GLEN L. TAGGART STUDENT CENTER - STAIR REMODEL

UTAH STATE UNIVERSITY

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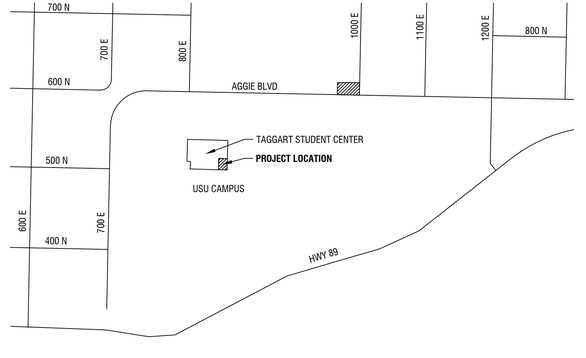
INDEX OF DRAWINGS

VICINITY MAP



CONSTRUCTION DOCUMENTS

DESIGN WEST

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USU TSC - STAIR REMODEL
650 NORTH 800 EAST
LOGAN, UT 84322
UTAH STATE UNIVERSITY

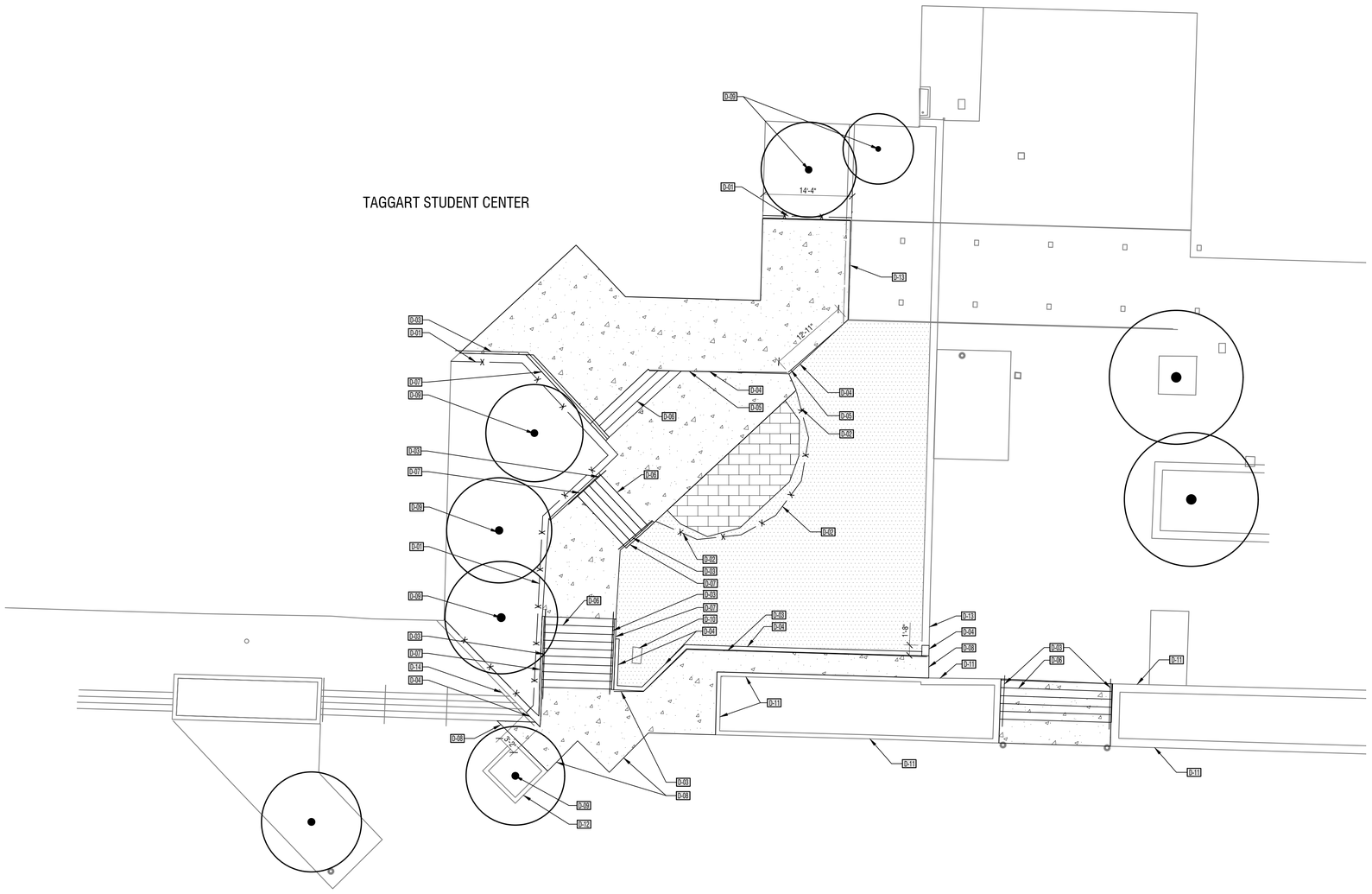
MARK: DATE: DESCRIPTION:

PROJECT #: 324242
DRAWN BY: J. CLEMENTS
CHECKED BY: B. WRIGHT
ISSUED: 03.28.2025

STATE OF UTAH
BLAKE C. WRIGHT
(3)7.28.2025
105101-5301
LICENSED LANDSCAPE ARCHITECT

COVER

G-001



DEMOLITION NOTES

1. REMOVE OBSTRUCTIONS, SHRUBS, AND OTHER VEGETATION TO PERMIT INSTALLATION OF NEW CONSTRUCTION.
2. GRIND STUMPS AND REMOVE ROOTS, OBSTRUCTIONS, AND DEBRIS EXTENDING TO A DEPTH OF 18 INCHES BELOW EXPOSED SUBGRADE.
3. FILL DEPRESSIONS CAUSED BY CLEARING AND GRUBBING OPERATIONS WITH SATISFACTORY SOIL MATERIALS IN HORIZONTAL LAYERS NOT EXCEEDING 8-INCH LOOSE DEPTH, AND COMPACT EACH LAYER TO A DENSITY EQUAL TO ADJACENT GROUND.
4. STRIP SUITABLE TOPSOIL TO WHATEVER DEPTHS ARE ENCOUNTERED IN A MANNER TO PREVENT INTERMINGLING WITH UNDERLYING SUBSOIL OR OTHER WASTE MATERIALS.
5. REMOVE EXISTING ABOVE- AND BELOW-GRADE STRUCTURES AS INDICATED AND AS NECESSARY TO FACILITATE NEW CONSTRUCTION.
6. AT ALL LOCATIONS WHERE EXISTING PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING PAVEMENT SHALL BE SAW CUT TO A CLEAN SMOOTH EDGE.
7. PROTECT EXISTING BUILDINGS, WALKS, DRIVES, CURBS, EXISTING VEGETATION, ETC. THAT ARE TO REMAIN. REPAIR ANY DAMAGES THAT MAY OCCUR TO EXISTING ITEMS TO BE PROTECTED.
8. ALL ITEMS TO BE REMOVED FROM THE PROJECT AND EXCESS MATERIALS SHALL BE LEGALLY DISPOSED OF OFFSITE BY THE CONTRACTOR, UNLESS INDICATED TO BE RETURNED TO THE OWNER.
9. CONTINUOUSLY CLEAN-UP AND REMOVE WASTE MATERIALS FROM SITE. DO NOT ALLOW MATERIALS TO ACCUMULATE ON SITE.
10. DO NOT BURN OR BURY MATERIALS ON SITE. LEAVE SITE IN CLEAN CONDITION.

TREE PROTECTION NOTES

1. ALL EXISTING TREES TO REMAIN SHALL BE PROPERLY PROTECTED DURING CONSTRUCTION. PLACE FOUR-FOOT TALL CONSTRUCTION FENCE AS SHOWN PER PLANS. FENCE SHALL REMAIN IN PLACE DURING CONSTRUCTION TO PREVENT UNINTENDED IMPACTS.
2. THE TREE'S CRITICAL ROOT ZONE SHALL BE AT TREE'S CANOPY DRIP LINE OR A RADIUS OF TWELVE-TIMES THE DIAMETER OF THE TRUNK AT 4.5-FOOT DBH (DIAMETER AT BREAST HEIGHT) WHICHEVER IS LARGER.
3. IN THE CRITICAL ROOT ZONE:
   - A. DO NOT ALTER OR DISTURB EXISTING GRADE.
   - B. DO NOT STORE ANY CONSTRUCTION MATERIALS, EQUIPMENT, SOIL OR DEBRIS.
   - C. DO NOT DISPOSE OF ANY LIQUIDS, E.G., CONCRETE, GAS, OIL, PAINT ETC.
   - D. DO NOT PERMIT VEHICLES, EQUIPMENT, OR FOOT TRAFFIC.
   - E. AVOID TRENCHING.
   - F. AVOID CONSTRUCTION ACTIVITY THAT WILL COMPACT THE SOIL.
4. IF TRENCHING IS REQUIRED IN THE ROOT AREA, THEN BORE UNDER THE ROOTING AREA AT A MINIMUM DEPTH OF THIRTY-INCHES. IF A TRENCH FOR AN IRRIGATION HEAD IS NEEDED IN THE ROOT ZONE AREA, TRENCH IN A DIRECT LINE TOWARDS THE TRUNK TO MINIMIZE ROOT DAMAGE.
5. PROVIDE WATER TO THE TREE(S) DURING CONSTRUCTION TO MAINTAIN TREE HEALTH.
6. REPAIR OR REPLACE TREES AND VEGETATION INDICATED TO REMAIN THAT ARE DAMAGED BY CONSTRUCTION OPERATIONS, IN A MANNER APPROVED BY LANDSCAPE ARCHITECT.
   - A. SUBMIT DETAILS OF PROPOSED REPAIRS TO DAMAGED TREES AND SHRUBS.
   - B. REPLACE TREES THAT CANNOT BE REPAIRED AND RESTORED TO FULL-GROWTH STATUS, AS DETERMINED BY A QUALIFIED ARBORIST.

LEGEND

SYMBOL	DESCRIPTION	QTY	DETAIL
D-01	INSTALL TREE PROTECTION FENCE		B2/C-501
D-02	REMOVE FENCE - return to owner for reuse		
D-03	REMOVE HANDRAIL		
D-04	REMOVE RETAINING WALL		
D-05	REMOVE GUARDRAIL		
D-06	REMOVE CONCRETE STAIRS		
D-07	REMOVE CHEEKWALL		
D-08	REMOVE CONCRETE AT CONTROL JOINTS		
D-09	EXISTING TREE - preserve and protect, install tree protection fence per notes and detail		B2/C-501
D-10	EXISTING IRRIGATION BOX - preserve and protect		
D-11	EXISTING RAISED CONCRETE PLANTER - preserve and protect		
D-12	EXISTING TREE GRATE - preserve and protect		
D-13	EXISTING CONCRETE RETAINING WALL - preserve and protect		
D-14	EXISTING HANDRAIL - preserve and protect		
	REMOVE CONCRETE	2,207 sf	
	REMOVE PAVERS - return to USU for re-use	224 sf	
	REMOVE ALL PLANT MATERIAL AND OLD TREE STUMPS. REMOVE 12" DEPTH OF EXISTING TOPSOIL TO PREPARE FOR NEW	1,722 sf	

NORTH

0 10 20 30 feet

SCALE: 1" = 10'

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10510153301

DEMOLITION PLAN

D-101

CAST-IN-PLACE CONCRETE SPECIFICATIONS

CONCRETE WORK DEFINITIONS AND APPLICATIONS:
- A. UNEXPOSED EXTERIOR FLATWORK SHALL BE DEFINED AS THE FOLLOWING:
  1. FLATWORK EXPOSED TO ICE AND SNOW BUT NOT EXPOSED TO HEAVY DEICER USE OR HEAVY SNOW REMOVAL EQUIPMENT.
  2. USE TYPE 1 FOR THESE APPLICATIONS.

SUBMITTALS:
- A. CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGN(S), CERTIFICATIONS, AND ALL OTHER REQUIRED PRODUCT SPEC SHEETS TO ARCHITECT FOR REVIEW PRIOR TO ANY CONSTRUCTION. ALLOW ONE (1) WEEK FOR REVIEW.
- B. NO CONCRETE SHALL BE POURED WITHOUT PRIOR WRITTEN APPROVAL OF ALL SUBMITTALS.

AGGREGATE:
- A. GENERAL:
  1. AGGREGATES FOR ALL CONCRETE SHALL COME FROM A QUARRY THAT IS DOT APPROVED AND MEETS OR EXCEEDS DURABILITY CLASS I AGGREGATE. THE QUARRY SHALL SUBMIT A LETTER TO USU FPD&C THAT CERTIFIES THAT ALL AGGREGATE COMPLIES WITH DOT REQUIREMENTS FOR DURABILITY. AGGREGATE NOT MEETING DOT DURABILITY REQUIREMENTS SHALL NOT BE USED.
- B. CLEANLINESS:
  1. THE CONCRETE SUPPLIER SHALL SUBMIT WRITTEN CERTIFICATION BY AN INDEPENDENT TESTING AGENCY DEMONSTRATING THAT AGGREGATES SUPPLIED MEET THIS REQUIREMENT.
     - 1.1. ALL FINE AGGREGATES SHALL HAVE A SAND EQUIVALENT (SE) VALUE OF NOT LESS THAN 80 ACCORDING TO ASTM D2419 AND/OR AASHTO T176.
     - 1.2. ALL COARSE AGGREGATES SHALL HAVE A CLEANLINESS VALUE (CV) OF NOT LESS THAN 80 ACCORDING TO CALIFORNIA DEPARTMENT OF TRANSPORTATION TEST 227.
  2. COARSE AGGREGATE:
     - 2.1. 1" MINUS AND WELL-GRADED CRUSHED AGGREGATE MEETING ASTM C33. AGGREGATE SHALL BE FREE OF DELETERIOUS COATINGS AND OTHER MATERIALS AND/OR AGGREGATE TYPES CAUSING POP OUTS, DISCOLORATION, STAINING, ALKALINE REACTIONS OR OTHER DEFECTS WITHIN THE CONCRETE. THE CONCRETE SUPPLIER SHALL SUBMIT WRITTEN CERTIFICATION BY AND INDEPENDENT TESTING SOURCE OF AGGREGATE TESTING AND SOUNDNESS IN ACCORDANCE WITH ASTM C33 WITH ALL CONCRETE MIX DESIGNS.
  3. FINE AGGREGATE:
     - 3.1. NATURAL SAND OR BLEND OF NATURAL SAND AND CRUSHED SAND MEETING ASTM C33. CRUSHED SAND SHALL BE LESS THAN 50% OF THE TOTAL SAND BY DRY WEIGHT.

CEMENT:
- A. PORTLAND TYPE I (DO NOT USE TYPE I-A).

POZZOLANS:
- A. FLY ASH: TYPE F MEETING ASTM C618

CONCRETE WATERPROOFING ADMIXTURES:
- A. APPROVED PRODUCTS:
  1. PENETRON ADMIX AS MANUFACTURED BY PENETRON INTERNATIONAL, LTD.
  2. XYPEX ADMIX C-500 AS MANUFACTURED BY XYPEX CHEMICAL CORPORATION.
  3. COMPLY WITH ALL MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.

FIBER REINFORCING:
- A. APPROVED PRODUCTS:
  1. 'RSC15' POLYVINYL ALCOHOL (PVA) FIBERS AS MANUFACTURED BY NYCON AT A DOSAGE RATE NOT LESS THAN TWO (2) LBS. PER CUBIC YARD.
  2. 'FIBERMESH 300' POLYPROPYLENE FIBRILLATED FIBERS AS MANUFACTURED BY FIBERMESH AT A DOSAGE RATE NOT LESS THAN 1.5 LBS. PER CUBIC YARD.
  3. 'ECONO-NET' POLYPROPYLENE FIBRILLATED FIBERS AS MANUFACTURED BY FORTA CORPORATION AT A DOSAGE RATE NOT LESS THAN 1.5 LBS. PER CUBIC YARD.
- B. COMPLY WITH ALL MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.

COMPRESSIVE STRENGTH:
- A. 4500 PSI, MINIMUM, AT TWENTY-EIGHT (28) DAYS.

WATER/CEMENT RATIO:
- A. AS NOTED FOR INDIVIDUAL MIX
- B. NO ADDITIONAL WATER SHALL BE PERMITTED EITHER IN TRANSIT OR ON SITE.

AIR ENTRAINMENT:
- A. AS NOTED FOR INDIVIDUAL MIX.
- B. AIR-ENTRAINING ADMIXTURES SHALL CONFORM TO ASTM C260.

SLUMP:
- A. AS NOTED FOR EACH INDIVIDUAL MIX.
- B. FOR HIGH SLUMP CONCRETE, WATER REDUCING ADMIXTURES MEETING ASTM C494 SHALL BE USED.

SURFACE PREPARATION:
- A. REMOVE ALL WATER, DEBRIS, DIRT CLODS, ETC., FROM SPACE WHERE CONCRETE IS TO BE PLACED.
- B. UNLESS NOTED OTHERWISE, ALL EXTERIOR CONCRETE FLATWORK SHALL BE INSTALLED WITH SIX INCHES (6") MINIMUM, OF WASHED, CRUSHED GRAVEL BENEATH IT (1" MINUS).
- C. GRAVEL SHALL BE WELL COMPACTED AND PRE-WETTED AS PER ACI STANDARDS PRIOR TO CONCRETE INSTALLATION.

SPECIAL TECHNIQUES:
- A. COLD WEATHER CONCRETING PROCEDURES:
  1. GENERAL REQUIREMENTS:
     - 1.1. ALTHOUGH THE SCHEDULES OF BUILDING PROJECTS MAY NECESSITATE IT, THE INSTALLATION OF EXTERIOR CONCRETE FLATWORK IS NOT RECOMMENDED BEFORE APRIL 1ST OR AFTER OCTOBER 1ST, DUE TO CACHE VALLEY CLIMATE.
     - 1.2. MATERIALS AND EQUIPMENT REQUIRED FOR HEATING AND PROTECTION OF CONCRETE SHALL BE APPROVED AND AVAILABLE AT PROJECT SITE BEFORE BEGINNING COLD WEATHER CONCRETING.
     - 1.3. FORMS, REINFORCEMENT, METALLIC EMBEDMENTS, AND FILLERS SHALL BE FREE FROM SNOW, ICE, AND FROST. SURFACES THAT WILL BE IN CONTACT WITH NEWLY PLACED CONCRETE, INCLUDING SUB-GRADE MATERIALS, SHALL BE 35 DEG F (2 DEG C) MINIMUM AT TIME OF CONCRETE PLACEMENT.
     - 1.4. THAW SUB-GRADE 6 INCHES (150 MM) DEEP MINIMUM BEFORE BEGINNING CONCRETE PLACEMENT. IF NECESSARY, RE-COMPACT ALL THAWED MATERIAL.
     - 1.5. USE NO FROZEN MATERIALS OR MATERIALS CONTAINING ICE.
     - 1.6. REQUIREMENTS WHEN AVERAGE TWENTY FOUR (24) HOUR TEMPERATURE, MIDNIGHT TO MIDNIGHT, IS BELOW 40 DEG F (4 DEG C):
       - 1.6.1. TEMPERATURE OF CONCRETE AS PLACED AND MAINTAINED SHALL BE 55 DEG F (13 DEG MINIMUM AND 75 DEG F (27 DEG C) MAXIMUM.
       - 1.6.2. HEAT CONCRETE FOR SEVENTY TWO (72) HOURS MINIMUM AFTER PLACING IF REGULAR CEMENT IS USED; FOR 48 HOURS IF HIGH EARLY STRENGTH CEMENT IS USED; OR LONGER IF DETERMINED NECESSARY BY USU FPD&C. (DURING THIS PERIOD, MAINTAIN CONCRETE SURFACE TEMPERATURE BETWEEN 55 AND 75 DEG F (13 AND 27 DEG C)).
       - 1.6.3. VENT FLUE GASES FROM COMBUSTION HEATING UNITS TO OUTSIDE OF ENCLOSURE TO PREVENT CARBONATION OF CONCRETE SURFACE.
       - 1.6.4. PREVENT CONCRETE FROM DRYING DURING HEATING PERIOD. MAINTAIN HOUSING, INSULATION, COVERING, AND OTHER PROTECTION TWENTY FOUR (24) HOURS AFTER HEAT IS DISCONTINUED.
       - 1.6.5. AFTER HEATING PERIOD, IF TEMPERATURE FALLS BELOW 32 DEG F (0 DEG C), PROTECT CONCRETE FROM FREEZING UNTIL STRENGTH OF 2000 PSI MINIMUM IS ACHIEVED. PROTECT FLATWORK EXPOSED TO MELTING SNOW OR RAIN DURING DAY AND FREEZING DURING NIGHT FROM FREEZING UNTIL STRENGTH OF 3500 PSI MINIMUM IS ACHIEVED.
     - 1.7. REQUIREMENTS WHEN AVERAGE TWENTY FOUR (24) HOUR TEMPERATURE, MIDNIGHT TO MIDNIGHT, IS ABOVE 40 DEG F (4 DEG C), BUT WHEN TEMPERATURE FALLS BELOW 32 DEG F (0 DEG C):
       - 1.7.1. PROTECT CONCRETE FROM FREEZING FOR SEVENTY TWO (72) HOURS AFTER PLACING, OR UNTIL STRENGTH OF 2000 PSI IS ACHIEVED, WHICHEVER IS LONGER.
       - 1.7.2. PROTECT FLATWORK EXPOSED TO MELTING SNOW OR RAIN DURING DAY AND FREEZING DURING NIGHT FROM FREEZING UNTIL STRENGTH OF 3500 PSI MINIMUM IS ACHIEVED.
- B. HOT WEATHER CONCRETING PROCEDURES:
  1. MAXIMUM CONCRETE TEMPERATURE ALLOWED IS 90 DEG F (32 DEG C) IN HOT WEATHER.
  2. COOL AGGREGATE AND SUBGRADES BY SPRINKLING WITH WATER.
  3. AVOID CEMENT OVER 140 DEG F (60 DEG C).
  4. USE COLD MIXING WATER OR ICE.
  5. USE FOG SPRAY OR EVAPORATION RETARDANT TO LESSEN RAPID EVAPORATION FROM CONCRETE SURFACE.

FINISHING OF EXTERIOR CONCRETE:
- A. ALL CONCRETE SIDEWALKS AND OTHER FLATWORK SHALL HAVE A CROSS-SLOPE OF NOT GREATER THAN 2% BUT NOT LESS THAN 0.5% TOWARD THE CURB OR STREET TO PROVIDE POSITIVE DRAINAGE.
- B. USE OF STEEL FLOATS/TROWELS, POWER SCREEDS AND VIBRATORS FOR THE FINISHING OF EXTERIOR, AIR-ENTRAINED CONCRETE IS NOT PERMITTED AND SHALL BE CAUSE FOR REJECTION OF ANY OR ALL WORK.
- C. BULL FLOATING AND/OR DARBYING SHALL FOLLOW PROMPTLY AFTER INITIAL SCREEDING USING MAGNESIUM TOOLS ONLY.
- D. NO FINISHING OPERATIONS SHALL BE PERFORMED WITH BLEED WATER PRESENT ON THE SURFACE OF THE CONCRETE. ANY DUSTING OF CEMENT POWDER ONTO THE SURFACE TO ABSORB BLEED WATER OR THE WORKING OF BLEED WATER BACK INTO THE SURFACE OF THE CONCRETE IS NOT PERMITTED.
- E. ALL CONCRETE SLABS SHALL BE EDGED ACCORDING TO CURRENT ACI STANDARDS.
- F. SPRINKLING OF WATER ON THE SURFACE OF THE CONCRETE TO RE-TEMPER IT DURING ANY FINISHING PROCESS IS NOT PERMITTED.
- G. TROWELLING OF CONCRETE SHALL BE LIMITED TO A SINGLE, LIGHT PASS BEFORE FINAL FINISH USING A MAGNESIUM TROWEL ONLY.
- H. ALL CONCRETE SHALL HAVE SLIP RESISTANT FINISHES. THE STANDARD FINISH, UNLESS NOTED OTHERWISE, SHALL BE A COARSE BROOMED FINISH. FINISHES SHALL BE APPLIED TO THE SURFACE BEFORE THE CONCRETE HAS THOROUGHLY HARDENED BUT YET SUFFICIENTLY HARDENED TO RETAIN THE SCORING IMPRESSIONS.

CONCRETE CURING:
- A. CURING PROCEDURES SHALL BEGIN IMMEDIATELY AFTER THE FINAL FINISHING PROCESS IS COMPLETE AND THE SURFACE SHEEN IS GONE.
- B. CONTRACTOR SHALL PROVIDE PROPER CURING OF CONCRETE BY EMPLOYING INITIAL AND FINAL CURING METHODS AS INDICATED IN ACI 308R-01.
- C. FINAL CURING SHALL BE ACHIEVED BY PROVIDING AND/OR INSTALLING THE FOLLOWING:
  1. MOIST CURING METHODS THAT MAINTAIN A CONTINUOUSLY WET SURFACE SUCH AS PONDING, SPRINKLING, PLASTIC SHEETING, OR WET BURLAP SHEETS FOR A MINIMUM PERIOD OF 7 DAYS. MOIST CURING IS THE CURING METHOD OF CHOICE FOR ALL EXTERIOR CONCRETE ON USU CAMPUS.
  2. AS AN ALTERNATE, LIQUID MEMBRANE-FORMING CURING COMPOUND(S) CONFORMING TO ASTM C-309 OR ASTM C-1315, APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND WITH THE FOLLOWING ADDITIONAL REQUIREMENTS:
     - 2.1. CURING AGENT SHALL BE APPLIED IN TWO (2) APPLICATIONS AT RIGHT ANGLES TO EACH OTHER TO ENSURE UNIFORM AND COMPLETE COVERAGE.
     - 2.2. CURING AGENT SHALL CONTAIN A FUGITIVE DYE OR WHITE PIGMENTATION WHICH ALLOWS AN INSPECTOR TO SEE THAT THE AGENT HAS BEEN ADEQUATELY APPLIED.
     - 2.3. CONTRACTOR SHALL PROVIDE EVIDENCE OF THE AMOUNT OF CURING AGENT USED FOR THE PROJECT.
     - 2.4. THE USE OF SPRAYED CURING COMPOUNDS IS NOT RECOMMENDED BEFORE APRIL 1ST OR AFTER OCTOBER 1ST DUE TO CACHE VALLEY CLIMATE.
  3. CONTRACTOR SHALL MAKE EVERY EFFORT TO ALLOW CONCRETE TO AIR DRY FOR AT LEAST 30 DAYS AFTER THE CURING PROCESS IS COMPLETE BEFORE EXPOSING IT TO FREEZE/THAW CONDITIONS.

JOINTS:
- A. ALL EXTERIOR CONCRETE SHALL HAVE EXPANSION AND CONTROL JOINTS INSTALLED ACCORDING TO CURRENT ACI STANDARDS.
- B. EXPANSION JOINTS:
  1. JOINT MATERIAL SHALL BE RE-FLEX RUBBER EXPANSION JOINT MATERIAL AS MANUFACTURED BY THE J.D. RUSSELL COMPANY OR APPROVED EQUAL.
  2. JOINTS SHALL BE SEALED USING A SELF-LEVELING SEALER INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS. APPROVED SEALERS ARE: MASTERSEAL SL1, NOVALINK SL OR APPROVED EQUAL.
- C. CONTROL JOINTS:
  1. JOINTS SHALL BE INSTALLED USING ONE OF TWO METHODS:
     - 1.1. SAW CUTTING USING A BEVELED BLADE THAT PROVIDES A 3/8" BEVELED PROFILE. STRAIGHT, UNBEVELED SAW CUTS ARE DISCOURAGED DUE TO DAMAGE BY SNOW REMOVAL EQUIPMENT.
     - 1.2. TOOLED JOINTS THAT PROVIDE A MAXIMUM 3/8" RADIUS (ROUNDED) PROFILE.

FIELD TESTS AND INSPECTIONS:
- A. TESTING AGENCY SHALL PROVIDE TESTING AND INSPECTION FOR CONCRETE AS PER ASTM C1077.
- B. TESTING AGENCY WILL SAMPLE AND TEST FOR QUALITY CONTROL DURING PLACEMENT OF CONCRETE AS DIRECTED BY USU FPD&C.
- C. TESTING AND INSPECTIONS, IF PERFORMED, WILL INCLUDE THE FOLLOWING:
  1. PERIODIC INSPECTION VERIFYING USE OF REQUIRED DESIGN MIX.
  2. INSPECTION AT TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE TEMPERATURE OF CONCRETE.
  3. INSPECTION OF CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.
  4. PERIODIC INSPECTION OF CURING MATERIALS AND TECHNIQUES.
  5. PERIODIC INSPECTION OF FORMWORK FOR CONFIGURATION, LOCATION, AND DIMENSIONS OF CONCRETE MEMBER BEING FORMED.
  6. SLOPE OF CONCRETE MEMBERS.
- D. TESTING AGENCY WILL SAMPLE AND TEST DURING PLACEMENT OF CONCRETE AS DIRECTED BY USU FPD&C AND MAY INCLUDE THE FOLLOWING:
  1. SAMPLING FRESH CONCRETE: ASTM C172, EXCEPT AS MODIFIED FOR SLUMP TO COMPLY WITH ASTM C94:
     - 1.1. SLUMP: ASTM C143. TEST EACH TIME A SET OF COMPRESSIVE TEST SPECIMENS ARE MADE.
     - 1.2. AIR CONTENT: ASTM C173. VOLUMETRIC METHOD FOR NORMAL WEIGHT CONCRETE EACH TIME A SET OF COMPRESSION TEST SPECIMENS IS MADE.
     - 1.3. CONCRETE TEMPERATURE: TEST EACH TIME A SET OF COMPRESSIVE TEST SPECIMENS IS MADE.
     - 1.4. UNIT WEIGHT: ASTM C567. TEST EACH TIME A SET OF COMPRESSIVE TEST SPECIMENS IS MADE.
  2. COMPRESSION TEST SPECIMENS: ASTM C31. ONE (1) SET OF FOUR (4) STANDARD CYLINDERS FOR EACH COMPRESSIVE STRENGTH TEST, UNLESS OTHERWISE DIRECTED.
  3. COMPRESSIVE STRENGTH TESTS: ASTM C39. :
     - 3.1. OBTAIN ONE (1) COMPOSITE SAMPLE FOR EACH DAYS POUR OF EACH CONCRETE MIXTURE EXCEEDING 5 CU. YD., BUT LESS THAN 50 CU. YD., PLUS ONE (1) SET FOR EACH ADDITIONAL 50 CU. YD. OR FRACTION THEREOF.
     - 3.2. ONE (1) SPECIMEN TESTED AT SEVEN (7) DAYS, TWO (2) SPECIMENS TESTED AT TWENTY EIGHT (28) DAYS, AND ONE (1) SPECIMEN RETAINED IN RESERVE FOR LATER TESTING IF REQUIRED.
     - 3.3. IF STRENGTH OF FIELD-CURED CYLINDERS IS LESS THAN EIGHTY-FIVE (85) PERCENT OF COMPANION LABORATORY-CURED CYLINDERS, EVALUATE CURRENT OPERATIONS AND PROVIDE CORRECTIVE PROCEDURES FOR PROTECTING AND CURING IN-PLACE CONCRETE.
     - 3.4. STRENGTH LEVEL OF CONCRETE WILL BE CONSIDERED SATISFACTORY IF AVERAGES OF SETS OF THREE (3) CONSECUTIVE STRENGTH TEST RESULTS EQUAL OR EXCEED SPECIFIED COMPRESSIVE STRENGTH, AND NO INDIVIDUAL STRENGTH TEST RESULT FALLS BELOW SPECIFIED COMPRESSIVE STRENGTH BY MORE THAN 500 PSI.

PROTECTION:
- A. PROTECT CONCRETE THAT HAS NOT RECEIVED ITS INITIAL SET FROM PEDESTRIAN TRAFFIC AND FROM PRECIPITATION TO AVOID EXCESS WATER IN THE MIX AND AN UNSATISFACTORY SURFACE FINISH.
- B. DO NOT ALLOW MATERIALS RESULTING FROM CONSTRUCTION ACTIVITIES, WHICH WILL AFFECT CONCRETE, TO COME IN CONTACT WITH CONCRETE SLABS.

WARRANTY:
- A. CONTRACTOR SHALL PROVIDE A TWO-YEAR WRITTEN GUARANTEE OF CONCRETE MATERIALS AND WORKMANSHIP COMMENCING ON THE DATE OF SUBSTANTIAL COMPLETION TO PROMPTLY REMOVE AND/OR REPAIR ALL DEFECTIVE CONCRETE (I.E., PITTING, SCALING, FLAKING, CRACKING, HONEYCOMBING, ETC.).

CONCRETE MIX TYPES
- A. TYPE 1:
  1. 611 LB. / CU. YD. TOTAL CEMENTITIOUS MATERIAL, MIN.
  2. WATER/CEMENTITIOUS RATIO: 0.43
  3. SLUMP: 3" - 6" USING MID AND HIGH RANGE WATER REDUCING ADMIXTURES
  4. WATERPROOFING ADMIXTURE: PENETRON OR XYPEX
  5. FIBER REINFORCED
  6. AIR ENTRAINMENT: 6.5%, +/-1.5%
  7. POZZOLAN: FLY ASH - ZERO TO 15% MAXIMUM.

SITE SPECIFICATIONS

SUMMARY - SECTION INCLUDES:
- A. TREE PROTECTION
- B. HANDRAILS

TREE PROTECTION:
- A. ALL EXISTING TREES TO REMAIN SHALL BE PROPERLY PROTECTED DURING CONSTRUCTION. PLACE FOUR-FOOT CONSTRUCTION FENCE AROUND THE CRITICAL ROOT ZONE OF THE TREE. REMOVE FENCE ONLY AS NECESSARY FOR DAILY CONSTRUCTION, FENCE SHALL REMAIN IN PLACE DURING CONSTRUCTION TO PREVENT UNINTENDED IMPACTS.
- B. THE TREE'S CRITICAL ROOT ZONE SHALL BE AT TREE'S CANOPY DRIP LINE OR A RADIUS OF TWELVE-TIMES THE DIAMETER OF THE TRUNK AT 4.5-FOOT DBH (DIAMETER AT BREAST HEIGHT) WHICHEVER IS LARGER.
- C. IN THE CRITICAL ROOT ZONE:
  1. DO NOT ALTER OR DISTURB EXISTING GRADE.
  2. DO NOT STORE ANY CONSTRUCTION MATERIALS, EQUIPMENT, SOIL OR DEBRIS.
  3. DO NOT DISPOSE OF ANY LIQUIDS E.G. CONCRETE, GAS, OIL, PAINT ETC.
  4. DO NOT PERMIT VEHICLES, EQUIPMENT, OR FOOT TRAFFIC
  5. AVOID TRENCHING.
  6. AVOID CONSTRUCTION ACTIVITY THAT WILL COMPACT THE SOIL.
- D. IF CONSTRUCTION WORK DOES ENCROACH INTO THE CRITICAL ROOT ZONE THEN LIMIT ENCROACHMENT TO LESS THAN TWENTY-FIVE PERCENT OF THE TOTAL AREA, AND NO CLOSER TO THE TRUNK THAT ONE-HALF THE RADIUS OF THE CRITICAL ROOT ZONE. PROVIDE SIX-INCHES OF MULCH AND A PROTECTIVE MAT OVER THE IMPACTED ROOT AREA.
- E. IF TRENCHING IS REQUIRED IN THE ROOT AREA, THEN BORE UNDER THE ROOTING AREA AT A MINIMUM DEPTH OF THIRTY-INCHES. IF A TRENCH FOR AN IRRIGATION HEAD IS NEEDED IN THE ROOT ZONE AREA, TRENCH IN A DIRECT LINE TOWARDS THE TRUNK TO MINIMIZE ROOT DAMAGE.
- F. PROVIDE WATER TO THE TREE(S) DURING CONSTRUCTION TO MAINTAIN TREE HEALTH.
- G. REPAIR OR REPLACE TREES AND VEGETATION INDICATED TO REMAIN THAT ARE DAMAGED BY CONSTRUCTION OPERATIONS, IN A MANNER APPROVED BY LANDSCAPE ARCHITECT.
  1. SUBMIT DETAILS OF PROPOSED REPAIRS AND TO REPAIR DAMAGE TO TREES AND SHRUBS.
  2. REPLACE TREES THAT CANNOT BE REPAIRED AND RESTORED TO FULL-GROWTH STATUS, AS DETERMINED BY THE QUALIFIED ARBORIST.

HANDRAILS:
- A. PROVIDE EXTERIOR HANDRAILS OF STAINLESS STEEL WITH AN ASI NUMBER FOUR (4) STAIN FINISH, BRIGHT AND DIRECTIONAL POLISH.

