TOWN of FRISCO
PUBLIC WORKS DEPARTMENT

P.O. BOX 4100
FRISCO, COLORADO 80443

January 11, 2017

Town of Frisco Community Development Department
Town of Frisco Planning Commission
Town of Frisco Mayor & Town Council
PO Box 4100
Frisco, Colorado 80443

Re: Conditional Use Application for Well #7PRA Improvements Project

Greetings,

The purpose of this letter is to present information regarding the Well #7PRA Improvement Project that is proposed for the existing drinking water well located just north of the Frisco Nordic Center on the Town's Peninsula Recreation Area property. It is our intent to finish the project that was started back in 2006 and to get this well producing water for the Town.

Historical Background and Need:

Well #7PRA was drilled and completed in 2006 and while the well produced a more than sufficient quantity of water, the quality was not up to standards required by the Colorado Department of Health & Environment (CDPH&E) at the time. Over the past ten years the well has been continuously pumped during the summer months with the hope that the water quality would improve over time. Tests conducted over this past summer indicate that this pumping process has been successful and the quality of the water now meets or exceeds all parameters set forth by the USEPA and CDPH&E. With the past and future growth of Frisco and in the need of additional water system redundancy it has been determined that an additional water source is necessary.

Structure Information:

The building will be constructed of masonry block walls and engineered wood roof trusses with a standing seam metal roof covering. The emergency generator enclosure will be constructed of the same materials. We have incorporated architectural elements of each of the surrounding buildings into the design of this structure. The roof lines are similar to the Nordic Center building, the gable end siding is similar to the siding on the snow-making pumphouse and the stone façade is similar to that of the Day Lodge. Material colors will be similar to the color of those elements on the existing structures. The storage tank shown on the plans will not be visible as it will be buried.

(970) 668-0836 ◆ Fax: (970) 668-1327 ◆ Denver Direct: (303) 670-1316 ◆
email: publicworks@townoffrisco.com

Other Considerations:

There will be an emergency generator installed that will be screened with a structure built of the same materials as the Well House. This structure will significantly reduce any noise created by the generator when it is running, which will only be during power failures and once per week for 30 minutes for exercising purposes. The generator will be fueled by natural gas and it will have a residential area rated muffler to further reduce noise.

Exterior lighting will be of the subdued downward light type and will match the “color” and brightness of existing building exterior lighting in the area. Exterior lighting will be installed by the two exterior doors and will be motion activated so as to not be illuminated unless needed.

Parking for up to two vehicles will be provided in the front of the structure. The structure will be visited each day for up to ½ hour or as needed for maintenance or repair thus keeping any vehicle traffic to a bare minimum. Snow storage will be located on the east and south sides of the parking area.

Existing trees and vegetation block the view of the structure from the west and south. This existing vegetation will not be disturbed. Additional shrubs or trees of a type that will not interfere with future maintenance operations will be planted on the east side of the structure.

We have already coordinated the location, access and design of the structure with the Recreation Department to ensure that we do not have a negative effect on the Nordic Center operations or the operation of the Two Below Zero sleighs.

Funding for this project has been approved by the Town Council and those funds have been placed in the Water Enterprise capital projects line item.

We are planning to begin construction in May of 2017, with a completion and startup date of late October to early November of 2017.

If you have any questions or comments, please do not hesitate to contact me. We thank you for your time and consideration in this matter.

Regards,

Jeff Goble
Interim Public Works Director / Water Superintendent
Town of Frisco

Town of Frisco
Planning Division
1 Main Street
Frisco, CO 80443

9/15/2025

Re: Conditional Use Application – Well #7 PFAS Removal Facility

Dear Planning Commission Members,

On behalf of the Town of Frisco Water Division, I respectfully submit this Conditional Use Application for the proposed **Well #7 PFAS Removal Facility**, located adjacent to **612 Recreation Way** within the Parks and Recreation District of the Frisco Peninsula Recreation Area. This facility is designed to protect human health, strengthen the community's water supply, and eliminate persistent chemical pollution by removing per- and polyfluoroalkyl substances (PFAS) through Granular Activated Carbon (GAC) filtration. The new treatment system is expected to provide 18 months of effective filtration under typical operating conditions and represents a critical investment in safe, reliable drinking water for Frisco residents and visitors.

In accordance with the review criteria, the following demonstrates how this project satisfies the Town's standards for conditional use:

1. **Consistency with Zone District and Community Goals**
   The proposed PFAS Removal Facility is consistent with the purpose and intent of the Parks and Recreation District, as reclaiming this water source will allow for additional water production capacity to bolster the Town's core services and enhance the recreational offerings that Frisco has prioritized. The project directly supports the goals of the Frisco Community Plan by protecting public health, ensuring clean and safe drinking water, and enhancing the Town's water system reliability. As a critical utility service, this project contributes significantly to the general welfare of the community.
2. **Compatibility with Surrounding Development**
   The proposed building has been designed to harmonize with the adjacent Well #7 pumping facility. At 17 feet in height, the structure matches the height of the existing building and remains well below the district's maximum allowance of 25 feet. The facility's floor elevation will be set 7 feet below grade to ensure scale and visual consistency. The project site is located on Town-owned property 990 feet from the closest property line, thereby exceeding setback requirements. Architectural design, exterior materials, and finishes will mirror the existing water infrastructure to maintain compatibility with the immediate area.
3. **Consistency with Character and Land Uses**
   While located in the Peninsula Recreation Area, the project's function and design are consistent with existing utility uses in the vicinity. The new facility complements the existing Well #7 building and is carefully sited to minimize its visual impact on recreational uses of the area. Dark-sky compliant exterior lighting, careful material

selection, and consideration of the surrounding forest character will ensure the facility blends with its natural setting and does not detract from the area's recreational value.

4. **Minimization of Adverse Impacts**
   The facility has been designed and planned to minimize all potential impacts. The project will not generate traffic beyond one daily operational pickup truck visit and a filter media replacement approximately once every 18 months. Noise, vibration, and odor impacts are negligible due to the enclosed treatment process. Parking, refuse, and recycling needs are minimal and consistent with existing utility operations. Upon construction completion, the site will be returned to a natural state where it is possible to soften visual impacts. Overall, the project is expected to operate seamlessly without disrupting recreational activities in the area.
5. **Availability of Public Facilities and Services**
   Existing public facilities and services fully support the project, and the Town has made additional efforts to coordinate with the Frisco Sanitation District. We understand that there may be unintended results to wastewater chemistry with this new treatment process, and we are committed to ensuring a partnership operation. The currently developed Well #7 site is directly served by existing road access, potable water, sewer, drainage, and solid waste services, and we expect the new facility operations to increase only slightly to the existing demand. Emergency services, including police, fire, and EMS, are readily available, and no undue burden on public facilities is anticipated. As essential infrastructure, the project strengthens the Town's ability to provide clean water and supports long-term public health and resiliency.

In summary, the **Well #7 PFAS Removal Facility** meets all five criteria for conditional use approval. This project is a necessary, well-designed investment in the Town's water system that will ensure safe drinking water for the Frisco community while respecting the recreational, environmental, and visual character of the Peninsula Recreation Area.

Thank you for your time and thoughtful consideration of this application. Please let us know if additional information or clarification would be helpful as you review the proposal.

Sincerely,
Ryan Thompson
Water Superintendent
Town of Frisco Water Division

TOWN OF FRISCO

BID DRAWINGS FOR:

WELL 7 PFAS MITIGATION IMPROVEMENTS

OCTOBER 2025

SITE ADDRESS

612 RECREATION WAY
FRISCO CO 80443

OWNER'S ADDRESS

102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

PLUMMER

1221 AURARIA PKWY | DENVER, COLORADO 80204
303.300.3464 | www.plummer.com

IN ASSOCIATION WITH:

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
PATRICK J. O'BRIEN
CO P.E. NO. 33925
DATE: 7/28/2025

PATRICK J. O'BRIEN, P.E., PRINCIPAL
Plummer Associates, Inc.

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 7/28/2025

TAYLOR M. GERTIG, P.E., PROJECT MANAGER
Plummer Associates, Inc.

Eidos ARCHITECTS

BCER ENGINEERING | TECHNOLOGY | LIFE SAFETY

REPELLA CONSULTING ENGINEERS, INC.

THESE DOCUMENTS ARE FOR PLANNING DEPARTMENT REVIEW ONLY. NOT FOR BIDDING OR CONSTRUCTION.

LOCATION MAP

SCALE: 1"=500'

INDEX OF DRAWINGS

Highlighted sheets are anticipated drawings of interest for the Planning Commission's review.

PLUMMER

1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO

102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

GENERAL
VICINITY MAP AND SHEET INDEX

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 6/26/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED M. FREYTAG
DRAWN M. RAGAY
CHECKED T. GERTIG
REVIEWED P. O'BRIEN

Seq. 2 of 70
Dwg. No. G-001
4131-002-09

PRINTED: 6/26/2025 4:52 PM C:\Users\rpemberton\DC\ACCDocs\Plummer Associates\4131-002-09_WELL_7\Project Files\Plummer\Sheets\General\G-001 VICINITY MAP AND SHEET INDEX_wal.dwg SAVED: 4/18/2025 10:23 AM SAVED BY: Rpemberton USER: Pemberton, Ron

THESE DOCUMENTS ARE FOR PLANNING DEPARTMENT REVIEW ONLY. NOT FOR BIDDING OR CONSTRUCTION.

GENERAL NOTES

1. CONTRACTOR SHALL CONFINE CONSTRUCTION OPERATIONS WITHIN THE OWNER'S EXISTING EASEMENTS AND RIGHTS-OF-WAY AND THE CONSTRUCTION LIMITS INDICATED ON THE DRAWINGS, AND SHALL USE DUE CARE IN PLACING CONSTRUCTION TOOLS, EQUIPMENT, EXCAVATED MATERIALS, MATERIALS AND SUPPLIES, SO AS TO CAUSE NO DAMAGE TO PROPERTY OR INTERFERENCE WITH OTHER CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL EXISTING ASPHALT AND CONCRETE FROM CONSTRUCTION EQUIPMENT. DAMAGED ASPHALT AND CONCRETE SHALL BE REPLACED IN KIND BY THE CONTRACTOR, AT HIS OR HER EXPENSE.
2. CONTRACTOR SHALL LOCATE, POTHOLE AND VERIFY THE LOCATIONS OF ALL EXISTING PIPING PRIOR TO START OF CONSTRUCTION. WHERE CONNECTIONS ARE TO BE MADE, CONTRACTOR SHALL VERIFY THE EXISTING MATERIAL TYPE PRIOR TO ORDERING ANY CONNECTION FITTINGS OR APPURTENANCES REQUIRED FOR THE CONNECTIONS. ALL CONNECTIONS TO EXISTING UTILITIES SHALL BE DONE IN A WAY SO AS TO MINIMIZE DISRUPTION IN SERVICE TO EXISTING USERS.
3. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE OWNER. THE OWNER RESERVES THE RIGHT TO ACCEPT OR REJECT ANY MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO STANDARDS AND SPECIFICATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOLLOWING:
   (A) ALL LICENSES AND PERMITS REQUIRED FOR CONSTRUCTION.
   (B) THE NOTIFICATION OF THE PROPER AUTHORITIES PRIOR TO CONSTRUCTION AND A PRECONSTRUCTION MEETING WITH THE OWNER, AND ENGINEER OF RECORD.
5. ALL PAVEMENT SAW CUTS SHALL BE 90° TO ONE ANOTHER.
6. THE CONTRACTOR SHALL PROTECT, REPAIR OR REPLACE ANY UTILITY IN KIND INCLUDING BUT NOT LIMITED TO: RESIDENTIAL SERVICES, WATER LINES, SEWER LINES, STORM DRAINS, ETC., THAT WAS REMOVED OR DAMAGED DURING CONSTRUCTION.
7. ALL MANHOLES/VALVE RINGS AND COVERS SHALL BE INSTALLED WITH CONCRETE COLLARS UNLESS OTHERWISE NOTED.
8. ALL KNOWN SEWERS, WATER MAINS, GAS MAINS, TELEPHONE CONDUITS, ELECTRIC CABLES, AND OTHER UNDERGROUND STRUCTURES ARE SHOWN ON THE DRAWINGS ONLY TO THE EXTENT SUCH INFORMATION HAS BEEN MADE AVAILABLE TO OR DISCOVERED BY THE ENGINEER. IT IS EXPECTED THAT THERE MAY BE DISCREPANCIES AND OMISSIONS IN THE LOCATION AND QUANTITIES OF UTILITIES AND STRUCTURES SHOWN. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR BUT IS NOT GUARANTEED TO BE EITHER CORRECT OR COMPLETE AND ALL RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS THEREOF IS EXPRESSLY DISCLAIMED. CONTRACTOR SHALL MAKE SUCH INVESTIGATION AS HE OR SHE THINKS NECESSARY TO VERIFY ITS CORRECTNESS AND COMPLETENESS. CONTRACTOR SHALL, AHEAD OF EXCAVATION, AND PRIOR TO ORDERING OF ANY PRODUCTS FOR THE PROJECT, LOCATE ALL UNDERGROUND UTILITIES AND STRUCTURES SO THAT THEY WILL NOT BE ACCIDENTALLY CUT BY CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL CONTACT THE UTILITY INFORMATION CENTER AT 811 AT LEAST 48 HOURS PRIOR TO ANY DIGGING.
9. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS.
10. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAGMEN OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY IN ACCORDANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.).
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL VEHICULAR AND PEDESTRIAN TRAFFIC CONTROL DURING THE ENTIRE LENGTH OF THE PROJECT.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL PLANS & PERMITTING.
13. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) AT 1-800-922-1987, AT LEAST 2 WORKING DAYS PRIOR TO BEGINNING EXCAVATION OR GRADING, TO HAVE ALL REGISTERED UTILITY LOCATIONS MARKED. OTHER UNREGISTERED UTILITY ENTITIES ARE TO BE LOCATED BY CONTACTING THE RESPECTIVE REPRESENTATIVE. UTILITY SERVICE LATERALS ARE ALSO TO BE LOCATED PRIOR TO BEGINNING EXCAVATION OR GRADING.
14. ANY DISRUPTION OF UTILITY SERVICE THAT IS REQUIRED TO ADJUST, EXTEND, RELOCATE OR OTHERWISE MODIFY ANY UTILITY WITHIN THE PROJECT AREA SHALL BE COORDINATED IN ADVANCE WITH THE OWNER AND OWNER SHALL BE NOTIFIED 48 HOURS PRIOR TO THE START OF DISRUPTION.
15. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER.
16. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, MATERIALS, AND CONDITIONS PRIOR TO INITIATING WORK.
17. CONTRACTOR SHALL SUPPORT AND PROTECT ALL EXISTING UTILITIES AND STRUCTURES FROM DAMAGE THAT MAY OCCUR DURING CONSTRUCTION. CONTRACTOR SHALL REPLACE ITEMS AND REPAIR STRUCTURES DAMAGED BY CONSTRUCTION AND/OR DEMOLITION TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR SHALL TOUCH-UP ITEMS THAT ARE AFFECTED DURING CONSTRUCTION. AREAS IMPACTED BY CONSTRUCTION ACTIVITIES INCLUDING BUT NOT LIMITED TO GRASS AREAS, SIDEWALKS, ROADS, STRUCTURES,PIPING, AND EQUIPMENT SHALL BE RETURNED TO A CONDITION EQUAL TO OR BETTER THAN EXISTING, AS DETERMINED BY THE OWNER.
18. CONTRACTOR SHALL NOT OPERATE ANY EXISTING VALVES DURING CONSTRUCTION. ALL EXISTING VALVE OPERATIONS SHALL BE COORDINATED WITH AND PERFORMED BY THE OWNER.

GENERAL NOTES (CONTINUED):

19. CONTRACTOR SHALL COORDINATE ELECTRICAL, INSTRUMENTATION, AND PIPING.
20. EXISTING VALVES, PIPELINES, AND STRUCTURES WILL LEAK IN THE CLOSED POSITION. CONTRACTOR SHALL PROVIDE WHATEVER MEANS AND EQUIPMENT NECESSARY TO CONTROL WATER DURING CONSTRUCTION.
21. ALL ANCHOR BOLTS, EXPANSION ANCHORS, AND CONCRETE INSERTS SHALL BE 304 OR 316 STAINLESS STEEL UNLESS OTHERWISE NOTED.
22. ALL SURFACES AND MATERIALS IN CONTACT WITH WATER SHALL COMPLY WITH THE REQUIREMENTS OF THE SAFE DRINKING WATER ACT AND SHALL CONFORM TO NSF-61. PRODUCT SHALL BEAR THE MARK OR SEAL OF AN ACCREDITED TESTING LABORATORY.
23. FURNISH AND INSTALL INSULATED BOLT AND GASKET SET AT CONNECTIONS BETWEEN DISSIMILAR METALS.
24. PIPE SUPPORTS SHOWN ON THE DRAWINGS ARE FOR ILLUSTRATIVE PURPOSES AND DO NOT SHOW ALL SUPPORTS AT THE REQUIRED SPACING. REFER TO SECTION 40 05 07 "HANGERS AND SUPPORTS FOR PROCESS SYSTEMS" FOR PIPE SUPPORT SPACING REQUIREMENT.
25. ALL EQUIPMENT, VALVES, FITTINGS, MATERIALS, ETC., REMOVED IN CONJUNCTION WITH THE CONTRACTORS ACTIVITIES ON THIS PROJECT ARE THE PROPERTY OF THE OWNER AND SHALL BE OFFERED TO THEM FOR THEIR CONTINUED USE.
26. CONTRACTOR SHALL REMOVE DEMOLISHED MATERIAL FROM THE PROJECT AREA INCLUDING DEMOLISHED VALVES, EQUIPMENT, AND PIPING, CONCRETE RUBBLE AND DEBRIS RESULTING FROM DEMOLITION, TRASH, ETC. TO AN APPROPRIATE OFF SITE LOCATION.
27. REFERENCE ELECTRICAL PLANS FOR ELECTRICAL CONDUIT, DUCT BANKS, RACEWAYS, LIGHT POLES, AND MANHOLES.
28. PIPING MAY BE FIELD ADJUSTED TO MATCH PIPING PLAN AND PROFILES BY PULLING JOINTS. THE ANGLE OF DEFLECTION PER JOINT SHALL NOT EXCEED HALF OF THE PIPE MANUFACTURER'S MAXIMUM ALLOWABLE DEFLECTION PER JOINT.
29. ALL PIPE FITTINGS ARE DRAWN AS SHORT RADIUS. LONG RADIUS FITTINGS ARE ALLOWABLE AT CONTRACTOR'S OPTION, UNLESS SPECIFIED OTHERWISE. CONTRACTOR TO COORDINATE CHANGES FROM THE DRAWINGS TO ACCOMMODATE LONG RADIUS FITTINGS.

EROSION AND SEDIMENTATION CONTROL NOTES

1. ALL DISTURBED SOIL, ON OR OFF-SITE, AND RELATED TO WORK AT THIS PROJECT SITE, IS REQUIRED TO BE PROTECTED FROM WIND AND STORM WATER EROSION. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A STORMWATER MANAGEMENT PERMIT AND ABIDING BY THE PERMIT OBLIGATIONS. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF STORMWATER BEST PRACTICES UNTIL FINAL STABILIZATION IS ACHIEVED.
2. GRADING, DRILLING, CLEARING, EXCAVATING, BACK-FILLING, SOIL STRIPPING OR ANY OTHER FORM OF EARTH MOVING SHALL NOT COMMENCE UNTIL ANY REQUIRED GRADING/EXCAVATION PERMITS HAVE BEEN ISSUED.
3. ALL EROSION AND SEDIMENT CONTROL BMPS SHALL BE INSTALLED ACCORDING TO THE STORMWATER MANAGEMENT PLAN (SWMP), INSTALLATION NOTES AND DETAILS (IF APPLICABLE).
4. THE CONTRACTOR SHALL REVISE OR MODIFY THE EROSION AND SEDIMENT CONTROL MEASURES AS REQUIRED TO ELIMINATE SEDIMENT DISCHARGE, OR POTENTIAL SEDIMENT DISCHARGE FROM THE SITE.
5. A COPY OF THE GRADING/EXCAVATION PERMIT, APPROVED CONSTRUCTION BMP PLAN(S), INSPECTION REPORTS AND SWMP, AS APPLICABLE, SHALL BE KEPT ONSITE AT ALL TIMES.
6. ALL AREAS RECEIVING PERMANENT SEEDING SHALL BE PROPERLY AMENDED WITH THE SPECIFIED AMOUNT OF NATIVE TOP SOIL FROM THE SITE. IF NATIVE TOP SOIL FROM THE SITE IS NOT AVAILABLE, TOP SOIL AND/OR SOIL AMENDMENTS MAY BE IMPORTED.
7. SOIL THAT IS STOCKPILED ONSITE SHALL BE ENCLOSED WITH SILT FENCE AT THE DISCRETION OF THE SWMP INSPECTOR. IF THE SOIL IS TO REMAIN EXPOSED FOR MORE THAN 30 DAYS, IT SHALL BE SEEDED AND MULCHED ACCORDING TO THE MUNICIPAL OR COUNTY REQUIREMENTS.
8. ALL INITIAL-STAGE BMPS MUST BE INSTALLED ON SITE PRIOR TO ANY GRADING, DRILLING, CLEARING, EXCAVATING, BACK-FILLING, TOPSOIL STRIPPING OR ANY OTHER FORM OF EARTH MOVING. DESIGNATION OF INITIAL STAGE BMPS WILL BE IDENTIFIED AT THE PRE-CONSTRUCTION MEETING.
9. ANY LAND DISTURBANCE THAT REMAINS INACTIVE FOR MORE THAN 14 CONSECUTIVE DAYS, MUST RECEIVE SURFACE ROUGHENING.
10. ANY LAND DISTURBANCE THAT REMAINS INACTIVE FOR MORE THAN 30 CONSECUTIVE DAYS, MUST RECEIVE SURFACE ROUGHENING, SEEDING, MULCHING, AND CRIMPING.
11. ANY STORMWATER MANAGEMENT OR EROSION AND SEDIMENT CONTROL BMPS THAT ARE FOUND TO BE DAMAGED OR IN NEED OF MAINTENANCE OR REPLACEMENT DURING INSPECTION PERFORMED BY THE CONTRACTOR SHALL BE REPAIRED IMMEDIATELY.
12. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL STREETS, CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, PARKING LOTS, ALLEYS, TRICKLE CHANNELS, AND/OR OTHER IMPERVIOUS SURFACES IMPACTED BY THE CONSTRUCTION ACTIVITIES ARE CLEAN BY 5 P.M. EACH DAY. WASHING OF ANY STREETS, CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, PARKING LOTS, ALLEYS, TRICKLE CHANNELS, AND/OR OTHER IMPERVIOUS SURFACES IS STRICTLY PROHIBITED.
13. ALL CONSTRUCTION TRAFFIC MUST ENTER AND EXIT THE SITE THROUGH THE APPROVED ACCESS POINT(S) DELINEATED ON THE SWMP. A VEHICLE TRACKING CONTROL PAD IS REQUIRED AT ALL APPROVED ACCESS POINTS TO THE SITE.

EROSION AND SEDIMENTATION CONTROL NOTES (CONTINUED):

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ANY ADVERSE IMPACTS THAT OCCUR TO NEIGHBORING PROPERTIES. THE CONTRACTOR MUST OBTAIN PERMISSION FROM LAND OWNERS PRIOR TO ENTERING THEIR PROPERTY.
15. A WATER SOURCE SHALL BE AVAILABLE ONSITE DURING CONSTRUCTION ACTIVITIES, AND UTILIZED TO MINIMIZE FUGITIVE DUST. ALTERNATIVE BMPS MAY BE REQUIRED IF INITIAL ATTEMPTS ARE UNSUCCESSFUL TO SUPPRESS DUST.
16. ALL CHEMICAL OR HAZARDOUS MATERIAL SPILLS, INCLUDING CONCRETE WASHOUT WATER, WHICH MAY ENTER WATERS OF THE STATE OF COLORADO, WHICH INCLUDES BUT ARE NOT LIMITED TO, SURFACE WATER, GROUND WATER, DRY GULLIES OR STORM SEWERS LEADING TO SURFACE WATER, SHALL BE IMMEDIATELY REPORTED TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) PER 25-8-601, AND THE MUNICIPALITY OR COUNTY. RELEASES OF PETROLEUM PRODUCTS AND CERTAIN HAZARDOUS SUBSTANCES LISTED UNDER THE FEDERAL CLEAN WATER ACT (40 CFR PART 116) MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER AND THE CDPHE. SPILLS THAT POSE AN IMMEDIATE SAFETY HAZARD SHALL BE REPORTED TO 911.
17. THE CLEANING OF CONCRETE TRUCKS AND EQUIPMENT IS RESTRICTED TO THE APPROVED CONCRETE WASHOUT LOCATION ON THE JOB SITE. THE DISCHARGE OF CONCRETE, CONCRETE WASHOUT WATER, OR ANY OTHER BUILDING MATERIAL THAT MAY NEGATIVELY IMPACT WATER QUALITY IS STRICTLY PROHIBITED.
18. VEHICLE AND EQUIPMENT WASHING/DEGREASING IS STRICTLY PROHIBITED ON THE JOB SITE.
19. ALL DEWATERING ON SITE SHALL BE COORDINATED WITH THE MUNICIPALITY OR COUNTY AND BE FREE OF POLLUTANTS, INCLUDING SEDIMENT. A STATE PERMIT MAY BE REQUIRED FOR DEWATERING. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL APPLICABLE PERMITS PRIOR TO BEGINNING THE DEWATERING ACTIVITIES.
20. ALL CONSTRUCTION BMPS SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL ALL LANDSCAPING HAS BEEN INSTALLED AND THE DESIRABLE VEGETATION HAS REACHED A POINT IN WHICH EROSION AND SEDIMENTATION IS NO LONGER A CONCERN AS DETERMINED BY THE SWMP INSPECTOR.
21. SEEDED AREAS SHALL BE EVALUATED AFTER ONE GROWING SEASON TO DETERMINE WHETHER ADDITIONAL MAINTENANCE AND/OR WEED CONTROL WILL BE REQUIRED. ACCEPTANCE OF SEEDED AREAS AFTER THE SECOND GROWING SEASON SHALL DEPEND UPON WHETHER A SATISFACTORY STAND OF GRASS IS DEFINED AS A DENSE, UNIFORM SURFACE OF GRASS WITH NO AREA GREATER THAN ONE SQUARE FOOT THAT IS BARREN OF DESIRABLE VEGETATION. DESIRABLE VEGETATION DEFINED TO MEAN PREDOMINATELY WEED FREE.
22. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATIONS.
23. ANY SETTLEMENT OR SOIL ACCUMULATIONS BEYOND THE LIMITS OF CONSTRUCTION DUE TO GRADING OR EROSION SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR OBTAINING ACCESS RIGHTS TO ADJACENT PROPERTY, IF NEEDED, AND REMEDIATING ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, WETLANDS, PROPERTIES, ETC. RESULTING FROM WORK DONE AS PART OF THIS PROJECT.

CHEMICAL AND PETROLEUM PRODUCTS STORAGE

1. THE CONTRACTOR WILL STORE CONSTRUCTION MATERIALS AND EQUIPMENT IN CONFINED AREAS ON SITE FROM WHICH RUNOFF WILL BE CONTAINED AND FILTERED. MATERIALS WILL BE STORED OFF THE GROUND AND PROTECTED FROM THE WEATHER BY A COVER OR STORED IN A CONTAINER SUCH AS A VAN OR TRAILER, AND EARTHEN DIKE WILL BE CONSTRUCTED AROUND THE PERIMETER OF THE FUEL STORAGE AREA TO PREVENT MATERIALS FROM CONTACT WITH SURFACE RUNOFF. EQUIPMENT MAINTENANCE WILL BE PERFORMED IN A DESIGNATED AREA AND STANDARD MAINTENANCE PROCEDURES, SUCH AS THE USE OF DRIP PANS, WILL BE USED TO CONTAIN PETROLEUM PRODUCTS.

VEHICLE TRACKING CONTROL (VTC) INSTALLATION NOTES

1. VEHICLE TRACKING CONTROL PAD SHALL BE LOCATED AT EVERY ACCESS POINT TO THE CONSTRUCTION SITE.
2. A SIGN SHALL BE PLACED NEXT TO THE VEHICLE TRACKING CONTROL PAD TO DESIGNATE THE LOCATION AS THE CONSTRUCTION ENTRANCE/EXIT.
3. WASHED GRANITE SHALL BE USED FOR THE VEHICLE TRACKING CONTROL PAD. USE OF RHYOLITE (LOW DENSITY ROCK), SANDSTONE, OR RECYCLED CONCRETE SHALL NOT BE ALLOWED AND CRACKED OR DAMAGED CURB AND SIDEWALK SHALL BE REPLACED BY CONTRACTOR.

VTC MAINTENANCE NOTES:

1. CONTRACTOR SHALL INSPECT VEHICLE TRACKING CONTROL PAD DAILY. GRAVEL SURFACE SHALL BE CLEAN AND LOOSE ENOUGH TO RUT SLIGHTLY UNDER WHEEL LOADS AND CAUSE LOOSE GRAVEL TO DISLODGE MUD FROM TIRES. WHEN GRAVEL BECOMES COMPACTED OR FILLED WITH SEDIMENT SO THAT THE EFFECTIVENESS OF THE PAD IS DIMINISHED, CONTRACTOR SHALL RIP, TURN OVER, OR OTHERWISE LOOSEN GRAVEL, PLACE ADDITIONAL NEW GRAVEL, OR REPLACE WITH NEW GRAVEL AS NECESSARY TO RESTORE EFFECTIVENESS.
2. SEDIMENT AND OTHER MATERIAL SPILLED, DROPPED OR TRACKED ONTO PAVED SURFACES SHALL BE REMOVED IMMEDIATELY OR BY THE END OF EACH WORK DAY.
3. VEHICLE TRACKING CONTROL PAD SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE AREA SHOULD BE TOP SOILED, SEEDING, CRIMPED, AND MULCHED OR OTHERWISE STABILIZED.

PLUMMER
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PO BOX 4100
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TOWN OF FRISCO
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TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 7/28/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	M. FREYTAG
DRAWN	M. RAGAY
CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 3 of 70
Dwg. No. G-002
4131-002-09

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CONCRETE

GRAVEL

EARTH

ROCK/ RIPRAP

SAFETY GRATING

6330 FINISHED MAJOR CONTOUR

6330 FINISHED MINOR CONTOUR

6330 EXISTING MAJOR CONTOUR

6330 EXISTING MINOR CONTOUR

ROW LINE

PROPERTY LINE

DRAINAGE FLOWLINE

EXISTING BARBED WIRE FENCE

PROPOSED CHAIN LINK FENCE

PROPOSED SILT FENCE

G EXISTING UNDERGROUND GAS LINE

UT EXISTING UNDERGROUND TELEPHONE

FO EXISTING UNDERGROUND FIBER OPTIC

UGE EXISTING UNDERGROUND ELECTRIC LINE

OHE EXISTING OVERHEAD ELECTRIC LINE

SAN EXISTING SANITARY SEWER LINE

EXISTING STORM SEWER LINE

W EXISTING WATER LINE

EXISTING POWER POLE

EXISTING TRANSFORMER

TP EXISTING TELEPHONE PEDESTAL

E EXISTING ELECTRICAL BOX

W EXISTING WATER BOX

V EXISTING VAULT

EXISTING STORM INLET

EXISTING FIRE HYDRANT

NEW FIRE HYDRANT

WM EXISTING WATER METER

V EXISTING VALVE BOX

GM EXISTING GAS METER

LP EXISTING LIGHT PEDESTAL

CO EXISTING CLEANOUT

W EXISTING WELL

ASPEN TREE

SPRUCE TREE

PINE TREE

SURVEY CONTROL POINT

S SEWER MANHOLE

SOIL BORING LOCATION

UTILITY PEDISTAL

X 9062.52' SPOT ELEVATION

SURFACE FLOW DIRECTION

LIMITS OF CONSTRUCTION

SF SF SILT FENCE

WATTLE/LOG SEDIMENT BARRIER

STRAW BALE SEDIMENT BARRIER

XX–1 COORDINATE

CUT PIPE

FLANGED FITTING

MECHANICAL JOINT FITTING

WELDED FITTING

PVC FITTING

PROPOSED FEATURES

W W WATER MAIN

RW RW RAW WATER MAIN

SS SS SEWER MAIN

FM FM SEWER FORCEMAIN

SD SD STORM DRAIN

EASEMENT LINE

5540 CONTOUR - MAJOR

5541 CONTOUR - MINOR

SEWER MANHOLE

WATER VALVE

FIRE HYDRANT

SURVEY CATEGORY

CONTROL MONUMENT

SECTION CORNER

SURVEY MONUMENT
SEE DESCRIPTION

PIPING CONNECTION INDEX

AFF	ABOVE FINISH FLOOR
B	BELL
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BV	BALL VALVE
BW	BUTT WELD
C	COUPLED
FCA	FLANGED COUPLING ADAPTER
FLG	FLANGE
G	GROOVED
MJ	MECHANICAL JOINT
PE	PLAIN END
PO	PUSH-ON JOINT
S	SPIGOT
SC	SCREWED
SV	SOLVENT WELD
SW	SOCKET WELD
T	THREADED
WV	WATER VALVE

PIPE CALLOUT FORMAT

PIPE MATERIAL
PROCESS ABBREVIATION
PIPE SIZE IN INCHES

NEW 48/RCY/DIP
EXISTING *48/RCY/DIP*

PROCESS LINE TYPE
EXISTING
NEW

SYMBOLS

AIR RELEASE/VACUUM RELIEF VALVE

AIR RELEASE VALVE

BALL CHECK VALVE

BUTTERFLY VALVE

BALL VALVE

CHECK VALVE

GLOBE VALVE

GATE VALVE

PLUG VALVE

SLIDE GATE

SURGE RELIEF VALVE

SPRING LOADED
PRESSURE RELIEF VALVE

BACK FLOW PREVENTER

PUMP

VERTICAL TURBINE PUMP

SUMP PUMP

METERING PUMP

M MOTOR OPERATOR

P PNEUMATIC OPERATOR

S SOLENOID

BLIND FLANGE

REDUCER

CHEMICAL INJECTOR

FLOW METER

M MIXER

PRESSURE GAUGE W/
DIAPHRAGM

UV REACTOR

RADAR LEVEL SENSOR

PROPELLER FLOW METER

STATIC MIXER

Y STRAINER

CARTRIDGE FILTER

UNION

PLUG

QUICK COUPLING

FOOT VALVE

CALIBRATION CHAMBER

PROCESS ABBREVIATION INDEX

BWS	BACKWASH SUPPLY
BWW	BACKWASH TO WASTE
BYP	BYPASS
CEP	COMPLIANCE ENTRY POINT
D	DRAIN (GRAVITY, FLOOR, AND/OR FOUNDATION)
FIL	FILTERED WATER
FILL	MEDIA INLET FILL
FW	FINISHED WATER
NAOCL	SODIUM HYPOCHLORITE
NAOH	CAUSTIC SODA
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
PD	PUMP DISCHARGE
PW	PLANT WATER
RW	RAW WATER
TVE	TREATMENT VESSEL EFFLUENT
V	VENT
WASH	WASHDOWN

LIST OF ABBREVIATIONS CIVIL/CONVEYANCE

DIA, Ø	DIAMETER
EOP	EDGE OF PAVEMENT
EP	END POINT
PC	POINT OF CURVATURE
PCC	POINT OF CONTINUOUS CURVE
PI	POINT OF INTERSECTION
POB	POINT OF BEGINNING
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENCY
R	RADIUS (CURVE DATA)
T	TANGENT DISTANCE (CURVE DATA)

PIPING MATERIAL INDEX

ABS	ACRYLONITRILE BUTADIENE STYRENE
BS	BLACK STEEL
BR	BRASS
CH	CHROME IRON ALLOY
CIP	CAST IRON PIPE (GRAY IRON)
CPVC	CHLORINATED POLYVINYL CHLORIDE
CU	COPPER TUBING
DIP	DUCTILE IRON PIPE
DT	DRAIN TILE
FRP	FIBERGLASS REINFORCED PLASTIC
GL	GLASS LINED PIPE
GS	GALVANIZED STEEL PIPE
PE	POLYETHYLENE PIPE
PET	POLYETHYLENE TUBING
PP	PERFORATED PVC PIPE
PVC	POLYVINYL CHLORIDE (PVC PIPE)
RCP	REINFORCED CONCRETE
RCCP	REINFORCED CONCRETE CYLINDER
RS	RUBBER LINED STEEL PIPE
SPVC	SLOTTED POLYVINYL CHLORIDE
STL	STEEL PIPE
SS	STAINLESS STEEL
SST	STAINLESS STEEL TUBING
VCP	VITRIFIED CLAY

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

GENERAL
SYMBOLS AND ABBREVIATIONS

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 7/28/2025

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DESIGNED M. FREYTAG
DRAWN M. RAGAY
CHECKED T. GERTIG
REVIEWED P. O'BRIEN

Seq. 4 of 70
Dwg. No. G-003
4131-002-09

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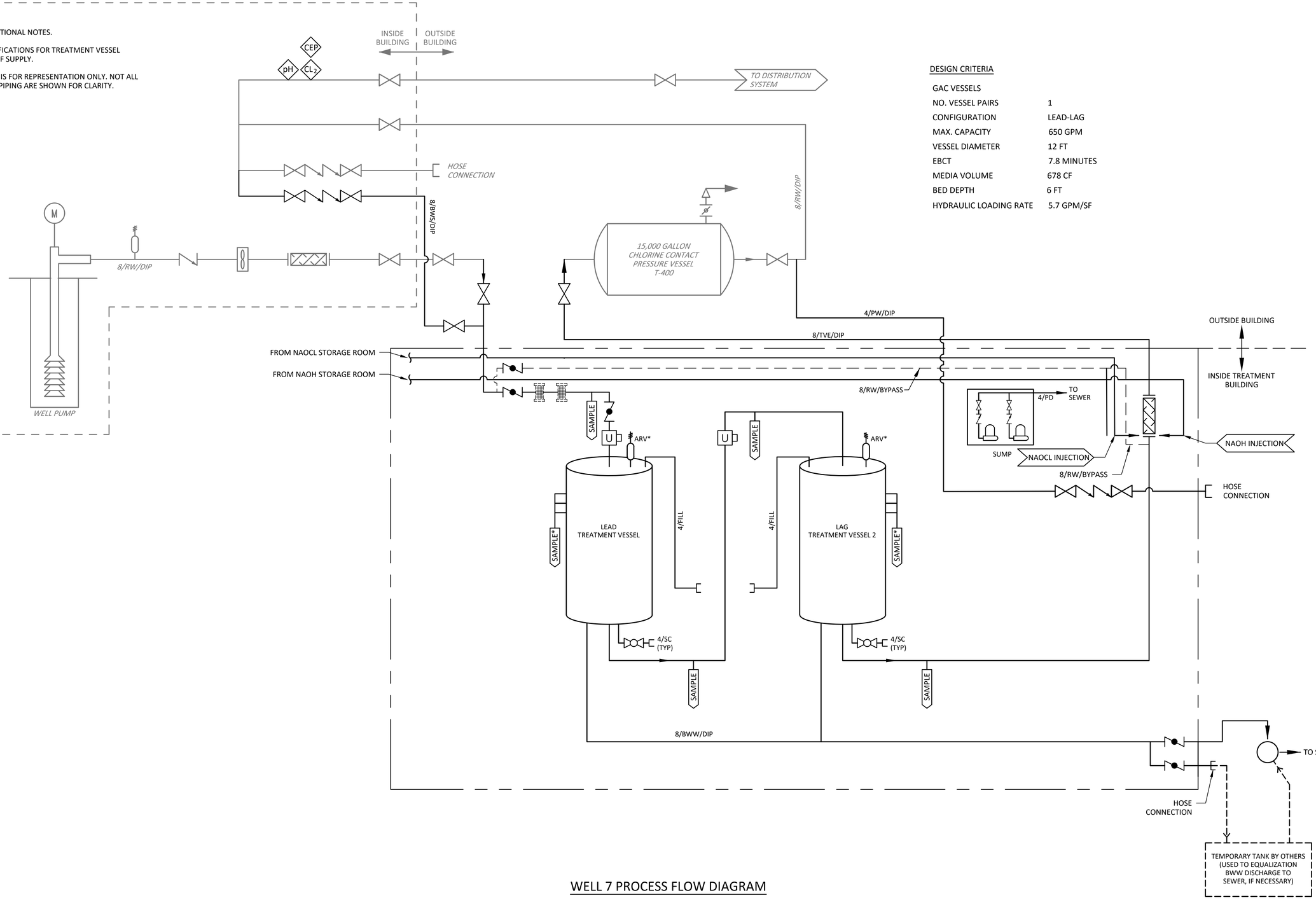
NOTES:

1. REFER TO G-002 FOR ADDITIONAL NOTES.
2. REFER TO PIDS AND SPECIFICATIONS FOR TREATMENT VESSEL MANUFACTURER SCOPE OF SUPPLY.
3. PROCESS FLOW DIAGRAM IS FOR REPRESENTATION ONLY. NOT ALL VALVES, EQUIPMENT, OR PIPING ARE SHOWN FOR CLARITY.



