"	1-3
EF-3	Cook	101C17D (VF)	ROOF	1	Roof, Downblast, Direct	360 cfm	0.32 in. H2O	75°F	1182 rpm	10"	46%		0.125 hp	0.039 hp	1725 rpm	120/1/60	23.563"	23.563"	21.125"	1-3
EF-4	Cook	210C11D	ROOF	1	Roof, Downblast, Direct	5400 cfm	0.3 in. H2O	75°F	1015 rpm	21"	24%		2 hp	1.04 hp	1080 rpm	208/3/60	43.625"	43.625"	37.25"	1-3

1. ROOFTOP EQUIPMENT. COLOR TO BE SELECTED BY THE ARCHITECT
2. PROVIDE WITH ELECTRICAL DISCONNECT.
3. PROVIDE WITH EC MOTOR.

AIR HANDLER HYDRONIC COIL SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	TYPE	AIR					HYDRONIC						PHYSICAL				NOTES
					AIRFLOW	LOAD	SENSIBLE LOAD	ENTERING DB TEMP	ENTERING WB TEMP	LEAVING DB TEMP	LEAVING WB TEMP	STATIC PRESSURE	FLOW	ENTERING TEMP	LEAVNG TEMP	HEAD LOSS	WORKING FLUID	NO. OF COILS	MIN. ROWS	MIN. FINS PER INCH	MIN. FACE AREA	
PHC-AH-1	GREENHECK	HWS8S02F07-72x108-LH	AH-1		18450 cfm	1616500 Btu/h		-20°F		60°F		0.25 in. H2O	112.7 gpm	200°F	170°F	5 ft	30% P Gly	1	2	7	41.2 ft²	1,2
RHC-AH-1	GREENHECK	HWS8S02F06-96x86-RH	AH-1		18450 cfm	600000 Btu/h		64.5°F		100°F		0.25 in. H2O	41.8 gpm	200°F	170°F	5 ft	30% P Gly	1	2	6	41.2 ft²	1,2

1. EACH COIL TO BE PROVIDED WITH DANFOSS ABQM PRESSURE INDEPENDENT CONTROL VALVES WITH RESPECTIVE MODULATING ACTUATOR COMPATIBLE WITH CONTROL CONTRACTOR.
2. PROVIDE HERESITE COATING ON ALL COILS..

AIR HANDLER SUPPLY AIR FAN SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	QTY	TYPE	AIR			FAN				ELECTRICAL				NOTES
						MAXIMUM AIRFLOW	STATIC PRESSURE	MAX. AIR TEMP.	FAN SPEED	FAN WHEEL DIAMETER	STATIC EFFICIENCY	FAN CLASS	MOTOR SIZE	MOTOR BHP	MOTOR SPEED	MOTOR V/PH/HZ	
SF-AH-1	Twin City	BC-DW 300	AH-1	1	Backward Inclined, Belt, DW	20450 cfm	3 in. H2O	83.5°F	1080 rpm	30"	69.2%	Class I	15 hp	13.944 hp	1800 rpm	208/3/60	1-2

1. FAN ON VFD. SEE VARIABLE SPEED DRIVE SCHEDULE.
2. FAN IS EXISTING. ONLY PROVIDE NEW FAN MOTOR AS PER THE AIR HANDLER SUPPLY AIR FAN SCHEDULE.

HYDRONIC PUMP SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	TYPE	FLUID		PUMP		ELECTRICAL				NOTES
					FLOW RATE	WORKING FLUID	HEAD LOSS	EFFICIENCY	CONSTRUCTION	MOTOR SIZE	MOTOR BHP	MOTOR SPEED	MOTOR V/PH/HZ	
P-B-1	Taco	KV2007D	MECHANICAL [301]	Vertical, Close-Coupled, In-Line	116.6 gpm	30% P Gly	42.8 ft	77%	Iron / Bronze	3 hp	1.63 hp	1760 rpm	208/3/60	1
P-B-2	Taco	KV2007D	MECHANICAL [301]	Vertical, Close-Coupled, In-Line	116.6 gpm	30% P Gly	42.8 ft	77%	Iron / Bronze	3 hp	1.63 hp	1760 rpm	208/3/60	1
P-HW-1	Taco	KS3006D	MECHANICAL [301]	Vertical, Split-Coupled, In-Line	192.1 gpm	30% P Gly	85.3 ft	77%	Iron / Bronze	7.5 hp	4.167 hp	3500 rpm	208/3/60	2
P-HW-2	Taco	KS3006D	MECHANICAL [301]	Vertical, Split-Coupled, In-Line	192.1 gpm	30% P Gly	85.3 ft	77%	Iron / Bronze	7.5 hp	4.167 hp	3500 rpm	208/3/60	2

1. PROVIDE ECM HIGH-EFFICIENCY MOTOR.
2. VFD BY MECHANICAL. PROVIDE IN ACCORDANCE WITH DIV. 26 SPECIFICATION.

HYDRONIC UNIT HEATER SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	TYPE	AIR		ENTERING DB TEMP	LEAVING DB TEMP	FLUID				ELECTRICAL				MIN. ROWS	NOTES
					AIRFLOW	LOAD			FLOW	ENTERING TEMP	LEAVING TEMP	HEAD LOSS	WORKING FLUID	MOTOR QTY	MOTOR SIZE	MOTOR SPEED	V/PH/HZ	
UH-1	Modine	HC47SB	Storage [123]	Horiz, HS, Side	350 cfm	21700 Btu/h	72°F	141.3°F	2.3 gpm	200°F	180°F	5 ft	30% P Gly	1	0.083 hp	1550 rpm	120/1/60	0	

GLYCOL FEED SYSTEM SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	TYPE	FLUID				ELECTRICAL		PHYSICAL					NOTES
					WORKING FLUID	TOTAL VOLUME	COLD STATIC FILL PRESSURE	PRESSURE RATING	CONTROL CIRCUIT V/PH/HZ	ALARM PANEL	LENGTH	WIDTH	HEIGHT	NPT FITTING	TANK SIZE	
GFS-HW-1	Axiom	SF100-L	MECHANICAL [301]	Standard	30% P Gly	1234.3 gal	25.7 psig	125 psig	120/1/60		33"	33"	53"	0.5"	100 gal	

EXPANSION TANK SCHEDULE

ID	MANUFACTURER	MODEL NUMBER	LOCATION	TYPE	FLUID				PHYSICAL						NOTES
					WORKING FLUID	MINIMUM FILL PRESSURE	MAXIMUM WORKING PRESSURE	RELIEF VALVE PRESSURE	TANK SIZE	LENGTH	WIDTH	HEIGHT	NPT FITTING	ASME CERT.	
ET-HW-1	Taco	CA300-125	MECHANICAL [301]	Vert, Bladder, Full	30% P Gly	12.67 psig	54 psig	60 psig	79 gal			59"	1.5"	Yes	

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

114 EAST 1000 NORTH. LOGAN UTAH 84321
OWNER/ORG NAME

MARK: DATE: DESCRIPTION:

PROJECT #: 123998
DRAWN BY: Author
CHECKED BY: Checker
ISSUED: 12.07.2023

LICENSED PROFESSIONAL ENGINEER
02/01/24
No. 8388845
JEDEDIAH JENKINS
STATE OF UTAH

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VBFA Project #: 23708

MECHANICAL SCHEDULES

M601

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

ID	MANUFACTURER AND MODEL	Count	DESCRIPTION	IMAGE
EG-1	TITUS PAR	1	STYLE: SQUARE PERFORATED FACE CEILING GRILLE CONSTRUCTION: STEEL FINISH: SELECTED BY ARCHITECT MOUNTING: SURFACE OR LAY-IN BASED ON CEILING TYPE. PROVIDE FRAME TYPE 1 FOR SURFACE MOUNT AND FRAME TYPE 3 FOR LAY-IN. FACE SIZE: 48"X24", 24"X24", 24"X12", 20"X20", 16"X16", OR 12"X12" AS SHOWN ON PLANS. VERIFY FACE SIZE WITH ARCHITECT AND ENGINEER. MAX NC:25 DAMPER: NONE CONNECTION: ROUND OR RECTANGULAR OF SIZE SHOWN ON DRAWINGS. PROVIDE ADAPTER FITTINGS AS REQUIRED. APPLICATION: EXHAUST OR RELIEF MINIMUM FREE AREA: 50%	

INTAKE AIR LOUVER SCHEDULE

					AIR		PHYSICAL			
ID	MANUFACTURER	MODEL NUMBER	LOCATION	TYPE	MAXIMUM AIRFLOW	STATIC PRESSURE	WIDTH	HEIGHT	THICKNESS	NOTES
L-1	Ruskin	ELF6350DMP		Stationary	20450 cfm	0.1 in. H2O	168"	36"	6"	1,2

1. PROVIDE WITH ALUMINUM MESH BIRD SCREEN
2. PROVIDE LOUVER WITH MOTORIZED ATC DAMPER WITH 115/1/60 ELECTRICAL CONNECTION.

RELIEF AIR LOUVER SCHEDULE

					AIR		PHYSICAL			
ID	MANUFACTURER	MODEL NUMBER	LOCATION	TYPE	MAXIMUM AIRFLOW	STATIC PRESSURE	WIDTH	HEIGHT	THICKNESS	NOTES
RL-1	Ruskin	ELF6375DX	BOILER/FILTER [211]	Stationary	450 cfm	0.1 in. H2O	16"	12"	6"	1,2

1. PROVIDE WITH ALUMINUM MESH BIRD SCREEN
2. PROVIDE LOUVER WITH MOTORIZED ATC DAMPER WITH 115/1/60 ELECTRICAL CONNECTION.

design west | architects
LOGAN UT 84321
255 SOUTH 300 WEST
SALT LAKE CITY UT 84103
795 NORTH 400 WEST

INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

114 EAST 1000 NORTH. LOGAN UTAH 84321
OWNER/ORG NAME

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: Author
CHECKED BY: Checker
ISSUED: 12.07.2023

LICENSED PROFESSIONAL ENGINEER
02/01/24
No. 8388845
JEDEDIAH JENKINS
STATE OF UTAH

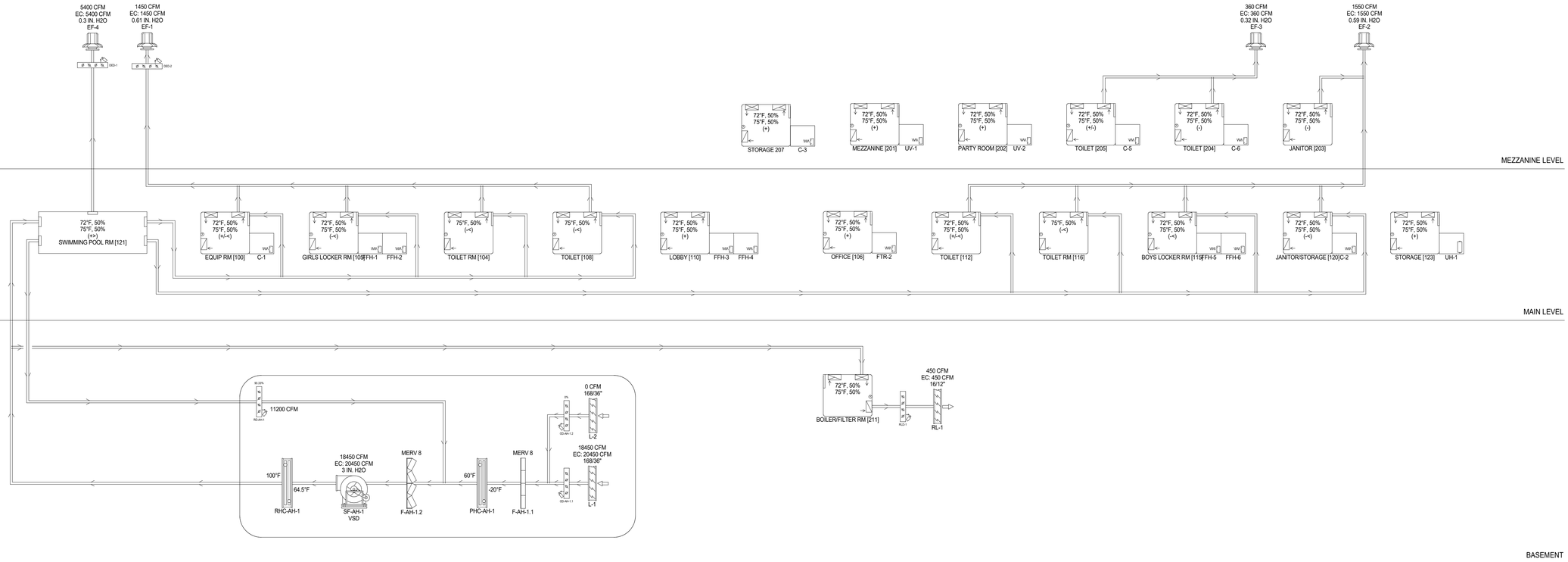
CONSTRUCTION DOCUMENTS

VBFA
40 W. Cache Valley Blvd.
Building 1, Suite B
Logan, UT
O: (435)752-5081
www.vbfa.com
VBFA Project #: 23708

MECHANICAL SCHEDULES

M602

2/2/2024 9:09:47 AM Autodesk Docs://123998 - LCCD - Indoor Athletic Facility - Municipool Remodel/123708 - LCCD - Indoor Athletic Facility - Municipool Remodel_MECH_v24.rvt



1 / M701 AIRFLOW SCHEMATIC
NOT TO SCALE

2/2/2024 9:09:47 AM Autodesk Docs://123998 - LCCI - Indoor Athletic Facility - Municipool Remodel/123708 - LCCI - Indoor Athletic Facility - Municipool Remodel_MEDA_r24.rvt

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INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

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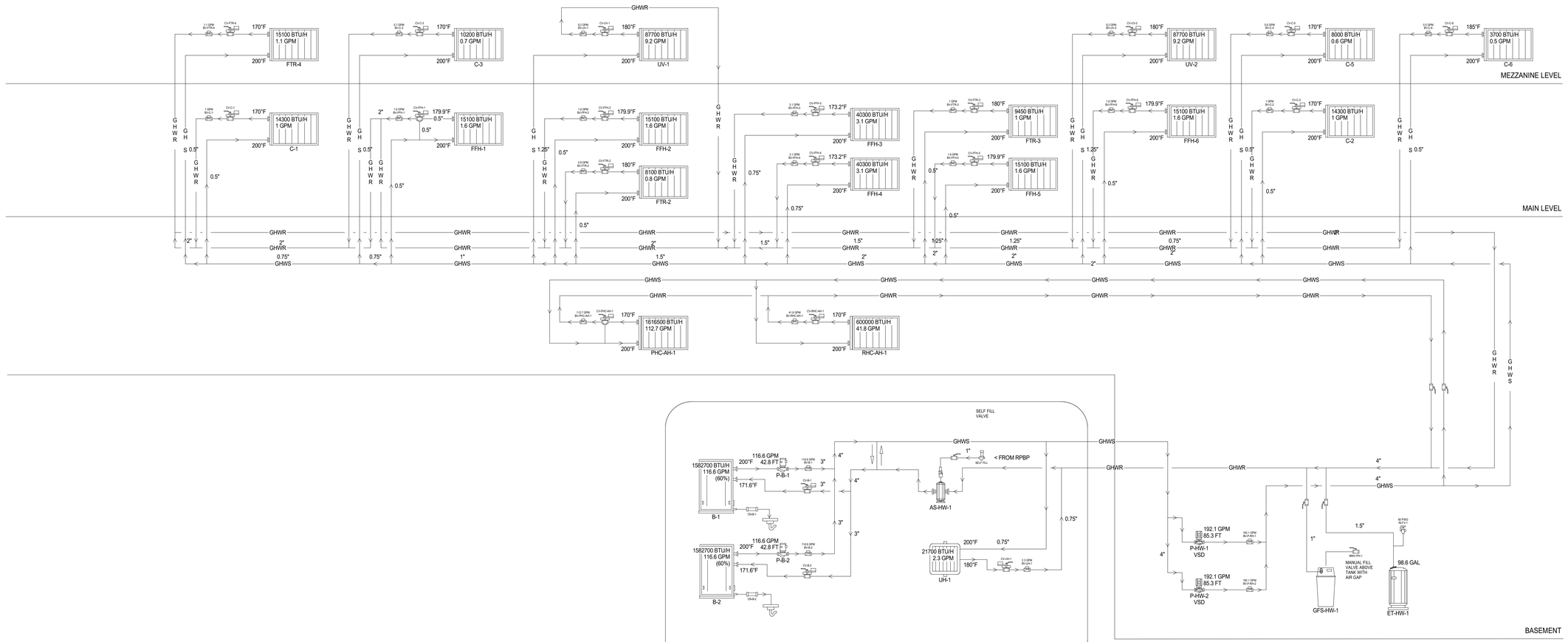
AIRFLOW SCHEMATIC

M701



1 M702 HEATING WATER SCHEMATIC
NOT TO SCALE

MECHANICAL [123]

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INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

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OWNER/ORG NAME

MARK:	DATE:	DESCRIPTION:

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LICENSED PROFESSIONAL ENGINEER
02/01/24
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CONSTRUCTION DOCUMENTS

HEATING WATER SCHEMATIC

M702

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GENERAL MECHANICAL SYMBOLS

- REVISION NUMBER - SHOWN ON PLANS
- POINT WHERE NEW CONNECTS TO EXISTING
- POINT WHERE EXISTING IS TO BE DEMOLISHED
- NUMBER OF DETAIL ON SHEET
- NUMBER OF SHEET WHERE DETAIL APPEARS
- KEYNOTE
- CONTINUATION SYMBOL
- ROOM NAME AND NUMBER (Room 10)
- ITEM TO BE DEMOLISHED
- AREA NOT IN CONTRACT
- 2" — PIPE SIZE TAG (DIAMETER)
- ABOVE GROUND PIPING
- 2" VTR — PIPE SLOPE TAG
- BELOW GROUND PIPING
- INVERT: -105' - 1" — PIPE INVERT ELEVATION TAG
- (E) — EXISTING PIPE TAG
- PIPING BEING DEMOLISHED

ABBREVIATIONS

Ø	ROUND	LB	POUND
ABV	ABOVE	LB/HR	POUNDS PER HOUR
AD	AREA DRAIN	LP	LOW PRESSURE
ADD	ADDENDUM	LWT	LEAVING WATER TEMPERATURE
AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	MBH	ONE THOUSAND BTU PER HOUR
ALT	ALTERNATE	MCF	ONE THOUSAND CUBIC FEET
AP	ACCESS PANEL	MECH	MECHANICAL
ARCH	ARCHITECT/ARCHITECTURAL	MFR	MANUFACTURER
BFF	BELOW FINISHED FLOOR	MIN	MINIMUM
BLW	BELOW	MISC	MISCELLANEOUS
BTU	BRITISH THERMAL UNITS	MTR	MOTOR
BTUH	BRITISH THERMAL UNITS PER HOUR	MUA	MAKE-UP/AIR
CAP	CAPACITY	NC	NORMALLY CLOSED
CB	CATCH BASIN	NIC	NOT IN CONTRACT
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
CLG	CEILING	NO	NORMALLY OPEN
CO	CLEAN OUT	NTS	NOT TO SCALE
CW	COLD WATER	ORD	OVERFLOW ROOF DRAIN
D	DEGREE	PD	PRESSURE DROP
DB	DRY BULB	PLBG	PLUMBING
DIA	DIAMETER	PRESS	PRESSURE
DN	DOWN	PRV	PRESSURE REDUCING VALVE
EA	EACH	PSI	POUNDS PER SQUARE INCH
ELEC	ELECTRICAL	PSIG	POUNDS PER SQUARE INCH GAUGE
EQUIP	EQUIPMENT	PWR	POWER
EWC	ELECTRIC WATER COOLER	R	DUCT RISER
EWT	ENTERING WATER TEMPERATURE	RD	ROOF DRAIN
EXIST	EXISTING	REC	RECESSED
F	DEGREES FAHRENHEIT	RED	REDUCER
FCO	FLOOR CLEAN OUT	RM	ROOM
FD	FLOOR DRAIN	RPM	REVOLUTIONS PER MINUTE
FL	FLOOR	RW	RAIN WATER
FPM	FEET PER MINUTE	SF	SQUARE FOOT
FS	FLOOR SINK	SAN	SANITARY
FT	FOOT/FEET	SF	SQUARE FOOT
GAL	GALLON	SM	SURFACE MOUNT
GC	GENERAL CONTRACTOR	SP	STATIC PRESSURE
GPM	GALLONS PER MINUTE	TD	TEMPERATURE DROP
HB	HOSE BIB	TDR	TRENCH DRAIN
HP	HORSE POWER	TEMP	TEMPERATURE
HTG	HEATING	TYP	TYPICAL
HTR	HEATER	UG	UNDERGROUND
HW	HOT WATER	V	VENT
HYD	HYDRANT	VENT	VENTILATION
ID	INDIRECT	VTR	VENT THROUGH ROOF
IN	INCH	W	WASTE
INV	INVERT	WCO	WALL CLEAN OUT
		WH	WALL HYDRANT

PLUMBING AND PIPING SYMBOLS

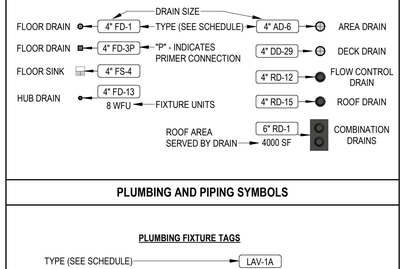
- NG — NATURAL GAS
- PG — PROPANE GAS
- CA — COMPRESSED AIR
- DCW — DOMESTIC COLD WATER
- NPCW — NON-POTABLE COLD WATER
- S-CW — SOFT COLD WATER
- F-CW — FILTERED COLD WATER
- RO — REVERSE OSMOSIS WATER
- DHW — HOT WATER
- DHW 140° — HOT WATER 140°
- DHW-R — HOT WATER RECIRCULATION
- DHW-R 140° — HOT WATER RECIRCULATION 140°
- V — SANITARY VENT
- W — SANITARY WASTE
- RD — ROOF DRAINAGE
- RDO — ROOF DRAIN OVERFLOW

PIPE DROP, PIPE RISE, PIPE TEE, CAP, 4" x 2" REDUCING 45 DEGREE TEE, PLUG, 45 DEGREE TEE

PIPE ACCESSORY TAGS

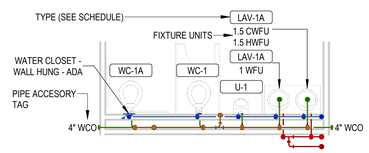
- 2" DOM. WM — DOMESTIC WATER METER
- 2" BALANCING — BALANCING VALVE
- 2" SHUTOFF — 1/4 TURN BALL VALVE
- 2" CHECK — CHECK VALVE
- 2" TMV — 3-WAY MIXING VALVE
- 2" M-CNTRL — MOTORIZED CONTROL VALVE
- 2" 3-WAY CNTRL — 3 WAY MOTORIZED CONTROL VALVE
- 2" PRV — PRESSURE REDUCING VALVE
- 3/8" SOLENOID — REFRIGERANT SOLENOID VALVE
- 2" BUTTERFLY — BUTTERFLY VALVE

DRAIN TAGS



PLUMBING AND PIPING SYMBOLS

PLUMBING FIXTURE TAGS



* NOTE *
ALL OF THE GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL OTHER DRAWINGS IN THIS SET.
THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

FIRE PROTECTION GENERAL NOTES

1. NO FIRE PROTECTION LINE SHALL BE DESIGNED OR INSTALLED PRIOR TO CLOSE COORDINATION WITH ALL OTHER DISCIPLINES. DUCTWORK, MECHANICAL PIPING AND PLUMBING TAKE SPACE PRECEDENCE OVER FIRE PROTECTION REMOVAL AND REINSTALLATION AT THE FIRE PROTECTION CONTRACTORS EXPENSE.
2. ALL WORK DONE SHALL BE PERFORMED WITH WATER CONTROL IN MIND. CONTAINMENT OF WATER IS NECESSARY TO PREVENT WATER FROM DAMAGING SURROUNDING AREA.
3. COORDINATE EXACT LOCATION OF PIPING WITH STRUCTURAL MEMBERS, LIGHTS, REFLECTED CEILING PLANS, CABLE TRAY, ELECTRICAL CONDUITS, DUCTWORK, MECHANICAL AND PLUMBING PIPING, AND ALL OTHER TRADES AND ALL EXISTING CONDITIONS.
4. FIRE SUPPRESSION CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND/OR REROUTE ANY AND ALL FIRE PROTECTION PIPING, VALVING, SUPPORTS OR SYSTEMS, OTHERWISE WITHIN THE FIRE SUPPRESSION DISCIPLINE REGARDLESS OF WHO INSTALLED THEM OR WHEN THEY WERE INSTALLED, IN ORDER TO ACCOMMODATE MECHANICAL, PLUMBING, ELECTRICAL OR OTHER SYSTEMS. COORDINATE WORK WITH MECHANICAL, ELECTRICAL, PLUMBING OR OTHER CONTRACTORS UNTIL SUBSTANTIAL COMPLETION OF PROJECT.
5. PROVIDE ALTERATIONS TO THE EXISTING FIRE PROTECTION SYSTEM AS REQUIRED TO ACCOMMODATE THE NEW FLOOR PLAN AND NEW CEILING TYPES. PROVIDE A COMPLETE WET TYPE SYSTEM INCLUDING NEW MAINS, BRANCHES, HEADS, VALVES, AND ACCESSORIES AS REQUIRED. REUSE EXISTING SYSTEM EQUIPMENT WHERE APPLICABLE. THE SYSTEM SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS AND AS PER REQUIREMENTS OF THE STATE BUILDING CODE, LOCAL FIRE DEPARTMENT, AND ALL FEDERAL, STATE, AND LOCAL AUTHORITIES, NFPA, AND FACTORY MUTUAL.
6. THE BUILDINGS COMPLETE OPERATIONAL FIRE PROTECTION SYSTEMS SHALL REMAIN IN PLACE. THIS CONTRACTOR SHALL REPAIR ANY DAMAGE TO THIS SYSTEM CREATED BY THE REMOVAL OF ANY OTHER MECHANICAL SYSTEMS OR COMPONENTS.
7. THIS CONTRACTOR SHALL COORDINATE PHASING OF SPRINKLER WORK WITH THE GENERAL CONTRACTOR PRIOR TO STARTING WORK.
8. PROVIDE A COMPLETE WET TYPE FIRE PROTECTION SYSTEM AS REQUIRED TO ACCOMMODATE THE FLOOR PLAN AND CEILING TYPES INCLUDING MAINS, BRANCHES, HEADS, VALVES, AND ACCESSORIES AS REQUIRED. THE SYSTEM SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS OF THE STATE BUILDING CODE, LOCAL FIRE DEPARTMENT, AND ALL FEDERAL, STATE, AND LOCAL AUTHORITIES, NFPA, AND FACTORY MUTUAL.
9. THE SPRINKLER SYSTEM SHALL BE DESIGNED BASED UPON ACTUAL WATER FLOW TEST DATA OBTAINED AT OR NEAR THE JOB SITE.
10. REFER TO REFLECTED CEILING PLANS FOR ADDITIONAL INFORMATION REGARDING SPRINKLER HEAD LOCATION AND PIPE, UNLESS NOTED OTHERWISE.
11. DIVISION 21 CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR PROPER INSTALLATION OF THE FIRE PROTECTION SYSTEMS ALARM DEVICES INVOLVED WITH FIRE SPRINKLER SYSTEM.
12. ALL SPRINKLER SYSTEM PIPING SHALL BE CONCEALED ABOVE THE SUSPENDED CEILING SYSTEM, UNLESS NOTED OTHERWISE. WRITTEN AUTHORIZATION SHALL BE OBTAINED FROM THE ARCHITECT PRIOR TO EXPOSING ANY PIPING IN ANY ROOM WHICH HAS A SUSPENDED CEILING.
13. THIS CONTRACTOR SHALL PROVIDE ALL ADDITIONAL SPRINKLER HEADS AS REQUIRED TO ENSURE AN APPROVED FIRE PROTECTION SYSTEM AT NO ADDITIONAL COST TO THE OWNER.
14. AUXILIARY DRAINS SHALL BE EXPOSED WITH 1" DRAIN VALVES. WHEN 5 OR MORE GALLONS ARE TRAPPED, THIS CONTRACTOR SHALL PROVIDE FIXED PIPING TO AN ADEQUATELY SIZED RECEPTOR WHICH IS CAPABLE OF ACCEPTING THE FULL FLOW OF THE DRAIN. WHEN LESS THAN 5 GALLONS ARE TRAPPED, A HOSE BIB SHALL BE PROVIDED AT THE DRAIN VALVE.
15. AUXILIARY DRAINS SHALL NOT BE LOCATED ABOVE PLASTER OR GYPSUM BOARD CEILING SYSTEMS. ONLY BY A SPECIFIC WRITTEN INSTRUCTION FROM THE ENGINEER WILL A VARIANCE BE PROVIDED.
16. AN INSPECTOR'S TEST CONNECTION SHALL BE PROVIDED FOR EACH FIRE SPRINKLER ZONE. THIS CONTRACTOR SHALL PROVIDE FIXED PIPING FROM THE TEST CONNECTION TO AN ADEQUATELY SIZED RECEPTOR WHICH IS CAPABLE OF ACCEPTING THE FULL FLOW OF THE TEST. (EXTERIOR DISCHARGE OF THE TEST CONNECTION SHALL BE PERMITTED ONLY BY SPECIFIC WRITTEN INSTRUCTION FROM THE ENGINEER.)
17. SHOW ALL ROOM NUMBERS ON SHOP DRAWING PLANS.
18. FLOW TEST DATA FROM #/## INDICATES THE FOLLOWING: STATIC PRESSURE # PSI. RESIDUAL PRESSURE: # PSI AT ## GPM. THE HYDRANTS TESTED ARE APPROXIMATELY ### FEET AWAY FROM THE CENTER OF THE SITE LOCATED OFF THE ##"" WATER MAIN IN ## STREET AT AN ELEVATION OF ### FEET ABOVE SEA LEVEL. SEE CIVIL PLANS FOR HYDRANT LOCATION. THE CONTRACTOR SHALL PERFORM A FIRE FLOW TEST IN ACCORDANCE WITH NFPA 291 TO VERIFY THE FLOW TEST DATA GIVEN ABOVE. THE DATA GIVEN ABOVE SHALL BE THE BASIS OF DESIGN UNLESS THE AVAILABLE PRESSURE OR FLOW HAS DECREASED. NOTIFY OWNERS REPRESENTATIVE IF FLOW TEST DATA DIFFERS FROM THE DATA ABOVE. A FIRE PROTECTION ENGINEER OR AN ENGINEER EXPERIENCED IN WATER FLOW TESTING SHALL PERFORM OR WITNESS THE REQUIRED FLOW TESTING AND SIGN THE REPORT PRIOR TO THE FIRST SPRINKLER SYSTEM SUBMITTAL.
19. ROUTE SPRINKLER PIPING SUCH THAT IT DOES NOT RUN ABOVE ELECTRICAL PANELS, SWITCHGEAR, OR SIMILAR EQUIPMENT. SPRINKLER MAINS SHALL NOT RUN THROUGH ELECTRICAL OR COMMUNICATION ROOMS. SPRINKLER HEADS IN THESE ROOMS SHALL BE SERVED BY A DEDICATED BRANCH LINE FOR EACH ROOM. BRANCH LINE TO ENTER ROOM ABOVE DOOR.
20. THIS DRAWING INDICATES A GENERAL PIPING ARRANGEMENT AND SUGGESTED SIZING ONLY. THIS CONTRACTOR SHALL DETERMINE THE ACTUAL PIPE SIZING REQUIRED AND COORDINATE WORK WITH ALL OTHER TRADES TO AVOID CONFLICTS.
21. THIS CONTRACTOR SHALL PREPARE HYDRAULIC CALCULATIONS BASED UPON THE CONFIGURATION OF THE ACTUAL SYSTEM DESIGN AS SHOWN ON THIS CONTRACTOR'S SHOP DRAWINGS.

PROJECT GENERAL NOTES

1. THE PROJECT GENERAL NOTES APPLY TO ALL DISCIPLINES.
2. REMOVE ALL UNUSED PIPING, DUCTWORK, EQUIPMENT, AND ACCESSORIES.
3. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS FOR PLUMBING AND MECHANICAL SYSTEMS WITHIN THE TENANT SPACE AND WITHIN CLOSE PROXIMITY TO THE TENANT SPACE. THE CONTRACTOR WILL FIELD VERIFY AS MUCH AS IS REASONABLE BEFORE THE FINAL BID. AFTER THE FINAL BID THE CONTRACTOR WILL NOTIFY THE OWNER, ARCHITECT, AND MECHANICAL DESIGN ENGINEER IMMEDIATELY UPON DISCOVERY OF EXISTING CONDITIONS THAT MAY AFFECT THE DESIGN.
4. THE MECHANICAL CONTRACTOR SHALL PERFORM SERVICE AND REPAIR ON THE EXISTING EQUIPMENT AND ITS ACCESSORIES AS FOLLOWS: CLEAN ALL COILS, REPLACE THE FILTERS AND BELTS, INSPECT, REPAIR, OR REPLACE THE ECONOMIZERS, DRIVERS AND FAN BEARINGS, MOTORS, CONTROL COMPONENTS, VALVES, AND ANY OTHER ITEM NECESSARY FOR A COMPLETE AND PROPER OPERATING SYSTEM. THIS CONTRACTOR SHALL ALSO VISIT THE SITE, PRIOR TO FINAL BIDDING, AND VERIFY ALL EXISTING SITE CONDITIONS. PROVIDE ALL MATERIAL AND COMPONENTS AS NEEDED TO BRING THE UNITS TO FULL COMPLIANCE OF THE LANDLORD'S CRITERIA AND LOCAL AUTHORITY HAVING JURISDICTION.
5. WHERE FLOOR DRAINS OCCUR WITHIN THE LIMITS OF CONSTRUCTION, PREVENT CONSTRUCTION DEBRIS FROM ENTERING DRAIN BODY BY SEALING DRAIN OPENING PRIOR TO START OF WORK. UNSEAL DRAINS AT COMPLETION OF CONSTRUCTION.
6. COORDINATE INSTALLATION OF PIPING, DUCTWORK, CONDUIT, LIGHTS, CABLE TRAY, STRUCTURE, EQUIPMENT, CEILINGS, ARCHITECTURAL COMPONENTS, AND ANYTHING ELSE PERTAINING TO THE PROJECT TO PREVENT CONFLICTS.
7. THE CONTRACTOR SHALL BE FAMILIAR WITH ALL THE CONDITIONS BOTH EXISTING AND THOSE ILLUSTRATED BY THESE DOCUMENTS AND THOSE OF OTHER DISCIPLINES, INCLUDING, BUT NOT LIMITED TO ARCHITECTURAL, CIVIL, ELECTRICAL, VENTILATION, PLUMBING, AND OTHER SYSTEMS INVOLVED ON THIS PROJECT.
8. FINAL PRODUCT SHALL BE A COMPLETE AND FUNCTIONING SYSTEM, AND SHALL CONFORM TO ALL REQUIREMENTS OF APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING BUT NOT LIMITED TO THE INTERNATION BUILDING CODE, INTERNATIONAL MECHANICAL CODE, AND INTERNATIONAL PLUMBING CODE.
9. LOCATE EQUIPMENT REQUIRING ACCESS 2'-0" MAXIMUM ABOVE CEILING.
10. ALL ROOF MOUNTED EQUIPMENT SHALL BE A MINIMUM 10'-0" FROM EDGE OF ROOF.
11. COORDINATE INSTALLATION OF DUCTWORK, PIPING AND MECHANICAL EQUIPMENT WITH NEC CLEARANCES INCLUDING THE SPACE ABOVE ELECTRICAL PANELS, TRANSFORMERS AND OTHER ELECTRICAL EQUIPMENT. NO PIPING OR DUCTWORK TO RUN OVER ELECTRICAL PANELS, VFD'S OR MCC'S. PROTECT EQUIPMENT WITH A 42" DEEP ZONE IN FRONT OF PANELS, VFD'S AND MCC'S. PROVIDE PANS IF REQUIRED UNDER PIPING.
12. FIRE SEAL AROUND DUCT AND PIPING PENETRATIONS OF FIRE RATED WALLS. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CAULKING AND SEALING ALL PENETRATIONS IN FIRE AND SMOKE RATED PARTITIONS TO MAINTAIN RATINGS. REFER TO SPECIFICATION.
13. PROVIDE SLEEVES AND/OR OPENINGS TO RUN PIPES AND DUCTS THROUGH FOUNDATIONS, FLOORS, WALLS, AND ROOF.
14. TRANSITION PIPING AND DUCTWORK SIZES TO MATCH THE SIZE OF EQUIPMENT CONNECTION.
15. REFER TO PLUMBING SERIES DRAWINGS FOR GAS PIPING.
16. ALL PIPE AND DUCT SIZES SHOWN SHALL BE CONTINUED IN THE DIRECTION OF FLOW UNTIL ANOTHER SIZE IS SHOWN.
17. FOR DETAILS, EQUIPMENT CONNECTIONS, AND PIPE SIZES NOT SHOWN ON THE SEGMENTS, REFER TO DETAILS, SCHEDULES, AND SPECIFICATIONS.
18. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE RESPECTIVE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, AT A LEVEL OF WORKMANSHIP CONSISTENT WITH THE SPECIFICATIONS.
19. MECHANICAL CONTRACTOR SHALL ENSURE THAT ALL EQUIPMENT IS PROVIDED AND INSTALLED WITH CLEARANCES PER MANUFACTURERS RECOMMENDATIONS. THE CONTRACTOR SHALL MAINTAIN PROPER SERVICE SPACE FOR COIL PULLS, BAS DEVICES, MAINTENANCE ACCESS, ETC.
20. INSTALL EXPOSED PIPING AND DUCTWORK AS HIGH AS PRACTICAL IN ROOMS WITHOUT CEILINGS.
21. LOCATIONS OF PIPING, DUCTWORK AND EQUIPMENT AS INDICATED ON THE DRAWING, ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS IN THE FIELD, INCLUDING, BUT NOT LIMITED TO, OFFSETS AND TRANSITIONS. NEW DUCTWORK, PIPING AND EQUIPMENT SHALL BE COORDINATED WITH STRUCTURE, LIGHTS, REFLECTED CEILING PLANS, CABLE TRAY, ELECTRICAL CONDUIT, PLUMBING, MECHANICAL AND FIRE PROTECTION PIPING, MEDICAL GASES, ALL OTHER TRADES AND ALL OTHER EXISTING CONDITIONS TO AVOID INTERFERENCE IN THE FIELD.
22. THE CONTRACTOR SHALL INFORM THE DESIGNER OF ANY PROPOSED DEVIATIONS FROM THE CONTRACT DOCUMENTS.
23. IF CONTRACTOR ENCOUNTERS MATERIAL WHICH MAY CONTAIN ASBESTOS, IMMEDIATELY STOP WORK IN THIS AREA AND NOTIFY THE OWNER.
24. DETAILS REFERENCE ALL SHEETS.
25. INSTALL ALL PIPING AND DUCTWORK WITHOUT FORCING OR SPRINGING.
26. ROUTE DOMESTIC WATER, FIRE PROTECTION, SANITARY WASTE, ROOF DRAIN, CAMPUS CHILLED OR HOT WATER, AND ANY OTHER UTILITY SERVICES TO SITE UTILITIES 5'-0" FROM BUILDING UNLESS NOTED OTHERWISE. REFER TO CIVIL PLANS.
27. LOCATE VALVING, ACCESSORIES, AND EQUIPMENT IN ACCESSIBLE LOCATIONS. WHERE LOCATED ABOVE HARD CEILING PROVIDE AN ACCESS DOOR IN CEILING. MINIMUM ACCESS DOOR SIZE OF 24" X 24". COORDINATE EXACT LOCATION AND STYLE WITH ARCHITECT. EQUIPMENT SHALL BE LOCATED IN THE CEILING CAVITY SO IT CAN BE SAFELY SERVICED FROM SOMEONE STAND ON A LADDER PLACED BELOW THE CEILING ACCESS.
28. WHERE VALVING, ACCESSORIES, OR EQUIPMENT IS LOCATED IN A WALL, PROVIDE AN APPROPRIATELY SIZED ACCESS DOOR. COORDINATE ACCESS DOOR SIZE, LOCATION, AND STYLE WITH ARCHITECT.
29. CONTRACTOR TO PROVIDE VALVE IDENTIFICATION AND LOCATION ON ALL CEILING TILES WHERE VALVES ARE LOCATED.

PLUMBING SHEET INDEX

P001	PLUMBING TITLE SHEET
P002	PLUMBING SPECIFICATIONS
P003	FIRE PROTECTION SPECIFICATIONS
PD100	BASEMENT PLUMBING DEMOLITION PLAN
PD101	LEVEL 1 PLUMBING DEMOLITION PLAN
P100	BASEMENT WASTE & VENT PLAN
P101	LEVEL 1 & MEZZANINE WASTE & VENT PLAN
P102	ROOF WASTE & VENT PLAN
P110	BASEMENT WATER DISTRIBUTION PLAN
P111	LEVEL 1 WATER DISTRIBUTION PLAN
P112	ROOF WATER DISTRIBUTION PLAN
P401	ENLARGED WASTE & VENT PLANS
P501	PLUMBING DETAILS
P601	PLUMBING SCHEDULES

PLUMBING GENERAL NOTES

1. UNLESS OTHERWISE NOTED, SLOPE PIPE AS FOLLOWS: WASTE BRANCHES: 1/4" PER FOOT; WASTE MAINS: 1/4" PER FOOT; ROOF DRAIN/ROOF DRAIN OVERFLOW: 1/8" PER FOOT. VERIFY ALL SLOPING WITH LOCAL CODES.
2. ALL WORK DONE SHALL BE PERFORMED WITH WATER CONTROL IN MIND. CONTAINMENT OF WATER IS NECESSARY TO PREVENT WATER FROM DAMAGING AREAS ON FLOORS BELOW.
3. PLUMBING DRAWINGS ARE SCHEMATIC IN NATURE. FIELD VERIFY EXACT PIPE ROUTING AND COORDINATE WITH ALL OTHER TRADES.
4. ALL PIPING IN PLUMBING CHASES SHALL BE ARRANGED TO ALLOW MAINTENANCE ACCESS.
5. NO PIPING TO RUN OVER ELECTRICAL PANELS, VFD'S OR MCC'S. PROTECT EQUIPMENT WITH A 42" DEEP ZONE IN FRONT OF PANELS, VFD'S, AND MCC'S.
6. COORDINATE FAN ROOM FLOOR DRAIN AND FLOOR SINK LOCATIONS WITH COOLING COIL, EVAPORATIVE SECTION, AND HEATING COIL LOCATIONS.
7. CONTRACTOR TO PROVIDE VALVE IDENTIFICATION AND LOCATION ON ALL CEILING TILES WHERE VALVES ARE LOCATED.
8. PIPING AND ROUTING SHOWN, INCLUDING ALL BELOW FLOOR DECK PIPING IS APPROXIMATE. IT IS UP TO THE CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION AND SIZE OF ALL PIPING.
9. REFER TO ARCHITECTURAL DRAWINGS FOR FIXTURE MOUNTING HEIGHTS, DIMENSIONS AND OTHER REQUIREMENTS.
10. CONTRACTOR TO VERIFY CONNECTION SIDE OF ADA FIXTURES AND ADJUST ACCORDINGLY. INSTALL FLUSH VALVES HANDLES ON WIDE SIDE OF ALL FIXTURES.
11. LOCATE ALL VENTS MINIMUM 25' AWAY FROM AIR INTAKES.
12. INSTALL ALL DOMESTIC WATER LINES BELOW DUCTWORK.
13. INSTALL A 24" X 24" ACCESS DOOR BELOW ALL ISOLATION VALVES, BALANCING VALVES AND WATER HAMMER ARRESTORS WHERE MOUNTED ABOVE HARD CEILINGS.
14. MOUNT ALL ISOLATION VALVES, CONTROL VALVES, BALANCING VALVES, ETC. NEAR CEILING HEIGHT FOR ACCESSIBILITY.
15. INSTALL ALL EQUIPMENT WITH SUFFICIENT CLEARANCE FOR MAINTENANCE PER MANUFACTURERS RECOMMENDATION.
16. COORDINATE ALL FLOOR PENETRATIONS WITH STRUCTURAL AND PROVIDE SLEEVES AS NECESSARY.
17. COORDINATE THE LOCATION OF THE FLOOR DRAIN, SHOWER DRAIN, OR FLOOR SINK WITH ARCHITECTURAL AND STRUCTURAL, TYPICAL.
18. SEE PLUMBING FIXTURE SCHEDULE FOR PIPE SIZES OF WASTE, VENT AND DOMESTIC WATER TO/FROM SINGLE FIXTURE.
19. HOSE BIBBS SHOWN AT LAVATORIES ARE TO BE MOUNTED AT AN ACCESSIBLE LOCATION UNDER THE LAVATORY.
20. LOCATE CIRCUIT SETTERS, VALVES, WATER HAMMER ARRESTORS, ETC. IN ACCESSIBLE LOCATIONS. PROVIDE 24" X 24" ACCESS PANEL WHERE ITEM IS LOCATED ABOVE A HARD CEILING. PROVIDE APPROPRIATELY SIZED ACCESS DOORS TO ANY OF THESE ITEMS INSTALLED IN A WALL. COORDINATE ACCESS DOOR SIZE, LOCATION, AND STYLE WITH ARCHITECT.
21. FIELD VERIFY LOCATION AND INVERTS OF SITE UTILITIES PRIOR TO INSTALLATION.
22. FIELD VERIFY ALL NEW WATER, WASTE AND VENT PIPING CONNECTIONS AND PROVIDE NEW CONNECTIONS AS REQUIRED FOR PROPERLY OPERATING SYSTEMS.
23. WASTE AND VENT PIPING BELOW FLOOR AND THROUGH FLOOR TO BE 2" MINIMUM.
24. INSTALL CLEANOUTS IN DRAIN PIPING AS INDICATED, AND WHERE NOT INDICATED, ACCORDING TO THE FOLLOWING.
    A. SIZE SAME AS DRAINAGE PIPING UP TO 4" NPS. USE 4" NPS FOR LARGER. DRAINAGE PIPING UNLESS LARGER CLEANOUT IS INDICATED.
    B. LOCATE AT MINIMUM INTERVALS OF 50 FT FOR PIPING 4" NPS AND SMALLER AND 100 FT FOR LARGER PIPING.
    C. LOCATE AT THE BASE OF EACH VERTICAL STACK.

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CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
255 SOUTH 300 WEST
SALT LAKE CITY UT 84103
795 NORTH 400 WEST

INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

114 EAST 1000 NORTH. LOGAN UTAH 84321
OWNER/ORG NAME

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: Author
CHECKED BY: Checker
ISSUED: 12.07.2023

LICENSED PROFESSIONAL ENGINEER
02/01/24
No. 8388845
JEDEDIAH JENKINS
STATE OF UTAH

PLUMBING TITLE SHEET

P001

SECTION 15400 - PLUMBING
PART 1 - GENERAL

1.01 GENERAL CONDITIONS

THE GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS AND DIVISION 1, ARE A PART OF THIS SECTION AND THE CONTRACT FOR THIS WORK AND SHALL APPLY TO THIS SECTION AS FULLY AS IF REPEATED HEREIN.

1.02 SCOPE OF WORK

FURNISH ALL LABOR, MATERIALS, EQUIPMENT, APPLIANCES AND NECESSARY INCIDENTALS FOR THE COMPLETE INSTALLATION OF ALL PLUMBING AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN.

A. WORK SPECIFIED IN THIS SECTION

1. SANITARY SOIL, WASTE AND VENT SYSTEMS
2. DOMESTIC HOT AND COLD WATER SYSTEMS
3. DOMESTIC WATER HEATERS
4. FURNISH AND SET ALL SLEEVES FOR PIPES PASSING THROUGH WALLS AND FLOORS.
5. PIPE COVERING, INSULATION AND WRAPPING
6. EXCAVATION AND BACKFILL
7. ROUGH-IN AND FINAL CONNECTIONS TO AIR CONDITIONING EQUIPMENT OF CONDENSATE DRAINS.
8. ALL PLUMBING FIXTURES, WATER HEATERS, VALVES, AND OTHER MISCELLANEOUS ITEMS OR EQUIPMENT REQUIRED FOR A COMPLETE INSTALLATION.

1.03 QUALITY ASSURANCE

A. CODES AND STANDARDS
1. ALL ITEMS INDICATED ON SITE, ARCHITECTURAL, OR MECHANICAL DRAWINGS ARE TO BE PROVIDED COMPLETE FROM POINT OF CONNECTION TO FINISHED FIXTURE IN CONFORMANCE WITH ALL GOVERNING AUTHORITY REQUIREMENTS. NOTHING IN THESE DRAWINGS OR SPECIFICATIONS SHALL BE CONSTRUED TO PERMIT WORK IN VIOLATION OF GOVERNING CODES.
2. IN ADDITION TO THE REQUIREMENTS OF ALL GOVERNING COES, ORDINANCES AND AGENCIES, CONFORM TO THE REQUIRMENTS OF THE FOLLOWING CODES AND STANDARDS:
   a. 2015 INTERNATIONAL PLUMBING CODE
   b. 2015 INTERNATIONAL BUILDING CODE
   c. 2015 INTERNATIONAL MECHANICAL CODE
   d. 2015 INTERNATIONAL ENERGY CONSERVATION CODE

1.04 PRODUCT HANDLING

A. PROTECTION: TAKE ALL PRECAUTIONS NECESSARY TO PROTECT THE MATERIALS OF THIS SECTION BEFORE, DURING AND AFTER INSTALLATION.

B. REPLACEMENTS: IN THE EVENT OF DAMAGE, IMMEDIATELY REPAIR ALL DAMAGED AND DEFECTIVE WORK TO THE APPROVAL OF THE ENGINEER, AT NO ADDITIONAL COST TO THE OWNER.

1.05 SUBMITTALS

A. MANUFACTURER'S LITERATURE: WITHIN 35 DAYS AFTER AWARD OF CONTRACT AND BEFORE ANY OF THE MATERIALS OF THIS SECTION ARE DELIVERED TO THE JOB SITE, SUBMIT SEVEN COMPLETE BROCHURES OF ALL MATERIALS AND EQUIPMENT, PER DIVISION 1 OF THE SPECIFICATIONS.

B. OTHER SUBMITTALS:

1. SHOP DRAWINGS
2. STERILIZATION TEST REPORT
3. TEST DATA

SETS IN BOUND BOOKLET FORM OF WRITTEN OPERATING AND MAINTENANCE INSTRUCTIONS AND BROCHURES FOR EQUIPMENT SPECIFIED IN THIS SECTION. FULLY INSTRUCT OWNER'S OPERATING PERSONNEL.

C. RECORD DRAWINGS: KEEP AN ACCURATE DIMENSIONED RECORD OF AS-BUILT LOCATIONS AND ELEVATIONS, AS REFERRED TO APPROVED BASE DATUM, OF BURIED CONCEALED.

D. OPERATION AND MAINTENANCE INSTRUCTION: DELIVER TO ARCHITECT TWO COMPLETE LINES, MANHOLE, CLEANOUTS, VALVES, PLUGGED TEES, CAPPED ENDS, AND OF WORK WHICH IS INSTALLED DIFFERENT FROM SHOWN IN THE PLANS.

1.06 MISCELLANEOUS

A. EXAMINATION OF THE SITE: EXERCISE CARE IN EXAMINING THE SITE AND COORDINATE ALL WORK INDICATED IN THE DRAWINGS WITH EXISTING CONDITIONS. REPORT TO ARCHITECT IN WRITING CONDITIONS THAT WILL PREVENT PROPER PROVISIONS OF THIS WORK. VERIFY DEPTH AND LOCATION OF ALL SERVICE LINES WITH SERVICING COMPANIES HAVE IN JURISDICTION BEFORE EXCAVATING. BY SUBMISSION OF THE BID, THE CONTRACTOR WARRANTS THAT HE HAS FAMILIARIZED HIMSELF WITH THE EXISTING CONDITIONS AND WILL PERFORM ALL WORK AS REQUIRED FOR HOOKUP AND AS REQUIRED BY THE CONTRACT DOCUMENTS AT NO ADDITIONAL COST.

B. PERMITS AND FEES: ARRANGE AND PAY FOR ALL PERMITS, INSPECTIONS AND FEES REQUIRED BY ALL GOVERNING AGENCIES.

C. SERVICE CONNECTIONS MAKE ALL NECESSARY ARRANGEMENTS WITH APPLICABLE UTILITY COMPANY FOR CONNECTION TO EXISTING SERVICE LINES. PAY ALL FEES ASSOCIATED WITH WORK INCLUDING METERS, HOOKUP CHARGE AND UTILITY ASSESSMENT FEES.

D. DRAWINGS: COORDINATE ALL SPACE REQUIREMENTS WITH OTHER TRADES. DRAWINGS INDICATE DESIRED LOCATION AND ARRANGEMENT OF PIPING, EQUIPMENT, AND OTHER ITEMS AND ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE.