CONSTRUCTION DOCUMENTS

DESIGN WEST
LOGAN, UTAH
(435) 752-7031
SALT LAKE CITY, UTAH
(801) 539-8221

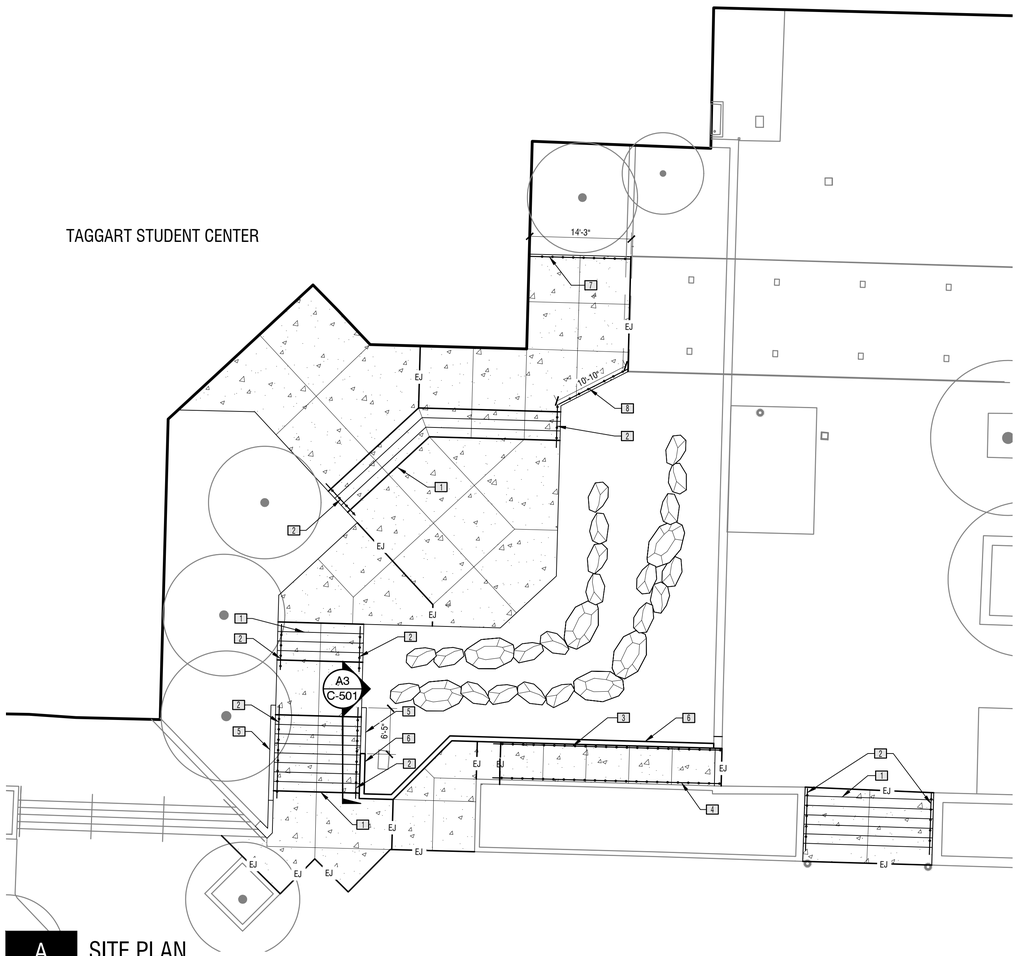
USU TSC - STAIR REMODEL
650 NORTH 800 EAST
LOGAN, UT 84322
UTAH STATE UNIVERSITY

MARK:	DESCRIPTION:	DATE:

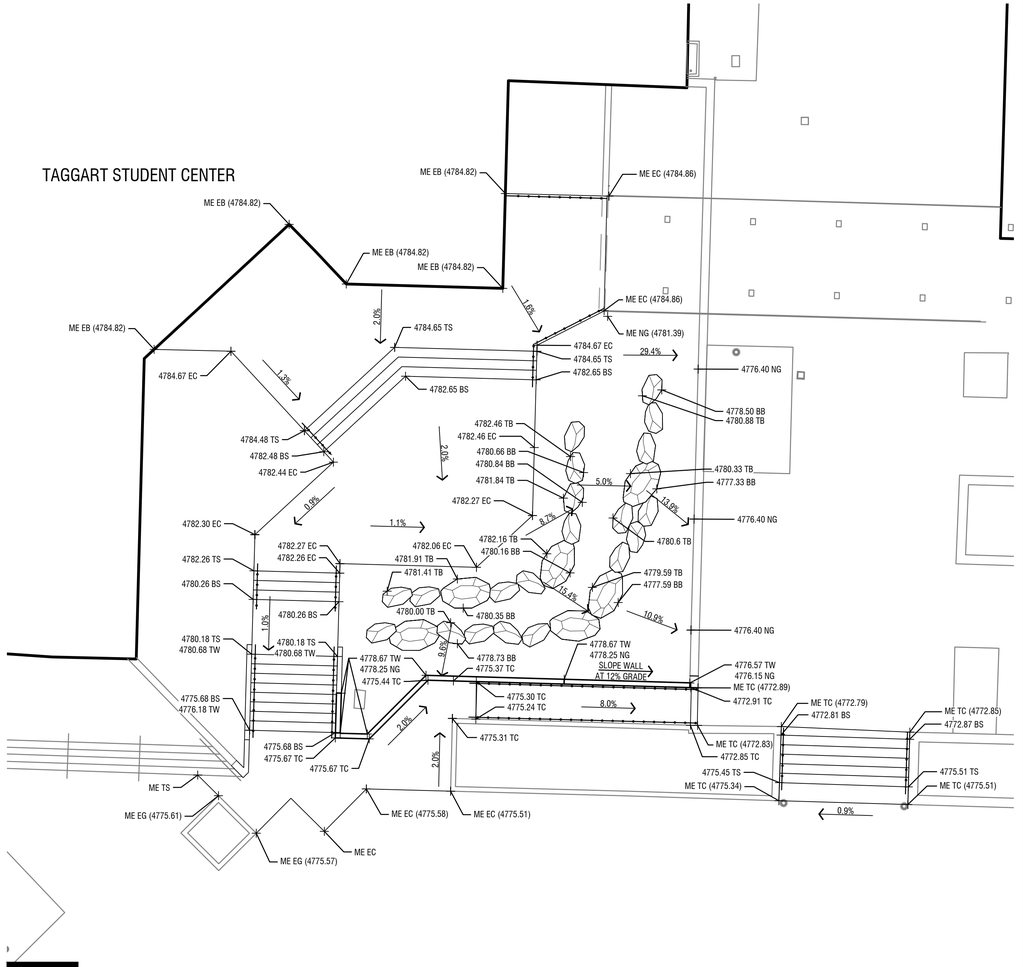
PROJECT #: 324242
DRAWN BY: J. CLEMENTS
CHECKED BY: B. WRIGHT
ISSUED: 03.28.2025

STATE OF UTAH
BLAKE C. WRIGHT
03.28.2025
10510153001
LICENSED LANDSCAPE ARCHITECT

SITE SPECIFICATIONS
C-001



A SITE PLAN



B GRADING PLAN

GENERAL NOTES

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

LEGEND

SYMBOL	DESCRIPTION	QTY	DETAIL
1	CONCRETE STAIRS - see structural drawings for reinforcement		A2/C-501
2	STAINLESS STEEL STAIR HANDRAIL		A2/C-501
3	WALL MOUNTED STAINLESS STEEL RAMP HANDRAIL		B3/C-501
4	GROUND MOUNTED STAINLESS STEEL RAMP HANDRAIL		B1/C-501
5	8" WIDE CONCRETE CHEEKWALL - see structural drawings for reinforcement		A4/C-501
6	CONCRETE RETAINING WALL - see structural drawings for details		
7	CUSTOM STAINLESS STEEL PLAIN PANEL GUARDRAIL - install on new concrete slab		C3/C-501
8	CUSTOM STAINLESS STEEL "A" PANEL GUARDRAIL - install on new concrete slab		D3/C-501
	CONCRETE	2,784 sf	A5/C-501
	TAN COLORED BOULDER - 1-2` DIAMETER	20	C2/C-501
	TAN COLORED BOULDER - 2-3` DIAMETER	6	C2/C-501

GRADING NOTES

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

GRADING LEGEND

CALLOUT	DEFINITION
BS	BOTTOM OF STAIR
BB	BOTTOM OF BOULDER
EB	EDGE OF BUILDING
EC	EDGE OF CONCRETE
EG	EDGE OF GRATE
ME	MATCH EXISTING
NG	NATURAL GRADE
TB	TOP OF BOULDER
TC	TOP OF CONCRETE
TS	TOP OF STAIR
TW	TOP OF WALL

NORTH

0 10 20 30 feet

SCALE: 1" = 10'

CONSTRUCTION DOCUMENTS

DESIGN WEST
LOGAN, UTAH
(435) 752-7031
SALT LAKE CITY, UTAH
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USU TSC - STAIR REMODEL

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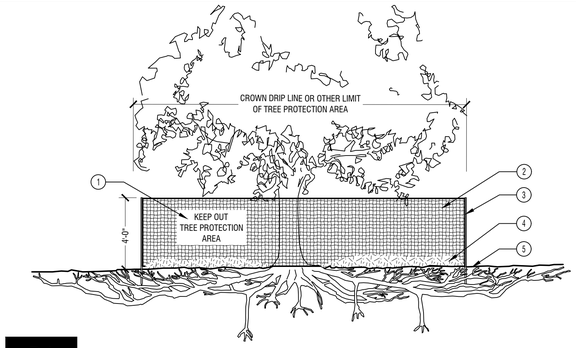
105101-5301
LICENSED LANDSCAPE ARCHITECT

SITE AND GRADING PLAN

C-101

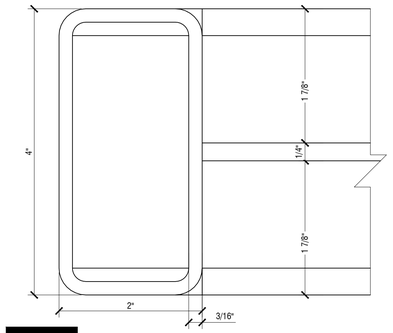


1. 8.5"X11" LAMINATED SIGN IN PLASTIC SPACED EVERY 50' ALONG FENCE
2. TREE PROTECTION FENCE. HIGH DENSITY POLYETHYLENE FENCING WITH 3.5"X1.5" OPENINGS; COLOR = ORANGE
3. 2"X6" STEEL POSTS OR APPROVED EQUAL AT 8'-0" O.C.
4. 5" THICK LAYER OF MULCH TO PROTECT TREE ROOTS IF VEHICLES MUST CROSS ROOT ZONE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

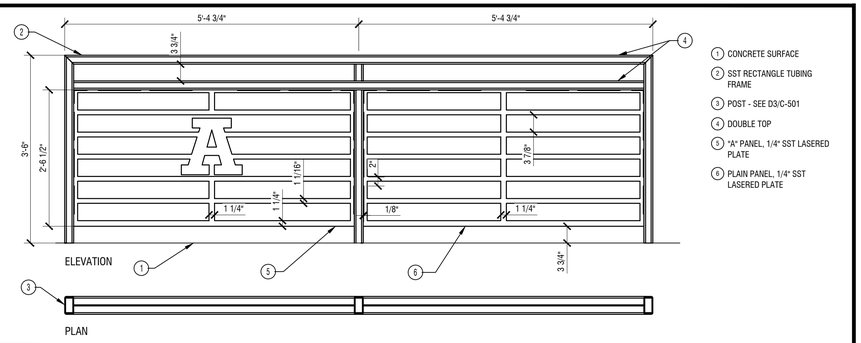
NOTES:
1. SEE SPECIFICATION FOR ADDITIONAL TREE PROTECTION REQUIREMENTS.
2. IF THERE IS NO EXISTING IRRIGATION OR IRRIGATION IS CUT OFF, SEE SPECIFICATION FOR WATERING REQUIREMENTS.
3. NO PRUNING SHALL BE PERFORMED EXCEPT BY AN APPROVED ARBORIST.
4. NO EQUIPMENT SHALL OPERATE INSIDE THE PROTECTIVE FENCING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

D1 TREE PROTECTION
1/4" = 1'-0"

P-3-USU-TSCS-10

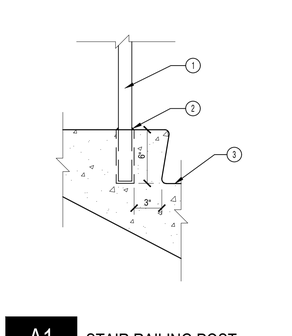


D3 GUARDRAIL POST
1" = 1"



1. CONCRETE SURFACE
2. SST RECTANGLE TUBING FRAME
3. POST - SEE D3/C-501
4. DOUBLE TOP
5. "A" PANEL, 1/4" SST LASERED PLATE
6. PLAIN PANEL, 1/4" SST LASERED PLATE

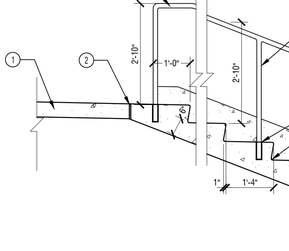
D4 FRONT GUARDRAIL
3/4" = 1'-0"



1. 1-1/2" DIAMETER STAINLESS STEEL POST
2. EXPANSION JOINT
3. CORE DRILL CONCRETE - EPOXY GROUT STEEL POST IN PLACE. GROUT COLOR TO MATCH CONCRETE
4. CONCRETE RAMP
5. EXISTING RAISED PLANTER. PRESERVE AND PROTECT

C1 ADA RAMP HANDRAIL
1" = 1'-0"

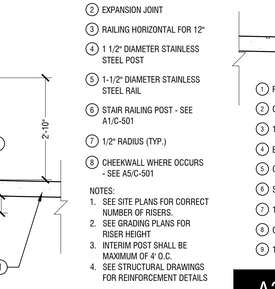
P-3-USU-TSCS-89



1. MINIMUM 12" EMBEDMENT BELOW ADJACENT GRADE
2. FINISH GRADE
3. COMPACTED BACKFILL
4. CLEAN, FREE DRAINING GRANULAR FILL, 12" THICK MIN.

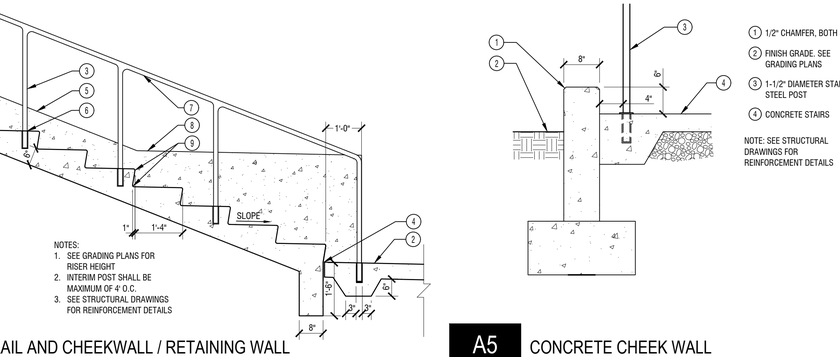
C2 BOULDER RETAINING WALL
3/8" = 1'-0"

P-3-USU-TSCS-15



1. 1 1/2" DIAMETER STAINLESS STEEL HANDRAIL
2. FINISH FACE OF WALL
3. 4" x 4" x 3/16" PLATE
4. 2 1/4" DIAMETER X 3" RAMSET SLEEVE ANCHOR HN CARBON TYPE
5. 3/4" DIAMETER STAINLESS STEEL ROD AT 4'-0" O.C. MAX - WELD TO RAIL AND PLATE

C3 HANDRAIL ATTACHMENT
6" = 1'-0"

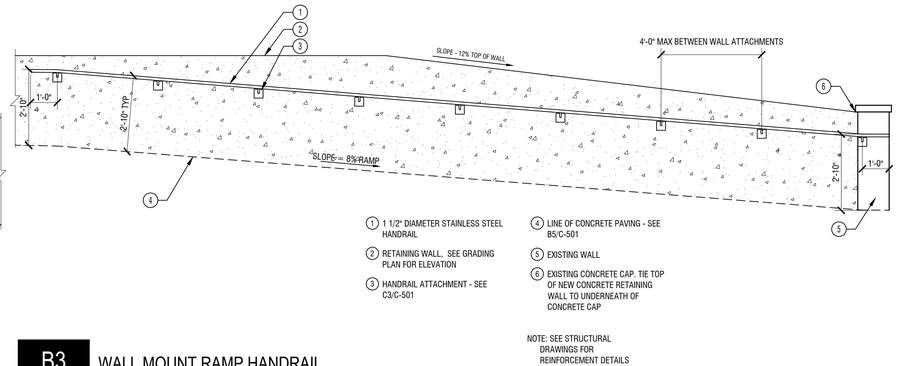


1. CONCRETE SURFACE
2. SST RECTANGLE TUBING FRAME
3. POST - SEE D3/C-501
4. DOUBLE TOP
5. PLAIN PANEL, 1/4" SST LASERED PLATE

C4 BACK GUARDRAIL
3/4" = 1'-0"

1. 1 1/2" DIAMETER STAINLESS STEEL RAIL
2. 1 1/2" DIAMETER STAINLESS STEEL POST
3. EXISTING RAISED CONCRETE PLANTER - PRESERVE AND PROTECT
4. LINE OF CONCRETE PAVING - SEE B5/C-501
5. RAMP HANDRAIL POST - SEE C1/C-501
6. HORIZONTAL FOR 12"

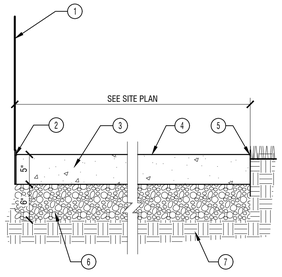
B1 GROUND MOUNT RAMP HANDRAIL
3/8" = 1'-0"



1. 1 1/2" DIAMETER STAINLESS STEEL HANDRAIL
2. RETAINING WALL, SEE GRADING PLAN FOR ELEVATION
3. HANDRAIL ATTACHMENT - SEE C3/C-501
4. LINE OF CONCRETE PAVING - SEE B5/C-501
5. EXISTING WALL
6. EXISTING CONCRETE CAP. TIE TOP OF NEW CONCRETE RETAINING WALL TO UNDERNEATH OF CONCRETE CAP

NOTE: SEE STRUCTURAL DRAWINGS FOR REINFORCEMENT DETAILS

B3 WALL MOUNT RAMP HANDRAIL
3/8" = 1'-0"



1. LINE OF WALL WHERE OCCURS
2. EXPANSION JOINT AT WALL WHERE OCCURS
3. FIBER MESH IN CONCRETE, SEE STRUCTURAL FOR SPECIFICATIONS
4. ROUGH BROOM FINISH
5. TOOL EDGE
6. 6" MINIMUM COMPACTED BASE OVER UNDISTURBED NATIVE GRAVELS OR IMPORTED AND COMPACTED ENGINEERED FILL
7. PREPARED SUBGRADE

B5 CONCRETE WALK
1" = 1'-0"

P-3-USU-TSCS-12

1. 1-1/2" DIAMETER STAINLESS STEEL POST
2. CORE DRILL CONCRETE, EPOXY GROUT STEEL POST IN PLACE. GROUT COLOR TO MATCH CONCRETE
3. CONCRETE STEP

NOTE: SEE STRUCTURAL DRAWINGS FOR REINFORCEMENT DETAILS

A1 STAIR RAILING POST
1 1/2" = 1'-0"

P-3-USU-TSCS-09

1. CONCRETE WALK - SEE B5/C-501
2. EXPANSION JOINT
3. RAILING HORIZONTAL FOR 12"
4. 1 1/2" DIAMETER STAINLESS STEEL POST
5. 1-1/2" DIAMETER STAINLESS STEEL RAIL
6. STAIR RAILING POST - SEE A1/C-501
7. 1/2" RADIUS (TYP.)
8. CHEEKWALL WHERE OCCURS - SEE A5/C-501

NOTES:
1. SEE SITE PLANS FOR CORRECT NUMBER OF RISERS.
2. SEE GRADING PLANS FOR RISER HEIGHT
3. INTERIM POST SHALL BE MAXIMUM OF 4' O.C.
4. SEE STRUCTURAL DRAWINGS FOR REINFORCEMENT DETAILS

A2 STAIR WITH HANDRAIL
1/2" = 1'-0"

1. RAILING HORIZONTAL FOR 12"
2. CONCRETE WALK - SEE B5/C-501
3. 1 1/2" DIAMETER STAINLESS STEEL POST
4. EXPANSION JOINT
5. CONCRETE CHEEKWALL - SEE A5/C-501
6. STAIR RAILING POST - SEE A1/C-501
7. 1-1/2" DIAMETER STAINLESS STEEL RAIL
8. CONCRETE RETAINING WALL
9. 1/2" RADIUS (TYP)

NOTES:
1. SEE GRADING PLANS FOR RISER HEIGHT
2. INTERIM POST SHALL BE MAXIMUM OF 4' O.C.
3. SEE STRUCTURAL DRAWINGS FOR REINFORCEMENT DETAILS

A3 STAIR WITH HANDRAIL AND CHEEKWALL / RETAINING WALL
1/2" = 1'-0"

P-3-USU-TSCS-81

1. 1/2" CHAMFER, BOTH SIDES
2. FINISH GRADE. SEE GRADING PLANS
3. 1-1/2" DIAMETER STAINLESS STEEL POST
4. CONCRETE STAIRS

NOTE: SEE STRUCTURAL DRAWINGS FOR REINFORCEMENT DETAILS

A5 CONCRETE CHEEK WALL
3/4" = 1'-0"

P-3-USU-TSCS-

CONSTRUCTION DOCUMENTS

1 2 3 4 5

DESIGN WEST
LOGAN, UTAH
(435) 752-7031
SALT LAKE CITY, UTAH
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USU TSC - STAIR REMODEL

650 NORTH 800 EAST
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MARK:	DESCRIPTION:	DATE:

PROJECT #: 324242
DRAWN BY: J. CLEMENTS
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ISSUED: 03.28.2025

STATE OF UTAH
LICENSED LANDSCAPE ARCHITECT
BLAKE C. WRIGHT
03.28.2025
10510I-5301

SITE DETAILS
C-501

SECTION 32 8423
UNDERGROUND SPRINKLERS

PART 1 GENERAL

1.01 SUMMARY

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

1.02 SECTION INCLUDES

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

1.03 DEFINITION

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

1.04 PROJECT CONDITIONS

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

1.05 SYSTEM PERFORMANCE REQUIREMENTS

A. MINIMUM WATER COVERAGE:
1. IRRIGATION HEADS IN PLANTER AREAS SHALL BE SPACED 90% OF THE RADIUS FOR SPRAY HEADS.
B. THE IRRIGATION SYSTEM SHALL PROVIDE THE MANUFACTURER'S RECOMMENDED MINIMUM OPERATION PRESSURE TO EVERY IRRIGATION HEAD.
C. MINIMUM WORKING PRESSURES: THE FOLLOWING ARE MINIMUM PRESSURE REQUIREMENTS FOR PIPING, VALVES, AND SPECIALTIES, UNLESS OTHERWISE INDICATED:
1. PRESSURE PIPING: 200 PSIG.
2. CIRCUIT PIPING: 150 PSIG.
3. DRAIN PIPING: 100 PSIG.

1.06 SUBMITTALS

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

1.07 QUALITY ASSURANCE

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

1.08 CODES AND STANDARDS

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

1.09 CONTRACTORS USE OF PREMISES

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

1.10 SUPERVISION

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

1.11 GUARANTEE

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

1.12 SEQUENCING AND SCHEDULING

A. COORDINATE LAWN IRRIGATION PIPING WITH UTILITY WORK.

PART 2 PRODUCTS

2.01 IRRIGATION SYSTEM

A. MANUFACTURERS:
1. RAIN BIRD SALES, INC.
2. HUNTER IRRIGATION PRODUCTS

2.02 FILL MATERIAL

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

2.03 PIPE MATERIALS

A. PVC PIPE: ASTM D2241; 200 PSI (1.38 MPA) PRESSURE RATED UPSTREAM FROM CONTROLS, 160 PSI (1.10 MPA) DOWNSTREAM; SOLVENT WELDED SOCKETS.
1. ALL LATERAL PIPING SMALLER THAN 3", SHALL BE SCHEDULE 40 PRESSURE RATED PVC GLUE JOINT PIPE WITH RATINGS PRINTED ON OUTSIDE OF PIPE.
2. ALL LATERAL PIPE AND FITTINGS SHALL BE SCHEDULE 40 PRESSURE RATED PVC UNLESS SPECIFICALLY NOTED ON DRAWINGS.
B. FITTINGS:
1. ALL POLYETHELENE PIPE FITTINGS SHALL BE COMPRESSION FITTINGS OR INSERT BARBED FITTINGS SECURED WITH STAINLESS STEEL CLAMPS.
C. SLEEVE MATERIAL:
1. SLEEVE DIAMETER SHALL BE TWO TIMES LARGER THAN PIPE THAT IS TO BE INSTALLED IN SLEEVE. SLEEVES 4" AND SMALLER DIAMETER SHALL BE PVC SCHEDULE 40. SLEEVES 4 INCH AND LARGER SHALL BE CLASS 200 PVC OR PVC SEWER PIPE.
D. PIPE CONNECTION MATERIAL
1. P-70 PRIMER
2. 711 SOLVENT/GLUE
3. TEFLON TAPE

2.04 OUTLETS

A. MANUFACTURERS:
1. RAIN BIRD.
2. HUNTER
B. ALL SPRINKLER HEADS SHALL BE THE BRAND, MODEL, SIZE, AND TYPE SHOWN ON DRAWINGS.
C. ALL SPRINKLER HEADS SHALL BE INSTALLED ON A "SWING JOINT" ASSEMBLY. LAWN SPRAY HEADS AND SMALL ROTORS WITH AN INLET SIZE 3/4'" AND SMALLER SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS WITH "FUNNY PIPE" AND "SWING ELLS" AS MANUFACTURED BY HUNTER OR APPROVED EQUAL. ALL LARGE STREAM ROTOR AND IMPACT HEADS SHALL BE INSTALLED WITH THREE 1" SCHEDULE 40 MARLEX STREET ELLS AND ONE SCHEDULE 80 1"X12" NIPPLE. PREFABRICATED SWING JOINT ASSEMBLIES BY SPEARS MANUFACTURING OR OTHER APPROVED EQUAL CAN BE SUBSTITUTED IF DESIRED. ALL "SWING JOINT" CONFIGURATIONS SHALL MATCH DETAIL DRAWINGS EXACTLY.
D. ROTARY TYPE SPRINKLER HEAD: POP-UP TYPE WITH SCREENS; FULLY ADJUSTABLE FOR FLOW AND PRESSURE; SIZE AS INDICATED; WITH LETTER OR SYMBOL DESIGNATING DEGREE OF ARC AND ARROW INDICATING CENTER OF SPRAY PATTERN.
E. RISERS: STATIONARY SPRAY POP-UP SPRINKLER HEADS, SHRUB SPRAY HEADS, STATIONARY SPRAY SPRINKLER HEADS AND ROTOR HEADS SHALL HAVE RISERS MADE UP OF ONE OF THE FOLLOWING WAYS:
1. RISERS FOR IRRIGATION HEADS WITH INLET SIZE OF 1/2 INCH SHALL BE SWING PIPE 14 INCHES LONG MINIMUM AND 24 INCHES MAXIMUM. SWING PIPE WITH SPIRAL BARB FITTINGS AND STREET "L" SHALL BE ASSEMBLED ACCORDING TO PLAN DETAILS. EQUAL AS APPROVED BY LANDSCAPE ARCHITECT BEFORE BIDDING.
2. RISER FOR IRRIGATION HEADS WITH 3/4 INCH TO 1 INCH INLETS SHALL HAVE A SWING JOINT ASSEMBLY ACCORDING TO DETAILS ON DRAWING.

2.05 OTHER COMPONENTS

B. SUBMIT OTHER COMPONENTS RECOMMENDED BY MANUFACTURER FOR ARCHITECT'S REVIEW AND ACCEPTANCE PRIOR TO INSTALLATION.
C. PROVIDE COMPONENTS NECESSARY TO COMPLETE AND MAKE SYSTEM OPERATIONAL.
D. FURNISH EXTRA MATERIALS DESCRIBED BELOW THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR STORAGE AND IDENTIFIED WITH LABELS DESCRIBING CONTENTS. DELIVER EXTRA MATERIALS TO OWNER.
1. TWO SETS OF SPRINKLER WRENCHES FOR ADJUSTING, CLEANING OR DISASSEMBLY OF EACH TYPE OF SPRINKLER.
2. TWO EACH OF ANY OTHER TOOLS REQUIRED FOR ANY OTHER EQUIPMENT.

PART 3 EXECUTION

3.01 OWNERS SALVAGE RIGHTS

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

3.02 EXAMINATION

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

3.03 PREPARATION

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

3.04 TRENCHING

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

3.05 INSTALLATION

A. GENERAL:
1. INSTALL PIPE AND OUTLETS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. CONNECT TO UTILITIES.
3. SET OUTLETS AND BOX COVERS AT FINISH GRADE ELEVATIONS AND SLOPED WITH SURROUNDING GRADE.
4. PROVIDE FOR THERMAL MOVEMENT OF COMPONENTS IN SYSTEM.
B. PIPES:
1. INSTALL PIPE IN MANNER TO PROVIDE FOR EXPANSION AND CONTRACTIONS AS RECOMMENDED BY MANUFACTURER.
2. UNLESS OTHERWISE INDICATED ON APPROVED DRAWINGS, INSTALL MAIN LINES AND LATERAL LINES CONNECTING ROTOR POP-UP SPRINKLERS WITH MINIMUM COVER OF 18 INCHES BASED ON FINISHED GRADE. INSTALL REMAINING LATERAL LINES WITH MINIMUM OF 12 INCHES OF COVER BASED ON FINISH GRADE.
3. INSTALL PIPE AND WIRES UNDER DRIVEWAYS OR PARKING AREAS IN SPECIFIED SLEEVES 18 INCHES MINIMUM BELOW FINISH GRADE OR AS SHOWN ON APPROVED DRAWINGS.
4. SLOPE PIPES UNDER PARKING AREAS OR DRIVEWAYS TO DRAIN OUTSIDE THESE AREAS.
5. LOCATE SPRINKLER HEADS NO CLOSER THAN 12 INCHES FROM BUILDING FOUNDATION. HEADS IMMEDIATELY ADJACENT TO MOW STRIPS, WALKS, OR CURBS SHALL BE ONE INCH BELOW TOP OF MOW STRIP, WALK, OR CURB AND HAVE 1 TO 3 INCHES CLEARANCE BETWEEN HEAD AND MOW STRIP, WALK, OR CURB.
6. SLOPE PIPING FOR SELF DRAINAGE TO CONTROL BOX WHERE POSSIBLE.
7. WHERE THIS IS NOT POSSIBLE, SLOPE PIPE TO A MINIMUM NUMBER OF LOW POINTS. INSTALL AT THESE LOW POINTS:
a. 3/4 INCH MANUAL DRAIN
b. INSTALL 2 INCH CLASS 200 PVC PIPE OVER TOP OF MANUAL DRAIN AND CUT AT FINISH GRADE,
c. INSTALL RUBBER VALVE CAP MARKER FLUSH WITH FINISHED GRADE.
d. DO NOT USE AUTOMATIC DRAIN VALVES.
8. CUT PLASTIC PIPE SQUARE. REMOVE BURRS AT CUT ENDS PRIOR TO INSTALLATION SO UNOBSTRUCTED FLOW WILL RESULT.
9. MAKE SOLVENT WELD JOINTS AS FOLLOWS:
a. DO NOT MAKE SOLVENT WELD JOINTS IF AMBIENT TEMPERATURE IS BELOW 40 DEGREES F.
b. CLEAN MATING PIPE AND FITTING WITH CLEAN, DRY CLOTH AND APPLY ONE COAT OF P-70 PRIMER TO EACH.
c. APPLY UNIFORM COAT OF 711 SOLVENT TO OUTSIDE OF PIPE.
d. APPLY SOLVENT TO FITTING IN A SIMILAR MANNER.
e. RE-APPLY LIGHT COAT OF SOLVENT TO PIPE AND QUICKLY INSERT INTO FITTING.
f. GIVE PIPE OR FITTING A QUARTER TURN TO ENSURE EVEN DISTRIBUTION OF SOLVENT AND MAKE SURE PIPE IS INSTERTED TO FULL DEPTH OF FITTING SOCKET.
g. HOLD IN POSITION FOR 15 SECONDS MINIMUM OR LONG ENOUGH TO SECURE JOINT.
h. WIPE OFF SOLVENT APPEARNING AT OUTER SHOULDER OF FITTING.
i. DO NOT USE EXCESSIVE AMOUNT OF SOLVENT THEREBY CAUSING OBSTRUCTION TO FORM ON INSIDE OF PIPE.
j. ALLOW JOINTS TO SET AT LEAST 24 HOURS BEFORE APPLYING PRESSURE TO PVC PIPE.
10. THREADED CONNECTIONS SHALL BE MADE WITH TEFLON TAPE.
C. SLEEVING:
1. CONTRACTOR IS RESPONSIBLE TO COORDINATE THE INSTALLATION OF SLEEVING WITH THE WORK OF OTHER TRADES (I.E. CONCRETE, ASPHALT PAVING, ETC.)
2. SLEEVE IRRIGATION WATER LINES AND CONTROL WIRES UNDER WALKS AND PAVING. EXTEND SLEEVES 6 INCHES MINIMUM BEYOND WALK OR PAVEMENT EDGE. CAP SLEEVES UNTIL PIPES AND WIRES ARE INSTALLED TO KEEP SLEEVE CLEAN AND FREE OF DIRT AND DEBRIS.
3. USE ONE WATER PIPE MAXIMUM PER SLEEVE. SLEEVE CONTROL WIRING IN SEPERATE SLEEVE.
4. POSITION SLEEVES WITH RESPECT TO BUILDINGS AND OTHER OBSTRUCTIONS SO PIPE CAN BE EASILY REMOVED.
D. OUTLETS:
1. USE THREADED NIPPLES FOR RISERS TO EACH OUTLET.
2. SPRINKLER HEADS:
a. PRIOR TO INSTALLATION OF SPRINKLER HEADS, OPEN CONTROL VALVES AND USE FULL HEAD OF WATER TO FLUSH OUT SYSTEM.
b. SET SPRINKLER HEADS AND QUICK-COUPLING VALVES PERPENDICULAR TO FINISH GRADE.
c. DO NOT INSTALL SPRINKLERS USING SIDE INLETS. INSTALL USING BASE INLETS ONLY.
d. SET SPRINKLERS AT A CONSISTENT DISTANCE FROM EXISTING WALKS, CURBS, AND OTHER PAVED AREAS AND TO GRADE.
E. AFTER PIPING IS INSTALLED, BUT BEFORE OUTLETS ARE INSTALLED AND BACKFILLING COMMENCES, OPEN VALVES AND FLUSH SYSTEM WITH FULL HEAD OF WATER.

3.06 FIELD QUALITY CONTROL

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

3.07 BACKFILLING

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

3.08 SYSTEM STARTUP

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

3.09 CLOSEOUT ACTIVITIES

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

3.10 CLEAN-UP AND MAINTENANCE

A. REMOVE FROM SITE ALL DEBRIS RESULTING FROM WORK OF THIS SECTION.
B. PROVIDE ONE COMPLETE SPRING START-UP AND A FALL SHUTDOWN BY INSTALLER, AT NO EXTRA COST TO OWNER.

3.11 WARRANTY

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

END OF SECTION

SECTION 32 9300
EXTERIOR PLANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. PREPARATION OF SUBSOIL.
B. TOPSOIL BEDDING.
C. NEW TREES AND PLANTS.
D. FERTILIZER.
E. MAINTENANCE.
F. TREE AND SHRUB PRUNING.

1.02 DEFINITIONS

A. WEEDS: ANY PLANT LIFE NOT SPECIFIED OR SCHEDULED.
B. PLANTS: LIVING TREES, PLANTS, AND GROUND COVER SPECIFIED IN THIS SECTION , AND DESCRIBED IN ANSI Z60.1.

1.03 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: ENGAGE AN EXPERIENCED INSTALLER WHO HAS COMPLETED LANDSCAPING WORK SIMILAR IN MATERIAL, DESIGN, AND EXTENT TO THAT INDICATED FOR THIS PROJECT WITH AT LEAST 3 YEARS EXPERIENCE AND A RECORD OF SUCCESSFUL LANDSCAPE ESTABLISHMENT.
B. PROVIDE QUALITY, SIZE, GENUS, SPECIES, AND VARIETY OF TREES, SHRUBS, AND PLANTS INDICATED COMPLYING WITH THE APPLICABLE REQUIREMENTS OF ANSI/AHIA Z60.1.
C. MEASURE TREES AND SHRUBS ACCORDING TO ANSI/AHIA Z60.1 WITH BRANCHES AND TRUNKS OR CANES IN THEIR NORNAL POSITION. DO NOT PRUNE TO OBTAIN REQUIRED SIZES. TAKE CALIPER MEASUREMENTS 6 INCHES ABOVE GROUND FOR TREES UP TO 4 INCH CALIPER SIZE AND 12 INCHES ABOVE GROUND FOR LARGER SIZES. MEASURE MAIN BODY OF TREE OR SHRUB FOR HEIGHT AND SPREAD; DO NOT MEASURE BRANCHES OR ROOTS TIP-TO-TIP.
D. TREE PRUNING: COMPLY WITH ANSI A300 PART 1.

