



GENERAL NOTES

- 1. CONSTRUCTION NOT SPECIFICALLY DETAILED OR SPECIFIED WITHIN THE PLANS OR PROJECT SPECIFICATIONS SHALL CONFORM TO THE 2025 EDITION OF THE IOWA STATEWIDE URBAN DESIGN AND SPECIFICATIONS (SUDAS) AND ANKENY CITY SUPPLEMENTAL SPECIFICATIONS.
2. THE LOCATIONS OF UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS PLOTTED ON THE DRAWINGS ARE APPROXIMATE ONLY AND WERE OBTAINED FROM RECORDS MADE AVAILABLE TO SHIVE-HATTERY, INC. THERE MAY BE OTHER EXISTING UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS NOT KNOWN TO SHIVE-HATTERY, INC. AND NOT SHOWN ON THIS DRAWING. THE VERIFICATION OF EXISTENCE OF, AND THE DETERMINATION OF THE EXACT LOCATION OF, UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR(S).
3. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES AT CRITICAL LOCATIONS TO VERIFY EXACT HORIZONTAL AND VERTICAL LOCATION.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL PUBLIC AND PRIVATE UTILITY LOCATES.
5. IOWA CODE 480. UNDERGROUND FACILITIES INFORMATION, REQUIRES VERBAL NOTICE TO IOWA ONE-CALL BY CALLING 811 OR 1-800-292-8989, NOT LESS THAN 48 HOURS BEFORE EXCAVATING, EXCLUDING WEEKENDS AND HOLIDAYS.
6. THE MEANS OF THE WORK AND THE SAFETY OF THE CONTRACTOR'S EMPLOYEES ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
7. NO WORK SHALL BE PERFORMED BEYOND THE PROJECT LIMITS WITHOUT PRIOR AUTHORIZATION FROM THE OWNER'S REPRESENTATIVE.
8. PROTECT EXISTING UTILITIES DURING CONSTRUCTION.
9. MAINTAIN POSITIVE DRAINAGE ON THE SITE THROUGHOUT THE PROJECT DURATION.
10. SITE CLEAN-UP TO BE PERFORMED ON A DAILY BASIS. SIDEWALKS, PARKING LOTS, ROADWAYS, ETC. SHALL BE KEPT CLEAN AT ALL TIMES.
11. ALL OPEN EXCAVATIONS SHALL BE PROTECTED.
12. REPLACE ANY PROPERTY MONUMENTS REMOVED OR DESTROYED BY CONSTRUCTION. MONUMENTS SHALL BE SET BY A LAND SURVEYOR REGISTERED TO PRACTICE IN THE STATE OF IOWA.
13. ANY WORK REQUIRED TO COMPLETE THE SCOPE OF THIS PROJECT BUT NOT SPECIFICALLY CALLED OUT IS TO BE CONSIDERED INCIDENTAL TO THE PROJECT. NO ADDITIONAL COMPENSATION TO BE ALLOWED FOR THE COMPLETION OF THIS WORK.
14. WORK WHICH DOES NOT CONFORM TO THE REQUIREMENTS OF THE CONTRACT WILL BE CONSIDERED UNACCEPTABLE. UNACCEPTABLE WORK, WHETHER THE RESULT OF POOR WORKMANSHIP, USE OF DEFECTIVE MATERIALS, DAMAGE THROUGH CARELESSNESS OR ANY OTHER CAUSE, FOUND TO EXIST PRIOR TO THE FINAL ACCEPTANCE OF THE WORK, SHALL BE REMOVED AND REPLACED IN AN ACCEPTABLE MANNER, AS REQUIRED BY SHIVE-HATTERY, INC. AT THE CONTRACTOR'S EXPENSE. WORK DONE CONTRARY TO THE INSTRUCTIONS OF SHIVE-HATTERY, INC., WORK DONE BEYOND THE LINES SHOWN ON THE PLANS OR ANY EXTRA WORK DONE WITHOUT AUTHORITY WILL NOT BE PAID FOR.
15. ALL DIMENSIONS TO BACK-OF-CURB UNLESS NOTED OTHERWISE.
16. CONTOURS AND SPOT ELEVATIONS SHOWN ARE TO FINISHED GRADE.
17. NO PONDING OF WATER WILL BE ACCEPTED ON ANY NEW PAVEMENT OR OVERLAY AREAS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY ANY AREAS OF EXISTING OR PROPOSED PAVEMENTS THAT HAVE POTENTIAL TO POND WATER AND MAKE ANY ADJUSTMENTS NECESSARY TO ENSURE THAT WATER WILL POSITIVELY DRAIN ACROSS THE PAVING.
18. STAGING LOCATION FOR CONSTRUCTION EQUIPMENT AND MATERIALS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER.
19. THE CONTRACTOR TO PROVIDE EROSION CONTROL MEASURES NECESSARY TO PROTECT AGAINST SILTATION, EROSION, AND DUST POLLUTION ON THE PROJECT SITE AND ANY OFF SITE BORROW OR DISPOSAL AREAS USED FOR THIS PROJECT. COMPLY WITH SOIL EROSION CONTROL REQUIREMENTS OF IOWA CODE, FEDERAL REGULATIONS, AND LOCAL ORDINANCES.
20. ALL AREAS DISTURBED BY CONSTRUCTION, NOT DESIGNATED AS PLANTED, SHALL BE SODDED. 6" OF TOPSOIL SHALL BE PROVIDED PER SPECIFICATIONS.
21. NOTIFY UTILITY COMPANIES WHO HAVE FACILITIES THAT ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS OF THE SCHEDULE PRIOR TO EACH STAGE OF CONSTRUCTION.
22. CONTROL DUST SPREADING FROM ALL WORK AND STAGING AREAS.
23. CONTRACTOR TO COORDINATE ANY GRADE ADJUSTMENTS WITH THE DESIGN ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
24. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF WORK OF ALL SUBCONTRACTOR(S) INVOLVED IN THE PROJECT.
25. ALL JOINTING SHALL MEET IOWA DOT SPECIFICATIONS AND REQUIREMENTS. ALL LONGITUDINAL PAVEMENT JOINTS SHALL HAVE EITHER TYPE "BT", "KT", OR "L" JOINTS DEPENDING ON THE POURING SEQUENCE. ALL TRAVERSE JOINTS SHALL BE TYPE "C" WITH TYPE "DW" JOINTS USED BETWEEN POURS. MAXIMUM JOINT SPACING SHALL BE 12' ON ALL PAVEMENT AND SQUARE ON ALL SIDEWALKS WITH A MAXIMUM JOINT SPACING OF 10'. SEAL ALL PAVEMENT JOINTS. CONTRACTOR SHALL SUBMIT POURING SEQUENCE AND JOINTING PLANS FOR APPROVAL BY ENGINEER PRIOR TO BEGINNING PAVING OPERATIONS.
26. MATERIALS NOT SUITABLE FOR CONSTRUCTION, INCLUDING TRENCH BACKFILL AND SURFACE RESTORATION, AND EXCESS MATERIALS SHALL BE PROPERLY DISPOSED OF OFFSITE AT NO ADDITIONAL COST TO THE OWNER.
27. ALL PEDESTRIAN SIDEWALK RAMPS SHALL BE CONSTRUCTED IN COMPLIANCE WITH SUDAS REQUIREMENTS AND SHALL MEET "AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINES" (ADAAG) AND "PROPOSED ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN PUBLIC RIGHT-OF-WAY" (PROWAG) GUIDELINES. ANY RAMP NOT IN COMPLIANCE WILL NOT BE ACCEPTED AND WILL REQUIRE RECONSTRUCTION.
28. SIGNING, STRIPING, OR OTHER TRAFFIC CONTROL DEVICES ON THE DRIVEWAY APPROACHES SHOULD CONFORM TO THE (MUTCD) MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (FEDERAL HIGHWAY ADMINISTRATION, 2023 EDITION).
29. THE CONTRACTOR SHALL PROVIDE APPROPRIATE CONSTRUCTION SIGNAGE AND TRAFFIC CONTROL AT ALL TIMES. THE MEASURES SHOWN IN THE PLANS ARE A SUGGESTED MINIMUM. TEMPORARY SIGNAGE AND TRAFFIC CONTROL MEASURES MAY BE REQUIRED BY THE CITY OR OTHER AHJ. OTHER FACTORS SUCH AS CONSTRUCTION PHASING AND WORKER SAFETY MAY REQUIRE DIFFERENT OR ADDITIONAL MEASURES FROM THOSE SHOWN IN THE DRAWINGS.

CONSTRUCTION STAGING NOTES

- 1. CONTRACTOR SHALL COORDINATE ALL STAGING AREAS WITH OWNER.
2. CONTRACTOR SHALL REPLACE ALL PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES AT THE END OF CONSTRUCTION. CONTRACTOR TO PROVIDE PHOTO DOCUMENTATION OF EXISTING CONDITIONS PRIOR TO BEGINNING WORK.
3. CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS NOT TO BE PAVED TO THEIR ORIGINAL CONDITION AT THE END OF CONSTRUCTION. ALL DISTURBED AREAS SHALL BE SCARIFIED, TILLED AND SEEDED. CONTRACTOR TO PROVIDE PHOTO DOCUMENTATION PRIOR TO BEGINNING WORK.
4. CONTRACTOR SHALL PROVIDE BARRICADES, FENCING OR OTHER DEVICES TO KEEP UNAUTHORIZED PERSONNEL OUT OF PROJECT SITE.

DEMOLITION NOTES

- 1. CONTRACTOR TO CONFIRM THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES AND INFORM THE ENGINEER OF ANY POTENTIAL CONFLICTS WITH PROPOSED UTILITIES PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO FOLLOW ALL APPLICABLE REGULATIONS FOR REMOVING, DE-ENERGIZING, AND ABANDONING UTILITIES.
3. ALL UTILITIES AND PAVEMENT NOT SHOWN TO BE REMOVED SHALL BE PROTECTED. IF DAMAGED, IT IS THE CONTRACTOR'S RESPONSIBILITY TO REPLACE AND REPAIR.
4. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH UTILITY COMPANIES DURING CONSTRUCTION.
5. CONTRACTOR SHALL COORDINATE WITH OWNER, UTILITY PROVIDER, AND ANY AFFECTED ADJACENT PROPERTY OWNERS PRIOR TO ANY SERVICE OR ACCESS DISRUPTIONS.
6. ALL PCC PAVEMENT REMOVALS SHALL BE SAW CUT FULL DEPTH REMOVED TO NEAREST JOINT AND DISPOSED OFF-SITE IN ACCORDANCE WITH APPLICABLE REGULATIONS.
7. TRAFFIC CONTROL SHALL BE PERFORMED FOR ALL WORK WITHIN THE TRAVELED WAY OR IMPACTING EXISTING SIDEWALK. TRAFFIC CONTROL SHALL FOLLOW ALL APPLICABLE LOCAL AND STATE REGULATIONS. CONTRACTOR SHALL COORDINATE ANY DISRUPTIONS WITH OWNER PRIOR TO CONSTRUCTION.
8. ALL GAS AND WATER UTILITIES CALLED OUT TO BE REMOVED SHALL BE BACKFILLED IN ACCORDANCE WITH RECOMMENDATIONS FOUND IN THE GEOTECHNICAL REPORT, INCLUDING BUT NOT LIMITED TO OVER-EXCAVATION, MOISTURE CONDITIONING, AND COMPACTNG.
9. REMOVAL REQUIREMENTS SHOWN ON THE PLANS SHOULD BE CONSIDERED MINIMUM REMOVAL AND REPLACEMENT REQUIREMENTS. CONTRACTORS SHALL ADJUST REMOVAL LIMITS AND DIMENSIONS AS REQUIRED BY CONSTRUCTION MEANS AND METHODS AND ACTUAL SITE CONDITIONS. ANY ADDITIONAL REMOVAL REQUIREMENTS NOT SHOWN ON THE PLANS ARE CONSIDERED INCIDENTAL.
10. ALL LANDSCAPING INCLUDING TREES, SHRUBS, PERENNIALS NOT CALLED OUT TO BE REMOVED OR APPROVED FOR REMOVAL BY CONSTRUCTION MANAGER SHALL BE PROTECTED AND REPLACED AT NO COST TO THE OWNER IF DAMAGED DURING CONSTRUCTION. REPLACE TREES WITH (1) EQUIVALENT TREE UP TO 6" CALIPER AND (1) ADDITIONAL TREE FOR EVERY 6" CALIPER BEYOND THAT. ALL PLANTS THAT ARE DESTROYED OR DAMAGED SHALL BE REPLACED WITH NEW PLANTS OF THE EQUIVALENT TYPE.
11. WHERE A SECTION OF PAVEMENT, CURB AND GUTTER, OR SIDEWALK IS CUT OR OTHERWISE DAMAGED BY THE CONTRACTOR, THE ENTIRE SECTION SHALL BE REMOVED AND REPLACED. PAVEMENT, CURBS, GUTTERS, AND SIDEWALKS SHALL BE REMOVED TO THE NEAREST JOINT A MINIMUM OF TWO FEET BEYOND THE EDGE OF ALL EXCAVATIONS. CONTRACTOR SHALL DOCUMENT (OR PHOTO) ALL CRACKED PCC PAVEMENT OR DAMAGED HMA PAVEMENT PRIOR TO CONSTRUCTION. IF NEW CRACKS IN PCC PAVEMENT DEVELOP OR HMA PAVEMENT IS DAMAGED DUE TO THE CONSTRUCTION TRAFFIC (EXTENDS BEYOND CONSTRUCTION LIMITS), CONTRACTOR SHALL REPLACE DAMAGED AREA AT NO ADDITIONAL COST TO OWNER.

PAVEMENT GENERAL NOTES

- 1. ALL PROPOSED PAVEMENT PATCHES ARE APPROXIMATE AND SHOULD BE CONSIDERED MINIMUM REMOVAL EXTENTS. EXTEND AND ADJUST PAVEMENT PATCHES AS REQUIRED BY CONSTRUCTION WITH PRIOR APPROVAL BY ENGINEER.
2. ALL SLOPES IN PAVEMENT SHALL BE UNIFORM TO AVOID PONDING. ANY PONDING ON PAVEMENT PATCHES OR ADJACENT TO PATCHES WILL BE CONSIDERED UNACCEPTABLE AND SHALL BE REPLACED.
3. USE TYPE "B" COMPACTION ON SUBGRADE AND SUBBASE, TYPE "B" COMPACTION PER IOWA DOT STANDARD SPECIFICATION FOR HIGHWAY AND BRIDGE CONSTRUCTION.
4. IN THE EVENT THAT PAVEMENT PATCHES ON ROADS AND SIDEWALKS CANNOT BE COMPLETED BEFORE THE COLD WEATHER SEASON BEGINS, CONTRACTOR MAY INSTALL TEMPORARY ROCK PATCHES IN AREAS WHERE PAVEMENT HAS BEEN REMOVED RATHER THAN COMPLETE PAVEMENT PATCHES IN LESS THAN IDEAL WEATHER CONDITIONS. TEMPORARY ROCK PATCHES SHALL BE A MINIMUM OF 8" DEEP AND COMPACTED. CONTRACTOR TO MAINTAIN TEMPORARY ROCK PATCHES THROUGHOUT THE WINTER SEASON INCLUDING SUPPLEMENTING WITH ADDITIONAL ROCK AS REQUIRED AND INSTALL PERMANENT PAVEMENT PATCHES AS SHOWN IN PLANS IN ACCEPTABLE WEATHER CONDITIONS.

EXCAVATION NOTES

- 1. EXCAVATE TRENCH AND PROVIDE PIPE BEDDING AND BACKFILL MATERIAL PER IOWA SUDAS SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.
2. STRIP, STOCKPILE, AND RESPREAD A MINIMUM OF 6" OF TOPSOIL IN ALL SEED OR SOD AREAS DISTURBED BY CONSTRUCTION. DISTURBED AREAS SHALL BE LEFT IN SMOOTH CONDITIONS READY FOR FINAL SEEDBED OR SOD PREPARATION BY SITE RESTORATION CONTRACTOR. GRADE ALL DISTURBED ARES TO DRAIN AS PONDING OF WATER WILL NOT BE ACCEPTABLE.
3. CONTRACTOR IS RESPONSIBLE FOR ALL TRENCH AND FILL SETTLEMENT FOR THE PROJECT'S ONE YEAR WARRANTY PERIOD. CONTRACTOR SHALL PROVIDE ADDITIONAL FILL MATERIAL AND IS RESPONSIBLE FOR RESEEDING OF ALL SETTLEMENT AREAS AFTER SITE RESTORATION HAS BEEN COMPLETED.
4. OWNER WILL PROVIDE AN EXCESS SOIL AND UTILITY SPOILS DISPOSAL SITE AVAILABLE ONSITE. CONTRACTORS WILL BE RESPONSIBLE FOR STRIPPING AND RESPREADING TOPSOIL AND LEAVING THE WASTE SITE IN A SMOOTHLY GRADED CONDITION AT THE END OF CONSTRUCTION. ONLY CLEAN SOIL MATERIAL AND GRANULAR MATERIAL LESS THAN 1.5" DIAMETER WILL BE ALLOWED TO BE PLACED ONSITE. ALL DEBRIS AND LARGER ROCK OR CONCRETE WASTE SHALL BE DISPOSED OF OFFSITE. POT HOLE MUD DISPOSAL WILL NOT BE PERMITTED ONSITE AND SHOULD BE DISPOSED OF OFFSITE.

GRADING AND EROSION CONTROL NOTES

- 1. THE PROJECT IS ANTICIPATED TO HAVE A TOTAL DISTURBED AREA OF LESS THAN ONE ACRE, AND AN IOWA DEPARTMENT OF NATURAL RESOURCES (DNR) NPDES GENERAL PERMIT #2 HAS NOT BEEN ACQUIRED FOR THIS PROJECT.
2. IF THE CONTRACTOR'S MEANS AND METHODS WILL RESULT IN DISTURBANCE OF 1.0 ACRES OR MORE, AN NPDES GENERAL PERMIT #2 WILL BE REQUIRED. THE CONTRACTOR SHALL BE A CO-PERMITTEE WITH THE OWNER, AND THE CONTRACTOR SHALL BE ENTIRELY RESPONSIBLE FOR IMPLEMENTING ALL STORMWATER AND NPDES PERMIT REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR PREPARING, SUBMITTING, AND OBTAINING THE NPDES GENERAL PERMIT #2, INCLUDING PAYING ANY REQUIRED FEES. MINIMAL EROSION CONTROL STRUCTURES ARE SHOWN ON THE PLANS AND IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE THESE AND ADDITIONAL STRUCTURES AS SITE CONDITIONS WARRANT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING AND IMPLEMENTING THE SWPPP AND SHALL PROVIDE ALL NECESSARY AND REQUIRED STORM WATER CONTROLS FOR THE PROJECT AT NO ADDITIONAL COST TO THE OWNER.
3. IF AN NPDES PERMIT IS REQUIRED, THE CONTRACTOR AND ALL SUBCONTRACTORS ARE REQUIRED TO SIGN A COPY OF THE CERTIFICATION STATEMENT CONTAINED IN THE SWPPP, PRIOR TO START OF CONSTRUCTION. THE SIGNED COPIES SHALL BE KEPT WITH THE SWPPP IN THE CONTRACTORS FIELD OFFICE UNTIL THE PROJECT IS COMPLETE.
4. IF AN NPDES PERMIT IS REQUIRED, THE CONTRACTOR SHALL PROVIDE INSPECTION OF THE CONSTRUCTION SITE AND MAINTAIN INSPECTION RECORDS IN ACCORDANCE WITH THE SWPPP.

- 5. IF AN NPDES PERMIT IS REQUIRED, COPIES OF THE PLAN, ALL INSPECTION REPORTS AND CERTIFICATIONS PREPARED BY THE CONTRACTOR SHALL BE FORWARDED TO THE OWNER.
6. BEST MANAGEMENT PRACTICES (BMP'S) AND CONTROLS SHALL CONFORM TO FEDERAL, STATE, OR LOCAL REQUIREMENTS OR MANUAL OF PRACTICE, AS APPLICABLE. IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY PERMITTING AGENCY OR OWNER.
7. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) SHALL BE DETAINED AND PROPERLY TREATED OR DISPOSED.
8. SUFFICIENT OIL AND GREASE ABSORBING MATERIALS SHALL BE MAINTAINED ON SITE OR READILY AVAILABLE TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.
9. DUST ON THE SITE SHALL BE CONTROLLED. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
10. RUBBISH, TRASH, GARBAGE, LITTER, OR OTHER SUCH MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS. MATERIALS SHALL BE PREVENTED FROM LEAVING THE PREMISES THROUGH THE ACTION OF WIND OR STORM WATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
11. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE SEEDED OR SODDED. THESE AREAS SHALL BE SEEDED OR SODDED NO LATER THAN 14 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY OCCURRING IN THESE AREAS.
12. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
13. CONTRACTORS OR SUBCONTRACTORS WILL BE RESPONSIBLE FOR REMOVING SEDIMENT THAT MAY HAVE COLLECTED IN THE STORM SEWER DRAINAGE SYSTEMS IN CONJUNCTION WITH THE STABILIZATION OF THE SITE.
14. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, WATTLE, INLET PROTECTION, ETC.) TO PREVENT EROSION.
16. ALL STORM SEWER INTAKES THAT RECEIVE STORMWATER RUNOFF FROM DISTURBED AREAS SHALL BE PROVIDED WITH INLET PROTECTION.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION, PERIODIC CHECKING AND REINSTALLATION OF EROSION AND SEDIMENTATION CONTROL MEASURES.
18. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE IOWA DNR, US EPA AND LOCAL REGULATIONS DEALING WITH STORMWATER RUNOFF AND EROSION CONTROL.

UTILITY CONSTRUCTION NOTES

- 1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT LOCATIONS AND DEPTHS OF ALL EXISTING PUBLIC AND PRIVATE UTILITIES AND WHETHER ADDITIONAL UTILITIES EXIST.
2. STORM SEWER PIPE LENGTHS SHOWN ARE INSIDE EDGE TO INSIDE EDGE OF STRUCTURES.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL STORM FLOW ONSITE UNTIL NEW SYSTEM IS INSTALLED.
4. RCP STORM SEWER PIPING TO HAVE WRAPPED JOINTS.
5. ALL HDPE PIPE SHALL BE DUAL-WALLED UNLESS OTHERWISE SPECIFIED AS PERFORMED.
6. ALL HDPE BENDS AND CONNECTIONS SHALL BE MANUFACTURED CONNECTIONS.
7. CONTRACTOR TO MODIFY EXISTING INVERTS TO ACCOMMODATE NEW PIPE CONNECTIONS.
8. THE CONTRACTOR IS RESPONSIBLE FOR CLEANING STORM SEWER WITHIN THE PROJECT AREA AT THE COMPLETION OF THE PROJECT.
9. CONTRACTOR IS RESPONSIBLE FOR ADJUSTING AND REBUILDING STORM STRUCTURES AS NECESSARY TO MATCH FINAL GRADES.
11. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES AND WHETHER ADDITIONAL UTILITIES EXIST
12. SANITARY SEWER PIPE LENGTHS SHOWN ARE CENTERLINE TO CENTERLINE OF STRUCTURES.
13. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES AND WHETHER ADDITIONAL UTILITIES EXIST.
14. WATER TO BE INSTALLED WITH A MINIMUM COVER OF 5 FEET DEEP OR LOWER TO ACCOMMODATE UTILITY CROSSINGS.
15. CONTACT FIRE DEPARTMENT OF ANY CHANGES THAT AFFECT FIRE/EMERGENCY ACCESS TO SITE, BUILDING, FDC'S, PIV'S, HYDRANTS, AND FRONT DOORS.
16. ALL WATER LINE SHALL BE PVC C900.
17. ALL EXISTING AND PROPOSED HYDRANTS AND VALVES SHALL BE ADJUSTED TO FINAL GRADES.
18. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER INSTALLATION OF AN APPROVED BACKFLOW PREVENTION ASSEMBLY(IES) FOR CONTAINMENT IN ALL NEW CONSTRUCTION.
19. WATER MAIN CROSSINGS WITH STORM SEWER AND/OR SANITARY SEWER SHALL FOLLOW SUDAS REQUIREMENTS AND PROVIDE WATERTIGHT JOINTS WHERE APPLICABLE.
20. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES FOR INSTALLATION REQUIREMENTS, SPECIFICATIONS, PERMITS, AND FEES.
21. ALL EXISTING AND PROPOSED UTILITY CROSSINGS/CONFLICTS SHALL MEET OR EXCEED IOWA SUDAS HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS.
22. ALL UNDERGROUND LINES SHALL BE INSTALLED, INSPECTED, AND APPROVED BEFORE BACKFILLING.
23. ALL OPEN EXCAVATIONS SHALL BE PROTECTED WITH SAFETY FENCE, BARRIERS OR BARRICADES IN ACCORDANCE WITH OSHA.
24. CONTRACTOR TO IMPLEMENT TEMPORARY SHORING OR SUPPORT AT ALL UTILITY CROSSINGS AS REQUIRED BY CONTRACTORS MEANS AND METHODS. ALL DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.

Project: D:\Projects\2024\240324\240324.dwg, sheet: 01 of 01, Date: 2/10/2025 10:41 AM

SHIVE-HATTERY ARCHITECTURE + ENGINEERING

4125 WESTOWN PKWY, SUITE 100 WEST DES MOINES, IOWA 50266 515.223.8104 | SHIVE-HATTERY.COM

DAKINS LAKE CABIN

STORY COUNTY CONSERVATION ZEARING, IOWA 50278

Table with 6 columns: DRAWN BY, APPROVED BY, ISSUED FOR, ISSUE DATE, PROJECT NUMBER, FIELD BOOK. Values include AHJ, BIDDING, 2/10/2026, 242204360.

SITE NOTES

C001

**SANITARY SEWER NOTES:**

- ALL SANITARY SEWER CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE NOTES IN THE PLANS AND THE STANDARDS, SPECIFICATIONS, CODES AND ORDINANCES OF THE LOCAL GOVERNING AUTHORITIES. IN CASE OF CONFLICT, THE MORE STRINGENT CODE SHALL TAKE PRECEDENCE.
- ALL SANITARY SEWER PIPE AND STRUCTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH SUDAS DIVISION 4 AND 6.
- ALL SANITARY SEWER PIPE SHALL BE POLYVINYL CHLORIDE (PVC), SDR 35 PIPE WITH WATER TIGHT JOINTS PER SUDAS SPECIFICATION SECTION 4010, UNLESS OTHERWISE NOTED. WHERE SANITARY SEWER PIPE IS NOTED AS PVC C900, THE PIPE SHALL BE IN ACCORDANCE WITH AMERICAN WATER WORKS ASSOCIATION (AWWA) C900 WITH WATERTIGHT, PRESSURE RATED JOINTS PER SUDAS SPECIFICATION SECTION 5010.
- SANITARY SERVICE PIPE BEDDING SHALL BE SUDAS DIVISION 3, SW-103 CLASS F-3, UNLESS NOTED OTHERWISE ON THE PLANS.
- SANITARY CLEANOUTS SHALL FOLLOW SUDAS SPECIFICATION DETAIL SW-203.
- PIPE LENGTHS SHOWN FOR SANITARY SEWER ARE MEASURED IN LINEAR FEET ALONG THE CENTERLINE OF THE PIPE FROM CENTER OF MANHOLE TO CENTER OF MANHOLE.
- A WATERTIGHT PLUG SHALL BE INSTALLED AND LEFT IN PLACE AT THE POINT OF COMMENCEMENT UNTIL THE REMAINDER OF THE PROPOSED SEWERS HAVE BEEN CONSTRUCTED, PROPERLY TESTED AND DEEMED READY FOR FINAL ACCEPTANCE.
- SANITARY SEWER MANHOLES SHALL BE PRECAST CONCRETE AND SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE DETAILS IN THE PLANS.
- A FLEXIBLE TYPE JOINT SHALL BE FURNISHED AT POINTS OF ENTRY INTO AND EXITING FROM MANHOLE STRUCTURES. THIS FLEXIBLE JOINT MAY CONSIST OF A SLEEVE OF HIGH-QUALITY SYNTHETIC RUBBER WITH A SUBSTANTIAL SERRATED FLANGE WHICH IS CAST DIRECTLY INTO THE WALL OF THE MANHOLE BASE TO FORM A WATERTIGHT SEAL AND PROTRUDES OUTSIDE OF THE MANHOLE WALL TO CONNECT WITH THE PIPE ENTERING/EXITING THE MANHOLE. WHEN THIS TYPE OF FLEXIBLE JOINT IS USED, THE SLEEVE SHALL SLIP OVER THE END OF THE PIPE ADJACENT TO THE MANHOLE BASE AND SHALL BE SECURED BY MEANS OF A STAINLESS-STEEL STRAP CLAMP EQUIPPED WITH A DRAW BOLT AND NUT.
- WHEN CONNECTING TO AN EXISTING SEWER MAIN BY MEANS OTHER THAN AN EXISTING WYE, TEE, OR MANHOLE, THE FOLLOWING METHOD SHALL BE USED:
  - CIRCULAR SAW-CUT OF SEWER MAIN BY PROPER TOOLS ('SEWER-TAP' MACHINE OR SIMILAR) AND PROPER INSTALLATION OF HUB-WYE SADDLE OR HUB-TEE SADDLE.
- UPON COMPLETION OF THE SANITARY SEWER CONSTRUCTION, INCLUDING THE SERVICE LINES, ALL SEWERS SHALL BE TESTED IN ACCORDANCE WITH SUDAS SECTIONS, LOCAL REQUIREMENTS, AND PROJECT SPECIFICATIONS AND SHALL BE WITNESSED BY THE LOCAL GOVERNING AUTHORITY OR AUTHORIZED REPRESENTATIVE.

**WATER NOTES:**

- ALL WATER MAIN CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE NOTES IN THE PLANS AND THE STANDARDS, SPECIFICATIONS, CODES AND ORDINANCES OF THE LOCAL GOVERNING AUTHORITIES. IN CASE OF CONFLICT, THE MORE STRINGENT CODE SHALL TAKE PRECEDENCE.
- WATER PIPE, SERVICES, APPURTENANCES, AND STRUCTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH SUDAS DIVISION 5.
- ALL PROPOSED WATER SHALL FOLLOW PROPOSED GRADES WITH MINIMUM FIVE (5) FEET OF COVER, TYP. UNLESS OTHERWISE SPECIFIED ON PLANS.
- IF USED, DUCTILE IRON WATER MAIN PIPES, FITTINGS, AND APPURTENANCES SHALL BE CONSTRUCTED WITH A MINIMUM OF 8-MIL POLYETHYLENE WRAP TO PREVENT CORROSION.
- WATER MAIN SHALL BE POLYVINYL CHLORIDE (PVC) PIPE C900 DR18 WITH PUSH-ON JOINTS IN ACCORDANCE WITH SUDAS SPECIFICATION SECTION 5010, UNLESS OTHERWISE NOTED.
- PIPE LENGTHS SHOWN FOR WATER ARE MEASURED ALONG THE CENTERLINE OF THE PIPE, INCLUDING THE LENGTH THROUGH THE FITTINGS.
- WATER PIPE BEDDING SHALL BE SUDAS DIVISION 3, SW-104 CLASS P-1, UNLESS NOTED OTHERWISE ON THE PLANS OR DIRECTED BY THE LOCAL MUNICIPALITY.
- ALL WATER VALVES EXTENDING THROUGH PAVEMENT SHALL BE INSTALLED WITH SLIDE TYPE VALVE BOXES AND SHALL MEET SUDAS SPECIFICATION SECTION 5020.
- A WATERTIGHT PLUG SHALL BE PLACED IN THE END OF THE WATER MAIN PIPE AT THE END OF EACH CONSTRUCTION DAY.
- UPON COMPLETION OF THE WATERMAIN CONSTRUCTION, ALL WATER MAIN SHALL BE TESTED IN ACCORDANCE WITH THE LOCAL REQUIREMENTS AND SUDAS SECTION 5030. TESTING SHALL BE WITNESSED BY THE LOCAL GOVERNING AUTHORITY.
- WATER SERVICE LINES 2 INCHES IN DIAMETER OR SMALLER SHALL BE CLASS 200 C901 POLYETHYLENE TUBING MEETING SUDAS SPECIFICATION SECTION 5010. NO COUPLINGS SHALL BE PERMITTED BETWEEN THE CORPORATION AND CURB STOPS OR BETWEEN THE CURB STOP AND THE BUILDING.
- SERVICE BOXES SHALL BE OF SUFFICIENT LENGTH TO PERMIT THE TOP TO BE INSTALLED FLUSH WITH THE FINISHED GRADE. EACH SERVICE BOX SHALL BE PROVIDED WITH A CAP WITH THE WORD "WATER" CAST IN THE TOP.
- PRESSURE CONNECTIONS TO THE EXISTING WATER MAIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUDAS DIVISION 5 SPECIFICATIONS AND SHALL INCLUDE THE INSTALLATION OF A FULL STAINLESS STEEL TAPPING SADDLE.
- TEMPORARY CONNECTIONS FOR CONSTRUCTION PURPOSES TO NEWLY INSTALLED OR EXISTING WATER MAINS SHALL BE MADE AND METERED IN ACCORDANCE WITH LOCAL REQUIREMENTS.
- BENDS, TEES, AND CROSSES ON 4 INCH AND GREATER WATER LINES SHALL BE PROVIDED WITH THRUST BLOCKING OR RESTRAINED JOINTS PER SUDAS DIVISION 5 AND SUDAS CHAPTER 4.

