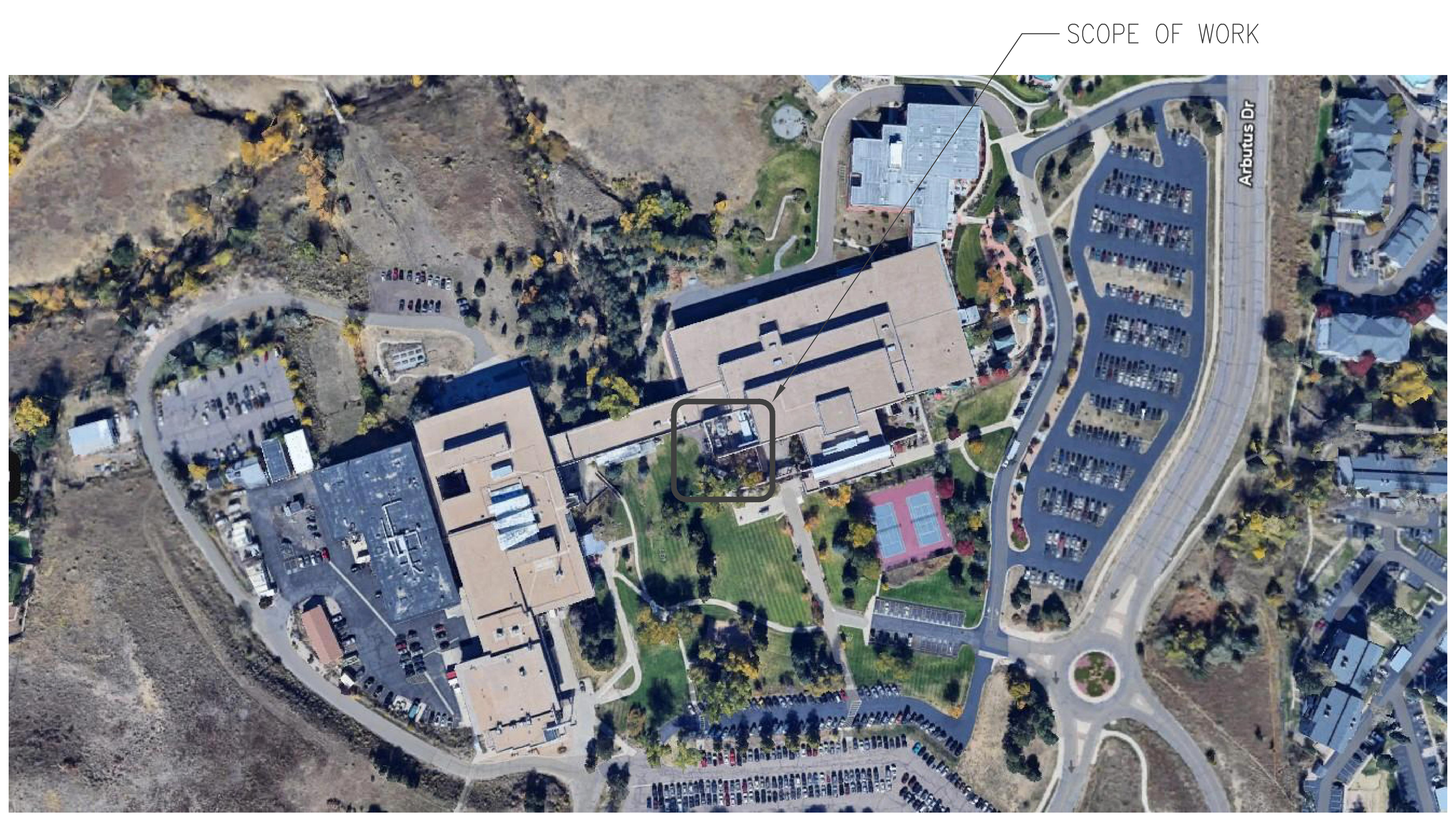
RED ROCKS COMMUNITY COLLEGE

13300 W 6th Ave.
Lakewood, CO 80228

GENERATOR ADDITION
CONSTRUCTION DOCUMENTS

OCTOBER 20, 2025



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APPLICABLE CODES

AHJ: STATE OF COLORADO

FIRE AUTHORITY: WEST METRO FIRE DISTRICT

REMODEL [X] NEW [ ]

YEAR	CODE
2021	INTERNATIONAL BUILDING CODE
2021	INTERNATIONAL MECHANICAL CODE
2021	INTERNATIONAL PLUMBING CODE
2021	INTERNATIONAL ENERGY CODE
2021	INTERNATIONAL FIRE CODE
2023	NATIONAL ELECTRICAL CODE
2021	INTERNATIONAL ENERGY CONSERVATION CODE
	OCCUPANCY CLASSIFICATION: B BUSINESS,S-1 STORAGE,A-3 ASSEMBLY

IS THE BUILDING FULLY SPRINKLERED? [X] YES [ ] NO

IS THE BUILDING FULLY DETECTED? [ ] YES [X] NO

REV.	DATE	DESCRIPTION
	07/26/24	ISSUED FOR CONSTRUCTION
	10/20/2025	ADD 01 - ISSUED FOR BID

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RED ROCKS COMMUNITY COLLEGE
GENERATOR ADDITION
13300 W. 6TH AVE., LAKEWOOD, CO 80228

COVER SHEET

DATE: JULY 26, 2024
SCALE: NONE
DESIGN BY: CPB
DRAWN BY: EKE
APPROVED BY: SB
PRJ. NO: 21098

SHT.NO. G00
REVISION –

MARTIN/MARTIN, INC. GENERAL NOTES:

IN ADDITION TO THE CITY OF LAKEWOOD STANDARD NOTES, THE FOLLOWING SHALL APPLY:

1. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT CITY OF LAKEWOOD STANDARDS AND SPECIFICATIONS. ALL STREETS, WATER MAIN, STORM SEWER AND SANITARY SEWER CONSTRUCTION SHALL BE SUBJECT TO CITY OF LAKEWOOD INSPECTION.

2. THE CONTRACTOR SHALL HAVE ONE [1] SIGNED COPY OF PLANS APPROVED BY THE CITY OF LAKEWOOD AND ONE COPY OF THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS ON THE JOB SITE AT ALL TIMES.

3. CONTRACTOR SHALL NOTIFY THE ENGINEER, OWNER AND THE CITY OF LAKEWOOD [48]–HOURS PRIOR TO THE START OF CONSTRUCTION. A PRE–CONSTRUCTION MEETING SHALL BE SCHEDULED WITH THE CITY OF LAKEWOOD ENGINEERING INSPECTOR [24]–HOURS PRIOR TO START OF WORK.

4. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB SITE, INCLUDING, BUT NOT LIMITED TO, SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK, TRENCH EXCAVATION AND SHORING, TRAFFIC CONTROL AND SECURITY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

5. THE CITY OF LAKEWOOD/OWNER/ENGINEER CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, ON OR NEAR THE CONSTRUCTION SITE.

6. ALL TRENCHES SHALL BE ADEQUATELY SUPPORTED AND THE SAFETY OF WORKERS PROVIDED FOR AS REQUIRED BY THE MOST RECENT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION [OSHA] "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION." THESE REGULATIONS ARE DESCRIBED IN SUBPART P, PART 1926 OF THE CODE OF FEDERAL REGULATIONS. SHEETING AND SHORING SHALL BE UTILIZED WHERE NECESSARY TO PREVENT ANY EXCESSIVE WIDENING OR SLOUGHING OF THE TRENCH WHICH MAY BE DETRIMENTAL TO HUMAN SAFETY, TO THE PIPE BEING PLACED, OR TO ANY EXISTING SITE IMPROVEMENTS OR STRUCTURES. THE CONTRACTOR MAY BE REQUIRED TO USE AN APPROVED PILING INSTEAD OF SHEETING AND SHORING.

7. CONTRACTOR SHALL OBTAIN ALL PERMITS FOR STREET CUTS, UTILITY INTERRUPTIONS AND TRAFFIC CONTROL.

8. AT LEAST FIVE [5] WORKING DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION, A TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO CITY OF LAKEWOOD. THE TRAFFIC CONTROL PLAN SHALL BE PREPARED BY A CERTIFIED TRAFFIC CONTROL SUPERVISOR AND SHALL BE IN CONFORMANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. NO WORK SHALL BEGIN UNTIL ALL TRAFFIC CONTROL DEVICES HAVE BEEN PLACED IN ACCORDANCE WITH THE PLAN. THE CONTRACTOR SHALL CONTINUOUSLY MAINTAIN THE TRAFFIC CONTROL DEVICES FOR THE ENTIRE DURATION OF THE PROJECT OR UNTIL THE ROADWAY HAS BEEN OPENED AND THE PERMANENT TRAFFIC CONTROL DEVICES HAVE BEEN INSTALLED.

9. ALL TRENCH BACKFILL AND SUBGRADE PREPARATION SHALL BE TESTED TO ENSURE COMPLIANCE WITH CITY OF LAKEWOOD STANDARDS AND SHALL BE TESTED AT CITY OF LAKEWOOD REQUIRED FREQUENCIES BY A CITY OF LAKEWOOD APPROVED PRIVATE SOILS TESTING FIRM. TEST RESULTS SHALL BE SUBMITTED TO, REVIEWED, AND APPROVED BY, THE CITY OF LAKEWOOD ENGINEERING DIVISION PRIOR TO INSTALLING BASE COURSE, ASPHALT OR CONCRETE ON PREPARED SUBGRADE. ALL BASE COURSE DENSITY SHALL ALSO BE TESTED BY THE PRIVATE SOILS FIRM AT CITY OF LAKEWOOD REQUIRED FREQUENCIES TO ENSURE COMPLIANCE WITH CITY OF LAKEWOOD REQUIREMENTS. BASE COURSE TEST RESULTS SHALL ALSO BE APPROVED BY THE CITY OF LAKEWOOD ENGINEERING DIVISION PRIOR TO INSTALLING PAVEMENT. ALL CONCRETE AND ASPHALT PLACED SHALL BE TESTED IN ACCORDANCE WITH CITY OF LAKEWOOD MINIMUM MATERIALS TESTING STANDARDS. TEST RESULTS SHALL BE REVIEWED AND APPROVED BY THE CITY OF LAKEWOOD ENGINEERING DIVISION PRIOR TO INITIATION OF THE REQUIRED [2] YEAR WARRANTY PERIOD.

10. CONTRACTOR SHALL CONFORM TO ALL FEDERAL, STATE AND LOCAL HEALTH AND SAFETY RULES AND REGULATIONS.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL UTILITIES DURING CONSTRUCTION AND FOR COORDINATING WITH THE APPROPRIATE UTILITY COMPANY FOR ANY UTILITY CROSSINGS REQUIRED. REPAIR OF DAMAGED UTILITIES SHALL BE AT THE CONTRACTORS EXPENSE, INCLUDING BUT NOT LIMITED TO UNKNOWN UNDERGROUND UTILITIES.

12. EXISTING FENCES, TREES, SIDEWALKS, CURBS AND GUTTERS, LANDSCAPING, STRUCTURES, AND IMPROVEMENTS DESTROYED, DAMAGED OR REMOVED DUE TO CONSTRUCTION OF THIS PROJECT SHALL BE REPLACED OR RESTORED IN LIKE KIND AT THE CONTRACTOR'S EXPENSE, UNLESS OTHERWISE INDICATED ON THESE PLANS.

13. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING REASONABLE ACCESS TO AND FROM ALL OF THE ADJACENT PROPERTIES THROUGHOUT THE COURSE OF THE WORK. THE CONTRACTOR SHALL BE REQUIRED TO MEET (INDIVIDUALLY OR COLLECTIVELY) WITH ALL ADJACENT PROPERTY OWNERS WHO'S DRIVEWAY ACCESS WILL BE AFFECTED BY THE WORK. AS CONSTRUCTION CONDITIONS CHANGE AND THE WORK PROGRESSES, THE CONTRACTOR SHALL BE REQUIRED TO PERIODICALLY UPDATE THOSE PROPERTY OWNERS SO THAT THEY ARE KEPT INFORMED ABOUT THEIR ACCESS.

14. OWNER/DEVELOPER SHALL OBTAIN A STORMWATER CONSTRUCTION PERMIT FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY CONTROL DIVISION, PRIOR TO CLEARING, GRADING, OR EXCAVATING A SITE OF ONE–HALF ACRE OR MORE, OR LESS THAN ONE–HALF ACRE AND PART OF A LARGER DEVELOPMENT. A COPY OF THE APPROVED PERMIT MUST BE SUBMITTED TO THE CITY OF LAKEWOOD ENGINEERING DIVISION PRIOR TO THE START OF CLEARING, GRADING OR EXCAVATING OF THE SITE. A COPY OF THE APPROVED PERMIT MUST ALSO BE AVAILABLE ON THE PROJECT SITE AT ALL TIMES DURING CONSTRUCTION.

15. CONTRACTOR SHALL OBTAIN A COLORADO STATE CONSTRUCTION DEWATERING DISCHARGE PERMIT FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT FOR ALL AREAS WHERE DEWATERING IS REQUIRED FROM AN EXCAVATION AND WATER IS DISCHARGED INTO A STORM SEWER, CHANNEL, IRRIGATION DITCH OR ANY WATERS OF THE UNITED STATES. A COPY OF THE APPROVED PERMIT MUST BE SUBMITTED TO THE CITY OF LAKEWOOD ENGINEERING DIVISION PRIOR TO THE START OF ANY DEWATERING. A COPY OF THE APPROVED PERMIT MUST ALSO BE AVAILABLE ON THE PROJECT SITE AT ALL TIMES DURING CONSTRUCTION.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING STORM RUNOFF AND ANY GROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT. GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS NOR EROSION ON ABUTTING PROPERTIES IN ORDER TO CONSTRUCT THE IMPROVEMENTS SHOWN ON THESE PLANS. NO CONCRETE SHALL BE PLACED WHERE GROUNDWATER IS VISIBLE OR UNTIL THE GROUNDWATER TABLE HAS BEEN LOWERED BELOW THE PROPOSED IMPROVEMENTS. ANY UNSTABLE AREAS, AS A RESULT OF GROUNDWATER, ENCOUNTERED DURING THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS SHALL BE STABILIZED AS AGREED UPON BY THE CONTRACTOR, THE CITY OF LAKEWOOD, AND THE GEOTECHNICAL ENGINEER AT THE TIME OF OCCURRENCE.

17. THE CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATING AND VERIFYING ELEVATIONS OF ALL EXISTING SEWER MAINS, WATER MAINS, CURBS, GUTTERS AND OTHER UTILITIES AT THE POINT OF CONNECTION SHOWN ON THE PLANS, AND AT ANY UTILITY CROSSINGS PRIOR TO INSTALLING ANY OF THE NEW IMPROVEMENTS. IF A CONFLICT EXISTS AND/OR A DESIGN MODIFICATION IS REQUIRED, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO MODIFY THE DESIGN.

18. PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION, THE CONTRACTOR SHALL CONTACT ALL UTILITIES TO COORDINATE SCHEDULES.

19. CONTRACTOR SHALL NOTIFY ALL BUSINESSES/RESIDENTS IN WRITING 48 HOURS PRIOR TO ANY SHUT–OFF IN SERVICE. THE NOTICES MUST HAVE CONTRACTOR'S PHONE NUMBER AND NAME OF CONTACT PERSON, AND EMERGENCY PHONE NUMBER FOR AFTER HOURS CALLS. ALL SHUT OFFS MUST BE APPROVED BY THE CITY OF LAKEWOOD UTILITY DIVISION, AND CITY OF LAKEWOOD VALVES AND APPURTENANCES SHALL BE OPERATED BY CITY OF LAKEWOOD PERSONNEL, UNLESS WRITTEN PERMISSION IS GIVEN OTHERWISE.

20. ALL PUBLIC IMPROVEMENT WORK, INCLUDING CORRECTION WORK, SHALL BE INSPECTED BY A CITY OF LAKEWOOD REPRESENTATIVE WHO SHALL HAVE THE AUTHORITY TO HALT CONSTRUCTION WHEN STANDARD CONSTRUCTION PRACTICES ARE NOT BEING ADHERED TO. THE CITY OF LAKEWOOD RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO ITS ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS. CONTRACTOR IS RESPONSIBLE FOR BEING AWARE OF, NOTIFYING, COORDINATING AND SCHEDULING ALL INSPECTIONS REQUIRED FOR FINAL APPROVALS AND PROJECT ACCEPTANCE.

21. THE CONTRACTOR SHALL NOT OPERATE ANY CONSTRUCTION VEHICLES NOR PERFORM ANY CONSTRUCTION OPERATIONS BEFORE 7 AM OR AFTER 6 PM, MONDAY THROUGH FRIDAY OR BEFORE 8 AM AND AFTER 5 PM ON SATURDAYS. NO WORK WILL BE ALLOWED ON SUNDAYS OR HOLIDAYS. THE CITY OF LAKEWOOD RESERVES THE RIGHT TO FURTHER RESTRICT OR MODIFY THESE HOURS OF OPERATION IF CONDITIONS WARRANT.

22. COMPACTION OF ALL TRENCHES MUST BE ATTAINED AND COMPACTION TEST RESULTS SUBMITTED TO THE ENGINEER AND THE CITY OF LAKEWOOD PRIOR TO FINAL ACCEPTANCE.

23. RECORD DRAWINGS SHOWING ALL CHANGES FROM THE APPROVED CONSTRUCTION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER AND OWNER PRIOR TO INITIATION OF THE REQUIRED TWO–YEAR WARRANTY PERIOD. THE RECORD DRAWINGS WILL CONSIST OF A MARKED–UP SET OF "ISSUED FOR CONSTRUCTION" DRAWINGS VERIFYING THE FOLLOWING:
   - ALL LENGTHS, SIZES, AND MATERIALS OF INSTALLED PIPE, MANHOLES, AND ANY OTHER IMPROVEMENT.
   - HORIZONTAL LOCATIONS EITHER BY STATION AND OFFSET, OR BY NORTHING AND EASTING COORDINATES OF ALL MANHOLES, BENDS, CLEANOUTS, VALVES, TAPS, WYES, STUBS, PLUGS, TEES, ETC.
   - ELEVATIONS AT TOP AND BOTTOM OF CONCRETE PAD.
   - ANY OTHER VARIATIONS FROM THE CONSTRUCTION DOCUMENTS MUST BE CLEARLY NOTED AND DETAILED ON THE PLANS.
   - AS–BUILT FIELD NOTES, FROM WHICH THE AS–BUILT DRAWINGS ARE PREPARED, ARE TO BE PROVIDED AND STAMPED/SIGNED AND DATED BY A COLORADO REGISTERED PROFESSIONAL LAND SURVEYOR.

25. THE CONTRACTOR SHALL WARRANT ALL WORK TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF TWO–YEARS FROM THE DATE OF ACCEPTANCE INTO THE WARRANTY PERIOD OF ALL CONSTRUCTION CALLED FOR BY THE PUBLIC IMPROVEMENTS AGREEMENT WITH THE CITY OF LAKEWOOD.

26. DURING CONSTRUCTION AND UPON COMPLETION OF CONSTRUCTION, THE SITE SHALL BE CLEANED AND RESTORED TO A CONDITION EQUAL TO, OR BETTER THAN, THAT WHICH EXISTED BEFORE CONSTRUCTION.

27. THE OWNER/DEVELOPER AND/OR THEIR ASSIGNS IS HEREBY NOTIFIED THAT IT IS TYPICAL AND LIKELY THAT SOME MOVEMENT OF THE SURFACE GRADES WILL OCCUR OVER TIME DUE TO VARIOUS FACTORS THAT ARE NOT IN CONTROL OF THE DESIGNERS. THUS, A ROUTINE AND DILIGENT MAINTENANCE PROGRAM IS REQUIRED TO MAINTAIN THE PROPER GRADING AND DRAINAGE THROUGHOUT THE PROJECT.

GRADING NOTES:

1. ALL SITE GRADING [EXCAVATION, EMBANKMENT, AND COMPACTION] SHALL CONFORM TO THE PROJECT SPECIFICATIONS AND SHALL FURTHER BE IN CONFORMANCE WITH THE CITY OF LAKEWOOD'S "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS," LATEST EDITION.

2. ALL NEWLY CONSTRUCTED OR ALTERATIONS OF ACCESSIBILITY ROUTES (WALKS, RAMPS, ENTRANCES, ETC.) SHALL COMPLY WITH THE RULES AND REGULATIONS SET FORTH BY ADA, ADAAG, CITY, STATE, FEDERAL OR JURISDICTION HAVING AUTHORITY, INCLUDING BUT NOT LIMITED TO: 5% MAXIMUM GRADE ON WALKS WITHOUT HANDRAILS, 8.33% MAXIMUM GRADE ON WALKS WITH HANDRAILS AND LEVEL LANDINGS (MAXIMUM 2% COMPOSITE SLOPE), 2% MAXIMUM CROSS SLOPE ON WALKS AND 2% MAXIMUM COMPOSITE SLOPE IN ACCESSIBLE PARKING/LOADING AREAS. NO TOLERANCE REGARDING MAXIMUM SLOPES WILL BE ALLOWED. DURING CONSTRUCTION, CONTRACTOR SHALL COORDINATE AS NECESSARY WITH OWNER, DEVELOPER, ENGINEER, ARCHITECT, OR DESIGNATED OFFICIAL IF RULES AND REGULATIONS OF ACCESSIBILITY ROUTES CAN NOT BE MET. IN ADDITION, OWNER IS ADVISED THAT REGULAR MAINTENANCE PROGRAMS SHOULD BE IMPLEMENTED AFTER CONSTRUCTION TO KEEP EXISTING ROUTES SAFE, USABLE, AND ADA COMPLIANT.

3. EXISTING ELEVATIONS SHOWN ON THIS DRAWING HAVE BEEN DEPICTED FROM BEST AVAILABLE INFORMATION AND ARE SHOWN TO THE EXTENT KNOWN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY EXISTING GRADE CONDITIONS AT THE LIMITS OF CONSTRUCTION AND AT LOCATIONS THAT INTERFACE WITH EXISTING OR PROPOSED STRUCTURES AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES THAT CONTRADICT THE ENGINEERS INTENT FOR DRAINAGE PATTERNS, MAXIMUM AND MINIMUM SLOPES, AND PROPOSED ELEVATIONS AS SHOWN ON THE PLAN. THE ENGINEER WILL NOT BE LIABLE FOR ANY COSTS ASSOCIATED WITH CHANGES TO THE DESIGN WITHOUT PROPER NOTIFICATION.

4. PROPOSED CONTOURS AND SPOT ELEVATIONS AS SHOWN HEREIN ARE DEFINED AS FINISHED ELEVATION AFTER PAVING, LANDSCAPING, ETC. CONTRACTOR SHALL COORDINATE WITH GEOTECH FOR PAVEMENT THICKNESS AND LANDSCAPE FOR THICKNESS OF TOPSOIL, SOD AND LANDSCAPE MATERIALS.

   ALL SPOTS ARE TO FLOWLINE UNLESS OTHERWISE NOTED. FG = FINISHED GRADE, FF = FINISH FLOOR, TOF = TOP OF FOUNDATION, HP = HIGH POINT, LP = LOW POINT, TOW = TOP OF WALL [FINISHED GRADE AT BACK OF WALL], BOW = BOTTOM OF WALL [FINISHED GRADE AT FACE OF WALL], GB = GRADE BREAK, FL = FLOWLINE, TOC = TOP OF CURB.

5. TEMPORARY CUT/FILL SLOPES SHALL NOT EXCEED A STEEPNESS OF [1:1] (H:V). PERMANENT SLOPES SHALL NOT EXCEED [4:1] (H:V) [UNLESS NOTED OTHERWISE] IN AREAS TO BE SEEDED OR SODDED.

6. CONTRACTOR SHALL ADJUST ALL EXISTING AND PROPOSED MANHOLE RIMS, VALVE BOXES, ETC. TO MATCH FINAL GRADE.

DEMOLITION NOTES:

1. CONTRACTOR SHALL CLEAR AND GRUB EXISTING VEGETATION PRIOR TO CONSTRUCTION. COORDINATE MATERIAL DISPOSAL WITH OWNER'S REPRESENTATIVE.
2. CONTRACTOR SHALL PRESERVE EXISTING VEGETATION OUTSIDE OF THE PROJECT LIMITS.
3. BARRIERS/FENCING SHALL BE PROVIDED PRIOR TO SITE DEMOLITION TO PROVIDE FOR THE SAFETY OF WORKERS AND PASSERSBY. THE CONTRACTOR SHALL PROVIDE A BARRIER/FENCING PLAN TO FACILITIES MANAGEMENT FOR APPROVAL PRIOR TO CONSTRUCTION.
4. G.C. SHALL PROVIDE FOR DUST CONTROL DURING DEMOLITION TO INCLUDE COVERING OF ALL TRUCKS HAULING DEBRIS OFFSITE, PERIODICALLY CLEANING AND SWEEPING ADJACENT STREETS, AND APPLYING AN APPROVED DUST PALLIATIVE AS NECESSARY.
5. THOROUGHLY CLEAN ALL AREAS, SURFACES, BUILDINGS AND STRUCTURES IMPACTED BY DEMOLITION PRIOR TO START OF NEW CONSTRUCTION.
6. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR BURIED UTILITIES. THE G.C. IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES NOT DESIGNATED FOR REMOVAL PRIOR TO AND DURING CONSTRUCTION.
7. EXISTING CONCRETE AT DEMOLITION LIMITS SHALL BE CUT ONLY AT EXISTING JOINTS.
8. ALL EXISTING MANHOLES, WATER VALVES AND EXISTING UTILITY STRUCTURES NOT DESIGNATED FOR REMOVAL SHALL BE ADJUSTED TO FINAL FINISH GRADE.
9. TREES, LANDSCAPING, STRUCTURES AND UTILITIES NOT DESIGNATED FOR DEMOLITION SHALL REMAIN AND BE PROTECTED DURING CONSTRUCTION.
10. CONTRACTOR SHALL COORDINATE ALL DEMOLITION ACTIVITIES WITH OWNER'S REPRESENTATIVE.
11. CONTRACTOR SHALL COORDINATE WITH OWNER AND UTILITY PROVIDER FOR DEMOLITION, RELOCATION, AND NEW DRY UTILITY SERVICES (GAS, ELECTRIC, CABLE TV, FIBER OPTIC, TELEPHONE, ETC).
12. CONTRACTOR SHALL COORDINATE WITH OWNER FOR SALVAGING OF EXISTING ONSITE MATERIALS (EG. LIGHT POLE, IRRIGATION VALVES, SIGNAGE, ETC.).
13. ALL SITE UTILITIES NO LONGER IN SERVICE SHALL BE REMOVED OR ABANDONED PER THE UTILITY PROVIDER'S REQUIREMENTS.
14. NO CONSTRUCTION ACCESS, ACTIVITY, OR STORAGE OF MATERIALS/DEBRIS/EQUIPMENT IS PERMITTED WITHIN TREE PROTECTION ZONES (TPZ), INCLUDING GRADING, INSTALLATION OF UNDERGROUND UTILITIES, INSTALLATION OF SITE IMPROVEMENTS, AND/OR GRUBBING. ALL CONSTRUCTION ACTIVITY MUST OCCUR OUTSIDE TREE PROTECTION ZONES (I.E DRIPLINES OF TREES). REFER TO LANDSCAPE FOR TREE PROTECTION ZONE (TPZ) LIMITS AND DETAIL.