1.04 DELIVERY, STORAGE, AND HANDLING

A. TREES AND SHRUBS: DELIVER FRESHLY DUG TREES AND SHRUBS. DO NOT PRUNE BEFORE DELIVERY, EXCEPT AS APPROVED BY LANDSCAPE ARCHITECT. PROTECT BARK, BRANCHES, AND ROOT SYSTEMS FROM SUN SCALD, DRYING, SWEATING, WHIPPING, AND OTHER HANDLING AND TYING DAMAGE. DO NOT BEND OR BIND-TIE TREES OR SHRUBS IN SUCH A MANNER AS TO DESTROY NATURAL SHAPE. PROVIDE PROTECTIVE COVERING DURING DELIVERY. DO NOT DROP TREES AND SHRUBS DURING DELIVERY.
B. HANDLE BALLED AND BURLAPPED STOCK BY THE ROOT BALL.
C. DELIVER FERTILIZER IN WATERPROOF BAGS SHOWING WEIGHT, CHEMICAL ANALYSIS, AND NAME OF MANUFACTURER.
D. DELIVER TREES, SHRUBS, AND PLANTS AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED AND INSTALL IMMEDIATELY. IF PLANTING IS DELAYED MORE THAN 6 HOURS AFTER DELIVERY, SET PLANTING MATERIALS IN SHADE, PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST.
1. SET BALLED STOCK ON GROUND AND COVER BALL WITH SOIL, PEAT MOSS, SAWDUST, OR OTHER ACCEPTABLE MATERIAL.
2. DO NOT REMOVE CONTAINER-GROWN STOCK FROM CONTAINERS BEFORE TIME OF PLANTING.
3. WATER ROOT SYSTEMS OF TREES AND SHRUBS STORED ON SITE WITH A FINE-MIST SPRAY. WATER AS OFTEN AS NECESSARY TO MAINTAIN ROOT SYSTEMS IN A MOIST CONDITION.
E. PROTECT AND MAINTAIN PLANT LIFE UNTIL PLANTED.
F. DELIVER PLANT LIFE MATERIALS IMMEDIATELY PRIOR TO PLACEMENT. KEEP PLANTS MOIST.

1.05 FIELD CONDITIONS

A. DO NOT INSTALL PLANT LIFE WHEN AMBIENT TEMPERATURES MAY DROP BELOW 35 DEGREES F (2 DEGREES C) OR RISE ABOVE 90 DEGREES F (32 DEGREES C).
B. DO NOT INSTALL PLANT LIFE WHEN WIND VELOCITY EXCEEDS 30 MPH (48 K/HR).
C. UTILITIES: DETERMINE LOCATION OF ABOVE GRADE AND UNDERGROUND UTILITIES AND PERFORM WORK IN A MANNER WHICH WILL AVOID DAMAGE. HAND EXCAVATE AS REQUIRED. MAINTAIN GRADE STAKES UNTIL REMOVAL IS MUTUALLY AGREED UPON BY PARTIES CONCERNED.
D. EXCAVATION: WHEN CONDITIONS DETRIMENTAL TO PLANT GROWTH ARE ENCOUNTERED, SUCH AS RUBBLE FILL, ADVERSE DRAINAGE CONDITIONS, OR OBSTRUCTIONS, NOTIFY LANDSCAPE ARCHITECT BEFORE PLANTING.

1.06 COORDINATION AND SCHEDULING

A. COORDINATE INSTALLATION OF PLANTING MATERIALS DURING NORMAL PLANTING SEASONS FOR EACH TYPE OF PLANT MATERIAL REQUIRED.

1.07 WARRANTY

A. GENERAL WARRANTY: THE SPECIAL WARRANTY SPECIFIED IN THIS ARTICLE SHALL NOT DEPRIVE THE OWNER OF OTHER RIGHTS THE OWNER MAY HAVE UNDER OTHER PROVISIONS OF THE CONTRACT DOCUMENTS AND SHALL BE IN ADDITION TO AND RUN CONCURRENT WITH OTHER WARRANTIES MADE BY THE CONTRACTOR UDNER REQUIREMENTS OF THE CONTRACT DOCUMENTS.
B. SPECIAL WARRANTY: WARRANT TREES, SHRUBS, AND PLANTS FOR A PERIOD OF ONE YEAR AFTER DATE OF SUBSTANTIAL COMPLETION AGAINST DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH, EXCEPT FOR DEFECTS RESULTING FROM LACK OF ADEQUATE MAINTENANCE, NEGLECT, OR ABUSE BY OWNER, ABNORMAL WEATHER CONDITIONS UNUSUAL FOR WARRANTY PERIOD, OR INCIDENTS THAT ARE BEYOND CONTRACTOR'S CONTROL.
C. REPLACEMENTS: PLANTS OF SAME SIZE AND SPECIES AS SPECIFIED, PLANTED IN THE NEXT GROWING SEASON, WITH A NEW WARRANTY COMMENCING ON DATE OF REPLACEMENT.
1. REMOVE AND REPLACE DEAD PLANTING MATERIALS IMMEDIATELY UNLESS REQUIRED TO PLANT IN THE SUCCEEDING PLANTING SEASON.
2. REPLACE PLANTING MATERIALS THAT ARE MORE THAN 25% DEAD OR IN AN UNHEALTHY CONDITION AT END OF WARRANTY PERIOD.
3. A LIMIT OF ONE REPLACEMENT OF EACH PLANT MATERIAL WILL BE REQUIRED, EXCEPT FOR LOSSES OR REPLACEMENTS DUE TO FAILURE TO COMPLY WITH REQUIREMENTS.

PART 2 PRODUCTS

2.01 TREE AND SHRUB MATERIAL

A. PLANTS: SPECIES AND SIZE IDENTIFIED IN PLANT SCHEDULE, GROWN IN CLIMATIC CONDITIONS SIMILAR TO THOSE IN LOCALITY OF THE WORK.
B. GENERAL: FURNISH NURSERY-GROWN TREES AND SHRUBS CONFORMING TO ANSI/AHIA Z60.1, WITH HEALTHY ROOT SYSTEMS, DEVELOPED BY TRANSPLANTING OR ROOT PRUNING. PROVIDE WELL SHAPED, FULLY-BRANCHED, HEALTHY, VIGOROUS STOCK FREE OF DISEASE, INSECTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SUN SCALD, INJURIES, ABRASIONS, AND DISFIGUREMENT.
C. GRADE: PROVIDE TREES AND SHRUBS OF SIZES AND GRADES CONFORMING TO ANSI/AHIA Z60.1 FOR TYPE OF TREES AND SHRUBS REQUIRED. TREES AND SHRUBS OF A LARGER SIZE MAY BE USED IF ACCEPTABLE TO LANDSCAPE ARCHITECT WITH PROPORTIONATE INCREASE IN SIZE OF ROOTS AND BALL.
D. LABEL AT LEAST 1 TREE AND 1 SHRUB OF EACH VARIETY AND CALIPER WITH A SECURELY ATTACHED, WATERPROOF TAG BEARING LEGIBLE DESIGNATION OF BOTANNICAL AND COMMON NAME.

2.02 SHADE AND FLOWERING TREES

A. SHADE TREES: SINGLE-STEM TREES WITH STRAIGHT TRUNK, WELL-BALANCED CROWN, AND INTACT LEADER, OF HEIGHT AND CALIPER INDICATED, CONFORMING TO ANSI/AHIA Z60.1 FOR TYPE OF TREES REQUIRED.
B. PROVIDE BALLED AND BURLAPPED TREES WHEN SPECIFIED ON APPROVED PLANS.

2.03 SHRUBS AND PERENNIALS

A. FORM AND SIZE: SHRUBS WITH NOT LESS THAN THE MINIMUM NUMBER OF CANES REQUIRED BY AND MEASURED ACCORDING TO ANSI/AHIA Z60.1 FOR TYPE, SHAPE, AND HEIGHT OF SHRUB.
B. PROVIDE BALLED AND BURLAPPED OR CONTAINER SHRUBS AND PERENNIALS.

2.04 SOIL MATERIALS

A. PROVIDE APPROVED IMPORTED TOPSOIL REQUIRED TO BRING SURFACE TO SPECIFIED ELEVATION RELATIVE TO WALK OR CURB.
B. TOPSOIL: PROVIDED BY USU LOAM, CONTRACTOR INSTALLED.

2.05 SOIL AMENDMENT MATERIALS

A. FERTILIZER FOR TREES AND SHRUBS: CONTAINING FIFTY PERCENT OF THE ELEMENTS DERIVED FROM ORGANIC SOURCES; OF PROPORTION NECESSARY TO ELIMINATE ANY DEFICIENCIES OF TOPSOIL, TO THE FOLLOWING PROPORTIONS:
1. NITROGEN: >20% (OF WHICH 50% WILL BE ORGANIC).
2. PHOSPHORIC ACID: 10%.
3. SOLUBLE POTASH: 5%.
B. WATER: CLEAN, FRESH, AND FREE OF SUBSTANCES OR MATTER THAT COULD INHIBIT VIGOROUS GROWTH OF PLANTS.

2.06 ACCESSORIES

A. STAKES: SOFTWOOD LUMBER, POINTED END.

PART 3 EXECUTION

3.01 EXAMINATION

A. EXAMINE AREAS TO RECEIVE LANDSCAPING FOR COMPLIANCE WITH REQUIREMENTS AND FOR CONDITIONS AFFECTING PERFORMANCE OF WORK OF THIS SECTION. DO NOT PROCEED WITH INSTALLATION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
B. VERIFY THAT PREPARED SUBSOIL AND PLANTERS ARE READY TO RECEIVE WORK.
C. SATURATE SOIL WITH WATER TO TEST DRAINAGE.

3.02 PREPARATION OF SUBSOIL

A. PREPARE SUBSOIL TO ELIMINATE UNEVEN AREAS. MAINTAIN PROFILES AND CONTOURS. MAKE CHANGES IN GRADE GRADUAL. BLEND SLOPES INTO LEVEL AREAS.
B. REMOVE STONES LARGER THAN 1 INCH IN ANY DIMENSION, FOREIGN MATERIALS, STICKS, RUBBISH, WEEDS AND UNDESIRABLE PLANTS AND THEIR ROOTS. REMOVE CONTAMINATED SUBSOIL.
C. SCARIFY SUBSOIL TO A DEPTH OF 6 INCHES (150 MM) WHERE PLANTS ARE TO BE PLACED. REPEAT CULTIVATION IN AREAS WHERE EQUIPMENT, USED FOR HAULING AND SPREADING TOPSOIL, HAS COMPACTED SUBSOIL.

3.03 PLACING TOPSOIL

A. TOPSOIL DEPTH SHALL BE A MINIMUM OF 12 INCHES.
B. SPREAD TOPSOIL TO A MINIMUM DEPTH OF 6 INCHES (150 MM) OVER AREA TO BE PLANTED. WORK INTO TOP OF LOOSENED SUB GRADE TO CREATE A TRANSITION LAYER AND THEN PLACE REMAINDER OF PLANTING SOIL MIXTURE.
C. TILL SOIL IN BEDS TO A MINIMUM DEPTH OF 8 INCHES AND MIX WITH SPECIFIED SOIL AMENDMENTS AND FERTILIZERS.
D. PLACE TOPSOIL DURING DRY WEATHER AND ON DRY UNFROZEN SUBGRADE.
E. REMOVE VEGETABLE MATTER AND FOREIGN NON-ORGANIC MATERIAL FROM TOPSOIL WHILE SPREADING.
F. GRADE TOPSOIL TO ELIMINATE ROUGH, LOW OR SOFT AREAS, AND TO ENSURE POSITIVE DRAINAGE.

3.04 FERTILIZING

A. APPLY FERTILIZER IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. APPLY AFTER INITIAL RAKING OF TOPSOIL AND TILL IN TO BEDS.
C. MIX THOROUGHLY INTO UPPER 8 INCHES (203 MM) OF TOPSOIL.
D. LIGHTLY WATER TO AID THE DISSIPATION OF FERTILIZER.

3.05 EXCAVATION FOR TREES AND SHRUBS

A. PITS AND TRENCHES: EXCAVATE WITH BOTTOM OF EXCAVATION SLIGHTLY RAISED AT CENTER TO ASSIST DRAINAGE. LOOSEN HARD SUBSOIL IN BOTTOM OF EXCAVATION.
1. BALLED AND BURLAPPED TREES AND SHRUBS: EXCAVATE APPROXIMATELY 3 TIMES AS WIDE AS BALL DIAMETER AND EQUAL TO BALL DEPTH.
2. CONTAINER-GROWN TREES AND SHRUBS: EXCAVATE APPROXIMATELY 3 TIMES AS WIDE AS CONTAINER DIAMTER AND EQUAL TO ROOT MASS DEPTH.
B. DISPOSE OF SUBSOIL REMOVED FROM LANDSDCAPE EXCAVATIONS. DO NOT MIX WITH PLANTING SOIL OR USE AS BACKFILL.
C. OBSTRUCTIONS: NOTIFY LANDSCAPE ARCHITECT IF UNEXPECTED ROCK OR OBSTRUCTIONS DETRIMENTAL TO TREES OR SHRUBS ARE ENCOUNTERED IN EXCAVATIONS.
D. DRAINAGE: NOTIFY LANDSCAPE ARCHITECT IF SUBSOIL CONDITIONS EVIDENCE UNEXPECTED WATER SEEPAGE OR RETENTION IN TREE OR SHRUB PITS.
E. FILL EXCAVATION WITH WATER AND ALLOW TO PERCOLATE OUT BEFORE PLACING SETTING LAYER AND POSITIONING TREES AND SHRUBS.

3.06 PLANTING

A. LAYOUT INDIVIDUAL TREE AND SHRUB LOCATIONS AND AREAS FOR MULTIPLE PLANTINGS. STAKE LOCATIONS, OUTLINE AREAS, AND <u>SECURE LANDSCAPE ARCHITECTS ACCEPTANCE BEFORE THE START OF PLANTING WORK</u>. MAKE MINOR ADJUSTMENTS AS NEEDED.
B. SET BALLED AND BURLAPPED STOCK PLUMB AND IN CENTER OF PIT OR TRENCH WITH TOP OF BALL RAISED ABOVE ADJACENT FINISH GRADES AS INDICATED.
1. PLACE STOCK ON UNDISTURBED OR COMPACTED TOPSOIL.
2. REMOVE BURLAP AND WIRE BASKETS FROM TOPS AND AT LEAST UPPER HALF OF ROOT BALL (MORE IF THE ROOT BALL IS STABLE), BUT DO NOT REMOVE FROM UNDER ROOT BALL. REMOVE PALLETS, IF ANY, BEFORE SETTING. DO NOT USE PLANTING STOCK IF BALL IS CRACKED OR BROKEN BEFORE OR DURING PLANTING OPERATION.
3. PLACE BACKFILL AROUND BALL IN LAYERS, TAMPING TO SETTLE BACKFILL AND ELIMINATE VOIDS AND AIR POCKETS.
4. BACKFILL TO CONSIST OF ONE (1) PART TOPSOIL AND ONE (1) PART NATIVE SOIL CLEAN AND FREE FROM TOXIC MINERAL AND CHEMICALS, NOXIOUS WEEDS, ROCKS LARGER THAN 1-1/2 INCH IN ANY DIMENSION, AND OTHER OBJECTIONABLE MATERIALS.
5. WHEN PIT IS APPROXIMATELY 1/2 BACKFILLED, WATER THOROUGHLY BEFORE PLACING REMAINDER OF BACKFILL. REPEAT WATERING UNTIL NO MORE IS ABSORBED. WATER AGAIN AFTER PLACING AND TAMPING FINAL LAYER OF BACKFILL.
C. SET CONTAINER-GROWN STOCK PLUMB IN CENTER OF PIT OR TRENCH WITH TOP OF BALL RAISED ABOVE ADJACENT FINISH GRADES AS INDICATED.
1. CAREFULLY REMOVE CONTAINERS SO AS NOT TO DAMAGE ROOT BALLS.
2. PLACE STOCK ON UNDISTURBED OR COMPACTED TOPSOIL.
3. PLACE BACKFILL AROUND BALL IN LAYERS, TAMPING TO SETTLE BACKFILL AND ELIMINATE VOIDS AND AIR POCKETS.
4. BACKFILL TO CONSIST OF ONE (1) PART TOPSOIL AND ONE (1) PART NATIVE SOIL CLEAN AND FREE FROM TOXIC MINERAL AND CHEMICALS, NOXIOUS WEEDS, ROCKS LARGER THAN 1-1/2 INCH IN ANY DIMENSION, AND OTHER OBJECTIONABLE MATERIALS.
5. WHEN PIT IS APPROXIMATELY 1/2 BACKFILLED, WATER THOROUGHLY BEFORE PLACING REMAINDER OF BACKFILL. REPEAT WATERING UNTIL NO MORE IS ABSORBED. WATER AGAIN AFTER PLACING AND TAMPING FINAL LAYER OF BACKFILL.
D. DISH AND TAMP TOP OF BACKFILL TO FORM A 3 INCH HIGH MOUND AROUND THE RIM OF THE PIT. DO NOT COVER TOP OF ROOT BALL WITH BACKFILL.

3.07 PLANT SUPPORT

A. BRACE PLANTS VERTICALLY WITH PLANT PROTECTOR WRAPPED GUY WIRES AND STAKES TO THE FOLLOWING:
1. TREE CALIPER: 1 TO 2 INCHES (25 TO 50 MM); TREE SUPPORT METHOD: 2 STAKES WITH TWO TIES

3.08 FIELD QUALITY CONTROL

A. PLANTS WILL BE REJECTED IF A BALL OF EARTH SURROUNDING ROOTS HAS BEEN DISTURBED OR DAMAGED PRIOR TO OR DURING PLANTING.

3.09 CLEAN-UP AND PROTECTION

A. DURING LANDSCAPING, KEEP PAVEMENT CLEAN AND WORK AREA IN ORDERLY CONDITION.
B. PROTECT LANDSCAPING FROM DAMAGE DUE TO LANDSCAPE OPERATIONS, OPERATIONS BY OTHER CONTRACTORS AND TRADES, AND TRESPASSERS. MAINTAIN PROTECTION DURING INSTALLATION AND MAINTENANCE PERIODS. TREAT, REPAIR, OR REPLACE DAMAGED LANDSCAPE WORK AS DIRECTED.

3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. REMOVE SURPLUS SOIL AND WASTE MATERIAL, INCLUDING EXCESS SUBSOIL, UNSUITABLE SOIL, TRASH, AND DEBRIS, AND LEGALLY DISPOSE OF IT OFF THE OWNER'S PROPERTY.

3.11 MAINTENANCE

A. PROVIDE MAINTENANCE AT NO EXTRA COST TO OWNER; OWNER WILL PAY FOR WATER.
B. MAINTAIN PLANT LIFE FOR 60 DAYS AFTER DATE OF SUBSTANTIAL COMPLETION.
C. IRRIGATE SUFFICIENTLY TO SATURATE ROOT SYSTEM AND PREVENT SOIL FROM DRYING OUT.
D. REMOVE DEAD OR BROKEN BRANCHES AND TREAT PRUNED AREAS OR OTHER WOUNDS.
E. NEATLY TRIM PLANTS WHERE NECESSARY.
F. IMMEDIATELY REMOVE CLIPPINGS AFTER TRIMMING.
G. CONTROL GROWTH OF WEEDS. APPLY HERBICIDES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
H. CONTROL INSECT DAMAGE AND DISEASE. APPLY PESTICIDES IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
I. REMEDY DAMAGE FROM USE OF HERBICIDES AND PESTICIDES.

CONSTRUCTION DOCUMENTS

DESIGN WEST
LOGAN, UTAH
(435) 752-7031
SALT LAKE CITY, UTAH
(801) 539-8221

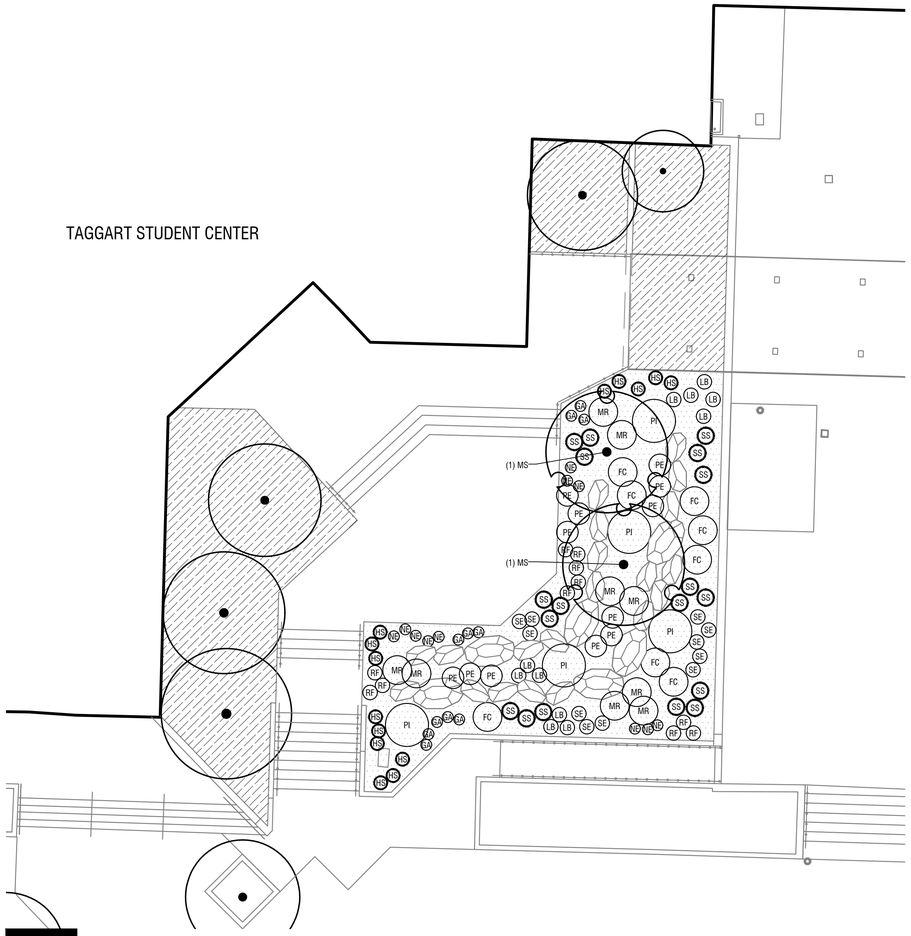
USU TSC - STAIR REMODEL
650 NORTH 800 EAST
LOGAN, UT 84322
UTAH STATE UNIVERSITY

MARK: DATE: DESCRIPTION:

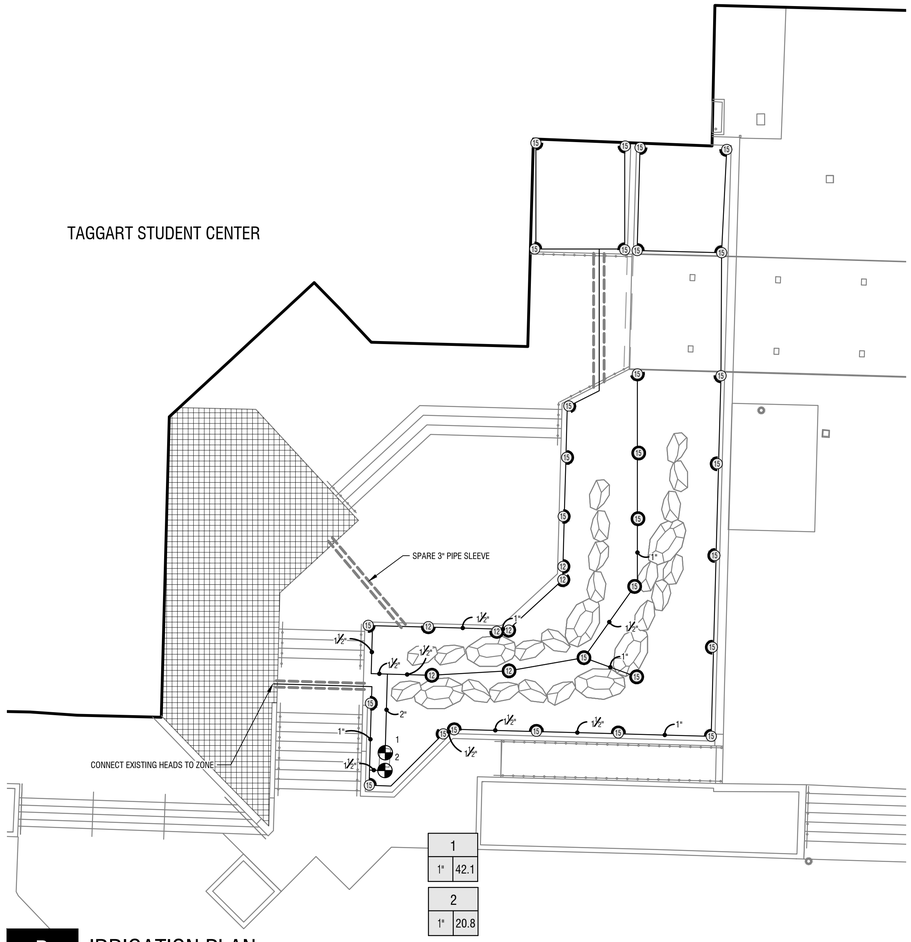
PROJECT #: 324242
DRAWN BY: J. CLEMENTS
CHECKED BY: B. WRIGHT
ISSUED: 03.28.2025

STATE OF UTAH
BLAKE C. WRIGHT
03.28.2025
105101-5301
LICENSED LANDSCAPE ARCHITECT

LANDSCAPE SPECIFICATIONS
L-001



A PLANTING PLAN



B IRRIGATION PLAN

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CONT
TREES				
	MS	2	Malus x 'Spring Snow' / Spring Snow Crabapple	B & B
SHRUBS				
FC	FC	8	Forsythia `Courtaneur` Gold Cluster / Forsythia	5 gal
MR	MR	9	Mahonia repens / Creeping Mahonia	5 gal
PI	PI	5	Pinus sylvestris `Hillside Creeper` / Hillside Creeper Scotch Pine	5 gal
GRASSES				
HS	HS	14	Helictotrichon sempervirens `Sapphire` / Sapphire Blue Oat Grass	1 gal
SS	SS	18	Schizachyrium scoparium `Prairie Blues` / Prairie Blues Little Bluestem	1 gal
PERENNIALS				
GA	GA	11	Gaillardia x 'Arizona Sun' / Arizona Sun Blanket Flower	5 gal
LB	LB	11	Leucanthemum x superbum 'Becky' / Becky Shasta Daisy	5 gal
NE	NE	11	Nepeta racemosa `Blue Wonder` / Blue Wonder Catmint	1 gal
PE	PE	12	Phlox subulata `Emerald Blue` / Emerald Blue Creeping Phlox	1 gal
RF	RF	11	Rudbeckia fulgida sullivantii `Goldsturm` / Black-eyed Susan	1 gal
SE	SE	11	Sedum x `Autumn Fire` / Autumn Fire Sedum	1 gal

LEGEND

SYMBOL	DESCRIPTION	QTY	DETAIL
	PLANTER BED - 12" depth topsoil provided by USU and placed by contractor under 2" depth soil pep	1,639 sf	
	PLANTER BED - top dress with bark. No digging, trenching, or scraping	1,961 sf	

PLANTING NOTES

1. CONTRACTOR TO VERIFY ALL CONDITIONS PERTAINING TO THIS PLAN AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE LANDSCAPE ARCHITECT.
2. THE CONTRACTOR SHALL LOCATE AND VERIFY ALL UTILITIES LINES PRIOR TO PLANTING AND SHALL REPORT ANY CONFLICTS TO THE LANDSCAPE ARCHITECT.
3. CONTRACTOR SHALL REPAIR ALL DAMAGES CAUSED BY OPERATIONS (WHICH OCCUR ON OR OFF SITE) TO THE ARCHITECT'S AND OWNER'S SATISFACTION.
4. ALL QUANTITIES SHOWN ARE APPROXIMATE AND ARE FURNISHED SOLELY FOR THE CONTRACTOR'S CONVENIENCE. THEY DO NOT NECESSARILY CORRESPOND TO BID SCHEDULE ITEMS. IN THE CASE OF ANY DISCREPANCIES, PLANS SHALL OVERRIDE THE LANDSCAPE AND BID SCHEDULE QUANTITIES. CONTRACTOR SHALL VERIFY QUANTITIES SHOWN ON THE PLANS AND BASE THEIR BID ACCORDINGLY.
5. DO NOT MAKE UNAPPROVED SUBSTITUTIONS. IF SPECIFIED LANDSCAPE MATERIAL IS NOT OBTAINABLE, SUBMIT PROOF OF NON-AVAILABILITY FROM AT LEAST FIVE SOURCES TO LANDSCAPE ARCHITECT, TOGETHER WITH PROPOSAL FOR USE OF EQUIVALENT MATERIAL FOR FINAL APPROVAL.
6. LAYOUT INDIVIDUAL TREE AND PLANT LOCATIONS AND AREAS FOR MULTIPLE PLANTINGS, STAKE LOCATIONS, AND OUTLINE AREAS AND SECURE ARCHITECT'S ACCEPTANCE BEFORE START OF PLANTING WORK. MAKE MINOR ADJUSTMENTS AS MAY BE DIRECTED.
7. REPAIR ALL LANDSCAPING WHERE NEW CONSTRUCTION MEETS EXISTING.
8. PERFORM PERCOLATION TEST ON ALL TREE PLANTING HOLES AND PLANTING BEDS PRIOR TO PLANTING. INFORM LANDSCAPE ARCHITECT OF CONDITIONS OF POOR DRAINAGE.
9. LANDSCAPE CONTRACTOR SHALL COORDINATE AND ADJUST PLANT PLACEMENT WITH SPRINKLERS. PLANTS SHALL NOT BE PLACED WITHIN 12 INCHES OF A SPRINKLER HEAD.
10. CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN ALL PLANT MATERIALS IN A HEALTHY STATE DURING CONSTRUCTION. ANY DAMAGE TO PLANT MATERIAL DUE TO NEGLECT BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
11. SEE SHEET L-501 FOR LANDSCAPE DETAILS.

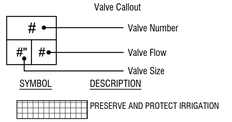
IRRIGATION NOTES

1. CONTRACTOR SHALL OBTAIN ALL PERMITS AND PAY REQUIRED FEES TO ANY GOVERNMENTAL AGENCY HAVING JURISDICTION OVER THE WORK. INSPECTIONS REQUIRED BY LOCAL ORDINANCES DURING CONSTRUCTION SHALL BE ARRANGED AND CONDUCTED BY THE CONTRACTOR.
2. BEFORE ANY TRENCHING, EXCAVATION OR DIGGING BELOW THE SURFACE FOR ANY REASON IS BEGUN, THE CONTRACTOR SHALL HAVE THE AREA "BLUE STAKED" IN ORDER TO DETERMINE AS CLOSE AS POSSIBLE THE LOCATIONS OF ALL UNDERGROUND UTILITIES. SHOULD UTILITIES NOT SHOWN ON THE PLANS BE FOUND DURING EXCAVATIONS THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT.
3. CONTRACTOR SHALL VERIFY THE AVAILABLE STATIC PRESSURE AND REPORT TO THE OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT.
4. PROTECT EXISTING TREES AND THEIR ROOT SYSTEMS. ROUTE IRRIGATION LINES AS NECESSARY TO MINIMIZE THE CUTTING OF TREE ROOTS.
5. THE CONTRACTOR SHALL CONDUCT WORK IN SUCH A MANNER TO PROTECT ALL SITE CONDITIONS AND UTILITIES TO REMAIN FROM DAMAGE. WHEN OCCURS, THE CONTRACTOR SHALL REPAIR THE DAMAGE AT THE CONTRACTOR'S EXPENSE.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTINUED WATERING OF ALL AREAS AFFECTED BY CONSTRUCTION. THIS CAN BE COMPLETED BY HAND WATERING, THE USE OF TEMPORARY IRRIGATION SYSTEMS, OR THE CONTINUED OPERATION OF EXISTING SYSTEMS NOT DISTURBED BY CONSTRUCTION.
7. ADJUST ALL RADII ON SPRINKLERS TO NOT SPRAY ONTO BUILDINGS, WALLS, WALKS, SIGNS, OR FENCES.
8. LANDSCAPE CONTRACTOR TO COORDINATE PLANT PLACEMENT WITH SPRINKLERS.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING PROPER COVERAGE OF ALL IRRIGATED AREAS.
10. USE EXISTING CONTROLLER
11. REBUILD, RECONFIGURE AND ADJUST THE IRRIGATION SYSTEM TO PROVIDE 100% COVERAGE. THE INSTALLED SYSTEM SHALL NOT SPRAY ONTO BUILDINGS, WALLS, WALKS, SIGNS, OR FENCES.
12. INSTALL NEW IRRIGATION MATERIAL SIMILAR TO THE EXISTING IRRIGATION MATERIALS USED ON SITE. MATCH HEADS, REMOTE VALVES, QUICK COUPLERS, ETC. AS NECESSARY TO MAKE SYSTEM OPERATIONAL.
13. THE IRRIGATION PIPING SHALL BE SIZED TO HAVE WATER SPEEDS UNDER FIVE FEET PER SECOND. NEW PIPING SHALL NOT CAUSE WATER SPEEDS IN THE EXISTING PIPE SYSTEM TO EXCEED FIVE FEET PER SECOND. PIPING SHALL BE PLACED SO THAT THERE IS 12 INCHES OF COVER ON LATERAL LINES AND 18 INCHES OF COVER ON MAINLINES AND ROTOR CIRCUIT LATERAL LINES.
14. FIELD VERIFY HEAD SPACING IN AREAS WHERE NEW AND OLD IRRIGATION SYSTEMS JOIN. ADJUST IRRIGATION SYSTEM HEAD SPACING TO PROVIDE COVERAGE AS REQUIRED IN SPECIFICATIONS.
15. RECONNECT THE IRRIGATION CONTROL WIRES AS REQUIRED TO CREATE AN OPERATIONAL SYSTEM. PUT ALL WIRE SPLICES IN SPLICE BOXES OR IN REMOTE CONTROL BOXES.
16. SEE SHEET L-501 FOR LANDSCAPE DETAILS.