E. ALL GAS FIRED EQUIPMENT SHALL INCLUDE A LABEL INDICATING THAT THE APPLIANCE HAS BEEN ADJUSTED, MODIFIED OR RE-CALIBRATED FOR THE ALTITUDE WHERIN THE PROJECT IS TO BE LOCATED. THE APPLIANCE SHALL ALSO INCLUDE A COMPLIANCE STATEMENT INDICATING THAT THE APPLIANCE HAS BEEN ADJUSTED, MODIFIED OR RE-CALIBRATED FOR THE PROPER OPERATION AT THE ALTITUDE OF THE PROJECT AND SHALL BE LISTED CAPABLE FOR USE WITH NATURAL GAS OR PROPANE GAS IF PROPANE IS LISTED ON THE DRAWINGS.

PART 2 - PRODUCTS

2.01 - GENERAL

A. PIPE SLEEVES AND WRAPPING: PROVIDE POLISHED CHROMIUM PLATED AND BRASS SET SCREW FLANGES WHERE PLUMBING PIPING PASS THROUGH WALLS, FLOORS, CEILINGS, AND PARTITIONS IN FINISHED PORTIONS OF BUILDING INCLUDING FLANGES ON PIPES AT FIXTURES. ALL SLEEVES IN CONCEALED AND EXTERIOR WALLS SHALL BE 20 GA. GALVANIZED IRON ONE INCH O.D. LARGER THAN THE PIPE, CAULKED IF BELOW GRADE IN A MOISTUREPROOF MANNER. ALL PIPES PENETRATING THROUGH FIRE WALLS AND FLOORS SHALL BE PROPERLY SAFED WITH DOW CORNING 3-6548 SILICONE RTV FOAM OR EQUAL. INSTALL PER MANUFACTURE'S DIRECTION.

B. PIPE IDENTIFICATION:

1. PIPING IDENTIFICATION PER ANSI AND OSHA STANDARDS: EACH INDIVIDUAL PIPELINE SHALL BE MARKED FOR QUICK AND EASY IDENTIFICATION AS TO CONTENTS AND CHARACTER OF MATERIAL CARRIED IN THE PIPES BY SET ON SNA OR STR MARKER.
2. MARKERS SHALL BE INSTALLED AND SPACED AT NOT MORE THAN 8 FT. INTERVALS AND SO LOCATED THAT MARKERS SHALL BE VISIBLE WHERE PIPING SYSTEM IS EXPOSED.
3. COLOR SCHEME SHALL BE APPROVED. BASE COLOR FOR MARKERS SHALL BE AS FOLLOWS:
   - DOMESTIC HOT WATER - YELLOW
   - DOMESTIC COLD WATER - GREEN
   - SANITARY SEWER - GREEN
   - SANITARY VENT - GREEN
   - CONDENSATE DRAIN - BLUE

C. ONE MARKER SHALL BE INSTALLED AT EACH SIDE OF VALVES, SPECIAL FITTINGS AND AT BRANCH TAKE-OFF. IN FURRED SPACES INSTALL ONE BAND 2 FT. ABOVE FLOOR AND 19 IN. BELOW CEILING LINE.

D. MATERIALS: MATERIALS WHEN NOT OTHERWISE DEFINITELY SPECIFIED SHALL CONFORM TO THE APPLICABLE ASTM, ASME, AGA, AND ASA STANDARDS.

E. ALL GAS FIRED EQUIPMENT SHALL INCLUDE A LABEL INDICATING THAT THE APPLIANCE HAS BEEN ADJUSTED, MODIFIED OR RE-CALIBRATED FOR THE ALTITUDE WHERIN THE PROJECT IS TO BE LOCATED. THE APPLIANCE SHALL ALSO INCLUDE A COMPLIANCE STATEMENT INDICATING THAT THE APPLIANCE HAS BEEN ADJUSTED, MODIFIED OR RE-CALIBRATED FOR THE PROPER OPERATION AT THE ALTITUDE OF THE PROJECT AND SHALL BE LISTED CAPABLE FOR USE WITH NATURAL GAS OR PROPANE GAS IF PROPANE IS LISTED ON THE DRAWINGS.

2.02 - PIPE AND FITTING SCHEDULE

PIPE AND FITTINGS

A. NO PIPE OF A FOREIGN MANUFACTURER WILL BE ACCEPTABLE.

B. ALL PIPING, FITTING, FLANGES, ETC. SHALL BE FREE FROM DEFECTS AND SHALL COMPLY WITH THE APPROPRIATE ASTM SPECIFICATIONS.

C. BLACK STEEL PIPE: ASTM A53 ERW GRADE B. STANDARD WEIGHT (SCHEDULE 40) OR EXTRA STRONG (SCHEDULE 80) AS SPECIFIED.

D. COPPER TUBING: ASTM B88, TYPE L OR K AS SPECIFIED.

E. PVC PIPE AND FITTING: ASTM D1785 CLASS 150 WITH ASTM D 2853 SOLVENT CEMENT JOINTS UNLESS OTHERWISE SPECIFIED. SCHEDULE 40. PVC PLASTIC PIPE FITTINGS: ASTM F 628, SCHEDULE 40.

F. ACRYLONITRILE BUTADIENE STYRENE (ABS) PLASTIC PIPE: ASTM D 2661, SCHEDULE 40, ASTM F 628, SCHEDULE 40. ABS PLASTIC PIPE FITTINGS: ASTM F 409, ACCESSIBLE AND REPLACEABLE, SOLVENT CEMENT AND THREADED TYPES, DRAIN PATTERN.

G. CAST IRON SOIL PIPE AND FITTINGS ASTM A74

H. WELDED BLACK STEEL FITTINGS: ASTM A234 GRADE B, 150-POUND FOR STANDARD WEIGHT PIPING, 300-POUND FOR EXTRA STRONG PIPING, OR OF WEIGHT OR SCHEDULE OF MATCHING PIPING.

I. THREADED MALLEABLE IRON FITTINGS: ANSI B16.3, 150-POUND FOR STANDARD WEIGHT PIPING, 300-POINT FOR EXTRA STRONG PIPING, OR OF WEIGHT OR SCHEDULE OF MATCHING PIPING EITHER BLACK OR GALVANIZED TO MATCH PIPING.

J. WELDED FLANCES: ASTM A181 GRADE B, 150-POUND FOR STANDARD WEIGHT PIPING, 300 POINT FOR EXTRA STRONG PIPING OR OF EQUAL WEIGHT OF CONNECTED EQUIPMENT.

K. COPPER FITTINGS: WROUGHT COPPER, ANSI SPECIFICATION B16.22.

L. BALL VALVES, DOMESTIC WATER: BRONZE, FULLPORT, CLASS 150, THREADED.
   a. GRINNELL 3750 OR 171N
   b. NIBCO T-585
   c. JAMESBURY 300

M. PARTITION STOP VALVES: T&S B415, LOOSE KEY TYPE WITH WALL FLANGE.

N. BALANCING COCKS 2 INCHES AND SAMLLER SHALL BE CRANE NO 250 OR MILWUAKEE BUTTERBALL BB2-100 OR BB2-350 WITH MEMORY STOP.

O. SOLDER
   a. JOINTS IN COPPER PIPING ABOVE GRADE SHALL BE STAY SAFE 50 SOLDER OR 95-5 SOLDER SHALL BE SILFOS OR SILVERFLOW FOR ALL REFRIGERANT PIPING JOINTS.

2.03 ROOF FLASHING

SANITARY VENT FLASHINGS: SEMCO 1100-3 OR 1100-5, WITH ONE-PIECE LEAD FLASHING AND COUNTERFLASHING SLEEVE.

2.04 PIPE SLEEVES

AT CONCRETE WALLS OR FLOORS, ADJUST-TO-CRETE, PARAMOUNT, HOLE-OUT OR SPERZEL CRETESLEEVE FLOOR SLEEVES SHALL EXTEND TO TOP OF CONCRETE CURBS FOR PIPING RISING THROUGH FLOORS . WALL SLEEVES SHALL BE FLUSH WITH FINISHED SURFACE. SLEEVES SHALL BE SIZED TO ALLOW 1/2 IN. CLEARANCE AROUND PIPE INSULATION. INSULATION AND COVERING SHALL BE CONTINUOUS THROUGH WALL AND FLOOR SLEEVES.

2.05 CLEANOUTS

A. FULL SIZE CLEANOUTS SHALL BE INSTALLED AT THE BASE OF EACH SOIL WASTE STACK. ALL OTHER CLEANOUTS SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS AND WHERE REQUIRED BY STATE, LOCAL OR NATIONAL PLUMBING CODES.

B. ALL CLEANOUTS SHALL BE INSTALLED IN LOCATIONS EASILY ACCESSIBLE FOR RODDING. CLEANOUTS IN WALLS SHALL BE JR SMITH 4402, IN FLOORS JR SMITH 4023. CLEANOUTS SHALL BE JR SMITH, ZURN, WADE, OR JOSAM.

2.06 PIPE INSULATION

A. ALL DOMESTIC HOT WATER AND COLD WATER PIPING SHALL BE COVERED WITH OWENS CORNING ASJ-25 FIBERGLASS PIPE INSULATION WITH VAPOR SEAL JACKET. INSULATION THICKNESS SHALL BE 1/2 INCH FOR COLD WATER AND 1 INCH FOR HOT WATER.

B. INSULATE ALL PIPING UNDER LAVATORIES ACCESSIBLE TO THE PHYSICALLY HANDICAPPED WITH HOT WATER SUPPLY AND 'P' TRAP PREFABRICATED INSULATION, HANDI LAV GUARD.

2.07 PIPE HANGERS

HANGERS SHALL BE SUPPLIED WITH FACTORY INSTALLED ISOLATION AND DI-CHROMATE FINISH.

PIPE 2 IN. AND SMALLER: GRINNEL F69. PIPE 2-1/2 IN. AND LARGER: GRINNEL F65. CONCRETE INSERTS: GRINNEL 281 ANAD 282. RISER CLAMPS FOR COPPER PIPING: GRINNEL 261P, PLASTIC COATED. RISER CLAMPS FOR OTHER PIPING: GRINNERL 261.

HANGER RODS SHALL CONFORM TO THE FOLLOWING: PIPE SIZE 2 IN. AND SMALLER: 3/8 IN. RODS. PIPE SIZE 2-1/2 IN. AND 3 IN.: 1/2 IN. RODS. PIPE SIZE 3 IN. AND LARGER: 5/8 IN. RODS.

P2.13 - GAS WATER HEATER

A. A GAS WATER HEATER OF THE SIZE AND CAPACITY SHOWN ON THE DRAWINGS SHALL BE FURNISHED AND INSTALLED. WATER HEATER SHALL BE AO SMITH, BRADFORD WHITE, AMERICAN, OR EQUAL.

B. THE TANK SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASMA CODE AND STAMPED WITH THE APPROPRIATE SYMBOL FOR 150 PSI. TANK INTERIOR SHALL BE GLASS LINED. TANK CABINET TO HAVE A BAKED ENAMEL FINISH WITH BONDERIZED UNDERCOAT.

C. HEATER SHALL HAVE A 5 YEAR WARRANTY.

D. THE WATER HEATER SHALL BE INSULATED WITH A HIGH DENSITY FIBERGLASS INSULATION.

E. ASME PRESSURE AND TEMPERATURE RELIEF VALVE, TEMPERATURE LIMITING DEVICE. A LOW WATER PROTECTION DEVICE, MAGNESIUM ANODE ROD AND DRAIN VALVE SHALL BE FACTORY INSTALLED.

SECTION 15400 - PLUMBING
PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. INSPECTION: ALL PLUMBING SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING AUTHORITIES, THE ORIGINAL DESIGN, AND THE REFERENCED STANDARDS

B. DISCREPANCIES

1. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE ARCHITECT.
2. DO NOT PROCEED WITH INSTALLATION IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED.
3. INTERFERENCES BETWEEN INSTALLED WORK OF VARIOUS TRADES DUE TO LACK OF COORDINATION SHALL BE RESOLVED BY ARCHITED WHOE DECISION IS FINAL. RELOCATE OR OFFSET ANY WORK AS REQUIRED TO ACCOMMODATE WORK OF THER TRADES AT NO EXTRA COST TO THE OWNER WHEN SO DIRECTED BY THE ARCHITECT.

3.02 LOCATIONS AND SPACE REQUIREMENTS

A. CONTRACTOR SHALL FULLY INFORM HIMSELF REGARDING PECULIARITIES AND LIMITATIONS OF SPACES AVAILABLE FOR INSTALLATION OF WORK UNDER THIS DIVISION. DRAWINGS INDICATE DESIRED LOCATION AND ARRANGEMENT OF PIPING, EQUIPMENT AND OTHER ITEMS, AND ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE. WORK SPECIFIED AND NOT CLEARLY DEFINED BY DRAWINGS SHALL BE INSTALLED AND ARRANGED IN A SATISFACTORY MANNER. IN ANY CASE AND AT ANY TIME, A CHANGE IN LOCATION REQUIRED BY OBSTACLES OR THE INSTALLATION OF OTHER TRADES NOT SHOWN ON THE MECHANICAL PLANS SHALL BE MADE BY CONTRACTOR WITHOUT ADDITIONAL CHARGE PROVIDED THE CHANGE IS ORDERED BEFORE WORK IS INSTALLED AND NO EXTRA MATERIALS ARE REQUIRED.

B. VERIFY ALL SPACES, DIMENSIONS FOR ALL FIXTURE, EQUIPMENT, OR OWNER-FURNISHED EQUIPMENT AND EQUIPMENT FURNISHED UNDER OTHER SECTIONS.

C. OBTAIN ALL NECESSARY ROUGH-IN DATA AND DIMENSIONS FOR ALL FIXTURES, EQUIPMENT, OR OWNER-FURNISHED EQUIPMENT AND EQUIPMENT FURNISHED UNDER OTHER SECTIONS.

D. MAINTAIN AMPLE HEADROOM CLEARANCES AND ACCESSIBILITY. MAINTAIN CEILING HEIGHTS.

E. CONSTANTLY CHECK WORK OF OTHER TRADES TO PREVENT INTERFERENCE WITH THIS INSTALLATION.

3.03 EXCAVATION AND BACKFILLING

A. PERFORM EXCAVATION AND BACKFILLING REQUIRED WORK UNDER THIS SECTION UNLESS OTHERWISE SPECIFIED. CONFORM TO REQUIREMENTS OF DIVISION 2, SOILS REPORT AND OF PUBLIC AUTHORITIES HAVING JURISDICTION.

3.04 SPECIALTY ITEMS

A. INSTALL AS INDICATED ON THE DRAWINGS, AS HEREIN SPECIFIED, AND AS RECOMMENDED BY MANUFACTURER.

3.05 STERILIZATION

A. STERILIZE EACH UNIT OF WATER SUPPLY AND DISTRIBUTION SYSTEM WITH LIQUID CHLORIDE OR HYDROCHLORIDE BEFORE ACCEPTANCE FOR OPERATION IN ACCORDANCE WITH AWWA C601, "STANDARD FOR DISINFECTING WATER MAINS". WORK SHALL BE DONE BY CONTRACTOR AND, UNLESS OTHERWISE REQUIRED BY PUBLIC AUTHORITIES HAVING JURISDICITON, SHALL CONFORM TO THE FOLLOWING:

B. MATERIALS
1. LIQUID CHLORINE: U.S. ARMY SPECIFICATION 4-1.2. HUDROCHLORIDE: LIQUID SHALL CONFORM TO FED. SPEC. O-C-11RA (INT. 4).

C. METHOD: AMOUNT OF CHLORINE SHALL PROVIDE A DOSAGE OF 50 PPM MINIMUM. INTRODUCE CHLORINATING MATERIALS INTO LINES AND DISTRIBUTION SYSTEM IN APPROVED MANNER. AFTER A CONTACT PERIOD OF 24 HOURS MINIMUM DURING WHICH PERIOD CHLORINE RESIDUAL SHALL BE MAINTAINED AT 5 PPM MINIMUM. FLUSH OUT SYSTEMS WITH CLEAN WATER UNTIL RESIDUAL CONTENT IS NOT GREATER THAN 0.2 PPM. FLUSH ENTIRE SYSTEM OPEN AND CLOSE VALVES IN LINES BEING STERILIZED SEVERAL TIMES DURING CONTACT PERIOD.

D. TEST REPORTS: FURNISH ONE COPY OF TEST REPORT OF COMPLETE AND ADEQUATE STERILIZATION TO ARCHITECT BEFORE FINAL ACCEPTANCE OF WORK. CERTIFICATES SHALL BEAR SIGNATURE OF AN OFFICIAL OF LABORATORY RESPONSIBLE FOR TEST. COST OF TESTING LABORATORY SERVICES SHALL BE INCLUDED IN THE SUBCONTRACT.

3.06 ADJUSTING

A. UPON COMPLETION OF WORK AND AFTER CLEANING OF SYSTEM, FIXTURES AND EQUIPMENT, AND AUTOMATIC PARTS OF PLUMBING SYSTEM SHALL BE CAREFULLY ADJUSTED NORMAL OPERATION. ALL FLUSH VALVES AND FIXTURE STOPS SHALL BE CHECKED FOR PROPER OPERATION AND FINAL ADJUSTMENT.

3.07 HANGERS AND SUPPORTS

A. HOLD HORIZONTAL PIPE RUNS FIRMLY IN PLACE USING APPROVED STEEL AND IRON HANGERS, SUPPORTS, AND/OR PIPE RESTS UNLESS OTHERWISE INDICATED. SUSPEND HANGER RODS FROM CONCRETE INSERTS OR FROM APPROVED BRACKETS, CLAMPS OR CLIPS. HANG PIPES INDIVIDUALLY OR IN GROUPS IF SUPPORTING STRUCTURE IS ADEQUATE TO SUPPORT WEIGHT OF PIPING AND FLUID. EXCEPT FOR BURIED PIPING, HANG OR SUPPORT PIPE RUNS SO THAT THEY MAY EXPAND OR CONTRACT FREELY WITHOUT STRAIN TO PIPE OR EQUIPMENT.

1. HORIZONTAL STEEL PIPING: PROVIDE HANGERS OR SUPPORTS EVERY 10 FT. EXCEPT EVERY 8 FT FOR PIPING 1-1/4 IN. AND SMALLER.
2. HORIZONTAL COPPER TUBING: FOR 2 IN. DIAMETER AND OVER, PROVIDE HANGERS EVERY 10 FT. ; FOR 1-1/2 IN. DIAMETER AND SMALLER, EVERY 6 FT.
3. HORIZONTAL CAST-IRON HUB AND SPIGOT PIPING; PROVIDE HANGERS OR SUPPORTS AT EACH HUB.
4. HORIZONTAL CAST-IRON NO-HUB PIPING: PROVIDE HANGERS OR SUPPORTS AT EACH SIDE OF NO-HUB FITTINGS. PROVIDE ANTI-SEPARATION BRACING AT EACH 90 DEGREE CHANGE OF DIRECTION.
5. VERTICAL PIPING: SUPPORT AT FLOOR WITH IRON PIPE CLAMPS.
6. BRANCHES: PROVIDE SEPARATE HANGERS OR SUPPORTS FOR BRANCH LINES 6 FT. OR MORE IN LENGTH.
7. SOUND AND ELECTROLYSIS ISOLATORS: PROVIDE AT ALL HANGERS AND SUPPORTS FOR HOT AND COLD DOMESTIC WATER LINES. SECURELY ATTACH PIPE TO WALLS, STUDS, ETC. ALL SUCH PIPING ISOLATED FROM STRUCTURE BY "TRISOLATORS".

3.08 TESTS

A. PERFORM TESTS TO ARCHITECT'S SATISFACTION. MAKE TESTS IN PRESENCE OF OWNER'S REP AND AT A TIME SUITABLE TO HIM IF REQUESTED. FURNISH NECESSARY LABOR AND EQUIPMENT AND BEAR COSTS FOR TESTING. COST OF REPLACING AND/OR REPAIRING DAMAGE RESULTING THEREFORE SHALL BE BORNE BY THIS CONTRACTOR. SHOULD THE CONTRACTOR REFUSE OR NEGLECT TO MAKE TESTS NECESSARY TO SATISFY THE ARCHITECT THAT REQUIREMENT OF SPECIFICATIONS AND DRAWINGS ARE MET SUCH TESTS MAY BE MADE BY AN INDEPENDENT TESTING COMPANY AND THE CONTRACTOR CHARGED FOR ALL EXPENSES.

B. HYDROSTATIC TESTS: MAKE BY COMPLETELY FILLING PIPING SYSTEM WITH WATER AND ELIMINATING ACCUMULATIONS OF AIR SO THAT LEAKAGE, NO MATTER HOW SMALL, WILL BE APPARENT ON TESTING GAUGE IMMEDIATELY, MAINTAIN PRESSURE UNTIL PIPE UNDER TEST HAS BEEN EXAMINED, BUT IN NO CASE LESS THAN 24 HOURS. TEST SYSTEMS AT THE FOLLOWING PRESSURE:

• SYSTEM	TEST PRESSURE
• DOMESTIC COLD WATER	150 PSIG
• DOMESTIC HOT WATER	150 PSIG

C. SANITARY SOIL, WASTE, VENT SYSTEM TESTS: BEFORE INSTALLATION OF FIXTURES, CAP END OF SYSTEM AND FILL LINES WITH WATER TO 10 FT. ABOVE THE SECTION BEING TESTED (INCLUDING VENTS) AND ALLOW TO STAND FOR AT LEAST FIFTEEN (15) MINUTES BEFORE INSPECTION STARTS. MAKE TESTS IN SECTIONS IF NECESSARY OR CONVENIENT. HOWEVER, INCLUDE INTERCONNECTIONS BETWEEN NEW SECTIONS AND PREVIOUSLY TESTED SECTIONS IN THE NEW TEST.

D. ROOF DRAINAGE SYSTEM: TEST AS SPECIFIED FOR SANITARY SYSTEM.

E. GAS SYSTEMS: TEST WITH COMPRESSED AIR AT 10 PSI FOR SIX HOURS OR LONGER AS DIRECTED TO PROVIDE A TIGHT SEAL WITHOUT LEAKS. USE PRESSURE RECORDER TO RECORD PRESSURE OF ALL LINES FOR DURATION OF TEST. REPAIR ALL LEAKAGES AND RETEST AS REQUIRED.

3.09 CLEANOUTS

A. PROVIDE CLEANOUTS WHERE INDICATED AND REQUIRED. UNLESS OTHERWISE INDICATED, CLEANOUTS SHALL BE ACCESSIBLE WITH EXTENSIONS TO GRADE, TO OUTSIDE OF BUILDINGS, OR TO FLOORS ABOVE AS INDICATED OR REQUIRED. DO NOT LOCATE CLEANOUTS IN PUBLIC LOBBIES AND PUBLIC CORRIDORS UNLESS APPROVED BY ARCHITECT.

B. MEMBRANES: WHERE WATERPROOFING MEMBRANE OCCURES UNDER FLOOR, BRING MEMBRANE TO CLEANOUT WITHOUT PUNCTURING, AND PERMANENTLY ANCHOR TO INTEGRAL ANCHORING FLANGE WITH A HEAVY CAST-IRON CLAMPING COLLAR AND RUSTPROOFED BOLTS.

C. COVERS: SET CLEANOUT COVERS WITH ALL FINISHED WALL, FLOOR OR GRADE. IN ALL CASES SECURELY ANCHOR BY MEANS OF INTEGRAL LUGS AND BOLTS. WHERE SURFACING MATERIAL SUCH AS RESILIENT COVERING IS SPECIFIED, ASCERTAIN THICKNESS BEING USED AND SET CLEANOUT TOP SO FINISHED FLOOR IS SMOOTH.

D. USE ACORN 3500 THREAD COMPOUND.

3.10 PIPE INSTALLATION

A. MAKE PIPE RUNS STRAIGHT AND TRUE. SPRINGING OR FORCING PIPING INTO PLACE IS NOT PERMITTED. INSTALL IN MANNER TO PREVENT ANY UNDUE STRAIN ON EQUIPMENT. MAKE JOINTS SMOOTH AND UNOBSTRUCTED INSIDE AND OUT, AND REAM PIPE ENDS THOROUGHLY TO REMOVE BURRS. CONCEAL PIPING IN FINISHED PORTIONS OF THE BUILDINGS EXCEPT AS OTHERWISE DIRECTED OR INDICATED. CAP OR PLUG ENDS AND OPENINGS IN PIPE AND FITTINGS IMMEDIATELY TO EXCLUDE DIRT UNTIL EQUIPMENT IS INSTALLED OR FINAL CONNECTIONS ARE MADE.

B. INSTALL PIPING TO CLEAR BEAMS UNLESS SLEEVING IS INDICATED. CONSTANTLY CHECK WORK OF OTHER TRADES TO PREVENT INTERFERENCE WITH THIS INSTALLATION. OBTAIN APPROVAL FROM ARCHITECT IF CORING OR CUTTING OF CONCRETE WORK IS NECESSARY DUE TO FAILURE TO INSTALL REQUIRED SLEEVES PRIOR TO THE TIME OF CONCRETE POUR. COST OF CORING AND CUTTING WORK SHALL BE BORNE BY THE SUBCONTRACTOR.

C. EXPOSED PLATED OR ENAMELED PIPE: MAKE CONNECTIONS TO EQUIPMENT WITH SPECIAL CARE. SHOW NO TOOL MARKS OR THREADS.

D. DIELECTRIC UNIONS: MAKE CONNECTIONS BETWEEN TWO DISSIMILAR METAL PIPES WITH DIELECTRIC UNIONS.

E. UNIONS. PROVIDE A UNION ON ONE SIDE OF EACH SHUTOFF VALVE, AT BOTH SIDES OF AUTOMATIC VALVES, AT EQUIPMENT CONNECTIONS AND ELSEWHERE INDICATED OR REQUIRED, UNLESS FLANGES ARE INDICATED.

F. FLOOR, WALL AND CEILING PLATES: PROVIDE WHERE PIPES PIERCE FINISHED SURFACES.

G. NOISE: INSTALL SOIL, WASTE, AND WATER PIPING IN A MANNER THAT PREVENTS ANY UNUSUAL NOISE FROM FLOW OF WATER UNDER NORMAL CONDITIONS.

H. SHUTOFF VALVES: PROVIDE WHERE INDICATED AND REQUIRED FOR ADEQUATE CONTROL OF SYSTEMS AND FOR ISOLATION OF FIXTURE GROUPS AND EQUIPMENT.

I. BURIED PIPING: INSTALL WITH MINIMUM 36 IN. COVERAGE UNLESS OTHERWISE INDICATED. LAY PIPING ACCURATELY TO GRADE WHERE INVERT ELEVATIONS ARE INDICATED. WHEN REQUIRED, PROVIDE THRUST BLOCKS PER MANUFACTURER'S RECOMMENDATIONS.

J. EQUIPMENT AND MATERIALS: INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

K. ACCESSIBILITY: INSTALL WORK READILY ACCESSIBLE FOR NORMAL OPERATION, READING OF INSTRUMENTS, ADJUSTMENT, SERVICE, INSPECTION AND REPAIR. PROVIDE ACCESS PANELS WHERE INDICATED AND REQUIRED.

L. PIPE JOINTS: MAKE SCREWED JOINTS WITH A MINIMUM AMOUNT OF COMPOUND APPLIED TO THE MALE THREAD ONLY. ALL JOINTS SHALL BE MADE PER CODE REQUIREMENTS.

M. PROVIDE PIPE ISOLATION AT ALL HANGERS FOR NON-INSULATED MATERIALS.

N. PIPING ROUGH-IN FOR FIXTURES: SUPPORT OR SECURE TO BUILDING CONSTRUCTION OF FIRMLY ANCHORED WASTE PIPING SO THAT PIPES CANNOT BE DISPLACED. DO NOT SECURE TO WALLS. USE OF MAKESHIFT DEVICES, SUCH AS ROPE, WIRE, TAPE, ETC. IS PROHIBITED.

O. HORIZONTAL DRAINAGE PIPING SHALL BE INSTALLED IN UNIFORM ALIGNMENT AT UNIFORM SLOPES. THE MINIMUM SLOPE OF HORIZONTAL PIPE 4" OR LARGER IN DIAMETER MAY HAVE A SLOPE OF NOT LESS THAN 1% (1/8 INCH PER FOOT). THE MINIMUM SLOPE OF HORIZONTAL PIPE LESS THAN 4" MAY HAVE A SLOPE OF NOT LESS THAN 2% (1/4 INCH PER FOOT).

- END -

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INDOOR ATHLETIC FACILITY - MUNICIPOOL
REMODEL MODEL
114 EAST 1000 NORTH, LOGAN UTAH 84321
OWNER/ORG NAME

MARK:	DATE:	DESCRIPTION:

PROJECT #:	123998
DRAWN BY:	Author
CHECKED BY:	Checker
ISSUED:	12.07.2023

LICENSED PROFESSIONAL ENGINEER
02/01/24
No. 8388845
JEDEDIAH JENKINS
STATE OF UTAH

CONSTRUCTION DOCUMENTS

PLUMBING SPECIFICATIONS

P002

DIVISION 21 FIRE PROTECTION

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

A. ALL PERTINENT SECTIONS OF DIVISION 22 AND 23, MECHANICAL GENERAL REQUIREMENTS, PIPING SYSTEMS, SPECIALTIES AND VALVES OR AS AMENDED BY THIS SECTION, ARE A PART OF THE WORK DESCRIBED IN THIS SECTION. DIVISION 1 IS A PART OF THIS AND ALL OTHER SECTIONS OF THESE SPECIFICATIONS.

1.02 QUALIFICATIONS OF INSTALLER

A. IT IS INTENDED THAT THE SYSTEM BE DESIGNED AND INSTALLED BY A FIRM REGULARLY ENGAGED IN THE DESIGN AND INSTALLATION BUSINESS OF FIRE SPRINKLER CONTRACTING. THE ENGINEER REQUIRES EVIDENCE TO SUPPORT THE ABILITY OF THE CONTRACTOR TO PERFORM WORK IN THE SCOPE AND VOLUME AS SPECIFIED. A CONTRACTOR WHO CANNOT SHOW SUCH EXPERIENCE, MAY BE FOUND NOT SUITABLE TO PERFORM THE WORK.

B. THE DESIGN SHALL BE PERFORMED BY A QUALIFIED INDIVIDUAL, AT A MINIMUM NICET III.

1.03 APPLICABLE STANDARDS

A. THE ENTIRE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE LOCAL CODES AND STANDARDS, BUT IN NO CASE LESS THAN THE FOLLOWING:

INTERNATIONAL BUILDING CODE

INTERNATIONAL FIRE CODE

NFPA 13-2021 INSTALLATION OF SPRINKLER SYSTEM

B. THE CODES LISTED REPRESENT THE MINIMUM REQUIREMENT. THE DRAWINGS, SPECIFICATIONS, INSURANCE COMPANY OR REGULATORY AGENCIES MAY DESIGNATE MORE STRINGENT REQUIREMENTS.

C. WHERE A CONFLICT BETWEEN CODES, DRAWINGS, INSURANCE COMPANY OR REGULATORY AGENCY OCCURS THE MOST STRINGENT REQUIREMENT SHALL GOVERN. ANY DEVIATIONS FROM THE MINIMUM REQUIREMENTS LISTED OR SHOWN ON THE DRAWINGS SHALL BE APPROVED BY THE REGULATORY AGENCY AND THE ENGINEER.

1.04 SUBMITTALS

A. SUBMIT PRODUCT DATA IN ACCORDANCE WITH DIVISION 1 AND SECTION 15100. SUBMIT THE FOLLOWING:

PIPING, VALVES, AND FITTINGS
SPRINKLER HEADS
FIRE PROTECTION SHOP DRAWINGS AND HYDRAULIC CALCULATIONS

1.05 TESTS

A. TEST OVERHEAD SPRINKLER PIPING IN ACCORDANCE WITH NFPA 13.

1.06 SCOPE OF WORK

A. THE SCOPE OF WORK INCLUDES THE PROVISION OF ALL ITEMS, ARTICLES, MATERIALS, OPERATIONS, OR METHODS LISTED, MENTIONED, OR SCHEDULED ON THE DRAWINGS AND/OR HEREIN SPECIFIED, INCLUDING LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY AND REQUIRED FOR THEIR COMPLETION.

B. THE WORK INCLUDES THE REPLACING OF EXISTING FIRE SPRINKLER HEADS AND BRANCH LINES WITH NEW QUICK RESPONSE FIRE SPRINKLER HEADS IN REMODELED AREAS AND COMMON EGRESS AREAS ASSOCIATED WITH REMODEL AREAS.

C. DESIGN SPRINKLER PIPING AND OBTAIN APPROVAL FROM AUTHORITIES HAVING JURISDICTION. OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO THE AHJ. SPRINKLER OCCUPANCY HAZARD CLASSIFICATIONS: OFFICE, PROCEDURE, AND PUBLIC AREAS - ORDINARY HAZARD, GROUP 1.

D. MAXIMUM PROTECTION AREA OF INDIVIDUAL SPRINKLER OPERATION, MINIMUM SPRINKLER DISCHARGE DENSITY AND MINIMUM AREA OF SPRINKLER OPERATION FOR DESIGN PURPOSES SHALL BE IN ACCORDANCE WITH NFPA-13.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. A. NO PIPE OR FITTINGS OF FOREIGN MANUFACTURE ARE ALLOWED. PIPE SHALL BE SCHEDULE 40 OR DYNATHREAD 40 UP TO AND INCLUDING 6" SIZE;. PIPE 8" AND LARGER SHALL BE SCHEDULE 10 OR SCHEDULE 40. NO PLAIN END, SLIP, SOCKET OR TEE TYPE FITTINGS ALLOWED. ALL FITTINGS SHALL BE THREADED OR GROOVED. IF MECHANICAL TEE FITTINGS ARE REQUIRED, THEY ARE TO BE VICTAULIC 920 OR 920N SERIES OR ENGINEER APPROVED EQUAL.

B. ALL PARTS AS REQUIRED INCLUDING PIPING, FITTINGS, VALVES, HANGERS AND EARTHQUAKE BRACING, ETC. SHALL BE UL LISTED FOR USE ON FIRE SPRINKLER SYSTEMS.

2.02 SPRINKLER

A. HEADS SHALL BE A MINIMUM ORIFICE SIZE OF 1/2". EXTRA LARGE ORIFICE (ELO) HEADS SHALL NOT BE USED UNLESS SPECIFIED. ORIFICES LARGER THAN 1/2" MAY BE USED AS REQUIRED BY DENSITY AND SPACING DEMANDS WHEN SPECIFIED. HEADS SHALL BE AS MANUFACTURED BY RELIABLE, TYCO, VICTAULIC, OR VIKING.

PART 3 - EXECUTION

3.01 PERFORMANCE

A. THIS CONTRACTOR SHALL SUBMIT COMPLETE FABRICATION DRAWINGS, HYDRAULIC CALCULATIONS, AND OTHER REQUIRED DOCUMENTATION TO THE LOCAL AUTHORITY HAVING JURISDICTION AND RECEIVE THEIR APPROVAL BEFORE INSTALLING.

B. DRAWINGS SUBMITTED FOR REVIEW SHALL BE MADE OF A SCALE EQUAL TO THE ARCHITECTS REFLECTED CEILING PLAN. DRAWINGS SHALL INCLUDE LOCATION OF LIGHTS, SPEAKERS, CEILING GRID, DIFFUSERS, GRILLES, ACCESS DOORS, RADIANT CEILING PANELS, ETC. FOR COORDINATION OF FIRE SPRINKLER HEAD LOCATIONS.

3.02 LOCATION OF SPRINKLER HEADS

A. EVERY EFFORT SHALL BE REQUIRED TO INSURE THAT THE HEADS FORM A SYMMETRICAL PATTERN IN THE CEILING WITH THE CEILING GRID, LIGHTS, DIFFUSERS AND GRILLES. OFFSETS SHALL BE MADE IN PIPING TO ACCOMMODATE DUCTWORK IN THE CEILING. HEADS SHOULD BE SYMMETRICAL AND ALL PIPING RUN PARALLEL OR PERPENDICULAR TO BUILDING LINES. IN NO CASE SHALL SPRINKLER HEADS BE INSTALLED CLOSER THAN APPROVED DISTANCES FROM CEILING OBSTRUCTIONS.

B. AUTOMATIC SPRINKLER HEADS LOCATED IN CORRIDORS SHALL BE IN CENTER LINE OF CORRIDOR. ALL HEADS THROUGHOUT STRUCTURE SHALL BE LOCATED WITHIN 1-1/2" RADIUS OF CENTER OF CEILING TILES.

C. APPROVAL OF THE ARCHITECT SHALL BE OBTAINED IN WRITING BEFORE SPRINKLER HEAD LOCATION ARE CHANGED.

3.03 COORDINATION

A. ALL WORK OF THIS CONTRACTOR WILL BE COORDINATED WITH OTHER TRADES TO INSURE MINIMAL CHANGES TO THE SPRINKLER SYSTEM FROM THE DESIGNS. CAREFUL COORDINATION OF MECHANICAL AND ELECTRICAL DUCTS, PIPE AND CONDUIT SHALL BE REQUIRED.

B. THE CEILING CAVITY MUST BE CAREFULLY REVIEWED AND COORDINATED WITH ALL TRADES. IN THE EVENT OF CONFLICT, THE INSTALLATION OF THE MECHANICAL EQUIPMENT AND PIPING SHALL BE IN THE FOLLOWING ORDER: PLUMBING WASTE, RAINWATER, AND SOIL LINES; SUPPLY, RETURN, AND EXHAUST DUCTWORK, WATER PIPING, FIRE PROTECTION PIPING, AND PNEUMATIC CONTROL PIPING.

C. ALL PIPING SHALL BE RUN CONCEALED WHERE POSSIBLE. ALL LINES WILL BE RUN AS HIGH AS POSSIBLE SO AS TO NOT INTERFERE WITH FUTURE CHANGES TO CEILING HEIGHTS OR OTHER MECHANICAL EQUIPMENT. THIS CONTRACTOR WILL BE RESPONSIBLE FOR ALL SLEEVES, CORE DRILLS, AND SEALING OF PENETRATIONS IN WALLS, FLOORS, AND STRUCTURAL MEMBERS TO FACILITATE THE INSTALLATION OF THE SYSTEM. HOWEVER, NO HOLES IN STRUCTURAL MEMBERS WILL BE ALLOWED UNLESS APPROVED BY THE STRUCTURAL ENGINEER.

3.04 SYSTEM REQUIREMENTS

A. THE SYSTEM SHALL BE DESIGNED SO IF ANY ONE SPRINKLER HEAD IS ACTIVATED, ALARM SYSTEM SHALL OPERATE.

B. HEADS LOCATED WITHIN THE AIR STREAMS OF UNIT HEATERS OR OTHER HEAT-EMITTING EQUIPMENT SHALL BE SELECTED FOR PROPER TEMPERATURE RATING.

C. ALL REQUIRED DRAINS AND TEST PIPES WILL BE INSTALLED AND FINISHED IN A WORKMANLIKE MANNER, TERMINATING AT A PROPER LOCATION TO ACCOMMODATE THE REQUIRED OUTFLOW WITHOUT DAMAGING THE BUILDING OR LANDSCAPING.

NO POWDER DRIVEN STUDS ALLOWED.

3.05 TESTS

A. ALL TESTS WILL BE CONDUCTED AS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION, AND IN NO CASE LESS THAN THOSE REQUIRED BY NFPA STANDARDS. AS A MINIMUM, PIPING IN THE SPRINKLER SYSTEM SHALL BE TESTED AT A WATER PRESSURE AT 200 PSI FOR A PERIOD OF NOT LESS TWO HOURS, OR AT 50 PSI IN EXCESS OF THE NORMAL PRESSURE WHEN THE NORMAL PRESSURE IS ABOVE 150 PSI. BRACING SHALL BE IN PLACE, AND AIR SHALL BE REMOVED FROM THE SYSTEM THROUGH THE HYDRANTS AND DRAIN VALVES BEFORE THE TEST PRESSURE IS APPLIED. NO APPARENT LEAKS WILL BE PERMITTED ON INTERIOR OR UNDERGROUND PIPING.

B. THE LOCAL JURISDICTION HAVING AUTHORITY SHALL BE NOTIFIED AT LEAST THREE WORKING DAYS IN ADVANCE OF ALL TESTS AND FLUSHING. THIS INCLUDES ANY FLUSHING OF UNDERGROUNDS, HYDROSTATIC TESTING, OR FLOW TESTING THAT MAY BE REQUIRED.

C. THIS CONTRACTOR SHALL MAKE ALL THE REQUIRED TESTS TO THE SPRINKLER SYSTEM AS REQUIRED BY CODE. HE SHALL BE RESPONSIBLE TO ASSURE THAT THE CONTRACTOR TEST CERTIFICATES FOR THE OVERHEAD AND UNDERGROUND WORK ARE COMPLETED AND DELIVERED TO THE OWNER'S INSURANCE UNDERWRITER TO ASSURE PROPER INSURANCE CREDIT.

D. ALL TESTS REQUIRING THE WITNESSING BY LOCAL AUTHORITIES WILL BE THE RESPONSIBILITY OF THIS CONTRACTOR. IF TESTS ARE NOT RUN OR DO NOT HAVE THE PROPER WITNESS, THEN THEY WILL BE RUN LATER AND ALL DAMAGE CAUSED BY THE SYSTEM, OR CAUSED IN UNCOVERING THE SYSTEM FOR SUCH TEST, WILL BE BORNE BY THIS CONTRACTOR.

3.06 JOB CLOSE-OUT

A. THIS CONTRACTOR SHALL ASSURE THAT ALL PLACARDS, SIGNS, AND INSTRUCTION MANUALS ARE IN PLACE, AND ALL TESTS ARE RUN BEFORE ANY CONSIDERATION FOR FINAL PAYMENT WILL BE MADE. THIS INCLUDES MAINTENANCE MANUALS, INCLUDING COPIES OF WARRANTY AND CONTRACTORS TEST CERTIFICATES AND AS-BUILT SHOP DRAWINGS, HYDRAULIC CALCULATION PLACARDS, SPARE HEAD CABINETS WITH THE PROPER NUMBER OF SPARE HEADS, WRENCHES, ETC, AND INSTRUCTION TO ON-SITE INSTRUCTION PERSONNEL. INCLUDE CD OF ELECTRONIC AS-BUILTS.

3.07 WARRANTY

A. THIS CONTRACTOR SHALL WARRANTY THE SPRINKLER SYSTEM AND ALL ITS COMPONENTS FOR ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. ANY COSTS INCURRED TO EXTEND ANY WARRANTIES OF MATERIALS TO ASSURE THIS TIME FRAME SHALL BE BORNE BY THIS CONTRACTOR.

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INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

114 EAST 1000 NORTH. LOGAN UTAH 84321
OWNER/ORG NAME

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: Author
CHECKED BY: Checker
ISSUED: 12.07.2023

LICENSED PROFESSIONAL ENGINEER
02/01/24
No. 8388845
JEDEDIAH JENKINS
STATE OF UTAH

FIRE PROTECTION SPECIFICATIONS

P003

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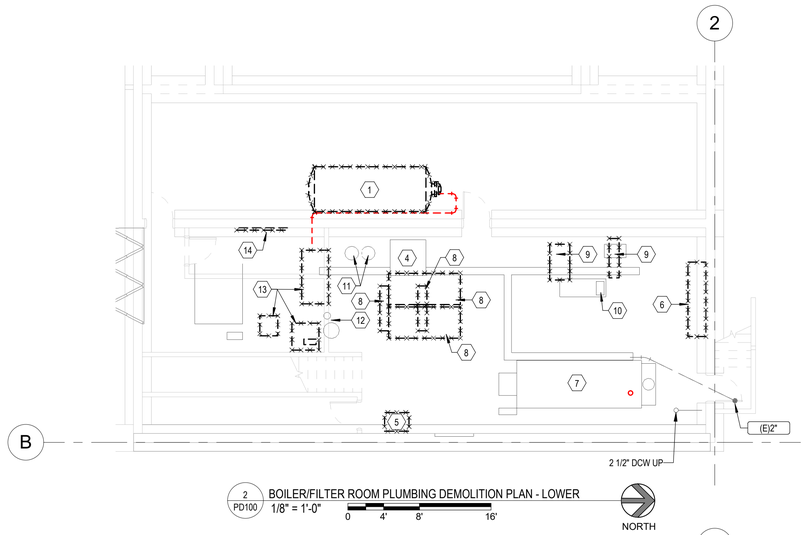
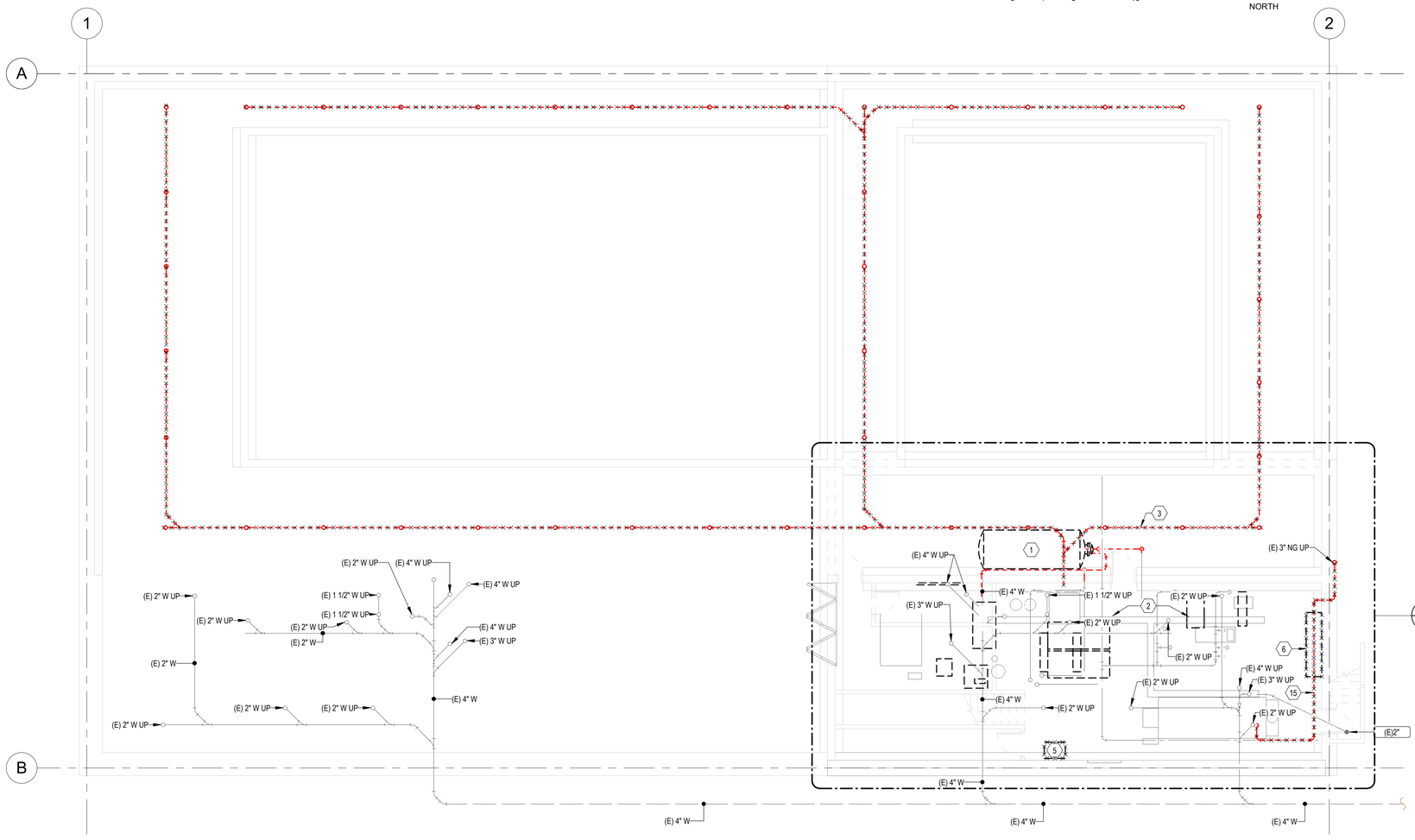


2 PD100 BOILER/FILTER ROOM PLUMBING DEMOLITION PLAN - LOWER
1/8" = 1'-0"
0 4' 8' 16'
NORTH



1 PD100 BASEMENT DWV PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH

KEYED NOTES

1. REMOVE THE EXISTING STEAM-TO-WATER DOMESTIC HEAT EXCHANGER.
2. EXISTING TRENCH DRAIN IN ROOM 211 TO REMAIN.
3. EXISTING PIPING TO BE FILLED WITH CONCRETE AND ABANDONED IN PLACE. TYPICAL.
4. EXISTING SUMP BASIN. THE ORIGINAL SUMP PUMPS WERE REMOVED PREVIOUSLY.
5. REMOVE THE EXISTING AIR COMPRESSOR.
6. REMOVE THE EXISTING DOMESTIC COLD WATER HEADER.
7. EXISTING STEAM BOILER. SEE MECHANICAL SHEETS.
8. REMOVE EXISTING POOL EQUIPMENT AND ASSOCIATED PIPING AS INDICATED.
9. EXISTING HEATING SYSTEM MECHANICAL EQUIPMENT. SEE MECHANICAL SHEETS.
10. EXISTING DOMESTIC RECIRC PUMP
11. EXISTING WATER TREATMENT. SEE MECHANICAL SHEETS.
12. EXISTING DOMESTIC WATER SOFTENING EQUIPMENT TO REMAIN.
13. EXISTING CONDENSATE AND FEEDWATER EQUIPMENT. SEE MECHANICAL SHEETS.
14. EXISTING STEAM HEATING COIL. SEE MECHANICAL SHEETS.
15. REMOVE THE EXISTING NATURAL GAS PIPING AS INDICATED.

