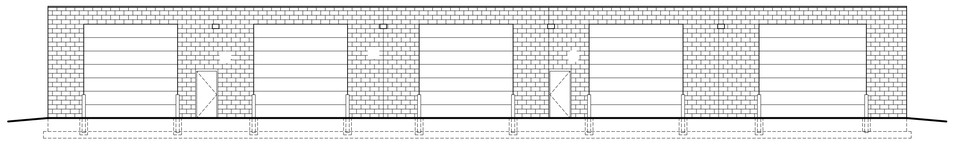

FARMINGTON CITY
PUBLIC WORKS & LEISURE SERVICES
STORAGE BUILDING
FARMINGTON, UTAH 84025

PROJECT CONSULTANTS

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442 NORTH MAIN STREET
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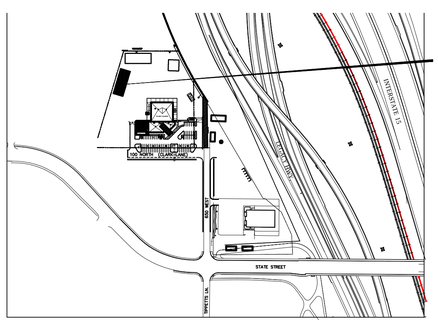
– MECHANICAL/PLUMBING/ELECTIRCAL ENGINEERS
2335 SOUTH STATE STREET, SUITE 100
PROVO, UTAH 84606
(801) 375–2228

DRAWING INDEX:

SHEET CONTENTS

VICINITY MAPS:

NORTH



CODE ANALYSIS

APPLICABLE CODES	Year		Year
International Building Code	2012	International Fuel Gas Code	2012
International Mechanical Code	2012	National Electrical Code	2011
International Plumbing Code	2012	ADA Accessibility Guildelines	ANSI 117 2003
International Fire Code	2012		
International Energy Conservation Code	2012		

A. Occupancy and Group: S-1 STORAGE

B. Type of Construction (Chaper 6): Type VB

C. Allowable Area and Height (Table 503): Area: 9,000 S.F.
Height: 40 FT. Stories: 1

D. Area Modification (Section 506): Required? Yes:_____ No: X
Modified Area (Allowable): -
Modified Height: - Modified Stories: -

E: Actual Area and Height:
Actual Area (S.F.): 6,400
Number of Stories: 1 Building Height: 16'-8"

F. Occupant Load for exiting (Section 1004) :
Design Occupant Load: 13

Occupant Load Description (No. from IBC 2006, Table 1004.1.2)

Space	Function of Space	Space S.F.	Floor Area/Occ.	No. of Occupants
Storage Floor	Storage	6400 S.F.	1/500	13 Occ.
TOTAL NUMBER OF OCCUPANTS				13 Occ.

G. Fire Resistance Rating: Requirements for the Exterior Walls based on the fire separation distance (in hours) (Table 602):
North: 0 South: 0 East: 0 West: 0

G. Fire Resistance Rating Requirements for Building Elements (hours); (Table 601)(Table 716.5).

Element	Hours	Assembly Listing	Element	Hours	Assembly Listing
Exterior Bearing Walls	0 HR	–	Floors - Ceiling Floors	0 HR	–
Interior Bearing Walls	0 HR	–	Roofs - Ceiling Roofs	0 HR	–
Exterior Non-Bearing Walls	–	–	Exterior Doors and Windows	0 HR	–
Structural Frame	0 HR	–	Shaft Enclosures	–	–
Partitions - Permanent	–	–	Fire Walls	–	–
Fire Barriers	–	–	Fire Partitions	–	–
			Smoke Partitions	–	–

H: Automatic Fire Sprinkler System (Section 903):
Required: No
Provided: No Type of Sprinkler System: _____

J. Exiting (Section 1015) :
Number Exits Required: 1 Number Exits Provided: 1

K. Travel Distance (Table 1016.2) :
Maximum Allowable Travel Distance: 200 ft.
Maximum Travel Distance (Actual): 70 ft.

L. Exit Width (Section 1005) :
Minimum Width: 34 in.
[(Occupant Load) 13 / 2 (# Exits) X (Means of Egress Factor) 0.2]
Minimum Width from Calculation: 1.3 in.

M. Minimum Number of Required Plumbing Facilities (Table 2902.1):
This building is not an 'Occupiable Space' as per 2012 IBC 'Definitions. Plumbing fixtures are located in adjacent Public Utilities and Leisure Building located 230 feet from building.

NOTE:
AT CONCLUSION OF THE WORK, GENERAL CONTRACTOR SHALL PROVIDE OWNER'S REPRESENTATIVE WITH TWO FULL–SIZE (24x36) HARD COPIES AND 1 C.D. WITH SCANNED *.PDF FILES AS PROJECT RECORD DRAWINGS.

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COVER SHEET

G-1.0

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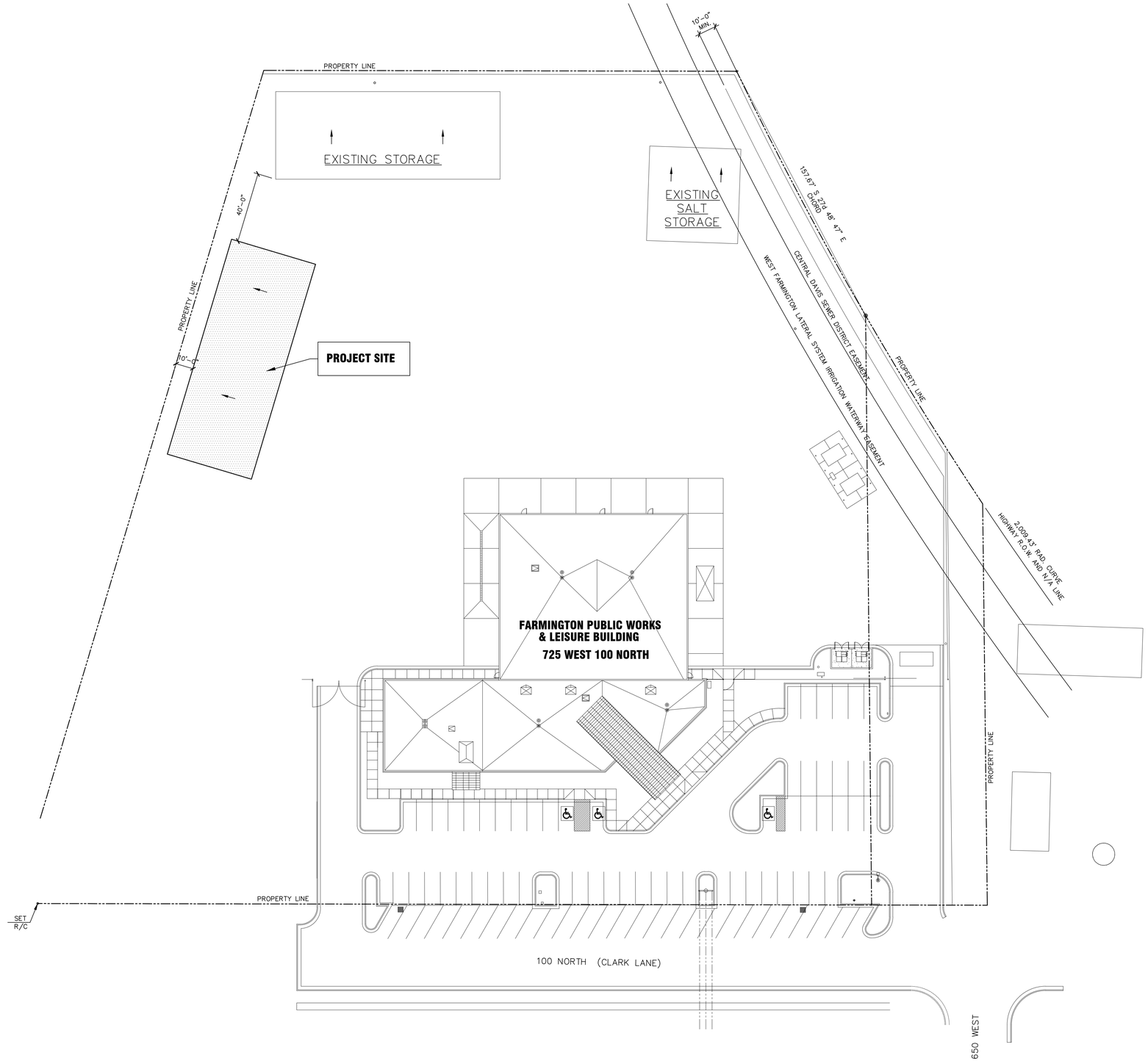
NOTE SHEET

G-1.1



01 A0.01 **SITE PLAN**

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

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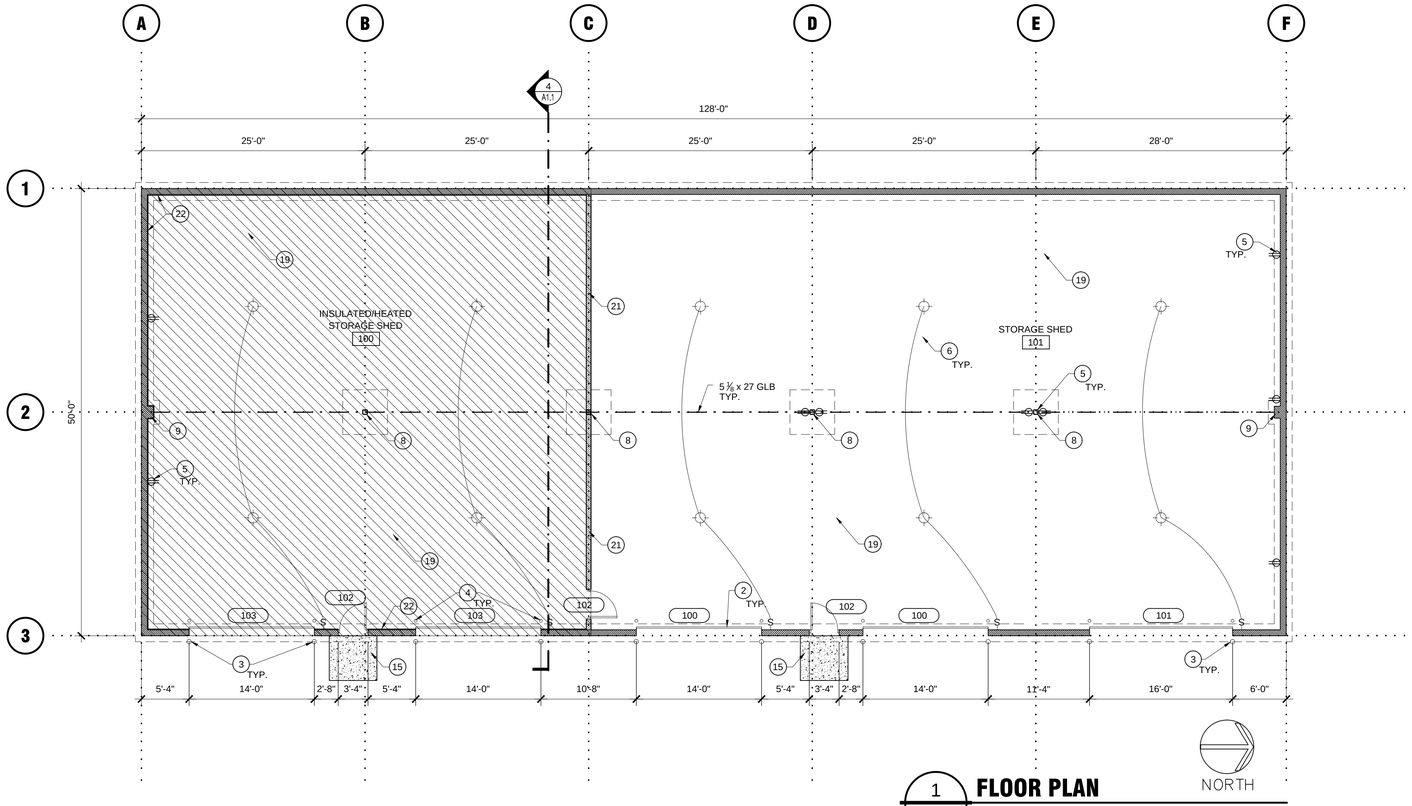
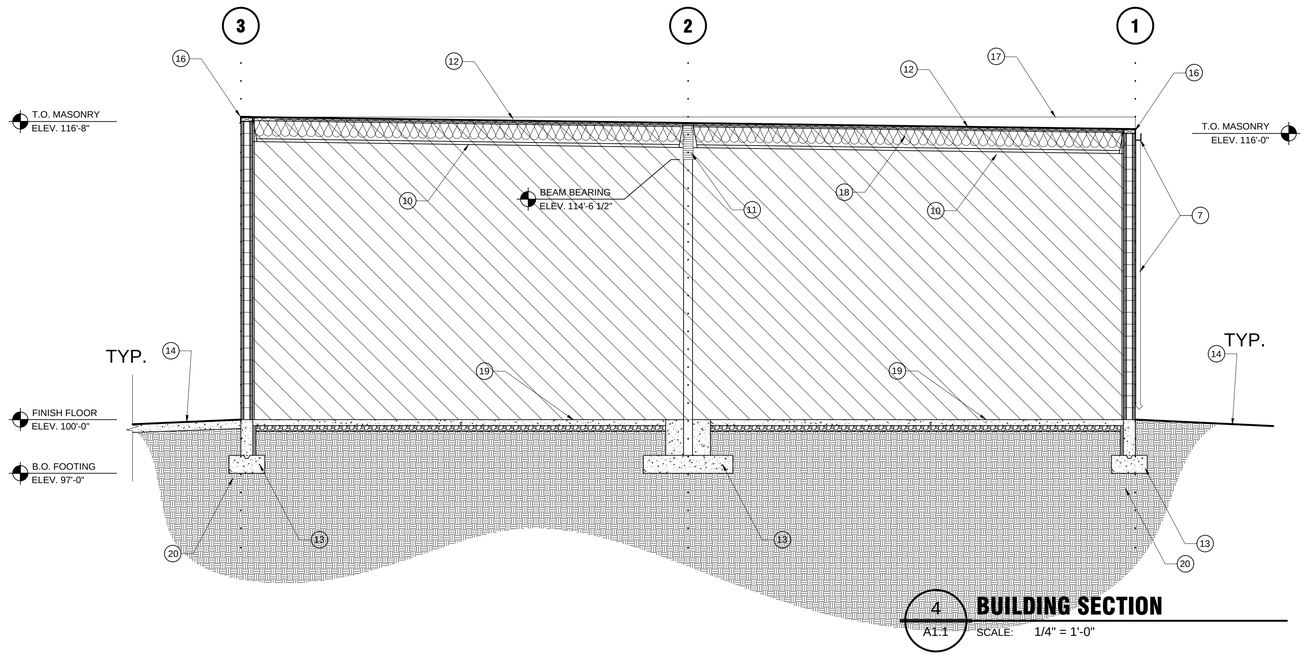
SITE PLAN

A-1.0



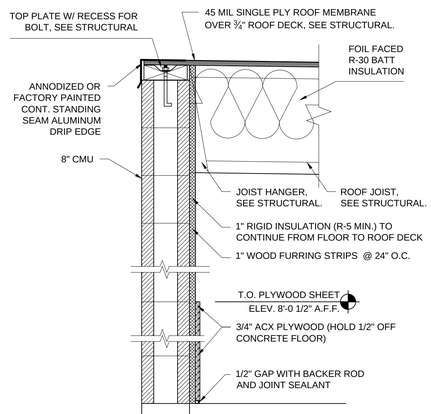
1 FLOOR PLAN
A1.1 SCALE: 1/8" = 1'-0"



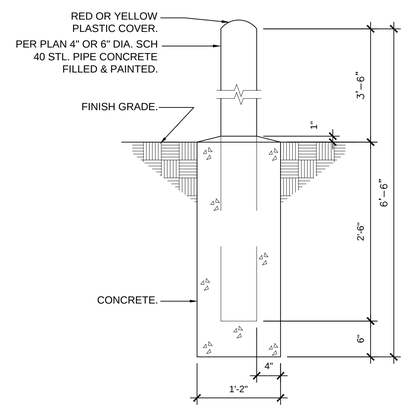
4 BUILDING SECTION
A1.1 SCALE: 1/4" = 1'-0"

DOOR SCHEDULE

DOOR NUMBER	DOOR SIZE	DOOR TYPE	QTY	REMARKS
100	14'-0"x14'-0"x1 ¾"	O.H. (PAINTED)	2	REFER TO STRUCTURAL DRAWINGS FOR JAMB, HEAD AND THRESHOLD DETAILS
101	16'-0"x14'-0"x1 ¾"	O.H. (PAINTED)	1	REFER TO STRUCTURAL DRAWINGS FOR JAMB, HEAD AND THRESHOLD DETAILS
102	3'-0"x7'-0"x1 ¾"	INSULATED H.M. (PAINTED)	3	H.M. FRAME, HEAVY DUTY LOCKSET WITH LEVER HANDLE.
103	14'-0"x14'-0"x1 ¾"	INSULATED O.H. (PAINTED)	2	REFER TO STRUCTURAL DRAWINGS FOR JAMB, HEAD AND THRESHOLD DETAILS



3 ROOF DETAIL @ HEATED SPACE
A1.1 SCALE: 1" = 1'-0"



2 PIPE BOLLARD
A1.1 SCALE: 1" = 1'-0"

REFERENCE NOTES

1. 6" METAL STUD DEMISING WALL FULL HEIGHT TO ROOF DECK ABOVE. ⅝" GYPSUM BOARD EACH SIDE, PAINTED.
2. OVERHEAD SECTIONAL DOORS WITH POWER OPERATOR.
3. 6" CONCRETE FILLED STEEL PIPE BOLLARDS, PAINTED, SEE 2/A1.1.
4. 4" CONCRETE FILLED STEEL PIPE BOLLARDS, PAINTED, SEE 2/A1.1.
5. VERIFY LOCATIONS OF ALL ELECTRICAL OUTLETS WITH CITY PUBLIC WORKS DEPT. (DESIGN/BUILD).
6. PROVIDE HIGH BAY LIGHT FIXTURES WITH SEPERATE SWITCHING FOR EACH BAY AS INDICATED. (DESIGN/BUILD).
7. ALUM. RAIN GUTTER AND DOWNSPOUT, COLOR TO MATCH COPING.
8. STEEL COLUMN, SEE STRUCTURAL.
9. MASONRY PIER, SEE STRUCTURAL.
10. WOOD TRUSS, SEE STRUCTURAL.
11. GLU-LAM GIRDER, SEE STRUCTURAL.
12. SINGLE PLY ROOFING MEMBRANE MECHANICALLY FASTENED OVER ROOF DECK. EXTEND MEMBRANE UP SIDE AND OVER TOP OF PARAPET WALL (FULLY ADHERED), SEE SPECIFICATIONS.
13. FOOTING AND FOUNDATION. REFER TO STRUCTURAL DRAWINGS.
14. SLOPE GRADE AWAY FROM BUILDING, TYP.
15. NEW 4" THICK, 5' X 5' CONCRETE PAD, ON 4" DRAINAGE GRAVEL. 2% MAX SLOPE AWAY FROM BUILDING AND CROSS SLOPE.
16. FACTORY FINISHED ALUM. DRIP FLASHING.
17. MASONRY WALL BEYOND, WRAP ROOF MEMBRANE UP SIDE OF WALL (FULLY ADHERED) AND OVER TOP OF WALL UNDER METAL COPING. TYPICAL AT END WALLS.
18. R-30 BATT INSULATION WITH VAPOR BARRIER ATTACHED TO BOTTOM OF JOISTS. (HEATED SIDE OF BUILDING ONLY.)
19. CONCRETE SLAB OVER GRANULAR FILL OVER 6 MIL VAPOR BARRIER, SEE STRUCTURAL DRAWINGS. PROVIDE FIBER JOINT BOARD BETWEEN SLAB EDGE AND FOUNDATION WALL
20. VERIFY WITH SOILS REPORT ANY REQUIREMENTS FOR ENGINEERED FILL UNDR FOOTINGS.
21. 6" INSULATED METAL STUD WALL FROM FLOOR TO UNDERSIDE OF ROOF DECK. INSTALL ¾" ACX PLYWOOD TO BOTH SIDES OF WALL. REFER TO DETAIL THIS SHEET.
22. 1" RIGID INSULATION BOARD ON 1" WOOD FURRED OUT WALL. ¾" ACX TO BE INSTALLED TO 8' ABOVE FINISHED FLOOR. SEE WALL SECTION THIS SHEET

WALL TYPES

8" CMU BLOCK, ALL CELLS NOT GROUTED SOLID SHALL BE FILLED WITH CORE-FILL 500 OR APPROVED EQUAL TO ACHIEVE R-11 MIN. CMU FIRE RATING - UL LISTING DESIGN NO. U904, 3 HR. RATING.

HATCH PATTERN INDICATES AREA LIMITS OF CONDITIONED SPACE

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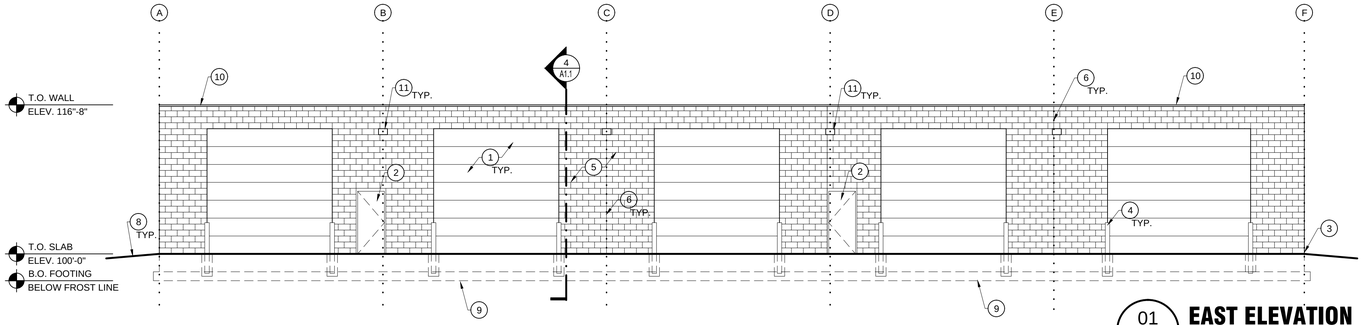
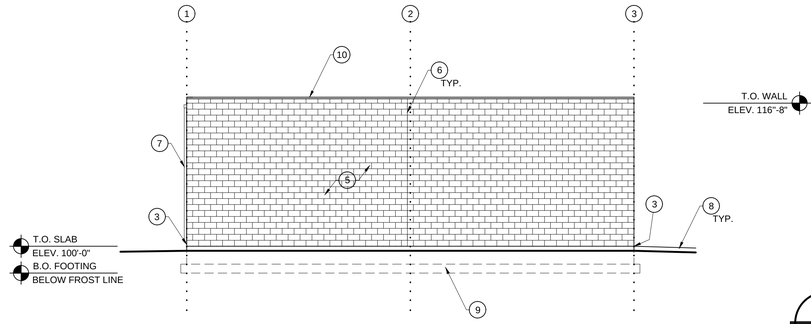
STORAGE BUILDING FLOOR PLAN

A1.1



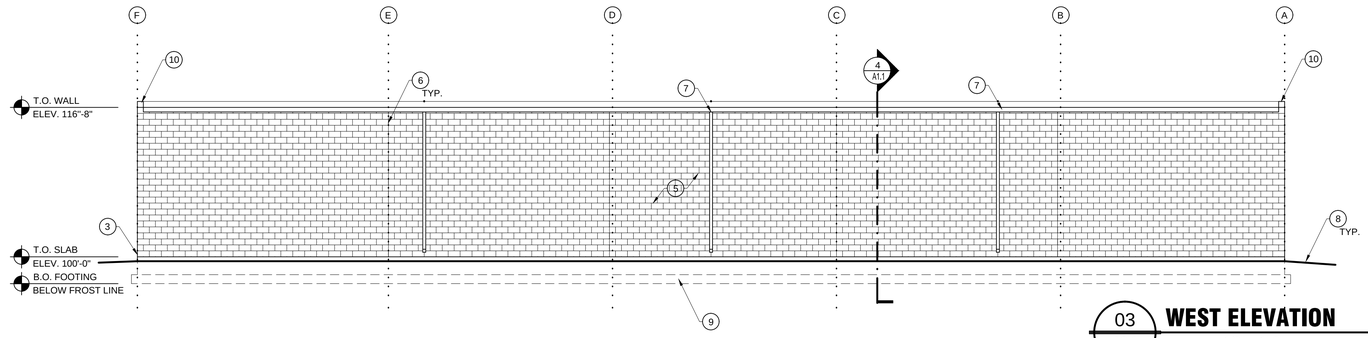
01 A2.1 **EAST ELEVATION**

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



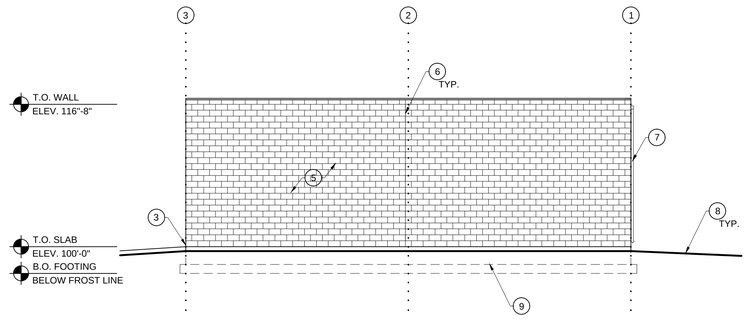
02 A2.1 **SOUTH ELEVATION**

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



03 A2.1 **WEST ELEVATION**

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



04 A2.1 **NORTH ELEVATION**

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

REFERENCE NOTES

1. OVERHEAD SECTIONAL DOOR, SEE SCHEDULE SHEET A1.1. (PAINTED). NON- INSULATED EXCEPT ON HEATED SIDE OF BUILDING.
2. H.M. MAN DOOR, SEE SCHEDULE SHEET A1.1. (PAINTED).
3. CONCRETE FOOTING AND FOUNDATION, SEE STRUCTURAL.
4. CONCRETE FILLED BOLLARD, SEE DETAIL 2/A1.1.
5. SMOOTH FACE CMU, VERIFY COLOR WITH CITY.
6. EXPANSION JOINTS
7. ALUM. RAIN GUTTER AND DOWNSPOUT, COLOR TO MATCH COPING.
8. SLOPE GRADE AWAY FROM BLDG. ALL AROUND.
9. FOOTING AND FOUNDATION MIN. 30" BELOW FINISH GRADE.
10. PRE-FINISHED STANDING SEAM METAL COPING, SEE 3/A1.1.
11. WALL PACK LIGHT FIXTURE, DESIGN BUILD.