EROSION CONTROL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND IMPLEMENTING AND MAINTAINING EROSION AND SEDIMENT CONTROL MEASURES AT ALL TIMES DURING CONSTRUCTION TO PREVENT DAMAGING FLOWS ON THE SITE AND IN THE WATERSHED BELOW THE SITE. CONTROL SYSTEMS SHALL BE INSTALLED PRIOR TO STRIPPING OF NATIVE VEGETATIVE COVER AND AS GRADING PROGRESSES. REFER TO SEDIMENT AND EROSION CONTROL PLANS AND STORM WATER MANAGEMENT PLAN. CONDITIONS IN THE FIELD MAY WARRANT EROSION CONTROL MEASURES IN ADDITION TO WHAT IS SHOWN ON THESE PLANS. THE PLAN MAY BE MODIFIED WITH APPROPRIATE APPROVALS AS FIELD CONDITIONS WARRANT.
2. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATION AND FOR THE SHORTEST PRACTICAL PERIOD OF TIME.
3. TOPSOIL SHALL BE STOCKPILED TO THE EXTENT PRACTICABLE ON THE SITE FOR USE ON AREAS TO BE REVEGETATED. ANY AND ALL STOCKPILES SHALL BE LOCATED AND PROTECTED FROM EROSIVE ELEMENTS.
4. AT ALL TIMES, THE PROPERTY SHALL BE MAINTAINED AND/OR WATERED TO PREVENT WIND–CAUSED EROSION. EARTHWORK OPERATIONS SHALL BE DISCONTINUED WHEN FUGITIVE DUST SIGNIFICANTLY IMPACTS ADJACENT PROPERTY. IF EARTHWORK IS COMPLETE OR DISCONTINUED AND DUST FROM THE SITE CONTINUES TO CREATE PROBLEMS, THE CONTRACTOR SHALL IMMEDIATELY INSTITUTE MITIGATIVE MEASURES AND SHALL CORRECT DAMAGE TO ADJACENT PROPERTY.
5. PERMANENT OR TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED TO DISTURBED AREAS WITHIN 30 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. UNLESS SPECIFIED OTHERWISE, TEMPORARY VEGETATION SHALL BE INSTALLED ON ALL DISTURBED AREAS WHERE PERMANENT SURFACE IMPROVEMENTS ARE NOT SCHEDULED FOR INSTALLATION WITHIN THREE MONTHS. TEMPORARY VEGETATION SHALL BE A VIGOROUS, DROUGHT TOLERANT, NATIVE SPECIES MIX. PROJECT SCHEDULING SHOULD TAKE ADVANTAGE OF SPRING OR FALL PLANTING SEASONS FOR NATURAL GERMINATION, BUT SEEDED AREAS SHALL BE IRRIGATED, IF CONDITIONS MERIT. REFER TO THE LANDSCAPE PLAN FOR FINAL LANDSCAPING.
6. TEMPORARY FENCES SHALL BE INSTALLED ALONG ALL BOUNDARIES OF THE CONSTRUCTION LIMITS OR PROPERTY LINES AS SHOWN ON THE APPROVED EROSION CONTROL PLAN, TO PREVENT GRADING ON PROPERTY NOT OWNED BY THE OWNER/DEVELOPER. IN ADDITION, THE CITY OF LAKEWOOD MAY REQUIRE ADDITIONAL TEMPORARY FENCES IF FIELD CONDITIONS WARRANT.
7. THE CONTRACTOR SHALL PREVENT SEDIMENT, DEBRIS AND ALL OTHER POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM DURING ALL DEMOLITION, EXCAVATION, TRENCHING, GRADING OR OTHER CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR REMEDIATION OF ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, ROADWAYS, WETLANDS, ETC., RESULTING FROM WORK DONE AS PART OF THIS PROJECT.
8. THE CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN INADVERTENTLY DISCHARGED TO, OR ACCUMULATED IN, THE FLOWLINES AND PUBLIC RIGHT–OF–WAY AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT.
9. THE GRADING CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL ENSURE THAT ALL LOADS OF CUT AND FILL MATERIAL IMPORTED TO OR EXPORTED FROM THIS SITE SHALL BE PROPERLY COVERED TO PREVENT LOSS OF THE MATERIAL DURING TRANSPORT ON PUBLIC ROADWAYS.
10. APPROVED EROSION AND SEDIMENT CONTROL "BEST MANAGEMENT PRACTICES" [BMP] SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THIS PROJECT. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL BMPS WEEKLY AND AFTER SIGNIFICANT PRECIPITATION EVENTS. ALL NECESSARY MAINTENANCE AND REPAIR SHALL BE COMPLETED IN A TIMELY MANNER. ACCUMULATED SEDIMENT AND DEBRIS SHALL BE REMOVED FROM A BMP WHEN THE SEDIMENT LEVEL REACHES ONE HALF THE HEIGHT OF THE BMP OR, AT ANY TIME THAT SEDIMENT OR DEBRIS ADVERSELY IMPACTS THE FUNCTIONING OF THE BMP.
11. WATER USED IN THE CLEANING OF CONCRETE TRUCK DELIVERY CHUTES SHALL BE DISCHARGED INTO A PREDEFINED, BERMED CONTAINMENT AREA ON THE JOB SITE. THE REQUIRED CONTAINMENT AREA IS TO BE BERMED SO THAT WASH WATER IS TOTALLY CONTAINED. WASH WATER DISCHARGED INTO THE CONTAINMENT AREA SHALL BE ALLOWED TO INFILTRATE OR EVAPORATE. DRIED CONCRETE WASTE SHALL BE REMOVED FROM THE CONTAINMENT AREA AND PROPERLY DISPOSED OF. SHOULD A PREDEFINED BERMED CONTAINMENT AREA NOT BE AVAILABLE DUE TO THE PROJECT SIZE, OR LACK OF AN AREA WITH A SUITABLE GROUND SURFACE FOR ESTABLISHING A CONTAINMENT AREA, PROPER DISPOSAL OF READY MIX WASHOUT AND RINSE OFF WATER AT THE JOB SITE SHALL CONFORM TO THE APPROVED TECHNIQUES AND PRACTICES IDENTIFIED IN THE COLORADO DEPARTMENT OF PUBLIC HEALTH & ENVIRONMENT'S TRAINING VIDEO ENTITLED "BUILDING FOR A CLEANER ENVIRONMENT, READY MIX WASHOUT TRAINING", AND ITS ACCOMPANYING MANUAL ENTITLED, "READY MIX WASHOUT GUIDEBOOK, VEHICLE AND EQUIPMENT WASHOUT AT CONSTRUCTION SITES." THE DIRECT OR INDIRECT DISCHARGE OF WATER CONTAINING WASTE CONCRETE TO THE STORM SEWER SYSTEM IS PROHIBITED. INFORMATION ABOUT, OR COPIES OF THE VIDEO AND TRAINING MANUAL ARE AVAILABLE FROM THE WATER QUALITY CONTROL DIVISION, COLORADO DEPARTMENT OF PUBLIC HEALTH & ENVIRONMENT, 4300 CHERRY CREEK DRIVE SOUTH, DENVER, COLORADO 80222–1530, 303–692–3555
12. THE CONTRACTOR SHALL PROTECT ALL STORM SEWER FACILITIES ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS INVOLVING WHEEL CUTTING, SAW CUTTING OR ABRASIVE WATER JET CUTTING ARE TO TAKE PLACE. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL WASTE PRODUCTS GENERATED BY SAID CUTTING OPERATIONS ON A DAILY BASIS. THE DISCHARGE OF ANY WATER CONTAMINATED BY WASTE PRODUCTS FROM CUTTING OPERATIONS TO THE STORM SEWER SYSTEM IS PROHIBITED.
13. PAVED SURFACES WHICH ARE ADJACENT TO CONSTRUCTION SITES SHALL BE SWEPT IN A TIMELY MANNER WHEN SEDIMENT AND OTHER MATERIALS ARE TRACKED OR DISCHARGED ON TO THEM. EITHER SWEEPING BY HAND OR USE OF STREET SWEEPERS IS ACCEPTABLE. STREET SWEEPERS USING WATER WHILE SWEEPING IS PREFERRED IN ORDER TO MINIMIZE DUST. FLUSHING OFF PAVED SURFACES WITH WATER IS PROHIBITED.

ABBREVIATIONS:

APPROX	APPROXIMATE
ARCH	ARCHITECT
BLDG	BUILDING
BM	BENCHMARK
BOC	BACK OF CURB
CIP	CAST IRON PIPE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CONC	CONCRETE
CONT	CONTOUR
COR	CORNER
CU	COPPER
DEMO	DEMOLITION
DIA OR ø	DIAMETER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DTL.	DETAIL
EL	ELEVATION
ELEC	ELECTRICAL
ESMT	EASEMENT
EX	EXISTING
FDC	FIRE DEPARTMENT CONNECTION
FES	FLARED END SECTION
FFE	FINISHED FLOOR ELEVATION
FGW	FINISHED GRADE AT WALL
FHY	FIRE HYDRANT
FL	FLOW LINE
FT	FOOT
GB	GRADE BREAK
GR	GRATE (AREA OR VALLEY INLETS)
GV	GATE VALVE
HERCP	HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HGL	HYDRAULIC GRADE LINE
HORZ	HORIZONTAL
HP	HIGH POINT
INV	INVERT
LF	LINEAL FEET
LP	LOW POINT
LT	LEFT
MAX	MAXIMUM
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL AND PLUMBING
MH	MANHOLE
MIN	MINIMUM
N.I.C.	NOT IN CONTRACT
NTS	NOT TO SCALE
PT	POINT OF HORIZONTAL TANGENCY
PCC	POINT OF COMPOUND CURVE
PERF	PERFORATED
PERIM	PERIMETER
PERP	PERPENDICULAR
PI	POINT OF HORIZONTAL INTERSECTION
PIV	PRESSURE INDICATOR VALVE
PL	PROPERTY LINE
PLBG	PLUMBING
POC	POINT OF CURVE
POT	POINT OF TANGENT
PRC	POINT OF REVERSE CURVE
PRKG	PARKING
PRV	PRESSURE REDUCING VALVE
PVC	POLYVINYL CHLORIDE PIPE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
R.O.W.	RIGHT OF WAY
RT	RIGHT
SSWR	SANITARY SEWER
SF	SQUARE FOOT
STA	STATION
STRM	STORM SEWER
STRC	STRUCTURAL
SWLK	SIDEWALK
SY	SQUARE YARD
TELE	TELEPHONE
TB	THRUST BLOCK
TEMP	TEMPORARY
TOC	TOP OF CURB
TOW	TOP OF WALL (RE: NOTE BELOW)
TYP.	TYPICAL
UD	UNDER DRAIN
UG	UNDERGROUND
VERT	VERTICAL
VC	VERTICAL CURVE

NOTE: TOW SHALL BE TOP OF WATER ON UTILITY SHEETS ONLY AND TOP OF WALL ON ALL OTHER SHEETS.

VICINITY MAP

SCALE: 1"=1000'

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
C1.0	NOTES
C1.1	EXISTING CONDITIONS PLAN
C1.2	GRADING AND EROSION CONTROL PLAN
C1.3	EROSION CONTROL DETAILS
C1.4	EROSION CONTROL DETAILS

REV.	DATE	DESCRIPTION
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RED ROCKS COMMUNITY COLLEGE GENERATOR ADDITION

NOTES

BID DOCUMENTS

DATE: JULY 26, 2024
SCALE: AS NOTED
DESIGN BY: M. LIBERATI
DRAWN BY: M. MARKS
APPROVED BY: M. THORNBROUGH
PRJ. NO: 24.0408

SHT.NO. C1.0
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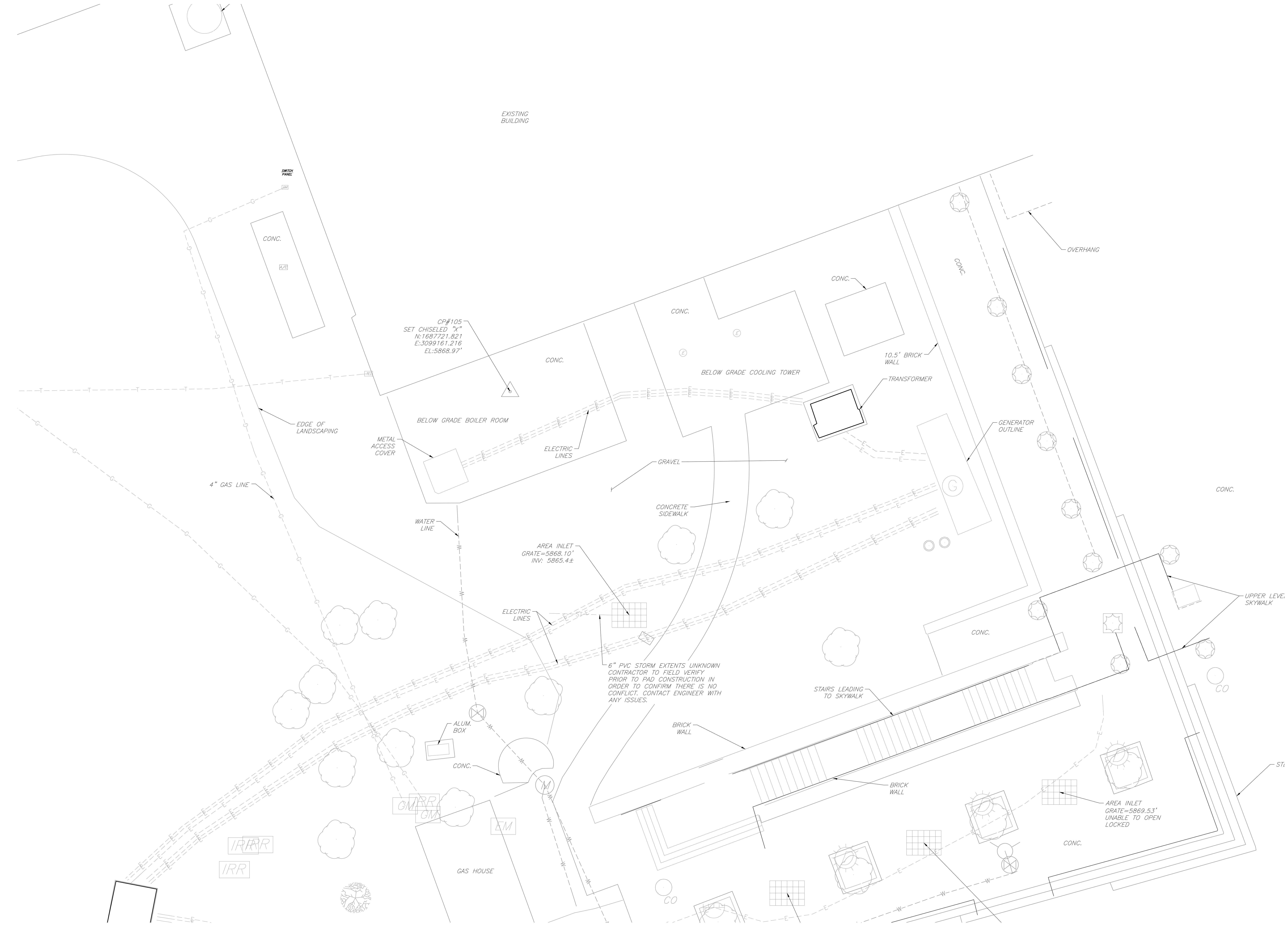

LEGEND

- PROPERTY LINE
- RIGHT–OF–WAY LINE
- SECTION LINE
- EASEMENT
- RETAINING WALL
- CURB & GUTTER
- CONTOURS
- STORM SEWER
- ROOF DRAIN
- STORM MANHOLE
- STORM INLET
- FLARED END SECTION
- SANITARY SEWER
- SANITARY MANHOLE
- CLEAN OUT
- WATER LINE
- WATER VALVE
- FIRE HYDRANT
- WATER METER
- IRRIGATION CONTROL
- OVERHEAD ELECTRIC
- ELECTRIC LINE
- LIGHT POLE
- POWER POLE
- ELECTRIC METER
- TELEPHONE LINE
- TELEPHONE PEDESTAL
- CABLE TV
- GAS LINE
- MONITOR WELL
- SIGN
- DECIDUOUS TREE
- EVERGREEN TREE
- BUSH/SHRUB
- HANDICAP RAMPS
- DESCRIPTIONS

N

5 2.5 0 5 10
SCALE: 1"=5'
ALL LINEAL DIMENSIONS ARE IN U.S. SURVEY FEET

BASIS OF BEARINGS

BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN ASSUMED TO BEAR N89°55'10"E AND BEING MONUMENTED BY A FOUND 3–1/4" ALUMINUM CAP IN RANGE BOX PLS#19591 AT THE NORTH QUARTER CORNER AND A FOUND 2" ALUMINUM CAP PLS #14112 AT THE NORTHEAST CORNER.

BENCHMARK

ELEVATIONS ARE BASED ON THE CITY OF LAKEWOOD AND COUNTY OF JEFFERSON BM #NGS–151 A CHISELED SQUARE ON THE CURB, SOUTHEAST CORNER OF WEST 6TH AVENUE AND WRIGHT STREET, MIDWAY BETWEEN THE ADA RAMP AND THE STORM INLET.

ELEVATION = 5788.39' (NGVD1929) DATUM.

UTILITY NOTE

UTILITIES DEPICTED HEREON, DO NOT COMPLY WITH ASCE 38 UTILITY LOCATE STANDARD QUALITY LEVEL A OR B, UNLESS A SEPARATE PLAN SHEET ENTITLED "ASCE 38 UTILITY QUALITY LEVEL B PLAN (A&B)", STAMPED BY A COLORADO PE, IS INCLUDED IN THE PLAN SET. THE UTILITY LOCATES SHOWN HEREON REPRESENT ASCE QUALITY LEVEL D, THUS THE CONTRACTOR IS REQUIRED TO VERIFY THE ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL COMPLY WITH ALL THE PROVISIONS OF SENATE BILL 18–167 THAT REQUIRE NOTIFICATION OF THE NOTIFICATION ASSOCIATION AND COMPLIANCE WITH CURRENT 811 PROGRAM REQUIREMENTS.

FOR UNDERGROUND UTILITIES MARTIN / MARTIN INC. RELIED UPON LOCATIONS AND MARKINGS PROVIDED BY UNDERGROUND CONSULTING SOLUTIONS.

NOTE:

1. EXISTING PHONE LINE RUNS FROM THE GAS HOUSE TO THE MAIN BUILDING. LOCATION IS UNKNOWN AND CONTRACTOR TO FIELD VERIFY PRIOR TO PAD CONSTRUCTION IN ORDER TO CONFIRM THERE IS NO CONFLICT. CONTACT ENGINEER WITH ANY ISSUES.

COLORADO 811
KNOW WHAT'S BELOW. CALL BEFORE YOU DIG.

CALL 811 2–BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE OR EXCAVATE FOR
MARKING OF UNDERGROUND MEMBER UTILITIES

MARTIN/MARTIN ASSUMES NO RESPONSIBILITY FOR UTILITY LOCATIONS. UNLESS OTHERWISE NOTED, THE UTILITIES SHOWN ON THIS DRAWING ARE BASED ON INFORMATION PROVIDED BY OTHERS AND DEPICTED AS ASCE (38) QUALITY LEVEL D. IN ACCORDANCE WITH THE PROVISIONS OF COLORADO REVISED STATUTE, TITLE 9, IT IS THE CONTRACTORS RESPONSIBILITY TO CALL COLORADO 811 UTILITY LOCATE SERVICE FOR UTILITY LOCATES BEFORE DIGGING, AND FIELD VERIFY THE SIZE, MATERIAL, HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES (DEPICTED OR NOT DEPICTED) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

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RED ROCKS COMMUNITY COLLEGE GENERATOR ADDITION

EXISTING CONDITIONS PLAN

BID DOCUMENTS

DATE: JULY 26, 2024
SCALE: AS NOTED
DESIGN BY: M. LIBERATI
DRAWN BY: M. MARKS
APPROVED BY: M. THORNBROUGH
PRJ. NO: 24.0408

SHT.NO. C1.1
REVISION 0

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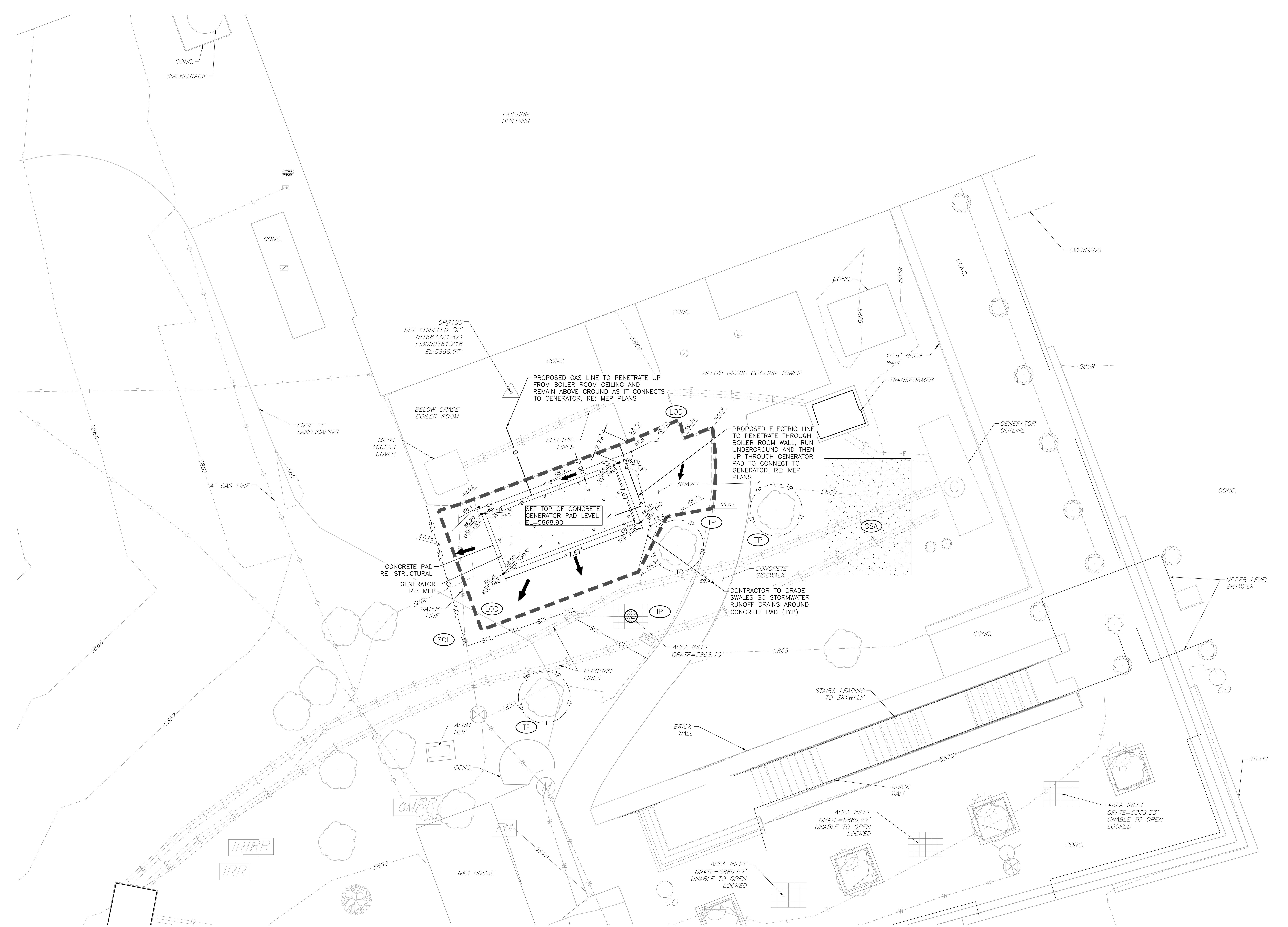

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	RIGHT-OF-WAY LINE	
	SECTION LINE	
	EASEMENT	
	RETAINING WALL	
	CURB & GUTTER	
5750	CONTOURS	5750
ST	STORM SEWER	ST
	STORM MANHOLE	
RD	ROOF DRAIN	RD
	INLET	
	FLARED END SECTION	
	SIGN	
	GRADING ARROW	
	DECIDUOUS TREE	
	EVERGREEN TREE	
	BUSH/SHRUB	
DRIVE	DESCRIPTIONS	DRIVE
ELEV	SPOT ELEVATIONS	ELEV

EROSION CONTROL LEGEND

	STABILIZED STAGING AREA	SSA
TP	TREE PROTECTION	TP
SCL	SEDIMENT CONTROL LOG	SCL
	INLET PROTECTION	IP
	FLOW DIRECTION	
	LIMITS OF DISTURBANCE	LOD

BASIS OF BEARINGS

BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN ASSUMED TO BEAR N89°55'10"E AND BEING MONUMENTED BY A FOUND 3-1/4" ALUMINUM CAP IN RANGE BOX PLS#19591 AT THE NORTH QUARTER CORNER AND A FOUND 2" ALUMINUM CAP PLS #14112 AT THE NORTHEAST CORNER.

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RED ROCKS COMMUNITY COLLEGE GENERATOR ADDITION

GRADING AND EROSION CONTROL PLAN

BID DOCUMENTS

DATE: JULY 26, 2024
SCALE: AS NOTED
DESIGN BY: M. LIBERATI
DRAWN BY: M. MARKS
APPROVED BY: M. THORNBROUGH
PRJ. NO.: 24.0408

SHT.NO. C1.2
REVISION 0

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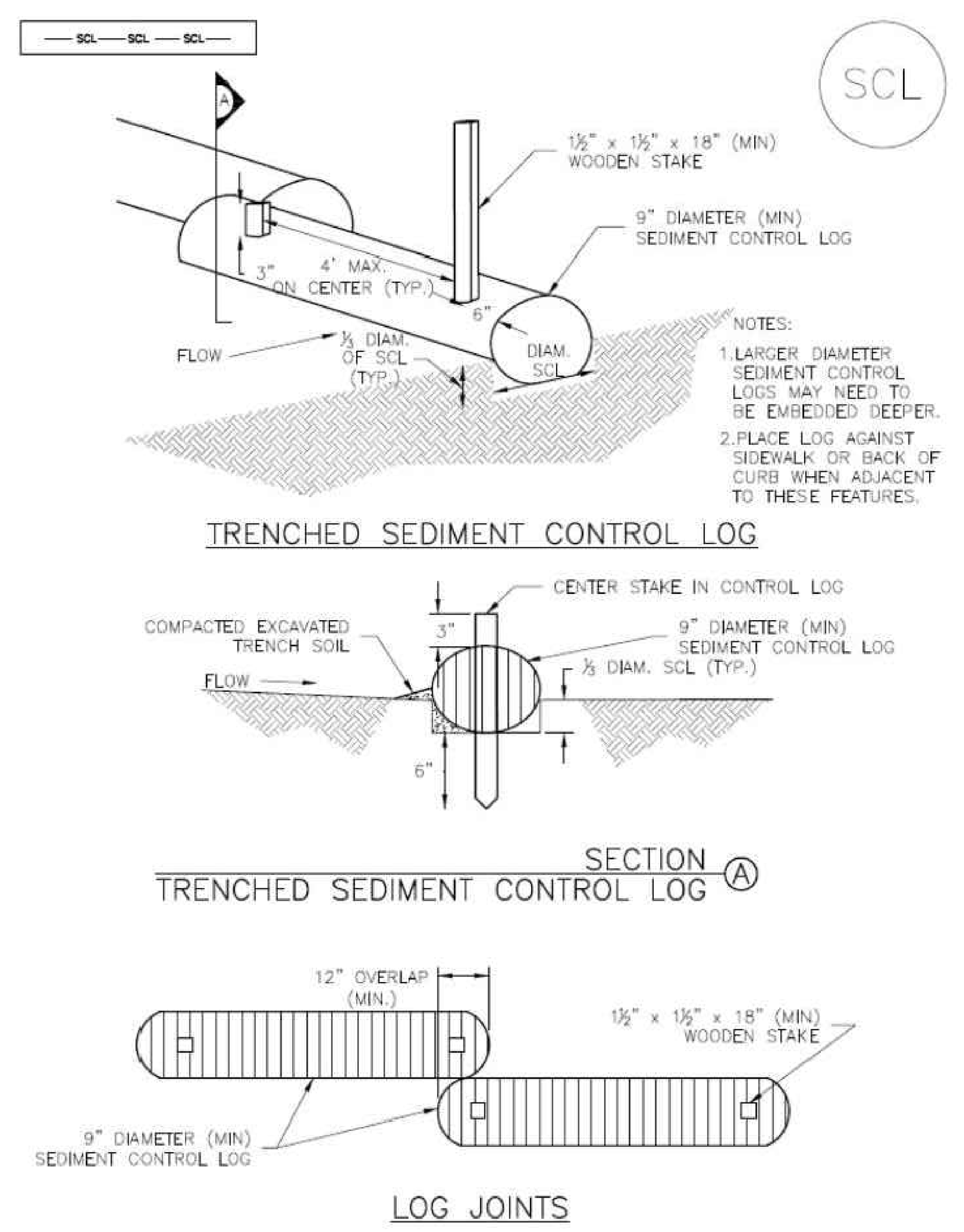
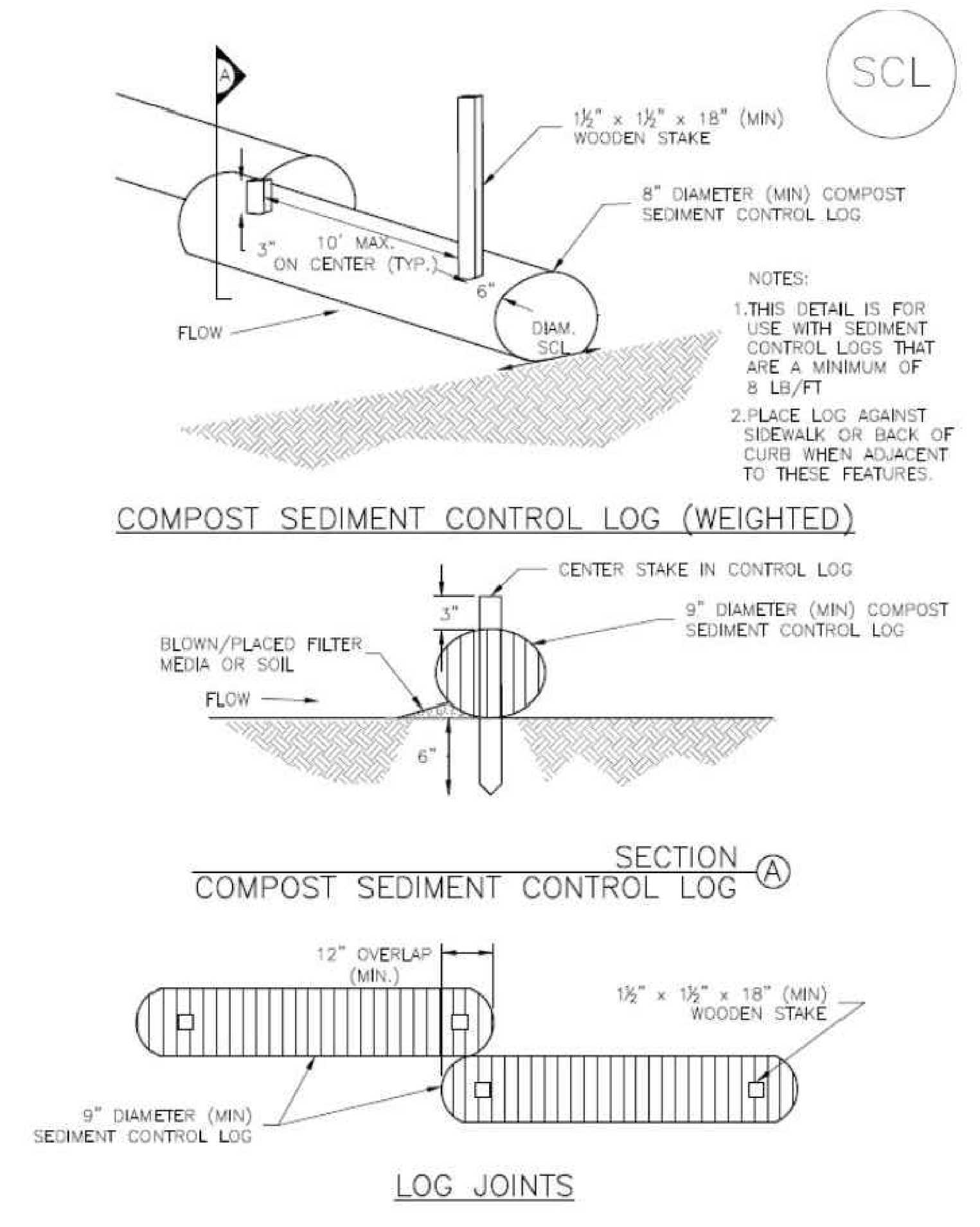
Sediment Control Log (SCL) — SC-2



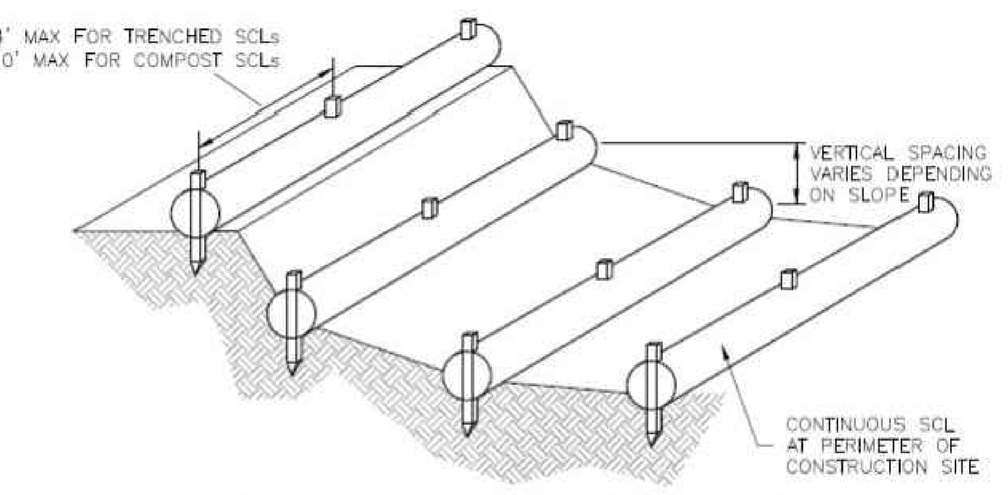
SCL-1. TRENCHED SEDIMENT CONTROL LOG

SC-2 — Sediment Control Log (SCL)



SCL-2. COMPOST SEDIMENT CONTROL LOG (WEIGHTED)

Sediment Control Log (SCL) — SC-2



SCL-3. SEDIMENT CONTROL LOGS TO CONTROL SLOPE LENGTH

SC-2 — Sediment Control Log (SCL)

SEDIMENT CONTROL LOG INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEDIMENT CONTROL LOGS.

2. SEDIMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO ANY UPGRADIENT LAND-DISTURBING ACTIVITIES.

3. SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR OR COCONUT FIBER, AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.

4. SEDIMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN DITCHES AND SWALES. HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS.

5. IT IS RECOMMENDED THAT SEDIMENT CONTROL LOGS BE TRENCHED INTO THE GROUND TO A DEPTH OF APPROXIMATELY ⅓ OF THE DIAMETER OF THE LOG. IF TRENCHING TO THIS DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO DAMAGE LANDSCAPE) A LESSER TRENCHING DEPTH MAY BE ACCEPTABLE WITH MORE ROBUST STAKING. COMPOST LOGS THAT ARE 8 LB/FT DO NOT NEED TO BE TRENCHED.

6. THE UPHILL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL OR FILTER MATERIAL THAT IS FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL OR WEIGHTED LAWN ROLLER OR BLOWN IN PLACE.

7. FOLLOW MANUFACTURERS' GUIDANCE FOR STAKING. IF MANUFACTURERS' INSTRUCTIONS DO NOT SPECIFY SPACING, STAKES SHALL BE PLACED ON 4' CENTERS AND EMBEDDED A MINIMUM OF 6" INTO THE GROUND. 3" OF THE STAKE SHALL PROTRUDE FROM THE TOP OF THE LOG. STAKES THAT ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED. COMPOST LOGS SHOULD BE STAKED 10' ON CENTER.

SEDIMENT CONTROL LOG MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

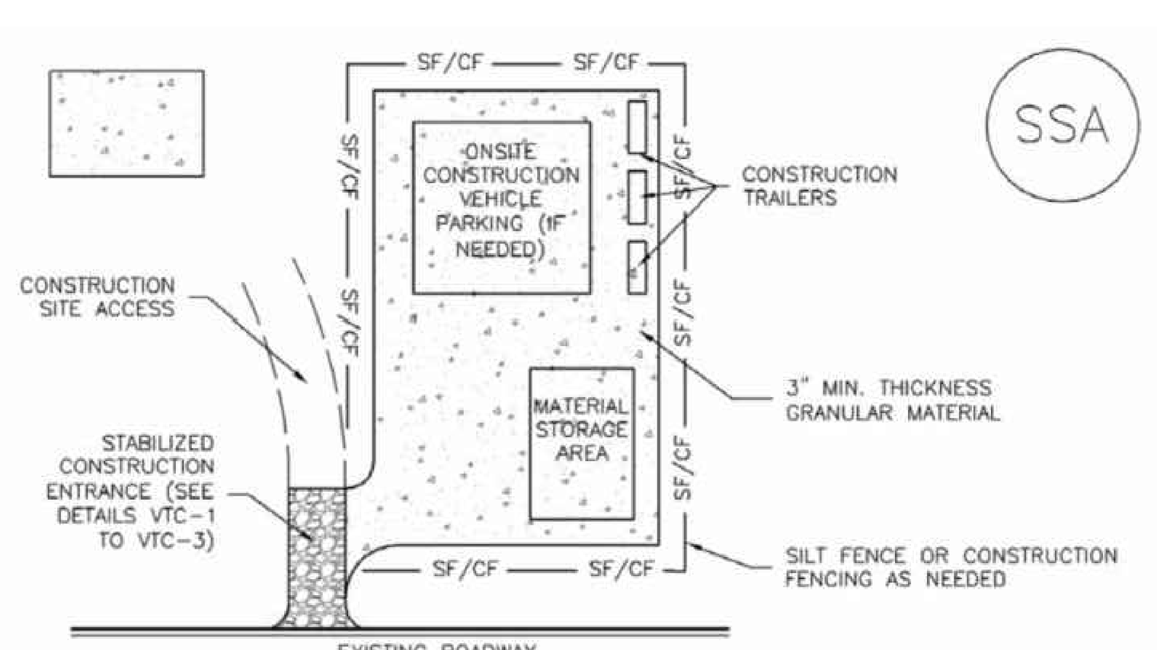
4. SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOG SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.

5. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION.COMPOST FROM COMPOST LOGS MAY BE LEFT IN PLACE AS LONG AS BAGS ARE REMOVED AND THE AREA SEEDED. IF DISTURBED AREAS EXIST AFTER REMOVAL, THEY SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, JEFFERSON COUNTY, COLORADO, DOUGLAS COUNTY, COLORADO, AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Stabilized Staging Area (SSA) — SM-6



SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   - LOCATION OF STAGING AREA(S).
   - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.

2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.

3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.

4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.

5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

SM-6 — Stabilized Staging Area (SSA)

STABILIZED STAGING AREA MAINTENANCE NOTES

5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.

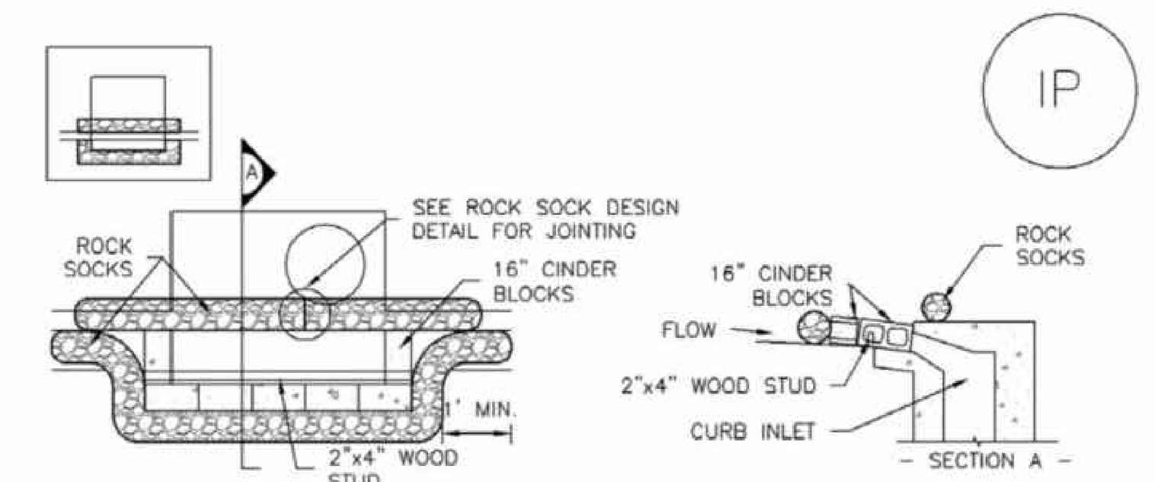
6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

SC-6 — Inlet Protection (IP)



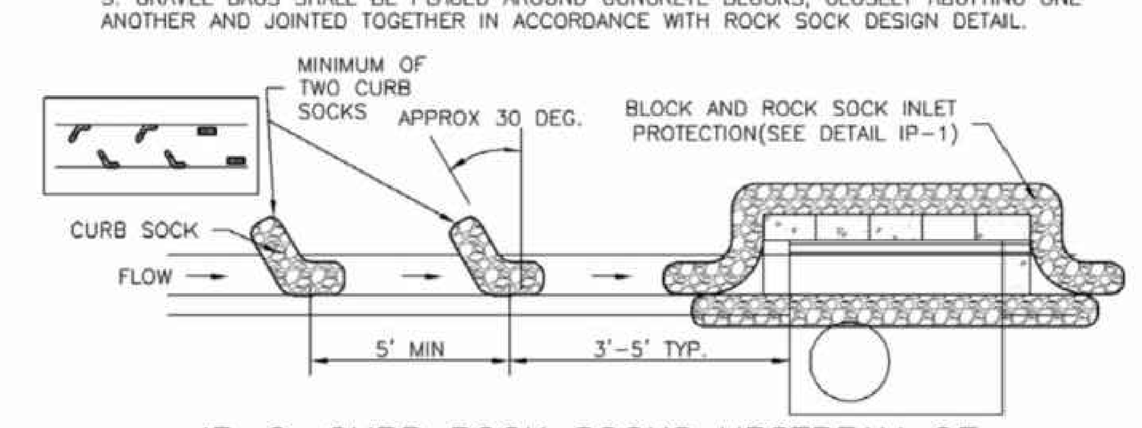
IP-1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.

3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP-2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

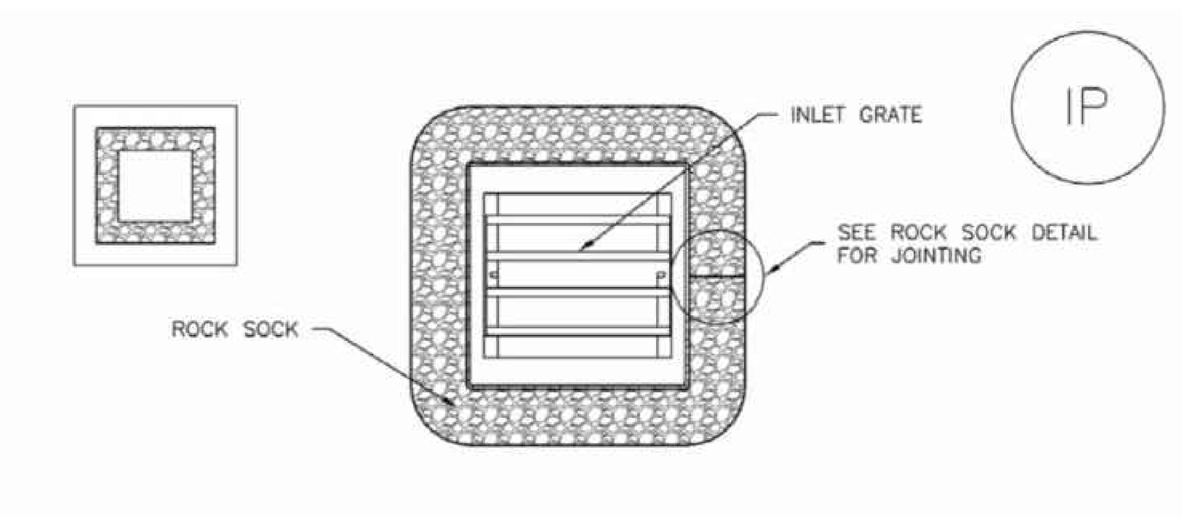
1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.

2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.

3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.

4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON-GRADE INLETS.

Inlet Protection (IP) — SC-6

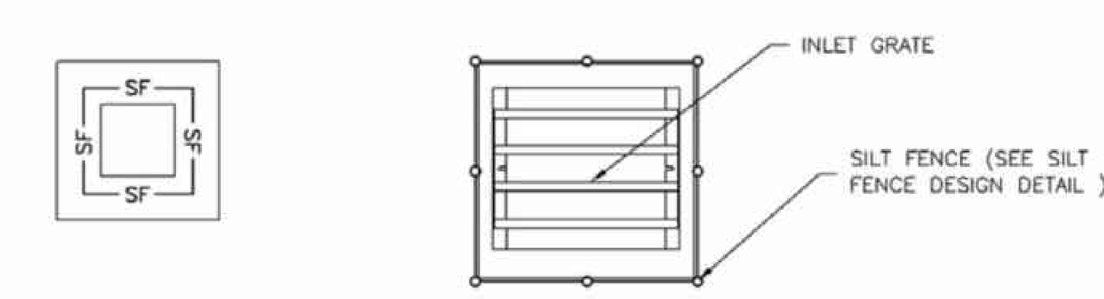


IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

REV.	DATE	DESCRIPTION
	07/26/24	ISSUED FOR CONSTRUCTION

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12600 West Colfax Avenue
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RED ROCKS COMMUNITY COLLEGE GENERATOR ADDITION

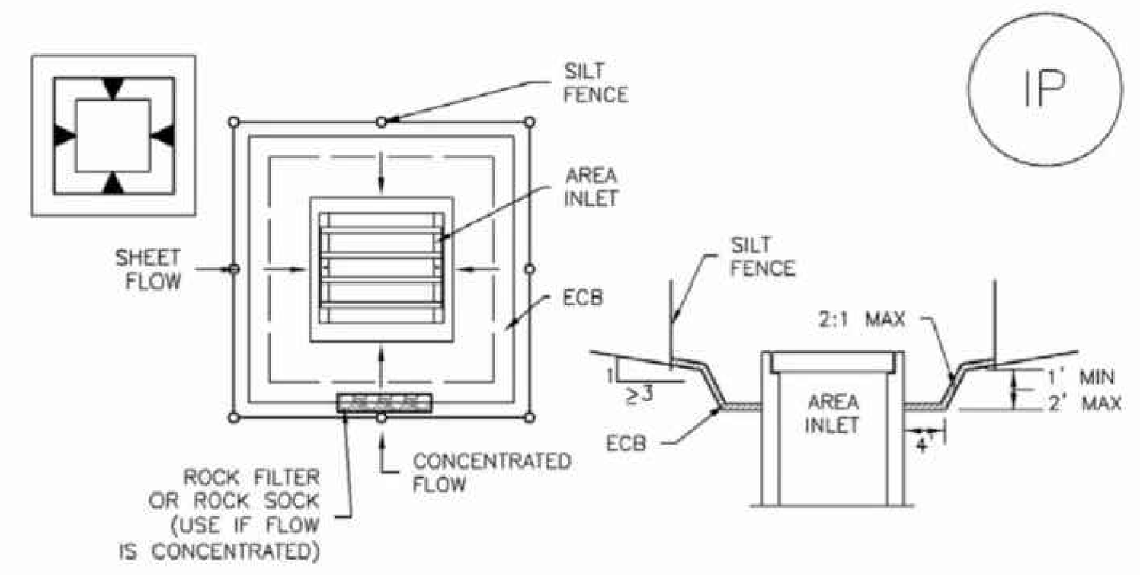
EROSION CONTROL DETAILS

BID DOCUMENTS

DATE: JULY 26, 2024
SCALE: AS NOTED
DESIGN BY: M. LIBERATI
DRAWN BY: M. MARKS
APPROVED BY: M. THORNBROUGH
PRJ. NO: 24.0408

SHT.NO. C1.3 REVISION 0

Created on 5/10/2024
Plotted on 7/25/2024



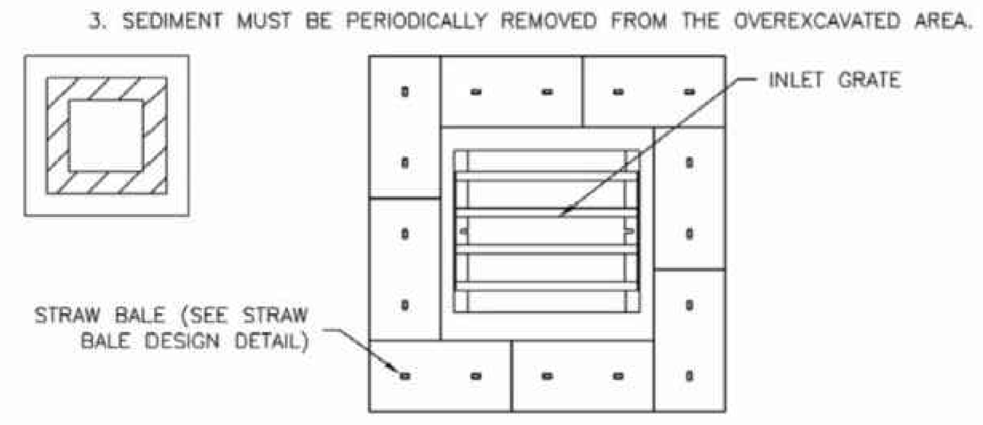
IP–5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.

2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.

3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.

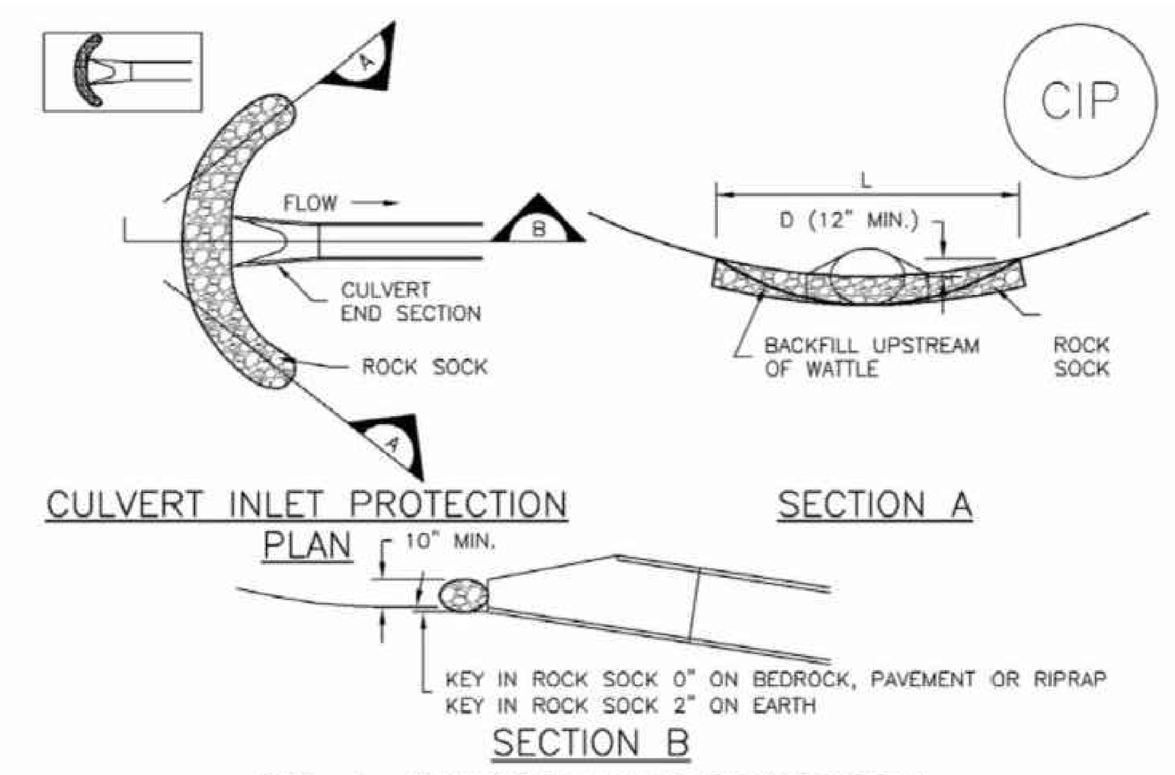


IP–6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.



CIP–1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR
–LOCATION OF CULVERT INLET PROTECTION.

2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS ½ THE HEIGHT OF THE ROCK SOCK.

5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
–LOCATION OF INLET PROTECTION.
–TYPE OF INLET PROTECTION (IP.1, IP.2, IP.3, IP.4, IP.5, IP.6)

2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.

3. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMP's IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ¼ OF THE HEIGHT FOR STRAW BALES.

5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.

6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.

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RED ROCKS COMMUNITY COLLEGE
GENERATOR ADDITION

EROSION CONTROL DETAILS

BID DOCUMENTS

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DESIGN BY: M. LIBERATI
DRAWN BY: M. MARKS
APPROVED BY: M. THORNBROUGH
PRJ. NO: 24.0408

SHT.NO. C1.4
REVISION 0

Created on 5/10/2024
File Path: C:\Thornbrough\24.0408–RRCC – Generator Pad\PLANS\CDs\EROSION DETAILS.dwg
Save Date 10–May–24by mmarks
Plotted on 7/25/2024

GENERAL NOTES

1) GENERAL:
1A) ENGINEER: REFERENCES ON THE STRUCTURAL DRAWINGS TO 'ENGINEER' MEAN THE STRUCTURAL ENGINEER OF RECORD. OTHER ENTITIES ARE SPECIFICALLY NOTED AS "CONTRACTOR'S ENGINEER", "MECHANICAL ENGINEER", ETC.
1B) UNDERGROUND UTILITIES: LOCATE EXISTING UTILITIES AND NOTIFY DESIGN TEAM OF EXISTING UTILITIES OR SUBGRADE CONDITIONS WHICH INTERFERE WITH WORK.

2) USE OF DRAWINGS:
2A) DO NOT SCALE DRAWINGS.
2B) DETAILS ON DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.

3) EXISTING STRUCTURES:
3A) CONTRACT DOCUMENTS HAVE BEEN PREPARED USING AVAILABLE DRAWINGS AND SITE OBSERVATION AS PERMITTED BY ACCESS RESTRICTIONS DURING DESIGN.
3B) DURING CONSTRUCTION, THE CONTRACTOR MAY ENCOUNTER EXISTING CONDITIONS WHICH ARE NOT KNOWN OR ARE AT VARIANCE WITH PROJECT DOCUMENTATION. CONTRACTOR SHALL NOTIFY THE ARCHITECT OF ALL CONDITIONS NOT PER THE CONTRACT DOCUMENTS. EXAMPLES INCLUDE:
- SIZES OR DIMENSIONS OTHER THAN THOSE SHOWN
- DAMAGE OR DETERIORATION TO MATERIALS AND COMPONENTS
- CONDITIONS OF INSTABILITY OR LACK OF SUPPORT
- ITEMS NOTED AS EXISTING ON THE DRAWINGS BUT NOT FOUND IN THE FIELD

3C) PREPARE DIMENSIONAL DRAWINGS OF ALL DISCOVERED ITEMS.
3D) CONTRACTOR SHALL FIELD VERIFY ALL EXISTING STRUCTURAL CONDITIONS PRIOR TO SUBMITTING SHOP DRAWINGS.
3E) CONTRACTOR SHALL MAKE ALLOWANCE FOR THE RESOLUTION OF SUCH DISCOVERIES IN THE CONSTRUCTION SCHEDULE.

4) COORDINATION:
4A) STRUCTURAL DRAWINGS ARE NOT STAND-ALONE DOCUMENTS AND ARE INTENDED TO BE USED IN CONJUNCTION WITH CIVIL, ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND DRAWINGS FROM OTHER DISCIPLINES. THE CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS INTO SHOP DRAWINGS AND WORK.

5) SUBMITTALS AND SUBSTITUTIONS:
5A) SUBMITTALS:
- IF THE CONTRACTOR REQUESTS A CHANGE FROM THE STRUCTURAL DRAWINGS, IT SHALL BE APPROVED BY THE ARCHITECT AND DESIGNED BY MARTIN/MARTIN, INC. PRIOR TO SUBMITTING SHOP DRAWINGS. VARIATION SHALL BE INDICATED ON THE SHOP DRAWINGS. CONTRACTOR SHALL COMPENSATE MARTIN/MARTIN, INC. FOR MAKING THE CHANGE.
- CONSTRUCTION DOCUMENTS SHALL NOT BE REPRODUCED FOR USE IN SUBMITTALS
- ALL SHOP DRAWINGS SHALL REFERENCE THE STRUCTURAL DRAWING NUMBER AND DETAIL USED TO PREPARE THE SUBMITTAL

5B) SUBSTITUTIONS: APPROVAL SHALL BE SECURED FOR ALL SUBSTITUTIONS
5C) NONCONFORMANCE: NOTIFY ARCHITECT OF CONDITIONS NOT CONSTRUCTED PER THE CONTRACT DOCUMENTS PRIOR TO PROCEEDING WITH CORRECTIVE WORK. SUBMIT PROPOSED REPAIR TO THE ARCHITECT FOR ACCEPTANCE. CONTRACTOR SHALL COMPENSATE MARTIN/MARTIN, INC. FOR DESIGNING THE REPAIR.

QUALITY ASSURANCE GENERAL NOTES

STATEMENT OF STRUCTURAL SPECIAL INSPECTIONS AND TESTING

1. **GENERAL:**
   A. SCOPE OF WORK
      - THE OWNER WILL ENGAGE A QUALIFIED INSPECTION AND TESTING AGENCY(S) TO PERFORM SPECIAL INSPECTIONS AND TESTING FOR ALL STRUCTURAL MEMBERS AND ASSEMBLIES AS NOTED HEREIN.
      - SPECIAL INSPECTIONS ARE IN ADDITION TO INSPECTIONS BY THE AUTHORITY HAVING JURISDICTION REQUIRED BY IBC 2021 SECTION 110.

   B. SPECIAL INSPECTIONS AND TESTING ARE APPLICABLE TO ALL REVISIONS AND/OR FUTURE WORK ADDED BY AMENDMENTS TO THESE DOCUMENTS.
   C. DEFINITIONS
      - SPECIAL INSPECTOR: THE AGENCY ENGAGED BY THE OWNER AND APPROVED BY THE AUTHORITY HAVING JURISDICTION TO ACT AS THE DESIGNATED REPRESENTATIVE TO PERFORM INSPECTIONS.
      - SPECIAL INSPECTION: INSPECTION PERFORMED BY THE SPECIAL INSPECTOR ACCORDING TO IBC 2021 SECTION 1704 TO ENSURE COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS.
      - (P) PERIODIC INSPECTION: THE PART-TIME OR INTERMITTENT OBSERVATION BY THE SPECIAL INSPECTOR OF WORK BEING PERFORMED. SPECIAL INSPECTOR SHALL BE PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED. OBSERVATION OF ALL WORK (100% VISUAL) SHALL BE MADE AT THE COMPLETION OF THE WORK.
      - (C) CONTINUOUS INSPECTION: THE FULL-TIME OBSERVATION BY THE SPECIAL INSPECTOR OF WORK BEING PERFORMED. SPECIAL INSPECTOR SHALL BE PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED. OBSERVATION OF ALL WORK (100% VISUAL) SHALL BE MADE AT THE COMPLETION OF THE WORK.

   D. DEFICIENCIES IN WORK
      - CORRECT DEFICIENCIES IN WORK THAT TESTS AND INSPECTIONS INDICATE DO NOT COMPLY WITH THE CONTRACT DOCUMENTS AND REFERENCED STANDARDS.
      - ALL COST OF ADDITIONAL TESTING AND/OR INSPECTIONS FOR CORRECTIVE WORK SHALL BE BORNE BY THE CONTRACTOR.

STRUCTURAL CONCRETE SPECIAL INSPECTIONS - GENERATOR

ITEM	FREQUENCY	STANDARD	CRITERIA
REINFORCING STEEL			
- DURING PLACEMENT	P	ACI 301-16 3.2-3.3	VERIFY GRADE, FINISH, SIZE, BAR QUANTITY, LOCATION, SPACING, COVER, HOOK LENGTHS, SPLICE LENGTH, SPLICE LOCATIONS, BEND DIAMETERS, COATING, SURFACE CONDITION, AND SUPPORT
- PRIOR TO PLACEMENT OF CONCRETE	100%		
BOLTS AND EMBEDMENTS			
- PRIOR TO PLACEMENT OF CONCRETE	100%	-	VERIFY TYPE, FINISH, DIAMETER, LENGTH, QUANTITY, EMBEDMENT LENGTH, SPACING AND EDGE DISTANCES. VERIFY USE OF PLACING TEMPLATE WHERE SPECIFIED
CONCRETE			
- MIX DESIGN	EACH TRUCK	-	VERIFY USE OF APPROVED DESIGN MIXTURE FOR EACH TRUCK LOAD
- FORMWORK PRIOR TO PLACEMENT OF CONCRETE	P	ACI 301-16 2.2-2.3	INSPECT FIRST POUR OF EACH TYPE (GRADE BEAM, ETC.)
- PLACEMENT OF CONCRETE	C	ACI 301-16 5.3.2	-
- CURING	P	ACI 301-16 5.3.6	-

SOILS SPECIAL INSPECTIONS - GENERATOR

ITEM	FREQUENCY	STANDARD`	CRITERIA
SUBGRADE			
- EXCAVATION	P	-	VERIFY EXCAVATIONS ARE EXTENDED TO THE PROPER DEPTH AND HAVE REACHED THE PROPER BEARING MATERIAL
CONTROLLED FILL			
- PRIOR TO PLACEMENT	P	-	VERIFY SUBGRADE HAS BEEN PROPERLY PREPARED
- PLACEMENT	C	-	VERIFY USE OF PROPER MATERIALS, DENSITIES, COMPACTION, AND LIFT THICKNESSES

CONCRETE NOTES

1) GENERAL:
1A) ALL WORK SHALL CONFORM WITH ACI 301-16, UNLESS NOTED OTHERWISE IN DRAWINGS.