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INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

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OWNER/ORG NAME

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No. 8388845
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BASEMENT PLUMBING DEMOLITION PLAN

PD100

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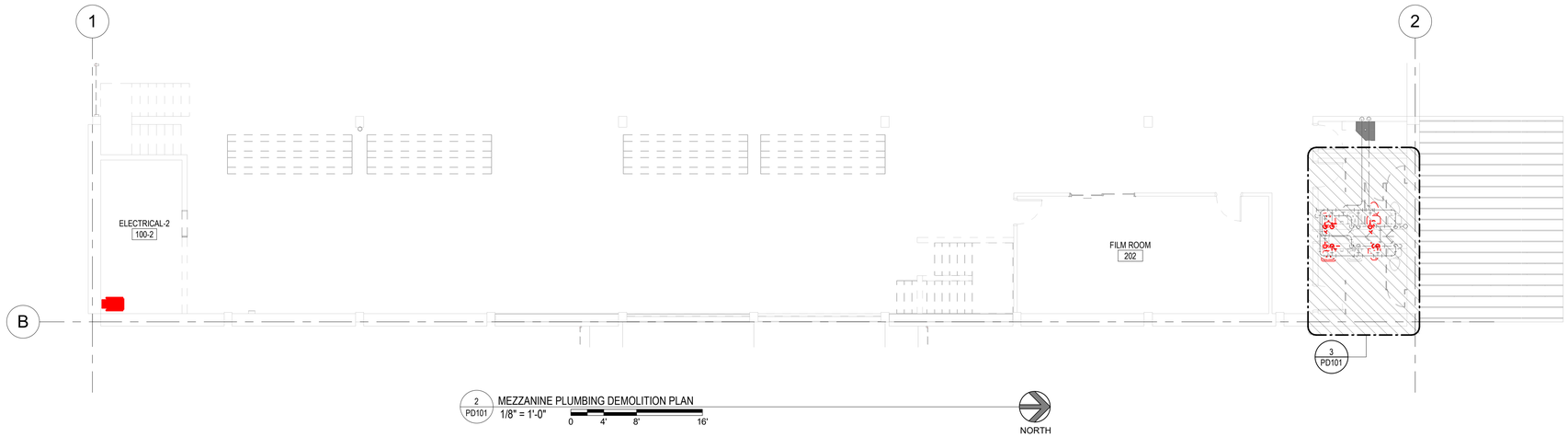
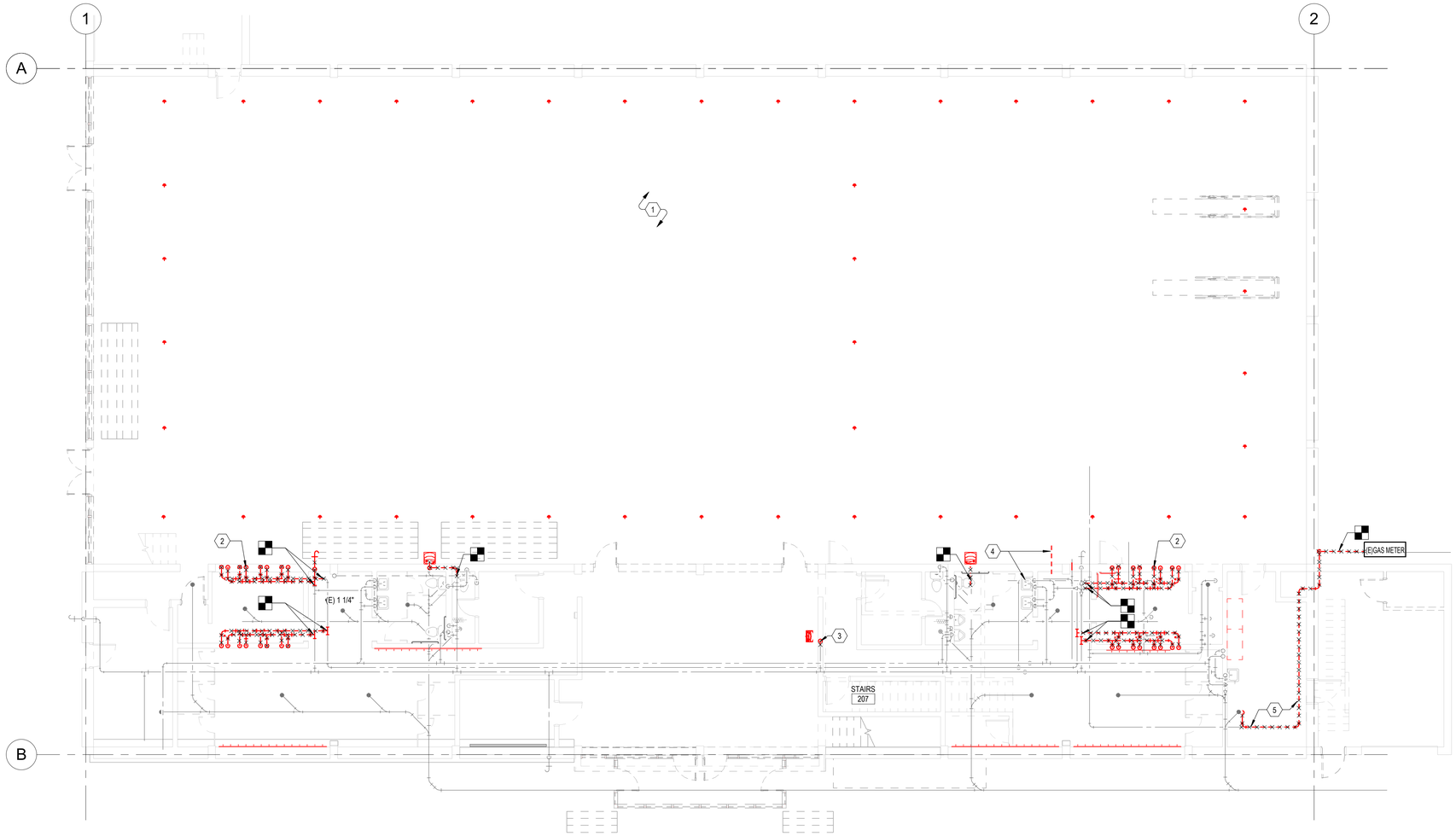
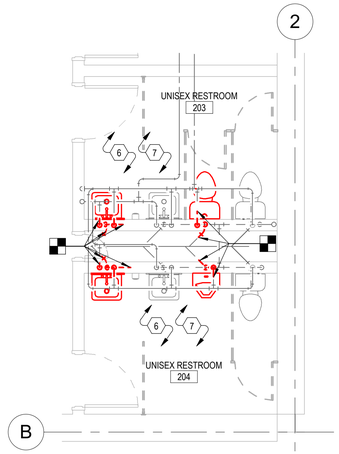


2 PD101 MEZZANINE PLUMBING DEMOLITION PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH



1 PD101 LEVEL 1 PLUMBING DEMOLITION PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH



3 PD101 Plumbing Demolition Enlarged Plan
1/4" = 1'-0"
0 2' 4' 8'
NORTH

KEYED NOTES

1 ABANDON FIXTURES IN PLACE AND FILL WITH CONCRETE.

2 REMOVE SHOWERS TO MAKE WAY FOR NEW SHOWERS.

3 DEMOLISH AND REMOVE EXISTING DRINKING FOUNTAIN. PREPARE DOMESTIC COLD WATER, WASTE AND VENT PIPING FOR NEW CONNECTIONS TO NEW ELECTRIC WATER COOLER

4 PIPE SYSTEMS LOCATED IN BASEMENT MECHANICAL ROOM.

5 REMOVE EXISTING NATURAL GAS PIPING. PATCH EXTERIOR WALL PENETRATION TO MATCH EXISTING.

6 OPEN ENDS OF DEMOLISHED PIPES WILL BE CAPPED AT THEIR OPEN ENDS. SEE P101 & P111 FOR MORE INFORMATION.

7 SHOWN PIPES ARE EXISTING AND TO BE DEMOLISHED TO MAKE WAY FOR NEW CONSTRUCTION FOR NEW BATHROOM ORIENTATION.

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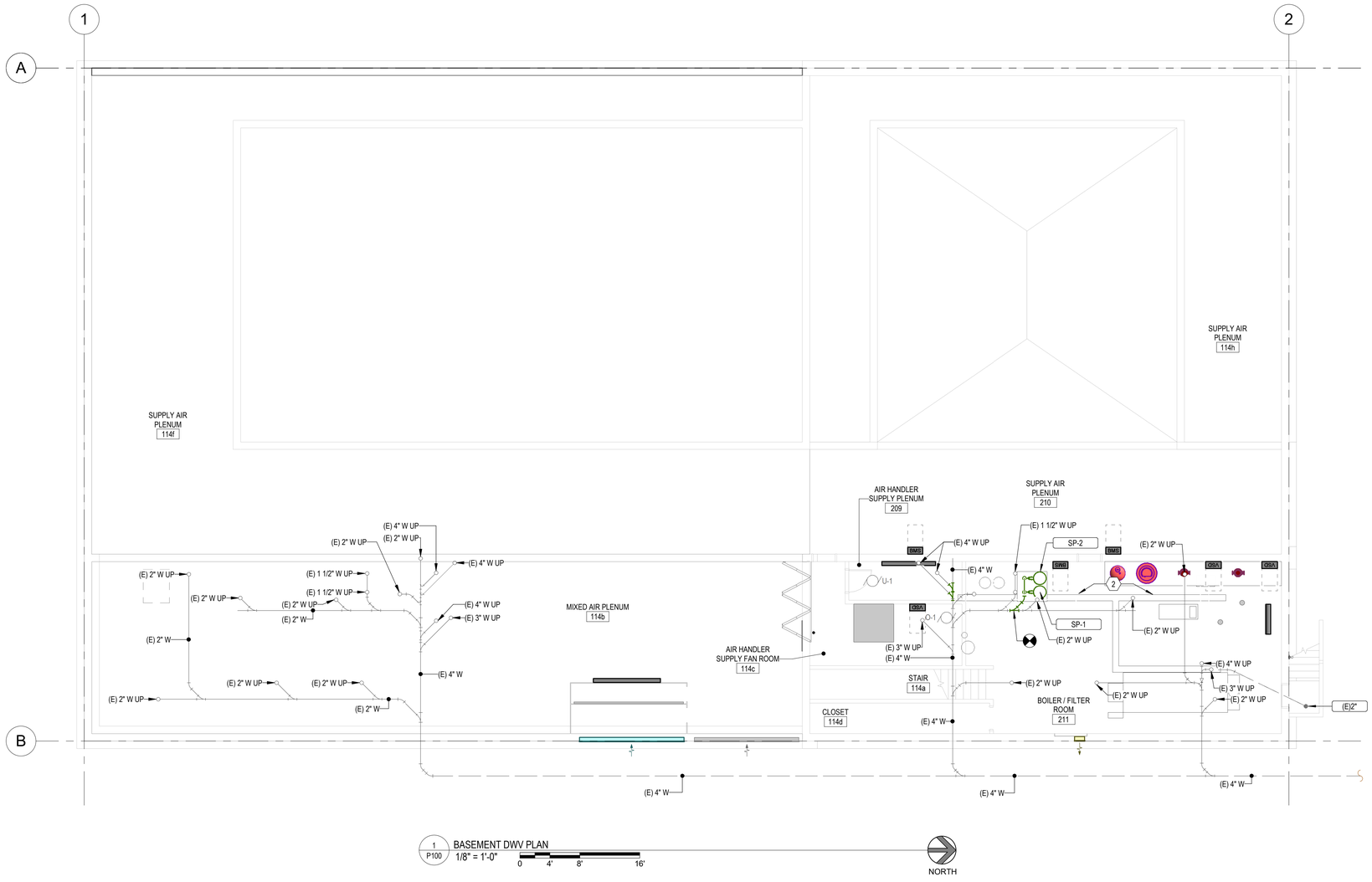
STATE OF UTAH

LEVEL 1 PLUMBING DEMOLITION PLAN

PD101

KEYED NOTES

2 EXISTING TRENCH DRAIN IN ROOM 211 TO REMAIN.



1 P100 BASEMENT DWV PLAN
1/8" = 1'-0"
0 4' 8' 16'

NORTH

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INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

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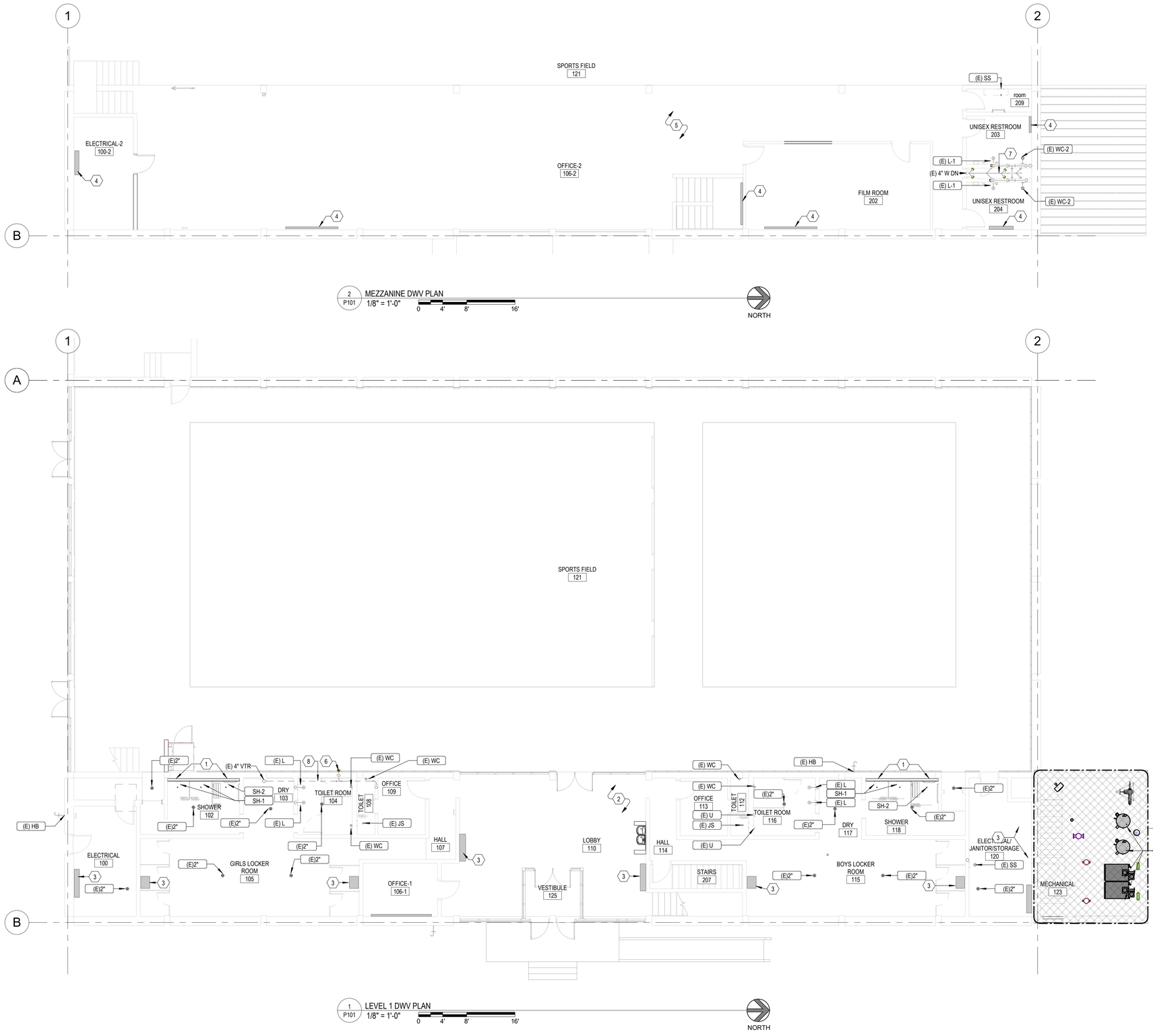
BASEMENT WASTE & VENT PLAN

P100



KEYED NOTES

1. NEW SHOWERS SHALL BE INSTALLED IN NEW WALL.
2. REMAINING FIXTURES AND EQUIPMENT WILL REMAIN AS IS. TYPICAL.
3. MECHANICAL EQUIPMENT. SEE MECHANICAL SHEETS. TYPICAL.
4. MECHANICAL EQUIPMENT. SEE MECHANICAL SHEETS. TYPICAL.
5. UNLESS INCATED OTHERWISE, ALL PLUMBING FIXTURES AND EQUIPMENT WILL REMAIN THRU CONSTRUCTION PROCESS.
6. WALL CLEAN OUT INSTALLED WASTE CONNECTION COVERED AFTER EXISTING DRINKING FOUNTAIN DEMOLITION
7. WASTE PIPING IS LOCATED UNDERNEATH THE FLOOR IN THE CEILING OF JANITOR/STORAGE 120
8. EXISTING VENT LINE BELOW FLOOR IN THE CRAWL SPACE.

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LEVEL 1 & MEZZANINE WASTE & VENT PLAN

P101

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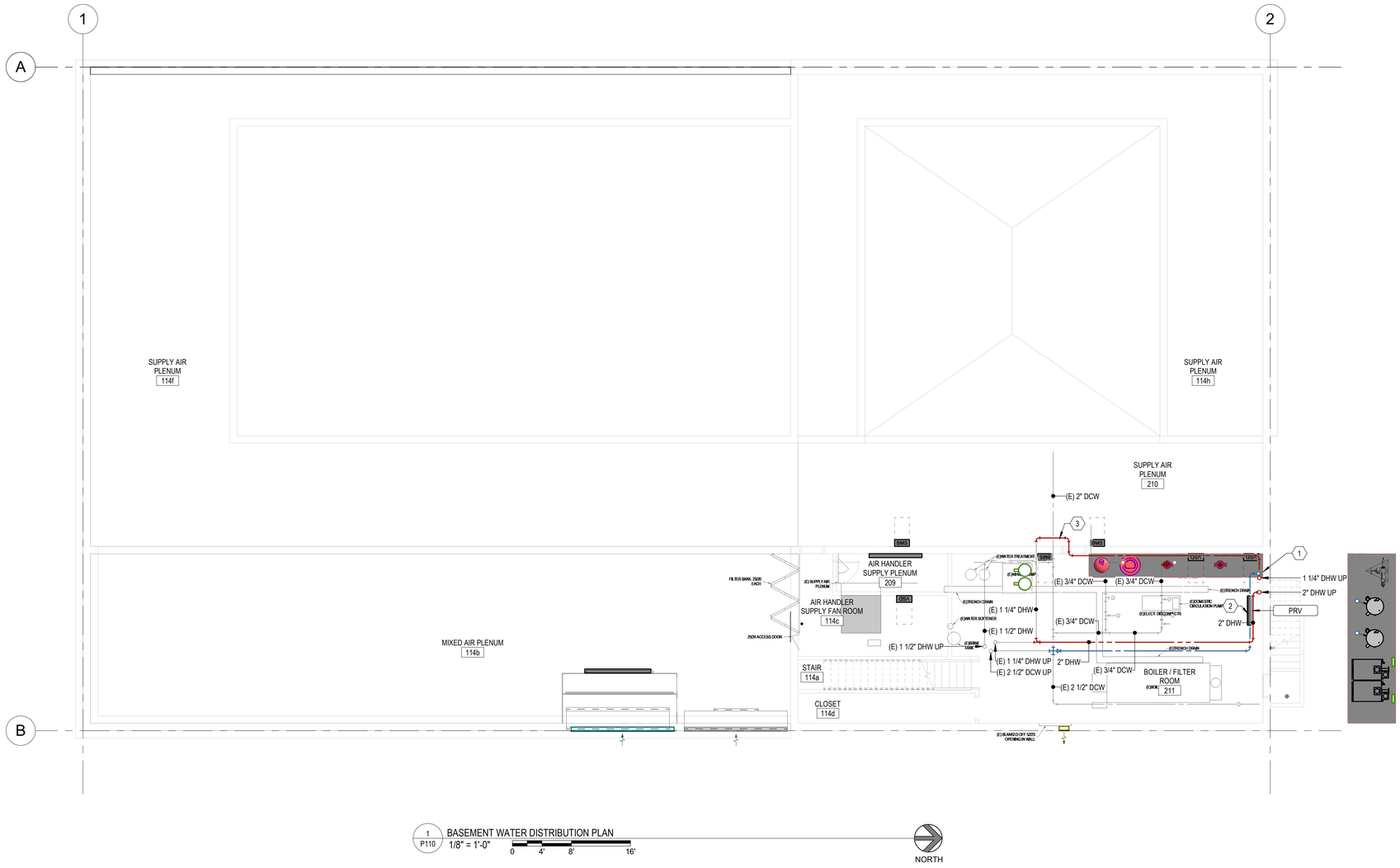
KEYED NOTES

1 CONNECTION TO METER AND CITY LINE

2 REFERENCE P501/3 FOR FULL DETAILS OF WATER HEADER.

3 HOT WATER PIPE TO REENTER BOILER/FILTER ROOM THRU EXISTING HOLE USED FOR NOW DEMOLISHED PIPING.



1 P110 BASEMENT WATER DISTRIBUTION PLAN

1/8" = 1'-0"

0 4' 8' 16'

NORTH

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INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

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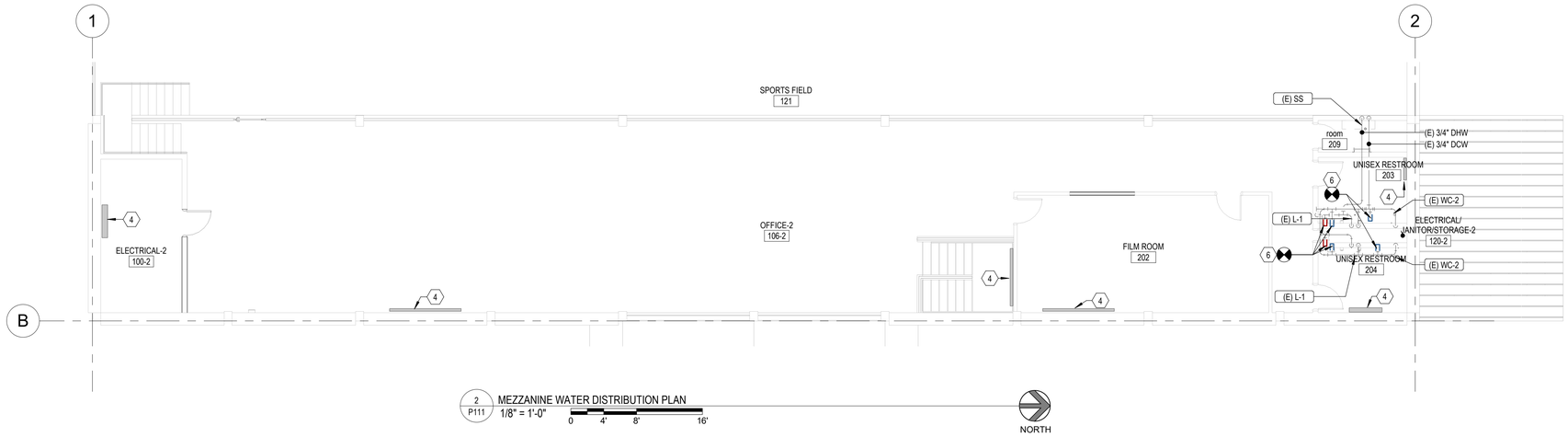
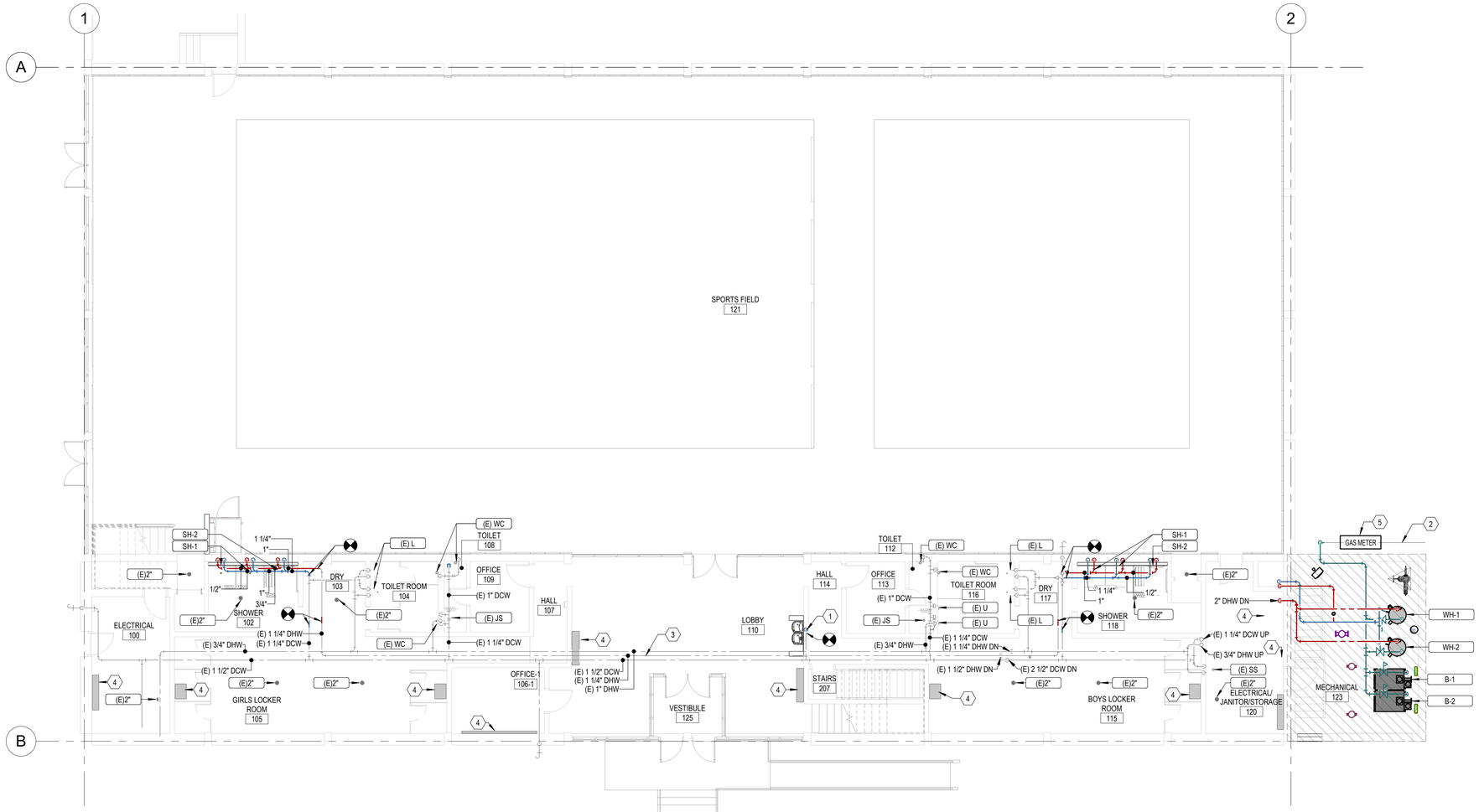
BASEMENT WATER DISTRIBUTION PLAN

P110



2 P111 MEZZANINE WATER DISTRIBUTION PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH



1 P111 LEVEL 1 WATER DISTRIBUTION PLAN
1/8" = 1'-0"
0 4' 8' 16'
NORTH

KEYED NOTES

1. CONNECT WASTE, VENT AND COLD WATER PIPING TO NEW ELECTRIC WATER COOLER.
2. GAS PIPING TO CONTINUE TO CITY CONNECTION.
3. ALL PIPING BELOW FLOOR IN CRAWL SPACE.
4. MECHANICAL EQUIPMENT. SEE MECHANICAL SHEETS. TYPICAL.
5. EXISTING GAS METER TO BE USED IN NEW GAS CONFIGURATION.
6. EXISTING HOT AND COLD PIPING TO REMAIN. HOWEVER DEMOLISHED PLUMBING FIXUTURES' CONNECTIONS WILL BE DEMOLISHED BACK TO EXISTING MAINS AND CAPPED AT THE EXISTING MAIN.

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INDOOR ATHLETIC FACILITY - MUNICIPOOL REMODEL

114 EAST 1000 NORTH. LOGAN UTAH 84321
OWNER/ORG NAME

CONSTRUCTION DOCUMENTS

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: Author
CHECKED BY: Checker
ISSUED: 12.07.2023

LICENSED PROFESSIONAL ENGINEER
02/01/24
No. 8388845
JEDEDIAH JENKINS
STATE OF UTAH

LEVEL 1 WATER DISTRIBUTION PLAN

P111

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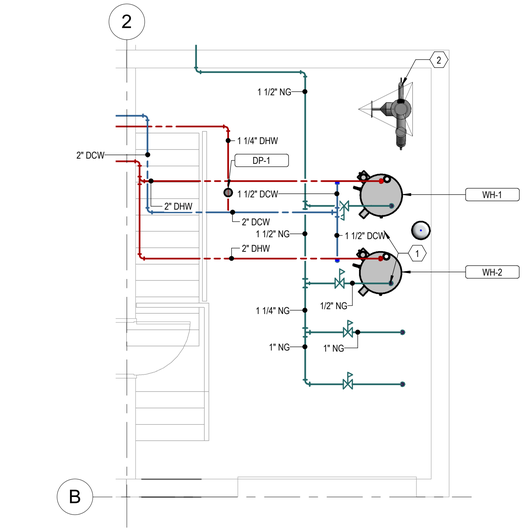
2/2/2024 8:16:17 AM Autodesk Docs://123998 - LCID - Indoor Athletic Facility - Municipool Remodel/23708 - LCID - Indoor Athletic Facility - Municipool Remodel_MECH_r24.rvt

KEYED NOTES

1 SEE P501/4 FOR FULL WATER HEATER DETAIL.

2 FIRE RISER.



1 / P401 Waste & Vent Plan - Mech Room Enlarged
1/4" = 1'-0"

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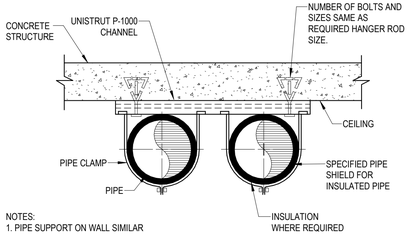
ENLARGED WASTE & VENT PLANS

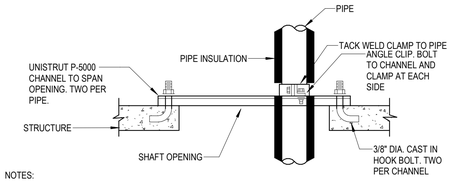
P401

2/2/2024 6:10:19 AM Autodesk Docs://123998 - LCCD - Indoor Athletic Facility - Municipool Remodel/23708 - LCCD - Indoor Athletic Facility - Municipool Remodel_MEDA_r24.rvt



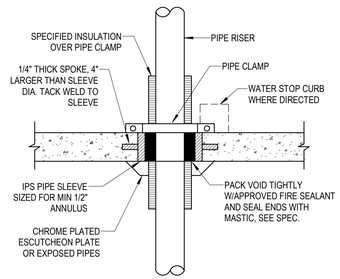
NOTES:
1. PIPE SUPPORT ON WALL SIMILAR

8 P501 PIPE CEILING DETAIL
NOT TO SCALE

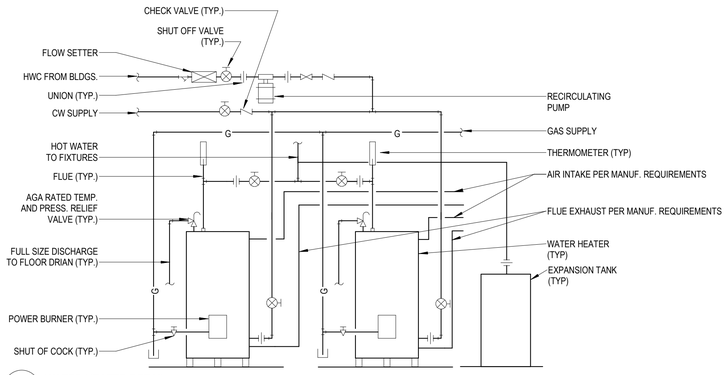


NOTES:
1. TYPICAL SUPPORT AT EACH FLOOR.
2. FOR MULTIPLE PIPES INSTALL CHANNELS IN PARALLEL AND PROVIDE ADDITIONAL FRAMING. SIZES OF FRAMING MEMBERS AS REQUIRED TO SUPPORT TOTAL WEIGHT OF PIPE.
3. INSULATE CLAMP AT CHILLED WATER PIPE ONLY.

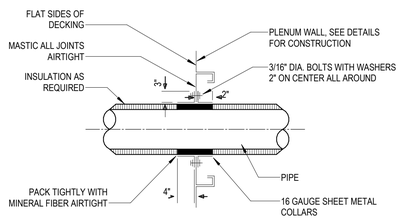
9 P501 PIPE RISER DETAIL
NOT TO SCALE



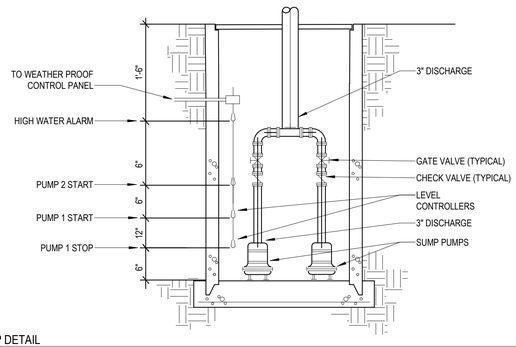
10 P501 PIPE THROUGH FLOOR SLAB DETAIL
NOT TO SCALE



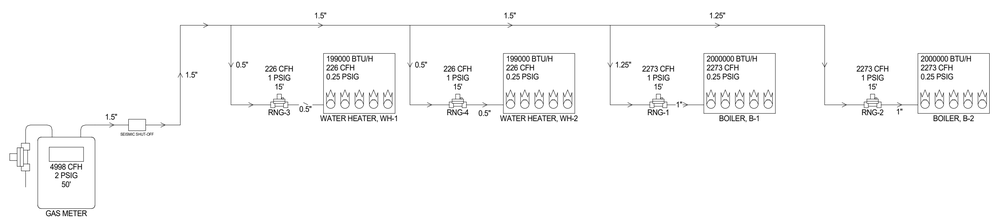
4 P501 WATER HEATER DETAIL
NOT TO SCALE



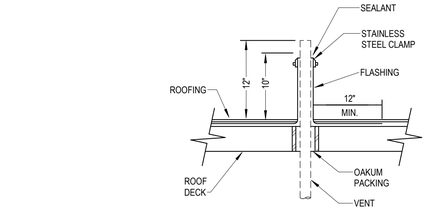
5 P501 PIPE THRU PLENUM WALL DETAIL
NOT TO SCALE



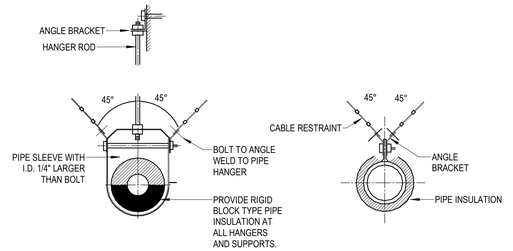
7 P501 SUMP PUMP DETAIL
12" = 1'-0"

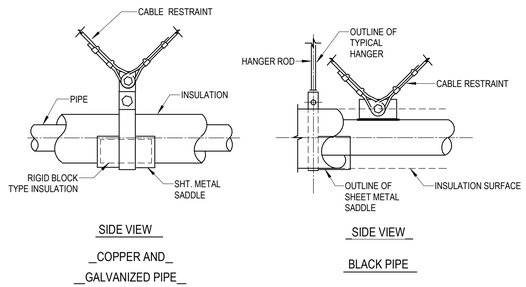


6 P501 GAS PIPING SCHEMATIC
NOT TO SCALE

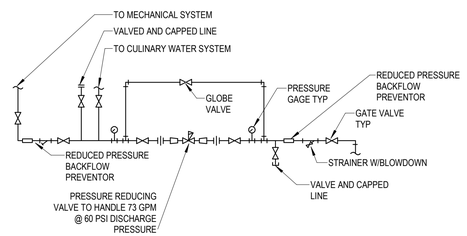


1 P501 VENT THRU ROOF FLASHING & SLEEVING DETAIL
NOT TO SCALE





2 P501 PIPING RESTRAINT DETAIL
NOT TO SCALE



3 P501 WATER HEADER DETAIL
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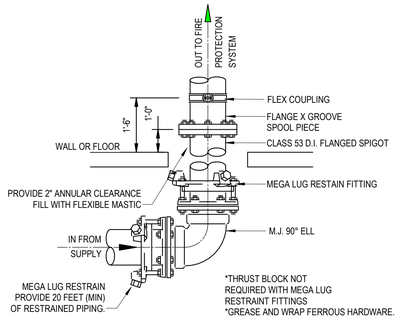
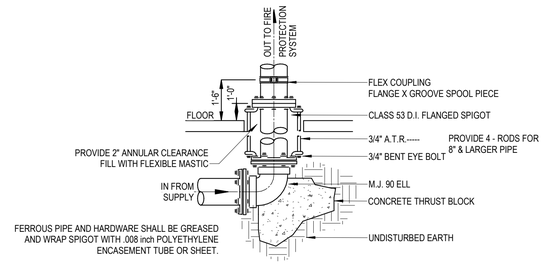
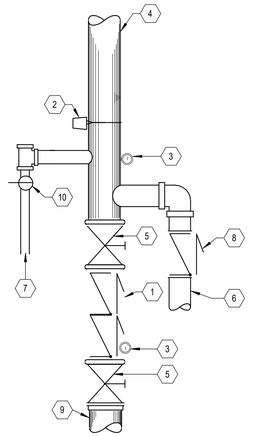
PLUMBING DETAILS

P501





1 P502 FLANGED SPIGOT THRU FLOOR
NOT TO SCALE



2 P502 FIRE SPRINKLER RISER DETAIL
NOT TO SCALE

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PLUMBING DETAILS

P502

DOMESTIC FIXTURE SCHEDULE

ID	DESCRIPTION	MANUFACTURER	MODEL	QTY	TRIM	FLOW FIXTURE				INDIRECT WASTE PIPE SIZE	COLD WATER ROUGH-IN PIPE SIZE	HOT WATER ROUGH-IN PIPE SIZE	Image	SPECIFICATION	REMARKS
					TYPE	WATER FLOW	CWT	HWT	MAX. MWT						
DF-1	DRINKING FOUNTAIN	Elkay	EZSTL8WSLK	1	BATTERY	1.1 GPM	50 °F	0 °F	0 °F	1-1/2"	1/2"			TWO LEVEL WALL HUNG WATER COOLER. THE UNIT TO BE WALL HUNG, MOUNTING FRAME, SELF CLOSING EASY TOCH SIDE AND FRONT PUSHBAR BONTROLS.	
SH-1	SHOWER STALL	BRADLEY	WS-1F-HD S15-SKV LBJ-ST SD-VS	4	MANUAL	1.5 GPM	40 °F	120 °F	105 °F	2"	1/2"	1/2"		BRADLEY WS-1F-HD-S15-AKV-LBJ-ST-SD-VS INDIVIDUAL FLUSH-MOUNT WALL SHOWER. 18 GAUGE 304 STAINLESS STEEL SHOWER PANEL, BRASS VALVE BODY, PRESSURE BALANCING MIXING VALVE, 1.5 GPM FLOW CONTROL.	
SH-2	SHOWER STALL - ADA	BRADLEY	HN200	2	MANUAL	1.0 GPM	40 °F	120 °F	105 °F	2"	1/2"	1/2"		BRADLEY HN200 INDIVIDUAL FLUSH-MOUNT WALL SHOWER.18 GAUGE 304 STAINLESS STEEL SHOWER PANEL, BRASS VALVE BODY, FLEXIBLE STAINLESS STEEL SUPPLY HOSES, PRESSURE BALANCING MIXING VALVE, 1.5 GPM FLOW CONTROL.	

Grand total: 7

GAS-FIRED WATER HEATER SCHEDULE

ID	MANUFACTURER	MODEL NO.	GAS-FIRED HEAT EXCHANGER							THERMAL EFF	UNIT WEIGHT	MCA	VOLT	PH	REMARKS
			GAS BURNER				FUEL	WATERSIDE							
			INPUT	CAP	EFF	STAGES	PRESS AVAIL	STORAGE		MAX TEMP RISE					
								RECOVERY	VOL						
WH-1	PVI Industries, LLC	20 L 100A-GCL	188667 Btu/h	199000 Btu/h	97.0%	0	150.0 psi	226 gal/h	100.0 gal	140 °F	97%	1470 lb	5.0 A	120 V	1	1-2
WH-2	PVI Industries, LLC	20 L 100A-GCL	188667 Btu/h	199000 Btu/h	97.0%	0	150.0 psi	226 gal/h	100.0 gal	140 °F	97%	1470 lb	5.0 A	120 V	1	1-2

1. WATER HEATER SHALL BE SET TO 110F DISCHARGE TEMPERATURE.
2. UNITE COMPLETE WITH CONDENSATE NEUTRILIZER.

SUMP PUMP SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	QUANTITY	TYPE	FLUID			PUMP		ELECTRICAL		NOTES
					FLOW RATE (GPM)	WORKING FLUID	HEAD LOSS (FT)	EFFICIENCY (%)	CONSTRUCTION	MOTOR SIZE (HP)	VOLT/PH/HZ	
SP-1	SEG.A15.20.R2.2.1.603	BASEMENT	1	IMPELLER	35	WASTE WATER	20	21	CAST IRON	1.21	208/3/60	
SP-2	SEG.A15.20.R2.2.1.603	BASEMENT	1	IMPELLER	35	WASTE WATER	20	21	CAST IRON	1.21	208/3/60	

1. PUMP PACKAGE TO INCLUDE PUMPS, CONTROL PANEL, GUIDE RAILS, AND LEVEL CONTROLS.
2. PUMPS TO INCLUDE PRIMARY AND SECONDARY PUMPS

DOMESTIC PUMP SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	FLUID			PUMP	EFFICIENCY (%)	ELECTRICAL			NOTES
				FLOW (GPM)	WORKING FLUID	PRESSURE LOSS (FT)	CONSTRUCTION		MOTOR SIZE (HP)	MOTOR SPEED (RPM)	V / PH / HZ	
RCP-1	GRUNDFOS UPS 15-58 FRC	STORAGE 123	INLINE	1	DHW-R	15	CAST IRON	3.7	0.08		120/1/60	

DOMESTIC EXPANSION TANK SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	FLUID		PHYSICAL				NOTES
				WORKING FLUID	MAX ACCEPTANCE VOLUME (GAL)	TANK SIZE (GAL)	RELIEF VALVE (PSI)	HEIGHT/ DIAMETER (IN)	NPT FITTING (IN)	
DET-1	AMTROL ST-447C	STORAGE 123	BLADDER	DHW-R	53.00	53.0	150	45"/24"	2"	

DOMESTIC PRV SCHEDULE

ID	MANUFACTURER AND MODEL NO.	LOCATION	SERVICE	TYPE	CAPACITY (GPM)	INLET PRESSURE (PSI)	SIZE (IN)	NOTES
PRV-1	WATTS LF 223	BOILER/FILTER ROOM 211	DCW	DIRECT	41	50	2	

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PLUMBING SCHEDULES

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GENERAL PROJECT NOTES

1. ALL ELECTRICAL INSTALLATIONS TO CONFORM TO THE LATEST NEC AND LOCAL CODES.
2. THE ELECTRICAL CONTRACTOR SHALL HAVE A COORDINATION MEETING WITH THE MECHANICAL CONTRACTOR, CONSTRUCTION SUPERINTENDANT AND ANY OTHER TRADES AS REQUIRED WITHIN SEVEN DAYS OF THE START OF THE JOB TO REVIEW CODE CLEARANCE REQUIREMENTS FOR PANELS, SWITCHES, AND OTHER ELECTRICAL GEAR SPECIFICALLY FOR THIS JOB. RECORD THE MEETING IN THE SUPERINDENTS LOG. REPORT UNRESOLVED CONFLICTS TO THE ARCHITECT IMMEDIATELY.
3. ELECTRICAL CONTRACTOR'S PROJECT MANAGER AND ON-SITE PROJECT FOREMAN SHALL REVIEW VENDOR SUBMITTALS FOR ACCURACY PRIOR TO SUBMITTING TO ENGINEER. INACCURACIES SHALL BE CORRECTED PRIOR TO ENGINEER SUBMITTAL.
4. SUBMITTALS FOR EACH SYSTEM WILL BE REVIEWED BY ENGINEER UP TO TWO TIMES—ONE FULL SUBMITTAL FOR OVERALL COMPLIANCE AND ONE RESUBMITTAL. ADDITIONAL REVIEWS WILL BE CHARGED TO CONTRACTOR AT ENGINEERS STANDARD BILLING RATE.
5. SUBMITTALS TO ENGINEER SHALL INCLUDE ALL SPECIFIED SYSTEMS IN FIRST SUBMITTAL. PARTIAL SUBMITTALS WILL BE RETURNED TO CONTRACTOR AS INCOMPLETE AND WILL BE CONSIDERED ONE OF TWO INCLUDED SUBMITTAL REVIEWS.
6. THE CLARITY OF RECORD DRAWING CHANGES MADE BY THE CONTRACTOR SHALL BE EQUAL TO THE ORIGINAL DRAWINGS AS JUDGED BY THE ARCHITECT OR THE RECORD SET WILL BE RETURNED TO THE CONTRACTOR FOR CLARIFICATION.
7. WHEN THE GENERAL CONTRACT CALLS FOR "RECORD" OR "AS-BUILT" DRAWINGS TO BE FURNISHED BY THE CONTRACTOR AT JOB COMPLETION, THE ELECTRICAL CONTRACTOR SHALL BE REQUIRED TO FURNISH A COMPLETE SET OF "BLUE-PRINT READY" AUTOCAD ELECTRICAL DRAWINGS FOR ALL CONTRACTOR GENERATED CHANGES FROM THE DRAWINGS OF A CLARITY EQUAL TO THE ORIGINAL DRAWINGS AS JUDGED BY THE ENGINEER. CONTACT ARCHITECT FOR DISKS OR REPRODUCIBLE ORIGINAL MEDIA. PROVIDE DRAWINGS ON CD IN AUTOCAD FORMAT.
8. DO NOT SCALE ELECTRICAL FLOOR PLANS. SEE ARCHITECTURAL DRAWINGS FOR ACCURATE DIMENSIONS AND FLOOR PLANS.
9. ELECTRICAL DEVICES CANNOT BE SHOWN TO SCALE AND SOMETIMES OVERLAP BUILDING ELEMENTS. REFER TO ARCHITECTURAL ELEVATIONS FOR ACCURATE MOUNTING LOCATIONS
10. ELECTRICAL CONTRACTOR SHALL CONTACT POWER COMPANY, TELEPHONE COMPANY, AND TV COMPANY WITHIN THE FIRST WEEK OF THE START OF CONSTRUCTION AND NOTIFY THEM OF THE PROBABLE DATE WHEN THE NEW ELECTRICAL, TELEPHONE, AND/OR TV SERVICE CONNECTION WILL BE NEEDED.
11. CONTRACTOR SHALL LOCATE AND INSTALL TRANSFORMER PAD PER POWER COMPANY SPECIFICATIONS. VERIFY PROPER CLEARANCES FROM BUILDING AND OTHER EQUIPMENT BEFORE INSTALLATION. THE LOCATION OF THE TRANSFORMER SHOWN ON THE PLANS IS AN APPROXIMATE LOCATION.
12. THE MAIN TELEPHONE AND TV SERVICES AS SHOWN ON THE DRAWINGS HAVE NOT BEEN COORDINATED WITH THE RESPECTIVE UTILITY COMPANIES DURING DESIGN. THE CONTRACTOR SHALL VERIFY THE TELEPHONE AND TV SERVICE AS SHOWN OR ANY CHANGES REQUIRED BY THE TELEPHONE COMPANY BEFORE INSTALLATION BEGINS. NOTIFY THE ARCHITECT IF CHANGES FROM THE DRAWING ARE REQUIRED.
13. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY ALL PANEL CLEARANCES PER NEC 110.26 AND NOTIFY ALL OTHER TRADES ON THE JOB OF THESE CODE REQUIREMENTS.
14. THE ELECTRICAL CONTRACTOR SHALL FIELD VERIFY WITH THE GENERAL CONTRACTOR ADEQUATE WALL DEPTH FOR MOUNTING FLUSH CIRCUIT BREAKER PANELS.
15. PANEL INDEXES SHALL INCLUDE ALL PERTINENT INFORMATION ON THE PANEL SCHEDULES INCLUDING INFORMATION ON LIGHTS AND OUTLETS. DO NOT SIMPLY COPY THE CIRCUIT DESCRIPTION COLUMN. INDEXES TO BE TYPEWRITTEN.
16. CONDUITS ENTERING MAIN PANEL FROM THE BOTTOM SHALL BE ARRANGED IN STRAIGHT ROWS FASTENED TO UNISTRUT. HOLES SHALL BE PUNCHED IN PANEL BOTTOM AND CONDUITS FASTENED BY TWO LOCKNUTS AND A CONDUIT BUSHING. CUTTING OUT THE BOTTOM OF THE PANEL IS NOT PERMITTED.
17. DO NOT INSTALL PANELS IN FIRE WALLS.
18. ALL PARALLEL CONDUCTORS TO BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 310.4. WIRE IS TO BE LAID ON A FLAT SURFACE FOR MEASUREMENT. USE TORQUE WRENCH ON TERMINATIONS.
19. COORDINATE MOUNTING HEIGHT AND LOCATION OF ALL OUTLETS, SWITCHES, AUXILIARY EQUIPMENT, AND OTHER DEVICES WITH THE ARCHITECTURAL DRAWINGS. PRIOR TO INSTALLATION, REVIEW WITH THE GENERAL CONTRACTOR THE LOCATION OF MILLWORK AS A FINAL CHECK TO PREVENT COVERING OF ELECTRICAL ITEMS.
20. MOUNTING HEIGHT OF GENERAL PURPOSE OUTLETS AND SWITCHES SHALL BE 16' TO BOTTOM AND 48" TO TOP RESPECTIVELY UNLESS OTHERWISE NOTED.
21. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED SO AS NOT TO INTERFERE WITH WOOD TRIM AND MOLDINGS. THE ELECTRICAL CONTRACTOR SHALL REVIEW FINISH SCHEDULES AND ARCHITECTURAL DETAILS BEFORE ROUGH-IN OF OUTLET OR SWITCH BOXES TO PREVENT BOXES AND PLATES FROM BEING PLACED BEHIND OR IN TRIMS AND MOLDINGS. REFER SPECIAL CONDITIONS TO ARCHITECT PRIOR TO ROUGH-IN.
22. DO NOT INSTALL DISPOSAL SWITCHES OR GFCI PROTECTION BEHIND SINKS.
23. EMT IS NOT ALLOWED OUT OF DOORS.
24. DO NOT INSTALL IN-GRADE JUCTION BOXES UNLESS SPECIFICALLY SHOWN ON DRAWINGS. CONDUCTORS SHALL BE RUN CONTINOUS WITHOUT SPLICING FROM SOURCE OR DEVICE TO NEXT DEVICE.
25. DO NOT INSTALL FEEDERS OR CIRCUITING EXPOSED ON ROOFTOPS OR RUNNING HORIZONTALLY WITHIN 36' OF ROOFTOPS.
26. CIRCUIT WIRE SIZES MUST, AT MINIMUM, MATCH NEC REQUIRED CONDUUCTOR SIZES FOR CORRESPONDING OVERCURRENT PROCTECTIVE DEVICES. VERIFY WITH PANEL SCHEDULES BEFORE PULLING WIRE.
27. HOME RUNS MUST BE RUN EXACTLY AS SHOWN ON PLANS UNLESS OTHERWISE NOTED. DO NOT COMBINE HOME RUNS INTO ONE CONDUIT THAT ARE NOT SHOWN COMBINED ON THE DRAWINGS.
28. THE ELECTRICAL CONTRACTOR SHALL RUN BRANCH CIRCUIT CONDUITS IN ATTIC SPACES IN A NEAT AND WORKMANLIKE MANNER SO AS TO CONSERVE OPEN SPACES AS MUCH AS POSSIBLE. HVAC DUCTWORK AND PLUMBING SHALL HAVE LOCATION PRIORITY OVER BRANCH CIRCUIT CONDUIT RUNS.
29. CIRCUIT WIRING SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS. ANY DEVIATIONS SHALL BE INITIATED BY A CHANGE ORDER FROM THE ARCHITECT. OTHERWISE THE RECORD SET SHALL MATCH THE CONSTRUCTION SET.
30. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR, PULLED INTO THE CONDUIT WITH THE PHASE CONDUCTOR, IN ALL SERVICE, FEEDER, AND BRANCH CIRCUITS.
31. PROVIDE A NEUTRAL CONDUCTOR FOR EACH BREAKER TRIP HANDLE. NEUTRALS SHALL NOT BE SHARED BETWEEN BRANCH CIRCUITS.
32. ALL CIRCUITS TO BE MINIMUM #12 CU IN MINIMUM 3/4" CONDUIT UNLESS OTHERWISE NOTED.
33. WHERE ALLOWED BY CODE, MC CABLE IS AN APPROVED ALTERNATE TO CONDUCTORS IN CONDUIT FOR CONCEALED BRANCH CIRCUIT WIRING BETWEEN DEVICES, BUT NOT FOR HOME-RUNS. HOME RUNS TO BE RAN IN CONDUIT COMPLETE FROM PANEL TO FIRST DEVICE OR FIXTURE ON CIRCUIT.
34. DO NOT INSTALL MORE THAN THREE PHASE CONDUCTORS IN ANY HOME-RUN CONDUITS UNLESS SPECIFICALLY INDICATED ON DRAWINGS.
35. IDENTIFY ALL OUTLET COVER PLATES WITH THE PANEL AND CIRCUIT NUMBER.
36. A GFI OUTLET SHALL BE INSTALLED AT EACH LOCATION DESIGNATED BY "GFI" ON THE DRAWINGS. DOWNSTREAM PROTECTION BY A GFI OUTLET UPSTREAM IS NOT ALLOWED.
37. OUTLETS, SWITCHES, AND COVER PLATES TO BE COLOR CODED (BROWN, WHITE, IVORY, OR GRAY) TO THE WALL THEY ARE MOUNTED ON AS DIRECTED BY THE ARCHITECT.
38. ALL CONVENIENCE OUTLETS MUST BE MOUNTED FLUSH WITH THE COVER PLATE AND SECURED FIRMLY TO THE OUTLET BOX.
39. THE CONTRACTOR SHALL TAKE SPECIAL CARE TO MAKE SURE OUTLET BOXES ARE SET FLUSH WITH FINISH WALL SURFACES WHERE WALL PANELING OR ACOUSTICAL WALLS ARE INSTALLED OR WHERE OUTLETS ARE INSTALLED ON CARPETED RISERS.
40. GFI OUTLETS SHALL BE INSTALLED AND/OR CIRCUITED SO THAT THE TRIPPING OF A GFI OUTLET IN A STUDENT ACCESSED AREA WILL NOT SHUT OF ANY DOWN-STREAM OUTLETS.
41. REMOVE ALL OLD AND/OR UNUSED EXISTING CONDUIT AND ELECTRICAL APPARATUS FROM EXTERIOR OR INTERIOR EXPOSED SURFACES.
42. WHERE EXISTING ELECTRICAL EQUIPMENT IS TO REMAIN BUT THE SURFACE THAT IT IS MOUNTED ON IS TO BE REWORKED UNDER OTHER CONTRACTS, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND INSTALL OR MODIFY THE EXISTING EQUIPMENT AS REQUIRED TO MEET THE DESIGN INTENT. SEE ARCHITECTURAL DRAWINGS FOR ROOF, CEILINGS, WALLS, SOFFITS, FLOORS, ETC.
43. REMOVE ALL UNUSED CONDUITS AND CIRCUITS IN THE DEMOLTIONED AREA AS THEY ARE IDENTIFIED AS UNUSED OR ABANDONED.
44. REMOVE ALL EXISITING ELECTRICAL DEVICES, EQUIPMENT, AND APPARATUS AS THEY ARE IDENTIFIED AS UNUSED OR ABANDONED.
45. RELOCATE EXISTING CONDUITS AND CIRCUITS AS REQUIRED THAT ARE PRESENTLY SERVING EQUIPMENT THAT IS INTENDED TO REMAIN IN SERVICE BUT SAID CONDUITS ARE CURRENTLY RUNNING THROUGH AREAS TO BE DEMOLITIONED.
46. WHERE EXISTING CONDUIT RUNS ARE RE-USED BY SPECIAL PERMISSION FROM THE ARCHITECT, A SEPARATE GREEN, INSULATED GROUND WIRE SHALL BE PULLED IN THE CONDUIT AND BONDED AT EACH END AS REQUIRED.
47. RE-ROUTE EXISTING CIRCUIT CONDUITS AS REQUIRED AT ALL AREAS WHERE EXISTING WALLS ARE TO BE DEMOLITIONED OR HAVE DOORWAYS CUT IN THEM. PLAN ON AN AVERAGE OF ONE, 3/4" CONDUIT RELOCATION FOR EACH PENETRATION OR WALL REMOVAL.
48. FIELD VERIFY CONDITIONS FOR NEW WIRING. SURFACE RACEWAYS MUST RECEIVE PRIOR APPROVAL FROM THE ARCHITECT AND OWNER AND WILL BE EVALUATED ON A CASE BY CASE BASIS DURING CONSTRUCTION. APPROVED RACEWAYS MUST BE PAINTED TO MATCH THE SURFACE ON WHICH THEY ARE MOUNTED.
49. ALL PATCH, REPAIR, REPAINT AND COVER UP REQUIRED AS A RESULT OF ELECTRICAL REMODEL IS TO BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR, BUT ACTUAL WORK IS TO BE PERFORMED BY QUALIFIED PERSONNEL.
50. ALL RECESSED LIGHT FIXTURES MUST CONFORM TO NEC 410
51. ALL RECESSED LIGHT FIXTURES THAT PENETRATE THE BUILDING THERMAL ENVELOPE SHALL BE SEALED WITH A GASKET OR CAULK BETWEEN THE HOUSING AND INTERIOR WALL OR CEILING COVERING
52. COORDINATE LOCATION OF CEILING LIGHT FIXTURES WITH THE REFLECTED CEILING PLAN.
53. FIXTURE COUNTS SHOWN ON DRAWINGS ARE FOR REFERENCE ONLY. CONTRACTOR IS RESPONSIBLE TO VERIFY FIXTURE COUNTS AS PART OF BIDDING PROCESS.
54. ELECTRICAL CONTRACTOR SHALL VERIFY CEILING THICKNESSES AND USE CEILING TRIM EXTENDERS ON DOWNLIGHTS AS REQUIRED.
55. ELECTRICAL CONTRACTOR SHALL REVIEW THE EXACT LOCATION OF ALL SKYLIGHTS WITH THE GENERAL CONTRACTOR PRIOR TO ROUGH-IN OF CEILING OUTLET BOXES.
56. COORDINATE LOCATION OF ALL CLOSET LIGHTS WITH MILLWORK. CENTER OUTLET BOX FOR LIGHT FIXTURE 6' FROM WALL ABOVE DOOR.
57. SUPPORT RECESSED T-BAR MOUNT FIXTURES WITH FOUR EXTRA GALVANIZED WIRE SUPPORTS ON OPPOSITE CORNERS PER IBC. CONNECT WIRES TO BUILDING STRUCTURE.
58. CONNECT EMERGENCY CIRCUIT OF EMERGENCY LIGHT BATTERY PACK TO UNSWITCHED LIGHTING CIRCUIT SERVING FIXTURES IN AREA. INSTALL EXTRA CONDUCTORS AS REQUIRED. WIRE SO LAMPS IN NORMAL MODE ARE CONTROLLED AS NOTED ON LIGHTING PLANS. PROVIDE ADDITIONAL BALLASTS AS REQUIRED.
59. WHERE LIGHT FIXTURES AS SPECIFIED AS COLOR PER ARCHITECT, THIS SHALL BE INTERPRETED AS A NON-STANDARD COLOR
60. THE CONTRACTOR SHALL PROVIDE A WIRE MESH COVER OVER ALL RECESSED LIGHTS TO KEEP BLOWN IN INSULATION AT LEAST THREE INCHES AWAY FROM THE FIXTURE HOUSING.
61. EMERGENCY LIGHT BATTERY PACKS SHALL BE CONNECTED SO AS TO BE ABLE TO OPERATE IN THE TEST MODE WHEN THE NORMAL SWITCH LEG IS TURNED ON, AND SHALL ILLUMINATE ONE FIXTURE LAMP UNLESS OTHERWISE NOTED.
62. OVER-MIRROR WALL LIGHTS ARE TO BE MOUNTED SO THE LENS FACES DOWNARD.
63. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW ALL SWITCH LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO ROUGH-IN TO PREVENT ANY SWITCHES FROM BEING LOCATED ON THE WRONG SIDE OF THE DOOR.
64. COORDINATE LOCATION OF EXIT LIGHTS WITH ARCHITECT.
65. PROVIDE MANUFACTURER STANDARD WIRE-GUARDS FOR EXIT AND BUG-EYE EMERGENCY LIGHTS AND/OR OCCUPANCY SENSORS SHOWN IN THE GYMNASIUM AND MULTI-PURPOSE ROOMS.
66. COORDINATE LOCATION OF LIGHT FIXTURES IN MECHANICAL ROOMS WITH MECHANICAL EQUIPMENT. DETERMINE FINAL FIXTURE LOCATIONS AFTER DUCTWORK INSTALLATION HAS BEEN COMPLETED. CHAIN SUSPEND FIXTURES UNDER DUCTWORK AND CONDUIT RACKS AS REQUIRED.
67. PENDANT FIXTURES SHALL HAVE SEISMIC RATED PENDANT CONNECTIONS AND SWIVEL JOINTS THAT ALLOW 45 DEGREE SWING IN ANY DIRECTION. SEISMICALLY BRACE FIXTURES WHERE OBSTRUCTIONS LIMIT SWINGING MOTION AND AS OTHERWISE REQUIRED.
68. VERIFY FIXTURE COUNT WITH REFLECTED CEILING PLAN.
69. THE BOTTOM OF WALL MOUNTED FIXTURES MUST BE A MINIMUM OF 6'-8" AFF UNLESS FIXTURES ARE ADA COMPLIANT.
70. EXHAUST FANS FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR.
71. REFER TO MECHANICAL PLANS FOR EXACT LOCATION OF MECHANICAL EQUIPMENT.
72. ELECTRICAL CONTRACTOR SHALL FURNISH ALL MOTOR DISCONNECTS, STARTERS, AND CONTROL STATIONS FOR MECHANICAL EQUIPMENT UNLESS THE SAME IS FURNISHED AS AN INTEGRAL PART OF THE EQUIPMENT. VERIFY WITH MECHANICAL CONTRACTOR PRIOR TO BID.
73. THERMOSTAT AND CONTROL WIRING FOR MECHANICAL EQUIPMENT BY MECHANICAL CONTRACTOR.
74. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE NUMBER AND LOCATION OF FIRE/SMOKE DAMPERS WITH MECHANICAL DRAWINGS. CONNECT TO 120V POWER THROUGH RELAY CONTROLLED BY FIRE ALARM.
75. ELECTRICAL CONTRACTOR SHALL COORDINATE THE ROUTING OF CONDENSATE LINES ON MECHANICAL PADS WITH THE MECHANICAL CONTRACTOR. WIREWAYS AND DISCONNECTS REQUIRE 3-FEET FRONTAL CLEARANCE AND A MINIMUM 30" WIDTH CLEARANCE, OR THE WIDTH OF THE UNIT, WHICHEVER IS GREATER.
76. PROVIDE SAFETY DISCONNECTS AS REQUIRED AT ALL CONNECTIONS TO MECHANICAL EQUIPMENT.
77. WHERE AUTOMATIC SPRINKLER CONTROLS ARE SHOWN ON THE LANDSCAPE OR ARCHITECTURAL DRAWINGS, PROVIDE A FLUSH SINGLE-GANG J-BOX BEHIND THE CONTROL AND CONNECT TO THE NEAREST OUTLET CIRCUIT WITH AVAILABLE CAPACITY.
78. INSTALL WEATHERPROOF GFI DUPLEX OUTLETS ADJACENT TO EACH ROOFTOP HVAC UNIT (UNLESS OUTLET IS PROVIDED AS PART OF EQUIPMENT). SEE MECHANICAL PLANS AND SPECIFICATIONS.
79. LOCATE OUTLETS FOR ELECTRIC WATER COOLERS SO THAT THE OUTLET AND CORDS ARE CONCEALED FROM VIEW. SEE DETAIL FOR ADDITIONAL INSTALLATION REQUIREMENTS.
80. DISCONNECT SWITCHES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. CONTRACTOR SHALL FIELD VERIFY LOCATION OF ALL ELECTRICAL SWITCHES AND MOTOR CONTROL FOR PROPER CODE CLEARANCES. NOTIFY ARCHITECT IMMEDIATELY OF ANY CONFLICTS WITH OTHER TRADES REGARDING PROPER EQUIPMENT CLEARANCES.
81. ALL DISCONNECT SWITCHES FOR MOTORS SHALL BE RATED A MINIMUM OF 22000 AIC UNLESS OTHERWISE SHOWN.
82. COORDINATE LOCATION OF THERMOSTATS, SENSORS, AND ATC JUNCTION BOXES WITH MECHANICAL CONTRACTOR BEFORE INSTALLATION.
83. BEFORE RUNNING CONDUITS, PLACING OUTLETS OR ORDERING EQUIPMENT, THE CONTRACTOR SHALL REVIEW THE SPECIFICATIONS AND DESIGN AND SHOP DRAWINGS OF THE OTHER TRADES SERVED BY THE CONDUIT, OUTLETS, AND/OR EQUIPMENT.
84. PROVIDE NEUTRAL CONNECTION TO 208/240/480V, SINGLE-PHASE EQUIPMENT. RUN SEPARATE GROUND WIRE TO ALL OUTDOOR UNITS AND BOND TO THE EQUIPMENT GROUND LUG.
85. ELECTRICAL CONTRACTOR SHALL INSTALL A PULL STRING IN ALL COMMUNICATIONS, SECURITY, AND OTHER LOW VOLTAGE CONDUITS FOR USE BY LOW VOLTAGE SYSTEM CONTRACTOR.
86. ELECTRICAL CONTRACTOR SHALL INSTALL A PULL STRING IN ALL UNUSED POWER AND LIGHTING CONDUITS.
87. WHERE THE MECHANICAL CONTRACTOR HAS INSTALLED SMOKE DETECTORS WITHIN ANY DUCTWORK, THE ELECTRICAL CONTRACTOR SHALL INSTALL ADDITIONAL HARDWARE AND CONTROL WIRING TO THE FIRE-ALARM PANEL AS REQUIRED FOR FIRE-ALARM DETECTION AND NOTIFICATION. PROVIDE ADDITIONAL SMOKE DETECTOR IF FACTORY INSTALLED DETECTOR IS INCOMPATIBLE WITH FIRE-ALARM SYSTEM.
88. INSTALL CEILING SMOKE AND HEAT DETECTORS A MINIMUM OF THREE FEET AWAY FROM ANY SUPPLY AIR DUCT.
89. FIELD VERIFY THE EXACT LOCATION OF THE MAIN FIRE ALARM PANEL WITH THE ARCHITECT PRIOR TO INSTALLATION.
90. BID TO RUN FIRE ALARM RACEWAYS CONCEALED. ANY SURFACE RACEWAYS (WIREMOLD #700 ONLY) MUST BE PRIOR APPROVED BY THE ARCHITECT/OWNER AND PAINTED TO MATCH THE SURFACE IT IS MOUNTED ON.
91. COORDINATE LOCATION OF ALL FIRE ALARM DEVICES WITH NFPA AND ADA REQUIREMENTS. COORDINATE LOCATIONS WITH MILLWORK AS REQUIRED.
92. REVIEW THE STATE DESIGN REQUIREMENTS MANUAL PRIOR TO BID.
93. WHERE THERE ARE CONFLICTS IN THE DRAWINGS AND/OR SPECIFICATIONS THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER PRIOR TO BID. WHERE NO NOTIFICATION IS GIVEN THE MORE STRINGENT INTERPRETATION (GENERALLY INTERPRETED TO BE THE MORE COSTLY) WILL BE ENFORCED.