WELL 7 PROCESS FLOW DIAGRAM

DESIGN CRITERIA

GAC VESSELS	
NO. VESSEL PAIRS	1
CONFIGURATION	LEAD-LAG
MAX. CAPACITY	650 GPM
VESSEL DIAMETER	12 FT
EBCT	7.8 MINUTES
MEDIA VOLUME	678 CF
BED DEPTH	6 FT
HYDRAULIC LOADING RATE	5.7 GPM/SF

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

GENERAL
PROCESS FLOW DIAGRAM AND DESIGN CRITERIA

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TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 7/28/2025

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DESIGNED	M. FREYTAG
DRAWN	M. RAGAY
CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 5 of 70
Dwg. No. G-004
4131-002-09

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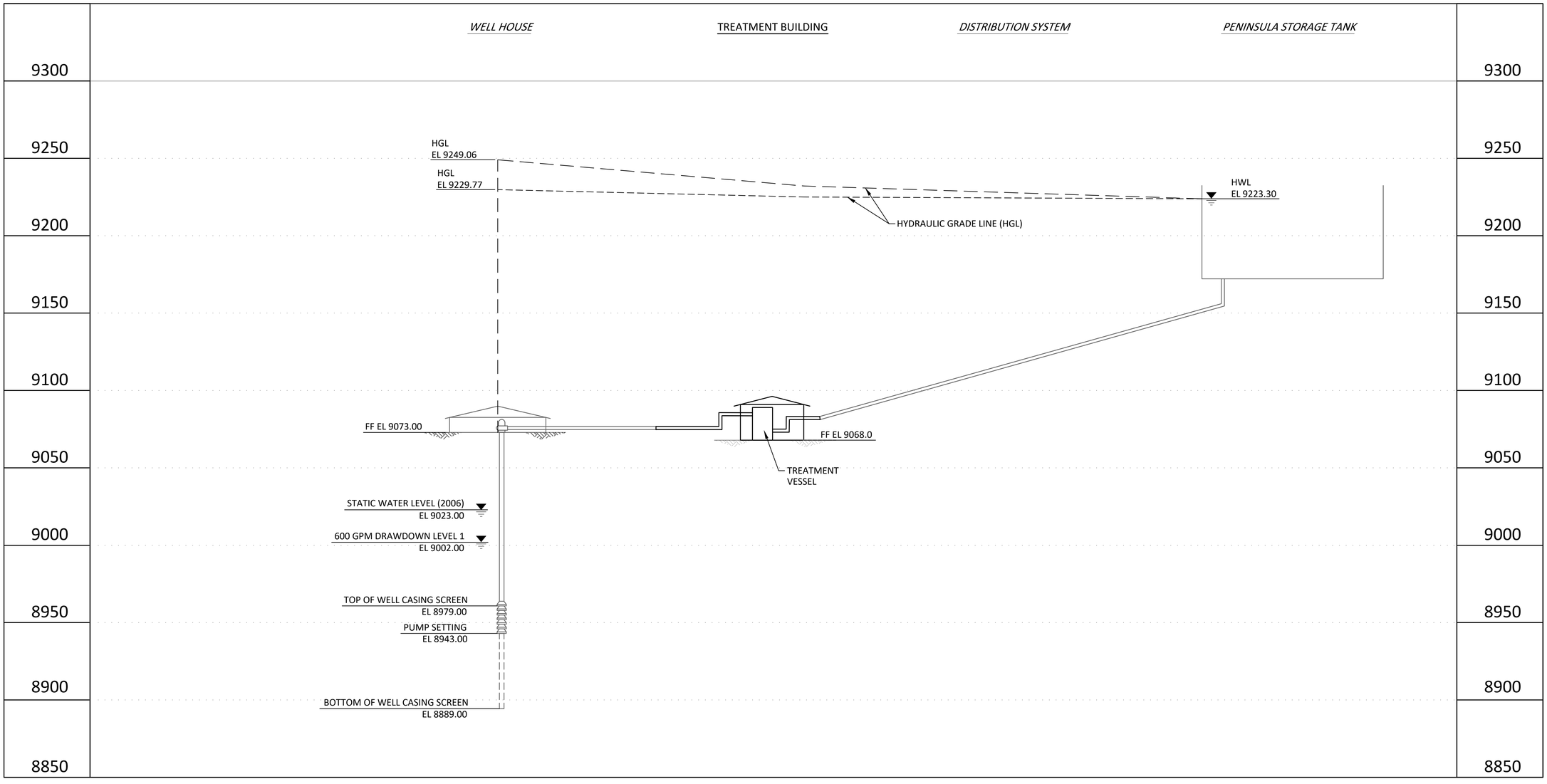
NOTES:

1. WELL NO. 7 IS PERMITTED FOR AN INSTANTANEOUS PUMPING RATE UP TO 650 GPM. THE ANNUAL AMOUNT OF GROUNDWATER TO BE APPROPRIATED UNDER THE WELL PERMIT IS UP TO 887 ACRE-FEET (EQUIVALENT TO 550 GPM AVERAGE DAILY FLOW). DRAWDOWN LEVEL ASSUMES AN AVERAGE OF THE TWO MAXIMUM PUMPING RATES.

— — — — — HGL AT 550 GPM (AVERAGE DAILY FLOW)

– – – – – – – – – – HGL AT 200 GPM (MIN. FLOW)



HYDRAULIC PROFILE

NOT TO SCALE

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

GENERAL
HYDRAULIC PROFILE

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 4/18/2025

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DESIGNED M. FREYTAG
DRAWN M. RAGAY
CHECKED T. GERTIG
REVIEWED P. O'BRIEN

Seq. 6 of 70
Dwg. No. G-005
4131-002-09

PRINTED: 4/18/2025 1:42 PM C:\Users\wlaclair\DCLACCDocs\Plummer Associates\4131-002-09_WELL_7\Project Files\Plummer\Sheets\General\G-005 HYDRAULIC PROFILE.dwg SAVED: 4/18/2025 10:58 AM SAVED BY: Wlaclair USER: LaClair, William

NOTES:

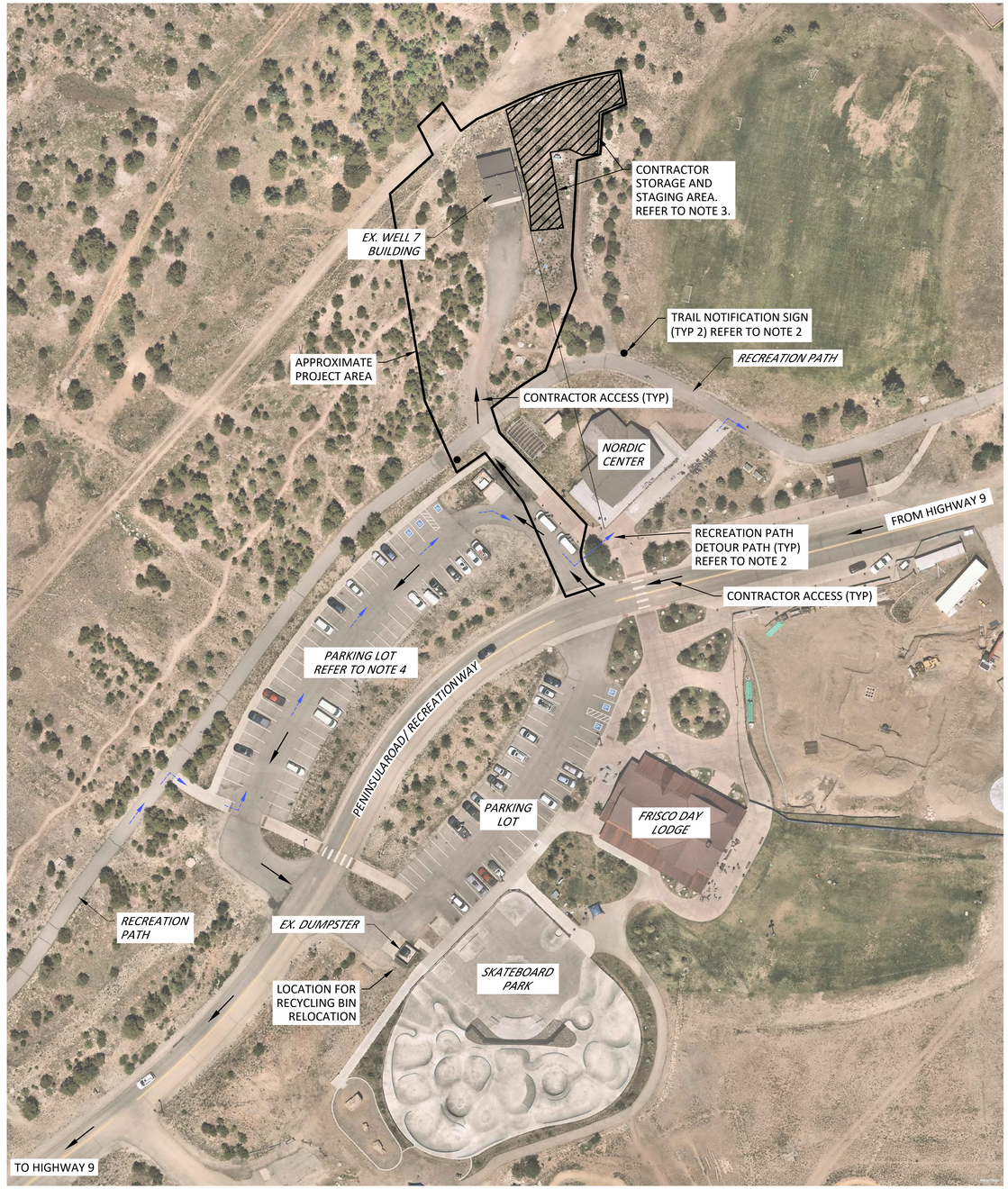
1. ADA PARKING SHALL REMAIN CLEAR AT ALL TIMES. DO NOT BLOCK ADA PARKING WITH CONSTRUCTION VEHICLES, EQUIPMENT, MATERIALS, ETC.

2. USE CAUTION ON SITE, RECREATION PATH TO REMAIN IN USE DURING CONSTRUCTION. CONTRACTOR TO FURNISH AND INSTALL A MINIMUM OF TWO SIGNS NOTIFYING USERS OF ACTIVE CONSTRUCTION SITE. SHUTDOWN OF THE RECREATION PATH IS ONLY PERMITTED WITH PRIOR WRITTEN AUTHORIZATION FROM OWNER. IN THE EVENT OF A RECREATION PATH SHUTDOWN, CONTRACTOR SHALL PROVIDE A DETOUR THROUGH THE PARKING LOT AS SHOWN. CONTRACTOR TO COORDINATE WITH OWNER AT LEAST 7 DAYS PRIOR TO SHUTDOWN TO OBTAIN DETOUR SIGNS, NO PARKING SIGNS, AND CONES TO CLEARLY MARK THE DETOUR PATH. DETOUR PATH TO BE APPROVED BY OWNER IN WRITING PRIOR TO RECREATION PATH SHUTDOWN. PATH SHUTDOWN SHALL NOT EXCEED 7 DAYS.

3. THE CONTRACTOR STAGING AND STORAGE SHALL ONLY BE ACCESSED FROM THE SOUTH SIDE OF THE PROJECT SITE. CONTRACTOR TO CONFIRM LIMITS OF CONSTRUCTION STORAGE AND STAGING AREA WITH OWNER PRIOR TO BEGINNING WORK.

4. CONTRACTOR PARKING IS AVAILABLE IN THE PARKING LOT. COORDINATE WITH OWNER FOR AVAILABILITY, WHICH MAY BE SUBJECT TO CHANGE THROUGHOUT THE PROJECT DURATION.

5. THE LIMITS OF THE PROJECTS ARE WITHIN LAND OWNED BY THE TOWN OF FRISCO. PARCEL DRAWINGS ARE AVAILABLE FROM THE OWNER UPON REQUEST.



PROJECT AREA PLAN

NOT TO SCALE

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

GENERAL
PROJECT AREA PLAN

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 9/11/2025

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DESIGNED M. FREYTAG
DRAWN R. PEMBERTON
CHECKED T. GERTIG
REVIEWED P. O'BRIEN

Seq. 7 of 70
Dwg. No. C-100
4131-002-09

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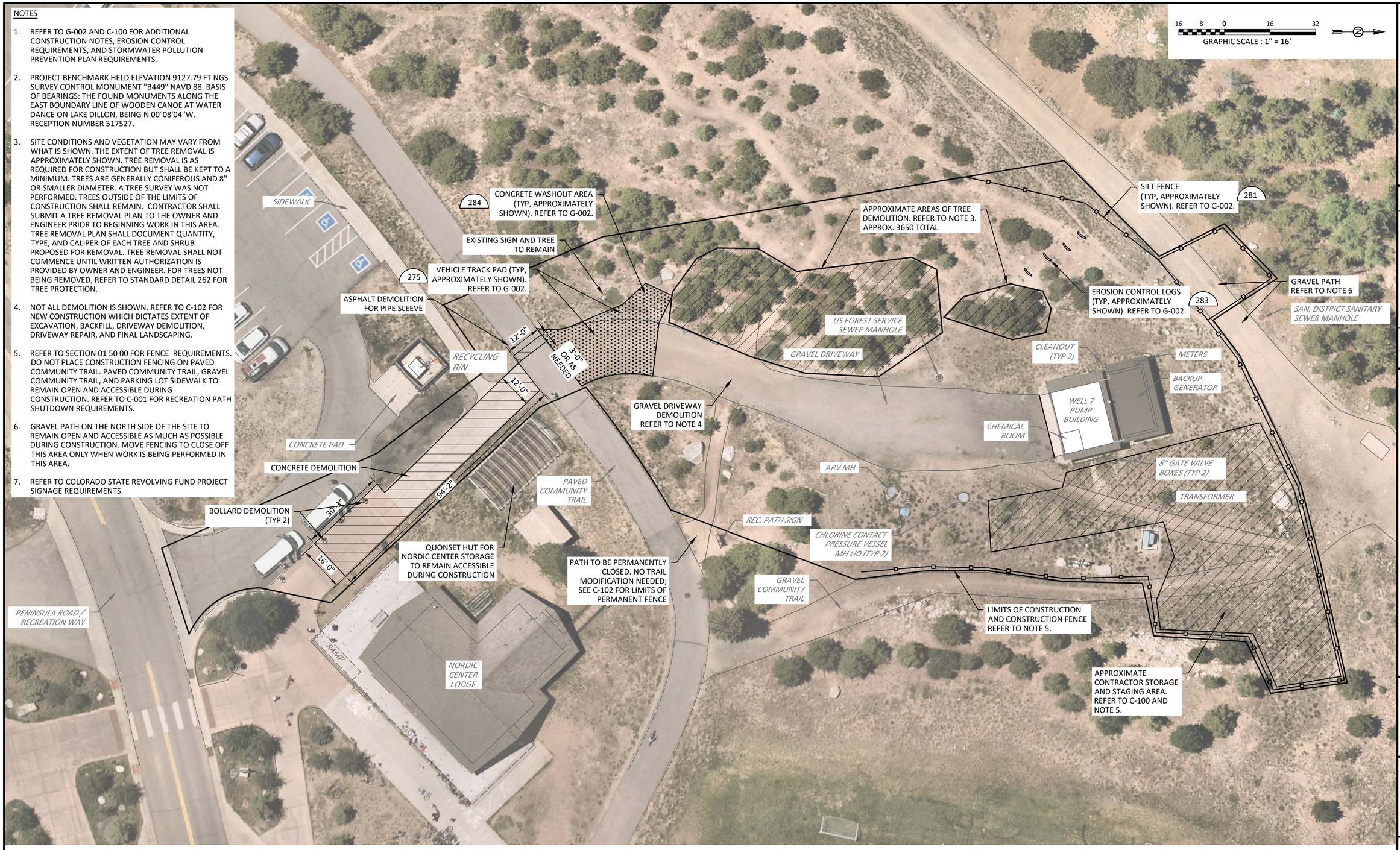
NOTES

1. REFER TO G-002 AND C-100 FOR ADDITIONAL CONSTRUCTION NOTES, EROSION CONTROL REQUIREMENTS, AND STORMWATER POLLUTION PREVENTION PLAN REQUIREMENTS.
2. PROJECT BENCHMARK HELD ELEVATION 9127.79 FT NGS SURVEY CONTROL MONUMENT "B449" NAVD 88. BASIS OF BEARINGS: THE FOUND MONUMENTS ALONG THE EAST BOUNDARY LINE OF WOODEN CANOE AT WATER DANCE ON LAKE DILLON, BEING N 00°08'04"W. RECEPTION NUMBER 517527.
3. SITE CONDITIONS AND VEGETATION MAY VARY FROM WHAT IS SHOWN. THE EXTENT OF TREE REMOVAL IS APPROXIMATELY SHOWN. TREE REMOVAL IS AS REQUIRED FOR CONSTRUCTION BUT SHALL BE KEPT TO A MINIMUM. TREES ARE GENERALLY CONIFEROUS AND 8" OR SMALLER DIAMETER. A TREE SURVEY WAS NOT PERFORMED. TREES OUTSIDE OF THE LIMITS OF CONSTRUCTION SHALL REMAIN. CONTRACTOR SHALL SUBMIT A TREE REMOVAL PLAN TO THE OWNER AND ENGINEER PRIOR TO BEGINNING WORK IN THIS AREA. TREE REMOVAL PLAN SHALL DOCUMENT QUANTITY, TYPE, AND CALIPER OF EACH TREE AND SHRUB PROPOSED FOR REMOVAL. TREE REMOVAL SHALL NOT COMMENCE UNTIL WRITTEN AUTHORIZATION IS PROVIDED BY OWNER AND ENGINEER. FOR TREES NOT BEING REMOVED, REFER TO STANDARD DETAIL 262 FOR TREE PROTECTION.
4. NOT ALL DEMOLITION IS SHOWN. REFER TO C-102 FOR NEW CONSTRUCTION WHICH DICTATES EXTENT OF EXCAVATION, BACKFILL, DRIVEWAY DEMOLITION, DRIVEWAY REPAIR, AND FINAL LANDSCAPING.
5. REFER TO SECTION 01 50 00 FOR FENCE REQUIREMENTS. DO NOT PLACE CONSTRUCTION FENCING ON PAVED COMMUNITY TRAIL. PAVED COMMUNITY TRAIL, GRAVEL COMMUNITY TRAIL, AND PARKING LOT SIDEWALK TO REMAIN OPEN AND ACCESSIBLE DURING CONSTRUCTION. REFER TO C-001 FOR RECREATION PATH SHUTDOWN REQUIREMENTS.
6. GRAVEL PATH ON THE NORTH SIDE OF THE SITE TO REMAIN OPEN AND ACCESSIBLE AS MUCH AS POSSIBLE DURING CONSTRUCTION. MOVE FENCING TO CLOSE OFF THIS AREA ONLY WHEN WORK IS BEING PERFORMED IN THIS AREA.
7. REFER TO COLORADO STATE REVOLVING FUND PROJECT SIGNAGE REQUIREMENTS.



EXISTING SITE PLAN AND PARTIAL DEMOLITION PLAN

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

CIVIL
EXISTING SITE PLAN AND PARTIAL DEMOLITION PLAN

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TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 9/11/2025

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DESIGNED	M. FREYTAG
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CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 8 of 70
Dwg. No. C-101
4131-002-09

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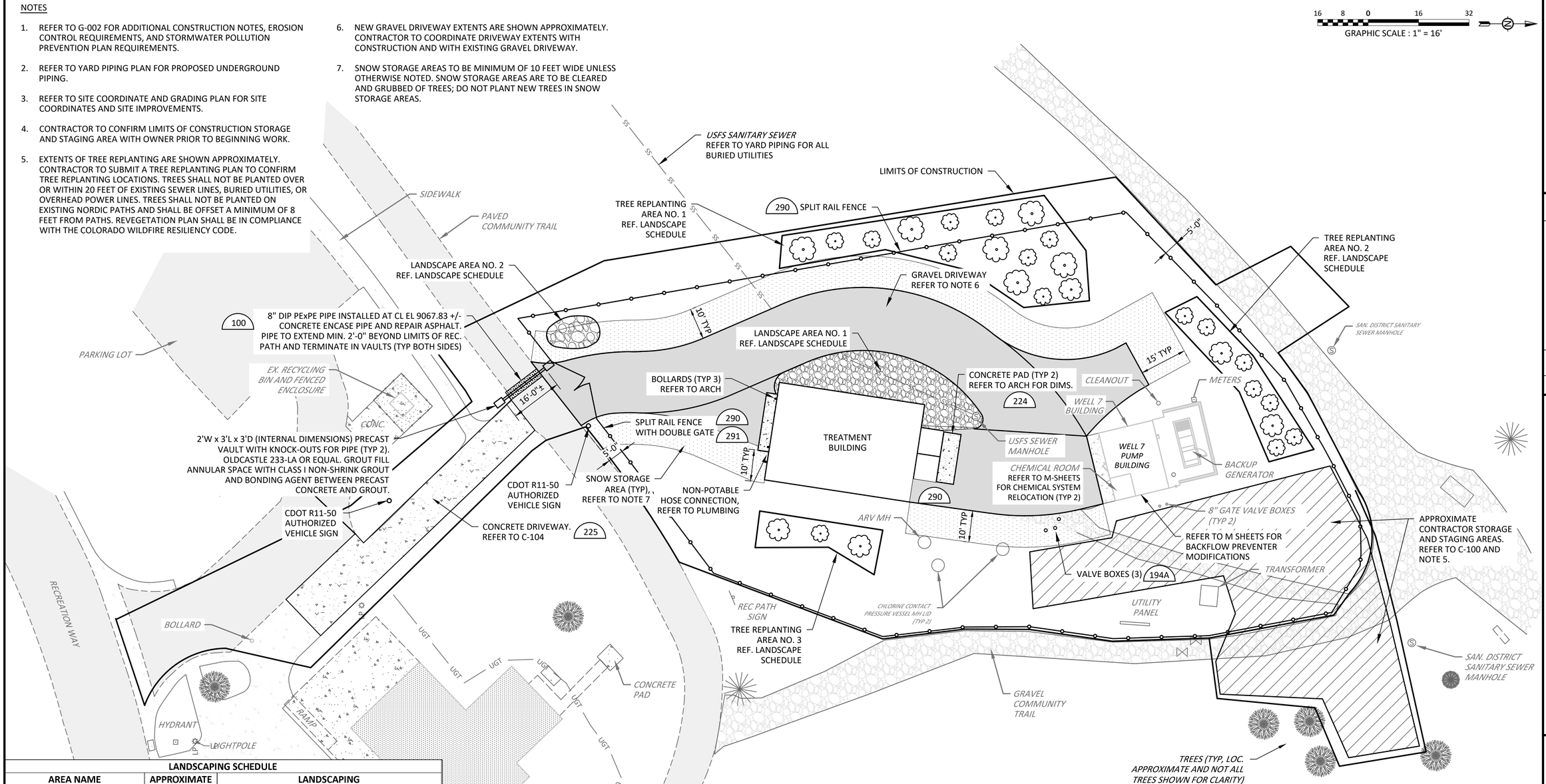
NOTES

1. REFER TO G-002 FOR ADDITIONAL CONSTRUCTION NOTES, EROSION CONTROL REQUIREMENTS, AND STORMWATER POLLUTION PREVENTION PLAN REQUIREMENTS.
2. REFER TO YARD PIPING PLAN FOR PROPOSED UNDERGROUND PIPING.
3. REFER TO SITE COORDINATE AND GRADING PLAN FOR SITE COORDINATES AND SITE IMPROVEMENTS.
4. CONTRACTOR TO CONFIRM LIMITS OF CONSTRUCTION STORAGE AND STAGING AREA WITH OWNER PRIOR TO BEGINNING WORK.
5. EXTENTS OF TREE REPLANTING ARE SHOWN APPROXIMATELY. CONTRACTOR TO SUBMIT A TREE REPLANTING PLAN TO CONFIRM TREE REPLANTING LOCATIONS. TREES SHALL NOT BE PLANTED OVER OR WITHIN 20 FEET OF EXISTING SEWER LINES, BURIED UTILITIES, OR OVERHEAD POWER LINES. TREES SHALL NOT BE PLANTED ON EXISTING NORDIC PATHS AND SHALL BE OFFSET A MINIMUM OF 8 FEET FROM PATHS. REVEGETATION PLAN SHALL BE IN COMPLIANCE WITH THE COLORADO WILDFIRE RESILIENCY CODE.
6. NEW GRAVEL DRIVEWAY EXTENTS ARE SHOWN APPROXIMATELY. CONTRACTOR TO COORDINATE DRIVEWAY EXTENTS WITH CONSTRUCTION AND WITH EXISTING GRAVEL DRIVEWAY.
7. SNOW STORAGE AREAS TO BE MINIMUM OF 10 FEET WIDE UNLESS OTHERWISE NOTED. SNOW STORAGE AREAS ARE TO BE CLEARED AND GRUBBED OF TREES; DO NOT PLANT NEW TREES IN SNOW STORAGE AREAS.



LANDSCAPING SCHEDULE

AREA NAME	APPROXIMATE AREA	LANDSCAPING
TREE REPLANTING AREA NO. 1	1700 SF	PLANT NATIVE TREES AT APPROXIMATE DENSITY OF ONE (1) TREE PER 25 SF. FOR BID PURPOSES, ASSUME EQUAL QUANTITIES OF BLUE SPRUCE (*Picea pungens*), ENGELMANN SPRUCE (*Picea engelmannii*), AND ASPEN (*Populus tremuloides*). TWENTY-FIVE PERCENT 10-FT MINIMUM HEIGHT, TWENTY-FIVE PERCENT 8-FT MINIMUM HEIGHT, AND FIFTY PERCENT 6-FOOT MINIMUM HEIGHT. REVEGETATE BY HYDROMULCH WITH BETWEEN TREES IN ACCORDANCE WITH DIVISION 32.
TREE REPLANTING AREA NO. 2	700 SF	
TREE REPLANTING AREA NO. 3	500 SF	
LANDSCAPING AREA NO. 1	400 CF (ROCK)	3- TO 6-INCH DIAMETER ASSORTED RIVER ROCK INSTALLED TO A MINIMUM DEPTH OF 6-INCHES. ROCK CAN BE SOURCED FROM NATIVE EXCAVATION IF PRESENT AT A CREDIT TO THE OWNER.
LANDSCAPING AREA NO. 2	145 CF (ROCK)	3- TO 6-INCH DIAMETER ASSORTED RIVER ROCK INSTALLED TO A MINIMUM DEPTH OF 1-FT. ROCK CAN BE SOURCED FROM NATIVE EXCAVATION IF PRESENT AT A CREDIT TO THE OWNER

PROPOSED SITE PLAN

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

CIVIL

PROPOSED SITE PLAN

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TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 9/11/2025

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DESIGNED M. FREYTAG
DRAWN R.PEMBERTON
CHECKED T. GERTIG
REVIEWED P. O'BRIEN

Seq. 9 of 70
Dwg. No. C-102
4131-002-09

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GRAPHIC SCALE : 1" = 8'

GRAVEL DRIVEWAY. REFER TO C-103

CONCRETE ENCASE AND INSULATE SEWER LINE UNDER DRIVEWAY AND LANDSCAPED AREA, AND 5'-0" BEYOND THE DRIVEWAY LIMITS ON EITHER SIDE (TYP) (100)

8" DIP OR CI US FOREST REFER TO NOTE 7

POTENTIAL SHORING REFER TO NOTE 4

GRAVEL ROAD

3/PD/PVC ROUTE TO MANHOLE FROM BUILDING CONCRETE ENCASE AND INSULATE BETWEEN BUILDING AND MANHOLE 3/PD/PVC DISCHARGE TO MANHOLE AT CL EL 9067.17 W/ DUCKBILL CHECK VALVE

(124) 6/SPVC/D

4/D/DIP 90 DEG BEND AND SS INSECT SCREEN REFER TO MECH.

1'-6"

8" BWW HOSE CONNECTION WITH SS LOCKABLE CAMLOCK ABOVE GRADE, 8" BWW TO SEWER BELOW GRADE. CONCRETE ENCASE AND INSULATE TRENCH FOR BELOW GRADE BWW PIPING BETWEEN BUILDING AND MANHOLE

TREATMENT BUILDING

CONCRETE ENTRYWAY PADS REFER TO STRUCTURAL

4"x 2.5" BUSHING AND 2.5" PW HOSE CONNECTION WITH SS LOCKABLE CAMLOCK

(124) 6/D/SPVC FOUNDATION DRAIN HIGH POINT INV EL 9067.85 SLOPE MIN. 1% AWAY FROM HIGH POINT IN EITHER DIRECTION

4/PW/DIP WALL PENETRATION REFER TO PLUMBING CL EL 9072.00 INSULATE TRENCH BETWEEN BUILDING AND POINT 101.

(100) CONCRETE ENCASEMENT W/INSULATION

8/TVE/DIP AND 8/RW/DIP CROSSING 8/RW/DIP CL EL 9061.84 8/TVE/DIP CL EL 9070.00

POTENTIAL SHORING REFER TO NOTE 4

REC PATH SIGN

8" MJxPE SPOOL PIECE (TYP) EL 9065.50+/-

8" DRESSER STYLE 38 COUPLING OR SIMILAR TO CONNECT TO EX. PIPING (TYP 2 EITHER SIDE OF TEE) CL EL 9065.50+/-

6/D/SPVC FOUNDATION DRAIN LOW POINT, TRANSITION TO PVC INV EL 9067.00 FIELD ROUTE BETWEEN NEW MH AND USFS MH (124)

MH1: 4'∅" ECC. SANITARY SEWER MANHOLE WITH AIR GAP DISCHARGE CENTER OF MANHOLE LID: (160) (164)
N 1634999.81
E 2837018.37
RIM EL 9075.00±
8/BWW/DIP AIR GAP PIPING CL EL
8/SS/PVC INV EL OUT 9076.33

8" HOSE CONNECTION AND CLEANOUT CENTER OF LID: (110)
N 1635004.76
E 2837020.76
LID EL 9075.00±
8/SS/PVC INV EL OUT 9066.76±

MH3: 4'∅ DROP MANHOLE CENTER OF MANHOLE LID: (162)
N 1635069.58
E 2837004.30
RIM EL 9072.50+/-
8/SS UPPER LINE INV EL IN 9063.83
8/SS DROP LINE INV EL IN 9056.83
8/SS INV EL OUT 9056.63

US FOREST SERVICE SEWER REFER TO NOTE 7

1'-0" X 1'-0" SQ. AREA OF 4" DIAM. RIP RAP AT FOUNDATION DRAIN OUTLET

6/D/SPVC FOUNDATION DRAIN DAYLIGHT INV EL 9064.00 DAYLIGHT PRIOR TO PATH AND BURIED UTILITIES

SLOPE

SLOPE APPROX. 48.0 LF @ 5.0%

6/D/SPVC SLOPE APPROX. 2.8% TO DAYLIGHT

8/SS/PVC

SLOPE APPROX. 58.0 LF @ 5.0%

4'∅ SANITARY SEWER DOGHOUSE DROP MANHOLE CENTER MANHOLE LID (162) (163)
N 1635117.76
E 2836988.54
RIM EL 9065.0±
EX. 8" SS INV EL IN 9052.0±
8/SS UPPER LINE INV EL OUT 9054.23
8/SS DROP LINE INV EL OUT 9052.25
EX. 8" SS INV EL OUT TO BE FIELD VERIFIED
REFER TO NOTE 8

EX. SANITARY SEWER MANHOLE RIM EL 9066.20 INV IN 9052.48 INV OUT 9052.13

USFS SEWER MANHOLE REFER TO NOTE 7

MH2: 4'∅" ECC. SANITARY SEWER MANHOLE WITH H20 TRAFFIC RATED MANHOLE COVER CENTER MANHOLE LID (160)
N 1635010.50
E 2837023.12
RIM EL 9074.75±
8/SS INV EL IN 9067.33
8/SS INV EL OUT 9066.93

GRAVEL ROAD

8" DIP SOLID SLEEVE COUPLING (TYP 4) LOCATED BEYOND CONCRETE ENCASEMENT

CHEMICAL ROOM

4/PW/DIP

5'-0"

8/RW/DIP

8/TVE/DIP

MIN 2'-6"

ARV MH

8" GATE VALVE AND VALVE BOX (194A) (TYP 3)

1' MIN. (TYP)

8/BWS/DIP

8/RW/DIP

8" GATE VALVE (TYP 2)

DEMOLISH EXISTING PIPING BETWEEN 90° BENDS (NOT SHOWN FOR CLARITY)

CHLORINE CONTACT PRESSURE VESSEL

MIN 6"

4/D/PVC

METERS

CLEANOUT

BACKUP GENERATOR

WELL 7 PUMP BUILDING

TRANSFORMER

8/FW/DIP

UTILITY PANEL

12/FW

GRAVEL COMMUNITY TRAIL

NOTES

1. REFER TO G-002 FOR ADDITIONAL CONSTRUCTION NOTES, EROSION CONTROL REQUIREMENTS, AND STORMWATER POLLUTION PREVENTION PLAN REQUIREMENTS.
2. REFER TO SHEET C-103 FOR PAVING AND GRADING IN THIS AREA.
3. ELEVATIONS OF EXISTING PIPING AND CONNECTIONS TO EXISTING PIPING ARE BASED ON HISTORICAL DRAWINGS. CONTRACTOR TO FIELD VERIFY ELEVATIONS PRIOR TO BEGINNING WORK IN THIS AREA.
4. EXISTING UTILITIES, INCLUDED BUT NOT LIMITED TO, USFS SEWER LINE AND CHLORINE CONTACT TANK, TO BE PROTECTED DURING CONSTRUCTION. CONTRACTOR SHALL IDENTIFY SUBSURFACE UTILITIES PRIOR TO BEGINNING WORK. CONTRACTOR IS RESPONSIBLE FOR MEANS AND METHODS TO PROTECT EXISTING EQUIPMENT AND STRUCTURES. IF SHORING IS WARRANTED, CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION. REFER TO SECTION 31 50 00.
5. 8/RW/DIP AND 8/TVE/DIP TO SHARE COMMON TRENCH WITH SAME CL EL UNLESS OTHERWISE NOTED.
6. ALL PIPING TO BE CLASS IV EMBEDMENT PER STANDARD DETAIL 100 ON C-900 UNLESS OTHERWISE NOTED. REFER TO DETAIL FOR MINIMUM BURIAL DEPTH TO BE MAINTAINED.
7. 8" USFS FORCEMAIN AND SEWER MANHOLE IS OWNED AND OPERATED BY THE UNITED STATES FOREST SERVICE. LOCATION SHOWN IN APPROXIMATE AND MAY NOT REPRESENT ITS ACTUAL LOCATION. SEWER LINE INVERT AT THE MANHOLE IS APPROXIMATELY 4'-4" BELOW GRADE; CONTRACTOR TO FIELD VERIFY USFS SEWER AND MANHOLE LOCATION, DEPTH, AND MATERIAL. ADJUSTMENTS TO THE PROPOSED SEWER LINE (8/BWW) AND MANHOLES MAY BE REQUIRED FOR CONSTRUCTABILITY UPON FIELD VERIFICATION TO AVOID DISTURBANCE TO THE USFS SEWER LINE AND MANHOLE. CONTRACTOR TO SUBMIT A PLAN FOR OWNER AND ENGINEER APPROVAL PRIOR TO BEGINNING WORK THAT DEVIATES FROM THE PROPOSED ALIGNMENTS.
8. EXISTING SEWER UTILITY OWNED AND OPERATED BY FRISCO SANITATION DISTRICT. CONTRACTOR TO OBTAIN APPROVAL FOR CONNECTION, IN WRITING, FROM THE OWNER AND SANITATION DISTRICT PRIOR TO COMMENCEMENT OF CONSTRUCTION. ELEVATION OF EXISTING GRAVITY MAIN TO BE FIELD VERIFIED.
9. NOT ALL CONCRETE ENCASEMENT IS SHOWN FOR CLARITY. CONCRETE ENCASE PVC PIPING UNDER DRIVEWAY AND A MINIMUM OF 5'-0" BEYOND DRIVEWAY EXTENTS (TYP D AND SS PIPES).