1B) DETAIL BARS IN ACCORDANCE WITH THE DRAWINGS, PROJECT SPECIFICATIONS, AND ACI PUBLICATION SP-66 (2004): "ACI DETAILING MANUAL"

2) REINFORCING MATERIALS:
2A) TYP REINFORCING: ASTM A615, Fy = 60 KSI
2B) EPOXY COATING OF REINFORCING: ASTM A775 OR A934

3) REINFORCING FABRICATION:
3A) SPLICES:
- SPLICE PER DETAILS AND WHERE REQUIRED
- TYPICAL LAP SPLICE LENGTH = 1'-6"

3B) MISCELLANEOUS REINFORCING REQUIREMENTS:
- PROVIDE ADDITIONAL BARS OR STIRRUPS REQUIRED TO SECURE REINFORCING IN PLACE DURING CONCRETE PLACEMENT.
- MAKE ALL REINFORCING BAR BENDS IN THE FABRICATOR'S SHOP UNLESS NOTED.

4) STRUCTURAL CONCRETE MIX REQUIREMENTS:
4A) NORMAL WEIGHT CONCRETE
- ¾" (#67 AGGREGATE) MAXIMUM.
- 28 DAY COMPRESSIVE STRENGTH: 5 KSI.
- MAXIMUM WATER/CEMENTITIOUS RATIO: 0.45
- AIR ENTRAINMENT: 6% +/- 1 1/2%.
- MAXIMUM CHLORIDE ION LIMIT: 0.15
- MUST HAVE WORKABILITY AND CONSISTENCY TO PERMIT CONCRETE TO BE WORKED READILY INTO FORMS AND AROUND REINFORCEMENT UNDER CONDITIONS OF PLACEMENT TO BE EMPLOYED, INCLUDING PUMPING, WITHOUT SEGREGATION OR EXCESSIVE BLEEDING. CONTRACTOR SHALL SELECT APPROPRIATE SLUMP. USE ADMIXTURES AS REQUIRED TO OBTAIN DESIRED RESULTS.

5) NON-SHRINK GROUT:
5A) CONFORM TO ASTM C1107

5B) ACHIEVE 6000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.

6) PLACING REINFORCEMENT:
6A) REINFORCEMENT PROTECTION:
- SEE DETAILS FOR REBAR COVER
- SEE ACI 117-10 FOR REINFORCEMENT PLACING TOLERANCES

6B) PROVIDE ACCESSORIES NECESSARY TO PROPERLY SUPPORT REINFORCING AND WELDED WIRE REINFORCEMENT AT POSITIONS SHOWN ON PLANS. ALL REINFORCING, DOWELS, BOLTS, AND EMBEDDED PLATES SHALL BE SET AND TIED IN PLACE BEFORE THE CONCRETE IS POURED. "STABBING" INTO PREVIOUSLY PLACED CONCRETE IS NOT PERMITTED.

7) MODIFICATIONS TO HARDENED OR EXISTING CONCRETE
7A) UNLESS NOTED ON THE STRUCTURAL DOCUMENTS MODIFICATIONS AS LISTED BELOW SHALL NOT BE MADE TO HARDENED OR EXISTING CONCRETE WITHOUT APPROVAL OF THE DESIGN TEAM:
- SAW CUTTING
- CORING
- CHIPPING

7B) DO NOT CUT OR DAMAGE ANY REINFORCING WITHOUT APPROVAL OF THE DESIGN TEAM

8) SUBMITTALS:
8A) CONCRETE MIX DESIGN INCLUDING:
- MIX IDENTIFICATION NUMBER (UNIQUE FOR EACH MIX SUBMITTED).
- STATEMENT OF INTENDED MIX USE.
- MIXTURE PROPORTIONS.
- WATER / CEMENTITIOUS MATERIALS RATIO.
- WET AND DRY UNIT WEIGHT.
- TOTAL AIR CONTENT.
- DESIGN SLUMP AND ALLOWABLE RANGE AFTER ADDITIONS OF ALL ADMIXTURES.
- COMPRESSIVE STRENGTH TESTS.

DESIGN CRITERIA

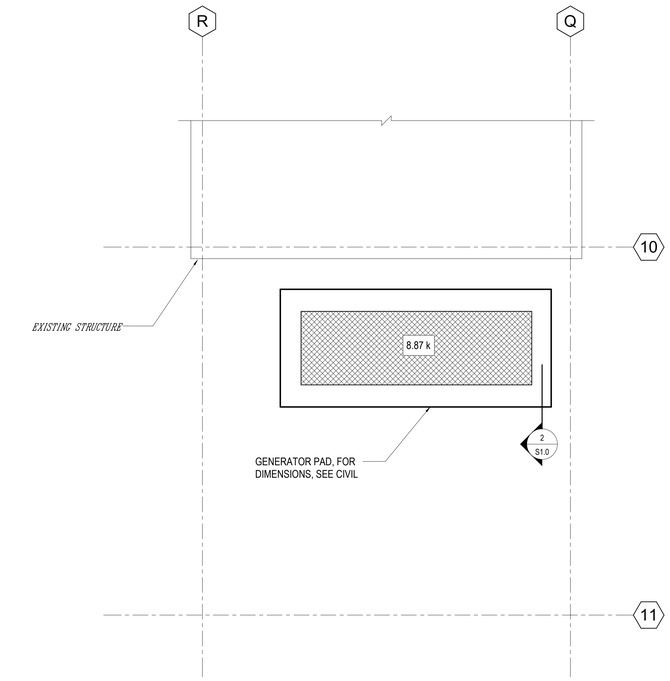
CODES AND STANDARDS:
1A) GENERAL DESIGN
- INTERNATIONAL BUILDING CODES 2021

1B) CONCRETE
- ACI 301-16 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS"
- ACI 318-19 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"

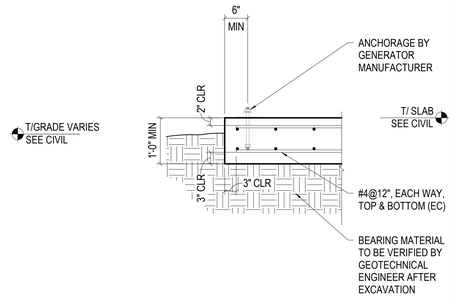
2) SEISMIC LOADS
- SEISMIC DESIGN CATEGORY = B
- RISK CATEGORY = II
- EARTHQUAKE IMPORTANCE FACTOR, Ie = 1.0
- MAPPED SPECTRAL RESPONSE ACCELERATION, Ss = 23.4 %g
- MAPPED SPECTRAL RESPONSE ACCELERATION, S1 = 6.1 %g
- DESIGN SPECTRAL RESPONSE COEFFICIENT, SDs = 0.25
- DESIGN SPECTRAL RESPONSE COEFFICIENT, SD1 = 0.098
- SOIL SITE CLASS = D

3) WIND LOADS
- RISK CATEGORY = II
- BASIC ULTIMATE WIND SPEED, Vult = 166 mph
- BASIC NOMINAL WIND SPEED, Vasd =138 mph
- EXPOSURE CATEGORY = C
- INTERNAL PRESSURE COEFFICIENT, Gcpi = +/-0.18
- TOPOGRAPHIC FACTOR, Kzt = 1.00
- ALTITUDE ADJUSTMENT FACTOR, Ke = 0.85

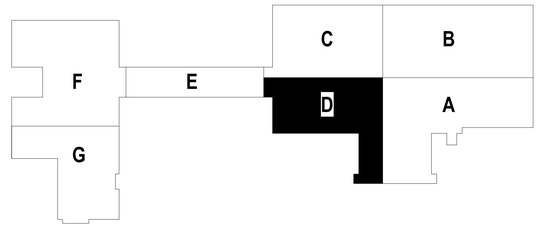
4) SOIL LOADS
- ASSUMED ALLOWABLE BEARING PRESSURE OF 1500 PSF PER "PRESUMPTIVE LOAD-BEARING VALUES" TABLE IN IBC 2021 CHAPTER 18



1 GENERATOR PLAN - NEW
1/4" = 1'-0"



2 3/4" = 1'-0" GENERATOR PAD EXTENSION



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RED ROCKS COMMUNITY COLLEGE GENERATOR ADDITION

13300 W 6TH AVE.
LAKEWOOD, CO 80228

STRUCTURAL PLANS DETAILS AND NOTES

Date:	JULY 26, 2024
Scale:	As indicated
Designed By:	JO
Drawn By:	JM
Approved By:	BD/JO
Project No:	24.0423.S.01

SHT NO: S1.0

REVISION

DESIGNERS: JACK MOWAT
LEAD ARCHITECH:
DATE PRINTED: 7/23/2024 10:55:34 PM
FILE PATH: Autodesk Docs://MM Structural Projects 2023/24.0423.S.01 - Red Rocks Community College Generator Support - S23.rvt

MM JOB #: 24.0423.S.01
PRINCIPAL: BEN DOWNEY
EOR: BEN DOWNEY
PROJECT MANAGER: JONATHAN OLTMAN

MECHANICAL LEGEND (NOTE: NOT ALL SYMBOLS SHOWN ARE USED ON THESE DRAWINGS)

– PLUMBING –

ABBR.	SYMBOL	DESCRIPTION
RD		ROOF DRAIN
OD		OVERFLOW DRAIN
AD		AREA DRAIN
		DOWNSPOUT NOZZLE
FS		FLOOR SINK
FD		FLOOR DRAIN
FCO		FLOOR CLEANOUT
GCO		GRADE CLEANOUT
WCO		WALL CLEANOUT
		HORIZONTAL CLEANOUT
HB		HOSE BIBB
SA		SHOCK ABSORBER
		THERMOSTATIC RECIRCULATION VALVE
RPBP	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
DCVA	DCVA	DOUBLE CHECK VALVE ASSEMBLY

– LABORATORY/MEDICAL SERVICES –

ABBR.	SYMBOL	DESCRIPTION
O2	—O2—	OXYGEN PIPING
VAC	—VAC—	VACUUM PIPING
N2O	—N2O—	NITROUS OXIDE PIPING
N	—N—	NITROGEN PIPING
MA	—MA—	MEDICAL AIR PIPING
H	—H—	HYDROGEN PIPING
NL	—NL—	LIQUID NITROGEN PIPING
LA	—LA—	LABORATORY COMPRESSED AIR PIPING
SA	—SA—	SCAVENGE AIR
WAGD	—WAGD—	WASTE ANESTHETIC GAS DISPOSAL
CO2	— CO2 —	CARBON DIOXIDE
		OXYGEN SERVICE OUTLET
		VACCUM SERVICE OUTLET
WAGD		WASTE ANESTHESIA GAS DISPOSAL OUTLET
		NITROUS OXIDE SERVICE OUTLET
		NITROGEN SERVICE OUTLET
		NATURAL GAS SERVICE OUTLET
		LABORATORY / MEDICAL AIR SERVICE OUTLET

– CONTROLS –

SYMBOL	DESCRIPTION
T ZONE#	THERMOSTAT WITH ZONE CALLOUT
HS ZONE#	HUMIDITY SENSOR WITH ZONE CALLOUT
TS ZONE#	TEMP SENSOR WITH ZONE CALLOUT
CO	CARBON MONOXIDE DETECTOR
CO_2	CARBON DIOXIDE SENSOR
DS XXX	DUCT STATIC PICKUP WITH AHU CALLOUT
BP XXX	BUILDING PRESSURE PICKUP WITH AHU CALLOUT
	DIGITAL INPUT, ANALOG INPUT
	DIGITAL OUTPUT, ANALOG OUTPUT
	BI-DIRECTIONAL NETWORK CONNECTION
	FLOW ARROW
FS	FLOW SWITCH
TS	DUCT TEMPERATURE SENSOR
TS	DUCT AVERAGING TEMP. SENSOR
TS	WELL MOUNTED TEMPERATURE SENSOR
MD	MOTORIZED CONTROL DAMPER
TL	TEMPERATURE LOW LIMIT THERMOSTAT
SD	DUCT SMOKE DETECTOR
ES	DAMPER\VALVE END SWITCH
DPS	DIFFERENTIAL PRESSURE SWITCH
HPS	HIGH PRESSURE SWITCH
PS	PRESSURE SWITCH MANUAL RESET
	AQUASTAT
MS	MOTOR STARTER
CR	CONTROL RELAY
VFD	VARIABLE FREQUENCY DRIVE
VFD B/P	VARIABLE FREQUENCY DRIVE WITH BY-PASS
M	ELECTRIC MOTOR
TC	TEMPERATURE CONTROLLER
LT	LEVEL TRANSMITTER
PT	PRESSURE TRANSMITTER
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
FT	FLOW TRANSMITTER
EPT	ELECTRIC\PNEUMATIC TRANSDUCER
	CURRENT SWITCH/TRANSMITTER
ANN	ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
CAM	CONTROL ADDRESSABLE MODULE
MAM	MONITOR ADDRESSABLE MODULE
ESR	EMERGENCY STOP RELAY
LC	LEVEL CONTROLLER
EPO	EMERGENCY POWER OFF
AFS	AIR FLOW SWITCH

– PIPING –

ABBR.	SYMBOL	DESCRIPTION
		PIPE DOWN
		PIPE UP
		TEE OUTLET UP
		TEE OUTLET DOWN
HWS	—HWS—	HEATING HOT WATER SUPPLY
HWR	—HWR—	HEATING HOT WATER RETURN
CWS	—CWS—	CHILLED WATER SUPPLY
CWR	—CWR—	CHILLED WATER RETURN
CTS	—CTS—	COOLING TOWER SUPPLY
CTR	—CTR—	COOLING TOWER RETURN
LPS	—LPS—	LOW PRESSURE STEAM SUPPLY
LPR	—LPR—	LOW PRESSURE RETURN
MPS	—MPS—	MEDIUM PRESSURE STEAM SUPPLY
MPR	—MPR—	MEDIUM PRESSURE RETURN
HPS	—HPS—	HIGH PRESSURE STEAM SUPPLY
HPR	—HPR—	HIGH PRESSURE RETURN
CDS	—CDS—	CONDENSER WATER SUPPLY
CDR	—CDR—	CONDENSER WATER RETURN
RL	—RL—	REFRIGERANT LIQUID
RS	—RS—	REFRIGERANT SUCTION
RHG	—RHG—	REFRIGERANT HOT GAS
FOS	—FOS—	FUEL OIL SUPPLY
FOR	—FOR—	FUEL OIL RETURN
FOV	– –FOV– –	FUEL OIL VENT
CA	—CA—	COMPRESSED AIR
PC	—PC—	PUMPED CONDENSATE
D	—D—	CONDENSATE OR EQUIPMENT DRAIN
GHXS	—GHXS—	GEOTHERMAL HX SUPPLY
GHXR	—GHXR—	GEOTHERMAL HX RETURN
DCW		DOMESTIC COLD WATER
DHW		DOMESTIC HOT WATER
DHWC		DOMESTIC HOT WATER RE-CIRCULATING
DTW	—T—	DOMESTIC TEMPERED WATER
DI	—DI—	DEIONIZED WATER
V	– –V– –	DOMESTIC VENT PIPING
AV	– –AV– –	ACID VENT PIPING
W	—W—	SUSPENDED WASTE
W	—W—	BURIED WASTE
AW	—AW—	ACID WASTE
GW	—GW—	GREASE WASTE
OST	—OST—	OVERFLOW STORM DRAIN
ST	—ST—	SUSPENDED STORM DRAIN
ST	—ST—	BURIED STORM DRAIN
G	—G—	NATURAL GAS

– PIPING –

ABBR.	SYMBOL	DESCRIPTION
	M	GAS METER
	M	WATER METER
	M	2-WAY CONTROL VALVE
	M	3-WAY CONTROL VALVE
	M	2-WAY CONTROL BALL VALVE
		BALANCE VALVE
		FLOW MEASURING STATION
		BALL VALVE
		BUTTERFLY VALVE
		CHECK VALVE
		GATE VALVE
		GLOBE VALVE
		PRESSURE REDUCING VALVE
		PRESSURE RELIEF VALVE
		HOSE END DRAIN VALVE
		STRAINER
		STRAINER WITH BLOW DOWN VALVE
		PLUG VALVE
		GAS SHUTOFF VALVE
	S	SOLENOID VALVE
PRV		PRESSURE REGULATING VALVE
		THERMOWELL
		THERMOMETER WITH THERMOWELL
		UNION
		VENTURI
		AUTOMATIC AIR VENT
	H	MANUAL AIR VENT
		VACUUM BREAKER
		THERMOMETER
		GAUGE
		GAUGE WITH BALL VALVE
		DIFFERENTIAL PRESSURE GAUGE
		PRESSURE TEMPERATURE/TEST POINT
		PIPE ANCHOR
		PIPE GUIDE
		FLEX CONNECTION
		PIPE CAP
		PIPE BREAK
		FLOW ARROW
	T IBT	STEAM TRAP (INVERTED BUCKET TRAP)
	T TT	STEAM TRAP (THERMOSTATIC TRAP)
	T FTT	STEAM TRAP (FLOAT AND THERMOSTATIC TRAP)

– HVAC –

ABBR.	SYMBOL	DESCRIPTION
SA		POSITIVE PRESSURE DUCT UP
SA		POSITIVE PRESSURE DUCT DOWN
EA/RA		NEGATIVE PRESSURE DUCT UP
EA/RA		NEGATIVE PRESSURE DUCT DOWN
OA		OUTSIDE AIR INTAKE DUCT UP
OA		OUTSIDE AIR INTAKE DUCT DOWN
		ROUND DUCT UP
		ROUND DUCT DOWN
		CONICAL FITTING WITH DAMPER
		ECCENTRIC FITTING WITH DAMPER
		CONICAL FITTING WITHOUT DAMPER
		ECCENTRIC FITTING WITHOUT DAMPER
		ELBOW WITH TURNING VANES
		ELBOW WITHOUT TURNING VANES
		LONG RADIUS ELBOW
		SHORT RADIUS ELBOW
		SUPPLY DIFFUSER
		SUPPLY DIFFUSER ROUND NECK
		SUPPLY DIFFUSER SQUARE NECK
		EXHAUST/RETURN GRILLE SQUARE NECK
		EXHAUST/RETURN GRILLE ROUND NECK
		RETURN AIR GRILLE
		ROUND DIFFUSER
		SLOT DIFFUSER
		FLEXDUCT
		DUCTWORK
MVD		MANUAL VOLUME DAMPER
		FIRE DAMPER 1-1/2 HOUR UNLESS NOTED OTHERWISE
		FIRE/SMOKE DAMPER 1-1/2 HOUR UNLESS NOTED OTHERWISE
		SMOKE DAMPER
	MD	MOTORIZED DAMPER
		SECURITY BARRIER
		ACCESS PANEL (SIZE)
		PUMP
		DUCT BREAK

– FIRE –

ABBR.	SYMBOL	DESCRIPTION
FL	—FL—	FIRE LINE
	FVC	FIRE VALVE CABINET
		FIRE DEPARTMENT CONNECTION
		FIRE SPRINKLER PENDENT HEAD
		FIRE SPRINKLER UPRIGHT HEAD
		FIRE SPRINKLER SIDEWALL HEAD
	TS	TAMPER SWITCH
		OS & Y GATE VALVE

APPLICABLE CODES

AHJ: STATE OF COLORADO

FIRE AUTHORITY: WEST METRO FIRE DISTRICT

REMODEL ☒ NEW ☐

YEAR	CODE
2021	INTERNATIONAL BUILDING CODE
2021	INTERNATIONAL MECHANICAL CODE
2021	INTERNATIONAL PLUMBING CODE
2021	INTERNATIONAL ENERGY CONSERVATION CODE
2021	INTERNATIONAL FIRE CODE
2023	NATIONAL ELECTRICAL CODE

IS THE BUILDING FULLY SPRINKLERED? ☒ YES ☐ NO

IS THE BUILDING FULLY DETECTED? ☐ YES ☒ NO

– ABBREVIATIONS –

AAP	AREA ALARM PANEL	MA	MIXED AIR
AFF	ABOVE FINISHED FLOOR	MAP	MASTER ALARM PANEL
BDD	BACK DRAFT DAMPER	MGO	MEDICAL GAS OUTLET
BFF	BELOW FINISH FLOOR	MOP	METHOD OF PROCEDURE
CL	CENTERLINE	(N)	NEW
CO	CLEAN OUT	NC	NORMALLY CLOSED
(E)	EXISTING	NO	NORMALLY OPEN
EA	EXHAUST AIR	OA	OUTSIDE AIR
EAT	ENTERING AIR TEMPERATURE	OTCS	OPEN TO CEILING SPACE
ELEV	ELEVATION	RA	RETURN AIR
ESP	EXTERNAL STATIC PRESSURE	SA	SUPPLY AIR
EWT	ENTERING WATER TEMPERATURE	TCP	TEMPERATURE CONTROL PANEL
FFE	FINISHED FLOOR ELEVATION	TSP	TOTAL STATIC PRESSURE
IE	INVERT ELEVATION	VTR	VENT THROUGH ROOF
LAT	LEAVING AIR TEMPERATURE	ZVB	ZONE VALVE BOX
LWT	LEAVING WATER TEMPERATURE		

– GRAPHIC SYMBOLS –

SYMBOL	DESCRIPTION
#	KEY NOTE
#	REVISION NUMBER
TAG	MECHANICAL EQUIPMENT TAG
	SHADING INDICATES MECHANICAL EQUIPMENT
	HATCHING INDICATES ITEM(S) TO BE REMOVED
N	NORTH ARROW
	CONNECT TO EXISTING
EXIST / NEW	CONNECT TO EXISTING PIPE
TYPE, NECK, CFM	DIFFUSER, REGISTER, GRILLE CFM CALLOUT
TYPE, NECK, CFM, #	DIFFUSER, REGISTER, GRILLE CFM CALLOUT WITH QUANTITY
TYPE, GPM, ZONE, LENGTH	BASEBOARD/FINTUBE RADIATION HEATING
TYPE, VAV-1-3, LEVEL, #	VAV TERMINAL BOX CALLOUT
1 / M2.1	DETAIL BUBBLE DETAIL NUMBER SHEET NUMBER-WHERE DETAIL IS SHOWN
A / M2.2	SECTION CUT SECTION LETTER SHEET NUMBER-WHERE SECTION IS SHOWN

GENERAL NOTES

CONTRACTOR SHALL REFERENCE SPECIFICATIONS FOR CONSTRUCTION MATERIALS AND INSTALLATION REQUIREMENTS. SPECIFICATIONS ARE A PART OF THE CONSTRUCTION DOCUMENTS. SHOULD ANY CONFLICT ARISE BETWEEN THE DRAWINGS AND SPECIFICATIONS, SUCH CONFLICT SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER FOR RESOLUTION.

ALL PENETRATIONS THROUGH RATED CONSTRUCTION SHALL BE SEALED TO MAINTAIN THE REQUIRED RATING.

THESE DRAWINGS ARE DIAGRAMMATIC IN CHARACTER AND DO NOT NECESSARILY INDICATE EVERY REQUIRED OFFSET, FITTING, ETC.

ALL DUCTWORK DIMENSIONS SHOWN ARE INTERIOR CLEAR DIMENSIONS. ALLOWANCES FOR DUCT LINER OR INSULATION ARE NOT INCLUDED.

LOCATIONS AND INFORMATION FOR EXISTING MECHANICAL DEVICES AND EQUIPMENT SHOWN ON THESE PLANS ARE APPROXIMATE. THIS INFORMATION IS DERIVED FROM FIELD OBSERVATIONS AND AVAILABLE RECORD DRAWINGS.

REV: 09/27/2023

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REV.	DATE	DESCRIPTION
	07/26/24	ISSUED FOR CONSTRUCTION

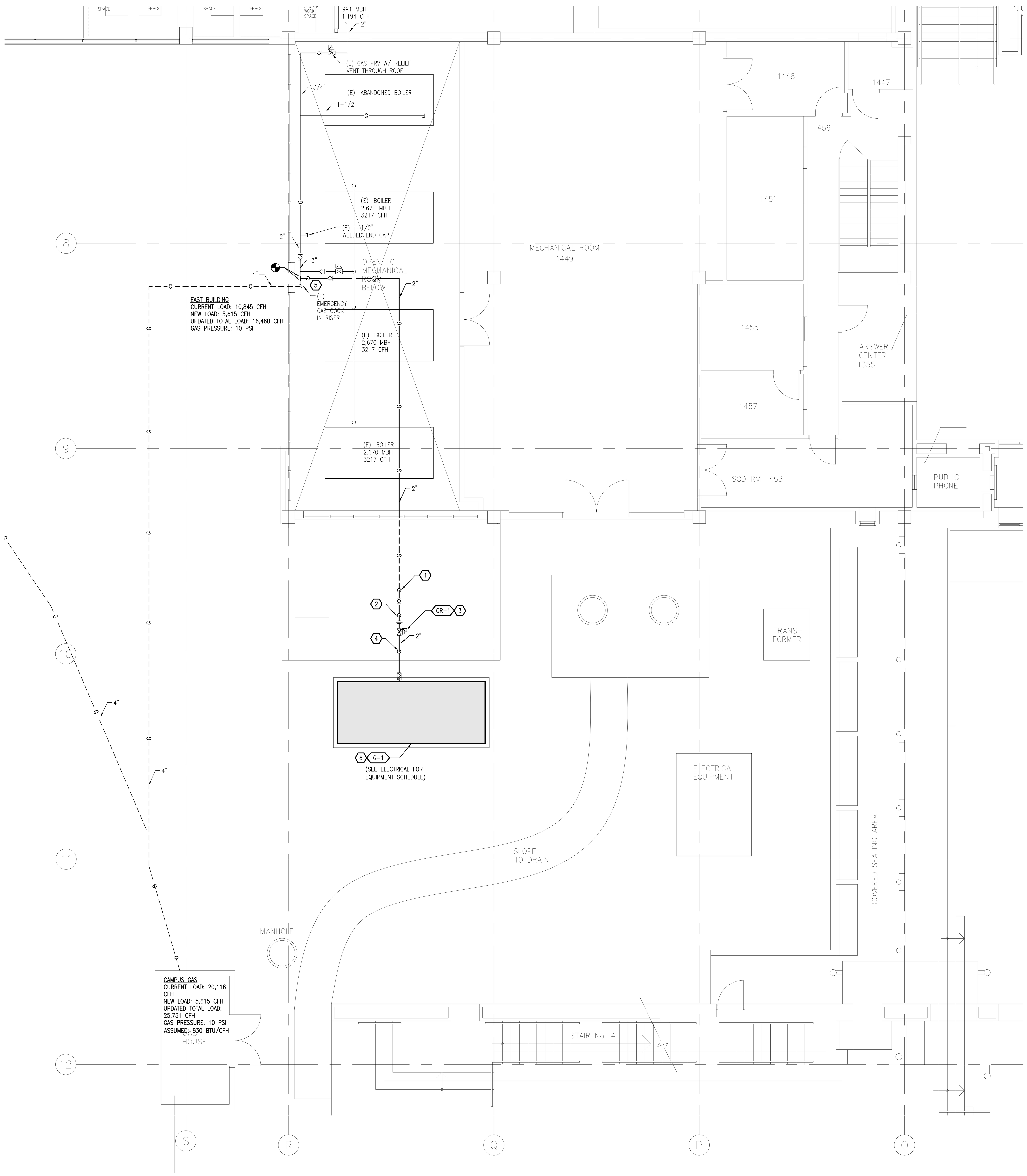
RMH GROUP
making a difference through engineering℠
Mechanical • Electrical
Industrial • Sustainability
Denver // Phoenix
12600 West Colfax Avenue
Suite A-400
Lakewood, Colorado 80215
Phone 303-239-0909
www.rmhgroup.com © 2024

RED ROCKS COMMUNITY COLLEGE
GENERATOR ADDITION
13300 W. 6TH AVE., LAKEWOOD, CO 80228

MECHANICAL LEGEND

DATE: JULY 26, 2024
SCALE: NONE
DESIGN BY: NLS
DRAWN BY: NLS
APPROVED BY: MJU
PRJ. NO: 21098

SHT.NO. M00
REVISION –



MECHANICAL SITE PLAN

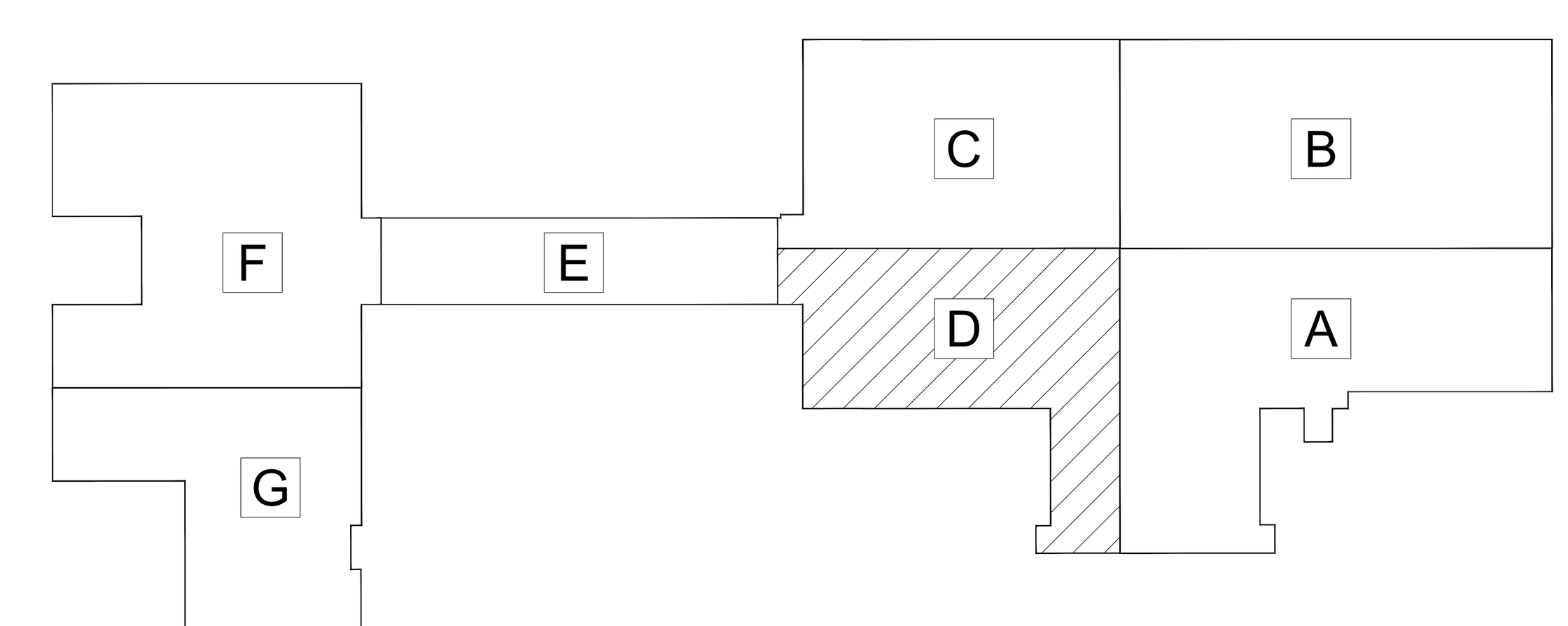
1 / P01 — SCALE: 3/16" = 1'-0"

SHEET NOTES

1. LIGHT LINE WEIGHT INDICATES EXISTING. HEAVY LINE WEIGHT INDICATES NEW CONSTRUCTION.
2. REPAIR ALL SURFACES AND FINISHES DAMAGED DUE TO DEMOLITION OR CONSTRUCTION TO MATCH EXISTING CONDITIONS.
3. EQUIPMENT AND PIPING SHOWN ON THIS DRAWING ARE BASED ON RECORD INFORMATION PROVIDED IN PART BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING CONDITIONS PRIOR TO STARTING WORK AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.