ELECTRICAL LEGEND

ANNOTATIONS

X / XXX	DETAIL CALL-OUT; TOP "X" REFERS TO DETAIL NUMBER & BOTTOM "XXX" REFERS TO SHEET NUMBER
#	KEYED NOTE CALLOUT
##	EQUIPMENT CALLOUT
xCDy	COMMUNICATIONS RACEWAY: "x" CONDUITS OF "y" DIAMETER

LIGHTING FIXTURES

	EXIT LIGHT: CEILING - FACE(S) AS SHOWN
	EXIT LIGHT: WALL - FACE(S) AS SHOWN
	EXIT LIGHT: FACE SIDE
	EXIT LIGHT: DIRECTIONAL ARROWS, DOUBLE FACE
	RECESSED FIXTURE
	STRIP LIGHT
	FLUORESCENT FIXTURE
	EMERGENCY FIXTURE
	WALL MOUNT FIXTURE

LIGHTING CONTROL

$^X	SINGLE POLE SWITCH; "x" INDICATES SWITCH GROUP
$LV	LOW VOLTAGE SWITCH; ACUITY N-LIGHT SYSTEM OR EQUIVALENT
$4	FOUR WAY SWITCH
$ LCX/Y	LIGHTING CONTROL OVERRIDE SWITCH; X=CONTROL ZONE #1, Y=CONTROL ZONE #2
DLV	DIMMER SWITCH: LED; 600 W MINIMUM; ACUITY N-LIGHT SYSTEM OR EQUIVALENT
XS LV	WALL MOUNT OCCUPANCY SENSOR; ADAPTIVE TECHNOLOGY; LOW-VOLTAGE; ACUITY N-LIGHT SYSTEM OR EQUIVALENT VS = VACANCY SENSOR SETTING OS = OCCUPANCY SENSOR SETTING
S XS	OCCUPANCY/VACANCY SENSOR: DUAL TECHNOLOGY VS = VACANCY SENSOR SETTING OS = OCCUPANCY SENSOR SETTING
S DT	OCCUPANCY/VACANCY SENSOR: DUAL TECHNOLOGY
S PR	OCCUPANCY/VACANCY SENSOR: PASSIVE INFRARED
S US	OCCUPANCY/VACANCY SENSOR: ULTRASONIC
S #	OCCUPANCY/VACANCY SENSOR: # INDICATES WATTSTOPPER CAT# FOR COVERAGE PATTERN OR EQUIVALENT AS SPECIFIED

BRANCH CIRCUITING

	SIMPLEX OUTLET
	SIMPLEX OUTLET: GROUND FAULT INTERRUPTER
	DUPLEX OUTLET
	DUPLEX OUTLET: ISOLATED GROUND - ORANGE DEVICE AND PLATE
	FACELESS GFCI PROTECTION DEVICE
	DUPLEX OUTLET: GROUND FAULT INTERRUPTER
EWC	ELECTRIC WATER COOLER OUTLET
USB	DUPLEX RECEPTACLE WITH (2)USB; LEVITON T5832 SERIES OR EQUIVALENT
WP	DUPLEX OUTLET: WEATHERPROOF
	DOUBLE DUPLEX OUTLET
	DOUBLE DUPLEX OUTLET: GROUND FAULT INTERRUPTER
	DOUBLE DUPLEX OUTLET: ISOLATED GROUND - ORANGE DEVICE AND PLATE
FB#	FLOOR OUTLET: WIREMOLD RFB4-S38BBTCBK, 2 DUPLEX, 1 DATA, 1 TELEPHONE UNLESS OTHERWISE NOTED IN FLOOR BOX SCHEDULE
J	JUNCTION BOX
	SPECIAL OUTLET: SEE PANEL SCHEDULE
	DISCONNECT; NO OVER-CURRENT PROTECTION
	DISCONNECT WITH OVER-CURRENT PROTECTION (CIRCUIT BREAKER STYLE OR AS SPECIFIED)
	COMBINATION DISCONNECT/MOTOR STARTER; NO OVER-CURRENT PROTECTION
	COMBINATION DISCONNECT/MOTOR STARTER WITH OVERCURRENT PROTECTION (CIRCUIT BREAKER STYLE OR AS SPECIFIED)
$m	MOTOR PROTECTIVE THERMAL SWITCH
$SSU	MOTOR PROTECTIVE FUSED THERMAL SWITCH
	QUANTITY OF CONDUCTORS: SHORT LINES = NEUTRAL/GROUND LONG LINES = PHASE /SWITCH
	HOME-RUN
	CIRCUITING: NORMAL SOURCE

POWER AND DISTRIBUTION

	DISTRIBUTION PANEL
	PANELBOARD
	METER/METER SOCKET

COMMUNICATIONS

	COMMUNICATIONS RACK
CMJ	COMMUNICATIONS RACEWAY; OPEN D-RINGS OR J-HOOKS. SEE DETAILS AND SPECIFICATIONS
LR#	COMMUNICATIONS LADDER RACK. SEE SPECIFICATIONS AND/OR SCHEDULES
	PHONE BACKBOARD
	TELEVISION OUTLET (4-11/16"sq x 2-3/4"D J-BOX; 5/8",1-GANG MUD RING; 1" CONDUIT, (2)RG-6 COAX)
	COMMUNICATIONS OUTLET, 1-PORT DEVICE, COMMUNICATIONS BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (1)CAT 6A CABLE/JACK
	COMMUNICATIONS OUTLET, 2-PORT DEVICE, COMMUNICATIONS BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (2)CAT 6A CABLES/JACKS
	COMMUNICATIONS OUTLET, 3-PORT DEVICE, COMMUNICATIONS BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (3)CAT 6A CABLES/JACKS
x	COMMUNICATIONS OUTLET, 6-PORT DEVICE, COMMUNICATIONS BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (X)CAT 6A CABLES/JACKS
W	COMMUNICATIONS OUTLET, WALL PHONE, 2-PORT DEVICE, COMMUNICATIONS BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (2) CAT 6A CABLES/JACKS
WAP	COMMUNICATIONS OUTLET, WIRELESS ACCESS POINT,2-PORT DEVICE, COMMUNICATIONS BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (2)CAT 6A CABLES/JACKS

FIRE ALARM

FACP	FIRE ALARM CONTROL PANEL
ANN	FIRE ALARM REMOTE ANNUNCIATOR PANEL
	SMOKE DETECTOR
DD	DUCT DETECTOR
CM	CONTROL/RELAY MODULE
x	STROBE;"X" = MINIMUM CANDELA RATING
x	CEILING MOUNTED STROBE;"X" = MINIMUM CANDELA RATING
x	HORN AND STROBE;"X" = MINIMUM CANDELA RATING
x	CEILING MOUNTED HORN AND STROBE;"X" = MINIMUM CANDELA RATING
RTS	DETECTOR REMOTE TEST SWITCH WITH INDICATING LIGHT

SECURITY

SEC	SECURITY SYSTEM HEAD END EQUIPMENT
	CCTV CAMERA : WALL MOUNT
	CCTV CAMERA : DOME TYPE CEILING MOUNT
ES	ELECTRIC STRIKE, (4SD J-BOX ABOVE CEILING; 1/2" CONDUIT STUB INTO DOOR FRAME)
CR	CARD READER (4SD J-BOX WALL; 4SD J-BOX ABOVE CEILING; 1/2" CONDUIT BETWEEN BOXES)
MS	MOTION SENSOR: INFRARED
EPT	EMERGENCY POWER TRANSFER, (4SD J-BOX ABOVE CEILING; 1/2" CONDUITS STUB DOWN DOOR FRAME TO ELECTRIFIED HINGE)

AUDIO/VISUAL

S A/V	SPEAKER : LOCAL AUDIO VISUAL SYSTEM SPEAKER

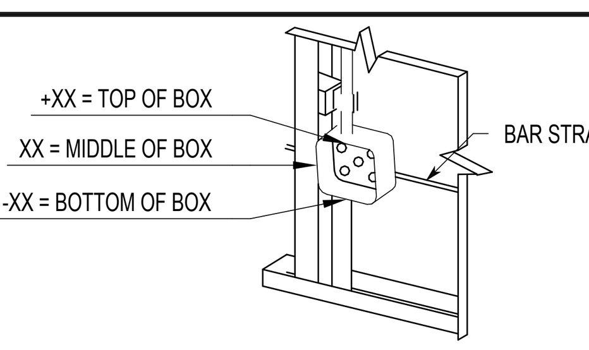
SITE ELECTRICAL

1ØUP	1-PHASE UNDERGROUND PRIMARY POWER
1ØUS	1-PHASE UNDERGROUND SECONDARY POWER
(E)3ØUP	3-PHASE UNDERGROUND PRIMARY POWER : EXISTING
(E)3ØUS	3-PHASE UNDERGROUND SECONDARY POWER : EXISTING
3ØUP	3-PHASE UNDERGROUND PRIMARY POWER
3ØUS	3-PHASE UNDERGROUND SECONDARY POWER
(E)UT	UNDERGROUND TELEPHONE : EXISTING
(E)UTV	UNDERGROUND TV : EXISTING
UT	UNDERGROUND TELEPHONE
UTV	UNDERGROUND TV
	POINT OF DISCONNECTION
	POINT OF CONNECTION
	UTILITY POLE

ONE-LINE

XA YP	BREAKER : "x" = BREAKER AMPERAGE "y" = QUANTITY OF POLES
	BRANCH PANEL
	BRANCH PANEL WITH MAIN BREAKER
	BRANCH PANEL WITH SUB FEED BREAKER
x	FEEDER SIZE (REFER TO CONDUIT AND CONDUCTOR SCHEDULE UNLESS OTHERWISE NOTED)
	GROUND
M	CT AND METER
M	DIRECT METER
hp	MOTOR : hp = MOTOR HORSEPOWER

GENERAL WALL MOUNTED BOX HEIGHT DETAIL



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ELECTRICAL ABBREVIATIONS

A	AMPERE	MAX	MAXIMUM
AF	AMP FUSE	MCB	MAIN CIRCUIT BREAKER
AFF	ABOVE FINISHED FLOOR	MECH	MECHANICAL
AFG	ABOVE FINISHED GRADE	MFR	MANUFACTURER
AFI	ARC-FAULT CIRCUIT-INTERRUPTER	MIN	MINIMUM
AIC	AMPERE INTERRUPTING CAPACITY	MLO	MAIN LUGS ONLY
AL	ALUMINUM	MTD	MOUNTED
ARCH	ARCHITECT(URAL)	NEC	NATIONAL ELECTRICAL CODE
AS	AMP SWITCH	NECA	NATIONAL ELECTRICAL CONTRACTOR'S ASSOCIATION
AWG	AMERICAN WIRE GAUGE	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
BLDG	BUILDING	N, NEUT	NEUTRAL
BKBD	BACKBOARD	NFC	NATIONAL FIRE CODE
C	CONDUIT	NC	NORMALLY CLOSED
CAB	CABINET	NIC	NOT IN CONTRACT
CAT	CATALOG/CATEGORY	NL	NIGHT LITE
C/B	CIRCUIT BREAKER	NO	NORMALLY OPEN
CKT	CIRCUIT	NTS	NOT TO SCALE
CLG	CEILING	OCP	OVERCURRENT PROTECTION
CO	CONDUIT ONLY	P	POLE
COMM	COMMUNICATION	PH	PHASE
CONN	CONNECTION	PNL	PANEL
CU	COPPER	PWR	POWER
DEMO	DEMOLITION/DEMOLISH	QTY	QUANTITY
DISC	DISCONNECT	RECEP	RECEPTACLE
DN	DOWN	REQ'D	REQUIRED
DWG	DRAWING	RGSC	RIGID GALVANIZED STEEL CONDUIT
EA	EACH	RM	ROOM
ELEC	ELECTRICAL	SCHED	SCHEDULE
ELEV	ELEVATOR	SECT	SECTION
EMER, EM	EMERGENCY	SP	SINGLE POLE
EMT	ELECTRICAL METALLIC TUBING	SN	SOLID NEUTRAL
EOLR	END OF LINE RESISTOR	SPEC	SPECIFICATION
EQUIP	EQUIPMENT	SW	SWITCH
EX, EXIST	EXISTING	SWBD	SWITCHBOARD
FBO	FURNISHED BY OTHERS	SWGR	SWITCH GEAR
FCU	FAN COIL UNIT	SYS	SYSTEM
FF	FINISHED FLOOR	TEMP	TEMPORARY
FIXT	FIXTURE	TELE	TELEPHONE
FLEX	FLEXIBLE METALLIC CONDUIT (STEEL)	TWP	TWISTED PAIR
FLUOR	FLUORESCENT	TWSP	TWISTED SHEILDED PAIR
FT	FEET OR FOOT	XFMR	TRANSFORMER
GFI	GROUND FAULT INTERRUPTER	T-STAT	THERMOSTAT
G, GND	GROUND	TYP	TYPICAL
HP	HORSEPOWER	UBC	UNIFORM BUILDING CODE
HVAC	HEATING, VENTILATING & AIR CONDITIONING	UL	UNDERWRITERS LABORATORY
IG	ISOLATED GROUND	UMC	UNIFORM MECHANICAL CODE
IMC	INTERMEDIATE METAL CONDUIT	UNO	UNLESS NOTED OTHERWISE
IN	INCH(ES)	V	VOLT OR VOLTAGE
ISC	SHORT CIRCUIT AMPERES, KA	VA	VOLT AMPERE
JB, J-BOX	JUNCTION BOX	W	WATT
KCMIL	THOUSAND CIRCULAR MILS	W/	WITH
KVA	KILOVOLT AMPERE	WG	WIRE GUARD
KW	KILOWATT	WP	UL LISTED WEATHERPROOF, NEMA 3R or 4
LTG	LIGHTING		

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK: DATE: DESCRIPTION:

PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER No. 294174 SHANE D. SWENSON 2/5/2024 STATE OF UTAH

CONSTRUCTION DOCUMENTS

ABBREVIATIONS, G.P.N., LEGEND & SHEET INDEX

E-001.1

SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL
1.1 PERFORMANCE REQUIREMENTS
A. Seismic Performance: Electrical equipment shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.
1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
1.2 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
1.3 SLEEVES FOR RACEWAYS AND CABLES
A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
B. Sleeves for Rectangular Openings: Galvanized sheet steel.
1.4 SLEEVE SEALS
A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
1. Sealing Elements: EPDM or NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
2. Pressure Plates: Stainless steel. Include two for each sealing element.
3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.
1.5 ELECTRICAL ENCLOSURES
A. Flush- and surface-mounted cabinets.
1. Rated for environmental conditions at installed location.
a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
b. Outdoor Locations: NEMA 250, Type 3R.
c. Kitchen Areas: NEMA 250, Type 4X, stainless steel.
d. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
1.6 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION
A. Comply with NECA 1.
B. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
C. Right of Way: Give to piping systems installed at a required slope.
1.7 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS
A. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
B. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
C. Seal space outside of sleeves with grout for penetrations of concrete and masonry
D. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials.
E. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
1.8 FIRESTOPPING
A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly.

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
1.1 CONDUCTORS AND CABLES
A. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-2-THWN-2 or Type XHHW-2.
B. Multiconductor Cable: Comply with NEMA WC 70/ICEA S-95-658 for metal-clad cable, Type MC and Type SOW with ground wire.
1.2 CONNECTORS AND SPLICES
A. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.
1.3 CONDUCTOR MATERIAL APPLICATIONS
A. Feeders: Copper for feeders smaller than No. 4 AWG; copper or aluminum for feeders No. 4 AWG and larger.
B. Branch Circuits: Copper.
1.4 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS
A. Feeders: Type THHN-2-THWN-2 or Type XHHW-2, single conductors in raceway.
B. Exposed Branch Circuits, Including in Crawlspaces: Type THHN-2-THWN-2, single conductors in raceway.
C. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-2-THWN-2, single conductors in raceway or Metal-clad cable, Type MC (for connections between devices on the same circuit, but not for home-runs).
D. Cord Drops and Portable Appliance Connections: Type SOW, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.
1.5 INSTALLATION OF CONDUCTORS AND CABLES
A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
C. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
D. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."
1.6 CONNECTIONS
A. Make splices, terminations, and taps that are compatible with conductor material.
1. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.
B. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.
1.7 IDENTIFICATION
A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
1.1 CONDUCTORS
A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
B. Bare Copper Conductors:
1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
1.2 CONNECTORS
A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
1.3 GROUNDING ELECTRODES
A. Ground Rods: Copper-clad Zinc-coated steel; 3/4 inch by 10 feet in diameter.
1.4 APPLICATIONS
A. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.
B. Conductor Terminations and Connections:
1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Connections to Ground Rods: Bolted connectors.
3. Connections to Structural Steel: Welded connectors.
1.5 EQUIPMENT GROUNDING
A. Install insulated equipment grounding conductors with all service, feeder, and branch circuits, in addition to those required by NFPA 70:
1.6 INSTALLATION
A. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade unless otherwise indicated.
B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
1.1 PERFORMANCE REQUIREMENTS
A. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
B. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.
1.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS
A. Steel Slotted Support Systems with galvanized metallic coatings and channel dimensions selected for applicable load criteria.
B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
D. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.
1.3 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES
A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
1.4 APPLICATION
A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
1.5 SUPPORT INSTALLATION
A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
B. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts or Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
1.1 METAL CONDUITS, TUBING, AND FITTINGS
A. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
B. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886 and NFPA 70.
2. Fittings for EMT:
a. Material: Steel or die cast.
b. Type: Setscrew or compression.
1.2 NONMETALLIC CONDUITS, TUBING, AND FITTINGS
A. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
1.3 METAL WIREWAYS AND AUXILIARY GUTTERS
A. Description: Sheet metal, complying with UL 870 and NEMA 250, unless otherwise indicated, and sized according to NFPA 70.
B. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
1.4 BOXES, ENCLOSURES, AND CABINETS
A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
B. Sheet Metal Outlet, Device, Pull, and Junction Boxes: Comply with NEMA OS 1 and UL 514A.
C. Cast-Metal Outlet, Device, Pull, and Junction Boxes: Comply with NEMA FB 1, ferrous alloy or aluminum, Type FD, with gasketed cover.
D. Metal Floor Boxes:
1. Material: sheet metal.
2. Type: Fully adjustable.
3. Shape: Rectangular.
4. Listing and Labeling: Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
E. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, with continuous-hinge cover with flush latch unless otherwise indicated.
1.5 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING
A. General Requirements for Handholes and Boxes:
1. Boxes and handholes for use in underground systems shall be designed and identified as defined in NFPA 70, for intended location and application.
2. Boxes installed in wet areas shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel, fiberglass, or a combination of the two.
1. Cover Legend: Molded lettering, "ELECTRIC.".
1.6 RACEWAY APPLICATION
A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
1. Above-grade: GRC.
2. Underground Conduit: RNC, Type EPC-40-PVC or Type EPC-80-PVC where required by utility.
3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
4. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
B. Indoors: Apply raceway products as specified below unless otherwise indicated.
1. Exposed, Not Subject to Physical Damage: EMT.
2. Exposed and Subject to Physical Damage: GRC.
3. Concealed in Ceilings and Interior Walls and Partitions: EMT.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
5. Damp or Wet Locations: GRC.
6. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.
C. Minimum Raceway Size: 3/4-inch trade size.
D. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
1.7 INSTALLATION
A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
B. Raceways Embedded in Slabs: Change from RNC to wrapped, GRC before rising above floor.
C. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways where required by NFPA 70:
D. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to top of box unless otherwise indicated.
E. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
F. Locate boxes so that cover or plate will not span different building finishes.
G. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
H. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.
I. Set metal floor boxes level and flush with finished floor surface.
1.8 INSTALLATION OF UNDERGROUND CONDUIT
A. Direct-Buried Conduit:
1. Excavate trench bottom to provide firm and uniform support for conduit.
2. Install backfill
3. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor.
a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete for a minimum of 12 inches on each side of the coupling.
b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.
4. Underground Warning Tape: Comply with requirements in Section 260553 "Identification for Electrical Systems."
1.9 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES
A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.
B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch above finished grade.

SECTION 260548 - VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS
1.1 PERFORMANCE REQUIREMENTS
A. Seismic-Restraint Loading:
1. Site Class as Defined in the IBC: D.
2. Assigned Seismic Use Group or Building Category as Defined in the IBC: III.
a. Component Importance Factor:
1) General: 1.0.
2) Life Safety (EM): 1.5
b. Component Response Modification Factor:
1) Fixtures: 1.0
2) Equipment: 2.5
3) Conduit and Cables: 5.0.
c. Component Amplification Factor: 2.5.
3. Design Spectral Response Acceleration at Short Periods (0.2 Second): 173%.
4. Design Spectral Response Acceleration at 1.0-Second Period: 76%.
1.2 SEISMIC-RESTRAINT DEVICES
A. General Requirements for Restraint Components: Rated strengths, features, and application requirements shall be as defined in reports by an agency acceptable to authorities having jurisdiction.
1. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.
B. Restraint Cables: ASTM A 603 galvanized-steel cables with end connections made of steel assemblies with thimbles, brackets, swivels, and bolts designed for restraining cable service; and with a minimum of two clamping bolts for cable engagement.
C. Mechanical Anchor: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchors with strength required for anchor and as tested according to ASTM E 488. Minimum length of eight times diameter.
D. Adhesive Anchor: Drilled-in and capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide anchor bolts and hardware with zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.
1.3 APPLICATIONS
A. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static and seismic loads within specified loading limits.
1.4 SEISMIC-RESTRAINT DEVICE INSTALLATION
A. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.
B. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.
C. Drilled-in Anchors:
1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
5. Set anchors to manufacturer's recommended torque, using a torque wrench.
6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.
1.5 ADJUSTING
A. Adjust isolators after isolated equipment is at operating weight.
B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.
C. Adjust active height of spring isolators.
D. Adjust restraints to permit free movement of equipment within normal mode of operation.

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS
1.1 INSTALLATION
A. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
B. Apply identification devices to surfaces that require finish after completing finish work.
C. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
D. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
E. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches (400 mm) overall.
1.2 IDENTIFICATION SCHEDULE
A. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder, and branch-circuit conductors.
a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
b. Colors for 120/240-V Circuits:
1) Phase A: Black.
2) Phase B: Red.
3) Neutral: White with colored stripe to match associated phase
4) Ground: Green
B. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.
C. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.
D. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.
E. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.
F. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive warning labels.
1. Comply with 29 CFR 1910.145.
2. Identify system voltage with black letters on an orange background.
3. Apply to exterior of door, cover, or other access.
G. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
1. Labeling Instructions:
a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.
b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

SECTION 260923 - LIGHTING CONTROL DEVICES
1.1 SUBMITTALS
A. Product Data: For each type of product.
B. Operation and maintenance data
1.2 OUTDOOR PHOTOELECTRIC SWITCHES
A. Description: Solid state, with SPST dry contacts rated for 1800 VA, to operate connected load, complying with UL 773.
1. Light-Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range.
2. Time Delay: Thirty-second minimum, to prevent false operation.
3. Lightning Arrester: Air-gap type.
4. Mounting: Twist lock complying with NEMA C136.10, with base.
1.3 INDOOR OCCUPANCY SENSORS
A. General Requirements for Sensors: Wall- or ceiling-mounted, solid-state indoor occupancy sensors with a separate power pack.
1. Operation: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn them off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor is powered from the power pack.
3. Power Pack: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Sensor has 24-V dc, 150-mA, Class 2 power source, as defined by NFPA 70.
4. Indicator: Digital display, to show when motion is detected during testing and normal operation of sensor.
5. Bypass Switch: Override the "on" function in case of sensor failure.
6. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc; turn lights off when selected lighting level is present.
B. PIR Type: Ceiling mounted; detect occupants in coverage area by their heat and movement.
1. Detector Sensitivity: Detect occurrences of 6-inch- minimum movement of any portion of a human body that presents a target of not less than 36 sq. in..
2. Detection Coverage (Room): Detect occupancy anywhere in a circular area of 1000 sq. ft. when mounted on a 96-inch- high ceiling.
3. Detection Coverage (Corridor): Detect occupancy within 90 feet when mounted on a 10-foot- high ceiling.
C. Dual-Technology Type: Ceiling mounted; detect occupants in coverage area using PIR and ultrasonic detection methods. The particular technology or combination of technologies that control on-off functions is selectable in the field by operating controls on unit.
1. Sensitivity Adjustment: Separate for each sensing technology.
2. Detector Sensitivity: Detect occurrences of 6-inch- minimum movement of any portion of a human body that presents a target of not less than 36 sq. in., and detect a person of average size and weight moving not less than 12 inches in either a horizontal or a vertical manner at an approximate speed of 12 inches/s.
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. when mounted on a 96-inch- high ceiling.
1.4 SWITCHBOX-MOUNTED OCCUPANCY SENSORS
A. General Requirements for Sensors: Automatic-wall-switch occupancy sensor, suitable for mounting in a single gang switchbox.
1. Operating Ambient Conditions: Dry interior conditions, 32 to 120 deg F.
2. Switch Rating: Not less than 800-VA fluorescent at 120 V, 1200-VA fluorescent at 277 V, and 800-W incandescent.
1.5 INSTALLATION
A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.
B. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.
1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.
C. Identify components and power and control wiring according to Section 260553 "Identification for Electrical Systems."
1.6 FIELD QUALITY CONTROL
A. Perform the following tests and inspections:
1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

SECTION 260943 - RELAY-BASED LIGHTING CONTROLS
1.1 ACTION SUBMITTALS
A. Product Data: For each type of product.
B. Shop Drawings: For each relay panel and related equipment.
1.2 SYSTEM DESCRIPTION
A. Input signal from field-mounted manual switches, or digital signal sources, shall open or close one or more lighting control relays in the lighting control panels. Any combination of inputs shall be programmable to any number of control relays.
B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
C. Comply with UL 916.
1.3 LIGHTING CONTROL RELAY PANELS
A. Description: Standalone lighting control panel using mechanically latched relays to control lighting and appliances.
B. Lighting Control Panel:
1. Leviton EZ-Max or equivalent
2. A single enclosure with incoming lighting branch circuits, control circuits, switching relays, and on-board timing and control unit.
3. A vertical barrier separating branch circuits from control wiring.
C. Control Unit: Contain the power supply and electronic control for operating and monitoring individual relays.
1. Timing Unit:
a. 365-day calendar, astronomical clock, and automatic adjustments for daylight savings and leap year.
2. Sequencing Control with Override:
3. Nonvolatile memory shall retain all setup configurations. After a power failure, the controller shall automatically reboot and return to normal system operation, including accurate time of day and date.
D. Relays: Electrically operated, mechanically held single-pole and double-pole switch, rated at 20 A at 277 V. Short-circuit current rating shall be not less than 5 kA. Control shall be three-wire, 24-V ac.
E. Operator Interface:
1. Integral alphanumeric touchscreen with intuitive drop-down menus to assist in programming.
1.4 MANUAL SWITCHES AND PLATES
A. Push-Button Switches: Modular, digitally addressible, for operating one or more relays and to override automatic controls.
1. Match color and style specified in Section 262726 "Wiring Devices."
2. Integral green LED pilot light to indicate when circuit is on.
3. Internal white LED locator light to illuminate when circuit is off.
B. Wall Plates: Single and multigang plates as specified in Section 262726 "Wiring Devices."
C. Legend: Engraved or permanently silk-screened on wall plate where indicated. Use designations indicated on Drawings.
1.5 EXAMINATION
A. Examine panels before installation. Reject panels that are damaged or rusted or have been subjected to water saturation.
1.6 PANEL INSTALLATION
A. Mount panel cabinet plumb and rigid without distortion of box.
B. Install filler plates in unused spaces.
1.7 IDENTIFICATION
A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
1.8 DEMONSTRATION
A. Train Owner's maintenance personnel to adjust, operate, and maintain the control unit and operator interface.

SECTION 262416 - PANELBOARDS
1.1 ACTION SUBMITTALS
A. Product Data: For each type of product indicated.
B. Shop Drawings: For each panelboard and related equipment.
1.2 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
1.3 GENERAL REQUIREMENTS FOR PANELBOARDS
A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Section 260548 "Vibration and Seismic Controls for Electrical Systems."
B. Enclosures: Flush- and surface-mounted cabinets.
1. Rated for environmental conditions at installed location.
2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
3. Directory Card: Inside panelboard door, mounted in transparent card holder.
C. Phase, Neutral, and Ground Buses: Tin-plated aluminum or Hard-drawn copper, 98 percent conductivity.
D. Conductor Connectors: Suitable for use with conductor material and sizes.
1. Material: Tin-plated aluminum or Hard-drawn copper, 98 percent conductivity.
2. Mechanical type.
3. Subfeed (Double) Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
E. Service Equipment Label: NRTL labeled for use as service equipment for panelboards with one or more main service disconnecting and overcurrent protective devices.
F. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
G. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.
1.4 DISTRIBUTION PANELBOARDS
A. Panelboards: NEMA PB 1, power and feeder distribution type.
B. Doors: Secured with vault-type latch with tumbler lock; keyed alike.
C. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes 125 A and Smaller: Plug-in or Bolt-on circuit breakers.
D. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.
1.5 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS
A. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
B. Branch Overcurrent Protective Devices: Plug-in or Bolt-on circuit breakers, replaceable without disturbing adjacent units.
C. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.
1.6 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES
A. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
3. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
a. Standard frame sizes, trip ratings, and number of poles.
b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
d. Shunt Trip: 120 or 24-V (per system requirements) trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.
e. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.
1.7 INSTALLATION
A. Comply with mounting and anchoring requirements specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."
B. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
C. Install overcurrent protective devices and controllers not already factory installed.
1. Set field-adjustable, circuit-breaker trip ranges.
D. Install filler plates in unused spaces.
E. Arrange conductors in gutters into groups and bundle and wrap with wire ties.
F. Comply with NECA 1.
1.8 IDENTIFICATION
A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Section 260553 "Identification for Electrical Systems."
B. Create a directory to indicate installed circuit loads and incorporating Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

SECTION 262713 - ELECTRICITY METERING
1.1 SUMMARY
A. Section includes equipment for electricity metering by utility company.
1.2 SUBMITTALS
A. Product Data: For each type of product indicated.
B. Shop Drawings: Dimensioned plans and sections or elevation layouts and wiring diagrams.
C. Field quality-control reports.
D. Operation and Maintenance Data.
1.3 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
1.4 EQUIPMENT FOR ELECTRICITY METERING BY UTILITY COMPANY
A. Meters will be furnished by utility company.
B. Current-Transformer Cabinets: Comply with requirements of electrical-power utility company.
C. Meter Sockets: Comply with requirements of electrical-power utility company.
1.5 INSTALLATION
A. Comply with equipment installation requirements in NECA 1.
B. Install meters furnished by utility company. Install raceways and equipment according to utility company's written requirements. Provide empty conduits for metering leads and extend grounding connections as required by utility company.
C. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
1. Series Combination Warning Label: Self-adhesive type, with text as required by NFPA 70.

SECTION 262726 - WIRING DEVICES
1.1 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
1. Receptacles for Owner-Furnished Equipment: Match plug configurations.
1.2 GENERAL WIRING-DEVICE REQUIREMENTS
A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
1.3 STRAIGHT-BLADE RECEPTACLES
A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.
B. Isolated-Ground, Duplex Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.
1. Description: Straight blade; equipment grounding contacts shall be connected only to the green grounding screw terminal of the device and with inherent electrical isolation from mounting strap. Isolation shall be integral to receptacle construction and not dependent on removable parts.
1.4 GFCI RECEPTACLES
A. General Description:
1. Straight blade, feed-through type.
2. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596.
3. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection.
B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:
1.5 LOW VOLTAGE SWITCHES
A. Push-Button Switches: Modular, analog interface, for operating one or more relays and to work in conjunction with automatic controls.
1. Match color and style specified in Section 262726 "Wiring Devices."
2. Integral green LED pilot light to indicate when circuit is on.
3. Internal white LED locator light to illuminate when circuit is off.
B. Legend: Engraved or permanently silk-screened on wall plate. Use designations indicating load controlled.
C. 24-volt; Powered from associated power pack serving controlled switching group
1.6 LOW VOLTAGE WALL-BOX DIMMERS
A. Push-Button Switches: Modular, analog interface, for operating one or more relays and to work in conjunction with automatic controls.
1. Match color and style specified in Section 262726 "Wiring Devices."
2. Integral green LED pilot light to indicate when circuit is on.
3. Internal white LED locator light to illuminate when circuit is off.
B. Legend: Engraved or permanently silk-screened on wall plate. Use designations indicating load controlled.
C. 24-volt; Powered from associated power pack serving controlled switching group
D. Control: Continuously adjustable; with single- or multi-location connections.
E. LED Lamp Dimmer Switches: Modular, compatible with dimmer drivers; trim potentiometer to adjust low-end dimming; dimmer-driver combination capable of consistent dimming with low end not greater than 1 percent of full brightness.
1.7 WALL PLATES
A. Single and combination types shall match corresponding wiring devices.
1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Finished Spaces: 0.035-inch- thick, satin-finished, Type 302 stainless steel.
3. Material for Unfinished Spaces: Galvanized steel.
4. Material for Damp Locations: Thermoplastic or Cast aluminum with spring-loaded lift cover, and listed and labeled for use in wet and damp locations.
B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant, die-cast aluminum or thermoplastic with lockable cover.
1.8 FINISHES
A. Device Color:
1. Wiring Devices Connected to Normal Power System: As selected by owner unless otherwise indicated or required by NFPA 70 or device listing.
2. Isolated Ground Devices: Orange.
B. Wall Plate Color: For plastic covers, match device color.
1.9 INSTALLATION
A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.
B. Conductors:
1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Existing Conductors:
a. Cut back and pigtail, or replace all damaged conductors.
b. Straighten conductors that remain and remove corrosion and foreign matter.
c. Pigtailing existing conductors is permitted, provided the outlet box is large enough.
C. Device Installation:
1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
2. Connect devices to branch circuits using pigtails that are not less than 12 inches in length.
3. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
D. Dimmers:
1. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device listing conditions in the written instructions.

SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS
1.1 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
B. Comply with NFPA 70.
1.2 NONFUSIBLE SWITCHES
A. Type GD, General Duty, Single Throw, 600 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.
B. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Lugs: Suitable for number, size, and conductor material.
1.3 MOLDED-CASE CIRCUIT BREAKERS
A. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.
B. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
C. Features and Accessories:
1. Standard frame sizes, trip ratings, and number of poles.
2. Lugs: Suitable for number, size, trip ratings, and conductor material.
3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
1.4 INSTALLATION
A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
B. Comply with NECA 1.
1.5 IDENTIFICATION
A. Comply with requirements in Section 260553 "Identification for Electrical Systems."

SECTION 262913 - ENCLOSED CONTROLLERS
1.1 SUBMITTALS
A. Operation and maintenance data.
1.2 FULL-VOLTAGE CONTROLLERS
A. General Requirements for Full-Voltage Controllers: Comply with NEMA ICS 2, general purpose, Class A.
B. Motor-Starting Switches: "Quick-make, quick-break" toggle or push-button action; marked to show whether unit is off or on.
1. Configuration: Nonreversing.
2. Surface mounting.
3. Pilot light.
C. Fractional Horsepower Manual Controllers: "Quick-make, quick-break" toggle or push-button action; marked to show whether unit is off, on, or tripped.
1. Configuration: Nonreversing.
2. Overload Relays: Inverse-time-current characteristics; NEMA ICS 2, Class 10 tripping characteristics; heaters matched to nameplate full-load current of actual protected motor; external reset push button; bimetallic type or melting alloy type.
3. Surface mounting.
4. Pilot light.
1.3 INSTALLATION
A. Wall-Mounted Controllers: Install enclosed controllers on walls with tops at uniform height, and with disconnect operating handles not higher than 79 inches (2006 mm) above finished floor, unless otherwise indicated, and by bolting units to wall or mounting on lightweight structural-steel channels bolted to wall. For controllers not at walls, provide freestanding racks complying with Section 260529 "Hangers and Supports for Electrical Systems."
B. Seismic Bracing: Comply with requirements specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."
C. Install heaters in thermal overload relays. Select heaters based on actual nameplate full-load amperes after motors have been installed.
D. Identify enclosed controllers, components, and control wiring. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
1. Label each enclosure with engraved nameplate.
1.4 ADJUSTING
A. Set field-adjustable switches and overload-relay pickup and trip ranges.

SECTION 265100 - INTERIOR LIGHTING
1.1 ACTION SUBMITTALS
A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, and finishes.
1.2 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
B. Comply with NFPA 70.
1.3 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS
A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.
B. Metal Parts: Free of burrs and sharp corners and edges.
C. Diffusers and Globes:
1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
a. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
b. UV stabilized.

CONSTRUCTION DOCUMENTS

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK: | DATE: | DESCRIPTION:

PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER
No. 294174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

ELECTRICAL SPECIFICATIONS
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ELECTRICAL SPECIFICATIONS

1.4 LED LUMINAIRES
A. Solid State Drivers and LED: Comply with DOE LM 79
1. Total Harmonic Distortion Rating: Less than 10 percent
2. Transient Voltage protection
3. Power factor: 0.90 or higher
4. Temperatures: Minus 40 deg F (minus 40 deg C) and higher
5. Heat sink to remove heat from circuits
6. L70 compliant to 70,000 hours minimum
7. Color Rendering Index: 80 CRI minimum
8. Dimmable
a. Dimming Range: 100 to 1 percent of rated lamp lumens
b. Input watts: Can be reduced to 20 percent of normal
1.5 EMERGENCY POWER UNIT
A. Internal Type: Self-contained, modular, battery-inverter unit, factory mounted within lighting fixture body and compatible with ballast or driver. Comply with UL 924.
1. Emergency Connection: Operate one lamp(s) continuously at an output of 1100 lumens each. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast or driver.
2. Nightlight Connection: Operate one lamp continuously.
3. Test Push Button and Indicator Light:
4. Battery: Sealed, maintenance-free, nickel-cadmium type.
5. Charger:
6. Integral Self-Test:
1.6 EXIT SIGNS
A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.
B. Internally Lighted Signs:
1. Lamps for AC Operation: LEDs, 50,000 hours minimum rated lamp life.
2. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.
1.7 LIGHTING FIXTURE SUPPORT COMPONENTS
A. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage.
B. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage.
1.8 INSTALLATION
A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.
B. Comply with NFPA 70 for minimum fixture supports.
1.9 FIELD QUALITY CONTROL
A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

SECTION 265600 - EXTERIOR LIGHTING
1.1 STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION
A. Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4-M.
B. Wind Load: Pressure of wind on pole and luminaire and banners and banner arms, calculated and applied as stated in AASHTO LTS-4-M.
1. Basic wind speed for calculating wind load for poles 50 feet high or less is 100 mph.
a. Wind Importance Factor: 1.0.
b. Minimum Design Life: 25 years.
c. Velocity Conversion Factors: 1.0.
1.2 SUBMITTALS
A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, and finishes.
B. Shop Drawings: Anchor-bolt templates keyed to specific poles and certified by manufacturer.
1.3 MANUFACTURERS
A. Products: Subject to compliance with requirements, provide product indicated on Drawings.
1.4 GENERAL REQUIREMENTS FOR LUMINAIRES
A. Sheet Metal Components: Corrosion-resistant aluminum unless otherwise indicated. Form and support to prevent warping and sagging.
B. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
C. Exposed Hardware Material: Stainless steel.
D. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
E. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.
F. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
G. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.
1.5 LED LUMINAIRES
A. Solid State Drivers and LED: Comply with DOE LM 79
1. Total Harmonic Distortion Rating: Less than 10 percent
2. Transient Voltage protection
3. Power factor: 0.90 or higher
4. Temperatures: Minus 40 deg F (minus 40 deg C) and higher
5. Heat sink to remove heat from circuits
6. L70 compliant to 70,000 hours minimum
7. Color Rendering Index: 80 CRI minimum
8. Dimmable
a. Dimming Range: 100 to 1 percent of rated lamp lumens
b. Input watts: Can be reduced to 20 percent of normal
1.6 GENERAL REQUIREMENTS FOR POLES AND SUPPORT COMPONENTS
A. Structural Characteristics: Comply with AASHTO LTS-4-M.
1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure.
2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.
B. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
1. Materials: Shall not cause galvanic action at contact points.
2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication unless otherwise indicated.
3. Anchor-Bolt Template: Plywood or steel.
C. Handhole: Oval-shaped, with minimum clear opening of 2-1/2 by 5 inches, with cover secured by stainless-steel captive screws.
D. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange.
1.7 ALUMINUM POLES
A. Poles: Seamless, extruded structural tube complying with ASTM B 429/B 429M, Alloy 6063-T6 with access handhole in pole wall.
B. Grounding and Bonding Lugs: Welded 1/2-inch threaded lug, complying with requirements in Section 260526 "Grounding and Bonding for Electrical Systems," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.
C. Brackets for Luminaires: Detachable, with pole and adapter fittings of cast aluminum. Adapter fitting welded to pole and bracket, then bolted together with stainless-steel bolts.
D. Aluminum Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
E. Base Covers: Manufacturers' standard metal units, arranged to cover pole's mounting bolts and nuts. Finish same as pole.
1.8 LUMINAIRE INSTALLATION
A. Install lamps in each luminaire.
B. Fasten luminaire to indicated structural supports.
1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.
1.9 INSTALLATION OF INDIVIDUAL GROUND-MOUNTED LUMINAIRES
A. Aim as indicated on Drawings.
B. Install on concrete base with top 4 inches (100 mm) above finished grade or surface at luminaire location. Cast conduit into base, and finish by troweling and rubbing smooth.
1.10 POLE INSTALLATION
A. Alignment: Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on the pole.
B. Clearances: Maintain the following minimum horizontal distances of poles from surface and underground features unless otherwise indicated on Drawings:
1. Fire Hydrants and Storm Drainage Piping: 60 inches.
2. Water, Gas, Electric, Communication, and Sewer Lines: 10 feet.
3. Trees: 15 feet from tree trunk.
C. Concrete Pole Foundations: Set anchor bolts according to anchor-bolt templates furnished by pole manufacturer.
D. Raise and set poles using web fabric slings (not chain or cable).
1.11 GROUNDING
A. Ground metal poles and support structures according to Section 260526 "Grounding and Bonding for Electrical Systems."
1. Install grounding electrode for each pole unless otherwise indicated.
2. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

SECTION 270528 - PATHWAYS FOR COMMUNICATIONS SYSTEMS
1.1 ACTION SUBMITTALS
A. Product Data: For each type of product.
B. Shop Drawings: For each type of cable tray.
C. Delegated-Design Submittal: For seismic restraints.
1.2 METAL CONDUITS AND FITTINGS
A. See section 260533 "Raceways and boxes for Electrical Systems".
1.3 BOXES, ENCLOSURES, AND CABINETS
A. See section 260533 "Raceways and boxes for Electrical Systems" unless otherwise indicated below.
B. Device Box Dimensions: 4 inches square by 2-1/2 inches deep.
1.4 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND CABLING
A. See section 260533 "Raceways and boxes for Electrical Systems".
1.5 WIRE-BASKET CABLE TRAYS
A. Description:
1. Configuration: Wires are formed into a standard 2-by-4-inch wire mesh pattern with intersecting wires welded together. Mesh sections must have at least one bottom longitudinal wire along entire length of section.
2. Materials: High-strength-steel longitudinal wires with no bends.
3. Safety Provisions: Wire ends along wire-basket sides (flanges) rounded during manufacturing to maintain integrity of cables and installer safety.
4. Sizes:
a. Straight sections shall be furnished in standard 118-inch lengths.
b. Wire-Basket Depth: 4-inch usable loading depth by 12 inches wide.
5. Connector Assemblies: Bolt welded to plate shaped to fit around adjoining tray wires and mating plate. Mechanically joins adjacent tray wires to splice sections together or to create horizontal fittings.
6. Connector Assembly Capacity: Splices located within support span shall not diminish rated loading capacity of cable tray.
7. Hardware and Fasteners: ASTM F 593 and ASTM F 594 stainless steel, Type 316.
1.6 PATHWAY APPLICATION
A. See section 260533 "Raceways and boxes for Electrical Systems" unless otherwise indicated below.
B. Indoors: Apply pathway products as specified below unless otherwise indicated:
C. Minimum Pathway Size: 1 inch.
1.7 INSTALLATION
A. See section 260533 "Raceways and boxes for Electrical Systems" unless otherwise indicated below.
B. Install no more than the equivalent of two 90-degree bends in any pathway run. Support within 12 inches of changes in direction. Utilize long radius ells for all optical-fiber cables.
C. Stub-ups to Above Recessed Ceilings:
1. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
D. Coat field-cut threads on PVC-coated pathway with a corrosion-preventing conductive compound prior to assembly.
E. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install insulated bushings on conduits terminated with locknuts.
F. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.
G. Spare Pathways: Install pull wires in empty pathways. Cap underground pathways designated as spare above grade alongside pathways in use.
H. Pathways for Communications Cable: Install pathways as follows:
1. 1-Inch Trade Size and Larger: Install pathways in maximum lengths of 75 feet.
2. Install with a maximum of two 90-degree bends or equivalent for each length of pathway unless Drawings show stricter requirements.
1.8 INSTALLATION OF UNDERGROUND CONDUIT
A. See section 260533 "Raceways and boxes for Electrical Systems" unless otherwise indicated below.
1.9 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES
A. See section 260533 "Raceways and boxes for Electrical Systems" unless otherwise indicated below.