YARD PIPING POINT TABLE

POINT No.	CL ELEVATION	NORTHING	EASTING	DESCRIPTION
100	9070.00	1634946.23	2837039.49	4" DIP MJ 90° BEND (PW)
101	9070.00	1634945.22	2837046.18	4" DIP MJ 90° ROTATED BEND (PW)
102	9065.17	1634978.06	2837052.36	4" DIP MJ 22.5° BEND (PW)
103	9065.17 +/-	1634983.72	2837075.11	4" DIP MJ 90° BEND (PW)
104	9065.17 +/-	1634986.15	2837074.50	8"X 8"X 4" DIP MJ TEE (PW)
105	9065.94	1634986.21	2837044.55	8/RW/DIP WALL PENETRATION
106	9065.94	1634986.03	2837045.73	8" DIP MJ 90° VERT BEND DN (RW)
107	9061.84	1634991.16	2837046.51	8" DIP MJ 45° BEND (RW)
108	9061.84	1634994.17	2837050.59	8" DIP MJ 45° BEND (RW)
109	9061.84	1635011.32	2837053.21	8" DIP MJ 22.5° BEND (RW)
110	9061.84	1635035.65	2837047.16	8" DIP MJ 90° ROTATED BEND (RW)
111	9061.60	1635037.25	2837053.54	8" DIP MJ GV W/ VALVE BOX (GV-610)
112	9061.60 +/-	1635037.84	2837055.89	8"X 8" DIP MJ 90° BEND (RW)
113	9061.60 +/-	1635039.88	2837055.38	DRESSER STYLE 38 COUPLING (RW)
114	9062.30	1635061.70	2837044.93	8" DIP MJ 90° BEND (BWS)
115	9061.84 +/-	1635034.84	2837056.64	8"X 8" DIP MJ 90° BEND (TVE)
116	9061.90 +/-	1635032.79	2837057.15	DRESSER STYLE 38 COUPLING (TVE)
117	9061.84 +/-	1635034.25	2837054.29	8" DIP MJ GV W/ VALVE BOX (GV-611)
118	9061.84	1635033.19	2837050.01	8" DIP MJ 90° BEND (TVE)
119	9061.84	1635011.42	2837055.42	8" DIP MJ 22.5° BEND (TVE)
120	9070.00	1634988.13	2837051.87	8" TVE/DIP 90° BEND (TVE)
121	9070.00	1634989.18	2837045.01	8" TVE/DIP WALL PENETRATION
122	9065.94	1634994.87	2837020.86	8/BWW/DIP WALL PENETRATION
123	9065.94	1634996.15	2837021.06	8" DIP MJ 45° BEND (BWW)
124	9079.21	1634994.87	2837020.86	8" BWW HOSE CONNECTION
125	9065.94	1634998.19	2837019.56	8" DIP MJ 45° BEND (BWW)
126	9076.33 +/-	1634998.20	2837019.55	8" DIP FLG 90° BEND (BWW, REF DET. 164)
127	9076.33 +/-	1634999.40	2837018.67	8" DIP FLG 90° BEND (BWW, REF DET. 164)
128	9078.94	1634946.12	2837031.37	2.5" PW HOSE CONNECTION
129	9061.84	1634988.13	2837051.87	8" DIP MJ 90° VERT BEND UP (TVE)
130	9061.84	1634986.03	2837045.73	8" DIP MJ 90° BEND (TVE)
131	9065.17	1634977.10	2837051.05	4" DIP MJ 45° ROTATED BEND (PW)
132	9070.00	1634946.23	2837039.49	4" DIP MJ 90° VERT BEND UP (PW)
133	9061.72 +/-	1635036.65	2837051.16	8"X8"X8" DIP MJ TEE (BWS)
134	9061.72 +/-	1635039.01	2837050.58	8" DIP MJ GV W/VALVE BOX (GV-413)
135	9074.06	1635061.70	2837044.93	8" DIP FLG 90° BEND (BWS)

YARD PIPING PLAN

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

CIVIL
YARD PIPING PLAN

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 7/29/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED M. FREYTAG
DRAWN R.PEMBERTON
CHECKED T. GERTIG
REVIEWED P. O'BRIEN

Seq. 10 of 70
Dwg. No. C-103
4131-002-09

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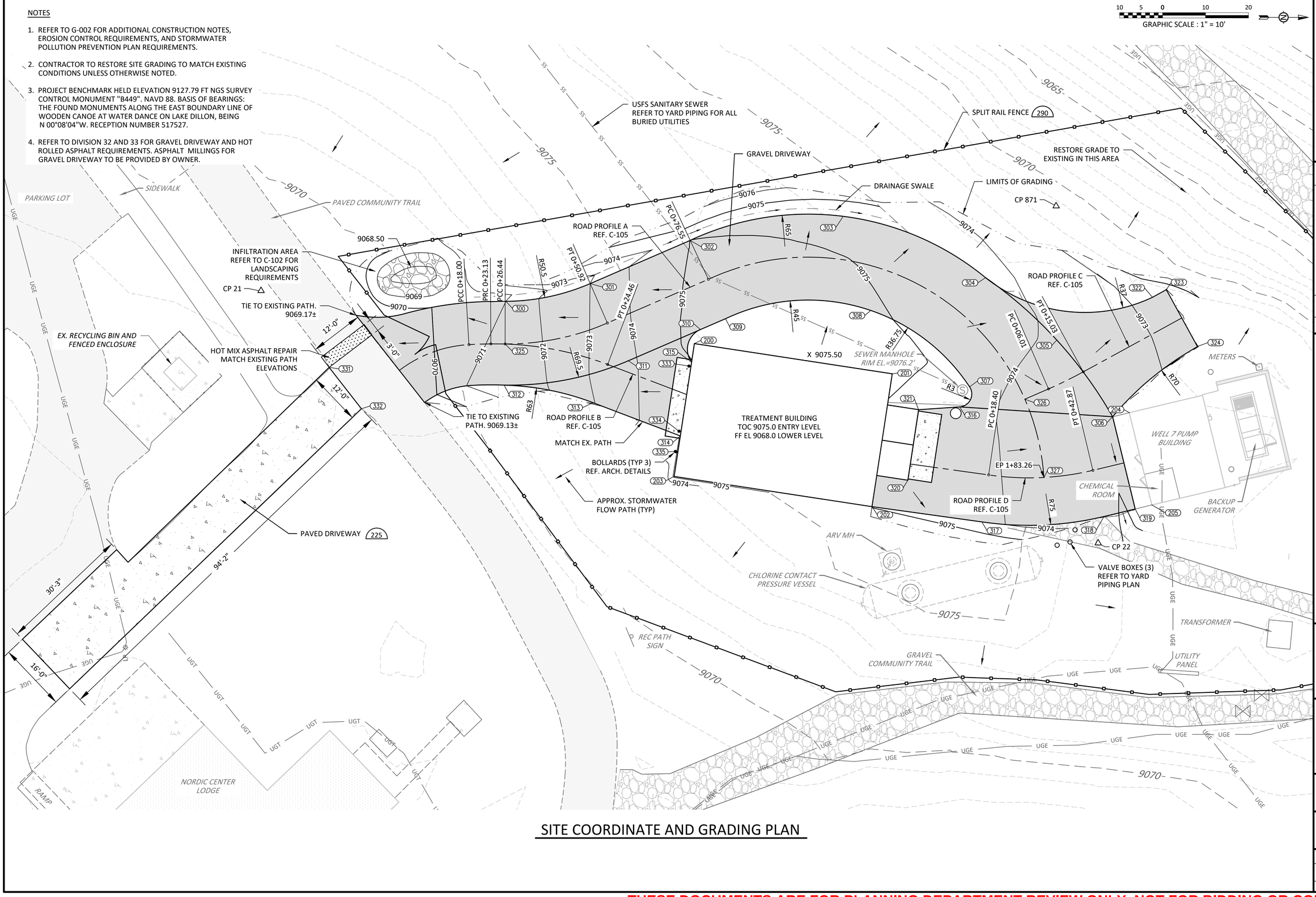
NOTES

1. REFER TO G-002 FOR ADDITIONAL CONSTRUCTION NOTES, EROSION CONTROL REQUIREMENTS, AND STORMWATER POLLUTION PREVENTION PLAN REQUIREMENTS.
2. CONTRACTOR TO RESTORE SITE GRADING TO MATCH EXISTING CONDITIONS UNLESS OTHERWISE NOTED.
3. PROJECT BENCHMARK HELD ELEVATION 9127.79 FT NGS SURVEY CONTROL MONUMENT "B449". NAVD 88. BASIS OF BEARINGS: THE FOUND MONUMENTS ALONG THE EAST BOUNDARY LINE OF WOODEN CANOE AT WATER DANCE ON LAKE DILLON, BEING N 00°08'04"W. RECEPTION NUMBER 517527.
4. REFER TO DIVISION 32 AND 33 FOR GRAVEL DRIVEWAY AND HOT ROLLED ASPHALT REQUIREMENTS. ASPHALT MILLINGS FOR GRAVEL DRIVEWAY TO BE PROVIDED BY OWNER.



SITE COORDINATE AND GRADING PLAN

THESE DOCUMENTS ARE FOR PLANNING DEPARTMENT REVIEW ONLY. NOT FOR BIDDING OR CONSTRUCTION.

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303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

CIVIL
SITE COORDINATE AND GRADING PLAN

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 9/11/2025

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DESIGNED	M. FREYTAG
DRAWN	R.PEMBERTON
CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 11 of 70
Dwg. No. C-104
4131-002-09

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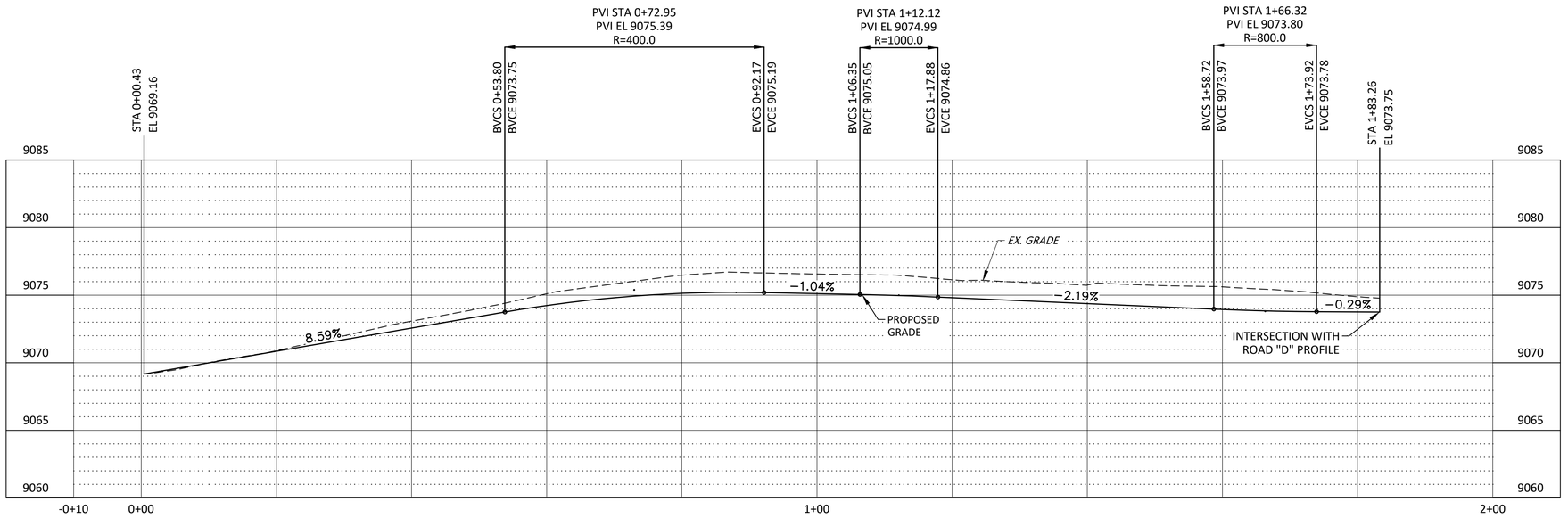
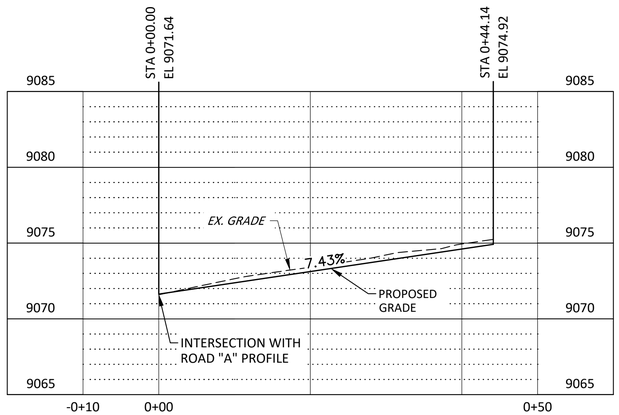


PROPOSED NEW ROAD "A" PROFILE



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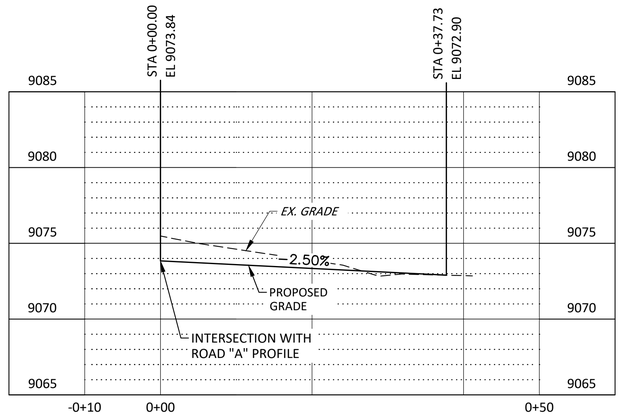
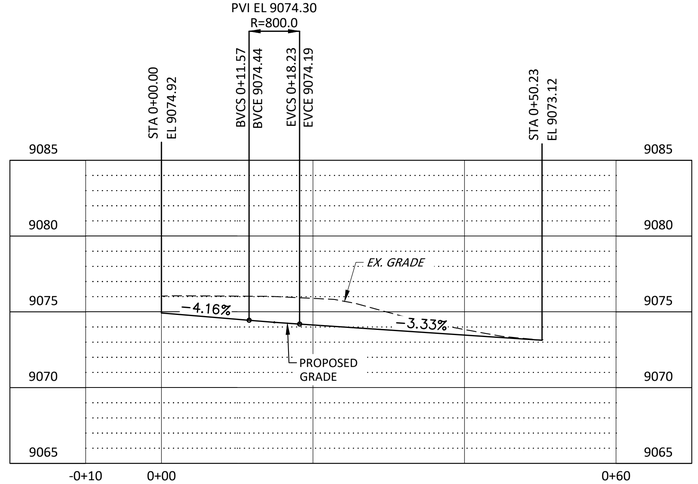


PROPOSED NEW ROAD "C" PROFILE



PROPOSED NEW ROAD "D" PROFILE

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
A COLORADO MUNICIPALITY

102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

CIVIL
DRIVEWAY PROFILES

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 9/11/2025

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DESIGNED M. FREYTAG
DRAWN R.PEMBERTON
CHECKED T. GERTIG
REVIEWED P. O'BRIEN

Seq. 12 of 70
Dwg. No. C-105
4131-002-09

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POINT TABLE

POINT No.	NORTHING	EASTING	ELEVATION	DESCRIPTION
10	2837028.60	1634763.67	9067.05	CP PENINSULA
11	2836898.59	1634848.61	9077.66	CP BERM
13	2836014.62	1634832.67	9057.59	RED CAP 15242
14	2836013.17	1634499.03	9053.66	RED CAP 15242
15	2836012.85	1634438.33	9054.61	RED CAP 15242
16	2836012.15	1634267.28	9056.90	BLM S35/S36
17	2836119.63	1634176.05	9068.26	CDOT 1029
18	2828149.70	1637749.57	9127.79	VERTICAL CONTROL PT
19	2836192.56	1633315.66	9086.76	COUNTY COMMONS PT 10
21	2836995.03	1634848.89	9069.10	CP BIKE
22	2837053.79	1635043.82	9073.31	CP HELI
23	2837054.26	1635152.76	9069.54	CP BOGEY
200	1634949.79	2837007.36	9075.25	SW BLDG CORNER
201	1634995.86	2837014.39	9075.25	NW BUILDING CORNER
202	1634991.14	2837045.31	9074.92	NE BUILDING CORNER
203	1634945.07	2837038.27	9074.92	SE BUILDING CORNER
204	1635051.07	2837023.44	9078.34	SW BUILDING CORNER
205	1635056.32	2837044.91	9078.34	SE BUILDING CORNER
300	1634905.89	2836997.54	9071.00±	EDGE OF DRIVE
301	1634925.55	2836993.39	9073.00±	EDGE OF DRIVE
302	1634948.80	2836983.34	9076.01±	EDGE OF DRIVE
303	1634984.45	2836977.75	9075.76±	EDGE OF DRIVE
304	1635017.59	2836992.02	9074.70	EDGE OF DRIVE
305	1635034.17	2837006.56	9075.82	EDGE OF DRIVE
306	1635047.18	2837024.39	9073.21	EDGE OF DRIVE
307	1635013.86	2837017.44	9076.35	EDGE OF DRIVE
308	1634990.84	2836999.65	9076.69	EDGE OF DRIVE
309	1634957.03	2837001.58	9076.37	EDGE OF DRIVE
310	1634951.18	2837004.10	9076.07	EDGE OF DRIVE
311	1634934.39	2837011.36	9074.27	EDGE OF DRIVE

POINT TABLE

POINT No.	NORTHING	EASTING	ELEVATION	DESCRIPTION
312	1634905.49	2837017.03	9071.17	EDGE OF DRIVE
313	1634926.20	2837021.12	9073.00	EDGE OF DRIVE
314	1634946.51	2837028.84	9074.92	EDGE OF DRIVE
315	1634949.13	2837011.65	9074.92	EDGE OF DRIVE
316	1635011.57	2837022.09	9075.99	EDGE OF DRIVE
317	1635016.73	2837048.86	9075.82	EDGE OF DRIVE
318	1635045.17	2837047.60	9073.37	EDGE OF DRIVE
319	1635052.44	2837045.86	9073.10	EDGE OF DRIVE
320	1634999.50	2837039.16	9074.92	EDGE OF DRIVE
321	1635002.00	2837022.75	9074.92	EDGE OF DRIVE
322	1635056.44	2836996.59	9072.80	EDGE OF DRIVE
323	1635059.69	2836994.81	9072.65	EDGE OF DRIVE
324	1635067.06	2837007.99	9072.92	EDGE OF DRIVE
325	1634905.71	2837007.45	9071.25	DRIVE CL
326	1635026.75	2837020.30	9043.84	DRIVE CL INTERSECTION
327	1635031.19	2837038.52	9073.71	DRIVE CL INTERSECTION
331	1634864.72	2837012.89	9069.32	EDGE OF PAVING
332	1634872.24	2837022.53	9069.15	EDGE OF PAVING
333	1634948.52	2837012.60	NA	BOLLARD
334	1634946.20	2837027.75	NA	BOLLARD
335	1634945.35	2837032.46	NA	BOLLARD
871	2836975.34	1635034.04	9071.32	CP DISK

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

CIVIL
POINT TABLE

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TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 9/11/2025

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DESIGNED M. FREYTAG
DRAWN R.PEMBERTON
CHECKED T. GERTIG
REVIEWED P. O'BRIEN

Seq. 13 of 70
Dwg. No. C-106
4131-002-09

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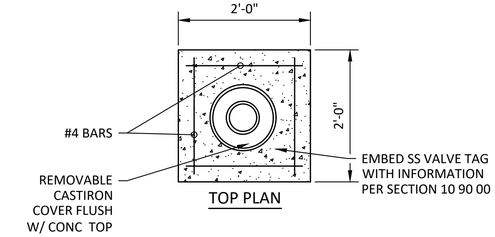
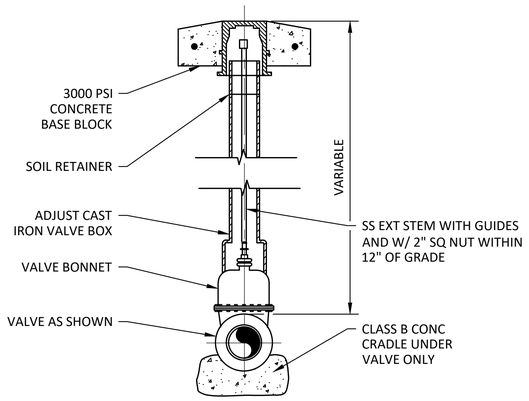
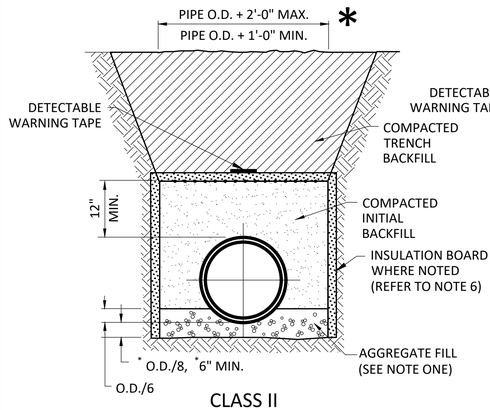


TOP PLAN

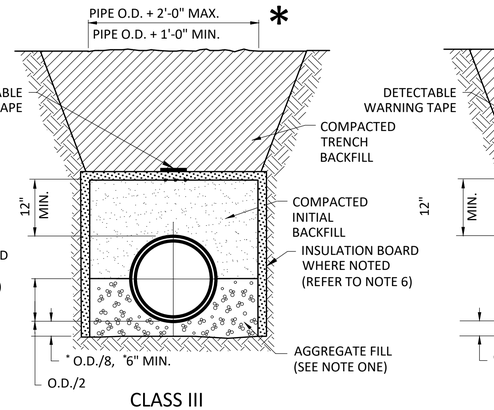


VALVE BOX DETAIL 194A

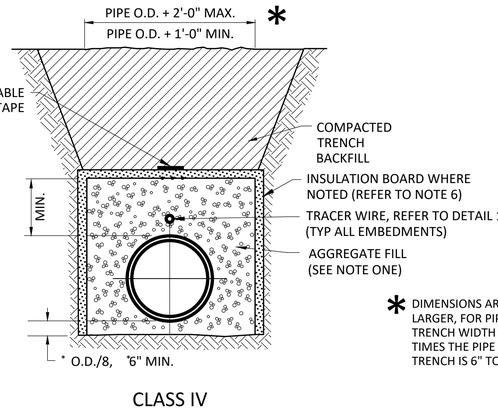
SCALE: NTS



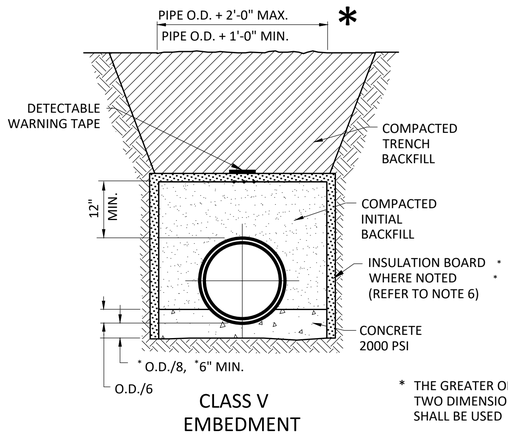
CLASS II EMBEDMENT



CLASS III EMBEDMENT

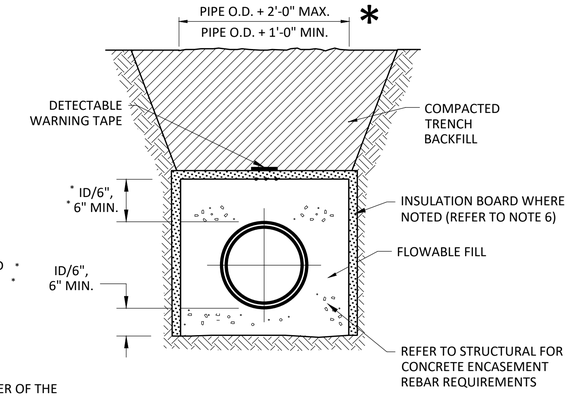


CLASS IV EMBEDMENT



CLASS V EMBEDMENT

* THE GREATER OF THE TWO DIMENSIONS SHALL BE USED



CONCRETE ENCASEMENT

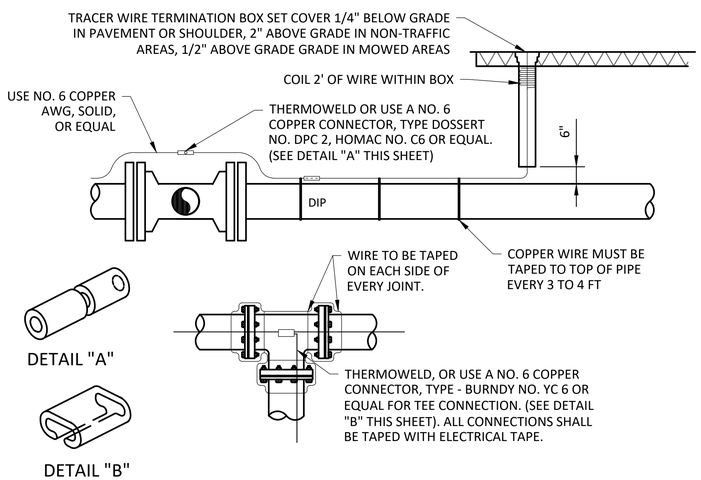
PIPE EMBEDMENT DETAILS 100

SCALE: NTS

* DIMENSIONS ARE FOR PIPES 6" AND LARGER, FOR PIPES 4" AND SMALLER TRENCH WIDTH SHALL BE 3 TO 4 TIMES THE PIPE SIZE (FOR 2" PIPE, TRENCH IS 6" TO 8")

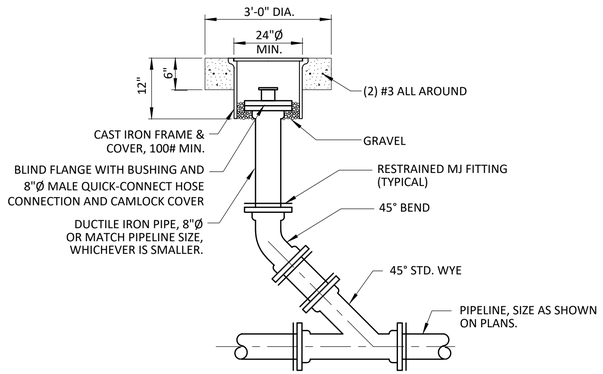
NOTE:

1. EMBEDMENT FOR DIP, STEEL OR PVC SHALL BE CLASS 2 AGGREGATE FILL. EMBEDMENT FOR CONCRETE PIPE (RCP) SHALL BE CLASS 3 AGGREGATE FILL. REFER TO SECTION 31 05 16 FOR AGGREGATE CLASSIFICATION.
2. COMPACTED INITIAL BACKFILL SHALL HAVE PI LESS THAN 16 AND SHALL HAVE MAXIMUM SIZE OF 2".
3. CONTRACTOR SHALL PREVENT PIPE FROM FLOATING OFF GRADE WHEN CONCRETE OR FLOWABLE FILL IS PLACED.
4. THE CUSHION PORTION OF CONCRETE ENCASEMENT SHALL BE PLACED FIRST AND ALLOWED TO SET BUT NOT DRY) BEFORE PLACEMENT OF SIDE AND TOP CONCRETE.
5. MINIMUM BURIAL DEPTH FOR THE TOWN OF FRISCO IS 6 FEET FOR PRESSURIZED PIPE, 7 FEET FOR GRAVITY PIPE.
6. INSULATION TO BE INCLUDED FOR NEW PIPING AND EXPOSED EXISTING PIPING SHALLOWER THAN THE MINIMUM BURIAL DEPTHS IN NOTE 5. THIS INCLUDES, BUT IS NOT LIMITED TO, THE USFS SANITARY SEWER AND SUMP PUMP DISCHARGE. USE EXTRUDED POLYSTYRENE INSULATION BOARD, DOW (OR EQUAL) 2 X 2" LAYERS (4" TOTAL MIN. THICKNESS) WITH 4" OVERLAP AT JOINTS.
7. USE CONCRETE OR FLOWABLE FILL ENCASEMENT BENEATH STRUCTURES AND 5'-0" OUTSIDE OF THE STRUCTURE.
8. CONCRETE CONFORM TO ASTM C94, MINIMUM COMPRESSIVE STRENGTH 2500 PSI AT 28 DAYS. FLOWABLE FILL MIN. 100 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
9. DETECTABLE WARNING TAPE SHALL BE PLACED 12 INCHES ABOVE TOP OF PIPE. WHEN INSULATION IS USED, DETECTABLE TAPE TO BE PLACED ABOVE INSULATION.



COPPER TRACER WIRE 101

SCALE: NTS



TYPICAL CLEANOUT DETAIL 110

SCALE: NTS

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

CIVIL
STANDARD DETAILS I

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 4/18/2025

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DESIGNED	M. FREYTAG
DRAWN	R.PEMBERTON
CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 14 of 70
Dwg. No. C-900
4131-002-09

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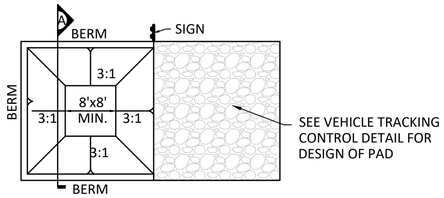
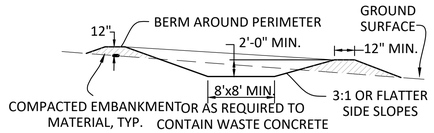


PLAN VIEW



SECTION A

CONCRETE WASHOUT AREA DETAIL 284

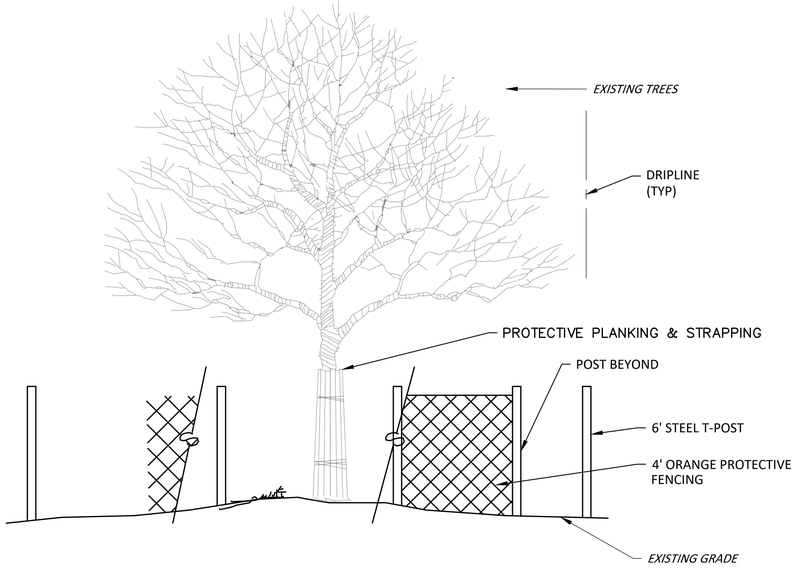
SCALE: N.T.S

CONCRETE WASHOUT AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATIONS OF CONCRETE WASHOUT AREA.
2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
3. VEHICLE TRACKING CONTROL IS REQUIRED AT THE ACCESS POINT.
4. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.

CONCRETE WASHOUT AREA MAINTENANCE NOTES

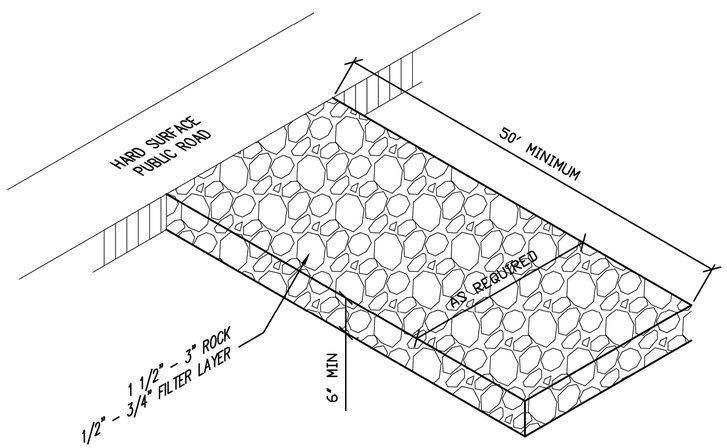
1. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
2. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN APPROVED WASTE SITE.
3. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, DRILL SEED AND CRIMP MULCH OR OTHERWISE STABILIZE IN A MANNER APPROVED BY THE LOCAL JURISDICTION.
4. INSPECT WEEKLY, DURING AND AFTER ANY STORM EVENT.



NOTE:
ANY TREE PRUNING OR REMOVAL NOT SHOWN ON THE DRAWINGS MUST HAVE WRITTEN APPROVAL BY OWNER.

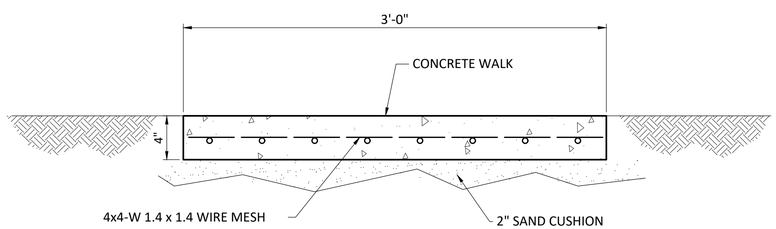
TREE PROTECTION DETAIL 262

SCALE: NTS



VEHICLE TRACKING CONTROL PAD DETAIL 275

SCALE: NTS



NOTE:

TRANSVERSE CONSTRUCTION JOINTS AT 4'-0"
TRANSVERSE EXPANSION JOINTS AT 32'-0" AND AT ALL INTERSECTIONS WITH VERTICAL SURFACES.