KEY NOTES

1. NEW PENETRATION OF EXISTING CONCRETE PAD / BOILER ROOM ROOF / DECK FOR NEW 2" GAS LINE. CORE DRILL CONCRETE. X-RAY PRIOR TO DRILLING TO PROPERLY LOCATE CLEAR AREA FOR PENETRATION. AFTER PIPE INSTALLATION, SEAL OPENING SUCH THAT THE SEAL IS WATER TIGHT.
2. PROVIDE TEE WITH SEDIMENT TRAP PER 2021 IFGC 408.4.
3. GAS SHUT OFF VALVE AND REGULATORS SHALL BE APPROXIMATELY 3'-0" ABOVE CONCRETE PAD AND SHALL BE SUPPORTED APPROPRIATELY WITH UNISTRUT SUPPORTS SECURED TO CONCRETE OR PREFABRICATED PIPE SUPPORTS (DURABLOCK OR SIMILAR).
4. GAS TO ROUTE DOWN AND LOW PRIOR TO GENERATOR CONNECTION TO AVOID CONFLICT WITH GENERATOR ACCESS DOORS.
5. CUT IN NEW GAS PIPING TEE AND ROLL DOWN WITH AT A 45 DEGREE ANGLE TO NEW GAS SHUT OFF VALVE AS SHOWN.
6. CONTROLS NOTE: PROVIDE NEW STATUS FROM GENERATOR TO THE EXISTING BUILDING BAS. CONTROLS CONTRACTOR SHALL BE UNIVERSAL CONTROLS.



KEY PLAN

REV.	DATE	DESCRIPTION
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Lakewood, Colorado 80215
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www.rmhgroup.com © 2024

RED ROCKS COMMUNITY COLLEGE GENERATOR ADDITION

13300 W. 6TH AVE., LAKEWOOD, CO 80228

MECHANICAL SITE PLAN

DATE: JULY 26, 2024
SCALE: NONE
DESIGN BY: NLS
DRAWN BY: NLS
APPROVED BY: MVJ
PRJ. NO: 21098

SHT.NO. M01
REVISION –

Created on 5/23/2024
File Path: W:\Jobs21\21098\1Dwgs\AutoCAD\Sheets\21098 - M60.dwg
Save Date 23-May-24 by nslaughter
Plotted on 7/26/2024

GAS REGULATOR SCHEDULE

TAG	SERVICE	LINE SIZE (IN)	PRESSURE INLET (PSIG)	PRESSURE OUTLET (PSIG)	MAX FLOW (SCFH)	MIN FLOW (SCFH)	MANUFACTURER & MODEL	NOTES
GR-1	GENERATOR	2"	10	1.5	5615	3002	EMERSON FISCHER CS-800	1

NOTES:
1. OUTLET PRESSURE IS MAXIMUM ALLOWABLE AT GENERATOR.

M60
SHEET NO.
1
REVISION

DATE: JULY 26, 2024
SCALE: NONE
DESIGN BY: NLS
DRAWN BY: NLS
APPROVED BY: MWJ
PRJ. NO: 21098

RED ROCKS COMMUNITY COLLEGE GENERATOR ADDITION

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MECHANICAL SCHEDULES

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	07/26/24	ISSUED FOR CONSTRUCTION

ELECTRICAL LEGEND (NOTE: NOT ALL SYMBOLS SHOWN ARE USED ON THESE DRAWINGS)

– ONE LINE SYMBOLS –

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	DRAW–OUT CIRCUIT BREAKER (MOLDED INSULATED CASE)
52	DRAW–OUT POWER CIRCUIT BREAKER
	CONTROL FUSE
	FUSE WITH SWITCH
	SWITCH
PANEL XXX	PANELBOARD
ATS–XX XXX A	AUTOMATIC TRANSFER SWITCH
100A4G	FEEDER DESIGNATION, SEE FEEDER SCHEDULE
	AUTOMATIC TRANSFER SWITCH WITH BY–PASS
E	ENGINE GENERATOR
TX–XXXX	TRANSFORMER
	ENCLOSED BUSWAY
	GROUND BUS
	WEATHERHEAD
M	MOTOR
	DELTA CONNECTION
	WYE CONNECTION
	GROUNDED WYE CONNECTION
	GROUNDED WYE CONNECTION WITH RESISTOR GROUND
	GROUNDED WYE CONNECTION WITH REACTOR GROUND
M	METERING DEVICE
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	LOAD–BREAK CONNECTOR
##	PROTECTIVE RELAY DEVICE
K	KEY INTERLOCK
2400V,100A, 10SEC. RESISTOR	RESISTOR
	CONTACT NORMALLY OPEN
	CONTACT NORMALLY CLOSED
	CAPACITOR
	SINGLE BATTERY
	MULTIPLE BATTERIES
	LIGHTNING ARRESTOR
	THERMAL ELEMENT, OVERLOAD RELAY

REV: 06/29/2020

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– GENERAL –

SYMBOL	DESCRIPTION
	BRANCH CIRCUIT HOME RUN TO PANELBOARD, DESIGNATION INDICATES PANEL AND CIRCUIT NUMBERS
	CONTROL WIRING
	LIGHTING, ONE–LINE, AND POWER CIRCUITING
	LIGHTING, ONE–LINE, AND POWER CIRCUITING (UNDERGROUND)
	FLEXIBLE CONDUIT
	CONDUIT BREAK SYMBOL
	CONDUIT CAP
	CONDUIT CHANGE IN ELEVATION
	CONDUIT STUB DOWN (OUT OF DRAWING LIMITS)
	CONDUIT STUB UP (OUT OF DRAWING LIMITS)
J	JUNCTION BOX
J	WALL MOUNTED JUNCTION BOX
J	FLOOR MOUNTED JUNCTION BOX
	PUSH BUTTON A = ABORT DA = DURESS ALARM EPO = EMERGENCY POWER OFF IC = INTERCOM ST = SHUNT TRIP
S#X	SWITCH SYMBOL (#) SINGLE POLE (IF BLANK) 2 = DOUBLE POLE 3 = THREE–WAY 4 = FOUR–WAY AS = ADJUSTABLE SPEED D = DIMMER K = KEY OPERATED LV = LOW VOLTAGE M = MANUAL MOTOR SWITCH OS = OCCUPANCY SENSOR P = WITH PILOT LIGHT T = TIMER TO = THERMAL OVERLOAD VS = VACANCY SENSOR WP = WEATHERPROOF x = SMALL LETTER – LUMINAIRES CONTROLLED XP = EXPLOSION PROOF
SS	DUAL SWITCH
$	INTERCOM SWITCH

– FIRE ALARM DEVICES –

SYMBOL	DESCRIPTION
B	BELL
D D	DUCT SMOKE DETECTOR
	FIRE FIGHTER'S TELEPHONE JACK
H	COMBINATION FIRE HORN/STROBE LIGHT
S	COMBINATION FIRE SPEAKER/STROBE LIGHT
	FIRE ALARM STROBE LIGHT
	FIRE ALARM STROBE, CEILING MOUNT
S	FIRE ALARM STROBE/SPEAKER, CEILING MOUNT
H	FIRE HORN
H	DUAL PROJECTION FIRE HORN
F	MANUAL PULL STATION
	MAGNETIC DOOR HOLD OPEN
D X / X	DETECTOR / DETECTOR UNDER FLOOR F = FLAME I = IONIZATION TYPE P = PHOTOELECTRIC TYPE T = THERMAL TYPE
B	BEAM DETECTOR
	PULL STATION/TELEPHONE JACK
S	DELUGE VALVE

– SPECIAL SYSTEMS DEVICES –

SYMBOL	DESCRIPTION
	DATA OUTLET
	COMBINATION TELEPHONE/DATA OUTLET
	TELEPHONE OUTLET
	TELEVISION JACK
	CEILING MOUNTED DATA OUTLET
	CEILING MOUNTED TELEPHONE/DATA OUTLET
	CEILING MOUNTED TELEPHONE OUTLET
	FLOOR MOUNTED DATA OUTLET
	FLOOR MOUNTED TELEPHONE/DATA OUTLET
	FLOOR MOUNTED TELEPHONE OUTLET
TTB	TELEPHONE TERMINAL BOARD
DTB	DATA TERMINAL BOARD
M	MICROPHONE OUTLET
S X	SPEAKER V = WITH INTEGRAL VOLUME CONTROL
S	WALL MOUNTED SPEAKER
V	WALL MOUNTED VOLUME CONTROL
C	CLOCK RECEPTACLE OUTLET
	SECURITY CAMERA
T	THERMOSTAT
XX	SPECIAL SYSTEMS SYMBOLS: AB = ABORT BUTTON AMP = AMPLIFIER ANN = ANNUNCIATOR ASD = ADJUSTABLE SPEED DRIVE ATS = AUTOMATIC TRANSFER SWITCH B = BUZZER BMS = BALANCED MAGNETIC STRIP CAM = CONTROL ADDRESSABLE MODULE CH = CHIME CK = CARD READER/KEYPAD CR = CARD READER DA = DURESS ALARM PUSH–BUTTON DC = DOOR CONTACT DE = DELAYED EGRESS DMA = DOOR MANAGEMENT ALARM DO = DOOR OPERATOR DS = DOOR STRIKE DTC = DATA TERMINAL CABINET DVR = DIGITAL VIDEO RECORDER EC = ELECTRICAL CONTACTOR EL = ELECTRIC LOCK ES = ELECTRIC STRIKE F = MANUAL PULL STATION FAA = FIRE ALARM ANNUNCIATOR FACP = FIRE ALARM CONTROL PANEL FS = FLOW SWITCH FSD = FIRE SMOKE DAMPER GB = GLASSBREAK DETECTOR HC = HANDICAP PUSH–BUTTON IC = INTERCOM CALL STATION IP = INDICATOR PANEL KP = KEYPAD MAM = MONITOR ADDRESSABLE MODULE MH = MANHOLE MD = MOTORIZED DAMPER MS = MOTION SENSOR ML = MAGNETIC LOCK NCMS = NURSE CALL MASTER STATION CM–CENTRALIZED PHYSIOLOGICAL MONITORING STATION NCT = NURSE CALL TERMINAL CABINET OS = OCCUPANCY SENSOR PA = PUBLIC ADDRESS PB = PULLBOX PIR = PASSIVE INFRARED DETECTOR PM = POWER QUALITY METER PS = PRESSURE SWITCH R = REMOTE INDICATING LIGHT RT = REMOTE TEST STATION RX = REQUEST TO EXIT PUSH–BUTTON S = WALL MOUNTED SPEAKER SAP = SECURITY ALARM PANEL SPD = SURGE PROTECTIVE DEVICE TC = TIME CLOCK TS = TAMPER SWITCH V = VARIABLE FREQUENCY DRIVE VM = VIDEO MONITOR VS = VACANCY SENSOR

– POWER –

SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE D = DEDICATED CIRCUIT IG = ISOLATED GROUND DEVICE ⏻ = AUTOMATICALLY CONTROLLED RECEPTACLE
GFI	GFI = GROUND FAULT CIRCUIT INTERRUPTER
	FLOOR MOUNTED DUPLEX RECEPTACLE
	FLOOR MOUNTED FOURPLEX RECEPTACLE
	FLOOR MOUNTED SPECIAL PURPOSE RECEPTACLE
	CEILING MOUNTED DUPLEX RECEPTACLE
	CEILING MOUNTED FOURPLEX RECEPTACLE
	CEILING MOUNTED SPECIAL PURPOSE RECEPTACLE
	FOURPLEX RECEPTACLE
	RANGE RECEPTACLE
	SINGLE RECEPTACLE
	SPECIAL PURPOSE RECEPTACLE
	SWITCHED RECEPTACLE
	DUPLEX EMERGENCY/CRITICAL
	FOURPLEX EMERGENCY/CRITICAL
	DUPLEX–2PORT USB
	4PORT USB
	DISCONNECT SWITCH
	FUSED DISCONNECT SWITCH
	ENCLOSED CIRCUIT BREAKER
	MOTOR STARTER
	COMBINATION MOTOR STARTER
S	COMBINATION SWITCH AND RECEPTACLE
	CONDUIT SEAL OFF
	FIRE RATED POKE–THROUGH
	PARTITION CIRCUIT SPLIT
	POWER POLE
W	SURFACE RACEWAY
M	METER

– NURSE CALL –

SYMBOL	DESCRIPTION
CB	CODE BLUE STATION
CP	CODE PINK STATION
EP	EMERGENCY CALL PULL STATION
SP	SINGLE PATIENT STATION
SA	STAFF ASSIST STATION
AI	AUXILIARY INPUT STATION
DS	DUTY STATION
SS	STAFF STATION
BI	BED INTERFACE STATION
2B	TWO BUTTON STATION
BM	BED MANAGEMENT STATION
D	DOME LIGHT
Z	ZONE LIGHT INTERSECTION
RL	REMOTE LOCATOR
PM	PATIENT MONITOR

– LIGHTING – (REFER TO LUMINAIRE SCHEDULE)

SYMBOL	DESCRIPTION
X * #	LUMINAIRES X = FIXTURE DESIGNATION # = BRANCH CIRCUIT NUMBER * = SWITCH LEG IDENTIFIER
	SHADING INDICATES LUMINAIRE ON LIFE SAFETY
	SHADING INDICATES PORTION OF LUMINAIRE ON LIFE SAFETY
	WALL MOUNTED LUMINAIRE
	STRIP LIGHT
	STRIP LIGHT WITH LIFE SAFETY
	POLE MOUNTED LUMINAIRE (QUANTITY OF LUMINAIRES PER POLE AS INDICATED ON PLANS)
	DOWNLIGHT LUMINAIRE
	WALL WASHER LUMINAIRE
	ADJUSTABLE LUMINAIRE
	PENDANT LUMINAIRE
	TRACK LIGHTING
P	PHOTOCELL
	EXIT LIGHT (WITH FACES AND DIRECTION ARROWS INDICATED)
	WALL MOUNTED EXIT LIGHT (WITH FACES AND DIRECTION ARROWS INDICATED)
	WALL MOUNTED BATTERY PACK EMERGENCY LIGHT

– GROUNDING SYMBOLS –

SYMBOL	DESCRIPTION
	GROUND TEST WELL
	GROUNDING CONDUCTOR
	LIGHTNING PROTECTION AIR TERMINAL
	BONDING POINT
G	GROUND BAR
	ELECTRICAL GROUND
	GROUND ROD
	GROUND ROD WITH INSPECTION TEST WELL
	PIGTAIL

– EQUIPMENT –

SYMBOL	DESCRIPTION
	DISTRIBUTION PANEL
	EXISTING DISTRIBUTION PANEL
	NEW PANEL, FLUSH MOUNTED
	EXISTING PANEL, FLUSH MOUNTED
	NEW PANEL, SURFACE MOUNTED
	EXISTING PANEL, SURFACE
T	TRANSFORMER

– ABBREVIATIONS –

(E)	EXISTING
(N)	NEW
(PART)	PARTIAL CIRCUIT
A	AMP
AC	ABOVE COUNTER TOP
AF	AMP FRAME, AMP FUSE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPS INTERRUPTING CAPACITY
AL	ALUMINUM
APL	APPLIANCE
AS	AMP SWITCH
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIOVISUAL
BJ	BONDING JUMPER
C	CONDUIT
CB	CIRCUIT BREAKER
CCT	CIRCUIT
CCTV	CLOSED CIRCUIT T.V.
CLG	CEILING
CU	COPPER
DISC	DISCONNECT
DIST	DISTRIBUTION
E/G	ENGINE/GENERATOR
ELEC	ELECTRIC, ELECTRICAL
ELEV	ELEVATOR ELEVATION
EM	EMERGENCY
EQPT	EQUIPMENT
F	FUSE
FA	FIRE ALARM
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FIXT	FIXTURE
FO	FIBER OPTIC
FLR	FLOOR
FLUOR	FLUORESCENT
G	GROUND (EQUIPMENT)
GEN	GENERATOR
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GF	GROUND FAULT PROTECTION
GND	GROUND
HC	HANDICAPPED
HG	HOSPITAL GRADE
HP	HORSEPOWER
HV	HIGH VOLTAGE
INC	INCANDESCENT
IDF	INTERMEDIATE DISTRIBUTION FRAME
IG	ISOLATED GROUND
JB	JUNCTION BOX
LED	LIGHT EMITTING DIODE
LTG	LIGHTING
LV	LOW VOLTAGE
MATV	MASTER ANTENNA T.V.
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDF	MAIN DISTRIBUTION FRAME
MH	MANHOLE
MLO	MAIN LUGS ONLY
MOP	METHOD OF PROCEDURE
MTD	MOUNTED
MTG	MOUNTING
MTR	MOTOR
MV	MEDIUM VOLTAGE
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NF	NON–FUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
OHE	OVERHEAD ELECTRIC
P	POLE
PA	PUBLIC ADDRESS
PB	PULL BOX
PH	PHASE
PNL	PANEL
PWR	POWER
RCPT(S)	RECEPTACLE(S)
SBC	STRANDED BARE COPPER
SPD	SURGE PROTECTIVE DEVICE
SW	SWITCH
TEL	TELEPHONE
TP	TAMPERPROOF
TV	TELEVISION
UF	UNDERFLOOR
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTAGE
VFD	VARIABLE FREQUENCY DRIVE
VP	VAPOR PROOF
W	WIRE
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

APPLICABLE CODES

AHJ: STATE OF COLORADO

FIRE AUTHORITY: WEST METRO FIRE DISTRICT

REMODEL ☒ NEW ☐

YEAR	CODE
2021	INTERNATIONAL BUILDING CODE
2021	INTERNATIONAL MECHANICAL CODE
2021	INTERNATIONAL PLUMBING CODE
2021	INTERNATIONAL ENERGY CODE
2021	INTERNATIONAL FIRE CODE
2023	NATIONAL ELECTRICAL CODE
2021	INTERNATIONAL ENERGY CONSERVATION CODE

IS THE BUILDING FULLY SPRINKLERED? ☒ YES ☐ NO

IS THE BUILDING FULLY DETECTED? ☐ YES ☒ NO

– GRAPHIC SYMBOLS –

SYMBOL	DESCRIPTION
1	KEY NOTE
1	REVISION NUMBER
X	DETAIL NOTE
X	X = DENOTES ALL LUMINAIRES IN THE RESPECTIVE AREA ARE THE TYPE INDICATED, REFER TO LUMINAIRE SCHEDULE
TAG	PANEL FLAG
TAG	OWNER EQUIPMENT TAG
S# X	LIGHTING CONTROL SEQUENCE INDICATION, SEE LIGHTING CONTROL SEQUENCE OF OPERATION SCHEDULE FOR INFORMATION X = DENOTES ILLUMINATION SET POINT
TAG	MECHANICAL EQUIPMENT TAG
	SHADING INDICATES EQUIPMENT
	HATCHING INDICATES ITEM(S) TO BE REMOVED
A100	ROOM NUMBER
N	NORTH ARROW
1 / E2.1	DETAIL BUBBLE DETAIL NUMBER SHEET NUMBER – WHERE DETAIL IS SHOWN
2 / E2.2	SECTION CUT SECTION NUMBER/LETTER SHEET NUMBER – WHERE SECTION IS SHOWN

GENERAL NOTES

SPECIFICATIONS ARE A PART OF THE CONSTRUCTION DOCUMENTS. SHOULD ANY CONFLICT ARISE BETWEEN THE DRAWINGS AND SPECIFICATIONS, BRING SUCH CONFLICT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION. UNLESS OTHERWISE DIRECTED BY ENGINEER, THE MOST STRINGENT REQUIREMENT WILL PREVAIL.

DATA ON THE DRAWINGS IS AS EXACT AS COULD BE REASONABLY SECURED. ABSOLUTE ACCURACY IS NOT GUARANTEED. VERIFY EXACT LOCATIONS, MEASUREMENTS, LEVELS, SPACE REQUIREMENTS, POTENTIAL CONFLICTS WITH OTHER TRADES. ADAPT WORK TO ACTUAL CONDITIONS AT THE SITE. BEFORE SUBMITTING COSTS VISIT THE SITE TO BECOME THOROUGHLY FAMILIAR WITH THE ACTUAL CONDITIONS OF THIS PROJECT. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE; DO NOT SCALE. THESE DRAWINGS DO NOT SHOW MATERIALS FOR A COMPLETE INSTALLATION; PLAN THE INSTALLATION AND LAYOUT OF THE WORK AS DIAGRAMMED IN THESE DOCUMENTS. REFER TO FLOOR PLANS, SCHEMATICS AND DIAGRAMS OF OTHER TRADES FOR ELECTRICAL REQUIREMENTS, BRANCH CIRCUITS AND OTHER ELECTRICAL CONNECTIONS NOT INDICATED ON THESE DOCUMENTS.

FIRE–SEAL ALL PENETRATIONS THROUGH RATED WALLS AND FLOORS WITH MATERIALS CAPABLE OF PREVENTING THE PASSAGE OF FLAMES AND HOT GASES WHEN SUBJECTED TO THE REQUIREMENTS OF THE TEST STANDARD SPECIFIC FOR FIRE STOPS ASTM E814.

JUNCTION BOXES FOR LUMINAIRES AND OUTLETS ARE NOT INDICATED. PROVIDE THE PROPER NUMBER OF JUNCTION BOXES TO MEET LOCAL CODE AND NATIONAL ELECTRICAL CODE.

EXECUTE THE WORK IN ACCORDANCE WITH SUPPORTING OBJECTS FOR SEISMIC ZONE REQUIRED BY STATE AND LOCAL CODES ALL CEILING ATTACHED OBJECTS AND FLOOR ATTACHED EQUIPMENT INCLUDING, BUT NOT LIMITED TO: PENDANT LIGHTING FIXTURES, GENERAL LIGHTING, MULTIPLE RACEWAYS, GENERATOR, TRANSFORMER, ELECTRICAL SWITCHGEAR, SWITCHBOARDS AND OTHER ELECTRICAL EQUIPMENT.

WHERE DISCONNECTS ARE INDICATED ON DRAWINGS PROVIDE FINAL CONNECTION TO EQUIPMENT BEING SERVED BY DISCONNECT. DISCONNECTING MEANS FOR ALL MECHANICAL EQUIPMENT SHALL BE ACCESSIBLE AND HAVE THE CLEARANCE REQUIRED BY NEC.

UP–TO–DATE ELECTRICAL RECORD DRAWINGS ARE NOT AVAILABLE FOR THIS PROJECT. INFORMATION FOR EXISTING CIRCUITRY IS BASED ON EXISTING PANEL DIRECTORIES, AVAILABLE DRAWINGS, AND ASSUMPTIONS. LOCATIONS AND INFORMATION FOR EXISTING ELECTRICAL DEVICES AND EQUIPMENT SHOWN ON THESE DOCUMENTS ARE APPROXIMATE AND WERE DERIVED FROM FIELD OBSERVATION AND AVAILABLE RECORD DRAWINGS. VERIFY ACTUAL FIELD CONDITIONS PRIOR TO STARTING WORK.

REV.	DATE	DESCRIPTION
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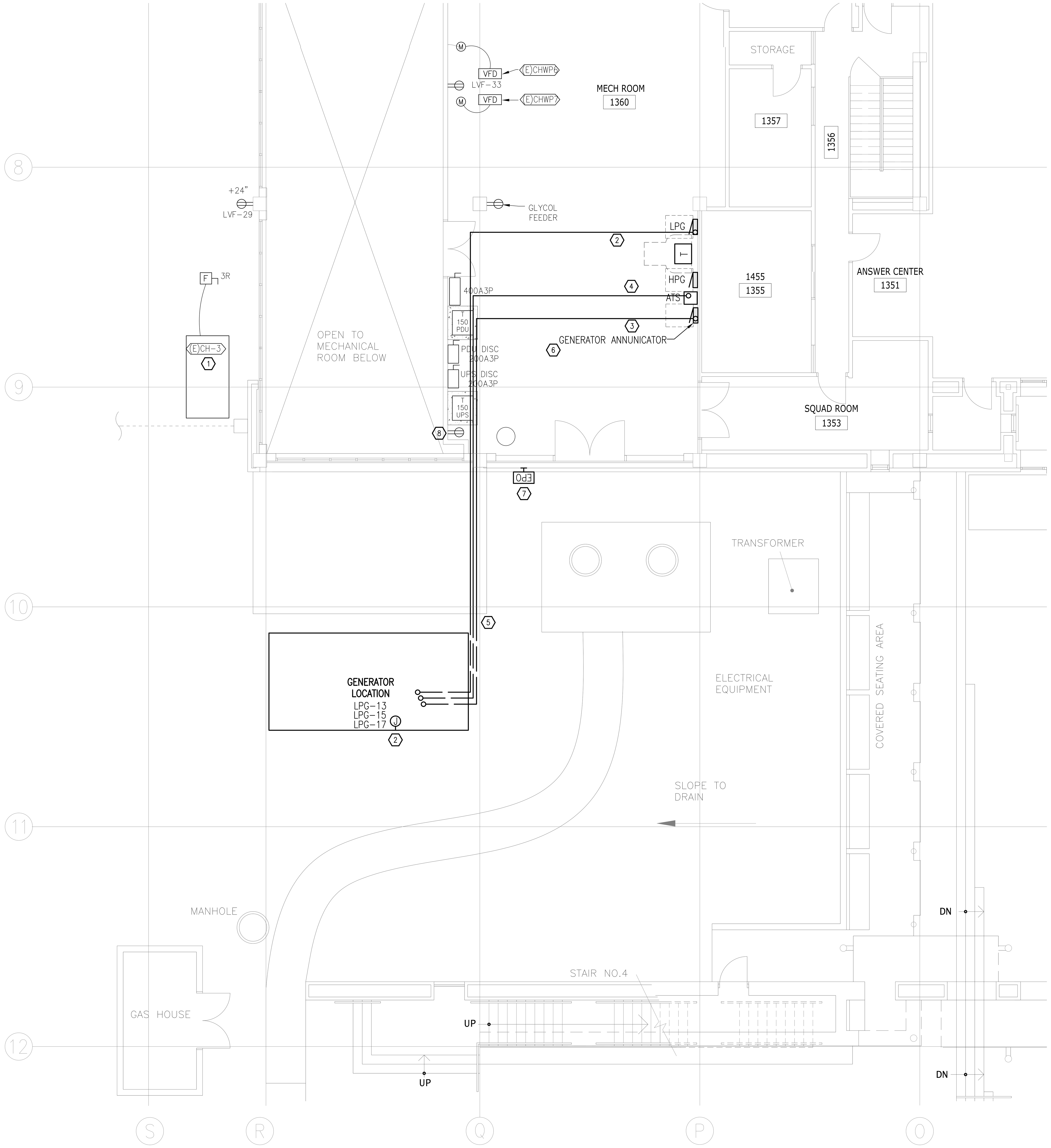
RED ROCKS COMMUNITY COLLEGE
GENERATOR ADDITION
13300 W. 6TH AVE., LAKEWOOD, CO 80228

ELECTRICAL LEGEND

DATE: JULY 26, 2024
SCALE: NONE
DESIGN BY: CPB
DRAWN BY: EXE
APPROVED BY: SB
PRJ. NO.: 21098

SHT.NO. E00
REVISION –



1 E01 ELECTRICAL SITE PLAN
SCALE: 3/16" = 1'-0"

SHEET NOTES

1. LIGHT LINE WEIGHT INDICATES EXISTING. HEAVY LINE WEIGHT INDICATES NEW CONSTRUCTION.
2. INCLUDE ALL COST, LABOR, MATERIAL, SERVICE ENTRANCE INSTALLATION, CONNECTION, FINAL TERMINATION, START-UP, TESTING, PERMIT FEES, AND ALL OTHER APPLICABLE FEES.
3. LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO TRENCHING AND INSTALL ALL UNDERGROUND RACEWAYS IN MOST FEASIBLE LOCATION.
4. COORDINATE ELECTRICAL EQUIPMENT LOCATIONS AND UNDERGROUND ROUTING WITH UTILITIES AND OTHER TRADES PRIOR TO TRENCHING AND SETTING EQUIPMENT PADS.
5. PATCH AND PAINT ANY DAMAGED SURFACES DUE TO DEMOLITION AND CONSTRUCTION TO MATCH EXISTING CONDITIONS.
6. PROVIDE ALL TRENCHING, BACKFILL AND SAW CUTTING. RETURN ALL LANDSCAPING, PAVEMENT, AND FLATWORK BACK TO ITS ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE OWNER.
7. UNLESS OTHERWISE INDICATED, ALL CONDUCTORS FOR BRANCH CIRCUITS SHALL BE #12 AWG PROTECTED BY 20-AMPERE CIRCUIT BREAKERS. INCREASE CONDUCTOR SIZE TO ACCOUNT FOR VOLTAGE DROP FOR ALL 120-VOLT CIRCUITS OVER 75 FEET, AND ALL 277-VOLT CIRCUITS OVER 150 FEET TO THE FIRST OUTLET. CONDUCTOR SIZE SHALL BE UNIFORM FOR THE ENTIRE LENGTH OF THE CIRCUIT UNLESS NOTED OTHERWISE. HOMERUNS WHICH INDICATE UPGRADING CIRCUIT CONDUCTORS FOR VOLTAGE DROP, E.G., #10AWG WIRE ON 20-AMPERE CIRCUIT, SHALL HAVE THE CONDUCTOR SIZE INDICATED CARRIED THROUGHOUT THE CIRCUIT TO ALL JUNCTION BOXES UP TO AND INCLUDING THE J-BOX NEAREST THE LAST DEVICE OR LUMINAIRE.