SECTION 271500 - COMMUNICATIONS CABLING
1.1 PERFORMANCE REQUIREMENTS
A. General Performance: Horizontal cabling system shall comply with transmission standards in TIA/EIA-568-B.1, when tested according to test procedures of this standard.
1.2 QUALITY ASSURANCE
A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 50 or less.
B. Telecommunications Pathways and Spaces: Comply with TIA/EIA-569-A.
C. Grounding: Comply with ANSI-J-STD-607-A.
1.3 DELIVERY, STORAGE, AND HANDLING
A. Test cables upon receipt at Project site. Test each pair of UTP cable for open and short circuits.
1.4 PATHWAYS
A. Cable Support: NRTL labeled for support of Category 6A cabling, designed to prevent degradation of cable performance and pinch points that could damage cable.
1. Support brackets with cable tie slots for fastening cable ties to brackets.
2. Lacing bars, spools, J-hooks, and D-rings.
3. Straps and other devices.
B. Conduit and Boxes: Comply with requirements in Division 26 Section "Raceway and Boxes for Electrical Systems." Flexible metal conduit shall not be used.
1. Outlet boxes shall be no smaller than 2 inches wide, 3 inches high, and 2-1/2 inches deep.
1.5 LABELING
A. Comply with TIA/EIA-606-A and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.
1.6 GROUNDING
A. Comply with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems" for grounding conductors and connectors.
1.7 BACKBOARDS
A. Backboards: Plywood, fire-retardant treated, 3/4 by 48 by 96 inches.
1.8 UTP CABLE
A. Description: 100-ohm, 4-pair UTP, covered with a blue thermoplastic jacket.
1. Comply with ICEA S-90-661 for mechanical properties.
2. Comply with TIA/EIA-568-B.1 for performance specifications.
3. Comply with TIA/EIA-568-B.2, Category 6A.
4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444 and NFPA 70 for the following types:
a. Communications, General Purpose: Type CM or CMG; or MPP, CMP, MPR, CMR, MP, or MPG.
b. Communications, Plenum Rated: Type CMP or MPP, complying with NFPA 262.
1.9 UTP CABLE HARDWARE
A. General Requirements for Cable Connecting Hardware: Comply with TIA/EIA-568-B.2, IDC type, with modules designed for punch-down caps or tools. Cables shall be terminated with connecting hardware of same category or higher.
B. Connecting Blocks: 110-style IDC for Category 6A.
C. Cross-Connect: Modular array of connecting blocks arranged to terminate building cables and permit interconnection between cables.
1. Number of Terminals per Field: One for each conductor in assigned cables.
D. Patch Panel: Modular panels housing multiple-numbered jack units with IDC-type connectors at each jack for permanent termination of pair groups of installed cables.
1. Number of Jacks per Field: One for each four-pair UTP cable indicated.
E. Jacks and Jack Assemblies: Modular, color-coded, eight-position modular receptacle units with integral IDC-type terminals.
F. Patch Cords: Factory-made, four-pair cables in varying lengths; terminated with eight-position modular plug at each end.
1. Patch cords shall have bend-relief-compliant boots and color-coded icons to ensure Category 6A performance. Patch cords shall have latch guards to protect against snagging.
1.10 COAXIAL CABLE
A. General Coaxial Cable Requirements: Broadband type, recommended by cable manufacturer specifically for broadband data transmission applications. Coaxial cable and accessories shall have 75-ohm nominal impedance with a return loss of 20 dB maximum from 7 to 806 MHz.
B. RG-6/U (Plenum Rated): NFPA 70, Type CMP.
C. Coaxial-Cable Connectors: Type BNC, 75 ohms.
1.11 TELECOMMUNICATIONS OUTLET/CONNECTORS
A. Jacks: 100-ohm, balanced, twisted-pair connector; four-pair, eight-position modular. Comply with TIA/EIA-568-B.1.
B. Workstation Outlets: Four and six-port-connector assemblies mounted in single faceplate.
1. For use with snap-in jacks accommodating any combination of UTP work area cords.
2. Legend: Snap-in, clear-label covers and machine-printed paper inserts.
1.12 IDENTIFICATION PRODUCTS
A. Comply with TIA/EIA-606-A and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.
B. Comply with requirements in Division 26 Section "Identification for Electrical Systems."
1.13 WIRING METHODS
A. Wiring Method: Install cables in raceways and cable trays except within consoles, cabinets, desks, and counters and except in accessible ceiling spaces, in attics, and in gypsum board partitions where unenclosed wiring method may be used. Conceal raceway and cables except in unfinished spaces.
1. Install plenum cable in environmental air spaces, including plenum ceilings.
2. Comply with requirements for raceways and boxes specified in Division 26 Section "Raceway and Boxes for Electrical Systems."
B. Wiring within Enclosures: Bundle, lace, and train cables to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.
1.14 INSTALLATION OF PATHWAYS
A. Comply with TIA/EIA-569-A for pull-box sizing and length of conduit and number of bends between pull points.
B. Comply with requirements in Division 26 Section "Raceway and Boxes for Electrical Systems" for installation of conduits and wireways.
C. Install manufactured conduit sweeps and long-radius elbows.
D. Pathway Installation in Communications Equipment Rooms:
1. Position conduit ends adjacent to a corner on backboard where a single piece of plywood is installed, or in the corner of room where multiple sheets of plywood are installed around perimeter walls of room.
2. Secure conduits to backboard when entering room from overhead.
3. Install metal conduits with grounding bushings and connect with grounding conductor to grounding system.
1.15 INSTALLATION OF CABLES
A. Comply with NECA 1.
B. General Requirements for Cabling:
1. Comply with TIA/EIA-568-B.1.
2. Comply with BICSI ITSIM, Ch. 6, "Cable Termination Practices."
3. Install 110-style IDC termination hardware unless otherwise indicated.
4. Terminate conductors; no cable shall contain unterminated elements.
5. Pulling Cable: Comply with BICSI ITSIM, Ch. 4, "Pulling Cable." Monitor cable pull tensions.
C. UTP Cable Installation:
1. Comply with TIA/EIA-568-B.2.
D. Separation from EMI Sources:
1. Comply with BICSI TDMM and TIA/EIA-569-A for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.
1.16 IDENTIFICATION
A. Identify system components, wiring, and cabling complying with TIA/EIA-606-A. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
1. Color-code cross-connect fields. Apply colors to voice and data service backboards, connections, covers, and labels.
B. Labels shall be preprinted or computer-printed type with printing area and font color that contrasts with cable jacket color but still complies with requirements in TIA/EIA-606-A.

SECTION 283111 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM
1.1 SYSTEM DESCRIPTION
A. Noncoded, addressable system, with multiplexed signal transmission, dedicated to fire-alarm service only.
1.2 SUBMITTALS
A. Product Data: For each type of product indicated.
B. Shop Drawings: For fire-alarm system. Include plans, elevations, sections, details, and attachments to other work.
C. General Submittal Requirements:
1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Architect.
2. Shop Drawings shall be prepared by persons with the following qualifications:
a. Trained and certified by manufacturer in fire-alarm system design.
b. NICET-certified fire-alarm technician, Level III minimum.
D. Delegated-Design Submittal: For smoke and heat detectors indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
1. Drawings showing the location of each smoke and heat detector, ratings of each, and installation details as needed to comply with listing conditions of the detector.
2. Design Calculations: Calculate requirements for selecting the spacing and sensitivity of detection, complying with NFPA 72.
E. Seismic Qualification Certificates: For fire-alarm control unit, accessories, and components, from manufacturer.
F. Field quality-control reports.
G. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals.
1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
2. Provide "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.
3. Record copy of site-specific software.
4. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72 article of the same name and include the following:
a. Frequency of testing of installed components.
b. Frequency of inspection of installed components.
c. Requirements and recommendations related to results of maintenance.
d. Manufacturer's user training manuals.
5. Manufacturer's required maintenance related to system warranty requirements.
6. Abbreviated operating instructions for mounting at fire-alarm control unit.
1.3 SYSTEMS OPERATIONAL DESCRIPTION
A. Fire-alarm signal initiation shall be by one or more of the following devices:
1. Manual stations.
2. Heat detectors.
3. Automatic sprinkler system water flow.
B. Fire-alarm signal shall initiate the following actions:
1. Continuously operate alarm-notification appliances.
2. Identify alarm at the fire-alarm control unit.
3. Transmit an alarm signal to the remote alarm receiving station.
4. Unlock electric door locks in designated egress paths.
5. Record events in the system memory.
C. Supervisory signal initiation shall be by one or more of the following devices and actions:
1. Valve supervisory switch.
D. System trouble signal initiation shall be by one or more of the following devices and actions:
1. Open circuits, shorts, and grounds in designated circuits.
2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
3. Loss of primary power at fire-alarm control unit.
4. Ground or a single break in fire-alarm control unit internal circuits.
5. Abnormal ac voltage at fire-alarm control unit.
6. Break in standby battery circuitry.
7. Failure of battery charging.
8. Abnormal position of any switch at fire-alarm control unit or annunciator.
E. System Trouble and Supervisory Signal Actions: Initiate notification appliance and annunciate at fire-alarm control unit.
1.4 FIRE-ALARM CONTROL UNIT
A. General Requirements for Fire-Alarm Control Unit:
1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864 and listed and labeled by an NRTL.
2. Addressable control circuits for operation of mechanical equipment.
B. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.
C. Circuits:
1. Initiating Device, Notification Appliance, and Signaling Line Circuits: NFPA 72, Class A.
a. Initiating Device Circuits: Style D.
b. Notification Appliance Circuits: Style Z.
c. Signaling Line Circuits: Style 6.
D. Notification Appliance Circuit: Operation shall sound in a repeating pattern.
E. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.
F. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory and digital alarm communicator transmitters shall be powered by 24-V dc source.
1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.
G. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.
1.5 MANUAL FIRE-ALARM BOXES
A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.
1. Double-action mechanism requiring two actions to initiate an alarm, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
2. Station Reset: Key- or wrench-operated switch.
3. Indoor Protective Shield: Factory-fabricated clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm. Lifting the cover actuates an integral battery-powered audible horn intended to discourage false-alarm operation.
1.6 SYSTEM SMOKE DETECTORS
A. General Requirements for System Smoke Detectors:
1. Comply with UL 268; operating at 24-V dc, nominal.
2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
3. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
4. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
5. Integral Visual-Indicating Light: LED type indicating detector has operated and power-on status.
B. Photoelectric Smoke Detectors:
1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
a. Primary status.
b. Device type.
c. Present average value.
d. Present sensitivity selected.
e. Sensor range (normal, dirty, etc.).
1.7 NOTIFICATION APPLIANCES
A. General Requirements for Notification Appliances: Connected to notification appliance signal circuits, zoned as indicated, equipped for mounting as indicated and with screw terminals for system connections.
1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated and with screw terminals for system connections.
B. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn, using the coded signal prescribed in UL 464 test protocol.
C. Visible Notification Appliances: Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch- high letters on the lens.
1. Rated Light Output:
a. 15/30/75/110 cd, selectable in the field.
2. Mounting: Wall mounted unless otherwise indicated.
3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
4. Flashing shall be in a temporal pattern, synchronized with other units.
5. Strobe Leads: Factory connected to screw terminals.
6. Mounting Faceplate: Factory finished, red.
1.8 ADDRESSABLE INTERFACE DEVICE
A. Description: Microelectronic monitor module, NRTL listed for use in providing a system address for alarm-initiating devices for wired applications with normally open contacts.
1.9 DIGITAL ALARM COMMUNICATOR TRANSMITTER
A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632 and be listed and labeled by an NRTL.
B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from fire-alarm control unit and automatically capture two telephone line(s) and dial a preset number for a remote central station. When contact is made with central station(s), signals shall be transmitted. If service on either line is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.
C. Local functions and display at the digital alarm communicator transmitter shall include the following:
1. Verification that both telephone lines are available.
2. Programming device.
3. LED display.
4. Manual test report function and manual transmission clear indication.
5. Communications failure with the central station or fire-alarm control unit.
D. Digital data transmission shall include the following:
1. Address of the alarm-initiating device.
2. Address of the supervisory signal.
3. Address of the trouble-initiating device.
4. Loss of ac supply or loss of power.
5. Low battery.
6. Abnormal test signal.
7. Communication bus failure.
E. Secondary Power: Integral rechargeable battery and automatic charger.
F. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.
1.10 FIRE ALARM WIRE AND CABLE
A. General Wire and Cable Requirements: NRTL listed and labeled as complying with NFPA 70, Article 760.
B. Signaling Line Circuits: Twisted, shielded pair, size as recommended by system manufacturer, but not less than No. 16 AWG .
1. Circuit Integrity Cable: Twisted shielded pair, NFPA 70, Article 760, Classification CI, for power-limited fire alarm signal service Type FPL. NRTL listed and labeled as complying with UL 1424 and UL 2196 for a 2-hour rating.
C. Non-Power-Limited Circuits: Solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation.
1. Low-Voltage Circuits: No. 16 AWG, minimum.
2. Line-Voltage Circuits: No. 12 AWG, minimum.
3. Multiconductor Armored Cable: NFPA 70, Type MC, copper conductors, Type TFN/THHN conductor insulation, copper drain wire, copper armor with outer jacket with red identifier stripe, NTRL listed for fire alarm and cable tray installation, plenum rated, and complying with requirements in UL 2196 for a 2-hour rating.
1.11 EQUIPMENT INSTALLATION
A. Comply with NFPA 72 for installation of fire-alarm equipment.
B. Install wall-mounted equipment, with tops of cabinets not more than 72 inches above the finished floor.
1. Comply with requirements for seismic-restraint devices specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."
C. Smoke- or Heat-Detector Spacing:
1. Comply with NFPA 72, "Smoke-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for smoke-detector spacing.
2. Comply with NFPA 72, "Heat-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for heat-detector spacing.
D. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.
E. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling.
1.12 IDENTIFICATION
A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
B. Install framed instructions in a location visible from fire-alarm control unit.
1.13 GROUNDING
A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.
1.14 FIRE ALARM WIRING INSTALLATION
A. Comply with NECA 1 and NFPA 72.
B. Wiring Method: Install wiring in metal raceway according to Section 260533 "Raceways and Boxes for Electrical Systems."
1. Fire alarm circuits and equipment control wiring associated with the fire alarm system shall be installed in a dedicated raceway system. This system shall not be used for any other wire or cable.
C. Wiring Method:
1. Cables and raceways used for fire alarm circuits, and equipment control wiring associated with the fire alarm system, may not contain any other wire or cable.
2. Fire-Rated Cables: Use of 2-hour, fire-rated fire alarm cables, NFPA 70, Types MI and CI, is not permitted.
3. Signaling Line Circuits: Power-limited fire alarm cables shall not be installed in the same cable or raceway as signaling line circuits.
D. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.
E. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.
F. Color-Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and another for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire alarm system junction boxes and covers red.
1.15 FIELD QUALITY CONTROL
A. Field tests shall be witnessed by authorities having jurisdiction.
B. Tests and Inspections:
1. Visual Inspection: Conduct visual inspection prior to testing.
a. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.
b. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.
2. System Testing: Comply with "Test Methods" Table in the "Testing" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
4. Test audible appliances for the private operating mode according to manufacturer's written instructions.
5. Test visible appliances for the public operating mode according to manufacturer's written instructions.
6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
C. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
D. Fire-alarm system will be considered defective if it does not pass tests and inspections.
E. Prepare test and inspection reports.
F. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.
G. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

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LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

CONSTRUCTION DOCUMENTS

REGISTERED PROFESSIONAL ENGINEER
No. 294174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

ELECTRICAL SPECIFICATIONS

E-002.2

KEYED NOTES

1. REMOVE EXISTING POLE AND BASE.
2. PROVIDE NEW POLE LIGHT.
3. GROUP CONTROL OF WIRELESS LIGHTING ZONE INDICATED. REFER TO LIGHTING CONTROL SCHEDULES FOR ADDITIONAL INFORMATION.
4. PROPOSED LOCATION FOR NEW UTILITY TRANSFORMER. COORDINATE WITH LOCAL UTILITY REP.
5. REMOVE EXISTING TEMPORARY METER/MAIN.
6. COORDINATE REMOVAL OF OVERHEAD POWER LINES WITH LOCAL UTILITY REP.
7. PROTECT TREE ROOTS ALONG UNDERGROUND LINE PATH.
8. EXISTING UTILITY JUNCTION CAN TO REMAIN. VERIFY CONNECTION POINT WITH LOCAL UTILITY REP.

GENERAL NOTES

1. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
2. CIRCUIT ROUTING IS SCHEMATIC UNLESS OTHERWISE NOTED.
3. COORDINATE ALL UTILITY INSTALLATIONS WITH LOCAL UTILITY REPS.
4. COMPLY WITH ALL UTILITY REQUIREMENTS FOR NEW UTILITY INSTALLATIONS.

1 ELECTRICAL SITE PLAN

1" = 20'-0"

NORTH

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SHANE D. SWENSON
2/5/2024
STATE OF UTAH

ELECTRICAL SITE PLAN

ES-101.1

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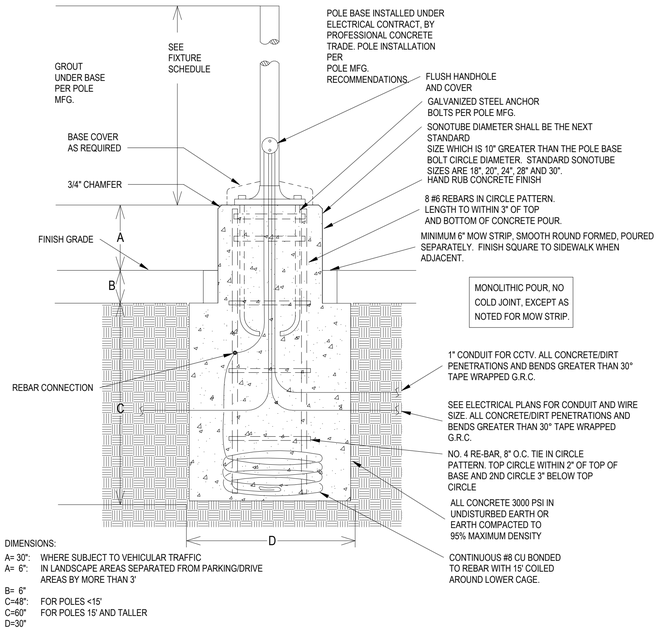
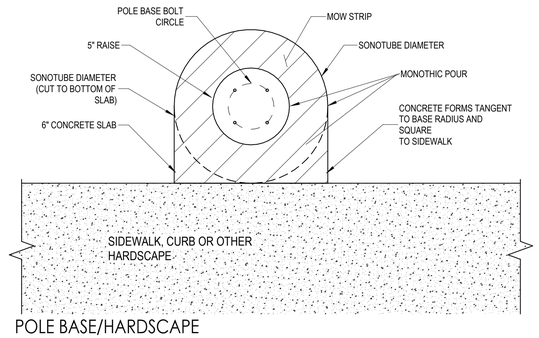


DIMENSIONS:
A= 30": WHERE SUBJECT TO VEHICULAR TRAFFIC
A= 6": IN LANDSCAPE AREAS SEPARATED FROM PARKING/DRIVE AREAS BY MORE THAN 3'
B= 6"
C=48": FOR POLES <15'
C=60" FOR POLES 15' AND TALLER
D=30"

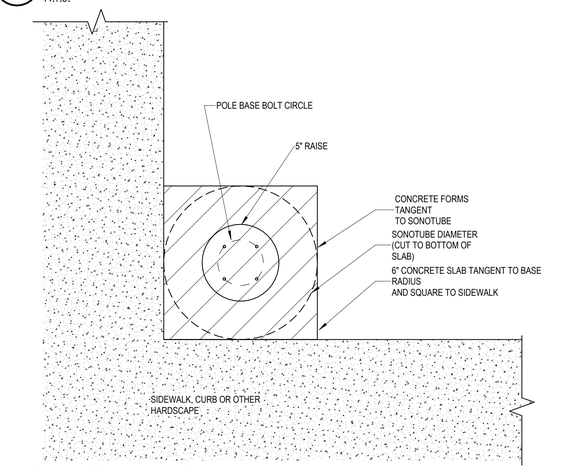
7 POLE BASE DETAIL

N.T.S.



6 POLE BASE/HARDSCAPE FINISH DETAIL: INTERIOR SECTION

N.T.S.



5 POLE BASE/HARDSCAPE FINISH DETAIL: CORNER POLE

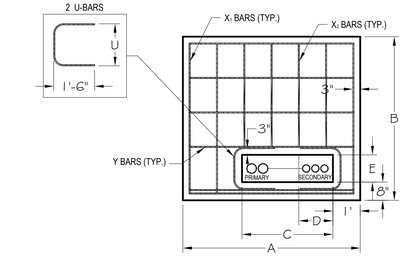
N.T.S.

REINFORCING STEEL SPECIFICATION TABLE								
XFMR	X_1 BARS		X_2 BARS		Y BARS		U	
TYPE	QUANTITY	SIZE	QUANTITY	SIZE	QUANTITY	SIZE	SIZE	DIM:
1	3	5'-6"	4	3'-10"	6	6'	1'-6"	
2	3	5'-6"	4	3'-7"	6	6'-6"	1'-9"	
3	3	6'	4	4'-1"	6	7'-6"	1'-9"	
NOTE: ALL #4 REBAR								

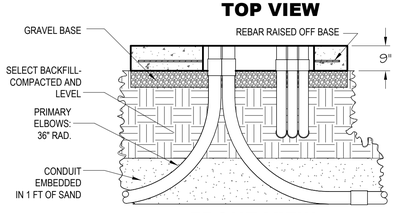
TRANSFORMER PAD DIMENSIONS TABLE								
TYPE	XFMR. SIZE	DIM:	A	B	C	D	E	F
1	75-500 KVA		6'-6"	6'	3'-4"	1'-3"	1'	1'-3"
2	750-1000 KVA		7'	6'	4'	1'-10"	1'-3"	1'-6"
3	1500-2000 KVA		8'	6'-6"	4'-6"	2'	1'-3"	1'-8"

DETAIL NOTES

1. PRIMARY CONDUIT - 48" BELOW FINAL GRADE.
2. SECONDARY CONDUIT - 24" BELOW FINAL GRADE.
3. CONDUIT SHALL EXTEND FLUSH TO THE TOP OF PAD.
4. CONDUIT MUST BE SEALED WITH TAPE TO PREVENT DEBRIS FROM ENTERING THE CONDUIT.
5. PAD MUST BE PLACED: WITHIN 15 FT OF HARD-PAVED SURFACE, 3FT AWAY FROM ANY STRUCTURE, & 10 FT AWAY FROM DOORS OR WINDOWS.
6. AREA 10 FT IN FRONT & 3 FT TO EITHER SIDE OF THE TRANSFORMER MUST REMAIN OPEN AND CLEAR.
7. ALL CONCRETE MUST BE A 4 BAG MIX MINIMUM WITH A 6.5%
8. AIR ENTRAPMENT, 3/4" OF CONCRETE MUST COVER ALL REINFORCING STEEL. 7 DAYS OF CURING IS REQUIRED BEFORE TRANSFORMER WILL BE PLACED.
9. CONDUIT AND TRANSFORMER PAD MUST BE INSPECTED 24 HRS. PRIOR TO BACK FILLING & POURING CONCRETE. CALL 716-9700 TO SCHEDULE AN INSPECTION.



TOP VIEW



FRONT VIEW

3 PHASE TRANSFORMER PAD DETAIL

DATE: 05/23/2007

SCALE: NO SCALE

1 3-PHASE TRANSFORMER PAD DETAIL

N.T.S.

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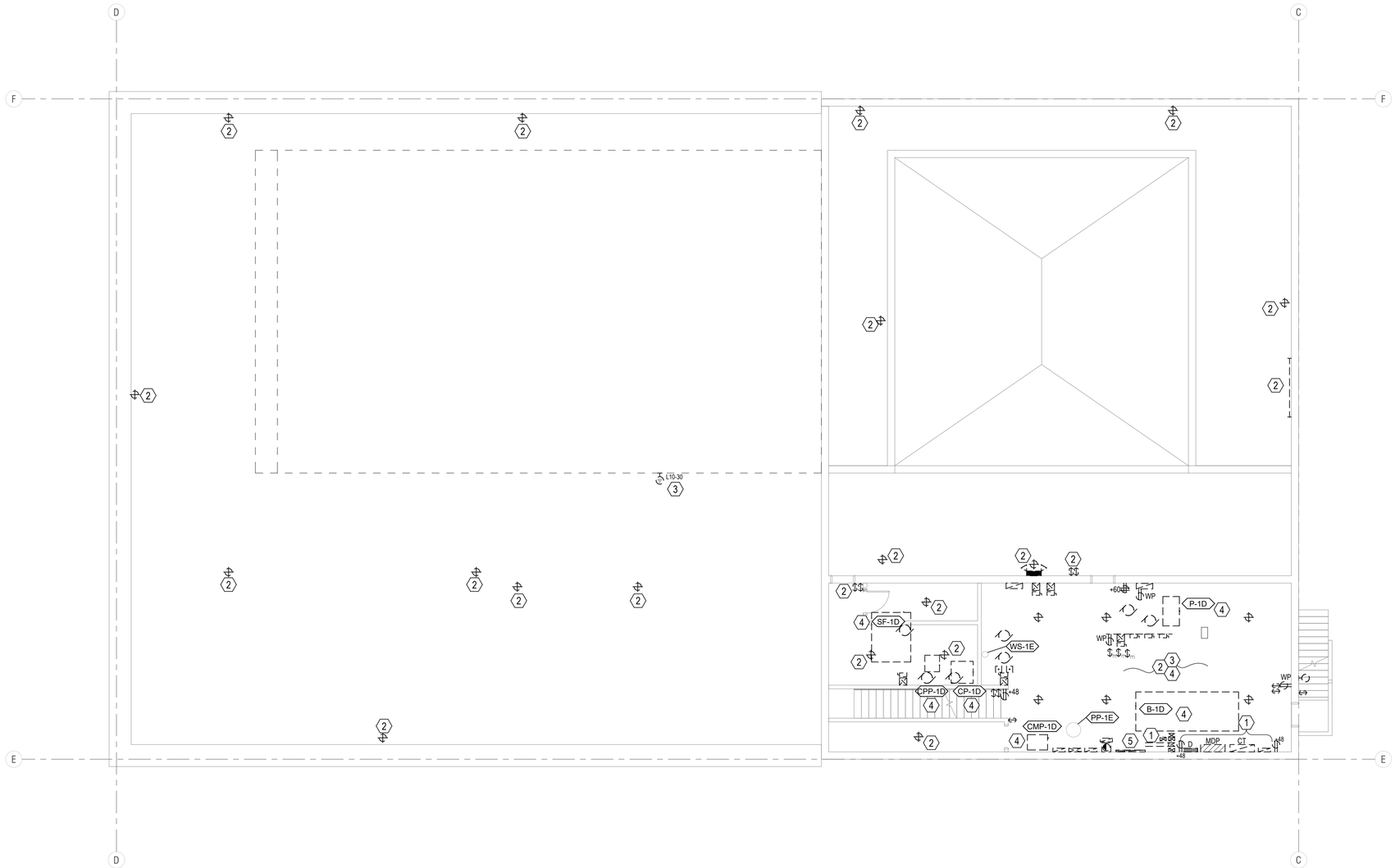
ELECTRICAL SITE DETAILS

ES-501.1



KEYED NOTES

1. REMOVE EXISTING DISTRIBUTION EQUIPMENT.
2. REMOVE EXISTING FIXTURES AND/OR LIGHTING CONTROL AS INDICATED.
3. REMOVE EXISTING OUTLETS AS INDICATED.
4. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL.
5. REMOVE EXISTING TELEPHONE BOARD.

GENERAL NOTES

1. DEMOLITION PLAN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES DOWNSTREAM OF ITEMS TO BE REMOVED.
4. WHERE DEVICES ARE SHOWN TO BE REMOVED, COMPLETELY REMOVE ALL RACEWAYS, BOXES AND CONDUCTORS TO PANEL OR TO FIRST J-BOX TO REMAIN ACTIVE IN CIRCUIT PATH.
5. ANY EXISTING CIRCUITING SHOWN IS BASED ON ORIGINAL PROJECT DRAWINGS AND HAVE NOT BEEN VERIFIED WITH FIELD CONDITIONS. CONTRACTOR VERIFY AND UPDATE FIELD REDLINE SET.

1 ELECTRICAL DEMOLITION PLAN - LOWER LEVEL

1/8" = 1'-0"

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SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY

MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER
No. 291174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

CONSTRUCTION DOCUMENTS

NORTH

ELECTRICAL DEMOLITION PLAN - LOWER LEVEL

ED-100.0

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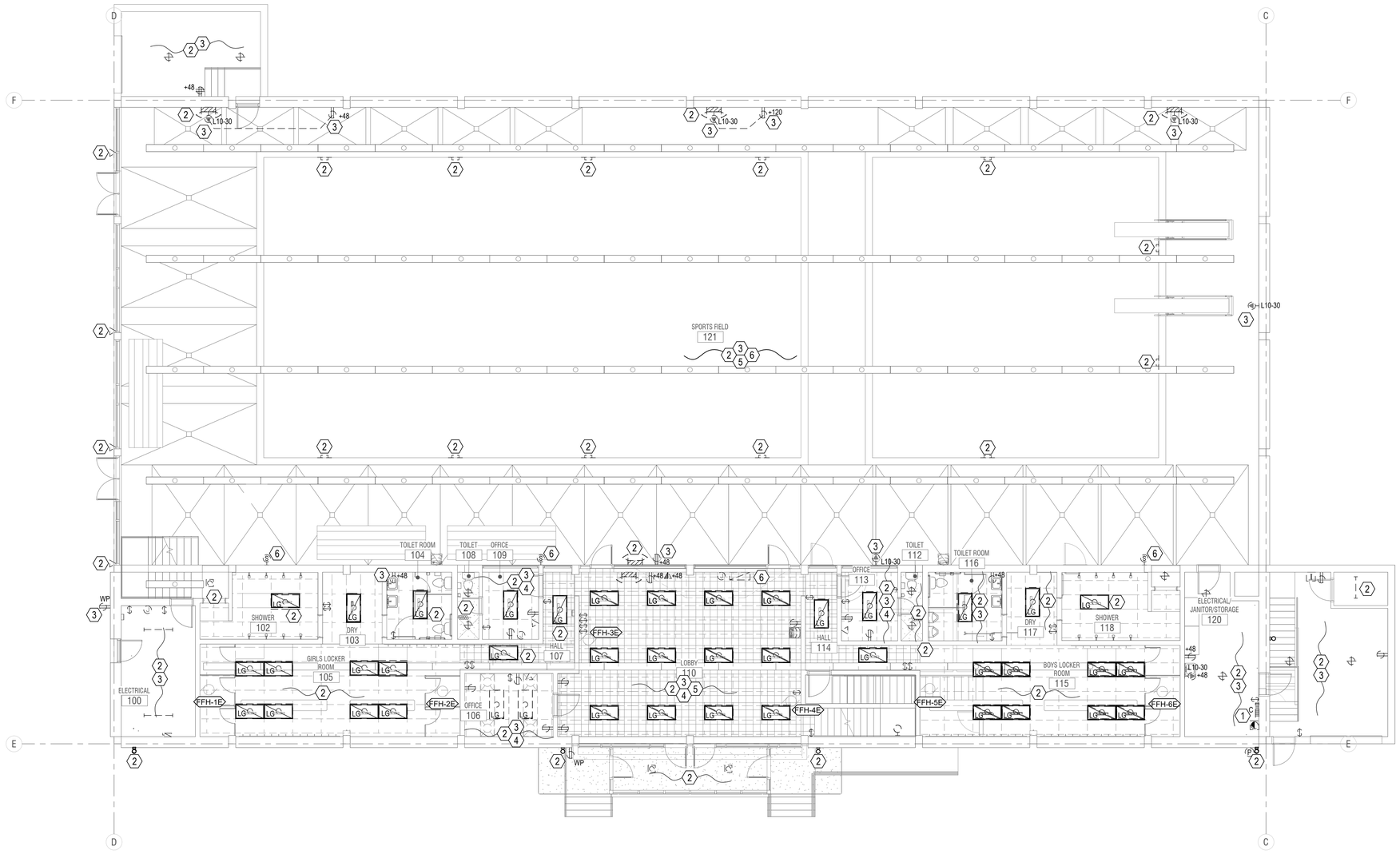

1 ELECTRICAL DEMOLITION PLAN - MAIN LEVEL

1/8" = 1'-0"

KEYED NOTES

1. REMOVE EXISTING DISTRIBUTION EQUIPMENT.
2. REMOVE EXISTING FIXTURES AND/OR LIGHTING CONTROL AS INDICATED.
3. REMOVE EXISTING OUTLETS AS INDICATED.
4. REMOVE EXISTING COMMUNICATIONS DEVICES AS INDICATED.
5. NOT USED.
6. REMOVE EXISTING ELECTRONIC SYSTEMS DEVICES AS INDICATED.
7. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL.

GENERAL NOTES

1. DEMOLITION PLAN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES DOWNSTREAM OF ITEMS TO BE REMOVED.
4. WHERE DEVICES ARE SHOWN TO BE REMOVED, COMPLETELY REMOVE ALL RACEWAYS, BOXES AND CONDUCTORS TO PANEL OR TO FIRST J-BOX TO REMAIN ACTIVE IN CIRCUIT PATH.
5. ANY EXISTING CIRCUITING SHOWN IS BASED ON ORIGINAL PROJECT DRAWINGS AND HAVE NOT BEEN VERIFIED WITH FIELD CONDITIONS. CONTRACTOR VERIFY AND UPDATE FIELD REDLINE SET.

NORTH

CONSTRUCTION DOCUMENTS

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LOGAN UT 84321
255 SOUTH 300 WEST
SALT LAKE CITY UT 84103
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

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PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER
No. 291174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

ELECTRICAL DEMOLITION PLAN - MAIN LEVEL

ED-100.1

2/5/2024 2:26:19 PM Autodesk Docs://123998 - LCSD - Indoor Athletic Facility - Municipool Remodel/123998_E-LCSD - Indoor Athletic Facility - Municipool Remodel_r25.rvt

KEYED NOTES

1. REMOVE EXISTING DISTRIBUTION AS INDICATED.
2. REMOVE EXISTING FIXTURES AND/OR LIGHTING CONTROL AS INDICATED.
3. REMOVE EXISTING OUTLETS AS INDICATED.
4. REMOVE EXISTING COMMUNICATIONS DEVICES AS INDICATED.
5. NOT USED.
6. REMOVE EXISTING ELECTRONIC SYSTEMS DEVICES AS INDICATED.
7. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL.

GENERAL NOTES

1. DEMOLITION PLAN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
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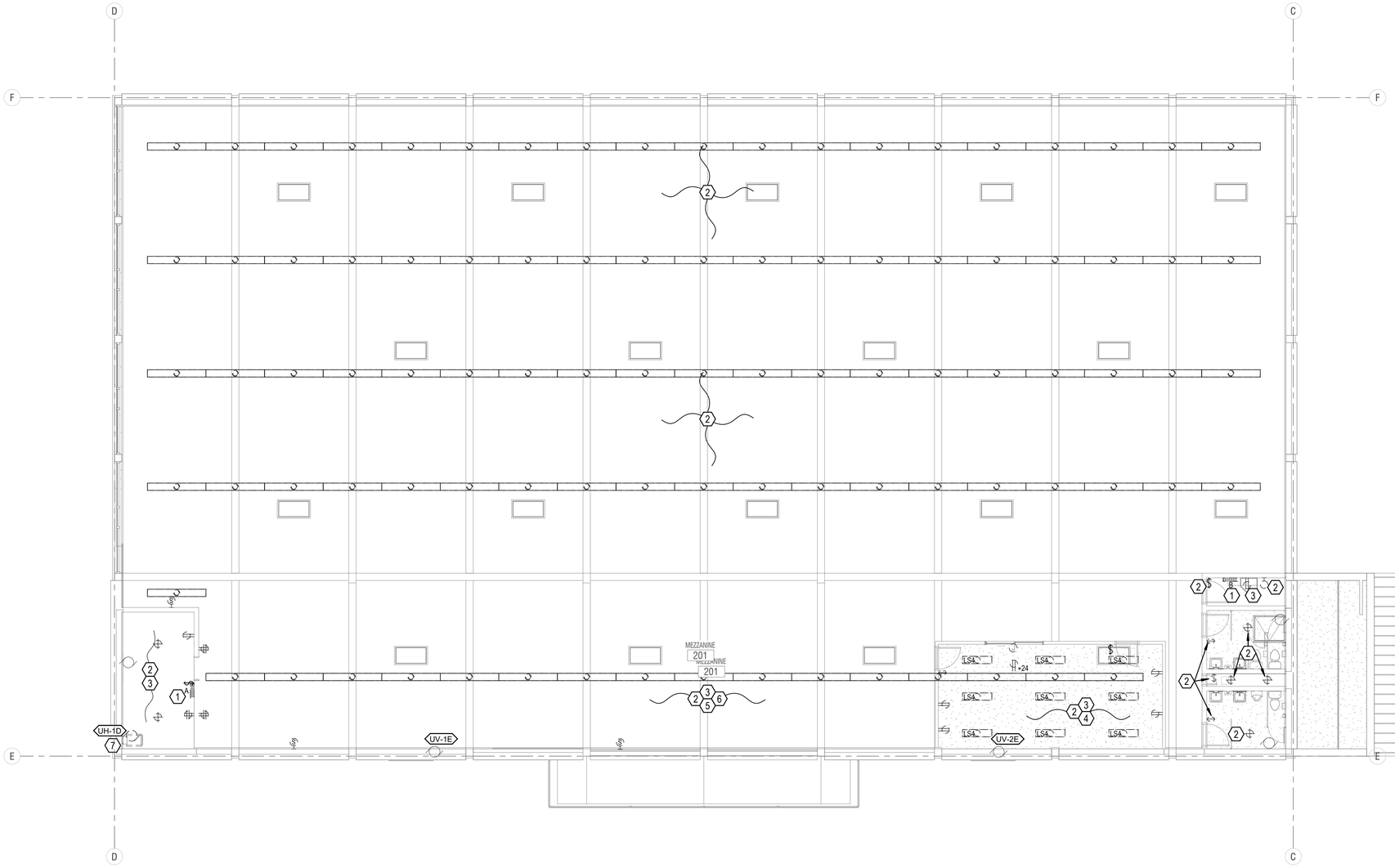
5. ANY EXISTING CIRCUITING SHOWN IS BASED ON ORIGINAL PROJECT DRAWINGS AND HAVE NOT BEEN VERIFIED WITH FIELD CONDITIONS. CONTRACTOR VERIFY AND UPDATE FIELD REDLINE SET.



1 ELECTRICAL DEMOLITION PLAN - MEZZANINE

1/8" = 1'-0"

NORTH

CONSTRUCTION DOCUMENTS

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255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

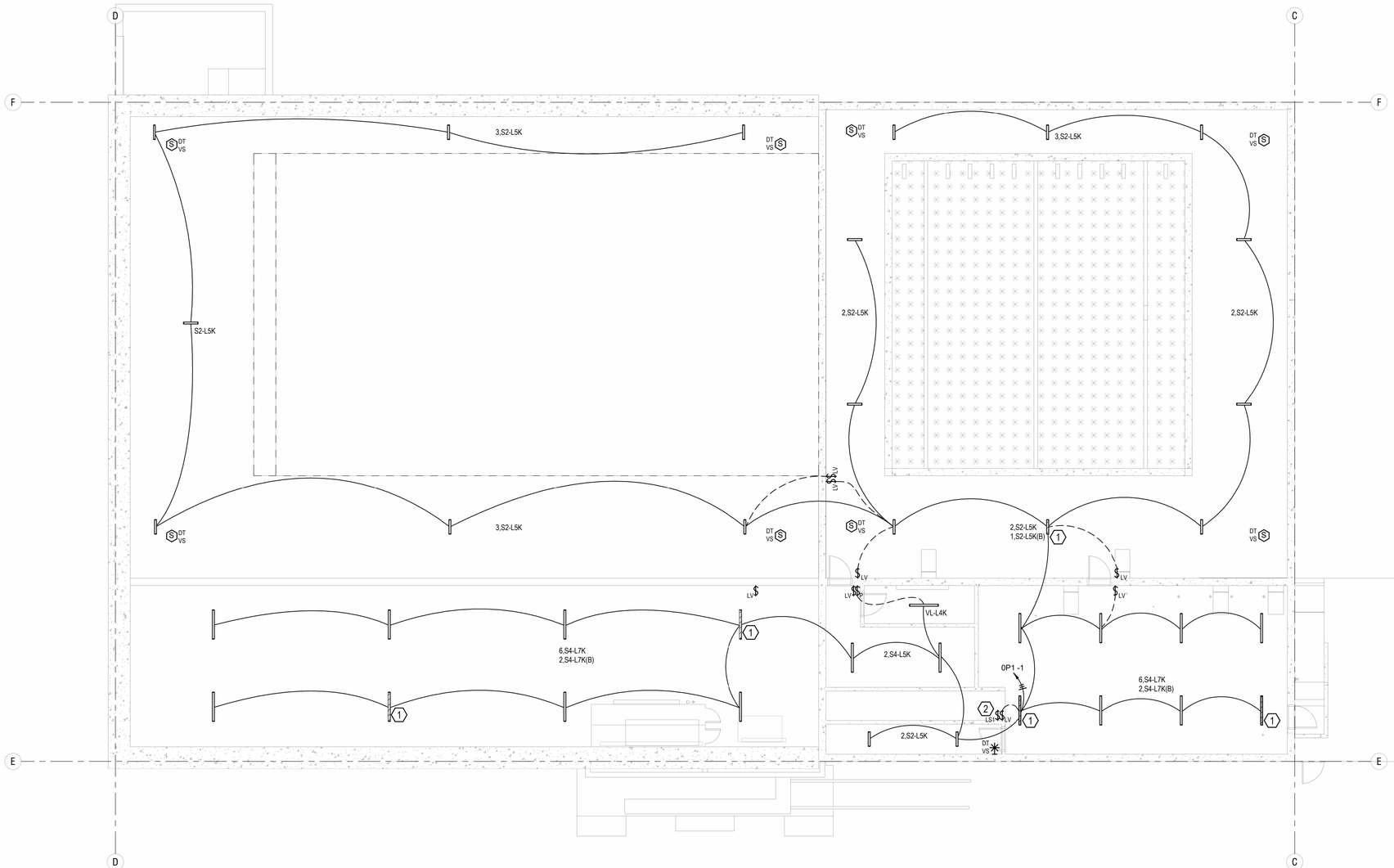
MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER
No. 291171
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

ELECTRICAL DEMOLITION PLAN - MEZZANINE

ED-100.2



KEYED NOTES

1. PROVIDE EM BATTERY IN FIXTURES NOTED. CONNECT BATTERY TO UNSWITCHED CIRCUIT CONDUCTOR OF CIRCUIT SERVING FIXTURE. CONNECT LAMPS TO OPERATE WITH SWITCH(S) IN NORMAL MODE.

2. PROVIDE DIGITAL, ADDRESSIBLE, LIGHTING CONTROL SWITCHES AT LOCATIONS INDICATED. PROVIDE CONTROL WIRING PER MANUFACTURER'S REQUIREMENTS. SEE DETAILS AND SCHEDULES FOR ADDITIONAL INFORMATION. ENGRAVE COVER PLATE WITH ZONES CONTROLLED. PROVIDE SEPARATE BUTTON FOR EACH ZONE INDICATED. MULTIPLE BUTTONS SHALL BE MOUNTED IN A SINGLE-GANG COVER.

GENERAL NOTES

1. COORDINATE ALL SWITCH, OUTLET, LIGHT AND OTHER DEVICE LOCATIONS WITH ARCHITECTURAL ELEMENTS (CABINETS, WINDOWS ETC.) PRIOR TO ROUGH-IN. REVIEW ARCHITECTURAL INTERIOR ELEVATIONS PRIOR TO ROUGH-IN OF EACH AREA FOR ADDITIONAL INFORMATION.

2. SOME LIGHTING CIRCUITS ARE ROUTED THROUGH LIGHTING CONTROL SYSTEM POWER PANEL. HOME-RUNS ONLY INDICATE BRANCH CIRCUIT CONDUCTORS. UNSWITCHED CONDUCTORS ARE REQUIRED FOR CIRCUITS WITH EM LIGHTING OR OTHER UNCONTROLLED LIGHTING AND DEVICES. ADDITIONAL SWITCHED CONDUCTORS ARE REQUIRED FOR EACH CIRCUIT AND ARE INDICATED WITH LIGHTING CONTROL PANEL HOME-RUNS. REFER TO LIGHTING CONTROL SCHEDULES FOR ADDITIONAL INFORMATION INCLUDING QUANTITY OF SWITCHED CONDUCTORS REQUIRED FOR EACH CIRCUIT.

3. ALL EMERGENCY LIGHTING BATTERIES SHALL PROVIDE A MINIMUM OF 90 MINUTES ILLUMINATION PER NEC 700.12(A) AND IBC 1006. SEE SPEC SECTION 265100 FOR ADDITIONAL REQUIREMENTS.

4. ALL BALLASTS, INCLUDING BATTERY BACKUP AND ASSOCIATED SELF-DIAGNOSTICS, SHALL BE FACTORY MOUNTED.

5. ALL OCCUPANCY SENSORS SHALL HAVE INTEGRAL PHOTOCELL CONTROL AS SPECIFIED.

6. CONTRACTOR TO FURNISH OCCUPANCY SENSORS WITH COVERAGE PATTERNS APPROPRIATE FOR THEIR INSTALLED LOCATIONS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO BID.

7. CONNECT OCCUPANCY SENSORS TO ENABLE ALL SWITCHES IN CONTROLLED SPACE.

8. CONNECT OCCUPANCY SENSORS, BATTERY BALLASTS, EXIT SIGNS, ETC. TO UNSWITCHED SOURCE CONDUCTOR.

9. SEE POWER PLAN FOR ELECTRICAL DISTRIBUTION, EQUIPMENT AND LIGHTING RELAY PANEL LOCATIONS.

10. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.

11. ALL NEW LIGHTING CONTROLS (SWITCH, OCCUPANCY SENSORS, DIMMERS, ETC.) SHALL BE LITHONIA N-LIGHT, WATTSTOPPER DLM OR SIMILIAR THAT ALLOW SWITCHES AND SENSORS TO COMMUNICATE TO MEET MANUAL ON, AUTO OFF REQUIREMENTS OF THE ENERGY CODE.

12. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.

13. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.