SIDEWALK DETAIL 224

SCALE: NTS

PLUMMER
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TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

CIVIL
STANDARD DETAILS II

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 4/18/2025

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DESIGNED	M. FREYTAG
DRAWN	R.PEMBERTON
CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 15 of 70
Dwg. No. C-901
4131-002-09

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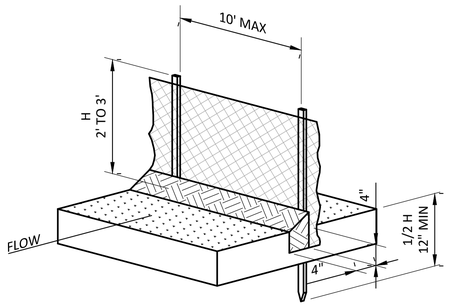
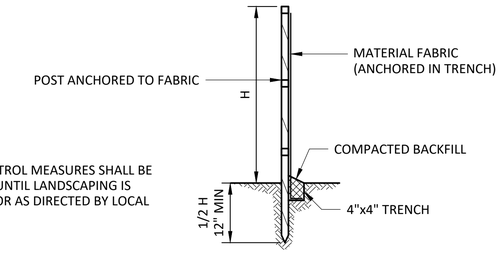


SILT FENCE INSTALLATION



SECTION

NOTE:
EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL LANDSCAPING IS COMPLETED, OR AS DIRECTED BY LOCAL JURISDICTION

SILT FENCE DETAIL 281

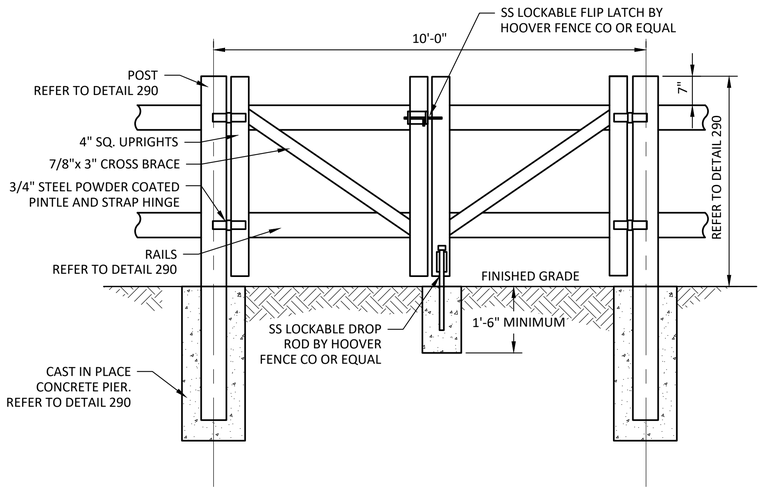
SCALE: N.T.S

SILT FENCE INSTALLATION NOTES:

1. SILT FENCE MUST BE PLACED AWAY FROM TOE OF SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOP SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.
2. A UNIFORM 6"x4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.
3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT THE SILT RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.
5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.
6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK". THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' -20').
7. SILT FENCE SHALL BE INSTALL PRIOR TO ANY LAND DISTURBING ACTIVITIES.

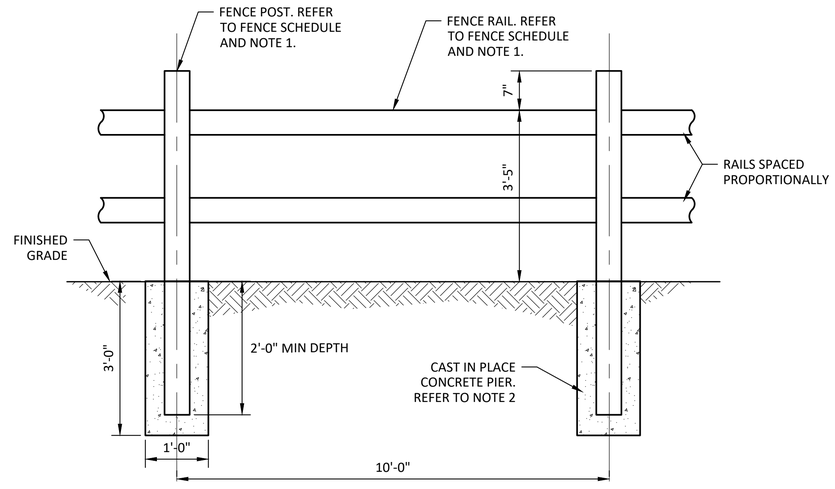
SILT FENCE MAINTENANCE NOTES:

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENT IS APPROXIMATELY 6".
5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.
6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.
7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.



SPLIT RAIL FENCE GATE 291

SCALE: N.T.S



ELEVATION

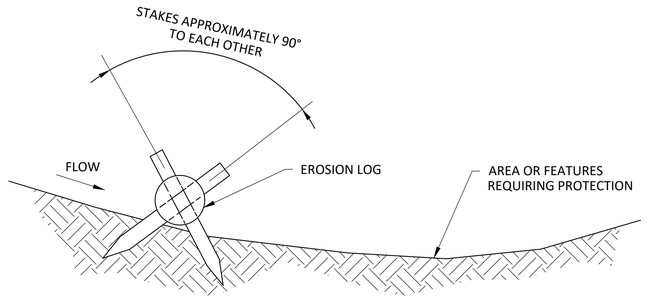
NOTES:

1. SPLIT RAIL FENCE TO BE CONSTRUCTED FROM TREATED LUMBER.
2. PIERS SHALL USE TYPE I/II PORTLAND CEMENT W/ FIBER MESH REINFORCING, MEETING OR EXCEEDING THE REQUIREMENTS OF ASTM-C150. MIN. 28 DAY COMPRESSIVE STRENGTH SHALL BE 3,000 PSI. PIER FOUNDATIONS TO BE IN UNDISTURBED SOILS UNLESS APPROVED BY THE ENGINEER.
3. LOCATION AND FENCE HEIGHT SHALL COMPLY WITH CITY/COUNTY FENCING CODES AND CURRENT CONDITIONS. ALL WORK SHALL COMPLY WITH CITY/COUNTY GRADING ORDINANCES.

SPLIT RAIL FENCE SCHEDULE			
	FACE	THICKNESS	LENGTH
RAILS:	3" TO 6"	3" TO 6"	10'
POSTS:	4" TO 7"	2-3/4" TO 4-1/2"	6'-0" MIN.

SPLIT RAIL FENCE 290

SCALE: N.T.S



EROSION DETAIL SPECIFICATIONS			
NOMINAL DIMENSIONS OF EROSION LOGS			
DIAMETER	LENGTH	WEIGHT	STAKE DIMENSIONS
12 INCH	7-10 FEET	2.5 LBS/FOOT	1.5x1.5x24 INCHES

TYPICAL EROSION LOG APPLICATION DETAIL 283

SCALE: N.T.S

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

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TOWN OF FRISCO
COLORADO

102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

CIVIL
STANDARD DETAILS III

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TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 3/4/2025

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DESIGNED M. FREYTAG
DRAWN R.PEMBERTON
CHECKED T. GERTIG
REVIEWED P. O'BRIEN

Seq. 16 of 70
Dwg. No. C-902
4131-002-09

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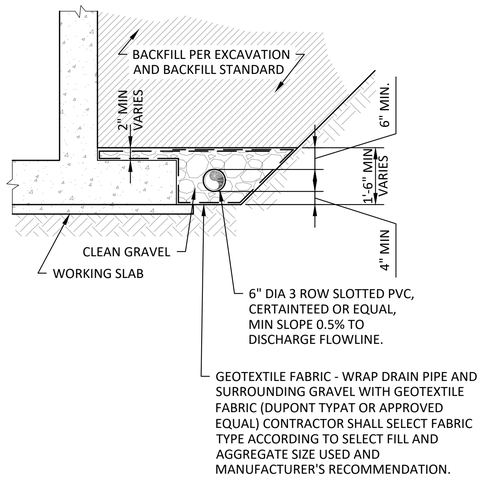
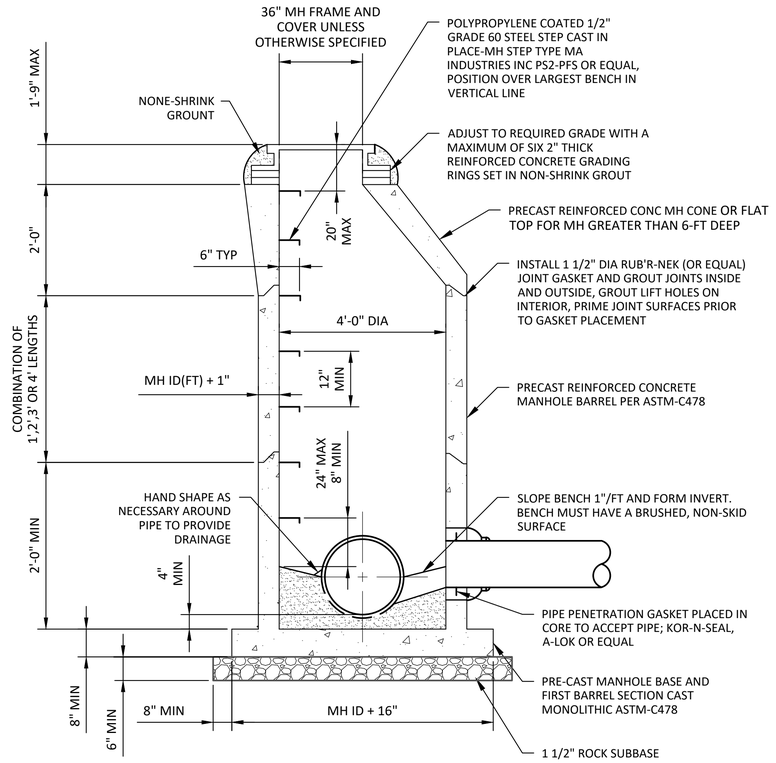


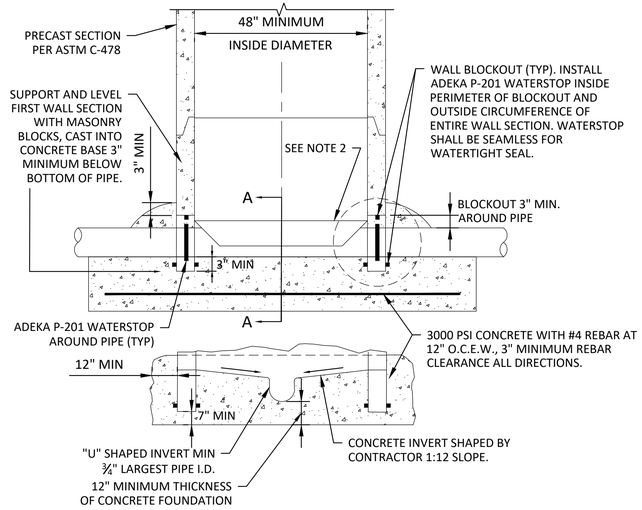
GROUND WATER RELIEF SYSTEM SECTION 124

SCALE: NTS



PRECAST MANHOLE DETAIL 160

SCALE: NTS

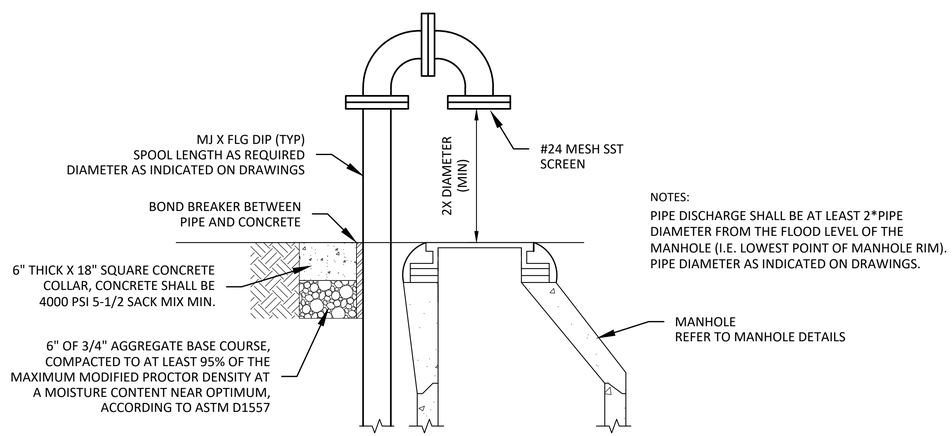


NOTES:

1. THIS DETAIL SHALL BE USED TO INSTALL MANHOLES ON EXISTING MAINS ONLY.
2. REMOVE ENTIRE EXISTING PIPE AND SHAPE INVERTS FOR NEW AND EXISTING PIPES.
3. REFERENCE STANDARD PRECAST MANHOLE DETAIL 160 FOR ADDITIONAL REQUIREMENTS.

DOG HOUSE MANHOLE 163

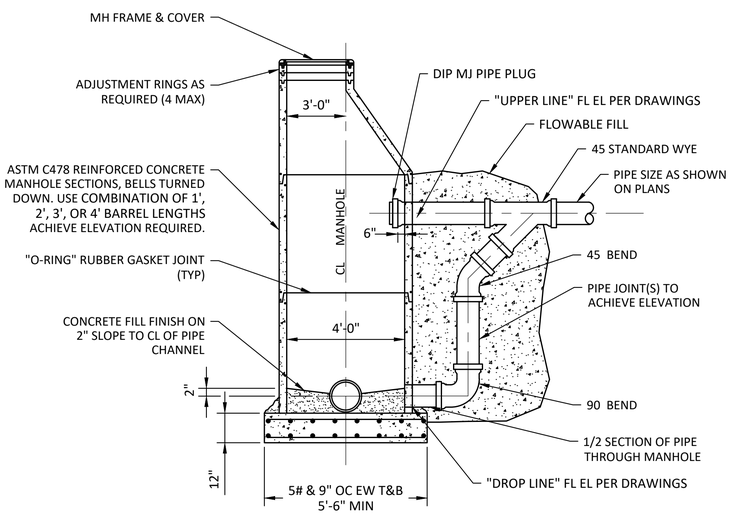
SCALE: NTS



NOTES:
PIPE DISCHARGE SHALL BE AT LEAST 2*PIPE DIAMETER FROM THE FLOOD LEVEL OF THE MANHOLE (I.E. LOWEST POINT OF MANHOLE RIM). PIPE DIAMETER AS INDICATED ON DRAWINGS.

AIR GAP DISCHARGE 164

SCALE: NTS



TYPICAL DROP MANHOLE DETAIL 162

SCALE: NTS

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
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TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

CIVIL
STANDARD DETAILS IV

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TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 4/18/2025

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DESIGNED	M. FREYTAG
DRAWN	R.PEMBERTON
CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 17 of 70
Dwg. No. C-903
4131-002-09

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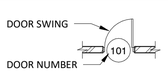
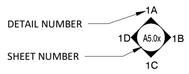
ABBREVIATIONS LIST

ATC	ACOUSTICAL TILE CEILING	L.	LENGTH
ADJ.	ADJUST(ABLE), ADJACENT	LAB.	LABORATORY
A.F.F.	ABOVE FINISHED FLOOR	LAM.	LAMINATE
ALUM.	ALUMINIUM	LAV.	LAVATORY
ALT.	ALTERNATE	L.F.	LINEAL FEET
APPROX.	APPROXIMATE	LB., #	POUND
ARCH.	ARCHITECT / ARCHITECTURAL	LVR.	LOUVER
ANOD.	ANODIZED		
APPROV.	APPROVED	MAS.	MASONRY
		M.O.	MASONRY OPENING
BD.	BOARD	MAT'L.	MATERIAL
BLDG.	BUILDING	MAX.	MAXIMUM
BLK.	BLOCK	MECH.	MECHANICAL
BLKG.	BLOCKING	MED.	MEDIUM
B.M.	BENCH MARK	MFR.	MANUFACTURER
BOT.	BOTTOM	MH.	MANHOLE
B.O.	BOTTOM OF	MIN.	MINIMUM
BRG.	BEARING	MISC.	MISCELLANEOUS
BSMT.	BASEMENT	MM.	MILLIMETER(S)
B.U.R.	BUILT UP ROOF	MTL.	METAL
CTR.	CENTER, CENTERED	(N)	NEW
CIR.	CIRCLE	N.	NORTH
CIRC.	CIRCUMFERENCE	NEC.	NECESSARY
C.J.	CONTROL JOINT	N.I.C.	NOT IN CONTRACT
CLG.	CEILING	NO., #	NUMBER
CLR.	CLEAR	NOM.	NOMINAL
CMU	CONCRETE MASONRY UNITS	N.T.S.	NOT TO SCALE
COL.	COLUMN		
COMB.	COMBINATION	O.D.	OUTSIDE DIAMETER
COMP.	COMPACT(ED), COMPOSITION	O.C.	ON CENTER
CONC.	CONCRETE	OH.	OVERHEAD
CONT.	CONTINUOUS	O.H.	OPPOSITE HAND
CONST.	CONSTRUCTION	OPN'G.	OPENING
COORD.	COORDINATE	OPP.	OPPOSITE
CORR.	CORRIDOR	O.S.B.	ORIENTED STRAND BOARD
CPT	CARPET		
C. TILE	CERAMIC TILE	PART.	PARTITION, PARTICLE
		PER.	PERIMETER
D.	DEEP, DRYER	P-LAM.	PLASTIC LAMINATE
DBL.	DOUBLE	PLBG.	PLUMBING
DEMO.	DEMOLITION	PROP.	PROPERTY
DEPT.	DEPARTMENT	P.T.	PRESSURE TREATED
D.F.	DRINKING FOUNTAIN	PT.	PAINT(ED)
DTL.	DETAIL	P. TILE	PORCELAIN TILE
DIAG.	DIAGONAL		
DIA.	DIAMETER	Q. TILE	QUARRY TILE
DIM.	DIMENSION		
DISP.	DISPENSER	R.	RISER, RADIUS
DISPL.	DISPOSAL	RB.	RUBBER BASE
DIV.	DIVISION	RE.	REFER TO
DN.	DOWN	REC.	RECESSED
DR.	DOOR	REF.	REFERENCE
D.S.	DOWN SPOUT	REFL.	REFLECTED
DWG.	DRAWING	REM.	REMOVE, REMOVABLE
		REQ'D.	REQUIRED
E.	EAST	RET.	RETURN
EA.	EACH	REV.	REVISION
ELEC.	ELECTRIC, ELECTRICAL	RM.	ROOM
ELEV.	ELEVATION, ELEVATOR		
EQ.	EQUAL	S.	SOUTH
EQMT.	EQUIPMENT	S.B.	SPLASH BLOCK
E.W.C.	ELECTRIC WATER COOLER	SCHED.	SCHEDULE
EXH.	EXHAUST	SECT.	SECTION
EXIST., (E)	EXISTING	S.F.	SQUARE FOOT
ETR.	EXISTING TO REMAIN	SHWR.	SHOWER
EXT.	EXTERIOR	SHT.	SHEET
EXP.	EXPANSION	SIM.	SIMILAR
E.J.	EXPANSION JOINT	S.O.G.	SLAB-ON-GRADE
		SPEC.	SPECIFICATION
F.D.	FLOOR DRAIN	SPECS.	SPECIFICATIONS
F.E.	FIRE EXTINGUISHER	SPK.	SPEAKER
F.F.E.	FINISH FLOOR ELEVATION	SQ.	SQUARE
FIN.	FINISH(ED)	ST.	STAIN
FIXT.	FIXTURE	STD.	STANDARD
FLR.	FLOOR	STL.	STEEL
FND.	FOUNDATION	STR.	STAIR
F.R.	FIRE RATED	STRUCT.	STRUCTURE, STRUCTURAL
FRMG.	FRAMING	SUSP.	SUSPENDED
FRT.	FIRE RETARDANT TREATED	SYM.	SYMMETRICAL
FRZ.	FREEZER	SYS.	SYSTEM
FTG.	FOOTING		
FUT.	FUTURE	T.	THICK, TREAD
		T.B.D.	TO BE DETERMINED
GA.	GAUGE	TEMP.	TEMPORARY, TEMPERED
GALV.	GALVANIZED	T & G	TONGUE AND GROOVE
G.B.	GRAB BAR	T.O.__	TOP OF _____ (E.G. STEEL)
GRND.	GROUND	TLT. / TOIL.	TOILET
G.C.	GENERAL CONTRACTOR	T.P.	TOILET PAPER
GYP. BD.	GYPSUM BOARD	T.S.	TUBE STEEL
		TYP.	TYPICAL
H.	HIGH		
H.B.	HOSE BIB	UC.	UNDERCUT
HC.	HANDICAPPED	U.N.O.	UNLESS NOTED OTHERWISE
H.D.	HEAVY DUTY		
HDWR.	HARDWARE	V.B.	VAPOR BARRIER
H.M.	HOLLOW METAL	V.C.T.	VINYL COMPOSITION TILE
H.O.	HOLD OPEN(S)	VENT.	VENTILATOR
HORZ.	HORIZONTAL	VERT.	VERTICAL
HT.	HEIGHT	VEST.	VESTIBULE
HTG.	HEATING	VIN.	VINYL
		V.I.F.	VERIFY IN FIELD
I.D.	INSIDE DIAMETER		
INCL.	INCLUDE, INCLUDING	W.	WIDE, WEST, WASHER
INSUL.	INSULATION, INSULATED	W/	WITH
INT.	INTERIOR	W/O	WITHOUT
		W.C.	WATER CLOSET
JT.	JOINT	WD.	WOOD
JST.	JOIST	WDW.	WINDOW
		WIN.	WINDOW
KIT.	KITCHEN	W.R.	WATER RESISTANT
		WSCT.	WAINSCOT
		W.W.F.	WELDED WIRE FABRIC

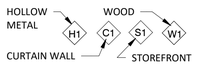
SYMBOLS LEGEND



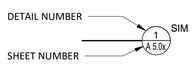
DOOR IDENTIFICATION



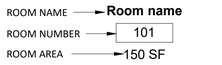
INTERIOR ELEVATION



WINDOW IDENTIFICATION



SECTION DETAIL



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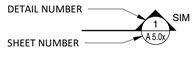
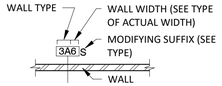
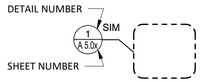


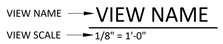
BUILDING & WALL SECTION



WALL TYPE IDENTIFICATION

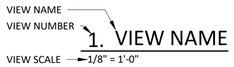


PLAN DETAIL

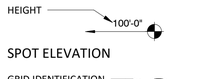


PLAN IDENTIFICATION

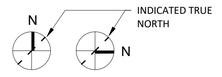
ELEVATION LEVEL



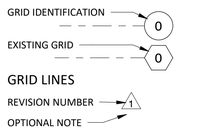
DETAIL IDENTIFICATION



SPOT ELEVATION



NORTH ARROW



GRID LINES

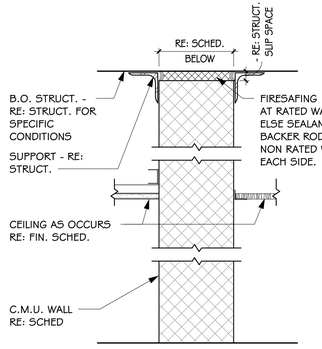
REVISION TAG

MATERIAL LEGEND

BATT INSULATION	FINISH WOOD	STONE
BRICK	GYPSUM BOARD	TILE
CONCRETE	METAL STUD	TERRAZZO
CMU	PLYWOOD	WOOD BLOCKING
DRAINAGE FILL	RIGID INSULATION	WOOD STUD
EARTH	STEEL	

GENERAL NOTES

1. DO NOT SCALE THE DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS BEFORE CONSTRUCTION. IF THERE ARE ANY DISCREPANCIES, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
2. ALL DIMENSIONS ON THE DRAWINGS ARE TO THE FACE OF STUD, MASONRY AND FOUNDATION WALLS UNLESS NOTED OTHERWISE.
3. ALL ANGLES SHOWN ON THE PLANS ARE 90 DEGREES UNLESS NOTED OTHERWISE.
4. THE CONTRACTOR SHALL COORDINATE AND IMPLEMENT ALL SAFETY MEASURES REQUESTED AND/OR REQUIRED BY THE LOCAL FIRE MARSHAL, HEALTH DEPARTMENT, BUILDING OFFICIALS, AND OTHER AUTHORITIES HAVING JURISDICTION ON THE PROJECT.
5. THE CONTRACTOR SHALL MAINTAIN THE SECURITY OF THE BUILDING AND CONSTRUCTION SITE THROUGHOUT THE ENTIRE PROJECT.
6. THE CONTRACTOR SHALL SLOPE ALL FLOORS WITHIN A TWO-FOOT RADIUS OF A FLOOR DRAIN AT A MINIMUM SLOPE OF ONE EIGHTH OF AN INCH PER FOOT TO DRAIN, UNLESS NOTED OTHERWISE.
7. THE CONTRACTOR SHALL COORDINATE ALL ITEMS PROVIDED OR INSTALLED BY THE OWNER OR THE OWNER'S SUBCONTRACTORS SO WORK ON THOSE CONTRACTS AND THIS MAY BE CARRIED OUT SMOOTHLY.
8. ALL PENETRATIONS IN SURFACES EXPOSED TO WEATHER, FIRE WALLS, SURFACES EXPOSED TO VIEW, AND OTHER SIMILAR CONDITIONS SHALL HAVE PIPE SLEEVES OR FINAL ASSEMBLIES FIT TIGHT TO SURROUNDING CONSTRUCTION. PENETRATIONS IN FIRE RATED ASSEMBLIES SHALL BE SEALED AS REQUIRED TO MAINTAIN THE INTEGRITY OF THE ASSEMBLY.
9. FIRE CAULKING AND OTHER REQUIREMENTS ASSOCIATED WITH THE PENETRATION SHALL BE PROVIDED BY THE TRADE CONSTRUCTING THE PENETRATION IN FULL COMPLIANCE WITH THE REQUIREMENTS OF THE GOVERNING CODES.
10. THE CONTRACTOR SHALL PROVIDE A TRANSITION STRIP AT ALL DISSIMILAR FLOOR MATERIALS.
11. THE CONTRACTOR SHALL PROVIDE CONTROL JOINTS IN WALLS WHERE GYPSUM BOARD IS PLACED IN ALIGNMENT WITH WALLS OF ANOTHER MATERIAL.
12. THE CONTRACTOR SHALL REVIEW THE CIVIL, STRUCTURAL, MECHANICAL, ELECTRICAL, AND ALL OTHER RELATED DRAWINGS AND DOCUMENTS FOR ADDITIONAL PROJECT REQUIREMENTS. NO EXTRAS WILL BE ALLOWED FOR WORK SHOWN IN ANY PART OF THESE DRAWINGS OR DESCRIBED IN ANY PART OF THE PROJECT MANUAL.



1, 2, 3, OR 4 HR RATED — UL FILE # U 901, 904, 905, 906, 907 & IBC SECTION 720

4A

DESCRIPTION		WIDTH
TYPE 4A4	4" CMU	3 5/8"
TYPE 4A6	6" CMU	5 5/8"
TYPE 4A8	8" CMU	7 5/8"
TYPE 4A12	12" CMU	11 5/8"

SUFFIX	
S	SOUND
P	TILE WSCT.
I	IMPACT
F	FRP

PARTITION NOTES

1. INSTALL STUDS WITH SPACING AT 16 INCHES ON CENTER MAX, UNLESS NOTED OTHERWISE (DORMER FRAMING).
2. REFER TO THE ARCHITECTURAL FLOOR PLANS (SHEET A-100) FOR PARTITION TYPE INDICATORS.
3. THE PARTITION TYPES INDICATE THE BASIC WALL CONSTRUCTION ONLY. REFER TO ALL THE CONSTRUCTION DOCUMENTS FOR OTHER REQUIREMENTS INCLUDING: MECHANICAL, ELECTRICAL, PLUMBING.

Eidos ARCHITECTS
5400 GREENWOOD PLAZA BOULEVARD
GREENWOOD VILLAGE, CO 80111 | 720.200.0630

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
Town of Frisco, Colorado

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ARCHITECTURAL

ABBREVIATIONS, STANDARD NOTES & LEGENDS

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

STATE OF COLORADO
7/31/2025
LORI MARIE HANSON
ARC-400684
LICENSED ARCHITECT

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	LH
DRAWN	CM
CHECKED	LH
REVIEWED	LH

Seq. 18 of 70

Dwg. No. A-000

4131-002-09

Autodesk Docs://4131-002-09_WELL_7/24021 Frisco Wellhouse #7 A23.rvt

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THESE DOCUMENTS ARE FOR PLANNING DEPARTMENT REVIEW ONLY. NOT FOR BIDDING OR CONSTRUCTION.

CODE ANALYSIS

CODES USED:

2018 IBC	2018 IPC
2018 IECC	2018 IFC
2023 NEC	2018 IFGC
2018 IMC	2009 ICC/ANSI A117.1
2018 IEBC	

IECC 2018 - CLIMATE ZONE 7
WALLS: (MASS) R-15.2 C.I., U-0.071
(METAL FRAMED DORMERS) R-13 + R-7.5 C.I., U-0.064
(WALLS, BELOW GRADE) R-10CI
ROOF: R-35 C.I., U-0.028

OCCUPANCY CLASSIFICATION: F-1

CONSTRUCTION TYPE: TYPE V-B

BUILDLNG HEIGHT: ALLOWABLE HT.: 40'-0" (TABLE 504.3)
ACTUAL BLDG. HT.: 17'-0"

BUILDING STORIES: ALLOWABLE # OF STORIES: 2 (TABLE 504.4)
ACTUAL # OF STORIES: 1 + BASEMENT

BUILDING AREA: ALLOWABLE AREA PER FLOOR: (TBL. 506.2)
F-2 OCCUPANCY: 13,000 S.F.
ACTUAL AREA PER FLOOR:
F-2 OCCUPANCY: 1,458 S.F.

TOTAL: 1,458 S.F. < 13,000 S.F.

FIRE PROTECTION: NON-SPRINKLERED - NOT REQUIRED

OCCUPANT LOAD: SEE PLAN: 7 TOTAL OCCUPANTS

EXITS: 1 EXIT PROVIDED AT GRADE PER AREA.

ADA ACCESSIBILITY: THE NEW BUILDING IS NOT REQUIRED TO BE ADA ACCESSIBLE. THE OCCUPANTS OF THIS BUILDING, BY NATURE OF THEIR JOBS, CANNOT PERFORM THEIR WORK WITH DISABILITIES. PER IBC SECTION 1103.2.9, "SPACES FREQUENTED ONLY BY SERVICE PERSONNEL FOR MAINTENANCE, REPAIR AND OCCASIONAL MONITORING OF EQUIPMENT ARE NOT REQUIRED TO COMPLY WITH THIS CHAPTER."

COMMON PATH OF EGRESS TRAVEL DISTANCE IS 75 FT.

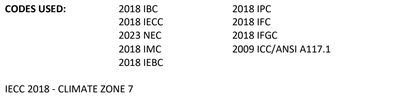
THERE ARE NO INCIDENTAL ACCESSORY OCCUPANCIES IN THE BUILDING THAT NEED TO BE SEPARATED.

FIRE-RESISTIVE RATING REQUIREMENTS FOR BUILDING ELEMENTS (TABLE 601)
TYPE VB

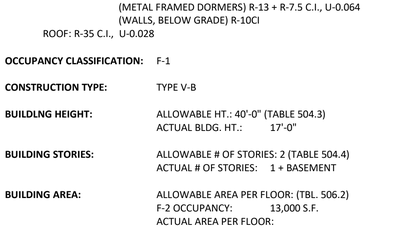
PRIMARY STRUCTURAL WALL	0 HR	INTERIOR NON-BEARING WALLS	0 HR
BEARING WALLS	0 HR	FLOOR CONSTRUCTION	0 HR
EXTERIOR NON-BEARING WALLS	0 HR (TBL. 602)	ROOF CONSTRUCTION	0 HR

CODE LEGEND

ROOM USE OCCUPANCY LOAD



EGRESS COMPONENT CAPACITY



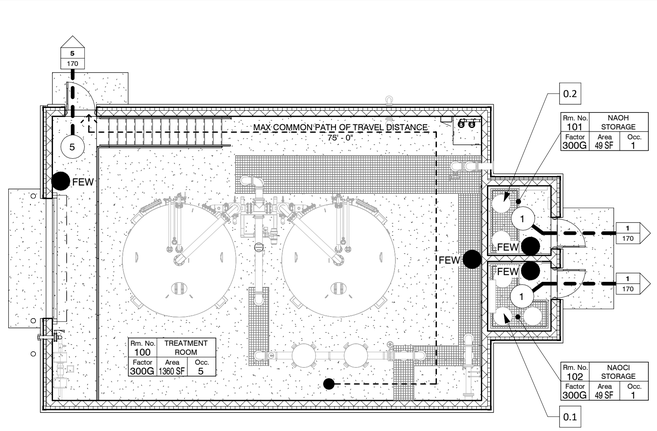
HAZARDOUS MAT'L STORAGE

STORAGE LOCATION: NAOCI STORAGE
SODIUM HYPOCHLORITE (12.5% SOLUTION) STORAGE OF 165 GAL (IN 3 APPROVED STORAGE TANKS OF 55 GAL EACH) DOES NOT EXCEED THE ALLOWABLE AMOUNT OF HAZARDOUS MATERIAL STORAGE AS INDICATED IN IBC TABLE 307.1(2).

SODIUM HYPOCHLORITE (12.5% SOLUTION) PROPERTIES:
NON-FLAMMABLE
NON-COMBUSTIBLE
NON-EXPLOSIVE
CORROSIVE
NFPA 704: HEALTH 2, FIRE 0, REACTIVITY 1

STORAGE LOCATION: NAOH STORAGE
SODIUM HYDROXIDE (25% SOLUTION) STORAGE OF 165 GAL (IN 3 APPROVED STORAGE TANKS OF 55 GAL EACH) IS NOT CONSIDERED TOXIC AND STORAGE QUANTITY IS NOT LIMITED.

SODIUM HYDROXIDE PROPERTIES:
NON-FLAMMABLE
NON-COMBUSTIBLE
NON-EXPLOSIVE
CORROSIVE
NFPA 704: HEALTH 3, FIRE 0, REACTIVITY 1



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

KEYNOTE LEGEND - CODE PLAN

0.1	SODIUM HYPOCHLORITE DRUMS, 55-GAL APPROVED STORAGE TANKS BY OTHERS.
0.2	SODIUM HYDROXIDE DRUMS, 55-GAL APPROVED STORAGE TANKS BY OTHERS.

COMcheck Software Version COMcheckWeb

Envelope Compliance Certificate

Project Information

Energy Code:	2018 IECC
Project Title:	Well 7 Treatment Building
Location:	Frisco, Colorado
Climate Zone:	7
Project Type:	New Construction
Vertical Glazing / Wall Area:	3%

Construction Site:
Wellhouse #7 PFAS Mitigarion Improvements
Town of Frisco, Colorado

Owner/Agent:
Town of Frisco
102 School Road
Frisco, Colorado 80443

Designer/Contractor:
Lori Hanson
Eidos Architects
5400 Greenwood Plaza Blvd.
Greenwood Village, Colorado 80111
720-200-0630
lhanson@eidosarch.com

Additional Efficiency Package(s)

Credits: 1.0 Required 1.0 Proposed
Reduced Lighting Power, 1.0 credit

Building Area	Floor Area
1-Frisco Wellhouse (Manufacturing Facility) : Nonresidential	1651

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
Roof: Insulation Entirely Above Deck, [Bldg. Use 1 - Frisco Wellhouse]	1555	---	36.0	0.027	0.028
Floor: Unheated Slab-On-Grade, [Bldg. Use 1 - Frisco Wellhouse] (c)	97	---	---	0.730	0.520
Roof: Insulation Entirely Above Deck, [Bldg. Use 1 - Frisco Wellhouse]	141	---	36.0	0.027	0.028
NORTH					
Basement: Solid Concrete, 8in. Thickness, Normal Density, Furring: None, Wall Ht 7.0, Depth B.G. 6.5, [Bldg. Use 1 - Frisco Wellhouse]	646	---	10.0	0.088	0.092
Ext. Wall: Concrete Block, 8in., Partially Grouted, Cells Empty, Normal Density, Furring: None, [Bldg. Use 1 - Frisco Wellhouse]	380	---	15.2	0.057	0.071
Door: Insulated Metal, Swinging, [Bldg. Use 1 - Frisco Wellhouse]	21	---	---	0.370	0.370
Ext. Wall: Steel-Framed, 16in. o.c., [Bldg. Use 1 - Frisco Wellhouse]	58	0.0	15.2	0.055	0.064
Window: Metal Frame with Thermal Break: Fixed, Perf. Specs.: Product ID Insulated Translucent Panel, SHGC 0.28, PF 1.00, [Bldg. Use 1 - Frisco Wellhouse] (b)	32	---	---	0.230	0.290
Ext. Wall: Concrete Block, 8in., Partially Grouted, Cells Empty, Normal Density, Furring: None, [Bldg. Use 1 - Frisco Wellhouse]	57	---	15.2	0.057	0.071
EAST					
Basement: Solid Concrete, 8in. Thickness, Normal Density, Furring: None, Wall Ht 7.0, Depth B.G. 6.5, [Bldg. Use 1 - Frisco Wellhouse]	440	---	10.0	0.088	0.092

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
Ext. Wall: Concrete Block, 8in., Partially Grouted, Cells Empty, Normal Density, Furring: None, [Bldg. Use 1 - Frisco Wellhouse]	372	---	15.2	0.057	0.071
Ext. Wall: Steel-Framed, 16in. o.c., [Bldg. Use 1 - Frisco Wellhouse]	19	0.0	15.2	0.055	0.064
Ext. Wall: Concrete Block, 8in., Partially Grouted, Cells Empty, Normal Density, Furring: None, [Bldg. Use 1 - Frisco Wellhouse]	160	---	15.2	0.057	0.071
Door: Insulated Metal, Swinging, [Bldg. Use 1 - Frisco Wellhouse]	21	---	---	0.370	0.370
Door: Insulated Metal, Swinging, [Bldg. Use 1 - Frisco Wellhouse]	21	---	---	0.370	0.370
SOUTH					
Basement: Solid Concrete, 8in. Thickness, Normal Density, Furring: None, Wall Ht 7.0, Depth B.G. 6.5, [Bldg. Use 1 - Frisco Wellhouse]	646	---	10.0	0.088	0.092
Ext. Wall: Concrete Block, 8in., Partially Grouted, Cells Empty, Normal Density, Furring: None, [Bldg. Use 1 - Frisco Wellhouse]	373	---	15.2	0.057	0.071
Ext. Wall: Steel-Framed, 16in. o.c., [Bldg. Use 1 - Frisco Wellhouse]	58	0.0	15.2	0.055	0.064
Window: Metal Frame with Thermal Break: Fixed, Perf. Specs.: Product ID Insulated Translucent Panel, SHGC 0.28, PF 1.00, [Bldg. Use 1 - Frisco Wellhouse] (b)	32	---	---	0.230	0.290
Ext. Wall: Concrete Block, 8in., Partially Grouted, Cells Empty, Normal Density, Furring: None, [Bldg. Use 1 - Frisco Wellhouse]	57	---	15.2	0.057	0.071
WEST					
Basement: Solid Concrete, 8in. Thickness, Normal Density, Furring: None, Wall Ht 7.0, Depth B.G. 6.5, [Bldg. Use 1 - Frisco Wellhouse]	440	---	10.0	0.088	0.092
Ext. Wall: Concrete Block, 8in., Partially Grouted, Cells Empty, Normal Density, Furring: None, [Bldg. Use 1 - Frisco Wellhouse]	372	---	15.2	0.057	0.071
Door: Insulated Metal, Garage door 14% glazing, [Bldg. Use 1 - Frisco Wellhouse]	101	---	---	0.310	0.310
Ext. Wall: Steel-Framed, 16in. o.c., [Bldg. Use 1 - Frisco Wellhouse]	19	0.0	15.2	0.055	0.064

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.
(b) Fenestration product performance must be certified in accordance with NFRC and requires supporting documentation.
(c) Slab-On-Grade proposed and budget U-factors shown in table are F-factors.