KEY NOTES

(1) REFEED EXISTING EQUIPMENT FROM NEW GENERATOR BACKED PANELBOARDS.

(2) PROVIDE A 1" CONDUIT AND DEDICATED CIRCUITS FOR CONNECTION TO GENERATOR BATTERY CHARGER, BLOCK HEATER, AND LIGHTING/RECEPTACLE. COORDINATE FINAL REQUIREMENTS WITH SELECTED GENERATOR.

(3) PROVIDE 1" CONDUIT BETWEEN THE GENERATOR AND ANNUNCIATOR PANEL. COORDINATE CONDUCTOR/CABLE REQUIREMENTS WITH THE SELECTED GENERATOR.

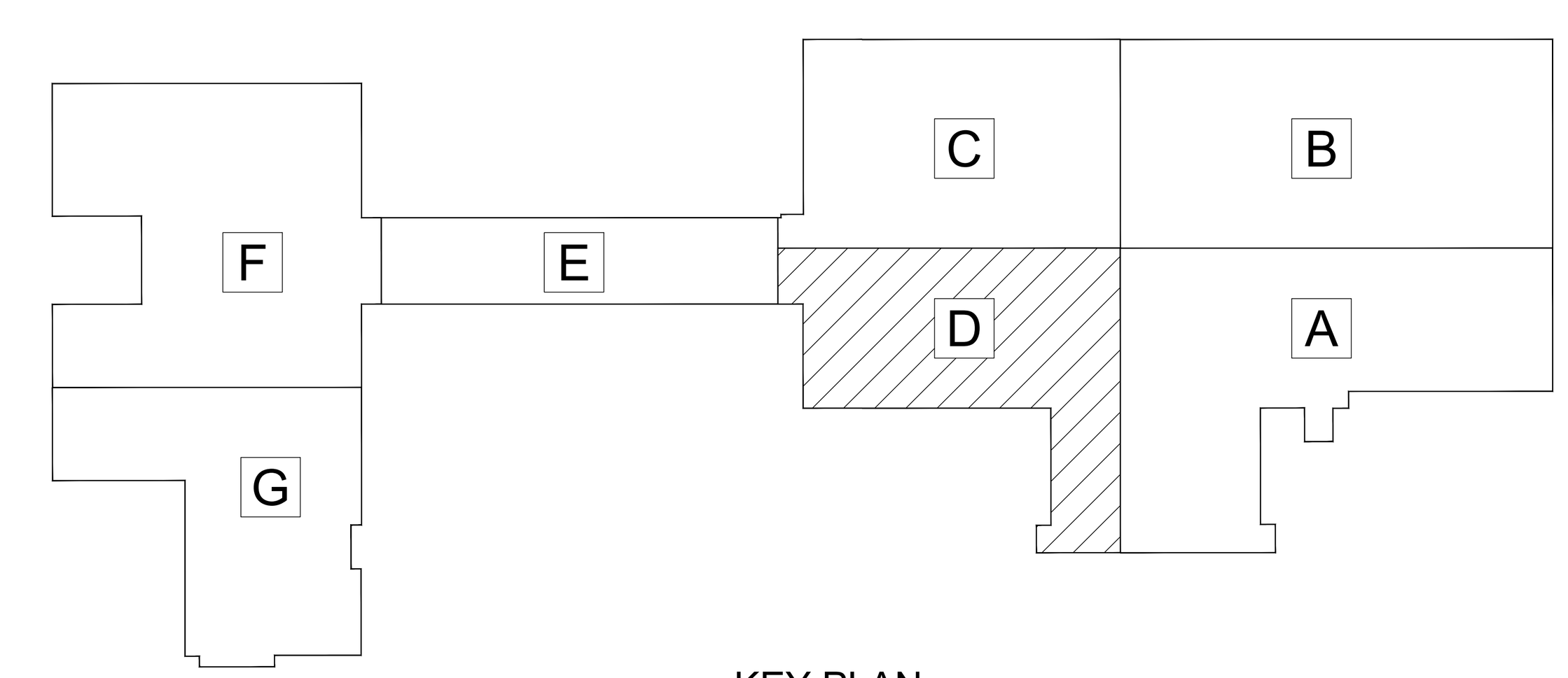
(4) PROVIDE 2 2-1/2" CONDUITS BETWEEN THE GENERATOR AND ATS. SEE ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION ON POWER FEEDER. COORDINATE CONTROLS CONDUCTOR/CABLE REQUIREMENTS WITH THE SELECTED GENERATOR.

(5) PROVIDE PENETRATIONS AND SEALS THROUGH EXISTING FOUNDATION WALL.

(6) INTEGRATE GENERATOR ANNUNCIATOR AND EXISTING BAS. COORDINATE INTEGRATION WITH OWNER, CAMPUS IT DEPARTMENT, AND OWNER'S CONTROLS CONTRACTOR, UNIVERSAL CONTROLS.

(7) PROVIDE GENERATOR EMERGENCY POWER OFF (EPO) BUTTON WITH WEATHER-PROOF ENCLOSURE.

(8) REPLACE EXISTING RECEPTACLE WITH A GFCI RECEPTACLE. MAINTAIN THE EXISTING CIRCUIT.



KEY PLAN

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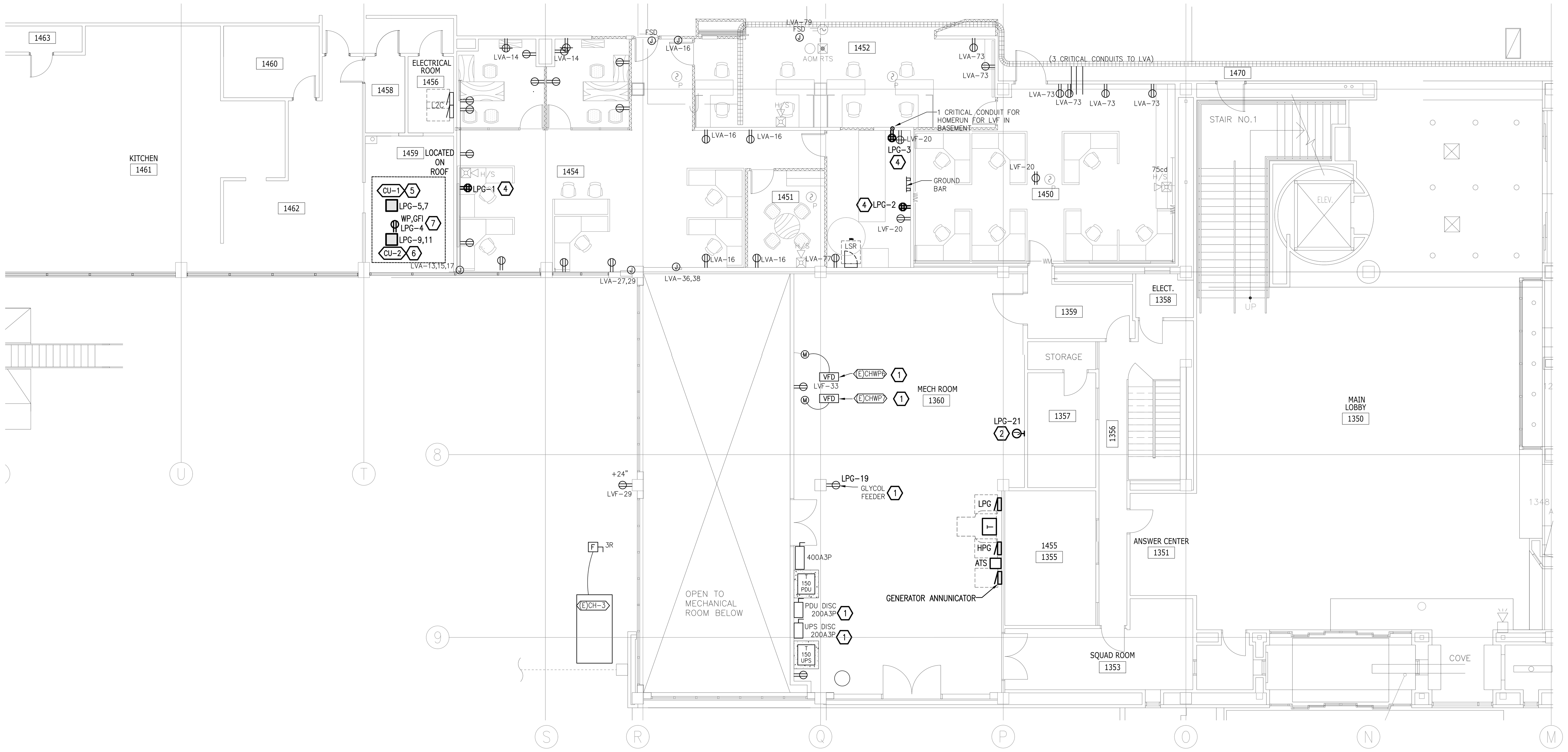
13300 W. 6TH AVE., LAKEWOOD, CO 80228

ELECTRICAL SITE PLAN

DATE: JULY 26, 2024
SCALE: 3/16" = 1'-0"
DESIGN BY: CPB
DRAWN BY: EE
APPROVED BY: SB
PRJ. NO: 21098

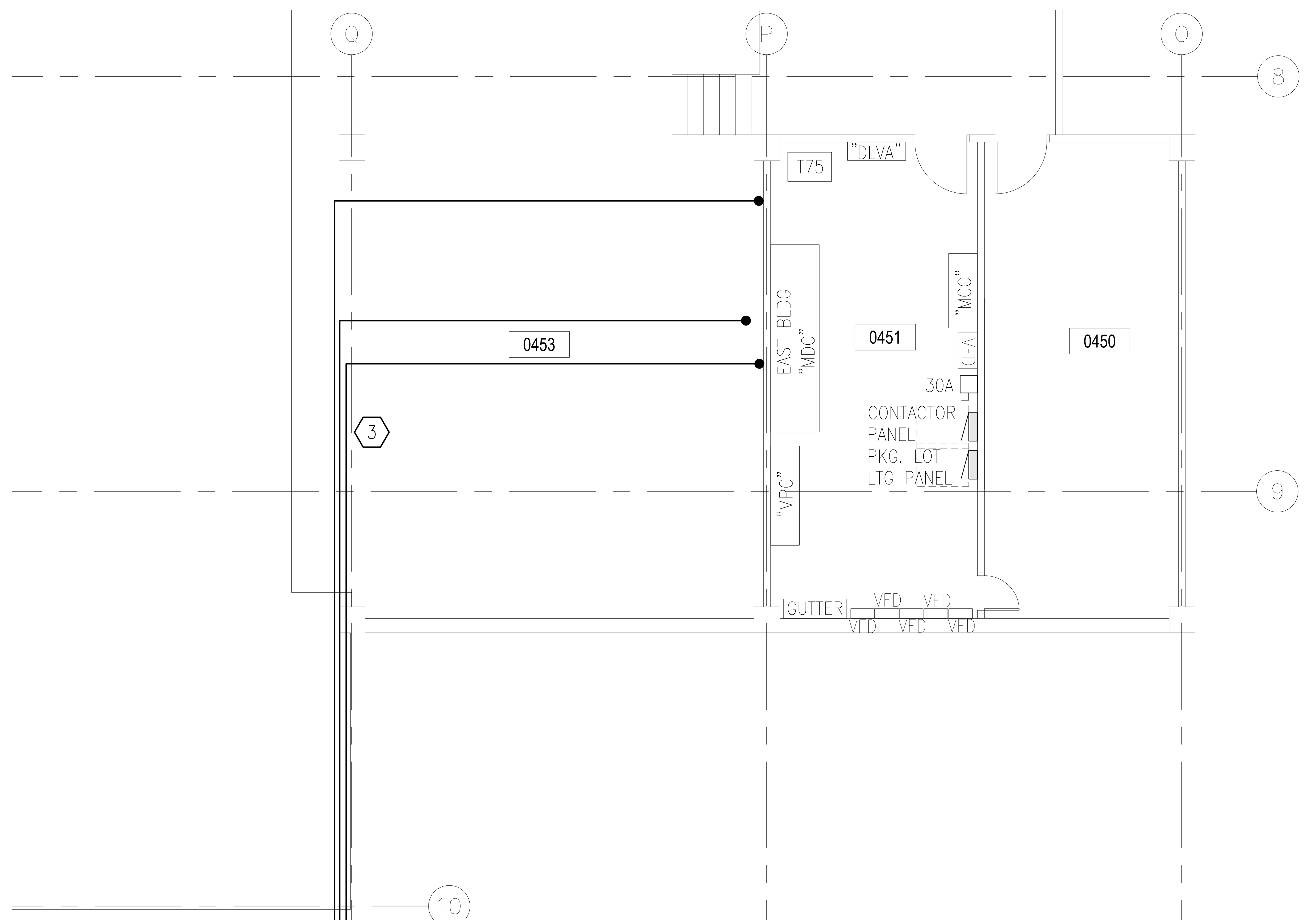
SHT.NO. E01

REVISION –



ELECTRICAL FLOOR PLAN – LEVEL 1

1 / E10 — SCALE: 1/8"=1'-0"



ELECTRICAL FLOOR PLAN – BASEMENT

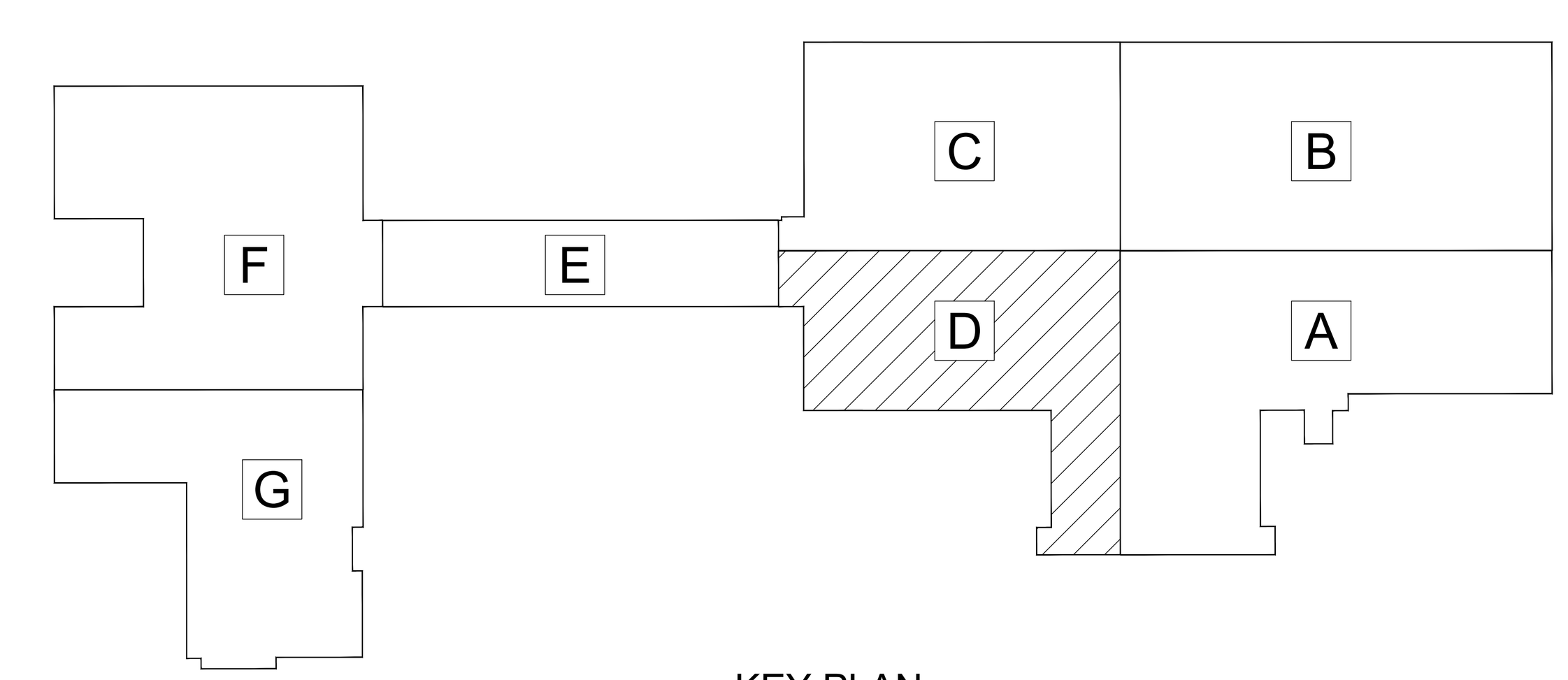
2 / E10 — SCALE: 1/4"=1'-0"

SHEET NOTES

1. LIGHT LINE WEIGHT INDICATES EXISTING. HEAVY LINE WEIGHT INDICATES NEW CONSTRUCTION.
2. PATCH AND PAINT ANY DAMAGED SURFACES DUE TO DEMOLITION AND CONSTRUCTION TO MATCH EXISTING CONDITIONS. SEAL ALL PENETRATIONS THROUGH RATED CEILINGS AND WALLS WITH UL LISTED SEALANTS AND FIRESTOPPING MATERIALS.
3. UPDATE PANEL SCHEDULES TO REFLECT INSTALLED CONDITIONS AFTER CONSTRUCTION IS COMPLETE.
4. EXISTING CIRCUIT INFORMATION SHOWN ON THE PLANS IS FOR REFERENCE ONLY. TRACE ALL EXISTING CIRCUITS AFFECTED BY THIS WORK TO CONFIRM SOURCE PANEL AND CIRCUIT NUMBERS.
5. THESE DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. DATA PRESENTED ON THIS DRAWING IS AS ACCURATE AS CAN BE DETERMINED, BUT ACCURACY IS NOT GUARANTEED. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, THE ENGINEER IS NEITHER RESPONSIBLE FOR ITS ACCURACY, NOR ERRORS NOR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED INTO THESE DOCUMENTS. FIELD VERIFICATION OF ALL AFFECTED COMPONENTS IS REQUIRED.
6. UNLESS OTHERWISE INDICATED, ALL CONDUCTORS FOR BRANCH CIRCUITS SHALL BE #12 AWG PROTECTED BY 20-AMPERE CIRCUIT BREAKERS. INCREASE CONDUCTOR SIZE TO ACCOUNT FOR VOLTAGE DROP FOR ALL 120-VOLT CIRCUITS OVER 75 FEET, AND ALL 277-VOLT CIRCUITS OVER 150 FEET TO THE FIRST OUTLET. CONDUCTOR SIZE SHALL BE UNIFORM FOR THE ENTIRE LENGTH OF THE CIRCUIT UNLESS NOTED OTHERWISE. HOMERUNS WHICH INDICATE UPGRADING CIRCUIT CONDUCTORS FOR VOLTAGE DROP, E.G., #10AWG WIRE ON 20-AMPERE CIRCUIT, SHALL HAVE THE CONDUCTOR SIZE INDICATED CARRIED THROUGHOUT THE CIRCUIT TO ALL JUNCTION BOXES UP TO AND INCLUDING THE J-BOX NEAREST THE LAST DEVICE OR LUMINAIRE.

KEY NOTES

1. REFEED EXISTING EQUIPMENT FROM NEW GENERATOR BACKED PANELBOARDS.
2. PROVIDE 120V, 20A DEDICATED CIRCUIT FOR CONNECTION TO CHILLER AND DATA CENTER CONTROLS. COORDINATE CONNECTION AND FINAL DETAILS WITH THE OWNER AND THE OWNER'S CONTROLS CONTRACTOR, UNIVERSAL CONTROLS.
3. ROUTE NEW CONDUITS THROUGHOUT BASEMENT CEILING SPACE. SEE SITE PLAN FOR ADDITIONAL INFORMATION.
4. PROVIDE GENERATOR BACKED RECEPTACLE FOR CAMPUS IT USE. COORDINATE FINAL LOCATIONS WITH CAMPUS IT STAFF.
5. PROVIDE 208V, 1P, 20A DEDICATED CIRCUIT (3/4"C – 2#12, 1#12G) FOR CONNECTION TO WALK-IN COOLER CONDENSING UNIT. REMOVE EXISTING FEEDER FROM PANEL L2C.
6. PROVIDE 208V, 1P, 30A DEDICATED CIRCUIT (3/4"C – 2#10, 1#10G) FOR CONNECTION TO WALK-IN FREEZER CONDENSING UNIT. REMOVE EXISTING FEEDER FROM PANEL L2C.
7. PROVIDE WEATHER RESISTANT, GFI RECEPTACLE WITH WHILE-IN-USE COVER.



KEY PLAN

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ELECTRICAL FLOOR PLAN

DATE: JULY 26, 2024
SCALE: VARIES
DESIGN BY: CPB
DRAWN BY: EKE
APPROVED BY: SB
PRJ. NO: 21098

SHT.NO. E10
REVISION –

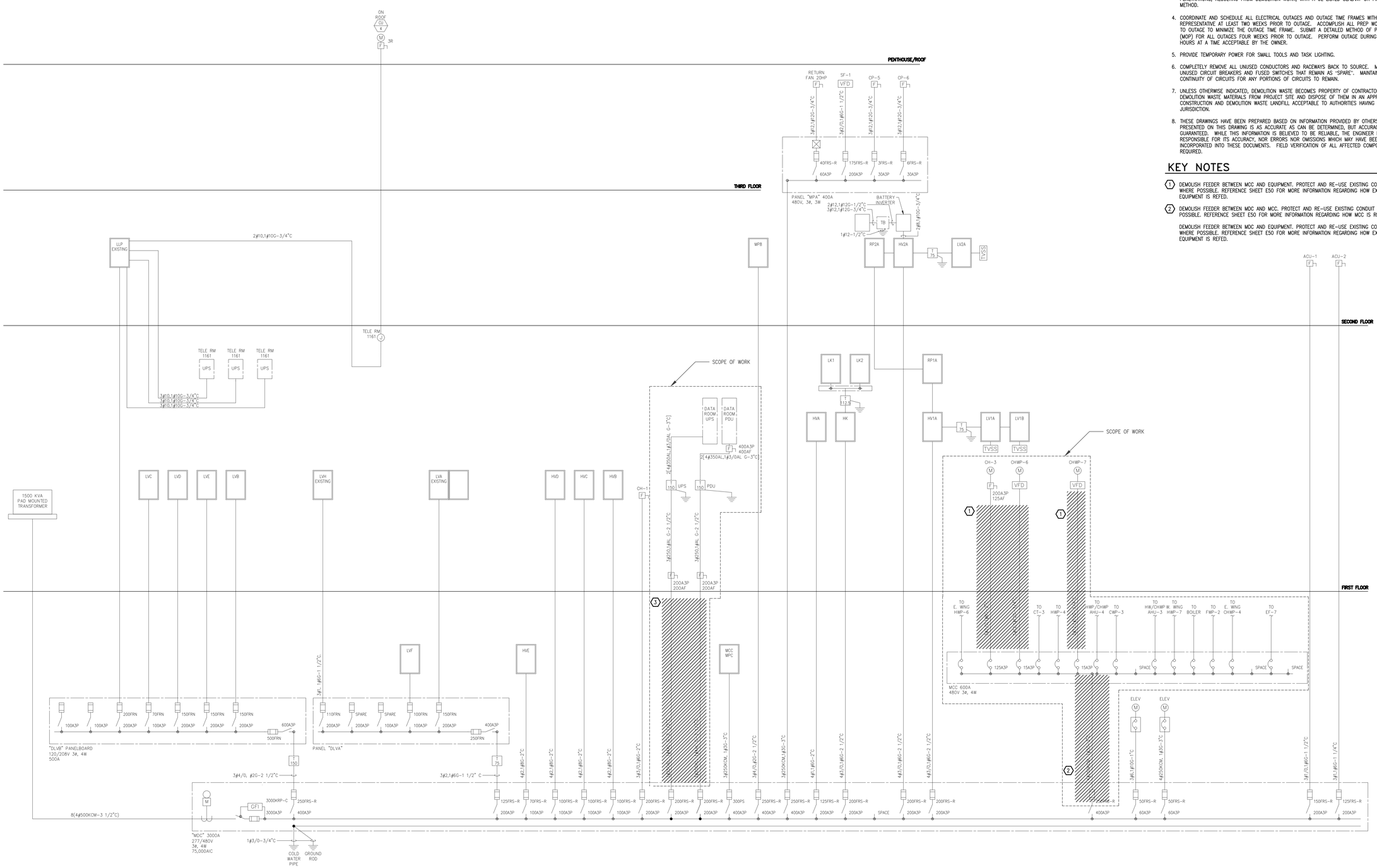
SHEET NOTES

1. LIGHT LINE WEIGHT INDICATES EXISTING. HATCHING INDICATES DEMOLITION.
2. COORDINATE DISPOSAL LOCATION WITH OWNERS REPRESENTAITVE PRIOR TO DISPOSING OF ANY REMOVED ELECTRICAL EQUIPMENT.
3. PATCH AND PAINT ANY DAMAGED SURFACES DUE TO DEMOLITION AND CONSTRUCTION TO MATCH EXISTING CONDITIONS. RESTORE FIRE RATINGS OF ALL WALLS AND CEILINGS BY SEALING ALL PENETRATIONS, RESULTING FROM DEMOLITION WORK, WITH A UL LISTED SEALANT OR FIRESTOPPING METHOD.
4. COORDINATE AND SCHEDULE ALL ELECTRICAL OUTAGES AND OUTAGE TIME FRAMES WITH OWNER'S REPRESENTATIVE AT LEAST TWO WEEKS PRIOR TO OUTAGE. ACCOMPLISH ALL PREP WORK PRIOR TO OUTAGE TO MINIMIZE THE OUTAGE TIME FRAME. SUBMIT A DETAILED METHOD OF PROCEDURE (MOP) FOR ALL OUTAGES FOUR WEEKS PRIOR TO OUTAGE. PERFORM OUTAGE DURING OFF HOURS AT A TIME ACCEPTABLE BY THE OWNER.
5. PROVIDE TEMPORARY POWER FOR SMALL TOOLS AND TASK LIGHTING.
6. COMPLETELY REMOVE ALL UNUSED CONDUCTORS AND RACEWAYS BACK TO SOURCE. MARK UNUSED CIRCUIT BREAKERS AND FUSED SWITCHES THAT REMAIN AS "SPARE". MAINTAIN CONTINUITY OF CIRCUITS FOR ANY PORTIONS OF CIRCUITS TO REMAIN.
7. UNLESS OTHERWISE INDICATED, DEMOLITION WASTE BECOMES PROPERTY OF CONTRACTOR. REMOVE DEMOLITION WASTE MATERIALS FROM PROJECT SITE AND DISPOSE OF THEM IN AN APPROVED CONSTRUCTION AND DEMOLITION WASTE LANDFILL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
8. THESE DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. DATA PRESENTED ON THIS DRAWING IS AS ACCURATE AS CAN BE DETERMINED, BUT ACCURACY IS NOT GUARANTEED. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, THE ENGINEER IS NEITHER RESPONSIBLE FOR ITS ACCURACY, NOR ERRORS NOR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED INTO THESE DOCUMENTS. FIELD VERIFICATION OF ALL AFFECTED COMPONENTS IS REQUIRED.