NOTE:
COLORS TO MATCH EXISTING ADJACENT STORAGE BUILDING

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STORAGE BUILDING ELEVATIONS

A2.1

GENERAL NOTES FOR STRUCTURAL SHEETS

BASIS OF DESIGN

1. BUILDING CODE . . . . . 2012 IBC
2. RISK CATEGORY II
3. GRAVITY DESIGN:
   DEAD LOADS:
   Roofs . . . . . 15 psf
   LIVE LOADS:
   Roofs . . . . . 20 psf
   SNOW LOADS:
   Snow load on ground, Pg . . . . . 42.8 psf
   Snow load on flat roof, Pf . . . . . 36 psf
   Exposure factor, Ce 1.0
   Importance factor, Is 1.0
   Thermal factor, Ct 1.2
4. WIND DESIGN
   Basic wind speed . . . . . 150 mph (3s gust, Ultimate)
   116 mph (3s gust, Nominal)
   Exposure C
   Internal pressure coefficient, GCpi . . . . . ±0.18
   Components and cladding wind pressures:

Zone, area=	Nominal pressures 10 sf	100 sf
1 (roof)	30.1 psf	27.5 psf
2 (roof)	50.5 psf	32.6 psf
3 (roof)	76.0 psf	32.6 psf
4 (wall)	29.8 psf	25.8 psf
5 (wall)	36.7 psf	28.6 psf

5. SEISMIC DESIGN:
   Importance factor, Ie 1.0
   Mapped Spectral response accelerations:
   Ss & S1 . . . . . 1.355 & 0.517
   Site class . . . . . D
   Spectral response coefficients:
   SDs & SD1 . . . . . 0.903 & 0.517
   Seismic Design Category . . . . . D
   Basic Seismic-Force-Resisting System:
   Bearing wall systems;
   Special reinforced masonry shear walls
   Design Base Shear . . . . . Cs*W kips
   Seismic response coefficient, Cs 0.181
   Response modification factor, R 5
   Analysis procedure . . . . . Equivalent Lateral Force
6. SOILS:
   Soil bearing pressure . . . . . 1500 psf
   Bear footings on the undisturbed natural soil or compacted structural fill, see soils report.
   Minimum frost cover . . . . . 30 inches
7. ABBREVIATIONS:
   EOR = Engineer of record. See professional stamp this page.
   UNO = Unless noted otherwise

GENERAL

1. THE GENERAL CONTRACTOR SHALL:
   A. Be familiar with the contract documents and insure that subcontractors are familiar with their portion of the work. Submit a written request to the Arch/EOR for approval before proceeding with any changes.
   B. Verifies site conditions and dimensions at the site. If they differ from the contract documents, notify the Arch/EOR prior to fabrication/construction of affected elements. Affected details may require redesign.
   C. Report to the Arch/EOR modifications made to the structure.
   D. Be responsible for safety and protection on and around the job site and adjacent properties.

2. THE GENERAL CONTRACTOR SHALL COORDINATE:
   A. And verify locations, weights and sizes of mechanical units, equipment, etc. prior to the fabrication and erecting of structural supporting elements. Report sizes and locations that differ from those shown on the drawings to the Arch/EOR for review. Additional framing maybe required.
   B. Roof, floor, and wall openings required for mechanical, etc. which are not shown on the structural drawings with the Arch/EOR.
   C. Any structural situation not covered by the drawings with the Arch/EOR.
   D. Doors, windows, walls, elevations, slopes, stairs, curbs, drains, recesses, depressions, railings, waterproofing, finishes, chamfers, kerfs, pads, landscape walls, trenches in slabs, etc. with the structural work.
   E. Inspections, testing, and structural observations as work proceeds. Notify the EOR 48 hours prior to any required structural observations.

3. CONTRACT DOCUMENTS & DRAWINGS:
   A. These structural notes complement the specifications and the drawings.
   B. Specific details, sections and notes shown on the drawings govern over these general notes and typical details.
   C. Contract documents take precedence over shop drawings, UNO.
   D. Apply typical or similar details, sections and notes to similar situations on the drawings where specific details are not referenced.
   E. Drawings and details have been prepared to visually represent information provided in scaled form. However, DO NOT scale plans or details for dimensional information.
   F. Refer to architectural drawings for dimensions.

4. BUILDING CODE COMPLIANCE: Construction, inspection, materials, testing, and workmanship shall conform to the requirements of the governing building code.

5. CONSTRUCTION SEQUENCE, SHORING, AND BRACING REQUIREMENTS: The general contractor is responsible for the method, means, and sequence of structural erection, UNO. He shall provide adequate temporary shoring or bracing for all structural elements until the entire structural system is completed. Design of shoring and bracing is by others at no additional cost to the owner.

6. OMISSIONS, CONFLICTS & DISCREPANCIES:
   A. Bring omissions, conflicts or discrepancies between the elements of the contract documents to the attention of the Arch/EOR before proceeding with work involved.
   B. In case of conflicts or discrepancies, follow the most stringent requirements as directed by the Arch/EOR.

7. MISCELLANEOUS:
   A. During and after construction, builder and/owner shall keep loads on the structure within the limits of this design. See Basis of Design.
   B. Site observations by WCA's field representative shall neither be construed as inspection nor approval of construction.

8. SUBMITTALS:
   A. Make submittals in a timely manner. WCA's review is for general compliance only and is not intended as approval. Contractor is responsible for verifying sizes, dimensions and elevations on submittals as related to the contract documents.
   B. Submit the following items for review prior to proceeding with the work:

      Concrete material Certifications & mix designs.
      Masonry material Certifications, grout & mortar designs.
      Shop Drawings: Reinforcing steel
      Structural steel
      Wood joist and beams (Manufactured)
      Roof, floor and wall openings not shown on the drawings.
      Welding procedures and certifications.

   C. Allow two weeks for the review of submittals by the EOR.
   D. Have EOR approved shop drawings & materials on site before construction of those components begins.
   E. Substitutions are not allowed unless approved by the EOR. Submit requests for structural substitutions to the Arch/EOR.

FOUNDATIONS

1. SOILS REPORT:
   A. Foundations and retaining wall systems have been designed following the recommendations contained in a soils report prepared by:

      Applied Geotechnical Engineering Consultants, Inc.
      Project No. 1010410
      Dated: July 2, 2001.

      Obtain a copy from the architect. This design assumes the recommendations contained in this report are being followed.
   B. If soil conditions vary from the report or if the report has been amended, etc., the contractor shall immediately inform the EOR. Foundations as shown on the drawings may require revision.

2. Soil preparation under footings and slabs-on-grade shall be in accordance with the soils report.

3. The general contractor is responsible for soil excavation, back fill and support of adjacent properties during earthwork.

4. All walls (except cantilevered retaining walls) shall be adequately brace against lateral movement prior to backfilling. Design and erection of bracing/shoring is the general contractor's responsibility. Bracing shall remain in place until supporting structural elements are in place and have attained full strength. If walls are not braced, DO NOT backfill until suspended floor is in place and concrete has attained full strength.

REINFORCING STEEL

1. CODES AND STANDARDS. Comply with:
   A. CRSI "Manual of Standard Practice"
   B. ACI "Detailing Manual", ACI 315 (or SP-66).

2. MATERIALS:
   A. New stock deformed rebar: ASTM A615, Grade 60, except as noted.
      a. Field bent dowels: ASTM A615, Grade 40 or ASTM A706, Grade 60, Low-Alloy Steel. Reduce spacing of grade 40 dowels by 1/3.
      b. Welded rebar: ASTM A706, Grade 60, Low-Alloy Steel.
      c. Deformed bar anchors (DBA's): See materials under section 'Structural Steel'
   B. Masonry joint wire: ASTM A82.
   C. Use mechanical splice couplers capable of developing 125% of the specified bar strength.

3. CONSTRUCTION:
   A. Detail, bolster, and support all rebar. Tie bars securely with proper clearances before casting concrete.
   B. Use rebar free of loose flaky rust, scale, grease, oil, dirt, and other materials, which affect or impair bond.
   C. Place rebar continuous in walls, beams, columns, slabs, footings, etc.
   D. Minimum lap splices (Inches), for normal weight concrete and masonry with strengths specified per 'General Structural Notes', UNO:

	#3	#4	#5	#6	#7	#8	#9	#10	#11
Concrete:	24"	24"	24"	26"	36"	44"	48"	56"	62"
Masonry:	See schedule "MASONRY - MINIMUM BAR LAP LENGTHS"								

      In suspended slabs and beams, make top bar splices at mid-spans and bottom bar splices at supports, UNO.

   E. Make cold bends. DO NOT use heat. Bends in the fabricator's shop, UNO. DO NOT unbend or rebend a previously bent bar.
   F. Minimum concrete cover: (securely position and anchor rebar prior to pour)

      Cast against and permanently exposed to earth . . . . . 3"
      Exposed to earth or weather:
      #6 and larger . . . . . 2"
      #5 and smaller . . . . . 1-1/2"
      NOT exposed to earth or weather:
      Slabs, walls and joist, #11 & smaller . . . . . 3/4"
      Beams, columns: Main reinforcing or ties . . . . . 1-1/2"
      Slabs-On-Grade (SOG) . . . . . Center of slab, UNO

   G. In masonry, place and position rebar according to the structural drawings while laying units. Secure against displacement at intervals not to exceed the following:

      #4 and smaller . . . . . 6'-0"
      #5 and larger . . . . . 10'-0"

   H. DO NOT weld reinforcing unless specifically noted. Use E-90XX electrodes and ASTM A706 reinforcing. Comply with AWS requirements.
   I. Use epoxy coated reinforcing when specifically noted. Increase lap splice lengths by a factor of 1.2.

POST-INSTALLED ANCHORS

1. PRODUCT: Epoxy Anchors
   A. Epoxy for Concrete connections shall be:
      1. HIT HY 200 (ICC-ESR-3187) by Hilti Corporation
      2. Powers PE1000 + (ICC-ESR-2583) by Powers Fasteners Inc
      3. SET-XP (ICC-ESR-2508) by Simpson Strong Tie.
      4. Alternative epoxies may be used if an ICC-ESR approval for use in cracked concrete is submitted to the structural engineer prior to use.
   B. Epoxy for Masonry Connections shall be:
      1. HIT HY 200 (ICC-ESR-3187) by Hilti Corporation (grout filled masonry applications)
      2. HIT HY 70 (ICC-ESR-3342) by Hilti Corporation (hollow masonry applications only)
      3. SET (ICC-ESR-1772) by Simpson Strong
   C. Follow all of the manufacturer's recommendations and ICC-ESR for epoxy installation.
2. PRODUCT: Mechanical Anchors
   A. Mechanical Anchors for Concrete connections shall be:
      1. Kwik Bolt TZ (ICC-ESR-1917) by Hilti Corporation
      2. Strong-Bolt (ICC-ESR-1771) by Simpson Strong Tie Inc.
      3. Power-Stud+ SD1 (ICC-ESR-2818) by Powers Fasteners Inc.
      4. Alternative mechanical anchors may be used if an ICC-ESR approval for use in cracked concrete is submitted to the structural engineer prior to use.
   B. Mechanical Anchors for Masonry Connections shall be:
      1. Kwik Bolt 3 (ICC-ESR-1385) by Hilti corporation (grout filled masonry applications)
      2. Wedge-All (ICC-ESR-1396) by Simpson Strong Tie Inc. (grout filled masonry applications)
      3. Power-Stud+SD1 (ICC-ESR-2966) by powers Fasteners Inc. (grout filled masonry applications)
   C. Follow all of the manufacturer's recommendations and ICC-ESR for mechanical anchor installation.
3. PRODUCT: Screw Anchors
   A. Screw Anchors for Concrete and grout filled Masonry connections shall be:
      1. Titen HD (ICC-ESR-2713) by Simpson Strong Tie Inc.
      2. Wedge-Bolt by Powers Fasteners Inc.
      3. Alternative screw anchors may be used if an ICC-ESR approval for use in cracked concrete is submitted to the structural engineer prior to use.
   B. Follow all of the manufacturer's recommendations and ICC-ESR for screw anchor installation.

EMBEDMENT OF ADHESIVE ANCHORS

BASE MATERIAL	REBAR DOWELS	THREADED ROD Ø	EMBEDMENT LENGTH	SCREEN LENGTH
CONCRETE	#3	3/8"	5"	--
	#4	1/2"	6"	--
	#5	5/8"	8"	--
	#6	3/4"	10"	--
	#7	7/8"	12"	--
CMU (GROUTED)	#3	3/8"	4"	--
	#4	1/2"	5"	--
	#5	5/8"	6"	--
	#6	3/4"	7"	--
CMU (HOLLOW)	#3	3/8"	--	4"
	#4	1/2"	--	5"
	#5	5/8"	--	6"
	#6	3/4"	--	7"

NOTES:
1. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.
2. EMBEDMENT LENGTH IS INTO STRUCTURE AND NOT VENEER, UNO.
3. REBAR SHALL BE DEFORMED.

CONCRETE

1. CODES AND STANDARDS. Comply with the following Codes:
   A. ACI 301, "Specifications for Structural Concrete for Buildings".
   B. ACI 318, "Building Code Requirements for Reinforced Concrete".
   C. ACI 347, "Recommended Practice for Concrete Form Work".

2. MATERIALS shall conform to the following:
   A. Cement: ASTM C150, Type I or IA, Portland Cement.
   B. Hard rock aggregates: ASTM C33
   Lightweight aggregates: ASTM C330
   C. Water shall be potable.
   D. Air entrainment: ASTM C260
   E. Fly ash: ASTM C618
   F. Calcium chloride SHALL NOT be used.

3. MIX DESIGNS:
   A. Place only one type of concrete at any given time.
   B. The maximum slump shall be 4" w/o plasticizer added.
   C. Use pea gravel and/or plasticizer in congested areas.
   D. Limit fly ash to 20% of the total cement.
   E. Concrete mixes shall conform to the following:

TYPE OF CONCRETE MEMBER	28 DAY STRENGTH (psi)	MAX. W/C (ratio)	MAX. AGGREGATE SIZE (inches)	AIR (%)	SPECIAL INSPECTIONS & TESTING (required)
Footings :	3000	0.50	3/4	3 ±1	YES
Foundation walls and grade beams:	3000	0.50	3/4	3 ±1	YES
Slabs on grade:					
Interior	3000	0.50	1.5"	0 to 2	NO
Exterior	4000	0.47	1.5"	6 ±1	NO

   *Well-graded Aggregates required, follow ACI 302 for sand gradation.

4. CONSTRUCTION:
   A. Mechanically vibrate concrete during placement.
   B. Prior to placing concrete, check with trades to insure proper placement of openings, block outs, sleeves, curbs, conduits, bolts, inserts, embeds, dowels, etc. Place anchor bolts and dowels prior to casting concrete, UNO.
   C. Form construction joints and bulkheads with a key way. Intentionally roughen contact surfaces (new or existing) at construction joints prior to casting adjacent pours, UNO.
   D. Add additional reinforcing too sides of floor and wall opening, equivalent to the bars cut by the opening with half to each side of the opening or (2) #5 bars, whichever is greater, UN0. Bars parallel to the principal reinforcing shall run full length of the span. End bars in the other direction with a standard hook. Add (2) #5 x 5'-0" diagonal bars at every corner.
   E. DO NOT allow penetrations through any beam, joist, column, pier, footing, or jamb without the EOR's approval. Otherwise, re-rout the penetration.

5. FOOTINGS:
   A. Bear footings on properly prepared materials.
   B. Center footings on the wall or column above, UNO.
   C. Bear exterior footings below the effects of frost. See Basis of Design.
   D. Provide 2x4 beveled key in continuous wall footings.
   E. Stagger footing construction joints from wall construction joints above by at least 6 feet.
   F. Provide corner bars in continuous footings at corners and intersections.
   G. Add (2) #6 or (3) #5 lengthwise top bars in addition to footing schedule reinforcement at continuous footings without concrete foundation walls directly above (door openings, etc.).
   H. DO NOT allow penetrations through any concrete footing. At utilities, step the footing down below the conflict and add a concrete wall, pier or column that extends to the footing. Consult with the EOR.
   I. Backfill bearing surfaces that are undermined during construction with a lean concrete mix (1000 psi min.).

6. SLABS ON GRADE (SOG):
   A. Minimum Interior slabs on grade requirements:
   4 inches thickness.
   4 inch layer of free-draining gravel base.
   #4 bars at 24" o.c. both ways, UNO. Chair rebar for proper placement.
   B. Place large areas of interior slabs-on-grade in strips not to exceed 120 feet in length nor 20 feet in width. Subdivide by construction or contraction (control) joints into roughly squares whose sides DO NOT exceed 10 feet in either direction.
   C. See Architectural for exterior slabs on grade, UN0.

7. WALLS:
   A. Place vertical reinforcing in the center of walls (UNO) unless each face (E.F.) is specified. When each face is specified, splice the horizontal reinforcing of each curtain at different locations.
   B. Dowel vertical reinforcing to the structure below and above with the same bar size and spacing, UNO.
   C. Terminate horizontal reinforcing at the ends of walls or openings with a standard hook or corner type bars. Provide corner bars of the size and spacing as the horizontal reinforcing at intersections and corners.
   D. Build penetrations into the wall before pouring concrete. Have the penetrations reviewed by the EOR prior to installation unless detailed on the plans.
   E. Provide drains at the base of retaining and basement walls.

WOOD

1. CODES AND STANDARDS. Comply with:
   A. The ANSI/AF&PA "National Design Specification", (NDS).
   B. The grading requirements of the WWPA.

2. MATERIALS: (All materials shall be clearly marked)
   A. Structural lumber species and grade shall be as follows:
      a. Joists, beams or headers: "DF/L #2" or better.
      b. Posts and columns: "DF/L #1" or better.
      c. Studs: "DF/L #2" or better.
      d. Sill plates: "DF/L #2" or better, treated.
   B. Manufactured joists: Trus-Joist or approved equal.
   C. Structural Glued-Laminated Timber: 24F-V4 for simple spans and 24F-V8 for continuous or cantilevered beams.
   D. Engineered Lumber:
      a. Structural Laminated-Veneer-Lumber (LVL): conform to the following minimum design values:
         Fb = 2,600 psi. (Joist/Beam orientation)
         Fv = 285 psi.
         E = 1,900,000 psi.
   E. Wood structural panels shall be Exposure 1 Grade or better APA rated sheathing with exterior glue and conform to Standard PS 1-83, or PS 2-92.
   F. Wood connectors shall be Simpson-Strong-Tie.

3. CONSTRUCTION:
   A. See plans for roof and floor joists sizes. Joists shall be laterally supported at bearing points by solid blocking or with metal hangers.
   B. Erect manufactured joists in accordance with the fabricator's commendations. Joists shall be able support the loads published in their design catalogs.
   C. Provide bridging at 8'-0" o.c. maximum spacing for dimensional lumber and LVL joists. Provide bridging in all other manufactured joists as per the manufacturer's recommendations.
   D. Fill all nail holes in wood connectors (framing anchors, joist hangers, purlin anchors, etc.) with nails as specified by the manufacturer, UNO.
   E. Install washers under all bolt nuts. Make bolt holes only 1/32 to 1/16 inch larger than bolts. Tighten nuts snugly, but DO NOT crush the wood. DO NOT countersink bolts, UNO.
   F. Specified nails are common and shall correspond to the following diameters and lengths: (16d -0.162"Ø & 3-1/2" long; 10d-0.148"Ø & 3" long; 8d-0.131"Ø & 2-1/2" long)
   G. Minimum nailing of members: Conform to IBC, Table 2304.9.1, UNO.
   H. Nail built-up beams of 2x_ members 12" deep or less together with 16d nails at 12" o.c., staggered. Add (2) 16d common nails at supports. Bolt 2x_ members deeper than 12" together with 1/2" bolts at 16" o.c. staggered. Add (2) bolts at supports.
   I. Fasteners in preservative-treated and fire-retardant-treated wood: Conform to IBC, Section 2304.9.5, UNO.

MASONRY

1. CODES AND STANDARDS: Comply with ACI 530, "Building Code Requirements for Masonry Structures".

2. MATERIALS:
   A. Minimum net area compressive strength of masonry, f'm = 2000 psi.
      1. Determine the compressive strength of masonry by either of the two following methods:
         a. Unit strength method.
            1. Lightweight concrete masonry units. ASTM C90, Grade N, Type 1. Minimum compressive strength = 2800 psi at 28 days (net area).
            2. Grout shall conform to ASTM C476 with a minimum compressive strength of 2500 psi at 28 days. Use a fluid consistent grout, which may contain additional pea gravel if grout spaces are 4" or more in every direction. Limit fly ash to 20% of the total cement.
         b. Prism test method,
            1. Minimum compressive strength of masonry prism tests at 28 days, f'm as specified above.
            2. The establishment of f'm by prism testing shall be accomplished prior to construction.
   B. Type "S" Portland cement-lime mortar. Minimum compressive strength = 1800 psi at 28 days. No additives.

1. CONSTRUCTION:
   A. Store masonry under cover at the job site.
   B. Fully bed face shells.
   C. Tool Mortar joints concave.
   D. DO NOT use mortar for grout.
   E. DO NOT use any frozen materials.
   F. Use either low or high lift grouting procedures.
   G. Consolidate grout by mechanical vibration during placing and reconsolidated after excess moisture has been absorbed but before workability is lost (45 minutes max.).
   H. Grout solid cells containing rebar, bolts, anchors, etc.
   I. Grout steel joist and steel beam pockets solid, UNO.
   J. Provide 1" of grout around bolts in side shells.
   K. DO NOT allow penetration through any beam, column, pier, or jamb without the EOR's approval. Otherwise, re-route penetrations at those locations.
   L. Prior to placing masonry, check with trades to insure proper placement of openings, block outs, sleeves, conduits, bolts, inserts, embeds, dowels, etc.

4. WALLS:
   A. Use running bond. Build corners and intersections as an integral unit.
   B. Dowel vertical reinforcing to the structure below and above with the same size bar and spacing, UNO.
   C. Place vertical reinforcing at the centerline of the wall unless each face (E.F.) is specified, UNO.
   D. Provide vertical reinforcing in grouted cells at corners and intersections.
   E. Terminate horizontal reinforcing at wall ends or openings with standard hooks or corner type bars. Provide corner bars of the same size bar and spacing as the horizontal reinforcing at corners and intersections.
   F. Make horizontal bars continuous where concrete walls, columns, or pilasters interfaces. Provide a key between the masonry and concrete. Grout key solid.
   G. Construct bond beams at the top course and at floor and roof diaphragm interfaces.
   H. Construct penetrations thru walls as they are being laid. Add 2-#5 bars in grouted cells on all sides of opening which exceed 24 inches in either direction, UNO. Extend vertical edge bars the full height of the wall between floor or roof support. Extend horizontal edge bars 24 inches beyond the opening edges.
   I. DO NOT place construction or expansion joints in beams, headers, columns or supports, UNO.

5. BEAMS:
   A. Build beams as an integral part of their supports. No toothing or doweling is permitted. Provide masonry units with one opened end (No back-to-back end shells). Grout beams solid the full depth as shown in the masonry beam schedule.
   B. Reinforcing in the masonry beam schedule is in addition to standard wall reinforcing.
   C. Place horizontal top bars in the top 4 inches of the beam and extend 72 bar diameters beyond the edge of the opening or terminate with a hook. Splice bars at mid-spans, UNO.
   D. Place horizontal bottom bars in the bottom 4 inches of the beam and extend 24 inches beyond the edge of the opening or terminate with a hook. Splice bars at supports, UNO.
   E. Hook vertical stirrups around bottom horizontal bars. Also hook them around the top horizontal bars or extend them into the wall above the beam a minimum of 48 bar diameters. Grout solid.

6. COLUMNS: Grout wall jambs (sides of openings) piers & columns solid the full height of member (floor to floor, etc.). Reinforce wall jambs with (2) #5 vertical bars for each grouted cell (one cell for each 4'-0" of span or portion thereof) with a #5 placed at each side face of the wall jamb, UNO.

STRUCTURAL STEEL

1. CODES AND STANDARDS: Comply with:
   A. AISC "Specification for Structural Steel Buildings & Commentary".
   B. AISC "Code of Standard Practice" excluding sections 7.5.4, and 7.11.5.
   C. AWS "Structural Welding Code", exclude items conflicting with AISC.

2. MATERIALS SHALL CONFORM AS FOLLOWS:
   A. Wide Flange beams & columns: ASTM A992, Fy = 50 ksi.
   B. Rect. Hollow Structural Sections (HSS): ASTM A500, Fy = 46 ksi, Gr. B.
   B. Round Hollow Structural Sections (HSS): ASTM A500, Fy = 42 ksi, Gr. B.
   C. Pipe: ASTM A53, Fy = 35 ksi, Gr. B.
   D. Misc. shapes & plates: ASTM A36, Fy = 36 ksi.
   E. High strength bolts: ASTM A325
   F. Anchor rods: ASTM F1554, Fy = 36 ksi.
   G. Other bolts: ASTM A307 or better.
   H. Welded anchors studs (WAS, HAS): ASTM A108, Fu = 65 ksi.
   I. Deformed bar anchors (DBA's): ASTM A496, Fy = 70 ksi, DO NOT substitute reinforcing for DBA's.

3. CONSTRUCTION:
   A. Fabricate in an approved fabricator's shop.
   B. Fabricate beams with incidental camber up, UNO.
   C. Use 6000 psi (minimum at 28-day) non-shrink liquid grout beneath bearing plates. Place grout per manufacturer's recommendations prior to loading member.
   D. Add deformed bar anchors to structural sections embedded in concrete or masonry, UNO. Use the same size and spacing as the adjacent reinforcing bars. Minimum length of bars shall be 48 bar diameters but not less than 24 inches.

4. BOLTED CONNECTIONS:
   A. Use 3/4" diameter bolts in Std. holes (bolt diameter + 1/16"), UNO.
   B. Steel-to-steel connections: Use ASTM A325 type "N" connections, UNO.
   C. Other connections: Use ASTM A307 bolts or better except for anchor rods, UNO.
   D. Use hardened washers beneath the turned element of the bolt or nut. Use beveled hardened washers where the outer face of bolted parts has a slope greater than one in twenty with respect to the plane normal to the bolts axis. At oversized holes, use hardened washers or plates at least 5/16" thick conforming to ASTM F436.
   E. Tighten bolts until all plies of the joint are in firm contact. Snug tight condition, UNO.
   F. Pretensioned bolts with Class A faying surfaces are required at all steel to steel connections for Moment Frames (SMF, IMF and OMF), Braced Frames (SCBR, OCBF and BRBF) and Eccentrically Braced Frames (EBF).
   G. Enlarge bolt holes by reaming. DO NOT torch cut.