Envelope PASSES: Design 3% better than code

Envelope Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed envelope systems have been designed to meet the 2018 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Lori Hanson - Project Architect (Name - Title) | Signature | July 31, 2025 (Date)

Eidos ARCHITECTS
5400 GREENWOOD PLAZA BOULEVARD
GREENWOOD VILLAGE, CO 80111 | 720.200.0630

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
Town of Frisco, Colorado

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ARCHITECTURAL

CODE PLAN, ANALYSIS, & LEGEND

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

STATE OF COLORADO
7/31/2025
LORI MARIE HANSON
ARC-400684
LICENSED ARCHITECT

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	LH
DRAWN	CM
CHECKED	LH
REVIEWED	LH

Seq. 19 of 70

Dwg. No. A-001

4131-002-09

Autodesk Docs://4131-002-09_WELL_7/24021 Frisco Wellhouse #7 A23.rvt

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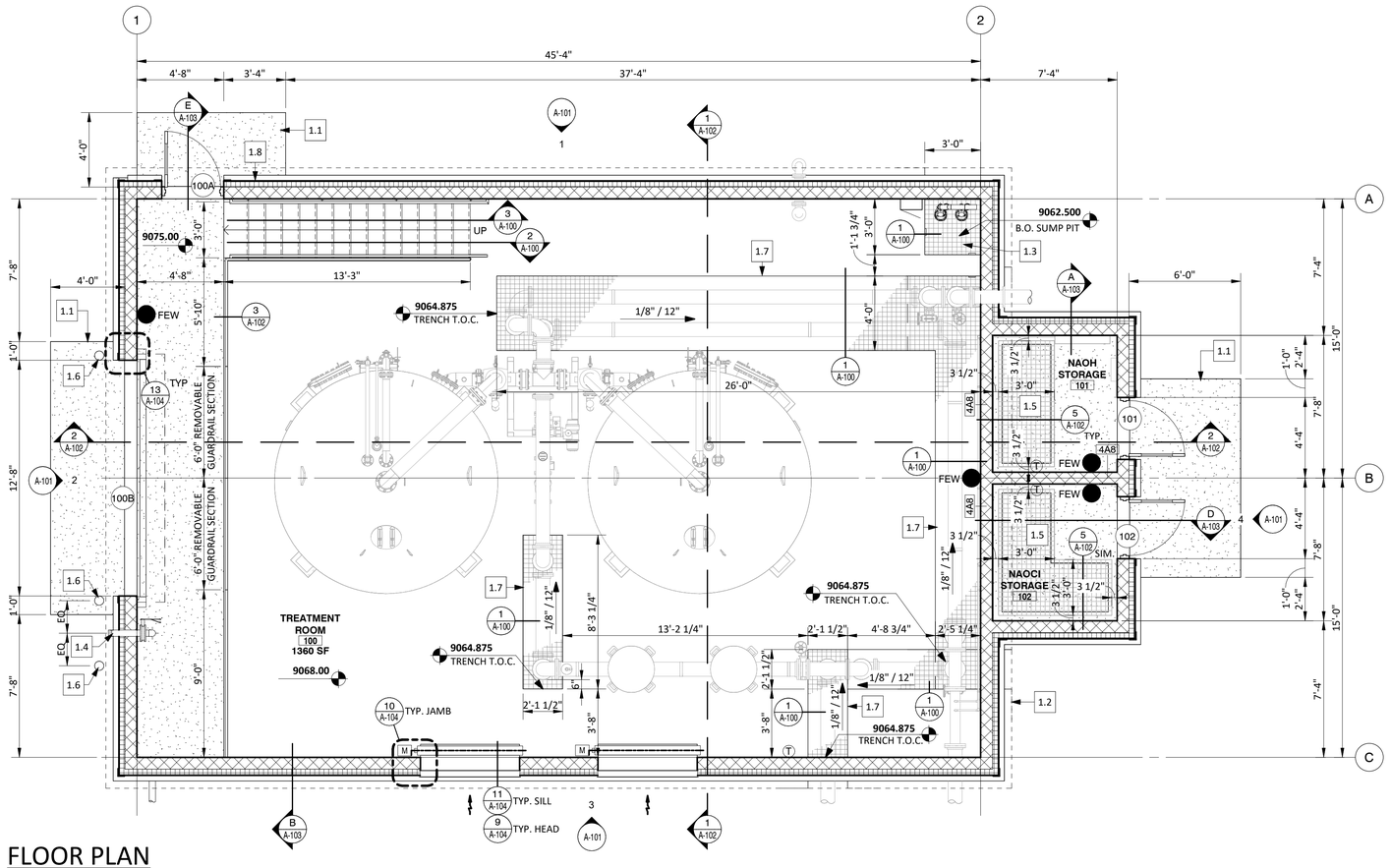
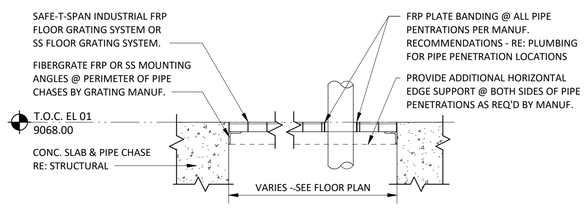


FLOOR PLAN

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

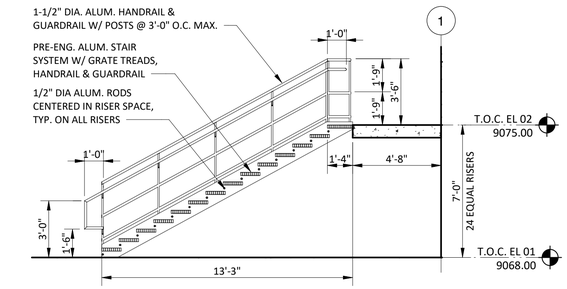
KEYNOTE LEGEND

1.1	CONC. STOOP - RE: STRUCT.
1.2	EDGE OF CONC. MAT SLAB BELOW - RE: STRUCT.
1.3	SUMP PIT - RE: PLUMBING & STRUCT.
1.4	HOSE BIB - RE: PLUMBING
1.5	6" DEEP CONC. CONTAINMENT AREA W/ FRP FLOOR GRATING - RE: STRUCT. & PROCESS.
1.6	6" CONC. FILLED PIPE BOLLARD. - RE: CIVIL
1.7	PIPE CHASE W/ FLUSH MOUNTED FLOOR GRATE. - RE: STRUCTURAL. ALL DIMENSIONS TO BE FIELD VERIFIED & FULLY COORDINATED W/ FINAL PIPE LOCATIONS.
1.8	KNOX BOX. COORDINATE MOUNTING LOCATION W/ OWNER.



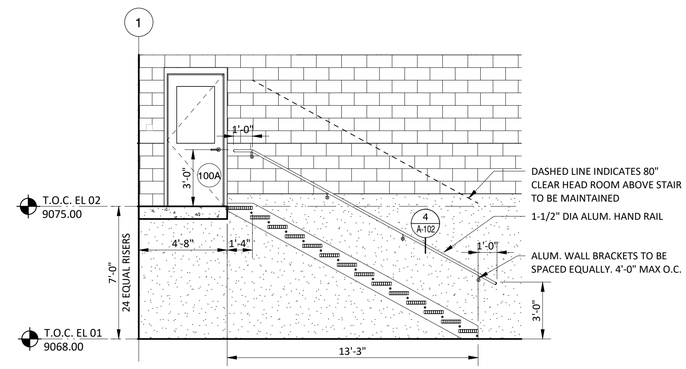
1. FLOOR GRATE DETAIL

1" = 1'-0"



2. STAIR SECTION

1/4" = 1'-0"



3. STAIR SECTION

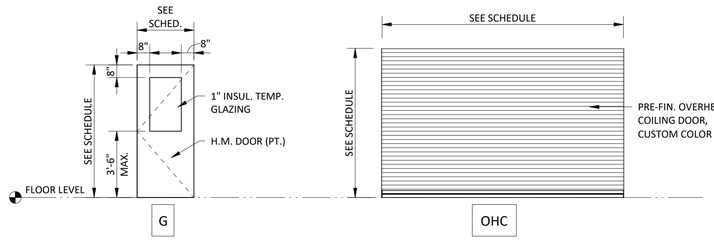
1/4" = 1'-0"

DOOR & FRAME SCHEDULE

		DOOR					FRAME							
DOOR NO.	S/PR	WIDTH	HEIGHT	TYPE	THICKNESS	MATERIAL	TYPE	MATERIAL	HEAD DETAIL	JAMB DETAIL	SILL DETAIL	FIRE RATING	HW GROUP	REMARKS
100A	S	3' - 0"	7' - 0"	G	1 3/4"	HM	H2	HM	1/A-104	2/A-104	5/A-104	---	#1	
100B	S	12' - 8"	8' - 0"	OHC	2"	MTL	---	STL	12/A-104	13,14/A-104	15/A-104	---	---	
101	S	3' - 0"	7' - 0"	G	1 3/4"	HM	H2	HM	1/A-104	2/A-104	4/A-104	---	#1	
102	S	3' - 0"	7' - 0"	G	1 3/4"	HM	H2	HM	1/A-104	2/A-104	4/A-104	---	#1	

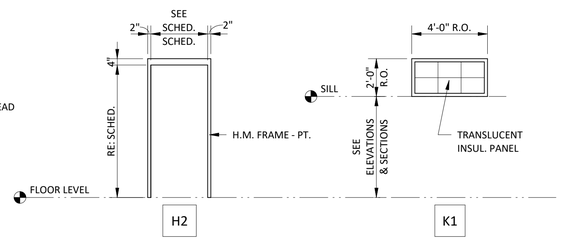
ROOM FINISH SCHEDULE

				Wall Finish						
Room No.	Room Name	Floor Material	Base Material	North	East	South	West	Ceiling Material / Finish	Ceiling Height	Remarks
100	TREATMENT ROOM	SEALED CONC.	NA	CMU/CONC. - PT.	CMU/CONC. - PT.	CMU/CONC. - PT.	CMU/CONC. - PT.	DECK & STRUCT. - PT.	EXPOSED STRUCT.	
101	NAOH STORAGE	SEALED CONC.	NA	CMU - PT.	CMU - PT.	CMU - PT.	CMU - PT.	DECK & STRUCT. - PT.	EXPOSED STRUCT.	
102	NAOCI STORAGE	SEALED CONC.	NA	CMU - PT.	CMU - PT.	CMU - PT.	CMU - PT.	DECK & STRUCT. - PT.	EXPOSED STRUCT.	



DOOR TYPES

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



FRAME TYPES

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

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PLUMMER
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303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

Town of Frisco, Colorado

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ARCHITECTURAL

FLOOR PLANS

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STATE OF COLORADO
7/31/2025
LORI MARIE HANSON
ARC-400684
LICENSED ARCHITECT

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	LH
DRAWN	CM
CHECKED	LH
REVIEWED	LH

Seq. 20 of 70

Dwg. No. A-100

4131-002-09

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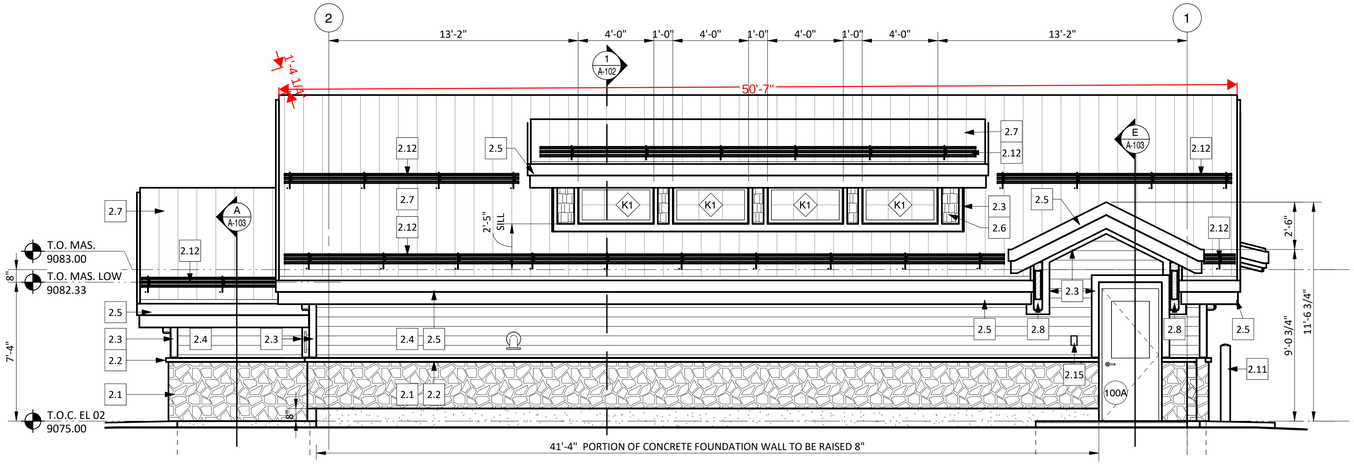
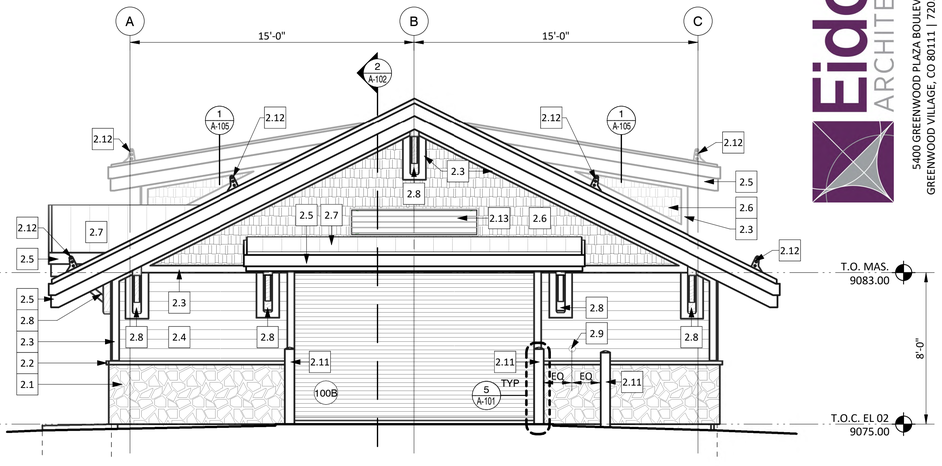


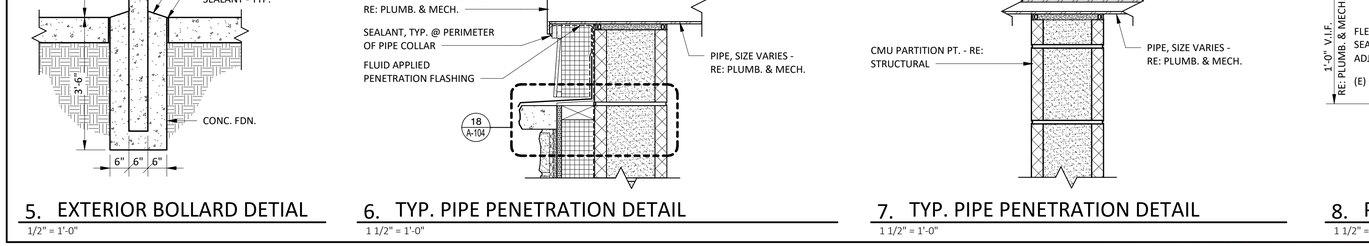
1. NORTH ELEVATION

1/4" = 1'-0"



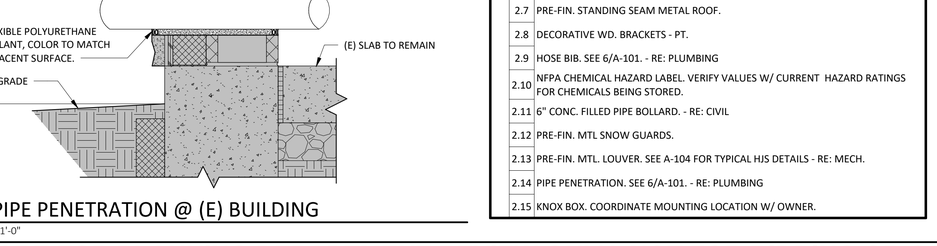
2. WEST ELEVATION

1/4" = 1'-0"



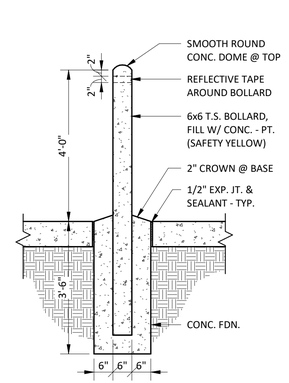
3. SOUTH ELEVATION

1/4" = 1'-0"



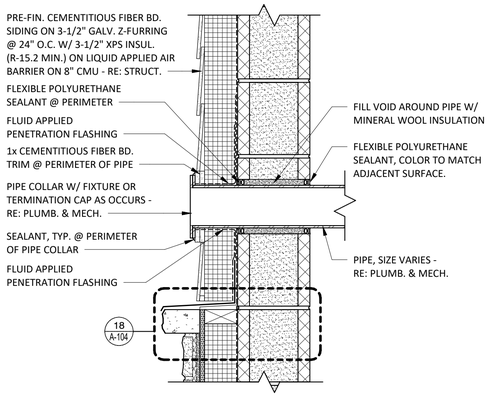
4. EAST ELEVATION

1/4" = 1'-0"



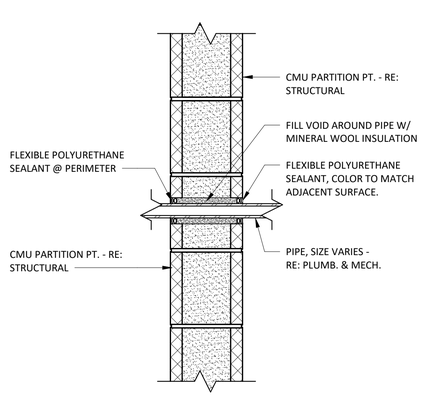
5. EXTERIOR BOLLARD DETIAL

1/2" = 1'-0"



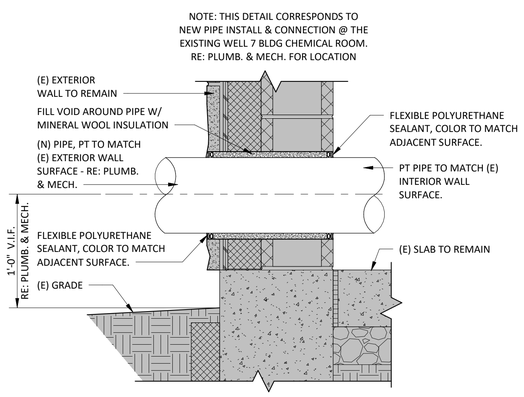
6. TYP. PIPE PENETRATION DETAIL

1 1/2" = 1'-0"



7. TYP. PIPE PENETRATION DETAIL

1 1/2" = 1'-0"



8. PIPE PENETRATION @ (E) BUILDING

1 1/2" = 1'-0"

KEYNOTE LEGEND - ELEVATIONS

2.1	STONE WAINSCOT
2.2	STONE CAP
2.3	PRE-FIN. CEMENTITIOUS FIBER BD. TRIM.
2.4	PRE-FIN. CEMENTITIOUS FIBER BD. LAP SIDING.
2.5	PRE-FIN. MTL. FASCIA & TRIM.
2.6	PRE-FIN. CEMENTITIOUS FIBER BD. SHINGLE SIDING.
2.7	PRE-FIN. STANDING SEAM METAL ROOF.
2.8	DECORATIVE WD. BRACKETS - PT.
2.9	HOSE BIB. SEE 6/A-101. - RE: PLUMBING
2.10	NFPA CHEMICAL HAZARD LABEL. VERIFY VALUES W/ CURRENT HAZARD RATINGS FOR CHEMICALS BEING STORED.
2.11	6" CONC. FILLED PIPE BOLLARD. - RE: CIVIL
2.12	PRE-FIN. MTL SNOW GUARDS.
2.13	PRE-FIN. MTL. LOUVER. SEE A-104 FOR TYPICAL HJS DETAILS - RE: MECH.
2.14	PIPE PENETRATION. SEE 6/A-101. - RE: PLUMBING
2.15	KNOX BOX. COORDINATE MOUNTING LOCATION W/ OWNER.

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TOWN OF FRISCO
Town of Frisco, Colorado

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ARCHITECTURAL
EXTERIOR ELEVATIONS

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STATE OF COLORADO
7/31/2025
LORI MARIE HANSON
ARC-400684
LICENSED ARCHITECT

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	LH
DRAWN	CM
CHECKED	LH
REVIEWED	LH

Seq. 21 of 70

Dwg. No. A-101

4131-002-09

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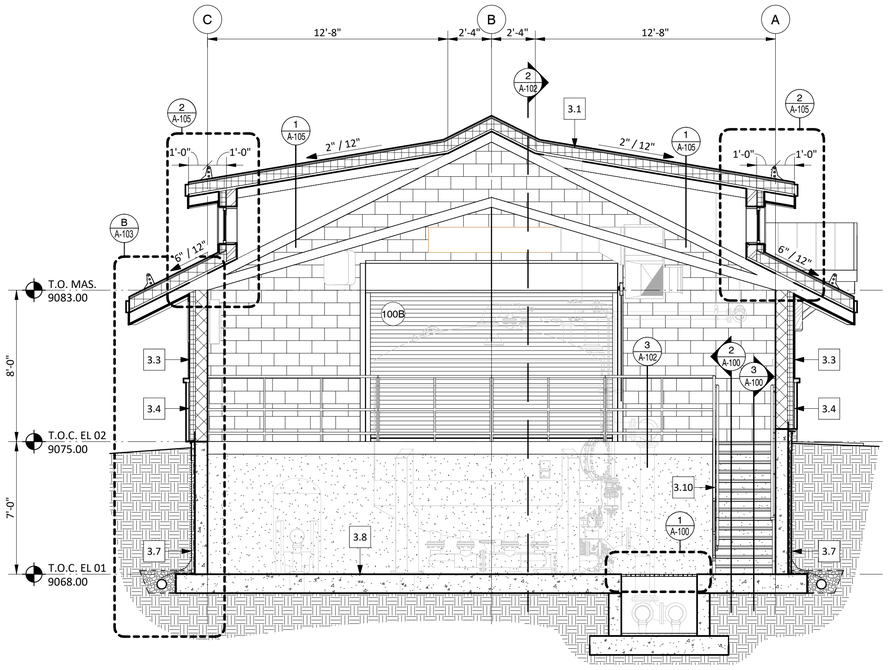
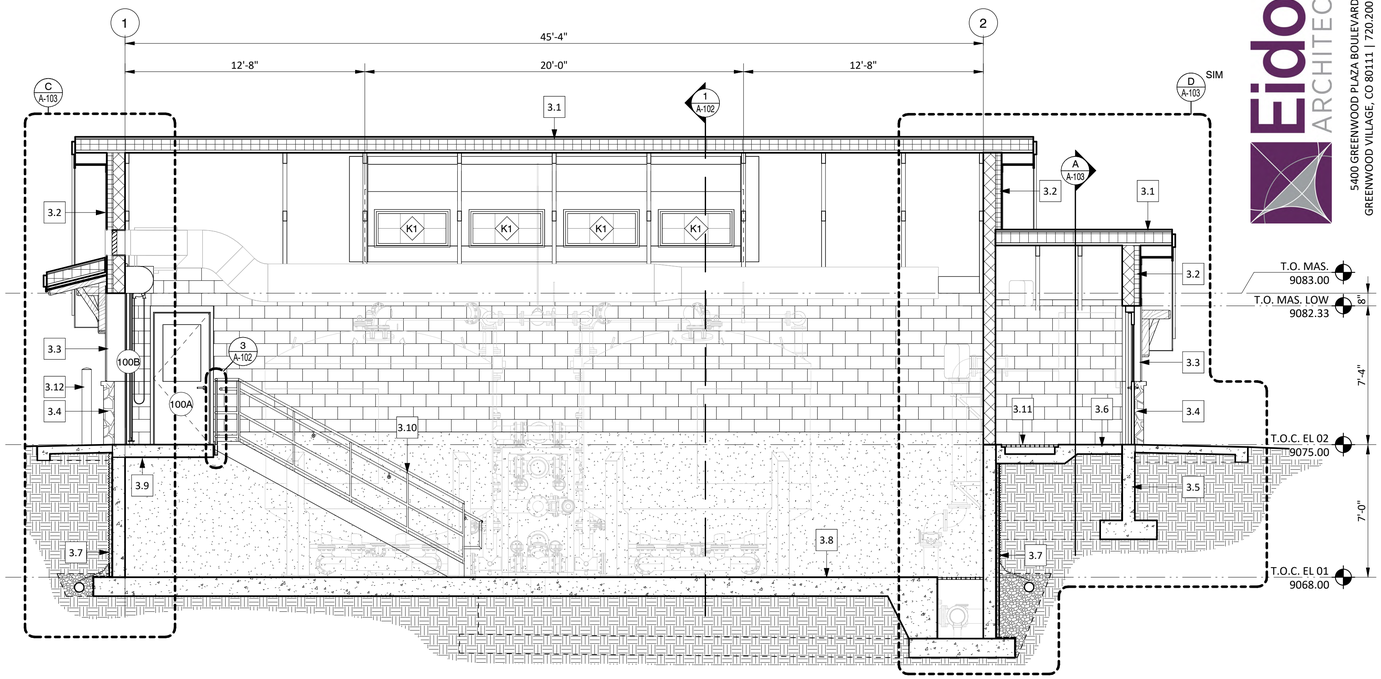


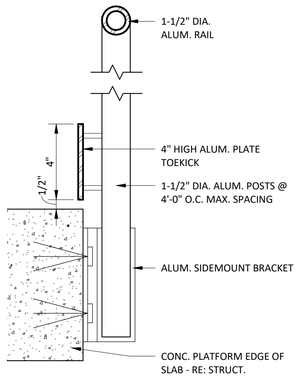
1. Building Section

1/4" = 1'-0"



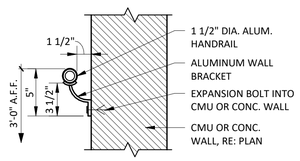
2. Building Section

1/4" = 1'-0"



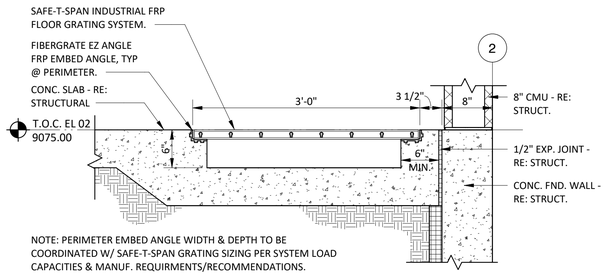
3. GUARDRAIL DETAIL

3" = 1'-0"



4. HANDRAIL DETAIL

1 1/2" = 1'-0"



5. RECESSED SLAB DETAIL

1" = 1'-0"

KEYNOTE LEGEND - SECTIONS

3.1	PRE-FIN. STANDING SEAM MTL. ROOF ON HIGH TEMP ICE & WATER SHIELD ON 1/2" COVER BD. ON 6" POLYISO. INSUL. (R-36 MIN.) ON 1-1/2" MTL. DECK ON PRE-ENG LIGHT GAGE SCISSOR TRUSSES - RE: STRUCT.
3.2	PRE-FIN. CEMENTITIOUS FIBER BD. SHINGLE SIDING ON 3-1/2" GALV. Z-FURRING @ 24" O.C. W/ 3-1/2" XPS INSUL. (R-15.2 MIN.) ON LIQUID APPLIED AIR BARRIER ON 8" CMU - RE: STRUCT.
3.3	PRE-FIN. CEMENTITIOUS FIBER BD. LAP SIDING ON 3-1/2" GALV. Z-FURRING @ 24" O.C. W/ 3-1/2" XPS INSUL. (R-15.2 MIN.) ON LIQUID APPLIED AIR BARRIER ON 8" CMU - RE: STRUCT.
3.4	ADHERED THIN VENEER STONE SET IN MORTAR BED ON MTL. LATH ON RAINSCREEN ON WEATHER BARRIER ON 1/2" EXT. PLYWD. ON 3-1/2" GALV. Z-FURRING @ 24" O.C. W/ 3-1/2" XPS INSUL. (R-15.2 MIN.) ON LIQUID APPLIED AIR BARRIER ON 8" CMU - RE: STRUCT.
3.5	8" CONC. FOUNDATION WALL - RE: STRUCTURAL
3.6	CONC. SLAB ON GRADE - RE: STRUCTURAL
3.7	DRAINAGE MAT ON 2" XPS INSUL. (R-10 MIN.) ON LIQUID APPLIED DAMP PROOFING ON CONC. FDN. WALL - RE: STRUCTURAL
3.8	12" CONC. MAT SLAB - RE: STRUCTURAL
3.9	8" CONC. SUSPENDED SLAB - RE: STRUCTURAL
3.10	PRE-ENG. ALUM. STAIR SYSTEM W/ GRATE TREADS, HANDRAIL & GUARDRAIL.
3.11	6" DEEP CONC. CONTAINMENT AREA W/ FRP FLOOR GRATING - RE: STRUCT. & PROCESS.
3.12	6" CONC. FILLED PIPE BOLLARD.

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Town of Frisco, Colorado

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ARCHITECTURAL

BUILDING SECTIONS

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STATE OF COLORADO
7/31/2025
LORI MARIE HANSON
ARC-400684
LICENSED ARCHITECT

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	LH
DRAWN	CM
CHECKED	LH
REVIEWED	LH

Seq. 22 of 70

Dwg. No. A-102

4131-002-09

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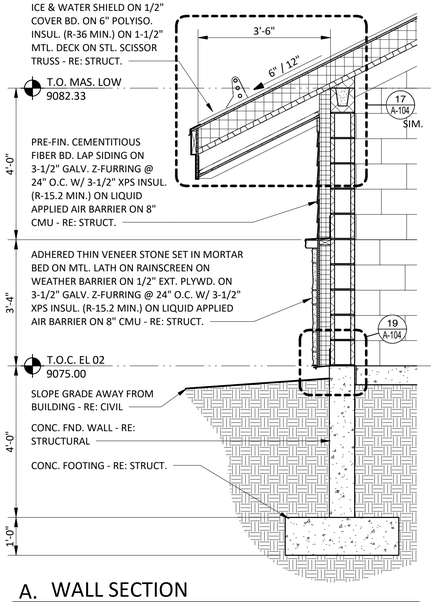
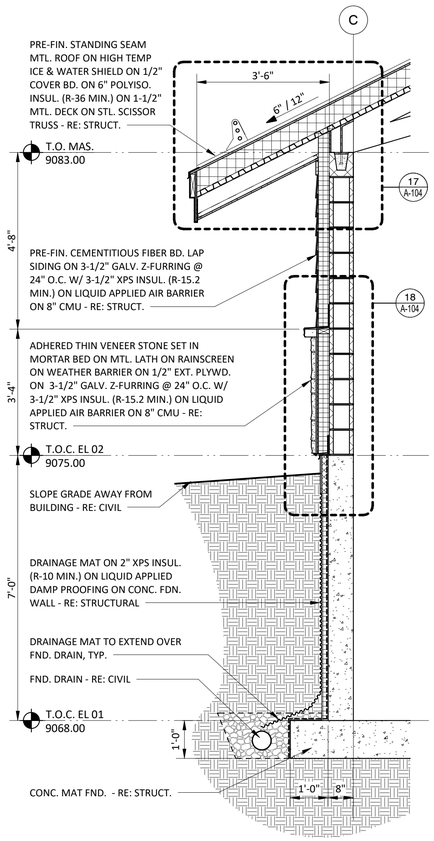


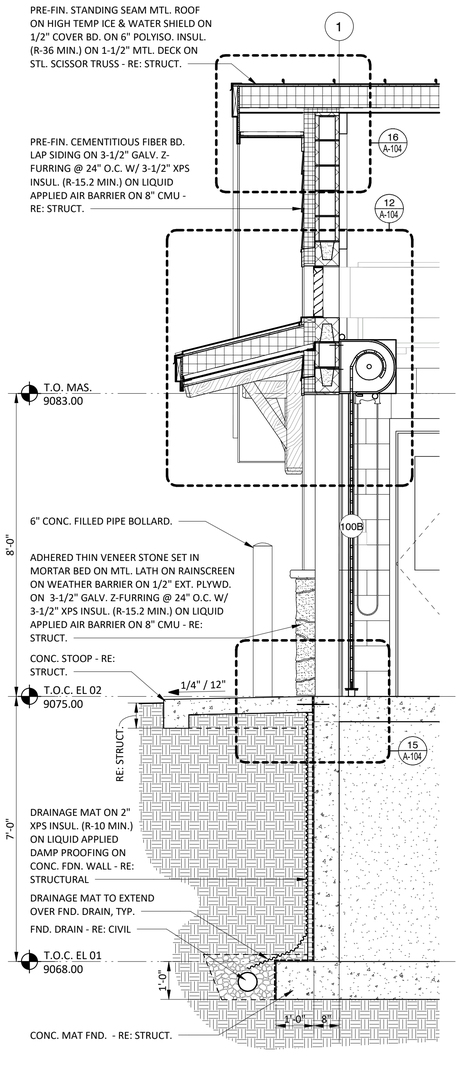
A. WALL SECTION

1/2" = 1'-0"



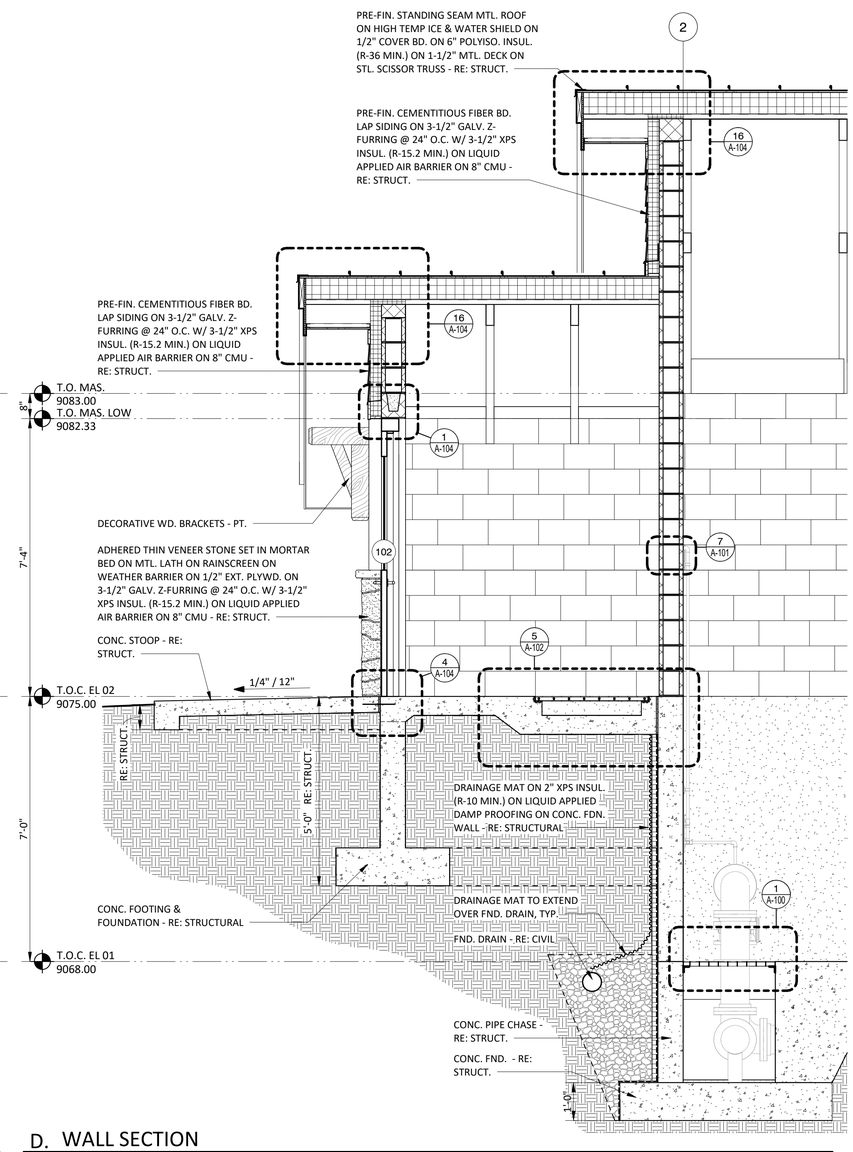
B. WALL SECTION

1/2" = 1'-0"