LEGEND	
GENERAL SITE DESIGN	
PLAN MARK	DESCRIPTION
	SPOT ELEVATION
	TOP OF CURB AND GUTTER ELEVATION
	TOP OF CURB EQUALS GUTTER ELEVATION
	MATCH EXISTING ELEVATION
	SLOPE ARROW
	FLOW ARROW
	TRAFFIC FLOW
	SILT FENCE
	LIMITS
	LEFT-TURN ARROW
	RIGHT-TURN ARROW
	THRU ARROW
	LEFT/ THRU ARROW
	RIGHT/ THRU ARROW
	LEFT/ RIGHT/ THRU ARROW

LEGEND		
UTILITY LINES		
EXISTING LINE TYPE	DESCRIPTION	PROPOSED LINE TYPE
	ELECTRIC - OVERHEAD	
	ELECTRIC - UNDERGROUND	
	GAS MAIN	
	WATER MAIN	
	SANITARY SEWER	
	SANITARY FORCE MAIN	
	STORM SEWER	
	TELEPHONE - OVERHEAD	
	TELEPHONE - UNDERGROUND	
	CABLE LINE - OVERHEAD	
	CABLE LINE - UNDERGROUND	
	FIBER OPTICS	
	PROCESS/HEATING STEAM	

LEGEND	
UTILITIES - PROPOSED	
PLAN MARK	DESCRIPTION
	UTILITY POLE W/TRANSFORMER
	WATER SHUTOFF VALVE
	GUY ANCHOR
	FIRE HYDRANT
	FLARED END SECTION
	UTILITY END CAP
	VALVE
	FIRE DEPARTMENT CONNECTION
	POST INDICATOR VALVE
	JUNCTION BOX
	MANHOLE
	STORM MANHOLE
	SANITARY MANHOLE
	TELEPHONE PEDESTAL
	HANDHOLE
	GAS METER
	ELECTRIC METER
	TRANSFORMER
	WATER METER
	AIR CONDITIONER
	CURB INLET
	INTAKE - CIRCLE

LEGEND	
GENERAL SITE - PROPOSED	
PLAN MARK	DESCRIPTION
	STRUCTURE
	GUARD POST/ BOLLARD
	HANDICAPPED PARKING
	SHRUB
	DECIDUOUS TREE
	CONIFEROUS TREE
	SINGLE POLE SIGN
	CHAINLINK FENCE
	TREE LINE
	MINOR CONTOUR
	MAJOR CONTOUR

LEGEND	
SURVEY	
PLAN MARK	DESCRIPTION
	BENCH MARK
	IRON ROD - FOUND
	IRON ROD - SET
	MONUMENT FOUND
	MONUMENT SET
	X CUT FOUND
	X CUT SET
	SOIL BORING

P:\Projects\2024\24040502\DWG\addendum\addendum.dwg - CIVIC300 COVER SHEET.dwg  
 Printed: 2/11/2026 8:57:06 AM

**SHIVEHATTERY**  
ARCHITECTURE + ENGINEERING

4125 WESTTOWN PKWY, SUITE 100  
WEST DES MOINES, IOWA 50266  
515.223.8104 | SHIVEHATTERY.COM

**DAKINS LAKE CABIN**

STORY COUNTY CONSERVATION  
ZEARING, IOWA 50278

DRAWN BY: AJH

APPROVED BY: AJH

ISSUED FOR: BIDDING

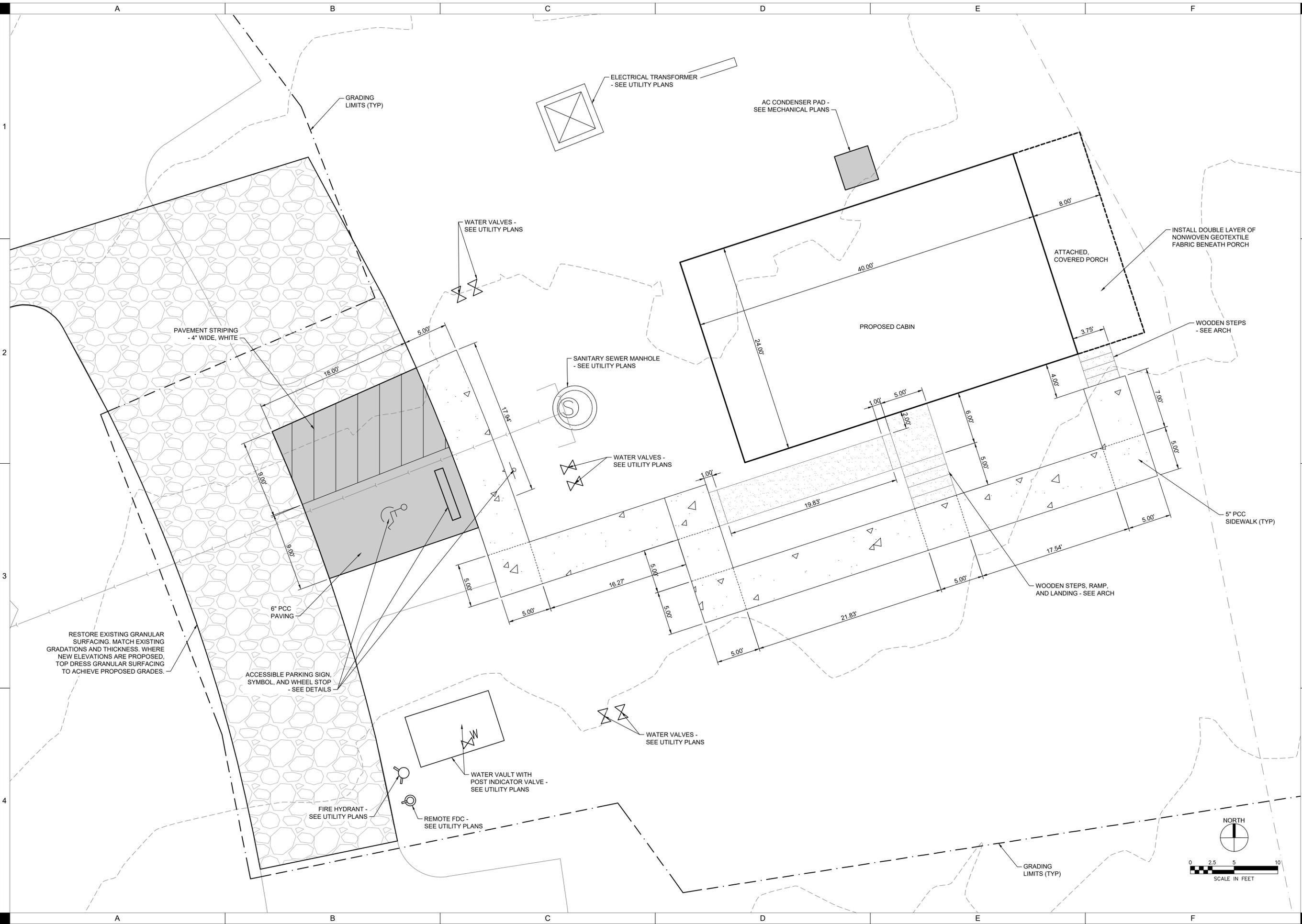
ISSUE DATE: 2/10/2026

PROJECT NUMBER: 242204360

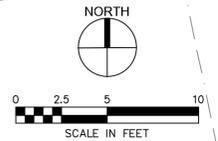
FIELD BOOK: .....

C002

B:\Projects\2024\240426\240426\_C101\_SitePlan.dwg  
Printed: 2/10/2026 8:57:22 AM

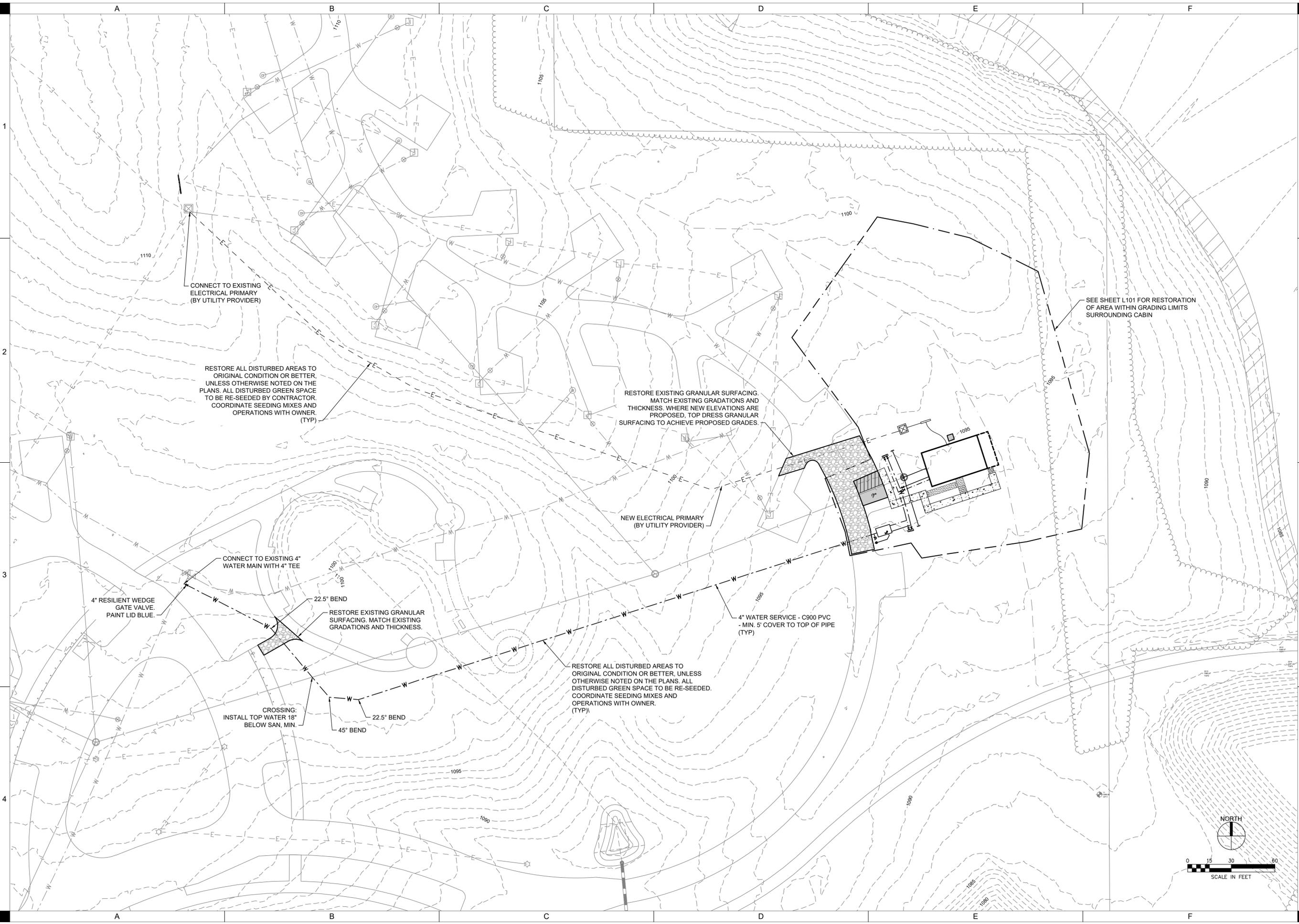


DRAWN BY	AJH
APPROVED BY	AJH
ISSUED FOR	BIDDING
ISSUE DATE	2/10/2026
PROJECT NUMBER	2142204360
FIELD BOOK	...





P:\Projects\DKINS\420226\DWG\CADD\Utility\PLAN.dwg  
Printed: 2/10/2026 8:57:50 AM



**DAKINS LAKE CABIN**

DRAWN BY	AJH
APPROVED BY	AJH
ISSUED FOR	BIDDING
ISSUE DATE	2/10/2026
PROJECT NUMBER	2142204360
FIELD BOOK	

**SITE UTILITY  
PLAN - OVERALL**

**C300**

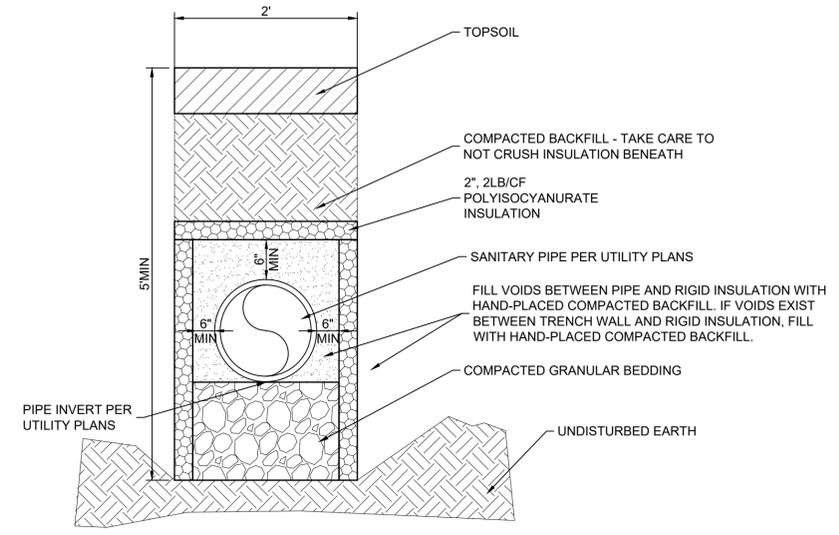
STORY COUNTY CONSERVATION  
ZEARING, IOWA 50278



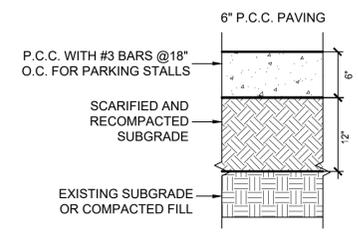
**STANDARD SUDAS DETAILS**

THE FOLLOWING STANDARD DETAILS APPLY TO CONSTRUCTION WORK ON THIS PROJECT

NUMBER	DATE	TITLE
3010.102	04-20-21	RIGID GRAVITY PIPE TRENCH BEDDING
3010.103	04-21-21	FLEXIBLE GRAVITY PIPE TRENCH BEDDING
3010.104	04-20-21	PRESSURE PIPE TRENCH BEDDING
4030.221	10-21-14	RCP APRON SECTION FOOTING
4040.231	10-21-14	SUBDRAINS - CASE C, TYPE 1
4040.232	2020	SUBDRAIN CLEANOUTS
4040.233	2025	SUBDRAIN OUTLETS
5010.101	10-18-16	THRUST BLOCKS
5010.102	10-18-16	TRACER SYSTEM
5020.201	04-19-22	FIRE HYDRANT ASSEMBLY
6010.301	10-18-22	CIRCULAR SANITARY SEWER MANHOLE
7010.101	04-19-22	JOINTS
7030.204	10-20-15	GENERAL FEATURES OF AN ACCESSIBLE SIDEWALK

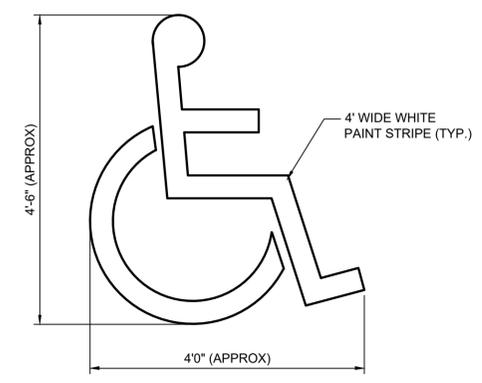


**C2** SANITARY PIPE INSULATION  
NOT TO SCALE

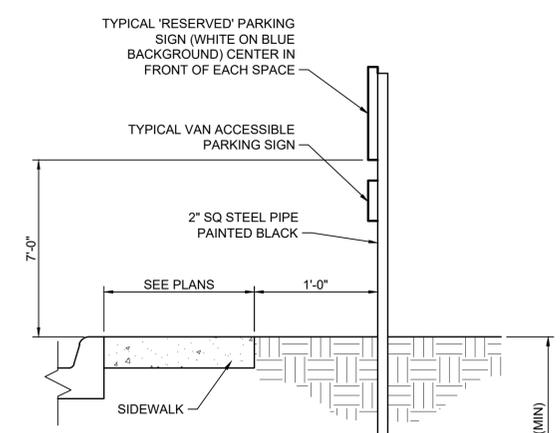


**E2** PCC PAVEMENT CROSS SECTIONS  
NOT TO SCALE

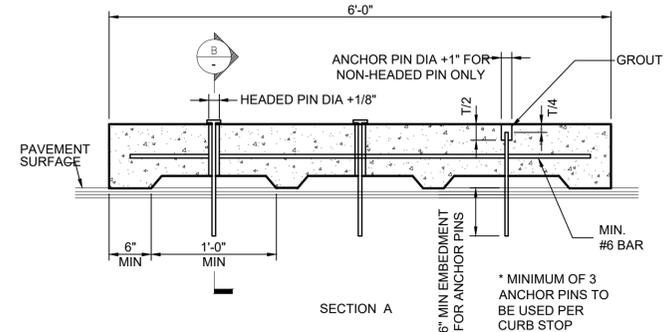
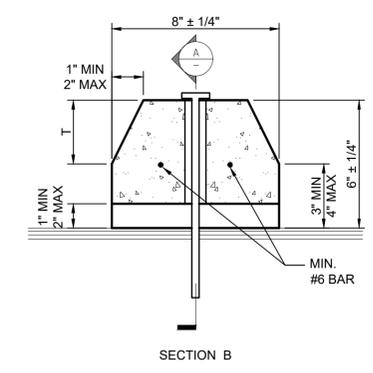
- NOTES:
- SUBGRADE PREPARATION SHALL EXTEND 24" BEYOND EDGE OF PAVING.
  - ALL PROPOSED AND EXISTING SUBGRADE TO BE COMPACTED TO 95% STANDARD PROCTOR DENSITY, MIN.



**F6** ACCESSIBLE PARKING SYMBOL  
NOT TO SCALE



**C4** R7-8 AND R7-8 MOD 'RESERVED' PARKING SIGN  
NOT TO SCALE



**E4** PCC WHEEL STOP  
NOT TO SCALE

DRAWN BY	AJH
APPROVED BY	AJH
ISSUED FOR	BIDDING
ISSUE DATE	2/10/2026
PROJECT NUMBER	2142204360
FIELD BOOK	...

LPL	DRAWN BY
HCR	APPROVED BY
BIDDING	ISSUED FOR
2/10/2026	ISSUE DATE
2142204360	PROJECT NUMBER
..	FIELD BOOK

**PLANT SCHEDULE**

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE
<b>TREES</b>						
BY OWNER	+	QUE ALB	1	Quercus alba	White Oak	B & B 2"Cal
BY OWNER	+	QUE RBA	1	Quercus rubra	Northern Red Oak	B & B 2"Cal
BY OWNER	+	TIL RED	1	Tilia americana 'Redmond'	Redmond American Linden	B & B 2"Cal
<b>GROUND COVERS</b>						
BY OWNER	○	ROCK	157 sf	1-2" Dia. Limestone w/ Weed Control Fabric	Rock Mulch	Rock Mulch
BY OWNER	■	NATIVE	21,575 sf	Native Shortgrass Prairie Mix	Native Shortgrass Prairie Mix	SEED
BY OWNER	■	TURF	8,880 sf	Turf Seed	Turf Seed	SEED

**LANDSCAPE CODE SUMMARY**

**STORY COUNTY MINIMUM LANDSCAPING STANDARDS**

**REQUIRED:**

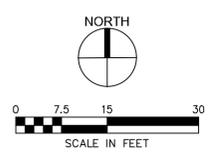
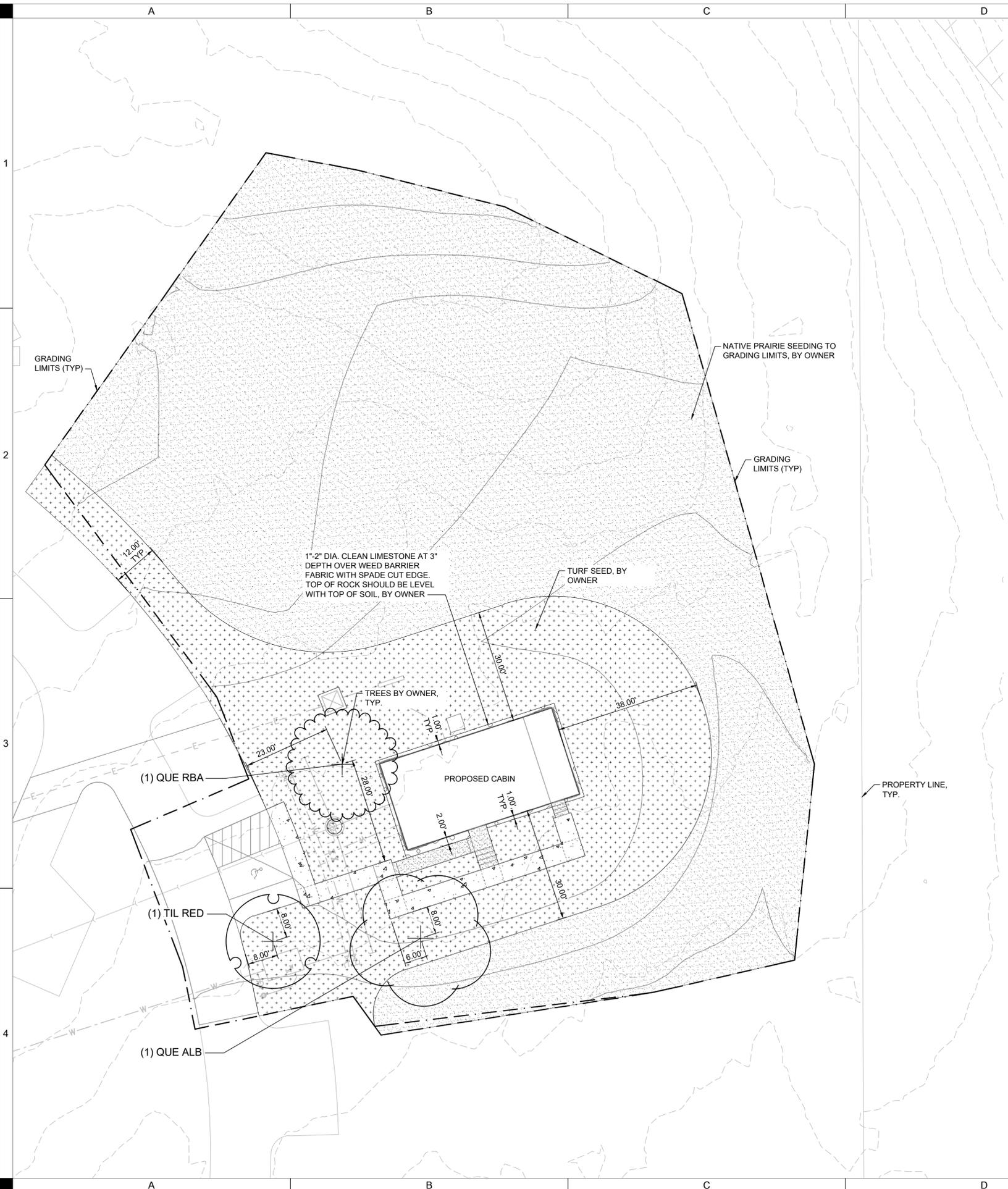
- AN AREA EQUAL TO AT LEAST 20% OF THE IMPERVIOUS SURFACE OF A PROPERTY TO BE DEVELOPED SHALL BE PLANTED AS LANDSCAPED AREAS. 3,313 SF NEW IMPERVIOUS SURFACE \* 20% = 662 SF LANDSCAPED AREA
- A MINIMUM OF ONE TREE PER FIVE PARKING STALLS OR FRACTION THEREOF. 1 PAVED STALL = REQUIRED 1 TREE

**PROVIDED:**

- 21,575 SF LANDSCAPED WITH NATIVE SEEDING
- ONE TREE PROVIDED IN TERMINAL PARKING ISLAND.

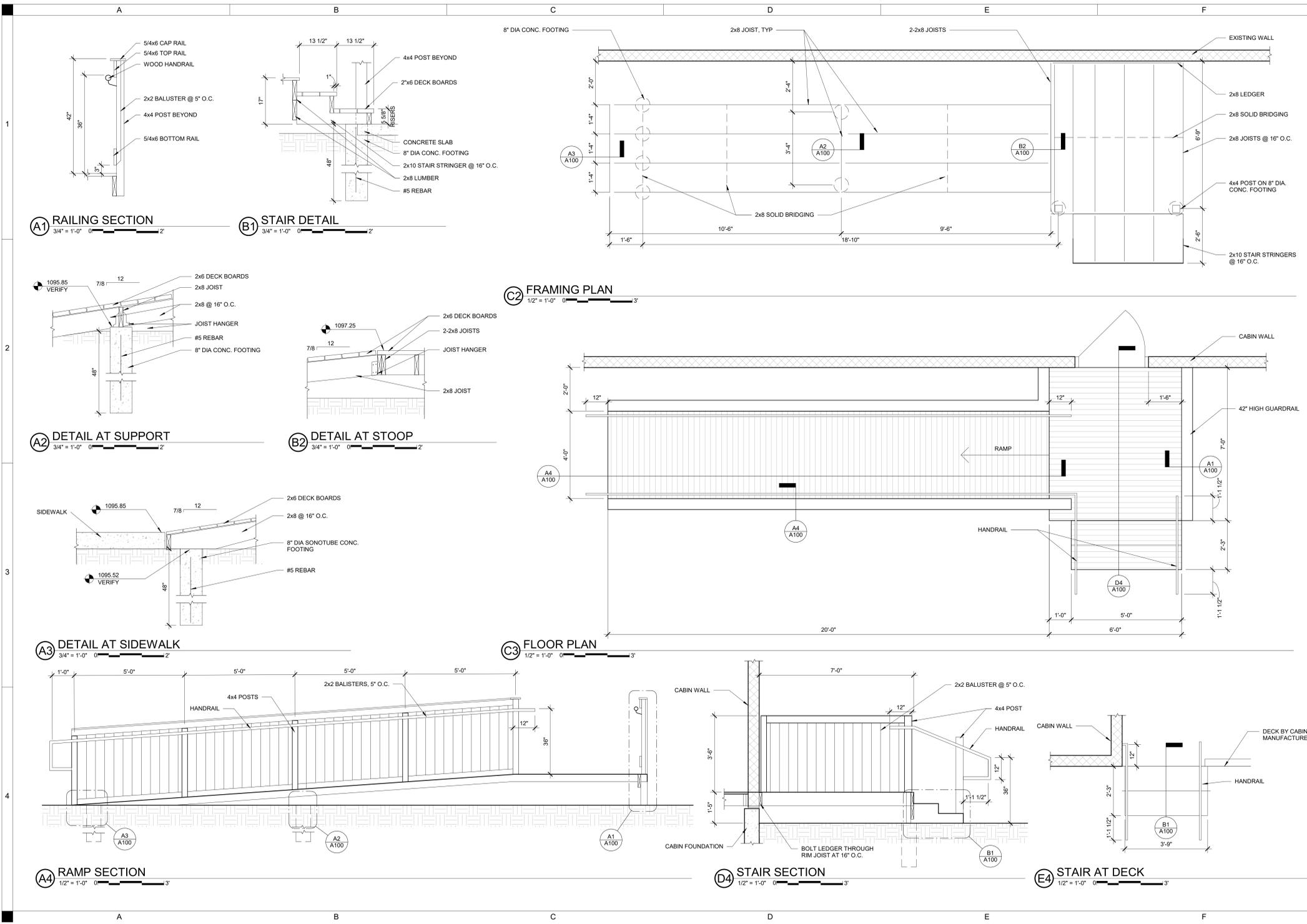
**LANDSCAPE NOTES**

1. PROTECT ALL STRUCTURES AND UTILITY SERVICES DURING INSTALLATION OF ALL PLANT MATERIAL. IF CONFLICTS EXIST BETWEEN PROPOSED PLANTING LOCATIONS AND OTHER STRUCTURES AND UTILITIES, CONTRACTOR SHALL COORDINATE PLANTING ADJUSTMENTS WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
2. CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE DUE TO OPERATIONS INSIDE AND OUTSIDE OF THE CONTRACT LIMIT LINE. ANY AREAS OUTSIDE THE LIMIT OF WORK THAT ARE DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE OWNER.
3. SEED AREAS SHALL RECEIVE 6" DEPTH TOPSOIL USING STOCKPILED TOPSOIL.
4. THE LOCATIONS OF ALL UTILITIES INDICATED ON THE PLANS ARE TAKEN FROM EXISTING RECORDS. THE EXACT LOCATION AND ELEVATION OF ALL UTILITIES MUST BE DETERMINED BY THE CONTRACTOR. IT SHALL BE THE DUTY OF THE CONTRACTOR TO ASCERTAIN WHETHER ANY ADDITIONAL UTILITIES OTHER THAN THOSE SHOWN ON THE PLAN MAY BE PRESENT.



P:\Projects\2024\240402\240402.dwg | C:\Users\lan\OneDrive\Documents\240402\240402.dwg  
 Printed: 2/10/2026 8:48:58 AM

Autodesk Revit 2024



**SHIVEHATTERY**  
 ARCHITECTURE+ENGINEERING

4125 Westown Parkway, Suite 100  
 West Des Moines, IA 50266 | SHIVEHATTERY.COM

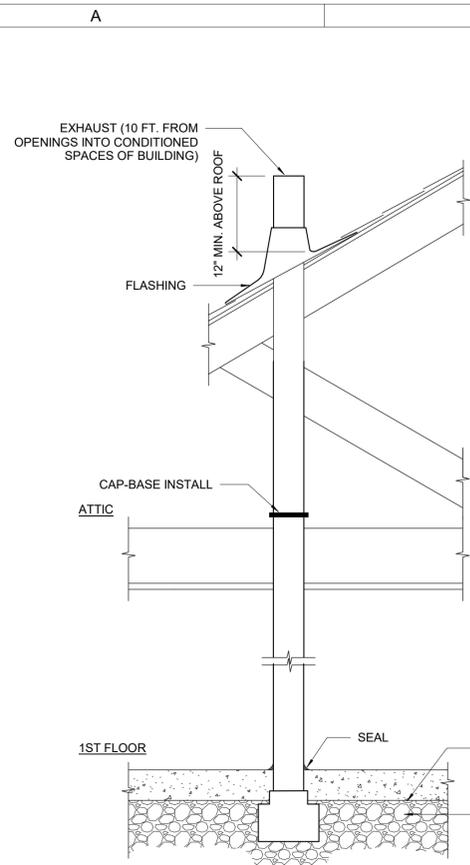
**DAKINS LAKE CABIN**

STORY COUNTY CONSERVATION  
 ZEARING, IOWA 50278

CRK	RCC	BIDDING	PROJECT NUMBER	FIELD BOOK
1095.85	1097.25	2026-02-26	2142294360	

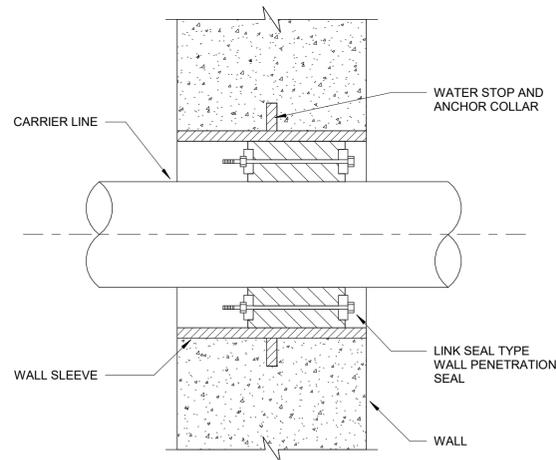
**STAIRS AND RAMP**

**A100**

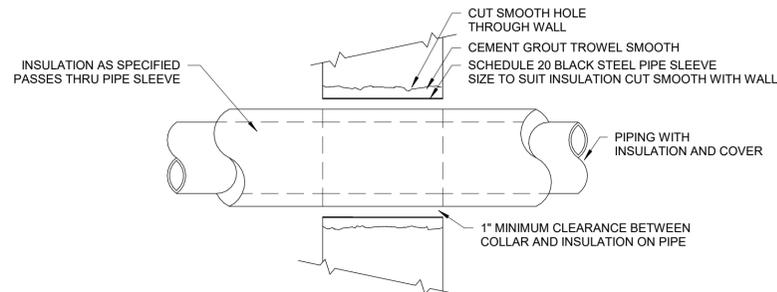


- NOTES:
1. ALL CONCRETE SLABS THAT COME IN CONTACT WITH THE GROUND SHALL BE LAID OVER A GAS PERMEABLE MATERIAL MADE UP OF EITHER A MINIMUM 4" THICK UNIFORM LAYER OF CLEAN AGGREGATE, OR A MINIMUM 4" THICK UNIFORM LAYER OF SAND, OVERLAIN BY A LAYER OR STRIPS OF MANUFACTURED MATTING DESIGNED TO ALLOW THE LATERAL FLOW OF SOIL GASES.
  2. CONCRETE FLOOR SLABS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL BUILDING CODES. ADDITIONAL REFS: AMERICAN CONCRETE INSTITUTE PUBLICATIONS, "ACI302.1R" & "ACI332R", OR THE POST TENSIONING INSTITUTE MANUAL, "DESIGN AND CONSTRUCTION OF POST-TENSIONED SLABS ON GROUND".
  3. ALL OPENINGS, GAPS AND JOINTS IN FLOOR AND WALL ASSEMBLIES IN CONTACT SOIL OR GAPS AROUND PIPES, TOILETS, BATHTUBS OR DRAINS PENETRATING THESE ASSEMBLIES SHALL BE FILLED OR CLOSED WITH MATERIALS THAT PROVIDE A PERMANENT AIR-TIGHT SEAL. SEAL LARGE OPENINGS WITH NON-SHRINK MORTAR, GROUTS OR EXPANDING FOAM MATERIALS AND SMALLER GAPS WITH AN ELASTOMERIC JOINT SEALANT, AS DEFINED IN ASTM C920-87.
  4. VENT PIPES SHALL BE INSTALLED SO THAT ANY RAINWATER OR CONDENSATION DRAINS DOWNWARD INTO THE GROUND BENEATH THE SLAB OR SOIL GAS RETARDER MEMBRANE.

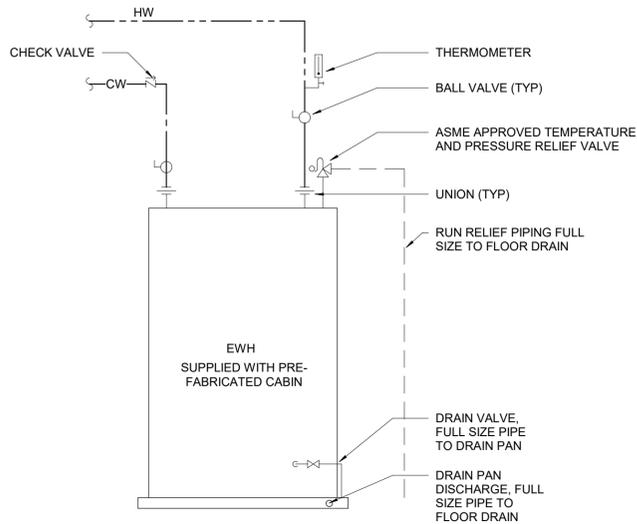
**A2** RADON SYSTEM DETAIL  
NOT TO SCALE



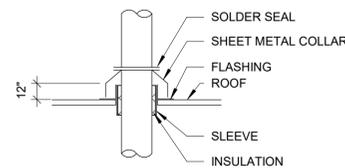
**A4** PIPE PENETRATION IN CAST-IN-PLACE CONCRETE WALL  
NOT TO SCALE



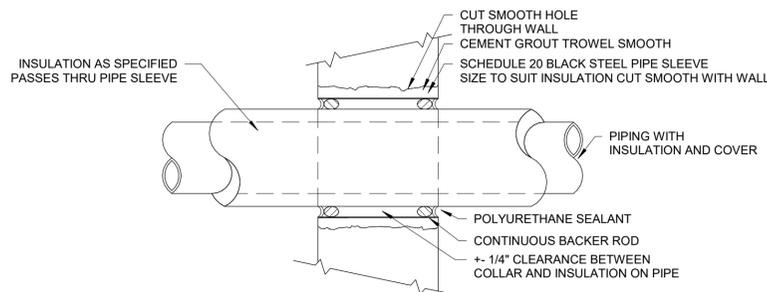
**A4a** INTERIOR WALL PIPE PENETRATION DETAIL  
NOT TO SCALE



**C2** ELECTRIC WATER HEATER DETAIL  
NOT TO SCALE



**C3** TYPICAL ROOF SLEEVE  
NOT TO SCALE



**C4** WALL PIPE PENETRATION DETAIL (EXTERIOR OR THROUGH UNCONDITIONED SPACE)  
NOT TO SCALE

PLUMBING SYMBOLS LEGEND	
← 2" CW →	PIPE SIZE, SYSTEM TAG, AND FLOW
← CW →	DOMESTIC COLD WATER
← HW →	DOMESTIC HOT WATER
← SAN →	SANITARY SEWER
← V →	SANITARY VENT
(M)	DOMESTIC WATER METER
(B)	BALL VALVE
(C)	CHECK VALVE
6" CW UP	ELBOW UP
6" HW DN	ELBOW DOWN
(O)	PIPE OFFSET UP
(O)	PIPE OFFSET DOWN
(T)	PIPE TEE TURNED UP
(T)	PIPE TEE TURNED DOWN
(T)	PIPE TEE
(C)	PIPE CAP
(U)	PIPE UNION
(T)	PIPE TRANSITION
(K)	KEYNOTE
(D)	DETAIL NUMBER
(S)	SHEET NUMBER ON WHICH THE DETAIL RESIDES

- PLUMBING**
1. PIPING SHOWN IS IN SCHEMATIC FORM. NOT ALL RISERS AND DROPS ARE SHOWN. PROVIDE OFFSETS AS REQUIRED TO MEET SPACE REQUIREMENTS AND TO AVOID INTERFERENCE WITH OTHER TRADES. COORDINATE WITH OTHER TRADES PRIOR TO FABRICATION. THE CONTRACTOR SHALL PROVIDE COMPLETE FULLY FUNCTIONAL SYSTEMS.
  2. 1/2" ROUGH-IN FOR INDIVIDUAL FIXTURES. FIXTURES SUPPLIED AS PART OF PRE-FABRICATED CABIN PACKAGE.
  3. ALL NEW PIPING EXPOSED IN OCCUPIED SPACES SHALL HAVE PVC JACKETS INSTALLED OVER THE PIPING INSULATION. ANY PIPING REQUIRED TO BE EXPOSED SHALL BE INSTALLED VERTICALLY OR HORIZONTALLY IN LEAST VISIBLE LOCATION.
  4. ALL EQUIPMENT AND ACCESSORIES SHALL BE INSTALLED TO BE EASILY ACCESSIBLE.

DRAWN BY	JLD
APPROVED BY	JLD
ISSUED FOR	BIDDING
ISSUE DATE	2/10/2026
PROJECT NUMBER	2142204360
FIELD BOOK	

PLUMBING SPECIFICATIONS:

1. COMMON WORK RESULTS

- A. THE WORK SHALL INCLUDE THE FURNISHING OF SYSTEMS, EQUIPMENT AND MATERIALS AS CALLED FOR ON THE PLUMBING DRAWINGS TO INCLUDE SUPERVISION, QUALITY CONTROL, OPERATION, METHODS AND LABOR FOR THE FABRICATION, INSTALLATION, START-UP AND TESTS FOR THE COMPLETE PLUMBING INSTALLATION.
B. THE INFORMATION CONTAINED ON THE PLUMBING DRAWINGS IS IN ITSELF INCOMPLETE AND VOID UNLESS USED IN CONJUNCTION WITH ALL OTHER DISCIPLINE DRAWINGS, THE SPECIFICATIONS, TRADE PRACTICES, OR APPLICABLE STANDARDS, CODES, ETC.
C. CONTRACTOR IS TO ASSUME FULL RESPONSIBILITY FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED ON THE JOB SITE AND BETWEEN INDIVIDUAL DRAWINGS OR SETS OF DRAWINGS FOR FABRICATION PROCESSES AND CONSTRUCTION TECHNIQUES (INCLUDING EXCAVATION, SHORING, SCAFFOLDING, BRACING, ERECTION, FORM WORK, ETC.), FOR COORDINATION OF THE VARIOUS TRADES, AND FOR SAFE CONDITIONS ON THE JOB SITE. VARIATIONS IN FIELD CONDITIONS RELATIVE TO THE CONTRACT DOCUMENTS SHALL BE REPORTED TO THE ENGINEER AS SOON AS THEY ARE FOUND. WORK SHALL NOT PROGRESS UNTIL WRITTEN PERMISSION FROM THE ENGINEER IS OBTAINED.