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI
12 G / 12 T / 12 H / 12 F	New or Reused MP 3000 rotators 12 Series	7	30
15 G / 15 T / 15 H / 15 F	New or Reused MP 3000 rotators 15 Series	21	30
SYMBOL	**MANUFACTURER/MODEL/DESCRIPTION**	**QTY**	
	Existing Valve	2	
	Irrigation Lateral Line: PVC Schedule 40	304.3 lf	
	Pipe Sleeve: PVC Schedule 40	50.1 lf	

Valve Callout



SYMBOL	DESCRIPTION	QTY
	PRESERVE AND PROTECT IRRIGATION	1,333 sf

VALVE SCHEDULE

NUMBER	MODEL	SIZE	TYPE	GPM	PSI	PRECIP
1	Existing Valve	1"	Shrub Spray	42.05	42.4	1.99 in/h
2	Existing Valve	1"	Shrub Spray	20.78 +	35.0	1.32 in/h

NORTH

0 10 20 30 feet

SCALE: 1" = 10'

CONSTRUCTION DOCUMENTS

DESIGN WEST

LOGAN, UTAH
(435) 752-7031

SALT LAKE CITY, UTAH
(801) 539-8221

USU TSC - STAIR REMODEL

650 NORTH 800 EAST
LOGAN, UT 84322
UTAH STATE UNIVERSITY

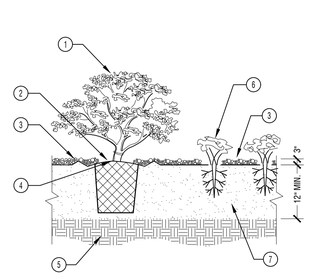
MARK:	DESCRIPTION:	DATE:

PROJECT #: 324242
DRAWN BY: J. CLEMENTS
CHECKED BY: B. WRIGHT
ISSUED: 03.28.2025

STATE OF UTAH
BLAKE C. WRIGHT
03.28.2025
105101-5301
LICENSED LANDSCAPE ARCHITECT

LANDSCAPE PLAN

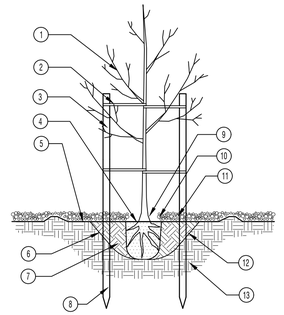
L-101



1. SHRUB (SEE PLANT SCHEDULE)
2. KEEP MULCH 3" AWAY FROM SHRUB AND PERENNIAL STEMS
3. MULCH PER PLAN
4. SOIL BACKFILL SHALL NOT BE ABOVE ROOT COLLAR
5. EXISTING SUBGRADE
6. PERENNIAL (SEE PLANT SCHEDULE)
7. BACKFILL WITH SPECIFIED TOPSOIL

C5 SHRUB AND PERENNIAL PLANTING

3/4" = 1'-0"

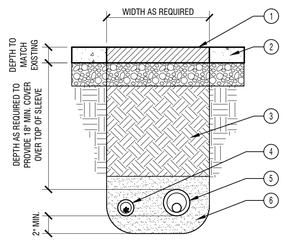


1. TREE (SEE PLANT SCHEDULE)
2. "CHAINLOCK" OR EQUAL TREE TIE MATERIAL (1" WIDTH). NAIL OR STAPLE TREE TIE MATERIAL TO STAKE TO HOLD VERTICALLY. LOOSELY LOOP EACH TIE AROUND HALF OF TREE TO PROVIDE 1" SLACK FOR TRUNK GROWTH
3. SUPPORT TREE WITH (2) 2" DIA. TREATED LODGEPOLE PINE DOWELED TREE STAKES (8'-0" LENGTH)
4. AFTER PLACING TREE IN HOLE, REMOVE WIRE AND BURLAP FROM THE UPPER HALF OF THE ROOT BALL (MORE IF THE ROOT BALL IS STABLE)
5. FINISH GRADE
6. PLANT PIT SHALL BE THREE TIMES LARGER THAN ROOTBALL. SLOPE EDGES AT 45° AND SCARIFY SIDE BEFORE PLANTING
7. BACKFILL PLANTING PIT WITH WITH NATIVE SOIL OR 1/2 NATIVE SOIL AND 1/2 SPECIFIED BACKFILL MIX
8. DRIVE STAKES 6" TO 1'-0" INTO UNDISTURBED SOIL BEFORE BACKFILLING
9. KEEP MULCH 3" AWAY FROM TREE TRUNK
10. PLACE 1-2" DEPTH OF MULCH OVER ROOT BALL
11. MULCH, SEE PLANS
12. EXCAVATE PLANTING PIT SO THAT THE ROOT FLARE SHALL BE 1-2" ABOVE FINAL GRADE OR 10% OF ROOT BALL
13. UNDISTURBED SUBGRADE

NOTES:
1. INSTALLATION INCLUDES STAKE REMOVAL ONE YEAR AFTER INSTALLATION.

B4 TREE PLANTING

3/8" = 1'-0"



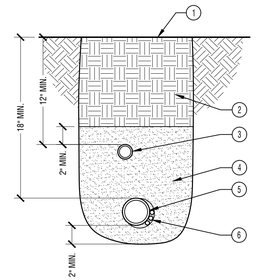
1. SAWCUT AND PATCH CONCRETE/ASPHALT AS REQUIRED
2. EXISTING CONCRETE/ASPHALT
3. COMPACTED BACKFILL FREE FROM ROCKS GREATER THAN 1/4" IN DIAMETER
4. CONTROL WIRES 6" TO EITHER SIDE OR 6" UNDER MAINLINE
5. PVC MAINLINE/LATERAL LINE IN SLEEVE
6. 2" SAND OR ROCK-FREE SOIL AROUND ALL PIPE

NOTES:
- SLEEVES 4" AND SMALLER, USE PVC SCH. 40 PIPE.
- SLEEVES >4", USE PVC SEWER PIPE.
- ALL SLEEVES FOR IRRIGATION PIPES SHALL BE 2X LARGER THAN PIPE TO BE SLEEVED.
- WIRE SLEEVES TO BE MINIMUM OF 2".
- SLEEVES TO EXTEND 12" INTO PLANTING AREA.

A3 PAVEMENT SLEEVE SECTION

1 1/2" = 1'-0"

P-3-USU-TSCS-08

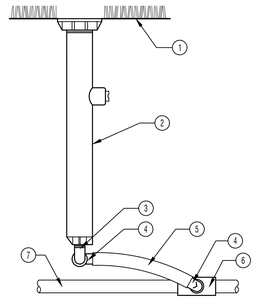


1. FINISH GRADE
2. COMPACTED BACKFILL
3. LATERAL PVC LINE (18" DEEP FOR ROTOR HEAD INSTALLATIONS)
4. 2" SAND OR ROCK-FREE SOIL AROUND ALL PIPE
5. PVC MAINLINE
6. TAPE WIRES TO SIDE OF MAINLINE AT 10'-0" O.C.

A4 TRENCH SECTION

1 1/2" = 1'-0"

P-3-USU-TSCS-06



1. FINISH GRADE
2. 12" POP-UP SPRAY HEAD
3. 90° MARLEX STREET ELL
4. 90° MARLEX ELL BARBED INSERT FITTING
5. LINEAR LOW DENSITY POLYETHYLENE PIPE (14" LONG MINIMUM, 24" LONG MAXIMUM)
6. PVC SCH. 40 TEE OR ELL
7. PVC LATERAL LINE

A5 12 IN. POP-UP SPRAY HEAD

3" = 1'-0"

P-3-USU-TSCS

CONSTRUCTION DOCUMENTS

DESIGN WEST

LOGAN, UTAH
(435) 752-7031

SALT LAKE CITY, UTAH
(801) 539-8221

USU TSC - STAIR REMODEL

650 NORTH 800 EAST
LOGAN, UT 84322
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MARK:	DESCRIPTION:	DATE:

PROJECT #: 324242
DRAWN BY: J. CLEMENTS
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ISSUED: 03.28.2025

STATE OF UTAH
LICENSED LANDSCAPE ARCHITECT
BLAKE C. WRIGHT
03.28.2025
10510I-5301

LANDSCAPE DETAILS

L-501

STRUCTURAL NOTES :

A. GENERAL

1. THE STRUCTURAL NOTES ARE INTENDED TO COMPLEMENT THE PROJECT SPECIFICATIONS WHICH ARE PART OF THE CONSTRUCTION DOCUMENTS. SPECIFIC NOTES AND DETAILS ON THE DRAWINGS SHALL GOVERN OVER THE STRUCTURAL NOTES AND TYPICAL DETAILS.
2. THESE DRAWINGS (AND, WHERE APPLICABLE, ACCOMPANYING WRITTEN SPECIFICATIONS) ARE THE ONLY CONTRACT DOCUMENTS PROVIDED BY ARW ENGINEERS FOR THE PROJECT REPRESENTED HEREIN. NOTHING IN ANY DIGITAL MODEL OR DIGITAL FILE RELATED TO THIS PROJECT SHALL BE TAKEN TO SUPERSEDE ANY INFORMATION SHOWN IN THESE DRAWINGS (INCLUDING, BUT NOT LIMITED TO, DIMENSIONS, SIZES, ETC).
3. THE ARCHITECTURAL DRAWINGS ARE THE PRIME CONTRACT DRAWINGS. THE STRUCTURAL DRAWINGS ARE SUPPLEMENTARY TO AND MUST BE USED IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS AND OTHER CONSULTANTS DRAWINGS. ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND/OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND STRUCTURAL ENGINEER BEFORE PROCEEDING WITH ANY WORK INVOLVED. IN CASE OF CONFLICT, FOLLOW THE MOST STRINGENT REQUIREMENT AS DIRECTED BY THE ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.
4. SEE SPECIFICATIONS FOR REQUIRED SUBMITTALS. SUBMITTALS SHALL BE MADE IN A TIMELY MANNER AS INDICATED IN SPECIFICATIONS. REVIEW OF SUBMITTALS BY ARW ENGINEERS IS FOR GENERAL COMPLIANCE ONLY AND IS NOT INTENDED AS APPROVAL. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL SIZES, DIMENSIONS, AND ELEVATIONS ON SUBMITTALS AS RELATED TO DESIGN DOCUMENTS. PREPARATION OF SHOP DRAWINGS FOR STRUCTURAL ELEMENTS WILL REQUIRE INFORMATION (I.E. DIMENSIONS, ETC.) FOUND IN THE ARCHITECTURAL, STRUCTURAL, AND OTHER CONSULTANTS DRAWINGS.
5. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AT THE SITE. IF ACTUAL CONDITIONS DIFFER FROM THOSE SHOWN ON CONTRACT DOCUMENTS, CONTRACTOR SHALL NOTIFY ARCHITECT PRIOR TO FABRICATION OR CONSTRUCTION OF ANY AFFECTED ELEMENTS.
6. THE CONTRACTOR SHALL COORDINATE AND VERIFY ALL LOCATIONS AND SIZES OF MECHANICAL EQUIPMENT OR OTHER EQUIPMENT BEFORE FABRICATING AND ERECTING STRUCTURAL ELEMENTS. SIZES AND LOCATIONS THAT DIFFER FROM THOSE SHOWN ON THE CONTRACT DOCUMENTS SHALL BE REPORTED TO THE ARCHITECT.
7. THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST TO THE ARCHITECT FOR ARCHITECT AND/OR ENGINEER APPROVAL BEFORE PROCEEDING WITH ANY CHANGES, MODIFICATIONS, OR SUBSTITUTIONS.
8. OBSERVATION VISITS TO THE SITE BY ARW ENGINEERS FIELD REPRESENTATIVES SHALL NEITHER BE CONSTRUED AS INSPECTION NOR APPROVAL OF CONSTRUCTION.
9. DURING AND AFTER CONSTRUCTION, BUILDER AND/OR OWNER SHALL KEEP LOADS ON STRUCTURE WITHIN THE LIMITS OF DESIGN LOADS AS NOTED IN THESE DOCUMENTS.
10. TYPICAL OR SIMILAR DETAILS AND SECTIONS SHALL APPLY WHERE SPECIFIC DETAILS ARE NOT SHOWN. TYPICAL OR SIMILAR DETAILS REFER TO THE CONDITION ADDRESSED AND ARE NOT NECESSARILY DETAILS LABELED “TYPICAL” OR “SIMILAR” IN THE PLANS AND DOCUMENTS.
11. DRAWINGS AND DETAILS HAVE BEEN PREPARED WITH THE INTENT TO VISUALLY REPRESENT INFORMATION PROVIDED IN SCALED FORM; HOWEVER CONTRACTOR/SUPPLIERS SHOULD NOT SCALE PLANS OR DETAILS FOR DIMENSIONAL INFORMATION.
12. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DESIGN AND INSTALL ADEQUATE TEMPORARY SHORING AND BRACING FOR ALL STRUCTURAL ELEMENTS UNTIL THE ENTIRE STRUCTURAL SYSTEM IS COMPLETED.
13. ENGINEER SHALL NOT BE RESPONSIBLE FOR ACTIVITIES UNDER CONTROL OF THE CONTRACTOR SUCH AS CONSTRUCTION SITE SAFETY, MEANS, METHODS AND SEQUENCING OF CONSTRUCTION. ENGINEER SHALL NOT BE RESPONSIBLE FOR FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS AS PRESCRIBED BY OSHA OR OTHER REGULATORY AGENCIES REGARDLESS OF INDICATIONS IN THESE DOCUMENTS.
14. NOTICE OF COPYRIGHT: THESE STRUCTURAL DRAWINGS ARE HEREBY COPYRIGHTED BY ARW ENGINEERS, ALL RIGHTS RESERVED. THESE DOCUMENTS DEFINE A STRUCTURE AND ARE INSTRUMENTS OF SERVICE, FOR ONE USE ONLY. REPRODUCTION AND DISTRIBUTION OF THESE DRAWINGS IS ONLY ALLOWED AS REQUIRED FOR REGULATORY AGENCIES AND FOR CONVEYANCE OF INFORMATION TO PARTIES INVOLVED IN THE CONSTRUCTION OF THIS PROJECT. THESE DOCUMENTS SHALL NOT BE REPRODUCED OR COPIED, IN PART OR WHOLE BY ANY PARTY FOR USE IN PREPARATION OF SHOP DRAWINGS OR OTHER SUBMITTALS.
15. WHERE THE WORD "SHALL" OCCURS IN THESE DRAWINGS AND ANY ACCOMPANYING SPECIFICATIONS, IT IS CONSIDERED A MANDATORY OBLIGATION AND SYNONYMOUS WITH THE PHRASE "HAS DUTY TO".

B. STATEMENT OF SPECIAL INSPECTIONS AND SPECIAL INSPECTIONS

1. SPECIAL INSPECTIONS AND TESTING ARE TO BE PROVIDED AS REQUIRED BY IBC SECTIONS 1704 THROUGH 1705 AND OTHER APPLICABLE SECTIONS OF THE IBC. THE TYPE AND FREQUENCY OF TESTING AND SPECIAL INSPECTIONS SHALL BE AS NOTED IN THE SPECIAL INSPECTION SCHEDULE, JOB SPECIFICATIONS, AND ACCORDANCE WITH IBC SECTION 110 AND CHAPTER 17. CONTRACTOR SHALL COORDINATE AND COOPERATE WITH REQUIRED INSPECTIONS.
2. ALL TESTING AND SPECIAL INSPECTION SHALL BE PROVIDED BY A QUALIFIED INDEPENDENT SPECIAL INSPECTION AGENCY IN ACCORDANCE WITH IBC 1704 AND AS OUTLINED IN THE JOB SPECIFICATIONS. REPORTS OF FINDINGS OR DISCREPANCIES SHALL BE NOTED AND FORWARDED TO THE CONTRACTOR, ARCHITECT, ENGINEERS, AND BUILDING OFFICIAL IN A TIMELY MANNER.
3. STRUCTURAL OBSERVATION VISITS SHALL BE PERFORMED BY A REPRESENTATIVE FROM ARW ENGINEERS IN ACCORDANCE WITH THE CONTRACT AS NEEDED TO OBSERVE THE CONSTRUCTION OF CRITICAL BUILDING ELEMENTS (I.E. FOOTINGS, BRACED FRAMES, MOMENT FRAMES, DRAG STRUTS AND THEIR CONNECTIONS, COLLECTORS, AND ROOF AND FLOOR DIAPHRAGMS). STRUCTURAL OBSERVATION REPORTS FOR EACH VISIT SHALL BE SENT DIRECTLY TO THE ARCHITECT FOR DISTRIBUTION TO THE CONTRACTOR AND BUILDING OFFICIAL. STRUCTURAL OBSERVATION VISITS SHALL NEITHER BE CONSTRUED AS SPECIAL INSPECTION NOR APPROVAL OF COMPLETED CONSTRUCTION.
4. IN ACCORDANCE WITH IBC 1704.4, THE CONTRACTOR SHALL SUBMIT A WRITTEN CONTRACTOR’S STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND OWNER.

C. BASIS OF DESIGN

1. GOVERNING BUILDING CODE : INTERNATIONAL BUILDING CODE (IBC) 2021
RISK CATEGORY : II

D. FOUNDATION

1. GENERAL
   a. DESIGN SOIL PRESSURE : 1500 PSF
   b. ALL FOOTINGS SHALL BE PLACED ON MECHANICALLY COMPACTED FILL COMPACTED TO NOT LESS THAN 95% OF MODIFIED PROCTOR DENSITY (ASTM D-1557).
   c. UNLESS NOTED OTHERWISE, ALL CONCRETE SLABS ON EARTH SHALL BEAR ON STRUCTURAL FILL COMPACTED TO 90% OF MODIFIED PROCTOR DENSITY (ASTM D-1557).
   d. TOP OF FOOTING ELEVATIONS SHOWN ON THE FOOTING AND FOUNDATION PLAN ARE BASED ON PRELIMINARY GRADING INFORMATION AND SHALL BE VERIFIED PRIOR TO CONSTRUCTION. STEPS WHERE SHOWN ARE AT APPROXIMATE LOCATIONS. ACTUAL STEP LOCATIONS SHALL BE AT THE CONTRACTOR’S DISCRETION BASED UPON FIELD CONDITIONS. ALL EXTERIOR FOUNDATIONS SHALL BEAR A MINIMUM OF 36" BELOW LOWEST ADJACENT FINAL GRADE.
   e. ALL WALLS (EXCEPT CANTILEVERED RETAINING WALLS) SHALL BE ADEQUATELY BRACED AGAINST LATERAL MOVEMENT PRIOR TO BACKFILLING. DESIGN AND ERECTION OF BRACING/SHORING SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. BRACING SHALL REMAIN IN PLACE UNTIL SUPPORTING STRUCTURAL ELEMENTS ARE IN PLACE AND HAVE ATTAINED FULL STRENGTH.
   f. UNLESS NOTED OTHERWISE, ALL FOOTINGS SHALL HAVE VERTICAL FACES FORMED WITH STANDARD FORMING MATERIALS (WOOD, METAL, ETC.). WITH PRIOR APPROVAL OF ARCHITECT AND ENGINEER, CONCRETE FOR FOOTINGS CAN BE PLACED IN EXCAVATED SOIL “FORMS” PROVIDED THAT THE DIMENSIONS ARE INCREASED 3” ON ALL SIDE.
   g. UNLESS NOTED AND DETAILED OTHERWISE, NO PIPES, DUCTS, CONDUITS, NON-STRUCTURAL ITEMS, ETC. SHALL BE BURIED BELOW OR EMBEDDED IN FOOTINGS / FOUNDATION WALLS. SEE TYPICAL DETAIL FOR CONDITIONS WHERE THESE ITEMS CROSS OR RUN PARALLEL TO FOOTINGS / FOUNDATION WALLS.

Structural Sheet Index

SHEET NUMBER	SHEET NAME
S001	STRUCTURAL NOTES
S010	SCHEDULES
S011	SCHEDULES
S101	FOOTING & FOUNDATION PLAN
S201	DETAILS

E. CONCRETE

1. ALL CONCRETE MIX DESIGNS SHALL COMPLY WITH THE PROJECT SPECIFICATIONS AND THE REQUIREMENTS LISTED BELOW :

ELEMENT	EXPOSURE CATEGORY F S W C	f'c, AT 28 DAYS (PSI)	MAX. W/C RATIO	AIR CONTENT %	MAX. AGGREGATE SIZE
FTG / FDN Walls[a]	F0 S0 W1 C0	3000	---	---	1"
FTG / FDN Walls[b]	F2 S0 W1 C1	4500	0.45	Note c	1"
Retaining Walls	F2 S0 W1 C1	4500	0.45	Note c	1"
All Other Site Cast Concrete	F2 S0 W1 C1	4500	0.45	Note c	1"

NOTES :
   a. ELEMENT IS NOT EXPOSED TO FREEZING AND / OR IS BURIED IN SOIL BELOW THE FROST LINE.
   b. ELEMENT IS EXPOSED TO FREEZING AND / OR IS LOCATED ABOVE THE FROST LINE.
   c. TOTAL AIR CONTENT FOR CONCRETE EXPOSED TO CYCLES OF FREEZING AND THAWING SHALL BE DETERMINED IN ACCORDANCE WITH THIS SCHEDULE. TOLERANCE ON AIR CONTENT AS DELIVERED SHALL BE +/- 1.5 PERCENT.

NOMINAL MAXIMUM AGGREGATE SIZE, IN.	TARGET AIR CONTENT, PERCENT F1	F2 AND F3
3/8	6	7.5
1/2	5.5	7
3/4	5	6
1	4.5	6
1-1/2	4.5	5.5
2	4	5
3	3.5	4.5

2. WATER USED IN MIXING CONCRETE SHALL CONFORM TO ASTM C1602.
3. NO CONDUIT, PIPES, DUCTS, SLEEVES, ETC. SHALL BE PLACED IN STRUCTURAL CONCRETE UNLESS SPECIFICALLY DETAILED OR APPROVED BY THE STRUCTURAL ENGINEER. NO ALUMINUM PRODUCTS SHALL BE EMBEDDED IN CONCRETE. PENETRATIONS THRU STRUCTURAL CONCRETE ELEMENTS MUST BE APPROVED BY THE ENGINEER AND SHALL BE BUILT INTO THE ELEMENT PRIOR TO CONCRETE PLACEMENT.
4. REFER TO ARCHITECTURAL DRAWINGS FOR MOLDS, GROOVES, ORNAMENTS, ETC. TO BE CAST IN TO CONCRETE, AND FOR EXTENT AND LOCATION OF DEPRESSIONS, CURBS, RAMPS, ETC.
5. UNLESS NOTED OTHERWISE, CONCRETE SLABS ON EARTH SHALL BE 5" THICK REINFORCED WITH FIBERMESH 300 WITH 1.5 LBS/CU. YD. SEE SPECIFICATIONS FOR ADDITIONAL CONCRETE REQUIREMENTS.
6. UNLESS NOTED OTHERWISE, FOR NON-DETAILED OPENINGS IN CONCRETE WALLS LARGER THAN 12” AND SMALLER THAN 24” IN ANY DIRECTION ADD (2) #5 BARS ON ALL SIDES IN ADDITION TO REGULAR WALL REINFORCING AND EXTEND 24” EACH WAY BEYOND OPENING. IF 24” IS NOT AVAILABLE ON EVERY SIDE, NOTIFY STRUCTURAL ENGINEER FOR FURTHER DIRECTION. OPENINGS SHALL HAVE A MINIMUM OF 12" OF CONCRETE ABOVE THE OPENING, TYP.
7. CONSTRUCTION JOINTS NOT SHOWN ON THE PLANS SHALL BE MADE AND LOCATED SO AS TO NOT IMPAIR THE STRENGTH OF THE STRUCTURE AND AS APPROVED BY THE STRUCTURAL ENGINEER. PROVIDE 2 X 4 (SHAPED) KEYWAY IN ALL VERTICAL AND HORIZONTAL JOINTS UNLESS NOTED OR DETAILED OTHERWISE. ALL STEEL REINFORCING SHALL BE CONTINUOUS THROUGH COLD JOINTS UNLESS NOTED OTHERWISE. SEE TYPICAL DETAILS FOR COLD/CONSTRUCTION JOINTS FOR SLABS ON GRADE.
8. WHERE NEW CONCRETE IS PLACED AGAINST PREVIOUSLY HARDENED CONCRETE, THE JOINT SHALL BE CLEAN AND FREE OF LAITANCE. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, CONSTRUCTION JOINTS SHALL BE PREWETTED AND STANDING WATER REMOVED.

F. ANCHOR BOLTS/EMBEDDED BOLTS

1. ALL ANCHOR BOLTS SHALL HAVE ASTM A-563 HEAVY HEX NUT AND ASTM F-436 WASHERS AT STANDARD OR OVERSIZED HOLES PER AISC SPECIFICATION TABLE J3.3. WHERE HOLE SIZES DO NOT COMPLY WITH THE LIMITATIONS FOR OVERSIZED HOLES THE STRUCTURAL ENGINEER SHALL BE NOTIFIED TO DETERMINE STEEL PLATE WASHER REQUIREMENTS. ANCHOR BOLTS SHALL COMPLY WITH THE FOLLOWING :
   a. AT ALL ANCHOR BOLTS (UNLESS NOTED OTHERWISE) - ASTM F1554 GRADE 36 HEADED BOLTS. (ASTM A36 THREADED ROD MAY BE USED WITH DOUBLE NUT AND WASHER.)
2. SEE TYPICAL ANCHOR BOLT DETAIL FOR DEFINITIONS OF EMBEDMENT LENGTH, ETC.
3. FURNISH TEMPLATES AND OTHER DEVICES AS NECESSARY FOR PRESETTING ALL BOLTS PRIOR TO PLACING CONCRETE AND/OR GROUT.
4. IF THREADED RODS ARE USED AS PERMITTED ABOVE, THEY SHALL BE CLEAR OF SOIL AND DIRT.

G. ADHESIVE/MECHANICAL ANCHORS

1. WITHOUT WRITTEN APPROVAL OF THE ENGINEER, CONTRACTOR SHALL NOT SUBSTITUTE POST-INSTALLED ANCHORS WHERE CAST-IN-PLACE ANCHORS ARE SPECIFIED IN THE DRAWINGS.
2. WHERE STRUCTURAL DETAILS SPECIFY SPECIFIC BRANDS AND/OR TYPES OF ADHESIVES OR ANCHORS, SUBSTITUTIONS OF OTHER BRANDS AND/OR TYPES IS NOT ALLOWED, WITHOUT WRITTEN APPROVAL OF THE ENGINEER.
3. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS SHALL BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. SUBSTITUTION REQUESTS SHALL INCLUDE AN ICC ESR OR IAPMO REPORT AND SUPPORTING CALCULATIONS INDICATING COMPLIANCE WITH DESIGN INTENT.
4. ALL ADHESIVE/MECHANICAL ANCHORS SHALL BE INSTALLED, INCLUDING HOLE DRILLING AND PREPARATION, IN ACCORDANCE WITH AN APPROVED INDEPENDENT EVALUATION REPORT (ICC-ES, IAPMO, OR APPROVED EQUAL), AS INDICATED BELOW, AND IN ACCORDANCE WITH ALL MANUFACTURER’S PRINTED INSTALLATION INSTRUCTIONS (MPII).
5. INSTALLERS SHALL BE, AT A MINIMUM, TRAINED FOR THE SPECIFIC APPLICATION INSTALLATION TECHNIQUE FOR THE SPECIFIC PRODUCT BY THE PRODUCT MANUFACTURERS FIELD EMPLOYEE OR SHALL POSSESS A TRAINING CARD OBTAINED BY THE MANUFACTURERS ONLINE TRAINING PROGRAM.
6. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING A MINIMUM AGE OF 21 DAYS AT TIME OF ANCHOR INSTALLATION. ADHESIVE ANCHORS SHALL NOT BE FULLY LOADED UNTIL CONCRETE HAS REACHED DESIGN STRENGTH.
7. ADHESIVE ANCHORS SHALL CONSIST OF REINFORCING BAR OR THREADED RODS AS INDICATED IN THESE DOCUMENTS.
8. UNLESS APPROVED BY THE ENGINEER OF RECORD, CONCRETE AND DRILLED ANCHOR HOLES SHALL BE DRY AND FREE OF WATER FOR 14 DAYS PRIOR TO ADHESIVE INSTALLATION. CONTACT THE ENGINEER OF RECORD FOR GUIDANCE IF THE CONTRACTOR CHOOSES TO INSTALL IN DAMP, WATER-SATURATED, OR WATER-FILLED HOLES.
9. CONCRETE TEMPERATURE AT THE TIME OF INSTALLATION SHALL BE MONITORED BY THE CONTRACTOR. CONTRACTOR SHALL COMPLY WITH ALL MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII) RELATIVE TO SUBSTRATE TEMPERATURE.
10. INSTALLATION OF ADHESIVE ANCHORS HORIZONTALLY OR UPWARDLY INCLINED TO SUPPORT SUSTAINED TENSION LOADS SHALL BE PERFORMED BY PERSONNEL CERTIFIED BY AN APPLICABLE CERTIFICATION PROGRAM. CERTIFICATION SHALL INCLUDE WRITTEN AND PERFORMANCE TESTS IN ACCORDANCE WITH THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM, OR EQUIVALENT IN ACCORDANCE WITH ACI 318-19 26.7.2 (e) PROOF OF CURRENT CERTIFICATION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. CONTINUOUS SPECIAL INSPECTION SHALL BE PROVIDED FOR THESE ANCHORS.
11. UNLESS NOTED OTHERWISE, ALL ADHESIVE ANCHORS INTO CONCRETE SHALL BE:
   a. HILTI HIT-RE 500V3 (ESR-3814), OR HILTI HIT-HY 200-V3 (ESR-4868).
   b. SIMPSON SET-3G (ESR-4057), OR AT-XP (ER-263).
   c. DEWALT PURE 110+ (ESR-3298), OR AC200+ GOLD (ESR-4027-COLD WEATHER).
12. UNLESS NOTED OTHER WISE, ALL MECHANICAL ANCHORS INTO CONCRETE SHALL BE:
   a. HILTI KWIK BOLT-TZ2 (ESR-4266).
   b. SIMPSON STRONG-BOLT 2 (ESR-3037).
13. UNLESS NOTED OTHERWISE, ALL SCREW ANCHORS INTO CONCRETE SHALL BE:
   a. SIMPSON TITEN HD (ESR-2713).
   b. DEWALT SCREWBOLT+ (ESR-3889).
   c. HILTI KH-EZ (ESR-3027).
14. THE TESTING LABORATORY WILL PERFORM VISUAL INSPECTION OF ANCHORS AND DOWELS AS SPECIFIED IN THE SPECIAL INSPECTION SCHEDULE AND THE APPROVED INDEPENDENT EVALUATION REPORT. TENSION TESTING CAN BE REQUIRED AT THE DIRECTION OF THE STRUCTURAL ENGINEER OF RECORD OR THE SPECIAL INSPECTOR.
15. IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, ABANDON THAT HOLE AND SHIFT THE ANCHOR LOCATION TO AVOID THE REINFORCEMENT. PROVIDE A MINIMUM SPACE OF (2) ANCHOR HOLE DIAMETERS OR 2 INCHES, WHICH EVER IS LARGER, OF SOUND CONCRETE/MASONRY BETWEEN THE ANCHOR AND THE ABANDONED HOLE. FILL THE ABANDONED HOLE WITH NON-SHRINK GROUT OR AN APPROVED ANCHORING ADHESIVE. AT CONTRACTORS OPTION, LOCATE EXISTING REINFORCEMENT PRIOR TO DRILLING/CORING. IF THE ANCHOR OR DOWEL CANNOT BE SHIFTED AS NOTED ABOVE, THE ENGINEER WILL DETERMINE A NEW LOCATION.
16. LOCATE REINFORCEMENT AND CONFIRM FINAL ANCHOR LOCATIONS PRIOR TO FABRICATING PLATES, MEMBERS, OR OTHER STEEL ASSEMBLIES ATTACHED WITH MECHANICAL ANCHORS.

H. REINFORCING STEEL

1. REINFORCING BAR STRENGTH REQUIREMENTS:
   a. ALL REINFORCING BARS SHALL CONFORM TO ASTM STANDARD A-615 GRADE 60 AND ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM STANDARD A-1064 AND SHALL BE SUPPLIED IN FLAT SHEETS. ADEQUATELY TIE AND SUPPORT ALL REINFORCING STEEL AS SPECIFIED BY ACI 117, TO MAINTAIN EXACT REQUIRED POSITION.
2. HEADED SHEAR STUD ASSEMBLIES SHALL CONFORM TO ASTM A1044.
3. HEADED DEFORMED BARS SHALL CONFORM TO ASTM A970. OBSTRUCTIONS OR INTERRUPTIONS OF THE BAR DEFORMATIONS, IF ANY, SHALL NOT EXTEND MORE THAN 2 BAR DIAMETERS FROM THE BEARING FACE OF THE HEAD.
4. ALL REINFORCING STEEL SHALL BE TIED IN PLACE AND ADEQUATELY SUPPORTED PRIOR TO PLACING CONCRETE. WET STABBING OF ANY REINFORCING STEEL IS NOT PERMITTED, UNLESS SPECIFICALLY DETAILED OTHERWISE OR APPROVED BY THE ENGINEER.
5. ALL FIELD BENT DOWELS SHALL BE GRADE 40 WITH SPACING INDICATED REDUCED BY 1/3.
6. UNLESS NOTED OTHERWISE, REINFORCEMENT SHALL HAVE THE FOLLOWING CONCRETE COVERAGE :
   a. CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH ….. 3”
   b. EXPOSED TO EARTH OR WEATHER :
      1. #6 & LARGER ….. 2”
      2. #5 & SMALLER …..1-1/2”
   c. NOT EXPOSED TO WEATHER OR EARTH :
      1. SLABS, WALLS, JOISTS, #11 & SMALLER ….. 3/4”
      2. BEAMS, COLUMNS: MAIN REINFORCING OR TIES ….. 1-1/2”
   d. SLAB ON GRADE :
      1. PLACE REINFORCING AT CENTER OF SLAB UNLESS INDICATED OTHERWISE.
7. EXCEPT WHERE NOTED ON PLANS OR DETAILS CONTINUOUS REINFORCEMENT SHALL BE SPLICED AT POINTS OF MINIMUM STRESS BY LAPPING PER THE REBAR LAP SCHEDULE.
8. REINFORCING STEEL MAY BE SPLICED WITH MECHANICAL COUPLERS THAT HAVE A TENSION CAPACITY OF AT LEAST 125% OF THE STRENGTH OF THE BAR. MECHANICAL COUPLERS SHALL BE A POSITIVE CONNECTING TYPE COUPLER, AND SHALL BE INSTALLED IN ACCORDANCE WITH AN APPROVED ICC RESEARCH REPORT. WHERE THESE ARE USED, SPLICES ON ADJACENT BARS SHALL BE STAGGERED AT LEAST 24 INCHES ALONG THE LENGTH OF THE BARS.
9. ALL VERTICAL REINFORCING IN STRUCTURAL ELEMENTS ABOVE SHALL BE SPLICED WITH MATCHING DOWELS EMBEDDED WITHIN THE FOOTINGS OR STRUCTURE BELOW. SPLICE LENGTHS SHALL COMPLY WITH REBAR LAP SCHEDULE. DOWELS INTO FOOTINGS SHALL TERMINATE WITH A STANDARD HOOK, AND SHALL EXTEND TO WITHIN 4” OF THE BOTTOM OF THE FOOTING, BUT NEED NOT EXTEND MORE THAN 20” INTO FOOTING.
10. DO NOT WELD REINFORCING EXCEPT AS NOTED ON PLANS, WHERE REINFORCING IS WELDED, USE ASTM A-706 REINFORCING.
11. REINFORCING BARS, TIES, AND TENDONS SHALL BE SUPPORTED BY NYLON CONES, PLASTIC-COATED TIE-WIRES, OR PLASTIC-COATED CHAIRS. REINFORCING IN FOOTINGS IS PERMITTED TO BE SUPPORTED ON CONCRETE DOBIES.
12. UNLESS NOTED OTHERWISE, HOOKS, STIRRUPS, TIES, AND OTHER BENDS IN REINFORCING STEEL SHALL MEET THE STANDARDS SET FORTH IN ACI 318/318R-19. UNLESS OTHERWISE PERMITTED BY THE ENGINEER, ALL REINFORCEMENT SHALL BE BENT COLD. REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT, EXCEPT AS SHOWN ON THESE DRAWINGS OR OTHERWISE PERMITTED BY THE ENGINEER.
13. UNLESS SPECIFICALLY NOTED AND/OR DETAILED IN THE STRUCTURAL DRAWINGS CONDUIT SHALL NOT BE IN CONTACT WITH REINFORCING STEEL.

I. STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING:
   a. ANSI/AISC 360-16 “SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS”, WITH “COMMENTARY” AND “SUPPLEMENTS” AS REQUIRED BY BUILDING CODE.
   b. AISC 303-16 “CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES” EXCLUDING THE FOLLOWING SECTIONS: 4.4, 4.4.1, AND 4.4.2.
   c. AISI “SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS”.
   d. AISC “SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS”.
   e. AWS D1.1 AND 1.3, “STRUCTURAL WELDING CODE” (EXCEPT SPECIFIC ITEMS DO NOT APPLY IF THEY CONFLICT WITH AISC).
   f. ANSI/AISC 341-16 “SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS”.
   g. AWS D1.8, "STRUCTURAL WELDING CODE - SEISMIC".
2. STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING:
   a. WIDE FLANGE SHAPES, CHANNELS, AND WT SHAPES - ASTM A992 (Fy = 50 ksi)
   b. OTHER SHAPES, PLATES, ANGLES, AND BARS - ASTM A572 (Fy = 50 ksi) (UNO)
   c. HOLLOW STRUCTURAL SECTIONS (HSS) - ASTM A500, GRADE C (Fy = 50 ksi)
   d. STAINLESS STEEL SHAPES, PLATES, AND FASTENERS – ASTM 304
   e. DEFORMED BAR ANCHORS (DBA) - ASTM A-496, WELDED IN ACCORDANCE WITH AWS D1.1
   f. HEADED STUD ANCHORS (HSA) - ASTM A-108, GRADE 1015 STEEL AND WELDED IN ACCORDANCE WITH AWS D1.1 FOR TYPE “B”. USE 3/4” DIAMETER STUDS, UNLESS NOTED OTHERWISE.
   g. THREADED ROD - ASTM A-449.
   h. NON-SHRINK GROUT - ASTM C1107. NON-SHRINK GROUT SHALL BE PRE-PACKAGED, NON-METALLIC, WITH A 28-DAY COMPRESSIVE STRENGTH OF 6,000 PSI.
3. CONNECTIONS SHALL COMPLY WITH THE STRUCTURAL DRAWINGS UNLESS WRITTEN APPROVAL TO CHANGE IS GIVEN BY THE STRUCTURAL ENGINEER.
4. ALL SHOP FABRICATIONS SHALL BE PERFORMED BY AN APPROVED FABRICATOR IN ACCORDANCE WITH SECTIONS 1702 AND 1704 OF THE IBC OR WITH SHOP INSPECTION BY AN INDEPENDENT AGENCY IN ACCORDANCE WITH SECTION 1704.2.5 OF THE IBC.
5. WELDING
   a. ALL WELDING AND CUTTING SHALL BE PERFORMED BY AWS QUALIFIED WELDERS IN ACCORDANCE WITH ANSI/AWS D1.1 (LATEST EDITION).
   b. USE E-70XX ELECTRODES UNLESS NOTED OTHERWISE. E-60XX MAY BE USED FOR WELDING STEEL DECKS.
   c. ALL INTERSECTING STEEL SHAPES WHICH ARE NOT CONNECTED WITH BOLTS SHALL BE WELDED TOGETHER WITH A FILLET WELD ALL AROUND UNLESS NOTED OTHERWISE. WHERE WELD SIZES ARE NOT SHOWN, USE THE FOLLOWING:
      1. WHERE THE THICKNESS OF THE CONNECTED PARTS IS EQUAL TO OR THICKER THAN 1/4”, WELD SIZE SHALL BE 1/16” LESS THAN THE THICKNESS OF THE THINNEST PART.
      2. WHERE ANY OF THE CONNECTED PARTS IS LESS THAN 1/4” THICK, WELD SIZE SHALL BE THE SAME AS THE THICKNESS OF THE THINNEST PART.
   d. WELDING OF HSA’S (HEADED STUD ANCHORS) AND DBA’S (DEFORMED BAR ANCHORS) SHALL CONFORM TO THE MANUFACTURER’S SPECIFICATIONS AND AWS D1.1 REINFORCING BARS SHALL NOT BE SUBSTITUTED FOR HSA'S OR DBA'S.
   e. WHEREVER POSSIBLE, WELDS SHALL BE SHOP WELDS. SPECIAL CONSIDERATIONS, SUCH AS ITEMS WHICH MAY NEED ADJUSTMENT AT THE SITE, REQUIRE THAT SOME WELDS BE FIELD WELDS. WHERE QUESTIONS OR DISCREPANCIES OCCUR THE CONTRACTOR SHALL COORDINATE THE WORK BETWEEN THE SHOP FABRICATOR AND THE STEEL ERECTOR.
6. BOLTING
   a. UNLESS NOTED OTHERWISE, ALL STRUCTURAL STEEL TO STEEL CONNECTIONS SHALL USE HIGH STRENGTH BOLTS CONFORMING TO ASTM F3125 GR. A325.
   b. UNLESS NOTED OTHERWISE, ALL BOLTING IS CLASSIFIED AS NON-SLIP CRITICAL BEARING TYPE CONNECTIONS WITH THREADS INCLUDED IN SHEAR PLANE. TIGHTEN BOLTS TO A SNUG TIGHT CONDITION, WITH ALL PLIES OF THE JOINT IN FIRM CONTACT.
   c. WHERE OVERSIZED OR SLOTTED HOLES OCCUR IN THE OUTER PLY, AN ASTM F436 WASHER OR 5/16” THICK COMMON PLATE WASHER SHALL BE USED AS REQUIRED TO COMPLETELY COVER THE HOLE.
   d. BOLTS SHALL BE CENTERED IN SLOTTED HOLES, UNLESS NOTED OTHERWISE.
   e. WHERE A STEEL BEAM TO BEAM CONNECTION IS NOT SHOWN, PROVIDE AN AISC STANDARD FRAMED CONNECTION SIZED FOR 1/2 OF THE TOTAL LOAD CAPACITY OF THE BEAM FOR THE SPAN AND STEEL
   SPECIFIED.

J. EXISTING BUILDING NOTES

1. ARW ENGINEERS EXPRESSLY DISCLAIMS RESPONSIBILITY FOR ANY PORTION OF THE EXISTING BUILDING NOT SPECIFICALLY ADDRESSED IN THESE DRAWINGS.
2. DRAWINGS AND DETAILS HAVE BEEN PREPARED TO REFLECT THE EXISTING CONDITIONS AND CONFIGURATIONS OF STRUCTURAL ELEMENTS. HOWEVER, THE CONTRACTOR IS ULTIMATELY RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS AND ALERTING THE ENGINEER OF ANY DISCREPANCIES FOUND PRIOR TO FABRICATING OR INSTALLING STRUCTURAL ELEMENTS.
3. THE CONTRACTOR IS RESPONSIBLE FOR MAKING SURE THAT THE BUILDING AND ELEMENTS WITHIN THE BUILDING REMAIN STABLE UNTIL CONSTRUCTION IS COMPLETE. AT NO ADDITIONAL COST TO THE OWNER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SHORING OR OTHER TEMPORARY SUPPORT OF STRUCTURAL MEMBERS UNTIL THE FINAL CONFIGURATION HAS BEEN COMPLETED.

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MARK: DATE: DESCRIPTION:

DW PROJECT #: 324242
ARW PROJECT #: 24933
DRAWN BY: ZT
CHECKED BY: JLB
ISSUED: 03/28/25

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STRUCTURAL NOTES

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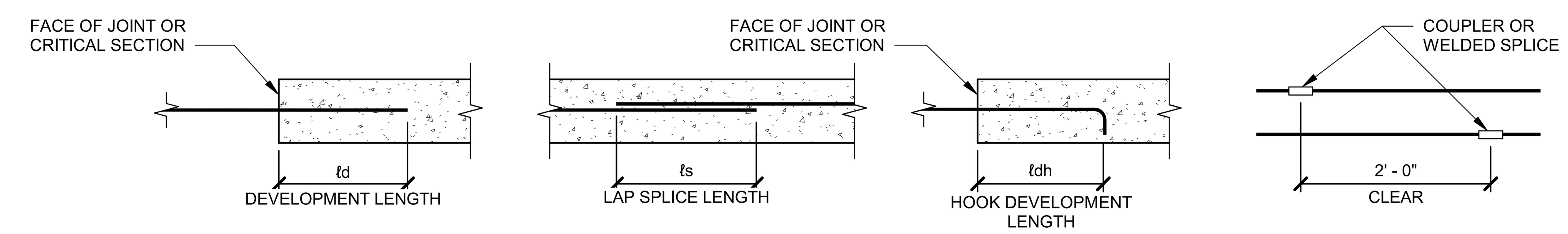
2021 IBC CONCRETE REBAR LAP SPLICE SCHEDULE (60KSI REBAR)

FOR CONCRETE APPLICATIONS (ACI 318 - 19)



BAR LOCATION	CONCRETE		CONCRETE REINFORCING & SPLICE LENGTHS (IN) — BAR SIZE																									COMMENTS
	TYPE	STRENGTH	#3			#4			#5			#6			#7			#8			#9			#10			#11			
			ℓd	ℓs	ℓdh	ℓd	ℓs	ℓdh	ℓd	ℓs	ℓdh	ℓd	ℓs	ℓdh	ℓd	ℓs	ℓdh	ℓd	ℓs	ℓdh	ℓd	ℓs	ℓdh	ℓd	ℓs	ℓdh	ℓd	ℓs	ℓdh	
VERT. WALL BARS, FILL ON METAL DECK	NWC	4500 PSI	14	18	6	18	23	6	23	30	8	27	35	10	40	52	12	45	59	15	51	66	18	57	74	21	64	83	25	
HORIZ. WALL BARS, FOOTING TOP BARS	NWC	4500 PSI	18	23	6	24	31	6	30	39	8	35	46	10	51	66	12	59	77	15	66	86	18	74	96	21	82	107	25	
BEAM BOTTOM BARS, COLUMN BARS	NWC	4500 PSI	14	18	6	18	23	9	23	30	12	27	35	16	40	52	20	45	59	24	51	66	29	57	74	34	64	83	40	
FOOTING BOTTOM BARS, SLAB ON GRADE	NWC	4500 PSI	12	16	6	12	16	6	13	17	8	16	21	10	23	30	12	26	34	15	29	38	18	33	43	21	36	47	25	
SLAB TOP BARS[5] BEAM TOP BARS	NWC	4500 PSI	18	23	6	24	31	9	30	39	12	35	46	16	51	66	20	59	77	24	66	86	29	74	96	34	82	107	40	

NOTES :

1. MECHANICAL COUPLERS MAY BE USED IN LIEU OF LAP SPLICES SHOWN. SEE STRUCTURAL NOTES FOR MINIMUM COUPLER CAPACITY. WHERE MECHANICAL COUPLERS ARE USED, STAGGER ADJACENT SPLICES A MINIMUM OF 24" AS INDICATED ABOVE.
2. WHERE EPOXY COATING IS USED, LENGTHS INDICATED IN THIS SCHEDULE SHALL BE INCREASED BY 50%. HOOKED DEVELOPMENT LENGTHS (ℓdh) SHALL INCREASE BY 20%.
3. WHEN SPLICING BARS OF DIFFERENT SIZES, USE LAP SPLICE LENGTH OF LARGER BARS UNO.
4. SPLICE BARS LARGER THAN #11 USING MECHANICAL COUPLERS.
5. SLAB TOP BARS ONLY FOR SLABS 12" OR GREATER IN THICKNESS.
6. WHERE LIGHTWEIGHT CONCRETE IS USED, LENGTHS INDICATED IN THIS SCHEDULE SHALL BE INCREASED BY 33%.

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CONSTRUCTION DOCUMENTS

SCHEDULES

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D

C

B

A

SPECIAL INSPECTION SCHEDULE [1, 2]

ESTABLISHED PER 2021 IBC SECTION 110 AND CHAPTER 17

ITEM	CONTINUOUS[3]	PERIODIC[3]	REFERENCE
PRE-FAB CONSTRUCTION (IBC 1704.2)			REFERENCE NOTES P1 & P2
CONCRETE CONSTRUCTION (IBC 1705.3)			SEE IBC TABLE 1705.3 - REF. NOTE C1
REINFORCING STEEL PLACEMENT		●	
WELDING OF REINFORCING STEEL	●	●	REFERENCE NOTE C2
ANCHORS CAST IN CONCRETE	●		
VERIFYING REQUIRED DESIGN MIX		●	
CONCRETE PLACEMENT / SAMPLING	●		REFERENCE NOTE C3
CURING TEMPERATURE / TECHNIQUES		●	
CONCRETE AND SHOTCRETE PLACEMENT / APPLICATION TECHNIQUES	●		
VERIFICATION OF IN-SITU STRENGTH		●	REFERENCE NOTE C4
POST-INSTALLED ANCHOR PLACEMENT	●	●	REFERENCE NOTE C5
FORMWORK		●	REFERENCE NOTE C8
SOILS (IBC 1705.6)			REFERENCE NOTE F1
VERIFY ADEQUATE MATERIALS BELOW FOOTINGS		●	REFERENCE NOTE F1
EXCAVATIONS EXTEND TO PROPER DEPTH AND REACH PROPER MATERIAL		●	REFERENCE NOTE F2
CLASSIFY & TEST CONTROLLED FILL MATERIALS		●	REFERENCE NOTE F2
FILL MATERIAL AND PLACEMENT	●		REFERENCE NOTE F3
PROPERLY PREPARED SITE AND SUB-GRADE PRIOR TO FILL.		●	REFERENCE NOTE F1

COMMENTS

P1. SPECIAL INSPECTION IS NOT REQUIRED WHERE THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION, PROVIDED THE FABRICATOR COMPLIES WITH IBC.
P2. INSPECTION FOR PREFABRICATED CONSTRUCTION SHALL BE THE SAME AS IF THE MATERIAL USED IN THE CONSTRUCTION TOOK PLACE ON SITE. SPECIAL INSPECTION WILL NOT BE REQUIRED DURING PREFABRICATION IF THE APPROVED AGENCY CERTIFIES THE CONSTRUCTION AND FURNISHES EVIDENCE OF COMPLIANCE. (SEE NOTE 2).

C 1. SPECIAL INSPECTION IS NOT REQUIRED FOR CONC. ISOLATED SPREAD FOOTINGS, CONTINUOUS FOOTINGS, NON-STRUCTURAL SLABS, FOUNDATION WALLS, PATIOS, DRIVEWAYS, AND SIDEWALKS PROVIDED THE REQUIREMENTS OF IBC 1705.3 ARE MET.
C 2. PERIODIC SPECIAL INSPECTION IS ALLOWED FOR VERIFICATION OF THE WELDABILITY OF REINFORCING STEEL RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, BOUNDARY ELEMENTS OF SPECIAL REINFORCED CONCRETE SHEAR WALLS, AND SHEAR REINFORCEMENT. PERIODIC SPECIAL INSPECTION IS ALLOWED FOR WELDING OF OTHER ASTM A 706 REINFORCING STEEL NOT INCLUDED IN THE CONTINUOUS SPECIAL INSPECTION REQUIREMENTS NOTED ABOVE.
C 3. PERFORM AIR, SLUMP AND TEMP. TESTS WHEN CONCRETE SAMPLES ARE CAST.
C 4. PERIODIC SPECIAL INSPECTION IS REQUIRED FOR VERIFICATION OF IN-SITU CONCRETE STRENGTH PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.
C 5. EPOXY AND EXPANSION ANCHORS INTO MASONRY OR CONCRETE MAY BE USED ONLY WHEN APPROVED BY ARCHITECT AND/OR ENGINEER USING AN APPROVED PRODUCT WITH CURRENT PUBLISHED ICC RESEARCH REPORT NUMBERS. COORDINATE CONTINUOUS/PERIODIC SPECIAL INSPECTION REQUIREMENTS WITH ICC REPORT AND ACI 318: 17.8.2.4.
C 6. CONTINUOUS SPECIAL INSPECTION IS REQUIRED FOR PRECAST CONCRETE DIAPHRAGM CONNECTIONS OR REINFORCEMENT AT JOINTS CLASSIFIED AS MODERATE OR HIGH DEFORMABILITY ELEMENTS IN STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY C, D, E, OR F.
C 7. PERIODIC SPECIAL INSPECTION IS REQUIRED FOR THE INSTALLATION TOLERANCES OF PRECAST CONCRETE DIAPHRAGM CONNECTIONS FOR COMPLIANCE WITH ACI 550.5.
C 8. PERIODIC SPECIAL INSPECTION IS REQUIRED FOR FORMWORK SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.

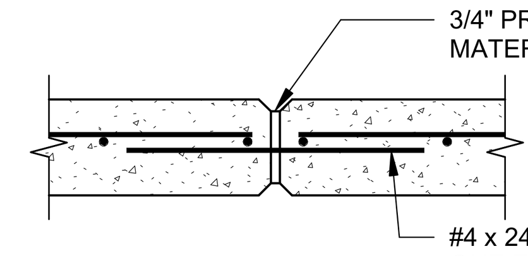
F 1. SPECIAL INSPECTION OF SOILS SHALL REFERENCE THE APPROVED GEOTECHNICAL REPORT TO DETERMINE COMPLIANCE.
F 2. WHERE GEOTECHNICAL REPORT IS NOT PROVIDED SPECIAL INSPECTIONS ARE REQUIRED TO VERIFY THAT THE IN-PLACE DRY DENSITY OF THE COMPACTED FILL IS NOT LESS THAN 90 PERCENT OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT DETERMINED IN ACCORDANCE WITH ASTM D1557.
F 3. CONTINUOUS SPECIAL INSPECTION IS REQUIRED DURING FILL PLACEMENT. VERIFY USE OF PROPER MATERIALS AND PROCEDURES IN ACCORDANCE WITH THE PROVISIONS OF THE APPROVED GEOTECHNICAL REPORT. VERIFY DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.

GENERAL SPECIAL INSPECTION NOTES :

1. THE ITEMS MARKED WITH A "●" IN THE SPECIAL INSPECTION SCHEDULE SHALL BE INSPECTED IN ACCORDANCE WITH IBC CHAPTER 17 BY A CERTIFIED SPECIAL INSPECTOR FROM AN ESTABLISHED TESTING AGENCY. FOR MATERIAL SAMPLING AND TESTING REQUIREMENTS, REFER TO THE MATERIAL SAMPLING AND TESTING SECTION, THE PROJECT SPECIFICATIONS, AND THE SPECIFIC GENERAL NOTES SECTIONS. THE TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS DIRECTLY TO THE ARCHITECT, ENGINEER, CONTRACTOR, AND BUILDING OFFICIAL. ANY ITEMS WHICH FAIL TO COMPLY WITH THE APPROVED CONSTRUCTION DOCUMENTS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF DISCREPANCIES ARE NOT CORRECTED, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL, ARCHITECT, AND ENGINEER PRIOR TO COMPLETION OF THAT PHASE OF WORK. SPECIAL INSPECTION TESTING REQUIREMENTS APPLY EQUALLY TO ALL BIDDER DESIGNED COMPONENTS.
2. ANY CONSTRUCTION OR MATERIAL THAT HAS FAILED INSPECTION SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT.
3. CONTINUOUS SPECIAL INSPECTION MEANS THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED. PERIODIC SPECIAL INSPECTION MEANS THE PART-TIME OR INTERMITTENT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF THE WORK. (IBC SECTION 202)

UNRESTRAINED RETAINING WALL SCHEDULE

NOTES:
1. PROVIDE 3/4" DEEP VERTICAL CONTROL JOINT AT 15'-0" MAXIMUM SPACING. CONTINUE ALL HORIZONTAL REINFORCING THROUGH JOINT.
2. PROVIDE EXPANSION JOINTS @ 48'-0"o.c. MAX. SPACING.

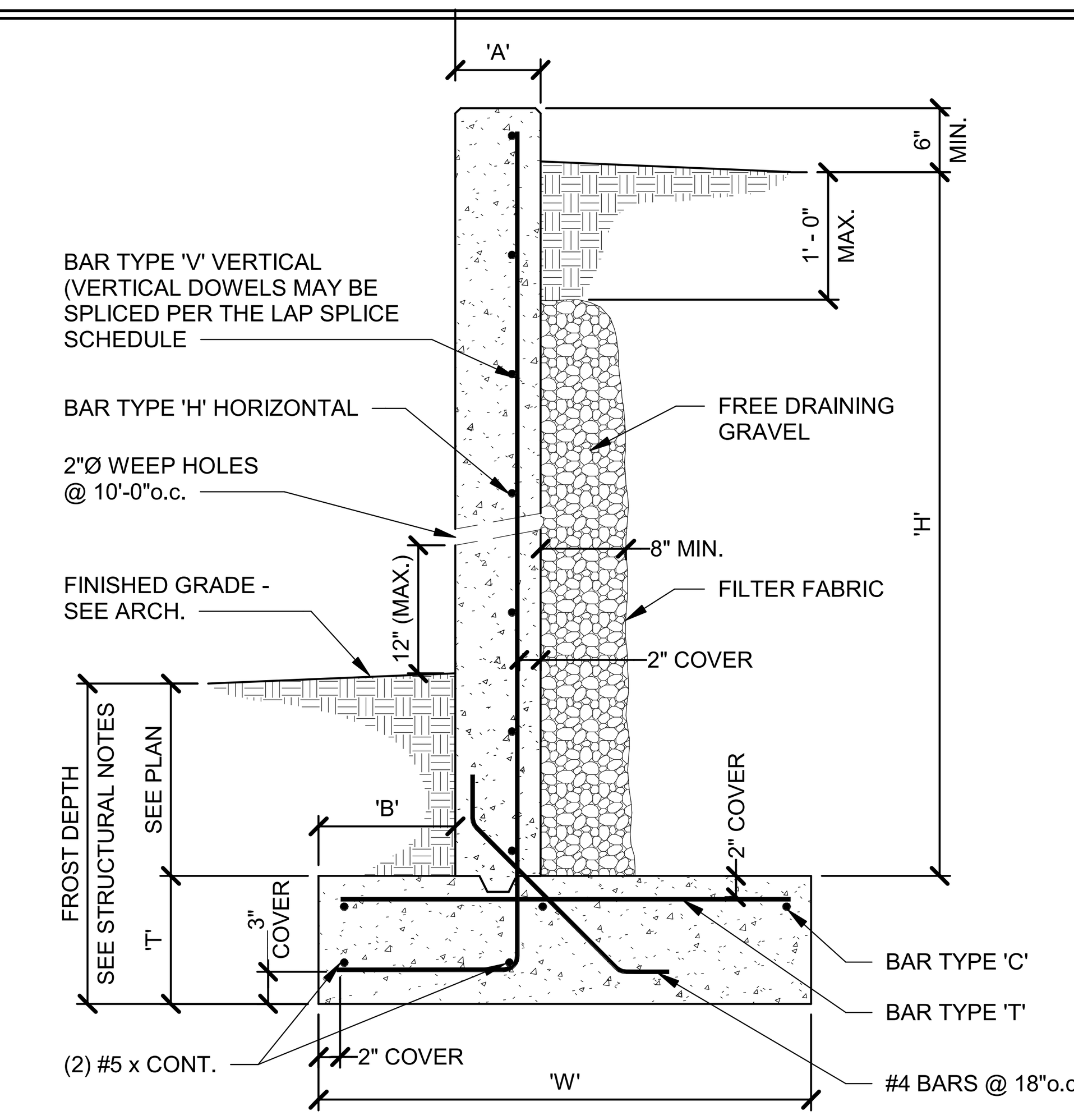


NOTE : JOINT IN FOOTING NOT REQUIRED.

3. EXTEND HORIZONTAL REINFORCING AROUND CORNERS OR ADD CORNER BARS AND LAP EACH WAY. SEE REBAR LAP SCHEDULE.
4. ALLOW CONCRETE TO REACH 100% OF DESIGN STRENGTH (f'c) PRIOR TO BACKFILLING.
5. PROVIDE 2"DIA. PVC PIPE WEEP HOLES @ 10'-0" WITH NON-FERROUS SCREEN AND GRAVEL BACKING. CONTINUOUS PERFORATED FOUNDATION DRAIN LINE TIED TO STORM DRAIN SYSTEM IS AN ACCEPTABLE ALTERNATE TO WEEP HOLES.
6. PROVIDE FILTER FABRIC BETWEEN GRANULAR BACKFILL AND BACK SIDE OF WALL. FILTER FABRIC TO BE FREE DRAINING WITHOUT ALLOWING INFILTRATION OF FINE SOILS.
7. EVERY OTHER VERTICAL BAR MAY BE DISCONTINUED AT 'H'/2 ABOVE FOOTING FOR 8'-0" AND 10'-0" HIGH WALLS, 1/3 OF VERTICAL BARS MAY BE DISCONTINUED AT 0.2'H' + 30 BAR DIAMETERS AND 0.4'H' + 30 BAR DIAMETERS ABOVE FOOTING. SPACING OF VERTICAL BARS SHALL BE 18" MAX. FOR 11'-0" THRU 14'-0" HIGH WALLS.

DIMENSION 'H'	DIMENSION				BAR TYPE 'H'		BAR TYPE 'V'		BAR TYPE 'C'		BAR TYPE 'T'	
	'T'	'A'	'B'	'W'	SIZE	SPACING	SIZE	SPACING	SIZE	NUMBER	SIZE	SPACING
H < 3'-0"	12"	8"	6"	24"	#4	12"o.c.	#4	16"o.c.	#5	---	---	---
3'-0" - 5'-0"	12"	8"	9"	36"	#4	12"o.c.	#5	12"o.c.	#4	(3)	#5	12"o.c.
5'-0" - 7'-0"	12"	8"	18"	54"	#4	12"o.c.	#5	12"o.c.	#4	(5)	#5	12"o.c.
7'-0" - 9'-0"	14"	8"	30"	72"	#4	12"o.c.	#6	12"o.c.	#4	(6)	#5	12"o.c.

OTHER PARAMETERS
- NO WATER TABLE
- LEVEL SOIL SLOPE
- BEARING PRESSURE = 1500 psf
- 35 psf /.ft LATERAL SOIL PRESSURE
- 0 SURCHARGE
- 0 AXIAL LOADS
- 0 LATERAL LOADS
- SOIL WEIGHT = 110 psf



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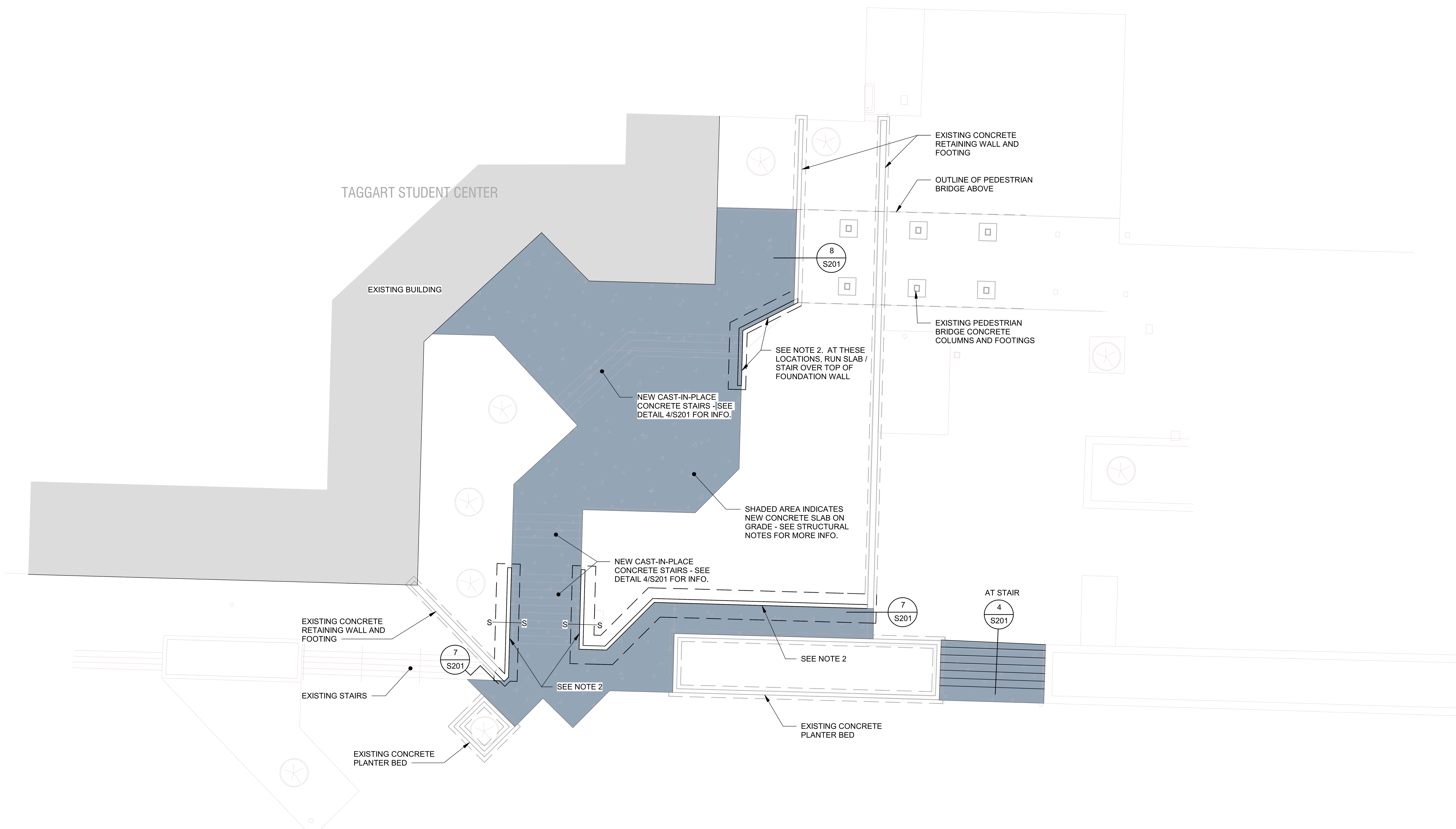
NOTES :

1. SEE SHEET S001 FOR GENERAL STRUCTURAL NOTES.
2. ALL NEW CONCRETE WALLS AND FOOTINGS SHOWN TO BE CONSTRUCTED PER RETAINING WALL SCHEDULE ON SHEET S011. SEE SITE DRAWINGS AND DETAILS FOR ADDITIONAL INFORMATION.



FOOTING AND FOUNDATION PLAN

SCALE : 1" = 10'-0"

A
S101

CONSTRUCTION DOCUMENTS

DESIGN WEST

LOGAN, UTAH
(435) 752-7031
SALT LAKE CITY, UTAH
(801) 539-8221

ARW ENGINEERS

USU TSC - STAIR REMODEL

650 NORTH 800 EAST
LOGAN, UT 84322
UTAH STATE UNIVERSITY

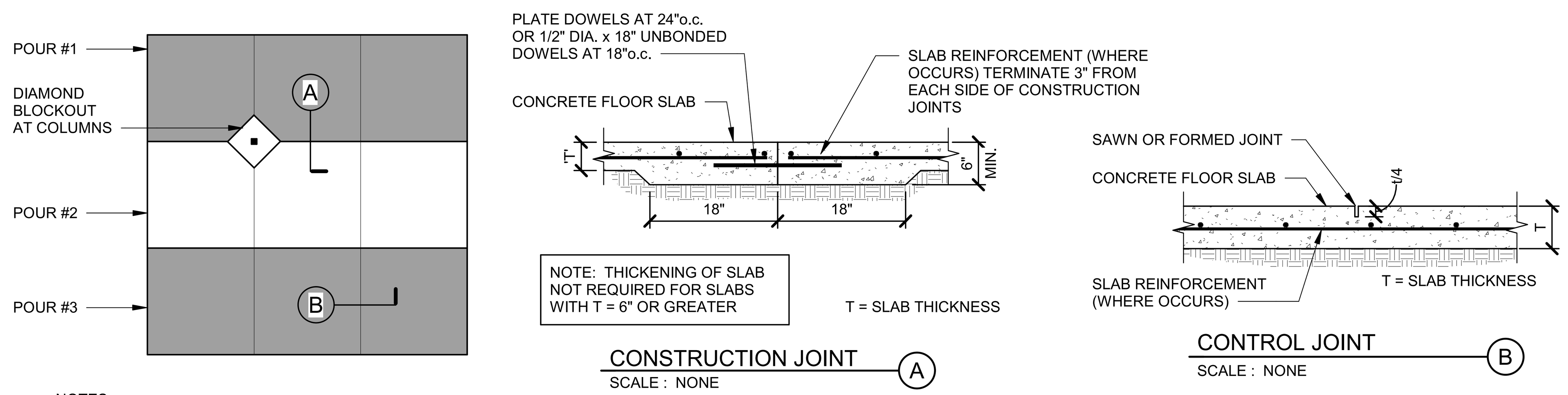
MARK: | DATE: | DESCRIPTION:

DW PROJECT #: 324242
ARW PROJECT #: 24933
DRAWN BY: TJM
CHECKED BY: JLB
ISSUED: 03/28/25

PROFESSIONAL STRUCTURAL ENGINEER
Joshua L. Blazzard
No. 5251609
3/27/25
STATE OF UTAH

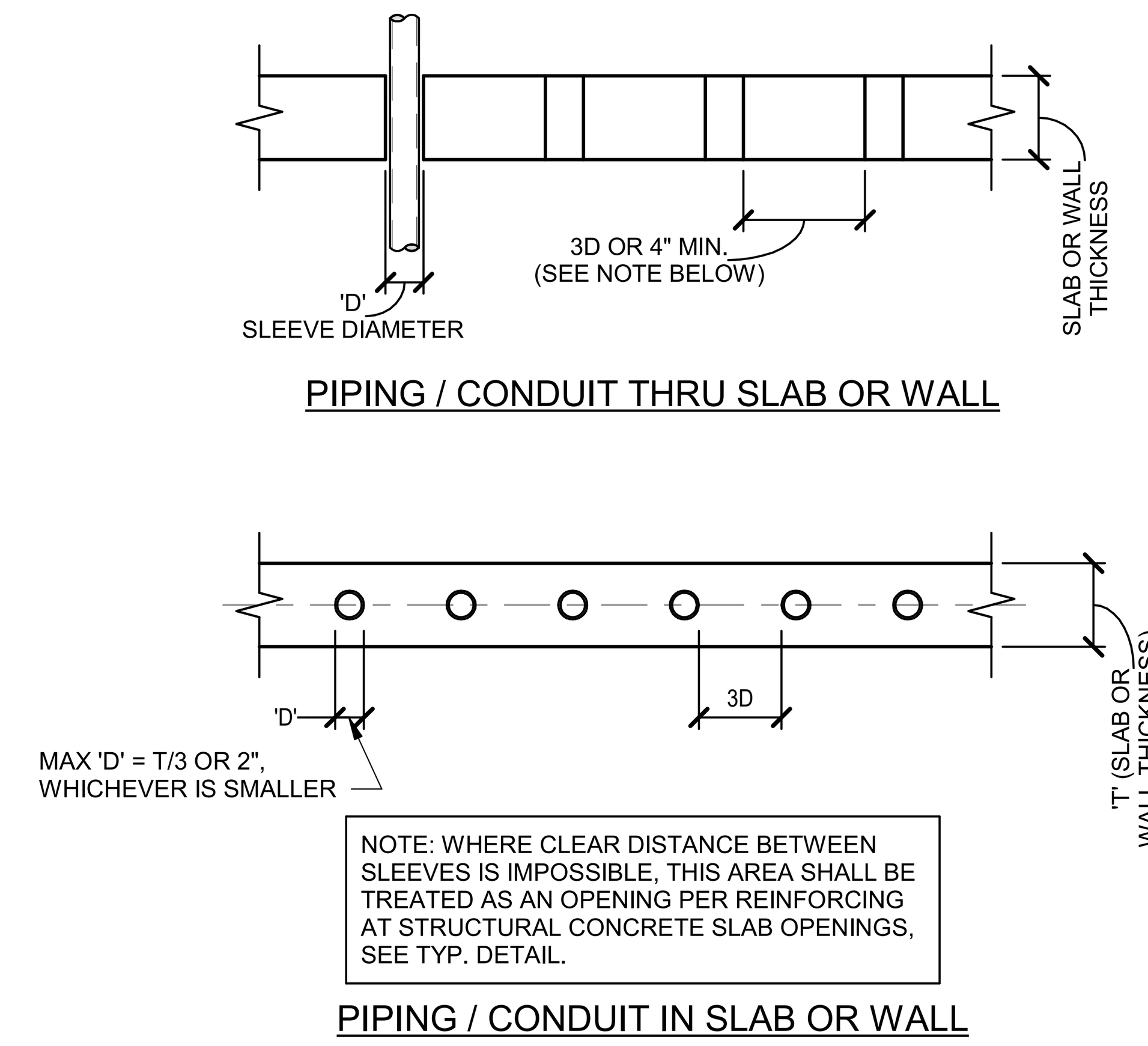
FOOTING & FOUNDATION PLAN

S101

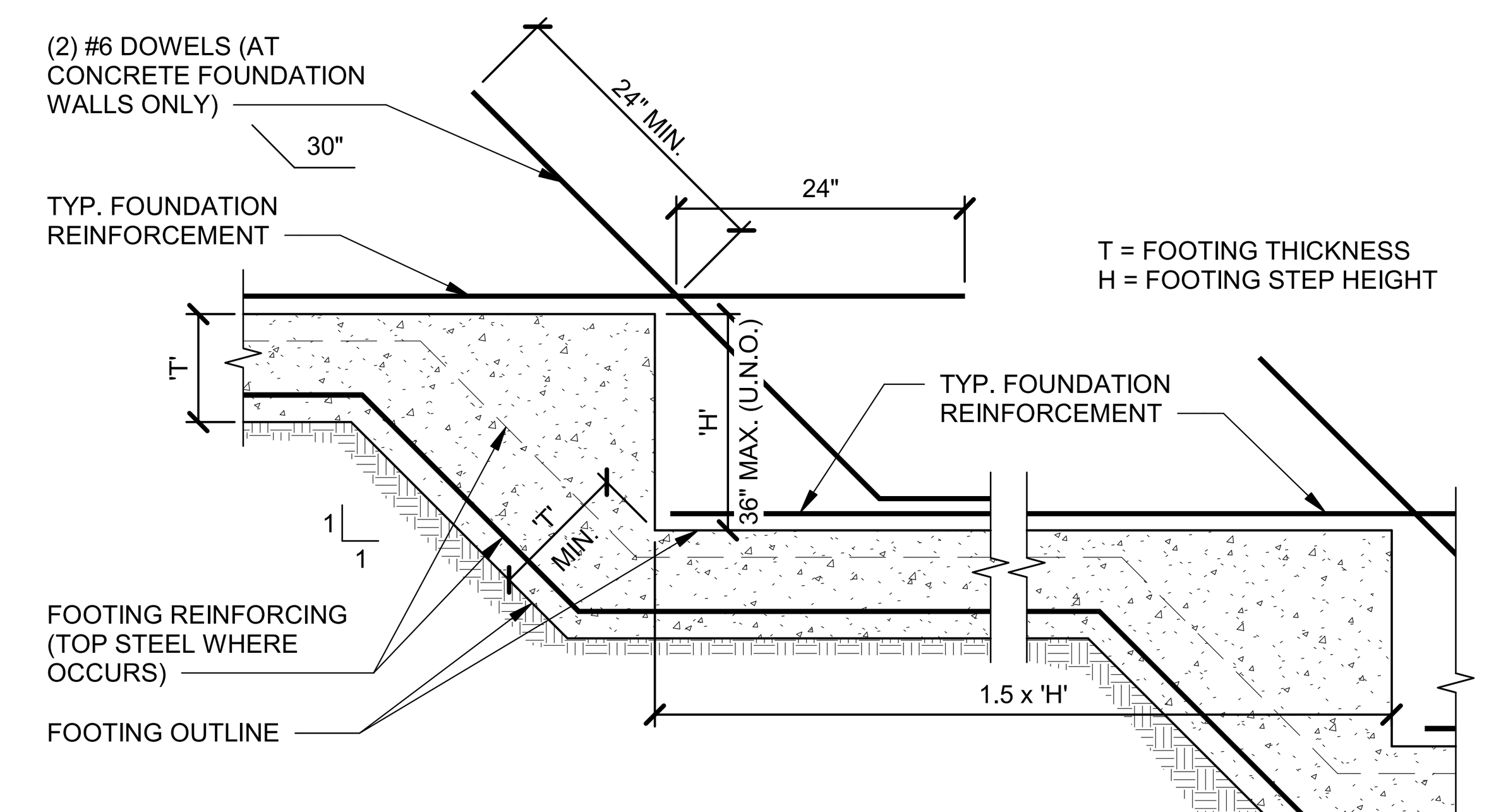


NOTES:
1. JOINTS SHALL OCCUR AT MAIN COLUMN / GRID LINES W/ 10'-0" MAX. SPACING BETWEEN JOINTS AT 4" SLABS; 12'-0" MAX. AT 5" SLABS, AND 15'-0" MAX. AT 6" SLABS.
2. SEE PLAN FOR SLAB THICKNESS 'T' AND REINFORCING SIZE AND SPACING.