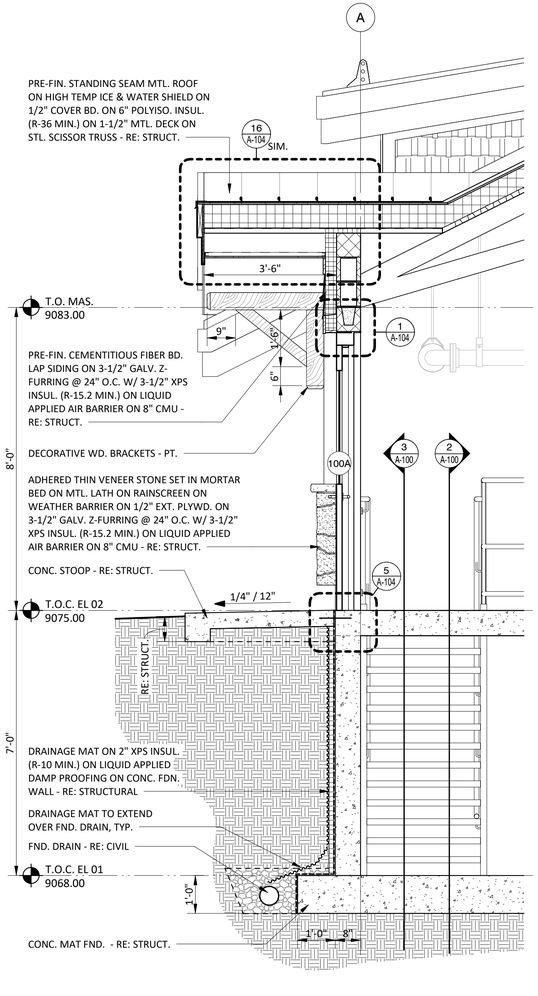
C. WALL SECTION

1/2" = 1'-0"



D. WALL SECTION

1/2" = 1'-0"



E. WALL SECTION

1/2" = 1'-0"

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TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ARCHITECTURAL

WALL SECTIONS

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STATE OF COLORADO
7/31/2025
LORI MARIE HANSON
ARC-400684
LICENSED ARCHITECT

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DESIGNED	LH
DRAWN	CM
CHECKED	LH
REVIEWED	LH

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Dwg. No. A-103

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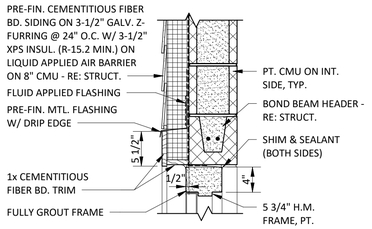
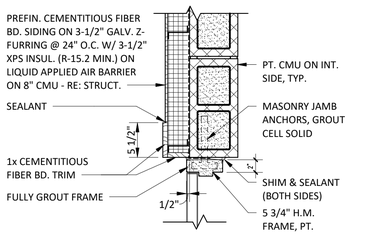


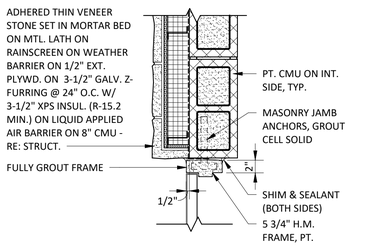
1. DOOR HEAD DETAIL

1" = 1'-0"



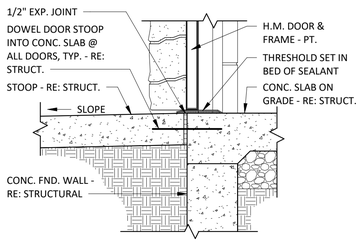
2. DOOR JAMB DETAIL

1" = 1'-0"



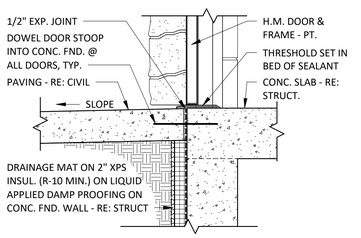
3. DOOR JAMB DETAIL (WAINSCOT)

1" = 1'-0"



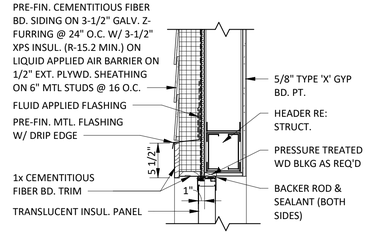
4. DOOR THRESHOLD DETAIL

1" = 1'-0"



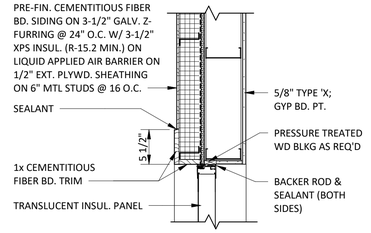
5. DOOR THRESHOLD DETAIL

1" = 1'-0"



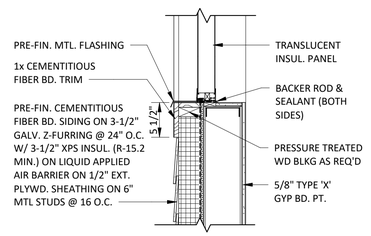
6. HEAD DETAIL @ K1

1" = 1'-0"



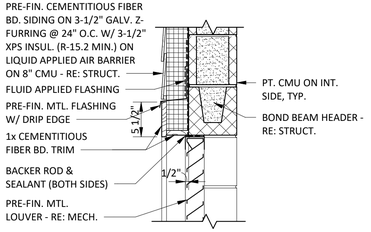
7. JAMB DETAIL @ K1

1" = 1'-0"



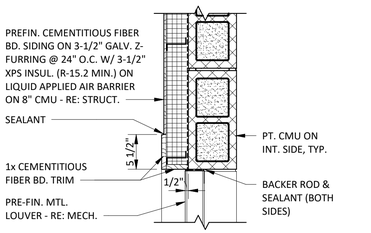
8. SILL DETAIL @ K1

1" = 1'-0"



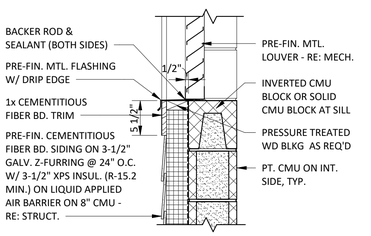
9. HEAD DETAIL @ LOUVER

1" = 1'-0"



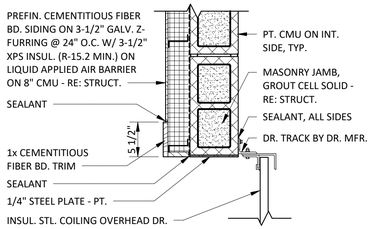
10. JAMB DETAIL @ LOUVER

1" = 1'-0"



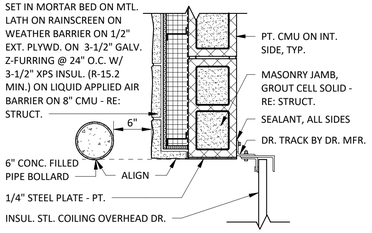
11. SILL DETAIL @ LOUVER

1" = 1'-0"



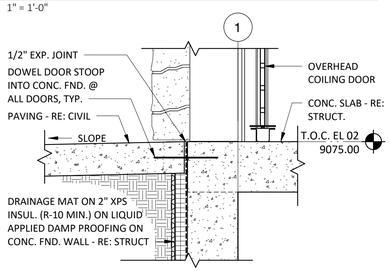
13. JAMB DETAIL @ OHC

1" = 1'-0"



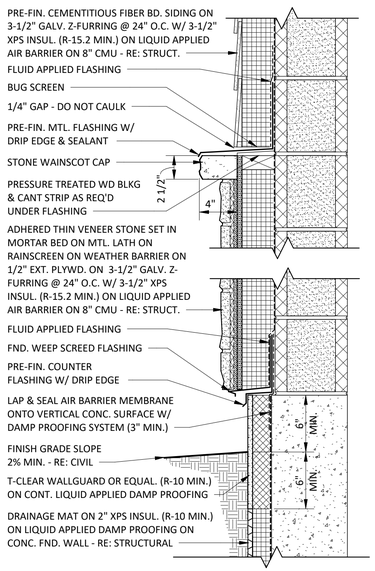
14. JAMB DETAIL @ OHC (WAINSCOT)

1" = 1'-0"



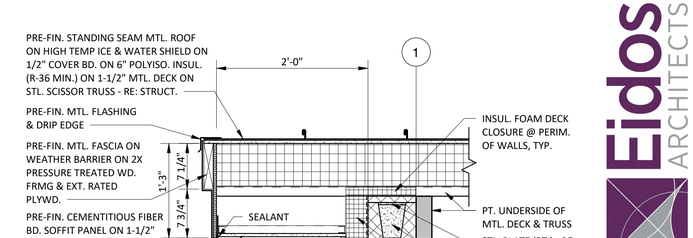
15. SILL DETAIL @ OHC

1" = 1'-0"



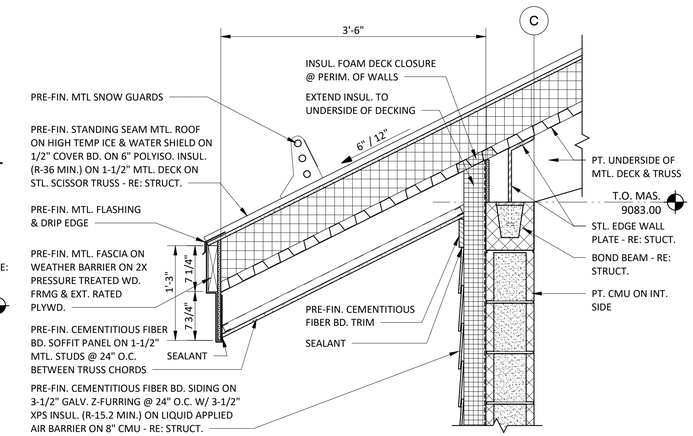
18. WAINSCOT SECTION DETAIL

1 1/2" = 1'-0"



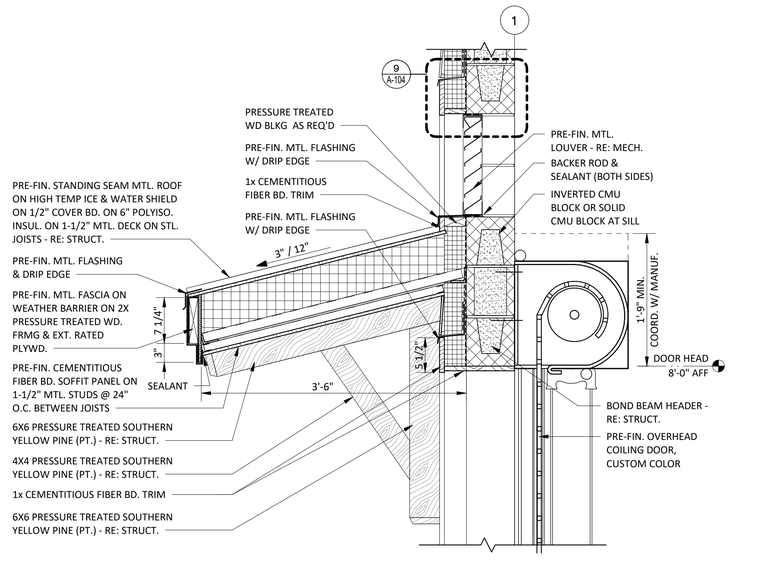
16. ROOF RAKE SECTION DETAIL

1" = 1'-0"



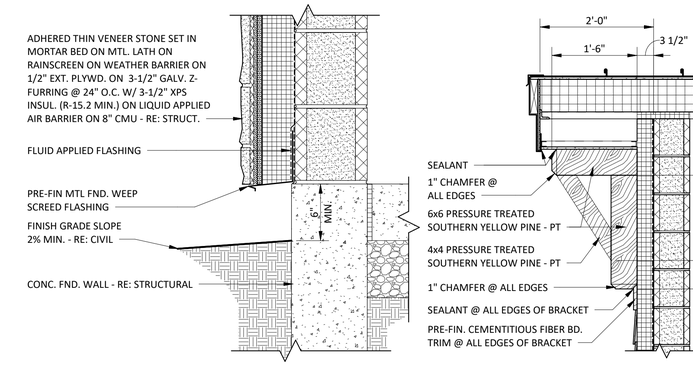
17. ROOF EAVE SECTION DETAIL

1" = 1'-0"



12. HEAD DETAIL @ OVERHEAD COILING DOOR

1" = 1'-0"



19. BASE OF WALL DETAIL

1 1/2" = 1'-0"

20. WALL BRACKET DETAIL

3/4" = 1'-0"

Eidos ARCHITECTS
5400 GREENWOOD PLAZA BOULEVARD
GREENWOOD VILLAGE, CO 80111 | 720.200.0630

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
COLORADO

Town of Frisco, Colorado

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ARCHITECTURAL

HEAD JAMB SILL DETAILS & SECTION DETAILS

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STATE OF COLORADO
7/31/2025
LORI MARIE HANSON
ARC-400684
LICENSED ARCHITECT

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	LH
DRAWN	CM
CHECKED	LH
REVIEWED	LH

Seq. 24 of 70

Dwg. No. A-104

4131-002-09

Autodesk Docs://4131-002-09_WELL_7/24021 Frisco Wellhouse #7 A23.rvt

PRINTED: 7/30/2025 7:19:29 PM

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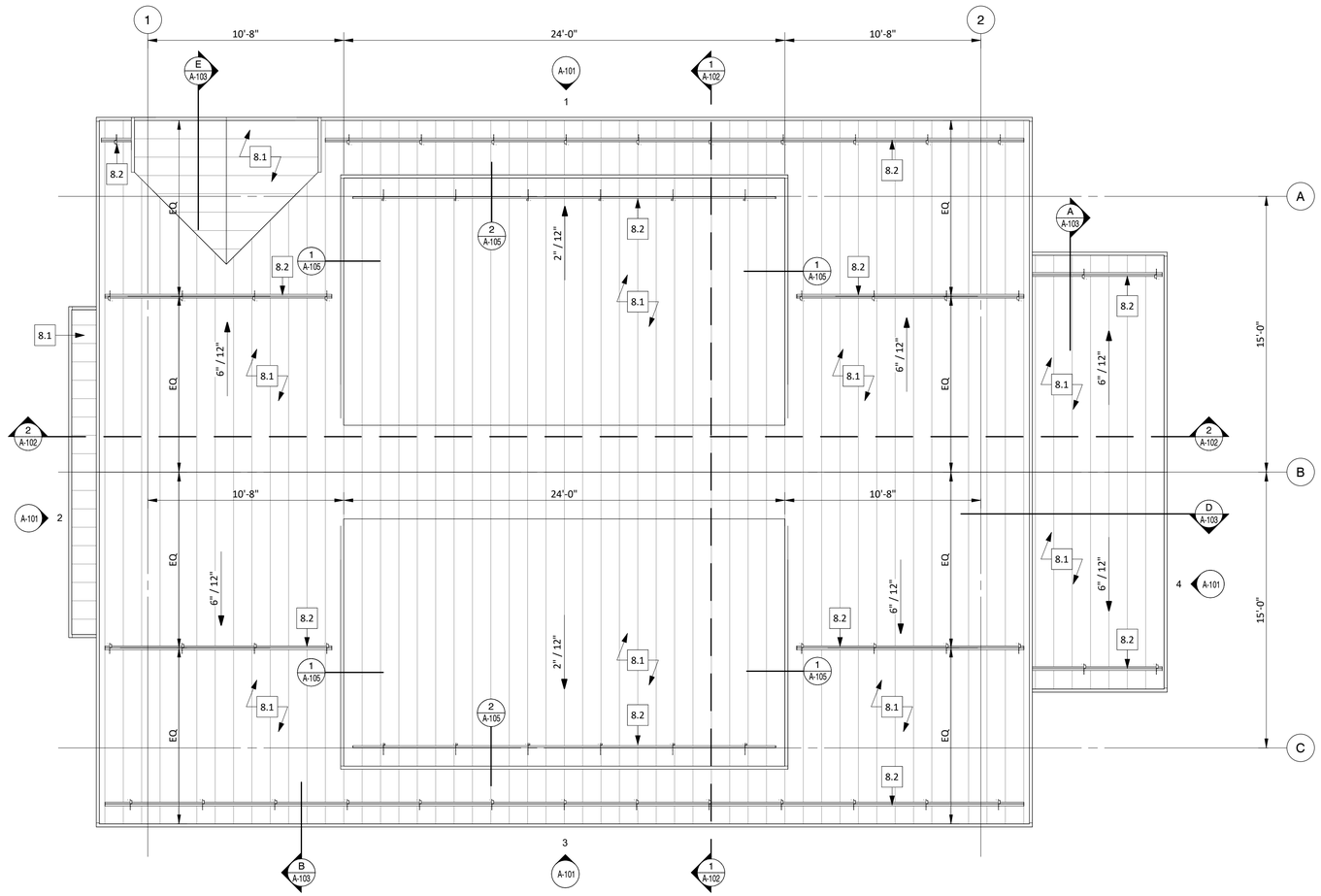
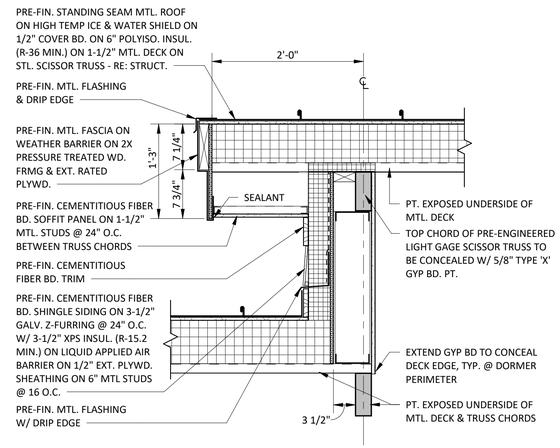


ROOF PLAN

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

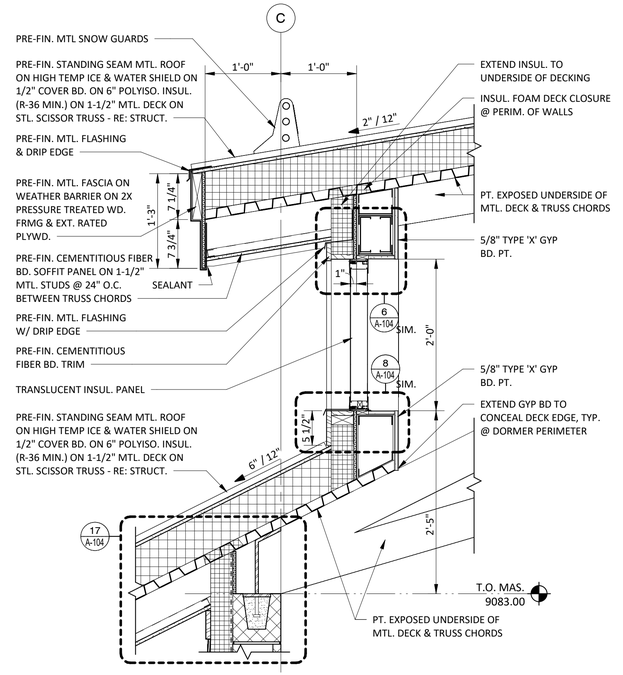
KEYNOTE LEGEND - ROOF PLANS

8.1	PRE-FIN STANDING SEAM MTL ROOF ON HIGH TEMP. ICE & WATER SHIELD ON 1/2" COVER BD. ON 6" POLYISO. INSUL. (R-36 MIN.) ON 1-1/2" MTL. DECK ON STL. JOISTS - RE: STRUCT.
8.2	PRE-FIN MTL STANDING SEAM MOUNTED SNOW GUARDS



1. SECTION DETAIL

1" = 1'-0"



2. DORMER SECTION DETAIL

1" = 1'-0"

Eidos ARCHITECTS
5400 GREENWOOD PLAZA BOULEVARD
GREENWOOD VILLAGE, CO 80111 | 720.200.0630

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303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
Town of Frisco, Colorado

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

MECHANICAL

ROOF PLAN

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STATE OF COLORADO
7/31/2025
LORI MARIE HANSON
ARC-400684
LICENSED ARCHITECT

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	LH
DRAWN	CM
CHECKED	LH
REVIEWED	LH

Seq. 25 of 70

Dwg. No. A-105

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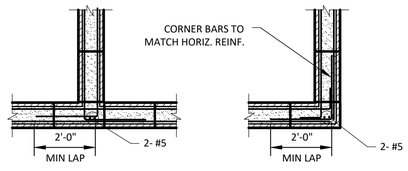
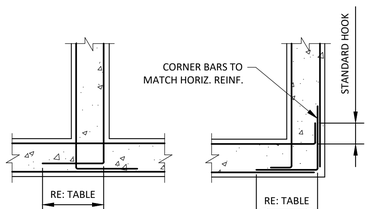
TABLE: MIN. LAP, DOWEL LENGTH & STD. HOOK FOR VERT. AND HORIZ. BARS		
BARS	MIN. LAP AND DOWEL LENGTH	STD. HOOK
#5	2'-6"	10"
#6	3'-0"	11"
#7	4'-3"	1'-0"
#8	5'-0"	1'-2"
#9	5'-8"	1'-4"
#10	6'-4"	1'-6"



TYPICAL INTERSECTION OF MASONRY BOND BEAM

TYPICAL CORNER OF MASONRY BOND BEAM



TYPICAL INTERSECTION OF CONCRETE WALLS AND FOOTINGS

TYPICAL CORNER OF CONCRETE WALLS AND FOOTINGS

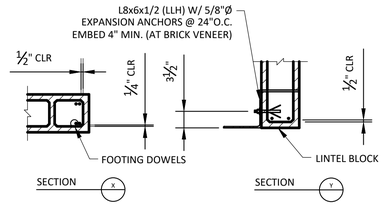
TYPICAL CORNER REINFORCING DETAIL

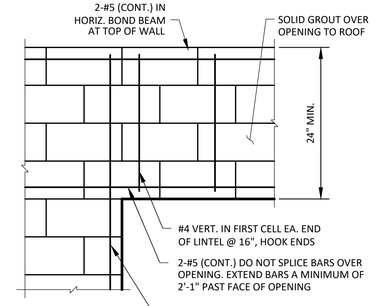
1/4"=1'-0"

1 S-001

MASONRY BLOCK TERMINOLOGY

- LINTEL BLOCK USED FOR HORIZONTAL BARS AT BOTTOM OF MASONRY LINTELS AND HAS SOLID BOTTOM.
- BOND BEAM BLOCK USED FOR HORIZONTAL BARS AT TOP OF WALLS (AND LINTELS) AND HAS OPEN BOTTOM AT CELLS. VERTICAL REINFORCEMENT IN WALLS SHALL EXTEND INTO BOND BEAMS AS SHOWN IN SECTIONS. DAM UNGROUTED CELLS TO ALLOW FOR CONTINUOUS GROUTING OF BOND BEAM.

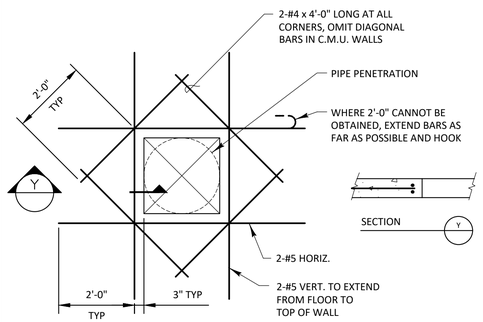




TYPICAL MASONRY LINTEL & END WALL REINFORCING

3/4"=1'-0"

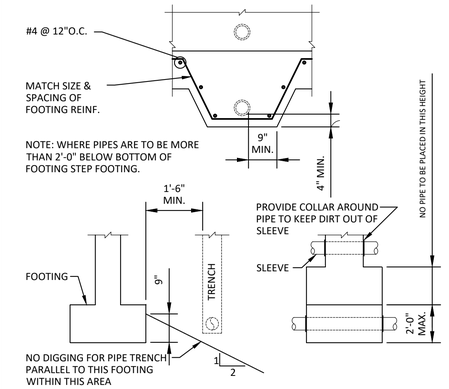
2 S-001



REINF. AROUND OPENINGS IN CONCRETE & MASONRY WALLS & CONCRETE SLABS

1/2"=1'-0"

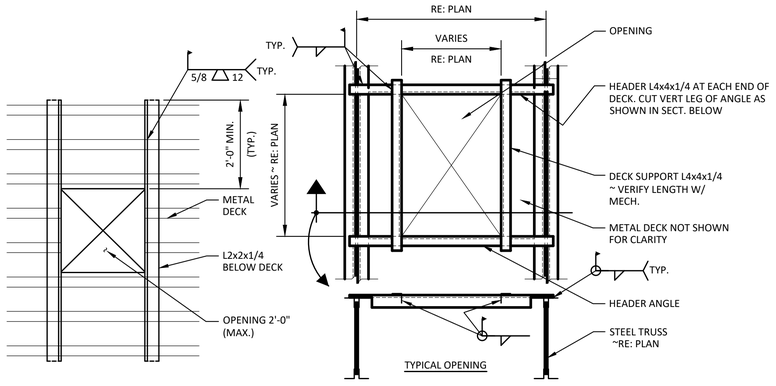
3 S-001



DETAIL OF PIPING AT FOOTING

NTS

4 S-001

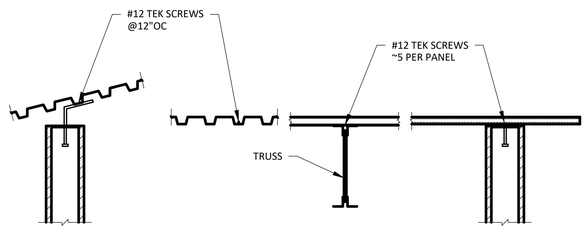


TYPICAL OPENING

TYPICAL OPENING IN METAL DECK

3/4"=1'-0"

5 S-001



NOTE: WELDS BASED ON 36" WIDE PANEL

ROOF:
1.5B 20ga. METAL DECKING
MIN. PROPERTIES PER FT OF WIDTH:
I = 0.212 IN^4
S+ = 0.234 IN^3
S- = 0.247 IN^3

TYPICAL DECK WELDING AND SHAPE

3/4"=1'-0"

6 S-001

STRUCTURAL NOTES:

DESIGN CRITERIA

1. IBC 2018
2. WIND - 90 MPH, 3 SEC GUST. EXP C
3. ROOF SNOW LOAD = 80 PSF

FOUNDATIONS

1. FOUNDATIONS WERE DESIGNED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT PREPARED BY KUMAR & ASSOC., PROJECT #24-1-401 DATED AUGUST 6, 2024.
2. FOOTINGS BEARING ON UNDISTURBED GRANULAR SOILS MAY BE DESIGNED FOR AN ALLOWABLE SOIL BEARING PRESSURE OF 3,000 PSF.
3. A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHALL BE PRESENT TO OBSERVE ALL FOUNDATION EXCAVATIONS PRIOR TO PLACEMENT OF ANY ENGINEERED FILL OR CONCRETE.
4. REFER TO THE GEOTECHNICAL REPORT FOR, COMPACTION REQUIREMENTS, FIELD OBSERVATIONS AND TESTING AND OTHER RECOMMENDATIONS. IN THE CASE OF A CONFLICT, THE MORE STRINGENT CONDITION SHALL APPLY.

GENERAL NOTES

1. THE CONTRACTOR SHALL REVIEW EXISTING CONDITIONS ON THE SITE PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS AND ELEVATIONS ON ALL DRAWINGS PRIOR TO STARTING WORK AND SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES OR INCONSISTENCIES PRIOR TO PROCEEDING.
3. REFERENCE ARCHITECTURAL, CIVIL, PROCESS, MECHANICAL, AND ELECTRICAL DRAWINGS FOR THE FOLLOWING:
   A. SIZE AND LOCATIONS OF SPOOLS IN CONCRETE WALLS AND SLABS.
   B. SIZE AND LOCATIONS OF ALL OPENINGS
   C. SIZE AND LOCATIONS OF ALL NON-BEARING PARTITIONS
   D. SIZE AND LOCATION OF ALL CONCRETE CURBS, WALKS, ROOF AND FLOOR DRAINS, SLOPES, DEPRESSED SLAB AREAS, ETC.
   E. FLOOR AND ROOF FINISHES
   F. COVERINGS (HATCHES, GRATING, ETC.) OVER OPENINGS.
4. WHERE NO CONSTRUCTION DETAILS ARE SHOWN OR NOTED FOR ANY PART OF THE WORK, THE DETAILS SHALL BE THE SAME AS FOR OTHER SIMILAR WORK.
5. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT LIFE AND THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE BUT NOT BE LIMITED TO BRACING AND SHORING OF LOADS DUE TO CONSTRUCTION EQUIPMENT, WIND, ETC.

MASONRY

1. CONCRETE BLOCK UNITS ARE TO BE IN ACCORDANCE WITH ASTM SPECIFICATIONS C 90 GRADE N. 1900 PSI AVERAGE NET AREA COMPRESSIVE STRENGTH.
2. F'm = 1500 PSI, (COMPRESSIVE STRENGTH OF THE MASONRY ASSEMBLAGE)
3. MORTAR SHALL CONFORM TO ASTM C 270, TYPE S. 1800 PSI.
4. GROUT SHALL CONFORM TO ASTM C1019 AND C476, 2000 PSI.
5. PLACE VERTICAL BARS IN WALLS IN CENTER OF WALL UNLESS NOTED OTHERWISE.
6. TIE OR OTHERWISE FIX VERTICAL BARS IN POSITION IN MASONRY AT INTERVALS OF NOT LESS THAN 4'-0" AND AT TOP AND BOTTOM.
7. PROVIDE DUR-O-WALL HORIZONTAL LADUR REINFORCEMENT @ 16" O.C. CONTINUOUS THROUGHOUT WALLS.
8. GROUT VERTICAL CELLS CONTAINING REINFORCING STEEL AND ANCHOR BOLTS AND HORIZONTAL BOND BEAMS IN WALL U.N.O.
9. PROVIDE 1" MINIMUM GROUT COVER ON ALL BOLTS AND PLATES.
10. RE: 2/S-001 FOR TYP. MASONRY LINTELS AND END WALL REINF.
11. FULL BUTTER ALL BED AND HEAD JOINTS AND WEBS OR USE OPEN END UNITS AT SOLID GROUTED MASONRY.
12. RE: 2/S-001 FOR MASONRY BLOCK TERMINOLOGY.
13. USE RUNNING BOND.
14. SHORE MASONRY LINTELS A MINIMUM OF 28 DAYS OR UNTIL 75% OF STRENGTH HAS BEEN REACHED.

METAL DECK

1. ALL METAL DECK SHALL BE MANUFACTURED BY VULCRAFT OR APPROVED EQUAL. METAL DECK SHALL BE FASTENED TO SUPPORTING MEMBERS BY FIELD WELDING PER DETAIL 6/S-001. METAL DECK SHALL BE CONTINUOUS OVER 3 SPANS. GALVANIZE DECK.

STRUCTURAL STEEL

1. FABRICATION AND ERECTION TO CONFORM TO AMERICAN INSTITUTE OF STEEL CONSTRUCTION AISC 360-05 AND AISC 303-05, "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" AND "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES," EXCEPT AS OTHERWISE SHOWN OR SPECIFIED. BURNING OF HOLES NOT ALLOWED.
2. QUALIFIED AND CERTIFIED WELDERS TO BE USED FOR ALL WELDING. WELDING TO BE PERFORMED IN THE SHOP OF A CERTIFIED FABRICATOR. ALL WELDING TO CONFORM TO THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE D1.1.
3. MATERIALS:
   STRUCTURAL STEEL WIDE FLANGE AND S SHAPES: ASTM A992
   STRUCTURAL STEEL SHAPES, BAR AND PLATES
   OTHER THAN WIDEFLANGE AND S SHAPES: ASTM A36
   STRUCTURAL STEEL TUBES: ASTM A500, GRADE B
   STRUCTURAL STEEL PIPE: ASTM A53, GRADE B
   WELDING ELECTRODES: ASTM A5.1 OR A5.5, E70-XX ELECTRODE
   NUTS AND BOLTS: ASTM 325N
   THREADED RODS ASTM A307 OR A36
   HEADED ANCHOR BOLTS ASTM F1554, GRADE 55
   RUST-INHIBITING PRIMER: TT-P-31
4. CONTRACTOR SHALL INSTALL AND MAINTAIN ADEQUATE BRACING AND SHORING UNTIL PERMANENT CONNECTIONS TO THE STRUCTURE ARE EFFECTIVE.
5. GROUT BENEATH BASE PLATES SHALL BE MASTERFLOW 830 OR 870 NON-SHRINK, NON METALLIC GROUT OR ACCEPTED EQUIVALENT.
6. CJP DENOTES COMPLETE JOINT PENETRATION WELD.
7. GALVANIZE ALL STRUCTURAL STEEL.

REINFORCING STEEL

1. FABRICATE AND PLACE REINFORCING BARS IN ACCORDANCE WITH CRSI "MANUAL OF STANDARD PRACTICE" AND CRSI "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS".
2. REINFORCING STEEL TO COMPLY WITH ASTM A615, AS FOLLOWS: IN CONCRETE AND MASONRY, NO. 4 BARS AND LARGER GRADE 60, NO. 3 BARS AND SMALLER, GRADE 40.
3. WELDED WIRE MESH SHALL CONFORM TO ASTM A185 OR A497.
4. LAP HORIZONTAL BARS IN MASONRY WHERE SPLICED, 40 DIAMETERS BUT NOT LESS THAN 2'-0", TYP. U.N.O.
5. LAP REINFORCING STEEL IN CONCRETE AS SPECIFIED IN DETAIL 1/S-001.
6. WHERE LAP SPLICES ARE REQUIRED IN SLAB AND BEAM REINF. TOP BARS SHALL BE SPLICED AT MIDSPAN PER 1/S-001, BOTTOM BARS SHALL BE SPLICED 12" OVER SUPPORTS.
7. PROVIDE REINFORCING STEEL WITH THE FOLLOWING PROTECTIVE COVERING OF CONCRETE:
   FOOTINGS AND MAT FOUNDATIONS
   TOP = 3"
   BOTTOM = 3"
   SUSPENDED SLABS
   TOP = 1 1/2"
   BOTTOM = 2"
   WALLS
   AGAINST EARTH (FORMED) OR IN CONTACT WITH WATER = 2"
   OTHER = 1 1/2"
8. DO NOT USE BRICK OR POROUS MATERIAL TO SUPPORT FOOTING STEEL OFF THE GROUND.
9. SUBMIT SHOP DRAWINGS AS SPECIFIED.
10. REINFORCE AROUND ALL OPENINGS PER 3/S-001 U.N.O ON PLAN.
11. THE CONTRACTOR SHALL PROVIDE AND INSTALL 10,000 POUNDS OF ADDITIONAL REINF. STEEL AS DIRECTED BY THE ENGINEER. SIZES REQUIRED BY THE ENGINEER WILL NOT BE SMALLER THAN #4 NOR LARGER THAN #6.

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF ACI 301 "SPECIFICATIONS FOR STRUCTURAL BUILDINGS," EXCEPT AS MODIFIED BY THE DRAWINGS, AND AS SPECIFIED IN DIVISION 3 SPECIFICATIONS.
2. SEE ARCHITECTURAL DRAWINGS FOR THE LOCATION OF ARCHITECTURAL FINISHES.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS 4,500 PSI.
4. CEMENT SHALL CONFORM TO ASTM C 150, TYPE I/II; CONTRACTOR SHALL SUBSTITUTE 20% OF CLASS F FLYASH FOR CEMENT.
5. AGGREGATES ASTM C 33.
6. CONCRETE SHALL CONTAIN 6" AIR ENTRAINMENT, ±1%.
7. PROVIDE 3/4" CHAMFER ON ALL EXPOSED EDGES.
8. WATER CEMENT RATIO SHALL BE 0.45 MAX.
9. ROUGHEN SURFACE, CLEAN FREE OF DEBRIS, AND APPLY BONDING AGENT PRIOR TO CONCRETE PLACEMENT AGAINST EXISTING CONCRETE SURFACES.
10. EPOXY ADHESIVE SHALL BE HILTI HIT-HY 200.