D. PERMITS AND INSPECTIONS

- a. FOLLOW APPLICABLE CODES AND OBTAIN NECESSARY PERMITS AND INSPECTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE BOTH A COMPLETE AND COMPLIANT INSTALLATION AS MAY BE DETERMINED BY THE AUTHORITY(S) HAVING JURISDICTION.
b. CONTRACTOR SHALL PROVIDE ALL WORK NECESSARY INCLUDING ALL LABOR, MATERIALS, PERMITS, TAXES, FEES, INSPECTIONS, HARDWARE, AND COST FOR INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.

E. CODES AND STANDARDS

- a. IT IS THE INTENT OF THESE DOCUMENTS TO COMPLY WITH THE APPLICABLE CODES. WHERE DISCREPANCIES OCCUR, NOTIFY THE ENGINEER/ARCHITECT IN WRITING FOR INTERPRETATION. CORRECT ANY INSTALLATION THAT FAILS TO COMPLY WITH THE CODES AND STANDARDS AT NO ADDITIONAL COST TO THE OWNER.
b. FOLLOW APPLICABLE CODES AND OBTAIN NECESSARY PERMITS AND INSPECTIONS. FOLLOW INDUSTRY STANDARDS, INCLUDING ASPE, ANSI, ASME, NFPA, ETC. COMPLY WITH CITY OF ZEARING AND STATE OF IOWA APPLICABLE CODES.

- c. IF ANY CONFLICTS ARISE BETWEEN THE CONTRACT DOCUMENTS AND THE APPLICABLE CODES, REGULATIONS OR ORDINANCE, THE CONTRACTOR SHALL BE RESPONSIBLE TO HAVE ALL WORK CONFORM TO THE STRICTER OF SAID REQUIREMENTS.

F. DRAWINGS

- a. THE CONTRACT DRAWINGS ARE IN PART DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENT AND APPROXIMATE SIZES AND LOCATIONS OF EQUIPMENT AND MATERIALS.
b. NEW WORK HAS BEEN SHOWN DIAGRAMMATICALLY AND DUE TO THE LIMITED SCALE OF THESE DRAWINGS, THE PLACEMENT AND ROUTING OF ALL PIPING, ETC. IS CONSIDERED SCHEMATIC IN NATURE; THEREFORE THE DRAWINGS MAY NOT SHOW ALL OFFSETS AND TRANSITIONS WHICH MAY BE REQUIRED. THE CONTRACTOR SHALL PROVIDE COMPLETE FULLY FUNCTIONAL SYSTEMS.
c. THE CONTRACTOR SHALL LOCATE ALL EQUIPMENT WHICH MUST BE SERVICED, OPERATED OR MAINTAINED IN FULLY ACCESSIBLE POSITIONS. MINOR DEVIATIONS FROM THE CONTRACT DRAWINGS MAY BE MADE TO ALLOW FOR BETTER ACCESSIBILITY, BUT CHANGES OF MAGNITUDE, OR WHICH INVOLVE EXTRA COST, SHALL NOT BE MADE WITHOUT APPROVAL. AMPLE SPACE SHALL BE ALLOWED FOR REMOVAL OF ALL PARTS THAT MAY REQUIRE REPLACEMENT OR MAINTENANCE IN THE FUTURE.

G. COORDINATION

- a. COORDINATE PLUMBING INSTALLATION WITH ALL TRADES PRIOR TO INSTALLATION. IF PLUMBING WORK INSTALLED INTERFERES WITH OTHER TRADES AFTER INSTALLATION, THE CONTRACTOR SHALL MAKE ALL NECESSARY CHANGES TO CORRECT THE CONDITION AT NO ADDITIONAL COST TO THE OWNER.
b. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING, SCHEDULING AND SEQUENCING OF THEIR WORK WITH ALL OTHER TRADES. PROVIDE OFFSETS, EASEMENTS, OR RELOCATE TO AVOID CONFLICTS WITH WORK OF OTHER TRADES. FURNISH SUFFICIENT RESOURCES TO MEET ALL PROJECT MILESTONES AND DEADLINES.

- c. MAINTAIN ALL MANUFACTURER RECOMMENDED EQUIPMENT SERVICE AND SAFETY CLEARANCES. MAINTAIN ALL NFPA/NEC CODE REQUIRED CLEARANCES.

H. GUARANTEE AND MAINTENANCE

- a. KEEP THE ENTIRE PORTION OF THE WORK IN REPAIR, WITHOUT ADDITIONAL COST TO THE OWNER, SO FAR AS DEFECTS IN WORKMANSHIP, APPARATUS, MATERIAL OR CONSTRUCTION ARE CONCERNED FOR ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE, EXCEPT AS OTHERWISE SPECIFIED HEREIN.

I. STANDARDS OF MATERIALS AND WORKMANSHIP

- a. ALL MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW, COMPLETE WITH MANUFACTURER'S GUARANTEE OR WARRANTY AND SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL).
b. ALL WORK WITHIN THE CONTRACT DOCUMENTS, WHICH INCLUDE THIS DRAWING, SHALL BE COMPLETED IN A SAFE WORKMANLIKE MANNER.

J. OPENINGS, CUTTING, AND PATCHING

- a. NEW FLOOR/WALL/CEILING PENETRATIONS REQUIRED FOR PIPING AND INSTALLATION SHALL BE CLEANLY BORED AT RIGHT ANGLES. AS NEW PIPING IS INSTALLED, NEW PENETRATIONS SHALL BE NEATLY CAULKED TO FILL VOID. WALL PENETRATIONS SHALL BE FINISHED WITH ESCUTCHEONS.
b. CONTRACTOR SHALL PATCH/REPAIR ALL UNUSED OPENINGS AND MODIFIED FINISH SURFACES. COORDINATE WALL AND FLOOR PATCHING REQUIREMENTS WITH THE GENERAL CONTRACTOR. PATCHWORK SHALL MATCH MATERIALS, FINISH AND TEXTURE OF ADJACENT SURFACES. REFERENCE ARCHITECTURAL PLANS.
c. IN A NEAT AND WORKMANLIKE MANNER: PATCH ANY REMAINING OPENINGS AND FILL EXCESSIVE GAPS; REWORK AND REFINISH TO MATCH ADJACENT STRUCTURES; FLASH AND SEAL ALL PLUMBING PENETRATIONS THRU WALLS, CEILINGS, AND FLOORS WITH METAL FRAMEWORK OR ESCUTCHEONS. ALL OPENINGS SHALL BE PROPERLY SEALED SO AS TO MEET FIRE RATING NEEDS.

K. CLEANING

- a. THE CONTRACTOR SHALL KEEP THE WORK AREA CLEAN OF ALL DEBRIS ON A DAILY BASIS. ALL NEW MATERIALS AWAITING INSTALLATION SHALL BE KEPT IN AREAS DESIGNATED BY THE OWNER AND PROTECTED, AS NEEDED, FROM ANY WEATHER OR ENVIRONMENTAL DAMAGE.

L. WARRANTY

- a. KEEP THE ENTIRE PORTION OF THE WORK IN REPAIR, WITHOUT ADDITIONAL COST TO THE OWNER, SO FAR AS DEFECTS IN WORKMANSHIP, APPARATUS, MATERIAL OR CONSTRUCTION ARE CONCERNED FOR ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE, EXCEPT AS OTHERWISE SPECIFIED HEREIN.

M. TESTS AND DEMONSTRATIONS

- a. SYSTEMS SHALL BE TESTED AND PLACED IN PROPER WORKING ORDER PRIOR TO DEMONSTRATING SYSTEMS TO OWNER.
b. PRIOR TO ACCEPTANCE OF THE PLUMBING INSTALLATION, THE CONTRACTOR SHALL DEMONSTRATE TO THE OWNER OR HIS DESIGNATED REPRESENTATIVES ALL ESSENTIAL FEATURES AND FUNCTIONS OF ALL SYSTEMS INSTALLED, AND SHALL INSTRUCT THE OWNER IN THE PROPER OPERATION AND MAINTENANCE OF SUCH SYSTEMS.
c. FLUSH, CLEAN, FILL AND PRESSURE TEST NEW PIPE.

- N. ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

2. PIPING PENETRATIONS

- A. PROVIDE CAST IRON PIPE SLEEVES AT PIPE PENETRATIONS AND INSTALL PIPE ESCUTCHEONS AT EXPOSED PIPE PENETRATIONS. PENETRATIONS SHALL BE NEATLY CAULKED TO FILL VOID.
B. PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, SHAFTS, ETC. BY DIVISION 22 CONTRACTOR SHALL BE SEALED WITH APPROPRIATE FIRE PROOFING MATERIAL TO RESTORE FIRE RATING. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALLS.
C. FLOOR/WALL/CEILING/SHAFT, ETC. PENETRATIONS REQUIRED FOR PIPING INSTALLATION SHALL BE CLEANLY BORED AT RIGHT ANGLES.

3. PIPES AND HANGERS

- A. PROVIDE FACTORY-FABRICATED PIPE HANGERS AND SUPPORTS COMPLYING WITH MSS SP-58, SELECTED BY INSTALLER TO SUIT PIPING SYSTEMS IN ACCORDANCE WITH MSS SP-58 AND MANUFACTURER'S PUBLISHED PRODUCT INFORMATION. USE ONLY ONE TYPE BY ONE MANUFACTURER FOR EACH PIPING SERVICE. SELECT SIZE OF HANGERS AND SUPPORTS TO EXACTLY FIT PIPE SIZE FOR BARE PIPING, AND TO EXACTLY FIT AROUND PIPING INSULATION WITH SADDLE OR SHIELD FOR INSULATED PIPING. PROVIDE COPPER-PLATED HANGERS AND SUPPORTS FOR COPPER-PIPING SYSTEMS.
B. INSTALL HANGERS AND SUPPORTS TO ALLOW CONTROLLED MOVEMENT OF PIPING SYSTEMS AND TO PERMIT FREEDOM OF MOVEMENT BETWEEN PIPE ANCHORS, AND TO FACILITATE ACTION OF EXPANSION JOINTS, EXPANSION LOOPS, EXPANSION BENDS, AND SIMILAR UNITS.
C. HANGERS: INSTALL HANGERS OUTSIDE OF INSULATION. HANGERS SHALL NOT BE ENCLOSED WITHIN INSULATION. INSTALL PIPE SHIELDS BETWEEN HANGERS AND INSULATION.

- D. SUPPORTS FOR 1-1/2" AND 2" PVC PLASTIC PIPING, MAXIMUM HORIZONTAL SPACING, 4'-0" WITH 3/8" ROD DIAMETER; MAXIMUM 4'-0" VERTICAL SPACING. 3" AND 3" PVC PLASTIC PIPING, MAXIMUM HORIZONTAL SPACING, 4'-0" WITH 5/8" ROD DIAMETER; MAXIMUM 4'-0" VERTICAL SPACING.
a. EXCEPTION: HORIZONTAL SPACING MAY BE INCREASED TO A MAXIMUM OF 8'-0" IF USING UPONOR PEX-A PIPE SUPPORTS OR EQUIVALENT. NON-COMBUSTIBLE, SELF-GRIPPING, GALVANIZED STEEL CHANNEL.

- E. SUPPORTS FOR COPPER PIPING 1 1/4" AND SMALLER SHALL BE SPACED MAXIMUM 5'-0" APART.
F. SUPPORT CAST IRON SOIL PIPING WITH TWO HANGERS FOR EACH PIPE LENGTH. MAXIMUM 5'-0" HORIZONTAL SPACING. MAXIMUM SPACING CAN BE INCREASED TO 10'-0" WHERE 10'-0" LENGTHS OF PIPE ARE INSTALLED. LOCATE HANGERS CLOSE TO COUPLINGS.

- G. INSTALL ADDITIONAL HANGERS AT CHANGES IN PIPE DIRECTION AND AT CONCENTRATED LOADS, LARGE VALVES, AND STRAINERS.
H. WHERE MORE THAN ONE PIPE IS TO BE RUN PARALLEL TOGETHER, THEY MAY BE SUPPORTED ON TRAPEZE TYPE HANGERS.

- 4. PLUMBING IDENTIFICATION
A. PIPE MARKERS
a. PROVIDE PLASTIC TAPE PIPE MARKERS (SETON OR EQUAL) FOR ALL PLUMBING PIPES.
b. MINIMUM INFORMATION INDICATING FLOW DIRECTION ARROW AND IDENTIFICATION OF FLUID BEING CONVEYED.

- c. PIPING SYSTEMS THAT SHALL BE IDENTIFIED BY THEIR CONTROLS (INCLUDING DIRECTIONAL ARROWS) ON THIS PROJECT SHALL INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, THE FOLLOWING:
• DOMESTIC HOT WATER
• DOMESTIC COLD WATER
• SANITARY WASTE
• SANITARY VENT
• RADON

5. PLUMBING FIXTURES AND SPECIALTIES

- A. INSTALL CLEANOUTS IN SANITARY WASTE PIPING WHERE REQUIRED BY THE 2021 UNIFORM PLUMBING CODE AND ELSEWHERE AS SHOWN.
B. ALL FLOOR CLEANOUTS, WALL CLEANOUTS, AND FLOOR DRAINS SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS. FIELD VERIFY LAYOUTS PRIOR TO INSTALL.
C. PROVIDE FIXTURES, TRIM, ACCESSORIES, LABOR, TOOLS AND SUPERVISION NECESSARY TO FURNISH AND INSTALL PLUMBING FIXTURES AS REQUIRED BY THE DRAWINGS AND THIS SECTION.
D. CLEAN PLUMBING FIXTURES AND EQUIPMENT ONCE INSTALLATION IS COMPLETE.
E. PROTECT INSTALLED PRODUCTS FROM DAMAGE DUE TO SUBSEQUENT CONSTRUCTION OPERATIONS. DO NOT PERMIT USE OF FIXTURES BY CONSTRUCTION PERSONNEL. REPAIR OR REPLACE DAMAGED PRODUCTS BEFORE DATE OF SUBSTANTIAL COMPLETION.

6. PIPE

- A. DUCTILE IRON PIPE, AWWA C151: SERVICE - UNDER GROUND WATER PIPING
B. SOLID WALL SCHEDULE 40 PVC, ASTM D2665: SERVICE - ABOVE GROUND SANITARY WASTE AND VENT
C. CAST IRON SOIL PIPE, SERVICE WEIGHT, BELL AND SPIGOT, ASTM A75, ASPHALT COATED: SERVICE - BELOW GRADE SANITARY WASTE
D. CROSS-LINKED POLYETHYLENE (SDR9 PEX), ASTM F876 & F877: SERVICE - DOMESTIC CW AND HW
a. BLUE COLOR FOR CW LINES AND RED FOR HW LINES.
b. PEX PIPING TO FIXTURES AND EQUIPMENT SHALL BE PER 2021 UNIFORM PLUMBING CODE AND MANUFACTURER'S INSTRUCTIONS.
E. INSTALL ALL PIPING IN ORDERLY MANNER AND MAINTAIN GRADIENT. ROUTE PARALLEL AND PERPENDICULAR TO WALLS.
F. SANITARY WASTE PIPING SHALL BE SLOPED AT 1/4" PER FOOT MINIMUM FOR PIPING UNDER 3" AND 1/8" PER FOOT MINIMUM FOR PIPING 3" AND LARGER.
G. INSTALL YELLOW INSULATED COPPER TRACER WIRE OR OTHER APPROVED CONDUCTOR ADJACENT TO ANY UNDER GROUND NON METALLIC PIPING. TRACER WIRE SHALL NOT BE LESS THAN 18 AWG WITH INSULATION TYPE SUITABLE FOR DIRECT BURIAL.
H. INSTALL PIPING TO EQUIPMENT TO PROVIDE EASY ACCESS AND REMOVAL OF EQUIPMENT. DO NOT ROUTE PIPING UNDER EQUIPMENT.
I. FIXTURE PIPING ON EXTERIOR WALL SHALL BE ROUTED ON WARM SIDE OF THE INSULATION TO PROTECT FROM FREEZING.
J. ALL ROOF WORK TO BE COMPLETED BY ROOF INSTALLER.
K. VENT TERMINAL THROUGH ROOF SHALL MEET 2021 UNIFORM PLUMBING CODE.
L. PROTECT PLUMBING VENTS EXPOSED TO SUNLIGHT WITH 2 COATS OF WATER-BASED LATEX PAINT.

7. FITTINGS

- A. COPPER WATER TUBE CAST BRONZE OR WROUGHT COPPER, SOLDER JOINT TYPE. ANSI B16.18 AND B16.22.
B. COPPER WATER AND DRAINAGE TUBE PRESS JOINTS - COMPRESSION SEALING VIA INTEGRAL INTERNAL EPDM GASKETS VIA USE OF SPECIALIZED TOOLS. ASSURED LEAKAGE PATH FEATURE TO ASSIST INSTALLER IN DETERMINING UN-PRESSED JOINT ASSEMBLY CONDITION.
C. CAST IRON FITTINGS SHALL CONFORM TO PIPE AS PER ASTM STANDARDS. NO-HUB CLAMPS EQUIVALENT TO CLAMP ALL HI-TORQ 80 FOR ABOVE GRADE PIPING.
D. SOLID WALL SCHEDULE 40 PVC, SOLVENT CEMENTED JOINTS, ASTM D2665.
E. SOLID WALL SCHEDULE 40 CPVC, SOLVENT CEMENTED JOINTS, ASTM F439.
F. PEX-A COLD EXPANSION FITTINGS, ASSEMBLY CONSISTS OF APPROPRIATE PROPEX INSERT WITH A CORRESPONDING PROPEX RING, ASTM F1960 COMPLIANT.

8. VALVES

- A. ACCEPTABLE MANUFACTURERS: LEAD FREE NIBCO, WATTS, OR APPROVED EQUAL FOR DOMESTIC WATER PIPING.
B. INSTALL EXTENDED-STEM VALVES WHERE INSULATION IS INDICATED.
C. WATER VALVES: FULL PORT BALL VALVES, ASTM B62 SILICONE/BRONZE BODY.
D. CHECK VALVES: SWING TYPE, ASTM B62 SILICONE/BRONZE BODY.
E. DO NOT INSTALL VALVES CLOSER THAN 6" TO NEAREST FITTING.
F. LOCATE VALVES WITHIN REACHABLE DISTANCE FROM EQUIPMENT BEING SERVED FOR EASY ACCESS AND OPERATION. DO NOT LOCATE WITH STEMS BELOW HORIZONTAL.

9. PIPING SPECIALTIES

- A. WATER METERS
a. CONSULT WITH UTILITY AS TO EXTENT OF WORK, COSTS, FEES, AND PERMITS INVOLVED. PAY SUCH COSTS AND FEES; OBTAIN PERMITS.
b. INSTALL WATER METERS PER UTILITY REQUIREMENTS WITH SHUT-OFF VALVES UPSTREAM AND DOWNSTREAM OF EACH METER.
B. WATER HAMMER ARRESTORS
a. MANUFACTURED BY WATTS, ZURN, OR ENGINEER APPROVED EQUIVALENT PRIOR TO BID.
b. COPPER CONSTRUCTION, BELLOW TYPE SIZED AND LOCATED IN ACCORDANCE WITH PDI-WH 201, PRE-CHARGED SUITABLE FOR OPERATION IN TEMPERATURE RANGE 34-250 DEGREES F AND MAXIMUM 150 PSIG WORKING PRESSURE. AIR CHAMBERS NOT ALLOWED.
c. WATER HAMMER ARRESTORS NOT SHOWN ON PLANS. REFER TO MPC 604.9. INSTALL ON BOTH COLD AND HOT WATER PIPING IN AN UPRIGHT POSITION. LOCATE AT THE ENDS OF PIPE RUNS AND FOR EACH NEW PLUMBING FIXTURE OR GROUP OF FIXTURES. FOLLOW MANUFACTURER'S SPECIFICATIONS AND LOCAL PLUMBING CODE FOR LOCATION AND INSTALLATION. INSTALL IN AN ACCESSIBLE LOCATION.
10. FLUSH, CLEAN, AND PRESSURE TEST NEW PIPING
A. TEST PER 2021 UNIFORM PLUMBING CODE. TESTED AND PROVED TIGHT FOR NOT LESS THAN 15 MINUTES.
a. DOMESTIC WATER PIPING -
• HYDROSTATICALLY TEST: NOT LESS THAN THE WORKING PRESSURE OF THE SYSTEM
• AIR TEST: NOT LESS THAN 50 PSI
b. SANITARY WASTE AND VENT PIPING -
• HYDROSTATICALLY TEST: PIPING INSIDE OF BUILDING WITH 10 FEET HEAD OF WATER FOR 4 HOURS.
• AIR TEST: A GAUGE PRESSURE OF 5 PSI OR 10 INCHES OF MERCURY COLUMN.
B. INSPECT BEFORE FIXTURES ARE CONNECTED. IF LEAKS APPEAR, REPAIR THEM AND REPEAT THE TEST.

11. INSULATION

- A. INSULATING MATERIALS, JACKETS, MASTICS, ETC. SHALL MEET FLAME SPREAD, FUEL CONTRIBUTION AND SMOKE DEVELOPED RATINGS IN ACCORDANCE WITH NFPA-90A. FLAME SPREAD RATING IN ACCORDANCE WITH NFPA 255, ASTM E-84 OR UL 723 OF NOT MORE THAN 25; SMOKE DEVELOPED RATING OF NOT MORE THAN 50, UNLESS OTHERWISE NOTED IN THIS SECTION.
B. SERVICE DOMESTIC COLD WATER
TYPE INSULATION FIBERGLASS INSULATION EQUAL TO MANVILLE "MICRO-LOK-HP-1"
MIN THICKNESS 1" THICK
C. DOMESTIC HOT WATER
FIBERGLASS INSULATION 1 1/2" THICK EQUAL TO MANVILLE "MICRO-LOK-HP-1"
D. INSULATION SHALL MEET 25/50 REQUIREMENTS WHEN INSTALLED OVER BOTH COMBUSTIBLE AND NON-COMBUSTIBLE MATERIALS.
E. PROVIDE PVC JACKETING (MANVILLE "ZESTON 2000" OR EQUAL) ON PIPE FITTINGS, VALVES, ETC.
F. INSTALL INSULATION AND JACKETING MATERIALS PER MANUFACTURER'S RECOMMENDATIONS.

12. WATER HEATER

- A. ELECTRIC TANK - PROVIDED BY OTHERS
B. PROVIDE "QUICK STAND" 40-S-22-A FLOOR MOUNTED STAND BY HUBBARD ENTERPRISES-HOLDRITE.
C. ASME PRESSURE AND TEMPERATURE RELIEF VALVE AND DRAIN PAN (3/4" MINIMUM DRAIN) SHALL DISCHARGE TO FLOOR DRAIN BELOW. PIPE MATERIAL TO BE COPPER, INSULATE WITH 1" INSULATION.

13. RADON

- A. EXTEND 3" MINIMUM SCHEDULE 40, SOLID CORE PVC ASTM 2865 FROM TEE WITH 12" FULL SIZE HORIZONTAL EXTENSIONS FULLY SUPPORTED BELOW CONCRETE FLOOR IN GAS PERMEABLE AGGREGATE.
B. COORDINATE WITH GENERAL CONTRACTOR TO ENSURE APPROPRIATE GAS PERMEABLE AGGREGATE MATERIALS, REFERENCE ASTM 1465-08A, SECTION 6.4 OR AS REQUIRED IN MOST RECENT EDITION.
C. CAULK AND SEAL AIRTIGHT ALL PENETRATIONS, JOINTS, PIPE SLEEVES, ANNULAR OPENINGS, AND CONDUIT OPENINGS WITH ELASTOMERIC JOINT SEALANT.
D. PENETRATIONS SHALL BE FIRE STOP SEALED WITH APPROVED INTUMESCENT EXPANDING FIRE STOP MATERIALS AS REQUIRED TO MAINTAIN FLOOR FIRE RATINGS.
E. ALL JOINTS IN PVC PIPING SHALL BE SOLVENT WELDED WITH PURPLE PRIMER.
F. RADON VENT PIPING SHALL BE EXTENDED THROUGH THE ROOF UNIMPEDED WITH APPROVED VENT FLASHINGS.

Table with 4 columns: JLD, JLD, BIDDING, and PROJECT NUMBER. Values include 2/10/2026 and 2142204360.

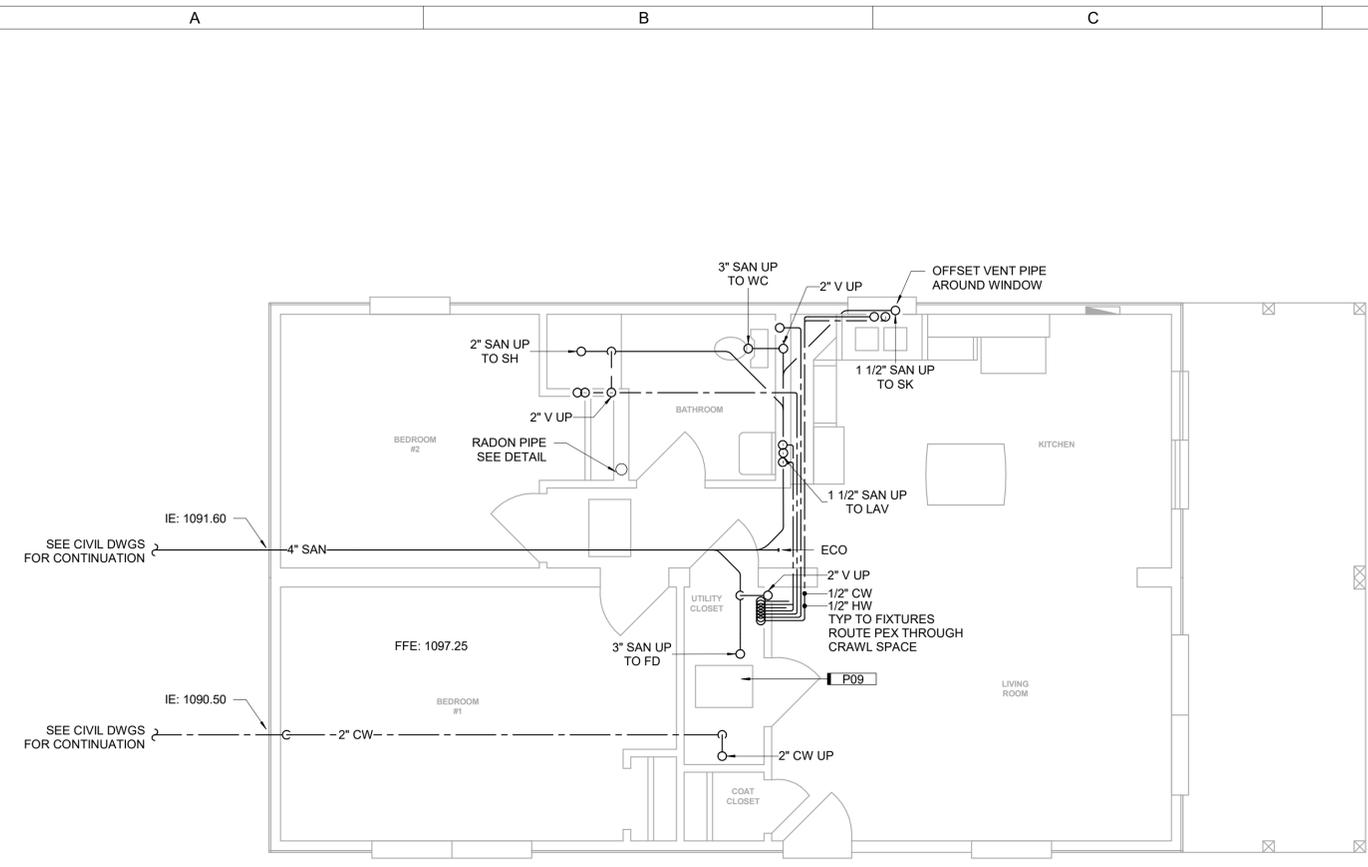
Table with 4 columns: DRAWN BY, APPROVED BY, ISSUED FOR, and PROJECT NUMBER. Values include JLD, JLD, BIDDING, and 2142204360.

Table with 4 columns: PLUMBING SPECIFICATIONS, JLD, JLD, BIDDING, and PROJECT NUMBER. Values include JLD, JLD, BIDDING, and 2142204360.

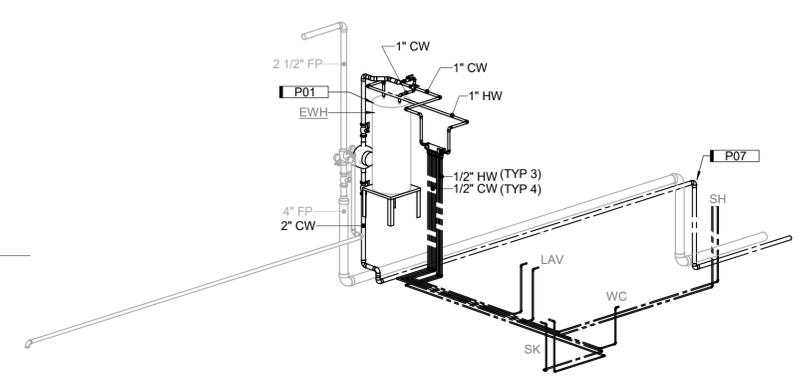
DRAWN BY	JLD
APPROVED BY	JLD
ISSUED FOR	BIDDING
ISSUE DATE	2/10/2026
PROJECT NUMBER	2142204360
FIELD BOOK	

KEYNOTES	
KEY	NOTE
P01	50 GAL. ELECTRIC WATER HEATER SUPPLIED AS PART OF PRE-FABRICATED CABIN PACKAGE. PLUMBING CONTRACTOR TO INSTALL WATER HEATER AND ACCESSORIES. CONTRACTOR TO PROVIDE A 12" HIGH SUPPORT STAND.
P02	VIEGA MINIBLOC ZONING MANIFOLD - MODEL V5660 (OR EQUAL).
P03	OFFSET VENT PIPING BELOW WINDOW.
P07	OFFSET PIPE MAIN IN THE CRAWL SPACE TO MEET INVERT ELEVATION FROM SITE PLAN.
P08	PROVIDE AND CONNECT HOT WATER AND WASTE CONNECTION FOR DISHWASHER. SIZE AND ROUTING OF CONNECTIONS TO BE PER MANUFACTURER'S RECOMMENDATIONS. WATER CONNECTION SHALL BE PROTECTED AGAINST BACKFLOW. INSTALLATION OF BACKFLOW AND WASTE PIPING SHALL BE PER 2024 UNIFORM PLUMBING CODE.
P09	KEEP ACCESS TO THE CRAWL SPACE CLEAR.

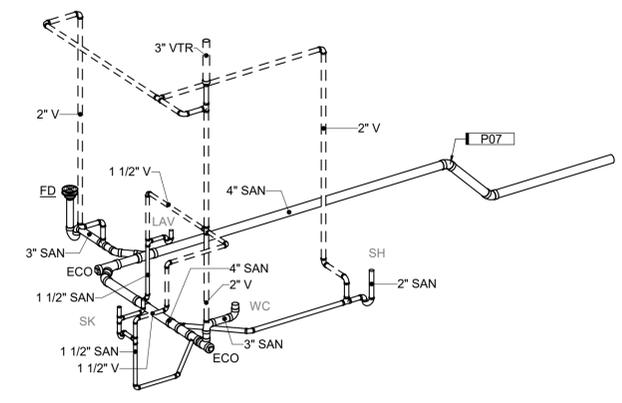
**FLOOR DRAIN (FD):**  
ZURN, Z415B (OR EQUAL), 8" DIAMETER ADJUSTABLE STRAINER HEAD, COATED CAST IRON, FLASHING COLLAR, WEEP HOLES, NIKALOY ROUND STRAINER, BACK WATER VALVE, NO-HUB OUTLET SET TOP OF STRAINER FLUSH WITH FINISHED FLOOR. PROVIDE WITH CAST IRON ADJUSTABLE P-TRAP.  
ALL OTHER FIXTURES SUPPLIED AS PART OF THE PRE-FABRICATED CABIN PACKAGE.