KEY NOTES

1. DEMOLISH FEEDER BETWEEN MCC AND EQUIPMENT. PROTECT AND RE-USE EXISTING CONDUIT WHERE POSSIBLE. REFERENCE SHEET E50 FOR MORE INFORMATION REGARDING HOW EXISTING EQUIPMENT IS REFED.
2. DEMOLISH FEEDER BETWEEN MDC AND MCC. PROTECT AND RE-USE EXISTING CONDUIT WHERE POSSIBLE. REFERENCE SHEET E50 FOR MORE INFORMATION REGARDING HOW MCC IS REFED.

   DEMOLISH FEEDER BETWEEN MDC AND EQUIPMENT. PROTECT AND RE-USE EXISTING CONDUIT WHERE POSSIBLE. REFERENCE SHEET E50 FOR MORE INFORMATION REGARDING HOW EXISTING EQUIPMENT IS REFED.



ELECTRICAL ONE-LINE DIAGRAM - DEMOLITION
SCALE: NONE

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ELECTRICAL ONE-LINE DIAGRAM - DEMOLITION

DATE: JULY 26, 2024	
SCALE: NONE	
DESIGN BY: CPB	
DRAWN BY: DKE	
APPROVED BY: SB	
PRJ. NO: 21098	
SHT.NO. ED50	REVISION –

Created on 10/15/2025
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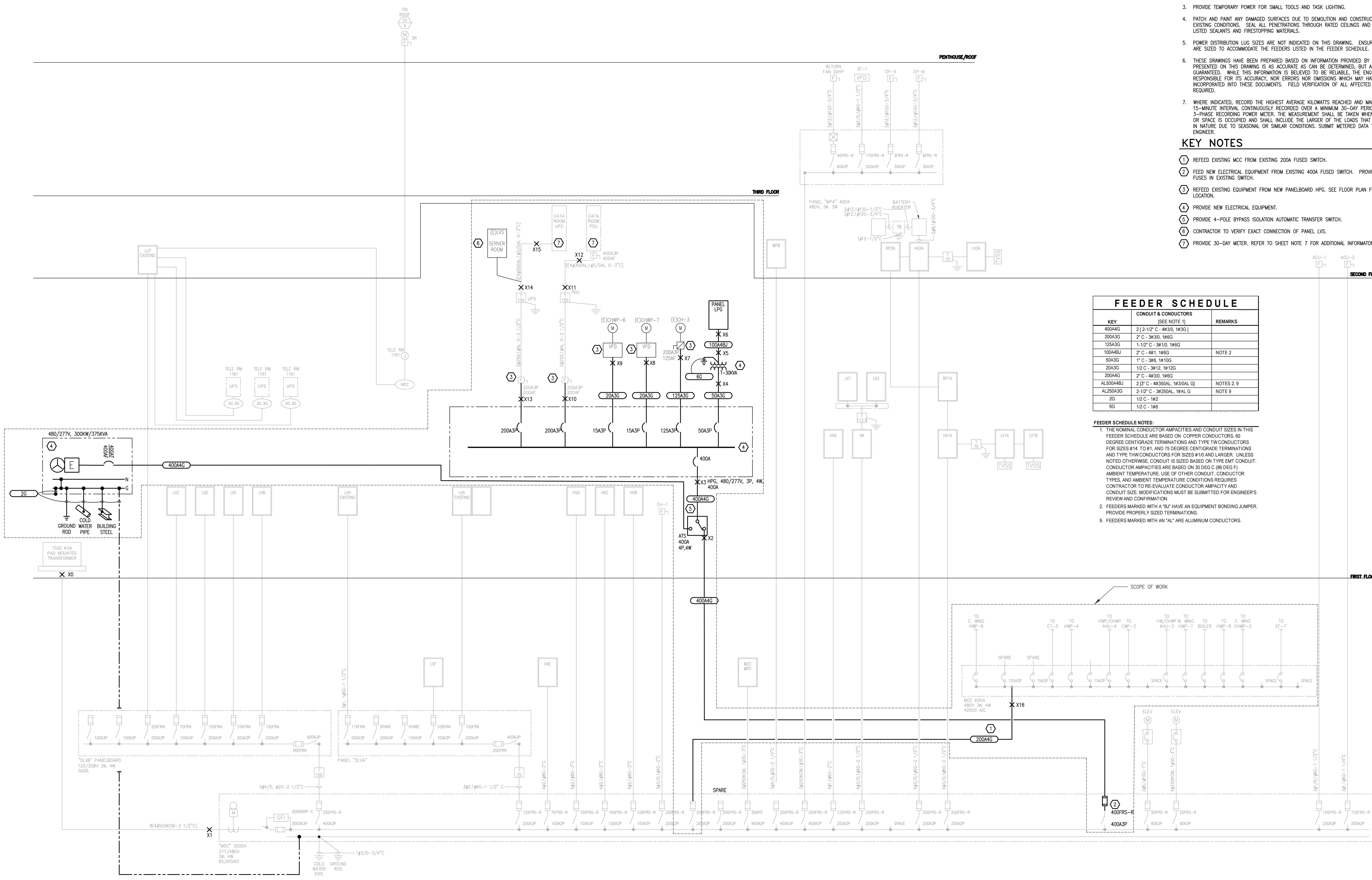
Sheet Date: 10/15/2025
Plotted on 10/17/2025



ELECTRICAL ONE-LINE DIAGRAM

SCALE: NONE

SHEET NOTES

1. LIGHT LINE WEIGHT INDICATES EXISTING. HEAVY LINE WEIGHT INDICATES NEW CONSTRUCTION.
2. COORDINATE AND SCHEDULE ALL ELECTRICAL OUTAGES AND OUTAGE TIME FRAMES WITH OWNER'S REPRESENTATIVE AT LEAST TWO WEEKS PRIOR TO OUTAGE. ACCOMPLISH ALL PREP WORK PRIOR TO OUTAGE TO MINIMIZE THE OUTAGE TIME FRAME. SUBMIT A DETAILED METHOD OF PROCEDURE (MOP) FOR ALL OUTAGES FOUR WEEKS PRIOR TO OUTAGE. PERFORM OUTAGES DURING OFF HOURS AT A TIME ACCEPTABLE BY THE OWNER.
3. PROVIDE TEMPORARY POWER FOR SMALL TOOLS AND TASK LIGHTING.
4. PATCH AND PAINT ANY DAMAGED SURFACES DUE TO DEMOLITION AND CONSTRUCTION TO MATCH EXISTING CONDITIONS. SEAL ALL PENETRATIONS THROUGH RATED CEILINGS AND WALLS WITH UL LISTED SEALANTS AND FIRESTOPPING MATERIALS.
5. POWER DISTRIBUTION LUG SIZES ARE NOT INDICATED ON THIS DRAWING. ENSURE THAT ALL LUGS ARE SIZED TO ACCOMMODATE THE FEEDERS LISTED IN THE FEEDER SCHEDULE.
6. THESE DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. DATA PRESENTED ON THIS DRAWING IS AS ACCURATE AS CAN BE DETERMINED, BUT ACCURACY IS NOT GUARANTEED. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, THE ENGINEER IS NEITHER RESPONSIBLE FOR ITS ACCURACY, NOR ERRORS NOR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED INTO THESE DOCUMENTS. FIELD VERIFICATION OF ALL AFFECTED COMPONENTS IS REQUIRED.
7. WHERE INDICATED, RECORD THE HIGHEST AVERAGE KILOWATTS REACHED AND MAINTAINED FOR A 15-MINUTE INTERVAL CONTINUOUSLY RECORDED OVER A MINIMUM 30-DAY PERIOD USING A 3-PHASE RECORDING POWER METER. THE MEASUREMENT SHALL BE TAKEN WHEN THE BUILDING OR SPACE IS OCCUPIED AND SHALL INCLUDE THE LARGER OF THE LOADS THAT MAY BE PERIODIC IN NATURE DUE TO SEASONAL OR SIMILAR CONDITIONS. SUBMIT METERED DATA TO OWNER AND ENGINEER.

KEY NOTES

1. REFEED EXISTING MCC FROM EXISTING 200A FUSED SWITCH.
2. FEED NEW ELECTRICAL EQUIPMENT FROM EXISTING 400A FUSED SWITCH. PROVIDE NEW 400A FUSES IN EXISTING SWITCH.
3. REFEED EXISTING EQUIPMENT FROM NEW PANELBOARD HPG. SEE FLOOR PLAN FOR EQUIPMENT LOCATION.
4. PROVIDE NEW ELECTRICAL EQUIPMENT.
5. PROVIDE 4-POLE BYPASS ISOLATION AUTOMATIC TRANSFER SWITCH.
6. CONTRACTOR TO VERIFY EXACT CONNECTION OF PANEL LVS.
7. PROVIDE 30-DAY METER. REFER TO SHEET NOTE 7 FOR ADDITIONAL INFORMATON.

FEEDER SCHEDULE

Version 1221

KEY	CONDUIT & CONDUCTORS [SEE NOTE 1]	REMARKS
400A4G	2 [2-1/2" C - 4#3/0, 1#3G]	
200A3G	2" C - 3#3/0, 1#6G	
125A3G	1-1/2" C - 3#1/0, 1#6G	
100A4BJ	2" C - 4#1, 1#6G	NOTE 2
50A3G	1" C - 3#6, 1#10G	
20A3G	1/2 C - 3#12, 1#12G	
200A4G	2" C - 4#3/0, 1#6G	
AL500A4BJ	2 [3" C - 4#350AL, 1#3/0AL G]	NOTES 2, 9
AL250A3G	2-1/2" C - 3#250AL, 1#AL G	NOTE 9
2G	1/2 C - 1#2	
6G	1/2 C - 1#6	

FEEDER SCHEDULE NOTES:

1. THE NOMINAL CONDUCTOR AMPACITIES AND CONDUIT SIZES IN THIS FEEDER SCHEDULE ARE BASED ON COPPER CONDUCTORS, 60 DEGREE CENTIGRADE TERMINATIONS AND TYPE TW CONDUCTORS FOR SIZES #14 TO #1, AND 75 DEGREE CENTIGRADE TERMINATIONS AND TYPE THW CONDUCTORS FOR SIZES #1/0 AND LARGER. UNLESS NOTED OTHERWISE, CONDUIT IS SIZED BASED ON TYPE EMT CONDUIT. CONDUCTOR AMPACITIES ARE BASED ON 30 DEG C (86 DEG F) AMBIENT TEMPERATURE. USE OF OTHER CONDUIT, CONDUCTOR TYPES, AND AMBIENT TEMPERATURE CONDITIONS REQUIRES CONTRACTOR TO RE-EVALUATE CONDUCTOR AMPACITY AND CONDUIT SIZE. MODIFICATIONS MUST BE SUBMITTED FOR ENGINEER'S REVIEW AND CONFIRMATION.
2. FEEDERS MARKED WITH A "BJ" HAVE AN EQUIPMENT BONDING JUMPER. PROVIDE PROPERLY SIZED TERMINATIONS.
9. FEEDERS MARKED WITH AN "AL" ARE ALUMINUM CONDUCTORS.

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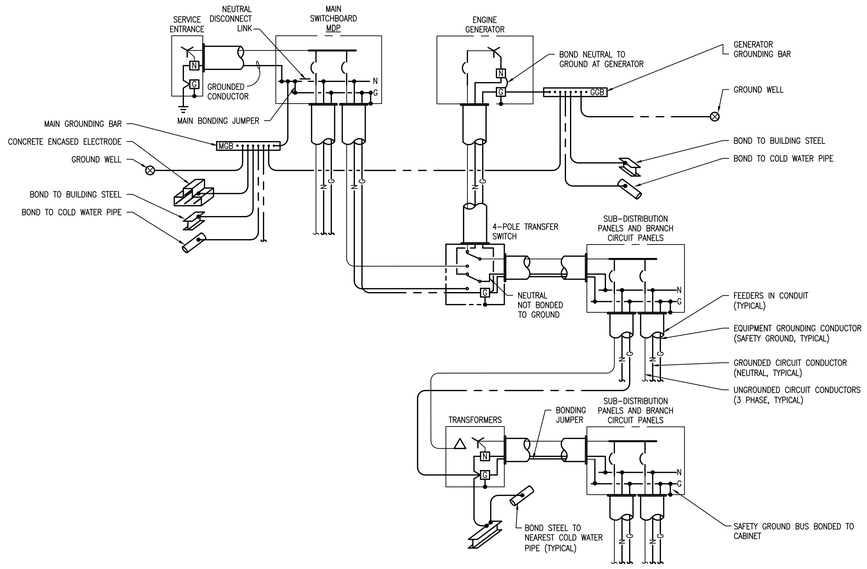
RED ROCKS COMMUNITY COLLEGE GENERATOR ADDITION

13300 W. 6TH AVE., LAKEWOOD, CO 80228

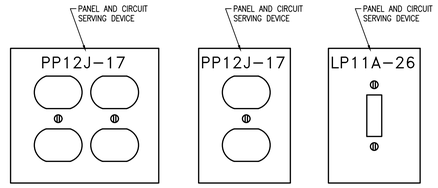
ELECTRICAL ONE-LINE DIAGRAM

DATE: JULY 26, 2024
SCALE: NONE
DESIGN BY: CPB
DRAWN BY: EKE
APPROVED BY: SB
PRJ. NO: 21098

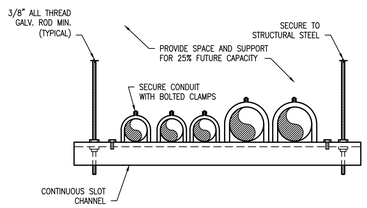
SHT.NO. E50
REVISION –



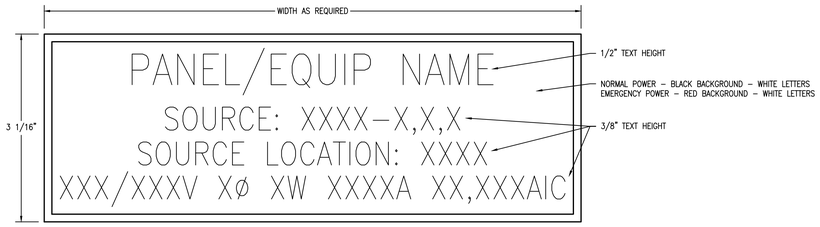
1 / E51 4-POLE TRANSFER SWITCH GROUNDING DIAGRAM
SCALE: NONE



2 / E51 DEVICE LABELING DETAIL
SCALE: NONE
NOTE: LABEL WITH BROTHER "P-TOUCH" SYSTEM. PROVIDE CLEAR OR WHITE TAPE WITH BLACK LETTERING.



3 / E51 CONDUIT SUPPORT DETAIL
SCALE: NONE



4 / E51 PANEL/EQUIPMENT NAMEPLATE DETAIL
SCALE: NTS
NOTE: REWORD NAMEPLATE TO MATCH ACTUAL EQUIPMENT.

REV.	DATE	DESCRIPTION
	10/20/2025	ADD 01 - ISSUED FOR BID
	07/26/24	ISSUED FOR CONSTRUCTION

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RED ROCKS COMMUNITY COLLEGE GENERATOR ADDITION

13300 W. 6TH AVE., LAKEWOOD, CO 80228

ELECTRICAL DETAILS

DATE: JULY 26, 2024
SCALE: NONE
DESIGN BY: CPB
DRAWN BY: EKE
APPROVED BY: SB
PRJ. NO: 21098

SHT.NO. E51
REVISION –

Created on:10/15/2025
File Path: W:\Jobs\21\21098\1Dwgs\AutoCAD\Sheets\21098 - E51.dwg
Saved By: CPB
Plotted on:10/17/2025

Motor Control Center Schedule

Version_0822

NAME: **(E)MCC**

N/A MCB
80% RATED
MLO MAIN LUGS
600 AMP BUS
COPPER BUSING
42000 SYM RMS AMPS PANEL SHORT CIRCUIT RATING
155 AMPS MINIMUM AMPACITY

FED FROM: MDP
LOCATION: MAIN ELECTRICAL ROOM
VOLTAGE: 480Y/277V, 3PH, 4W
HZ: 60

TYPE: INDOOR
DEPTH: 20 INCHES
WIDTH: 20 INCHES PER SECTION
NEUTRAL BUS: YES
GROUND BUS: YES
GENERAL NOTES 1.
2.
3.
4.

CIRCUIT #	EQUIPMENT IDENTIFICATION (SEE NOTE 1)	MOTOR DATA HP	PHASE	TERMINAL VOLTAGE	FLA	CIRCUIT TOTAL kVA	FUNCTIO CODE(S)	NEMA Size STARTER	BREAKER/FUSE SIZE TYPE	OCP SIZE	BRANCH CIRCUIT SIZE	REMARKS
Panel	PANEL		3	460	.0	- -			CB	20 / 3		SEE PANEL SCHEDULE
1E	BOILER	5	3	460	7.6	6.06						- -
2A	HWP-6	10	3	460	14.0	11.15						- -
2B	CT-3	15	3	460	21.0	16.73						- -
2C	HWP/CHWP AHU-4	5	3	460	7.6	6.06						- -
2D	HWP/CHWP AHU-3	5	3	460	7.6	6.06						- -
2E	HWP 8	5	3	460	7.6	6.06						- -
2F	EF-7	2	3	460	3.4	2.71						- -
3B	HWP4	10	3	460	14.0	11.15						- -
3C	CWP-3	10	3	460	14.0	11.15						- -
3D	HWP 7	10	3	460	14.0	11.15						- -
3E	CHWP-2	10	3	460	14.0	11.15						- -

PHASE LOADING SUMMARY

LOAD TYPE	PH A	PH B	PH C	TOTAL	
LIGHTING	0.0	0.0	0.0	0.0	kVA
RECEPTACLE	0.0	0.0	0.0	0.0	kVA
COMPUTER	0.0	0.0	0.0	0.0	kVA
MOTOR	33.1	33.1	33.1	99	kVA
KITCHEN	0.0	0.0	0.0	0.0	kVA
HEAT	0.0	0.0	0.0	0.0	kVA
EQUIPMENT	0.0	0.0	0.0	0.0	kVA
OTHER	0.0	0.0	0.0	0.0	kVA
CONT LOAD	0.0	0.0	0.0	0.0	kVA
NONCOINCIDENT	0.0	0.0	0.0	0.0	kVA
PEAK LOAD	0.0	0.0	0.0	0.0	kVA
TOTAL	33.1	33.1	33.1	99	kVA

Power Factor: 81%
Minimum MCC Ampacity: 155 Amps

LOAD TYPE	CONNECTED LOAD	POWER FACTOR	kVA	DEMAND FACTOR	NEC Calculated LOAD
LIGHTING	0.0 kW @	95%	0.0	125%	0.0 kVA
RCPT 1ST 10 kVA	0.0 kW @	95%	0.0	100%	0.0 kVA
REMAINDER	0.0 kW @	95%	0.0	50%	0.0 kVA
COMPUTER	0.0 kW @	95%	0.0	100%	0.0 kVA
MOTORS LARGEST	13.4 kW @	80%	16.7	125%	20.9 kVA
REMAINDER	66.2 kW @	80%	82.7	100%	82.7 kVA
KITCHEN	0.0 kW @	80%	0.0	100%	0.0 kVA
HEAT	0.0 kW @	100%	0.0	125%	0.0 kVA
EQUIPMENT	0.0 kW @	85%	0.0	100%	0.0 kVA
OTHER	0.0 kW @	85%	0.0	100%	0.0 kVA
CONT LOAD	0.0 kW @	85%	0.0	125%	0.0 kVA
NONCOINCIDENT	0.0 kW @	85%	0.0	0%	0.0 kVA
PEAK LOAD	0.0 kW @	95%	0.0	125%	0.0 kVA
0% SPARE	21.2 kW @	95%	24.9	100%	24.9 kVA
TOTAL	101 kW		124 kVA		129 kVA

Function Code(s):
FVNR = Full Voltage Non-Reversing
FVR = Full Voltage Reversing
2S1W = Two Speed, One Winding
2S2W = Two Speed, Two Winding
VFD = Variable Speed Drive
SSRVS = Solid State Reduced Voltage

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NOTES:
1. COORDINATE ELECTRICAL EQUIPMENT REQUIREMENTS WITH THE ACTUAL MECHANICAL EQUIPMENT SUPPLIED.

DIST BD: **HPG** VOLTAGE: 480Y/277V, 3PH, 4W TYPE: DISTRIBUTION PANEL - CIRCUIT BREAKER
LOCATION: MECHANICAL ROOM 1449 60 HZ MOUNTING: SURFACE
FED FROM: MDC ENCLOSURE: (SEE SPECIFICATIONS)
400 AMP MAIN RATED AT 80% NEUTRAL BUS: YES
N/A AMP MAIN LUGS GROUND BUS: YES ISOLATED GND: NO
400 AMP BUS NOTE: 1.
(SEE SPECIFICATIONS) BUSING 2.
(SEE FAULT SCHEDULE) SYMMETRICAL RMS AMPS 3.
PANEL SHORT CIRCUIT RATING 4.

NOTE	DESCRIPTION	CCT VA	BREAKER AMP / P	CCT	PH	CCT	BREAKER AMP / P	CCT VA	DESCRIPTION	NOTE
	DATA ROOM PDU	16666	200	1	A	2	20	0	SPACE	
		16666			B			0		
		16666	3		C		3	0		
	UPS DIST PANEL	16666	200	3	A	4	20	0	SPACE	
		16666			B			0		
		16666	3		C		3	0		
	CH-3	26600	125	5	A	6	20	0	SPACE	
		26600			B			0		
		26600	3		C		3	0		
	CHWP-6	1273	15	7	A	8	20	0	SPACE	
		1273			B			0		
		1273	3		C		3	0		
	CHWP-7	1273	15	9	A	10	20	0	SPACE	
		1273			B			0		
		1273	3		C		3	0		
	PANEL LPG	3810	50	11	A	12	20	0	SPACE	
		3860			B			0		
		3580	3		C		3	0		
	SPACE	0	20	13	A	14	20	0	SPACE	
		0			B			0		
		0	3		C		3	0		

PANEL LOADING SUMMARY

LOAD TYPE	PH A	PH B	PH C	TOTAL	
LIGHTING	0.0	0.0	0.2	0.2	kVA
RECEPTACLE	1.4	0.4	0.2	2.0	kVA
COMPUTER	0.0	0.0	0.0	0.0	kVA
MOTOR	31.0	31.2	32.4	94.5	kVA
KITCHEN	0.0	0.0	0.0	0.0	kVA
HEAT	0.0	1.0	0.0	1.0	kVA
EQUIPMENT	0.0	0.0	0.0	0.0	kVA
OTHER	33.8	33.8	33.3	101	kVA
CONT LOAD	0.0	0.0	0.0	0.0	kVA
NONCOINCIDENT	0.0	0.0	0.0	0.0	kVA
PEAK LOAD	0.0	0.0	0.0	0.0	kVA
TOTAL	66.3	66.3	66.1	199	kVA

PHASE BALANCE	A-B	B-C	C-A	PF
(%)	100	100	100	83

MIN PANEL AMPACITY 263 AMPERES

NEC DEMAND LOAD SUMMARY

LOAD TYPE	kW		POWER FACT		kVA		DEMAND FACTOR		CALCULATED LOAD	
LIGHTING	0.2	@	95%	=	0.2	@	125%	=	0.3	kVA
RECEPTACLES										
FIRST 10 kVA	1.9	@	95%	=	2.0	@	100%	=	2.0	kVA
REMAINDER	0.0	@	95%	=	0.0	@	50%	=	-	kVA
COMPUTER	0.0	@	95%	=	0.0	@	125%	=	0.0	kVA
MOTORS										
LARGEST	63.8	@	80%	=	79.8	@	125%	=	100	kVA
REMAINDER	11.8	@	80%	=	14.7	@	100%	=	14.7	kVA
KITCHEN	0.0	@	80%	=	0.0	@	100%	=	0.0	kVA
HEAT	1.0	@	100%	=	1.0	@	125%	=	1.3	kVA
EQUIPMENT	0.0	@	85%	=	0.0	@	100%	=	0.0	kVA
OTHER	85.9	@	85%	=	101	@	100%	=	101	kVA
CONT LOAD	0.0	@	85%	=	0.0	@	125%	=	0.0	kVA
NONCOINCIDENT	0.0	@	95%	=	0.0	@	0%	=	-	kVA
PEAK LOAD	0.0	@	90%	=	0.0	@	125%	=	0.0	kVA
0 % Spare	0.0	@	90%	=	0.0	@	100%	=	0.0	kVA
TOTAL	165	kW	90%	=	199	kVA			219	kVA

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PANEL: **LPG** VOLTAGE: 208Y/120V, 3PH, 4W TYPE: PANELBOARD
LOCATION: MECHANICAL ROOM 1449 60 HZ MOUNTING: SURFACE
FED FROM: HPG PANEL COVER: (SEE SPECIFICATIONS)
100 AMP MAIN RATED AT 80% NEUTRAL BUS: YES
N/A AMP MAIN LUGS GROUND BUS: YES ISOLATED GND: NO
100 AMP BUS NOTE: 1.
(SEE SPECIFICATIONS) BUSING 2.
(SEE FAULT SCHEDULE) SYMMETRICAL RMS AMPS 3.
PANEL SHORT CIRCUIT RATING 4.

NOTE	DESCRIPTION	CCT VA	BREAKER AMP / P	CCT	PH	CCT	BREAKER AMP / P	CCT VA	DESCRIPTION	NOTE
	DATA CENTER RECEPTS	360	20 / 1	1	A	2	20 / 1	1080	DATA CENTER RECEPT	
	PHONE RACK RECEPTS	360	20 / 1	3	B	4	20 / 1	180	ROOFTOP RECEPT	
	FREEZER 1	1200	20 / --	5	C	6	20 / 1	0	SPARE	
	"	1200	-- / 2	7	A	8	20 / 1	0	SPARE	
	FREEZER 2	2000	30 / --	9	B	10	20 / 1	0	SPARE	
	"	2000	-- / 2	11	C	12	20 / 1	0	SPARE	
	GEN BATT CHARGER	500	20 / 1	13	A	14	20 / 1	0	SPARE	
	ENGINE BLOCK HEATER	1000	20 / 1	15	B	16	20 / 1	0	SPARE	
	LTG AND RECEPT	380	20 / 1	17	C	18	20 / 1	0	SPARE	
	GLYCOL FEEDER	670	15 / 1	19	A	20	20 / 1	0	SPARE	
	CHILLER& DATA CTR CONTROLS	500	20 / 1	21	B	22	20 / 1	0	SPARE	
	SPARE	0	20 / 1	23	C	24	20 / 1	0	SPARE	
	SPARE	0	20 / 1	25	A	26	20 / 1	0	SPARE	
	SPARE	0	20 / 1	27	B	28	20 / 1	0	SPARE	
	SPARE	0	20 / 1	29	C	30	20 / 1	0	SPARE	
	SPARE	0	20 / 1	31	A	32	20 / 1	0	SPARE	
	SPARE	0	20 / 1	33	B	34	20 / 1	0	SPARE	
	SPARE	0	20 / 1	35	C	36	20 / 1	0	SPARE	
	SPARE	0	20 / 1	37	A	38	20 / 1	0	SPARE	
	SPARE	0	20 / 1	39	B	40	20 / 1	0	SPARE	
	SPARE	0	20 / 1	41	C	42	20 / 1	0	SPARE	

PANEL LOADING SUMMARY

LOAD TYPE	PH A	PH B	PH C	TOTAL	
LIGHTING	0.0	0.0	0.2	0.2	kVA
RECEPTACLE	1.4	0.5	0.2	2.2	kVA
COMPUTER	0.0	0.0	0.0	0.0	kVA
MOTOR	1.9	2.0	3.2	7.1	kVA
KITCHEN	0.0	0.0	0.0	0.0	kVA
HEAT	0.0	1.0	0.0	1.0	kVA
EQUIPMENT	0.0	0.0	0.0	0.0	kVA
OTHER	0.5	0.5	0.0	1.0	kVA
CONT LOAD	0.0	0.0	0.0	0.0	kVA
NONCOINCIDEN	0.0	0.0	0.0	0.0	kVA
PEAK LOAD	0.0	0.0	0.0	0.0	kVA
TOTAL	3.8	4.0	3.6	11.4	kVA

PHASE BALANCE	A-B	B-C	C-A	PF
(%)	95	89	95	86

MIN PANEL AMPACITY 36 AMPERES

NEC DEMAND LOAD SUMMARY

LOAD TYPE	kW		POWER FACT		kVA		DEMAND FACTOR		CALCULATED LOAD	
LIGHTING	0.2	@	95%	=	0.2	@	125%	=	0.3	kVA
RECEPTACLES										
FIRST 10 kVA	2.1	@	95%	=	2.2	@	100%	=	2.2	kVA
REMAINDER	0.0	@	95%	=	0.0	@	50%	=	-	kVA
COMPUTER	0.0	@	95%	=	0.0	@	125%	=	0.0	kVA
MOTORS										
LARGEST	3.2	@	80%	=	4.0	@	125%	=	5.0	kVA
REMAINDER	2.5	@	80%	=	3.1	@	100%	=	3.1	kVA
KITCHEN	0.0	@	80%	=	0.0	@	100%	=	0.0	kVA
HEAT	1.0	@	100%	=	1.0	@	125%	=	1.3	kVA
EQUIPMENT	0.0	@	85%	=	0.0	@	100%	=	0.0	kVA
OTHER	0.9	@	85%	=	1.0	@	100%	=	1.0	kVA
CONT LOAD	0.0	@	85%	=	0.0	@	125%	=	0.0	kVA
NONCOINCIDEN	0.0	@	95%	=	0.0	@	0%	=	-	kVA
PEAK LOAD	0.0	@	90%	=	0.0	@	125%	=	0.0	kVA
0 % SPARE	0.0	@	90%	=	0.0	@	100%	=	0.0	kVA
TOTAL	9.9	kW			11.5	kVA			12.9	kVA

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LOAD SUMMARY: MDP(E)

480Y/277V, 3PH, 4W	AMPS	kVA	kW	PF
BUS SIZE	3000	2494	2369	95%
MAIN OCP	3000	2494	2369	95%
FEEDER AMPACITY	3040	2527	2401	95%
XFMR SIZE	1804	1500	1425	95%
MAXIMUM LOAD CAPACITY	1804	1500	1425	95%
MEASURED PEAK DEMAND	666	554	526	95%
DATE:	4/17/2024			
PEAK DEMAND X 125%	832	692	658	95%
NEC CALCULATED LOAD ADDED	AMPS	kVA	kW	PF
1 RECEPTACLE CIRCUITS	2.2	1.8	1.6	90%
2 GENERATOR ACCESSORIES	2.0	1.7	1.6	95%
TOTAL LOAD ADDED	4.2	3.5	3.2	92%
NET NEW LOAD	837	696	661	95%
REMAINING CAPACITY	968	804	764	

SHORT CIRCUIT CALCULATIONS BASED ON BUSSMANN POINT TO POINT METHOD. Version V_0222

SHORT CIRCUIT SCHEDULE

Fault Contributions

Utility contribution: 1500 kVA, 480 V, 3 PH, 3.5%Z	33,900 A
Total fault current from all sources	33,900 A

Point Fault Calculations

POINT	DESCRIPTION	Required Short Circuit Bracing	Short Circuit Isc SYM RMS	Multiplier M	F Factor	Constant C	Line-Line Voltage V	Length of Run (Note 1)	Available Isc	Xfmr Rated kVA	Xfmr Imped %Z
X1	Service XFMR to MDC	42,000	32,990	0.973	0.028	177,480	480	40	33,900	-----	-----
X2	MDC to ATS	42,000	31,954	0.969	0.032	25,686	480	7	32,990	-----	-----
X3	ATS to HPG	35,000	31,252	0.978	0.022	25,686	480	5	31,954	-----	-----
X4	HPG to PRIMARY 30KVA XFMR	30,000	25,816	0.808	0.238	2,425	480	5	31,954	-----	-----
X5	30KVA XFMR	5,000	2,288	0.089	25.040	-----	-----	-----	25,816	30	3.5
X6	SECONDARY 30KVA XFMR to LPG	5,000	2,258	0.987	0.013	7,292	208	5	2,288	-----	-----
X7	HPG to CH-3	22,000	18,301	0.586	0.708	8,924	480	56	31,252	-----	-----
X8	HPG to CHWP-7	5,000	3,322	0.106	8.408	617	480	46	31,252	-----	-----
X9	HPG to CHWP-6	5,000	2,924	0.094	9.687	617	480	53	31,252	-----	-----
X10	HPG to PRIMARY PDU XFMR	30,000	23,589	0.755	0.325	12,843	480	37	31,252	-----	-----
X11	PDU XFMR	14,000	9,763	0.414	4.576	-----	-----	-----	23,589	150	3.5
X12	SECONDARY PDU XFMR to PDU	10,000	8,640	0.885	0.130	39,406	208	63	9,763	-----	-----
X13	HPG to PRIMARY UPS XFMR	25,000	21,986	0.703	0.421	12,843	480	48	31,252	-----	-----
X14	UPS XFMR	14,000	9,637	0.438	4.265	-----	-----	-----	21,986	150	3.5
X15	SECONDARY UPS XFMR to UPS	10,000	8,480	0.880	0.136	39,406	208	67	9,637	-----	-----
X16	MDC to MCC	35,000	29,688	0.900	0.111	12,843	480	12	32,990	-----	-----
X17	LPG to CU-1	5,000	470	0.208	3.810	617	208	125	2,258	-----	-----
X18	LPG to CU-2	5,000	680	0.301	2.320	981	208	121	2,258	-----	-----

NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR ALL QUANTITIES, FEEDER ROUTING AND INSTALLATION. INDICATED FEEDER LENGTH WAS USED TO CALCULATE FAULT CURRENT AND IS AN APPROXIMATE QUANTITY. IF THE INSTALLED FEEDER LENGTH IS 10% SHORTER OR LONGER THAN THE INDICATED FEEDER LENGTH FAULT CURRENT MUST BE RE-EVALUATED AND REQUIRED BRACING RESIZED.