5. WELDED CONNECTIONS:
   A. Perform welding and cutting by AWS certified welders in accordance with ANSI/AWS D1.1 (latest edition).
   B. For typical shop & field welds, use filler metals with nominal 70 ksi tensile strength having:
      a. Matching material for multiple pass welds.
      b. A diffusible hydrogen limit of H16 or less.
      c. A CVN toughness of 20 ft-lbs at 0 deg. F.
   C. For shop & field weld connections of lateral load resisting elements (all braced frames and all moment frames (demand critical welds)), use filler metals with nominal 70 ksi tensile strength having:
      a. Matching material for multiple pass welds.
      b. A diffusible hydrogen limit of H16 or less.
      c. A CVN toughness of 40 ft-lbs at 70 deg. F.
   D. Use pre-qualified procedures.
   E. Weld intersecting steel shapes together, which are not connected with bolts, with all-around fillet welds, UNO.
   F. Weld studs and DBA's according to Manufacturer's specs.
   G. Wherever possible use shop welds. The contractor shall coordinate field and shop welds between shop fabrication and the steel erector.
   H. Remove slag from welds.

6. Provide full depth web stiffeners at each side of all beams at all bearing points.
   A. Stiffener plates shall be the thickness called out below unless noted otherwise, and shall be welded both side with fillet welds all around:

Flange width	Stiffener thickness	Weld size
Less than 8 1/4"	1/4"	3/16"
8 1/4" - 12 1/4"	3/8"	1/4"
12 1/4" - 16 1/2"	1/2"	5/16"
16 1/2" - 20 1/4"	5/8"	3/8"

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NOTE:

Bid documents should not be separated or issued as partial sets to subcontractors. Bidders are responsible for all portions of the documents that pertain to the work covered by sub-bids. Bidder assumes full responsibility for errors or misinterpretations resulting from use of partial sets of Bidding Documents by itself or any sub-bidder.

Conflicting information or errors found in the construction documents should be brought to the attention of the architect immediately so that questions and concerns may be clarified by addendum. In the event of a conflict in the drawings, bidder should not assume that the least expensive option will meet the project requirements.

PUBLIC WORKS & LEISURE SERVICES STORAGE BUILDING

720 WEST 100 NORTH FARMINGTON, UTAH 84025

#	DATE	DESC.

ISSUE:	12/30/2013
WCA PROJECT NO:	13302B
DRAWN BY:	JC
CHECKED BY:	JC

SHEET TITLE

GENERAL STRUCTURAL NOTES (GSN)

S1.0

STATEMENT OF SPECIAL INSPECTIONS

1. The inspection requirements as noted on this sheet are required for the items that are specifically noted, designed and detailed in the structural documents. Refer to the current IBC, Chapter 17, the architectural drawings, and the geotechnical report for additional information and additional inspection requirements for non-structural items.

2. The project owner shall employ one or more special inspectors to provide inspections during construction on the types of work listed below. The special inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the building official and/or EOR, for inspection of the particular type of construction or operation requiring special inspection. These inspections are in addition to the inspections required by the building department of the local jurisdiction.

3. Special inspectors shall keep records of inspections. The special inspector shall furnish inspection reports to the building official and to the EOR in responsible charge. Reports shall indicate that work inspected was done in conformance with approved construction documents. Discrepancies shall be brought to the immediate attention of the contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the building official and to the EOR in responsible charge prior to the completion of that phase of the work. A final report documenting required special inspections and correction of any discrepancies noted in the inspections shall be submitted at a point in time agreed upon by the permit applicant and the building official prior to the start of work.

4. Special inspections for each task shall be carried out in compliance with requirements per the current IBC and other material standards.

5. FABRICATION SHOP REQUIREMENTS
   A. Where fabrication of structural load bearing members and assemblies are being performed on the premises of a fabricators shop, special inspections required shall be provided in the shop during the fabrication process. This requirement may be excepted if the work is done on the premises of a fabricator registered and approved to perform such work without special inspection. A certificate shall be required to verify such approval. At completion of the fabrication, the approved fabricator shall submit a certificate of compliance to the building official stating that the work was performed in accordance with the approved construction drawings

6. TESTING: The owner will provide testing by qualified testing personnel for the following types of construction:

   Bolting: installation and correct torque and/or tension.
   Concrete: strength, slump, air, and temperature. (see Concrete Notes 3(E) on GSN for concrete items that require testing)
   Masonry: strength of mortar, grout, block, and prisms.
   Soils: compaction.
   Welding: type, size, length, and quality of shop and all field welds by approved methods. Ultrasonically test complete penetration welds.

7. THE CONTRACTOR SHALL:

   A. Coordinate testing. DO NOT proceed with subsequent work until inspections and testing has been approved.
   B. Copy inspection reports/testing results to the Arch/EOR and owner before work proceeds.
   C. Correct deficient work at no additional cost to the owner.

STRUCTURAL OBSERVATIONS

1. Structural observations are not required for this project.

VERIFICATION AND INSPECTIONS FOR THE STRUCTURAL DOCUMENTS

STEEL CONSTRUCTION INSPECTIONS

ITEM NO.	ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		ITEMS REQUIRED FOR THIS PROJECT
		CONTINUOUS	PERIODIC	
1	MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS:			
1a	Identification markings to conform to ASTM standards specified in the approved construction documents	--	X	YES
1b	Manufacturer's certificate of compliance required	--	X	YES
2	INSPECTION OF HIGH-STRENGTH BOLTING:			
2a	Snug-tight joints	--	X	NO
2b	Pretensioned and slip-critical joints using turn-of-nut with matchmarking, twist-off bolt or direct tension indicator methods of installation	--	X	NO
2c	Pretensioned and slip-critical joints using turn-of-nut without matchmarking or calibrated wrench methods of installation	X	--	NO
3	MATERIAL VERIFICATION OF STRUCTURAL STEEL AND COLD-FORMED STEEL DECK:			
3a	For structural steel, identification of markings to conform to AISC 360	--	X	YES
3b	For other steel, identification markings to conform to ASTM standards specified in the approved construction documents	--	X	YES
3c	Manufacturer's certified test reports	--	X	YES
4	MATERIAL VERIFICATION OF WELD FILLER MATERIALS:			
4a	Identification markings to conform to AWS specification in the approved construction documents	--	X	YES
4b	Manufacturer's certificate of compliance required	--	X	YES
5	Inspection of welding:			
5a	Structural steel and cold-formed steel deck			
	1) Complete and partial joint penetration grove welds	X	--	NO
	2) Multipass fillet welds	X	--	NO
	3) Single-pass fillet welds > 5/16"	X	--	NO
	4) Plug and slot welds	X	--	NO
	5) Single-pass fillet welds ≤ 5/16"	--	X	YES
	6) Floor and roof deck welds	--	X	NO
5b	Reinforcing steel:			
	1) Verification of weldability of reinforcing steel other than ASTM A706	--	X	NO
	2) Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special structural walls of concrete and shear reinforcement	X	--	NO
	3) Shear reinforcing steel	X	--	NO
	4) Other reinforcing steel	--	X	NO
6	Inspection of steel frame joint details for compliance:			
6a	Details such as bracing and stiffening	--	X	NO
6b	Member locations	--	X	NO
6c	Application of joint details at each connection	--	X	NO

CONCRETE CONSTRUCTION INSPECTIONS

ITEM NO.	ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		ITEMS REQUIRED FOR THIS PROJECT
		CONTINUOUS	PERIODIC	
1	Inspection of reinforcing steel, including prestressing tendons, and placement	--	X	YES
2	Inspection of bolts to be installed in concrete prior to and during placement of concrete	X	--	YES
3	Inspection of anchors installed in hardened concrete	--	X	YES
4	Verifying use of required design mix	--	X	YES
5	At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete	X	--	YES
6	Inspection of concrete and shotcrete placement for proper application techniques	X	--	YES
7	Inspection for maintenance of specified curing temperature and techniques	--	X	YES
8	Inspection of prestressed concrete: a) Application of prestressing forces b) Grouting of bonded prestressing tendons in the seismic-force-resisting system	X	--	NO
9	Erection of precast concrete members	--	X	NO
10	Verification of in-situ concrete strength, prior to stressing of tendons in posttensioned concrete and prior to removal of shores and forms from beams and structural slabs	--	X	NO
11	Inspection formwork for shape, location and dimensions of the concrete member being formed	--	X	YES

Note:
1. See also Concrete Notes Section 3(E) on GSN sheet S1.0 for structural items that require inspections and testing. Misc concrete items, i.e. bollards, stair pans, garden curb etc., need not be inspected nor tested.

MASONRY CONSTRUCTION INSPECTIONS (LEVEL 1)

ITEM NO.	ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		ITEMS REQUIRED FOR THIS PROJECT
		CONTINUOUS	PERIODIC	
1	Compliance with required inspection provisions of the construction documents and the approved submittals shall be verified	--	X	YES
2	Verification of f'm and f'acc prior to construction	--	X	YES
3	Verification of slump flow and VSI as delivered to the site for self-consolidation grout	X	--	YES
4	As masonry construction begins, the following shall be verified to ensure compliance			
4a	Proportions of site-prepared mortar	--	X	YES
4b	Construction of mortar joints	--	X	YES
4c	Location of reinforcement, connectors, prestressing tendons and anchorages	--	X	YES
4d	Prestressing technique	--	X	NO
4e	Grade and size of prestressing tendons and anchorages	--	X	NO
5	During construction the inspection program shall verify:			
5a	Size and location of structural elements	--	X	YES
5b	Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames or other construction	--	X	YES
5c	Specified size, grade and type of reinforcement, anchor bolts, prestressing tendons and anchorages	--	X	YES
5d	Welding of reinforcing bars	X	--	NO
5e	Preparation, construction and protection of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F)	--	X	YES
5f	Application and measurement of prestressing force	X	--	NO
6	Prior to grouting, the following shall be verified to ensure compliance			
6a	Grout space is clean	--	X	YES
6b	Placement of reinforcement and connectors, and prestressing tendons and anchorages	--	X	YES
6c	Proportions of site-prepared grout and prestressing grout for bonded tendons	--	X	YES
6d	Construction of mortar joints	--	X	YES
7	Grout placement shall be verified to ensure compliance:	X	--	YES
7a	Grouting of prestressing bonded tendons	X	--	NO
8	Preparation of any required grout specimens, mortar specimens and/or prisms shall be observed	--	X	YES

SOILS INSPECTIONS

ITEM NO.	ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		ITEMS REQUIRED FOR THIS PROJECT
		CONTINUOUS	PERIODIC	
1	Verify materials below shallow foundations are adequate to achieve the design bearing capacity	--	X	YES
2	Verify excavations are extended to proper depth and have reached proper material	--	X	YES
3	Perform classification and testing of compacted fill materials	--	X	YES
4	Verify use of proper materials, densities and lift thichnesses during placement and compaction of compacted fill	X	--	YES
5	Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly	--	X	YES

Note:
1. The approved soils report and the construction documents shall be used to determine compliance

WOOD CONSTRUCTION INSPECTIONS

ITEM NO.	ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		ITEMS REQUIRED FOR THIS PROJECT
		CONTINUOUS	PERIODIC	
1	During field gluing operations of elements of the wind-force-resisting or seismic-force-resisting system (see note 2)	X	--	NO
2	For nailing, bolting, anchoring and other fastening of components within the wind-force-resisting or seismic-force-resisting-system, including wood shear walls, wood diaphragms, drag struts, braces, shear panels and holdowns (see note 2)	--	X	NO
3	High-load diaphragms as per IBC Section 1704.6.1	--	X	NO
4	Where a truss clear span in 60ft or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package	--	X	NO

Note:
. Inspections are not required for shear walls, shear panels and diaphragms, including nailing, bolting, anchoring and other fastening to other components where the fastener spacing of the sheathing is more than 4" o.c.

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PUBLIC WORKS & LEISURE SERVICES STORAGE BUILDING

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CHECKED BY:	JC

SHEET TITLE

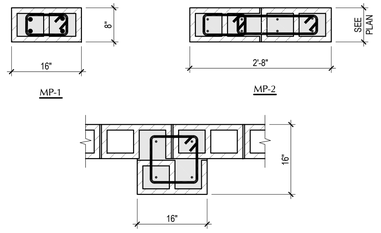
SPECIAL INSPECTIONS & TESTING

S1.1

MASONRY PIER SCHEDULE

MARK	WIDTH	LENGTH	VERT. REINF.	TIE SETS	NOTES
MP-1	8"	1'-4"	(4) #5	#2 @ 8" O.C.	
MP-2	8"	2'-8"	(8) #5	#2 @ 8" O.C.	
MP-3	16"	1'-4"	(4) #5	#3 @ 8" O.C.	

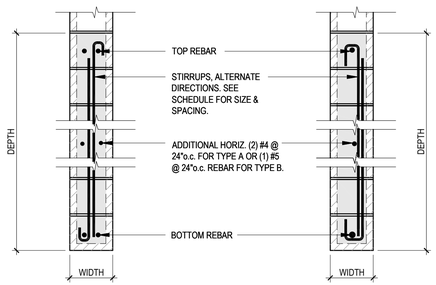
1. SOLID GROUT ALL CELLS, TYPICAL.
2. COLUMN TIES:
   - A. SINGLE BLOCK COLUMNS: PLACE TIES WITHIN THE MORTAR JOINT, UNO.
   - B. MULTI WIDE BLOCK COLUMNS: PLACE TIES INSIDE OF FACE SHELLS 2" ABOVE OR BELOW MORTAR JOINTS. USE "H" BLOCK and/or NOTCH WEB MEMBERS AS REQUIRED.
   - C. ADD (2) SETS OF TIES INSIDE THE FACE SHELLS AT THE TOP OF ALL COLUMNS TO ENCLOSE ANCHOR BOLTS, STUDS OR DBA'S WHEN THEY OCCUR. USE SAME TIE SIZE AS SCHEDULE. UNO.
3. REMOVE BACK-TO-BACK FACE SHELLS. ALTERNATE REMOVED FACE SHELLS, COURSE BY COURSE.
4. DOWEL VERTICAL PIER REINFORCEMENT TO STRUCTURE BELOW WITH MATCHING BARS. EXTEND VERTICAL REINFORCEMENT TO FOOTING. IF FOUNDATION WALL EXTENDS ABOVE FLOOR SLAB, ADD PIER TIES IN FOUNDATION WALL FROM FLOOR SLAB TO MASONRY PIER.
5. FOR BAR LAP OR SPLICE LENGTHS SEE THE GENERAL STRUCTURAL NOTES, SHEET S1.0.
6. DO NOT ALLOW PENETRATIONS THRU THE COLUMN.
7. HORIZONTAL WALL STEEL:
   - A. AT PIERS WITHIN THE WALL, RUN HORIZONTAL WALL STEEL THRU THE COLUMN.
   - B. AT PIERS AT THE END OF THE WALL OR AT WALL OPENINGS, RUN HORIZONTAL WALL STEEL THRU COLUMN TO THE FAR FACE OF PIER AND TERMINATE WITH A STD. HOOK.



MASONRY BEAM SCHEDULE

MARK	WIDTH	DEPTH	TYPE	HORIZONTAL REINF.	STIRRUPS	NOTES
MB-1	8"	24"	A	(2) #4 BOTTOM	NONE	
MB-2	8"	32"	A	(2) #6 BOTTOM & (2) #5 TOP	#3 STIRRUPS @ 8" O.C.	

1. SOLID GROUT ALL CELLS, TYPICAL.
2. USE OPEN ENDED UNITS THROUGHOUT MASONRY BEAM. BACK-TO-BACK END SHELLS ARE NOT ALLOWED.
3. TYPICAL HORIZONTAL REINFORCING DETAILING:
   - A. SPLICE TOP BARS AT MID SPAN ONLY.
   - B. EXTEND TOP BARS A MINIMUM OF 4'-0" BEYOND THE FACE THE OPENING OR TERMINATE WITH A STANDARD HOOK, UNO.
   - C. SPLICE BOTTOM BARS AT SUPPORTS ONLY.
   - D. EXTEND BOTTOM BARS A MINIMUM OF 24" BEYOND THE FACE OF THE OPENING OR TERMINATE WITH A STANDARD HOOK, UNO.
- E. HOOK STIRRUPS AROUND HORIZONTAL TOP & BOTTOM BARS. PLACE THE FIRST STIRRUP 4" FROM THEIR SUPPORTS.
- F. EXTEND VERTICAL WALL REINFORCING TO BOTTOM OF BEAM IN ADDITION TO BEAM STIRRUPS.
- G. EXTEND THE END SUPPORTS VERTICAL STEEL THE FULL HEIGHT OF THE WALL. (LEVEL TO LEVEL)
- H. PROVIDE VERTICAL WALL CONTROL JOINTS ABOVE BEAMS NEAR BEAM MID-SPANS ONLY, UNO. DO NOT PLACE CONTROL JOINTS AT OR NEAR FACE OF SUPPORTS OR EXTEND JOINTS THRU THE BEAMS.
- I. DO NOT ALLOW PENETRATIONS THROUGH MASONRY BEAMS.
- J. SEE GENERAL NOTES FOR ADDITIONAL INFORMATION.



TYPICAL BEAM SECTIONS

MASONRY WALL SCHEDULE

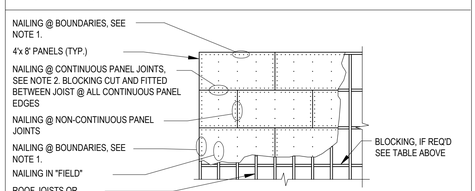
MARK	THICK	VERTICAL REINF.	HORIZONTAL REINF.	WALL CONSTRUCTION NOTES
MW-1	8"	(1) #5 @ 32" O.C.	(2) #4 @ 48" O.C.	

1. ALL MASONRY WALLS ARE MW-1, UNO.
2. TERMINATE ALL REINFORCING (BOTH VERTICAL AND HORIZONTAL) WITH A STANDARD HOOK, OR APPROVED EQUAL.
3. DO NOT SOLID GROUT WALLS UNLESS SPECIFICALLY NOTED ON PLANS.
4. SOLID GROUT ALL CELLS WITH REINFORCING AND/OR EMBEDS, TYPICAL.
5. LAY BLOCK IN RUNNING BOND, TYPICAL, UNO. (IF STACK BOND IS REQ'D. CONTACT EOR FOR REQ'D. REINF.)
6. TOOL MORTAR JOINTS CONCAVE, TYPICAL, UNO.
7. PROVIDE MINIMUM COVER FOR REINFORCING PER THE GENERAL NOTES.
8. PROVIDE CORNER BARS AT CORNERS AND INTERSECTING WALLS.
9. DOWEL TO THE STRUCTURE BELOW WITH BARS MATCHING THE VERTICAL WALL REINFORCING, UNO.
10. PLACE VERTICAL REINFORCING IN THE CENTER OF THE WALL UNLESS EACH FACE IS SPECIFIED.
11. REMOVE BACK-TO-BACK FACE SHELLS AT INTERSECTING WALLS. ALTERNATE REMOVED FACE SHELLS, COURSE BY COURSE.
12. ADD LADDER-TYPE JOINT REINFORCING OF 2-#9 WIRES (3-#9 WIRES WITH VENEER) AT 16" O.C. HORIZONTALLY IN ALL MASONRY WALLS.

WOOD DIAPHRAGM NAILING AND SHEATHING SCHEDULE

MARK	SHEATHING REQUIREMENT		NAILING REQUIREMENT					
	THICK	SPAN RATING	NAIL SIZE	BOUNDARY ELEMENTS	CONT. PANEL JOINTS	NON-CONT. PANEL JOINTS	FIELD SPACING	BLOCKING REQ'D
WD-1	23/32"	48/24	10d	6" O.C.	6" O.C.	6" O.C.	12" O.C.	YES
WD-2	23/32"	48/24	10d	6" O.C.	N.A.	6" O.C.	12" O.C.	NO

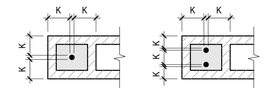
1. BOUNDARIES EXIST AT ALL DIAPHRAGM-SHEAR WALL INTERFACES AND ALONG ALL STRUCTURAL ELEMENTS THAT TRANSFER DIAPHRAGM FORCES INTO THOSE WALLS.
2. THIS JOINT DETERMINES IF THE DIAPHRAGM IS BLOCKED OR UNBLOCKED.
3. SHEATHING ORIENTATION: LONG DIRECTION (STRONG AXIS) PERPENDICULAR TO FRAMING & SHORT DIRECTION (WEAK AXIS) PARALLEL TO FRAMING.
4. SPECIFIED NAILS ARE COMMON AND SHALL CORRESPOND TO THE FOLLOWING DIAMETERS AND LENGTHS: (10d-0.148"Ø & 3" LONG; 8d-0.131"Ø & 2-1/2" LONG), OTHERWISE CONTACT EOR. USING NAILS OTHER THAN THOSE SPECIFIED MAY RESULT IN THE DEMOLITION OF WORK AND FRAMING TO BE REPLACED.
5. SEE DETAIL 2/SS.1 FOR DIAPHRAGM BLOCKING DETAIL.



MASONRY - MINIMUM BAR LAP LENGTHS

F'm = 2000psi		BAR SIZE						
		# 3	# 4	# 5	# 6	# 7	# 8	# 9
BAR COVER 'K'	2"	24"	27"	42"	85" *	115" *	161" *	204" *
	2 1/2"	24"	24"	34"	68" *	92" *	129" *	163" *
	3"	24"	24"	28"	56" *	77" *	107" *	136" *
	3 1/2"	24"	24"	24"	48"	66" *	92" *	116" *
	4"	24"	24"	24"	42"	58" *	80" *	102" *

1. THESE LAPS ARE REQUIRED IN ALL COLUMNS, WALLS AND BEAMS. LAP LENGTHS DO NOT APPLY TO HOOKS OR COLUMN TIES.
2. THE BAR COVER DISTANCE, K, SHALL BE TAKEN AS THE LEAST DIMENSION AS SHOWN HERE.
3. FOR BAR COVER DISTANCES, K, NOT SHOWN CONTACT E.O.R.
4. MINIMUM YIELD STRENTGH OF REINFORCEMENT; fy = 60,000psi.
5. MECHANICALLY SPLICE BARS GREATER THAN #9.
6. * NOT ALLOWED AS VERT. REINF IN LOW LIFT GROUTED WALLS.



FOOTING SCHEDULE

MARK	SIZE			BOTTOM REINFORCING	TOP REINFORCING
	WIDTH	LENGTH	THICK		
F-1	2'-0"	CONT.	12"	(3) #4 CONTINUOUS	NONE
F-2	4'-0"	4'-0"	12"	(6) #5 E.W.	NONE
F-3	5'-6"	5'-6"	12"	(7) #5 E.W.	NONE

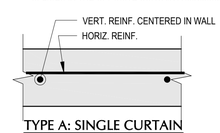
C.W. = CROSSWISE E.W. = EACH WAY L.W. = LENGTHWISE

1. ALL CONT. FOOTINGS ARE MARK F-1, U.N.O..
2. BEAR FOOTINGS ON THE UNDISTURBED NATURAL SOIL OR COMPACTED STRUCTURAL FILL, SEE SOILS REPORT.
3. BEAR EXTERIOR FOOTINGS BELOW THE EFFECTS OF FROST.
4. CENTER FOOTINGS BELOW THE WALL AND/OR COLUMN ABOVE, TYPICAL UNO.
5. PROVIDE 2x4 BEVELED KEYWAYS IN CONTINUOUS WALL FOOTINGS. UNO
6. PROVIDE 3" CLEAR CONCRETE COVER AT BOTTOM REINF., UNO.
7. PROVIDE DOWELS WITH STANDARD HOOK FROM FOOTINGS TO ANY REINFORCED ELEMENT ABOVE. DOWEL SIZE TO MATCH VERTICAL REINFORCING IN ELEMENT ABOVE. UNO
8. ANY INCREASE IN THE SIZE OF FOOTINGS FOR CONSTRUCTION CONVENIENCE, MAY REQUIRE ADDITIONAL REINFORCING. COORDINATE WITH THE EOR
9. S - - - - - S, DENOTES AN ELEVATION STEP IN FOOTING, SEE DETAIL 4/S4.0

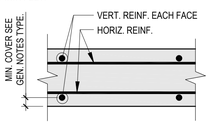
CONCRETE WALL SCHEDULE

MARK	THICKNESS	VERTICAL REINF.	HORIZONTAL REINF.	NOTES
CW-1	8"	#4 @ 18" O.C.	#4 @ 12" O.C.	(2) #5 TOP & BOTTOM, TYPE 'A'

1. ALL WALLS ARE MARK CW-1, U.N.O..
2. CONTRACTOR TO VERIFY ALL WALL THICKNESS W/ ARCHITECT.
3. PROVIDE CORNER BARS AT ALL CORNERS AND INTERSECTING WALLS, SEE DETAIL 2/S4.0.
4. WHEN A SINGLE CURTAIN OF REINFORCING IS SPECIFIED, PLACE THE VERTICAL REINFORCING IN THE CENTER OF THE WALL, TYPICAL, U.N.O..
5. WHEN A DOUBLE CURTAIN OF REINFORCING IS SPECIFIED, PLACE EACH CURTAIN OF STEEL AT THE FACE OF THE WALL WITH MINIMUM COVER AS SPECIFIED IN THE GENERAL NOTES. PLACE THE VERTICAL REINFORCING CLOSEST TO THE FORMS, TYPICAL, U.N.O..
6. PROVIDE DOWELS WITH STANDARD HOOKS TO THE STRUCTURE BELOW WITH SIZE AND SPACING TO ATTACH THE VERTICAL REINFORCING IN THE WALL ABOVE.
7. SPLICE VERTICAL REINFORCING AT FLOOR LEVELS ONLY, TYPICAL, U.N.O..
8. SPLICES IN HORIZONTAL REINFORCING IN ONE CURTAIN SHALL BE STAGGERED FROM SPLICES IN THE OPPOSITE CURTAIN A MINIMUM OF FOUR FEET.