TYPICAL CONCRETE SLAB JOINTS
SCALE : NONE
1 S201

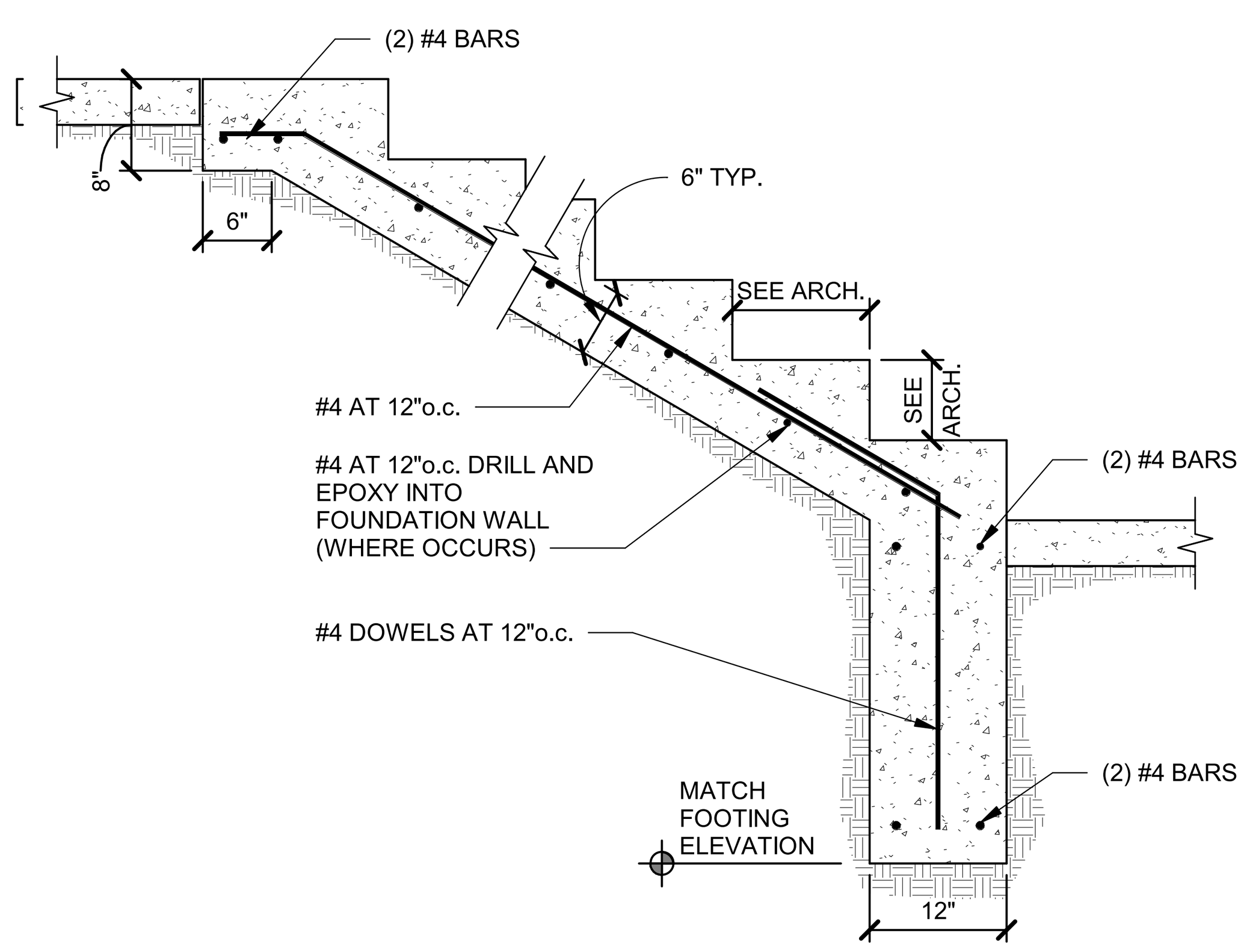


TYP. PIPING/CONDUIT AT SLAB OR WALL
SCALE : NONE
2 S201

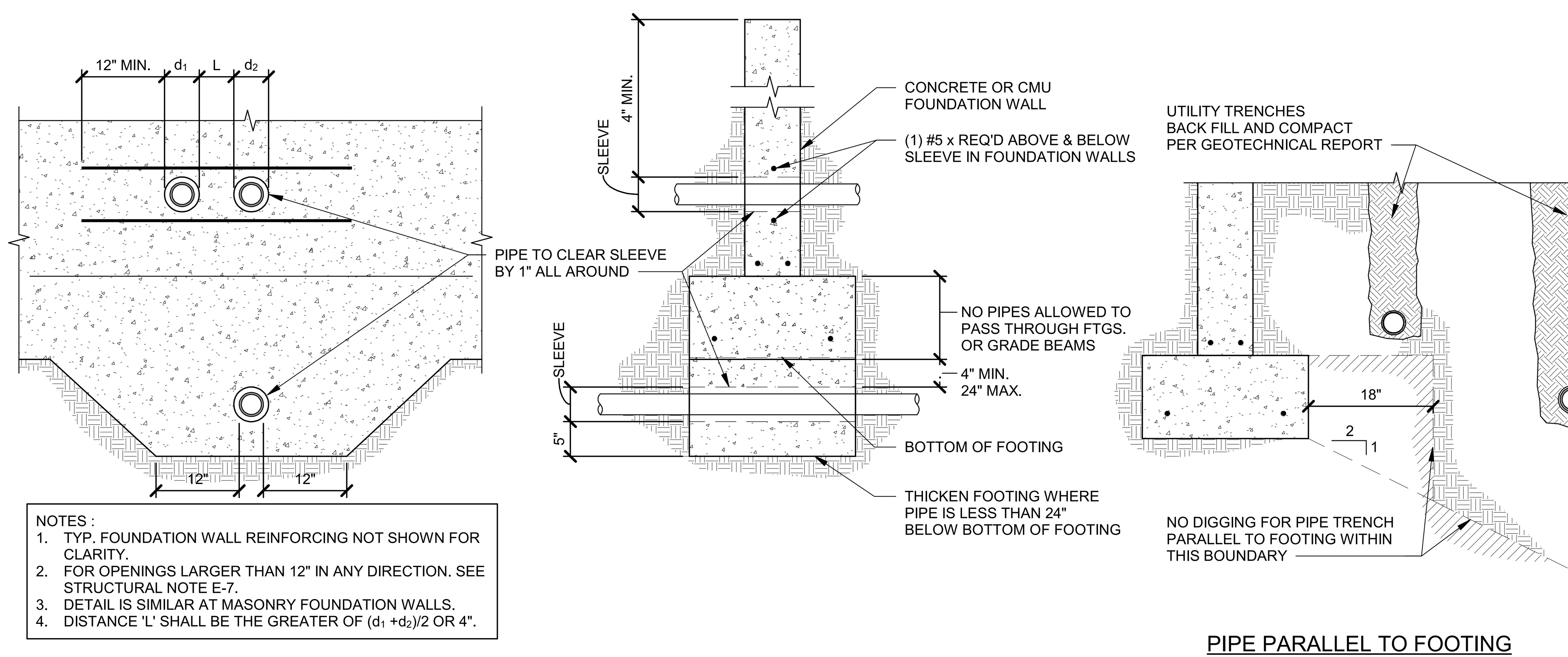


NOTES :
1. FOUNDATION REINFORCING NOT SHOWN FOR CLARITY.
2. SEE FOOTING SCHEDULE FOR FOOTING WIDTH AND REINFORCING SIZE AND LOCATION. ALL FOOTING REINFORCING REFERENCED IN THE SCHEDULE OR SHOWN IN THE DETAILS MUST RUN CONTINUOUS THROUGH THE FOOTING STEP.

TYPICAL STEPPED FOOTING
SCALE : NONE
3 S201



TYPICAL STEPPED STAIR FOOTING
SCALE : NONE
4 S201

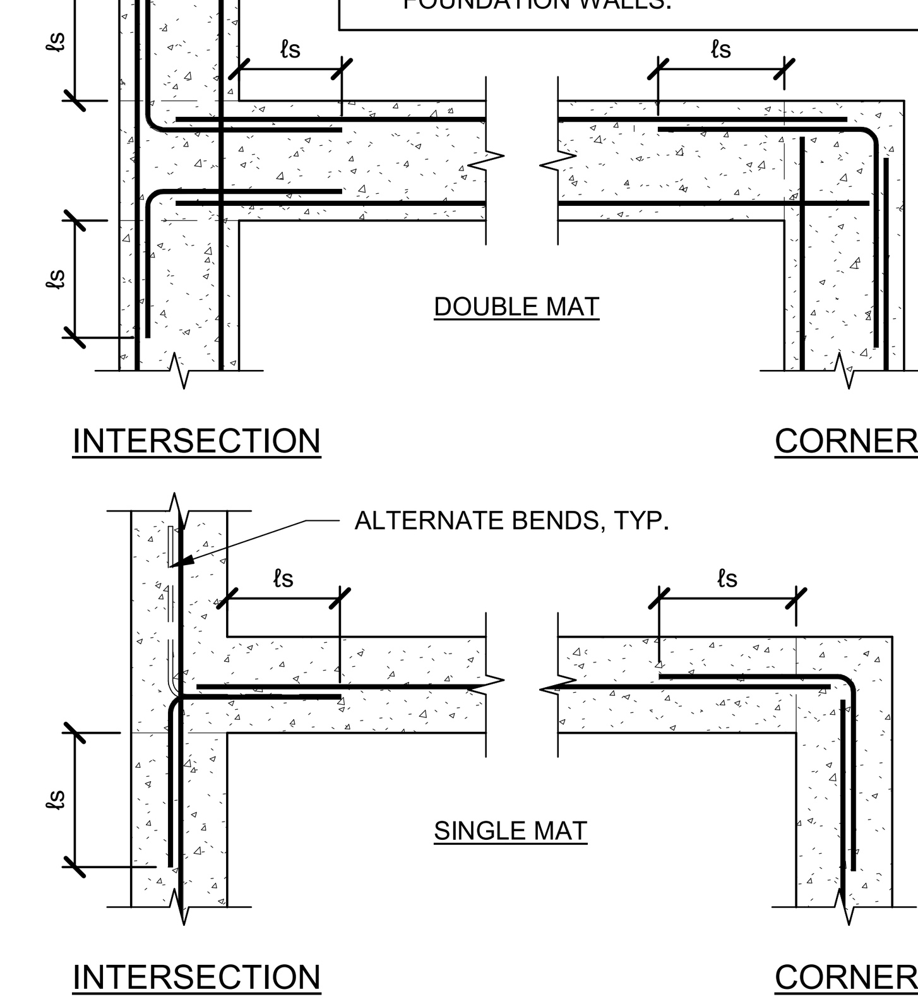


NOTES :
1. TYP. FOUNDATION WALL REINFORCING NOT SHOWN FOR CLARITY.
2. FOR OPENINGS LARGER THAN 12" IN ANY DIRECTION, SEE STRUCTURAL NOTE E-7.
3. DETAIL IS SIMILAR AT MASONRY FOUNDATION WALLS.
4. DISTANCE 'L' SHALL BE THE GREATER OF $(d_1 + d_2)/2$ OR 4".

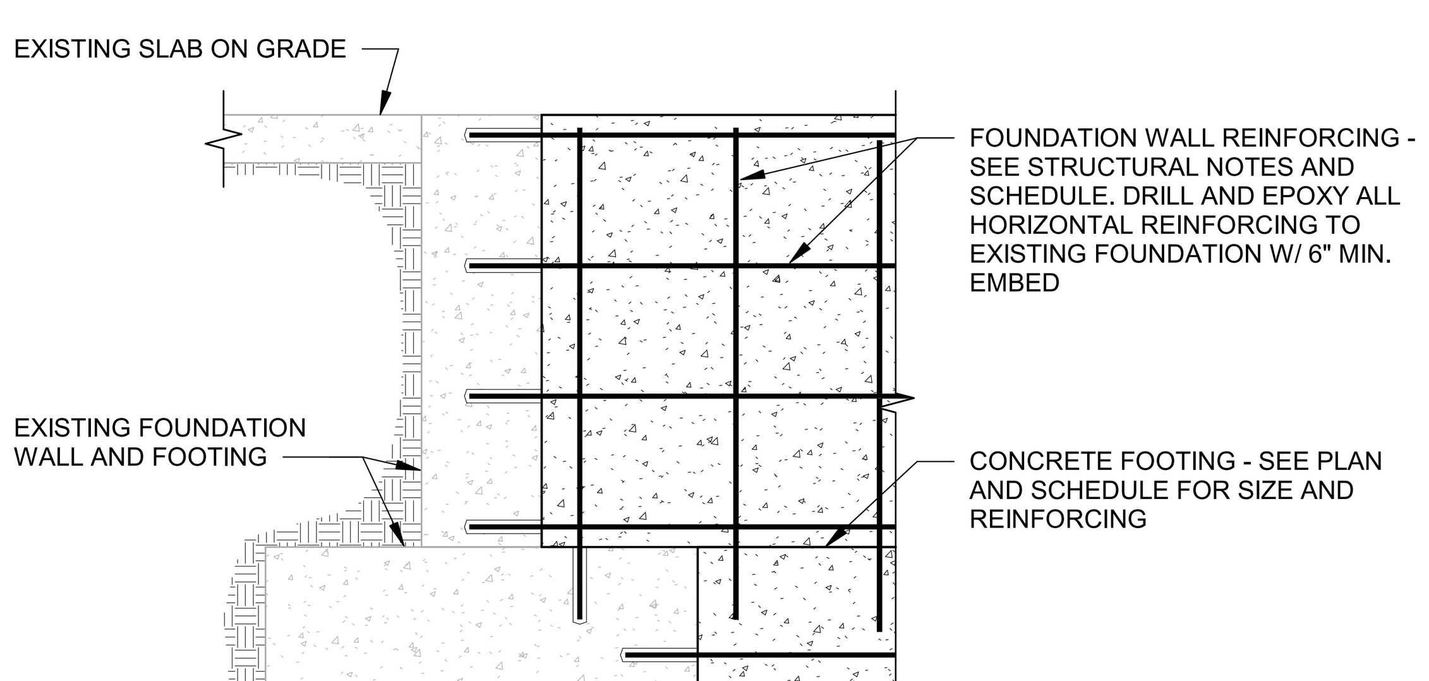
PIPE CROSSING FOOTING / FOUNDATION WALL

ALLOWABLE PIPING LOCATIONS @ FOOTING DETAIL
SCALE : NONE
5 S201

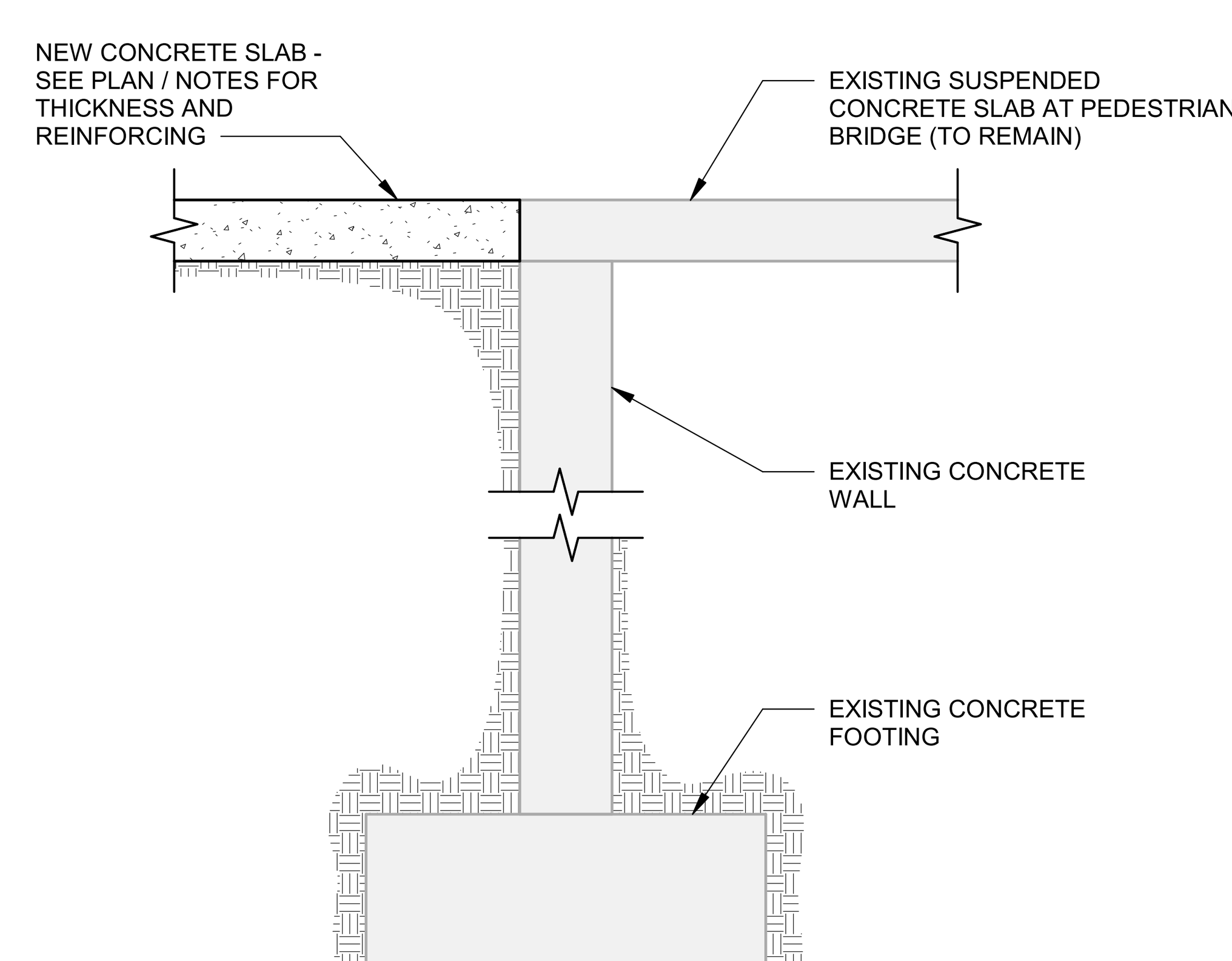
NOTES:
1. ℓs = LAP SPLICE LENGTH - SEE REBAR LAP SCHEDULE.
2. VERTICAL BARS NOT SHOWN.
3. THIS DETAIL IS APPLICABLE AT ALL FOOTINGS AND FOUNDATION WALLS.



TYP. REINF. @ INTERSECTIONS IN CONC. DETAIL
SCALE : NONE
6 S201



TYP. FOOTING & FOUNDATION INTO EXISTING FOOTING & FOUNDATION
SCALE : NONE
7 S201



DETAIL
SCALE : NONE
8 S201

CONSTRUCTION DOCUMENTS

DESIGN WEST
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SALT LAKE CITY, UTAH (801) 539-8221

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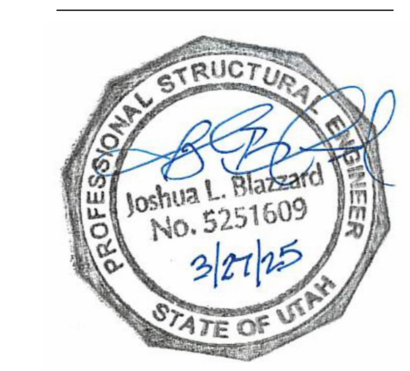

DETAILS

S201

GENERAL PROJECT NOTES

SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL
- 1.1 PERFORMANCE REQUIREMENTS
  - A. Seismic Performance: Electrical equipment shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.
    1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
- 1.2 QUALITY ASSURANCE
  - A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- 1.3 SLEEVES FOR RACEWAYS AND CABLES
  - A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
  - B. Sleeves for Rectangular Openings: Galvanized sheet steel.
- 1.4 SLEEVE SEALS
  - A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
    1. Sealing Elements: EPDM or NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
    2. Pressure Plates: Stainless steel. Include two for each sealing element.
    3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.
- 1.5 ELECTRICAL ENCLOSURES
  - A. Flush- and surface-mounted cabinets.
    1. Rated for environmental conditions at installed location.
       a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
       b. Outdoor Locations: NEMA 250, Type 3R.
       c. Kitchen Areas: NEMA 250, Type 4X, stainless steel.
       d. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
- 1.6 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION
  - A. Comply with NECA 1.
  - B. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
  - C. Right of Way: Give to piping systems installed at a required slope.
- 1.7 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS
  - A. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
  - B. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
  - C. Seal space outside of sleeves with grout for penetrations of concrete and masonry
  - D. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials.
  - E. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- 1.8 FIRESTOPPING
  - A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly.

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
- 1.1 CONDUCTORS AND CABLES
  - A. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-2-THWN-2 or Type XHHW-2.
  - B. Multiconductor Cable: Comply with NEMA WC 70/ICEA S-95-658 for metal-clad cable, Type MC and Type SOW with ground wire.
- 1.2 CONNECTORS AND SPLICES
  - A. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.
- 1.3 CONDUCTOR MATERIAL APPLICATIONS
  - A. Feeders: Copper for feeders smaller than No. 4 AWG; copper or aluminum for feeders No. 4 AWG and larger.
  - B. Branch Circuits: Copper.
- 1.4 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS
  - A. Feeders: Type THHN-2-THWN-2 or Type XHHW-2, single conductors in raceway.
  - B. Exposed Branch Circuits, Including in Crawlspaces: Type THHN-2-THWN-2, single conductors in raceway.
  - C. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-2-THWN-2, single conductors in raceway or Metal-clad cable, Type MC (for connections between devices on the same circuit, but not for home-runs).
  - D. Cord Drops and Portable Appliance Connections: Type SOW, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.
- 1.5 INSTALLATION OF CONDUCTORS AND CABLES
  - A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
  - B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
  - C. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
  - D. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."
- 1.6 CONNECTIONS
  - A. Make splices, terminations, and taps that are compatible with conductor material.
    1. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.
  - B. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.
- 1.7 IDENTIFICATION
  - A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
- 1.1 CONDUCTORS
  - A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
  - B. Bare Copper Conductors:
    1. Solid Conductors: ASTM B 3.
    2. Stranded Conductors: ASTM B 8.
    3. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
- 1.2 CONNECTORS
  - A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
  - B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- 1.3 GROUNDING ELECTRODES
  - A. Ground Rods: Copper-clad Zinc-coated steel; 3/4 inch by 10 feet in diameter.
- 1.4 APPLICATIONS
  - A. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.
  - B. Conductor Terminations and Connections:
    1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
    2. Connections to Ground Rods: Bolted connectors.
    3. Connections to Structural Steel: Welded connectors.
- 1.5 EQUIPMENT GROUNDING
  - A. Install insulated equipment grounding conductors with all service, feeder, and branch circuits, in addition to those required by NFPA 70:
- 1.6 INSTALLATION
  - A. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade unless otherwise indicated.
  - B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
    1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
    2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
- 1.1 PERFORMANCE REQUIREMENTS
  - A. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
  - B. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.
- 1.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS
  - A. Steel Slotted Support Systems with galvanized metallic coatings and channel dimensions selected for applicable load criteria.
  - B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
  - C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
  - D. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
  - E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
    1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
    2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
    3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
    4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
    5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
    6. Toggle Bolts: All-steel springhead type.
    7. Hanger Rods: Threaded steel.
- 1.3 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES
  - A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- 1.4 APPLICATION
  - 1. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- 1.5 SUPPORT INSTALLATION
  - A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
  - B. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
    1. To Wood: Fasten with lag screws or through bolts.
    2. To New Concrete: Bolt to concrete inserts.
    3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
    4. To Existing Concrete: Expansion anchor fasteners.
    5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
    6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts or Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
    7. To Light Steel: Sheet metal screws.
    8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
- 1.1 METAL CONDUITS, TUBING, AND FITTINGS
  - A. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
  - B. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
    1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886 and NFPA 70.
    2. Fittings for EMT:
       a. Material: Steel or die cast.
       b. Type: Setscrew or compression.
- 1.2 NONMETALLIC CONDUITS, TUBING, AND FITTINGS
  - A. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- 1.3 METAL WIREWAYS AND AUXILIARY GUTTERS
  - A. Description: Sheet metal, complying with UL 870 and NEMA 250, unless otherwise indicated, and sized according to NFPA 70.
  - B. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- 1.4 BOXES, ENCLOSURES, AND CABINETS
  - A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
  - B. Sheet Metal Outlet, Device, Pull, and Junction Boxes: Comply with NEMA OS 1 and UL 514A.
  - C. Cast-Metal Outlet, Device, Pull, and Junction Boxes: Comply with NEMA FB 1, ferrous alloy or aluminum, Type FD, with gasketed cover.
  - D. Metal Floor Boxes:
    1. Material: sheet metal.
    2. Type: Fully adjustable.
    3. Shape: Rectangular.
    4. Listing and Labeling: Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
  - E. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, with continuous-hinge cover with flush latch unless otherwise indicated.
- 1.5 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING
  - A. General Requirements for Handholes and Boxes:
    1. Boxes and handholes for use in underground systems shall be designed and identified as defined in NFPA 70, for intended location and application.
    2. Boxes installed in wet areas shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
  - B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel, fiberglass, or a combination of the two.
    1. Cover Legend: Molded lettering, "ELECTRIC.".
- 1.6 RACEWAY APPLICATION
  - A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
    1. Above-grade: GRC.
    2. Underground Conduit: RNC, Type EPC-40-PVC or Type EPC-80-PVC where required by utility.
    3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
    4. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
  - B. Indoors: Apply raceway products as specified below unless otherwise indicated:
    1. Exposed, Not Subject to Physical Damage: EMT.
    2. Exposed and Subject to Physical Damage: GRC.
    3. Concealed in Ceilings and Interior Walls and Partitions: EMT.
    4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
    5. Damp or Wet Locations: GRC.
    6. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.
  - C. Minimum Raceway Size: 3/4-inch trade size.
  - D. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
- 1.7 INSTALLATION
  - A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
  - B. Raceways Embedded in Slabs: Change from RNC to wrapped, GRC before rising above floor.
  - C. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways where required by NFPA 70:
  - D. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to top of box unless otherwise indicated.
  - E. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
  - F. Locate boxes so that cover or plate will not span different building finishes.
  - G. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
  - H. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.
  - I. Set metal floor boxes level and flush with finished floor surface.
- 1.8 INSTALLATION OF UNDERGROUND CONDUIT
  - A. Direct-Buried Conduit:
    1. Excavate trench bottom to provide firm and uniform support for conduit.
    2. Install backfill
    3. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor.
       a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete for a minimum of 12 inches on each side of the coupling.
       b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.
    4. Underground Warning Tape: Comply with requirements in Section 260553 "Identification for Electrical Systems."
- 1.9 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES
  - A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.
  - B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
  - C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch above finished grade.

GENERAL PROJECT NOTES

1. ALL ELECTRICAL INSTALLATIONS TO CONFORM TO THE LATEST NEC AND LOCAL CODES.
2. ELECTRICAL CONTRACTOR'S PROJECT MANAGER AND ON-SITE PROJECT FOREMAN SHALL REVIEW VENDOR SUBMITTALS FOR ACCURACY PRIOR TO SUBMITTING TO ENGINEER. INACCURACIES SHALL BE CORRECTED PRIOR TO ENGINEER SUBMITTAL.
3. SUBMITTALS FOR EACH SYSTEM WILL BE REVIEWED BY ENGINEER UP TO TWO TIMES--ONE FULL SUBMITTAL FOR OVERALL COMPLIANCE AND ONE RESUBMITTAL. ADDITIONAL REVIEWS WILL BE CHARGED TO CONTRACTOR AT ENGINEER'S STANDARD BILLING RATE.
4. THE CLARITY OF RECORD DRAWING CHANGES MADE BY THE CONTRACTOR SHALL BE EQUAL TO THE ORIGINAL DRAWINGS AS JUDGED BY THE ARCHITECT OR THE RECORD SET WILL BE RETURNED TO THE CONTRACTOR FOR CLARIFICATION.
5. WHEN THE GENERAL CONTRACT CALLS FOR "RECORD" OR "AS-BUILT" DRAWINGS TO BE FURNISHED BY THE CONTRACTOR AT JOB COMPLETION, THE ELECTRICAL CONTRACTOR SHALL BE REQUIRED TO FURNISH A COMPLETE SET OF "BLUE-PRINT READY" AUTOCAD ELECTRICAL DRAWINGS FOR ALL CONTRACTOR GENERATED CHANGES FROM THE DRAWINGS OF A CLARITY EQUAL TO THE ORIGINAL DRAWINGS AS JUDGED BY THE ENGINEER. CONTACT ARCHITECT FOR DISKS OR REPRODUCIBLE ORIGINAL MEDIA. PROVIDE DRAWINGS ON CD IN AUTOCAD FORMAT.
6. DO NOT SCALE ELECTRICAL PLANS. SEE ARCHITECTURAL AND CIVIL DRAWINGS FOR ACCURATE DIMENSIONS AND FLOOR PLANS.
7. ELECTRICAL DEVICES CANNOT BE SHOWN TO SCALE AND SOMETIMES OVERLAP BUILDING ELEMENTS. REFER TO ARCHITECTURAL ELEVATIONS FOR ACCURATE MOUNTING LOCATIONS
8. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED SO AS NOT TO INTERFERE WITH SITE ELEMENTS.
9. EMT IS NOT ALLOWED OUT OF DOORS.
10. DO NOT INSTALL IN-GRADE JUNCTION BOXES UNLESS SPECIFICALLY SHOWN ON DRAWINGS. CONDUCTORS SHALL BE RUN CONTINUOUS WITHOUT SPLICING FROM SOURCE OR DEVICE TO NEXT DEVICE.
11. CIRCUIT WIRE SIZES MUST, AT MINIMUM, MATCH NEC REQUIRED CONDUCTOR SIZES FOR CORRESPONDING OVERCURRENT PROTECTIVE DEVICES. VERIFY WITH PANEL SCHEDULES BEFORE PULLING WIRE.
12. HOME RUNS MUST BE RUN EXACTLY AS SHOWN ON PLANS UNLESS OTHERWISE NOTED. DO NOT COMBINE HOME RUNS INTO ONE CONDUIT THAT ARE NOT SHOWN COMBINED ON THE DRAWINGS.
13. THE ELECTRICAL CONTRACTOR SHALL RUN BRANCH CIRCUIT CONDUITS IN ATTIC SPACES IN A NEAT AND WORKMANLIKE MANNER SO AS TO CONSERVE OPEN SPACES AS MUCH AS POSSIBLE. HVAC DUCTWORK AND PLUMBING SHALL HAVE LOCATION PRIORITY OVER BRANCH CIRCUIT CONDUIT RUNS.
14. CIRCUIT WIRING SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS. ANY DEVIATIONS SHALL BE INITIATED BY A CHANGE ORDER FROM THE ARCHITECT. OTHERWISE THE RECORD SET SHALL MATCH THE CONSTRUCTION SET.
15. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR, PULLED INTO THE CONDUIT WITH THE PHASE CONDUCTOR, IN ALL SERVICE, FEEDER, AND BRANCH CIRCUITS.
16. PROVIDE A NEUTRAL CONDUCTOR FOR EACH BREAKER TRIP HANDLE. NEUTRALS SHALL NOT BE SHARED BETWEEN BRANCH CIRCUITS.
17. ALL CIRCUITS TO BE MINIMUM #12 CU IN MINIMUM 3/4" CONDUIT UNLESS OTHERWISE NOTED.
18. ALL SITE LIGHTING CIRCUITS TO BE MINIMUM #8 CU IN MINIMUM 1" CONDUIT UNLESS OTHERWISE NOTED.
19. MC CABLE IS NOT AN APPROVED ALTERNATE TO CONDUCTORS IN CONDUIT.
20. DO NOT INSTALL MORE THAN THREE PHASE CONDUCTORS IN ANY HOME-RUN CONDUITS UNLESS SPECIFICALLY INDICATED ON DRAWINGS.
21. REMOVE ALL OLD AND/OR UNUSED EXISTING CONDUIT AND ELECTRICAL APPARATUS FROM EXTERIOR OR INTERIOR EXPOSED SURFACES.
22. WHERE EXISTING ELECTRICAL EQUIPMENT IS TO REMAIN BUT THE SURFACE THAT IT IS MOUNTED ON IS TO BE REWORKED UNDER OTHER CONTRACTS, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND INSTALL OR MODIFY THE EXISTING EQUIPMENT AS REQUIRED TO MEET THE DESIGN INTENT. SEE ARCHITECTURAL DRAWINGS FOR ROOF, CEILINGS, WALLS, SOFFITS, FLOORS, ETC.
23. REMOVE ALL UNUSED CONDUITS AND CIRCUITS IN THE DEMOLTIONED AREA AS THEY ARE IDENTIFIED AS UNUSED OR ABANDONED.
24. REMOVE ALL EXISTING ELECTRICAL DEVICES, EQUIPMENT, AND APPARATUS AS THEY ARE IDENTIFIED AS UNUSED OR ABANDONED.
25. RELOCATE EXISTING CONDUITS AND CIRCUITS AS REQUIRED THAT ARE PRESENTLY SERVING EQUIPMENT THAT IS INTENDED TO REMAIN IN SERVICE BUT SAID CONDUITS ARE CURRENTLY RUNNING THROUGH AREAS TO BE DEMOLITIONED.
26. WHERE EXISTING CONDUIT RUNS ARE RE-USED BY SPECIAL PERMISSION FROM THE ARCHITECT, A SEPARATE GREEN, INSULATED GROUND WIRE SHALL BE PULLED IN THE CONDUIT AND BONDED AT EACH END AS REQUIRED.
27. FIELD VERIFY CONDITIONS FOR NEW WIRING. SURFACE RACEWAYS MUST RECEIVE PRIOR APPROVAL FROM THE ARCHITECT AND OWNER AND WILL BE EVALUATED ON A CASE BY CASE BASIS DURING CONSTRUCTION. APPROVED RACEWAYS MUST BE PAINTED TO MATCH THE SURFACE ON WHICH THEY ARE MOUNTED.
28. ALL PATCH, REPAIR, REPAINT AND COVER UP REQUIRED AS A RESULT OF ELECTRICAL REMODEL IS TO BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR, BUT ACTUAL WORK IS TO BE PERFORMED BY QUALIFIED PERSONNEL.
29. PROVIDE NEUTRAL CONNECTION TO 208/240/480V, SINGLE-PHASE EQUIPMENT. RUN SEPARATE GROUND WIRE TO ALL OUTDOOR UNITS AND BOND TO THE EQUIPMENT GROUND LUG.
30. ELECTRICAL CONTRACTOR SHALL INSTALL A PULL STRING IN ALL COMMUNICATIONS, SECURITY, AND OTHER LOW VOLTAGE CONDUITS FOR USE BY LOW VOLTAGE SYSTEM CONTRACTOR.
31. ELECTRICAL CONTRACTOR SHALL INSTALL A PULL STRING IN ALL UNUSED POWER AND LIGHTING CONDUITS.
32. REVIEW THE STATE DESIGN REQUIREMENTS MANUAL PRIOR TO BID
33. REVIEW THE USU A&E DESIGN MANUAL PRIOR TO BID.
34. WHERE THERE ARE CONFLICTS IN THE DRAWINGS AND/OR SPECIFICATIONS THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER PRIOR TO BID. WHERE NO NOTIFICATION IS GIVEN THE MORE STRINGENT INTERPRETATION (GENERALLY INTERPRETED TO BE THE MORE COSTLY) WILL BE ENFORCED.