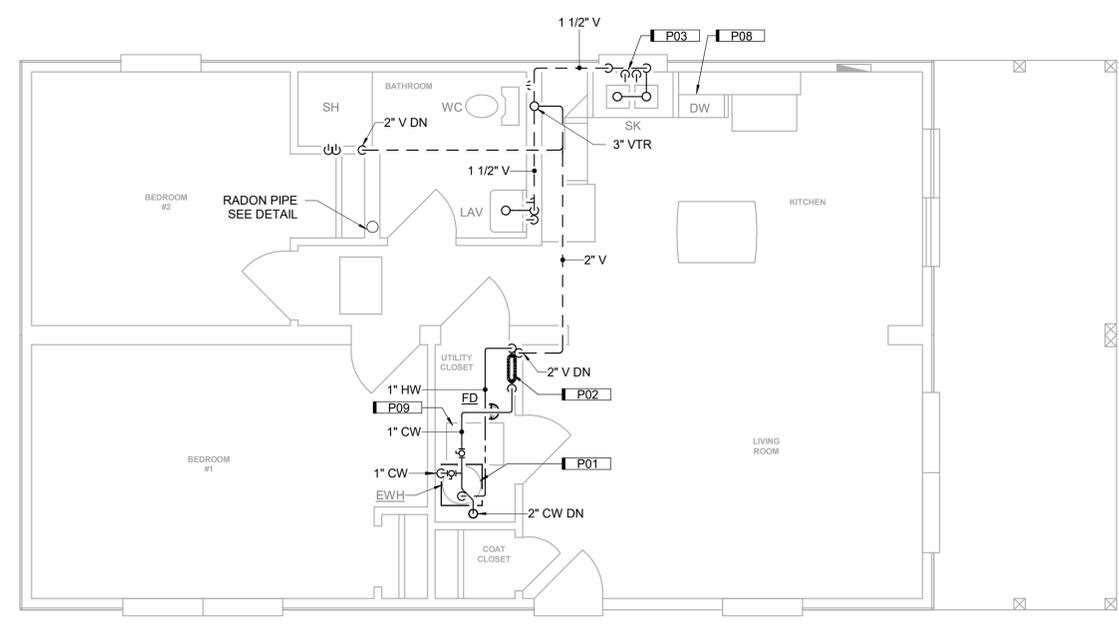
**A2 CRAWL SPACE PLUMBING PLAN**  
1/4" = 1'-0" 0 6'



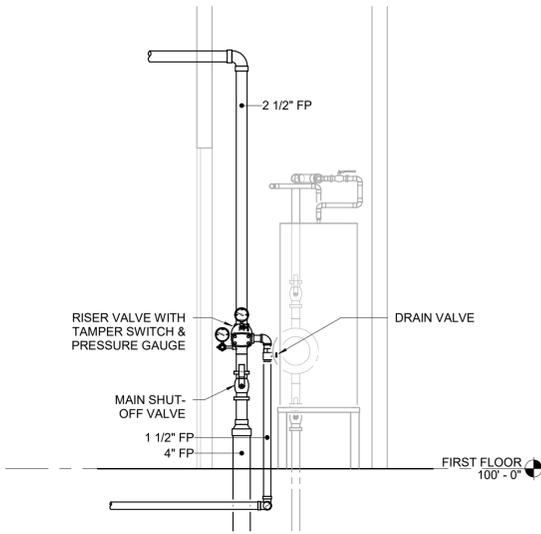
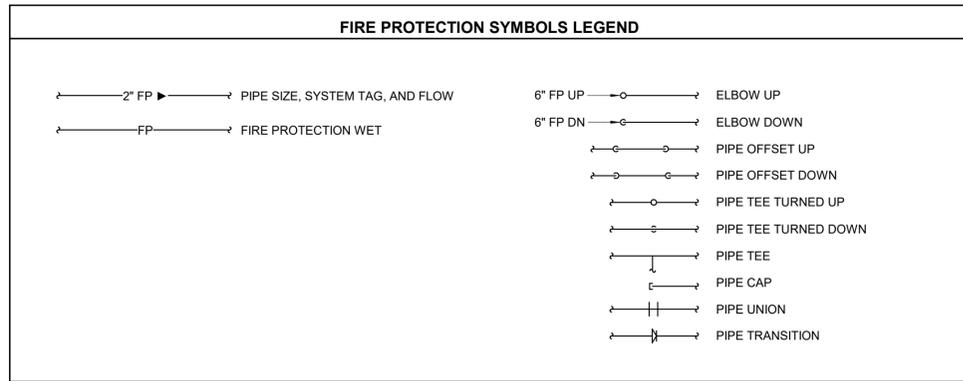
**D3 PLUMBING ISOMETRIC - DOMESTIC**  
NOT TO SCALE



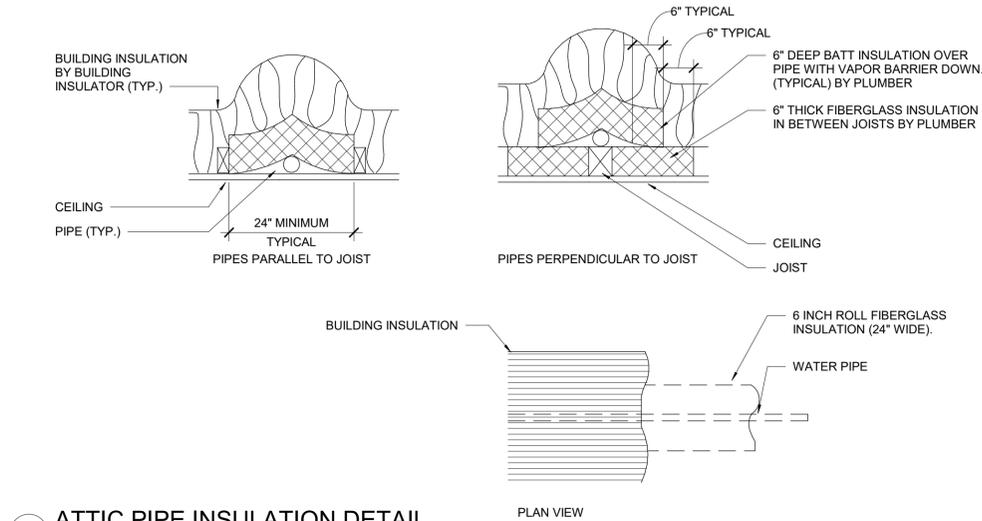
**D4 PLUMBING ISOMETRIC - SV**  
NOT TO SCALE



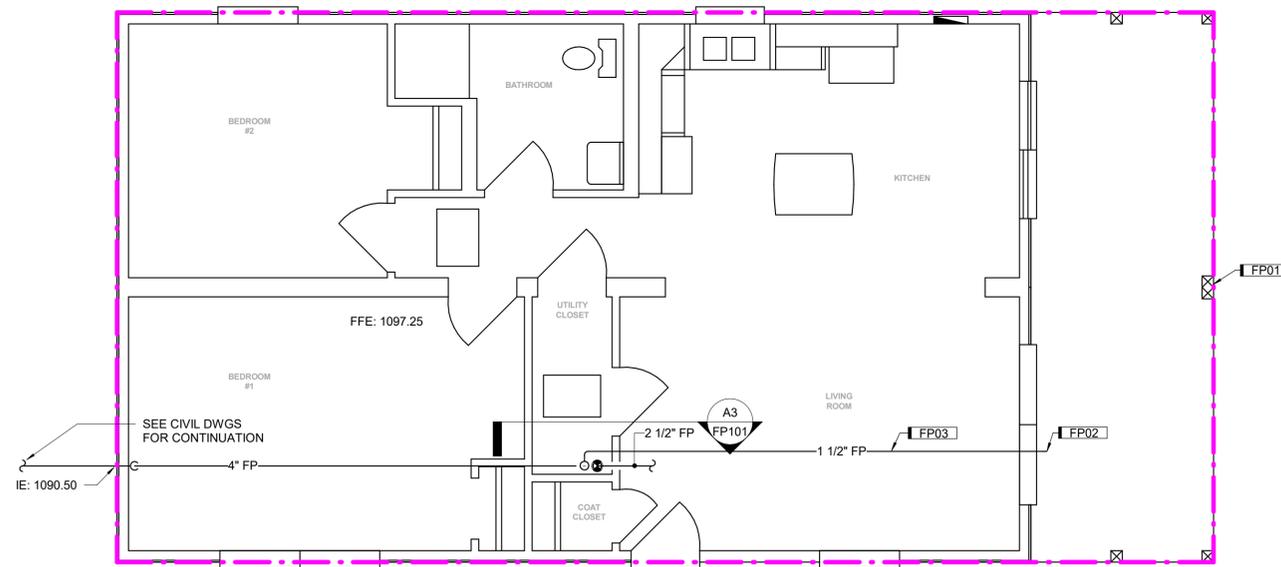
**A4 ABOVE FLOOR PLUMBING PLAN**  
1/4" = 1'-0" 0 6'



**A3** FIRE SERVICE ENTERANCE  
1/2" = 1'-0" 0' 3'



**B3** ATTIC PIPE INSULATION DETAIL  
NOT TO SCALE



**A4** FIRE PROTECTION PLAN  
1/4" = 1'-0" 0' 6'

### DIVISION 21: FIRE PROTECTION SPECIFICATIONS:

1. BASIC MATERIALS AND METHODS
  - A. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR PRODUCING FINAL DESIGN DRAWINGS, SIGNED AND SEALED BY A NICET CERTIFIED LEVEL IV DESIGNER OR LICENSED PROFESSIONAL ENGINEER IN THE STATE OF IOWA FOR ISSUANCE OF A PERMIT FROM THE CITY OF DAKINS LAKE. SUBMIT FINAL DRAWINGS TO GENERAL CONTRACTOR FOR REVIEW PRIOR TO PERMIT SUBMISSION.
  - B. COMPREHENSIVE SHOP DRAWINGS AND HYDRAULIC CALCULATIONS SHALL BE SUBMITTED BY THE CONTRACTOR FOR THE APPROVAL BY THE OWNER AND LANDLORD'S FIRE INSURANCE UNDERWRITER, AND THE FIRE RATING INSPECTION BUREAU. SPRINKLER SHOP DRAWINGS SHALL BE SUBMITTED TO THE LOCAL FIRE MARSHALL OFFICE ADDRESS AND RECEIVE THEIR APPROVAL BEFORE ANY INSTALLATION CAN BEGIN. APPROVED DRAWINGS MUST BE AT JOB SITE DURING CONSTRUCTION.
  - C. THIS CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR COORDINATION WORK WITH THE WORK OF OTHER TRADES PRIOR TO INSTALLATION. ISSUES THAT ARISE BECAUSE OF LACK OF COORDINATION WILL BE CORRECTED AT NO COST TO THE OWNER. DUCTWORK, DIFFUSERS, AND LIGHT FIXTURES SHALL HAVE PRIORITY OVER SPRINKLER PIPING AND SPRINKLERS.
  - D. CONTRACTOR SHALL LOCATE AND INSTALL SPRINKLER PER NFPA 13R AND AUTHORITY HAVING JURISDICTION. PROVIDE APPROPRIATE SPRINKLERS AS REQUIRED TO MAINTAIN A FULLY SPRINKLERED BUILDING.
  - E. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERATE FIRE PROTECTION SYSTEM AS INDICATED ON DRAWINGS, AS SPECIFIED, AND IN COMPLIANCE WITH THE STANDARDS OF THE NATIONAL FIRE PROTECTION ASSOCIATION, AND ALL STATE AND LOCAL REGULATIONS.
  - F. ALL WORK WITHIN THE CONTRACT DOCUMENTS, WHICH INCLUDE THIS DRAWING, SHALL BE COMPLETED IN A SAFE WORKMANLIKE MANNER AND IN ACCORDANCE WITH ALL APPLICABLE STATE, LOCAL, AND NATIONAL CODES, REGULATIONS AND ORDINANCES. IF ANY CONFLICTS ARISE BETWEEN THE CONTRACT DOCUMENTS AND THE APPLICABLE CODES, REGULATIONS OR ORDINANCE, THE CONTRACTOR SHALL BE RESPONSIBLE TO HAVE ALL WORK CONFORM TO THE STRICTER OF SAID REQUIREMENTS.
  - G. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS AS REQUIRED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE BOTH A COMPLETE AND COMPLIANT INSTALLATION AS MAY BE DETERMINED BY THE AUTHORITY(S) HAVING JURISDICTION.
2. PRODUCTS
  - A. MANUFACTURERS: TYCO FIRE PROTECTION PRODUCTS, VIKING CORPORATION, RELIABLE SPRINKLER
  - B. PIPE
    - a. BLACK STEEL, SCH 10, ASTM A 135: SERVICE - 2" AND LARGER
    - b. BLACK STEEL, SCH 40, ASTM A 53: SERVICE - 1 1/2" AND SMALLER
    - c. CPVC, ASTM F422: SERVICE - WET SYSTEM, CONCEALED LOCATIONS ONLY
  - C. FITTINGS
    - a. CAST IRON: ASTM A 234 SEAMLESS OR WELDED JOINTS, ASTM A538 OR ASTM A 47 ROLLED GROOVE TYPE (CUT GROOVING NOT ALLOWED), MECHANICAL LOCKING (PUSH-ON) TYPE. SERVICE - 2" AND LARGER
    - b. CAST IRON: ASME B16.3 THREADED JOINTS, WELDED JOINTS, MECHANICAL JOINTS (CUT, ROLLED GROOVE, PUSH-ON TYPE). SERVICE - 1 1/2" AND SMALLER
    - c. CPVC: ASTM F438
  - D. FIRE PROTECTION SYSTEM MATERIALS AND COMPONENTS SHALL BE U.L. LISTED FOR THE APPLICATION ANTICIPATED.
  - E. FLUSH, TEST, AND CERTIFY SYSTEM PER NFPA-13R.
  - F. SPRINKLERS
    - a. FOR AREAS WITH CEILINGS: SPRINKLERS SHALL BE QUICK RESPONSE FULLY-RECESSED CONCEALED TYPE PENDENTS WITH WHITE COVER.
    - b. IN EXPOSED AREAS SPRINKLER HEADS SHALL BE QUICK RESPONSE UPRIGHT, PENDANT, OR HORIZONTAL TYPE.
    - c. PROVIDE BASKET TYPE METAL GUARDS OVER SPRINKLER TO PROTECT THEM FROM DAMAGE IN EXPOSED AREAS.
  - G. PIPING SPECIALTIES
    - a. PROVIDE ALARMS, TEST CONNECTIONS, FLOW SWITCHES, ETC. AS REQUIRED FOR A FULLY FUNCTIONAL SPRINKLER SYSTEM.
  - H. PIPING PENETRATIONS
    - a. PROVIDE CAST IRON PIPE SLEEVES AT PIPE PENETRATIONS AND INSTALL PIPE ESCUTCHEONS AT EXPOSED PIPE PENETRATIONS. PENETRATIONS SHALL BE NEATLY CAULKED TO FILL VOID.
    - b. PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, SHAFTS, ETC. BY DIVISION 21 CONTRACTOR SHALL BE SEALED WITH APPROPRIATE FIRE PROOFING MATERIAL TO RESTORE FIRE RATING. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALLS.
    - c. FLOOR/WALL/CEILING/SHAFT, ETC. PENETRATIONS REQUIRED FOR PIPING INSTALLATION SHALL BE CLEANLY BORED AT RIGHT ANGLES.
  - I. PROVIDE HANGERS AND SUPPORTS AS REQUIRED BY NFPA 13R.
3. INSTALLATION
  - A. LOCATE AND INSTALL SPRINKLERS PER NFPA-13R AND AUTHORITY HAVING JURISDICTION. DETERMINE ACTUAL NUMBER OF SPRINKLERS REQUIRED FOR LIGHT HAZARD APPLICATIONS.
  - B. FIRE PROTECTION WORK SHALL BE COORDINATED WITH OTHER TRADES PRIOR TO INSTALLATION INCLUDING BUT NOT LIMITED TO DUCTWORK, PLUMBING, ELECTRICAL EQUIPMENT, AND PIPING. SPACE ABOVE THE CEILING IS LIMITED AND SHALL BE COORDINATED WITH OTHER TRADES.
  - C. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING, SCHEDULING AND SEQUENCING OF THEIR WORK WITH ALL OTHER TRADES. PROVIDE OFFSETS, EASEMENTS OR RELOCATE TO AVOID CONFLICTS WITH WORK OF OTHER TRADES. FURNISH SUFFICIENT RESOURCES TO MEET ALL PROJECT MILESTONES AND DEADLINES.
  - D. ALL FIRE PROTECTION PIPING MAY NOT BE INSTALLED AT A SINGLE ELEVATION. OFFSETS MAY BE REQUIRED TO ALLOW FOR INSTALLATION OF OTHER WORK. NOT ALL MAIN OR BRANCH LINES SHOWN. INSTALL PIPING TO BE SELF DRAINING BY GRAVITY WHERE POSSIBLE OR PROVIDE DRAIN LEGS AS NEEDED.
  - E. TEST DRAIN LOCATIONS SHALL BE DRAINED INTO FLOOR DRAINS, MOP SINKS, OR THROUGH EXTERIOR WALLS TO SPILL ON CONCRETE PAD SPLASH BLOCKS, MOUNTED ON GRADE. VERIFY ALL LOCATIONS WITH ARCHITECT.
  - F. CONTRACTOR SHALL NOT PROCURE OR FABRICATE ANY PIPING, WITHOUT FIRST VERIFYING ALL DIMENSIONS AND CONDITIONS WHETHER CURRENTLY EXISTING OR NOT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK, INCLUDING ANY REQUIRED REWORK.
  - G. MAINTAIN ALL MANUFACTURER RECOMMENDED EQUIPMENT AND ACCESSORY SERVICE AND SAFETY CLEARANCES. DO NOT LOCATE ANY EQUIPMENT OR RUN MATERIALS ABOVE ANY ELECTRICAL PANELS OR SWITCHGEAR. MAINTAIN ALL NFPA/NEC CODE REQUIRED CLEARANCES.
  - H. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE WATERTIGHT AND WEATHER-PROOF INTEGRITY OF ROOFS, WALLS AND FLOORS DURING CONSTRUCTION. EACH TRADE SHALL LOCATE/DIMENSION/COORDINATE THEIR ROOF, FLOOR AND WALL OPENINGS WITH THE GENERAL CONTRACTOR (GC) OR CONSTRUCTION MANAGER.
  - I. PROTECT NEW WORK FROM DAMAGE OR CONTAMINATION. PROVIDE TEMPORARY PROTECTIVE CAPPING OR TAPED POLYETHYLENE ENCLOSURES OVER PIPING ENDS AND EQUIPMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING MECHANICAL SYSTEMS PRIOR TO PLACING THEM IN SERVICE.
  - J. IN A NEAT AND WORKMANLIKE MANNER: PATCH ANY REMAINING OPENINGS AND FILL EXCESSIVE GAPS; REWORK AND REFINISH TO MATCH ADJACENT STRUCTURES; FLASH AND SEAL ALL FIRE PROTECTION PENETRATIONS THRU WALLS, CEILINGS AND FLOORS WITH METAL FRAMEWORK OR ESCUTCHEONS. ALL OPENINGS SHALL BE PROPERLY SEALED SO AS TO MEET FIRE RATING NEEDS.

WATER FLOW TEST DATA	
STATIC PRESSURE = 50 PSIG	RESIDUAL PRESSURE = 40 PSIG AT 60 GPM FLOW RATE
JURISDICTION OR PARTIES OF GOVERNMENT = CITY OF ZEARING WATER DEPARTMENT	
CONTRACTOR IS RESPONSIBLE FOR DOING A NEW FLOW TEST AND PROVIDING THE INFORMATION IN THEIR SHOP DRAWING SUBMITTAL ALONG WITH THE DATE AND LOCATIONS TESTED.	

FIRE PROTECTION LEGEND	
	AREA SHALL BE CONSIDERED LIGHT HAZARD WITH A SPRINKLER DENSITY OF 0.1 GPM/SF OVER THE MOST HYDRAULICALLY REMOTE 1500 SF WITH A 100 GPM HOSE STREAM ALLOWANCE.

KEYNOTES	
KEY	NOTE
FP01	PROTECT DECK WITH DRY SIDEWALL SPRINKLERS PER NFPA 13R.
FP02	TERMINATE DRAIN LINE WITH AN ELBOW POINTED DOWN, INSTALL COVER MESH SCREEN CAP.
FP03	ROUTE DRAIN LINE IN CRAWL SPACE TO OUT UNDER THE DECK. SEAL EXTERIOR PENETRATION WEATHER TIGHT.

JLD	JLD	BIDDING	2/10/2026
DRAWN BY	APPROVED BY	ISSUED FOR	PROJECT NUMBER
			2142204360
		ISSUE DATE	FIELD BOOK

A

B

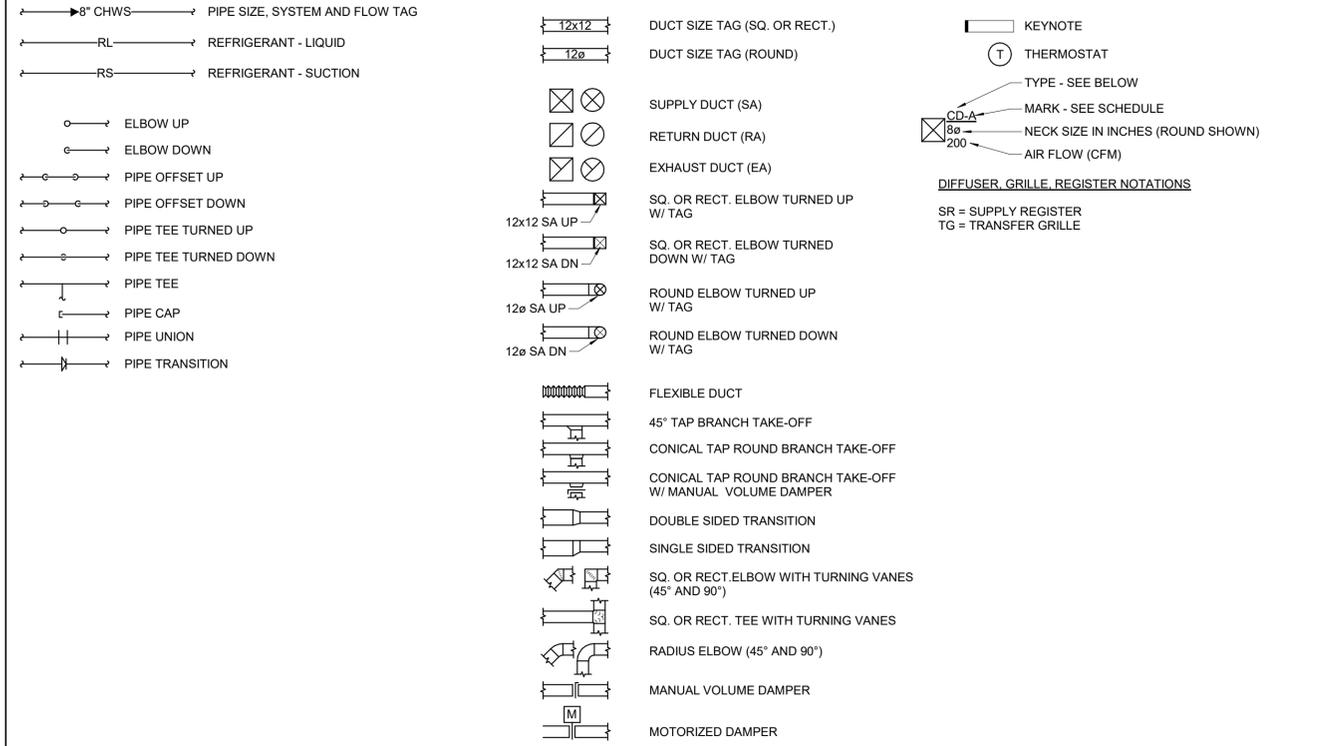
C

D

E

F

MECHANICAL SYMBOLS LEGEND

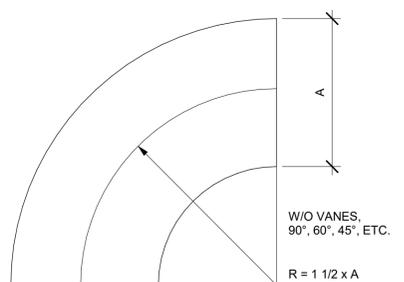
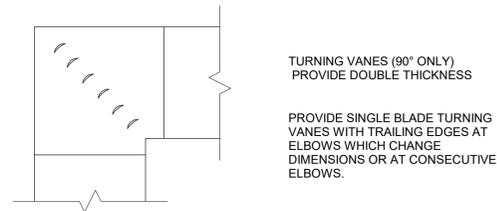


MECHANICAL DUCTWORK

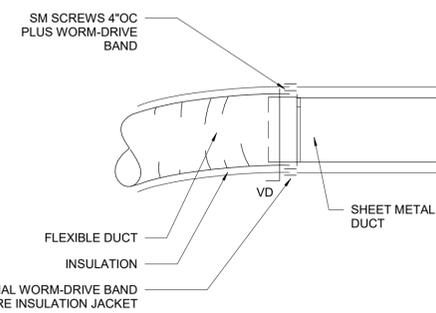
1. DUCTWORK SHOWN IS IN SCHEMATIC FORM. NOT ALL RISERS AND DROPS ARE SHOWN. PROVIDE OFFSETS AS REQUIRED TO MEET SPACE REQUIREMENTS AND TO AVOID INTERFERENCE WITH OTHER TRADES. COORDINATE WITH OTHER TRADES PRIOR TO FABRICATION. THE CONTRACTOR SHALL PROVIDE COMPLETE FULLY FUNCTIONAL SYSTEMS.
2. INSTALL MANUAL VOLUME DAMPERS IN ALL SUPPLY SYSTEMS AS REQUIRED FOR CONTROLLING AIR VOLUMES TO TRUNK DUCTS, BRANCH DUCTS, OUTLETS, AND INLETS. CONTRACTOR SHALL INSTALL A COMPLETE SYSTEM OF DAMPERS AS REQUIRED FOR BALANCING AIR SYSTEMS.
3. PLACE GRILLES AS CLOSE TO PLAN LOCATION AS POSSIBLE.
4. MOUNT TEMPERATURE CONTROL DEVICES AT 48" AFF. WHERE A LIGHT SWITCH AND DEVICE OCCUPY THE SAME GENERAL LOCATION, MOUNT THE DEVICE DIRECTLY ADJACENT TO SWITCH. IN THE CASE THERE IS NOT ENOUGH ROOM TO DO SO, MOUNT THE DEVICE ABOVE AND IN LINE WITH THE SWITCH.
5. ALL BRANCH DUCTWORK SHALL BE EQUIPMENT CONNECTION SIZE UNLESS OTHERWISE NOTED.
6. PROVIDE ACCESS PANELS IN HARD LID CEILINGS TO ALLOW ACCESS FOR ALL DUCT MOUNTED EQUIPMENT (VOLUME DAMPERS, FIRE DAMPERS, FIRE/SMOKE DAMPERS, ETC.) COORDINATE LOCATION WITH CEILING PLAN AND ARCHITECTURAL REQUIREMENTS.
7. ALL EQUIPMENT AND ACCESSORIES SHALL BE INSTALLED TO BE EASILY ACCESSIBLE.

MECHANICAL PIPING

1. PIPING SHOWN IS IN SCHEMATIC FORM. NOT ALL RISERS AND DROPS ARE SHOWN. PROVIDE OFFSETS AS REQUIRED TO MEET SPACE REQUIREMENTS AND TO AVOID INTERFERENCE WITH OTHER TRADES. COORDINATE WITH OTHER TRADES PRIOR TO FABRICATION. THE CONTRACTOR SHALL PROVIDE COMPLETE FULLY FUNCTIONAL SYSTEMS.
2. BREAK CONNECTIONS REQUIRED AT ALL MAJOR EQUIPMENT AND PIPING ITEMS THAT REQUIRE REMOVAL FOR MAINTENANCE.
3. FIRE SAFE ALL PIPE PENETRATIONS PER UL AT RATED WALLS.
4. ALL NEW PIPING EXPOSED IN OCCUPIED SPACES SHALL HAVE PVC JACKETS INSTALLED OVER THE PIPING INSULATION. ANY PIPING REQUIRED TO BE EXPOSED SHALL BE INSTALLED VERTICALLY OR HORIZONTALLY IN LEAST VISIBLE LOCATION.
5. EXTEND ALL DRAIN CONNECTIONS FOR MECHANICAL EQUIPMENT TO NEAREST FLOOR DRAIN. PROVIDE P-TRAP AS REQUIRED BY MANUFACTURER. DRAIN PIPING TO BE SIZED PER CODE OR LINE SIZE, WHICHEVER IS LARGER.
6. ALL EQUIPMENT AND ACCESSORIES SHALL BE INSTALLED TO BE EASILY ACCESSIBLE.

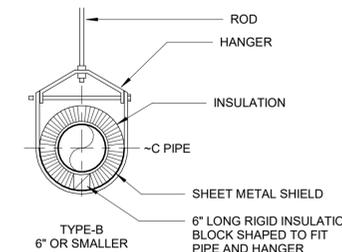


A3 ELBOW DETAILS NOT TO SCALE



A4 FLEXIBLE DUCT CONNECTION NOT TO SCALE

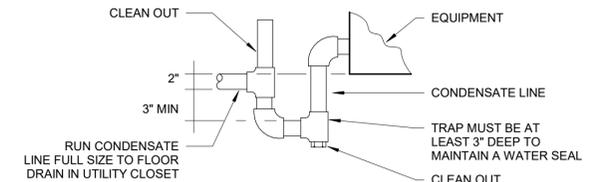
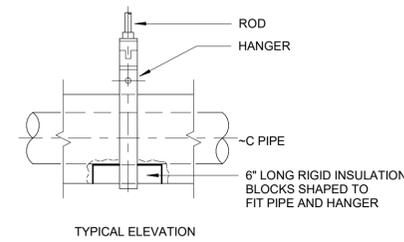
- NOTES:
1. SUPPORT FLEXIBLE DUCTS AS REQUIRED TO PREVENT SAGGING AND CRIMPING. SUPPORTS SHALL ENCIRCLE DUCT AND SHALL BE AT LEAST 1" WIDE AND SPACED 3'-0" OC MAX. SUPPORTS MAY BE THERMOFLEX NYLON "SADDLES" WITH THERMOCLIPS.
  2. MINIMUM CENTERLINE RADIUS OF BENDS: 1.5' DIA
  3. CUT DUCTS IN LENGTHS TO FIT SITUATION. EXTEND DUCTS THAT WERE COMPRESSED DURING SHIPMENT TO PROPER LENGTH. AVOID UNNECESSARY LOOPS.
  4. USE RIGID METAL DUCT TO REACH TO WITHIN DIMENSIONS (I.E. MAX. LENGTH, MAX BEND, ETC) SPECIFIED.



SHIELD SCHEDULE:  
 2" AND SMALLER: 16 GAGE  
 2 1/2" TO 6": 14 GAGE  
 8" AND LARGER: 12 GAGE

LENGTH OF SHIELD TO BE AT LEAST 6" LONGER THAN THE OUTSIDE DIAMETER OF THE INSULATION

C4 INSULATED PIPE HANGER DETAIL NOT TO SCALE



NOTE: THE TRAP MUST EQUAL OR EXCEED THE NEGATIVE STATIC PRESSURE DEVELOPED BY THE SUPPLY AIR BLOWERS. OTHERWISE THE CONDENSATE WILL NOT DRAIN PROPERLY AND WILL OVERFLOW THE DRAIN PAN.

D4 CONDENSATE DRAIN PIPING DETAIL NOT TO SCALE

DRAWN BY	JLD
APPROVED BY	JLD
ISSUED FOR	BIDDING
ISSUE DATE	2/10/2026
PROJECT NUMBER	2142204360
FIELD BOOK	

Autodesk Docs: 2142204360 - Story CCB - Dakins Lake Cabin 2142204360-MEP-R04.rvt  
2/10/2026 7:05:18 PM

**MECHANICAL SPECIFICATIONS:**

1. COMMON WORK RESULTS

- A. THE WORK SHALL INCLUDE THE FURNISHING OF SYSTEMS, EQUIPMENT AND MATERIALS AS CALLED FOR ON THE MECHANICAL DRAWINGS TO INCLUDE SUPERVISION, QUALITY CONTROL, OPERATION, METHODS AND LABOR FOR THE FABRICATION, INSTALLATION, START-UP AND TESTS FOR THE COMPLETE MECHANICAL INSTALLATION.
- B. THE INFORMATION CONTAINED ON THE MECHANICAL DRAWINGS IS IN ITSELF INCOMPLETE AND VOID UNLESS USED IN CONJUNCTION WITH ALL OTHER DISCIPLINE DRAWINGS, THE SPECIFICATIONS, TRADE PRACTICES, OR APPLICABLE STANDARDS, CODES, ETC.
- C. CONTRACTOR IS TO ASSUME FULL RESPONSIBILITY FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED ON THE JOB SITE AND BETWEEN INDIVIDUAL DRAWINGS OR SETS OF DRAWINGS FOR FABRICATION PROCESSES AND CONSTRUCTION TECHNIQUES (INCLUDING EXCAVATION, SHORING, SCAFFOLDING, BRACING, ERECTION, FORM WORK, ETC.), FOR COORDINATION OF THE VARIOUS TRADES, AND FOR SAFE CONDITIONS ON THE JOB SITE. VARIATIONS IN FIELD CONDITIONS RELATIVE TO THE CONTRACT DOCUMENTS SHALL BE REPORTED TO THE ENGINEER AS SOON AS THEY ARE FOUND. WORK SHALL NOT PROGRESS UNTIL WRITTEN PERMISSION FROM THE ENGINEER IS OBTAINED.

D. PERMITS AND INSPECTIONS

- a. FOLLOW APPLICABLE CODES AND OBTAIN NECESSARY PERMITS AND INSPECTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE BOTH A COMPLETE AND COMPLIANT INSTALLATION AS MAY BE DETERMINED BY THE AUTHORITY(S) HAVING JURISDICTION.
- b. FOLLOW INDUSTRY STANDARDS, INCLUDING ASHRAE, SMACNA, ANSI, ASME, NFPA, ETC. COMPLY WITH THE CITY OF ZEARING AND STATE OF IOWA APPLICABLE CODES.

E. CODES AND STANDARDS

- a. IT IS THE INTENT OF THESE DOCUMENTS TO COMPLY WITH THE APPLICABLE CODES, WHERE DISCREPANCIES OCCUR, NOTIFY THE ENGINEER/ARCHITECT IN WRITING FOR INTERPRETATION. CORRECT ANY INSTALLATION THAT FAILS TO COMPLY WITH THE CODES AND STANDARDS AT NO ADDITIONAL COST TO THE OWNER.
- b. CONTRACTOR SHALL PROVIDE ALL WORK NECESSARY INCLUDING ALL LABOR, MATERIALS, PERMITS, TAXES, FEES, INSPECTIONS, HARDWARE, AND COST FOR INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.
- c. IF ANY CONFLICTS ARISE BETWEEN THE CONTRACT DOCUMENTS AND THE APPLICABLE CODES, REGULATIONS OR ORDINANCE, THE CONTRACTOR SHALL BE RESPONSIBLE TO HAVE ALL WORK CONFORM TO THE STRICTER OF SAID REQUIREMENTS.

F. DRAWINGS

- a. THE CONTRACT DRAWINGS ARE IN PART DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENT AND APPROXIMATE SIZES AND LOCATIONS OF EQUIPMENT AND MATERIALS.
- b. NEW WORK HAS BEEN SHOWN DIAGRAMMATICALLY AND DUE TO THE LIMITED SCALE OF THESE DRAWINGS, THE PLACEMENT AND ROUTING OF ALL DUCTWORK, PIPING, ETC. IS CONSIDERED SCHEMATIC IN NATURE; THEREFORE THE DRAWINGS MAY NOT SHOW ALL OFFSETS AND TRANSITIONS WHICH MAY BE REQUIRED. THE CONTRACTOR SHALL PROVIDE COMPLETE FULLY FUNCTIONAL SYSTEMS.
- c. THE CONTRACTOR SHALL LOCATE ALL EQUIPMENT WHICH MUST BE SERVICED, OPERATED OR MAINTAINED IN FULLY ACCESSIBLE POSITIONS. MINOR DEVIATIONS FROM THE CONTRACT DRAWINGS MAY BE MADE TO ALLOW FOR BETTER ACCESSIBILITY, BUT CHANGES OF MAGNITUDE, OR WHICH INVOLVE EXTRA COST, SHALL NOT BE MADE WITHOUT APPROVAL. AMPLE SPACE SHALL BE ALLOWED FOR REMOVAL OF ALL PARTS THAT MAY REQUIRE REPLACEMENT OR MAINTENANCE IN THE FUTURE.

G. COORDINATION

- a. COORDINATE MECHANICAL INSTALLATION WITH ALL TRADES PRIOR TO INSTALLATION. IF MECHANICAL WORK INSTALLED INTERFERES WITH OTHER TRADES AFTER INSTALLATION, THE CONTRACTOR SHALL MAKE ALL NECESSARY CHANGES TO CORRECT THE CONDITION AT NO ADDITIONAL COST TO THE OWNER.
- b. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING, SCHEDULING AND SEQUENCING OF THEIR WORK WITH ALL OTHER TRADES, PROVIDE OFFSETS, EASEMENTS, OR RELOCATE TO AVOID CONFLICTS WITH WORK OF OTHER TRADES. FURNISH SUFFICIENT RESOURCES TO MEET ALL PROJECT MILESTONES AND DEADLINES.
- c. MAINTAIN ALL MANUFACTURER RECOMMENDED EQUIPMENT SERVICE AND SAFETY CLEARANCES. MAINTAIN ALL NFPA/NEC CODE REQUIRED CLEARANCES INCLUDING FOR ALL CONTROL PANELS INCLUDING VAV BOX CONTROL BOXES LOCATED ABOVE CEILINGS.

H. GUARANTEE AND MAINTENANCE

- a. KEEP THE ENTIRE PORTION OF THE WORK IN REPAIR, WITHOUT ADDITIONAL COST TO THE OWNER, SO FAR AS DEFECTS IN WORKMANSHIP, APPARATUS, MATERIAL OR CONSTRUCTION ARE CONCERNED FOR ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE, EXCEPT AS OTHERWISE SPECIFIED HEREIN.

I. SUBMITTAL PROCESS

- a. PROVIDE SHOP DRAWINGS AND CATALOG DATA FOR ALL SCHEDULED EQUIPMENT, DUCTWORK, PIPING, ETC. SUBMIT CONTRACTOR APPROVED SETS WITH PRODUCT, PERFORMANCE, AND MAINTENANCE REQUIREMENTS.
- b. APPROVAL OF MATERIALS, INCLUDING ALTERNATE OR SUBSTITUTE ITEMS, SHALL BE OBTAINED IN WRITING FROM THE ARCHITECT/ENGINEER. VERBAL APPROVAL WILL NOT BE CONSIDERED BINDING.
- c. PROVIDE ONE (1) FULL SET OF OPERATION AND MAINTENANCE MANUALS AND RECORD DRAWINGS AT COMPLETION OF PROJECT TO OWNER. O&M HARD COPY TO BE PROVIDED IN 3-RING BINDER WITH TABS FOR EACH PIECE OF EQUIPMENT. ELECTRONIC SET TO BE INDEXED AND HYPERLINKED.
- d. PROVIDE PDFS OF AS BUILTS ELECTRONICALLY MARKED UP TO OWNER AS SOON AS WORK IS COMPLETED AND PRIOR TO AUTHORIZATION OF FINAL PAYMENT.

J. STANDARDS OF MATERIALS AND WORKMANSHIP

- a. ALL MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW, COMPLETE WITH MANUFACTURER'S GUARANTEE OR WARRANTY AND SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL).
- b. ALL WORK WITHIN THE CONTRACT DOCUMENTS, WHICH INCLUDE THIS DRAWING, SHALL BE COMPLETED IN A SAFE WORKMANLIKE MANNER.