TYPE A: SINGLE CURTAIN AT WALL CENTERLINE



TYPE B: DOUBLE CURTAIN

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PUBLIC WORKS & LEISURE SERVICES STORAGE BUILDING

720 WEST 100 NORTH FARMINGTON, UTAH 84025

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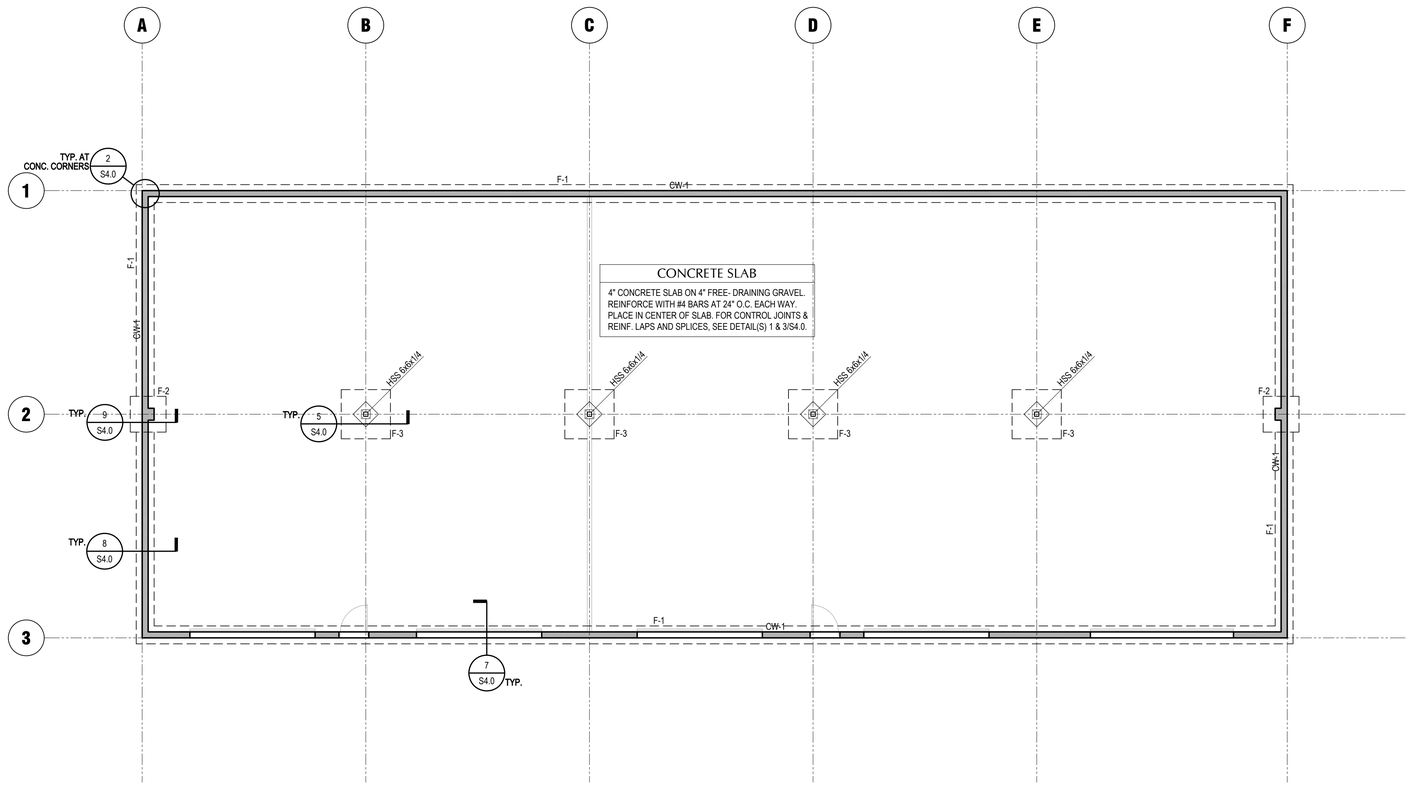
SHEET TITLE

SCHEDULES

S1.2



1 S2.0 **FOOTING & FOUNDATION PLAN**

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

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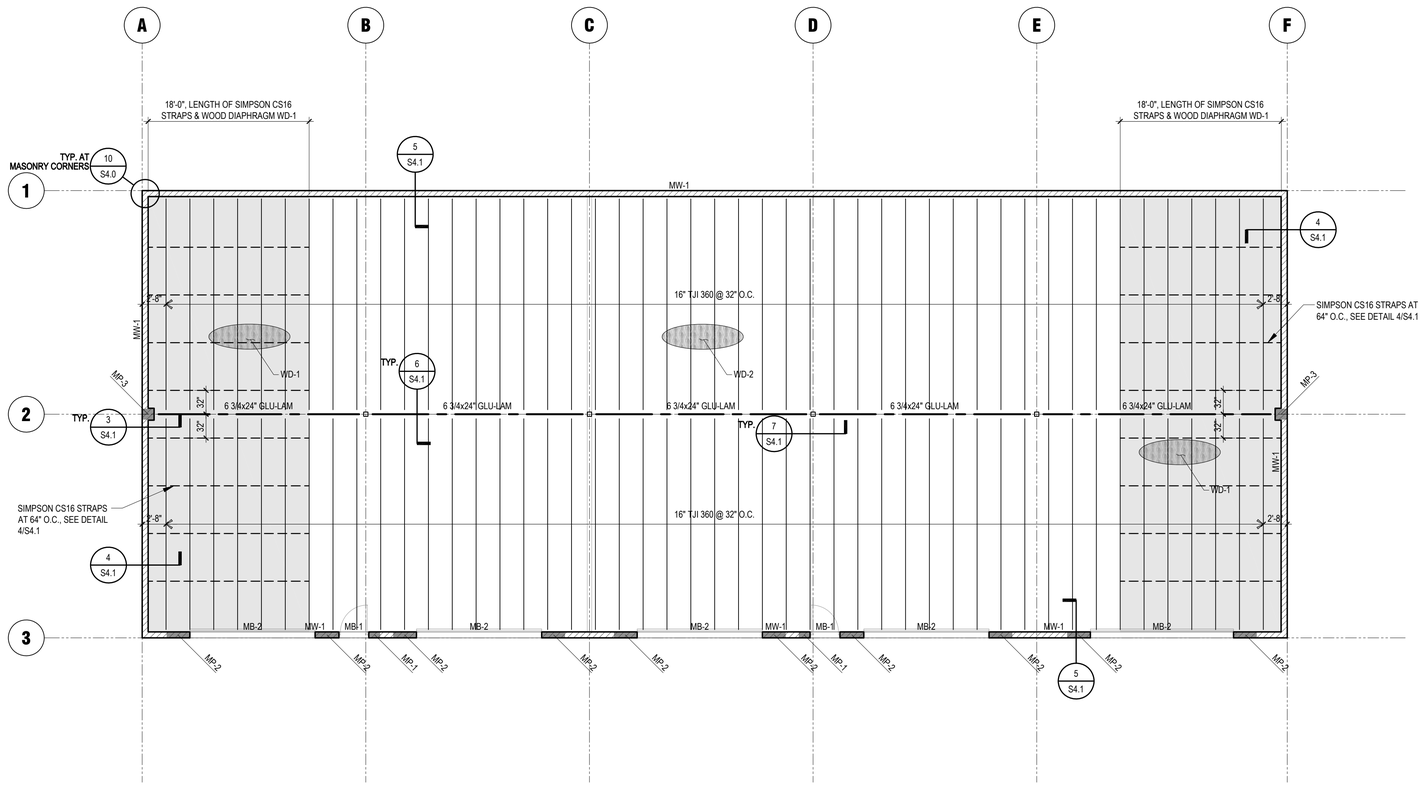
FOOTING & FOUNDATION PLAN

S2.0



1 S3.0 **ROOF FRAMING PLAN**

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

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#	DATE	DESC.

ISSUE:	12/30/2013
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DRAWN BY:	JC
CHECKED BY:	JC

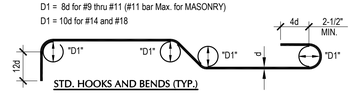
SHEET TITLE

ROOF FRAMING PLAN

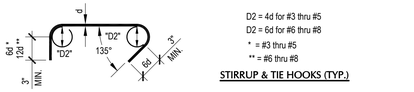
S3.0

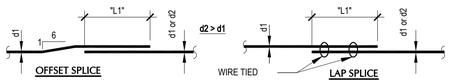
1 S4.0 TYPICAL HOOKS & BENDS
NO SCALE

D1 = 6d for #3 thru #8
D1 = 8d for #9 thru #11 (#11 bar Max. for MASONRY)
D1 = 10d for #14 and #18



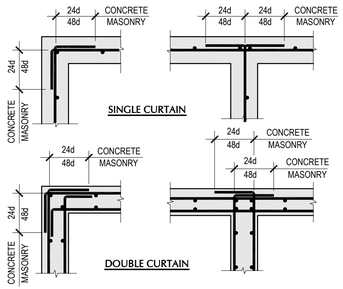
D2 = 4d for #3 thru #5
D2 = 6d for #6 thru #8
* = #3 thru #5
** = #6 thru #8



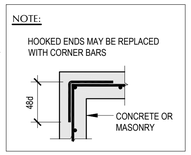


MARK	WALL TYPE	LAP LENGTH	MIN. LAP LENGTH
L1	CONCRETE	30d2 for 40 GRADE	2'-0"
L1	CONCRETE	40d2 for 60 GRADE	2'-0"
L1	MASONRY	48d2	2'-0"

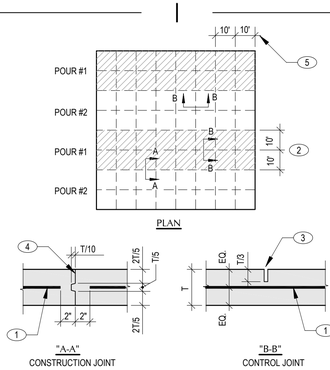
2 S4.0 CONCRETE OR MASONRY WALL CORNER REINF.
NO SCALE



NOTE:
HOOKED ENDS MAY BE REPLACED WITH CORNER BARS

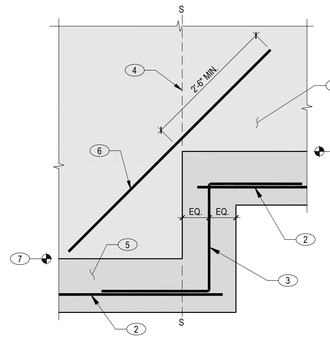


3 S4.0 SLAB ON GRADE JOINT
NO SCALE

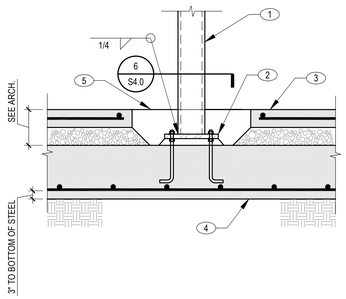


KEYNOTES:
1. SLAB REINFORCING
2. MAX. WIDTH OF POUR = 20'-0"
3. 1/8" FIBERBOARD STRIP, ZIP STRIP, OR SAW CUT, SEE SPECIFICATIONS. AT EXPOSED SLOT WITH SLAB, USE 1/4" JOINT SEALER.
4. FOR SLABS LEFT EXPOSED, PROVIDE 1/4" WIDE SLOT FILLED WITH JOINT SEALER.
5. MAX. LENGTH OF POUR WITHOUT CONTROL JOINT = 10'-0" COORDINATE JOINT LOCATIONS WITH ARCHITECTS REQUIREMENTS

4 S4.0 TYP. FOOTING STEP
NO SCALE



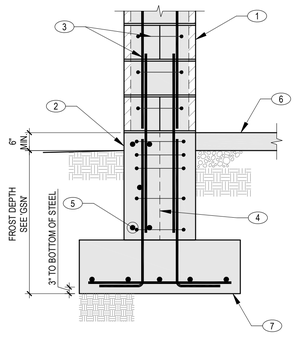
KEYNOTES:
1. CONCRETE FOUNDATION WALL, SEE PLAN
2. FOOTING REINFORCING, SEE PLAN & SCHEDULE
3. "Z" SHAPED BARS TO MATCH SIZE & SPACING OF FOOTING REINFORCING
4. STEP IN FOOTING, SEE PLAN FOR LOCATION. INDIACED BY: "S--------S"
5. FOOTING, SEE PLAN & SCHEDULE
6. (2) #6 DIAGONAL BARS
7. TOP OF FOOTING, SEE ARCH.



KEYNOTES:
1. STEEL COLUMN, SEE PLAN
2. 3/4" BASE PLATE COL. WIDTH + 6" x COL. DEPTH + 6" WITH (4) 3/4"Ø ANCHOR RODS ON 1-1/2" NON SHRINK GROUT WITH LEVELING NUTS. EXTEND ANCHOR RODS TO BOTTOM STEEL IN FOOTINGS.
3. CONCRETE SLAB ON GRADE, SEE PLAN
4. FOOTING, SEE PLAN AND SCHEDULE FOR SIZE AND REINF.
5. 2'-4" SQUARE ISOLATION NO REINF. REQ'D. POUR AFTER DEAD LOADS ARE IN PLACE

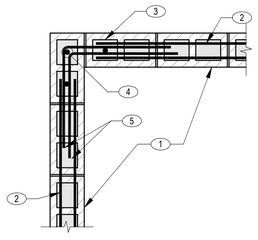
NOTES:
A. COORDINATE TOP OF FOOTING AND TOP OF SLAB WITH ARCH.

5 S4.0 DETAIL
NO SCALE



KEYNOTES:
1. MASONRY PIER, SEE PLAN
2. 16"x16" CONCRETE PIER WITH VERT. BARS & DOWELS MATCHING MASONRY PIER REINF. W/ #3 CLOSED TIES @ 3" O.C. TOP 9" AND 6"o.c. REMAINDER
3. MASONRY PIER REINFORCING AND TIES, SEE PLAN
4. CONT. FOUNDATION WALL BEYOND
5. HORIZ. FOUNDATION WALL REINF. TO CONTINUE THROUGH CONCRETE PIER
6. FLOOR SLAB, SEE PLAN (REINFORCEMENT NOT SHOWN)
7. FOOTING, SEE PLAN AND SCHEDULE FOR SIZE AND REINF.

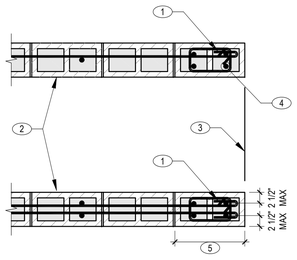
6 S4.0 ISOLATION JOINT
NO SCALE



KEYNOTES:
1. GROUT SOLID (3) CELLS AT CORNER, U.N.O.
2. MASONRY WALL, SEE PLAN
3. (3) #5 BARS TYP. @ CORNERS, U.N.O.
4. CORNER BARS TO MATCH SIZE AND SPA. OF HORIZ. REINF. IN WALL. SEE PLAN FOR REINF. IN ALL MASONRY PIERS

NOTE:
A. ALL CELLS ARE SHOWN AS FULLY GROUTED. THIS REPRESENTS BOND BEAM CELLS

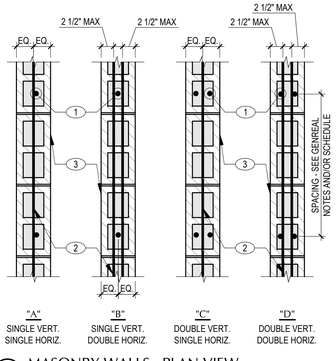
7 S4.0 DETAIL
NO SCALE



KEYNOTES:
1. 180° HOOK, SEE DETAIL 1/S4.0
2. MASONRY WALL, SEE PLAN
3. FACE OF OPENING
4. JAMB STEEL (2) VERTS. PER CELL (ONE EACH FACE) EXTEND FULL HEIGHT OF WALL BETWEEN LEVELS, TYP
5. JAMB LENGTH VARIES ONE CELL PER EACH 4'-0" LENGTH OF OPENING OR PORTION THEREOF TYP., U.N.O.

NOTE:
A. IN LIEU OF THE 180° HOOK IN NOTE 1, IT IS PERMITTED TO PROVIDE A 90° VERITCAL BEND, SEE DETAIL 1/S4.0
B. ALL CELLS ARE SHOWN AS FULLY GROUTED. THIS REPRESENTS BOND BEAM CELLS

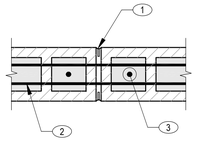
8 S4.0 DETAIL
NO SCALE



KEYNOTES:
1. VERTICAL REINF., TYP
2. HORIZONTAL REINF., TYP
3. MASONRY WALL, SEE PLAN

NOTE:
A. ALL CELLS ARE SHOWN AS FULLY GROUTED. THIS REPRESENTS BOND BEAM CELLS

9 S4.0 DETAIL
NO SCALE

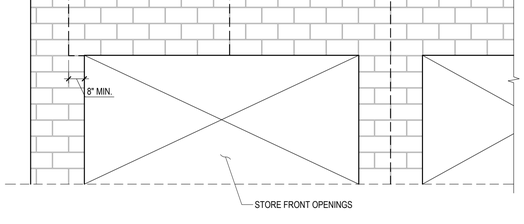


PLAN VIEW OF CONTROL JOINT

OPTION 3: PLACE CONTROL JOINT AS SHOWN, OFFSET 8" MIN. FROM EDGE OF MASONRY LINTEL (DO NOT CUT ANY REINFORCING STEEL)

OPTION 1: PLACE CONTROL JOINT AT CENTERLINE OF MASONRY LINTEL (DO NOT CUT ANY REINFORCING STEEL)

OPTION 2: PLACE CONTROL JOINT AT CENTERLINE OF PIER or WALL (DO NOT CUT ANY REINFORCING STEEL)



ELEVATION VIEW
CONTROL JOINT LOCATIONS @ STORE FRONT PIERS

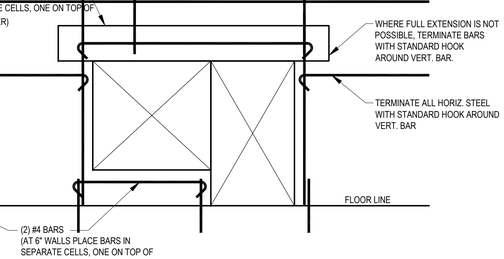
10 S4.0 MASRONY WALL CORNERS (TYP) - PLAN VIEW
NO SCALE

KEYNOTES:
1. SAW-CUT JOINT 1" DEEP FULL HEIGHT OF WALL. FILL JOINT WITH MORTAR OR CAULK
2. RUN HORIZ. WALL REINF. CONTINUOUS THRU JOINT. DO NOT CUT ANY REINF.
3. TYP. VERTICAL WALL REINF. IN CELL EACH SIDE OF CONTROL JOINT

NOTES:
A. PROVIDE VERTICAL CONTROL JOINTS AT 20' O.C. (MAXIMUM) IN CMU WALLS AND 50' O.C. IN ATLAS BRICK WALLS, U.N.O. ON THE DRAWINGS. CONTROL JOINTS ARE ONLY ALLOWED IN MASONRY BEAMS, COLUMNS, OR JAMBS AS SHOWN (CONTROL JOINTS IN CONTINUOUS WALLS ARE SIMILAR TO OPTION 2)
B. IF CONTROL JOINT IS SPECIFIED IN MASONRY BEAM/LINTEL THEN, CONTROL JOINTS SHALL BE LOCATED AT MID-SPAN & SHALL HAVE MORTAR TO FILL COMPLETE HEAD JOINT. DO NOT CUT REINF. AT BOND BEAMS OR DESIGNATED MASONRY BEAMS/LINTELS
C. SEE ARCH. FOR ADDITIONAL CONTROL JOINT REQUIREMENTS

11 S4.0 VERTICAL MASONRY WALL JAMBS (TYP) - PLAN VIEW
NO SCALE

12 S4.0 MASONRY WALLS - PLAN VIEW
NO SCALE



KEYNOTES:
1. MASONRY WALL, SEE PLAN
2. DOWELS TO MATCH VERT. REINF. IN MASONRY WALL
3. LADDER-TYPE JOINT REINFORCING, MASONRY WALL SCHEDULE
4. CONCRETE SLAB, SEE PLAN
5. #4 DOWELS @ 24"o.c. 2'-0" 1'-6"
6. CONCRETE WALL, SEE PLAN
7. (2) #5 x CONT. TOP & BOTTOM.
8. FOOTING, SEE PLAN AND SCHEDULE FOR SIZE AND REINF.

PLAN VIEW OF CONTROL JOINT

13 S4.0 VERTICAL MASONRY WALL CONTROL JOINT
NO SCALE

ELEVATION VIEW
CONTROL JOINT LOCATIONS @ STORE FRONT PIERS

14 S4.0 TYP. MASONRY WALL ELEVATION
NO SCALE

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PUBLIC WORKS & LEISURE SERVICES STORAGE BUILDING

720 WEST 100 NORTH FARMINGTON, UTAH 84025

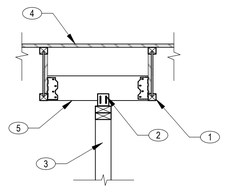
#	DATE	DESC.

ISSUE:	12/30/2013
WCA PROJECT NO:	13302B
DRAWN BY:	JC
CHECKED BY:	JC

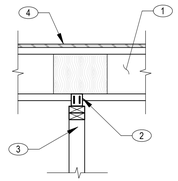
SHEET TITLE

FRAMING DETAILS

S4.0



BRACE PARALLEL TO TRUSS

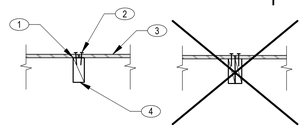


BRACE PERPENDICULAR TO TRUSS

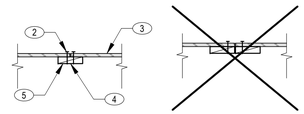
KEYNOTES:

1. TRUSS, SEE PLAN.
2. SIMPSON DTC @ 48" O.C.
3. 2x AT 16" O.C. STUD WALL.
4. SHEATHING, SEE PLAN.
5. 2x6 BLOCKING W/ SIMPSON LS30, EACH END OF BLOCKING, ALTERNATING SIDES.

1 S4.1 TYP. PARTITION WALL BRACING
NO SCALE



ALLOWED NOT ALLOWED



ALLOWED NOT ALLOWED

KEYNOTES:

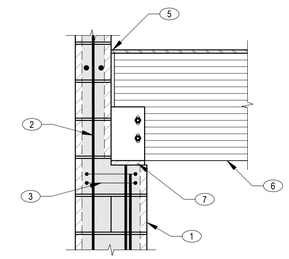
1. BUTT BLOCKING TIGHT TO SHEATHING.
2. PANEL EDGE NAILING, SEE PLAN AND SCHEDULE.
3. SHEATHING, SEE PLAN & SCHED.
4. BLOCKING ON EDGE OR FLAT WISE, SEE SCHEDULE OR DETAIL FOR SIZE.
5. PROVIDE SIMPSON Z4 AT ENDS.

NOTES:

A. ALL BLOCKING: USE HEM-FIR #1 OR BTR GRADE.

B. REMOVE AND REPLACE ANY SPLIT BLOCKING. USE 3x BLOCKING TO PRE-DRILL HOLES W/ 7/64"Ø BOT FOR 10d COMMON NAILS & 3/32"Ø BIT FOR 8d COMMON NAILS

2 S4.1 TYP. DIAPHRAGM BLOCKING DETAIL
NO SCALE



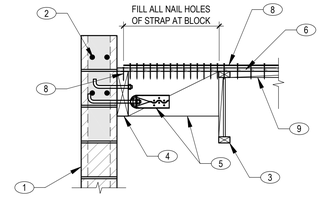
KEYNOTES:

1. MASONRY PIER, SEE PLAN
2. PIER VERTICAL REINF. TYP.
3. (2) #3 TIES @ 2" O.C. @ TOP
4. ROOF SHEATHING, SEE PLAN
5. SEE DETAIL 4/S4.1 FOR DECK BEARING
6. GLU-LAM BEAM, SEE PLAN
7. 3/4x7x12" BEARING PLATE W/ 1/2x7x12" SIDE PLATES AND (2) 3/4"Ø THRU BOLTS W/ VERITCAL SHORT SLOTTED HOLES AND (2) #6x24" DBA. AT 8" GA. BOTTOM OF BEARING PLATE

NOTES:

A. HORIZONTAL REINF. NOT SHOWN

3 S4.1 DETAIL
NO SCALE



KEYNOTES:

1. MASONRY WALL, SEE PLAN
2. (2) #4 BARS CONT. AT TOP OF WALL
3. ROOF JOIST, SEE PLAN
4. 3x8 CONT. LEDGER WITH 3/4"Ø ANCHOR BOLTS AT 32" O.C.
5. 3x8 BLOCK WITH SIMPSON HDU2-SDS2.5 AND 5/8"Ø BOLTS @ 64" O.C., PROVIDE 5" MIN. EMBEDMENT. ATTACH HDU TO BLOCK W/ (6) SDS0.25x2.5 SCREWS
6. ROOF SHEATHING, SEE PLAN
7. REQ'D PANEL BOUNDARY NAILING, SEE SCHEDULE
8. SIMPSON CS16 STRAP AT EACH HDU ANCHOR, SEE PLAN FOR LENGTH. NAIL EVERY OTHER HOLE EXCEPT AS NOTED
9. 2x FLAT BLOCKING, SEE DETAIL 8/S4.1

4 S4.1 DETAIL
NO SCALE

KEYNOTES:

1. MASONRY WALL, SEE PLAN
2. GROUT SOLID FOR (2) FULL COURSES (16" MIN.) AT JOIST BEARING. REINF. WITH (2) #5 x CONT. TOP AND BOTTOM TYP., U.N.O.
3. ROOF JOIST, SEE PLAN
4. SIMPSON BA2.56/16 JOIST HANGER, SLOPED AS REQ'D
5. SIMPSON HDU2-SDS2.5 W/ 5/8"Ø BOLTS @ 64" O.C., PROVIDE 5" MIN. EMBEDMENT. POSITION THE HDS'S ON SAME JOIST LINE AT OPPOSITE END OF THE BUILDING. ATTACH HDU TO JOIST W/ (6) SDS0.25x2.5 SCREWS. PROVIDE 2x_ FILLER BLOCK 18" LONG MINIMUM, SISTERED TO ROOF JOIST WEB FOR ATTACHMENT OF ANCHOR
6. WEB FILLER, EACH SIDE OF JOIST (AT JOIST W/ OUT SIMPSON HDU)
7. ROOF SHEATHING, SEE PLAN
8. REQ'D PANEL BOUNDARY NAILING, SEE SCHEDULE
9. 3x8 CONT. PLATE WITH 3/4"Ø ANCHOR BOLTS AT 32" O.C., PLACE SO THAT PLATE IS FLUSH WITH INSIDE FACE OF MASONRY WALL. DO NOT COUNTERSINK BOLTS MORE THAN 3/4"

5 S4.1 DETAIL
NO SCALE

KEYNOTES:

1. ROOF SHEATHING, SEE PLAN & SCHED.
2. TJI ROOF JOIST, SEE PLAN
3. SIMPSON BA2.56/16 JOIST HANGER, SLOPED AS REQ'D
4. GLU-LAM BEAM, SEE PLAN
5. SIMPSON CS16 STRAP @ 64" O.C., NAIL STRAP WITH 10d COMMON NAILS EVERY OTHER HOLE. PLACE STRAP ON JOIST THAT HAVE SIMPSON HDU ANCHORS ATTACHED AT MASONRY WALL, SEE DETAIL 5/S4.1
6. WEB FILLER, EACH SIDE OF JOIST

6 S4.1 DETAIL
NO SCALE

KEYNOTES:

1. STEEL COLUMN, SEE PLAN
2. GLU-LAM BEAM, SEE PLAN
3. ROOF SHEATHING, SEE PLAN & SCHED.
4. 3/4x8x13" BEARING PLATE W/ 1/2x12x13" SIDE PLATES AND (4) 3/4"Ø THRU BOLTS W/ VERITCAL SHORT SLOTTED HOLES
5. (2) SIMPSON MST37 STRAP, ONE EACH SIDE OF GLU-LAM BEAM. CENTER STRAP ON GLU-LAM SPLICE. (PROVIDE (40) 16d COMMON NAILS EACH STRAP

7 S4.1 DETAIL
NO SCALE

KEYNOTES:

1. SIMPSON STRAP, SEE PLANS FOR LENGTH
2. SHEATHING, SEE PLAN (DETAIL SHOWS OVERLAY.
3. 2x6 BLOCKING, UNO (SEE SPECIFIC DETAILS) W/ SIMPSON Z2 FOR 2x6BLOCKING & Z4 FOR 3x BLOCKING @ ENDS
4. SHEATHING, SEE PLAN (DETAIL SHOWS NO OVERLAY)

NOTES:

A. ALL BLOCKING: USE HEM-FIR #1 OR BTR GRADE

B. REMOVE AND REPLACE ANY SPLIT BLOCKING. USE 3x BLOCKING PRE-DRILL HOLES W/ 7/64"Ø BOT FOR 10d COMMON NAILS & 3/32"Ø BIT FOR 8d COMMON NAILS

8 S4.1 TYPICAL STEEL STRAPPING
NO SCALE

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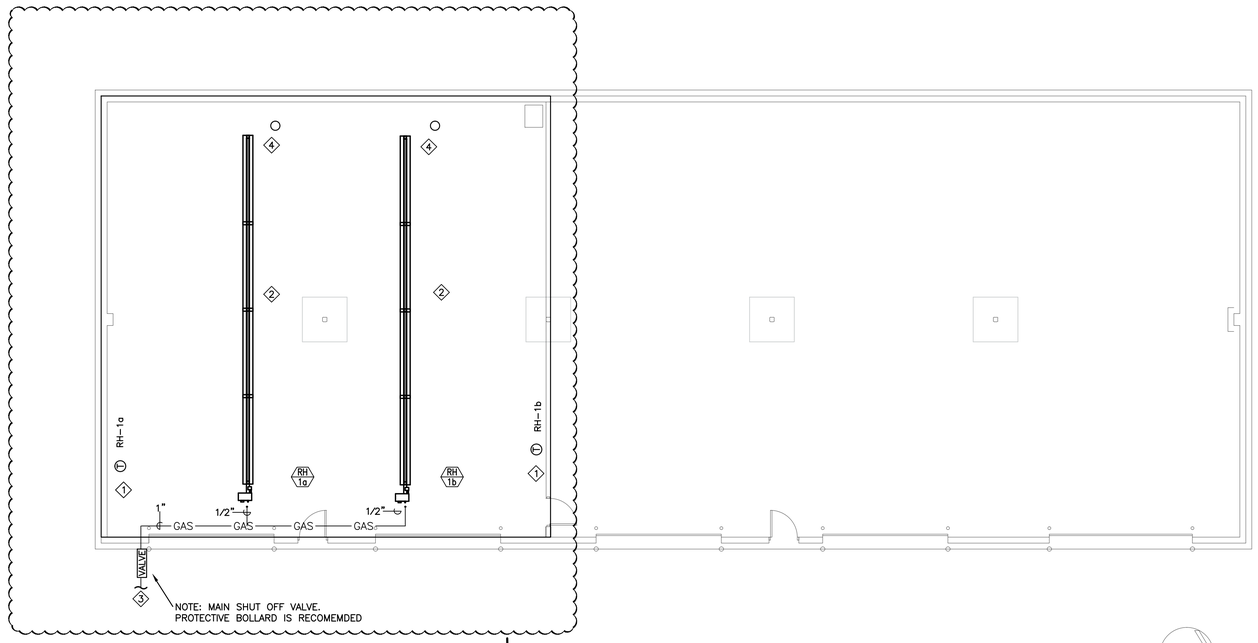
SHEET TITLE

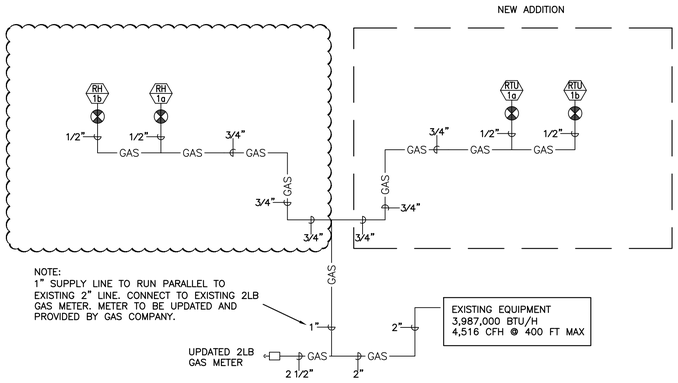
FRAMING DETAILS

S4.1



MECHANICAL AND GAS PLAN
SCALE: 1/8" = 1'-0"

NORTH



GAS PIPING SCHEMATIC
SCALE: NONE

GAS PIPING CALCULATIONS (QUESTAR, NFPA)

DESIGN CONDITIONS

CITY:	FARMINGTON, UTAH
LONGEST PIPE:	500 FEET MAX(VERIFY)
GAS PRESSURE:	2 LB.

ADDITION EQUIPMENT:

RTU-1a	149 CFH	131,200	BTU PER HOUR
RTU-1b	149 CFH	131,200	BTU PER HOUR

NEW STOR. EQUIPMENT:

RH-1a	142 CFH	125,000	BTU PER HOUR
RH-1b	142 CFH	125,000	BTU PER HOUR
TOTAL	582 CFH	512,400	BTU PER HOUR

GAS PIPING CALCULATIONS (QUESTAR, NFPA)

DESIGN CONDITIONS

CITY:	FARMINGTON, UTAH
LONGEST PIPE:	400 FEET MAXIMUM (VERIFY)
GAS PRESSURE:	2 LB.

EXISTING EQUIPMENT:

WH-1	225 CFH	199,000	BTU PER HOUR
RTU-1	142 CFH	125,000	BTU PER HOUR
RTU-2	82 CFH	72,000	BTU PER HOUR
RTU-3	142 CFH	125,000	BTU PER HOUR
RTU-4	82 CFH	72,000	BTU PER HOUR
RTU-5	82 CFH	72,000	BTU PER HOUR
UH-1	170 CFH	150,000	BTU PER HOUR
UH-2	170 CFH	150,000	BTU PER HOUR
UH-3	170 CFH	150,000	BTU PER HOUR
UH-4	170 CFH	150,000	BTU PER HOUR
UH-5	85 CFH	75,000	BTU PER HOUR
UH-6	85 CFH	75,000	BTU PER HOUR
UH-7	113 CFH	100,000	BTU PER HOUR
UH-8	113 CFH	100,000	BTU PER HOUR
UH-9	113 CFH	100,000	BTU PER HOUR
MUA-1	1,219 CFH	1,078,000	BTU PER HOUR
MUA-2	1,045 CFH	924,000	BTU PER HOUR
IR-1	40 CFH	35,000	BTU PER HOUR
IR-2	40 CFH	35,000	BTU PER HOUR

EXIST. STOR. EQUIPMENT:

UH-1	57 CFH	50,000	BTU PER HOUR
UH-2	57 CFH	50,000	BTU PER HOUR
UH-3	57 CFH	50,000	BTU PER HOUR
UH-4	57 CFH	50,000	BTU PER HOUR
TOTAL	4,516 CFH	3,987,000	BTU PER HOUR

GENERAL MECHANICAL NOTES:

1. COORDINATE ALL WORK WITH OTHER TRADES AS REQUIRED.
2. ALL GAS FIRED EQUIPMENT WILL BE TESTED BY CERTIFIED GAS INSTALLERS AND HAVE GREEN STICKERS STATING COMPLIANCE WITH ALL REQUIRED LOCAL AND 2012 IFGC REQUIREMENTS.
3. PROVIDE AND INSTALL B-VENT EXHAUST DUCT TO EXTERIOR FOR EACH GAS APPLIANCE. SIZING DETERMINED USING IFGC TABLE 504.3(1) AND 504.3(2) USING ACTUAL LENGTH AND CONFIGURATION INFORMATION FROM FIELD. COORDINATE IN FIELD WITH PLUMBING CONTRACTOR. PROVIDE CLAMPS TO SECURE B-VENT PIPE TO STRUCTURE.

MECHANICAL PERF. NOTES:

M1. MECHANICAL CONTRACTOR TO PROVIDE AND INSTALL A THERMOSTAT FOR EACH RADIANT HEATING UNIT. VERIFY THERMOSTAT LOCATION WITH OWNER IN FIELD.

M2. COORDINATE EXACT LOCATION OF ALL MECHANICAL UNITS WITH GENERAL CONTRACTOR. VERIFY IN FIELD.

M3. PROVIDE AND INSTALL ALL NECESSARY COMPONENTS FOR RADIANT UNIT HEATING SYSTEMS. ALL PER MANUFACTURERS RECOMMENDATIONS

GENERAL PLUMBING NOTES:

1. SEE GAS PIPING PLAN FOR NATURAL GAS PIPE SIZING.
2. COORDINATE ALL WORK WITH OTHER TRADES AS REQUIRED.
3. CONCEAL ALL PIPING IN FINISHED AREAS.
4. PROVIDE AND INSTALL ALL REQUIRED VALVES IN PIPING SYSTEM.
5. PLUMBING CONTRACTOR SHALL DETERMINE ACTUAL PIPE ROUTING IN FIELD PER AVAILABLE SPACE AND BUILDING CONSTRUCTION.
6. ALL NATURAL GAS PIPING MATERIAL SHALL MEET THE STANDARDS SET FORTH IN IFGC SECTION 403.
7. PROVIDE AND INSTALL ALL REQUIRED VALVES IN PIPING SYSTEM.

SEISMIC SUPPORT NOTES:

BRACING FOR SUSPENDED PIPING, ETC

1. PER ASCE STANDARD 7-05 13.6.8 SEISMIC SUPPORTS ARE NOT REQUIRED FOR THE FOLLOWING CONDITION:
   A. PIPING IS SUPPORTED BY ROD HANGERS 12" OR LESS IN LENGTH FROM THE TOP OF THE PIPE TO THE SUPPORTING STRUCTURE.
   B. HIGH-DEFORMABILITY PIPING IS USED.
2. IF INSTANCES OCCUR WHERE PIPING IS SUSPENDED BY HANGERS GREATER THAN 12" IN LENGTH, SYSTEM CONNECTORS AND COMPONENTS SHALL BE COMPATIBLE AND DESIGNED FOR THE APPLICATION THAT THEY ARE USED FOR. SHALL HAVE A MINIMUM OF TWO TRANSVERSE BRACES PER STRAIGHT PIPING RUN. THE MAXIMUM DISTANCE BETWEEN TRANSVERSE BRACES WILL BE DETERMINED BY PIPE SIZE AND PIPING COMPOSITION. SHALL HAVE A MINIMUM OF ONE LONGITUDINAL BRACE PER STRAIGHT DUCT RUN. IF LENGTH OF PIPING EXCEEDS LONGITUDINAL BRACE SPACING, ADDITIONAL LONGITUDINAL BRACES WILL BE REQUIRED.

PLUMBING PERF. NOTES:

P1. FIELD LOCATE UPDATED 2 LB GAS METER. FIELD VERIFY LOCATION AND ALL REQUIREMENTS WITH OWNER REPRESENTATIVE AND GAS COMPANY.

P2. PAINT ALL GAS LINES ON EXTERIOR OF BUILDING WITH WEATHER RESISTANT PAINT.

MECHANICAL KEYED NOTES:

1. PROVIDE & INSTALL THERMOSTAT. FIELD VERIFY THERMOSTAT LOCATION WITH OWNER.
2. VERIFY EXACT LOCATION OF RADIANT HEATING EQUIPMENT WITH OWNER'S REPRESENTATIVE. COORDINATE WITH OTHER TRADES. FOLLOW MANUFACTURERS SPECIFICATIONS AND PROVIDE A MAX MOUNTING HEIGHT OF 16FT.
3. PROPOSED LOCATION FOR UNDERGROUND GAS LINE FROM EXISTING BUILDING. SEE PLUMBING DETAILS.
4. PROVIDE EXHAUST FLUE TO EXTERIOR.

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CONSULTANTS

NOTE:

Bid documents should not be separated or issued as partial sets to subcontractors. Bidders are responsible for all portions of the documents that pertain to the work covered by sub-bids. Bidder assumes full responsibility for errors or misinterpretations resulting from use of partial sets of Bidding Documents by itself or any sub-bidder.

Conflicting information or errors found in the construction documents should be brought to the attention of the architect immediately so that questions and concerns may be clarified by addendum. In the event of a conflict in the drawings, bidder should not assume that the least expensive option will meet the project requirements.

PUBLIC WORKS & LEISURE SERVICES STORAGE BUILDING

720 WEST 100 NORTH FARMINGTON, UTAH 84025

PERMIT SET

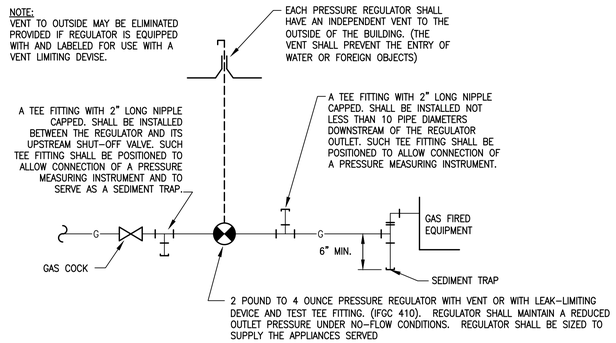
#	DATE	DESC.
1	4/07/14	CITY COMMENTS

ISSUE:	2/26/2014
PROJECT NO:	J14038.01
DRAWN BY:	RG
CHECKED BY:	MLM

SHEET TITLE

MECHANICAL & PLUMBING PLAN

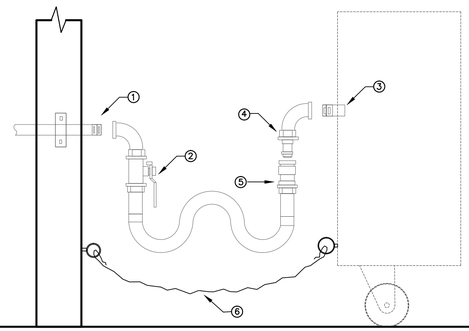
MP-1.01



PRESSURE REGULATORS INSTALLED INSIDE BUILDING SHALL BE PROVIDED WITH ACCESS.

TYPICAL 2LB GAS CONNECTION DETAIL

SCALE: NONE



1. CONNECT DORMONT SUPR-SAFE GAS BALL VALVE TO HOUSE PIPING.
2. CONNECT DORMONT SUPR-SAFE GAS APPLIANCE CONNECTOR TO GAS BALL VALVE
3. JOIN FURNISHED STEEL ELBOW TO APPLIANCE NIPPLE. ELBOW SHOULD BE FACING DOWNWARD
4. ATTACH SUPR-QUICK DISCONNECT NIPPLE PORTION TO STEEL ELBOW
5. CONNECT BOTH PORTIONS OF SUPR-QUICK DISCONNECT DEVICE (NIPPLE COUPLER) TO SUPR-SAFE GAS CONNECTOR. TIGHTEN ALL CONNECTIONS. PERFORM LEAK TEST SOLUTION.
   NOTE: MAY CAUSE CORROSION LEAK TEST SOLUTIONS WATER RINSE AFTER TEST, THEN THOROUGHLY DRY.
6. RESTRAINING CABLE:
   A.- MUST BE SHORTER THAN GAS CONNECTION.
   B.- ATTACH EYELET FASTENERS TO BOTH WALL AND EQUIPMENT.
   C.- ATTACH SPRING HOOKS OF RESTRAINING CABLE TO EYELET FASTENERS ON WALL AND EQUIPMENT.

QUICK DISCONNECT DETAIL

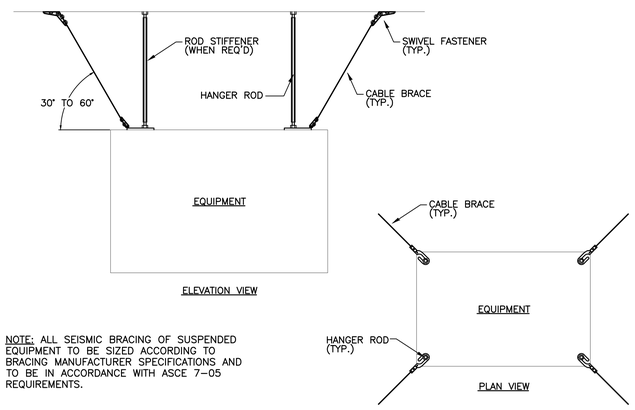
SCALE: NONE

RADIANT TUBE HEATER SCHEDULE

MARK	DESCRIPTION	ELECTRICAL		MIN.REQ'D INPUT BTU/HR (AT SEA LEVEL)	NOMINAL LENGTH (FEET)	REMARKS
		FLA	VOLTAGE			
RH-1	TUBE HEATER	1	120V/1PHS	125,000	40	MODEL TA/TX/TXR-125 OR EQUIVALENT 1 2

1. APPROVED MANUFACTURERS: RE-VERBER-RAY, SUPERIOR, SOLARONICS, REDD-I, SCHWANK, COMBUSTION RESEARCH, REZNOR, DORNBACK. (SUBJECT TO PROJECT DOCUMENT CONFORMANCE)
2. TWO STAGE INFRARED HEATER. FOLLOW MANUFACTURER MOUNTING RECOMMENDATIONS. PROVIDE AND INSTALL EXTERNAL, WALL MOUNTED THERMOSTAT.

NOTE: VERIFY ALL EQUIPMENT MANUFACTURERS, EFFICIENCIES, AND OPTIONS WITH OWNER BEFORE ORDERING.

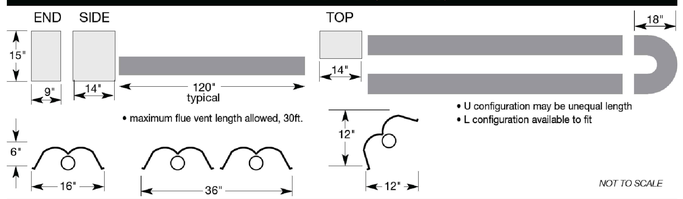


NOTE: ALL SEISMIC BRACING OF SUSPENDED EQUIPMENT TO BE SIZED ACCORDING TO BRACING MANUFACTURER SPECIFICATIONS AND TO BE IN ACCORDANCE WITH ASCE 7-05 REQUIREMENTS.

SUSPENDED EQUIPMENT SEISMIC BRACING DETAIL

SCALE: NONE

DIMENSIONS (Inches)



CLEARANCES TO COMBUSTIBLES (Inches)

MODEL	TA/TX/TXR 60			TA/TX/TXR 100			TA/TX/TXR 125			TA/TX/TXR 175			TA/TX/TXR 205			TA/TX/TXR 220		
Configuration	Top	Side	Below	Top	Side	Below	Top	Side	Below	Top	Side	Below	Top	Side	Below	Top	Side	Below
Straight - Horizontal	2	25	58	2	30	67	4	33	71	6	40	78	6	44	80	6	46	83
Straight - 45° Tilt	4	4-46	50	4	4-58	67	6	4-63	70	8	4-67	74	8	4-72	78	8	4-77	81
U-Tube Horizontal	2	25	59	2	30	71	4	34	74	6	40	78	6	45	82	6	46	88

- Other layout configurations are approved
- Side reflectors and lower shields are available
- Lower clearances are allowable at 25' from burner
- See installation manual for complete information

Go to website for I/O manuals, specifications, submittal data and weights.

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CONSULTANTS

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720 WEST 100 NORTH FARMINGTON, UTAH 84025

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ISSUE:	2/26/2014
PROJECT NO:	J14038.01
DRAWN BY:	RG
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SHEET TITLE

MECHANICAL & PLUMB. DETAILS AND SCHEDULES

MP-1.02

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SECTION 15000 – GENERAL PROVISIONS
Not all specification items are used in every project.

PART 1 – GENERAL

1.1 Scope:

A. Provisions of this section apply to all work specified in all sections under Division 15.

B. In addition, work in Division 15 is governed by the provisions of the Bidding Requirements, Contract Forms, General Conditions and all sections under Division 1, General Requirements.

1.2 Examination of Premises: Visit the site, verify all measurements and job conditions, and pay all costs necessary to perform the work. Coordinate division of fee responsibilities with the General Contractor.

1.3 The Mechanical Contractor shall be licensed and hold a current contracting licence that has been valid for a minimum of two years in the State of Utah as a Mechanical Contractor.

1.4 The Mechanical Contractor shall have a minimum of five years experience installing commercial cooling and heating systems similar to those described in these specifications and provide a list of previous projects, including name of project and contact person names and phone numbers as a separate document in addition to the mechanical bid submitted if required by the General Contractor.

1.5 The Mechanical Contractor shall be able to bond work he is bidding to perform and shall provide a written statement from the bonding agency proposed to be used for this project as a separate document in addition to the mechanical bid submitted if required by the General Contractor. The bonding agency shall be one having a Best's insurance rating of A or A+.

1.6 The Plumbing Contractor shall be licensed and hold a current contracting license that has been valid for a minimum of two years in the State of Utah as a plumbing contractor.

1.7 The Plumbing Contractor shall have a minimum of five years experience installing commercial plumbing systems similar to those described in these specifications and provide a list of previous projects, including name of project and contact person names and phone numbers if required by the General Contractor.

1.8 The Plumbing Contractor shall be able to bond work he is bidding to perform and shall provide a written statement from the bonding agency proposed to be used for this project as a separate document in addition to the plumbing bid submitted if required by the General Contractor. The bonding agency shall be one having a Best's insurance rating of A or A+.

1.9 Regulations, Permits, Fees, Charges, Inspections:

A. Regulations: Comply with all applicable codes, rules and regulations. All materials and work must comply with local construction, mechanical, plumbing, electrical and fire codes. As a minimum, comply with the following: IMC, UPC, NEC, NFPA codes and all City codes.

B. Fees and Permits: Pay all connection, installation, use, development, etc., fees and/or charges. Obtain and pay for all required permits and licenses. Coordinate division of fee responsibilities with the General Contractor.

C. Inspections: All work must be inspected and approved by local authorities. Prior to final approval, furnish the Architect with certificates of inspections and approvals by the local authorities in accordance with Division 1.

1. Preheat and interpass temperature shall be determined by temperature indicating crayons, contact pyrometers or other equally suitable means.

D. Postweld Heat Treatment: Postweld heat treatment for pressure components shall be as specified in Table 131 of ANSI B31.1.

1.10 Drawings and Specifications:

A. Refer to Division 1 for information on submittals and shop drawings.

B. If a conflict exists between the drawings and specifications, promptly notify the Architect.

1.11 Record Drawings: Provide record drawings for all work under sections in Division 15. See Division 1 for detailed requirements covering preparation of record drawings.

1.12 Work and Materials: Unless otherwise specified, all materials must be new and of the quality specified. The workmanship shall be of a quality that is acceptable to the Architect and is equal to the standards of the trades. Contractor must staff the project with sufficient skilled workmen, including a fully qualified construction Superintendent, to complete the work in the time allotted. The Superintendent must be qualified to supervise all of the work in his work category.

1.13 Approvals of Materials and Equipment: Refer to Division 1 for description of material and equipment for prior approvals and substitutions.

1.14 Maintenance Manual:

A. Prior to completion of the project, compile a complete equipment and maintenance manual for all equipment supplied under sections of Division 15, as described in Division 1.

B. Manuals shall be bound in a three–ring binder. A preliminary submittal of the manual shall be made to the Architect 90 days after receiving approved submittals. Final submittal of the manual shall be made four weeks prior to substantial completion of the project.

1.15 Equipment Purchases: Arrange for purchase and delivery of all materials and equipment within 15 days after approval of submittals. Coordinate with General Contractor.

1.16 Cooperative Work:

A. Correct without charge any work requiring alteration due to lack of proper supervision or failure to make proper provision in time. Correct without charge any damage to adjacent work caused by the alteration. See Division 1 for additional requirements.
B. Cooperative Work Includes:

1. General supervision and responsibility for proper location, rough–in and size of work related to Division 15 but provided under other divisions of these specifications.

2. Installation of sleeves, inserts and anchors bolts for work under sections in Division 15.

3. Electrical work as specified herein. Refer to Division 16 for requirements.

1.17 Construction Facilities:

A. General: Under this division of the specifications execute all work in a manner to provide safe and lawful ingress and egress to the Owner's establishment and such facilities shall be kept clear of materials or equipment as directed by the Architect. Refer to Division 1 for additional requirements.

B. Furnish and maintain from the beginning to the completion of all work all lawful and necessary guards, railings, fences, canopies, lights, and warning signs. Take all necessary precautions required by city and state laws to avoid injury or damage to any and all persons and property.

1.18 Guarantee: Guarantee all material, equipment, and workmanship for all sections under Division 15 in writing to be free from defects of material and workmanship for one year from date of final acceptance as outlined in Division 1. Replace without charge any material or equipment proving defective during this period. The guarantee shall include performance of the equipment under all conditions of load, installing any additional items of control and/or protective devices as required and the replacing of any refrigerant lost.

1.19 Mechanical Wiring:

A. Provide all temperature control wiring, all interlock wiring, and equipment control wiring for the equipment that is to be provided under this Division unless specifically shown on electrical drawings.

B. All wiring shall be not less than No. 14 insulated, color coded wire in electrical metallic tubing. Installation shall comply with Division 16.

C. Before ordering motors, equipment, etc., verify the available voltage and phase with the electrical trades.

1.20 Electrical Work:

A. Electrical wiring, including power wiring and control wiring (except as otherwise specified under Automatic Temperature Controls), all raceways, wiring, outlet and junction boxes, and labor for installation of the wiring and equipment shall be included in Electrical Division 16 of the specifications.

B. All starters in motor control centers are to be furnished and installed under the Electrical Division of the specifications.

C. Under the Automatic Temperature Control section of these specifications, furnish and install all wiring, conduit, electric automatic temperature control devices, thermostats, relays, pneumatic electric switches, automatic control switches and pilot lights. See the Automatic Temperature Control, Section 15900, for additional detailed information.

D. All loose starters and control devices for equipment furnished under Division 15 (except as otherwise specified under Automatic Temperature Control, Section 15900) are to be furnished under that particular section of Division 15 and installed under the electrical division.