1 LIGHTING PLAN - LOWER LEVEL
1/8" = 1'-0"

NORTH

CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

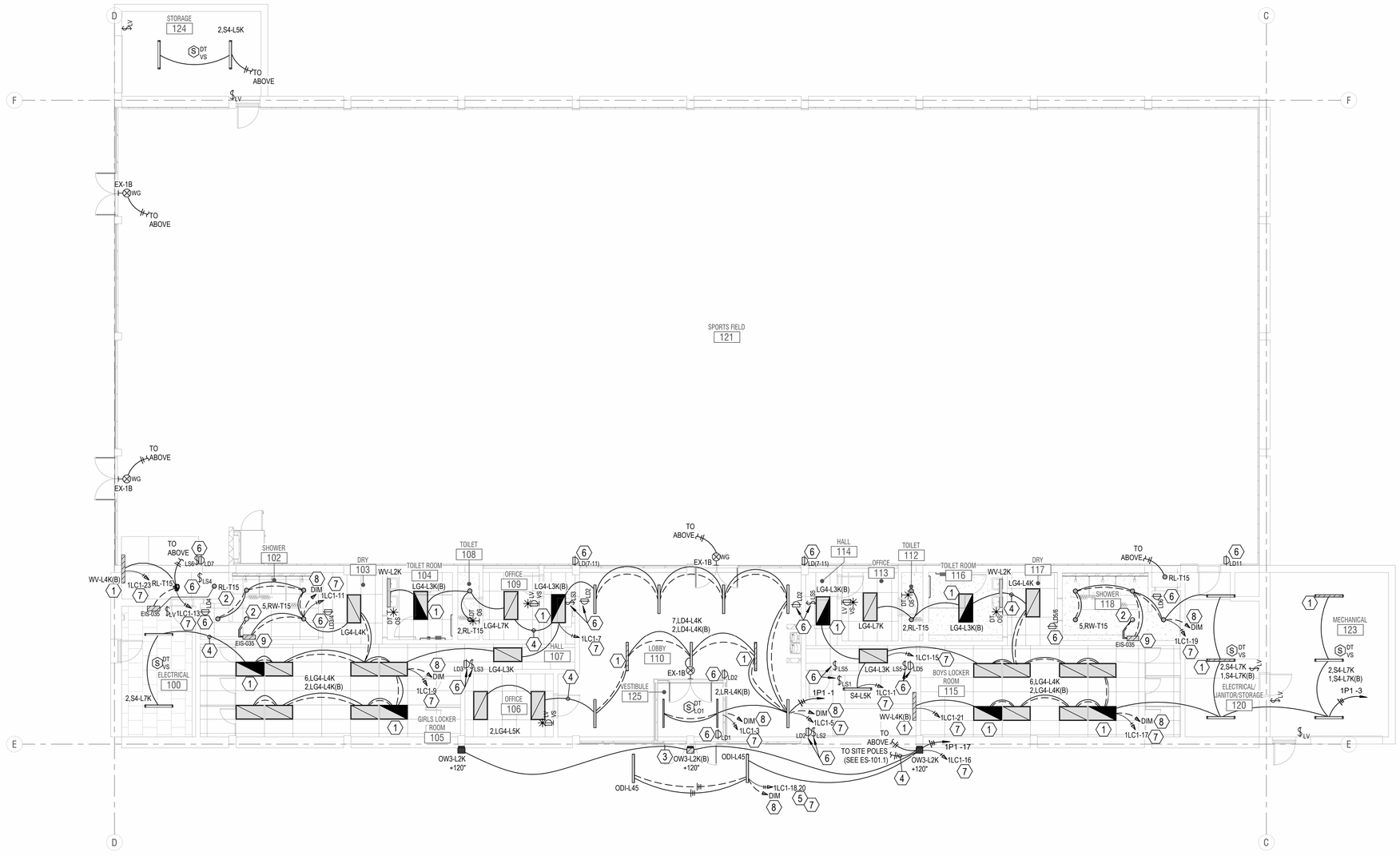
MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER
No. 291174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

LIGHTING PLAN - LOWER LEVEL

E-201.0



KEYED NOTES

1. PROVIDE EM BATTERY IN FIXTURES NOTED. CONNECT BATTERY TO UNSWITCHED CIRCUIT CONDUCTOR OF CIRCUIT SERVING FIXTURE. CONNECT LAMPS TO OPERATE WITH SWITCH(S) IN NORMAL MODE.
2. CONNECT FIXTURE TO OUTPUT OF INVERTER INDICATED. CONNECT FOR FIXTURES TO BE ON IN NORMAL MODE AND OVERRIDE ON WITH NORMAL POWER FAILURE. CONNECT FIXTURES TO OPERATE WITH SWITCH(S) IN NORMAL MODE.
3. PROVIDE COLD-WEATHER OR REMOTE EM BATTERY BACKUP FOR FIXTURES NOTED. CONNECT BATTERY TO UNSWITCHED CIRCUIT CONDUCTOR OF CIRCUIT SERVING FIXTURE. CONNECT LAMPS TO OPERATE WITH SWITCH(S) IN NORMAL MODE.
4. CONNECT TO UNSWITCHED SOURCE CONDUCTOR.
5. PROVIDE SEPARATE CONTROL FOR DIRECT AND INDIRECT COMPONENTS.
6. PROVIDE DIGITAL, ADDRESSIBLE, LIGHTING CONTROL SWITCHES AT LOCATIONS INDICATED. PROVIDE CONTROL WIRING PER MANUFACTURER'S REQUIREMENTS. SEE DETAILS AND SCHEDULES FOR ADDITIONAL INFORMATION. ENGRAVE COVER PLATE WITH ZONES CONTROLLED. PROVIDE SEPARATE BUTTON FOR EACH ZONE INDICATED. MULTIPLE BUTTONS SHALL BE MOUNTED IN A SINGLE-GANG COVER.
7. LIGHTING CONTROL PANEL SWITCH LEGS. REFER TO LIGHTING CONTROL PANEL SCHEDULES AND DETAILS FOR ADDITIONAL INFORMATION. SWITCH LEGS MAY BE ROUTED TO PANEL IN SAME CONDUITS AS CONSTANT POWER FEEDS. CONTRACTOR TO DERATE/UPSIZE CONDUCTORS & CONDUIT WHERE REQUIRED.
8. PROVIDE DIMMING CONTROL PER FIXTURE REQUIREMENTS TO LIGHTING CONTROL PANEL. EXTEND DIMMING CONTROL THROUGHOUT CIRCUIT.
9. INVERTER SHOWN AT LOCATION INDICATED FOR DRAWING CLARITY. LOCATE INVERTER IN CLOSET OF ELEC 120 OR EQUIPMENT 100.

GENERAL NOTES

1. COORDINATE ALL SWITCH, OUTLET, LIGHT AND OTHER DEVICE LOCATIONS WITH ARCHITECTURAL ELEMENTS (CABINETS, WINDOWS ETC.) PRIOR TO ROUGH-IN. REVIEW ARCHITECTURAL INTERIOR ELEVATIONS PRIOR TO ROUGH-IN OF EACH AREA FOR ADDITIONAL INFORMATION.
2. SOME LIGHTING CIRCUITS ARE ROUTED THROUGH LIGHTING CONTROL SYSTEM POWER PANEL. HOME-RUNS ONLY INDICATE BRANCH CIRCUIT CONDUCTORS. UNSWITCHED CONDUCTORS ARE REQUIRED FOR CIRCUITS WITH EM LIGHTING OR OTHER UNCONTROLLED LIGHTING AND DEVICES. ADDITIONAL SWITCHED CONDUCTORS ARE REQUIRED FOR EACH CIRCUIT AND ARE INDICATED WITH LIGHTING CONTROL PANEL HOME-RUNS. REFER TO LIGHTING CONTROL SCHEDULES FOR ADDITIONAL INFORMATION INCLUDING QUANTITY OF SWITCHED CONDUCTORS REQUIRED FOR EACH CIRCUIT.
3. ALL EMERGENCY LIGHTING BATTERIES SHALL PROVIDE A MINIMUM OF 90 MINUTES ILLUMINATION PER NEC 700.12(A) AND IBC 1006. SEE SPEC SECTION 265100 FOR ADDITIONAL REQUIREMENTS.
4. ALL BALLASTS, INCLUDING BATTERY BACKUP AND ASSOCIATED SELF-DIAGNOSTICS, SHALL BE FACTORY MOUNTED.
5. ALL OCCUPANCY SENSORS SHALL HAVE INTEGRAL PHOTOCELL CONTROL AS SPECIFIED.
6. CONTRACTOR TO FURNISH OCCUPANCY SENSORS WITH COVERAGE PATTERNS APPROPRIATE FOR THEIR INSTALLED LOCATIONS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO BID.
7. CONNECT OCCUPANCY SENSORS TO ENABLE ALL SWITCHES IN CONTROLLED SPACE.
8. CONNECT OCCUPANCY SENSORS, BATTERY BALLASTS, EXIT SIGNS, ETC. TO UNSWITCHED SOURCE CONDUCTOR.
9. SEE POWER PLAN FOR ELECTRICAL DISTRIBUTION, EQUIPMENT AND LIGHTING RELAY PANEL LOCATIONS.
10. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
11. ALL NEW LIGHTING CONTROLS (SWITCH, OCCUPANCY SENSORS, DIMMERS, ETC.) SHALL BE LITHONIA N-LIGHT, WATTSTOPPER DLM OR SIMILIAR THAT ALLOW SWITCHES AND SENSORS TO COMMUNICATE TO MEET MANUAL ON, AUTO OFF REQUIREMENTS OF THE ENERGY CODE.
12. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
13. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.

1 LIGHTING PLAN - MAIN LEVEL

1/8" = 1'-0"

NORTH

CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DATE:	DESCRIPTION:

PROJECT #:	123998
DRAWN BY:	D.PATTON
CHECKED BY:	S.SWENSON
ISSUED:	02.05.2024

REGISTERED PROFESSIONAL ENGINEER
No. 294174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

LIGHTING PLAN - MAIN LEVEL

E-201.1

Autodesk Docs://123998 - LCSD - Indoor Athletic Facility - Municipool Remodel/123998_E-LCSD - Indoor Athletic Facility - Municipool Remodel_r25.rvt
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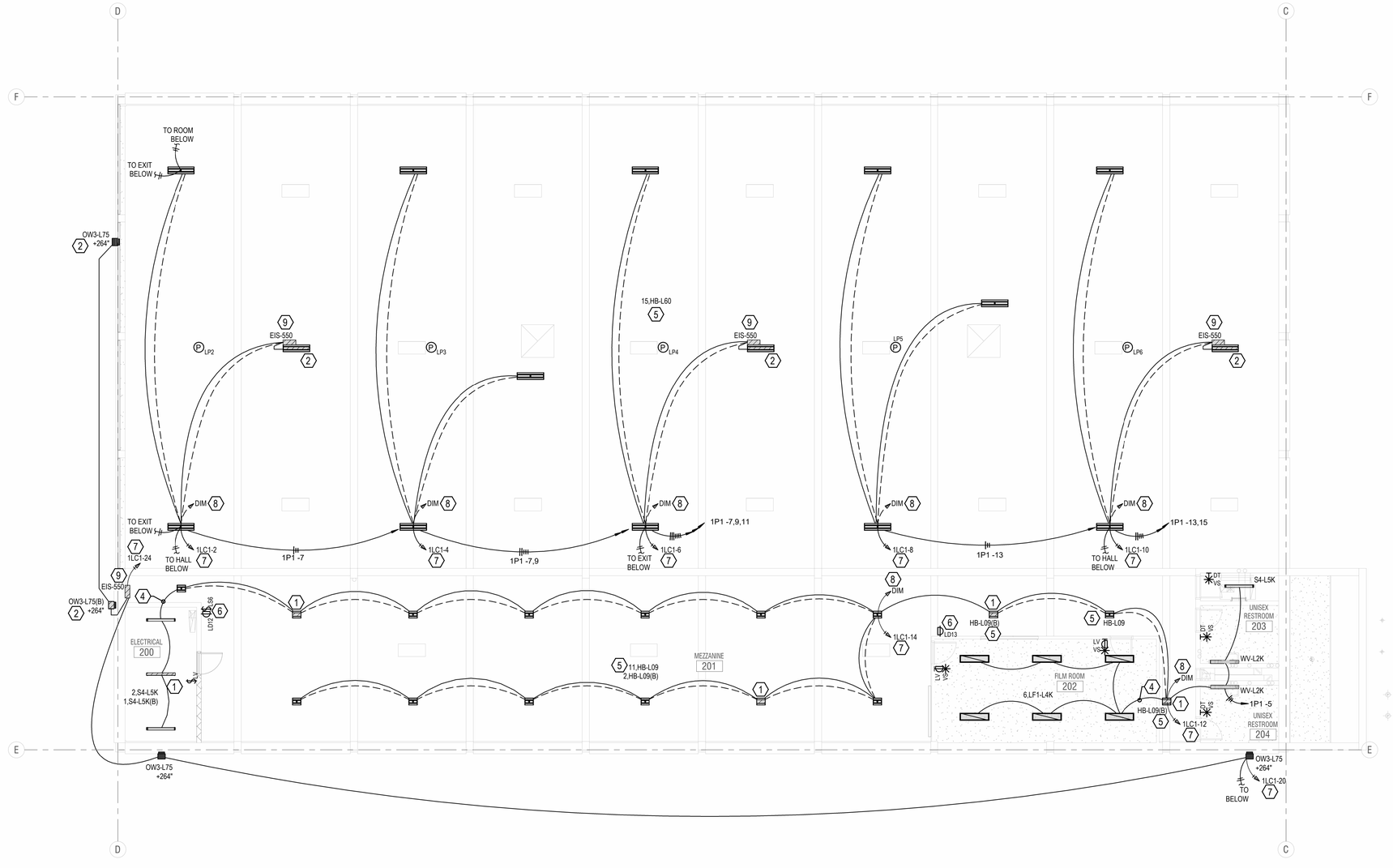

1 LIGHTING PLAN - MEZZANINE

1/8" = 1'-0"

KEYED NOTES

1. PROVIDE EM BATTERY IN FIXTURES NOTED. CONNECT BATTERY TO UNSWITCHED CIRCUIT CONDUCTOR OF CIRCUIT SERVING FIXTURE. CONNECT LAMPS TO OPERATE WITH SWITCH(S) IN NORMAL MODE.
2. CONNECT FIXTURE TO OUTPUT OF INVERTER INDICATED. CONNECT FOR FIXTURES TO BE ON IN NORMAL MODE AND OVERRIDE ON WITH NORMAL POWER FAILURE. CONNECT FIXTURES TO OPERATE WITH SWITCH(S) IN NORMAL MODE.
3. NOT USED.
4. CONNECT TO UNSWITCHED SOURCE CONDUCTOR.
5. SURFACE MOUNT FIXTURE TO UPPER CEILING STRUCTURE.
6. PROVIDE DIGITAL, ADDRESSIBLE, LIGHTING CONTROL SWITCHES AT LOCATIONS INDICATED. PROVIDE CONTROL WIRING PER MANUFACTURER'S REQUIREMENTS. SEE DETAILS AND SCHEDULES FOR ADDITIONAL INFORMATION. ENGRAVE COVER PLATE WITH ZONES CONTROLLED. PROVIDE SEPARATE BUTTON FOR EACH ZONE INDICATED. MULTIPLE BUTTONS SHALL BE MOUNTED IN A SINGLE-GANG COVER.
7. LIGHTING CONTROL PANEL SWITCH LEGS. REFER TO LIGHTING CONTROL PANEL SCHEDULES AND DETAILS FOR ADDITIONAL INFORMATION. SWITCH LEGS MAY BE ROUTED TO PANEL IN SAME CONDUITS AS CONSTANT POWER FEEDS. CONTRACTOR TO DERATE/UPSIZE CONDUCTORS & CONDUIT WHERE REQUIRED.
8. PROVIDE DIMMING CONTROL PER FIXTURE REQUIREMENTS TO LIGHTING CONTROL PANEL. EXTEND DIMMING CONTROL THROUGHOUT CIRCUIT.
9. INVERTER SHOWN AT LOCATION INDICATED FOR DRAWING CLARITY. LOCATE ALL INVERTERS HIGH IN ELECTRICAL 200.

GENERAL NOTES

1. COORDINATE ALL SWITCH, OUTLET, LIGHT AND OTHER DEVICE LOCATIONS WITH ARCHITECTURAL ELEMENTS (CABINETS, WINDOWS ETC.) PRIOR TO ROUGH-IN. REVIEW ARCHITECTURAL INTERIOR ELEVATIONS PRIOR TO ROUGH-IN OF EACH AREA FOR ADDITIONAL INFORMATION.
2. SOME LIGHTING CIRCUITS ARE ROUTED THROUGH LIGHTING CONTROL SYSTEM POWER PANEL. HOME-RUNS ONLY INDICATE BRANCH CIRCUIT CONDUCTORS. UNSWITCHED CONDUCTORS ARE REQUIRED FOR CIRCUITS WITH EM LIGHTING OR OTHER UNCONTROLLED LIGHTING AND DEVICES. ADDITIONAL SWITCHED CONDUCTORS ARE REQUIRED FOR EACH CIRCUIT AND ARE INDICATED WITH LIGHTING CONTROL PANEL HOME-RUNS. REFER TO LIGHTING CONTROL SCHEDULES FOR ADDITIONAL INFORMATION INCLUDING QUANTITY OF SWITCHED CONDUCTORS REQUIRED FOR EACH CIRCUIT.
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4. ALL BALLASTS, INCLUDING BATTERY BACKUP AND ASSOCIATED SELF-DIAGNOSTICS, SHALL BE FACTORY MOUNTED.
5. ALL OCCUPANCY SENSORS SHALL HAVE INTEGRAL PHOTOCELL CONTROL AS SPECIFIED.
6. CONTRACTOR TO FURNISH OCCUPANCY SENSORS WITH COVERAGE PATTERNS APPROPRIATE FOR THEIR INSTALLED LOCATIONS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO BID.
7. CONNECT OCCUPANCY SENSORS TO ENABLE ALL SWITCHES IN CONTROLLED SPACE.
8. CONNECT OCCUPANCY SENSORS, BATTERY BALLASTS, EXIT SIGNS, ETC. TO UNSWITCHED SOURCE CONDUCTOR.
9. SEE POWER PLAN FOR ELECTRICAL DISTRIBUTION, EQUIPMENT AND LIGHTING RELAY PANEL LOCATIONS.
10. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
11. ALL NEW LIGHTING CONTROLS (SWITCH, OCCUPANCY SENSORS, DIMMERS, ETC.) SHALL BE LITHONIA N-LIGHT, WATTSTOPPER DLM OR SIMILIAR THAT ALLOW SWITCHES AND SENSORS TO COMMUNICATE TO MEET MANUAL ON, AUTO OFF REQUIREMENTS OF THE ENERGY CODE.
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LOGAN UT 84321
SALT LAKE CITY UT 84103
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795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

CONSTRUCTION DOCUMENTS

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER
No. 291174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

LIGHTING PLAN - UPPER LEVEL

E-201.2

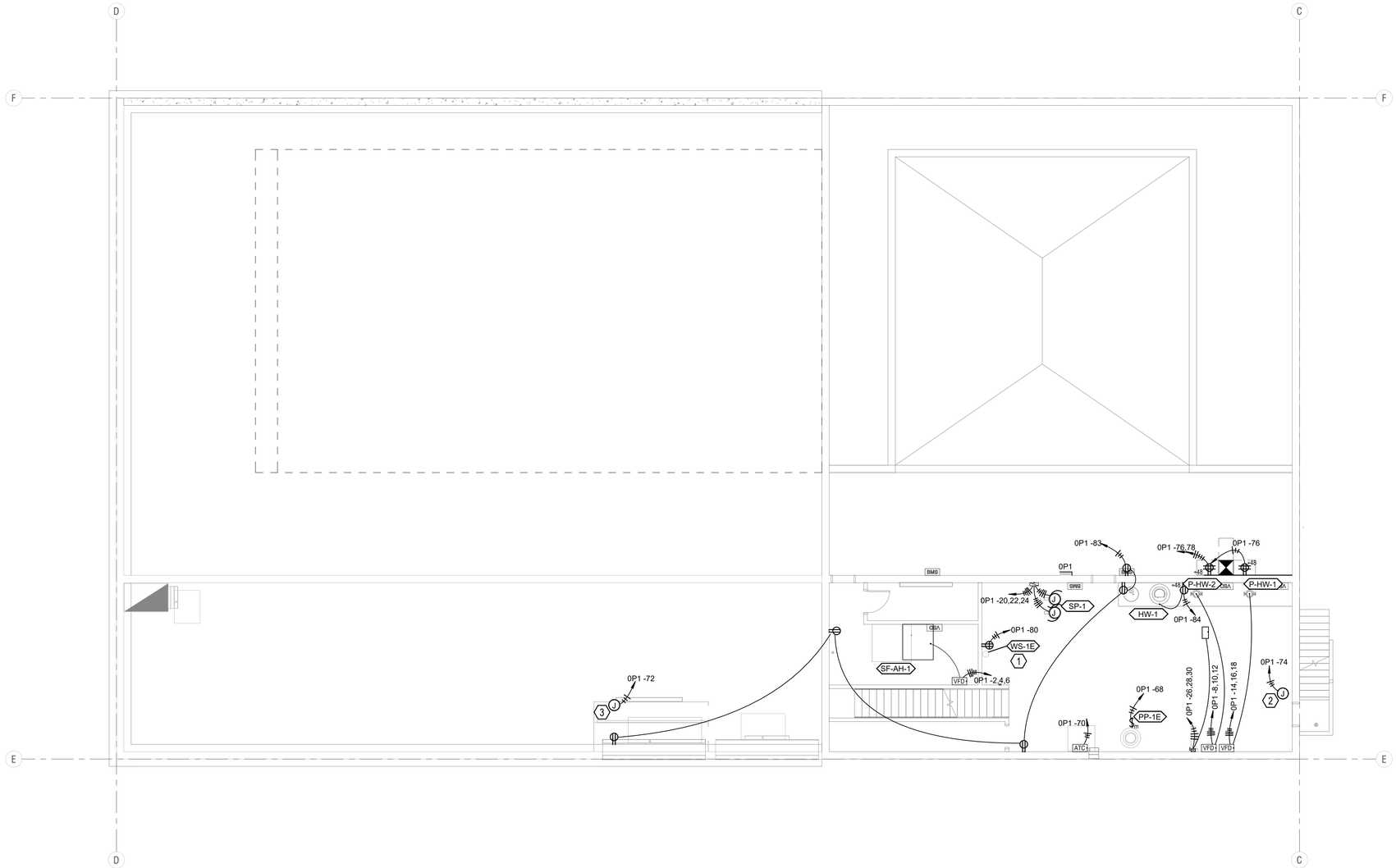
2/5/2024 2:27:35 PM Autodesk Docs://123998_LCSD - Indoor Athletic Facility - Municipool Remodel/123998_E-LCSD - Indoor Athletic Facility - Municipool Remodel_r25.rvt

KEYED NOTES

1. PROVIDE POWER TO EXISTING EQUIPMENT TO REMAIN. VERIFY LOAD INFORMATION WITH EXISTING NAMEPLATE PRIOR TO ROUGH-IN.
2. PROVIDE POWER TO BOILER KILL SWITCH CONTROLS. SWITCH AND CONTROL WIRING BY OTHERS.
3. PROVIDE POWER TO CONTROL TRANSFORMER. TRANSFORMER AND SECONDARY WIRING PROVIDED BY OTHERS. VERIFY CONNECTION LOCATION WITH CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.

GENERAL NOTES

1. COORDINATE ALL SWITCH, OUTLET, LIGHT AND OTHER DEVICE LOCATIONS WITH ARCHITECTURAL ELEMENTS (CABINETS, WINDOWS ETC.) PRIOR TO ROUGH IN. REVIEW ARCHITECTURAL INTERIOR ELEVATIONS PRIOR TO ROUGH-IN OF EACH AREA FOR ADDITIONAL INFORMATION.
2. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
3. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
4. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
5. ALL NEW 20A, 120V RECEPTACLES SHALL BE RATED TAMPER RESISTANT.



1 POWER PLAN - LOWER LEVEL

1/8" = 1'-0"

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY

MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

CONSTRUCTION DOCUMENTS

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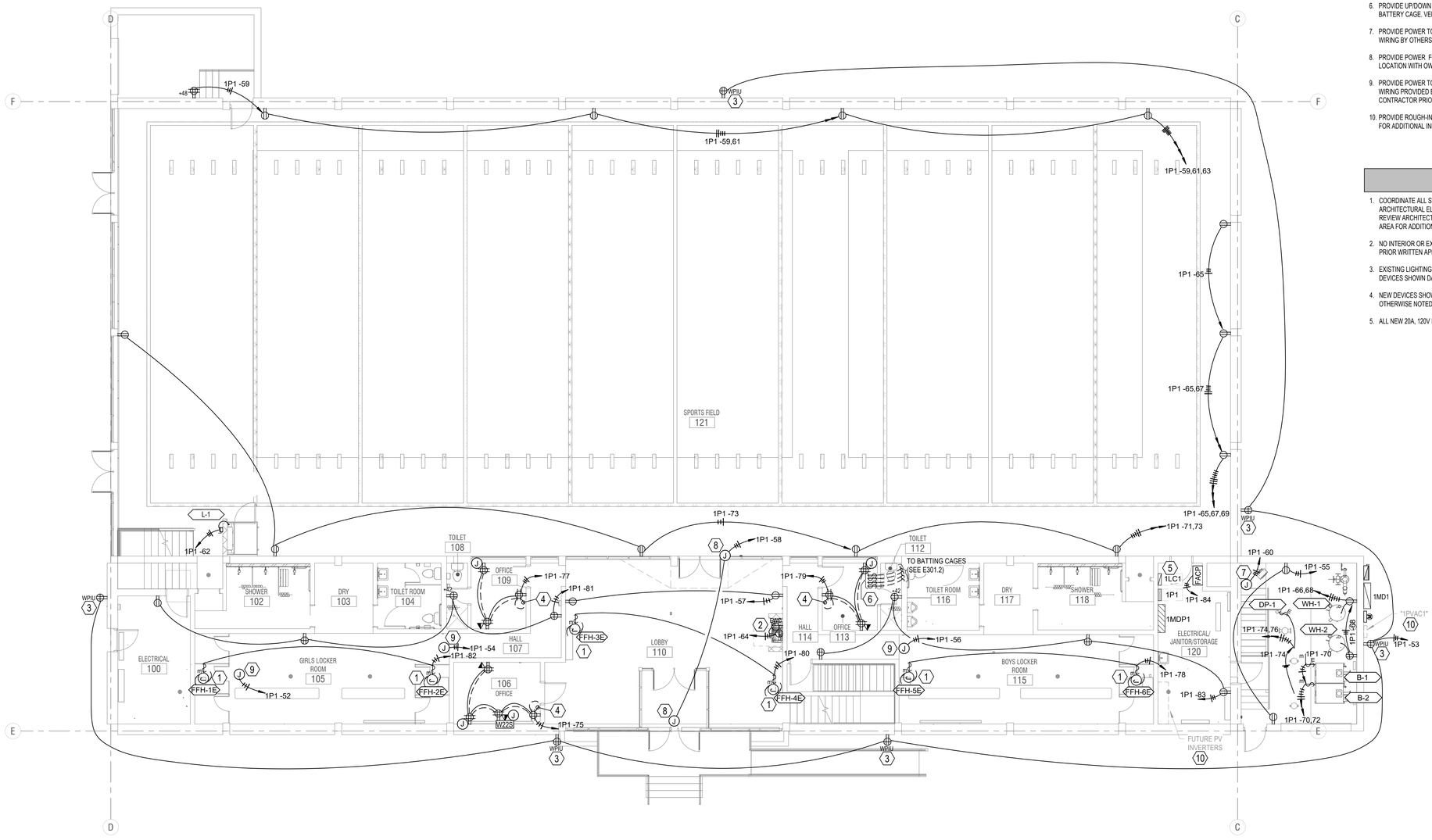
PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER
No. 291174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

POWER PLAN - LOWER LEVEL

E-301.0



KEYED NOTES

1. PROVIDE POWER TO EXISTING EQUIPMENT TO REMAIN. VERIFY LOAD INFORMATION WITH EXISTING NAMEPLATE PRIOR TO ROUGH-IN.
2. MOUNT EWC OUTLET BEHIND COOLER COVER. ROUTE CIRCUIT THROUGH FACELESS GFCI (LEVITON 7590 OR EQUIVALENT) MOUNTED BELOW COOLER COVER. SEE DETAIL 2/E501.3 FOR ADDITIONAL INFORMATION.
3. PROVIDE WP-IN-USE, FLUSH-MOUNT BOX (ARLINGTON STEEL IN-BOX OR EQUIVALENT). COORDINATE TYPE WITH WALL CONSTRUCTION. FIELD PAINT INTERIOR AND TRIM TO MATCH BUILDING TRIM COLOR.
4. ROUTE PORTIONS OF CIRCUIT TO BE CONTROLLED BY OCCUPANCY SENSOR IN SPACE. CIRCUIT CONTROLLED CONDUCTOR TO (1)DUPLEX IN EACH QUAD INDICATED.
5. PROVIDE NEW LIGHTING RELAY PANEL. SEE LIGHTING CONTROL RISER DIAGRAM FOR ADDITIONAL INFORMATION.
6. PROVIDE UP/DOWN CONTROL SWITCH WITH 1/2" CONDUIT AND CONTROL WIRING TO BATTERY CAGE. VERIFY SWITCH LOCATION WITH OWNER PRIOR TO ROUGH-IN.
7. PROVIDE POWER TO BOILER KILL SWITCH CONTROLS. SWITCH AND CONTROL WIRING BY OTHERS.
8. PROVIDE POWER FOR ACCESS CONTROL AS REQUIRED. VERIFY ROUGH-IN LOCATION WITH OWNER'S SECURITY PERSONNEL PRIOR TO ROUGH-IN.
9. PROVIDE POWER TO CONTROL TRANSFORMER. TRANSFORMER AND SECONDARY WIRING PROVIDED BY OTHERS. VERIFY CONNECTION LOCATION WITH CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
10. PROVIDE ROUGH-IN FOR FUTURE PV SYSTEM. SEE ELECTRICAL ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.

GENERAL NOTES

1. COORDINATE ALL SWITCH, OUTLET, LIGHT AND OTHER DEVICE LOCATIONS WITH ARCHITECTURAL ELEMENTS (CABINETS, WINDOWS ETC.) PRIOR TO ROUGH IN. REVIEW ARCHITECTURAL INTERIOR ELEVATIONS PRIOR TO ROUGH-IN OF EACH AREA FOR ADDITIONAL INFORMATION.
2. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
3. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
4. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
5. ALL NEW 20A, 120V RECEPTACLES SHALL BE RATED TAMPER RESISTANT.

1 POWER PLAN - MAIN LEVEL

1/8" = 1'-0"

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795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY

MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

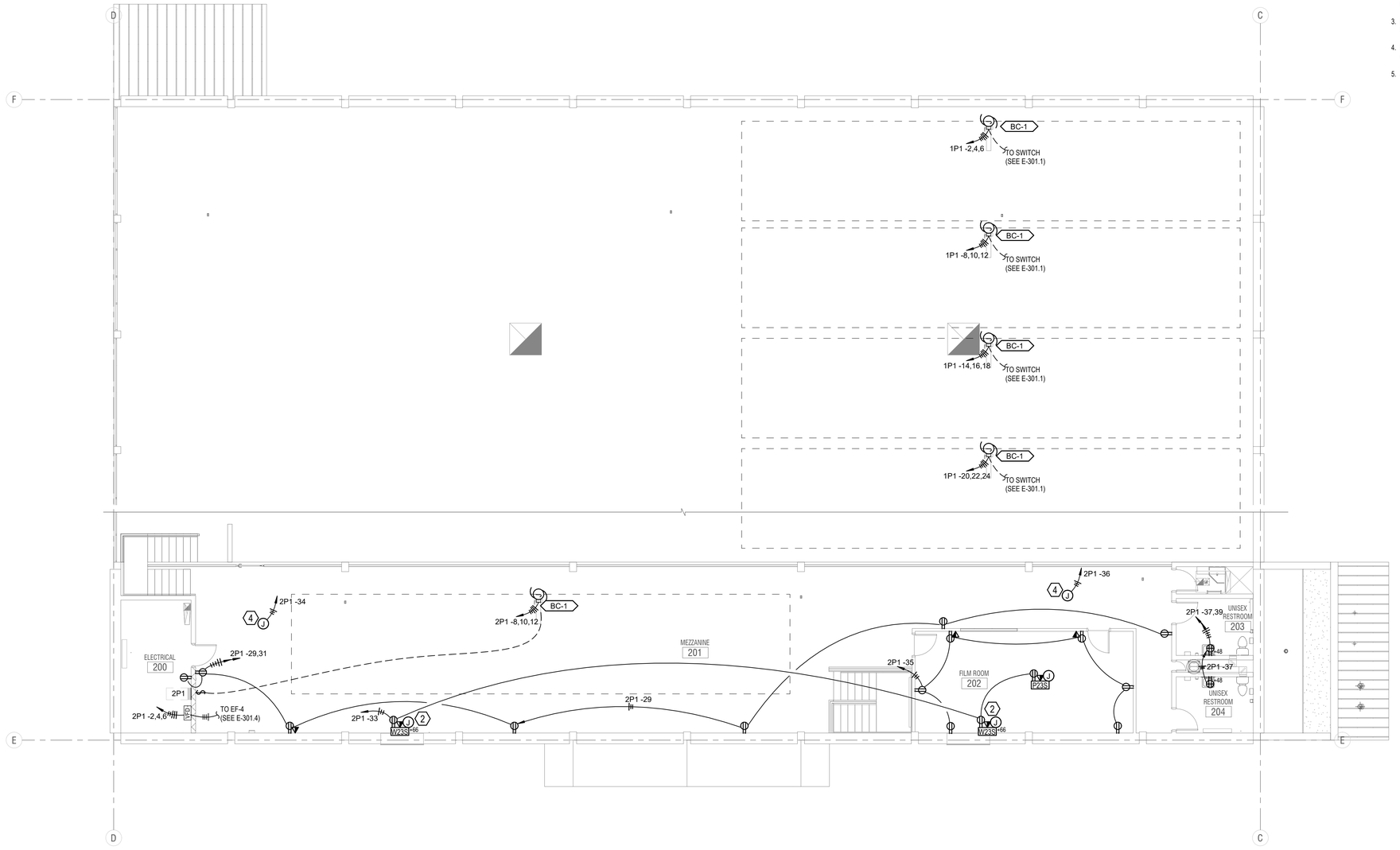
REGISTERED PROFESSIONAL ENGINEER
No. 294174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

CONSTRUCTION DOCUMENTS

POWER PLAN - MAIN LEVEL

E-301.1

2/5/2024 2:27:30 PM Autodesk Docs://123998 - LCSD - Indoor Athletic Facility - Municipool Remodel/123998_E-LCSD - Indoor Athletic Facility - Municipool Remodel_r25.rvt



1 POWER PLAN - MEZZAINE

1/8" = 1'-0"

KEYED NOTES

1. PROVIDE POWER TO EXISTING EQUIPMENT TO REMAIN. VERIFY LOAD INFORMATION WITH EXISTING NAMEPLATE PRIOR TO ROUGH-IN.
2. PROVIDE POWER TO FLAT SCREEN TV. VERIFY MOUNTING LOCATION WITH OWNER PRIOR TO ROUGH-IN.
3. PROVIDE UP/DOWN CONTROL SWITCH WITH 1/2" CONDUIT AND CONTROL WIRING TO BATTERY CAGE. VERIFY SWITCH LOCATION WITH OWNER PRIOR TO ROUGH-IN.
4. PROVIDE POWER TO CONTROL TRANSFORMER. TRANSFORMER AND SECONDARY WIRING PROVIDED BY OTHERS. VERIFY CONNECTION LOCATION WITH CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.

GENERAL NOTES

1. COORDINATE ALL SWITCH, OUTLET, LIGHT AND OTHER DEVICE LOCATIONS WITH ARCHITECTURAL ELEMENTS (CABINETS, WINDOWS ETC.) PRIOR TO ROUGH IN. REVIEW ARCHITECTURAL INTERIOR ELEVATIONS PRIOR TO ROUGH-IN OF EACH AREA FOR ADDITIONAL INFORMATION.
2. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
3. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
4. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
5. ALL NEW 20A, 120V RECEPTACLES SHALL BE RATED TAMPER RESISTANT.

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ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER
No. 291171
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

CONSTRUCTION DOCUMENTS

POWER PLAN - UPPER LEVEL

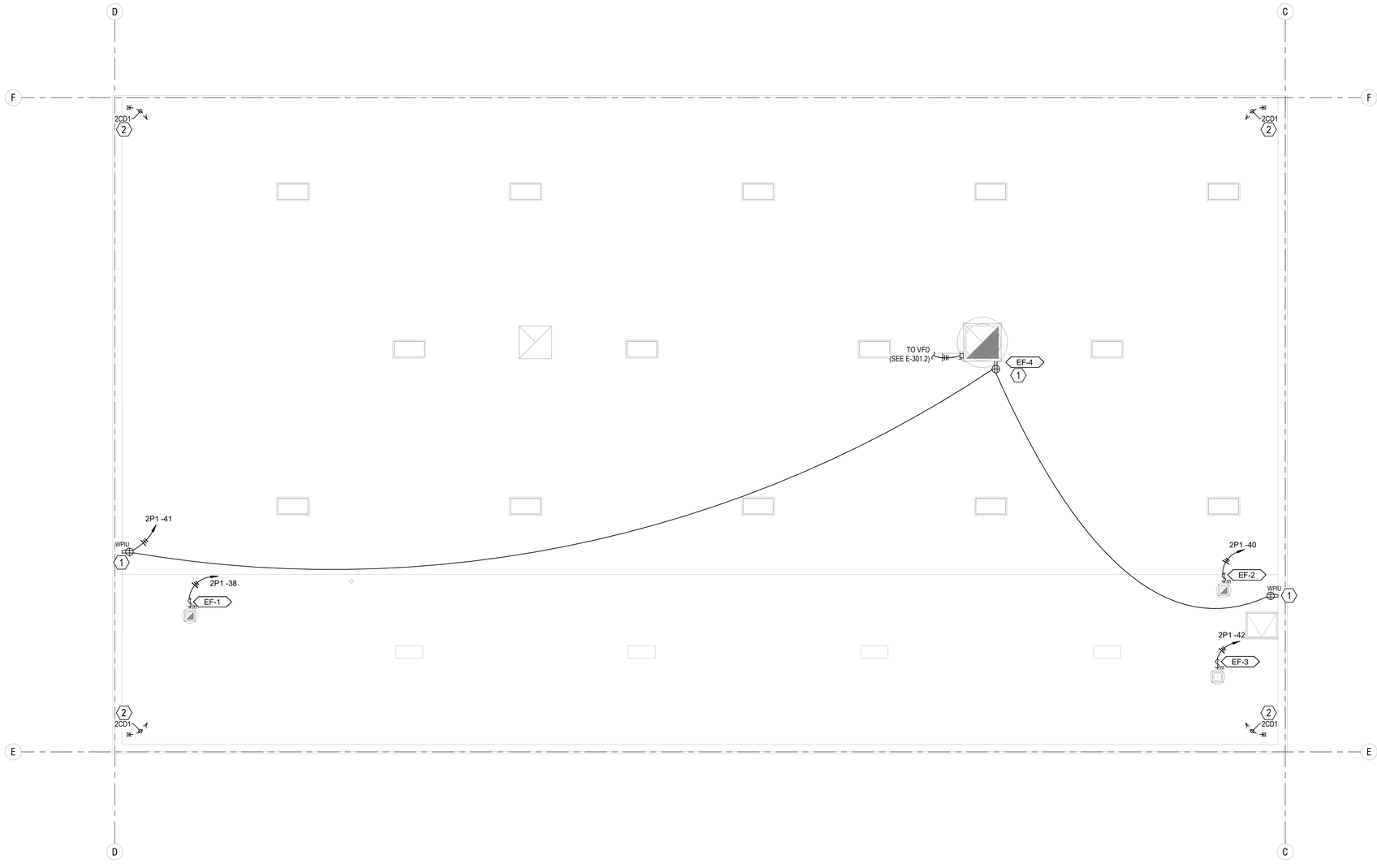
E-301.2

KEYED NOTES

1. PROVIDE ROOF EQUIPMENT SERVICE OUTLET LOCATED PER NEC REQUIREMENTS. WHERE OUTLET IS SHOWN ADJACENT TO ROOF-TOP UNIT, PROVIDE CONNECTION TO OUTLET FURNISHED WITH UNIT.
2. PROVIDE CONDUIT STUB TO ROOF FOR FUTURE PV ARRAY. SEE E-301.1 AND E-601.1 ELECTRICAL ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.

GENERAL NOTES

1. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
2. ALL NEW 20A, 120V RECEPTACLES SHALL BE RATED TAMPER RESISTANT.
3. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
4. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.



1 POWER PLAN - ROOF

1/8" = 1'-0"

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LCSD INDOOR ATHLETIC FACILITY
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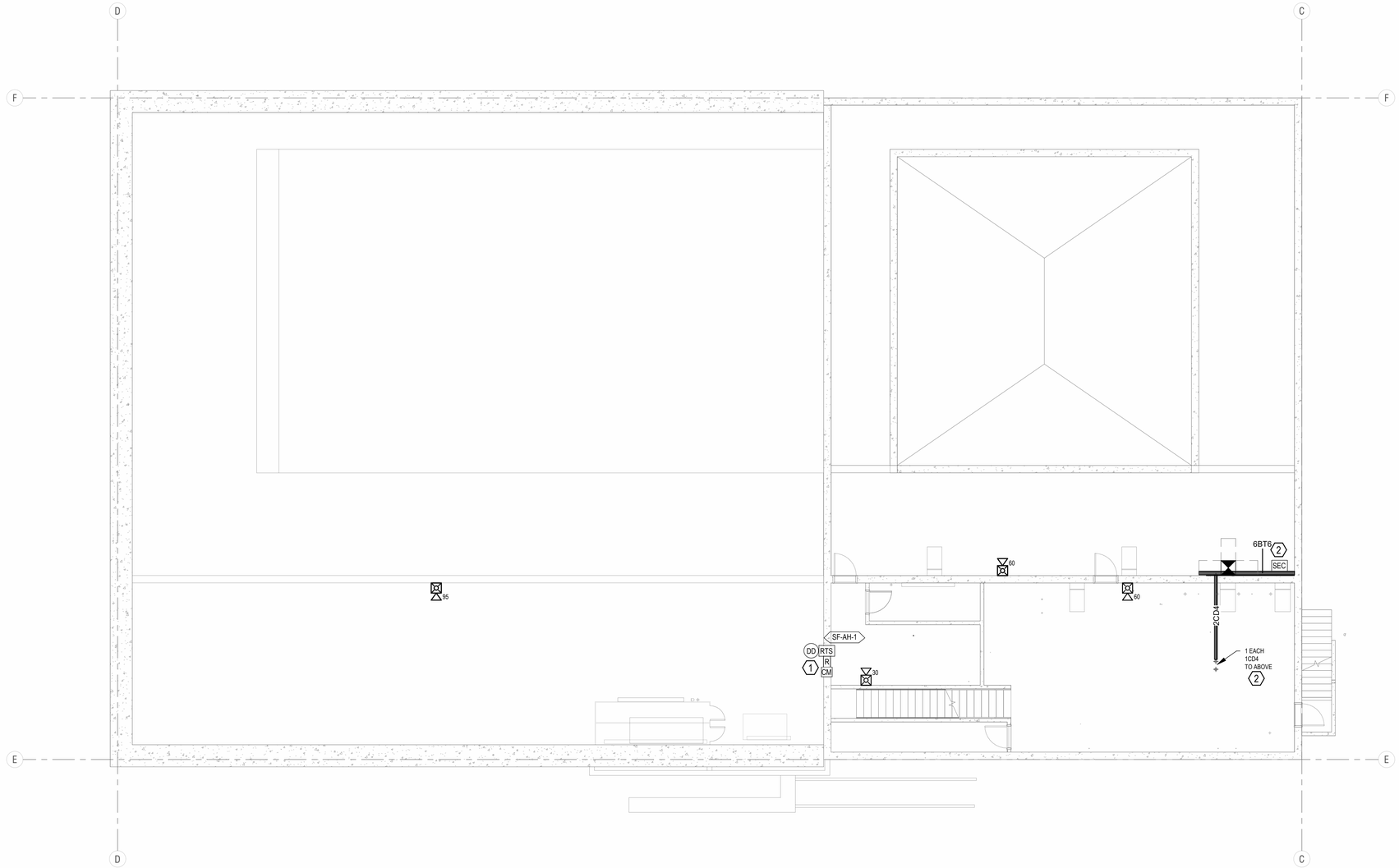
No. 291174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

CONSTRUCTION DOCUMENTS

POWER PLAN - ROOF

E-301.4



1 ELECTRONICS SYSTEMS PLAN - LOWER LEVEL

1/8" = 1'-0"

KEYED NOTES

1. PROVIDE DUCT DETECTORS WITH REMOTE INDICATING LAMP AND FIRE ALARM SHUTDOWN FOR HVAC UNITS.
2. PROPOSED ROUTING OF COMMUNICATIONS RACEWAYS. VERIFY WITH FIELD CONDITIONS.

GENERAL NOTES

1. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
2. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
3. COORDINATE ALL SWITCH, OUTLET, LIGHT AND OTHER DEVICE LOCATIONS WITH ARCHITECTURAL ELEMENTS (CABINETS, WINDOWS ETC.) PRIOR TO ROUGH IN. REVIEW ARCHITECTURAL INTERIOR ELEVATIONS PRIOR TO ROUGH-IN OF EACH AREA FOR ADDITIONAL INFORMATION.
4. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
5. SEE SYMBOL SCHEDULE AND COMMUNICATIONS RISER DIAGRAM FOR COMMUNICATIONS CABLING AND ROUGH-IN REQUIREMENTS.
6. PROVIDE PULL STRINGS IN ALL COMMUNICATIONS AND SECURITY RACEWAYS AS SPECIFIED.
7. SOLIDLY SUPPORT COMMUNICATIONS J-HOOKS (—CMJ— LINES) TO STRUCTURAL ELEMENTS. USE SUSPENSION HANGERS, WHERE NEEDED, TO MAINTAIN SPECIFIED SPACING.
8. CONTRACTOR PROVIDE ALL COMMUNICATIONS BOXES AND RACEWAY UNLESS OTHERWISE NOTED. SEE COMMUNICATIONS RACEWAY SCHEDULE FOR ADDITIONAL INFORMATION.
9. PROVIDE INDUSTRY STANDARD CADDIE CLIPS 4' ON CENTER THROUGH ALL CORRIDORS AND INTO DATA ROOM. COMPLY WITH TIA/EIA CATEGORY 6E STANDARDS FOR COMMUNICATIONS RACEWAY INSTALLATIONS.
10. CANDELA RATINGS FOR STROBE DEVICES ARE MINIMUM REQUIRED VALUES. FIRE ALARM CONTRACTOR SHALL ADJUST MANUFACTURER'S STANDARD CANDELA RATINGS AS NECESSARY TO MEET OR EXCEED MINIMUM REQUIREMENTS.
11. FIRE ALARM ANNUNCIATION DEVICE LOCATIONS ARE BASED ON CODE REQUIRED LAYOUTS. COORDINATE WITH ENGINEER PRIOR TO RELOCATING ANY DEVICES. ALTERNATE LOCATIONS AFFECT DEVICE CANDELA RATINGS.
12. ALL FIRE ALARM CONDUITS AND BOXES TO BE IDENTIFIED AS FOLLOWS:
    a) CONCEALED: FACTORY APPLIED RED.
    b) EXPOSED: FIELD PAINTED TO MATCH ADJACENT SURFACE.
13. SMOKE DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER CONSTRUCTION CLEAN-UP IS COMPLETED AND FINAL.
14. PROVIDE SYNCHRONIZATION OF ALL VISUAL NOTIFICATION APPLIANCE CIRCUITS. PROVIDE ALL REQUIRED SYNC MODULES. PROVIDE A MULTI-SYNC MODE SLAVE CONNECTION BETWEEN ALL SYNC MODULES.
15. DESIGN AND FIELD VERIFY AUDIBILITY SETTINGS OF NOTIFICATION APPLIANCES. FIELD MEASURE SOUND PRESSURE LEVELS AND REPLACE HORN-STROBES WITH STROBE ONLY DEVICES WERE REQUIRED.
16. POWER FOR ALL FIRE ALARM PANELS AND FIRE ALARM POWER SUPPLIES MUST BE PROVIDED BY A DEDICATED AC BRANCH CIRCUIT.
17. PROVIDE FACTORY COLOR CODING FOR LOW VOLTAGE SYSTEMS RACEWAYS AS FOLLOWS:
    - FIRE ALARM: RED
    - IT/COMMUNICATIONS: BLUE
    - SECURITY: YELLOW
    - LIGHTING CONTROL: ORANGE
    - OTHER: PURPLE

COMMUNICATIONS RACEWAY SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
xCDy	CONDUIT; QUANTITY "X", DIAMETER "Y" AS INDICATED ON SYMBOL SCHEDULE	AS SPECIFIED		INSULATED THROAT CONNECTORS ON ALL ENDS; PULL STRING
xCTy	X"W X Y"D ALUMINUM CABLE TRAY; MAXIMUM 10' SUPPORT SPACING (MIN 300 LBS/FT LOAD CAPACITY)	COOPER	35A-12 SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
CMJ	CABLE HOOKS; 4"; RETAINING CLIP QUANTITY AS REQUIRED FOR CURRENT CABLING PLUS 50% SPARE CAPACITY	COOPER B-LINE	BCH64 SERIES (OR EQUIVALENT)	RETAINER (BCHR64) OTHER ACCESSORIES AS REQUIRED
xBTy	X"W X Y"D STEEL, WIRE MESH TRAY MAXIMUM 6' SUPPORT SPACING (MIN 83 LBS/FT LOAD CAPACITY)	COOPER	FT(X)X(Y)-EG SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
xLRy	X"W X Y"D ALUMINUM; LADDER STYLE; CABLE TRAY; 6" RUNG SPACING; 200 LBS/FT LOAD CAPACITY	COOPER B-LINE	H47-A-XX-YY-** SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
COMM OUTLET BOX	5" SQUARE X 2 7/8" DEEP 3/4" MUD RING (1 OR 2-GANG AS NOTED)	STEEL CITY STEEL CITY	821811-1 SERIES 82C-*G-3/4 (OR EQUIVALENT)	

CONSTRUCTION DOCUMENTS

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LOGAN CITY SCHOOL DISTRICT

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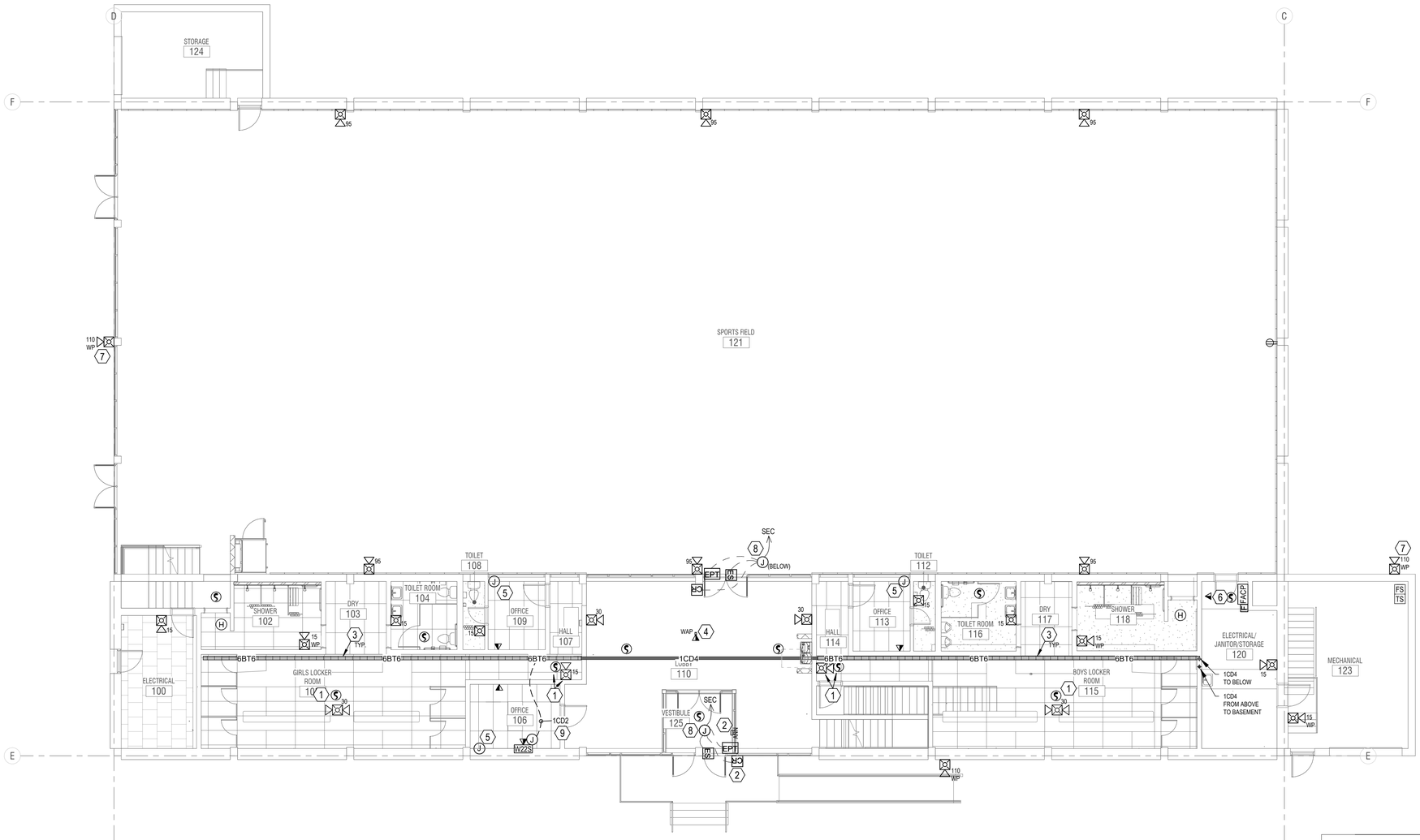
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER
No. 291174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

ELECTRONICS SYSTEMS PLAN - LOWER LEVEL

E-401.0



1 ELECTRONIC SYSTEMS PLAN - MAIN LEVEL

1/8" = 1'-0"

KEYED NOTES

1. DEVICE INDICATED TO BE INSTALLED WITH 15' OF END OF CORRIDOR.
2. MOUNT TO WINDOW MULLION. ROUTE FLEXIBLE CONDUITS CONCEALED THROUGH MULLIONS AS NEEDED.
3. PROPOSED ROUTING OF COMMUNICATIONS RACEWAYS. VERIFY WITH FIELD CONDITIONS.
4. PROVIDE CEILING OUTLET FOR WIRELESS ACCESS POINT. VERIFY LOCATION WITH OWNER'S I.T. REP PRIOR TO ROUGH-IN.
5. PROVIDE ROUGH-IN FOR FUTURE DATA OUTLET AS SPECIFIED.
6. PROVIDE DATA CONNECTION TO LIGHTING RELAY PANEL.
7. CONNECT DEVICE TO OPERATE ONLY ON WATER FLOW.
8. PROVIDE ACCESS CONTROL ROUGH-IN FOR DOOR INDICATED. SEE DETAIL 4/E-501.3. PROVIDE INTERLOCK WITH FIRE ALARM FOR DOOR TO RELEASE ON ALARM.
9. PROVIDE EMPTY CONDUIT, SIZE AS INDICATED, FROM BOX TO BOX OR TRAY AS SHOWN FOR OWNER A/V CABLING.