K. OPENINGS, CUTTING, AND PATCHING

- a. THIS CONTRACTOR SHALL PROVIDE CUTTING, PATCHING, AND PATCH PAINTING IN THE STRUCTURE, AS REQUIRED FOR THE INSTALLATION OF WORK, AND SHALL FURNISH UNTELS AND SUPPORTS AS REQUIRED FOR OPENINGS. CUTTING OF STRUCTURAL SUPPORT MEMBERS WILL NOT BE PERMITTED WITHOUT PRIOR APPROVAL OF THE ENGINEER/ARCHITECT/OWNER. EXTENT OF CUTTING SHALL BE MINIMIZED; USE CORE DRILLS, POWER SAWS OR OTHER MACHINES WHICH WILL PROVIDE NEAT, MINIMALLY SIZED OPENINGS.
- b. NEW FLOOR/WALL PENETRATIONS REQUIRED FOR MECHANICAL PIPING AND DUCTWORK INSTALLATION SHALL BE CLEANLY BORED AT RIGHT ANGLES. AS NEW PIPING AND DUCTWORK IS INSTALLED, NEW PENETRATIONS SHALL BE NEATLY CAULKED TO FILL VOID. EXPOSED WALL PENETRATIONS SHALL BE FINISHED WITH ESCUTCHEONS.
- c. IN A NEAT AND WORKMANLIKE MANNER: FILL EXCESSIVE GAPS; REWORK AND REFINISH TO MATCH ADJACENT STRUCTURES; FLASH AND SEAL ALL MECHANICAL AND ELECTRICAL PENETRATIONS THRU WALLS, CEILINGS, AND FLOORS WITH METAL FRAMEWORK OR ESCUTCHEONS. ALL OPENINGS SHALL BE PROPERLY SEALED SO AS TO MEET FIRE RATING NEEDS.

L. CLEANING

- a. THE CONTRACTOR SHALL KEEP THE WORK AREA CLEAN OF ALL DEBRIS ON A DAILY BASIS. ALL NEW MATERIALS AWAITING INSTALLATION SHALL BE KEPT IN AREAS DESIGNATED BY THE OWNER AND PROTECTED, AS NEEDED, FROM ANY WEATHER OR ENVIRONMENTAL DAMAGE.

M. WARRANTY

- a. KEEP THE ENTIRE PORTION OF THE WORK IN REPAIR, WITHOUT ADDITIONAL COST TO THE OWNER, SO FAR AS DEFECTS IN WORKMANSHIP, APPARATUS, MATERIAL OR CONSTRUCTION ARE CONCERNED FOR ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE, EXCEPT AS OTHERWISE SPECIFIED HEREIN.

N. WIRING FOR MECHANICAL EQUIPMENT

- a. THE ELECTRICAL CONTRACTOR WILL PROVIDE POWER TO AND CONNECTION OF MOTORS AND EQUIPMENT FURNISHED BY THIS CONTRACTOR.
- b. PROVIDE INTEGRAL WIRING, ALARM WIRING, CONTROL WIRING, TEMPERATURE CONTROL WIRING, AND OVERLOCK WIRING FOR EQUIPMENT FURNISHED, WHETHER OR NOT SUCH WIRING IS FURNISHED BY THE EQUIPMENT VENDOR.
- c. REFER TO MECHANICAL/ELECTRICAL COORDINATION SCHEDULE FOR STARTER AND DISCONNECT RESPONSIBILITY.
- d. FURNISH TO THE ELECTRICAL CONTRACTOR, SHOP DRAWINGS AND A SCHEDULE FOR MOTORS AND OTHER MECHANICAL EQUIPMENT FURNISHED WHICH REQUIRE ELECTRICAL SERVICES. THE SCHEDULE SHALL INCLUDE THE LOCATIONS FOR ROUGHINS, ELECTRICAL LOADS, SIZE, AND ELECTRICAL CHARACTERISTICS FOR SERVICES REQUIRED.
- e. REVIEW THE ELECTRICAL DRAWINGS AND CALL TO THE ATTENTION OF THE A/E PRIOR TO BIDDING, OMISSIONS OF ELECTRICAL SERVICES REQUIRED FOR THE EQUIPMENT.

O. TESTS AND DEMONSTRATIONS

- a. SYSTEMS SHALL BE TESTED AND PLACED IN PROPER WORKING ORDER PRIOR TO DEMONSTRATING SYSTEMS TO OWNER.
- b. PRIOR TO ACCEPTANCE OF THE MECHANICAL INSTALLATION, THE CONTRACTOR SHALL DEMONSTRATE TO THE OWNER OR HIS DESIGNATED REPRESENTATIVES ALL ESSENTIAL FEATURES AND FUNCTIONS OF ALL SYSTEMS INSTALLED, AND SHALL INSTRUCT THE OWNER IN THE PROPER OPERATION AND MAINTENANCE OF SUCH SYSTEMS.
- c. FLUSH, CLEAN, FILL AND PRESSURE TEST NEW PIPE.

P. ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

2. HANGERS AND SUPPORTS FOR PIPING

- A. PIPE SUPPORT SYSTEMS SHALL SECURE PIPES IN PLACE, PREVENT PIPE VIBRATION, PROVIDE VERTICAL ADJUSTMENT FOR MAINTAINING REQUIRED GRADES, AND PROVIDE FOR EXPANSION AND CONTRACTION.
- B. INSTALL HANGERS AND SUPPORTS TO ALLOW CONTROLLED MOVEMENT OF PIPING SYSTEMS AND TO PERMIT FREEDOM OF MOVEMENT BETWEEN PIPE ANCHORS, AND TO FACILITATE ACTION OF EXPANSION JOINTS, EXPANSION LOOPS, EXPANSION BENDS, AND SIMILAR UNITS.
- C. PROVIDE FACTORY-FABRICATED PIPE HANGERS AND SUPPORTS COMPLYING WITH MSS SP-69, SELECTED BY INSTALLER TO SUIT PIPING SYSTEMS IN ACCORDANCE WITH MSS SP-69 AND MANUFACTURER'S PUBLISHED PRODUCT INFORMATION. USE ONLY ONE TYPE BY ONE MANUFACTURER FOR EACH PIPING SERVICE. SELECT SIZE OF HANGERS AND SUPPORTS TO EXACTLY FIT PIPE SIZE FOR BARE PIPING, AND TO EXACTLY FIT AROUND PIPING INSULATION WITH SADDLE OR SHIELD FOR INSULATED PIPING. PROVIDE COPPER-PLATED HANGERS AND SUPPORTS FOR COPPER-PIPING SYSTEMS.
- D. HANGERS: INSTALL HANGERS OUTSIDE OF INSULATION. HANGERS SHALL NOT BE ENCLOSED WITHIN INSULATION. INSTALL PIPE SHIELDS BETWEEN HANGERS AND INSULATION.
- E. INSTALL ADDITIONAL HANGERS AT CHANGES IN PIPE DIRECTION.
- F. SUPPORTS FOR COPPER PIPING 1 1/4" AND SMALLER SHALL BE SPACED MAXIMUM 5'-0" APART.

3. IDENTIFICATION FOR HVAC PIPING

- A. PIPE MARKERS
  - a. PROVIDE PLASTIC TAPE PIPE MARKERS (SETON OR EQUAL) FOR ALL MECHANICAL PIPES.
  - b. MINIMUM INFORMATION INDICATING FLOW DIRECTION ARROW AND IDENTIFICATION OF FLUID BEING CONVEYED.
  - c. PIPING SYSTEMS THAT SHALL BE IDENTIFIED (INCLUDING DIRECTIONAL ARROWS) INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, THE FOLLOWING:
    1. REFRIGERANT
    2. CONDENSATE

4. TESTING AND BALANCING (TAB)

- A. TESTING AND BALANCING SHALL BE PERFORMED BY A CERTIFIED BALANCING CONTRACTOR UNDER THE HVAC CONTRACTOR'S CONTRACT.
- B. SUBMIT CERTIFIED TEST REPORTS, SIGNED BY TEST AND BALANCE SUPERVISOR WHO PERFORMED TESTING AND BALANCING WORK.
- C. INDICATE DEFICIENCIES IN SYSTEMS THAT WOULD PREVENT PROPER TESTING, ADJUSTING, BALANCING, AND EQUIPMENT DATA REQUIRED.
- D. SEQUENCE WORK TO COMMENCE AFTER COMPLETION OF SYSTEMS INSTALLATION AND SCHEDULE COMPLETION OF BALANCING WORK BEFORE SUBSTANTIAL COMPLETION OF PROJECT.
- E. ENSURE THE FOLLOWING CONDITIONS:
  - a. SYSTEMS ARE STARTED AND IN OPERATING CONDITION
  - b. TEMPERATURE CONTROL SYSTEMS ARE INSTALLED, COMPLETE, AND OPERABLE.
  - c. FILTERS ARE CLEAN AND IN PLACE.
  - d. SYSTEMS ARE FREE FROM DEBRIS
  - e. VOLUME DAMPERS ARE IN PLACE AND OPEN
  - f. AIR OUTLETS ARE INSTALLED AND CONNECTED
- F. ADJUST AIR HANDLING SYSTEMS TO WITHIN +/- 5% OF DESIGN FOR SUPPLY SYSTEMS AND +/- 10% OF DESIGN FOR RETURN AND EXHAUST SYSTEMS
- G. ADJUST DIFFUSERS, REGISTERS, AND GRILLES IN SPACES TO WITHIN +/- 10% OF DESIGN TO SPACE. ADJUST ENTIRE SYSTEM TO +/- 10% OF OVERALL DESIGN AIR FLOWS.

H. AIR SYSTEM PROCEDURES

- a. ADJUST AIR HANDLING AND DISTRIBUTION SYSTEMS TO PROVIDE REQUIRED SUPPLY, RETURN, AND EXHAUST FLOWS.
- b. MEASURE AIR QUANTITIES AT AIR INLETS AND OUTLETS
- c. USE VOLUME CONTROL DEVICES TO REGULATE AIR QUANTITIES ONLY TO THE EXTENT THAT ADJUSTMENTS DO NOT CREATE OBJECTIONABLE AIR MOTION OR SOUND LEVELS.
- d. PROVIDE ADJUSTMENT TO FAN SPEEDS, DRIVE CHANGES, OR DAMPER REGULATION AS REQUIRED.
- e. PROVIDE SYSTEM SCHEMATIC WITH REQUIRED AND ACTUAL AIR QUANTITIES RECORDED AT EACH OUTLET OR INLET.
- f. MEASURE STATIC AIR PRESSURE CONDITIONS ON SUPPLY UNITS, INCLUDING FILTER AND COIL PRESSURE DROPS, AND TOTAL PRESSURE ACROSS FAN. MAKE ALLOWANCE FOR 50% LOADING OF FILTERS.
- g. ADJUST OUTDOOR AIR CONTROL DAMPERS, OUTSIDE AIR, RETURN AIR, AND EXHAUST DAMPERS FOR DESIGN CONDITIONS.
- h. WHERE MODULATING DAMPERS ARE PROVIDED, TAKE MEASUREMENTS AND BALANCE AT EXTREME CONDITIONS. BALANCE VARIABLE VOLUME SYSTEMS AT MAXIMUM AIR FLOW RATE FOR FULL COOLING, AND AT MINIMUM AIRFLOW RATE FOR FULL HEATING.
- i. PROVIDE DISCHARGE AIR TEMPERATURE VALUES FOR ALL HEAT PRODUCING DEVICES. DATS SHALL BE MEASURED AT A FULL CALL FOR HEATING.

5. HVAC INSULATION

- A. PROVIDE EQUIPMENT, MATERIALS, LABOR AND SUPERVISION NECESSARY TO INSTALL INSULATION TO HOT AND COLD SURFACES OF PIPING, DUCTWORK, FITTINGS AND OTHER SURFACES.
- B. INSULATION SHALL INCLUDE INSULATING MATERIALS, JACKETS, ADHESIVE, MASTIC COATINGS, TIE WIRE AND OTHER MATERIALS AS REQUIRED TO COMPLETE THE INSULATING WORK.
- C. CODES AND STANDARDS
  - a. INSULATING MATERIALS, JACKETS AND MASTICS SHALL MEET FLAME SPREAD, FUEL CONTRIBUTION AND SMOKE DEVELOPED RATINGS IN ACCORDANCE WITH NFPA-90A, FLAME SPREAD RATING IN ACCORDANCE WITH NFPA 255, ASTM E-84 OR UL 723 OF NOT MORE THAN 25; SMOKE DEVELOPED RATING OF NOT MORE THAN 50, UNLESS OTHERWISE NOTED IN THIS SECTION.
  - b. INSULATION SHALL MEET OR EXCEED ALL REQUIREMENTS OF THE 2021 INTERNATIONAL ENERGY CONSERVATION CODE.
- D. INSULATION THAT HAS BEEN TREATED WITH A FLAME-RETARDANT ADDITIVE TO MEET THE FLAME SPREAD AND SMOKE DEVELOPED RATINGS SHOWN ABOVE IS NOT PERMITTED.
- E. INSULATION MATERIALS SHALL BE NONCORROSIVE TO THE MATERIALS THEY ARE APPLIED TO, INCLUDING STRESS CORROSION CRACKING OF STAINLESS STEEL, AND SHALL NOT BREED OR PROMOTE FUNGUS AND BACTERIA.
- F. QUALIFICATION
  - a. INSULATING MATERIALS BY OWENS-CORNING, ARMACELL, PITTSBURGH-CORNING, KNAUF, JOHNS MANVILLE, OR ENGINEER APPROVED EQUIVALENT PRIOR TO BID.
  - b. MASTICS AND ADHESIVES AS RECOMMENDED BY INSULATION MANUFACTURER.
  - c. PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL PRODUCT DATA AND INSTALLATION INSTRUCTIONS FOR EACH TYPE OF MECHANICAL INSULATION. SUBMIT SCHEDULE SHOWING MANUFACTURER'S PRODUCT NUMBER, FLAME SPREAD AND SMOKE DEVELOPMENT RATING, K-VALUE, DENSITY, TEMPERATURE LIMITATIONS, SOUND ABSORPTION COEFFICIENTS, THICKNESS, AND FURNISHED ACCESSORIES FOR EACH MECHANICAL SYSTEM REQUIRING INSULATION.

G. DESCRIPTION:

- a. TYPE B: FLEXIBLE, ELASTOMERIC PIPE AND SHEET INSULATION WITH CLOSED-CELL STRUCTURE. SHALL COMPLY WITH ASTM C534, TYPE I, GRADE 1 FOR TUBULAR MATERIALS AND ASTM C534 TYPE II, GRADE 1 FOR SHEET MATERIALS. SUITABLE FOR OPERATING TEMPERATURES FROM -40° F TO 220° F. OUTDOOR APPLICATIONS, AND WHERE OTHERWISE NOTED, SHALL RECEIVE A WEATHER-RESISTANT, PROTECTIVE, LATEX ENAMEL FINISH. THERMAL CONDUCTIVITY OF 0.28 BTU-IN/HR-FT<sup>2</sup>-F @ 75° F MEAN TEMPERATURE. WATER VAPOR PERMEANCE OF 0.08 PERMS. INSULATION SHALL BE EQUIVALENT TO ARMACELL AP ARMAFLEX; ADHESIVE EQUIVALENT TO ARMACELL ARMAFLEX 520 OR ARMAFLEX 520 BLV LOW-VOC CONTACT ADHESIVE; FINISH EQUIVALENT TO ARMACELL ARMAFLEX WB FINISH.
- b. TYPE I: FIBERGLASS DUCT WRAP, 1.5 PCF DENSITY, FABRICATED OF INORGANIC GLASS FIBERS BONDED WITH THERMOSETTING RESIN WITH FACTORY APPLIED FOIL SKRIM-KRAFT FACING, SUITABLE FOR OPERATING TEMPERATURE UP TO +250 F. THERMAL CONDUCTIVITY OF 0.26 BTU-IN/HR-FT<sup>2</sup>-F @ 75 F MEAN TEMPERATURE. WATER VAPOR PERMEANCE OF 0.02 PERMS. KNAUF DUCT WRAP OR ENGINEER APPROVED EQUIVALENT PRIOR TO BID.
- c. TYPE J: FLEXIBLE FIBERGLASS DUCT LINER, 1.5 PCF DENSITY, FABRICATED OF INORGANIC GLASS FIBERS BONDED WITH THERMOSETTING RESIN, WITH MAT FACE SUITABLE FOR AIR VELOCITIES UP TO 4000 FPM AND OPERATING TEMPERATURES UP TO +250° F. THERMAL CONDUCTIVITY OF 0.25 BTU-IN/HR-FT<sup>2</sup>-F @ 75° F MEAN TEMPERATURE. KNAUF "DUCT LINER E-M" OR ENGINEER APPROVED EQUIVALENT PRIOR TO BID.

H. INSTALLATION, GENERAL

- a. USE ONLY EXPERIENCED APPLICATORS REGULARLY ENGAGED IN THE TRADE. ROUGH WORK WILL BE REJECTED. APPLICATION DETAILS SHALL BE IN ACCORDANCE WITH THE INSULATION MATERIALS SUPPLIER'S RECOMMENDATIONS, EXCEPT WHERE A HIGHER STANDARD IS SPECIFIED.
- b. INSTALL MATERIALS AFTER SYSTEMS HAVE BEEN TESTED AND APPROVED. MATERIAL SUCH AS RUST, SCALE, DIRT AND MOISTURE SHALL BE REMOVED FROM SURFACES TO BE INSULATED.
- c. INSULATION SHALL BE KEPT CLEAN AND DRY AT ALL TIMES.
- d. WHEN FLEXIBLE CELLULAR INSULATION IS USED, IT SHALL BE INSTALLED WITH SEAMS AND JOINTS SEALED WITH CONTACT ADHESIVE.
- e. WHERE THE INSULATION CANNOT BE SLIPPED ON, CUT THE INSULATION LONGITUDINALLY AND APPLY IT TO THE PIPING. SEAL LONGITUDINAL SEAM AND BUTT JOINTS WITH ARMACELL ARMAFLEX 520 ADHESIVE, OR ARMAFLEX 520 BLV LOW-VOC CONTACT ADHESIVE OR EQUAL. IN ALL CASES, THE INSULATION, EQUAL TO ARMACELL AP, PROTECTED WITH HALF-ROUND PVC SLEEVES THE LENGTH OF THREE TIMES THE NOMINAL PIPE SIZE, MINIMUM LENGTH TO BE 8 INCHES.
- I. PIPE INSULATION INSTALLATION
  - a. PIPE INSULATION SHALL CONTINUE THROUGH SLEEVES AND HANGERS WITH VAPOR BARRIER AND/OR JACKET.
  - b. INSERT TO BE BETWEEN SUPPORT SHIELD AND PIPING BUT UNDER THE FINISH JACKET. PROVIDE AN INSERT AT HANGARS NOT LESS THAN 6 INCHES LONG, OF SAME THICKNESS AND CONTOUR AS ADJOINING INSULATION, TO PREVENT INSULATION FROM SAGGING AT SUPPORT POINTS. INSERTS SHALL BE HEAVY DENSITY INSULATING MATERIAL SUITABLE FOR THE PLANNED TEMPERATURE RANGE. FACTORY FABRICATED INSERTS MAY BE USED.
  - c. NEATLY FINISH INSULATION AT SUPPORTS, PROTRUSIONS AND INTERRUPTIONS.
  - d. WHEREVER PIPING PENETRATES A FLOOR OR IS EXPOSED IN A FINISHED AREA SUCH AS KITCHENS, FURNISH A FLOOR PIPE ESCUTCHEON AND/OR PVC (WHITE) JACKET TO PROTECT INSULATION AND ALLOW FOR A SMOOTH FINISH FOR CLEANING.
- J. INSULATION JACKETS
  - a. PROVIDE 20 MIL HIGH IMPACT PVC INSULATION JACKET FOR ALL EXPOSED INSULATED PIPING. JACKETING SHALL BE APPLIED WITH SPRAY CONTACT ADHESIVE AND SHALL MEET 25/50 SDR WHEN INSTALLED OVER BOTH COMBUSTIBLE AND NON-COMBUSTIBLE MATERIALS. MANVILLE ZESTON 2000 OR EQUIVALENT.
    - ALTERNATE - CLOSED CELL INSULATION WITH INTEGRAL UV RESISTANT JACKET. ARMAFLEX SHIELD OR EQUAL.
  - b. AT WALL PENETRATIONS AND ON EXTERIOR PIPE, PROVIDE AN ADDITIONAL JACKET OF 0.020 INCH THICK SMOOTH FINISH ALUMINUM. METAL JACKET SHALL HAVE FACTORY APPLIED MOISTURE BARRIER, FITTING AND VALVE COVERS TO BE PREFORMED OF SAME MATERIAL AS ADJACENT METAL JACKET
  - c. WHERE PVC OR METAL JACKETS ARE USED, DELETE THE FACTORY APPLIED ASJ ON PIPE AND EQUIPMENT OPERATING ABOVE 75° F.
  - d. PVC JACKETS SHALL BE USED IN THE FOLLOWING AREAS AND SYSTEMS:
    1. WHENEVER PIPING IS ROUTED EXPOSED THROUGH OCCUPIED SPACES.
    2. PREMOLDED PVC AT ALL FITTINGS AND VALVE JACKETS.

K. DUCT COVERING APPLICATION

- a. COVERING SHALL BE CUT SLIGHTLY LONGER THAN CIRCUMFERENCE OF DUCT TO ENSURE FULL THICKNESS AT CORNERS. INSULATION SHALL BE APPLIED WITH EDGES TIGHTLY BANDED, AND SHALL BE ADHERED TO DUCT WITH FIRE-RESISTANT ADHESIVE. ADHESIVE SHALL BE APPLIED SO THAT INSULATION CONFORMS TO DUCT SURFACES UNIFORMLY AND FIRMLY.
- b. IN ADDITION TO THE ADHESIVE, THE INSULATION SHALL BE ADDITIONALLY SECURED TO THE BOTTOM OF DUCTS 18" OR WIDER BY MEANS OF ADHESIVE PINS AND SPEED CLIPS. THE PROTRUDING ENDS OF THE PINS SHALL BE CUT OFF FLUSH AFTER THE SPEED CLIPS HAVE BEEN APPLIED. THE VAPOR BARRIER FACING SHALL BE THOROUGHLY SEALED WITH A VAPOR BARRIER MASTIC AND TAPE WHERE THE PINS HAVE PIERCED THROUGH. THE VAPOR BARRIER SHALL BE CONTINUOUS TO PREVENT CONDENSATION. INSULATION SHALL NOT BE COMPRESSED AT ANY LOCATION SO AS TO REDUCE INSULATING CHARACTERISTICS.
- c. JOINTS SHALL BE SEALED WITH 2" WIDE PRESSURE-SENSITIVE TAPE OR VAPOR BARRIER TAPE OR STRIPS, USING A FIRE-RESISTIVE ADHESIVE. CUTS OR TEARS SHALL BE SEALED WITH STRIPS OF VAPOR BARRIER JACKET APPLIED WITH ADHESIVE OR PRESSURE-SENSITIVE TAPE.

L. INSULATION SCHEDULE

SERVICE	TYPE	SIZE/DIAMETER	THICKNESS
a. SUPPLY DUCT	I	ALL	2"
b. OUTDOOR AIR DUCT	I	ALL	2"
c. TRANSFER DUCTS	J	ALL	1/2"
d. RETURN DUCT	J	ALL	1"
e. REFRIGERANT	B	ALL	1"
f. CONDENSATE	B	ALL	1/2"