E. Contractor shall be responsible for the checking and testing of all controls and the interlocks for a complete and satisfactory operating system.

F. Before ordering any motors and equipment. Verify the available voltage and phase for all motors with the Electrical Contractor.

G. Submit a complete list of all motors prior to final closeout of job indicating the locations, horsepower, voltage, phase specified in Table 132 of ANSI B.1.

H. All field wiring and equipment must conform to the applicable sections of the Electrical specifications, Division 16.

1.21 Welding Codes and Standards: All welding and other criteria covered by this specification shall be in accordance with the following code:

A. ASME Boiler and Pressure Vessel Code

B. Section IX ANSI Code for Power Piping: B31.1

PART 2 – PRODUCTS

2.1 Machinery Drives:

A. Use V–belts designed for 150% of capacity for all belt drives. For multiple belt drives, use matched sets, so marked at the factory.

B. On drives with not more than two belts, provide adjustable pitch motor sheaves with the midpoint of the adjustment range equal to that required to achieve the specified fan capacity.

C. On motors with drives with more than two belts, furnish nonadjustable sheaves, providing the specified fan capacity.

2.2 Machinery Accessories:

A. Lubricating Devices: Provide all oil level gauges, oil pressure gauges, grease cups, grease gun fittings, as required by the equipment. Extend all lubricating fittings to readily accessible locations.

B. Guards: Provide totally–enclosed OSHA type belt guards for all rotating equipment. Design guards to be readily removable for access to belt drives.

2.3 Equipment Design and Installation:

A. Uniformity: Unless otherwise specified, provide all equipment of same type or classification by the same manufacturer.

B. Design: Design all equipment in accordance with ASME, AGA, UL and other applicable technical standards as follows:

C. Pressures vessels – ASME Code constructed and stamped

D. Electric appliances – UL labeled

E. Fire protection equipment – UL approved and labeled

F. Fans – AMCA rated and stamped

G. Cooling equipment – ARI certified

H. Fire dampers, smoke dampers, combination fire and smoke dampers – UL listed

I. Concrete Inserts:

1. The work under this section includes furnishing and installing all concrete inserts required for all materials and equipment specified herein or in other sections of Division 15.

2. Provide concrete inserts equal to Unistrut Series 3200 with standard, plain, oiled finish. Provide exposed Unistrut pipe supports with factory finished enamel paint.

PART 3 – EXECUTION

3.1 Verification of Dimensions:

A. Scaled and figured dimensions are approximate only. Before proceeding with work, carefully check and verify dimensions at site, and be responsible for properly fitting equipment and materials together and to the structure in spaces provided.

B. Drawings are essentially diagrammatic and many offsets, bends, special fittings and exact locations are not indicated. Carefully study drawings and premises in order to determine best methods, exact locations, routes, building obstructions, and install apparatus and equipment in available locations. Install apparatus and equipment in manner and in locations to avoid obstructions, preserve headroom, and keep openings and passageways clear.

3.2 Cutting and Patching: Cut work and patch per Division 1 as necessary to properly install the new work. As the work progresses, coordinate necessary openings, holes, chases, etc., in their correct location. If the required openings, holes and chases are not in their correct locations, make the necessary corrections at no cost to the Owner. Avoid excessive cutting and do not cut structural members without the consent of the Architect. Patching by General Contractor at Mechanical, Plumbing or Fire Protection Contractor's expense. Include as a part of the work under this contract all structural framing required by penetrations through the roof and necessary steel to support ducts and pipes between structural steel unless shown on the structural drawings.

3.3 Closing–in of Unfinished Work: Cover no work until inspected, tested and approved. Where work is covered before inspection and test, uncover it, and when inspected, tested and approved, restore all work to original proper condition.

3.4 Excavation and Backfill:

A. Perform all necessary excavation, shoring and backfilling required for the proper laying of all pipes and conduits inside the building and premises, and outside as may be necessary. Conform to Division 2 requirements. Remove all excess excavated materials from the site or dispose of on site as directed by General Contractor.

B. Excavate all trenches open cut, keep trench banks as nearly vertical as practicable, and sheet and brace trenches where required for stability and safety. Excavate trenches true to line and make bottoms not less than 18" wide but no wider than necessary to provide ample work room. Grade trench bottoms accurately to provide uniform bearing and support for each section of pipe on undisturbed soil along its entire length. Dig "bell" holes after the trench bottom has been graded. Machine grade only to the top line of the pipes, doing the balance by hand. Do not cut any trench near or under footings without first consulting the Architect. Comply with OSHA requirements.

C. Provide backfilling and compaction in accordance with requirement of Division 2 and under the direction of the Architect and the Owner's testing firm to the required density. Make the first 2 feet of fill in 6" layers, each thoroughly compacted as directed, and free from rocks, large clods of earth, leaves, branches, and debris. Compact the rest of the backfill to prevent settlement as directed, using in the backfill no rocks larger than 4" in diameter, and using no rocks at all in the top 12".

3.5 Accessibility:

A. Install valves, dampers, thermometers, gauges, traps, cleanouts, control devices or other specialties requiring reading, adjustment, inspection, repairs, removal or replacement conveniently and accessibly throughout the finished building. Where any of these devices are shown on the contract drawings to be installed above any inaccessible ceiling, the Mechanical Contractor shall furnish access doors or panels as required.

B. All access doors or panels in walls and ceilings required for access to control devices, traps, valves and similar devices are to be furnished and installed as part of the work under this section. Provide type as specified under Division 8.

C. Provide ducts which pierce a fire separation with fire dampers of same fire rating as the separation.

D. Refer to drawings and "Finish Schedule" for type of wall and ceiling in each area and for rated construction.

E. Coordinate work of various sections to locate valves, traps, and dampers with others to avoid unnecessary duplication of access doors.

3.6 Roof Flashings: Flash and counterflash all piping, conduits and ductwork penetrating roofing membrane with flashing per roofing manufacturer's recommendations. Refer to architectural drawings for detailing of duct and pipe penetrations through roof.

3.7 Equipment Rough–in:

A. Rough in all equipment and fixtures as designated on the drawings and in the specifications. The drawings indicate only the approximate location of rough–ins. The exact rough–in locations must be determined from large–scale certified drawings. The Contractor shall obtain all certified rough–in information before progressing with any work for rough–in final connections.

B. Be responsible for providing all outlets and services of proper size at the required locations.

C. Minor changes in the contract drawings shall be anticipated and provided for under this division of the specifications.

D. Rough–in only (unless otherwise designated on the drawings) shall include the following:

1. Plumbing: Provide all services designated and required, including waste and water. Valve and cap all stub–outs for water and gas. Cap all waste and vent outlets.

2. Mechanical: Provide all services as indicated and required, including all ductwork, piping and valves. Valve and cap all piping stub–outs. Cap all ductwork stub–outs in a manner suitable for future extension.

3.8 Owner–Furnished and Other Equipment:

A. Rough–in only for all Owner–furnished equipment (see Division 1) and all equipment furnished under other sections of the specifications, except as otherwise specified and/or noted on the drawings.

B. Provide all services designated, valve and cap all piping, cap all waste piping and ductwork and leave in a clean and orderly manner.

C. Rough–in requirements shall be as outlined in the preceding paragraph titled "Equipment Rough–In."

3.9 Equipment Final Connections:

A. Provide all piping and duct final connections for all equipment under Division 15 as required herein specified and indicated on the drawings.

B. Plumbing: Provide final plumbing connections complete with shutoff valves, risers, traps, vacuum breakers and indirect wastes for all equipment furnished and installed under other sections of these specifications, except as otherwise designated. Included under the Plumbing section of the specifications are the final connections to the following:

1. Miscellaneous equipment specified to be furnished and installed under other divisions of the specifications.

2. Cold water make–up connections to air conditioning equipment.

3. Kitchen equipment, furnished under other sections of the specifications.

C. Air Conditioning, Heating, and Ventilating: Provide final connections complete with necessary valves, drains, unions, flanges and duct connections for equipment furnished and installed under other sections of the specifications, except as otherwise designated. Included under the HVAC sections of the specifications are the final connections to the following:

1. Condensate and evaporative cooler drain piping from air conditioning equipment.

2. Supply, return, relief, outside air and exhaust duct connections for all equipment including exhaust fans.

3. Piping connections for all equipment.

4. Duct connections for all kitchen hoods.

3.10 Machinery Drives: After tests have been performed on the air conditioning and air handling systems, make without cost not more than two changes in the size of the nonadjustable sheaves to obtain the required air quantities.

3.11 Machinery Accessories:

A. Application: Do not install any equipment in an application not recommended by the manufacturer.

B. Installation: Align, level and adjust all equipment for proper operation. Install so connecting and disconnecting of piping and accessories can readily be done and so all parts are readily accessible for inspection, service and repair. Install equipment in accordance with manufacturer's recommendations.

3.12 Pipe and Equipment Supports:

A. Where supports, foundations, stands, suspended platforms for machinery, tanks, or other equipment are indicated or specified, perform the following:

1. Locate support members to avoid equipment strains and interference with piping connections, tube pulling or other maintenance operations.

2. Where saddles are required, use cast iron or welded steel saddles with curvature to fit the tank shell.

3. Mount power–driven equipment on common base with driver.

B. Concrete Inserts: Furnish and install all concrete inserts required for all materials and equipment specified and/or shown on the drawings for Division 15.

C. Concrete Foundations: Work under this section includes coordination of construction of all concrete foundations indicated or required for equipment specified herein or in other sections under Division 15. Materials and workmanship shall be described under Division 3.

D. Grout under all equipment after leveling, filling completely the space between machinery bed plate and foundation surface as specified in Division 3. Finish exposed surface of grout for a neat appearance.

E. Floor Stands: Where equipment is mounted standard or on legs, construct of structural steel or steel pipe and fittings, cross–brace and fasten with flanges or plates bolted to floor.

F. Ceiling or Wall Supports: Use suspended platform, strap hangers, bracket or shelf, whichever is most suitable for equipment and location. Construct of structural steel members, steel plates, rods or pipe as required. Cross–brace and fasten to building structure or inserts in an approved manner.

G. Steel Work: Neatly fabricate and erect steel work with burrs and welding spatter ground off. Paint after fabrication with a rust–inhibitive primer.

H. Roof Mounted Equipment (Steel Supported): Provide curbs and flashings for metal support structures as shown in the latest SMACNA manual for roof supports.

3.13 Cleanup:

A. In addition to cleanup specified under Division 1, thoroughly clean all parts of the equipment. Where exposed parts are to be painted, thoroughly clean off any splattered construction materials and remove all oil and grease spots. Wipe the surface carefully and scrape out all cracks and corners.

B. Thoroughly flush and clean out all water circulating systems. Remove, clean and replace all strainer elements.

C. During the progress of the work, keep the premises clean and free of debris.

3.14 Painting:

A. Except as otherwise specified or indicated in the architectural drawings and/or specifications, paint all exposed unfinished metal with one coat of rust–inhibiting primer. (Galvanized ductwork and factory painted equipment shall be considered as having primed surface.)

B. Finished painting is specified under Division 9.

3.15 Connections to Services: Provide all connections to sanitary sewer lines, storm sewer, gas lines, water lines, electrical services furnished under other contracts, except as otherwise specifically designated. Provide all necessary tees, taps and connections required to properly connect to all mains. Verify all required City requirements before making any piping connections to sanitary sewer, storm sewer, water or gas piping and conform to them during installation.

3.16 Objectionable Noise and Vibration: Construct and brace the metal partitions, ducts and sheet metal housings to prevent vibration or rattling when systems are in operation. Install connections to equipment so noise and vibration will not reach the conditioned area through ducts, piping, conduit, sheet metal work, or the building structure. Provide power–driven equipment suspended from the structure with spring type isolation.

3.17 Welding:

A. Procedures:

1. All procedures and welders must be qualified in accordance with the requirements of Section IX, ASME Boiler and Pressure Vessel Code and ANSI code for power piping B31.1. Procedure qualification test records and acceptance shall be submitted with the welding procedure prior to the start of fabrication.

2. Architect's inspector or authorized representative will review performance qualification records of individual welders.

B. Welding Processes: The following welding processes are permitted, provided that the procedure is qualified in accordance with Section IX, ASME Boiler and Pressure Vessel Code.

1. Manual shielded metal–arc.

2. Gas tungsten–arc.

3. Other welding processes may be used providing they are qualified in accordance with Section IX, ASME Boiler and Pressure Vessel Code.

C. Restrictions: Weld bevel preparations shall be provided on all welding fittings and shall be machined or ground to remove all discoloration if flame or arc cut.

D. Welding Filler Material:

1. A filler material control procedure shall be submitted to Owner for review and acceptance prior to performing any welding.

2. All shielded metal–arc welding shall be performed using low–hydrogen type electrodes such as E 7018.

E. Preheat and Interpass Temperature:

1. Preheat for pressure components shall be as specified in Table 132 of ANSI B.1.

ROYAL ENGINEERING
ELECTRICAL
2595 SOUTH STATE SUITE 100
PHONE: 801.375.2228
MECHANICAL
PROVO, UTAH 84606
FAX: 801.375.2676

dixon
architecture, planning, interiors
833 south 200 east
salt lake city, ut 84111
phone: 801.595.6400
www.dixonslc.com

CONSULTANTS

REGISTERED PROFESSIONAL ENGINEER
MARK L. MAKIN
9/9/14
STATE OF UTAH

NOTE:

Bid documents should not be separated or issued as partial sets to subcontractors. Bidders are responsible for all portions of the documents that pertain to the work covered by sub-bids. Bidder assumes full responsibility for errors or misinterpretations resulting from use of partial sets of Bidding Documents by itself or any sub-bidder.

Conflicting information or errors found in the construction documents should be brought to the attention of the architect immediately so that questions and concerns may be clarified by addendum. In the event of a conflict in the drawings, bidder should not assume that the least expensive option will meet the project requirements.

PUBLIC WORKS & LEISURE SERVICES STORAGE BUILDING

720 WEST 100 NORTH FARMINGTON, UTAH 84025

PERMIT SET

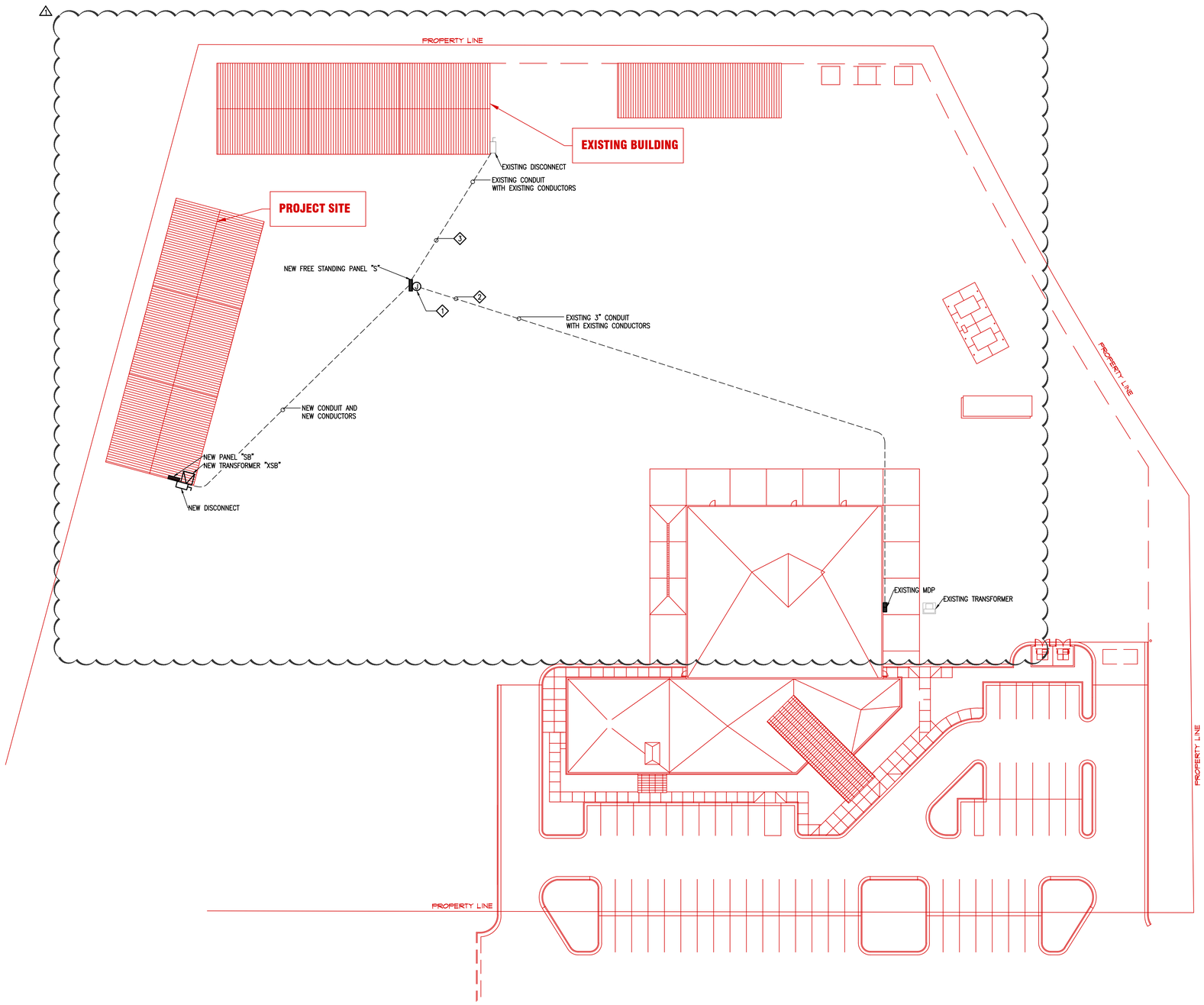
#	DATE	DESC.
1	4/07/14	CITY COMMENTS

ISSUE:	2/26/2014
PROJECT NO:	J14038.01
DRAWN BY:	RG
CHECKED BY:	MLM

SHEET TITLE

MECHANICAL & PLUMBING SPECIFICATIONS

MP-2.01



SITE ELECTRICAL PLAN

SCALE: 1" = 30'-0"

ELECTRICAL KEYED NOTES:

1. REPLACE EXISTING JUNCTION BOX WITH NEW JUNCTION BOX SIZE 18"X24"X12".
2. REMOVE EXISTING CONDUCTORS AND INSTALL NEW. SEE POWER ONE-LINE DIAGRAM.
3. RE-FEED EXISTING BUILDING FROM NEW PANEL "S". USE EXISTING CONDUCTORS.

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720 WEST 100 NORTH FARMINGTON, UTAH 84025

PERMIT SET

#	DATE	DESC.
1	4/07/14	CITY COMMENTS

ISSUE:	2/26/2014
PROJECT NO:	J14038.01
DRAWN BY:	DJN
CHECKED BY:	KB

SHEET TITLE

SITE ELECTRICAL PLAN

E-1.01

ROYAL ENGINEERING

ELECTRICAL
2335 SOUTH STATE SUITE 100
PHONE: 801.375.2228

MECHANICAL
PROVO, UTAH 84606
FAX: 801.375.2878

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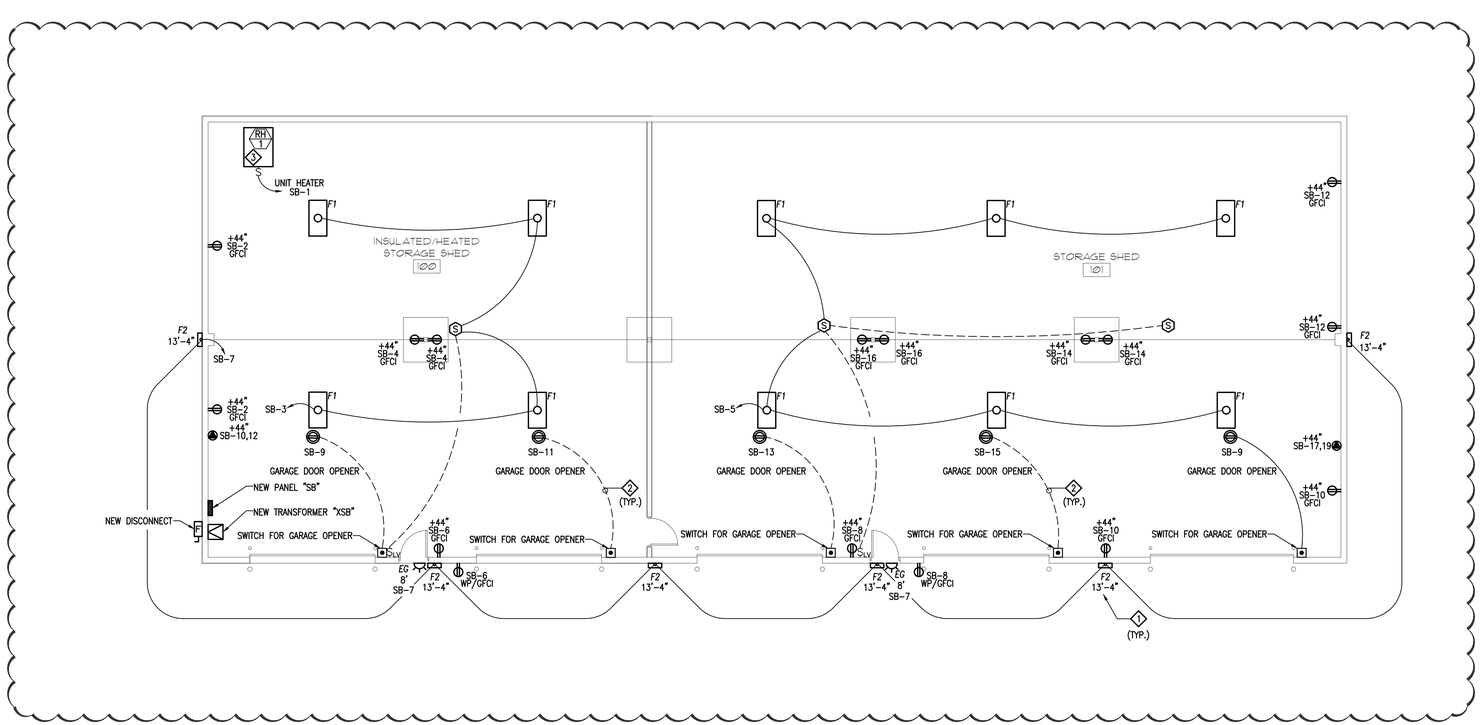
ELECTRICAL KEYED NOTES:

1. FIXTURE MOUNTING HEIGHT MEASUREMENT ABOVE FINAL GRADE.
2. INSTALL 3/4" C.. CABLE AND CONTROLS BY DOOR INSTALLER. VERIFY LOCATIONS WITH DOOR INSTALLER PRIOR TO ROUGH-IN.
3. VERIFY LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.



ELECTRICAL PLAN

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

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NOTE:

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Conflicting information or errors found in the construction documents should be brought to the attention of the architect immediately so that questions and concerns may be clarified by addendum. In the event of a conflict in the drawings, bidder should not assume that the least expensive option will meet the project requirements.

PUBLIC WORKS & LEISURE SERVICES STORAGE BUILDING

720 WEST 100 NORTH FARMINGTON, UTAH 84025

PERMIT SET

#	DATE	DESC.
1	4/07/14	CITY COMMENTS

ISSUE:	2/26/2014
PROJECT NO:	J14038.01
DRAWN BY:	DJN
CHECKED BY:	KB

SHEET TITLE

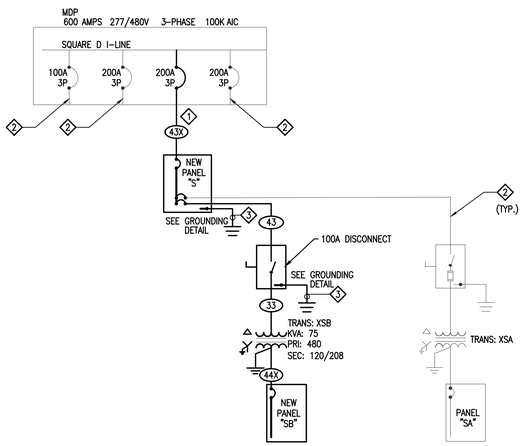
ELECTRICAL PLAN

E-2.01

ROYAL ENGINEERING
ELECTRICAL
2335 SOUTH STATE SUITE 100
PHONE: 801.375.2226
MECHANICAL
PROVO, UTAH 84606
FAX: 801.375.2676

ELECTRICAL KEYED NOTES:

1. PROVIDE NEW CONDUCTORS. USE EXISTING 3" CONDUIT.
2. EXISTING SHOWN GREYED.
3. #8 BC, 5/8" X 8' GROUND ROD. DO NOT BOND NEUTRAL.



POWER ONE-LINE DIAGRAM

SCALE: NONE

COPPER FEEDER SCHEDULE

TYPE	CONDUIT SIZE PVC	CONDUIT SIZE EMT	CONDUCTORS QUAN.	CONDUCTORS SIZE	75°C AMP RATING
(212)	3/4"	3/4"	2	#12	
(312)	3/4"	3/4"	3	#12	25
(412)	3/4"	3/4"	4	#12	
(20)	3/4"	3/4"	2	#10	
(30)	3/4"	3/4"	3	#10	35
(40)	3/4"	3/4"	4	#10	
(28)	3/4"	3/4"	2	#8	
(38)	3/4"	3/4"	3	#8	50
(48)	3/4"	3/4"	4	#8	
(26)	3/4"	3/4"	2	#6	
(36)	3/4"	3/4"	3	#6	65
(46)	1"	1"	4	#6	
(24)	3/4"	3/4"	2	#4	
(34)	1"	1"	3	#4	85
(44)	1-1/4"	1-1/4"	4	#4	
(23)	1"	1"	2	#3	
(33)	1"	1"	3	#3	100
(43)	1-1/4"	1-1/4"	4	#3	
(22)	1"	1"	2	#2	
(32)	1-1/4"	1-1/4"	3	#2	115
(42)	1-1/4"	1-1/4"	4	#2	

TYPE	CONDUIT SIZE PVC	CONDUIT SIZE EMT	CONDUCTORS QUAN.	CONDUCTORS SIZE	75°C AMP RATING
(21)	1-1/4"	1-1/4"	2	#1	
(31)	1-1/4"	1-1/4"	3	#1	130
(41)	1-1/2"	1-1/2"	4	#1	
(21X)	1-1/4"	1-1/4"	2	1/0	
(31X)	1-1/2"	1-1/2"	3	1/0	150
(41X)	1-1/2"	1-1/2"	4	1/0	
(22X)	1-1/4"	1-1/4"	2	2/0	
(32X)	1-1/2"	1-1/2"	3	2/0	175
(42X)	2"	2"	4	2/0	
(23X)	1-1/2"	1-1/4"	2	3/0	
(33X)	2"	2"	3	3/0	200
(43X)	2"	2"	4	3/0	
(24X)	1-1/2"	1-1/2"	2	4/0	
(34X)	2"	2"	3	4/0	230
(44X)	2-1/2"	2-1/2"	4	4/0	
(225)	2"	2"	2	250 KCMIL	
(325)	2"	2"	3	250 KCMIL	255
(425)	3"	2-1/2"	4	250 KCMIL	
(230)	2"	2"	2	300 KCMIL	
(330)	2-1/2"	2-1/2"	3	300 KCMIL	285
(430)	3"	2-1/2"	4	300 KCMIL	

TYPE	CONDUIT SIZE PVC	CONDUIT SIZE EMT	CONDUCTORS QUAN.	CONDUCTORS SIZE	75°C AMP RATING
(235)	2"	2"	2	350 KCMIL	
(335)	2-1/2"	2-1/2"	3	350 KCMIL	310
(435)	3"	2-1/2"	4	350 KCMIL	
(240)	2"	2"	2	400 KCMIL	
(340)	2-1/2"	2-1/2"	3	400 KCMIL	335
(440)	3"	3"	4	400 KCMIL	
(250)	2-1/2"	2-1/2"	2	500 KCMIL	
(350)	3"	2-1/2"	3	500 KCMIL	380
(450)	4"	3-1/2"	4	500 KCMIL	
(260)	2-1/2"	2-1/2"	2	600 KCMIL	
(360)	3-1/2"	3-1/2"	3	600 KCMIL	420
(460)	4"	4"	4	600 KCMIL	

EQUIPMENT GROUNDING CONDUCTORS SCHEDULE

OVERCURRENT DEVICE	COPPER
15	14
20	12
30	10
40	10
60	10
100	8
200	6
300	4
400	3
500	2
600	1
800	1/0

NOTE:
1. SEE EQUIPMENT GROUND CONDUCTOR SCHEDULES OR SERVICE GROUNDING DETIAL FOR GROUND CONDUCTORS RATING.
2. ALL INSULATION SHALL BE THHN UNLESS NOTED OTHERWISE.
3. PVC CONDUIT SIZE IS BASED ON SCHEDULE 40 PVC. PVC IS APPROVED FOR UNDERGROUND FEEDERS ONLY.