GENERAL NOTES

1. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
2. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
3. COORDINATE ALL SWITCH, OUTLET, LIGHT AND OTHER DEVICE LOCATIONS WITH ARCHITECTURAL ELEMENTS (CABINETS, WINDOWS ETC.) PRIOR TO ROUGH IN. REVIEW ARCHITECTURAL INTERIOR ELEVATIONS PRIOR TO ROUGH-IN OF EACH AREA FOR ADDITIONAL INFORMATION.
4. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
5. SEE SYMBOL SCHEDULE FOR COMMUNICATIONS CABLING AND ROUGH-IN REQUIREMENTS.
6. PROVIDE PULL STRINGS IN ALL COMMUNICATIONS AND SECURITY RACEWAYS AS SPECIFIED.
7. SOLIDLY SUPPORT COMMUNICATIONS J-HOOKS (---CMJ--- LINES) TO STRUCTURAL ELEMENTS. USE SUSPENSION HANGERS, WHERE NEEDED, TO MAINTAIN SPECIFIED SPACING.
8. CONTRACTOR PROVIDE ALL COMMUNICATIONS BOXES AND RACEWAY UNLESS OTHERWISE NOTED. SEE COMMUNICATIONS RACEWAY SCHEDULE FOR ADDITIONAL INFORMATION.
9. PROVIDE INDUSTRY STANDARD CADDIE CLIPS 4' ON CENTER THROUGH ALL CORRIDORS AND INTO DATA ROOM. COMPLY WITH TIA/EIA CATEGORY 6E STANDARDS FOR COMMUNICATIONS RACEWAY INSTALLATIONS.
10. CANDELA RATINGS FOR STROBE DEVICES ARE MINIMUM REQUIRED VALUES. FIRE ALARM CONTRACTOR SHALL ADJUST MANUFACTURER'S STANDARD CANDELA RATINGS AS NECESSARY TO MEET OR EXCEED MINIMUM REQUIREMENTS.
11. FIRE ALARM ANNUNCIATION DEVICE LOCATIONS ARE BASED ON CODE REQUIRED LAYOUTS. COORDINATE WITH ENGINEER PRIOR TO RELOCATING ANY DEVICES. ALTERNATE LOCATIONS AFFECT DEVICE CANDELA RATINGS.
12. ALL FIRE ALARM CONDUITS AND BOXES TO BE IDENTIFIED AS FOLLOWS:
    a) CONCEALED: FACTORY APPLIED RED.
    b) EXPOSED: FIELD PAINTED TO MATCH ADJACENT SURFACE.
13. SMOKE DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER CONSTRUCTION CLEAN-UP IS COMPLETED AND FINAL.
14. PROVIDE SYNCHRONIZATION OF ALL VISUAL NOTIFICATION APPLIANCE CIRCUITS. PROVIDE ALL REQUIRED SYNC MODULES. PROVIDE A MULTI-SYNC MODE SLAVE CONNECTION BETWEEN ALL SYNC MODULES.
15. DESIGN AND FIELD VERIFY AUDIBILITY SETTINGS OF NOTIFICATION APPLIANCES. FIELD MEASURE SOUND PRESSURE LEVELS AND REPLACE HORN-STROBES WITH STROBE ONLY DEVICES WERE REQUIRED.
16. POWER FOR ALL FIRE ALARM PANELS AND FIRE ALARM POWER SUPPLIES MUST BE PROVIDED BY A DEDICATED AC BRANCH CIRCUIT.
17. PROVIDE FACTORY COLOR CODING FOR LOW VOLTAGE SYSTEMS RACEWAYS AS FOLLOWS:
    - FIRE ALARM: RED
    - IT/COMMUNICATIONS: BLUE
    - SECURITY: YELLOW
    - LIGHTING CONTROL: ORANGE
    - OTHER: PURPLE

COMMUNICATIONS RACEWAY SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
xCDy	CONDUIT; QUANTITY "X", DIAMETER "Y" AS INDICATED ON SYMBOL SCHEDULE	AS SPECIFIED		INSULATED THROAT CONNECTORS ON ALL ENDS; PULL STRING
xCTy	X"W X Y"D ALUMINUM CABLE TRAY; MAXIMUM 10' SUPPORT SPACING (MIN 300 LBS/FT LOAD CAPACITY)	COOPER	35A-12 SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
CMJ	CABLE HOOKS; 4"; RETAINING CLIP QUANTITY AS REQUIRED FOR CURRENT CABLING PLUS 50% SPARE CAPACITY	COOPER B-LINE	BCH64 SERIES (OR EQUIVALENT)	RETAINER (BCHR64) OTHER ACCESSORIES AS REQUIRED
xBTy	X"W X Y"D STEEL, WIRE MESH TRAY MAXIMUM 6' SUPPORT SPACING (MIN 83 LBS/FT LOAD CAPACITY)	COOPER	FT(X)X(Y)-EG SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
xLRy	X"W X Y"D ALUMINUM; LADDER STYLE; CABLE TRAY; 6" RUNG SPACING; 200 LBS/FT LOAD CAPACITY	COOPER B-LINE	H47-A-XX-YY-** SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
COMM OUTLET BOX	5" SQUARE X 2 7/8" DEEP 3/4" MUD RING (1 OR 2-GANG AS NOTED)	STEEL CITY STEEL CITY	82181T-1 SERIES 82C-*G-3/4 (OR EQUIVALENT)	

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CONSTRUCTION DOCUMENTS

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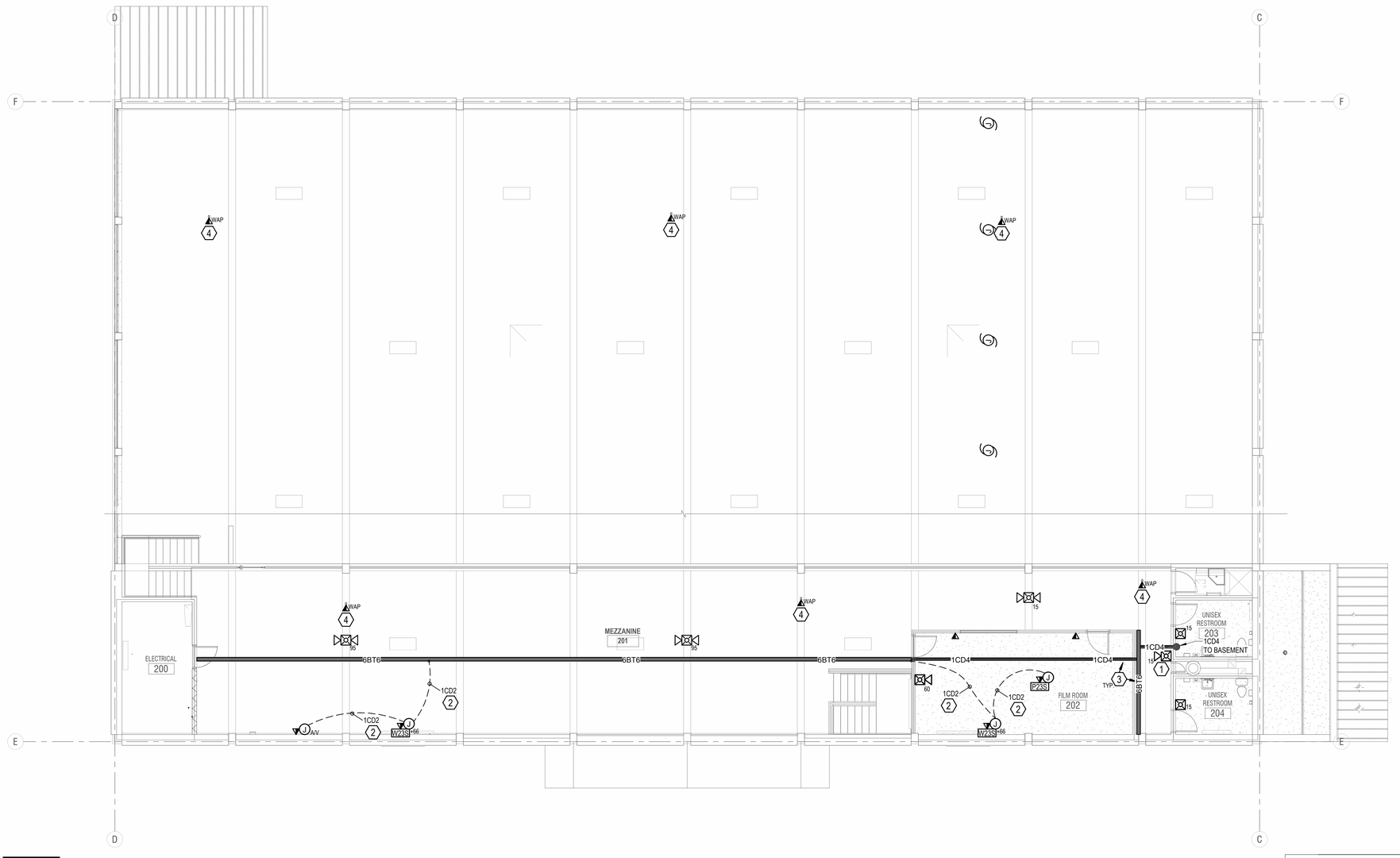
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

ELECTRONICS SYSTEMS PLAN - MAIN LEVEL

E-401.1



1 ELECTRONIC SYSTEMS PLAN - MEZZANINE

1/8" = 1'-0"

NORTH

KEYED NOTES

1. DEVICE INDICATED TO BE INSTALLED WITH 15' OF END OF CORRIDOR.
2. PROVIDE EMPTY CONDUIT, SIZE AS INDICATED, FROM BOX TO BOX OR TRAY AS SHOWN FOR OWNER A/V CABLING.
3. PROPOSED ROUTING OF COMMUNICATIONS RACEWAYS. VERIFY WITH FIELD CONDITIONS.
4. PROVIDE CEILING OUTLET FOR WIRELESS ACCESS POINT. VERIFY LOCATION WITH OWNER'S I.T. REP PRIOR TO ROUGH-IN.

GENERAL NOTES

1. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
2. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
3. COORDINATE ALL SWITCH, OUTLET, LIGHT AND OTHER DEVICE LOCATIONS WITH ARCHITECTURAL ELEMENTS (CABINETS, WINDOWS ETC.) PRIOR TO ROUGH IN. REVIEW ARCHITECTURAL INTERIOR ELEVATIONS PRIOR TO ROUGH-IN OF EACH AREA FOR ADDITIONAL INFORMATION.
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5. SEE SYMBOL SCHEDULE FOR COMMUNICATIONS CABLING AND ROUGH-IN REQUIREMENTS.
6. PROVIDE PULL STRINGS IN ALL COMMUNICATIONS AND SECURITY RACEWAYS AS SPECIFIED.
7. SOLIDLY SUPPORT COMMUNICATIONS J-HOOKS (—CMJ— LINES) TO STRUCTURAL ELEMENTS. USE SUSPENSION HANGERS, WHERE NEEDED, TO MAINTAIN SPECIFIED SPACING.
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17. PROVIDE FACTORY COLOR CODING FOR LOW VOLTAGE SYSTEMS RACEWAYS AS FOLLOWS:
    - FIRE ALARM: RED
    - IT/COMMUNICATIONS: BLUE
    - SECURITY: YELLOW
    - LIGHTING CONTROL: ORANGE
    - OTHER: PURPLE

COMMUNICATIONS RACEWAY SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
xCDy	CONDUIT; QUANTITY "X", DIAMETER "Y" AS INDICATED ON SYMBOL SCHEDULE	AS SPECIFIED		INSULATED THROAT CONNECTORS ON ALL ENDS; PULL STRING
xCTy	X"W X Y"D ALUMINUM CABLE TRAY; MAXIMUM 10' SUPPORT SPACING (MIN 300 LBS/FT LOAD CAPACITY)	COOPER	35A-12 SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
CMJ	CABLE HOOKS; 4"; RETAINING CLIP QUANTITY AS REQUIRED FOR CURRENT CABLING PLUS 50% SPARE CAPACITY	COOPER B-LINE	BCH64 SERIES (OR EQUIVALENT)	RETAINER (BCHR64) OTHER ACCESSORIES AS REQUIRED
xBTy	X"W X Y"D STEEL, WIRE MESH TRAY MAXIMUM 6' SUPPORT SPACING (MIN 83 LBS/FT LOAD CAPACITY)	COOPER	FT(X)X(Y)-EG SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
xLRy	X"W X Y"D ALUMINUM; LADDER STYLE; CABLE TRAY; 6" RUNG SPACING; 200 LBS/FT LOAD CAPACITY	COOPER B-LINE	H47-A-XX-YY-** SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
COMM OUTLET BOX	5" SQUARE X 2 7/8" DEEP 3/4" MUD RING (1 OR 2-GANG AS NOTED)	STEEL CITY STEEL CITY	82181T-1 SERIES 82C-*G-3/4 (OR EQUIVALENT)	

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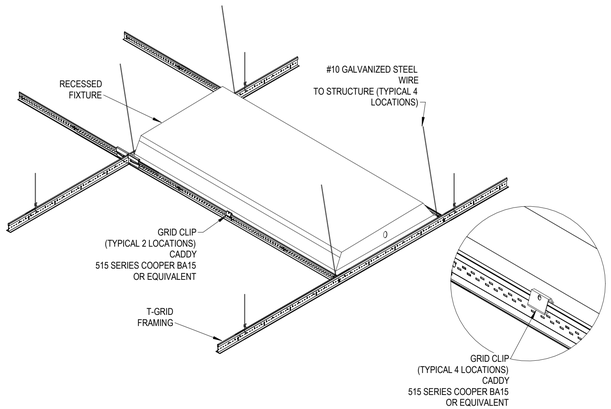
ELECTRONICS SYSTEMS PLAN - UPPER LEVEL

E-401.2



2 SEISMIC SUPPORT DETAIL

N.T.S.

LIGHTING CONTROL INPUT SCHEDULE

TYPE	DESCRIPTION	CONTROLLED RELAYS
T1	INTERIOR TIMECLOCK ON/OFF (SCHEDULE PER OWNER)	
T2	EXTERIOR TIMECLOCK ON/OFF (ON AT DUSK, OFF PER OWNER)	1LC1:16-24E WZ1:1
T3	EXTERIOR SECURITY ON/OFF (ON AT DUSK, OFF PER OWNER)	
SS	SECURITY SYSTEM INTERFACE	1LC1:1-24 WZ1:1
B1	BLINK WARNING	1LC1:1-24 WZ1:1
D1	TOGGLE W/ TIME OUT + DIMMING: VESTIBULE	1LC1:3
D2	TOGGLE W/ TIME OUT + DIMMING: LOBBY	1LC1:5
D3	TOGGLE W/ TIME OUT + DIMMING: GIRLS LOCKER	1LC1:9
D4	TOGGLE W/ TIME OUT + DIMMING: GIRLS SHOWER	1LC1:11
D5	TOGGLE W/ TIME OUT + DIMMING: BOYS LOCKER	1LC1:17
D6	TOGGLE W/ TIME OUT + DIMMING: BOYS SHOWER	1LC1:19
D7	TOGGLE W/ TIME OUT + DIMMING: MAIN SOUTH	1LC1:2
D8	TOGGLE W/ TIME OUT + DIMMING: MAIN CNTR S	1LC1:4
D9	TOGGLE W/ TIME OUT + DIMMING: MAIN CENTER	1LC1:6
D10	TOGGLE W/ TIME OUT + DIMMING: MAIN CNTR N	1LC1:8
D11	TOGGLE W/ TIME OUT + DIMMING: MAIN NORTH	1LC1:10
D12	TOGGLE W/ TIME OUT + DIMMING: MEZZANINE	1LC1:14
D13	TOGGLE W/ TIME OUT + DIMMING: MEZZANINE HALL	1LC1:12
D14	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D15	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D16	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D17	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D18	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D19	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D20	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D21	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D22	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D23	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D24	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
IO	OCCUPANCY SENSOR: INTERNAL NIGHT SETBACK OVERRIDE	WZ:1
O1	OCC SENSOR: VESTIBULE	
O2	OCC SENSOR: SPARE INPUT	
O3	OCC SENSOR: SPARE INPUT	
O4	OCC SENSOR: SPARE INPUT	
O5	OCC SENSOR: SPARE INPUT	
O6	OCC SENSOR: SPARE INPUT	
O7	OCC SENSOR: SPARE INPUT	
O8	OCC SENSOR: SPARE INPUT	
P1	PHOTOCELL: EXTERIOR	1LC1:16-24E WZ1:1
P2	PHOTOCELL: GYM SOUTH DAYLIGHT	1LC1:2
P3	PHOTOCELL: GYM S CNTR DAYLIGHT	1LC1:4
P4	PHOTOCELL: GYM CNTR DAYLIGHT	1LC1:6
P5	PHOTOCELL: GYM N CNTR DAYLIGHT	1LC1:8
P6	PHOTOCELL: GYM N DAYLIGHT	1LC1:10
P7	PHOTOCELL: SPARE INPUT	
P8	PHOTOCELL: SPARE INPUT	
S1	TOGGLE W/ TIME OUT: BSMT STAIR	1LC1:1
S2	TOGGLE W/ TIME OUT: CENTER STAIR	1LC1:21
S3	TOGGLE W/ TIME OUT: GIRL LOCKER HALL	1LC1:7
S4	TOGGLE W/ TIME OUT: EQUIP HALL	1LC1:13
S5	TOGGLE W/ TIME OUT: BOYS LOCKER HALL	1LC1:15
S6	TOGGLE W/ TIME OUT: S STAIR	1LC1:23
S7	TOGGLE W/ TIME OUT: SPARE INPUT	
S8	TOGGLE W/ TIME OUT: SPARE INPUT	
S9	TOGGLE W/ TIME OUT: SPARE INPUT	
S10	TOGGLE W/ TIME OUT: SPARE INPUT	
S11	TOGGLE W/ TIME OUT: SPARE INPUT	
S12	TOGGLE W/ TIME OUT: SPARE INPUT	
S13	TOGGLE W/ TIME OUT: SPARE INPUT	
S14	TOGGLE W/ TIME OUT: SPARE INPUT	
S15	TOGGLE W/ TIME OUT: SPARE INPUT	
S16	TOGGLE W/ TIME OUT: SPARE INPUT	
S17	TOGGLE W/ TIME OUT: SPARE INPUT	

NOTES

RELAY PANEL SCHEDULE

RELAY PANEL: 1LC1 — [X] NEW [ ] EXISTING

FEEDS: [X] INDIVIDUAL [ ] MAIN LUGS [ ] MAIN BKR; MAX VOLTAGE 208; MAX PHASE 1

REMARKS: -*=PROVIDE DIMMING CONTROL WIRING PER LOAD TYPE THROUGHOUT CIRCUIT

LOCATION: ELECTRICAL 120

MOUNTING: [ ] FLUSH [X] SURFACE

No.	RELAY A	RELAY P	CONTROLLED CKT	CONTROL ZONE	CONTROL TYPE (SEE SCHEDULE)	DIMMING* (SEE SCHED)	No.	No.	CONTROL TYPE (SEE SCHEDULE)	DIMMING* (SEE SCHED)	CONTROL ZONE	CONTROLLED CKT	RELAY A	RELAY P	No.
1	20	1	1P1- 3	BSMT STAIR	T1,B1,SS,S1	N/A	1	2	T1,B1,SS	D7,P2	MAIN SOUTH	1P1- 7	20	1	2
3	20	1	1P1- 5	VESTIBULE	T1,B1,SS	D1	3	4	T1,B1,SS	D8,P3	MAIN CNTR S	1P1- 9	20	1	4
5	20	1	1P1- 5	LOBBY	T1,B1,SS	D2	5	6	T1,B1,SS	D9,P4	MAIN CENTER	1P1- 11	20	1	6
7	20	1	1P1- 5	GIRL LKR HALL	T1,B1,SS,S3	N/A	7	8	T1,B1,SS	D10,P5	MAIN CNTR N	1P1- 13	20	1	8
9	20	1	1P1- 5	GIRL LKR	T1,B1,SS	D3	9	10	T1,B1,SS	D11,P6	MAIN NORTH	1P1- 15	20	1	10
11	20	1	1P1- 5	GIRL SHOWER	T1,B1,SS	D4	11	12	T1,B1,SS	D13	MEZZ HALL	1P1- 5	20	1	12
13	20	1	1P1- 5	EQUIP HALL	T1,B1,SS,S4	N/A	13	14	T1,B1,SS	D12	MEZZ GNRL	1P1- 5	20	1	14
15	20	1	1P1- 3	BOY LKR HALL	T1,B1,SS,S5	N/A	15	16	T2,B1,SS,P1	FUTURE	EXT FRNT GNRL	1P1- 17	20	1	16
17	20	1	1P1- 3	BOY LKR	T1,B1,SS	D5	17	18	T2,B1,SS,P1	FUTURE	FRNT CANOPY DN	1P1- 17	20	1	18
19	20	1	1P1- 3	BOY SHOWER	T1,B1,SS	D6	19	20	T2,B1,SS,P1	FUTURE	FRNT CANOPY UP	1P1- 17	20	1	20
21	20	1	1P1- 3	CENTER STAIR	T1,B1,SS,S2		21	22	T2,B1,SS,P1	FUTURE	EXT FRNT AREA	1P1- 17	20	1	22
23	20	1	1P1- 5	S STAIR	T1,B1,SS,S6		23	24	T2,B1,SS,P1	FUTURE	EXT S PATIO	1P1- 17	20	1	24
25	20	1	SPA RE				25	26				SPA RE	20	1	26
27	20	1	SPA RE				27	28				SPA RE	20	1	28
29	20	1	SPA RE				29	30				SPA RE	20	1	30
31	20	1	SPA RE				31	32				SPA RE	20	1	32
33	20	1	SPA RE				33	34				SPA RE	20	1	34
35	20	1	SPA RE				35	36				SPA RE	20	1	36
37	20	1	SPA RE				37	38				SPA RE	20	1	38
39	20	1	SPA RE				39	40				SPA RE	20	1	40
41	20	1	SPA RE				41	42				SPA RE	20	1	42
43	20	1	SPA RE				43	44				SPA RE	20	1	44
45	20	1	SPA RE				45	46				SPA RE	20	1	46
47	20	1	SPA RE				47	48				SPA RE	20	1	48

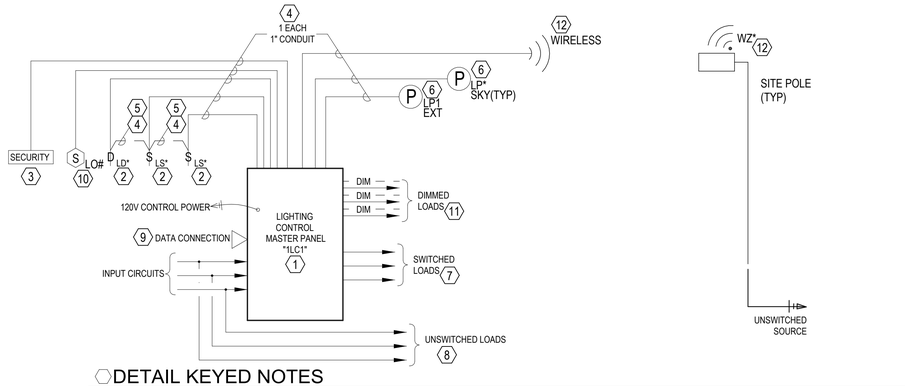
CONTROL TYPES

CLK = TIMECLOCK
SW = SWITCH (1, 3, OR 4)
OVER = 2-HOUR TIMED OVERRIDE ON
PHOTO = PHOTOCELL

WIRELESS CONTROL SCHEDULE

NOTES
-INTEGRATE WIRELESS CONTROL ACCESSORIES INTO MAIN LIGHTING CONTROL SYSTEM
-*=PROVIDE DIMMING CONTROL WIRING AS REQUIRED

No.	CONTROL ZONE	SWITCHING (SEE SCHEDULE)	DIMMING* (SEE SCHED)
WZ1	PARKING	T2,B1,SS,P1	NS, IO
WZ2	SPARE		
WZ3	SPARE		
WZ4	SPARE		
WZ5	SPARE		
WZ6	SPARE		
WZ7	SPARE		
WZ8	SPARE		



DETAIL KEYED NOTES

1. PROVIDE LIGHTING CONTROL PANEL WITH ALL OPTIONS NECESSARY TO PROVIDE CONTROLS AS SHOWN AND SPECIFIED.
2. SEE LIGHTING PLANS ON E20X SERIES SHEETS FOR DIGITAL, ADDRESSABLE SWITCH LOCATIONS. PROGRAM FOR CONTROL AS SCHEDULED. PROVIDE ENGRAVED COVER PLATES AS DESCRIBED ON EL2XX SHEETS. (*) INDICATES CONTROL TYPE.
3. COORDINATE CONNECTIONS WITH OWNER'S SECURITY SYSTEM PROVIDER.
4. PROVIDE CONTROL WIRING PER EQUIPMENT REQUIREMENTS.
5. PROVIDE HOME-RUN OR DAISY CHAIN WIRING PER EQUIPMENT REQUIREMENTS.
6. PROVIDE INTERIOR AND/OR EXTERIOR PHOTOCELLS. REFER TO LIGHTING PLAN FOR INTERIOR COUNTS AND LOCATIONS. PROVIDE (1)EXTERIOR SENSOR ROOF MOUNTED PER MANUFACTURER RECOMMENDATIONS. (*) INDICATES CONTROL TYPE.
7. REFER TO LIGHTING PLANS FOR SWITCHING GROUPS/HOME RUNS.
8. PROVIDE CONSTANT POWER TO EXIT SIGNS, EM BALLASTS, NIGHT-LIGHTS, OCCUPANCY SENSORS, ETC.
9. PROVIDE LAN CONNECTION TO CONTROL PANEL FOR REMOTE OWNER CONTROL. PROVIDE ALL HARDWARE/PROGRAMMING REQUIRED FOR SYSTEM INTERFACES AS SPECIFIED.
10. PROVIDE OCCUPANCY SENSORS/RELAYS COMPATIBLE WITH LIGHTING CONTROL SYSTEM. SENSORS MY BE USED FOR LOCAL AND SYSTEM CONTROL. (*)INDICATES CONTROL TYPE.
11. REFER TO LIGHTING PLANS FOR DIMMING GROUPS/HOME-RUNS. INCLUDE DIMMING CONTROL WIRE PER SYSTEM/FIXTURE REQUIREMENTS.
12. PROVIDE WIRELESS ACCESSORIES AS REQUIRED TO CONTROL SITE AND REMOTE DRIVE-THRU FIXTURES. INTEGRATE INTO MAIN SYSTEM.

1 LIGHTING CONTROL RISER DIAGRAM

N.T.S.

CONSTRUCTION DOCUMENTS

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

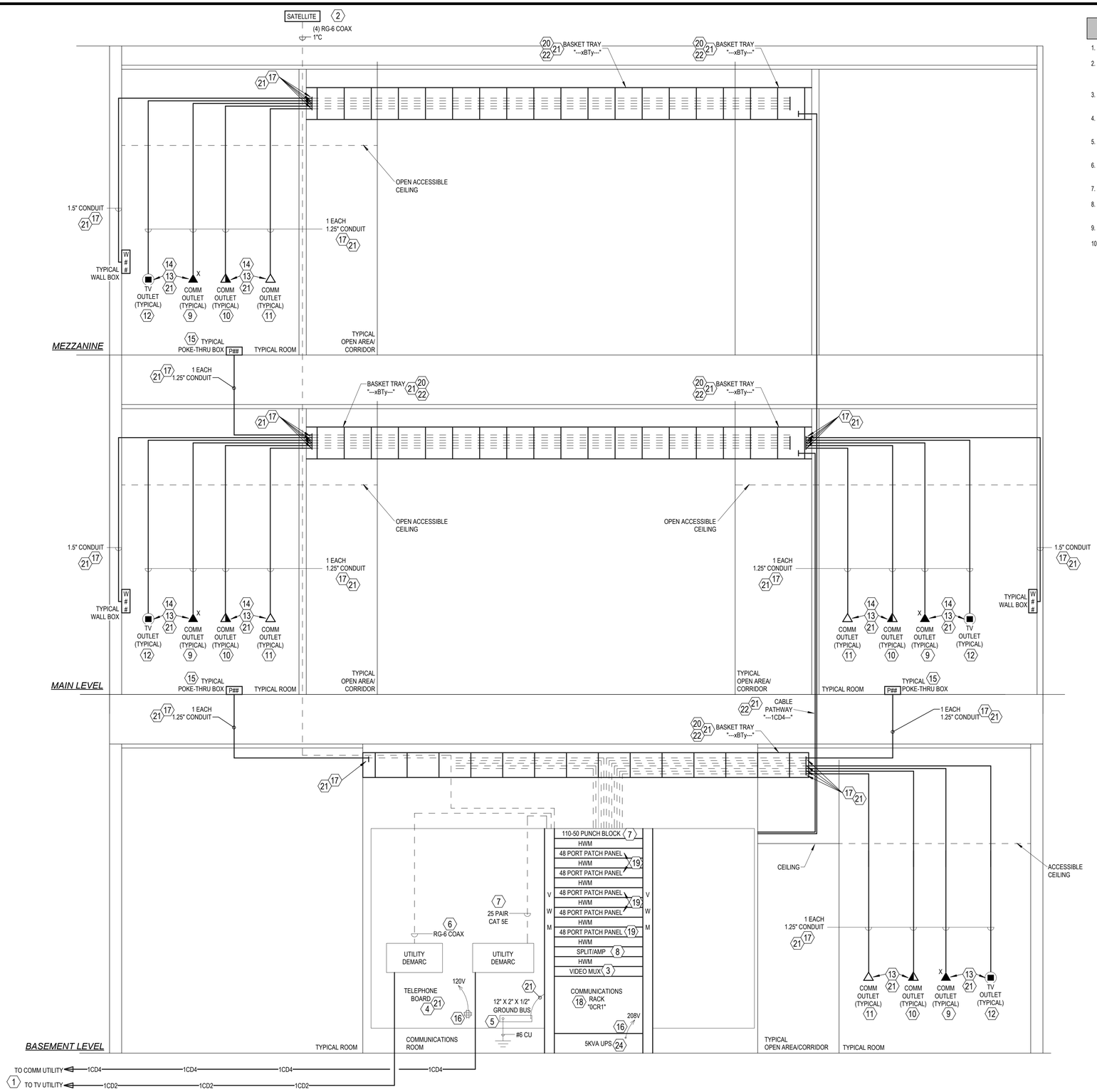
MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER No. 294174 SHANE B. SWENSON 2/5/2024 STATE OF UTAH

LIGHTING CONTROL RISER DIAGRAM & DETAILS

E-501.1



1 COMMUNICATIONS RISER DIAGRAM

N.T.S.

GENERAL NOTES

1. ALL INSTALLATIONS TO COMPLY WITH TIA/EIA STANDARD 586B FOR CAT 6A CABLE.
2. ALL STATION OUTLETS AND ASSOCIATED CABLING AND DATA RACKS, RACEWAYS, PUNCH BLOCKS, PATCH PANELS AND CROSS CONNECTS PROVIDED BY CONTRACTOR. ELECTRONICS BY OWNERS.
3. PROVIDE OWNER STANDARD OUTLET PLATES AT EACH OUTLET WITH PROVISIONS FOR (6)JACKS IN EACH OUTLET. FILL UNUSED SPACES WITH BLANK INSERT.
4. FOLLOW OWNER'S IDENTIFICATION STANDARDS FOR ALL NEW INSTALLATIONS. COORDINATE WITH OWNER'S VOICE AND DATA PERSONNEL.
5. PROVIDE ONE PATCH CORD FOR EACH NEW CABLE/PORT INSTALLED. FIELD VERIFY LENGTHS, BUT ASSUME EQUAL QUANTITIES OF 2', 4', AND 10' CABLES FOR BID.
6. CONTRACTOR SHALL TEST ALL COPPER RUNS TO VERIFY dB LOSSES AND SHALL PROVIDE TEST RESULTS TO OWNER AND ENGINEER.
7. PROVIDE WIDE-SWEEP BENDS FOR ALL CONDUITS.
8. PROVIDE CONNECTORS WITH INSULATED THROATS OR PLASTIC BUSHINGS ON ALL CONDUIT ENDS.
9. ALL CABLING SHALL BE PLENUM RATED.
10. PROVIDE PULL STRINGS IN ALL CONDUITS.

KEYED NOTES

1. CONDUIT, TRENCHING AND BACKFILL BY CONTRACTOR. CONDUCTORS BY UTILITY. VERIFY CONNECTION LOCATIONS WITH LOCAL UTILITY REPS.
2. FIELD VERIFY SATELLITE LOCATION WITH OWNER, IF USED.
3. COORDINATE OWNERS RECEIVER ELECTRONICS WITH OWNER'S SATELLITE SYSTEM PROVIDER.
4. PROVIDE 3/4" PLYWOOD BACKBOARD (4'x8' MINIMUM) ON WALLS OF NEW COMMUNICATIONS AREA. SEE E401 FOR LOCATION.
5. PROVIDE PRE-DRILLED, CU GROUNDING BAR WITH STANDOFFS MOUNTED AT 12" AFF IN COMMUNICATIONS CLOSET. PROVIDE #6 CU GROUND TO GROUNDING ELECTRODE SYSTEM. PROVIDE #6 BONDING CONDUCTORS TO ALL EQUIPMENT RACKS, CABLE-TRAYS, RACEWAYS, AND OTHER ASSOCIATED COMMUNICATIONS AND AUXILIARY SYSTEMS EQUIPMENT AS NECESSARY.
6. PROVIDE RG-6 CONNECTION TO UTILITY DEMARC.
7. PROVIDE RACK MOUNT PUNCH BLOCK AND CROSS CONNECTS TO UTILITY DEMARC.
8. PROVIDE RACK-MOUNT TV DISTRIBUTION AND AMPLIFIER.
9. PROVIDE (3)DATA JACKS WITH (1)CAT 6A CABLE PER JACK FROM DATA RACK TO EACH COMPLETELY FILLED TRIANGLE OUTLET SHOWN ON FLOOR PLANS. WHERE OUTLETS HAVE A NUMERICAL SUPERSCRIPT, PROVIDE "X" QUANTITY OF JACKS AND CABLES WHERE "X" IS THE ASSOCIATED SUPERSCRIPT NUMBER.
10. PROVIDE (2)DATA JACKS WITH (1)CAT 6A CABLE PER JACK FROM DATA RACK TO EACH HALF-FILLED TRIANGLE OUTLET SHOWN ON FLOOR PLANS.
11. PROVIDE (1)DATA JACK WITH (1)CAT 6A CABLE FROM DATA RACK TO EACH EMPTY TRIANGLE OUTLET SHOWN ON FLOOR PLANS.
12. PROVIDE (2)F-CONNECTORS WITH (2)RG-6 COAX CABLES FROM TV DISTRIBUTION TO EACH TV OUTLET SHOWN ON PLAN.
13. PROVIDE COMM OUTLET BOX AS SCHEDULED FOR OUTLETS. SEE E4 SERIES SHEETS, FOR LOCATIONS AND COUNTS. TV OUTLETS SHOWN ADJACENT TO COMM OUTLETS ON FLOOR PLAN MAY BE COMBINED INTO THE SAME BOX/RACEWAY/FACEPLATE.
14. PROVIDE 6-PORT MODULAR FACEPLATE FOR EACH COMMUNICATIONS OR TV OUTLET SHOWN. PROVIDE (1)CAT 6A, RJ-45 ANGLED JACK FOR EACH VOICE OR DATA CABLE TERMINATED IN OUTLET OR (1)ANGLED F-CONNECTOR FOR EACH COAX CABLE. PROVIDE BLANK INSERTS FOR UNUSED PLATE OPENINGS. PROVIDE ADDITIONAL GANGS WHERE MORE THAN 4 DEVICES ARE REQUIRED.
15. PROVIDE CONNECTIONS FROM FLOOR AND POKE-THRU VOICE/DATA OUTLETS (AS NOTED IN FLOOR BOX SCHEDULE AND SIMILAR NOTE ABOVE.) TO DATA RACK.
16. PROVIDE POWER TO RACKS AND PHONEBOARD. SEE E3 SERIES SHEETS FOR ADDITIONAL INFORMATION.
17. PROVIDE CONDUIT STUB FROM OUTLETS TO NEAREST COMMUNICATIONS PATHWAY. PROVIDE INSULATED THROAT CONNECTORS ON ALL CONDUIT ENDS.
18. PROVIDE 84"x19" TWO-POST DATA RACK WITH WIRING HOLDER FRAME.
19. PROVIDE CAT 6A PATCH PANELS AS INDICATED WITH QUANTITY OF PORTS TO TERMINATE EACH VOICE AND DATA CABLE PLUS 100% SPARE CAPACITY. ALLOW ONE CABLE PER STATION PORT.
20. PROVIDE TRAY FOR CABLE MANAGEMENT SEE E4 SERIES SHEETS FOR ROUTING.
21. PROVIDE ELECTRICALLY BONDED RACEWAY SYSTEM - BOND COMM DEVICE CONDUITS TO COMM RACK, GROUND BUS, ETC. WHERE OUTLETS STUB TO ACCESSIBLE CEILING, BOND DEVICE BOX/CONDUIT TO ADJACENT ELECTRICAL OUTLET.
22. PROVIDE COMMUNICATIONS RACEWAYS ALONG PATHS SHOWN. SEE E4 SERIES SHEETS FOR ADDITIONAL INFORMATION.
23. CONTRACTOR MAY OPT TO ROUTE LOWER LEVEL FLOOR BOX CONDUITS UNDERGROUND FROM BOX TO COMMUNICATIONS RACK.
24. PROVIDE RACK MOUNT UPS AS SPECIFIED.

COMMUNICATIONS RACEWAY SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
xCDy	CONDUIT; QUANTITY "X", DIAMETER "Y" AS INDICATED ON SYMBOL SCHEDULE	AS SPECIFIED		INSULATED THROAT CONNECTORS ON ALL ENDS; PULL STRING
xCTy	X"W X Y"D ALUMINUM CABLE TRAY; MAXIMUM 10' SUPPORT SPACING (MIN 300 LBS/FT LOAD CAPACITY)	COOPER	35A-12 SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
CMJ	CABLE HOOKS; 4"; RETAINING CLIP QUANTITY AS REQUIRED FOR CURRENT CABLING PLUS 50% SPARE CAPACITY	COOPER B-LINE	BCH64 SERIES (OR EQUIVALENT)	RETAINER (BCHR64) OTHER ACCESSORIES AS REQUIRED
xBTy	X"W X Y"D STEEL, WIRE MESH TRAY MAXIMUM 6' SUPPORT SPACING (MIN 83 LBS/FT LOAD CAPACITY)	COOPER	FT(X)X(Y)-EG SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
xLRy	X"W X Y"D ALUMINUM; LADDER STYLE; CABLE TRAY; 6" RUNG SPACING; 200 LBS/FT LOAD CAPACITY	COOPER B-LINE	H47-A-XX-YY-** SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
COMM OUTLET BOX	5" SQUARE X 2 7/8" DEEP 3/4" MUD RING (1 OR 2-GANG AS NOTED)	STEEL CITY STEEL CITY	82181T-1 SERIES 82C-"G-3/4 (OR EQUIVALENT)	

CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK: DESCRIPTION: DATE:

PROJECT #: 123998
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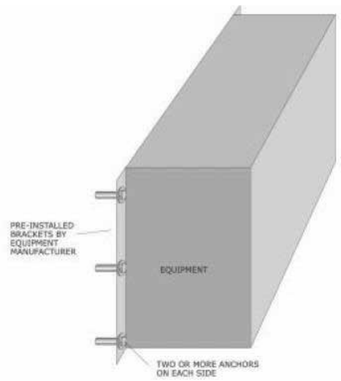
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER No. 294174 SHANE D. SWENSON 2/5/2024 STATE OF UTAH

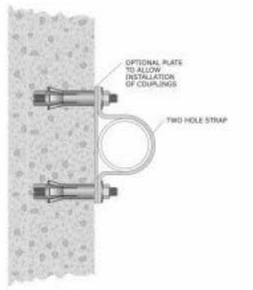
COMMUNICATIONS RISER DIAGRAM

E-501.2



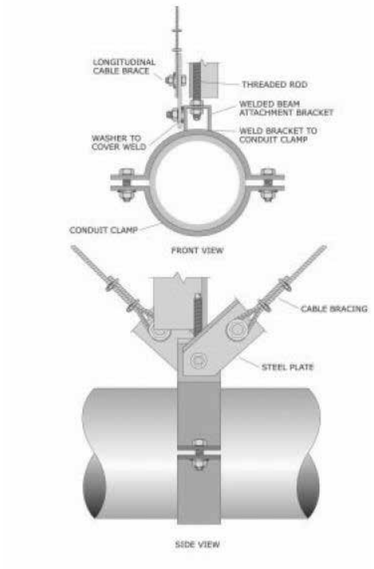
Direct attachment to a wall.

10 SEISMIC SUPPORT: EQUIPMENT TO WALL
N.T.S.



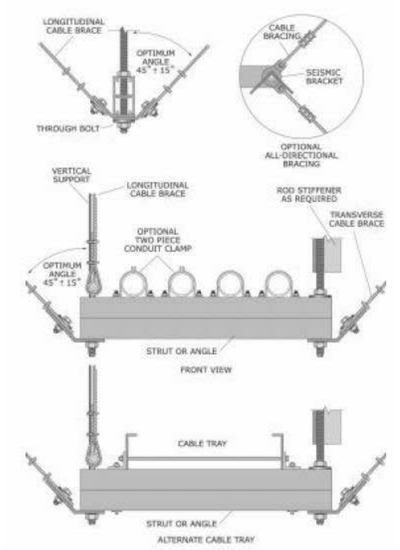
Direct attachment

9 SEISMIC SUPPORT: RACEWAY TO WALL
N.T.S.



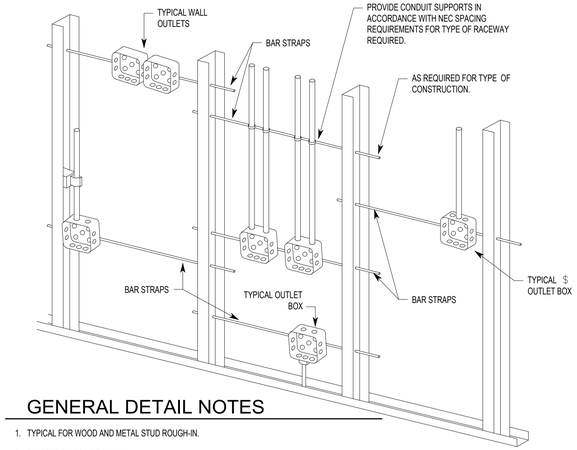
Conduit damp supports with longitudinal cable lateral support and hanger rod.

8 SEISMIC SUPPORT_SUSPENDED RACEWAY
N.T.S.



Trapeze support with cable lateral supports.

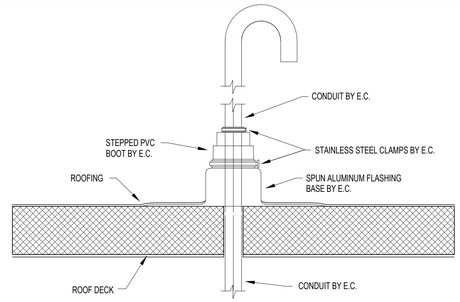
7 SEISMIC SUPPORT: RACEWAY TRAPEZE
N.T.S.



GENERAL DETAIL NOTES

1. TYPICAL FOR WOOD AND METAL STUD ROUGH-IN.
2. PLASTER RINGS NOT SHOWN.
3. LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND WITH ALL APPLICABLE SHOP DRAWINGS.
4. OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE IN A RATED FIRE SEPARATION WALL MUST BE SEPARATED BY A MINIMUM OF 24" HORIZONTAL DISTANCE.
5. IN NON-RATED WALLS, OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS MUST BE SEPARATED BY 16" FOR SOUND ATTENUATION.

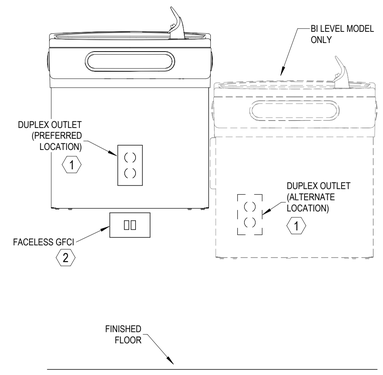
5 TYPICAL ROUGH-IN REQUIREMENTS DETAIL
N.T.S.



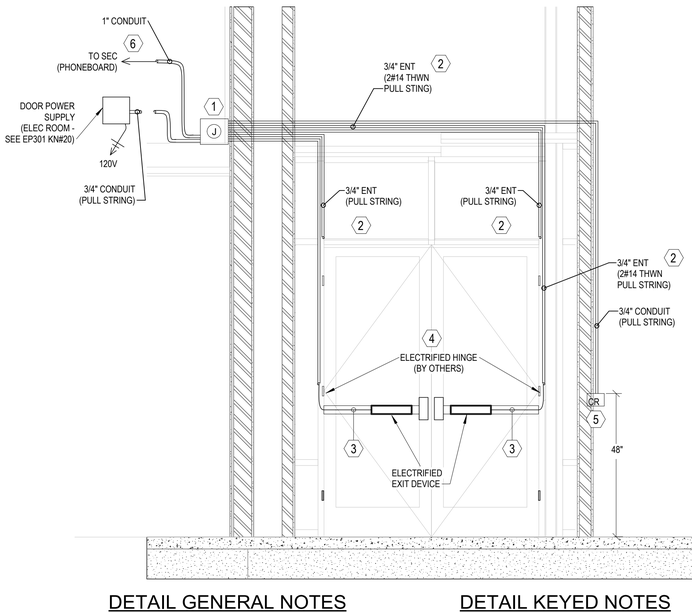
3 CONDUIT/ROOF PENETRATION DETAIL
N.T.S.

DETAIL KEYED NOTES

1. VERIFY OUTLET LOCATION WITH MANUFACTURER'S REQUIREMENTS AND FIELD CONDITIONS TO BE CONCEALED WITH COVER INSTALLED.
2. FACELESS GFCI - HORIZONTAL, FLUSH-MOUNT IMMEDIATELY BELOW COOLER COVER TO BE ACCESSIBLE WITH COVER IN PLACE. CONNECT OUTLETS TO LOAD-SIDE OF GFCI.



2 Drinking Fountain Electrical Detail
N.T.S.



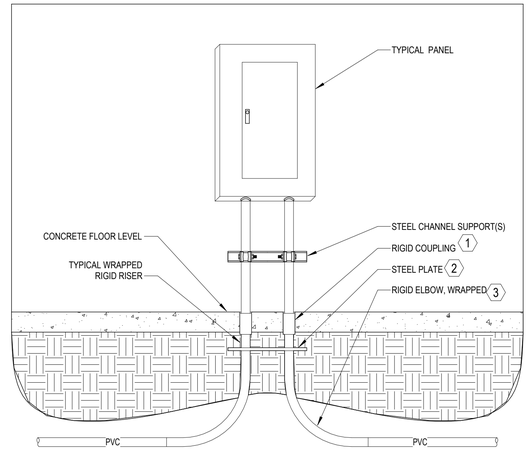
DETAIL GENERAL NOTES

1. CABLING BY OTHERS UNLESS OTHERWISE NOTED.
2. COORDINATE ALL CONDUIT, BOX TYPES AND LOCATIONS WITH OWNER'S SECURITY SYSTEM VENDOR PRIOR TO ROUGH-IN.
3. PROVIDE INSULATED THROAT CONNECTORS ON BOTH ENDS OF ALL CONDUITS.
4. REFER TO ARCHITECTURAL DRAWINGS FOR DOOR HARDWARE TYPES.
5. PROVIDE FACTORY COLOR CODING FOR LOW VOLTAGE SYSTEMS BOXES AND RACEWAYS AS NOTED ON ET401.

DETAIL KEYED NOTES

1. PROVIDE J-BOX ABOVE ACCESSIBLE CEILING ON CONTROLLED SIDE OF DOOR. ROUTE ALL DOOR SECURITY CONDUITS FOR DOOR TO J-BOX.
2. PROVIDE 3/4" ENT WITH CONDUCTORS AND/OR PULL STRING AS INDICATED ROUTED THROUGH STOREFRONT/WINDOW MULLIONS FOR OWNER USE.
3. WIRING THROUGH HINGE TO ELECTRIFIED HARDWARE WITH INTEGRAL REX AND DOOR STATUS.
4. VERIFY HEIGHT WITH DOOR HARDWARE SUPPLIER.
5. WHERE READER IS SHOWN ON ELECTRONICS SYSTEMS PLAN, PROVIDE 1-GANG BOX WITH CONDUIT TO ABOVE CEILING J-BOX FOR EXTERIOR DOOR CARD READER. VERIFY MOUNTING HEIGHT AND LOCATION WITH OWNER'S SECURITY SYSTEM VENDOR PRIOR TO ROUGH-IN.
6. PROVIDE HOME-RUN TO SECURITY SYSTEM HEAD-END LOCATION.

4 ENTRY DOOR ACCESS DETAIL - DOUBLE DOOR
N.T.S.



DETAIL KEYED NOTES

1. SET COUPLING FLUSH WITH FINISH FLOOR.
2. PROVIDE STEEL PLATE WITH SAME DIMENSIONS AS PANEL BOTTOM PLATE. PUNCH PLATE PER CONDUITS ENTERING PANEL TO STRAIGHTEN/ORGANIZE CONDUITS PRIOR TO FINAL RISE INTO PANEL.
3. TRANSITION TO WRAPPED RIGID CONDUIT PRIOR TO RISING ABOVE FLOOR AS SPECIFIED.

1 EQUIPMENT CONDUIT RISER DETAIL
N.T.S.

design west | architects
LOGAN UT 84321
255 SOUTH 300 WEST
SALT LAKE CITY UT 84103
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DATE:	DESCRIPTION:

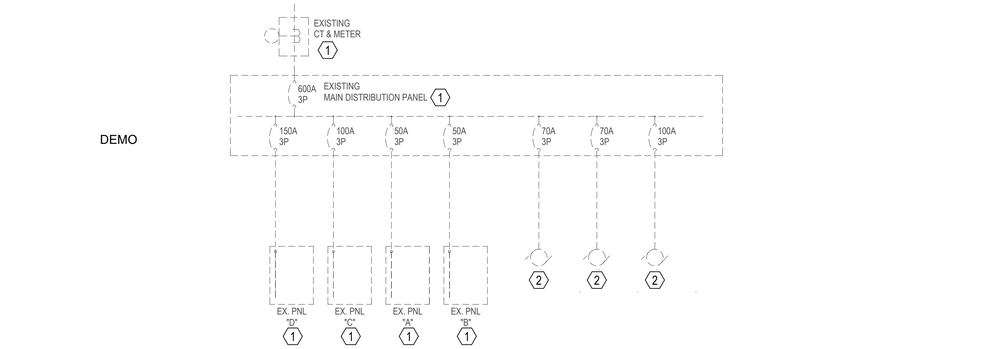
PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

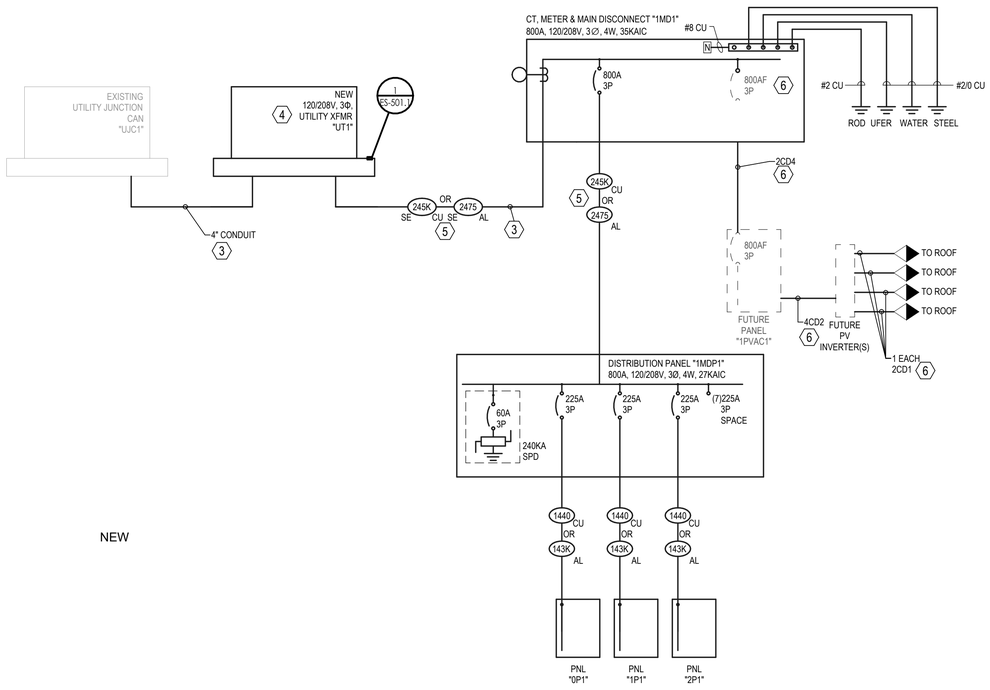
REGISTERED PROFESSIONAL ENGINEER
No. 291174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

CONSTRUCTION DOCUMENTS

ELECTRICAL DETAILS

E-501.3





1 ELECTRICAL ONE-LINE DIAGRAMS

N.T.S.