**SHIVE-HATTERY**  
ARCHITECTURE + ENGINEERING  
800.798.0313 | SHIVE-HATTERY.COM

**DAKINS LAKE CABIN**  
STORY COUNTY CONSERVATION  
ZEARING, IOWA 50278

DRAWN BY	JLD
APPROVED BY	JLD
ISSUED FOR	BIDDING
ISSUE DATE	2/10/2026
PROJECT NUMBER	2142204360
FIELD BOOK	

**MECHANICAL SPECIFICATIONS**

**M001**

A

B

C

D

E

F

A	B	C	D	E	F
<p>6. HYDRONIC PIPING</p> <p>A. MATERIALS</p> <p>a. REFRIGERANT</p> <p>1. COPPER TUBE, ASTM B280 TYPE ACR, ANNEALED</p> <p>b. CONDENSATE</p> <p>1. TYPE L COPPER, ASTM B306</p> <p>2. PVC PIPE, SCHEDULE 40, ASTM D2665</p> <p>B. FITTINGS</p> <p>a. SOLDERED PIPE - COPPER WATER TUBE, CAST BRONZE, OR WROUGHT COPPER, ANSI B16.18 AND B16.22.</p> <p>1. CUT PIPE SQUARE. CLEAN AND POLISH TUBE ENDS AND INNER SURFACE OF FITTINGS. APPLY FLUX AND SOLDER JOINT AS RECOMMENDED BY MANUFACTURER OF SOLDER TYPE FITTINGS.</p> <p>b. PVC - SCHEDULE 40, SOCKET-TYPE, ASTM D2466. DWV SCHEDULE 40, SOLVENT CEMENTED JOINTS.</p> <p>1. CUT PIPE SQUARE. CLEAN AND POLISH TUBE ENDS AND INNER SURFACE OF FITTINGS. APPLY GLUE AND CEMENT AS RECOMMENDED BY MANUFACTURER.</p> <p>c. PRESS JOINTS - COMPRESSION SEALING VIA INTEGRAL INTERNAL EPDM GASKETS VIA USE OF SPECIALIZED TOOLS. ASSURED LEAKAGE PATH FEATURE TO ASSIST INSTALLER IN DETERMINING UN-PRESSED JOINT ASSEMBLY CONDITION.</p>		<p>H. ROUND DUCT FITTINGS</p> <p>a. RADIUS ELBOWS WITH 1.5 TIMES DUCT DIAMETER, UNLESS ROUTING IS ONLY POSSIBLE USING ELBOWS WITH 1.0 TIMES DUCT DIAMETER.</p> <p>b. FITTINGS WITH WELDED SEAM CONSTRUCTION.</p> <p>c. NO ADJUSTABLE GORE ELBOWS ALLOWED.</p> <p>d. TEES, CROSSES AND LATERAL CROSS FITTINGS FOR ROUND DUCT SHALL BE OF THE CONICAL TYPE.</p> <p>e. REDUCERS, INCREASERS, OFFSETS, WYES, CROSSES, DIVIDED FLOW FITTINGS AND SIMILAR FITTINGS FOR ROUND DUCT SHALL BE ONE-PIECE CONSTRUCTION WITH WELDED SEAMS.</p> <p>f. NO BULL HEADED TEES SHALL BE USED.</p> <p>g. PIPE-TO-FITTING JOINTS FOR ROUND DUCTS UP TO 24" SHALL BE MADE BY SLIP-FIT OF PROJECTING COLLAR OF FITTING INTO THE DUCT.</p> <p>h. SLIP-FIT JOINTS SHALL BE FASTENED WITH SHEET METAL SCREWS, PLACE 1/2" FROM FITTING OR COUPLING HEAD.</p> <p>i. JOINTS SHALL BE SEALED WITH DUCT SEALANT INSTALLED AS RECOMMENDED BY THE MANUFACTURER.</p> <p>I. DUCTWORK SUPPORT MATERIALS</p> <p>a. EXCEPT AS OTHERWISE INDICATED, PROVIDE HOT-DIPPED GALVANIZED STEEL FASTENERS, ANCHORS, RODS, STRAPS, TRIM AND ANGLES FOR SUPPORT OF DUCTWORK.</p> <p>b. GRIPPLE OR EQUIVALENT ALLOWED.</p>	<p>8. DUCT ACCESSORIES</p> <p>A. BACKDRAFT DAMPERS</p> <p>a. FURNISH AND INSTALL A HEAVY-DUTY COUNTERBALANCED BACKDRAFT DAMPER WITH STEEL FRAME AND STEEL AIRFOIL TYPE 18 GAUGE STEEL BLADES. BLADES SHALL HAVE EPDM SEALS AND JAMB SEALS AND BE SPACED A MAXIMUM WIDTH OF 7" WITH 1/4 INCH DIAMETER PLATED STEEL AXLES. THE BEARINGS SHALL BE BALL BEARINGS PRESSED INTO THE FRAME. DAMPER SHALL BE RUSKIN CBS8 OR APPROVED EQUAL.</p> <p>B. MANUAL VOLUME DAMPERS</p> <p>a. FABRICATED OF SAME MATERIAL AS DUCTS. TWO METAL GAUGES HEAVIER THAN DUCT AND HAMMERED 1" ALL AROUND, MOUNTED ON 3/8" SQUARE ROD WITH SAW SLOT POSITION INDICATOR. PIVOT BEARINGS, LOCKING POSITION REGULATOR, YOUNG REGULATOR CO., SERIES 443.</p> <p>b. WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE, PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING WALL OR FLOOR INSTALLATION, AS REQUIRED. YOUNG SERIES 301 AND 315 FOR CEILING, SERIES 270-302 FOR WALLS.</p> <p>c. PROVIDE EXTENSIONS ON ALL DAMPERS LOCATED ON INSULATED DUCTS.</p> <p>d. INSTALL MANUAL VOLUME DAMPERS IN ALL SUPPLY, RETURN AND EXHAUST DUCT SYSTEMS AS REQUIRED FOR CONTROLLING AIR VOLUMES TO TRUNK DUCTS, BRANCH DUCTS, OUTLETS AND INLETS. CONTRACTOR SHALL INSTALL A COMPLETE SYSTEM OF DAMPERS AS REQUIRED FOR BALANCING AIR SYSTEMS.</p> <p>C. DUCTMATE, OR EQUIVALENT TURNING VANES</p> <p>a. PROVIDE SINGLE THICKNESS STREAMLINE TYPE, EXCEPT PROVIDE SINGLE BLADE TURNING VANES WITH TRAILING EDGE AT ELBOWS WHICH CHANGE DIMENSIONS OR AT CONSECUTIVE ELBOWS.</p> <p>b. PROVIDE MANUFACTURED TURNING VANES AND VANE RUNNERS. FABRICATED FROM THE SAME MATERIAL AS THE DUCT, AND CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARDS. TAB SPACING SHALL BE SMACNA STANDARD. RAIL SYSTEMS WITH NON-STANDARD TAB SPACINGS SHALL NOT BE ACCEPTED. ALL TABS SHALL BE USED, DO NOT SKIP TABS. MOUNTING RAILS SHALL HAVE FRICTION INSERT TABS WHICH ALIGN THE VANES AUTOMATICALLY. VANES SHALL BE SUBJECTED TO TENSILE LOADING AND BE CAPABLE OF SUPPORTING 250 LBS. WHEN FASTENED PER THE MANUFACTURER'S INSTRUCTIONS.</p> <p>c. AERO DYNE; DUCTMATE; ANEMOSTAT; DURO DYNE; OR HART &amp; COOLEY.</p> <p>d. INSTALL TURNING VANES IN ALL SQUARE OR RECTANGULAR 90° ELBOWS IN SUPPLY, RETURN, AND EXHAUST AIR SYSTEMS.</p> <p>D. DUCT-MOUNTED ACCESS DOORS</p> <p>a. SHALL BE OF SAME MATERIAL AS DUCTS IN WHICH THEY ARE INSTALLED, FABRICATED OF TWO THICKNESSES OF NOT LESS THAN 22 GAUGE, WITH 1" THICK RIGID GLASS FIBER FILLER. PROVIDE SHEET METAL FRAME, AIRTIGHT GASKET AND TWO CAM LATCHES.</p> <p>b. ACCESS DOORS AND PANELS SHALL BE 2 INCHES SMALLER THAN DUCT WIDTH AND SQUARE FOR DUCTS 18" WIDE AND LARGER, MAXIMUM SIZE SHALL BE 24" X 24" UNLESS NOTED OTHERWISE. FOR DUCTS LESS THAN 18" WIDE, ACCESS DOORS AND PANELS SHALL BE 2" SMALLER THAN DUCT WIDTH AND 18" LONG. PRE-MANUFACTURED DOORS SHALL BE HINGED AND SHALL BE OF ADEQUATE SIZE TO ALLOW EASY ACCESS TO HARDWARE WHICH NEEDS TO BE MAINTAINED.</p> <p>c. INSTALL ACCESS PANELS FOR INSPECTION AND SERVICING OF DUCT MOUNTED EQUIPMENT; REHEAT COILS, SOUND ATTENUATORS, AND SMOKE AND FIRE DAMPERS.</p>	<p>10. AIR HANDLER</p> <p>A. DOWNFLOW, UPFLOW RETURN; MANUFACTURED BY LENNOX, CARRIER, TRANE, OR ENGINEER APPROVED EQUAL PRIOR TO BID.</p> <p>B. HEAVY DUTY GALVANIZED STEEL, FULLY INSULATED CABINET.</p> <p>C. MULTI-SPEED DIRECT DRIVE EC MOTOR STATICALLY AND DYNAMICALLY BALANCED.</p> <p>D. SAFETY INTERLOCK SWITCH AUTOMATICALLY SHUTS OFF POWER TO UNIT WHEN BLOWER COMPARTMENT ACCESS DOOR IS REMOVED.</p> <p>E. COOLING COIL SHALL CONSIST OF ALUMINUM TUBING AND FINN IN "A" CONFIGURATION.</p> <p>F. ANTI-MICROBIAL AND CORROSION RESISTANT SLOPED DRAIN PAN.</p> <p>G. ELECTRIC HEAT PROVIDED AS SCHEDULED.</p> <p>H. THERMAL CUTOFF LIMIT CONTROL PROVIDES POSITIVE PROTECTION IN CASE OF EXCESSIVE TEMPERATURES.</p> <p>I. CONDENSING UNIT (CU)</p> <p>a. HEAVY GAUGE STEEL CONSTRUCTION CABINET WITH HEAVY GAUGE STEEL PANELS ON ALL SIDES.</p> <p>b. DIRECT DRIVE FAN, VERTICAL AIR DISCHARGE.</p> <p>c. COPPER TUBES WITH ALUMINUM FINN, LOW AND HIGH PRESSURE SWITCHES, LIQUID LINE DRIER, FREEZESTAT.</p> <p>J. TWO-STAGE SCROLL COMPRESSOR</p> <p>K. VENTILATION CONTROL SYSTEM</p> <p>a. APRILAIRE VENTILATION CONTROL SYSTEM, MODEL 8126X.</p> <p>b. SYSTEM CONSISTS OF CONTROLLER, DAMPER, AND OUTDOOR AIR SENSOR</p> <p>c. INSTALL, SET, AND TEST ALL PARTS PER MANUFACTURER REQUIREMENTS AND ADJUST SETTINGS AS REQUIRED.</p> <p>d. SYSTEM SHALL CALCULATE FLOW REQUIRED BASED ON SQUARE FOOTAGE AND NUMBER OF BEDROOMS</p> <p>e. PROVIDE WITH 120V:24V TRANSFORMER.</p>	
<p>7. HVAC DUCTS</p> <p>A. SHOP DRAWINGS: SUBMIT DUCTWORK SHOP DRAWINGS TO OWNER INDICATING DUCT SIZES, LOCATIONS, FITTINGS, EQUIPMENT, ACCESSORIES, STRUCTURAL CLEARANCES, ETC. DO NOT INSTALL DUCTWORK PRIOR TO APPROVAL OF SHOP DRAWINGS BY ENGINEER.</p> <p>B. DUCTS, METAL GAUGES, REINFORCING, METHODS OF SUPPORTING AND HANGING, AND OTHER SHEET METAL WORK AS CALLED FOR SHALL MEET ALL FUNCTIONAL CRITERIA DEFINED IN SECTION VII OF THE SMACNA MANUAL. ALL DUCTWORK MUST COMPLY WITH ALL LOCAL, STATE AND FEDERAL CODE REQUIREMENTS.</p> <p>C. COMPLY WITH APPLICABLE REQUIREMENTS OF NFPA 91.</p> <p>D. DUCT SEALANT</p> <p>a. DUCT SEALANT SHALL BE INSTALLED PER SMACNA CLASS A-ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS.</p> <p>b. SEALANT SHALL BE ALLOWED TO SET 48 HOURS BEFORE ANY AIR PRESSURE IS APPLIED TO SYSTEM. EXPOSED DUCTWORK SHALL BE SEALED SO AS TO PRESENT A CLEAN AND PRESENTABLE APPEARANCE. NO SEALANT STREAK MARKS WILL BE ALLOWED.</p> <p>c. POLYKEN FOILMASTIC 367-17 MAY BE USED AS A DUCT SEALANT ALTERNATIVE TO DUCTWORK THAT IS NOT EXPOSED.</p> <p>E. RECTANGULAR DUCT</p> <p>a. EXCEPT AS OTHERWISE INDICATED, FABRICATE DUCTWORK FROM MINIMUM 24 GAGE GALVANIZED SHEET STEEL COMPLYING WITH ASTM A527, LOCKFORMING QUALITY; WITH G90 ZINC COATING IN ACCORDANCE WITH ASTM A653; AND MILL PHOSPHATIZED FOR EXPOSED LOCATIONS.</p> <p>b. PITTSBURGH LOCK SHALL BE USED ON ALL LONGITUDINAL SEAMS. ALL LONGITUDINAL SEAMS WILL BE SEALED WITH MASTIC SEALANT.</p> <p>c. SNAPLOCK IS NOT ACCEPTABLE.</p> <p>F. RECTANGULAR DUCT FITTINGS</p> <p>a. ELBOWS SHALL BE CONSTRUCTED WITH CENTERLINE RADIUS OF NOT LESS THAN 1.5 TIMES DUCT WIDTH; WHERE SPACE CONDITIONS WILL NOT PERMIT THIS RADIUS OR WHERE INDICATED ON THE DRAWINGS, SQUARE ELBOWS WITH SINGLE THICKNESS STREAMLINE TURNING VANES, OR ELBOWS WITH CENTERLINE RADIUS OF NOT LESS THAN 1.0 TIMES DUCT WIDTH SHALL BE USED. PROVIDE TRAILING EDGE EXTENSION FOR ELBOWS IN SERIES.</p> <p>b. SQUARE THROAT WITH RADIUS HEEL FITTINGS ARE NOT ACCEPTABLE.</p> <p>c. SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSION SHALL BE A MAXIMUM OF 1 TO 3.</p> <p>d. PROVIDE 45° HIGH EFFICIENCY TAKE OFF TAPS FOR ALL BRANCH CONNECTIONS OFF OF MAINS.</p> <p>G. ROUND DUCT</p> <p>a. MINIMUM 24 GAGE, ARCHITECTURAL SPIRAL.</p> <p>b. NO SNAP-LOCK TYPE DUCTWORK ALLOWED.</p> <p>c. EXTERNALLY INSULATED</p>	<p>J. INSTALLATION</p> <p>a. ASSEMBLE AND INSTALL DUCTWORK IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES WHICH WILL ACHIEVE AIRTIGHT (5% LEAKAGE FOR SYSTEMS RATED 3" AND UNDER; 1% FOR SYSTEMS RATED OVER 3") AND NOISELESS (NO OBJECTIONABLE NOISE) SYSTEMS. CAPABLE OF PERFORMING EACH INDICATED SERVICE. INSTALL EACH RUN WITH MINIMUM NUMBER OF JOINTS. ALIGN DUCTWORK ACCURATELY AT CONNECTIONS, WITHIN 1/8" MISALIGNMENT TOLERANCE AND WITH INTERNAL SURFACES SMOOTH. SUPPORT DUCTS RIGIDLY WITH SUITABLE TIES, BRACES, HANGERS AND ANCHORS OF TYPE WHICH WILL HOLD DUCTS TRUE-TO-SHAPE AND TO PREVENT BUCKLING. SUPPORT VERTICAL DUCTS AT EVERY FLOOR.</p> <p>b. LOCATE DUCTWORK RUNS, EXCEPT AS OTHERWISE INDICATED, VERTICALLY AND HORIZONTALLY AND AVOID DIAGONAL RUNS WHEREVER POSSIBLE. LOCATE RUNS AS INDICATED BY DIAGRAMS, DETAILS AND NOTATIONS OR, IF NOT OTHERWISE INDICATED, RUN DUCTWORK IN SHORTEST ROUTE WHICH DOES NOT OBSTRUCT USABLE SPACE OR BLOCK ACCESS FOR SERVICING BUILDING AND ITS EQUIPMENT. MAINTAIN FULL CAPACITY OF DUCTS AT OFFSETS, ANGLES, TRANSITIONS AND EASEMENTS. EXCEPT WHERE DRAWINGS INDICATED USE OF REDUCING OR INCREASING TRANSITIONS. HOLD DUCTS CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS, AND OTHER STRUCTURAL AND PERMANENT ENCLOSURE ELEMENTS OF BUILDING.</p> <p>c. EACH DUCT SECTION SHALL BE RIGIDLY SUPPORTED FROM STRUCTURE. ATTACH HANGERS TO STRUCTURE WITH EXPANSION PLUGS, CONCRETE INSERTS, BEAM CLAMPS OR OTHER APPROVED MEANS. RUBBER-IN-SHEAR ISOLATORS SHALL BE INSTALLED IN HANGERS FOR DUCTS IN EQUIPMENT ROOMS, TO PREVENT VIBRATION TRANSMISSION TO THE STRUCTURE.</p> <p>d. DUCT SIZES SHOWN ON DRAWINGS ARE NET INSIDE DIMENSIONS. INCREASE DUCT SIZES AS REQUIRED TO ALLOW FOR INSTALLATION OF DUCT LINER, WHERE SPECIFIED.</p> <p>e. AT ENDS OF DUCTS WHICH ARE NOT CONNECTED TO EQUIPMENT OR AIR DISTRIBUTION DEVICES AT TIME OF DUCTWORK INSTALLATION, PROVIDE TEMPORARY CLOSURE OF POLYETHYLENE FILM OR OTHER COVERING WHICH WILL PREVENT ENTRANCE OF DUST AND DEBRIS UNTIL TIME CONNECTIONS ARE TO BE COMPLETED.</p> <p>K. EQUIPMENT CONNECTIONS</p> <p>L. CONNECT METAL DUCTWORK TO EQUIPMENT AS INDICATED; PROVIDE FLEXIBLE CONNECTION FOR EACH DUCTWORK CONNECTION TO EQUIPMENT MOUNTED ON VIBRATION ISOLATORS, AND/OR EQUIPMENT CONTAINING ROTATING MACHINERY.</p> <p>M. DUCTWORK LEAKAGE TESTING</p> <p>a. INSTALLED DUCTWORK SHALL BE TESTED PRIOR TO INSTALLATION OF ACCESS DOORS, TAKE-OFFS, ETC, AND BEFORE DUCT IS MADE INACCESSIBLE.</p> <p>b. MAJOR SUPPLY, RETURN AND EXHAUST DUCT RUNS OR DUCTS RUNNING THROUGH CHASES SHALL BE PRESSURE TESTED BEFORE BRANCH DUCTS ARE ADDED OR CHASES ARE CLOSED. IT IS RECOMMENDED THAT THE FIRST 100'-300' OF DUCTWORK INSTALLED BE TESTED TO INSURE THE QUALITY OF THE WORKMANSHIP AT AN EARLY STAGE.</p> <p>c. DUCTS HAVING A PRESSURE CLASS OF +1/3" WC, OR HIGHER SHALL HAVE REPRESENTATIVE SECTIONS TESTED. A MINIMUM OF 25% OF THE TOTAL INSTALLED DUCT AREA FOR THE DESIGNATED PRESSURE CLASS SHALL BE TESTED. THIS IS NOT NECESSARILY 25% OF EACH FLOOR. INCLUDE DUCTS IN SHAFTS OR DUCTS THAT WILL BE INACCESSIBLE ABOVE HARD CEILINGS IN THE REPRESENTATIVE SAMPLE.</p> <p>d. NEGATIVE PRESSURE SYSTEMS MAY BE TESTED WITH POSITIVE PRESSURE TESTS.</p> <p>e. THE MAXIMUM PERMISSIBLE DUCT LEAKAGE CLASS OF THE TESTED DUCT SHALL BE 6.0 AS DETERMINED IN ACCORDANCE WITH IECC.</p> <p>f. THE TESTING SHALL BE PERFORMED AS FOLLOWS:</p> <ol style="list-style-type: none"> <li>PERFORM TESTING IN ACCORDANCE WITH THE SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL.</li> <li>USE A CERTIFIED ORIFICE TUBE FOR MEASURING THE LEAKAGE.</li> <li>DEFINE SECTION OF SYSTEM TO BE TESTED AND BLANK OFF.</li> <li>DETERMINE THE PERCENTAGE OF THE SYSTEM BEING TESTED.</li> <li>USING THAT PERCENTAGE, DETERMINE THE ALLOWABLE LEAKAGE (CFM) FOR THAT SECTION BEING TESTED.</li> <li>PRESSURIZE TO OPERATING PRESSURE AND REPAIR ANY SIGNIFICANT OR AUDIBLE LEAKS.</li> <li>REPRESSURIZE AND MEASURE LEAKAGE.</li> <li>REPEAT STEPS 6 AND 7 UNTIL THE LEAKAGE MEASURED IS LESS THAN THE ALLOWABLE DEFINED IN STEP 5.</li> </ol>	<p>E. FLEXIBLE DUCT CONNECTIONS</p> <p>a. MANUFACTURERS: VENTFABRIC, VENTGLASS, DURO DYNE, DUCTMATE, AMERICAN/ELGIN OR ENGINEER APPROVED EQUIVALENT PRIOR TO BID.</p> <p>b. FLEXIBLE DUCT CONNECTIONS SHALL BE 30 OUNCE WOVEN GLASS FIBER, DOUBLE NEOPRENE COATED, FIRE RETARDANT, WATERPROOF AND AIRTIGHT, SUITABLE FOR TEMPERATURES TO 200°F., UL APPROVED.</p> <p>F. FLEXIBLE DUCTS</p> <p>a. MANUFACTURERS: THERMAFLEX, SEMCO, WIREMOLD, OR ENGINEER APPROVED EQUIVALENT PRIOR TO BID.</p> <p>b. FLEXIBLE DUCT SHALL INCLUDE WIRE, CORE, INSULATION, AND VAPOR BARRIER AND THE COMPOSITE ASSEMBLY SHALL MEET REQUIREMENTS OF NFPA 90A AND UL 181 AND SHALL BE UL LISTED FOR FLAME SPREAD RATING OF NOT MORE THAN 25 AND SMOKE DEVELOPED RATED OF NOT MORE THAN 50.</p> <p>c. FLEXIBLE DUCT SHALL HAVE A MINIMUM R-VALUE OF 4.2, MAXIMUM VAPOR TRANSMISSION RATING OF .1 PERMS, RATED FOR OPERATING TEMPERATURES BETWEEN -20 AND 250 DEGREES.</p> <p>d. FLEXIBLE DUCT SHALL HAVE AN OPERATING POSITIVE PRESSURE RATING OF 6" WG FOR NOMINAL SIZES 4 THRU 20 INCH. DUCT SHALL BE RATED FOR A VELOCITY OF 5,000 FEET PER MINUTE. DUCT SHALL BE EQUAL TO THERMAFLEX G-KM.</p> <p>e. INSTALL ONLY WHERE ROUND TAKEOFFS ARE INDICATED ON DRAWINGS (SUPPLY ONLY). NOT ALLOWED IN RETURN EXHAUST, OR EXPOSED SYSTEMS.</p> <p>f. MAXIMUM EXTENDED LENGTH SHALL BE 5'-0".</p> <p>g. SECURE WITH WORM-DRIVE BAND TO COLLAR WITH SUPPLEMENTAL BAND SECURING THE INSULATION.</p> <p>h. SUPPORT FLEX DUCT WITH MIN. 2" WIDE SHEET METAL BANDS ON MINIMUM 3 FOOT CENTERS.</p> <p>i. FLEXIBLE DUCTWORK SHALL NOT CONNECT DIRECTLY TO DIFFUSER NECKS. PROVIDE RIGID ELBOWS OR THERMAFLEX FLEXFLOW ELBOWS AT DIFFUSER NECKS PER DETAILS.</p> <p>j. THE FLEXIBLE DUCT SHALL BE INSTALLED WITH A MINIMUM CENTERLINE RADIUS EQUAL TO 1.5 TIMES THE DIAMETER OF THE DUCT.</p> <p>k. WHEN CONNECTING FLEXIBLE DUCT TO DIFFUSERS, THE DUCT SHALL BE INSTALLED WITH A MINIMUM OF 6" STRAIGHT FLEX AT THE DIFFUSER.</p>	<p>9. AIR INLETS AND OUTLETS</p> <p>A. PROVIDE GRILLES, REGISTERS, AND DIFFUSERS AS SCHEDULED.</p> <p>B. COORDINATE WITH OTHER WORK, INCLUDING DUCTWORK AND DUCT ACCESSORIES, AS NECESSARY TO INTERFACE INSTALLATION OF GRILLES AND REGISTERS WITH OTHER WORK.</p> <p>C. PROVIDE DUCT TRANSITIONS AS REQUIRED TO MAKE FINAL CONNECTIONS AND PROVIDE RIGID ELBOWS AT NECKS PER DETAILS ON DRAWINGS.</p> <p>D. INSTALLING CONTRACTOR TO ADJUST THROWS PRIOR TO BALANCING.</p> <p>E. INSTALL GRILLES AND REGISTERS LEVEL AND PLUMB.</p>		
<p>8. DUCT ACCESSORIES</p> <p>A. BACKDRAFT DAMPERS</p> <p>a. FURNISH AND INSTALL A HEAVY-DUTY COUNTERBALANCED BACKDRAFT DAMPER WITH STEEL FRAME AND STEEL AIRFOIL TYPE 18 GAUGE STEEL BLADES. BLADES SHALL HAVE EPDM SEALS AND JAMB SEALS AND BE SPACED A MAXIMUM WIDTH OF 7" WITH 1/4 INCH DIAMETER PLATED STEEL AXLES. THE BEARINGS SHALL BE BALL BEARINGS PRESSED INTO THE FRAME. DAMPER SHALL BE RUSKIN CBS8 OR APPROVED EQUAL.</p> <p>B. MANUAL VOLUME DAMPERS</p> <p>a. FABRICATED OF SAME MATERIAL AS DUCTS. TWO METAL GAUGES HEAVIER THAN DUCT AND HAMMERED 1" ALL AROUND, MOUNTED ON 3/8" SQUARE ROD WITH SAW SLOT POSITION INDICATOR. PIVOT BEARINGS, LOCKING POSITION REGULATOR, YOUNG REGULATOR CO., SERIES 443.</p> <p>b. WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE, PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING WALL OR FLOOR INSTALLATION, AS REQUIRED. YOUNG SERIES 301 AND 315 FOR CEILING, SERIES 270-302 FOR WALLS.</p> <p>c. PROVIDE EXTENSIONS ON ALL DAMPERS LOCATED ON INSULATED DUCTS.</p> <p>d. INSTALL MANUAL VOLUME DAMPERS IN ALL SUPPLY, RETURN AND EXHAUST DUCT SYSTEMS AS REQUIRED FOR CONTROLLING AIR VOLUMES TO TRUNK DUCTS, BRANCH DUCTS, OUTLETS AND INLETS. CONTRACTOR SHALL INSTALL A COMPLETE SYSTEM OF DAMPERS AS REQUIRED FOR BALANCING AIR SYSTEMS.</p> <p>C. DUCTMATE, OR EQUIVALENT TURNING VANES</p> <p>a. PROVIDE SINGLE THICKNESS STREAMLINE TYPE, EXCEPT PROVIDE SINGLE BLADE TURNING VANES WITH TRAILING EDGE AT ELBOWS WHICH CHANGE DIMENSIONS OR AT CONSECUTIVE ELBOWS.</p> <p>b. PROVIDE MANUFACTURED TURNING VANES AND VANE RUNNERS. FABRICATED FROM THE SAME MATERIAL AS THE DUCT, AND CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARDS. TAB SPACING SHALL BE SMACNA STANDARD. RAIL SYSTEMS WITH NON-STANDARD TAB SPACINGS SHALL NOT BE ACCEPTED. ALL TABS SHALL BE USED, DO NOT SKIP TABS. MOUNTING RAILS SHALL HAVE FRICTION INSERT TABS WHICH ALIGN THE VANES AUTOMATICALLY. VANES SHALL BE SUBJECTED TO TENSILE LOADING AND BE CAPABLE OF SUPPORTING 250 LBS. WHEN FASTENED PER THE MANUFACTURER'S INSTRUCTIONS.</p> <p>c. AERO DYNE; DUCTMATE; ANEMOSTAT; DURO DYNE; OR HART &amp; COOLEY.</p> <p>d. INSTALL TURNING VANES IN ALL SQUARE OR RECTANGULAR 90° ELBOWS IN SUPPLY, RETURN, AND EXHAUST AIR SYSTEMS.</p> <p>D. DUCT-MOUNTED ACCESS DOORS</p> <p>a. SHALL BE OF SAME MATERIAL AS DUCTS IN WHICH THEY ARE INSTALLED, FABRICATED OF TWO THICKNESSES OF NOT LESS THAN 22 GAUGE, WITH 1" THICK RIGID GLASS FIBER FILLER. PROVIDE SHEET METAL FRAME, AIRTIGHT GASKET AND TWO CAM LATCHES.</p> <p>b. ACCESS DOORS AND PANELS SHALL BE 2 INCHES SMALLER THAN DUCT WIDTH AND SQUARE FOR DUCTS 18" WIDE AND LARGER, MAXIMUM SIZE SHALL BE 24" X 24" UNLESS NOTED OTHERWISE. FOR DUCTS LESS THAN 18" WIDE, ACCESS DOORS AND PANELS SHALL BE 2" SMALLER THAN DUCT WIDTH AND 18" LONG. PRE-MANUFACTURED DOORS SHALL BE HINGED AND SHALL BE OF ADEQUATE SIZE TO ALLOW EASY ACCESS TO HARDWARE WHICH NEEDS TO BE MAINTAINED.</p> <p>c. INSTALL ACCESS PANELS FOR INSPECTION AND SERVICING OF DUCT MOUNTED EQUIPMENT; REHEAT COILS, SOUND ATTENUATORS, AND SMOKE AND FIRE DAMPERS.</p>	<p>K. VENTILATION CONTROL SYSTEM</p> <p>a. APRILAIRE VENTILATION CONTROL SYSTEM, MODEL 8126X.</p> <p>b. SYSTEM CONSISTS OF CONTROLLER, DAMPER, AND OUTDOOR AIR SENSOR</p> <p>c. INSTALL, SET, AND TEST ALL PARTS PER MANUFACTURER REQUIREMENTS AND ADJUST SETTINGS AS REQUIRED.</p> <p>d. SYSTEM SHALL CALCULATE FLOW REQUIRED BASED ON SQUARE FOOTAGE AND NUMBER OF BEDROOMS</p> <p>e. PROVIDE WITH 120V:24V TRANSFORMER.</p>	<p>F. FLEXIBLE DUCTS</p> <p>a. MANUFACTURERS: THERMAFLEX, SEMCO, WIREMOLD, OR ENGINEER APPROVED EQUIVALENT PRIOR TO BID.</p> <p>b. FLEXIBLE DUCT SHALL INCLUDE WIRE, CORE, INSULATION, AND VAPOR BARRIER AND THE COMPOSITE ASSEMBLY SHALL MEET REQUIREMENTS OF NFPA 90A AND UL 181 AND SHALL BE UL LISTED FOR FLAME SPREAD RATING OF NOT MORE THAN 25 AND SMOKE DEVELOPED RATED OF NOT MORE THAN 50.</p> <p>c. FLEXIBLE DUCT SHALL HAVE A MINIMUM R-VALUE OF 4.2, MAXIMUM VAPOR TRANSMISSION RATING OF .1 PERMS, RATED FOR OPERATING TEMPERATURES BETWEEN -20 AND 250 DEGREES.</p> <p>d. FLEXIBLE DUCT SHALL HAVE AN OPERATING POSITIVE PRESSURE RATING OF 6" WG FOR NOMINAL SIZES 4 THRU 20 INCH. DUCT SHALL BE RATED FOR A VELOCITY OF 5,000 FEET PER MINUTE. DUCT SHALL BE EQUAL TO THERMAFLEX G-KM.</p> <p>e. INSTALL ONLY WHERE ROUND TAKEOFFS ARE INDICATED ON DRAWINGS (SUPPLY ONLY). NOT ALLOWED IN RETURN EXHAUST, OR EXPOSED SYSTEMS.</p> <p>f. MAXIMUM EXTENDED LENGTH SHALL BE 5'-0".</p> <p>g. SECURE WITH WORM-DRIVE BAND TO COLLAR WITH SUPPLEMENTAL BAND SECURING THE INSULATION.</p> <p>h. SUPPORT FLEX DUCT WITH MIN. 2" WIDE SHEET METAL BANDS ON MINIMUM 3 FOOT CENTERS.</p> <p>i. FLEXIBLE DUCTWORK SHALL NOT CONNECT DIRECTLY TO DIFFUSER NECKS. PROVIDE RIGID ELBOWS OR THERMAFLEX FLEXFLOW ELBOWS AT DIFFUSER NECKS PER DETAILS.</p> <p>j. THE FLEXIBLE DUCT SHALL BE INSTALLED WITH A MINIMUM CENTERLINE RADIUS EQUAL TO 1.5 TIMES THE DIAMETER OF THE DUCT.</p> <p>k. WHEN CONNECTING FLEXIBLE DUCT TO DIFFUSERS, THE DUCT SHALL BE INSTALLED WITH A MINIMUM OF 6" STRAIGHT FLEX AT THE DIFFUSER.</p>	<p>9. AIR INLETS AND OUTLETS</p> <p>A. PROVIDE GRILLES, REGISTERS, AND DIFFUSERS AS SCHEDULED.</p> <p>B. COORDINATE WITH OTHER WORK, INCLUDING DUCTWORK AND DUCT ACCESSORIES, AS NECESSARY TO INTERFACE INSTALLATION OF GRILLES AND REGISTERS WITH OTHER WORK.</p> <p>C. PROVIDE DUCT TRANSITIONS AS REQUIRED TO MAKE FINAL CONNECTIONS AND PROVIDE RIGID ELBOWS AT NECKS PER DETAILS ON DRAWINGS.</p> <p>D. INSTALLING CONTRACTOR TO ADJUST THROWS PRIOR TO BALANCING.</p> <p>E. INSTALL GRILLES AND REGISTERS LEVEL AND PLUMB.</p>		
<p>9. AIR INLETS AND OUTLETS</p> <p>A. PROVIDE GRILLES, REGISTERS, AND DIFFUSERS AS SCHEDULED.</p> <p>B. COORDINATE WITH OTHER WORK, INCLUDING DUCTWORK AND DUCT ACCESSORIES, AS NECESSARY TO INTERFACE INSTALLATION OF GRILLES AND REGISTERS WITH OTHER WORK.</p> <p>C. PROVIDE DUCT TRANSITIONS AS REQUIRED TO MAKE FINAL CONNECTIONS AND PROVIDE RIGID ELBOWS AT NECKS PER DETAILS ON DRAWINGS.</p> <p>D. INSTALLING CONTRACTOR TO ADJUST THROWS PRIOR TO BALANCING.</p> <p>E. INSTALL GRILLES AND REGISTERS LEVEL AND PLUMB.</p>					

DRAWN BY	JLD
APPROVED BY	JLD
ISSUED FOR	BIDDING
ISSUE DATE	2/10/2026
PROJECT NUMBER	2142204360
FIELD BOOK	

DRAWN BY	JLD
APPROVED BY	JLD
ISSUED FOR	BIDDING
ISSUE DATE	2/10/2026
PROJECT NUMBER	2142204360
FIELD BOOK	

**AIR HANDLING UNIT SCHEDULE**

- REMARKS:  
 1. DISCONNECT PROVIDED AND INSTALLED BY E.C.  
 2. PROVIDE WITH 24-HOUR, 7 DAY (5+1+1) PROGRAMMABLE THERMOSTAT.  
 3. PROVIDE WITH EXTRA SET OF FILTERS (20x20x1), REPLACE FILTER AT TIME OF SYSTEM ACCEPTANCE BY OWNER.  
 4. PROVIDE AND INSTALL UNIT ON MOUNTING BLOCKS, DIVERSITECH FB-1 (OR EQUAL).  
 5. PROVIDE WITH DOWNFLOW COMBUSTIBLE FLOORING BASE AND SINGLE POINT POWER SOURCE CONTROL BOX.

MARK	CFM	MIN OA CFM	ESP (IN WC)	AIRFLOW DIRECTION	COOLING COIL DATA				AUXILIARY HEATING COIL DATA				ELECTRICAL DATA				CONTROLLER OR STARTER FURNISHED / INSTALLED	DISCONNECT FURNISHED / INSTALLED	SIASBN GSDIE				
					EAT (°F)		LAT (°F)		TOTAL MBH	SENSIBLE MBH	TYPE	EAT (°F)	LAT (°F)	KW	VOLTS	PHASE				MCA	MOCP	CONTROL OR STARTER	
					DB	WB	DB	WB															
AHU-1	1980	55	0.5	DOWN	DX	80	67	62	60.8	40.5	39.3	ELECTRIC	62	98	12.5	230	1	71	80	LOW VOLTAGE THERMOSTAT	MC/MC	EC/EC	LENNOX CBK48MVT-060

**AIR COOLED CONDENSING UNIT SCHEDULE**

- REMARKS:  
 1. PROVIDE WITH LOW AMBIENT CONTROL, FREEZESTAT, AND WIND BAFFLES FOR LOW AMBIENT OPERATION.  
 2. UNIT TO BE INSTALLED ON CONCRETE EQUIPMENT PAD AT GRADE.  
 3. DISCONNECT PROVIDED BY E.C.  
 4. MAINTAIN MANUFACTURER RECOMMENDED REFRIGERANT PIPING LENGTH AND MAXIMUM VERTICAL OFFSET FROM INSIDE UNIT TO OUTSIDE UNIT.

MARK	SYSTEM SERVED	MAX CAPACITY (MBH)	COND AMBIENT AIR TEMP (°F)	MIN OPERATING AMBIENT TEMP (°F)	REFRIGERANT TYPE	ELECTRICAL DATA				CONTROLLER OR STARTER FURNISHED / INSTALLED	DISCONNECT FURNISHED / INSTALLED	SIASBN GSDIE			
						SEER	EER	APH	ACM						
CU-1	AHU-1	40.5	95	-20	R-454B	20	13	230	1	24	40	AHU-1	MC/MC	EC/EC	LENNOX SL22KLV-036-230

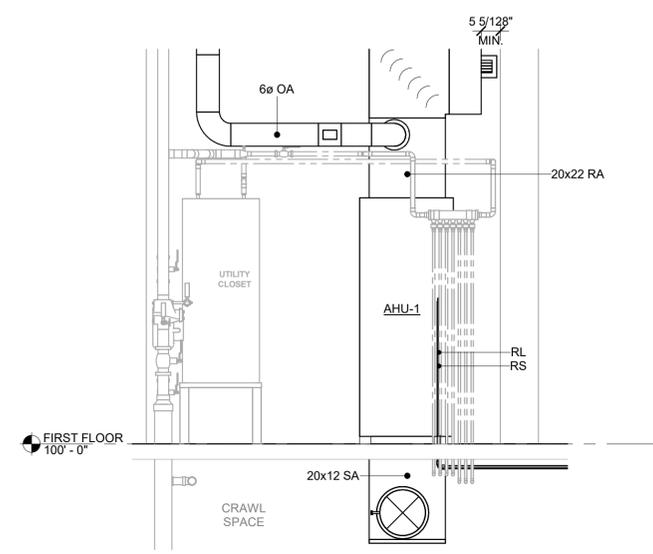
**DIFFUSERS REGISTERS AND GRILLES SCHEDULE**

- REMARKS:  
 1. PROVIDE CONCEALED SCREWS FOR SURFACE MOUNTED GRILLES AND REGISTERS.  
 2. COORDINATE PAINT/FINISH COLOR WITH ARCHITECT.

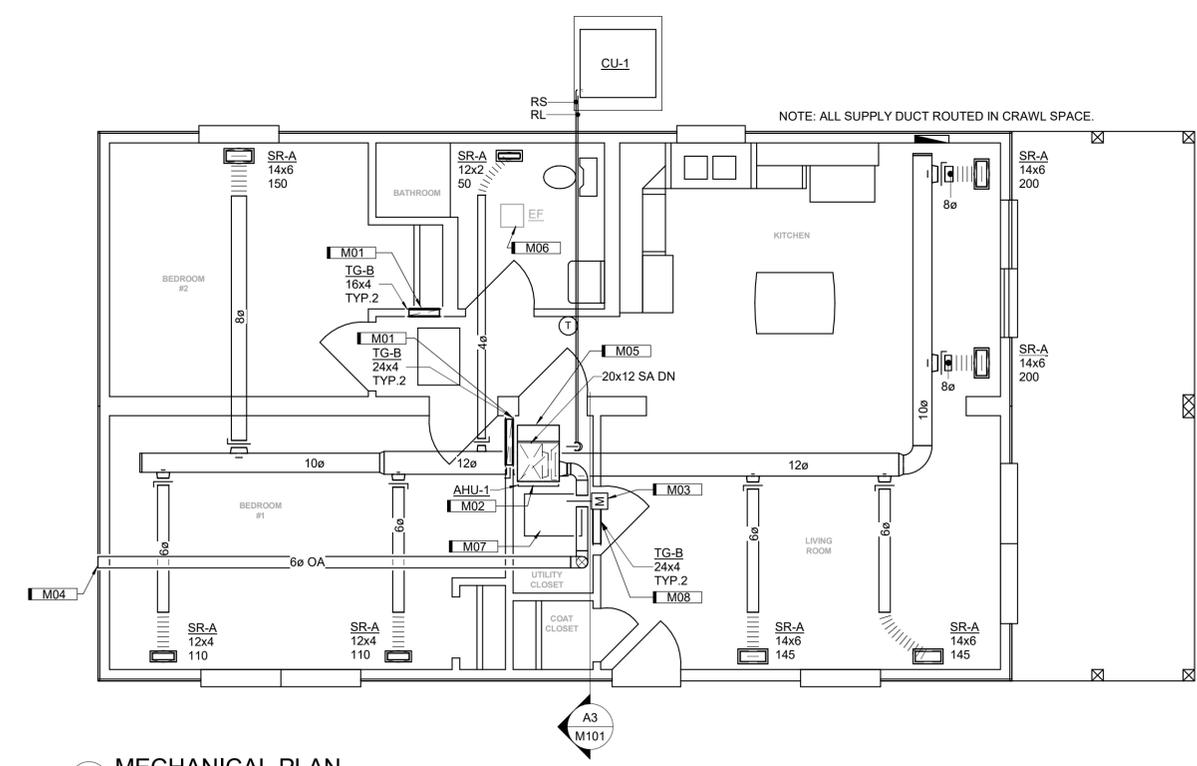
MARK	MATERIAL	DESCRIPTION	FACE SIZE	FACTORY FINISH	DESIGN BASIS
A	STEEL	HEAVY GAUGE STEEL FLOOR REGISTER	SEE PLANS	WHITE	HART & COOLEY 411
B	STEEL	SINGLE DEFLECTION, 1/3IN. FIN SPACING	SEE PLANS	WHITE	HART & COOLEY 650

**KEYNOTES**

KEY	NOTE
M01	PROVIDE ONE TRANSFER GRILLE 8" FROM FLOOR ON BEDROOM SIDE AND ONE TRANSFER GRILLE 8" FROM CEILING ON NON-BEDROOM SIDE. CONNECT VIA STACK DUCT IN STUD SPACE.
M02	COORDINATE FURNACE AND DUCTWORK INSTALLATION WITH PLUMBING EQUIPMENT AND PIPING INSTALLED WITHIN SAME CLOSET.
M03	PROVIDE APRILAIRE MODEL 8126X VENTILATION CONTROL SYSTEM. SEE SPECIFICATIONS FOR DETAILS.
M04	PROVIDE 6" OA DUCT TO RETURN DUCT. PROVIDE NUTONE 843-BL WALL CAP. COORDINATE COLOR WITH ARCHITECT. MAINTAIN MINIMUM 10' DISTANCE FROM GRADE AND EXHAUST AIR OPENINGS.
M05	INSTALL INSECT SCREEN ON RETURN AIR INLET TO AIR HANDLER. RETURN AIR INLET TO AIR HANDLER TO REMAIN OPEN AND MUST MAINTAIN 6" OF CLEARANCE TO THE OPPOSING WALL TO SUPPORT AIRFLOW AND DECREASE STATIC PRESSURE IN THE RETURN MECHANICAL CLOSET TO HAVE LOUVERED DOOR TO ALLOW RETURN AIR BACK TO THE UNIT.
M06	EXHAUST FAN/LIGHT FIXTURE PRE-INSTALLED AS PART OF PRE-FABRICATED CABIN PACKAGE (60 CFM). KEEP ACCESS TO THE CRAWL SPACE CLEAR.
M07	KEEP ACCESS TO THE CRAWL SPACE CLEAR.
M08	INSTALL BOTTOM OF TRANSFER GRILLES AT 8'-0" AFF, CENTERED OVER THE DOOR.



**A3 MECHANICAL SECTION - AHU**  
1/2" = 1'-0" 0' 3"



**A4 MECHANICAL PLAN**  
1/4" = 1'-0" 0' 6"

ELECTRICAL ABBREVIATIONS

ELECTRICAL GENERAL NOTES

ELECTRICAL SPECIFICATIONS:

C. PART 1 - GENERAL (CONTINUED)

Table with columns A, B, C, D, E, F, G, H, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X. Contains electrical abbreviations such as AMPERE, AIR CIRCUIT BREAKER, BUILDING AUTOMATION SYSTEM, CONTRACTOR, DIRECT CURRENT, ELECTRICAL CONTRACTOR, FUSE, FIRE ALARM, FLOOR LIGHT, FREQUENCY, GENERAL CONTRACTOR, GROUNDING ELECTRODE CONDUCTOR, GENERATOR, GROUND FAULT CIRCUIT INTERRUPTER, GROUND FAULT PROTECTOR, GROUND, GROUNDING CONDUCTOR, GROUND ROD, GROUND WELL, HEIGHT, HANDHOLE, HIGH INTENSITY DISCHARGE, HORSEPOWER, HIGH PRESSURE SODIUM HEATER, HERTZ, FREQUENCY IN CYCLES PER SECOND, INTERMEDIATE METALLIC CONDUIT, INCANDESCENT INTERCONNECTION, JUNCTION BOX, JUNCTION, KEY OPERATED, THOUSAND CIRCULAR MILS, KILOVOLT, KILOVOLT-AMPERE, KILOVOLT-AMPERE REACTIVE, KILOWATT, KILOWATT-HOUR, LENGTH, LIMIT, LOW PRESSURE SODIUM LIGHT, LIGHTING, LOW VOLTAGE, LOW VOLTAGE SURGE SUPPRESSION, MANUAL, MATERIAL, MECHANICAL CONTRACTOR, MOTOR CONTROL CENTER, MOTOR CIRCUIT PROTECTOR, MANHOLE, MANUFACTURER, MANHOLE, MICROPHONE, MAIN LUGS ONLY, MOUNT, MOUNTED, MOUNTING, MOTOR, MANUAL TRANSFER SWITCH, MEGAVOLT-AMPERE, MEGAVOLT-AMPERE REACTIVE, MEGAWATT, MEGAWATT-HOUR, NORMALLY CLOSED, NON-FUSED, NOT IN CONTRACT, NATIONAL ELECTRICAL CODE, NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION, NORMALLY OPEN, NOT TO SCALE, OIL CIRCUIT BREAKER OPERATOR, OPERATED, THERMAL OVERLOAD PROTECTION.