ELECTRICAL SYMBOLS

NOTE: ALL SYMBOLS MAY NOT BE USED — DOTTED SYMBOLS INDICATE EXISTING FIXTURE, EQUIPMENT, ETC.

SYMBOL	EXPLANATION
———	BRANCH CIRCUIT CONCEALED IN CEILING OR WALL
- - - -	BRANCH CIRCUIT CONCEALED IN GROUND OR FLOOR
——A——1,3	BRANCH CIRCUIT HOMERUNS TO PANEL
	LIGHTING AND POWER PANELBOARD
(SA) 1	MECHANICAL EQUIPMENT SYMBOL
1	KEYED NOTE REFERENCE
J	JUNCTION BOX
	DUPLEX RECEPTACLE OUTLET
	WP — MODIFIER; A-3 — PANEL SPACE ASSIGNMENT; REF — EQUIPMENT DESIGNATION
WP	WEATHERPROOF COVER & LISTED WEATHER RESISTANT DEVICE
GFCI	PROTECTED BY FAULT CIRCUIT INTERRUPTER
+44	MOUNTING HEIGHT ABOVE FLOOR OR GRADE GIVEN IN INCHES.
REF	REFRIGERATOR
DW	DISHWASHER
DISP	DISPOSAL
WASH	WASHING MACHINE
EWC	ELECTRIC WATER COOLER
USB	COOPER TR7746 OR EQUAL DUPLEX PLUS USB CHARGER
TR	TAMPER RESISTANT
	QUAD RECEPTACLE OUTLET
	SPLIT WIRED DUPLEX RECEPTACLE OUTLET
	220V RECEPTACLE OUTLET
	ISOLATED GROUND RECEPTACLE
	RECEPTACLE FLOOR MOUNTED
	RECEPTACLE CEILING MOUNTED
	SPECIAL RECEPTACLE
	DISCONNECT SWITCH
	MOTOR STARTER
	FLUORESCENT FIXTURE (TYPICAL)
EM	EMERGENCY LIGHTING UNIT
	SURFACE OR PENDANT MOUNTED FIXTURE
	RECESSED FIXTURE
	WALL MOUNTED FIXTURE
	WALL PACK
	FLUORESCENT STRIP
	TRACK LIGHTING
	EMERGENCY LIGHTING UNIT
F1	FIXTURE TYPE SYMBOL
135	ROOM NUMBER
©	CONDUIT STUB
	TAMPER AND FLOW
FACP	FIRE ALARM CONTROL PANEL

SYMBOL	EXPLANATION
$	SINGLE POLE SWITCH (SUBSCRIPT AS INDICATED BELOW)
2	TWO POLE SWITCH
3	3-WAY SWITCH
4	4-WAY SWITCH
D	DIMMER SWITCH
K	KEYED SWITCH
T	TIMER SWITCH
M	MANUAL STARTER WITH THERMAL OVERLOAD
F	PADDLE FAN 3 SPEED CONTROL
OC	OCCUPANCY SENSOR SWITCH
LV	LOW VOLTAGE CONTROL SWITCH
ab$c	CONTROLLING SWITCH (LETTER INDICATES CONTROL OF CORRESPONDING FIXTURES)
$$	DOUBLE GANG SWITCH
(S)	OCCUPANCY SENSOR (CEILING MOUNTED)
	MOTOR OUTLET
(T)	THERMOSTAT OUTLET
[S]	REMOTE SENSOR OUTLET
	EXHAUST FAN
-(B)	BELL
	PUSHBUTTON
(V)	VOLUME CONTROL
	WALL SPEAKER
	CEILING SPEAKER
	TELEPHONE OUTLET
▷	COMPUTER DATA OUTLET
	NETWORK AND VOICE OUTLET
TV	TELEVISION OUTLET
(P)	PHOTOCELL
F	FIRE ALARM PULL STATION
	FIRE ALARM HORN/STROBE
	FIRE ALARM STROBE
(S)	SMOKE DETECTOR (SUBSCRIPT AS INDICATED BELOW)
B	SMOKE ALARM BATTERY-BACKED
C	SMOKE/CARBON MONOXIDE ALARM COMBO BATTERY-BACKED
D	DUCT SMOKE DETECTOR
R	SMOKE DETECTOR WITH ADDRESSABLE RELAY
(I)	HEAT DETECTOR
	WALL MOUNTED EXIT LIGHT (SINGLE FACE)
	WALL MOUNTED EXIT LIGHT (DOUBLE FACE)
⊗	CEILING MOUNTED EXIT LIGHT
	CEILING MOUNTED EXIT LIGHT (DOUBLE FACE)
42X	FEEDER TAG (SEE FEEDER SCHEDULE)
D/H	DOOR HOLDER
F/S	FIRE/SMOKE DAMPER
	SECURITY CAMERA

LIGHT FIXTURE SCHEDULE

FIXTURE NUMBER	FIXTURE MANUFACTURER	FIXTURE CATALOG #	LAMPS TYPE	LAMPS QTY.	FIXTURE VOLTS	FIXTURE WATTS	FIXTURE MOUNTING	DESCRIPTION	REMARKS
F1	LITHONIA METALUX	IBZ 654L HBL-654T5-W-UNV-EBT2	F54T5HO	6	120	324	CHAIN	48" 6 LAMP HIGH BAY	OR EQUIVALENT
F2	LITHONIA LUMARK	TWH LED 10C 1000 50K T3M 120 PE DBLXD LD-WP-4A-120-BK-WG/WPFC	LED	1	120	40	SURFACE WALL	LED WALL PACK WITH INTEGRAL PHOTOCELL	OR EQUIVALENT
EG	LITHONIA MCPHILBEN EXITRONIX DUAL-LITE ISOLITE LIGHTOLIER	AFN DB EXT PDNBZ TR-WB-BR-CL PGZ-HTR EYE6 LVL7HR	6W XENON INCLUDED	2	120	12	SURFACE WALL	EMERGENCY EGRESS LIGHT	EMERGENCY EGRESS FINISH SELECTED BY ARCHITECT

NOTE- ALL LUMINAIRES THAT UTILIZE DOUBLE ENDED FLUORESCENT LAMPS AND CONTAIN BALLASTS THAT CAN BE SERVICED IN PLACE SHALL HAVE A DISCONNECTING MEANS AS REQUIRED BY 2011 NEC 410.130 (G)(1)

PANEL SCHEDULE "SB"

VOLTAGE: 208 Y/ 120 VOLTS — **BUS RATING (AMPS):** 225 — **REMARKS:** FED FROM MDP VIA TRANSFORMER XSB
MOUNTING: SURFACE — **PHASE:** 3 — **MAIN CIRCUIT BREAKER:** 225
ENCLOSURE: NEMA 1 — **WIRE:** 4 — **MINIMUM EQUIPMENT RATING:** 10,000 AMPS (RMS-SYM)

CIRCUIT BREAKER No.	AMPS	POLE	MOD.	CIRCUIT NAME	FEEDER C	FEEDER WIRE	FEEDER GRD	CKT. LOAD DEMAND FACTOR	CKT. LOAD WATTS	LOAD/PHASE (VA) ØA	ØB	ØC	CKT. LOAD WATTS	CKT. LOAD DEMAND FACTOR	FEEDER GRD	FEEDER WIRE	FEEDER C	CIRCUIT NAME	CIRCUIT BREAKER MOD.	POLE	AMPS	No.
1	20	1	-	UNIT HEATER	¾"	#12	#12	1.00	720	1,080			360	1.00	#12	#12	¾"	SOUTH BAY SOUTH CO	-	1	20	2
3	20	1	-	LIGHTING SOUTH	¾"	#12	#12	1.25	1,296		1,656		360	1.00	#10	#10	¾"	SOUTH BAY CTR CO	-	1	20	4
5	20	1	-	LIGHTING NORTH	¾"	#12	#12	1.25	1,944			2,304	360	1.00	#10	#10	¾"	SOUTH BAY EAST CO	-	1	20	6
7	20	1	-	EXTERIOR LIGHTING	¾"	#12	#12	1.25	184	544			360	1.00	#10	#10	¾"	NORTH BAY EAST CO	-	1	20	8
9	20	1	-	GARAGE DOOR SOUTH	¾"	#12	#12	1.00	1,000		1,360		360	1.00	#10	#10	¾"	NORTH BAY NE CO	-		20	10
11	20	1	-	GARAGE DOOR SOUTH MIDDLE	¾"	#12	#12	1.00	1,000			1,360	360	1.00	#10	#10	¾"	NORTH BAY NORTH CO	-		20	12
13	20	1	-	GARAGE DOOR NORTH MIDDLE	¾"	#12	#12	1.00	1,000	1,360			360	1.00	#10	#10	¾"	NORTH BAY CTR NORTH CO	-	1	20	14
15	20	1	-	GARAGE DOOR NORTH	¾"	#12	#12	1.00	1,000		1,360		360	1.00	#10	#10	¾"	NORTH BAY CTR SOUTH CO	-	1	20	16
17	20	2	-	NORTH 208V CO	¾"	#12	#12	1.00	1,000			1,000		1.00				SPARE	-	1	20	18
19	-	-	-	-	-	#12	-	1.00	1,000	1,000				1.00				SPARE	-	1	20	20
21	20	2	-	SOUTH 208V CO	¾"	#12	#12	1.00	1,000		1,000			1.00				SPARE	-	1	20	22
23	-	-	-	-	-	#12	-	1.00	1,000			1,000		1.00				SPARE	-	1	20	24
25	20	1	-	SPARE				1.00		0				1.00				SPARE	-	1	20	26
27	20	1	-	SPARE				1.00			0			1.00				SPARE	-	1	20	28
29			-	SPACE				1.00				0		1.00				SPACE	-			30
31			-	SPACE				1.00		0				1.00				SPACE	-			32
33			-	SPACE				1.00			0			1.00				SPACE	-			34
35			-	SPACE				1.00				0		1.00				SPACE	-			36
37			-	SPACE				1.00		0				1.00				SPACE	-			38
39			-	SPACE				1.00			0			1.00				SPACE	-			40
41			-	SPACE				1.00				0		1.00				SPACE	-			42

NOTES:
1. ALL INSULATION ON CONDUCTORS TO BE THHN UNLESS NOTED OTHERWISE. INSULATION ON ALL UNDERGROUND EXTERIOR CONDUCTORS SHALL BE THHW.
2. LOAD DEMANDS CALCULATED AS PER SECTIONS 210 & 220 OF THE NATIONAL ELECTRICAL CODE.
3. PANEL COVER SHALL BE FIELD MARKED FOR FLASH PROTECTION WITH A PERMANENT LABEL AS REQUIRED BY THE NATIONAL ELECTRICAL CODE SECTION 110. LABEL SHALL READ: "DANGER: POTENTIAL ARC FLASH HAZARD"
4. ABBREVIATIONS: CO-CONVENIENCE OUTLET, RR-RESTROOM, (N)ORTH, (S)OUTH, (E)AST, (W)EST.

ØA	ØB	ØC	TOTALS	
3,984	5,376	5,664	15,024	CONNECTED LOAD (VA)
			42	CONNECTED LOAD (A)
46	324	486	856	DEMAND FACTOR ADJUSTMENTS (VA)
4,030	5,700	6,150	15,880	TOTAL LOAD (VA)
34	47	51	44	TOTAL LOAD (A)
25%	36%	39%		PHASE BALANCE

PANEL SCHEDULE "S"

VOLTAGE: 480 Y/ 277 VOLTS — **BUS RATING (AMPS):** 225 — **REMARKS:**
MOUNTING: STANDING — **PHASE:** 3 — **MAIN CIRCUIT BREAKER:** 200
ENCLOSURE: NEMA 3R — **WIRE:** 4 — **MINIMUM EQUIPMENT RATING:** 14,000 AMPS (RMS-SYM)

CIRCUIT BREAKER No.	AMPS	POLE	MOD.	CIRCUIT NAME	FEEDER C	FEEDER WIRE	FEEDER GRD	CKT. LOAD DEMAND FACTOR	CKT. LOAD WATTS	LOAD/PHASE (VA) ØA	ØB	ØC	CKT. LOAD WATTS	CKT. LOAD DEMAND FACTOR	FEEDER GRD	FEEDER WIRE	FEEDER C	CIRCUIT NAME	CIRCUIT BREAKER MOD.	POLE	AMPS	No.
1	100	3	-	PANEL "SA"				1.00		4,030			4,030	1.00	#8	#3	1½"	PANEL "SB"	-	3	100	2
3	-	-	-	-	-		-	1.00			5,700		5,700	1.00	-	#3	-	-	-	-	-	4
5	-	-	-	-	-		-	1.00				6,150	6,150	1.00	-	#3	-	-	-	-	-	6
7	20	1	-	SPARE				1.00		0				1.00				SPACE	-			8
9	20	1	-	SPARE				1.00			0			1.00				SPACE	-			10
11	20	1	-	SPARE				1.00				0		1.00				SPACE	-			12
13	20	1	-	SPARE				1.00		0				1.00				SPACE	-			14
15	20	1	-	SPARE				1.00			0			1.00				SPACE	-			16
17	20	1	-	SPARE				1.00				0		1.00				SPACE	-			18
19	20	1	-	SPARE				1.00		0				1.00				SPACE	-			20
21	20	1	-	SPARE				1.00			0			1.00				SPACE	-			22
23	20	1	-	SPARE				1.00				0		1.00				SPACE	-			24

NOTES:
1. ALL INSULATION ON CONDUCTORS TO BE THHN UNLESS NOTED OTHERWISE. INSULATION ON ALL UNDERGROUND EXTERIOR CONDUCTORS SHALL BE THHW.
2. LOAD DEMANDS CALCULATED AS PER SECTIONS 210 & 220 OF THE NATIONAL ELECTRICAL CODE.
3. PANEL COVER SHALL BE FIELD MARKED FOR FLASH PROTECTION WITH A PERMANENT LABEL AS REQUIRED BY THE NATIONAL ELECTRICAL CODE SECTION 110. LABEL SHALL READ: "DANGER: POTENTIAL ARC FLASH HAZARD"
4. ABBREVIATIONS: CO-CONVENIENCE OUTLET, RR-RESTROOM, (N)ORTH, (S)OUTH, (E)AST, (W)EST.

ØA	ØB	ØC	TOTALS	
4,030	5,700	6,150	15,880	CONNECTED LOAD (VA)
			19	CONNECTED LOAD (A)
0	0	0	0	DEMAND FACTOR ADJUSTMENTS (VA)
4,030	5,700	6,150	15,880	TOTAL LOAD (VA)
15	21	22	19	TOTAL LOAD (A)
25%	36%	39%		PHASE BALANCE

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CONSULTANTS

NOTE:

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PUBLIC WORKS & LEISURE SERVICES STORAGE BUILDING

720 WEST 100 NORTH FARMINGTON, UTAH 84025

PERMIT SET

#	DATE	DESC.
1	4/07/14	CITY COMMENTS

ISSUE:	2/26/2014
PROJECT NO:	J14038.01
DRAWN BY:	DJN
CHECKED BY:	KB

SHEET TITLE

ELECTRICAL SCHEDULES & CALCULATIONS

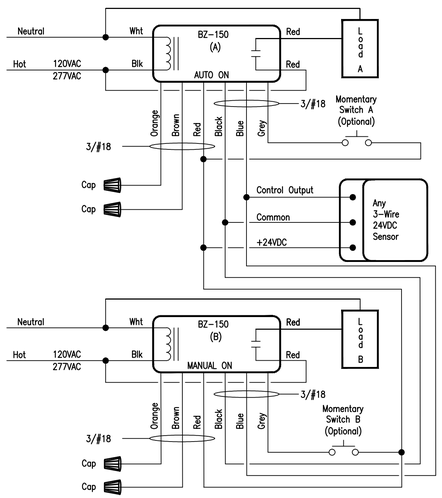
E-3.01

ROYAL ENGINEERING
ELECTRICAL
2335 SOUTH STATE SUITE 100
PHONE: 801.375.2228
MECHANICAL
PROVO, UTAH 84606
FAX: 801.375.2676

EQUIPMENT SCHEDULE

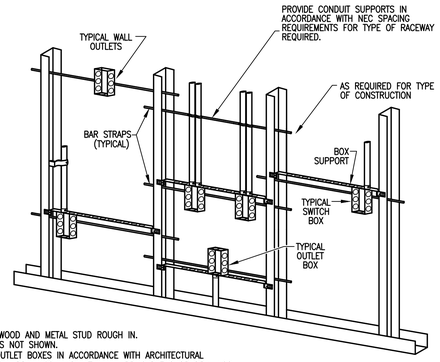
SYMBOL	DESCRIPTION	SERVICE		DISCONNECT		STARTER	LOAD			REMARKS
		VOLTS	PHASE	SIZE	FUSE		HP/TON	VA	AMPS	
RH 1	UNIT HEATER	120 V	1Ø	TOGGLE SWITCH	-	-		180	1.5 A	

NOTES:
1. VERIFY ALL EQUIPMENT LOCATIONS AND CONNECTION REQUIREMENTS (i.e. VOLTAGE, PHASE, FLA, ETC.) WITH MECHANICAL DRAWINGS/SUBMITTALS BEFORE BEGINNING ROUGH IN.
2. ALL FUSES SHALL BE DUAL ELEMENT TIME DELAY. FINAL BREAKER/FUSE & DISCONNECT SIZE SHALL BE DETERMINED BY MANUFACTURER'S RECOMMENDATION FOR ACTUAL EQUIPMENT INSTALLED.
3. MAXIMUM VALUES INDICATED.
4. DISCONNECTING MEANS NOT REQUIRED FOR EQUIPMENT WITHIN SIGHT (AS DEFINED IN NEC) OF BRANCH PANEL SERVING EQUIPMENT. SEE NEC 422.31 (B).
5. DISCONNECTING MEANS NOT REQUIRED FOR APPLIANCES NOT OVER 300 VA. SEE NEC 422.31 (A).



MOTION SENSOR WITH LV SWITCH

SCALE: NONE



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 MUST BE SEPARATED BY A MINIMUM OF 24" HORIZONTAL DISTANCE.

TYPICAL ROUGH-IN REQUIREMENTS DETAIL

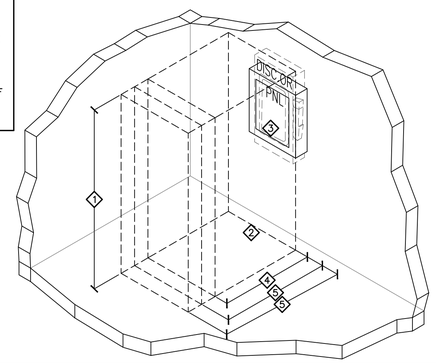
SCALE: NONE

KEYED NOTES:

1. THE MINIMUM HEADROOM OF WORKING SPACE SHALL BE 6½ FT.
2. THE WIDTH OF THE WORKING SPACE SHALL BE THE WIDTH OF THE EQUIPMENT OR 30 IN., WHICHEVER IS GREATER. THE PANEL DOOR SHALL OPEN AT LEAST 90 DEGREES.
3. ALL CIRCUIT BREAKERS OR DISCONNECT HANDLES SHALL BE NOT MORE THAN 6 FT 7 IN. ABOVE THE FLOOR WHEN IN THEIR HIGHEST POSITION.
4. 3 FT CLEARANCE IF 0–150V TO GROUND
5. 3.5FT CLEARANCE IF 151–600V TO GROUND. 4FT IF EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORKING SPACE.

GENERAL NOTE:

1. ALL WORKING SPACE CLEARANCE FROM FACE OF PANEL.



ELECTRICAL EQUIPMENT WORK SPACE CLEARANCES

SCALE: NONE

FAULT CURRENT CALCULATION TABLE

MAIN UTILITY COMPANY TRANSFORMER	TRANSFORMER KVA	AFC AT UTILITY
3Ø 277/480V -3600A PAD MOUNTED	2500	65,000 A

CONFIGURATION					FEEDER			SYSTEM						FAULT CURRENT AT EQUIPMENT	FULL OR SERIES RATED	MINIMUM SYMMETRICAL EQUIPMENT AIC RATING
FROM		TO		LENGTH	AVAILABLE FAULT CURRENT	FEEDER SIZE	FEEDERS PER PHASE	WIRE CONSTANT	LINE TO LINE VOLTS (SYSTEM OR XFMR PRIMARY)	XFMR SECONDARY VOLTS	PHASE	KVA	%Z	MOTOR LOAD			
TRANSFORMER	UTILITY	SWITCHBOARD	METER	20'-0"	65,000 AIC	600 CU	9	28,033	480 V		3Ø		-		63,814 AIC	FULL	65,000 AIC
SWITCHBOARD	METER	SWITCHBOARD	MDP	20'-0"	63,814 AIC	350 CU	2	22,736	480 V		3Ø		-		57,945 AIC	FULL	65,000 AIC
SWITCHBOARD	MDP	PANELBOARD	S	275'-0"	57,945 AIC	3/0 CU	1	13,923	480 V		3Ø		-		11,296 AIC	FULL	14,000 AIC
PANELBOARD	S	TRANSFORMER	XSB	390'-0"	11,296 AIC	3 CU	1	4,802	480 V		3Ø		-		2,621 AIC	FULL	14,000 AIC
TRANSFORMER	XSB	TRANS. SECONDARY	XSB		2,621 AIC				480 V	208 V	3Ø	30	1.2%		3,231 AIC	FULL	14,000 AIC
TRANSFORMER	XSB	PANELBOARD	SB	10'-0"	3,231 AIC	3 CU	1	4,802	208 V		3Ø		-		3,060 AIC	FULL	10,000 AIC

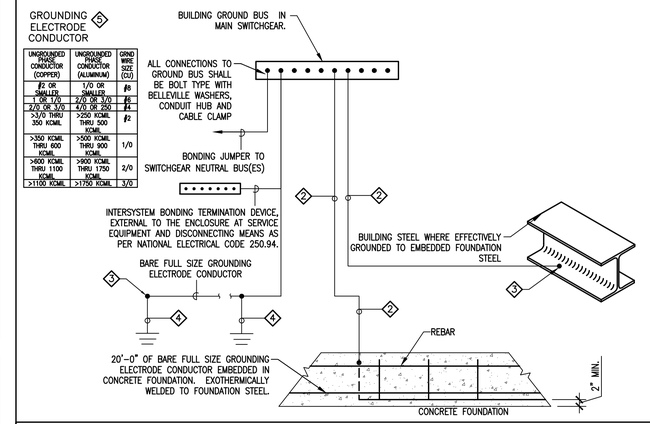
NOTE: DISTANCES INDICATED ARE FOR FAULT-CURRENT ANALYSIS ONLY. CONTRACTOR SHALL USE FIELD MEASUREMENTS ESTABLISH CONDUCTOR LENGTHS FOR ORDERING PURPOSES.

NOTE:

1. WHEN PRESENT CONTRACTOR SHALL PROVIDE ALL GROUNDING MEANS INDICATED. CONTRACTOR SHALL REFER TO ELECTRICAL ONE-LINE DIAGRAM AND GROUNDING ELECTRODE CONDUCTOR SCHEDULE (THIS DETAIL) FOR GROUNDING ELECTRODE CONDUCTOR SIZE. CONTRACTOR SHALL REFER TO ELECTRICAL SPECIFICATIONS FOR SPECIFICS OF GROUNDING SYSTEM INSTALLATION AND MATERIALS.
2. GROUNDING ROD SHALL BE MIN. 9FT. AWAY FROM IRRIGATION CONTROLLER.

KEYED NOTE:

1. T&B 3900 BU GROUND CLAMP WITH 3/4" CONDUIT HUB AND CABLE CLAMP
2. FULL SIZE GROUNDING ELECTRODE CONDUCTOR IN PVC.
3. EXOTHERMICALLY WELDED (TYPICAL)
4. DRIVEN GROUND RODS ⅝"x8' COPPER/STEEL ON BUILDING EXTERIOR
5. TABLE TAKEN FROM NEC 250.66. UNGROUNDED PHASE CONDUCTOR REFERS TO THE SIZE OF THE LARGEST UNGROUNDED SERVICE-ENTRANCE CONDUCTOR OR EQUIVALENT AREA FOR PARALLEL CONDUCTORS. SEE NEC 250.66.