ELECTRICAL LEGEND

ANNOTATIONS

Symbol	Description
X / XXX	DETAIL CALL-OUT; TOP "X" REFERS TO DETAIL NUMBER & BOTTOM "XXX" REFERS TO SHEET NUMBER
#	KEYED NOTE CALLOUT
#-#	EQUIPMENT CALLOUT
---- xCDy ---	COMMUNICATIONS RACEWAY: "x" CONDUITS OF "y" DIAMETER

LIGHTING FIXTURES

FIXTURE LUMEN INDICATOR / FIXTURE SIZE INDICATOR / FIXTURE TYPE — XXX - X XX (X) — FIXTURE ACCESSORY APPEND

Symbol	Description
	EMERGENCY LIGHT
	BATTERY PACK
	RECESSED FIXTURE
	WALL MOUNT FIXTURE
	BOLLARD FIXTURE
	POLE LIGHT; ONE HEAD
	POLE LIGHT; TWO HEAD
	DECORATIVE POLE LIGHT

SITE ELECTRICAL

Symbol	Description
---1ØUP---	1-PHASE UNDERGROUND PRIMARY POWER
---1ØUS---	1-PHASE UNDERGROUND SECONDARY POWER
--(E)3ØUP--	3-PHASE UNDERGROUND PRIMARY POWER : EXISTING
--(E)3ØUS--	3-PHASE UNDERGROUND SECONDARY POWER : EXISTING
--(D)3ØUP--	3-PHASE UNDERGROUND PRIMARY POWER: DEMO
--(D)3ØUS--	3-PHASE UNDERGROUND SECONDARY POWER: DEMO
---3ØUP---	3-PHASE UNDERGROUND PRIMARY POWER
---3ØUS---	3-PHASE UNDERGROUND SECONDARY POWER
---(E)UT---	UNDERGROUND TELEPHONE : EXISTING
---(E)UTV---	UNDERGROUND TV : EXISTING
---(D)UT---	UNDERGROUND TELEPHONE : DEMO
---(D)UTV---	UNDERGROUND TV : DEMO
----UT-----	UNDERGROUND TELEPHONE
----UTV----	UNDERGROUND TV
	POINT OF DISCONNECTION
	POINT OF CONNECTION

BRANCH CIRCUITING

Symbol	Description
	DUPLEX OUTLET
USB	DUPLEX RECEPTACLE WITH (2)USB; LEVITON T5832 SERIES OR EQUIVALENT
	FACELESS GFCI PROTECTION DEVICE
	DUPLEX OUTLET: GROUND FAULT INTERRUPTER
EWC	ELECTRIC WATER COOLER OUTLET: GFCI UNLESS NOTED
	DOUBLE DUPLEX OUTLET
	DOUBLE DUPLEX OUTLET: GROUND FAULT INTERRUPTER
	SPECIAL OUTLET: SEE PANEL SCHEDULE
	QUANTITY OF CONDUCTORS: SHORT LINES = PHASE /SWITCH, LONG LINES = NEUTRAL
	HOME-RUN
	CIRCUITING: LINE VOLTAGE
	CIRCUITING: CONTROL

POWER AND DISTRIBUTION

Symbol	Description
	DISTRIBUTION PANEL
	PANELBOARD

COMMUNICATIONS

Symbol	Description
---- xCDy ---	COMMUNICATIONS RACEWAY: "x" CONDUITS OF "y" DIAMETER
LR#	COMMUNICATIONS LADDER RACK. SEE SPECIFICATIONS AND / OR SCHEDULES
CT#	COMMUNICATIONS RACEWAY CABLE TRAY. SEE SPECIFICATIONS AND / OR SCHEDULES
	PHONE BACKBOARD
	COMMUNICATIONS OUTLET, 1-PORT DEVICE, COMM OUTLET BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (1)CAT 6 CABLE/JACK; CABLE BY OWNER
	COMMUNICATIONS OUTLET, 2-PORT DEVICE, COMM OUTLET BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (2)CAT 6 CABLES/JACKS; CABLE BY OWNER
	COMMUNICATIONS OUTLET, 3-PORT DEVICE, COMM OUTLET BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (3)CAT 6 CABLES/JACKS; CABLE BY OWNER
x	COMMUNICATIONS OUTLET, 6-PORT DEVICE, COMM OUTLET BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (X)CAT 6 CABLES/JACKS; CABLE BY OWNER
WAP	COMMUNICATIONS OUTLET, WIRELESS ACCESS POINT,2-PORT DEVICE, COMM OUTLET BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (2)CAT 6 CABLES/JACKS; CABLE BY OWNER

SHEET INDEX

#	Sheet Title
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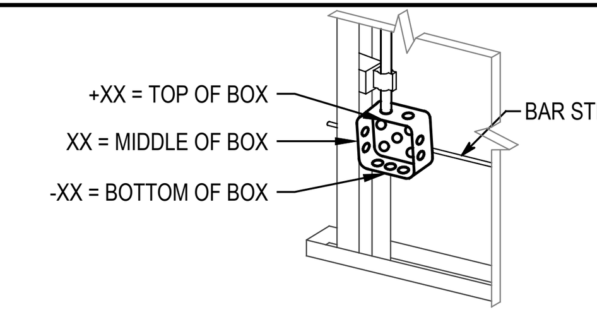
E002	ELECTRICAL SPECIFICATIONS
ES101	ELECTRICAL SITE PLAN - LIGHTING
ES201	ELECTRICAL SITE PLAN - POWER & COMMUNICATIONS
ES501	ELECTRICAL SITE DETAILS
ES502	ELECTRICAL SITE DETAILS
E602	ELECTRICAL SCHEDULES

GENERAL WALL-MOUNTED BOX HEIGHT DETAIL



ELECTRICAL ABBREVIATIONS

A	AMPERE	LTG	LIGHTING
AF	AMP FUSE	MAX	MAXIMUM
AFF	ABOVE FINISHED FLOOR	MCB	MAIN CIRCUIT BREAKER
AFG	ABOVE FINISHED GRADE	MECH	MECHANICAL
AFI	ARC-FAULT CIRCUIT-INTERRUPTER	MFR	MANUFACTURER
AIC	AMPERE INTERRUPTING CAPACITY	MIN	MINIMUM
AL	ALUMINUM	MLO	MAIN LUGS ONLY
ARCH	ARCHITECT(URAL)	MTD	MOUNTED
AS	AMP SWITCH	NEC	NATIONAL ELECTRICAL CODE
AWG	AMERICAN WIRE GAUGE	NECA	NATIONAL ELECTRICAL CONTRACTOR'S ASSOCIATION
BLDG	BUILDING	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
BKBD	BACKBOARD	NEUT	NEUTRAL
C	CONDUIT	NFC	NATIONAL FIRE CODE
CAB	CABINET	NC	NORMALLY CLOSED
CAT	CATALOG/CATEGORY	NIC	NOT IN CONTRACT
C/B	CIRCUIT BREAKER	NL	NIGHT LITE
CKT	CIRCUIT	NO	NORMALLY OPEN
CLG	CEILING	NTS	NOT TO SCALE
CO	CONDUIT ONLY	OCP	OVERCURRENT PROTECTION
COMM	COMMUNICATION	P	POLE
CONN	CONNECTION	PH	PHASE
CU	COPPER	PNL	PANEL
DEMO	DEMOLITION/DEMOLISH	PWR	POWER
DISC	DISCONNECT	QTY	QUANTITY
DN	DOWN	RECEP	RECEPTACLE
DWG	DRAWING	REQ'D	REQUIRED
EA	EACH	RGSC	RIGID GALVANIZED STEEL CONDUIT
ELEC	ELECTRICAL	RM	ROOM
ELEV	ELEVATOR	SCHED	SCHEDULE
EMER, EM	EMERGENCY	SECT	SECTION
EMT	ELECTRICAL METALLIC TUBING	SP	SINGLE POLE
EOLR	END OF LINE RESISTOR	SN	SOLID NEUTRAL
EQUIP	EQUIPMENT	SPEC	SPECIFICATION
EX, EXIST	EXISTING	SW	SWITCH
FBO	FURNISHED BY OTHERS	SWBD	SWITCHBOARD
FCU	FAN COIL UNIT	SWGR	SWITCH GEAR
FF	FINISHED FLOOR	SYS	SYSTEM
FIXT	FIXTURE	TEMP	TEMPORARY
FLEX	FLEXIBLE METALLIC CONDUIT (STEEL)	TELE	TELEPHONE
FLUOR	FLUORESCENT	XFMR	TRANSFORMER
FT	FEET OR FOOT	T-STAT	THERMOSTAT
GFI	GROUND FAULT INTERRUPTER	TWP	TWISTED PAIR
GND	GROUND	TWSP	TWISTED SHEILDED PAIR
HP	HORSEPOWER	TYP	TYPICAL
HVAC	HEATING, VENTILATING & AIR CONDITIONING	UBC	UNIFORM BUILDING CODE
IG	ISOLATED GROUND	UL	UNDERWRITERS LABORATORY
IMC	INTERMEDIATE METAL CONDUIT	UMC	UNIFORM MECHANICAL CODE
IN	INCH(ES)	UNO	UNLESS NOTED OTHERWISE
ISC	SHORT CIRCUIT AMPERES, KA	V	VOLT OR VOLTAGE
JB, J-BOX	JUNCTION BOX	VA	VOLT AMPERE
KCMIL	THOUSAND CIRCULAR MILS	W	WATT
KVA	KILOVOLT AMPERE	W/	WITH
KW	KILOWATT	WG	WIRE GUARD
		WP	UL LISTED WEATHERPROOF, NEMA 3R or 4

DESIGN WEST
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UTAH STATE UNIVERSITY

MARK: DATE: DESCRIPTION:

PROJECT #: 324242
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 03.28.2025

3/28/2025

CONSTRUCTION DOCUMENTS

ABBREVIATIONS G.P.N. LEGEND & SHEET INDEX

E001

ELECTRICAL SPECIFICATIONS

SECTION 260548 - VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS
1.1 PERFORMANCE REQUIREMENTS
A. Seismic-Restraint Loading:
1. Site Class as Defined in the IBC: D.
2. Assigned Seismic Use Group or Building Category as Defined in the IBC: III.
a. Component Importance Factor:
1) General: 1.0.
2) Life Safety (EM): 1.5
b. Component Response Modification Factor:
1) Fixtures: 1.0
2) Equipment: 2.5
3) Conduit and Cables: 5.0.
c. Component Amplification Factor: 2.5.
3. Design Spectral Response Acceleration at Short Periods (0.2 Second): 173%.
4. Design Spectral Response Acceleration at 1.0-Second Period: 76%.
1.2 SEISMIC-RESTRAINT DEVICES
A. General Requirements for Restraint Components: Rated strengths, features, and application requirements shall be as defined in reports by an agency acceptable to authorities having jurisdiction.
1. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.
B. Restraint Cables: ASTM A 603 galvanized-steel cables with end connections made of steel assemblies with thimbles, brackets, swivels, and bolts designed for restraining cable service; and with a minimum of two clamping bolts for cable engagement.
C. Mechanical Anchor: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchors with strength required for anchor and as tested according to ASTM E 488. Minimum length of eight times diameter.
D. Adhesive Anchor: Drilled-in and capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide anchor bolts and hardware with zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.
1.3 APPLICATIONS
A. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static and seismic loads within specified loading limits.
1.4 SEISMIC-RESTRAINT DEVICE INSTALLATION
A. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.
B. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.
C. Drilled-in Anchors:
1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
5. Set anchors to manufacturer's recommended torque, using a torque wrench.
6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.
1.5 ADJUSTING
A. Adjust isolators after isolated equipment is at operating weight.
B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.
C. Adjust active height of spring isolators.
D. Adjust restraints to permit free movement of equipment within normal mode of operation.

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS
1.1 INSTALLATION
A. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
B. Apply identification devices to surfaces that require finish after completing finish work.
C. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
D. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
E. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches (400 mm) overall.
1.2 IDENTIFICATION SCHEDULE
A. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder, and branch-circuit conductors.
a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
b. Colors for 208/120-V Circuits:
1) Phase A: Black.
2) Phase B: Red.
3) Phase C: Blue.
4) Neutral: White with colored stripe to match associated phase
5) Ground: Green
c. Colors for 480/277-V Circuits:
1) Phase A: Brown.
2) Phase B: Yellow.
3) Phase C: Violet.
4) Neutral: Gray with colored stripe to match associated phase
5) Ground: Green with gray stripe
B. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.
C. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.
D. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.
E. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.
F. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive warning labels.
1. Comply with 29 CFR 1910.145.
2. Identify system voltage with black letters on an orange background.
3. Apply to exterior of door, cover, or other access.
G. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
1. Labeling Instructions:
a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.
b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

SECTION 260923 - LIGHTING CONTROL DEVICES
1.1 SUBMITTALS
A. Product Data: For each type of product.
B. Operation and maintenance data
1.2 OUTDOOR PHOTOELECTRIC SWITCHES
A. Description: Solid state, with SPST dry contacts rated for 1800 VA, to operate connected load, complying with UL 773.
1. Light-Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range.
2. Time Delay: Thirty-second minimum, to prevent false operation.
3. Lightning Arrester: Air-gap type.
4. Mounting: Twist lock complying with NEMA C136.10, with base.
1.3 INDOOR OCCUPANCY SENSORS
A. General Requirements for Sensors: Wall- or ceiling-mounted, solid-state indoor occupancy sensors with a separate power pack.
1. Operation: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn them off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor is powered from the power pack.
3. Power Pack: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Sensor has 24-V dc, 150-mA, Class 2 power source, as defined by NFPA 70.
4. Indicator: Digital display, to show when motion is detected during testing and normal operation of sensor.
5. Bypass Switch: Override the "on" function in case of sensor failure.
6. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc; turn lights off when selected lighting level is present.
B. PIR Type: Ceiling mounted; detect occupants in coverage area by their heat and movement.
1. Detector Sensitivity: Detect occurrences of 6-inch- minimum movement of any portion of a human body that presents a target of not less than 36 sq. in..
2. Detection Coverage (Room): Detect occupancy anywhere in a circular area of 1000 sq. ft. when mounted on a 96-inch- high ceiling.
3. Detection Coverage (Corridor): Detect occupancy within 90 feet when mounted on a 10-foot- high ceiling.
C. Dual-Technology Type: Ceiling mounted; detect occupants in coverage area using PIR and ultrasonic detection methods. The particular technology or combination of technologies that control on-off functions is selectable in the field by operating controls on unit.
1. Sensitivity Adjustment: Separate for each sensing technology.
2. Detector Sensitivity: Detect occurrences of 6-inch- minimum movement of any portion of a human body that presents a target of not less than 36 sq. in., and detect a person of average size and weight moving not less than 12 inches in either a horizontal or a vertical manner at an approximate speed of 12 inches/s.
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. when mounted on a 96-inch- high ceiling.
1.4 SWITCHBOX-MOUNTED OCCUPANCY SENSORS
A. General Requirements for Sensors: Automatic-wall-switch occupancy sensor, suitable for mounting in a single gang switchbox.
1. Operating Ambient Conditions: Dry interior conditions, 32 to 120 deg F.
2. Switch Rating: Not less than 800-VA fluorescent at 120 V, 1200-VA fluorescent at 277 V, and 800-W incandescent.
1.5 INSTALLATION
A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.
B. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.
1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.
C. Identify components and power and control wiring according to Section 260553 "Identification for Electrical Systems."
1.6 FIELD QUALITY CONTROL
A. Perform the following tests and inspections:
1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

SECTION 262416 - PANELBOARDS
1.1 ACTION SUBMITTALS
A. Product Data: For each type of product indicated.
B. Shop Drawings: For each panelboard and related equipment.
1.2 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
1.3 GENERAL REQUIREMENTS FOR PANELBOARDS
A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Section 260548 "Vibration and Seismic Controls for Electrical Systems."
B. Enclosures: Flush- and surface-mounted cabinets.
1. Rated for environmental conditions at installed location.
2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
3. Directory Card: Inside panelboard door, mounted in transparent card holder.
C. Phase, Neutral, and Ground Buses: Tin-plated aluminum or Hard-drawn copper, 98 percent conductivity.
D. Conductor Connectors: Suitable for use with conductor material and sizes.
1. Material: Tin-plated aluminum or Hard-drawn copper, 98 percent conductivity.
2. Mechanical type.
3. Subfeed (Double) Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
E. Service Equipment Label: NRTL labeled for use as service equipment for panelboards with one or more main service disconnecting and overcurrent protective devices.
F. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
G. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.
1.4 DISTRIBUTION PANELBOARDS
A. Panelboards: NEMA PB 1, power and feeder distribution type.
B. Doors: Secured with vault-type latch with tumbler lock; keyed alike.
C. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes 125 A and Smaller: Plug-in or Bolt-on circuit breakers.
D. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.
1.5 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS
A. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
B. Branch Overcurrent Protective Devices: Plug-in or Bolt-on circuit breakers, replaceable without disturbing adjacent units.
C. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.
1.6 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES
A. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
3. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
a. Standard frame sizes, trip ratings, and number of poles.
b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
d. Shunt Trip: 120 or 24-V (per system requirements) trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.
e. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.
1.7 INSTALLATION
A. Comply with mounting and anchoring requirements specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."
B. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
C. Install overcurrent protective devices and controllers not already factory installed.
1. Set field-adjustable, circuit-breaker trip ranges.
D. Install filler plates in unused spaces.
E. Arrange conductors in gutters into groups and bundle and wrap with wire ties.
F. Comply with NECA 1.
1.8 IDENTIFICATION
A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Section 260553 "Identification for Electrical Systems."
B. Create a directory to indicate installed circuit loads and incorporating Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

SECTION 262713 - ELECTRICITY METERING
1.1 SUMMARY
A. Section includes equipment for electricity metering by utility company.
1.2 SUBMITTALS
A. Product Data: For each type of product indicated.
B. Shop Drawings: Dimensioned plans and sections or elevation layouts and wiring diagrams.
C. Field quality-control reports.
D. Operation and Maintenance Data.
1.3 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
1.4 EQUIPMENT FOR ELECTRICITY METERING BY UTILITY COMPANY
A. Meters will be furnished by utility company.
B. Current-Transformer Cabinets: Comply with requirements of electrical-power utility company.
C. Meter Sockets: Comply with requirements of electrical-power utility company.
1.5 INSTALLATION
A. Comply with equipment installation requirements in NECA 1.
B. Install meters furnished by utility company. Install raceways and equipment according to utility company's written requirements. Provide empty conduits for metering leads and extend grounding connections as required by utility company.
C. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
1. Series Combination Warning Label: Self-adhesive type, with text as required by NFPA 70.

SECTION 262726 - WIRING DEVICES
1.1 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
1. Receptacles for Owner-Furnished Equipment: Match plug configurations.
1.2 GENERAL WIRING-DEVICE REQUIREMENTS
A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
1.3 STRAIGHT-BLADE RECEPTACLES
A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.
B. Isolated-Ground, Duplex Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.
1. Description: Straight blade; equipment grounding contacts shall be connected only to the green grounding screw terminal of the device and with inherent electrical isolation from mounting strap. Isolation shall be integral to receptacle construction and not dependent on removable parts.
1.4 GFCI RECEPTACLES
A. General Description:
1. Straight blade, feed-through type.
2. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596.
3. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection.
B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:
1.5 LOW VOLTAGE SWITCHES
A. Push-Button Switches: Modular, analog interface, for operating one or more relays and to work in conjunction with automatic controls.
1. Match color and style specified in Section 262726 "Wiring Devices."
2. Integral green LED pilot light to indicate when circuit is on.
3. Internal white LED locator light to illuminate when circuit is off.
B. Legend: Engraved or permanently silk-screened on wall plate. Use designations indicating load controlled.
C. 24-volt; Powered from associated power pack serving controlled switching group
1.6 LOW VOLTAGE WALL-BOX DIMMERS
A. Push-Button Switches: Modular, analog interface, for operating one or more relays and to work in conjunction with automatic controls.
1. Match color and style specified in Section 262726 "Wiring Devices."
2. Integral green LED pilot light to indicate when circuit is on.
3. Internal white LED locator light to illuminate when circuit is off.
B. Legend: Engraved or permanently silk-screened on wall plate. Use designations indicating load controlled.
C. 24-volt; Powered from associated power pack serving controlled switching group
D. Control: Continuously adjustable; with single- or multi-location connections.
E. LED Lamp Dimmer Switches: Modular, compatible with dimmer drivers; trim potentiometer to adjust low-end dimming; dimmer-driver combination capable of consistent dimming with low end not greater than 1 percent of full brightness.
1.7 WALL PLATES
A. Single and combination types shall match corresponding wiring devices.
1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Finished Spaces: 0.035-inch- thick, satin-finished, Type 302 stainless steel.
3. Material for Unfinished Spaces: Galvanized steel.
4. Material for Damp Locations: Thermoplastic or Cast aluminum with spring-loaded lift cover, and listed and labeled for use in wet and damp locations.
B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant, die-cast aluminum or thermoplastic with lockable cover.
1.8 FINISHES
A. Device Color:
1. Wiring Devices Connected to Normal Power System: As selected by owner unless otherwise indicated or required by NFPA 70 or device listing.
2. Isolated Ground Devices: Orange.
B. Wall Plate Color: For plastic covers, match device color.
1.9 INSTALLATION
A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.
B. Conductors:
1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Existing Conductors:
a. Cut back and pigtail, or replace all damaged conductors.
b. Straighten conductors that remain and remove corrosion and foreign matter.
c. Pigtailing existing conductors is permitted, provided the outlet box is large enough.
C. Device Installation:
1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
2. Connect devices to branch circuits using pigtails that are not less than 12 inches in length.
3. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
D. Dimmers:
1. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device listing conditions in the written instructions.

SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS
1.1 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
B. Comply with NFPA 70.
1.2 NONFUSIBLE SWITCHES
A. Type GD, General Duty, Single Throw, 600 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.
B. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Lugs: Suitable for number, size, and conductor material.
1.3 MOLDED-CASE CIRCUIT BREAKERS
A. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.
B. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
C. Features and Accessories:
1. Standard frame sizes, trip ratings, and number of poles.
2. Lugs: Suitable for number, size, trip ratings, and conductor material.
3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
1.4 INSTALLATION
A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
B. Comply with NECA 1.
1.5 IDENTIFICATION
A. Comply with requirements in Section 260553 "Identification for Electrical Systems."

SECTION 262913 - ENCLOSED CONTROLLERS
1.1 SUBMITTALS
A. Operation and maintenance data.
1.2 FULL-VOLTAGE CONTROLLERS
A. General Requirements for Full-Voltage Controllers: Comply with NEMA ICS 2, general purpose, Class A.
B. Motor-Starting Switches: "Quick-make, quick-break" toggle or push-button action; marked to show whether unit is off or on.
1. Configuration: Nonreversing.
2. Surface mounting.
3. Pilot light.
C. Fractional Horsepower Manual Controllers: "Quick-make, quick-break" toggle or push-button action; marked to show whether unit is off, on, or tripped.
1. Configuration: Nonreversing.
2. Overload Relays: Inverse-time-current characteristics; NEMA ICS 2, Class 10 tripping characteristics; heaters matched to nameplate full-load current of actual protected motor; external reset push button; bimetallic type or melting alloy type.
3. Surface mounting.
4. Pilot light.
1.3 INSTALLATION
A. Wall-Mounted Controllers: Install enclosed controllers on walls with tops at uniform height, and with disconnect operating handles not higher than 79 inches (2006 mm) above finished floor, unless otherwise indicated, and by bolting units to wall or mounting on lightweight structural-steel channels bolted to wall. For controllers not at walls, provide freestanding racks complying with Section 260529 "Hangers and Supports for Electrical Systems."
B. Seismic Bracing: Comply with requirements specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."
C. Install heaters in thermal overload relays. Select heaters based on actual nameplate full-load amperes after motors have been installed.
D. Identify enclosed controllers, components, and control wiring. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
1. Label each enclosure with engraved nameplate.
1.4 ADJUSTING
A. Set field-adjustable switches and overload-relay pickup and trip ranges.

SECTION 265100 - INTERIOR LIGHTING
1.1 ACTION SUBMITTALS
A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, and finishes.
1.2 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
B. Comply with NFPA 70.
1.3 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS
A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.
B. Metal Parts: Free of burrs and sharp corners and edges.
C. Diffusers and Globes:
1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
a. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
b. UV stabilized.
1.4 LED LUMINAIRES
A. Solid State Drivers and LED: Comply with DOE LM 79
1. Total Harmonic Distortion Rating: Less than 10 percent
2. Transient Voltage protection
3. Power factor: 0.90 or higher
4. Temperatures: Minus 40 deg F (minus 40 deg C) and higher
5. Heat sink to remove heat from circuits
6. L70 compliant to 70,000 hours minimum
7. Color Rendering Index: 80 CRI minimum
8. Dimmable
a. Dimming Range: 100 to 1 percent of rated lamp lumens
b. Input watts: Can be reduced to 20 percent of normal
1.5 EMERGENCY POWER UNIT
A. Internal Type: Self-contained, modular, battery-inverter unit, factory mounted within lighting fixture body and compatible with ballast or driver. Comply with UL 924.
1. Emergency Connection: Operate one lamp(s) continuously at an output of 1100 lumens each. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast or driver.
2. Nightlight Connection: Operate one lamp continuously.
3. Test Push Button and Indicator Light:
4. Battery: Sealed, maintenance-free, nickel-cadmium type.
5. Charger:
6. Integral Self-Test:
1.6 EXIT SIGNS
A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.
B. Internally Lighted Signs:
1. Lamps for AC Operation: LEDs, 50,000 hours minimum rated lamp life.
2. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.
1.7 LIGHTING FIXTURE SUPPORT COMPONENTS
A. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage.
B. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage.
1.8 INSTALLATION
A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.
B. Comply with NFPA 70 for minimum fixture supports.
1.9 FIELD QUALITY CONTROL
A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

SECTION 270528 - PATHWAYS FOR COMMUNICATIONS SYSTEMS
1.1 ACTION SUBMITTALS
A. Product Data: For each type of product.
B. Shop Drawings: For each type of cable tray.
C. Delegated-Design Submittal: For seismic restraints.
1.2 METAL CONDUITS AND FITTINGS
A. See section 260533 “Raceways and boxes for Electrical Systems”.
1.3 BOXES, ENCLOSURES, AND CABINETS
A. See section 260533 “Raceways and boxes for Electrical Systems” unless otherwise indicated below.
B. Device Box Dimensions: 4 inches square by 2-1/2 inches deep.
1.4 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND CABLING
A. See section 260533 “Raceways and boxes for Electrical Systems”.
1.5 WIRE-BASKET CABLE TRAYS
A. Description:
1. Configuration: Wires are formed into a standard 2-by-4-inch wire mesh pattern with intersecting wires welded together. Mesh sections must have at least one bottom longitudinal wire along entire length of section.
2. Materials: High-strength-steel longitudinal wires with no bends.
3. Safety Provisions: Wire ends along wire-basket sides (flanges) rounded during manufacturing to maintain integrity of cables and installer safety.
4. Sizes:
a. Straight sections shall be furnished in standard 118-inch lengths.
b. Wire-Basket Depth: 4-inch usable loading depth by 12 inches wide.
5. Connector Assemblies: Bolt welded to plate shaped to fit around adjoining tray wires and mating plate. Mechanically joins adjacent tray wires to splice sections together or to create horizontal fittings.
6. Connector Assembly Capacity: Splices located within support span shall not diminish rated loading capacity of cable tray.
7. Hardware and Fasteners: ASTM F 593 and ASTM F 594 stainless steel, Type 316.
1.6 PATHWAY APPLICATION
A. See section 260533 “Raceways and boxes for Electrical Systems” unless otherwise indicated below.
B. Indoors: Apply pathway products as specified below unless otherwise indicated:
C. Minimum Pathway Size: 1 inch.
1.7 INSTALLATION
A. See section 260533 “Raceways and boxes for Electrical Systems” unless otherwise indicated below.
B. Install no more than the equivalent of two 90-degree bends in any pathway run. Support within 12 inches of changes in direction. Utilize long radius ells for all optical-fiber cables.
C. Stub-ups to Above Recessed Ceilings:
1. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
D. Coat field-cut threads on PVC-coated pathway with a corrosion-preventing conductive compound prior to assembly.
E. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install insulated bushings on conduits terminated with locknuts.
F. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.
G. Spare Pathways: Install pull wires in empty pathways. Cap underground pathways designated as spare above grade alongside pathways in use.
H. Pathways for Communications Cable: Install pathways as follows:
1. 1-Inch Trade Size and Larger: Install pathways in maximum lengths of 75 feet.
2. Install with a maximum of two 90-degree bends or equivalent for each length of pathway unless Drawings show stricter requirements.
1.8 INSTALLATION OF UNDERGROUND CONDUIT
A. See section 260533 “Raceways and boxes for Electrical Systems” unless otherwise indicated below.
1.9 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES
A. See section 260533 “Raceways and boxes for Electrical Systems” unless otherwise indicated below.

SECTION 283111 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM
1.1 SUBMITTALS
A. Product Data: For each type of product, including furnished options and accessories.
B. Shop Drawings: For fire-alarm system.
C. General Submittal Requirements:
1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Architect.
D. Delegated-Design Submittal: For notification appliances and smoke and heat detectors, in addition to submittals listed above, indicate compliance with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
1. Drawings showing the location of each notification appliance and smoke and heat detector, ratings of each, and installation details as needed to comply with listing conditions of the device.
2. Design Calculations: Calculate requirements for selecting the spacing and sensitivity of detection, complying with NFPA 72. Calculate spacing and intensities for strobe signals and sound-pressure levels for audible appliances.
3. Indicate audible appliances required to produce square wave signal per NFPA 72.
E. Field quality-control reports.
F. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals.
1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following and deliver copies to authorities having jurisdiction:
a. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
b. Provide "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.
c. Record copy of site-specific software.
d. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72 article of the same name and include the following:
e. Frequency of testing of installed components.
f. Frequency of inspection of installed components.
g. Requirements and recommendations related to results of maintenance.
h. Manufacturer's user training manuals.
i. Manufacturer's required maintenance related to system warranty requirements.
j. Abbreviated operating instructions for mounting at fire-alarm control unit.
k. Retain subparagraph below if Project contains water-based sprinkler or standpipe systems.
l. Copy of NFPA 25.
m. Field redlines showing:
n. Routing of new conduits
o. Location of all devices, relays, control modules, j-boxes, etc.
p. Device connection order
q. Device addresses
r. Battery calculations
s. Visual device candela rating
t. Audible device sound pressure rating and setting
u. I/O matrix
v. FCPS location and number
w. The following information in digital (.pdf and AutoCad .dwg) and one hardcopy:
x. Field redline information indicated above
y. Equipment and device cutsheets
z. Panel programming information
aa. Device point report
1.2 SYSTEM DESCRIPTION
A. Source Limitations for Fire-Alarm System and Components: Components shall be compatible with, and operate as an extension of, existing system. Provide system manufacturer's certification that all components provided have been tested as, and will operate as, a system.
B. Noncoded, UL-certified FM Global-placarded addressable system, with multiplexed signal transmission and horn/strobe evacuation.
C. Automatic sensitivity control of certain smoke detectors.
D. All components provided shall be listed for use with the selected system.
E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
1.3 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. NOTIFIER; a Honeywell company supplied by Mountain Alarm
1.4 FIRE-ALARM CONTROL UNIT
A. Initiating-Device, Notification-Appliance, and Signaling-Line Circuits:
1. Pathway Class Designations: NFPA 72, Class D.
2. Pathway Survivability: Level 1.
3. Signaling Line Circuits: Style 7
4. Install no more than 75% of loop capacity's addressable devices on each signaling line circuit
B. Notification-Appliance Circuit:
1. Operation shall match existing device audible pattern.
2. Visual alarm appliances shall flash in synchronization where multiple appliances are in the same field of view, as defined in NFPA 72.
C. Remote Smoke-Detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory.
D. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch. Include battery upgrades to incorporate new devices.
1.5 SYSTEM SMOKE DETECTORS
A. General Requirements for System Smoke Detectors:
1. Comply with UL 268; operating at 24-V dc, nominal.
2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
3. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
4. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
5. Integral Visual-Indicating Light: LED type, indicating detector has operated and power-on status.
6. Remote Control: Unless otherwise indicated, detectors shall be digital-addressable type, individually monitored at fire-alarm control unit for calibration, sensitivity, and alarm condition and individually adjustable for sensitivity by fire-alarm control unit.
a. Rate-of-rise temperature characteristic of combination smoke- and heat-detection units shall be selectable at fire-alarm control unit for 15 or 20 deg F per minute.
b. Fixed-temperature sensing characteristic of combination smoke- and heat-detection units shall be independent of rate-of-rise sensing and shall be settable at fire-alarm control unit to operate at 135 or 155 deg F.
c. Multiple levels of detection sensitivity for each sensor.
d. Sensitivity levels based on time of day.
B. Photoelectric Smoke Detectors:
1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
a. Primary status.
b. Device type.
c. Present average value.
d. Present sensitivity selected.
e. Sensor range (normal, dirty, etc.).
1.6 NOTIFICATION APPLIANCES
A. General Requirements for Notification Appliances: Connected to notification-appliance signal circuits, zoned as indicated, equipped for mounting as indicated, and with screw terminals for system connections.
1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated, and with screw terminals for system connections.
B. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464.
C. Visible Notification Appliances: Xenon strobe lights complying with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch-high letters on the lens.
1. Mounting: Wall mounted unless otherwise indicated.
2. Flashing shall be in a temporal pattern, synchronized with other units.
3. Strobe Leads: Factory connected to screw terminals.
4. Mounting Faceplate: Factory finished, [red] [white].
1.7 EQUIPMENT INSTALLATION
A. Comply with NFPA 72, NFPA 101, and requirements of authorities having jurisdiction for installation and testing of fire-alarm equipment. Install all electrical wiring to comply with requirements in NFPA 70 including, but not limited to, Article 760, "Fire Alarm Systems."
B. Connecting to Existing Equipment: Verify that existing fire-alarm system is operational before making changes or connections.
C. Smoke- or Heat-Detector Spacing: Comply with NFPA 72.
D. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Install all devices at the same height unless otherwise indicated.
E. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling. Install all devices at the same height unless otherwise indicated.
F. Device Location-Indicating Lights: Locate in public space near the device they monitor.
1.8 PATHWAYS
A. Pathways shall be installed in EMT.
B. Exposed EMT shall be painted red enamel.
1.9 IDENTIFICATION
A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
1.10 GROUNDING
A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.
B. Ground shielded cables at the control panel location only. Insulate shield at device location.
1.11 FIELD QUALITY CONTROL
A. Field tests shall be witnessed by authorities having jurisdiction.
B. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
1. Visual Inspection: Conduct visual inspection prior to testing.
a. Inspection shall be based on completed record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" table in the "Documentation" section of the "Fundamentals" chapter.
b. Comply with the "Visual Inspection Frequencies" table in the "Inspection" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.
2. System Testing: Comply with the "Test Methods" table in the "Testing" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
4. Test audible appliances for the private operating mode according to manufacturer's written instructions.
5. Test visible appliances for the public operating mode according to manufacturer's written instructions.
6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" section of the "Fundamentals" chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
C. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
D. Prepare test and inspection reports.