- 1. ALL WORK SHALL BE IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE - LATEST EDITION ADOPTED BY THE STATE, THE STATE AMENDMENTS, LOCAL/MUNICIPAL CODES AND ORDINANCES, AND THE AUTHORITY HAVING JURISDICTION. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES).
2. IT IS THE INTENT OF THESE DOCUMENTS TO COMPLY WITH THE APPLICABLE CODES, WHERE DISCREPANCIES OCCUR, NOTIFY THE ENGINEER/ARCHITECT IN WRITING FOR INTERPRETATION. CORRECT ANY INSTALLATION THAT FAILS TO COMPLY WITH THE CODES AND STANDARDS AT NO ADDITIONAL COST TO THE OWNER.
3. CONTRACTOR SHALL PROVIDE ALL WORK NECESSARY INCLUDING ALL LABOR, MATERIALS, PERMITS, TAXES, FEES, INSPECTIONS, HARDWARE, AND COST FOR INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.
4. ALL MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW, COMPLETE WITH MANUFACTURER'S GUARANTEE OR WARRANTY AND SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL).
5. COORDINATE ELECTRICAL INSTALLATION WITH ALL TRADES PRIOR TO INSTALLATION. IF ELECTRICAL WORK INSTALLED INTERFERES WITH OTHER TRADES AFTER INSTALLATION, THE CONTRACTOR SHALL MAKE ALL NECESSARY CHANGES TO CORRECT THE CONDITION AT NO ADDITIONAL COST TO THE OWNER.
6. DRAWINGS ARE DIAGRAMMATIC. ALL DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE, AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION THIS CONTRACTOR SHALL VERIFY ALL CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.
7. ALL ELECTRICAL PANELS WITH ANY BRANCH CIRCUIT/LOAD REVISIONS (DEMOLITION OR NEW WORK) SHALL HAVE A NEW TYPED UPDATED CIRCUIT DIRECTORY CARD INSTALLED INSIDE THE DOOR OF THE ELECTRICAL PANEL. THE CONTRACTOR SHALL VERIFY THAT ALL UNUSED CIRCUIT BREAKERS ARE TURNED OFF AND PROPERLY INDICATED AS 'SPARE' ON THE NEW CIRCUIT DIRECTORY CARD. THE CONTRACTOR SHALL INSTALL FILLER PLATES WHERE BREAKERS ARE REMOVED AS PART OF THIS PROJECT OR HAVE BEEN REMOVED PREVIOUSLY.
8. NO ENERGIZED CONDUCTORS SHALL BE EXPOSED AT ANYTIME EXCEPT WHEN THE IMMEDIATE AREA IS UNDER THE SUPERVISION OF A QUALIFIED ELECTRICIAN.
9. WHERE CONDUIT IS SURFACE MOUNTED TO A WALL AND RUN VERTICALLY DOWN TO A SWITCH/OUTLET BOX, UTILIZE 1-HOLE OR 2-HOLE CONDUIT STRAPS.
10. REFER TO THE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF BUILDING EXPANSION JOINTS. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL BE INSTALLED WITH EXPANSION FITTINGS, UNLESS THE CONDUIT IS BELOW SLAB IN THE COMPACTED GRANULAR FILL. EXPANSION FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, AND MANUFACTURER'S WRITTEN RECOMMENDATIONS.
11. PENETRATIONS THROUGH FIRE RATED WALLS BY DIVISION 26 CONTRACTOR SHALL BE SEALED WITH APPROPRIATE FIRE PROOFING MATERIAL TO RESTORE FIRE RATING. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALLS.
12. THE CONTRACTOR SHALL KEEP THE WORK AREA CLEAN OF ALL DEBRIS ON A DAILY BASIS. ALL DEWY MATERIALS AWAITING INSTALLATION SHALL BE KEPT IN AREAS DESIGNATED BY THE OWNER.
13. THESE DRAWINGS SHALL NOT BE SCALED TO OBTAIN DIMENSIONS. REFER TO DIMENSIONED ARCHITECTURAL FLOOR PLANS. IF THE DIMENSIONS CANNOT BE DETERMINED BY THE INFORMATION GIVEN, CONTRACTOR SHALL CONTACT THE ENGINEER FOR ADDITIONAL INFORMATION.
14. PERIODIC SITE OBSERVATION BY THE ENGINEER IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK OF THE CONTRACTOR IS PROCEEDING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION SHOULD NOT BE CONSTRUED AS EXHAUSTIVE OR CONTINUOUS TO CHECK THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER PERIODIC IN AN EFFORT TO GUARD THE OWNER AGAINST DEFECTS OR DEFICIENCIES IN THE WORK OF THE CONTRACTOR.
15. THE INFORMATION CONTAINED ON THE ELECTRICAL DRAWINGS IS IN ITSELF INCOMPLETE AND VOID UNLESS USED IN CONJUNCTION WITH ALL OTHER DISCIPLINE DRAWINGS, THE SPECIFICATIONS, TRADE PRACTICES, OR APPLICABLE STANDARDS, CODES, ETC., AND SHALL BE CONSIDERED THE CONTRACT DOCUMENTS AND WITH ALL THEREIN BY REFERENCE, WHICH THE CONTRACTOR CERTIFIES KNOWLEDGE OF BY SIGNING THE CONTRACT.
16. CONTRACTOR IS TO ASSUME FULL RESPONSIBILITY, UNRELIEVED BY REVIEW OF SHOP DRAWINGS OR PERIODIC OBSERVATION OF CONSTRUCTION, FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED ON THE JOB SITE AND BETWEEN INDIVIDUAL DRAWINGS OR SETS OF DRAWINGS FOR FABRICATION PROCESSES AND CONSTRUCTION TECHNIQUES (INCLUDING EXCAVATION, SHORING, SCAFFOLDING, BRACING, ERECTION, FORM WORK, ETC.). FOR COORDINATION OF THE VARIOUS TRADES, AND FOR SAFE CONDITIONS ON THE JOB SITE, VARIATIONS IN FIELD CONDITIONS RELATIVE TO THE CONTRACT DOCUMENTS SHALL BE REPORTED TO THE ENGINEER AS SOON AS THEY ARE FOUND. WORK SHALL NOT PROGRESS UNTIL WRITTEN PERMISSION FROM THE ENGINEER IS OBTAINED.

- 1. BASIC MATERIALS AND METHODS
A. PART 1 - GENERAL
a. ALL WORK SHALL BE IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE - LATEST EDITION ADOPTED BY THE STATE, THE STATE AMENDMENTS, LOCAL/MUNICIPAL CODES AND ORDINANCES, AND THE AUTHORITY HAVING JURISDICTION. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES).
b. REFERENCES:
1. AMERICANS WITH DISABILITIES ACT (ADA)
2. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
3. ELECTRICAL TESTING LABORATORIES (ETL)
4. FEDERAL COMMUNICATIONS COMMISSION (FCC)
5. NATIONAL ELECTRICAL CODE (NEC)
6. NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA)
7. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
8. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) NFPA101
9. UNDERWRITERS' LABORATORIES, INC (UL)
c. CONTRACTOR SHALL PROVIDE ALL WORK NECESSARY INCLUDING ALL LABOR, MATERIALS, PERMITS, TAXES, FEES, INSPECTIONS, HARDWARE, AND COST FOR INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.
d. PRIOR TO BID, CONTRACTOR SHALL VISIT THE EXISTING SITE AND BECOME FAMILIAR WITH THE CONDITIONS AS THEY EXIST, OR THAT WILL IN ANY MANNER AFFECT THE WORK. NO ALLOWANCE WILL BE MADE SUBSEQUENTLY, IN THIS CONNECTION, ON THE BEHALF OF THE CONTRACTORS FOR ANY ERROR OR NEGLIGENCE ON THEIR PART.
e. AT THE TIME OF BIDDING, IF THE CONTRACTOR NOTES ANY PARTS OF THE DRAWINGS OR SPECIFICATIONS THAT DO NOT COMPLY WITH THE CODES OR REGULATIONS, THEY SHALL INFORM THE ARCHITECT/ENGINEER IN WRITING, REQUESTING A CLARIFICATION PRIOR TO THE BID. SUBMITTING A BID MEANS THE CONTRACTOR HAS READ THE COMPLETE DRAWINGS AND SPECIFICATIONS, WHERE TWO OR MORE CODES OR STANDARDS ARE IN CONFLICT, THAT REQUIRING THE HIGHEST ORDER OF WORKMANSHIP SHALL TAKE PRECEDENCE, BUT SUCH QUESTIONS SHALL BE REFERRED TO ARCHITECT/ENGINEER FOR FINAL DECISION.
f. COORDINATE ELECTRICAL INSTALLATION WITH ALL TRADES PRIOR TO INSTALLATION. IF ELECTRICAL WORK INSTALLED INTERFERES WITH OTHER TRADES AFTER INSTALLATION, THE CONTRACTOR SHALL MAKE ALL NECESSARY CHANGES TO CORRECT THE CONDITION AT NO ADDITIONAL COST TO THE OWNER.
g. DRAWINGS ARE DIAGRAMMATIC. ALL DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE, AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION THIS CONTRACTOR SHALL ADJUST CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.
h. THESE DRAWINGS SHALL NOT BE SCALED TO OBTAIN DIMENSIONS. REFER TO DIMENSIONED ARCHITECTURAL FLOOR PLANS. IF THE DIMENSIONS CANNOT BE DETERMINED BY THE INFORMATION GIVEN, CONTRACTOR SHALL CONTACT THE ENGINEER FOR ADDITIONAL INFORMATION.
i. REFER TO THE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF BUILDING EXPANSION JOINTS. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL BE INSTALLED WITH EXPANSION FITTINGS, UNLESS THE CONDUIT IS BELOW SLAB IN THE COMPACTED GRANULAR FILL. EXPANSION FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, AND MANUFACTURER'S WRITTEN RECOMMENDATIONS.
j. PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, AND PARTITIONS BY ELECTRICAL CONTRACTOR SHALL BE SEALED WITH APPROPRIATE FIRE PROOFING MATERIAL TO RESTORE FIRE RATING. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED ASSEMBLIES. PENETRATIONS THROUGH EXISTING FLOORS SHALL BE ASSUMED TO REQUIRE FIRE PROOFING, MINIMUM 2 HOUR, WHERE CONDUIT OR SLEEVES PASS THROUGH WALLS, FLOORS, OR PARTITIONS NOT CARRYING A FIRE RATING, PENETRATIONS SHALL BE SEALED WITH GROUT OR CAULK.
k. THE CONTRACTOR SHALL KEEP THE WORK AREA CLEAN OF ALL DEBRIS ON A DAILY BASIS. ALL NEW MATERIALS AWAITING INSTALLATION SHALL BE KEPT IN AREAS DESIGNATED BY THE OWNER.
l. PERIODIC SITE OBSERVATION BY THE ENGINEER IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK OF THE CONTRACTOR IS PROCEEDING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION SHOULD NOT BE CONSTRUED AS EXHAUSTIVE OR CONTINUOUS TO CHECK THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER PERIODIC IN AN EFFORT TO GUARD THE OWNER AGAINST DEFECTS OR DEFICIENCIES IN THE WORK OF THE CONTRACTOR.
m. THE INFORMATION CONTAINED ON THE ELECTRICAL DRAWINGS IS IN ITSELF INCOMPLETE AND VOID UNLESS USED IN CONJUNCTION WITH ALL OTHER DISCIPLINE DRAWINGS, SPECIFICATIONS, TRADE PRACTICES, OR APPLICABLE STANDARDS, CODES, ETC., AND SHALL BE CONSIDERED THE CONTRACT DOCUMENTS AND WITH ALL THEREIN BY REFERENCE, WHICH THE CONTRACTOR CERTIFIES KNOWLEDGE OF BY SIGNING THE CONTRACT.

- B. PART 2 - PRODUCTS
a. ALL MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW, COMPLETE WITH MANUFACTURER'S GUARANTEE OR WARRANTY AND SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL).
b. PROVIDE A MINIMUM FIVE (5) YEAR WARRANTY FOR ALL FIXTURES, EQUIPMENT, MATERIALS, AND WORKMANSHIP.
c. MATERIALS AND EQUIPMENT SHALL BE GUARANTEED BY THE CONTRACTOR TO BE FREE FROM DEFECTS.
C. PART 3 - EXECUTION
a. NO ENERGIZED CONDUCTORS SHALL BE EXPOSED AT ANYTIME EXCEPT WHEN THE IMMEDIATE AREA IS UNDER THE SUPERVISION OF A QUALIFIED ELECTRICIAN.
b. WHEN CHANGES REQUIRE SHUT-DOWN OF ELECTRICAL SERVICES, THE CONTRACTOR SHALL NOTIFY THE OWNER, PROPER BUILDING AUTHORITIES, OR OWNER'S REPRESENTATIVE NOT LESS THAN 48 HOURS IN ADVANCE AND OBTAIN APPROVAL FROM THESE AUTHORITIES BEFORE MAKING CHANGES.
c. MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
d. VERIFY ALL PERTINENT DIMENSIONS AT THE JOB SITE BEFORE ORDERING ANY CONDUIT, CONDUCTORS, WIREWAYS, BUS DUCT, FITTINGS, ETC. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO THE WORK OF OTHER TRADES OR TO THE BUILDING AND ITS CONTENTS CAUSED BY THE ELECTRICAL INSTALLATION.
e. SUBMITTALS:
1. PROVIDE SUBMITTALS FOR THE FOLLOWING:
a. WIRING DEVICES
b. LIGHTING FIXTURES
c. LIGHTING CONTROLS
d. ENCLOSED SWITCHES
e. PANELBOARDS
f. TRANSFORMERS
g. TELECOMMUNICATION SYSTEMS
h. FIRE ALARM
i. CENTRAL BATTERY EQUIPMENT
2. REFER TO ASSOCIATED SPECIFICATION SECTION FOR ADDITIONAL SUBMITTAL REQUIREMENTS.
3. SUBMITTALS SHALL AT A MINIMUM INCLUDE MANUFACTURER'S STANDARD CATALOG INFORMATION WITH SUBMITTED PRODUCT TYPE FOR REVIEW OUTLINED.
4. ENGINEER WILL REVIEW SHOP DRAWINGS SOLELY TO ASSIST CONTRACTOR IN CORRECTLY INTERPRETING THE PLANS AND SPECIFICATIONS. CONTRACTOR REQUIREMENTS CANNOT BE CHANGED BY SHOP DRAWINGS WHICH DIFFER FROM CONTRACT DRAWINGS AND SPECIFICATIONS.
f. OPERATION AND MAINTENANCE MANUALS
1. SUBMIT THE OPERATION AND MAINTENANCE MANUALS INCLUDING BOUND COPIES OF APPROVED SHOP DRAWINGS, RECORD DOCUMENTS, SPARE PARTS, AND EXTRA MATERIALS IN QUANTITIES SPECIFIED IN THESE SPECIFICATIONS. INCLUDING INSPECTION AND TESTING REPORT BY THE FIRE ALARM SYSTEM MANUFACTURER.

SHIVEHATTERY ARCHITECTURE + ENGINEERING

DAKINS LAKE CABIN

Table with columns: DRAWN BY, APPROVED BY, ISSUED FOR, ISSUE DATE, PROJECT NUMBER, FIELD BOOK. Values: JMH, JMH, BIDDING, 2/10/2026, 2142204360, 2142204360.

Table with columns: DRAWN BY, APPROVED BY, ISSUED FOR, ISSUE DATE, PROJECT NUMBER, FIELD BOOK. Values: JMH, JMH, BIDDING, 2/10/2026, 2142204360, 2142204360.

ELECTRICAL GENERAL INFORMATION AND SPECIFICATIONS

E000

A	B	C	D	E	F	
<b>ELECTRICAL SPECIFICATIONS:</b>						
2	<b>CONDUIT</b>	<b>3. BOXES</b>	<b>4. WIRES AND CABLES</b>	<b>5. WIRING DEVICES</b>	<b>6. GROUNDING</b>	<b>7. ENCLOSED SWITCHES</b>
1	<p>1. PART 1 - GENERAL</p> <p>a. CONTRACTOR SHALL FURNISH ALL MATERIALS, TOOLS, LABOR, AND SUPERVISION NECESSARY TO FABRICATE AND INSTALL COMPLETE CONDUIT SYSTEMS.</p> <p>b. CONDUIT SYSTEMS SHALL BE PROVIDED FOR ALL WIRING, EXCEPT WHERE DRAWINGS INDICATE THAT CERTAIN WIRING MAY BE INSTALLED ELSEWHERE.</p> <p>c. DO NOT USE CONDUIT AND ASSOCIATED FITTINGS FOR APPLICATIONS OTHER THAN AS PERMITTED BY NFPA 70 AND PRODUCT LISTING.</p> <p>2. PART 2 - PRODUCTS</p> <p>a. MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS OTHERWISE NOTED.</p> <p>b. <b>MINIMUM UNDERGROUND EXTERIOR CONDUIT SIZE SHALL BE 1" UNLESS OTHERWISE NOTED.</b></p> <p>c. THREADED TYPE CONNECTIONS AND COUPLINGS SHALL BE USED WITH RIGID AND INTERMEDIATE METAL CONDUIT.</p> <p>d. CONNECTORS FOR EMT SHALL BE STEEL OR MALLEABLE IRON AND OF THE COMPRESSION TYPE. INDENTOR, FRICTION, OR SET SCREW TYPE OF THOSE MADE FROM DIE CAST METAL WILL NOT BE PERMITTED ON THIS PROJECT.</p> <p>e. WHERE CONNECTIONS ARE MADE TO VIBRATING EQUIPMENT, A MAXIMUM SIX FOOT LENGTH OF FLEXIBLE STEEL CONDUIT WITH APPROPRIATE FITTINGS SHALL BE USED. IN WET LOCATIONS, USE LIQUID-TIGHT FLEXIBLE STEEL CONDUIT.</p> <p>3. PART 3 - EXECUTION</p> <p>a. CONDUIT AND OUTLET INSTALLATIONS SHALL BE CONCEALED UNLESS OTHERWISE NOTED.</p> <p>b. CONDUIT APPLICATIONS:</p> <ol style="list-style-type: none"> <li><b>UNDER SLAB ON GRADE, DIRECT BURIED: RIGID PVC CONDUIT.</b></li> <li><b>EXTERIOR, EXPOSED: GALVANIZED STEEL RIGID METAL CONDUIT (GRS) OR INTERMEDIATE METAL CONDUIT (IMC).</b></li> <li>CONCEALED WITHIN HOLLOW STUD WALLS: INTERIOR: ELECTRICAL METALLIC TUBING (EMT)</li> <li>CONCEALED ABOVE ACCESSIBLE CEILINGS: ELECTRICAL METALLIC TUBING (EMT).</li> <li>CONNECTIONS TO LUMINAIRES ABOVE ACCESSIBLE CEILINGS: FLEXIBLE METAL CONDUIT, MAXIMUM LENGTH 6 FEET.</li> <li>FISHED IN EXISTING WALLS WHERE NECESSARY: USE FLEXIBLE METAL CONDUIT.</li> <li>TELECOMMUNICATIONS: REFER TO CORRESPONDING SPECIFICATION SECTION FOR REQUIREMENTS.</li> </ol> <p>c. PVC CONDUIT SHALL NOT BE INSTALLED ABOVE GRADE.</p> <p>d. <b>WHERE PVC CONDUIT IS PROVIDED, TRANSITION TO GALVANIZED STEEL RIGID METAL CONDUIT WHERE EMERGING FROM UNDERGROUND. TRANSITION SHALL OCCUR BELOW GRADE STARTING WITH ASSOCIATED ELBOW.</b></p> <p>e. ALL FIRE ALARM CABLING SHALL BE ROUTED IN CONDUIT.</p> <p>f. CONDUIT SHALL NOT BE USED AS THE SOLE GROUNDING MEANS.</p> <p>g. CONDUIT SHALL BE INDEPENDENTLY SUPPORTED FROM BUILDING STRUCTURE. DO NOT PROVIDE SUPPORT FROM PIPING, DUCTWORK, CEILING GRID OR OTHER SYSTEMS.</p> <p>h. PROVIDE CONDUIT SUPPORTS IN ACCORDANCE WITH NEC REQUIREMENTS FOR WIRING METHOD USED. COMPLY WITH NECA-1.</p> <p>i. WHERE CONDUIT IS SURFACE MOUNTED TO A WALL AND RUN VERTICALLY DOWN TO A SWITCH/OUTLET BOX, UTILIZE A 1-HOLE OR 2-HOLE CONDUIT STRAP.</p> <p>j. DO NOT USE POWDER ACTUATED ANCHORS IN EXISTING STRUCTURE.</p> <p>k. CONDUIT SHALL BE ROUTED IN A NEAT, WORKMAN LIKE MANNER.</p> <p>l. CONDUIT RUNS ARE NOT SHOWN TO ALLOW THE CONTRACTORS TO CHOOSE THEIR OWN ROUTE TO VARIOUS ELECTRICAL EQUIPMENT AND DEVICES. HOWEVER, CARE SHALL BE TAKEN TO COORDINATE THE CONDUIT RUNS WITH EXISTING CONDITIONS AND WORK TO BE INSTALLED BY OTHER TRADES.</p> <p>m. CONDUITS INSTALLED UNDERGROUND OR EMBEDDED IN CONCRETE MAY BE ROUTED IN THE SHORTEST POSSIBLE MANNER UNLESS OTHERWISE INDICATED. ROUTE ALL OTHER CONDUITS PARALLEL OR PERPENDICULAR TO BUILDING STRUCTURE AND SURFACES, FOLLOWING SURFACE CONTOURS WHERE PRACTICAL.</p> <p>n. UNLESS OTHERWISE APPROVED, DO NOT ROUTE CONDUIT EXPOSED:</p> <ol style="list-style-type: none"> <li>ACROSS FLOORS</li> <li>ACROSS BUILDING EXTERIOR SURFACES</li> <li>BELOW CEILING ELEMENTS (ACT, CLOUDS, BAFFLES, ETC)</li> </ol> <p>o. <b>AREAS OPEN TO STRUCTURE:</b></p> <ol style="list-style-type: none"> <li><b>CONDUIT SHALL BE ROUTED TIGHT TO STRUCTURE UNLESS OTHERWISE REQUIRED BY CODE.</b></li> <li><b>ROUTE CONDUITS PARALLEL OR PERPENDICULAR TO BUILDING STRUCTURE AND SURFACES, FOLLOWING SURFACE CONTOURS WHERE PRACTICAL.</b></li> <li><b>CONDUIT SHALL BE HIDDEN ABOVE CEILING CLOUDS/BAFFLES AND HIDDEN FROM PUBLIC VIEW WHERE POSSIBLE.</b></li> </ol>	<p>A. PART 1 - GENERAL</p> <p>a. DO NOT USE BOXES AND ASSOCIATED ACCESSORIES FOR APPLICATIONS OTHER THAN AS PERMITTED BY NFPA 70 AND PRODUCT LISTING.</p> <p>b. PROVIDE ALL BOXES, FITTINGS, SUPPORTS, AND ACCESSORIES REQUIRED FOR A COMPLETE RACEWAY SYSTEM AND TO ACCOMMODATE DEVICES AND EQUIPMENT TO BE INSTALLED.</p> <p>c. PROVIDE PRODUCTS LISTED, CLASSIFIED, AND LABELED AS SUITABLE FOR THE PURPOSE INTENDED.</p> <p>d. WHERE BOX SIZE IS NOT INDICATED, SIZE TO COMPLY WITH NFPA 70 BUT NOT LESS THAN APPLICABLE MINIMUM SIZE REQUIREMENTS SPECIFIED.</p> <p>B. PART 2 - PRODUCTS</p> <p>a. OUTLET AND DEVICE BOXES UP TO 100 CUBIC INCHES, INCLUDING THOSE USED AS JUNCTION AND PULL BOXES:</p> <ol style="list-style-type: none"> <li>USE SUITABLE MASONRY TYPE BOXES WHERE FLUSH-MOUNTED IN MASONRY WALLS.</li> <li>USE RAISED COVERS SUITABLE FOR THE TYPE OF WALL CONSTRUCTION AND DEVICE CONFIGURATION WHERE REQUIRED.</li> <li>USE SHALLOW BOXES WHERE REQUIRED BY THE TYPE OF WALL CONSTRUCTION.</li> <li>DO NOT USE "THROUGH-WALL" BOXES DESIGNED FOR ACCESS FROM BOTH SIDES OF WALL.</li> <li>BOXES FOR SUPPORTING LUMINAIRES: LISTED AS SUITABLE FOR THE TYPE AND WEIGHT OF LOAD TO BE SUPPORTED; FURNISHED WITH FIXTURE STUD TO ACCOMMODATE MOUNTING OF LUMINAIRE WHERE REQUIRED.</li> <li>BOXES FOR GANGED DEVICES: USE MULTIGANG BOXES OF SINGLE-PIECE CONSTRUCTION. DO NOT USE FIELD-CONNECTED GANGABLE BOXES.</li> <li>MINIMUM SIZE SHALL BE 4" SQUARE BY 2-1/8" DEEP.</li> <li>REFER TO TELECOMMUNICATIONS AND LOW VOLTAGE SPECIFICATION SECTION FOR ADDITIONAL REQUIREMENTS.</li> </ol> <p>b. JUNCTION AND PULL BOXES LARGER THAN 6 SQUARE FEET SHALL BE PROVIDED WITH HINGED-COVER ENCLOSURES.</p> <p>c. FLOORBOXES AND POKE-THRUS:</p> <ol style="list-style-type: none"> <li>FURNISH AS INDICATED ON DRAWINGS.</li> <li>FURNISH WITH BARRIER TO SEPARATE HIGH AND LOW VOLTAGE SYSTEMS.</li> <li>FURNISH DUPLEX RECEPTACLES PER WIRING DEVICES SPECIFICATION SECTION.</li> <li>FURNISH COMPLETE WITH NECESSARY GASKETS, PLATES, SPACERS, COVERS, AND ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.</li> <li>UNUSED OPENINGS SHALL BE COVERED WITH BLANK COVERPLATES AND FITTINGS REQUIRED TO MAINTAIN RATING.</li> <li>FINISH SHALL BE DETERMINED DURING SUBMITTAL REVIEW.</li> </ol> <p>d. <b>IN-GROUND HANDHOLES SHALL BE POLYMER CONCRETE CONSTRUCTION WITH OPEN BOTTOM STACKABLE. QUAZITE PG STYLE OR EQUAL.</b></p> <ol style="list-style-type: none"> <li><b>ALL STAINLESS STEEL HARDWARE WITH MINIMUM TWO FASTENERS PER LID.</b></li> <li><b>EXTRA HEAVY DUTY COVERS WITH NON-SKID SURFACE, TIER 22, 22,500 LB VERTICAL AND 800 IBS/SQ. FT. LATERAL DESIGN LOADS, UNLESS NOTED OTHERWISE.</b></li> <li><b>MINIMUM SIZE TO BE 11"X18", UNLESS NOTED OTHERWISE.</b></li> </ol> <p>C. PART 3 - EXECUTION</p> <p>a. ELECTRICAL CONNECTION TO EQUIPMENT AND MOTORS, SIZED PER NEC, UNLESS NOTED OTHERWISE IN SCHEDULE ON DRAWINGS.</p> <p>b. MULTIPLE GANG SWITCH OUTLETS SHALL CONSIST OF THE REQUIRED NUMBER OF GANG BOXES APPROPRIATE TO THE QUANTITY OF SWITCHES COMPRISING THE GANG. PROVIDE PLASTER RINGS AND COVERS AS NEEDED.</p> <p>c. PULL AND JUNCTION BOXES, GALVANIZED STEEL, SIZED PER NEC.</p> <p>d. INDEPENDENTLY SUPPORT BOXES. BOXES SHALL NOT BE SUPPORTED BY CONDUIT.</p> <p>e. FLOORBOXES AND POKE-THRUS SHALL BE CLEANED OF ALL DIRT AND DEBRIS.</p> <p>f. COORDINATE ALL CORING WITH TENANT BELOW AS APPLICABLE. ALL CORING SHALL TAKE PLACE OUTSIDE OF NORMAL BUSINESS HOURS.</p> <p>g. FLOORBOX AND POKE-THRU LAYOUTS PROVIDED FOR SCOPING PURPOSES ONLY. EXACT DIMENSIONS SHALL BE COORDINATED WITH STRUCTURE AND FURNITURE PROVIDER AS REQUIRED PRIOR TO ROUGH-IN. WHERE DISCREPANCIES EXIST, COORDINATE NECESSARY ADJUSTMENTS WITH DESIGN TEAM.</p> <p>h. FOR POKE-THRUS LOCATED ABOVE INACCESSIBLE CEILING SPACE, LOW VOLTAGE CABLING SHALL BE INSTALLED WITHIN CONDUIT.</p>	<p>A. PART 1 - GENERAL</p> <p>a. CONDUCTORS USED THROUGHOUT THIS PROJECT SHALL BE COPPER.</p> <p>b. CONDUCTORS SHALL BE INSULATED FOR 600 VOLTS UNLESS SHOWN OTHERWISE.</p> <p>c. ALL WIRES AND CABLES NOT INSTALLED IN SEALED CONDUIT SHALL BE PLENUM RATED.</p> <p>d. <b>COLOR CODING OF WIRING SHALL MATCHING EXISTING.</b></p> <p>B. PART 2 - PRODUCTS</p> <p>a. INSULATION SHALL BE THERMOPLASTIC TYPE THWN, THHN, OR XHHW. CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED. CONDUCTORS #10 AWG AND SMALLER SHALL BE SOLID.</p> <p>b. CONDUCTORS SMALLER THAN #12 SHALL NOT BE USED ON THIS PROJECT UNLESS SPECIFICALLY NOTED.</p> <p>c. NO TYPE AC, MC, OR TYPE NM CABLES WILL BE ALLOWED.</p> <p>d. WIRING SYSTEM SHALL BE COLOR CODED TO INDUSTRY STANDARD APPLICATIONS.</p> <p>C. PART 3 - EXECUTION</p> <p>a. WIRING SHALL BE IN CONDUIT OR APPROVED RACEWAYS.</p> <p>b. NO MORE THAN 3 PHASE CONDUCTORS TO A CONDUIT.</p> <p>c. EACH SINGLE PHASE BRANCH CIRCUIT CONDUCTOR SHALL HAVE A DEDICATED NEUTRAL BACK TO THE PANELBOARD.</p> <p>d. USE #10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUIT HOME RUNS LONGER THAN 75 FEET.</p> <p>e. PULL ALL CONDUCTORS INTO RACEWAY AT THE SAME TIME.</p> <p>f. UTILIZE STRANDED TYPE CONDUCTORS FOR ALL VIBRATION TYPE INSTALLATIONS (I.E. MOTORS, ETC.).</p> <p>g. SPLICES IN BRANCH CIRCUIT WIRES SHALL BE MADE ONLY IN ACCESSIBLE JUNCTION BOXES. KEEP CONDUCTOR SPLICES TO A MINIMUM.</p> <p>h. PROVIDE SEPARATE GREEN GROUND CONDUCTOR THROUGHOUT ENTIRE ELECTRICAL SYSTEM.</p> <p>i. ALL CABLE FOR MAJOR FEEDERS SHALL BE CONTINUOUS FROM ORIGIN TO TERMINATION, UNLESS OTHERWISE INDICATED.</p> <p>j. WHERE CIRCUITS PASS THROUGH AN OUTLET BOX AND IS TAPPED, ALL LEADS SHALL BE PITGALED TO THE WIRING DEVICE, INCLUDING EQUIPMENT GROUND.</p>	<p>A. PART 1 - GENERAL</p> <p>a. DEVICES, OUTLETS, AND JUNCTION BOXES SHOWN ON DRAWINGS ARE DIAGRAMMATIC. COORDINATE EXACT PLACEMENT OF ALL DEVICES WITH OWNER AND OTHER TRADES PRIOR TO INSTALLATION. VERIFY DOOR SWING PRIOR TO INSTALLATION OF ALL SWITCH BOXES. ADJUSTMENT OF LOCATION PRIOR TO INSTALLATION, SHALL BE DONE WITH NO ADDITIONAL COST TO THE OWNER.</p> <p>b. RECEPTACLES SHALL HAVE A GROUNDING POLE.</p> <p>B. PART 2 - PRODUCTS</p> <p>a. REFER TO MATERIAL LIST FOR ADDITIONAL INFORMATION.</p> <p>b. WIRING DEVICE MANUFACTURERS:</p> <ol style="list-style-type: none"> <li>LEVITON</li> <li>LEGRAND - PASS AND SEYMOUR/WIREMOLD</li> <li>HUBBELL</li> <li>COOPER</li> </ol> <p>c. ALL DEVICES SHALL BE HEAVY DUTY INDUSTRIAL SPECIFICATION GRADE OR BETTER.</p> <p>d. INTERIOR COVERPLATES SHALL BE NYLON AND MATCH THE DEVICES. USE JUMBO SIZE PLATES FOR OUTLETS INSTALLED IN MASONRY WALLS. USE GALVANIZED STEEL PLATES ON OUTLET BOXES AND JUNCTION BOXES IN UNFINISHED AREAS, ABOVE ACCESSIBLE CEILINGS, AND ON SURFACE MOUNTED OUTLETS, UNLESS OTHERWISE NOTED.</p> <p>e. PROVIDE QUIET TYPE TOGGLE SWITCHES RATED 120/277V, 20 AMP.</p> <p>f. RECEPTACLES:</p> <ol style="list-style-type: none"> <li>REFER TO MATERIAL LIST FOR MORE INFORMATION.</li> <li>POKE THRU/FLOORBOX DEVICES:</li> </ol> <ol style="list-style-type: none"> <li>REFER TO MATERIAL LIST FOR MORE INFORMATION.</li> <li>COORDINATE EXACT LOCATIONS AND ELECTRICAL REQUIREMENTS WITH FURNITURE AND AV VENDORS PRIOR TO ORDERING AND ROUGH-IN. DO NOT SCALE DRAWINGS FOR LOCATIONS.</li> <li>POKE-THRU DEVICE LOCATIONS ARE SCHEMATIC AND SHALL BE COORDINATED WITH EXISTING STRUCTURAL MEMBERS PRIOR TO DRILLING.</li> <li>DEVICES SHALL BE COMPLETE WITH NECESSARY GASKETS, PLATES, SPACES, COVERS, FASTENERS, BRACKETS, AND COVERPLATES SUITABLE FOR ALL DEVICES LOCATED WITHIN. MANUFACTURER SPECIFIC BLANK COVERPLATES SHALL BE FURNISHED FOR ALL UNUSED OPENINGS.</li> <li>WHERE POKE-THRUS ARE LOCATED ABOVE AN INACCESSIBLE CEILING SPACE, FURNISH RECEPTACLES WITH LEADS SUITABLE TO BE EXTENDED TO NEAREST ACCESSIBLE CEILING SPACE.</li> </ol> <p>C. PART 3 - EXECUTION</p> <p>a. MOUNTING DIMENSIONS INDICATED FOR DEVICES SHALL BE HEIGHT TO CENTER OF DEVICE ABOVE FINISHED FLOOR (18" AFF IF NOT SHOWN).</p> <p>b. RECEPTACLES AND DATA NOTED AS 'AC', SHALL BE MOUNTED VERTICALLY 8" ABOVE COUNTER TOP OR 4" ABOVE BLACKSPASH UNLESS OTHERWISE NOTED/SHOWN.</p> <p>1. RECEPTACLE GROUND POLE TO BE DOWN FOR VERTICAL MOUNT OR NEUTRAL POLE UP FOR HORIZONTAL MOUNT.</p> <p>c. SWITCHES AND RECEPTACLES SHALL BE MOUNTED AT THE HEIGHTS SHOWN. ONLY SCREW TYPE TERMINATIONS SHALL BE USED. COORDINATE DISCREPANCIES WITH DESIGN TEAM PRIOR TO ROUGH-IN.</p> <p>d. WHERE SEVERAL DEVICES ARE GANGED TOGETHER, THE COVERPLATE SHALL BE OF THE GANGED STYLE FOR THE NUMBER OF DEVICES INSTALLED.</p> <p>e. TO REDUCE NOISE BETWEEN WALLS, CONTRACTOR SHALL AVOID INSTALLING POWER OR DATA OUTLETS LOCATED BACK TO BACK. WHERE OUTLETS ARE REQUIRED TO BE LOCATED BACK TO BACK, CONTRACTOR SHALL PROVIDE SOUND PROOFING MATERIAL BETWEEN DEVICE BOXES.</p> <p>f. ALL GFI TYPE RECEPTACLES SHALL BE INSTALLED WHERE GFI NOTATION IS SHOWN ON PLANS. DOWNSTREAM PROTECTION OF RECEPTACLES IS ONLY ALLOWED WHERE SPECIFICALLY INDICATED ON DRAWINGS.</p> <p>1. ROUTE GREEN INSULATED GROUNDING CONDUCTOR FROM GROUND BAR IN BRANCH PANEL TO GROUND TERMINAL ON WIRING DEVICES.</p>	<p>A. PART 1 - GENERAL</p> <p>a. THE ELECTRICAL SYSTEM GROUP SHALL CONFORM TO THE REQUIREMENTS OF THE NEC AND DETAILS INDICATED ON THE DRAWINGS.</p> <p>b. RACEWAY SYSTEMS SHALL NOT BE USED AS SOLE GROUND PATH.</p> <p>B. PART 2 - PRODUCTS</p> <p>a. PROVIDE GREEN GROUNDING WIRE IN ALL BRANCH CIRCUITS AND FEEDERS. CONNECT TO GROUND BAR IN PANELBOARDS AND TO GROUND TERMINAL OR CHASSIS ON EQUIPMENT.</p> <p>C. PART 3 - EXECUTION</p> <p>a. BOND MECHANICAL DUCTWORK AND PIPING TO GROUND SYSTEM.</p> <p>7. IDENTIFICATION</p> <p>A. PART 1 - GENERAL</p> <p>a. INSTALL ARC FLASH WARNING SIGNS ON ALL PANELBOARDS, AND INDUSTRIAL CONTROL PANELS.</p> <p>B. PART 2 - PRODUCTS</p> <p>a. NOT USED.</p> <p>C. PART 3 - EXECUTION</p> <p>a. JUNCTION BOXES AND PULL BOXES:</p> <ol style="list-style-type: none"> <li>INDICATE SOURCE AND CIRCUIT NUMBER ON FRONT OF COVERPLATES LOCATED IN UNFINISHED SPACES.</li> <li>INDICATE SOURCE AND CIRCUIT NUMBER ON INSIDE FACE OF COVERPLATES LOCATED IN EXPOSED FINISHED SPACES.</li> </ol> <p>b. COVERPLATES FOR RECEPTACLES AND SWITCHES:</p> <ol style="list-style-type: none"> <li>INDICATE SOURCE AND CIRCUIT NUMBER SERVING THE DEVICE ON BACK OF COVERPLATE</li> </ol> <p>c. WHERE CONDUIT LEAVES A PANELBOARD, IDENTIFY EACH CONDUIT INDICATING CIRCUITS CONTAINED WITHIN.</p> <p>d. ALL ELECTRICAL PANELS WITH ANY BRANCH CIRCUIT/LOAD REVISIONS (DEMOLITION OR NEW WORK) SHALL HAVE A NEW TYPED UPDATED CIRCUIT DIRECTORY CARD INSTALLED INSIDE THE DOOR OF THE ELECTRICAL PANEL. THE CONTRACTOR SHALL VERIFY THAT ALL UNUSED CIRCUIT BREAKERS ARE TURNED 'OFF' AND PROPERLY INDICATED AS 'SPARE' ON THE NEW CIRCUIT DIRECTORY CARD. THE CONTRACTOR SHALL INSTALL FILLER PLATES WHERE BREAKERS ARE REMOVED AS PART OF THIS PROJECT OR HAVE BEEN REMOVED PREVIOUSLY.</p> <p>e. UTILIZE ENGRAVED PLASTIC LAMINATE SIGN: 1/2" HIGH LETTERING ON 1-1/2" HIGH SIGN, WHITE LETTERING IN BLACK FIELD. PROVIDE TEXT MATCHING TERMINOLOGY AND CIRCUIT NUMBERING ON THE CONTRACT DOCUMENTS FOR THE FOLLOWING PIECES OF EQUIPMENT:</p> <ol style="list-style-type: none"> <li>PANELBOARDS, CABINETS, ENCLOSURES</li> <li>DISTRIBUTION BOARD</li> <li>DISTRIBUTION BOARD CIRCUIT BREAKERS</li> <li>DISCONNECTS, STARTERS, AND DRIVES</li> <li>INVERTERS</li> </ol>	<p>A. PART 1 - GENERAL</p> <p>a. FURNISH AND INSTALL SAFETY DISCONNECTS AND MOTOR RATED SWITCHES SHOWN OR AS INDICATED ON THE ELECTRICAL AND MECHANICAL COORDINATION SCHEDULE. IF INDICATED AS FURNISHED WITH EQUIPMENT, ELECTRICAL CONTRACTOR SHALL INSTALL.</p> <p>B. PART 2 - PRODUCTS</p> <p>a. REFER TO MATERIAL LIST FOR MORE INFORMATION.</p> <p>b. ALL DISCONNECTS SHALL BE HEAVY DUTY TYPE UNLESS NOTED OTHERWISE.</p> <p>c. ENCLOSED SWITCH MANUFACTURERS:</p> <ol style="list-style-type: none"> <li>SQUARE D</li> <li>GENERAL ELECTRIC</li> <li>EATON</li> </ol> <p>d. INTERIOR DEVICES SHALL HAVE A NEMA 1 RATED HOUSING UNLESS OTHERWISE NOTED.</p> <p>e. EXTERIOR DEVICES SHALL HAVE A NEMA 3R RATED HOUSING UNLESS OTHERWISE NOTED.</p> <p>f. MOTOR STARTERS SHALL BE MANUAL WITH MELTING ALLOY TYPE THERMAL OVERLOAD RELAYS.</p> <p>g. FURNISH AND INSTALL FUSES FOR EQUIPMENT AS REQUIRED. COORDINATE FUSE RATING WITH EQUIPMENT MANUFACTURER'S RECOMMENDATION.</p> <p>h. POLES, RATINGS, AND FUSES SHALL MATCH BRANCH CIRCUIT AND LOAD CHARACTERISTICS.</p> <p>C. PART 3 - EXECUTION</p> <p>a. MOUNT THE TOP OF SWITCH AT A MAXIMUM HEIGHT OF 6'-0" TO TOP OF ENCLOSURE FROM GROUND.</p> <p>b. REFER TO APPROVED MECHANICAL AND PLUMBING EQUIPMENT SUBMITTAL DRAWINGS FOR EQUIPMENT RATINGS AND SIZES. COST OF CHANGES TO ELECTRICAL INSTALLATION RESULTING FROM SUBMISSION OF ALTERNATE EQUIPMENT FROM THAT SCHEDULED ON THE MECHANICAL DRAWINGS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR/VENDOR PROVIDING SUCH EQUIPMENT.</p> <ol style="list-style-type: none"> <li>WHERE DISCONNECT SWITCHES CANNOT BE MOUNTED ON WALL, PROVIDE SUPPORT RACKS FABRICATED OF GALVANIZED U-CHANNEL STRUT.</li> </ol> <p>8. FIRE ALARM</p> <p>A. PART 1 - GENERAL</p> <p>a. CONTRACTOR IS RESPONSIBLE TO CONTACT FIRE ALARM SYSTEM MANUFACTURER REPRESENTATIVE AND PROVIDE ALL LABOR, MATERIALS, AND RESOURCES NECESSARY FOR A COMPLETE AND WORKING SYSTEM, PER THESE PLANS.</p> <p>B. PART 2 - PRODUCTS</p> <p>a. REFER TO MATERIAL LIST FOR MORE INFORMATION.</p> <p>b. PROVIDE NEW DEVICES AS SHOWN ON PLANS COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM.</p> <p>c. STROBE LIGHTS SHALL BE THE CANDELA RATING MATCHING THE VALUE INDICATED ON THE FLOOR PLAN. MOUNTED CEILING DEVICES NO HIGHER THAN 12' ABOVE FINISHED FLOOR. MOUNT ALL DEVICES 6" BELOW ACCESSIBLE CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER.</p> <p>C. PART 3 - EXECUTION</p> <p>a. ALL WIRING SHALL BE ROUTED IN CONDUIT.</p> <p>b. WIRING SHALL BE APPROVED RATED FIRE ALARM CABLE (PLFA) AS RECOMMENDED BY THE SYSTEM MANUFACTURER.</p> <p>c. PROVIDE SYSTEM VOICE INTELLIGIBILITY AS REQUIRED.</p>
2						
3						
4						