Generator Size Calculation and Starting Sequence

Generator ID: **Gen**
NFPA 110 Level 2 Class 2 Type 60
System Voltage: 277 / 480 volts, 3 phase, 4 wire
Elevation: 5,800 ft derate 3 % per 1000 ft above 3,300 ft = 93% deration factor for elevation
Ambient temperature: 110 deg F, 43 deg C, derate 1 % per 10°F above 77°F = 97% temperature derate
Net Elevation and Temperature Deration Factor = 89% of nameplate rating

Loads: Sequence #1	Amps	kVA	PF	kW	Harmonic Load? Y/N	Starting kVA Multiplier	Starting kVA
1 UPS	57.7	48.0	100%	48.0	Y	1.2	57.6
2 PDU	57.7	48.0	100%	48.0	Y	1.2	57.6
Sequence #1 Totals	115	96.0	100%	96.0	100%		115

Loads: Sequence #2	Amps	kVA	PF	kW	Harmonic Load? Y/N	Starting kVA Multiplier	Starting kVA
1 CH-3	108	90.0	80%	72.0		2.0	180
2 CHWP-6	4.8	4.0	98%	3.9		2.5	10.0
3 CHWP-7	4.8	4.0	98%	3.9		2.5	10.0
4 CONTROLS CIRCUIT	10.0	8.3	95%	7.9		2.0	16.6
5 GLYCOL FEEDER	0.5	0.4	80%	0.3		6.0	2.3
6 COMPUTER CIRCUITS	12.0	10.0	95%	9.5		2.0	19.9
7 FREEZER 1	6.3	5.2	80%	4.2		3.0	15.7
8 FREEZER 2	6.3	5.2	80%	4.2		3.0	15.7
Sequence #2 Totals	153	127	83%	106			270
Sequence 1 + 2 Totals	268	223	90%	202	48%		493

Sequence Totals: 268 A 223 kVA 202 kW 90% PF 493 Starting kVA
Spare 10% 26.8 A 22.3 kVA 20.2 kW 90% PF 49.3 Starting kVA
Safety Factor 20% 49.1 kVA 44.4 kW 90% PF 109 Starting kVA
Percent Load Harmonics 48%

Net generator size before deration
354 A 294 kVA 266 kW 90% PF 651 Starting kVA

	Minimum Performance at Project Site Amps	kVA	PF	kW	Minimum Starting kVA
Net generator nameplate sizes after deration	396	**329**	90%	**298**	**651**

Note: Verify the size of the generator based on the actual equipment installed, including installation elevation, ambient temperature and humidity. Provide generator according to NFPA 110 Level, Class and Type as indicated on these plans or as specified. Engine generator shall provide required voltage during load starting and running conditions according to the IBC, NFPA 20, 70, 99, 101, 110, and ASME 17.1.

EQUIPMENT SCHEDULE

Version 0623

KEY	EQUIPMENT DESCRIPTION (SEE NOTE 1)	VOLTS	PH	LOAD TYPE	UNIT FLA	UNIT KVA	UNIT KW	PANEL (SEE NOTE 2)	BREAKER SIZE	EQUIPMENT FEEDER	MINIMUM SCCR (kA) (SEE NOTE 1)	STARTER / CONTROLLER TYPE	SIZE	LOCATION	MOTOR FEEDER	LOCAL DISC. SW. (SEE NOTE 3)	DISC. LOCATION (SEE NOTE 4)	REMARKS
CU-1	CONDENSING UNIT	200	1	M	12.0	2.4	1.9	LPG	20	3/4 C - 2#12, 1#12G	5	-	-	AT UNIT	3/4 C - 2#12, 1#12G	20A, 2P	AT UNIT	- -
CU-2	CONDENSING UNIT	200	1	M	20.0	4.0	3.2	LPG	30	3/4 C - 2#10, 1#10G	5	-	-	AT UNIT	3/4 C - 2#10, 1#10G	30A, 2P	AT UNIT	- -

NOTES:
1. COORDINATE ELECTRICAL EQUIPMENT REQUIREMENTS WITH THE ACTUAL MECHANICAL EQUIPMENT SUPPLIED. VERIFY THE COMPONENT OR EQUIPMENT MARKED NAMEPLATE SCCR IS EQUAL TO OR GREATER THAN THE AVAILABLE FAULT CURRENT INDICATED. IF THE NAMEPLATE SCCR IS LESS THAN THE AVAILABLE FAULT CURRENT, PROTECT COMPONENT OR EQUIPMENT TO AVAILABLE SHORT-CIRCUIT CURRENT INDICATED ACCORDING TO ANSI/UL 508A, SUPPLEMENT SB, USING NRTL LISTED COMPONENTS. SUBMIT FOR REVIEW COMPONENTS DATA AND TIME-CURRENT CURVES SUBSTANTIATING COMPLIANCE.
2. REFER TO PANEL SCHEDULES FOR EXACT CIRCUIT NUMBER.
3. IF A FUSE SIZE IS INDICATED, PROVIDE A FUSED DISCONNECT UNLESS INDICATED OTHERWISE.
4. FUSE SIZE INDICATED MUST BE USED IN COMBINATION WITH PROPERLY SIZED OVERLOAD RELAYS. UNLESS INDICATED OTHERWISE, FUSES SHALL BE BUSSMANN LPS-RK OR LPN-RK. CONFIRM ACTUAL NAMEPLATE DATA OF EQUIPMENT AND PROVIDE FUSES RECOMMENDED BY MANUFACTURER.

REV.	DATE	DESCRIPTION
	07/26/24	ISSUED FOR CONSTRUCTION
	10/20/2025	ADD 01 - ISSUED FOR BID

RMH GROUP
Denver // Phoenix
12600 West Colfax Avenue
Suite A-400
Lakewood, Colorado 80215
Phone 303-239-0909
www.rmhgroup.com © 2024
making a difference through engineering SM
Mechanical • Electrical
Industrial • Sustainability

RED ROCKS COMMUNITY COLLEGE
GENERATOR ADDITION
13300 W. 6TH AVE., LAKEWOOD, CO 80228

ELECTRICAL SCHEDULES

DATE: JULY 26, 2024
SCALE: NONE
DESIGN BY: CPB
DRAWN BY: EKE
APPROVED BY: SB
PRJ. NO: 21098

SHT.NO. E60
REVISION –

Enclosures

Image shown may not reflect actual configuration.

DG350 – DG500
Sound Attenuated Enclosures

US Sourced
Gas Generator Set
350 – 500 ekW 60 Hz

Features

Robust/Highly Corrosion Resistant Construction

- Factory installed on skid base
- Environmentally friendly, polyester powder baked paint
- 14 gauge steel
- Interior zinc plated fasteners
- Exterior stainless steel fasteners
- Internally mounted exhaust silencing system
- Designed and tested to comply with UL 2200 Listed generator set package
- Steel enclosures designed for 150 mph
- Compression door latches providing solid door seal

Excellent Access

- Large cable entry area for installation ease
- Accommodates side mounted single or multiple breakers
- Three doors on both sides
- Vertically hinged allow 180° opening rotation and retention with door stays
- Coolant drains piped to the exterior of the enclosure base
- Radiator fill cover

Security and Safety

- Lockable access doors which give full access to control panel and breaker
- Cooling fan and battery charging alternator fully guarded
- Oil fill and battery can only be reached via lockable access
- Externally mounted emergency stop button
- Designed for spreader bar lifting to ensure safety
- Stub-up area is rodent proof

Transportability

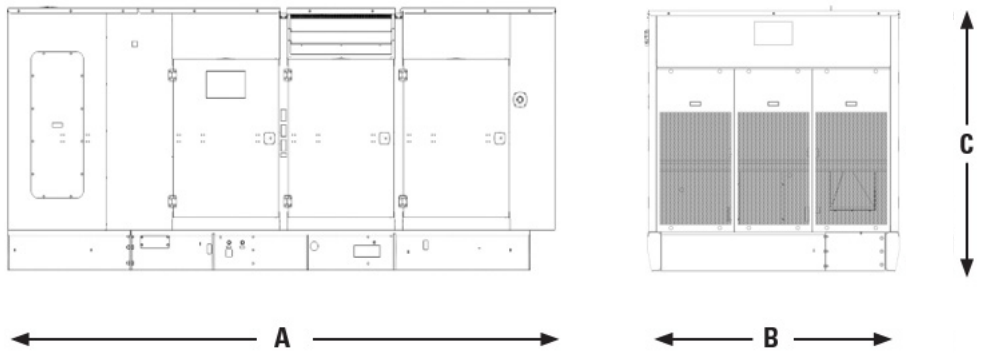
These enclosures are of extremely rugged construction to withstand outdoor exposure and rough handling common on many construction sites.

Options

- Enclosure constructed with 14 gauge steel
- Enclosure constructed with 12 gauge aluminum (5052 grade)
- Caterpillar yellow or white paint
- Seismic certification per applicable building codes: IBC 2018, CBC 2007, CBC 2010
- IBC Certification for 180 mph wind loading#
- DC lighting package
- 5 kW Canopy space heater to facilitate compliance with NFPA 110
- Motorized louvers and gravity discharge damper
- 125A Load Center
- LHS or RHS or both mounted GFCI outlets

Applicable to Aluminum Enclosures only.

Enclosures



Weights and Dimensions

Enclosure Type	Genset Model	Length "L"		Width "W"		Height "H"		Package Weight	
		mm	in	mm	in	mm	in	kg	lb
Sound Attenuated Level-2	DG350 to DG500	5245	206	2196	86	2251	89	6342	13982
Sound Attenuated Level-2 Cold Weather		5245	206	2196	86	2251	89	6475	14275
Weather Protective		5245	206	2196	86	2251	89	6114	13479
Sound Attenuated Level-2 (AI)		5245	206	2196	86	2251	89	5505	12136
Sound Attenuated Level-2 Cold Weather (AI)		5245	206	2196	86	2251	89	5812	12813

Enclosure Sound Pressure Levels (SPL) Targets for Sound Attenuated Steel and Aluminum Enclosures.

Genset Models	SPL at 7m (23 ft) at 100% load (L2) dBA
DG350 - DG500	75

(Consult your local Cat dealer for sound data. For deriving aluminum enclosure sound data, add 1 db to steel enclosure data from TMI).

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LEHE20528-02 (04/24)

Cat® DG350
Gas Generator Sets

Image shown might not reflect actual configuration

Engine Model	Cat® CG18 In-line 6, 4-cycle Natural Gas
Bore x Stroke	145 mm x 183 mm (5.7 in x 7.2 in)
Displacement	18.1 L (1106.3 in³)
Compression Ratio	10.5:1
Aspiration	Turbocharged, Air-to-Air Aftercooled
Fuel System	Venturi – Mixer
Governor	Electronic ADEM™ A4 - G2 Class* capable

Model	Standby / Demand Response Power	Emission Strategy
DG350	60 Hz	U.S. EPA Certified for Emergency and Non-Emergency
	350 ekW (437.5 kVA)	

PACKAGE PERFORMANCE

Performance	Standby	Demand Response
Performance Number	EM6247	EM6188
Frequency, Hz	60	
Genset power rating with fan @ 0.8 power factor, ekW	350	
Fuel Consumption		
Utility Fuel Pressure – Standard Pressure, psi#	1.25 – 1.5	
Utility Fuel Pressure – Low Pressure (optional), psi#	0.25 – 1.5	
100% load with fan, CFH (m³/hr)	3962 (112.2)	4110 (116.4)
75% load with fan, CFH (m³/hr)	3157 (89.4)	3277 (92.8)
50% load with fan, CFH (m³/hr)	2352 (66.6)	2433 (68.9)
Cooling System[1]		
Radiator air flow restriction (system), kPa (in. water)	0.12 (0.48)	
Radiator air flow, CFM (m³/min)	24826 (703)	
Engine coolant capacity, L (gal)	27 (7.2)	
Radiator coolant capacity, L (gal)	62 (16.4)	
Total coolant capacity, L (gal)	89 (23.6)	
Inlet Air		
Combustion air inlet flow rate, lb/hr (m³/min)	4918 (31.7)	5231 (33.7)
Exhaust System		
Exhaust stack gas temperature,°C (°F)	550 (1022)	548 (1018)
Exhaust gas flow rate, lb/hr (m³/min)	5117 (92.8)	5427 (98.4)
Exhaust system backpressure (minimum allowable), kPa (in. water)	1 (4.02)	
Exhaust system backpressure (maximum allowable), kPa (in. water)	5 (20.1)	
Heat Rejection		
Heat rejection to coolant (total), kW (BTU/min)	142 (8075)	145 (8246)
Heat rejection to atmosphere to aftercooler, kW (BTU/min)	106 (6028)	122 (6938)
Heat rejection to atmosphere from engine, kW (BTU/min)	85 (4833)	86 (4890)
Heat rejection to exhaust (total), kW (BTU/min)	389 (22122)	411 (23373)

PACKAGE PERFORMANCE (contd.)

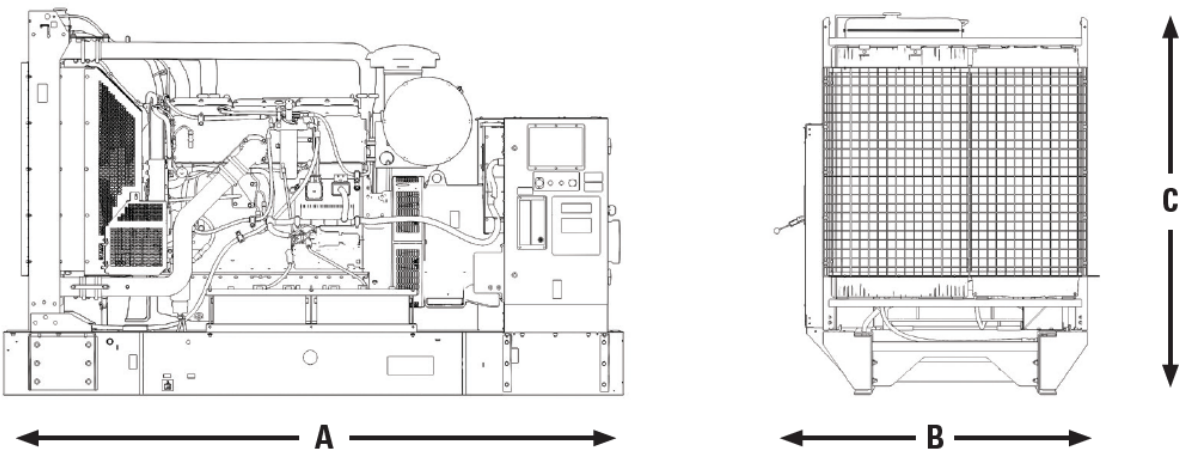
Lube System	
Sump Refill with Filter, L (gal)	42 (11.1)
Maximum oil temperature, °C (°F)	110 (230)

Emissions	Standby	Demand Response
Meets EPA Stationary Emergency and Non-Emergency Limits (g/bhp-hr)	NOx: 2.0 CO: 4.0 VOC: 1	NOx: 1.0 CO: 2.0 VOC: 0.7

ALTERNATOR DATA

Alternator[2]						
Duty Cycle		Standby/Demand Response				
Phase		3-Phase				
Voltages, V		480/277	240/139	208/120	240/120	600/346
Current, Amps		526	1053	1214	1053	421
Frame: LC6114B Excitation: SE	Temperature Rise @ 40°C	130	130	130	130	
	Motor Starting Capability @ 30% Voltage Dip, skVA	800	800	610	610	
Frame: LC6114C Excitation: SE	Temperature Rise @ 40°C	105	105			
	Motor Starting Capability @ 30% Voltage Dip, skVA	802	802			
Frame: LC6114D Excitation: SE	Temperature Rise @ 40°C	80	80	105	105	
	Motor Starting Capability @ 30% Voltage Dip, skVA	824	824	627	627	
Frame: LC6114F Excitation: SE	Temperature Rise @ 40°C			80	80	
	Motor Starting Capability @ 30% Voltage Dip, skVA			1001	1001	
Frame: LC6124B Excitation: AREP	Temperature Rise @ 40°C					130
	Motor Starting Capability @ 30% Voltage Dip, skVA					849
Frame: LC6124D Excitation: AREP	Temperature Rise @ 40°C					80
	Motor Starting Capability @ 30% Voltage Dip, skVA					1287

WEIGHTS & DIMENSIONS



On Narrow Skid Base

Length "A" mm (in)	Width "B" mm (in)	Height "C" mm (in)	Dry Weight kg (lb)
3593 (141.4)	1766 (69.5)	2087 (82.1)	4689 (10337)

On Wide Skid Base

Length "A" mm (in)	Width "B" mm (in)	Height "C" mm (in)	Dry Weight kg (lb)
4986 (196.2)	2170 (85.4)	2089 (82.2)	5017 (11060)

Note: General configuration not to be used for installation. See general dimension drawings for detail.

APPLICABLE CODES AND STANDARDS:

CSA C22.2 No 100-04, UL 489, UL 869, UL 2200, IBC, IEC60034-1, ISO 3046, ISO 8528, NEMA MG 1-22, NEMA MG 1-33 and facilitates the compliance to NFPA 37, NFPA 70, NFPA 99, NFPA 110.

Codes may not be available for all model configurations. Site level review needed for NFPA70. Please consult your Cat dealer for availability.

STANDBY POWER: Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby rated ekW. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

DEMAND RESPONSE POWER: Output available with varying load when participating in a demand response or economic dispatch program. Average power output is 70% of the standby rated ekW. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO 3046 standard conditions.

1 CFH = 1000 BTU/HR

Fuel Rates are based on LHV (lower heat values) of 905 BTU/SCF for Natural Gas @77°F (25°C) and 498.6 ft (152m) above sea level.

Additional ratings may be available for specific customer requirements. For higher temperatures and elevations follow derate specification. Contact your Cat representative for details.

DEFINITIONS AND CONDITIONS

1 For ambient and altitude capabilities consult your Cat dealer.
Air flow restriction (system) is added to the existing restriction from the factory.

2 Generator temperature rise is based on a 40°C (104°F) ambient per NEMA MG1-32.

Operating Fuel Pressure is the fuel pressure required to be delivered at the genset base frame rail connection. Recommended gas regulator to be used in conjunction if the gas supply pressure is above this range.

* Governing Class capability as per ISO-8528-5. Consult your local Cat dealer for configuration and site specific transient performance classification.

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LEHE20514-11 (11/25)

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Project Sizing Report

Sizing Id	11246512	Electricity Supply	60 Hz 480/277 V
Project Name	RRCC Gen 2	Connection	STAR
Customer Name	RMH Group	Max. Ambient Temperature	109.0 F
Region	U.S.	Altitude	5,800.0 Ft. A.S.L
Prepared By	Anthony Andrade	Humidity	30%
Modified Date	27-Oct-2025	Project Description	

Load Analysis Summary

Max Transient Load Step	397.5 SkVA / 135.2 SkW
Peak Transient Load Step	397.5 SkVA / 155.0 SkW
Final Running Load	248.1 kVA / 221.6 kW / 0.89 PF
Max Running Non Linear Load	173.6 RkVA
Selection Criteria	Step 1 Voltage dip restriction
Project THDI	10.4%

Note: The selected gas generator set performance may vary when applying a UPS ramp load to this generator set. To ensure proper operation, please contact your local Cat Dealer or Caterpillar A&I team.

Generator Set

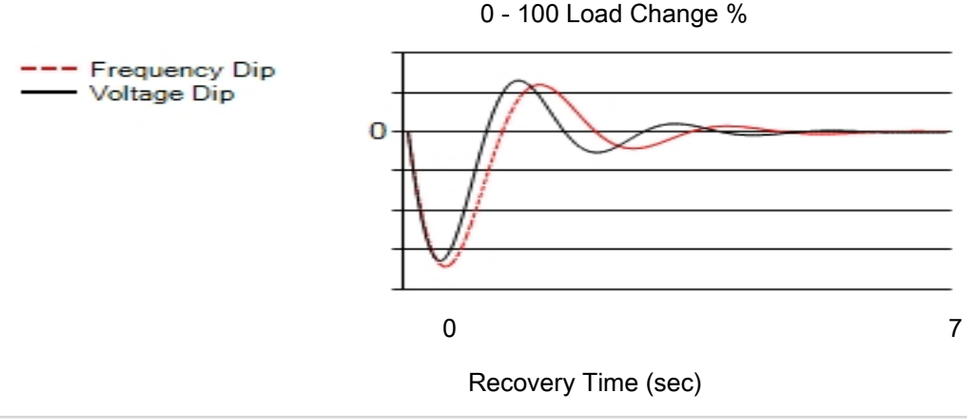
Engine Model	(1) of CG18	Nameplate Rating	350.0 ekW / 437.5 kVA / 0.8 PF
Package Model	DG350	Site Output Rating	350 ekW / 437.5 kVA
Voltage Regulator and Slope	Standard 2:1 slope;	Rating Type	Standby
Feature Code	18LGE05	Open / Enclosure	Open
Fuel	Natural Gas	UL Listed	UL Listed
Sizing Methodology	Conventional	Capacity Used	63.3%
Methane #	84.70	Project THDV	5.8%
Generator Set Type	Stationary		

Engine			
Make / Model	CG18	Emissions / Certifications	US EPA S.I. Stationary Emergency
Aspiration	TA	Governor	ADEM4 W/ IM
Cylinder Configuration	INLINE - 6	Aftercooler Type	ATAAC
Speed	1800 RPM	Displacement	1,106 Cubic Inch / 18 Liter
Engine Performance Number	EM6247	Bore	145
Fuel Consumption at 100% Load	0.0 scfm	Stroke	183
Alternator			
Alternator Type/Frame Size	LC / LC6134C	Insulation Class	H
Alternator Winding Pitch	0.6667	Temperature Rise	105 C
Excitation/Winding Type	PM / RANDOM	Number Of Poles	4
Alternator Arrangement Number	6122018	Number of Leads	12
Subtransient Reactance X"d	0.1413	Rated Amps	526.2

**** See your Caterpillar dealer and/or Spec Sheet for technical information.

***** Package Power Tolerance: +/- 5%

Block Load(Only) Transient Response *			
Load Change %	FDip %	VDip %	Recovery Time (sec)
25	5.2	7.7	<3
50	10.5	18.3	<5
75	15.3	28.0	<5
100	21.4	40.5	7



Transient Performance

Block Load (only) Transient Response values are at factory conditions with a heat-soaked, unloaded engine and application of a resistive load. This information is representative of a typical Cat generator set, but is not guaranteed. Generator set block load capabilities at site conditions may vary from factory transient response test results due to initial engine state, site altitude, site ambient, and engine to engine variation.

Load Report

Project Name	RRCC Gen 2	Electricity Supply	60 Hz 480/277 V
Customer Name	RMH Group	Rating Type	Standby
Region	U.S.	Max. Ambient Temperature	109.0 F
Prepared By	Anthony Andrade	Altitude	5,800.0 Ft. A.S.L
Modified Date	27-Oct-2025	Humidity	30%
Engine Model	(1) of CG18	Nameplate Rating	350.0 ekW / 437.5 kVA / 0.8 PF

Load Details		Permitted		Predicted		Transient Inrush		Running		Resultant Peak		Cumulative Running	
Load Step	Load Description	FDip	VDip	FDip	VDip	SkVA	SkW	kVA	kW	SkVA	SkW	kVA	kW
Step 1													
1.1	1x70.13 HP - Three Phase Motor Load: NEMA, 3-Phase Motor, Across the line, Loaded	30%	30%			397.5	135.2	63.2	56.2				
	Step 1 Total	30%	30%	7.6%	15.0%	397.5	135.2	63.2	56.2				
	Total Through Step 1									397.5	135.2	63.2	56.2
Step 2													
2.1	1x5.00 HP - Three Phase Motor Load: NEMA, 3-Phase Motor, Across the line, Loaded, NEMA H	30%	30%			33.5	19.1	5.6	4.4				
2.2	1x5.00 HP - Three Phase Motor Load: NEMA, 3-Phase Motor, Across the line, Loaded, NEMA H	30%	30%			33.5	19.1	5.6	4.4				
2.3	1x12.00 Amps - Office Equipment Load: Office Equipment, Distr. 3-Phase , 46.7 THDI%	30%	30%			10.0	9.0	10.0	9.0				
2.4	1x10.00 Amps - Office Equipment Load: Office Equipment, Distr. 3-Phase , 46.7 THDI%	30%	30%			8.3	7.5	8.3	7.5				
2.5	1x0.25 HP - Three Phase Motor Load: NEMA, 3-Phase Motor, Across the line, Loaded, NEMA M	30%	30%			5.3	4.0	0.4	0.3				
2.6	1x3.00 HP - Three Phase Motor Load: NEMA, 3-Phase Motor, VFD, 110% Current Limit, Single Operating Point, 6 Pulse , 29.1 THDI%	20%	20%			0.3	0.3	3.4	3.0				
2.7	1x3.00 HP - Three Phase Motor Load: NEMA, 3-Phase Motor, VFD, 110% Current Limit, Single Operating Point, 6 Pulse , 29.1 THDI%	20%	20%			0.3	0.3	3.4	3.0				

2.8	1x100.00 kW - UPS Load: User Defined UPS, 3-Phase, IGBT, 25% Walk-In, 25% Battery Recharge, No Battery Revert , 6.7 THDI%	10%	10%			37.1	33.4	148.5	133.7				
	Step 2 Total	10%	10%	6.0%	9.4%	124.4	92.7	248.1	221.6				
	Total Through Step 2									192.8	155.0	248.1	221.6
Load Analysis Summary : Generator set is user selected and meets site requirements													
						Maximum Step				Maximum Peak		Final Running	
						SkVA	SkW			SkVA	SkW	kVA	kW
						397.5	135.2			397.5	155.0	248.1	221.6