COLD FORMED STEEL FRAMING (CFSF)

1. THE CONTRACTOR SHALL SUBMIT STRUCTURAL CALCULATIONS AND SHOP DRAWINGS FOR ALL WALL AND JOIST FRAMING AND CONNECTIONS TO THE STRUCTURE TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION. DESIGN SHALL BE IN ACCORDANCE WITH DESIGN CRITERIA (CODES AND LOADING) AS NOTED UNDER DESIGN CRITERIA THIS SHEET. WALL DEFLECTION SHALL BE LIMITED TO L/360.
2. ALL METAL STUDS AND JOISTS SHALL BE 16 GAGE C CHANNELS WITH A MINIMUM FLANGE WIDTH OF 1 5/8". RETURN OF 1/2" DEPTH, U.N.O. STUDS COMPRISING HEADERS SHALL BE 12 GAGE. RE: DETAIL A THIS SHEET.
3. STUDS AND JOISTS FOR 16ga. AND THICKER SHALL CONFORM TO ASTM A653 GRADE 50 AND HAVE A MINIMUM YIELD STRENGTH OF 50,000 PSI.
4. BRIDGING AND OTHER ACCESSORIES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
5. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

FASTENERS AND SCREWS (CFSF)

1. ALL SCREWS SHALL BE SELF TAPPING, SELF DRILLING UNLESS NOTED OTHERWISE.
2. WAFER HEAD SCREWS SHALL BE USED WHERE SHEATHING OVERLAYS SCREW.

REPELLA CONSULTING ENGINEERS, INC
Phone 303.471.1900
Highlands Ranch, CO

PLUMMER
1221 AURARIA PKWY | DENVER, COLORADO 80204
303.300.3464 | www.plummer.com

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

STRUCTURAL

STRUCTURAL GENERAL NOTES AND TYPICAL DETAILS

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GREGORY REPELLA
CO P.E. NO. 27990
DATE: 04/11/2025

COLORADO REGISTERED GREGORY REPELLA 27990 8/2/25 PROFESSIONAL ENGINEER

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	GR
DRAWN	JB
CHECKED	GR
REVIEWED	GR

Seq. 26 of 70

Dwg. No. S-001

4131-002-09

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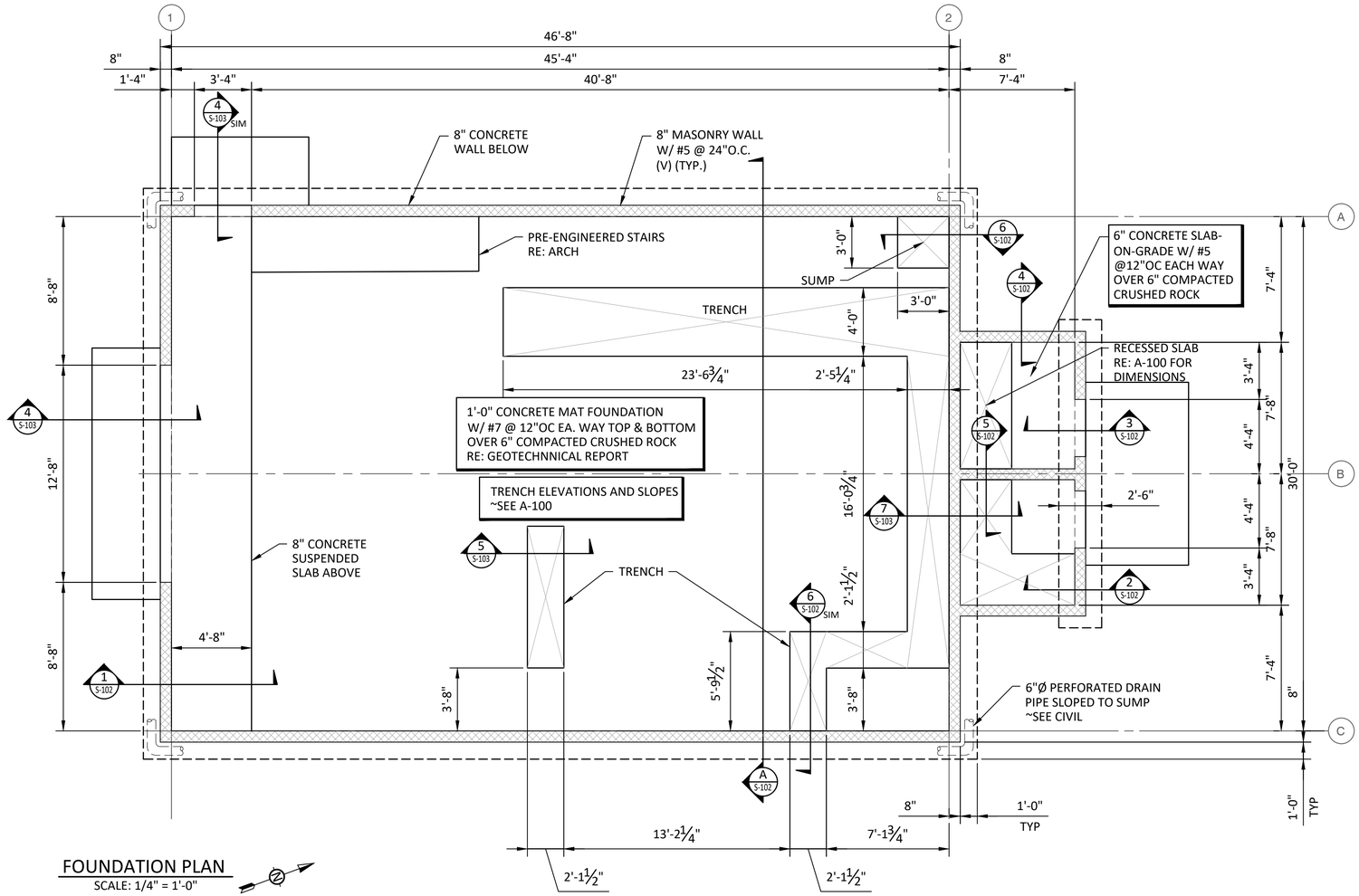

FOUNDATION PLAN
SCALE: 1/4" = 1'-0"

RE: 1/S-001 FOR LAP LENGTHS AND REINF. STEEL NOTES ON S-001 FOR BAR CLEARANCES

SOIL PREPARATION BENEATH THE SLAB-ON-GRADE AND FOOTINGS SHALL BE PERFORMED IN ACCORDANCE WITH THE GEOTECHINICAL REPORT.
RE: FOUNDATION NOTES ON S-001 FOR ADDITIONAL REQUIREMENTS.

NOTES:

1) XXXX.XX DENOTES TOP OF CONCRETE ELEVATION.
2) COORDINATE THIS DRAWING WITH ARCHITECTURAL AND PROCESS DRAWINGS.
3) RE: 1/S-001 FOR TYPICAL REINFORCEMENT AT WALL CORNERS AND INTERSECTIONS.
4) RE: 3/S-001 FOR TYPICAL REINF. AROUND OPENINGS AND PIPE PENETRATIONS IN WALLS AND SLABS.
5) COORDINATE SIZE AND LOCATION OF OPENINGS WITH ARCHITECTURAL AND PROCESS DRAWINGS.
6) COORDINATE FLOOR DRAINS W/ PLUMBING DRAWINGS.
7) CONCRETE ENCASE PIPING BELOW SLAB-ON-GRADE. RE: CIVIL & PROCESS DRAWINGS.
8) RE: 4/S-001 FOR PIPING AT OR NEAR FOOTINGS.

REPELLA CONSULTING ENGINEERS, INC
Phone 303.471.1900
Highlands Ranch, CO

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TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

STRUCTURAL
FOUNDATION PLAN

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GREGORY REPELLA
CO P.E. NO. 27990
DATE: 04/11/2025

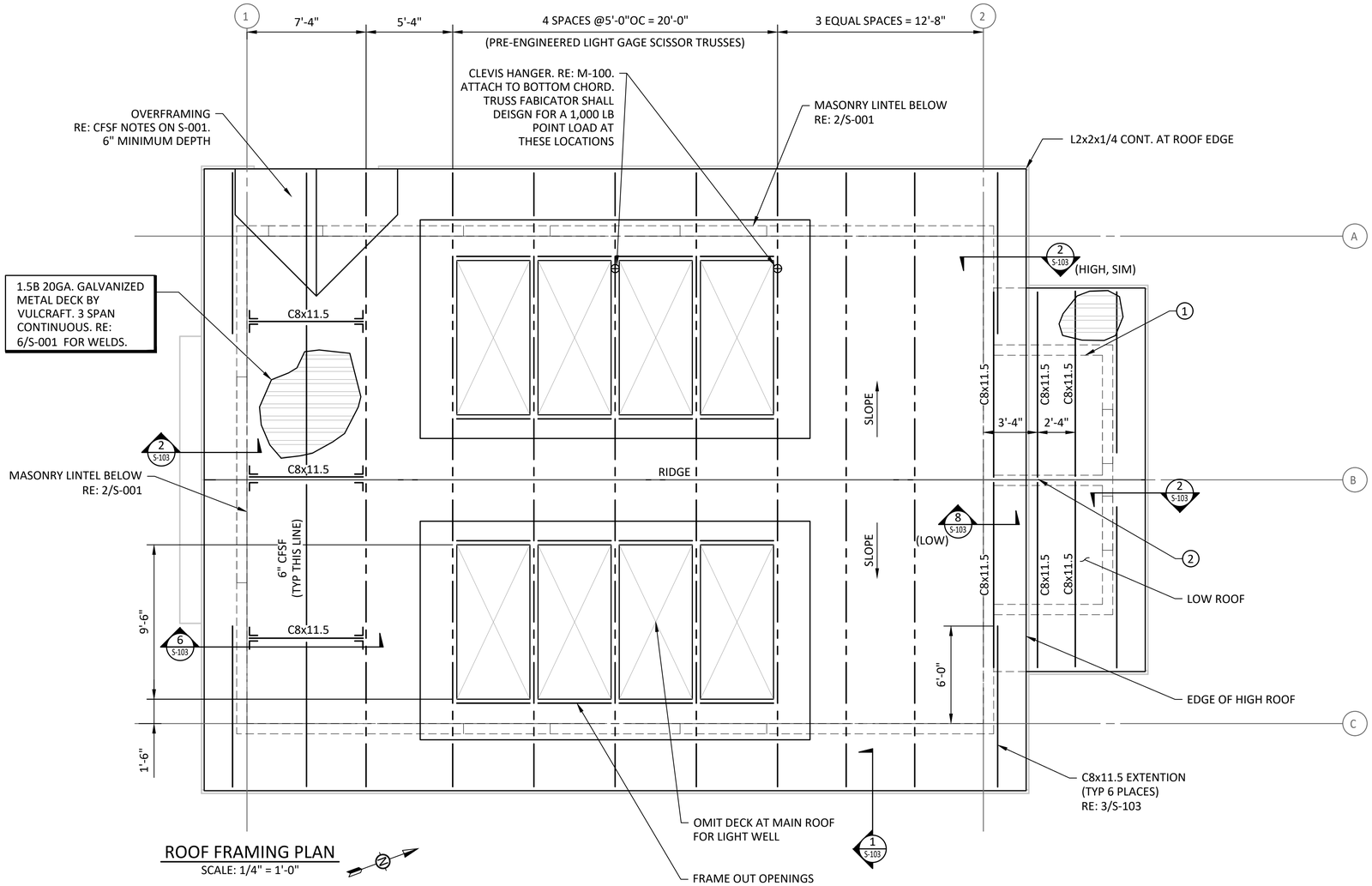
COLORADO REGISTERED GREGORY REPELLA 27990 8/2/25 PROFESSIONAL ENGINEER

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	GR
DRAWN	JB
CHECKED	GR
REVIEWED	GR

Seq. 27 of 70
Dwg. No. S-100
4131-002-09

PRINTED: 8/5/2025 6:44 PM S-100 SAVED: 8/4/2025 7:58 PM SAVED BY: JeffBeiermann USER: Jeff Beiermann



ROOF FRAMING PLAN
SCALE: 1/4" = 1'-0"

NOTES:

1) TOS = XXXX.XX DENOTES TOP OF STEEL ELEVATION.
   JB = XXXX.XX DENOTES JOIST BEARING ELEVATION.
   BB = XXXX.XX DENOTES TOP OF BOND BEAM ELEVATION.
2) COORDINATE ROOF FRAMING PLANS WITH ARCHITECTURAL DRAWINGS.
3) RE: 1/S-001 FOR MASONRY BOND BEAM REINF. AT CORNERS AND INTERSECTIONS.
4) RE: 2/S-001 FOR TYPICAL MASONRY LINTEL DETAIL.
5) COORDINATE ALL OPENINGS AND PENETRATIONS W/ ARCH. & MECH. DRAWINGS.
6) GALVANIZE STRUCTURAL STEEL, TRUSSES AND ACCESSORIES.

KEYNOTES:

(1) PL⅝x5x9 W/ (2) ⅝"Ø EXPANSION ANCHORS (EMBED 5").

(2) PL⅝x3½x9 W/ (2) ⅝"Ø EXPANSION ANCHORS (EMBED 5") @ EACH C8.

NOTES:

LIGHT GAGE STEEL TRUSSES:

1. PROVIDE AND INSTALL ALL MANUFACTURER'S STANDARD STEEL TRUSS COMPONENTS AND ACCESSORIES AS REQUIRED BY THE MANUFACTURER.
2. FABRICATION SHALL BE PERFORMED BY A COLD-FORMED STEEL TRUSS FABRICATOR WITH EXPERIENCE DESIGNING AND FABRICATING TRUSS SYSTEMS EQUAL IN MATERIAL, DESIGN AND EXTENT TO THE SYSTEMS REQUIRED FOR THIS PROJECT.
3. FABRICATE TRUSS FRAMING SYSTEMS AND COMPONENTS OF STRUCTURAL QUALITY STEEL SHEET IN ACCORDANCE TO ASTM A653 WITH A MINIMUM YIELD STRENGTH OF 50 KSI.
4. BRACING, BRIDGING AND BLOCKING MEMBERS MAY BE FABRICATED OF COMMERCIAL QUALITY STEEL SHEET IN ACCORDANCE TO ASTM A653 WITH A MINIMUM YIELD STRENGTH OF 33 KSI.
5. MINIMUM MATERIAL THICKNESS FOR ALL MEMBERS AND COMPONENTS SHALL BE 16 GAGE UNCOATED THICKNESS.
6. ALL MEMBERS AND COMPONENTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A653, MINIMUM G60 COATING.
7. WELDING SHALL BE DONE IN ACCORDANCE WITH AWS D1.1, "STRUCTURAL WELDING CODE - STEEL", AND AWS D1.3, "STRUCTURAL WELDING CODE - SHEET STEEL".
8. WELDERS SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURE".
9. VERTICAL DEFLECTION OF TRUSSES SHALL BE LESS THAN OR EQUAL TO 1/240 OF THE SPAN FOR TOTAL LOAD.
10. FRAMING SYSTEMS SHALL BE DESIGNED TO PROVIDE FOR MOVEMENT OF FRAMING MEMBERS WITHOUT DAMAGE OR OVERSTRESSING, SHEATHING FAILURE, CONNECTION FAILURE, UNDUE STRAIN ON FASTENERS AND ANCHORS, OR DETRIMENTAL EFFECTS CAUSED BY A MAXIMUM AMBIENT TEMPERATURE CHANGE OF 153 DEGREES FAHRENHEIT.
11. MEMBERS AND COMPONENTS OF THE TRUSS FRAMING SYSTEMS SHALL BE CUT SQUARELY, OR AS REQUIRED FOR AN ANGULAR FIT AGAINST ABUTTING MEMBERS.
12. FRAMING MEMBERS SHALL BE HELD POSITIVELY IN PLACE AND PROPERLY FASTENED.
13. ERECTION OF TRUSSES, INCLUDING PROPER HANDLING, SAFETY PRECAUTIONS, TEMPORARY BRACING AND OTHER SAFEGUARDS AND PROCEDURES ARE THE RESPONSIBILITY OF THE CONTRACTOR AND THE CONTRACTOR'S INSTALLER.
14. ERECT TRUSSES WITH THE PLANE OF THE WEBS VERTICAL AND PARALLEL TO EACH OTHER AND ACCURATELY LOCATED AS INDICATED ON THESE DRAWINGS.
15. SUBMIT SHOP DRAWINGS AND CALCULATIONS STAMPED BY A LICENSE COLORADO PROFESSIONAL ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

ADDITIONAL TRUSS NOTES:

1. TRUSSES SHALL BE DESIGNED FOR THE FOLLOWING APPLIED LOADS IN ADDITION TO THE WEIGHT OF THE TRUSS SYSTEM.
   DEAD LOAD: 15 PSF
   SNOW LOAD: 80 PSF
   BOTTOM CHORD DEAD LOAD = 10 PSF
   WIND LOAD: RE:S-001
   DESIGN FOR WIND LOAD SHALL BE IN ACCORDANCE WITH ASCE 7-16, UFC 3-310-04 AND CODES AS NOTED ON S-001. APPLICATION OF WIND FORCES SHALL CONSIDER WIND PRESSURES FOR THE MAIN WIND FORCE RESISTING SYSTEMS AND FOR COMPONENTS AND CLADDING.
2. TRUSSES SHALL BE TEMPORARILY BRACED UNTIL ALL PERMANENT BRACING AND ROOF DECK IS INSTALLED.
3. TRUSSES SHALL BE DESIGNED TO WITHSTAND THE DEAD, LIVE AND WIND LOADS INDICATED. THE CONTRACTOR SHALL BE RESPONSIBLE TO HAVE THE TRUSSES DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF COLORADO. ALL DESIGN CALCULATIONS AND DRAWINGS SHALL BE SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF COLORADO. DATA SHALL BE SUBMITTED FOR REVIEW.
4. TRUSS BRACING, BRIDGING, ETC. SHALL BE PROVIDED AS REQUIRED BY THE TRUSS DESIGNER. IN ADDITION, TRUSS BOTTOM CHORDS SHALL BE BRACED WITH BOTTOM CHORD BRIDGING NOT EXCEEDING 8'-0" ON CENTER.
5. FOR TRUSS DIMENSIONS, ELEVATIONS, ETC., REFER TO RELEVANT STRUCTURAL AND ARCHITECTURAL DETAILS.
6. WEB CONFIGURATIONS SHALL BE DESIGNED BY MFGR. AND COORDINATED WITH ARCHITECTURAL AND MECHANICAL REQUIREMENTS PRIOR TO FABRICATION.
7. METAL CONNECTORS, WHERE USED, SHALL BE OF SIZE TO FIT MEMBERS AND OF SUFFICIENT STRENGTH TO DEVELOP THE FULL STRENGTH OF THE SUPPORTED MEMBER, COMPLETE WITH SPECIAL FASTENERS AS REQUIRED.
8. TRUSS DESIGNER SHALL DESIGN STRUCTURAL FASCIA MEMBERS AT CORNERS OF BUILDINGS AS NOTED ON DRAWINGS.
9. TRUSS FABRICATOR SHALL BE RESPONSIBLE FOR PROVIDING PANEL BLOCKING BETWEEN TRUSSES FOR TRANSFER OF DIAPHRAGM SHEAR TO MASONRY BELOW. BLOCKING SHALL BE DESIGNED FOR A LOAD OF 200 POUNDS PER LINEAR FOOT. TRUSS FABRICATOR SHALL PROVIDE CONNECTIONS BETWEEN PANEL BLOCKING AT EMBED PLATES AT TRUSSES.

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NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

STRUCTURAL
ROOF FRAMING PLAN

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
GREGORY REPELLA
CO P.E. NO. 27990
DATE: 04/11/2025

COLORADO REGISTERED 27990 8/2/25 PROFESSIONAL ENGINEER

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DESIGNED	GR
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Seq. 28 of 70
Dwg. No. S-101
4131-002-09

PRINTED: 8/5/2025 7:42 PM S-101 SAVED: 8/5/2025 7:39 PM SAVED BY: JeffBeiermann USER: Jeff Beiermann

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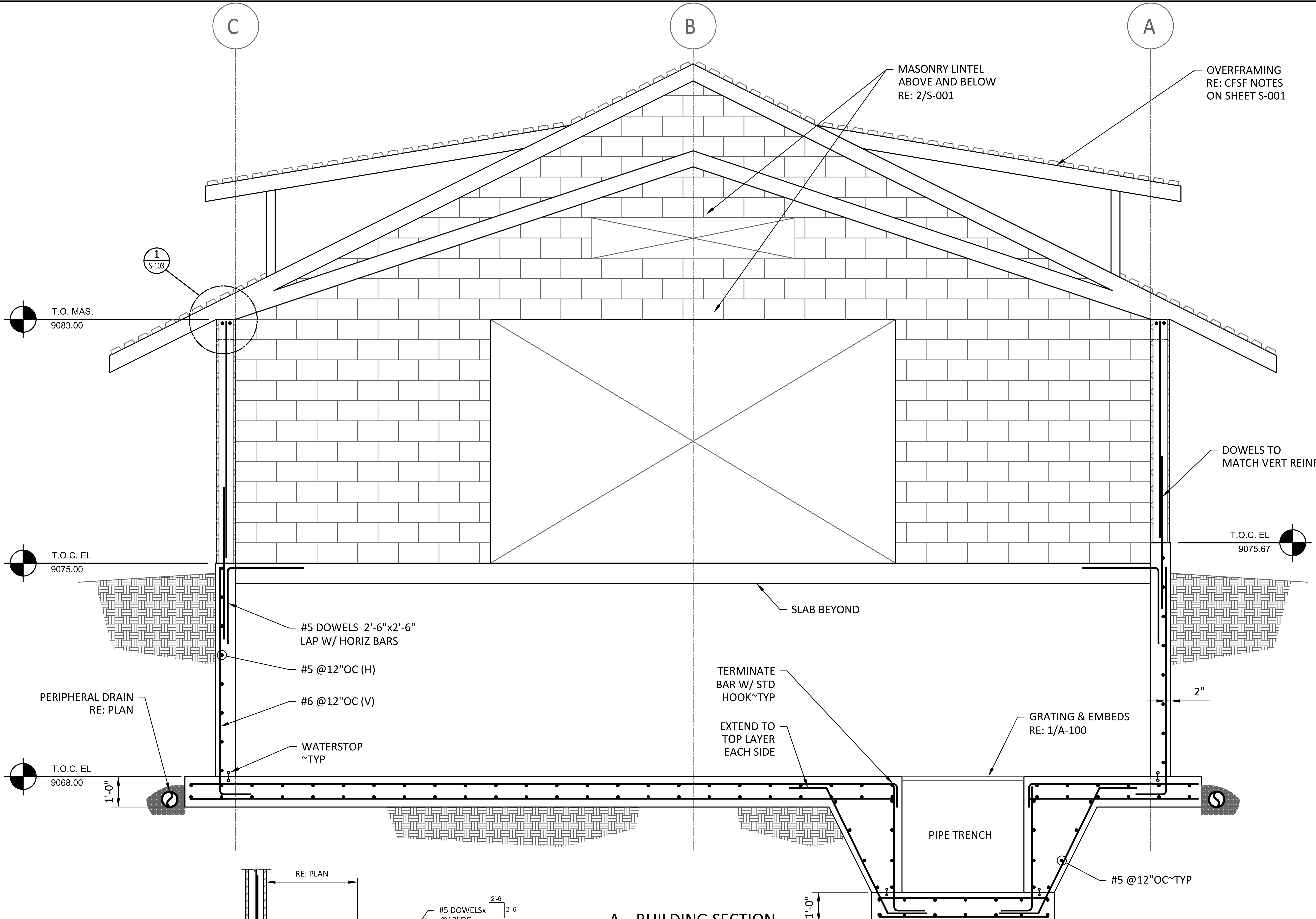
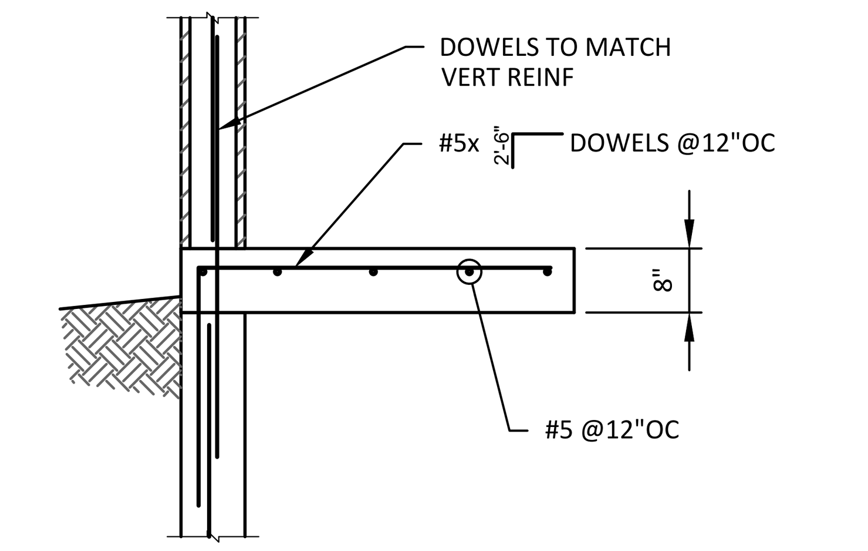
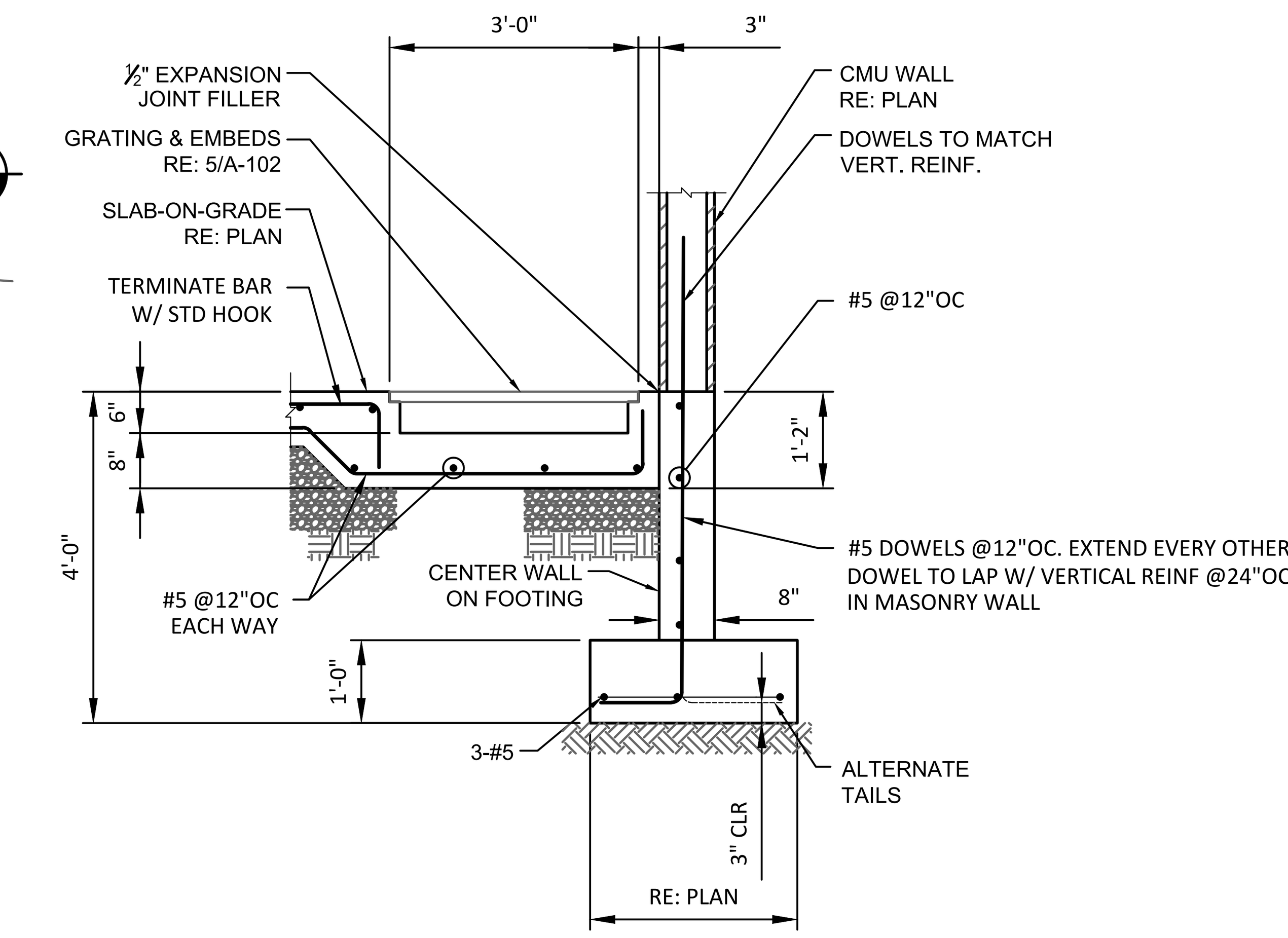


A BUILDING SECTION
SCALE: 1/2" = 1'-0"



SECTION 1
3/4"=1'-0" S-102



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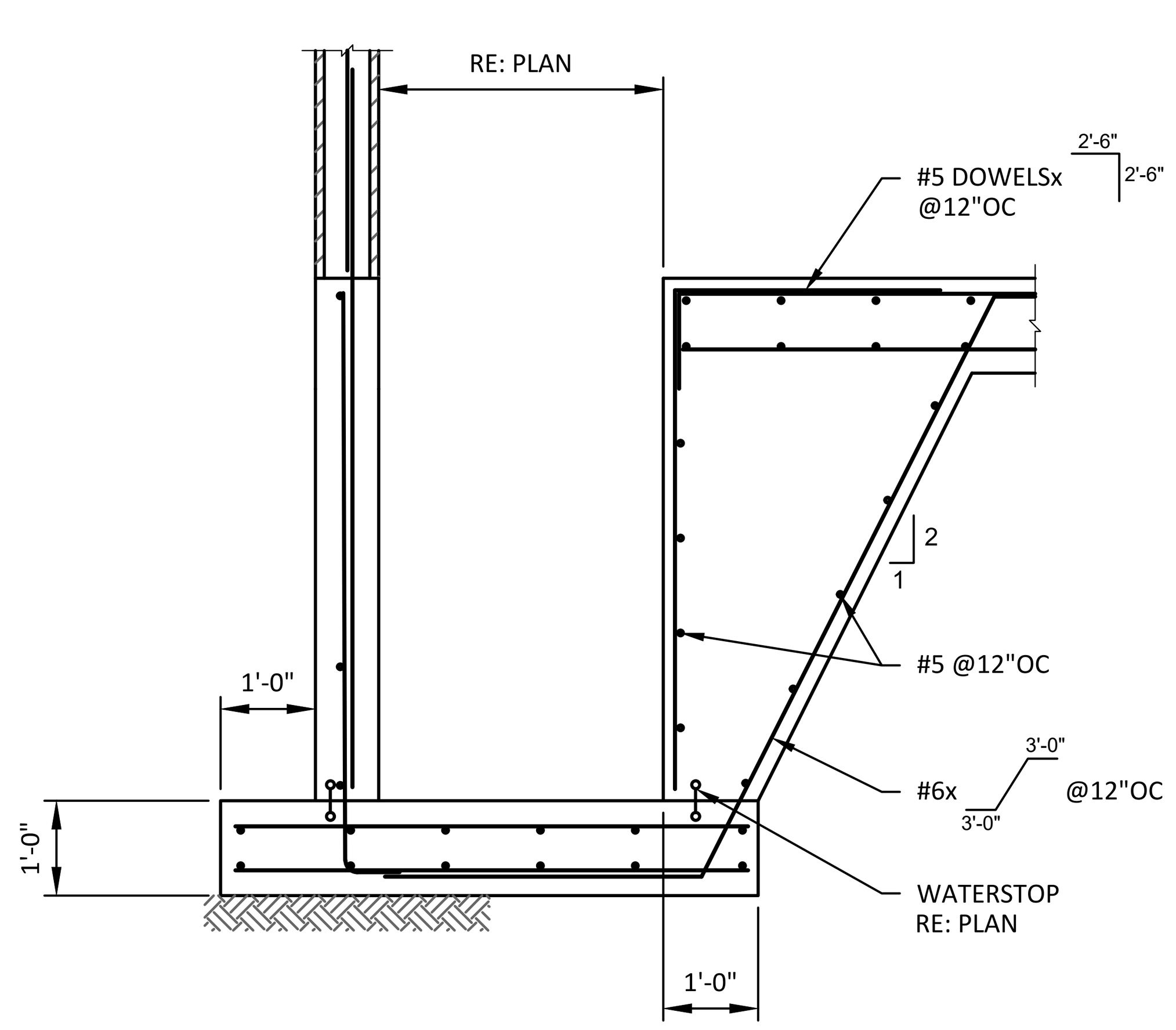
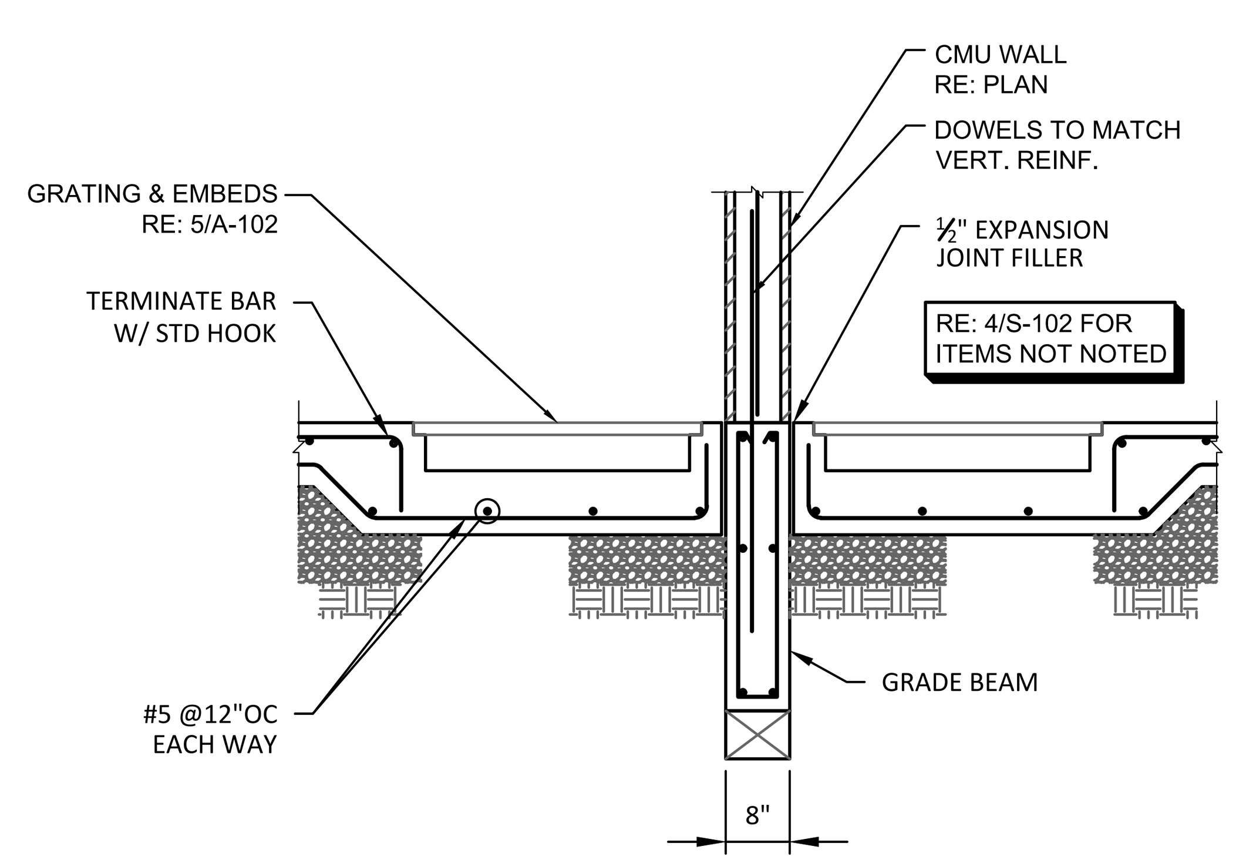
3/4"=1'-0" S-102



SECTION 6
3/4"=1'-0" S-102



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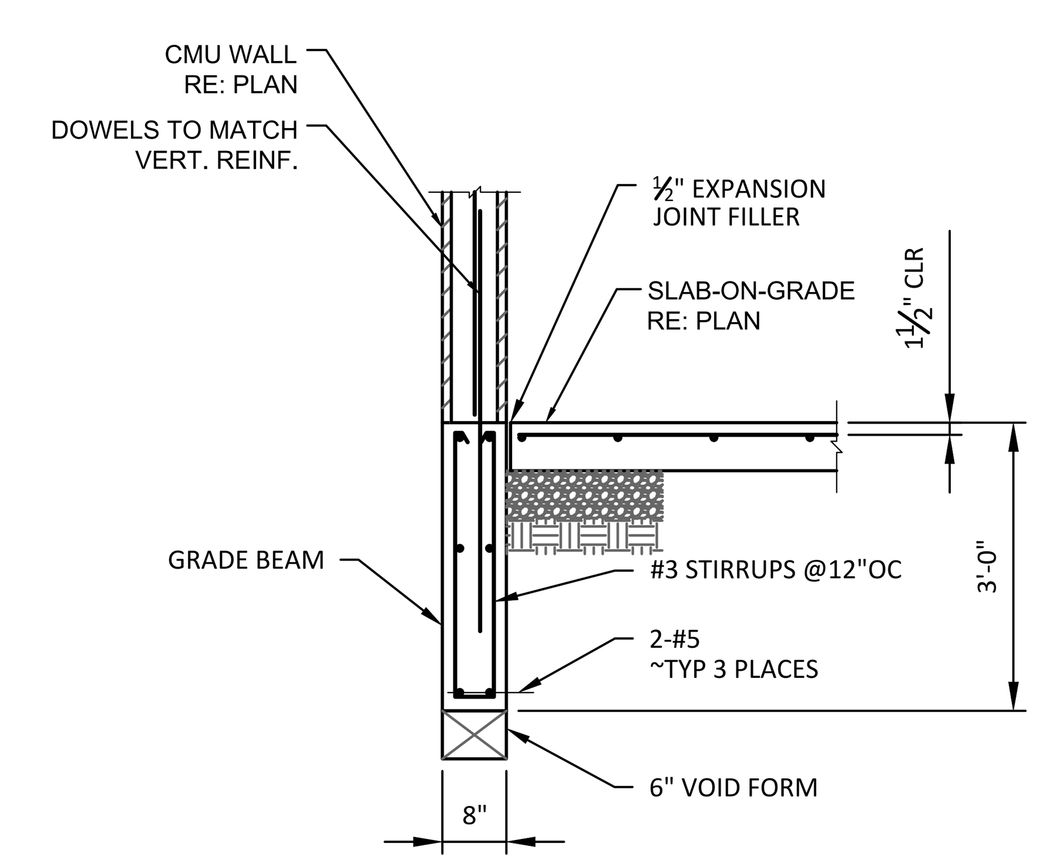
3/4"=1'-0" S-102