Autodesk Docs: 2142204360 - Story C23 - Dakins Lake Cabin 2142204360-MEP-R24.rvt  
 2/11/2028 10:30:10 AM  
 Autodesk Revit 2024

**SHIVEHATTERY**  
 ARCHITECTURE + ENGINEERING  
 800.798.0313 | SHIVEHATTERY.COM

**DAKINS LAKE CABIN**  
 STORY COUNTY CONSERVATION  
 ZEARING, IOWA 50278

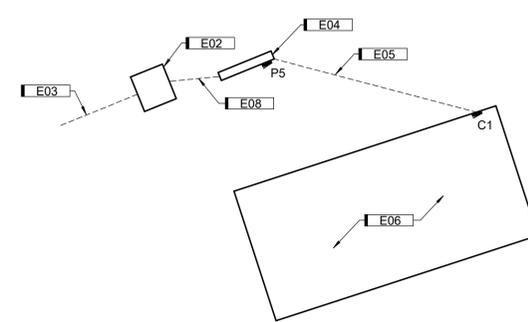
DRAWN BY	JMH
APPROVED BY	JMH
ISSUED FOR	BIDDING
ISSUE DATE	2/10/2026
PROJECT NUMBER	2142204360
FIELD BOOK	

**ELECTRICAL SPECIFICATIONS**  
**E001**

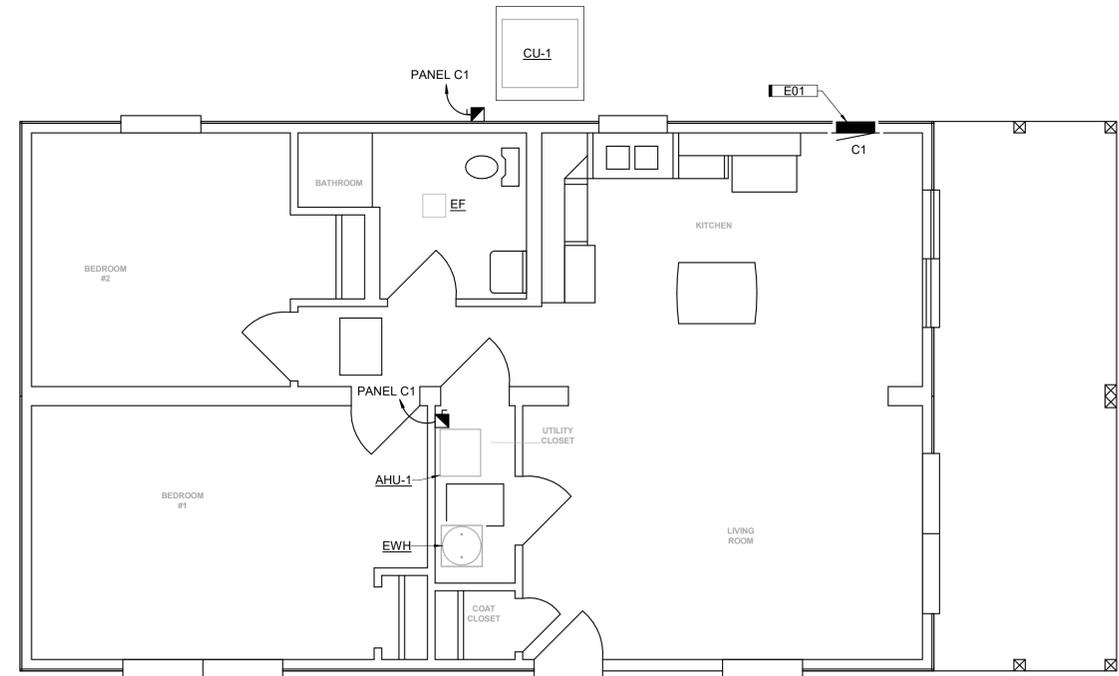
BRANCH PANEL NAME	VOLTAGE	PHASE	WIRE	BUS SIZE	MAIN OCP	AIC RATING					
<b>P5</b>	<b>240/120</b>	<b>1</b>	<b>3</b>	<b>600 AMPS</b>	<b>600 A</b>	<b>14,000 AMPS SYMMETRICAL</b>					
ROOM:						MOUNTING: SURFACE					
FED FROM:						ENCLOSURE: NEMA 1					
						FEED:					
LOAD	NOTE	POLE	BKR	CKT #	A	B	CKT #	BKR	POLE	NOTE	LOAD
C1 - CABIN #1		2	200 A	1 3	0.0 / 0.0 0.0 / 0.0		2 4	200 A	2	--	FUTURE CABIN
FUTURE CABIN		2	200 A	5 7	0.0 / 0.0 0.0 / 0.0		6 8	--	1	--	SPACE
SP-1 - SITE SUMP PUMP		1	20 A	9	0.9 / 0.0		10	--	1	--	SPACE
SPARE		1	20 A	11		0.0 / 0.0	12	--	1	--	SPACE
SPARE		1	20 A	13	0.0 / 0.0		14	--	1	--	SPACE
SPARE		1	20 A	15		0.0 / 0.0	16	--	1	--	SPACE
SPACE		1	--	17	0.0 / 0.0		18	--	1	--	SPACE
SPACE		1	--	19		0.0 / 0.0	20	--	1	--	SPACE
SPACE		1	--	21	0.0 / 0.0		22	--	1	--	SPACE
SPACE		1	--	23		0.0 / 0.0	24	--	1	--	SPACE
SPACE		1	--	25	0.0 / 0.0		26	--	1	--	SPACE
SPACE		1	--	27		0.0 / 0.0	28	--	1	--	SPACE
SPACE		1	--	29	0.0 / 0.0		30	--	1	--	SPACE
<b>TOTAL LOAD:</b>					940.8 VA	0.0 VA					
<b>TOTAL AMPS:</b>					7.8 A	0.0 A					
LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	PANEL TOTALS							
MOTORS	940.8 VA	125%	1,176.0 VA	<b>CONNECTED LOAD:</b> 940.8 VA							
				<b>ESTIMATED DEMAND:</b> 1176.0 VA							
				<b>CONNECTED CURRENT:</b> 3.9 A							
				<b>ESTIMATED DEMAND CURRENT:</b> 4.9 A							

NOTES:

MECHANICAL AND ELECTRICAL COORDINATION SCHEDULE														
<b>GENERAL NOTES:</b>							<b>ABBREVIATIONS:</b>							
A. MOCPS SIZES SHOWN BELOW ARE FOR BIDDING PURPOSES ONLY. VERIFY MOCPS WITH EQUIPMENT NAME PLATE DATA PRIOR TO ORDERING EQUIPMENT.							EC - ELECTRICAL CONTRACTOR							
B. MINIMUM WIRE SIZE SHALL BE #12 AWG AND MINIMUM CONDUIT SIZE SHALL BE 3/4".							MC - MECHANICAL CONTRACTOR							
C. INCLUDE A SEPARATE, GREEN, CONDUCTOR IN ALL FEEDER AND BRANCH CIRCUIT CONDUITS.							MFR - MANUFACTURER							
							TCC - TEMPERATURE CONTROL CONTRACTOR							
							OWN - OWNER							
<b>REMARKS:</b>														
1. XXX.														
2. XXX.														
MARK	VOLTAGE	PHASE	FLA	MCA	MOCP	HP	FUSE	WATTAGE	CONDUIT AND WIRE SIZE	CONTROL OR STARTER	CONTROLLER OR STARTER FURNISHED / INSTALLED	DISCONNECT TYPE	DISCONNECT FURNISHED / INSTALLED	REMARKS
AHU-1	240	1	56.8	71	80	1	-	10906	2#3, 1#8G, 1" C	LOW VOLTAGE THERMOSTAT	MC/MC	MOTOR RATED SWITCH	EC/EC	--
CU-1	240	1	19.2	24	40	-	-	3686	2#8, 1#10G, 1" C	AHU-1	MC/MC	LOCAL ON/OFF FUSED DISCONNECT	EC/EC	--
SP-1	120	1	9.8	12.3	20	1/2	-	941	2#12, 1#12G, 3/4" C	XXX	XXX	XXX	XXX	XXX



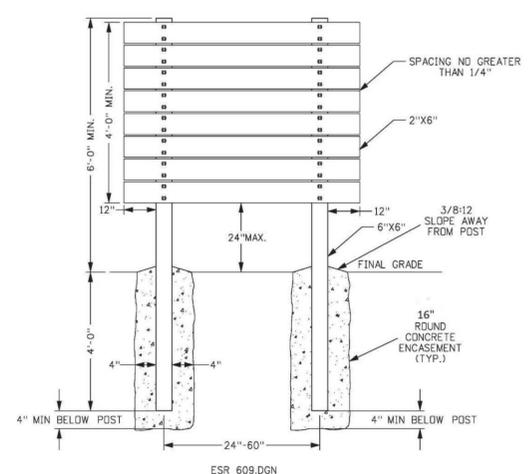
**C3 ELECTRICAL SITE PLAN**  
1/16" = 1'-0" 0 24'



**A4 ELECTRICAL PLAN**  
1/4" = 1'-0" 0 6'

- 609. OUTDOOR FREE STANDING (Field-Built) METER STRUCTURES**
- A. Field built structures are limited to 1200 Amp Maximum. Alliant Energy engineering approval is required for use.
  - B. Wood field-built structures shall have a minimum of two 6" x 6" wood posts and 2" x 6" planks that are pressure treated against decay per the American Wood Protection Association (AWPA). The posts shall be buried a minimum of 4 feet deep, plumb and set in concrete the full depth. The planks shall be level and fastened with stainless steel or hot-dipped galvanized (G-185) hardware (bolts, washers, nuts.), **nails and screws are not acceptable**. The customer is responsible for the maintenance of the structure. See ESR 609.dgn for allowable design details.
  - C. All service equipment shall be waterproof, lockable and listed by an approved testing agency for service entrance use. Shall be securely fastened to structure with through bolts, washers and nuts.

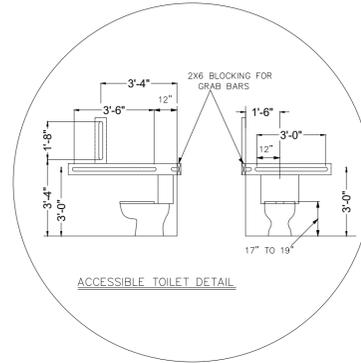
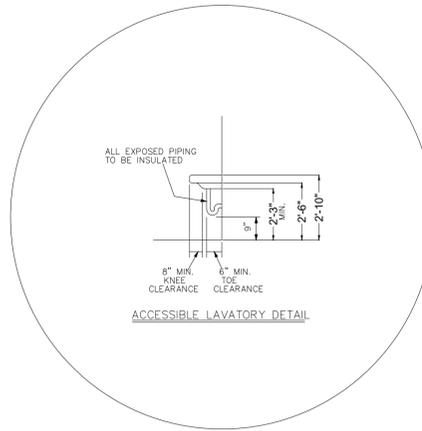
**WOOD CONSTRUCTION**



**E4 FREE STANDING METER STRUCTURE - ALLIANT**  
NOT TO SCALE

DRAWN BY	JMH
APPROVED BY	JMH
ISSUED FOR	BIDDING
ISSUE DATE	2/10/2026
PROJECT NUMBER	2142204360
FIELD BOOK	

- 1] STUD WALL= 2X6X8 CATH CEILING= KITCHEN PORCH DINING & LIVING ROOM
- 2] FLOOR JOIST= 2X10 FLOOR SHEATHING= OSB
- 3] ROOF RISE= 4' (APPROX SLOPE=3.45 IN 12) SPACING= 24" O.C. METAL ROOF= RUSTIC RED GABLE= NONE
- 4] SIDING= LP ELKHORN SHUTTERS= NONE FACIA/SOFFIT= ALMOND
- 5] WINDOWS= PELLA 250 SINGLE HUNG ALMOND VINYL NO GRILLS
- 6] CABINETS= ARBOR OAK KAROO SELECT NO TRAYS COUNTER TOP= 3466-11 ANTIQUE MASCARELLO
- 7] RANGEHOOD= WMH31017H BLACK MICROWAVE VENTED OUTSIDE & INSULATE DUCT (AF/GFI)
- 8] KITCHEN SINK= ELKAY BLACK W/K596-BL FAUCET WIRE FOR ELECT RANGE= YES W/40 AMP BREAKER  
TOP OF KITCHEN SINK TO BE A MAXIMUM OF 34" OFF FINISH FLOOR
- 9] BATH= WHITE TOP= PF5514WH WHITE FIXTURES= CHROME
- 10] SHOWER ENCLOSURE= ROD
- 11] HEAT= BOOTS & REGISTERS BY DHI. FURNACE, ACCESSIBLE VOLUME DAMPERS & DUCTS SUPPLIED & INSTALLED BY BUYER  
PER ENERGY CODE THIS DWELLING REQUIRES AN AIR TO AIR  
HEAT EXCHANGER DESIGNED, SUPPLIED & INSTALLED ON SITE BY BUYER  
STACKS IN WALL CAVITIES TO CONNECT REGISTERS ON OPPOSITE SIDES OF WALL ONLY, WITHOUT PENETRATING CEILINGS & FLOORS
- 12] WATER HEATER= AO SMITH ENT50 50 GALLON ELECTRIC SHIPPED LOOSE & INSTALLED ON SITE BY BUYER
- 13] ELECT POWER= 200 AMP BY DHI. METER BASE, EMERGENCY DISCONNECT & ENTRANCE CABLE SUPPLIED & INSTALLED BY BUYER  
INSTALL TYPE 2 SURGE PROTECTION IN POWER PANEL
- 14] APPLIANCES= WDT550SAP BLACK DW (AF/GFI)
- 15] WALL/CEILING= GYPSUM BOARD, ORANGE PEEL ALL CEILINGS & WALLS
- 16] USE JAVA BEAN OAK DOORS & JAVA BEAN OAK TRIM. INSTALL LOUVERED DOOR WHERE NOTED
- 17] INSTALL MIRROR/LIGHT BAR & NO MEDICINE CABINET IN BATHROOM
- 18] USE MATTE BLACK HARDWARE
- 19] USE PEX TUBING WATER SUPPLY LINES
- 20] USE R-21 INSULATION & AIR INFILTRATION BARRIER W/NO 1" R-5 FOAM ON EXTERIOR OF HOME
- 21] LABELS & DATA PLATES INSTALLED UNDER KITCHEN SINK & FLOOR JOIST
- 22] COUNTERS OVER 12" WILL BE SPLICED
- 23] PLUMBING #PP122400039PTOPP, PP122400042PTOPP
- 25] ALL INTERIOR & EXTERIOR 15 & 20 AMP RECEPTACLES TO BE TAMPER PROOF
- 26] ALL EXTERIOR RECEPTACLES TO BE WEATHER RESISTANT
- 27] BRACED WALL METHOD BEING USED IS CS-WSP



READY FOR PRODUCTION AGREEMENT  
I/WE, THE UNDERSIGNED CUSTOMER(S) OF DESIGN HOMES, INC., UNDERSTAND THAT BY SIGNING THIS PRODUCTION PRINT I/WE ARE AGREEING THAT:

- 1) THIS PRODUCTION PRINT IS COMPLETE AND ACCURATE AND I AM AUTHORIZING DESIGN HOMES TO BUILD THIS HOME.
- 2) THAT I/WE WILL MAKE NO ADDITIONAL CHANGES TO THE PLAN.
- 3) WE ARE AWARE THAT ANY SPECIAL ITEMS ORDERED FOR THE HOME OR CONVEYED EITHER VERBALLY OR IN WRITING TO DESIGN HOMES INCLUDING ANY UNIQUE FEATURES, COLORS OR MATERIALS MUST BE CLEARLY INDICATED ON THE PRINT OR THEY WILL NOT BE PART OF THE HOME PACKAGE. WE HAVE CHECKED THE PRINT THOROUGHLY AND CONFIRM THAT THE HOUSE SPECIFICATIONS ARE COMPLETE AND ACCURATE

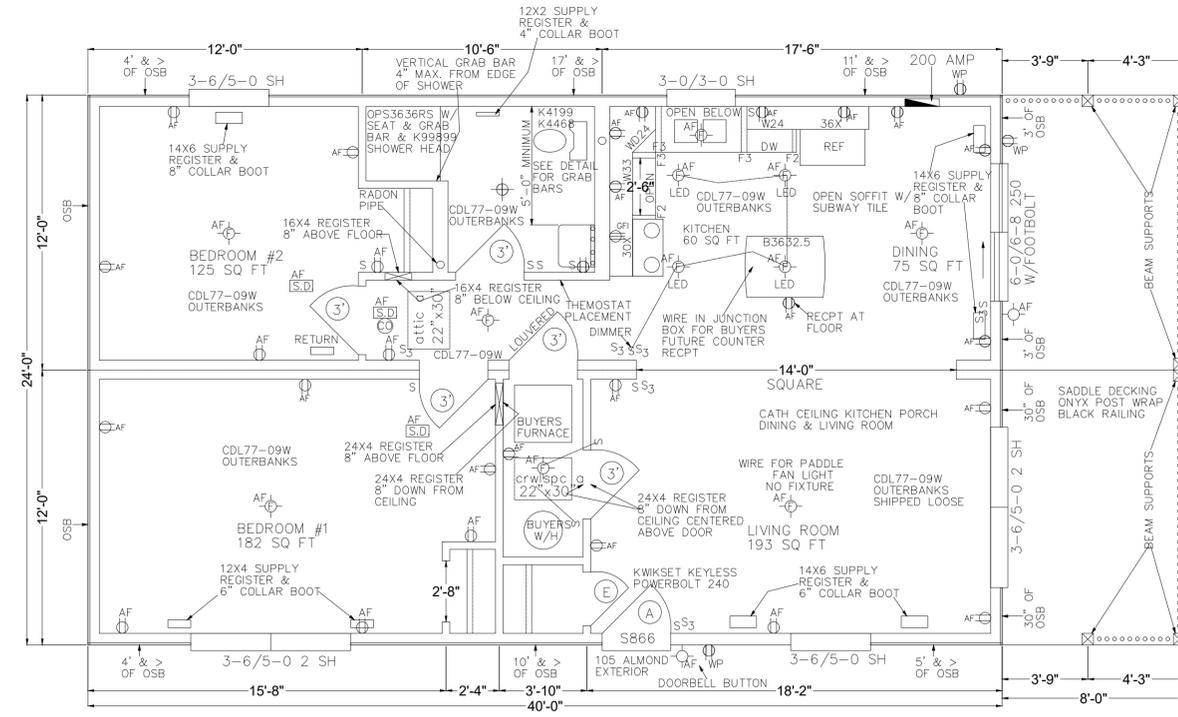
PRINT CUSTOMERS NAME: \_\_\_\_\_ DATE: \_\_\_\_\_  
CUSTOMER SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_  
CUSTOMER SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_  
DHI REPRESENTATIVE: \_\_\_\_\_ DATE: \_\_\_\_\_

DOOR SCHEDULE		
#	SIZE	TYPE
A	3'0" x 6'8"	EXTERIOR
B	2'8" x 6'8"	EXTERIOR
3'	3'0" x 6'8"	INTERIOR
C	2'8" x 6'8"	INTERIOR
D	2'6" x 6'8"	INTERIOR
E	2'4" x 6'8"	INTERIOR
F	2'0" x 6'8"	INTERIOR
G	1'6" x 6'8"	INTERIOR
H	1'0" x 6'8"	INTERIOR
I	5'0" x 6'8"	SLIDE-BY
J	4'0" x 6'8"	SLIDE-BY
K	3'0" x 6'8"	SLIDE-BY
L	5'0" x 6'8"	BI-FOLD
M	3'0" x 6'8"	BI-FOLD
N	4'0" x 6'8"	BI-FOLD
O	2'0" x 6'8"	BI-FOLD

LEGEND

SYMBOL	DESCRIPTION
⊕	220V OUTLET
⊖	CONVIENCE OUTLET
⊕/⊖	CONV. OUTLET/COMBINATION TYPE ARC-FAULT PROTECTED
⊕/⊖/AF	GFI OUTLET
⊕/⊖/AF/WP	ARC-FAULT/GFI OUTLET WITH WEATHER PROOF ENCLOSURE
⊕/⊖/AF/S.D.	GFI OUTLET WITH WEATHER PROOF ENCLOSURE SMOKE DETECTORS
⊕/⊖/AF/S.D./D.A.F.	SMOKE DET./COMBINATION TYPE ARC-FAULT PROTECTED SWITCH (SWITCHED FROM 1 LOCATION)
⊕/⊖/AF/S.W.	3 WAY SWITCH (SWITCHED FROM 2 LOCATIONS)
⊕/⊖/AF/S.W.S.	4 WAY SWITCH (SWITCHED FROM 3 LOCATIONS)
⊕/⊖/AF/FAN	FAN/LIGHT (70 CFM)
⊕/⊖/AF/INCAN	INCANDESCENT LIGHT
⊕/⊖/AF/BOX	BOX CAPABLE OF SUPPORTING PADDLE FAN/LIGHT
⊕/⊖/AF/BOX/AF	BOX CAPABLE OF SUPPORTING PADDLE FAN/LIGHT/ COMBINATION TYPE ARC-FAULT PROTECTED
⊕/⊖/AF/BATH	BATHROOM LIGHT BAR
⊕/⊖/AF/CO	CARBON MONOXIDE DETECTOR

ALL DWV PLUMBING VENT EXTENSIONS THROUGH THE ROOF SHALL BE 3 INCHES IN DIAMETER AND 12 INCHES ABOVE THE ROOF SURFACE AND WITHIN 3" ABOVE THE CEILINGS BOTTOM SIDE (PER IRC P3103.2)



**DESIGN HOMES INC.**  
P.O. BOX 239  
PRAIRIE DU CHIEN, WISCONSIN 53821  
PHONE (608) 326-6041

---

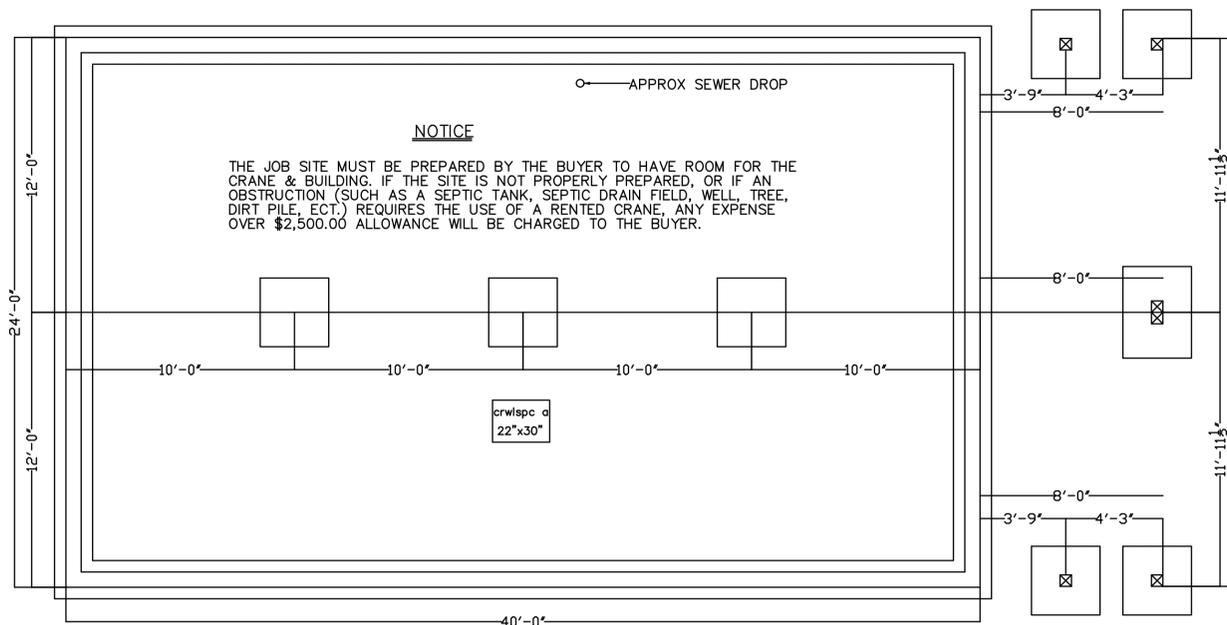
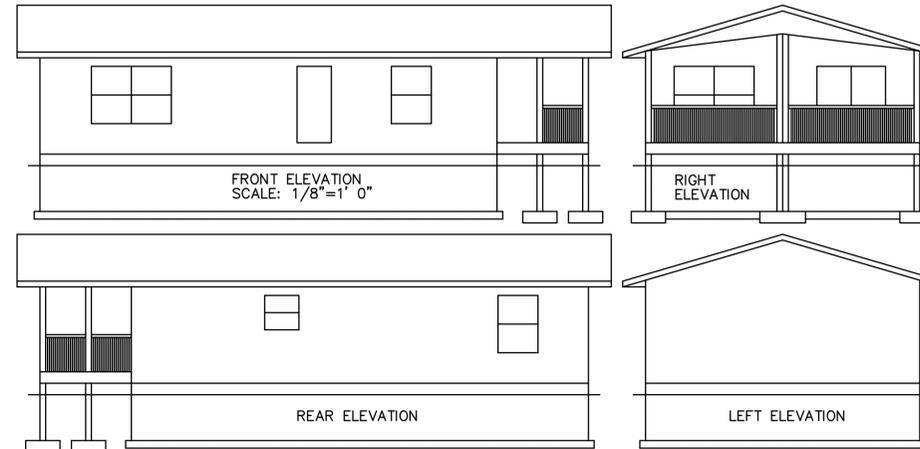
**BUILDERS OF QUALITY  
RESIDENTIAL STRUCTURES**

CUSTOMER:	STORY COUNTY CONSERVATION #1	
ADDRESS:	AMES, IA	
JOB SITE:	ZEARING, IA	
SALES REP: G. L.	DRWN BY: MASON	DATE: 4-4-25
SCALE: 1/4" = 1' 0"	REVISED: 1-28-26	
40 X 24 FP	DRWG#: STORYCO1	

**DHI CRAWLSPACE FOOTINGS & WALL RECOMMENDATIONS**

- \* DIMENSIONS SHOWN INCLUDE ALL MATERIALS, INCLUDING FOAM INSULATION, WOOD SHEATHING, ECT... SUBTRACT THESE MATERIALS FROM THE DIMENSIONS (A MAXIMUM OF 4 INCHES) TO GET THE ACTUAL POURED/BLOCK WALL DIMENSIONS.
- \* PIER PADS 12"D.X36"LX36"W. USE 3(#4) REBAR EACH WAY
- \* USE 2(1/2") REBAR IN FOOTINGS, USE 2(1/2") REBAR IN WALLS
- \* POURED CONCRETE WALL 8"W.X60"H.
- \* POURED CONCRETE FOOTINGS 8"D.X20"W.
- \* PROVIDE STOOP ARMS AT ALL EXITS FOR CONCRETE STEP SUPPORT (IF USED)
- \* USE 3" DIA. MIN. ADJUSTABLE STEEL COLUMNS (NO JACK POSTS)
- \* LENGTH OF 1 PIECE STEEL SUPPORTS MUST BE EQUAL TO THE DISTANCE MEASURED FROM TOP OF PIER PADS TO THE TOP OF THE FOUNDATION WALL (NOT INCLUDING SILL PLATE)
- \* MINIMUM DISTANCE BETWEEN TOP OF FOUNDATION WALL & INSIDE GRADE EQUALS 48"
- \* 3'X3' MINIMUM CRAWLSPACE ACCESS TO OUTSIDE REQUIRED FOR FURNACE & WATER HEATER INSTALLATION/REMOVAL
- \* FOLLOW STATE CODES FOR VAPOR BARRIER, CRAWLSPACE ACCESS, VENTILATION & INSULATION
- \* A/C PAD= 4"D.X36"W.X36"L. AT 18" TO 24" FROM OUTSIDE OF FOUNDATION WALL.
- \* INSTALL 2X8 TREATED WOOD SILL PLATE-COUNTER SINK NUTS-SEE CROSS SECTION DRAWING #700 FOR EXACT REQUIREMENTS
- \* DO NOT OVER DIG THE BASEMENT EXCAVATION. UNDISTURBED SOIL IS NEEDED WITHIN 4 FEET OF FOUNDATION WALL FOR CRANE. OTHER THAN FOUNDATION BACK-FILL, DO NOT BRING IN LOOSE FILL UNTIL AFTER THE HOME IS SET.
- \* ON HOUSE FOUNDATIONS LARGER THAN 54 FEET WITH A FRONT GARAGE, THE FOUNDATION CONTRATOR MUST CONFIRM WITH THE DHI TRANSPORTATION DEPARTMENT THAT THE GARAGE FOUNDATION CAN BE POURED PRIOR TO DHI CRANE SETTING THE HOUSE SECTIONS.

NOTE TO CUSTOMER: THE BUILDING CODE REQUIRES ALL FOUNDATIONS TO BE INSULATED (BY THE BUYER) TO A MINIMUM VALUE OF R-10 FOR THE FOUNDATION WALL, AND R-21 FOR THE BOX SILL. HOMES WITH EXCESSIVE WINDOW AND/OR DOOR OPENINGS MAY REQUIRE FOUNDATION INSULATION OF R-15 OR MORE (CHECK YOUR HEAT LOSS CALCULATION FOR YOUR SPECIFIC CODE REQUIRED FOUNDATION INSULATION).



**NOTICE**

THE JOB SITE MUST BE PREPARED BY THE BUYER TO HAVE ROOM FOR THE CRANE & BUILDING. IF THE SITE IS NOT PROPERLY PREPARED, OR IF AN OBSTRUCTION (SUCH AS A SEPTIC TANK, SEPTIC DRAIN FIELD, WELL, TREE, DIRT PILE, ECT.) REQUIRES THE USE OF A RENTED CRANE, ANY EXPENSE OVER \$2,500.00 ALLOWANCE WILL BE CHARGED TO THE BUYER.

**PORCH SUPPORT**

PIER PADS FOR PORCH SUPPORT TO BE 36"x36"x12" DEEP AT CORNERS, AND 36"x48"x12" DEEP AT CENTER, AT OR BELOW FROST PENETRATION DEPTH. SUPPORT POSTS (I.E. COLUMNS) AT PORCH TO BE 4X6 TREATED (MIN.) AT CORNERS, AND DOUBLE 4X6 TREATED AT CENTER, OR POURED CONCRETE OR CONCRETE BLOCK COLUMN OF EQUAL OR LARGER BEARING AREA TO SUPPORT TOTAL LOAD (LL+DL) FROM ABOVE AT 5,161 POUNDS. TERMINATE TOP OF SUPPORT COLUMNS WITH TOP OF SILL PLATE ON HOUSE FOUNDATION WALL. TREATED COLUMNS WILL NEED MOUNTING BRACKETS AT TOP & BOTTOM OF POST.

ALL DWV PLUMBING VENT EXTENSIONS THROUGH THE ROOF SHALL BE 3 INCHES IN DIAMETER AND 12 INCHES ABOVE THE ROOF SURFACE AND WITHIN 3" ABOVE THE CEILINGS BOTTOM SIDE (PER IRC P3103.2)

<b>DESIGN HOMES INC.</b>		
P.O. BOX 239 PRAIRIE DU CHIEN, WISCONSIN 53821 PHONE (608) 326-6041		
<b>BUILDERS OF QUALITY RESIDENTIAL STRUCTURES</b>		
CUSTOMER:	STORY COUNTY CONSERVATION #1	
ADDRESS:	AMES, IA	
JOB SITE:	ZEARING, IA	
SALES REP: G. L.	DRWN BY: MASON	DATE: 4-4-25
SCALE: 1/4"=1'-0"	1"	REVISED: -8-26
40 X 24 FP	DRWG#:	STORYCO1