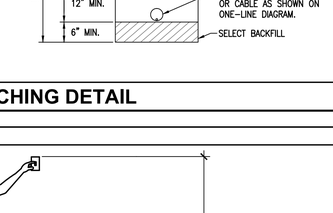


UNGROUNDED PHASE CONDUCTOR (COPPER)	UNGROUNDED PHASE CONDUCTOR (ALUMINUM)	GRND WIRE SIZE (CU)
8 OR SMALLER	1/0 OR SMALLER	#8
1 OR 1/0	2/0 OR 3/0	#6
2/0 OR 3/0	4/0 OR 250	#4
>3/0 THRU 350 KCMIL	>250 KCMIL THRU 500 KCMIL	#2
>350 KCMIL THRU 600 KCMIL	>500 KCMIL THRU 900 KCMIL	1/0
>600 KCMIL THRU 1100 KCMIL	>900 KCMIL THRU 1750 KCMIL	2/0
>1100 KCMIL	>1750 KCMIL	3/0

SERVICE GROUNDING DETAIL

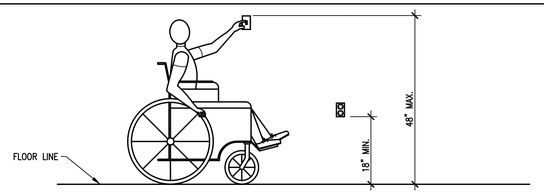
SCALE: NONE

LOCATION DESCRIPTION	DEPTH
BELOW CONCRETE SLAB (NOT TRAFFIC)	14 INCHES
BELOW TRAFFIC SURFACES	34 INCHES
PARKING LOT (PAVED OR NON-PAVED)	34 INCHES
OTHER LOCATIONS	28 INCHES
UTILITY SECONDARY	34 INCHES*
UTILITY PRIMARY	48 INCHES*
(SEE NEC TABLE 300.5) * VERIFY ALL DIMENSIONS WITH LOCAL POWER COMPANY STANDARDS AND SPECIFICATIONS.	



TRENCHING DETAIL

SCALE: NTS



MOUNTING HEIGHTS DETAIL

SCALE: NONE

dixon
architecture, planning, interiors
833 south 200 east
salt lake city, ut 84111
phone: 801.595.6400
www.dixonslc.com

CONSULTANTS

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ELECTRICAL DETAILS

E-3.02

ROYAL ENGINEERING
ELECTRICAL
2335 SOUTH STATE SUITE 100
PHONE: 801.375.2228
MECHANICAL
PROVO, UTAH 84606
FAX: 801.375.2676

ELECTRICAL SPECIFICATIONS

GENERAL PROVISION

A. REFERENCE
1. THE GENERAL CONDITIONS AND OTHER CONTRACT DRAWINGS AS SET FORTH IN THE FOREGOING PAGES ARE HEREBY INCORPORATED INTO AND BECOME A PART OF THE SPECIFICATIONS FOR WORK UNDER THIS TITLE, INSOFAR AS THEY APPLY HERETO.
2. ALL SPECIFICATIONS UNDER THIS DIVISION TITLE ARE DIRECTED TO AND ARE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR, UNLESS OTHER TRADES OR PERSONS ARE SPECIFICALLY MENTIONED, "ELECTRICAL CONTRACTOR" IS INFERRED AND INTENDED.

B. CONTRACT DRAWINGS
1. THE DRAWINGS ACCOMPANYING THESE SPECIFICATIONS ARE COMPLEMENTARY EACH TO THE OTHER AND WHAT IS CALLED FOR BY ONE SHALL BE AS IF CALLED FOR BY BOTH.
2. CONSULT ALL CONTRACT DRAWINGS WHICH MAY AFFECT THE LOCATION OF EQUIPMENT, CONDUIT AND WIRING AND MAKE MINOR ADJUSTMENTS IN LOCATION TO SECURE COORDINATION.
3. WIRING LAYOUT IS SCHEMATIC AND EXACT LOCATIONS SHALL BE DETERMINED BY FIELD CONDITIONS.
4. OTHER THAN MINOR ADJUSTMENTS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR APPROVAL BEFORE PROCEEDING WITH THE WORK.

C. JOB-SITE COPY OF DOCUMENTS
1. MAINTAIN AT THE SITE, ONE COPY OF ALL DRAWINGS, SPECIFICATIONS, ADDENDA APPROVED SHOP DRAWINGS, CHANGE ORDERS AND OTHER MODIFICATIONS, IN GOOD ORDER AND MARKED TO RECORD ALL CHANGES MADE DURING CONSTRUCTION. THESE SHALL BE AVAILABLE TO THE OWNER'S REPRESENTATIVE. THE DRAWINGS MARKED TO RECORD ALL CHANGES MADE DURING CONSTRUCTION SHALL BE DELIVERED TO THE OWNER'S REPRESENTATIVE FOR THE OWNER UPON COMPLETION OF THE WORK. AN ADDITIONAL SET OF DRAWINGS WILL BE FURNISHED BY THE OWNER'S REPRESENTATIVE FOR THIS PURPOSE UPON REQUEST.

D. MANUFACTURER'S DRAWINGS
1. THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR REVIEW. (6) COPIES OF MANUFACTURER'S DRAWINGS AND WIRING DIAGRAMS. THE ENGINEER WILL REVIEW CONTRACTOR'S SHOP DRAWINGS AND RELATED SUBMITTALS (AS INDICATED BELOW) WITH RESPECT TO THE ABILITY OF THE DETAILED WORK, WHEN COMPLETE, TO BE A PROPERLY FUNCTIONING INTEGRAL ELEMENT OF THE OVERALL SYSTEM DESIGNED BY THE ENGINEER. BEFORE SUBMITTING A SHOP DRAWING OR ANY RELATED MATERIAL TO THE ENGINEER, CONTRACTOR SHALL: REVIEW EACH SUCH SUBMISSION FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATIONS OF CONSTRUCTION, AND SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF CONTRACTOR: APPROVE EACH SUCH SUBMISSION BEFORE SUBMITTING IT; AND SO STAMP EACH SUCH SUBMISSION BEFORE SUBMITTING IT. THE ENGINEER SHALL ASSUME THAT NO SHOP DRAWING OR RELATED SUBMITTAL COMPRISES A VARIATION UNLESS CONTRACTOR ADVISES ENGINEER OTHERWISE VIA A WRITTEN INSTRUMENT WHICH IS ACKNOWLEDGED BY ENGINEER IN WRITING. THE ITEMS, TYPES OF SUBMITTALS AND RELATED MATERIAL (IF ANY) CALLED FOR ARE INDICATED BELOW:

ITEMS	TYPE SUBMITTALS REQUESTED
LIGHTING AND POWER PANELS	SHOP DRAWINGS
LIGHTING FIXTURES	CATALOG CUTS

E. GUARANTEES
1. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEFECTS, REPAIRS AND REPLACEMENTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR AFTER DATE OF SUBSTANTIAL COMPLETION AS DETERMINED BY THE OWNER'S REPRESENTATIVE. PRODUCT GUARANTEES GREATER THAN ONE (1) YEAR SHALL BE PASSED ALONG TO THE OWNER FOR FULL BENEFIT OF THE MANUFACTURER'S WARRANTY.

WORK INCLUDED

A. INSTALLING, MATERIALS, AND WORKMANSHIP
1. FURNISH AND INSTALL ALL NECESSARY ANCHORS, SUPPORTS, STRAPS, BOXES, FITTINGS AND OTHER SIMILAR APPURTENANCES NOT INDICATED ON THE DRAWINGS BUT WHICH ARE REQUIRED FOR A COMPLETE AND PROPERLY INSTALLED SYSTEM CONSISTENT WITH THE ARCHITECTURAL TREATMENT OF THE BUILDING.
2. THE ELECTRICAL CONTRACTOR, INSOFAR AS THE WORK IS CONCERNED, SHALL AT ALL TIMES KEEP THE PREMISES IN A NEAT AND ORDERLY CONDITION. AND AT THE COMPLETION OF THE WORK, SHALL PROPERLY CLEAN UP AND CART AWAY DEBRIS AND EXCESS MATERIALS. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF DUMPSTER & REFUSED DISPOSAL AS REQUIRED FOR ELECTRICAL WORK.
3. ALL MATERIALS SHALL BE NEW AND UNDETERIORATED AND OF A QUALITY NOT LESS THAN THE MINIMUM SPECIFIED.

B. COORDINATION OF PLANS AND SPECIFICATIONS
1. CONTACT THE OWNER'S REPRESENTATIVE IMMEDIATELY IF THERE IS ANY QUESTIONS REGARDING THE MEANING OR INTENT OF EITHER PLANS OR SPECIFICATIONS, OR UPON NOTICING ANY DISCREPANCIES OR OMISSIONS IN EITHER PLANS OR SPECIFICATIONS.

C. CUTTING AND PATCHING
1. ALL ELECTRICAL EQUIPMENT SHALL BE KEPT DRY AND CLEAN DURING THE CONSTRUCTION PERIOD. INTERIOR OF ALL ENCLOSURES SHALL BE CLEANED OF DIRT AND DEBRIS BEFORE INSTALLING TRIM OR COVERS.
2. ALL FINISHED SURFACES OF EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE THOROUGHLY CLEANED OF DIRT AND ALL SCRATCHED OR DAMAGED SURFACES SHALL BE TOUCHED UP WITH MATCHING MATERIALS BEFORE FINAL ACCEPTANCE OF THE WORK.
3. WHEN ALL WORK IS COMPLETED AND ALL WORK HAS BEEN SATISFACTORILY TESTED AND ACCEPTED BY THE OWNER'S REPRESENTATIVE, ALL CONDUIT AND OTHER EXPOSED SURFACES SHALL BE THOROUGHLY CLEANED.

CODES AND FEES

A. CODES:
1. ALL WORK PERFORMED UNDER THIS SPECIFICATION SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AS PREPARED AND PUBLISHED BY THE NATIONAL FIRE PROTECTION ASSOCIATION AND ANY APPLICABLE STATE OR LOCAL CODES.

B. FEES:
1. OBTAIN AND PAY FOR ANY AND ALL PERMITS REQUIRED BY ALL LAWS AND REGULATIONS AND PUBLIC AUTHORITY HAVING SUCH JURISDICTION.

TESTS AND INSPECTIONS

A. OBTAIN ALL INSPECTIONS REQUIRED BY ALL LAWS, ORDINANCES, RULES, REGULATIONS OR PUBLIC AUTHORITY HAVING JURISDICTION AND OBTAIN CERTIFICATES OF SUCH INSPECTIONS AND SUBMIT SAME TO THE OWNER'S REPRESENTATIVE. PAY ALL FEES, CHARGES AND OTHER EXPENSES IN CONNECTION THEREIN. OBTAIN OCCUPANCY PERMIT AS REQUIRED BY OWNER. FINAL PAYMENT SHALL NOT BE MADE UNTIL OCCUPANCY PERMIT IS OBTAINED.
B. WORK SHALL BE UNACCEPTABLE WHEN FOUND TO BE DEFECTIVE OR CONTRARY TO THE PLANS SPECIFICATIONS, CODES SPECIFIED OR ACCEPTED STANDARDS OF GOOD WORKMANSHIP.
C. THE CONTRACTOR SHALL PROMPTLY CORRECT ALL WORK FOUND UNACCEPTABLE BY THE OWNER'S REPRESENTATIVE WHETHER OBSERVED BEFORE OR AFTER SUBSTANTIAL COMPLETION AND WHETHER OR NOT FABRICATED, INSTALLED OR COMPLETED. THE CONTRACTOR SHALL BEAR ALL COSTS OF CORRECTING SUCH UNACCEPTABLE WORK, INCLUDING COMPENSATION FOR THE OWNERS REPRESENTATIVE ADDITIONAL SERVICES MADE NECESSARY THEREBY.

CONDUIT

A. FURNISH AND INSTALL ALL CONDUITS, BOXES, FITTINGS, ETC., FOR A COMPLETE RACEWAY SYSTEM.
B. ALL WIRING SHALL BE RUN IN EMT CONDUIT OR MC CABLE WITH GROUND CONDUCTOR UNLESS OTHERWISE NOTED.
C. ALL CONDUIT SIZES STATED HEREIN OR MARKED ON THE DRAWINGS ARE MINIMUM SIZE AND SHALL BE NO LESS THAN ½" UNLESS OTHERWISE NOTED.
D. ALL CONDUIT SHALL BE SUBSTANTIALLY SUPPORTED BY PIPE STRAPS OR SUITABLE CLAMPS OR HANGERS ATTACHED TO THE ELEMENTS OF THE BUILDING STRUCTURE TO PROVIDE RIGID INSTALLATION; IN NO CASE SHALL CONDUIT BE ATTACHED OR SUPPORTED FROM ADJOINING PIPE OR INSTALLED IN SUCH A MANNER AS TO PREVENT THE READY REMOVAL OF OTHER PIPE FOR REPAIRS.

WIRE AND CABLE

A. ALL CONDUCTORS SHALL BE COPPER AND OF THE AWG SIZE AND TYPE SHOWN ON THE DRAWINGS. WHERE NO SIZE OR TYPE IS SHOWN. CONDUCTORS SHALL NOT BE LESS THAN #12 TYPE XHHW, THHN, OR THWN. CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED COPPER AND HAVE 600 VOLT INSULATION; BE UL LABELED AND OF AMERICAN MANUFACTURER.
B. ALL CONNECTIONS ARE TO BE MADE USING PRESSURE TYPE TERMINALS.
C. THE FOLLOWING COLOR CODE SHALL BE USED:

	120/240 VOLT	120/208 VOLT	277/480 VOLT
PHASE A	BLACK	BLACK	BROWN
PHASE B	RED	RED	ORANGE
PHASE C		BLUE	YELLOW
NEUTRAL	WHITE	WHITE	WHITE
GROUND	GREEN	GREEN	GREEN

D. CONDUCTORS NO. 10 AWG OR SMALLER SHALL HAVE INSULATION COLORED AS NOTED ABOVE.
E. CONDUCTORS NO. 8 AWG OR LARGER SHALL HAVE INSULATION COLORED AS NOTED ABOVE OR COLORED TAPE, MINIMUM SIZE ½", WRAPPED TWICE AROUND AT THE FOLLOWING POINTS:
1. AT EACH TERMINAL
2. AT EACH CONDUIT ENTRANCE
3. AT INTERVALS NOT MORE THAN 12 INCHES APART IN ALL BOXES, PANEL TUBS, SWITCHBOARDS, ETC
F. ALL BRANCH CIRCUITS SHALL BE MARKED IN THE PANEL BOARD GUTTERS. MARKERS SHALL INDICATE CORRESPONDING BRANCH--CIRCUIT NUMBERS.
G. EACH BRANCH CIRCUIT REQUIRING A NEUTRAL SHALL BE FURNISHED WITH A SEPARATE INDIVIDUAL NEUTRAL CONDUCTOR.

BOXES AND PLATES

A. FURNISH AND INSTALL ALL OUTLET, JUNCTION, AND PULL BOXES AS INDICATED ON THE DRAWINGS AND AS NECESSARY TO INSTALL THE REQUIRED CONDUIT AND WIRING IN A NEAT AND WORKMANLIKE MANNER.
B. PULL BOXES AND JUNCTION BOXES SHALL BE GALVANIZED AND OF THE CORRECT SIZE AND GAUGE, SIZED IN ACCORDANCE WITH CODE REQUIREMENTS AND SHALL BE U.L. LABELED.
C. BOXES AT EXTERIOR AREAS TO BE WATERTIGHT AND DUST-TIGHT WITH GASKETED COVERS.
D. ALL BOXES FOR EXPOSED WORK IN FINISHED SPACES SHALL BE "FS" TYPE WITH THREADED HUBS WITH RIGID CONDUIT RISER (DEEP WIRE MOLD BOXES)
E. ALL BOXES SHALL BE RIGIDLY SUPPORTED INDEPENDENT OF THE CONDUIT SYSTEM. BOXES CAST INTO MASONRY OR CONCRETE ARE CONSIDERED TO BE RIGIDLY SUPPORTED.

WIRING DEVICES

A. WIRING DEVICES SHALL BE SIMILAR TO THOSE LISTED BELOW AND OF SPECIFIED AMPERAGE. OTHER SPECIAL PURPOSE DEVICES SHALL BE AS SPECIFIED ON THE DRAWINGS.
B. DUPLEX GROUNDING TYPE RECEPTACLE--20 AMP, 125 VOLT--
1. HUBBELL--5352
2. ARROW HART--5352
C. SINGLE POLE SWITCHES - 20 AMP, 120 VOLT
D. WEATHERPROOF RECEPTACLES - 20 AMP, 125 VOLT--NEMA 5--20R
1. HUBBELL--5352 WITH 5205 COVER INTERMATIC GUARDIAN
2. I SERIES, NEMA 3R COVER
3. ARROW HART--5352 WITH 4500 COVER
E. G.F.C.I. RECEPTACLE- 20 AMP, 125 VOLT--NEMA 5-20 R
1. HUBBELL- GF 5262 WITH MATCHING NYLON COVER PLATE OR WO-26 W.P. COVER
F. GROUND ALL RECEPTACLES IN ACCORDANCE WITH ARTICLE 250-146 OF NEC AND AS INDICATED IN THE GROUNDING SECTION OF THIS SPECIFICATION.

IDENTIFICATION

A. EACH PIECE OF SERVICE EQUIPMENT AND INDIVIDUAL SWITCHES, ALL DISCONNECTS, STARTERS, ALL EXHAUST FAN MANUAL STARTING SWITCHES.
B. IDENTIFICATION SHALL BE IN THE FORM OF LAMINATED PLASTIC NAMEPLATES, BLACK RACE, WITH THE LETTERS ENGRAVED INTO THE WHITE BACKGROUND, MINIMUM ¼" HIGH. PLATES SHALL BE DRILLED ON EACH END FOR SHEET METAL SCREW ATTACHMENT. NO "DYMO" OR SIMILAR TYPE LABELS WILL BE ALLOWED.
C. PANEL BOARD DIRECTORY: A TYPED CIRCUIT DIRECTORY SHALL BE PROVIDED INDICATING LOCAL AREA SERVED AND LOCATION FOR EACH BRANCH CIRCUIT.

GROUNDING

A. ALL FEEDERS AND BRANCH CIRCUITS OVER 100 VOLTS SHALL INCLUDE A GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH NEC TABLE 250-122, EXCEPT NOT BE SMALLER THAN #12 FOR POWER AND LIGHTING CIRCUITS AND #14 FOR CONTROL CIRCUITS. ALL GROUND CONDUCTORS SHALL BE GREEN, OR AS SPECIFIED UNDER SECTION 16120, "WIRE AND CABLE".
B. ALL GROUND CLAMPS SHALL BE PENN-UNION "GPL" TYPE OR SIMILAR BY O.Z. OR BURNDY.
C. CONDUIT FOR SOLITARY GROUND CONDUCTORS SHALL BE RIGID SCHEDULE 40 PVC NON- METALLIC ELECTRICAL CONDUIT WITH U.L. LABEL SOLITARY GROUND CONDUCTORS SHALL NOT BE PLACED THROUGH METALLIC SLEEVES OR CONDUITS AND SHALL NOT BE COMPLETELY ENCIRCLED BY METALLIC HANGERS OR SUPPORTS.
D. THE GROUND CONDUCTOR SHALL BE CONNECTED TO THE NEUTRAL IN ONLY TWO LOCATIONS -ON THE SUPPLY SIDE OF THE SERVICE DISCONNECT MEANS PER NEC--250--24 AND ON SEPARATELY DERIVED SYSTEMS PER NEC 250-30.
E. AT EACH RECEPTACLE BOX, THE GROUND CONDUCTOR SHALL ENTER AND CONNECT, WITH NORMAL WIRING CONNECTOR, TO: 1) THE GROUND PIGTAIL TO RECEPTACLE: 2) THE GROUND PIGTAIL TO THE BOX GROUND SCREW; AND 3) THE OUTGOING GROUND CONDUCTOR TO NEXT DEVICE, IF NOT AT END OF RUN. METAL TO METAL CONTACT BETWEEN THE DEVICE YOKE AND THE OUTLET BOX IS NOT ACCEPTABLE AS A BOND FOR EITHER SURFACE MOUNTED BOXES OR FLUSH TYPE BOXES.
F. CONDUIT SYSTEM SHALL BE ELECTRICALLY CONTINUOUS. ALL LOCK NUTS SHALL CUT THROUGH ENAMELED OR PAINTED SURFACES ON ENCLOSURES. WHERE ENCLOSURES AND NON-CURRENT CARRYING METALS ARE ISOLATED FROM THE CONDUIT SYSTEM, USE BONDING JUMPERS WITH APPROVED CLAMPS. WHERE REDUCING WASHERS ARE USED AND WHERE CONCENTRIC OR ECCENTRIC KNOCKOUTS ARE NOT COMPLETELY REMOVED BONDING BUSHINGS SHALL BE REQUIRED.

INTERRUPTION OF SERVICE AND OWNER'S OPERATION

A. THE ELECTRICAL CONTRACTOR SHALL ORGANIZE HIS WORK SO THAT THESE ALTERATIONS AND ADDITIONS SHALL CAUSE A MINIMUM OF INTERFERENCE AND DISTURBANCE TO THE OWNER. ARRANGEMENTS SHALL BE MADE WITH THE OWNER AND ENGINEER BEFORE INTERRUPTING SERVICE IN ANY AREA. A WRITTEN DETAILED METHOD OF INTERRUPTION PROCEDURE INDICATING ELAPSED TIME REQUIRED AND TIME OF INTERRUPTION SHALL BE PREPARED BY THE ELECTRICAL CONTRACTOR AND SUBMITTED TO THE OWNER FOR APPROVAL.
B. ALL INTERRUPTIONS OF SERVICE SHALL BE MADE WHEN THE LOAD IS AT A MINIMUM AND SHALL BE SCHEDULED AT THE OWNER'S CONVENIENCE. (SERVICE INTERRUPTIONS WILL BE SCHEDULED FOR OTHER THAN NORMAL DAYTIME WORKING HOURS. THE ELECTRICAL CONTRACTOR SHALL INCLUDE NECESSARY COST FOR OVERTIME LABOR IN ALL BIDS.)
C. AT NO TIME SHALL THE ELECTRICAL CONTRACTOR OR HIS EMPLOYEES NORMALLY WORKING ON THE PROJECT LEAVE THE FACILITY DURING A TIME WHEN ANY NORMALLY LIVE CIRCUITS OR FEEDERS ARE DISCONNECTED, WITHOUT PERMISSION OF THE ENGINEER.
D. ALL MATERIALS, CONNECTIONS AND EQUIPMENT FOR TEMPORARY CONTROL OR POWER WIRING TO MAINTAIN CONTINUITY OF SERVICE DURING CONSTRUCTION SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.

POWER AND LIGHTING PANELS

A. FURNISH AND INSTALL, AS SCHEDULED AND SHOWN ON THE DRAWINGS, POWER PANELS FOR OPERATION ON VOLTAGES INDICATED.
B. ALL TERMINATIONS SHALL BE MARKED "75'C ONLY", "60/75' C" OR LISTED FOR USE OF 75' C INSULATED CONDUCTORS AT FULL 75' C AMPACITY.
C. ALL BUS BARS SHALL BE SILVER OR TIN PLATED COPPER.
D. CABINETS SHALL BE OF COMMERCIAL GALVANIZED SHEET STEEL, CODE GAUGE AND SIZE, SURFACE OR RECESSED MOUNTED AS CALLED FOR IN THE DRAWINGS.
E. NEUTRAL ASSEMBLY SHALL HAVE INDIVIDUAL ANTI-TURN SOLDERLESS TERMINALS, SIMILAR TO SQUARE D TYPE PK, FOR CONNECTION OF ULTIMATE NUMBER OF NEUTRAL WIRES. SHEET METAL TERMINAL STRIPS AND CONNECTIONS WILL BE REJECTED.
F. PANEL SHALL HAVE A COPPER GROUND BAR SIMILAR TO NEUTRAL BAR IN NUMBER, SIZE, AND TYPE OF ANTI-TURN SOLDERLESS LUGS. THIS GROUND BAR SHALL BE FACTORY BONDED TO THE PANEL TUB IN THE GUTTER SPACE OPPOSITE THE MAINS AND THE NEUTRAL ASSEMBLY AND SHALL HAVE THE SCREWDRIVER SLOTS FACING THE FRONT OF THE PANEL.
G. QUALITY STANDARD: SQUARE D TYPE NQOD

LIGHTING FIXTURES

A. CONTRACTOR SHALL FURNISH AND INSTALL LIGHTING FIXTURES AND LAMPS AS INDICATED IN FIXTURE SCHEDULE SHOWN ON DRAWINGS, AND SPECIFIED HEREIN.
B. NEUTRAL ASSEMBLY SHALL HAVE INDIVIDUAL ANTI-TURN SOLDERLESS TERMINALS, SIMILAR TO SQUARE D TYPE PK, FOR CONNECTION OF ULTIMATE NUMBER OF NEUTRAL WIRES. SHEET METAL TERMINAL STRIPS AND CONNECTIONS WILL BE REJECTED.
C. ALL LAMP HOLDERS INSTALLED BY THE ELECTRICAL CONTRACTOR SHALL BE FURNISHED COMPLETE WITH NEW LAMPS OF THE SIZE INDICATING ON THE FIXTURE SCHEDULE.
D. LAMP CURRENT CREST FACTOR SHALL NOT EXCEED 1.8 AND SHALL BE COMPATIBLE WITH BALLAST BEING UTILIZED.
E. ANY FIXTURES SCRATCHED, BENT, CRACKED OR IN ANY WAY DAMAGED BEFORE ACCEPTANCE BY OWNER SHALL BE REPLACED AT THIS CONTRACTOR'S EXPENSE.
F. ALL LAMPS SHALL BE IN WORKING ORDER AT THE TIME OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER.
G. ALL LIGHTING FIXTURES ARE TO BE GROUNDED ON THE INTERIOR OF THE FIXTURE HOUSING, ON CLEAN BARE METAL (FREE OF PAINT). BY USE OF PIGTAIL AND FASTENED BY A SCREW USED FOR NO OTHER PURPOSE.
H. FLUORESCENT FIXTURES SHALL COMPLY WITH 2008 NEC 410.73G (BALLAST DISCONNECT MEANS FOR DOUBLE ENDED LAMPS).

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CONSULTANTS

NOTE:

Bid documents should not be separated or issued as partial sets to subcontractors. Bidders are responsible for all portions of the documents that pertain to the work covered by sub-bids. Bidder assumes full responsibility for errors or misinterpretations resulting from use of partial sets of Bidding Documents by itself or any sub-bidder.

Conflicting information or errors found in the construction documents should be brought to the attention of the architect immediately so that questions and concerns may be clarified by addendum. In the event of a conflict in the drawings, bidder should not assume that the least expensive option will meet the project requirements.

PUBLIC WORKS & LEISURE SERVICES STORAGE BUILDING

720 WEST 100 NORTH FARMINGTON, UTAH 84025

PERMIT SET

#	DATE	DESC.
1	4/07/14	CITY COMMENTS

ISSUE:	2/26/2014
PROJECT NO:	J14038.01
DRAWN BY:	DJN
CHECKED BY:	KB

SHEET TITLE

ELECTRICAL SPECIFICATIONS

E-4.01