DESIGN WEST
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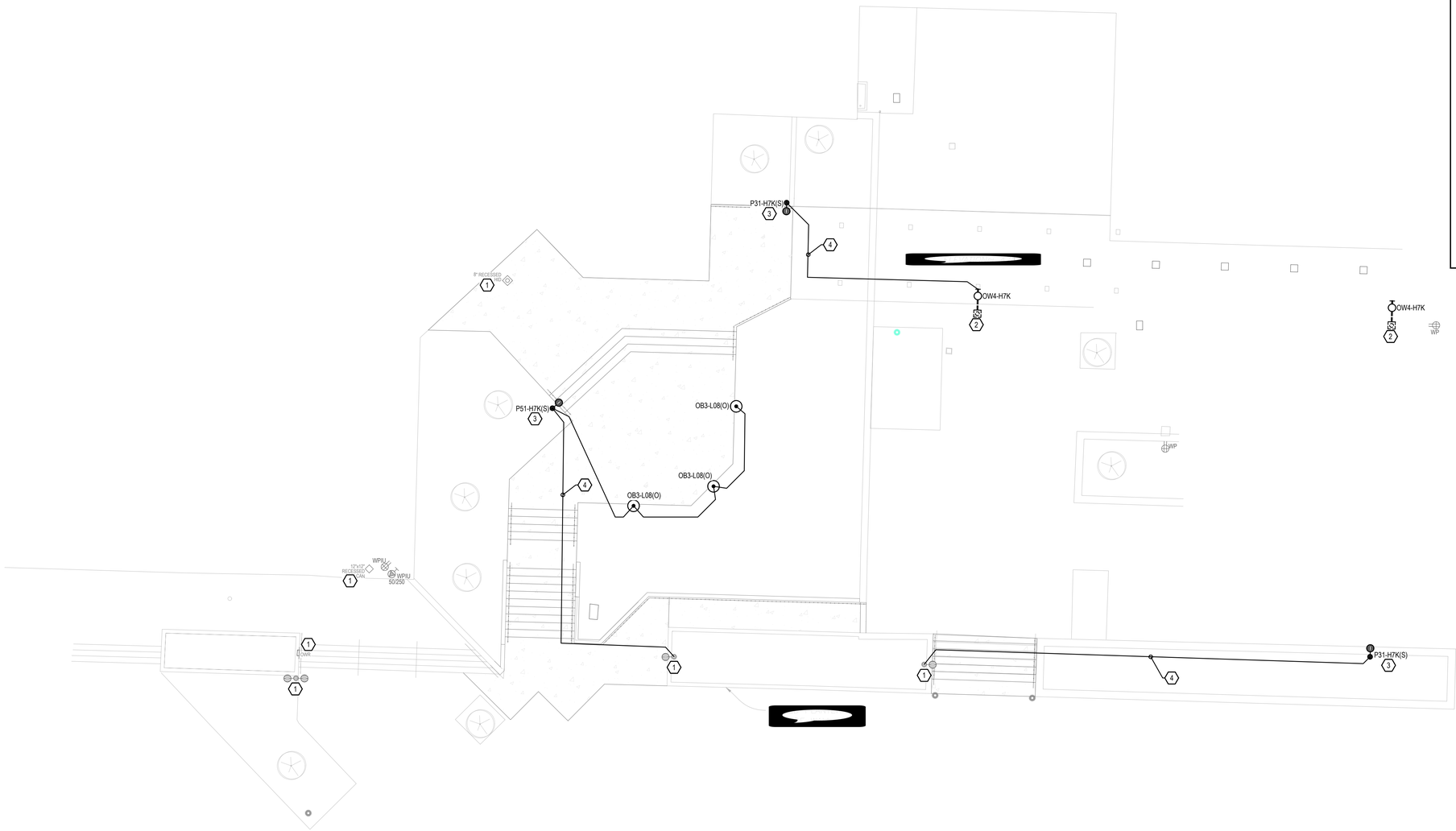
MARK: DATE: DESCRIPTION:

PROJECT #: 324242
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 03.28.2025

3/28/2025

CONSTRUCTION DOCUMENTS

ELECTRICAL SPECIFICATIONS
E002



1 ELECTRICAL SITE PLAN - LIGHTING

Scale: 1"=10'-0"

SHEET KEYED NOTES

1. EXISTING LIGHTING TO REMAIN.
2. REPLACE EXISTING FIXTURE IN SAME LOCATION WITH NEW OF TYPE INDICATED.
3. PROVIDE NEW FIXTURE OF TYPE INDICATED.
4. CONNECT TO EXISTING CIRCUIT INDICATED.

GENERAL SHEET NOTES

1. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES DOWNSTREAM OF ITEMS TO BE REMOVED.
4. SITE LIGHTING CIRCUITS TO BE MINIMUM #6 CU IN 1" MINIMUM CONDUIT UNLESS OTHERWISE INDICATED.
5. CIRCUIT ROUTING IS SCHEMATIC UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL FIELD VERIFY EXISTING CIRCUIT VOLTAGES AND CAPACITIES FOR CIRCUITS WHERE NEW FIXTURES ARE SHOWN TO CONNECT TO EXISTING CIRCUITS. VERIFICATION SHALL BE MADE PRIOR TO RELEASING FIXTURES. BID SHALL INCLUDE CONNECTIONS FOR ALL STANDARD CAMPUS VOLTAGES FROM 120V, 1-PHASE TO 480V, 1-PHASE.
7. CONTRACTOR MAY OPT TO REPLACE COMPLETE SECTIONS OF CONCRETE INSTEAD OF TUNNELING UNDER EXISTING CONCRETE AS NOTED.
8. REMOVE AND REPLACE WITH NEW ENTIRE SECTIONS OF CONCRETE SURFACES COMPLETE TO COLD JOINTS FOR NEW ELECTRICAL INSTALLATIONS. ONLY REMOVE SECTIONS WHERE REQUIRED TO INSTALL NEW CIRCUITING.
9. CUT, PATCH AND REPAIR EXISTING SURFACES AS NEEDED FOR NEW CIRCUIT INSTALLATIONS. INCLUDE ALL LANDSCAPING AND FLATWORK RESTORATION COSTS AS NEEDED TO REPAIR SURFACES DAMAGED BY NEW CIRCUIT INSTALLATIONS USING MATERIALS, METHODS, ETC. COMPLYING WITH USU STANDARDS.
10. PATCH AND REPAIR LANDSCAPE AND HARDSCAPE WITH PRODUCT EQUIVALENT TO ADJACENT SURFACES AND COMPLYING WITH USU STANDARDS AT ALL LOCATIONS. ALL DISTURBED GRASS SHALL BE REPAIRED WITH SOD PER USU STANDARDS.
11. PROTECT EXISTING TREE ROOTS ALONG CIRCUIT PATHS. HAND DIG AS REQUIRED.
12. RESTORE ALL IRRIGATION SYSTEM COMPONENTS DAMAGED BY CONSTRUCTION.
13. DEMOLITION INFORMATION SHOWN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
14. CONTRACTOR SHALL COORDINATE POLE OPTICAL ORIENTATION WITH ENGINEER PRIOR TO POLE BASE INSTALLATION FOR ALL P2, P3 AND/OR P4 SERIES POLES.
15. PROVIDE GRASS/HARDSCAPE TRANSITIONS PER DETAILS C/ES501 & D/ES501 WHEN POLES ARE LOCATED ADJACENT TO HARDSCAPE.
16. EXISTING UTILITY LOCATIONS NOT SHOWN. CONTRACTOR BLUE STAKE UTILITIES AND FIELD COORDINATE NEW POLE LOCATIONS WITH OWNER, ENGINEER AND FIELD CONDITIONS IN FIELD WALK-THROUGH PRIOR TO CONSTRUCTION. PROVIDE REDLINED DRAWING WITH ANTICIPATED ADJUSTMENTS PRIOR TO WALK-THROUGH.

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USU TSC - STAIR REMODEL

650 NORTH 800 EAST
LOGAN, UT 84322
UTAH STATE UNIVERSITY

MARK:	DATE:	DESCRIPTION:

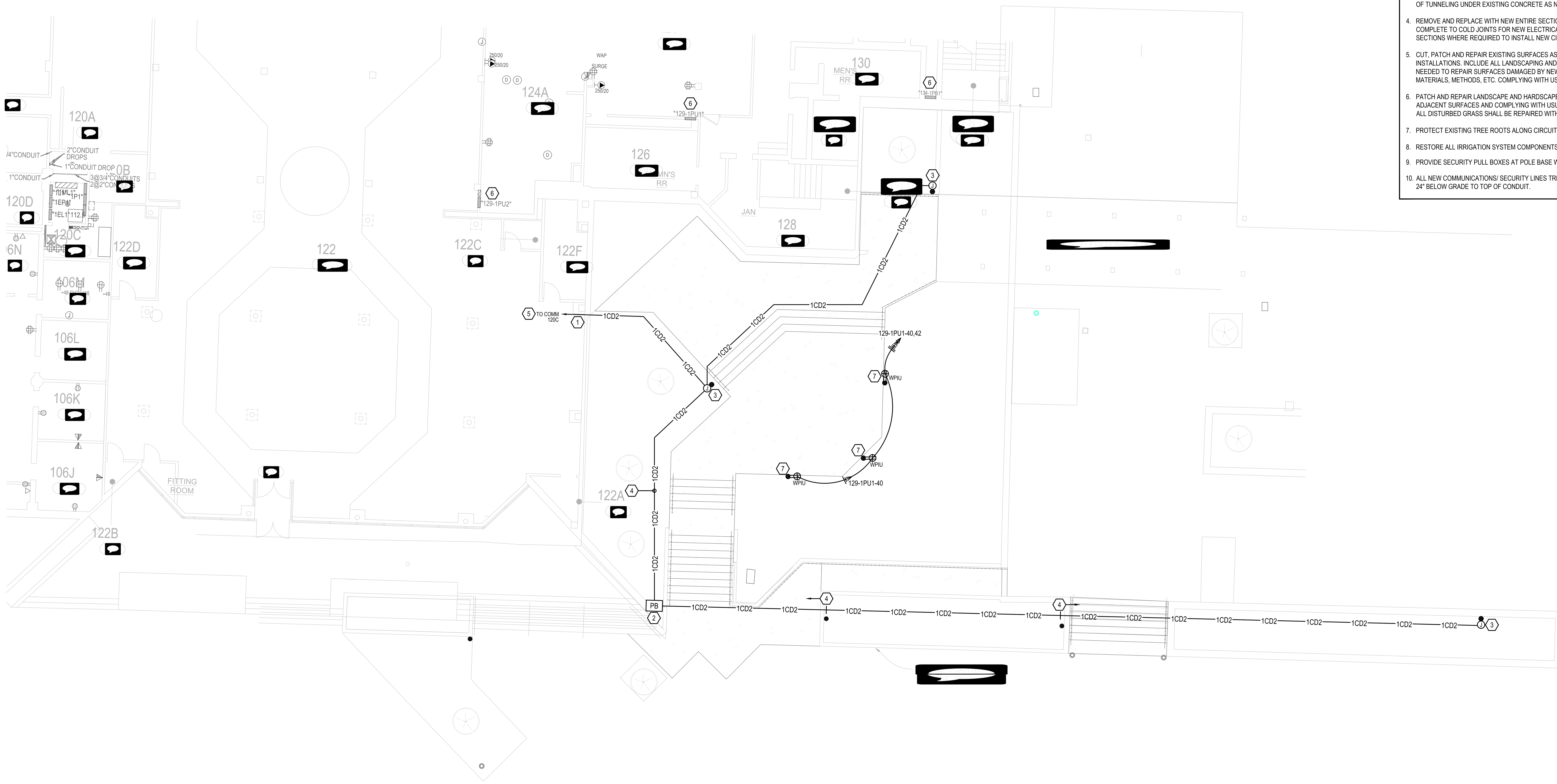
PROJECT #: 324242
DRAWN BY: D.PATTON
CHECKED BY: S.SWENSON
ISSUED: 03.28.2025

CONSTRUCTION DOCUMENTS

ELECTRICAL SITE PLAN - LIGHTING

ES101

LAST SAVE 3/5/2025 T:\JOBS\2025\609 USU TSC STAIR\01 DRAWINGS\00 ELECTRICAL\SINE SOURCE PROJECTSHEETS\ES101 ELECTRICAL SITE PLAN - LIGHTING.DWG
LAST SAVED: 05 Mar 25



ELECTRICAL SITE PLAN - POWER & COMMUNICATIONS

Scale: 1"=10'-0"

SHEET KEYED NOTES

1. PROVIDE CONDUIT FROM BUILDING COMMUNICATIONS ROOM OR MANHOLE INDICATED FOR POLE LIGHT SECURITY/INTERCOM CABLING.
2. PROVIDE TYPE 2 COMMUNICATIONS ENCLOSURE TO FINISH FLUSH WITH GRADE. SEE DETAIL A/ES502.
3. SECURITY PULL-BOX AT POLE. SEE DETAIL C/ES502 AND SHEET ES101 FOR ADDITIONAL INFORMATION.
4. SEGMENT OF SECURITY CONDUIT ANTICIPATED TO BE RAN PARALLEL WITH POWER CIRCUITS. PROVIDE 6" MINIMUM SEPARATION. SEE ES1XX SERIES SHEETS FOR ADDITIONAL INFORMATION.
5. EXTEND TO EXISTING COMM ROOM INDICATED. ALLOW 125' FROM EXTERIOR WALL TO COMM ROOM THROUGH EXISTING GRID & STRUCTURAL CEILING AREAS.
6. EXISTING DISTRIBUTION TO REMAIN.
7. OUTLET INTEGRAL TO BOLLARD. PROVIDE SEPARATE CIRCUITING AS SHOWN.

GENERAL SHEET NOTES

1. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
2. CIRCUIT ROUTING IS SCHEMATIC UNLESS OTHERWISE NOTED.
3. CONTRACTOR MAY OPT TO REPLACE COMPLETE SECTIONS OF CONCRETE INSTEAD OF TUNNELING UNDER EXISTING CONCRETE AS NOTED.
4. REMOVE AND REPLACE WITH NEW ENTIRE SECTIONS OF CONCRETE SURFACES COMPLETE TO COLD JOINTS FOR NEW ELECTRICAL INSTALLATIONS. ONLY REMOVE SECTIONS WHERE REQUIRED TO INSTALL NEW CIRCUITING.
5. CUT, PATCH AND REPAIR EXISTING SURFACES AS NEEDED FOR NEW CIRCUIT INSTALLATIONS. INCLUDE ALL LANDSCAPING AND FLATWORK RESTORATION COSTS AS NEEDED TO REPAIR SURFACES DAMAGED BY NEW CIRCUIT INSTALLATIONS USING MATERIALS, METHODS, ETC. COMPLYING WITH USU STANDARDS.
6. PATCH AND REPAIR LANDSCAPE AND HARDSCAPE WITH PRODUCT EQUIVALENT TO ADJACENT SURFACES AND COMPLYING WITH USU STANDARDS AT ALL LOCATIONS. ALL DISTURBED GRASS SHALL BE REPAIRED WITH SOD PER USU STANDARDS.
7. PROTECT EXISTING TREE ROOTS ALONG CIRCUIT PATHS. HAND DIG AS REQUIRED.
8. RESTORE ALL IRRIGATION SYSTEM COMPONENTS DAMAGED BY CONSTRUCTION.
9. PROVIDE SECURITY PULL BOXES AT POLE BASE WHERE NOTED PER DETAIL C/ES502.
10. ALL NEW COMMUNICATIONS/ SECURITY LINES TRENCHED IN SHALL BE A MINIMUM OF 24" BELOW GRADE TO TOP OF CONDUIT.

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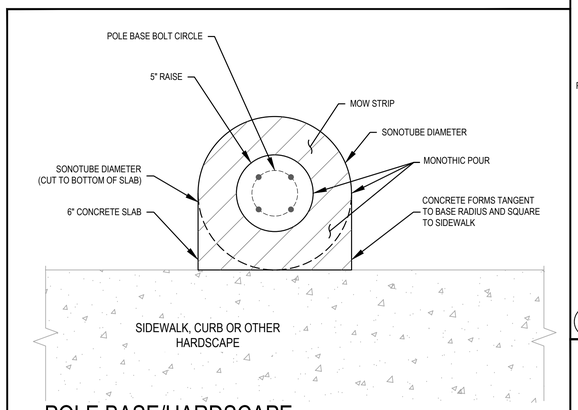
CONSTRUCTION DOCUMENTS

ELECTRICAL SITE PLAN - POWER & COMMUNICATIONS

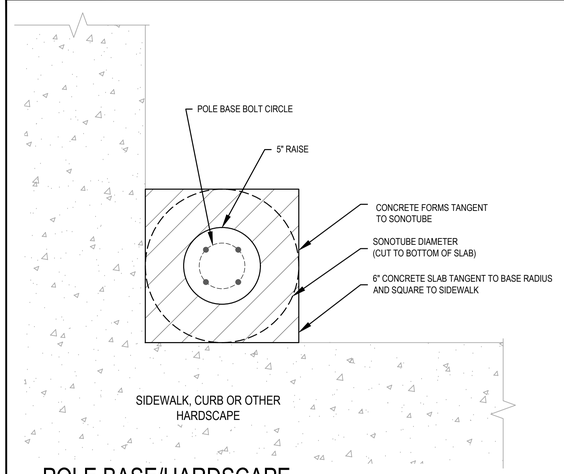
ES201

LAST SAVE 3/5/2025 T:\JOBS\2025009 USU TSC STAIR\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECT\SHEETS\ES201 ELECTRICAL SITE PLAN - POWER & COMMUNICATIONS.DWG
LAST SAVED: 05 Mar 25



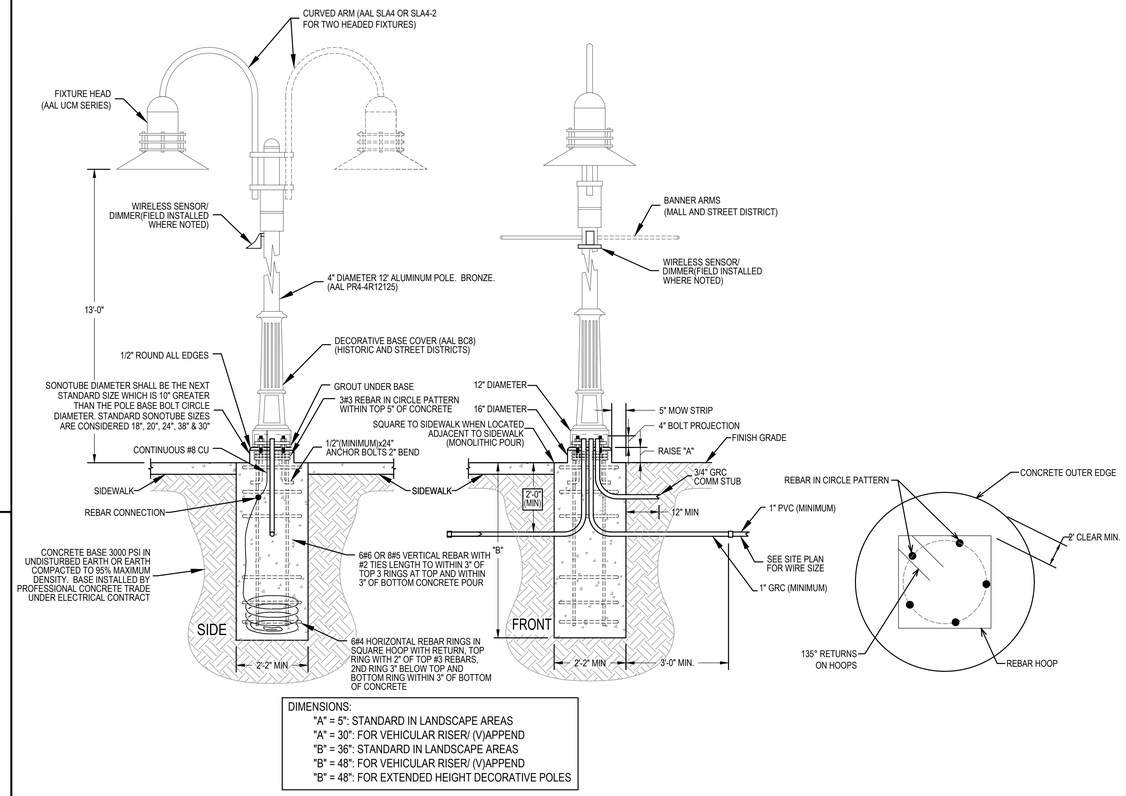
POLE BASE/HARDSCAPE FINISH DETAIL: INTERIOR SECTION

D SCALE: NO SCALE



POLE BASE/HARDSCAPE FINISH DETAIL: CORNER POLE

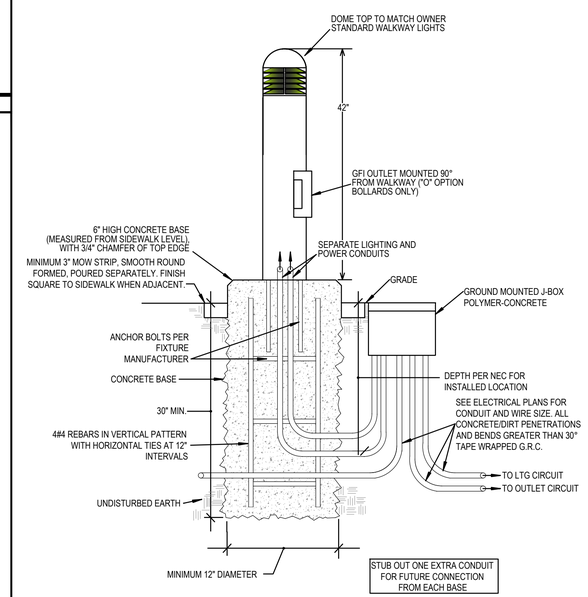
C SCALE: NO SCALE



DIMENSIONS:
"A" = 5": STANDARD IN LANDSCAPE AREAS
"A" = 30": FOR VEHICULAR RISER/ (V)APPEND
"B" = 36": STANDARD IN LANDSCAPE AREAS
"B" = 48": FOR VEHICULAR RISER/ (V)APPEND
"B" = 48": FOR EXTENDED HEIGHT DECORATIVE POLES

USU POLE BASE DETAIL: HISTORIC, STREET AND MALL DISTRICT WALKWAYS

B SCALE: NO SCALE



OBX-LXX FIXTURE MOUNT DETAIL

A SCALE: NO SCALE

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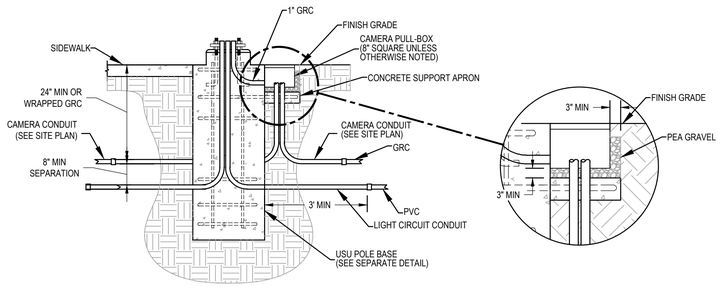
ISSUED: 03.28.2025

CONSTRUCTION DOCUMENTS

ELECTRICAL SITE DETAILS

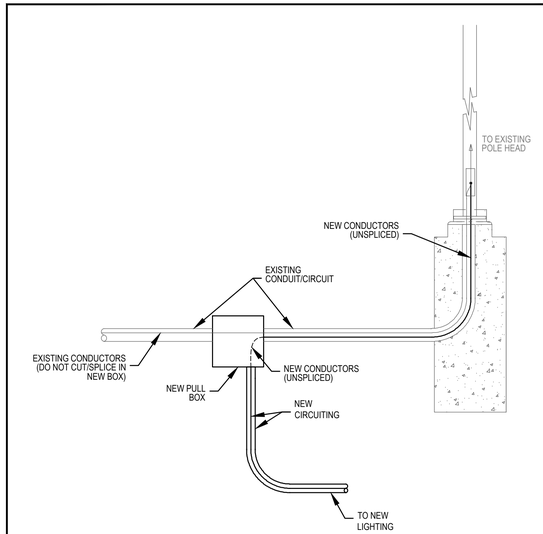
ES501

LAST SAVE: 3/5/2025 T:\JOBS\2025\09 USU TSC STAIR\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECT\SHEETS\ES501 ELECTRICAL SITE DETAILS.DWG
LAST SAVED: 03 Mar 25



C USU POLE BASE DETAIL: SECURITY PULL-BOX MODIFICATION

SCALE: NO SCALE

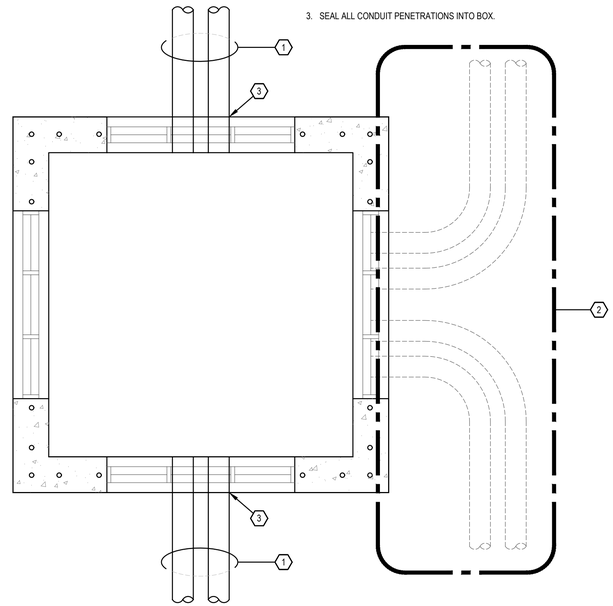


E EXISTING CIRCUIT TIE-IN DETAIL

SCALE: NO SCALE

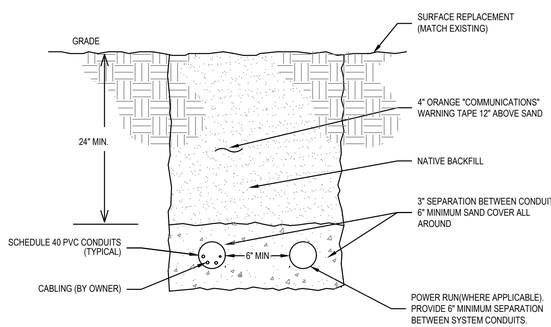
DETAIL KEYED NOTES

1. CONDUIT INTO BOX SHALL BE STRAIGHT LINE ENTRIES ALONG CONTINUOUS CONDUIT PATH.
2. DO NOT USE BEND ENTRIES INTO BOX WITHOUT SPECIFIC PRIOR APPROVAL FROM OWNER. DETERMINATION WILL BE ON A CASE-BY-CASE BASIS IN THE FIELD AND MAY REQUIRE ADDING ADDITIONAL BOXES AT CONTRACTOR'S EXPENSE.
3. SEAL ALL CONDUIT PENETRATIONS INTO BOX.



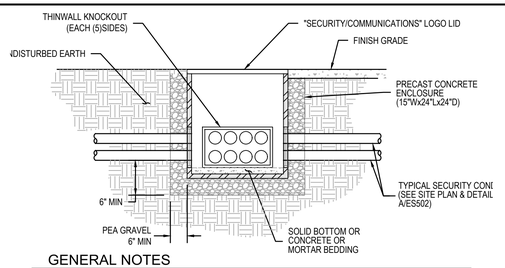
B USU-COMMUNICATIONS/ SECURITY PULL-BOX CONDUIT ENTRANCE DETAIL

SCALE: NO SCALE



D USU-COMMUNICATIONS CONDUIT INSTALLATION (TRENCH)-SPECIFIED DEPTH

SCALE: NO SCALE



GENERAL NOTES

1. PROVIDE PRE-CAST PULL BOXES.
2. PULL BOX & COVER TO MEET TIER 8 LOADING REQUIREMENTS IN LANDSCAPE AREAS AND TIER 15 MINIMUM IN PARKING/DRIVE AREAS.
3. BOND ALL METAL(IF APPLICABLE) WITH #6 CU TO GROUND ROD INSTALLED ADJACENT TO BOX.
4. PROVIDE SEGMENTED, THINWALL KNOCKOUTS ON ALL SIDES OF BOX (MINIMUM 8 PER SIDE)
5. SEAL ALL CONDUIT PENETRATIONS INTO BOX

A USU TYPE 2 COMMUNICATIONS ENCLOSURE DETAIL

SCALE: NO SCALE

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CHECKED BY: S.SWENSON
ISSUED: 03.28.2025

3/28/2025

ELECTRICAL SITE DETAILS

ES502

LAST SAVE: 3/26/2025 T:\JOBS\2025\09 USU TSC STAIR\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECT\SHEET\ES502 ELECTRICAL SITE DETAILS.DWG
LAST SAVED: 26 Mar 25

LIGHT FIXTURE SCHEDULE

	TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
	OB3- L08 OB3- L08(O)	KIM VRB1-15L-4K-UV-DBT(-DRGFI) EQUIVALENT ONLY WITH PRIOR OWNER APPROVAL	LED BOLLARD; 8" NOMINAL DIAMETER; 42" NOMINAL HEIGHT; TYPE 3 OPTICAL PATTERN; CAST ALUMINUM HOUSING; DOME TOP; LOUVERS; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; FINISH TO MATCH AREA POLES; INTEGRAL OUTLET WHERE (O) OPTION SHOWN ON DRAWINGS	BASE SEE DETAIL	15 W	800 LUMEN NOMINAL LED 4000K
	OW4- H7K	AAL UCM2-SR-STR-36L-615-4K7-4W-CL(-H)-DBT-SLC-TR/WMA 24 VISIONAIRE PD-L-T4-84LC-3-4K-*-AM-BZ-C1-H2-DIM-CUSTOM ARM UNIVERSITY STANDARD. NO EQUIVALENTS	USU HISTORIC DISTRICT STYLE WALL MOUNT; SOLID CYLINDER WITH RINGS; STRAIGHT SHADE; FLAT-GLASS LENS; VOLTAGE PER FIELD CONDITIONS; ELECTRONIC, DIMMABLE, DRIVER; TOOLED LENS REMOVAL; DARK-BRONZE FINISH; OFFSET SHEPHARD'S CROOK ARM (WALL MOUNT); TYPE 4 DISTRIBUTION	WALL	78 W	7000 LUMEN NOMINAL LED 4000K
	P31- H7K P31- H7K(S)	AAL UCM2-SR-STR-36L-615-4K7-3-CL(-H)-DBT-SLC-TR/SLA4/PR4-4R12226/BC8 VISIONAIRE PD-L-T3-84LC-3-4K-*-AM-BZ-C1-H2-DIM/VVA103-L-S1-4 RNTA-4R-250-12-AKB-343-BZ/DCB12-BZ-4 UNIVERSITY STANDARD. NO EQUIVALENTS	DECORATIVE POLE; USU HISTORIC DISTRICT; SOLID CYLINDER WITH RINGS; STRAIGHT SHADE; FLAT-GLASS LENS; VOLTAGE PER FIELD CONDITIONS; ELECTRONIC, DIMMABLE, DRIVER; TOOLED LENS REMOVAL; DARK-BRONZE FINISH; OFFSET SHEPHARD'S CROOK ARM; SMOOTH, ROUND, ALUMINUM POLE; DECORATIVE BASE COVER; TYPE 3 DISTRIBUTION; HOUSE SIDE SHIELD WHERE (H) OPTION SHOWN ON DRAWINGS	POLE; WALKWAY POLE BASE SEE DETAIL B/ES501 WITH SECURITY PULL BOX--DETAIL C/ES502	78 W	7000 LUMEN NOMINAL LED 4000K
	P51- H7K P51- H7K(S)	AAL UCM2-SR-STR-36L-615-4K7-5W-CL(-H)-DBT-SLC-TR/SLA4/PR4-4R12226/BC8 VISIONAIRE PD-L-T5-84LC-3-4K-*-AM-BZ-C1-H2-DIM/VVA103-L-S1-4 RNTA-4R-250-12-AKB-343-BZ/DCB12-BZ-4 UNIVERSITY STANDARD. NO EQUIVALENTS	DECORATIVE POLE; USU HISTORIC DISTRICT; SOLID CYLINDER WITH RINGS; STRAIGHT SHADE; FLAT-GLASS LENS; VOLTAGE PER FIELD CONDITIONS; ELECTRONIC, DIMMABLE, DRIVER; TOOLED LENS REMOVAL; DARK-BRONZE FINISH; OFFSET SHEPHARD'S CROOK ARM; SMOOTH, ROUND, ALUMINUM POLE; DECORATIVE BASE COVER; TYPE 5 DISTRIBUTION	POLE; WALKWAY POLE BASE SEE DETAIL B/ES501 WITH SECURITY PULL BOX--DETAIL C/ES502	78 W	7000 LUMEN NOMINAL LED 4000K

NOTES

-BID PRICING SHALL INCLUDE ALLOWANCES FOR FIXTURES TO BE SERVED AT ALL AVAILABLE CAMPUS VOLTAGES--120/1, 208/1, 240/1, 277/1, AND 480/1

LIGHT FIXTURE ACCESSORY SCHEDULE

	O	OUTLET--POLE/BOLLARD MOUNTED	APPENDED TO FIXTURE TYPE; INTEGRAL GFCI, DUPLEX RECEPTACLE FACTORY MOUNTED IN POLE/BOLLARD; SEPARATE CIRCUIT FROM FIXTURE	FACTORY INSTALLED IN FIXTURE	N/A	N/A
	S	SECURITY PULL BOX	APPENDED TO FIXTURE TYPE; POLE BASE MODIFICATION FOR SECURITY PULL BOX SUPPORT APRON	CONCRETE SUPPORT TIED TO POLE BASE AND PULL BOX PER	N/A	N/A

NOTES

-FIXTURE ACCESSORIES ARE ADDED TO STANDARD FIXTURE TYPES THROUGH (X) APPENDS WHERE SELECT FIXTURES REQUIRE THE ACCESSORY, OR IN FIXTURE DESCRIPTIONS WHERE ACCESSORY IS STANDARD FOR ALL FIXTURES OF THAT TYPE.

-APPENDS ARE INTENDED TO MODIFY FIXTURE CATALOG NUMBERS GIVEN ABOVE AS NOTED IN APPEND DESCRIPTION; MULTIPLE ACCESSORIES MAY BE LISTED IN A SINGLE APPEND (XY), (XYZ), ETC

COMMUNICATIONS RACEWAY SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
xCDy	CONDUIT; QUANTITY "X", DIAMETER "Y" AS INDICATED ON SYMBOL SCHEDULE	AS SPECIFIED		INSULATED THROAT CONNECTORS ON ALL ENDS; PULL STRING

PANEL 134-1PB1

[ ] NEW
[X] EXISTING
1 NEMA RATING
[X] BOLT ON BREAKERS
[ ] ISOLATED GROUND BUS
[ ] SURGE PROTECT (SPD)

TYPE WESTINGHOUSE 3 Ø 4 WIRE 120/208 VOLTS

REMARKS -ALL CIRCUITS CONSIDERED EXISTING UNLESS OTHERWISE INDICATED IN THESE DRAWINGS

LOCATION: MECH CHASE 134

MOUNTING: [ ] FLUSH [X] SURFACE

TBD AMP MAIN
[X] LUGS
[ ] BREAKER

No.	BRKR A	BRKR P	CIRCUIT DESCRIPTION	L	O	M	WIRE/CND P	WIRE/CND N	WIRE/CND G	WIRE/CND C	CIRC. LOAD	A	B	C	CIRC. LOAD	WIRE/CND P	WIRE/CND N	WIRE/CND G	WIRE/CND C	L	O	M	CIRCUIT DESCRIPTION	BRKR A	BRKR P	No.
1	20	1	ALL ROUND CLG				EX	EX	EX	EX		0				EX	EX	EX	EX				FOUNTAIN N	20	1	2
3	20	1	E HALL ROUND CEILING				EX	EX	EX	EX			0			EX	EX	EX	EX				FOUNTAIN CNTR	20	1	4
5	20	1	FOUNTAIN C				EX	EX	EX	EX				0		EX	EX	EX	EX				FOUNTAIN S	20	1	6
7	20	1	POWER DOORS SE				EX	EX	EX	EX		0				EX	EX	EX	EX				ELEVTOR LIGHTS	20	1	8
9	20	1	PLUGS: HUB SE HALL				EX	EX	EX	EX			0			EX	EX	EX	EX				EX: ??	20	1	10
11	20	1	PLUGS: HALL				EX	EX	EX	EX				0		EX	EX	EX	EX				PLUGS: HALL	20	1	12
13	20	1	PLUGS: HALL				EX	EX	EX	EX		0				EX	EX	EX	EX				EX: ??	20	1	14
15	20	1	EX: ??				EX	EX	EX	EX			0			EX	EX	EX	EX				ELECTRONIC NETWORK HUB	20	1	16
17	20	2	CLOCK C				EX	EX	EX	EX				0		EX	EX	EX	EX				LTG: CANOPY, PATIO	20	2	18
19	-	-	-				EX					0				EX							-	-	-	20
21	20	2	CLOCK D (LEAVE OFF)				EX	EX	EX	EX			0			EX	EX	EX	EX				FTN E WALKWAY LTG	20	2	22
23	-	-	-				EX							0		EX							-	-	-	24
25	20	1	PLUGS: SPEAKER				EX	EX	EX	EX		0				EX	EX	EX	EX				ELEVATOR MAIN	20	1	26
27	20	1	PLUGS: N UNDER IBIS DESK				EX	EX	EX	EX			0			EX	EX	EX	EX				EX: ??	20	1	28
29	20	1	EX: ??				EX	EX	EX	EX				0		EX	EX	EX	EX				EX: ??	20	1	30
31	100	3	EX: ??				EX	EX	EX	EX		0											SPACE	20	1	32
33	-	-	-				EX						0										SPACE	20	1	34
35	-	-	-				EX							0									SPACE	20	1	36
37	100	3	EX: ??				EX	EX	EX	EX		0				EX	EX	EX	EX				EX: ??	100	3	38
39	-	-	-				EX						0			EX							-	-	-	40
41	-	-	-				EX							0		EX							-	-	-	42
											TOTALS	0	0	0												

FEEDER EXISTING

AMPS/PHASE 0 0 0

AIC EXISTING
SCCR EXISTING
PARALLEL RUNS SEE ONE-LINE

BREAKER CODES
A=ARC-FAULT; G=GROUND FAULT; H=HACR; L=LOCKING HANDLE; S=SHUNT TRIP; R=RED PAINTED HANDLE
WIRE CODES
I=ADD'L ISO GROUND TO MATCH SAFETY GROUND; S=UNLESS OTHERWISE SPECIFIED
GENERAL CODES
1LIN=SEE ONE-LINE DIAGRAM

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CONSTRUCTION DOCUMENTS

ELECTRICAL SCHEDULES

E602