KEYED NOTES

1. REMOVE ALL EXISTING DISTRIBUTION.
2. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL BY OTHERS.
3. PRIMARY AND SECONDARY CONDUIT, TRENCHING, BACKFILL AND SECONDARY CONDUCTORS BY CONTRACTOR. PRIMARY CONDUCTORS BY UTILITY.
4. TRANSFORMER PAD-VAULT BY CONTRACTOR. EQUIPMENT BY UTILITY.
5. ALTERNATE CONFIGURATIONS OF PARALLEL FEEDERS CAN BE USED WITH ENGINEER'S, PRIOR WRITTEN APPROVAL.
6. PROVIDE PROVISIONS FOR FUTURE PV INTEGRATION AS SHOWN.

GENERAL NOTES

1. DEMOLITION PLAN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. COMPLY WITH POWER UTILITY'S REQUIREMENTS FOR ALL UTILITY RELATED INSTALLATIONS. REVIEW CURRENT UTILITY STANDARDS MANUAL PRIOR TO BID. NOTIFY ENGINEER OF CONFLICTS PRIOR TO BID.
4. AIC RATINGS SHOWN INDICATE MINIMUM REQUIRED VALUES. SCCR RATINGS ARE TO MATCH OR EXCEED AIC RATINGS.
5. A FULL SIZE EQUIPMENT GROUNDING CONDUCTOR SIZED FOR THE OVERCURRENT PROTECTIVE DEVICE PROTECTING THE CIRCUIT IS REQUIRED IN EACH RACEWAY OR CABLE FOR PARALLELED CIRCUITS.
6. CONTRACTOR SHALL DOCUMENT FEEDER CONDUCTOR LENGTH ON FIELD REDLINE SET. FEEDER LENGTHS ARE REQUIRED FOR ARC FAULT STUDIES AS SPECIFIED.
7. FIELD MARK SERVICE EQUIPMENT WITH AVAILABLE FAULT CURRENT AND CALCULATION DATE PER NEC 110.24(A).
8. RUN PORTIONS OF GROUNDING ELECTRODE CONDUCTORS NOT CONCEALED IN BUILDING FINISHES IN CONDUIT.
9. REFER TO SPECIFICATIONS FOR SERIES VS. FULLY RATED REQUIREMENTS.
10. FIELD MARK ALL SERVICE EQUIPMENT WITH REQUIRED BREAKER CLEARING TIME. CONTRACTOR VERIFY WITH MANUFACTURER'S PUBLISHED DATA FOR MAIN BREAKER.

CONDUCTOR AND CONDUIT SCHEDULE

SIZE OF CONDUCTORS
QUANTITY OF PHASE/NEUTRAL CONDUCTORS
QUANTITY OF PARALLEL RUNS
SCHEDULE NUMBER
CONDUCTOR MATERIAL
SUBSCRIPTS (SEE NOTE 5)

SYM	AMP		CONDUIT		CONDUCTOR (NOTE 1,6,7)									NOTES
						G		IG		SE (NOTE 4)				
	CU	AL	QTY	SIZE	QTY	SIZE PN	CU	AL	CU	AL	CU	AL		
1 2 12	20	N/A	1	3/4"	2	12	12	N/A	12	N/A	8	N/A	2	
1 3 12					3								2,3	
1 4 12					4								2,3	
1 2 0	30				2	10	10		10				2	
1 3 0					3								2	
1 4 0					4								2	
1 2 8	40			1"	2	8			8				2	
1 3 8					3								2	
1 4 8					4								2	
1 2 6	55				2	6			6				2	
1 3 6					3								2	
1 4 6				1.25"	4								2	
1 2 4	70	55			2	4	8	6	4	4			2	
1 3 4					3								2	
1 4 4					4								2	
1 2 3	85	65			2	3			3	3			2	
1 3 3					3								2	
1 4 3					4								2	
1 3 2	95	75			3	2			2	2		6	2	
1 4 2				1.5"	4								2	
1 3 1	130	100			3	1	6				6		2	
1 4 1					4								2,8	
1 3 10	150	120		2"	3	1/0		4		1			2	
1 4 10					4								2	
1 3 20	175	135			3	2/0					4	4	2	
1 4 20					4								2	
1 3 30	200	155			3	3/0							2	
1 4 30				2.5"	4								2	
1 3 40	230	180			3	4/0	4		1		2	2	2	
1 4 40					4								2	
1 2 25	255	205			2	250								
1 3 25					3			2		2/0			2	
1 4 25				3"	4								2,8	
1 3 3K	285	230			3	300						1/0	2,8	
1 4 3K					4								2	
1 3 35	310	250			3	350	3		1/0				2	
1 4 35					4								2,8	
1 3 4K	335	270		3.5"	3	400					1/0		2	
1 4 4K					4								2	
1 3 5K	380	310		4"	3	500		1		3/0			2,4	
1 4 5K					4								2,4	
1 3 75	475	385			3	750	2		2/0		2/0	3/0	2,4	
1 4 75					4								2,4	
1 3 10K	545	445		5"-CU 4"-AL*	3	1000	1	1/0	3/0	4/0		4/0	2,4	
1 4 10K				5"	4								2,4	
2 3 10	300	240	2	2"	3	1/0	4	2	1	1/0	2	2	2	
2 4 10					4								2	
2 3 20	350	270			3	2/0	3	1	1/0	2/0		1/0	2	
2 4 20					4								2	
2 3 30	400	310			3	3/0					3/0		2,4	
2 4 30				2.5"	4								2,4	
2 3 40	460	360			3	4/0	2		2/0		1/0		2,4	
2 4 40					4								2,4	
2 3 25	510	410			3	250	1	1/0	3/0	4/0			2,4	
2 4 25				3"	4								2,4,8	
2 3 3K	570	460			3	300						3/0	2,4,8	
2 4 3K					4								2,4	
2 3 35	620	500		3"	3	350	1/0	1/0	4/0	4/0	2/0	3/0	2,4	
2 4 35					4								2,4,8	
2 3 4K	670	540		3.5"	3	400		2/0	4/0				2,4	

SYM	AMP		CONDUIT		CONDUCTOR (NOTE 1,6,7)									NOTES
						G		IG		SE (NOTE 4)				
	CU	AL	QTY	SIZE	QTY	SIZE PN	CU	AL	CU	AL	CU	AL		
2 4 4K	670	540	2	3.5"	4	400	1/0	2/0	4/0	4/0	2/0	3/0	2,4	
2 3 5K	760	620		4"	3	500		3/0		300		4/0	2,4	
2 4 5K					4								2,4	
2 3 75	950	770			3	750						4/0	2,4	
2 4 75					4								2,4	
2 3 10K	1090	890		5"-CU 4"-AL*	3	1000	2/0				250	250	2,4	
2 4 10K				5"	4								2,4	
3 3 10	450	360	3	2"	3	1/0	2	1	1/0	1/0	2	1/0	2,4	
3 4 10					4								2,4	
3 3 20	525	405			3	2/0	1	1/0	2/0	2/0	1/0	3/0	2,4	
3 4 20					4								2,4	
3 3 30	600	465			3	3/0			3/0	3/0			2,4	
3 4 30				2.5"	4								2,4	
3 3 40	690	540			3	4/0	1/0	2/0	4/0	4/0	2/0		2,4	
3 4 40					4								2,4	
3 3 25	765	615			3	250		3/0		250			2,4	
3 4 25				3"	4								2,4	
3 3 3K	855	690			3	300				300			2,4,8	
3 4 3K					4								2,4,8	
3 3 35	930	750			3	350						3/0	4/0	2,4
3 4 35					4									2,4
3 3 4K	1005	810		3.5"	3	400	2/0							2,4,8
3 4 4K					4									4
3 3 5K	1140	930		4"	3	500						4/0		4
3 4 5K					4									4
4 3 10	600	480	4	2"	3	1/0	1	1/0	1/0	1/0	1/0	1/0		4
4 4 10					4									4
4 3 20	700	540			3	2/0	1/0	2/0	2/0	2/0		3/0		4
4 4 20					4									4
4 3 30	800	620			3	3/0		3/0	3/0	3/0	2/0			4
4 4 30				2.5"	4									4
4 3 40	920	720			3	4/0		4/0	4/0					4
4 4 40					4									4
4 3 25	1020	820			3	250	2/0			250		4/0		4
4 4 25				3"	4									4
4 3 3K	1140	920			3	300				300	3/0			4,8
4 4 3K					4									4,8
4 3 35	1240	1000			3	350	3/0	4/0				4/0		4
4 4 35					4									4
4 3 4K	1340	1080		3.5"	3	400								4,8
4 4 4K					4									4
4 3 5K	1520	1240		4"	3	500		250		350	250	250		4
4 4 5K					4									4
4 3 6K	1680	1360			3	600	4/0							4
4 4 6K					4									4
5 3 4K	1675	1350	5		3	400			250					4
5 4 4K					4									4
6 3 4K	2010	1620	6		3		250	350			300	300		4
6 4 4K					4									4
7 3 5K	2660	2170	7		3	500	350	400	350	500	500	500		4
7 4 5K					4									4
7 3 75	3325	2695			3	750	400	600	400	600	750	750		4
7 4 75					4									4,8
8 3 5K	3040	2480	8		3	500		400	500	600	500	500		4
8 4 5K					4									4
8 3 75	3800	3080			3	750	500	600			750	750		4
8 4 75					4									4
11 3 5K	4180	3410	11		3	500					500	500		4
11 4 5K					4									4

CONDUIT AND CONDUCTOR SCHEDULE NOTES

1. CONDUCTORS SHOWN ARE SHOWN FOR EACH CONDUIT WITH MODIFICATIONS AS NOTED IN NOTE #5. ALL CONDUCTORS SHOWN ARE THWN FOR CU OR THWN OR XHHW FOR AL UNLESS OTHERWISE NOTED.
2. PROVIDE EQUIPMENT GROUNDING CONDUCTORS PER NEC TABLE 250-122 WHEN CIRCUIT BREAKERS ARE SIZED GREATER THAN AMPERE RATING SHOWN IN TABLE.
3. PROVIDE #10 NEUTRALS FOR MULTIWIRE BRANCH CIRCUITS SERVING COMPUTERS.
4. GROUND (G) CONDUCTOR MAY BE DELETED ON SERVICE ENTRANCE CONDUCTORS.
5. SYMBOL SUBSCRIPTS:
   - "IG": INCLUDE IG (INSULATED/ISOLATED GROUND CONDUCTOR) SCHEDULED ALONG WITH THE GROUND OF EQUIPMENT GROUND CONDUCTOR.
   - "SE": SUBSTITUTE "SE" CONDUCTOR FOR "G" CONDUCTOR SHOWN, WHICH IS SIZED FOR THE GROUNDING OF THE SECONDARY OF THE SEPARATELY DERIVED SYSTEM.
   - "2N": INCLUDE TWO NEUTRAL CONDUCTORS, SIZED AS SCHEDULED FOR PHASED AND NEUTRAL CONDUCTORS.
   - "R": RACEWAY ONLY. CONDUCTORS PROVIDED BY UTILITY.
   - "V(#)": PHASE AND NEUTRAL CONDUCTORS UPSIZED FOR VOLTAGE DROP. UPSIZE GROUNDING CONDUCTOR(G) TO SIZE INDICATED BY (#) PER NEC 250.122(B).
   - "A": ALUMINUM CONDUCTORS ALLOWED FOR FEEDER INDICATED. ALUMINUM CONDUCTORS ARE NOT TO BE USED FOR CONNECTIONS TO MOTORS OR MOTOR DRIVEN EQUIPMENT.
6. A FULL SIZE GROUNDING CONDUCTOR (SE OR G AND/OR IG) SHALL BE INSTALLED IN EACH RACEWAY OR CABLE FOR PARALLELED CIRCUITS.
7. GROUNDING CONDUCTORS (G, IG, AND SE) SHALL BE OF THE SAME CONDUCTOR MATERIAL AS THE CORRESPONDING PHASE CONDUCTORS TO KEEP TABLE CALCULATIONS IN ACCORDANCE WITH NEC REQUIREMENTS.
8. INCREASE CONDUIT TO NEXT LARGEST STANDARD CONDUIT SIZE WHEN IG IS USED.

* -CONDUIT SIZED FOR COMPACT ALUMINUM CONDUCTORS. USE COPPER CONDUIT SIZE FOR STANDARD SIZE CONDUCTORS

CONSTRUCTION DOCUMENTS

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL

114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK	DATE	DESCRIPTION

PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER
No. 291174
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

ELECTRICAL
ONE-LINE DIAGRAMS

E-601.1

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS	TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
EIS- 035	IOTA IIS-35-I OR EQUIVALENT	EMERGENCY INVERTER; SURFACE MOUNT; SELF-DIAGNOSTIC; DIMMER COMPATIBLE; LINE VOLTAGE OUTPUT	SURFACE	44 W	EMERGENCY FIXTURE	ODI- L45	PINNACLE EX3B-WET-O-840-840-4'-IND-PP*ST-U-FSD-2(-FSB)-SCBA-* OR EQUIVALENT WITH PRIOR APPROVAL	SUSPENDED DIRECT/INDIRECT LINEAR, 3" NOMINAL WIDTH; WET LOCATION RATED; DIFFUSE LENS; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; COLOR AS SELECTED BY ARCHITECT; EM BATTERY WHERE (B) OPTION INDICATED ON DRAWINGS	SUSPENDED	35 W	1500 LUMEN DN 3000 LUMEN UP NOMINAL LED 4000K
EIS- 125	IOTA IIS-125-SM-DR OR EQUIVALENT	EMERGENCY INVERTER; SURFACE MOUNT; SELF-DIAGNOSTIC; DIMMER COMPATIBLE; LINE VOLTAGE OUTPUT	SURFACE	125 W	EMERGENCY FIXTURE	OW3- L2K OW3- L2K(B)	LITHONIA WDGE2-LED-P2-40K-70CRI-T3M-MVOLT-SRM(-E20WC)-DMB-SCBA OR EQUIVALENT	EXTERIOR WALL FIXTURE; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; WEDGE SHAPE; FULL CUTOFF; COLD WEATHER EM BATTERY WHERE (B) INDICATED ON DRAWINGS; TYPE 3 OPTICAL DISTRIBUTION	WALL	19 W	2000 LUMEN NOMINAL LED 4000K
EIS- 550	IOTA IISCN-550-I-DR OR EQUIVALENT	EMERGENCY INVERTER; SURFACE MOUNT; SELF-DIAGNOSTIC; DIMMER COMPATIBLE; LINE VOLTAGE OUTPUT	SURFACE	675 W	EMERGENCY FIXTURE	OW3- L75	LITHONIA WDGE3-LED-P1-40K-80CRI-R4-MVOLT-*-DMG-SCBA OR EQUIVALENT	EXTERIOR WALL FIXTURE; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; WEDGE SHAPE; FULL CUTOFF; TYPE 3 OPTICAL DISTRIBUTION;	WALL	52 W	7500 LUMEN NOMINAL LED 4000K
EX- 1B	DUAL LITE LX-U-G-W-E-I SURE-LITES CCX7-0-70-G-WH-SD LIGHTOLIER LT-N-U-G-W-SD LITHONIA LQM S W 3 G 120/277 EL N SD MCPHILBEN CXXL-3-G-W	EXIT SIGN; SINGLE FACE; UNIVERSAL MOUNTING; WHITE, THERMOPLASTIC HOUSING; SELF DIAGNOSTICS; WIRE GUARD WHERE NOTED ON DRAWINGS	WALL OR CEILING 1-FACE	1.5W	LED	P31- L7K	LITHONIA RSX1-P1-40K-R3-MVOLT-SPA-(HS)-NLTAIR2/PIRHN-DBLBXD SSA-20-5G-DM19*-FBC-NEC--DBLBXD OR EQUIVALENT	EXTERIOR POLE LIGHT; MULTI-VOLT, ELECTRONIC, DRIVER; TYPE 3 OPTICAL DISTRIBUTION; WIRELESS CONTROL INTEGRATED WITH LIGHTING CONTROL SYSTEM; 30% NIGHT SETBACK WITH LOW LEVEL MOTION SENSOR OVERRIDE ON TO FULL OUTPUT; MOTION SENSOR INTEGRATED INTO HEAD; HOUSE SIDE SHIELD WHERE (H) APPEND	POLE PARKING POLE BASE VEHICLE RISER SEE DETAIL	51 W	7000 LUMEN NOMINAL LED 4000K
HB- L09 HB- L09(B)	LITHONIA CPHB-9000LM-SEF-GCL-WD-MVOLT-GZ10-40K-80CRI(-E15WMCP)-CORD-DWH-IBAC*/M100-* OR EQUIVALENT	LED HIGH BAY; DIFFUSING, WIDE-THROW LENS; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; SUSPENSION ACCESSORIES AS REQUIRED; INTEGRAL, EM BATTERY WHERE (B) NOTED ON DRAWINGS;	CABLE SUSPENDED	61 W	9000 LUMEN NOMINAL LED 4000K	RL- T15	JUNO WF6-AL020-SWW5-90CRI-MW OR EQUIVALENT WITH PRIOR APPROVAL	RECESSED CAN/WAFER; LED LAMPING; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; 6" NOMINAL OPENING; 1.5" MAX DEPTH;	RECESS	16 W	1500 LUMEN NOMINAL LED 4000K
HB- L60	LITHONIA CPHB-60000LM-SEF-GCL-WD-MVOLT-GZ10-40K-80CRI(-E15WMCP)-CORD-DWH-IBAC*/M100-* OR EQUIVALENT	LED HIGH BAY; DIFFUSING, WIDE-THROW LENS; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; SUSPENSION ACCESSORIES AS REQUIRED; INTEGRAL, EM BATTERY WHERE (B) NOTED ON DRAWINGS;	CABLE SUSPENDED	421 W	60000 LUMEN NOMINAL LED 4000K	RW- T15	JUNO WF6-AL020-SWW5-90CRI-MW OR EQUIVALENT WITH PRIOR APPROVAL	RECESSED CAN/WAFER; LED LAMPING; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; 6" NOMINAL OPENING; 1.5" MAX DEPTH; WET LOCATOIN RATED	RECESS	16 W	1500 LUMEN NOMINAL LED 4000K
LD4- L4K LD4- L4K(B)	MARK S2PD-LLP-4FT-MSL4-80CRI-40K-1000LMF-SCT-MIN1-FLL-MVOLT-SCBA(-E10WLCP)-ZT-MOUNT-XXA-SUSPEND OR EQUIVALENT	SUSPENDED LINEAR; MULTI-VOLT, ELECTRONIC, DIMMABLE (1%) DRIVER SUSPENSION LENGTH AS INDICATED ON ARCHITECTURAL DRAWINGS; COLOR AS SELECTED BY ARCHITECT; FLUSH MOUNT CANOPY; MOUNTING ACCESSORIES AS REQUIRED AT INSTALLED LOCATION; EM BATTERY WHERE (B) OPTION SHOWN	CABLE SUSPENDED	32 W	4000 LUMEN NOMINAL LED 4000K	S2- L5K S2- L5K(B)	LITHONIA CLX-L24-5000LM-SEF-FDL-MVOLT-GZ10-35K-80CRI-(PS1050)-MOUNT HE WILLIAMS 75-4-L60-835(-EM/10WRM)-DIM-UNV-MOUNT OR EQUIVALENT	2' LED STRIP FIXTURE; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; DIFFUSE LENS; EM BATTERY WHERE NOTED ON DRAWINGS	SURFACE OR CABLE SUSPENDED AS NOTED	43.6 W	5000 LUMEN NOMINAL LED 3500K
LF1- L4K	LITHONIA SPX-1X4-4000LM-80CRI-40K-BFR-MPL-MIN10-ZT-MVOLT(-E10WLCP)-MW-DGA22 NO EQUIVALENTS	RECESSED, FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMING, DRIVER; SMOOTH WHITE LENS; EM BATTTERY PACK WHERE NOTED ON DRAWINGS;	SHEETROCK FLANGE	28 W	4000 LUMEN NOMINAL LED 4000K	S4- L5K S4- L5K(B)	LITHONIA CLX-L48-5000LM-SEF-FDL-MVOLT-GZ10-40K-80CRI-(PS1050)-SCBA HE WILLIAMS 75-4-L50-840-DIM-UNV OR EQUIVALENT	LED STRIP FIXTURE; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; DIFFUSE LENS; EM BATTERY WHERE NOTED ON DRAWINGS	SURFACE OR CABLE SUSPENDED WHERE NOTED	35 W	5000 LUMEN NOMINAL LED 4000K
LG4- L3K LG4- L3K(B)	LITHONIA SPX-2X4-3000LM-80CRI-40K-BFR-MPL-MIN10-ZT-MVOLT(-E10WLCP)-MW OR EQUIVALENT	RECESSED, FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMING, DRIVER; SMOOTH WHITE LENS; EM BATTTERY PACK WHERE NOTED ON DRAWINGS;	RECESSED	20 W	3000 LUMEN NOMINAL LED 4000K	S4- L7K S4- L7K(B)	LITHONIA CLX-L48-7000LM-SEF-FDL-MVOLT-GZ10-40K-80CRI-(PS1050)-SCBA HE WILLIAMS LIGHTOLIER 75-4-L65-840-DIM-UNV OR EQUIVALENT	LED STRIP FIXTURE; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; DIFFUSE LENS; EM BATTERY WHERE NOTED ON DRAWINGS	SURFACE OR CABLE SUSPENDED WHERE NOTED	51 W	7000 LUMEN NOMINAL LED 4000K
LG4- L4K LG4- L4K(B)	LITHONIA SPX-2X4-4000LM-80CRI-35K-BFR-MPL-MIN10-ZT-MVOLT(-E10WLCP)-MW OR EQUIVALENT	RECESSED, FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMING, DRIVER; SMOOTH WHITE LENS; EM BATTTERY PACK WHERE NOTED ON DRAWINGS;	RECESSED	27 W	4000 LUMEN NOMINAL LED 3500K	VL- L4K	LITHONIA DMW2-L24-3000-AFL-WD-MVOLT-GZ10-40K-80CRI OR EQUIVALENT WITH PRIOR APPROVAL	WET LOCATION, VAPOR TIGHT FIXTURE; MULTI-VOLT, ELECTRONIC, DRIVER; GASKETED; FIBERGLASS HOUSING; ACRYLIC OR POLYCARBONATE LENS	ELEVATOR PIT WALL	40 W	4000 LUMEN NOMINAL LED 4000K
LG4- L5K	LITHONIA SPX-2X4-4800LM-80CRI-35K-BFR-MPL-MIN10-ZT-MVOLT(-E10WLCP)-MW OR EQUIVALENT	RECESSED, FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMING, DRIVER; SMOOTH WHITE LENS; EM BATTTERY PACK WHERE NOTED ON DRAWINGS;	RECESSED	34 W	5000 LUMEN NOMINAL LED 3500K	WV- L2K WV- L2K(B)	PA-CO MURA-L-45-00-2000-FA1-G1-MV-1C(-EM)-AM-D OR EQUIVALENT	LINEAR WALL; DOWNLIGHT ONLY; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; IMPACT RESISTANT, DIFFUSE LENS; EM BATTERY WHERE (B) OPTION INDICATED ON DRAWINGS	WALL ADJACENT TO CEILING	18 W	2000 LUMEN NOMINAL LED 4000K
LG4- L7K	LITHONIA SPX-2X4-7200LM-80CRI-40K-BFR-MPL-MIN10-ZT-MVOLT(-E10WLCP)-MW OR EQUIVALENT	RECESSED, FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMING, DRIVER; SMOOTH WHITE LENS; EM BATTTERY PACK WHERE NOTED ON DRAWINGS;	RECESSED	53 W	7000 LUMEN NOMINAL LED 4000K	WV- L4K WV- L4K(B)	PA-CO MURA-L-45-2000-2000-FA1-G1-MV-1C(-EM)-AM-D OR EQUIVALENT	LINEAR WALL; UP/DOWN LIGHT; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; IMPACT RESISTANT, DIFFUSE LENS; EM BATTERY WHERE (B) OPTION INDICATED ON DRAWINGS	WALL	36 W	4000 LUMEN NOMINAL LED 4000K
LR4- L4K LR4- L4K(B)	MARK SL2L-LOP-4-FLP-*-80CRI-40K-1000LMF-MIN1-MVOLT-*(-E10WLCP)-ZT OR EQUIVALENT	RECESSED LINEAR, 2" NOMINAL WIDTH; RECESS MOUNT; DIFFUSE LENS; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; COLOR AS SELECTED BY ARCHITECT; EM BATTERY WHERE (B) OPTION INDICATED ON DRAWINGS	RECESS	44 W	4000 LUMEN NOMINAL LED 4000K						

NOTES

LIGHT FIXTURE ACCESSORY APPEND

B	AS SPECIFIED	APPENDED TO FIXTURE TYPE; 1100 LUMEN EM BATTERY SUPPLY	AS SPECIFIED	N/A	PER FIXTURE TYPE

NOTES

-FIXTURE APPENDS ARE ADDED TO STANDARD FIXTURE TYPES. APPENDS ARE INTENDED TO MODIFY FIXTURE CATALOG NUMBERS GIVEN ABOVE AS NOTED IN APPEND DESCRIPTION

design west | architects
LOGAN UT 84321
SALT LAKE CITY UT 84103
255 SOUTH 300 WEST
795 NORTH 400 WEST

LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

MARK:	DATE:	DESCRIPTION:

PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER
No. 291171
SHANE D. SWENSON
2/5/2024
STATE OF UTAH

CONSTRUCTION DOCUMENTS

LIGHTING SCHEDULE

E-602.1

PANEL 1P1 | TYPE NQOD | 3 Ø 4 WIRE 120/208 VOLTS | LOCATION: ELEC 120 | MOUNTING: X SURFACE

X NEW; AS NEMA RATING; AS BOLT ON BREAKERS; ISOLATED GROUND BUS; SURGE PROTECT (SPD)

REMARKS: -*=VERIFY WITH EQUIPMENT NAMEPLATE AND/OR SUBMITTAL PRIOR TO GEAR RELEASE

225 AMP MAIN; X LUGS; BREAKER

No.	BRKR A	BRKR P	CIRCUIT DESCRIPTION	L	O	M	WIRE/CND PH	WIRE/CND N	WIRE/CND G	WIRE/CND C	CIRC. LOAD	A	B	C	CIRC. LOAD	WIRE/CND PH	WIRE/CND N	WIRE/CND G	WIRE/CND C	L	O	M	CIRCUIT DESCRIPTION	BRKR A	BRKR P	No.
1	20	1	LTG: GIRLS LKR, LOBBY				12S	12S	12S	3/4S	1120	2020			900	12S	12S	12S	3/4S			1	BATTING CAGE: WEST	20H*	3	2
3	20	1	LTG: BOYS LKR, JAN, STOR				12S	12S	12S	3/4S	809		1709		900	12S						1	-	-	-	4
5	20	1	LTG: MEZZANINE				12S	12S	12S	3/4S	1354			2254	900	12S						1	-	-	-	6
7	20	1	LTG: MAIN SOUTH				12S	12S	12S	3/4S	1333	2233			900	12S	12S	12S	3/4S			1	BATTING CAGE: W CNTR	20H*	3	8
9	20	1	LTG: MAIN CNTR S				12S	12S	12S	3/4S	1263		2163		900	12S						1	-	-	-	10
11	20	1	LTG: MAIN				12S	12S	12S	3/4S	1263			2163	900	12S						1	-	-	-	12
13	20	1	LTG: MAIN CNTR N				12S	12S	12S	3/4S	1263	2163			900	12S	12S	12S	3/4S			1	BATTING CAGE: E CNTR	20H*	3	14
15	20	1	LTG: MAIN NORTH				12S	12S	12S	3/4S	1279		2179		900	12S						1	-	-	-	16
17	20	1	LTG: BLDG EXTERIOR, SITE				12S	12S	12S	3/4S				900	900	12S						1	-	-	-	18
19	20	1	SPARE									900			900	12S	12S	12S	3/4S			1	BATTING CAGE: EAST	20H*	3	20
21	20	1	SPARE										900		900	12S						1	-	-	-	22
23	20	1	SPARE											900	900	12S						1	-	-	-	24
25	20	1	SPARE									0											SPARE	20	1	26
27	20	1	SPARE										0										SPARE	20	1	28
29	20	1	SPARE											0									SPARE	20	1	30
31	20	1	SPARE									0											SPARE	20	1	32
33	20	1	SPARE										0										SPARE	20	1	34
35	20	1	SPARE											0									SPARE	20	1	36
37	20	1	SPARE									0											SPARE	20	1	38
39	20	1	SPARE										0										SPARE	20	1	40
41	20	1	SPARE											0									SPARE	20	1	42
43	20	1	SPARE									0											SPARE	20	1	44
45	20	1	SPARE										0										SPARE	20	1	46
47	20	1	SPARE											0									SPARE	20	1	48
49	20	1	SPARE									0											SPARE	20	1	50
51	20	1	SPARE										1200		1200	12S	12S	12S	3/4S			1	CNTRL VALVE XFMR	20	1	52
53	20	1	PLUGS: EXTERIOR		6		10	10	10	3/4S	1080			2280	1200	12S	12S	12S	3/4S			1	CNTRL VALVE XFMR	20	1	54
55	20	1	PLUGS: STORAGE/MECH 123	2	1		12S	12S	12S	3/4S	420	1620			1200	12S	12S	12S	3/4S			1	CNTRL VALVE XFMR	20	1	56
57	20	1	PLUGS: LOBBY 110	2			12S	12S	12S	3/4S	360		840		480	12S	12S	12S	3/4S			2	DOOR SECURITY	20	1	58
59	20	1	PLUGS: SW STORAGE	2			12S	12S	12S	3/4S	360			1560	1200	12S	12S	12S	3/4S			1	BOILER KILL	20	1	60
61	20	1	PLUGS: SPRT FLD SW	2			12S	12S	12S	3/4S	360	1536			1176	12S	12S	12S	3/4S			1	ADA LIFT	20	1	62
63	20	1	PLUGS: SPRT FLD NW	2			12S	12S	12S	3/4S	360		1560		1200	12S	12S	12S	3/4S			1	DRINK FTN	20	1	64
65	20	1	PLUGS: SPRT FLD N WALL W	1			12S	12S	12S	3/4S	180			780	600	12S	12S	12S	3/4S			1	WATER HEATER WH-1	20*	1	66
67	20	1	PLUGS: SPRT FLD N WALL CNTR	1			12S	12S	12S	3/4S	180	780			600	12S	12S	12S	3/4S			1	WATER HEATER WH-2	20*	1	68
69	20	1	PLUGS: SPRT FLD N WALL E	1			12S	12S	12S	3/4S	180		2580		2400	10	10	10	3/4			1	BOILER B-1	30*	1	70
71	20	1	PLUGS: SPRT FLD NE	2			12S	12S	12S	3/4S	360			2760	2400	10	10	10	3/4			1	BOILER B-2	30*	1	72
73	20	1	PLUGS: SPRT FLD SE	3			12S	12S	12S	3/4S	540	2196			1656	10	10	10	3/4			1	BOILER PUMP P-B-1	30H*	1	74
75	20	1	PLUGS: OFF 106	8			12S	12S	12S	3/4S	1440		3096		1656	10	10	10	3/4			1	BOILER PUMP P-B-2	30H*	1	76
77	20	1	PLUGS: OFF 109	6			12S	12S	12S	3/4S	1080			1560	480	12S	12S	12S	3/4S			2	HEATERS: BOYS 115	20	1	78
79	20	1	PLUGS: OFF 113	6			12S	12S	12S	3/4S	1080	1560			480	12S	12S	12S	3/4S			2	HEATERS: LOBBY 110	20	1	80
81	20	1	PLUGS: EQUIP, GIRLS	4			12S	12S	12S	3/4S	720		1200		480	12S	12S	12S	3/4S			2	HEATERS: GIRLS 105	20	1	82
83	20	1	PLUGS: BOYS, JANITOR	4			12S	12S	12S	3/4S	720			2220	1500	12S	12S	12S	3/4S			1	FACP	R20L	1	84
											TOTALS	15008	17427	17377											

AIC 27000; SCCR 27000; PARALLEL RUNS SEE ONE-LINE

FEEDER SEE ONE-LINE | AMPS/PHASE 125 145 145

BREAKER CODES
A=ARC-FAULT; G=GROUND FAULT; H=HACR; L=LOCKING HANDLE; S=SHUNT TRIP; R=RED PAINTED HANDLE
WIRE CODES
I=ADD'L ISO GROUND TO MATCH SAFETY GROUND; S=UNLESS OTHERWISE SPECIFIED
GENERAL CODES
1LIN=SEE ONE-LINE DIAGRAM; AS=AS SPECIFIED

PANEL 2P1 | TYPE NQOD | 3 Ø 4 WIRE 120/208 VOLTS | LOCATION: ELEC 200 | MOUNTING: X SURFACE

X NEW; AS NEMA RATING; AS BOLT ON BREAKERS; ISOLATED GROUND BUS; SURGE PROTECT (SPD)

REMARKS: -*=VERIFY WITH EQUIPMENT NAMEPLATE AND/OR SUBMITTAL PRIOR TO GEAR RELEASE

225 AMP MAIN; X LUGS; BREAKER

No.	BRKR A	BRKR P	CIRCUIT DESCRIPTION	L	O	M	WIRE/CND PH	WIRE/CND N	WIRE/CND G	WIRE/CND C	CIRC. LOAD	A	B	C	CIRC. LOAD	WIRE/CND PH	WIRE/CND N	WIRE/CND G	WIRE/CND C	L	O	M	CIRCUIT DESCRIPTION	BRKR A	BRKR P	No.
1	20	1	SPARE									1272			1272	12S	12S	12S	3/4S			1	EXHAUST FAN (EF-4)	20H*	3	2
3	20	1	SPARE										1272		1272	12S						1	-	-	-	4
5	20	1	SPARE											1272	1272	12S						1	-	-	-	6
7	20	1	SPARE									900			900	12S	12S	12S	3/4S			1	BATTING CAGE: WEST	20H*	3	8
9	20	1	SPARE										900		900	12S						1	-	-	-	10
11	20	1	SPARE											900	900	12S						1	-	-	-	12
13	20	1	SPARE									0											SPARE	20	1	14
15	20	1	SPARE										0										SPARE	20	1	16
17	20	1	SPARE											0									SPARE	20	1	18
19	20	1	SPARE									0											SPARE	20	1	20
21	20	1	SPARE										0										SPARE	20	1	22
23	20	1	SPARE											0									SPARE	20	1	24
25	20	1	SPARE									0											SPARE	20	1	26
27	20	1	SPARE										0										SPARE	20	1	28
29	20	1	PLUGS: L2 NORTH		3		12S	12S	12S	3/4S	540			540									SPARE	20	1	30
31	20	1	PLUGS: L2 SOUTH		4		12S	12S	12S	3/4S	720	720											SPARE	20	1	32
33	20	1	PLUGS: L2 TV'S			2	12S	12S	12S	3/4S	720				1200	12S	12S	12S	3/4S			1	CNTRL VALVE XFMR	20	1	34
35	20	1	PLUGS: L2 FILM ROOM		6		12S	12S	12S	3/4S	1080			2280	1200	12S	12S	12S	3/4S			1	CNTRL VALVE XFMR	20	1	36
37	20	1	PLUGS: BOYS		1		12S	12S	12S	3/4S	180	1356			1176	12S	12S	12S	3/4S			1	EX FAN: EF-1	20H*	1	38
39	20	1	PLUGS: GIRLS		1		12S	12S	12S	3/4S	180		1356		1176	12S	12S	12S	3/4S			1	EX FAN: EF-2	20H*	1	40
41	20	1	PLUGS: ROOF		3		12S	12S	12S	3/4S	540			1716	1176	12S	12S	12S	3/4S			1	EX FAN: EF-3	20H*	1	42
											TOTALS	4248	5448	6708											

AIC 12000; SCCR 12000; PARALLEL RUNS SEE ONE-LINE

FEEDER SEE ONE-LINE | AMPS/PHASE 35 45 56

BREAKER CODES
A=ARC-FAULT; G=GROUND FAULT; H=HACR; L=LOCKING HANDLE; S=SHUNT TRIP; R=RED PAINTED HANDLE
WIRE CODES
I=ADD'L ISO GROUND TO MATCH SAFETY GROUND; S=UNLESS OTHERWISE SPECIFIED
GENERAL CODES
1LIN=SEE ONE-LINE DIAGRAM; AS=AS SPECIFIED

PANEL 1MDP1 | TYPE I-LINE | 3 Ø 4 WIRE 120/208 VOLTS | LOCATION | MOUNTING: X SURFACE

X NEW; AS NEMA RATING; AS BOLT ON BREAKERS; ISOLATED GROUND BUS; 1LIN SURGE PROTECT (SPD)

REMARKS

1LIN AMP MAIN; 1LIN LUGS; 1LIN BREAKER

No.	BRKR A	BRKR P	CIRCUIT DESCRIPTION	L	O	M	WIRE/CND PH	WIRE/CND N	WIRE/CND G	WIRE/CND C	CIRC. LOAD	A	B	C	CIRC. LOAD	WIRE/CND PH	WIRE/CND N	WIRE/CND G	WIRE/CND C	L	O	M	CIRCUIT DESCRIPTION	BRKR A	BRKR P	No.
1	1LIN	3	PANEL 0P1				1LIN	1LIN	1LIN	1LIN	14806	29814			15008	1LIN	1LIN	1LIN	1LIN				PANEL 2P1	1LIN	3	2
3	-	-	-				1LIN				14052		31479		17427	1LIN							-	-	-	4
5	-	-	-				1LIN				15828			33205	17377	1LIN							-	-	-	6
7	1LIN	3	PANEL 1P1				1LIN	1LIN	1LIN	1LIN	15008	15008											SPACE	1LIN	3	8
9	-	-	-				1LIN				17427		17427										-	-	-	10
11	-	-	-				1LIN				17377			17377									-	-	-	12
13	1LIN	3	SPACE									0											SPACE	1LIN	3	14
15	-	-	-										0										-	-	-	16
17	-	-	-											0									-	-	-	18
19	1LIN	3	SPACE									0											SPACE	1LIN	3	20
21	-	-	-										0										-	-	-	22
23	-	-	-											0									-	-	-	24
25	1LIN	3	SPACE									0											SPACE	1LIN	3	26
27	-	-	-										0										-	-	-	28
29	-	-	-											0									-	-	-	30
											TOTALS	44822	48906	50582											

AIC TBD; SCCR TBD; PARALLEL RUNS SEE ONE-LINE

FEEDER SEE ONE-LINE | AMPS/PHASE 374 408 422

BREAKER CODES
A=ARC-FAULT; G=GROUND FAULT; H=HACR; L=LOCKING HANDLE; S=SHUNT TRIP; R=RED PAINTED HANDLE
WIRE CODES
I=ADD'L ISO GROUND TO MATCH SAFETY GROUND; S=UNLESS OTHERWISE SPECIFIED
GENERAL CODES
1LIN=SEE ONE-LINE DIAGRAM; AS=AS SPECIFIED

PANEL 0P1 | TYPE NQOD | 3 Ø 4 WIRE 120/208 VOLTS | LOCATION: BASEMENT HALL | MOUNTING: X SURFACE

X NEW; EXISTING; AS NEMA RATING; AS BOLT ON BREAKERS; ISOLATED GROUND BUS; SURGE PROTECT (SPD)

REMARKS: -*=VERIFY WITH EQUIPMENT NAMEPLATE AND/OR SUBMITTAL PRIOR TO GEAR RELEASE

225 AMP MAIN; X LUGS; BREAKER

No.	BRKR A	BRKR P	CIRCUIT DESCRIPTION	L	O	M	WIRE/CND PH	WIRE/CND N	WIRE/CND G	WIRE/CND C	CIRC. LOAD	A	B	C	CIRC. LOAD	WIRE/CND PH	WIRE/CND N	WIRE/CND G	WIRE/CND C	L	O	M	CIRCUIT DESCRIPTION	BRKR A	BRKR P	No.
1	20	1	LTG: BASEMENT				12S	12S	12S	3/4S	1594	7138			5544	4	4	8	1.25			1	AIR HANDLER SUPPLY (SF-AH1)	70H*	3	2
3	20	1	SPARE										5544		5544	4						1	-	-	-	4
5	20	1	SPARE											5544	5544	4						1	-	-	-	6
7	20	1	SPARE									2004			2004	10	10	10	3/4			1	HEATING WTR PUMP (PHW1)	30H*	3	8
9	20	1	SPARE										2004		2004	10						1	-	-	-	10
11	20	1	SPARE											2004	2004	10						1	-	-	-	12
13	20	1	SPARE									2004			2004	10	10	10	3/4			1	HEATING WTR PUMP (PHW2)	30H*	3	14
15	20	1	SPARE										2004		2004	10						1	-	-	-	16
17	20	1	SPARE											2004	2004	10						1	-	-	-	18
19	20	1	SPARE									1800			1800	10	10	10	3/4			1	SUMP PUMP	30H*	3	20
21	20	1	SPARE										1800		1800	10						1	-	-	-	22
23	20	1	SPARE											1800	1800	10						1	-	-	-	24
25	20	1	SPARE									0											SPARE	20	1	26
27	20	1	SPARE										0										SPARE	20	1	28
29	20	1	SPARE											0									SPARE	20	1	30
31	20	1	SPARE									0											SPARE	20	1	32
33	20	1	SPARE										0										SPARE	20	1	34
35	20	1	SPARE											0									SPARE	20	1	36
37	20	1	SPARE									0											SPARE	20	1	38
39	20	1	SPARE										0										SPARE	20	1	40
41	20	1	SPARE											0									SPARE	20	1	42
43	20	1	SPARE									0											SPARE	20	1	44
45	20	1	SPARE										0										SPARE	20	1	46
47	20	1	SPARE											0									SPARE	20	1	48
49	20	1	SPARE									0											SPARE	20	1	50
51	20	1	SPARE										0										SPARE	20	1	52
53	20	1	SPARE											0									SPARE	20	1	54
55	20	1	SPARE									0											SPARE	20	1	56
57	20	1	SPARE										0										SPARE	20	1	58
59	20	1	SPARE											0									SPARE	20	1	60
61	20	1	SPARE									0											SPARE	20	1	62
63	20	1	SPARE										0										SPARE	20	1	64
65	20	1	SPARE											0									SPARE	20	1	66
67	20	1	SPARE									420			420	12S	12S	12S	3/4S			1	EX FAN: BASEMENT	20	1	68
69	20	1	SPARE										1200		1200	12S	12S	12S	3/4S			1	HVAC CNTRL PANEL	20	1	70
71	20	1	SPARE											1200	1200	12S	12S	12S	3/4S			1	CNTRL VALVE XFMR	20	1	72
73	20	1	SPARE									1200			1200	12S	12S	12S	3/4S			1	BOILER KILL	20	1	74
75	20	1	SPARE										1500		1500	12S	12S	12S	3/4S	2			PHONE BOARD CKT 1	20	1	76
77	20	1	SPARE											1500	1500	12S	12S	12S	3/4S	2			PHONE BOARD CKT 2	20	1	78
79	20	1	SPARE									240			240	12S	12S	12S	3/4S			1	WATER SOFTENER	20	1	80
81	20	1	SPARE										0			12S	12S	12S	3/4S			1	CIRC PUMP	20*	1	82
83	20	1	PLUGS: BASEMENT	5			12S	12S	12S	3/4S	900			1776	876	12S	12S	12S	3/4S			1	GLYCOL FEED SYSTEM	20*	1	84
											TOTALS	14806	14052	15828											

AIC 23000; SCCR 23000; PARALLEL RUNS SEE ONE-LINE

FEEDER SEE ONE-LINE | AMPS/PHASE 123 117 132

BREAKER CODES
A=ARC-FAULT; G=GROUND FAULT; H=HACR; L=LOCKING HANDLE; S=SHUNT TRIP; R=RED PAINTED HANDLE
WIRE CODES
I=ADD'L ISO GROUND TO MATCH SAFETY GROUND; S=UNLESS OTHERWISE SPECIFIED
GENERAL CODES
1LIN=SEE ONE-LINE DIAGRAM; AS=AS SPECIFIED

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LCSD INDOOR ATHLETIC FACILITY
MUNICIPOOL REMODEL
114 EAST 1000 NORTH
LOGAN UT 84321
LOGAN CITY SCHOOL DISTRICT

CONSTRUCTION DOCUMENTS

MARK: DESCRIPTION: DATE:

PROJECT #: 123998
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 02.05.2024

REGISTERED PROFESSIONAL ENGINEER No. 294174 SHANE D. SWENSON 2/5/2024 STATE OF UTAH

ELECTRICAL SCHEDULES

E-603.1

MECHANICAL EQUIPMENT SCHEDULE

SYM	DESCRIPTION	LOAD	VOLTS	PHASE	FIRE ALARM SHUTDOWN	CONTROL CIRCUITS BY	* STARTER BY	SAFETY DISCONNECT BY	REMARKS
NEW EQUIPMENT									
B- 1	BOILER	25 MCA	120	1	NO	MECH	MECH	ELEC	
B- 2	BOILER	25 MCA	120	1	NO	MECH	MECH	ELEC	
BC- 1	BATTING CAGE	2 HP	208	3	NO	ELEC	ELEC	ELEC	TYPICAL FOR MULTIPLE UNITS--SEE POWER PLANS FOR COUNTS AND LOCATIONS. PROVIDE CONTROL SWITCH AND ASSOCIATED CONTROL CONNECTIONS
DP- 1	DOMESTIC CIRC PUMP	0.08 HP	120	1	NO	MECH	ELEC	ELEC	PROVIDE CORD AND PLUG TO MATCH EQUIPMENT NAMEPLATE
EF- 1	EXHAUST FAN	1/3 HP	120	1	NO	MECH	ELEC	ELEC	
EF- 2	EXHAUST FAN	1/3 HP	120	1	NO	MECH	ELEC	ELEC	
EF- 3	EXHAUST FAN	1/6 HP	120	1	NO	MECH	ELEC	ELEC	
EF- 4	EXHAUST FAN	5 HP	208	3	NO	MECH	ELEC	ELEC	
GFS- HW1	GLYCOL FEED SYSTEM	2 FLA	120	1	NO	MECH	MECH	ELEC	PROVIDE CORD AND PLUG TO MATCH EQUIPMENT NAMEPLATE
L- 1	ADA LIFT	1/2 HP	120	1	NO	ELEC	EQUIP	ELEC	
P- B1	PUMP: BOILER	3/4 HP	120	1	NO	MECH	ELEC	ELEC	
P- B2	PUMP: BOILER	3/4 HP	120	1	NO	MECH	ELEC	ELEC	
P- HW1	PUMP: HEATING WATER	5 HP	208	3	NO	MECH	MECH	MECH	EQUIPMENT VFD BY MECHANICAL
P- HW2	PUMP: HEATING WATER	5 HP	208	3	NO	MECH	MECH	MECH	EQUIPMENT VFD BY MECHANICAL
SF- AH1	AIR HANDLER (SUPPLY FAN)	15 HP	208	3	YES	MECH	MECH	ELEC	EQUIPMENT VFD BY MECHANICAL
SP- 1	SUMP PUMP	2 @ 2HP	208	3	NO	MECH	ELEC	ELEC	PROVIDE SINGLE POINT CONNECTION TO PUMP CONTROL PANEL (BY OTHERS). PROVIDE SEPARATE CONNECTIONS FROM CONTROL PANEL TO EACH PUMP AS REQUIRED.
WH- 1	WATER HEATER	5 FLA	120	1	NO	MECH	MECH	ELEC	PROVIDE CORD AND PLUG TO MATCH EQUIPMENT NAMEPLATE
WH- 2	WATER HEATER	5 FLA	120	1	NO	MECH	MECH	ELEC	PROVIDE CORD AND PLUG TO MATCH EQUIPMENT NAMEPLATE
EXISTING EQUIPMENT TO REMAIN									
FFH- 1E	FORCED FLOW HEATER: EXISTING	0.03 HP	120	1	NO	MECH	ELEC	ELEC	REPLACE EXISTING EQUIPMENT STARTER AND/OR DISCONNECT WITH NEW COMPLYING WITH THIS PROJECT'S SPECIFICATIONS
FFH- 2E	FORCED FLOW HEATER: EXISTING	0.03 HP	120	1	NO	MECH	ELEC	ELEC	REPLACE EXISTING EQUIPMENT STARTER AND/OR DISCONNECT WITH NEW COMPLYING WITH THIS PROJECT'S SPECIFICATIONS
FFH- 3E	FORCED FLOW HEATER: EXISTING	0.03 HP	120	1	NO	MECH	ELEC	ELEC	REPLACE EXISTING EQUIPMENT STARTER AND/OR DISCONNECT WITH NEW COMPLYING WITH THIS PROJECT'S SPECIFICATIONS
FFH- 4E	FORCED FLOW HEATER: EXISTING	0.03 HP	120	1	NO	MECH	ELEC	ELEC	REPLACE EXISTING EQUIPMENT STARTER AND/OR DISCONNECT WITH NEW COMPLYING WITH THIS PROJECT'S SPECIFICATIONS
FFH- 5E	FORCED FLOW HEATER: EXISTING	0.04 HP	120	1	NO	MECH	ELEC	ELEC	REPLACE EXISTING EQUIPMENT STARTER AND/OR DISCONNECT WITH NEW COMPLYING WITH THIS PROJECT'S SPECIFICATIONS
FFH- 6E	FORCED FLOW HEATER: EXISTING	0.04 HP	120	1	NO	MECH	ELEC	ELEC	REPLACE EXISTING EQUIPMENT STARTER AND/OR DISCONNECT WITH NEW COMPLYING WITH THIS PROJECT'S SPECIFICATIONS
P- HW3	PUMP: HEATING WATER	1.5 HP	208	3	NO	MECH	ELEC	ELEC	REPLACE EXISTING EQUIPMENT STARTER AND/OR DISCONNECT WITH NEW COMPLYING WITH THIS PROJECT'S SPECIFICATIONS
PP- 1E	EXHAUST FAN	1/6 HP	120	1	NO	MECH	ELEC	ELEC	REPLACE EXISTING EQUIPMENT STARTER AND/OR DISCONNECT WITH NEW COMPLYING WITH THIS PROJECT'S SPECIFICATIONS
UV- 1E	VENTILATOR FAN: EXISTING	1/6 HP	120	1	NO	MECH	ELEC	ELEC	REPLACE EXISTING EQUIPMENT STARTER AND/OR DISCONNECT WITH NEW COMPLYING WITH THIS PROJECT'S SPECIFICATIONS
UV- 2E	VENTILATOR FAN: EXISTING	1/6 HP	120	1	NO	MECH	ELEC	ELEC	REPLACE EXISTING EQUIPMENT STARTER AND/OR DISCONNECT WITH NEW COMPLYING WITH THIS PROJECT'S SPECIFICATIONS
WS- 1E	WATER SOFTENER: EXISTING	5 FLA	120	1	NO	MECH	MECH	ELEC	PROVIDE CORD AND PLUG TO MATCH EQUIPMENT NAMEPLATE
DEMO EQUIPMENT									
B- 1D	BOILER: DEMO								
CMP- 1D	AIR COMPRESSOR: DEMO								
CNP- 1D	CONDENSATE RETURN PUMP: DEMO								
CP- 1D	CIRCULATION PUMP: DEMO	1.5 HP	208	3	NO	MECH	ELEC	ELEC	
CPP- 1D	CONDENSATE RETURN PUMP PACKAGE: DEMO								
P- 1D	POOL PUMP: DEMO								
SF- 1D	SUPPLY FAN: DEMO								
UH- 1D	UNIT HEATER: DEMO								

* ELECTRICAL CONTRACTOR VERIFY SINGLE SPEED OR TWO SPEED STARTERS WITH MECHANICAL DRAWINGS.

FLOOR, TABLE, AND WALL BOX SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	COLOR	DEVICES
A/V	X-LARGE CAPACITY WALL BOX; STEEL 6" SQUARE X 3 1/2" DEEP 3/4" MUD RING (3-GANG AS SPECIFIED)	GARVIN GARVIN OR EQUIVALENT	6350-1-1/2 6AMR-3	PER ARCHITECT	-A/V CONNECTORS PER OWNER -A/V CONDUIT AS NOTED ON PLAN
P23S	MULTI-SERVICE, X-LARGE CAPACITY POKE-THRU; STEEL; FLUSH-IN-USE; CUTOUT COVER; COLOR PER OWNER/ARCHITECT	HUBBELL SYSTEM 1 OR EQUIVALENT WITH PRIOR APPROVAL	10" WITH S1R10CVRX	PER ARCHITECT	-TWO DUPLEX -1 @ 1.25" COMM CONDUIT WITH --2 COMM PORTS --1 TV JACK -A/V CONNECTORS PER OWNER -A/V CONDUIT AS NOTED ON PLAN
W12S	MULTI-SERVICE, LARGE CAPACITY WALL BOX; STEEL; FLUSH-IN-USE; RECESS MOUNT IN WALL; COVER FIELD PAINTED CUSTOM COLOR AS SELECTED BY OWNER/ARCHITECT	WIREMOLD HUBBELL OR EQUIVALENT WITH PRIOR APPROVAL	EFSB2 NSAV62M/NSAV6C	PER ARCHITECT	-ONE DUPLEX -1 @ 1.25" COMM CONDUIT WITH --2 COMM PORTS --1 TV JACK -A/V CONNECTORS PER OWNER -A/V CONDUIT AS NOTED ON PLAN

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E-603.2

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