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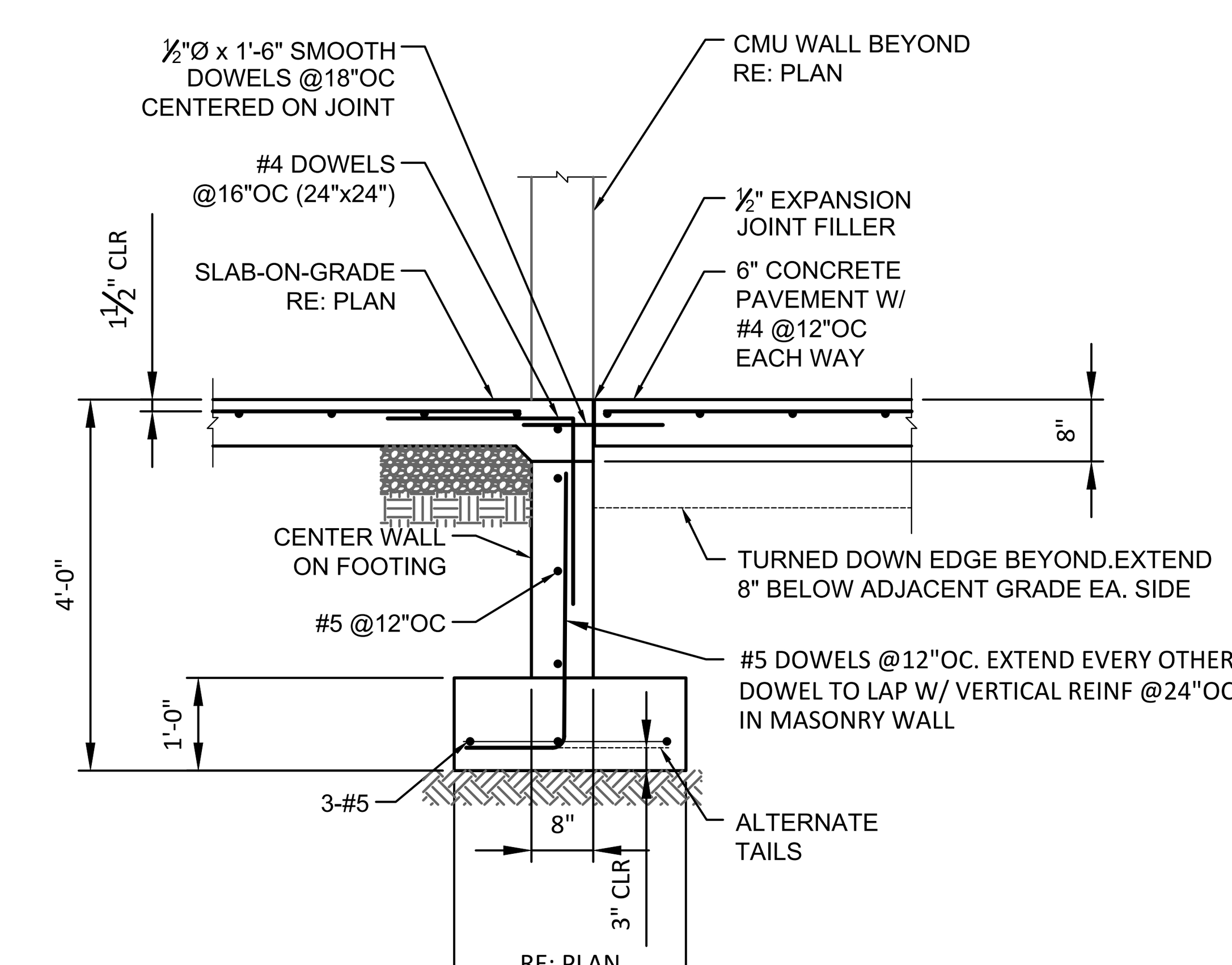
3/4"=1'-0" S-102



SECTION 3
3/4"=1'-0" S-102

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NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

STRUCTURAL
FOUNDATION SECTIONS

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
GREGORY REPELLA
CO P.E. NO. 27990
DATE: 04/11/2025

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Dwg. No. S-102
4131-002-09

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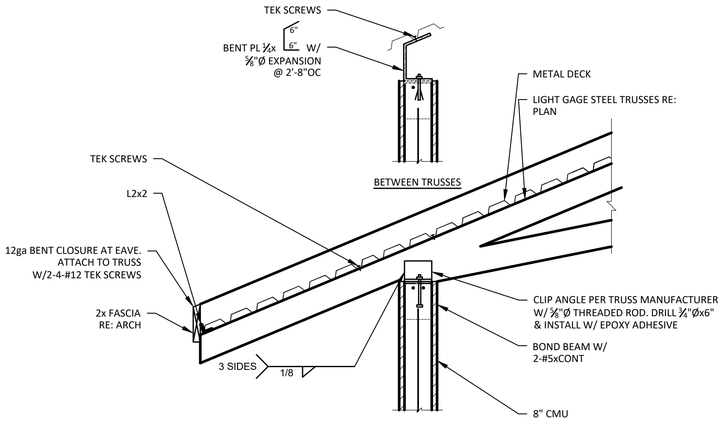

SECTION 1 S-103
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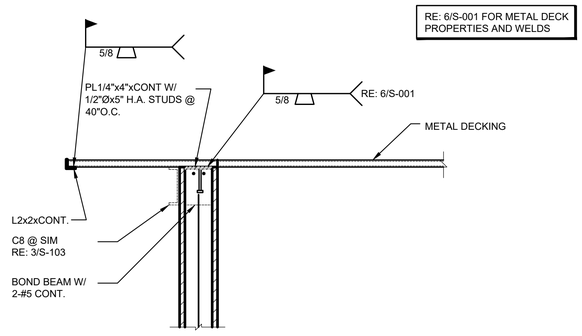

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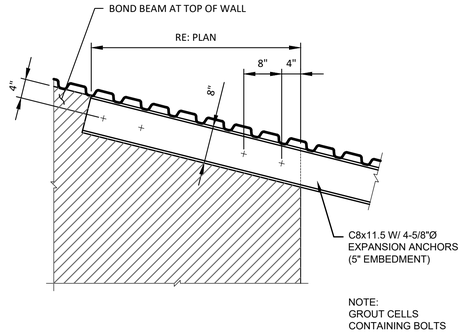

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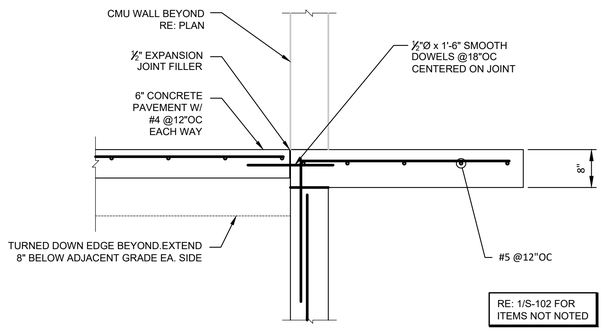

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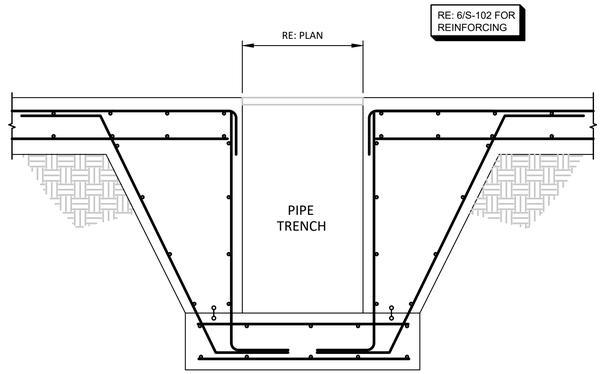

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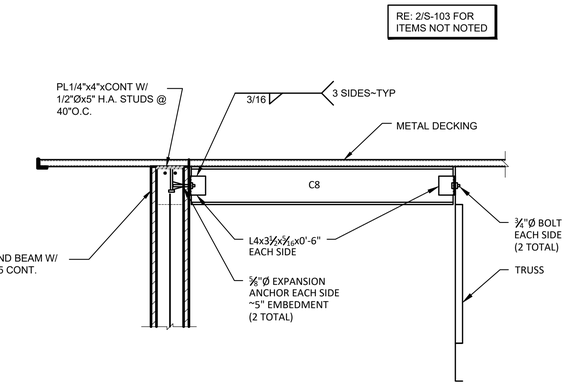

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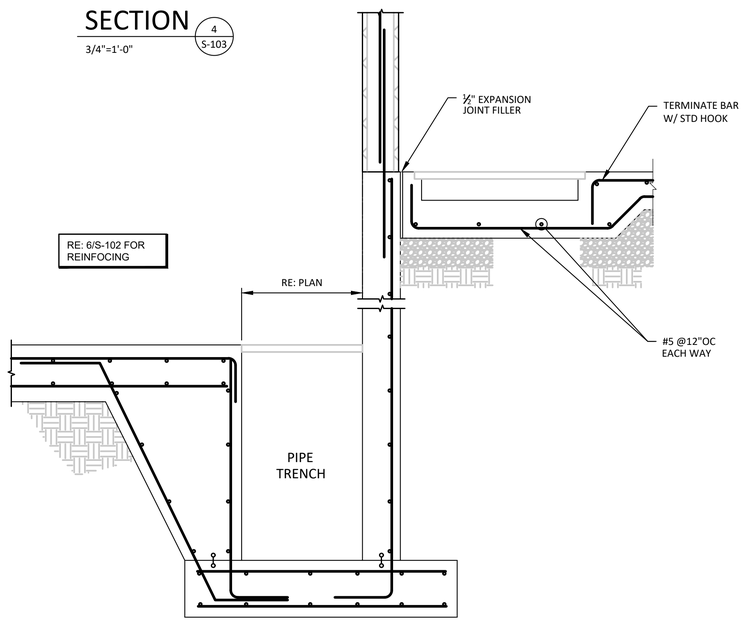
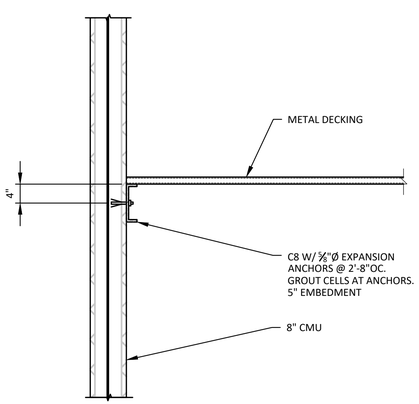


SECTION 7 S-103
3/4"=1'-0"



SECTION 8 S-103
3/4"=1'-0"

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TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

STRUCTURAL
ROOF FRAMING SECTIONS

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GREGORY REPELLA
CO P.E. NO. 27990
DATE: 04/11/2025

GREGORY REPELLA 27990 COLORADO REGISTERED PROFESSIONAL ENGINEER 8/2/25

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	GR
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Dwg. No. S-103
4131-002-09

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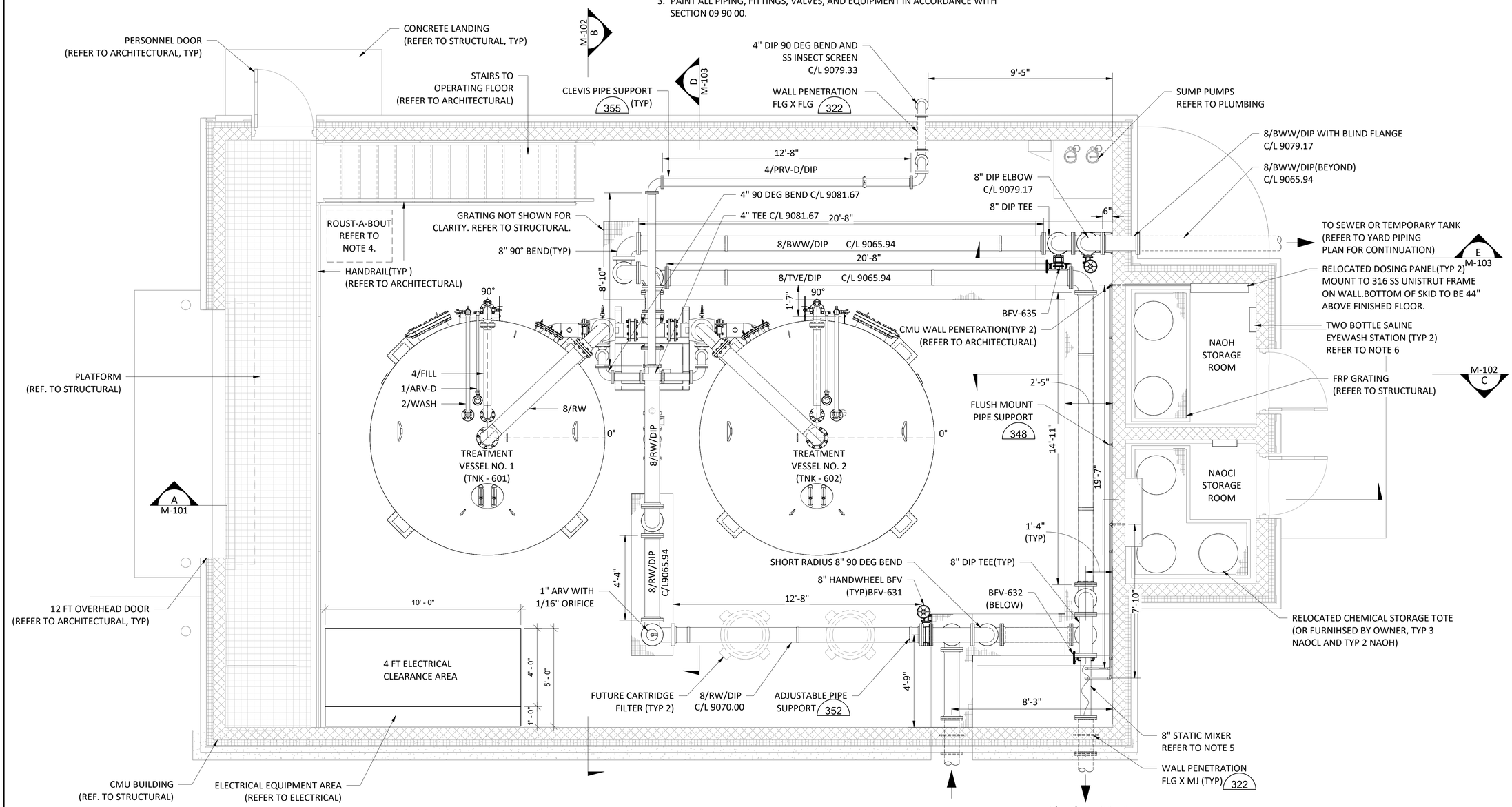
Vessel Appurtenance Schedule

	Quantity	Size	Elevation	Orientation Angle
Treatment Vessel 1 (TNK-601)				
Manway	1	Refer to spec section 43 31 13.13	1073	120
ARV	1	Refer to spec section 43 31 13.14	Top of vessel	95
Effluent Piping Connection (TVE)	1	8 inches	Bottom of Vessel	60
Raw Water Piping Connection (RW)	1	8 inches	Top of vessel	45
Media Fill Connection (FILL)	1	4 inches	Top of vessel	90
Washdown (WASH)	1	2 inches	Top of vessel	105
Treatment Vessel 2 (TNK-602)				
Manway	1	Refer to spec section 43 31 13.13	9073	60
ARV	1	Refer to spec section 43 31 13.14	Top of vessel	90
Effluent Piping Connection (TVE)	1	8 inches	Bottom of Vessel	120
Raw Water Piping Connection (RW)	1	8 inches	Top of vessel	135
Media Fill Connection (FILL)	1	4 inches	Top of vessel	105
Washdown (WASH)	1	2 inches	Top of Vessel	55

1. Locations are approximate and provided for reference

NOTES:

1. DRAWINGS ARE REPRESENTATIVE OF A PF 12-520 LOW PRO TREATMENT SYSTEM PROVIDED BY AQUEOUS VETS. CONTRACTOR SHALL COORDINATE CONNECTIONS AS REQUIRED FOR OTHER VESSELS SPECIFIED. IF A CHANGE IN CONFIRUGATION IS REQUIRED TO ACCOMODATE OTHER VESSELS, A PLAN SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO BEGINNING THE WORK. ADDITIONAL FITTINGS, PIPING, AND CONECTIONS TO ACCOMODATE OTHER VESSELS SHALL BE IDENTIFIED BY THE CONTRACTOR AND FURNISHED AT NO COST TO THE OWNER.
2. REFER TO SECTION 43 31 13.13 ACTIVATED CARBON LIQUID PURIFICATION FILTERS AND SHEET PID-004 FOR SUPPLIER SCOPE OF SUPPLY. ALL ITEMS IDENTIFIED WITH AN ASTERISK* ON THE PIDS AND LISTED IN SECTION 43 31 13.13 SHALL BE FURNISHED BY A SINGLE SUPPLIER. ALL VESSEL INSTRUMENTATION AND GAUGES SHALL FACE THE WEST SIDE OF THE BUILDING.
3. PAINT ALL PIPING, FITTINGS, VALVES, AND EQUIPMENT IN ACCORDANCE WITH SECTION 09 90 00.
4. CONTRACTOR TO FURNISH SUMNER 780300 R-100 ROUST-A-BOUT WITH 15 FT TOP HEIGHT.
5. CONTRACTOR TO FURNISH AND INSTALL WESTFALL 6000 STATIC MIXER, OR APPROVED EQUAL. REFER TO DETAIL 387/M-901. PROVIDE SUBMITTAL TO ENGINEER FOR REVIEW IN ACCORDANCE WITH DIVISION 01. MIXER SHALL BE:
   - 2-PORT
   - SCHEDULE 40 316 SS BODY
   - 316 SS MIXING FINS
6. SALINE BOTTLE EYEWASH SHALL BE HONEYWELL MODEL H-1174 OR EQUAL.



TREATMENT BUILDING PLAN

SCALE: 3/8" = 1'-0"

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NO.	DATE	REVISION	BY

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FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

MECHANICAL

TREATMENT BUILDING PLAN

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 05/10/2024

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	M. FREYTAG
DRAWN	D. WUBSHET
CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 31 of 70

Dwg. No. M-100

4131-002-09

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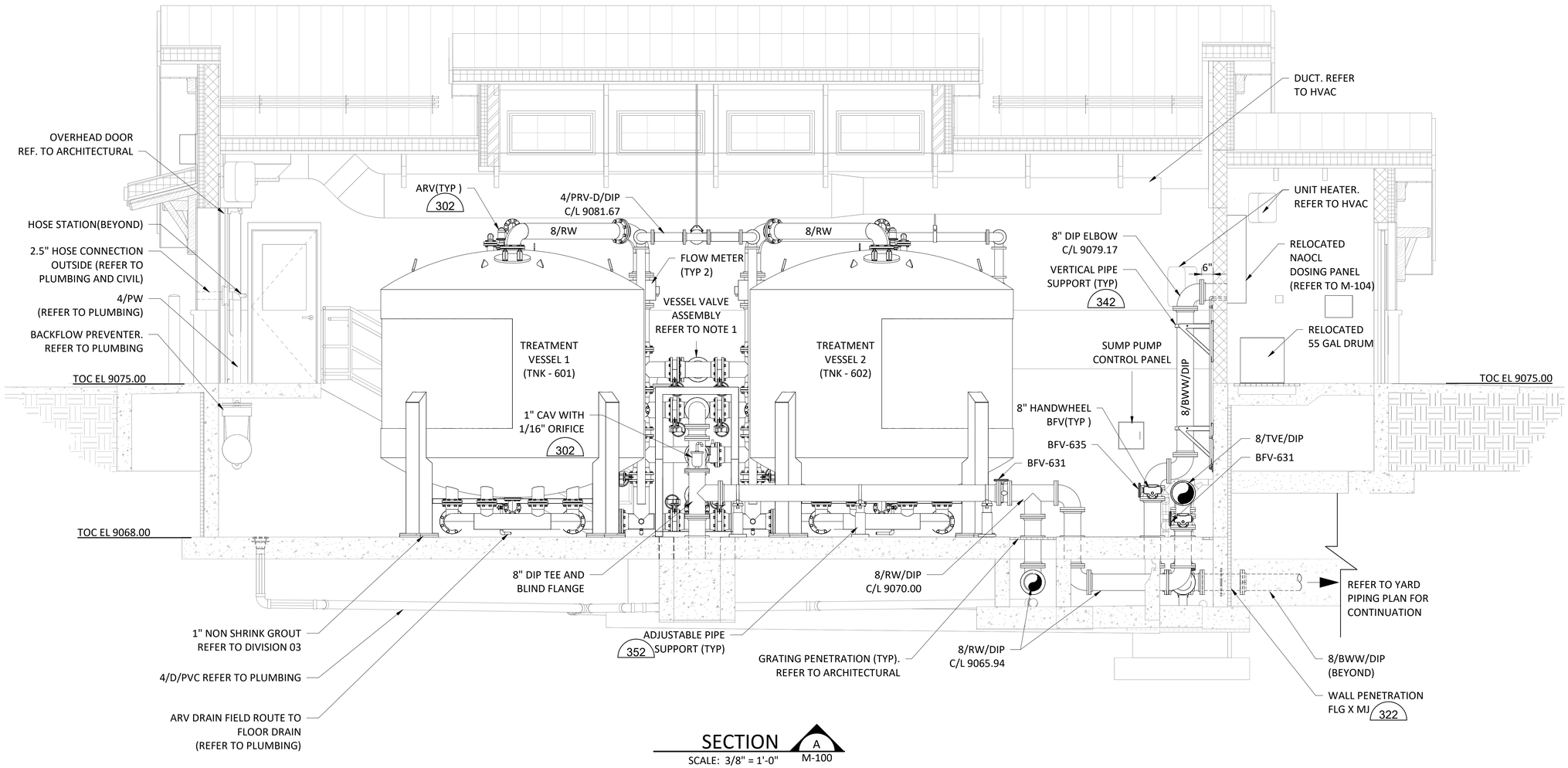
NOTES:

1. REFER TO SHEETS M-100 AND G-002 FOR ADDITIONAL NOTES.
2. NOT ALL VALVE, VALVE TAGS, AND APPURTENANCES ASSOCIATED WITH THE VESSELS ARE SHOWN OR CALLED OUT FOR CLARITY. REFER TO SECTION 43 31 13.13 ACTIVATED CARBON LIQUID PURIFICATION FILTERS AND SHEET PID-004 FOR SUPPLIER SCOPE OF SUPPLY.



SECTION A
SCALE: 3/8" = 1'-0"
M-100

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

MECHANICAL

TREATMENT BUILDING SECTION I

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TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 05/10/2024

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DESIGNED	M. FREYTAG
DRAWN	D. WUBSHET
CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 32 of 70
Dwg. No. M-101
4131-002-09

Autodesk Docs://4131-002-09_WELL_7/NW_TREATMENT_VESSEL_BUILDING_M.rvt
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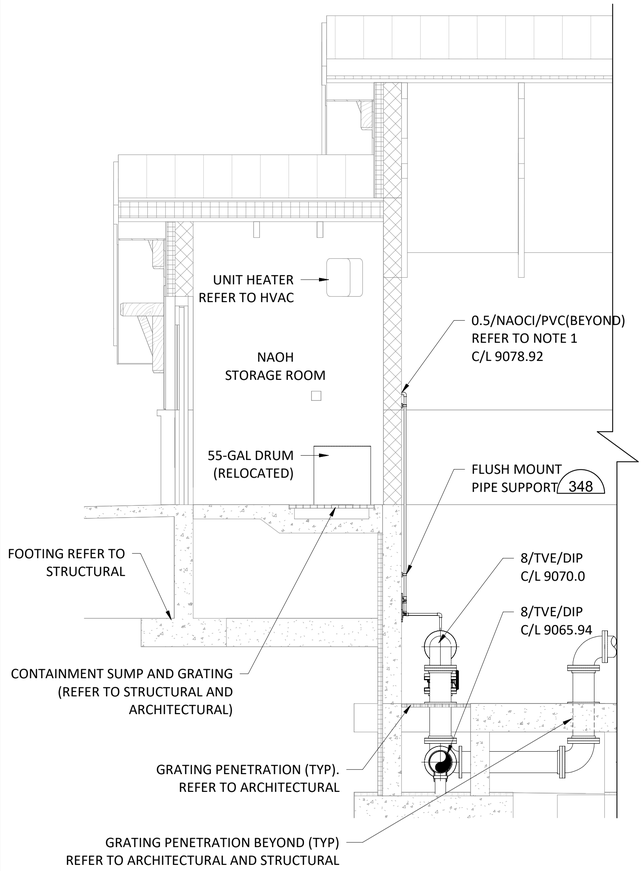
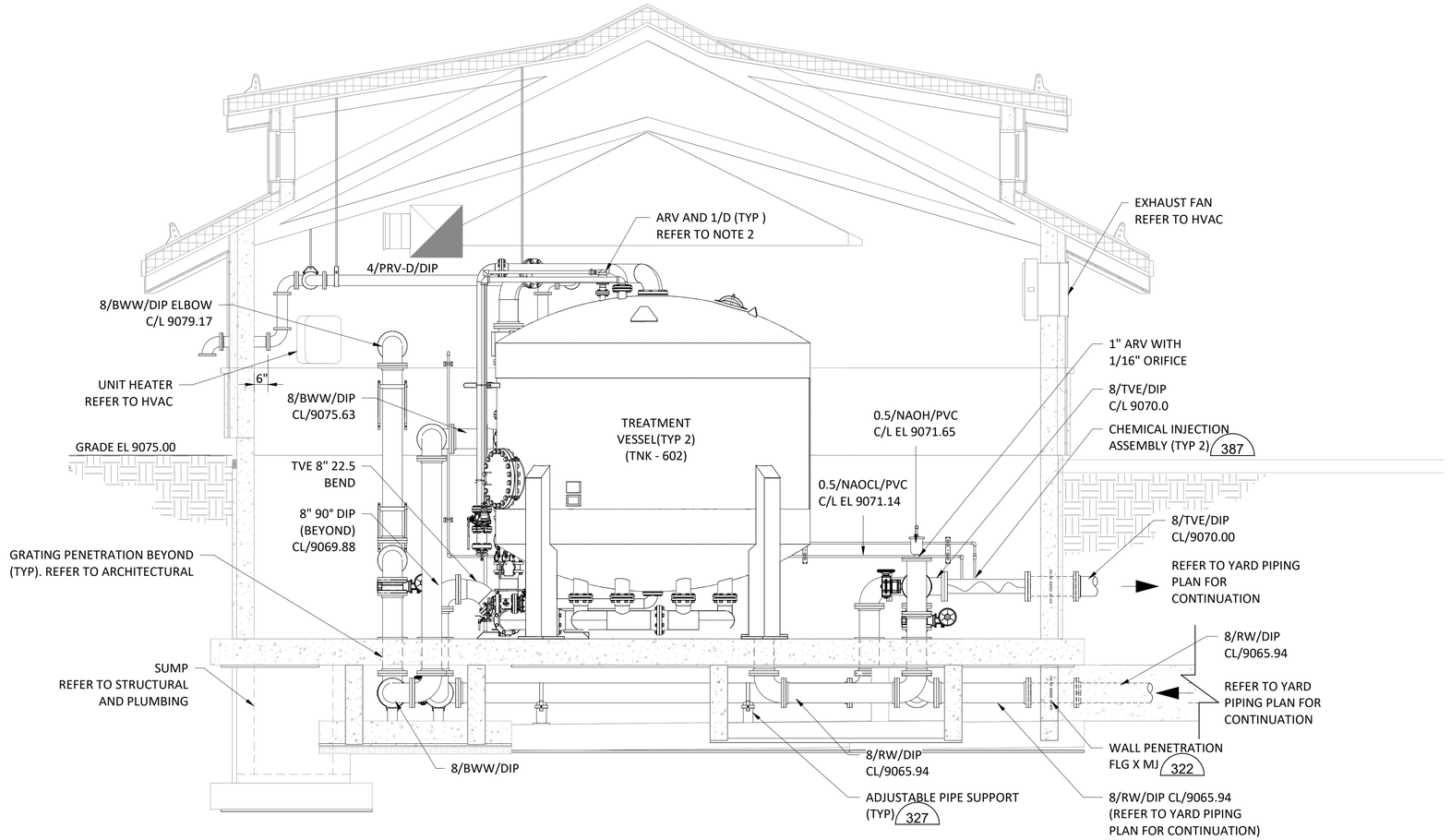
Notes

1. CONTRACTOR TO COORDINATE 0.5 NAOCL/PVC AND 0.5 NAOH/PVC ELEVATIONS WITH CONNECTIONS TO CHEMICAL DOSING PANELS.
2. ARV AND DISCHARGE PIPING FROM ARV DOWN TO 4'-0" AFF IS PROVIDED BY VESSEL SUPPLIER (TYP). CONTRACTOR TO FURNISH AND INSTALL ADDITIONAL ARV DRAIN PIPING TO FIELD ROUTE ARV DRAINS TO FLOOR DRAIN (TYP BOTH VESSELS).
3. FLOOR DRAIN SYSTEM NOT SHOWN FOR CLARITY, REFER TO PLUMBING.



SECTION C

SCALE: 3/8" = 1'-0"



SECTION B

SCALE: 3/8" = 1'-0"

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
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PO BOX 4100
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TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

MECHANICAL

TREATMENT BUILDING SECTION II

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DESIGNED	M. FREYTAG
DRAWN	D. WUBSHET
CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 33 of 70

Dwg. No. M-102

4131-002-09

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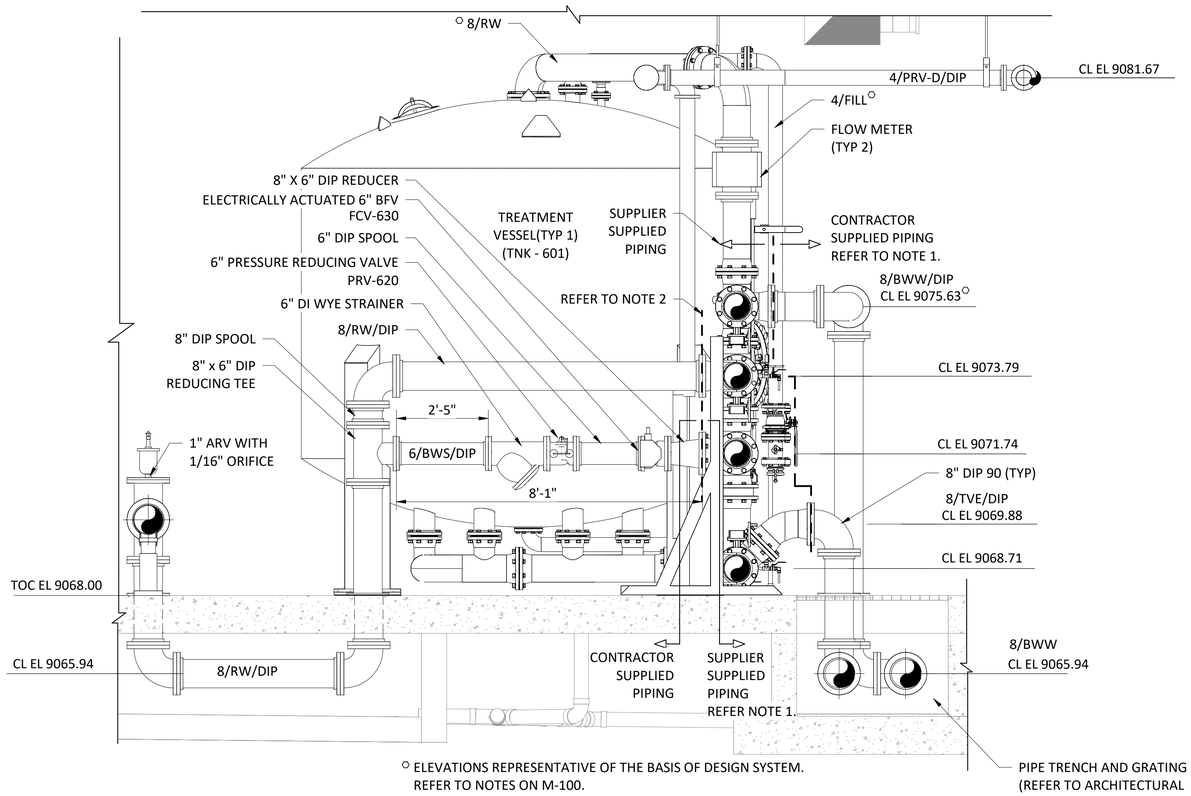


ELEVATIONS REPRESENTATIVE OF THE BASIS OF DESIGN SYSTEM.
REFER TO NOTES ON M-100.

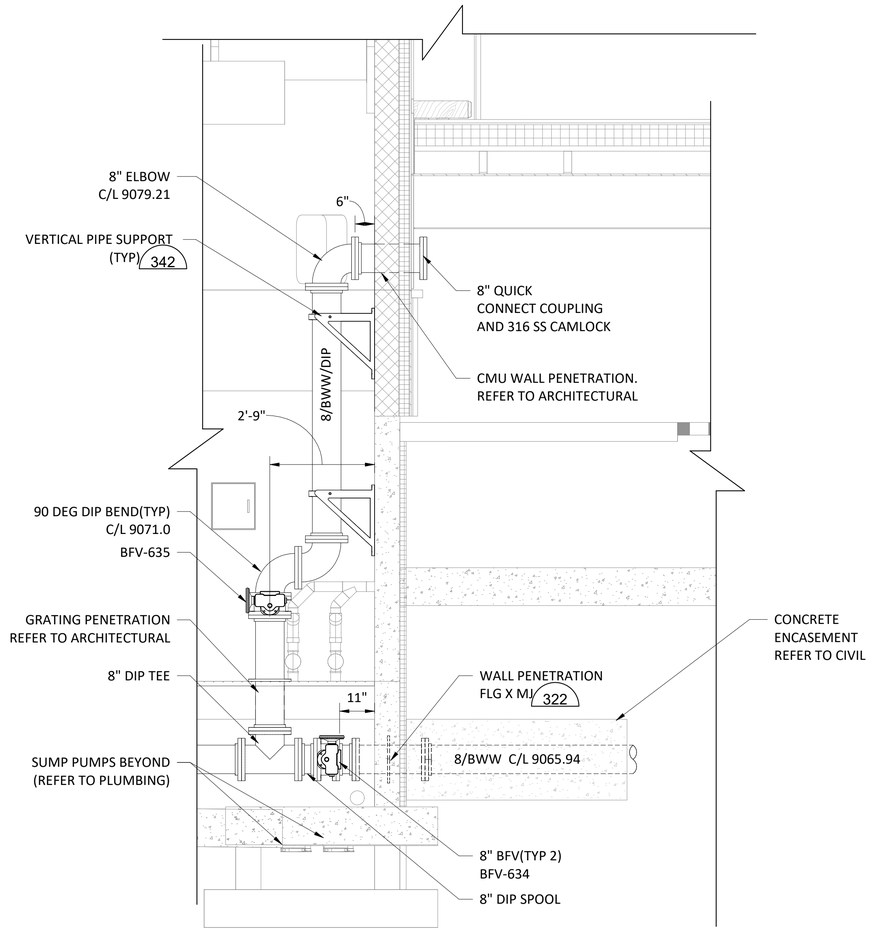
SECTION D

SCALE: 1/2" = 1'-0"

D M-100

NOTES

1. CONTRACTOR SHALL PROVIDE DIELECTRIC FLANGE KITS AT DISSIMILAR METALS. REFER TO SECTION 40 05 01. REFER TO SECTION 43 31 13.13 FOR PIPING MATERIALS PROVIDED BY SUPPLIER.
2. PRV BEYOND TO BE PROVIDED BY SUPPLIER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ADJACENT DISCHARGE PIPING AND DIELECTRIC FLANGE KIT.



SECTION E

SCALE: 1/2" = 1'-0"

E M-100

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

MECHANICAL
TREATMENT BUILDING SECTION III

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	M. FREYTAG
DRAWN	D. WUBSHET
CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 34 of 70

Dwg. No. M-103

4131-002-09

Autodesk Docs://4131-002-09_WELL_7/NW_TREATMENT_VESSEL_BUILDING_M.rvt

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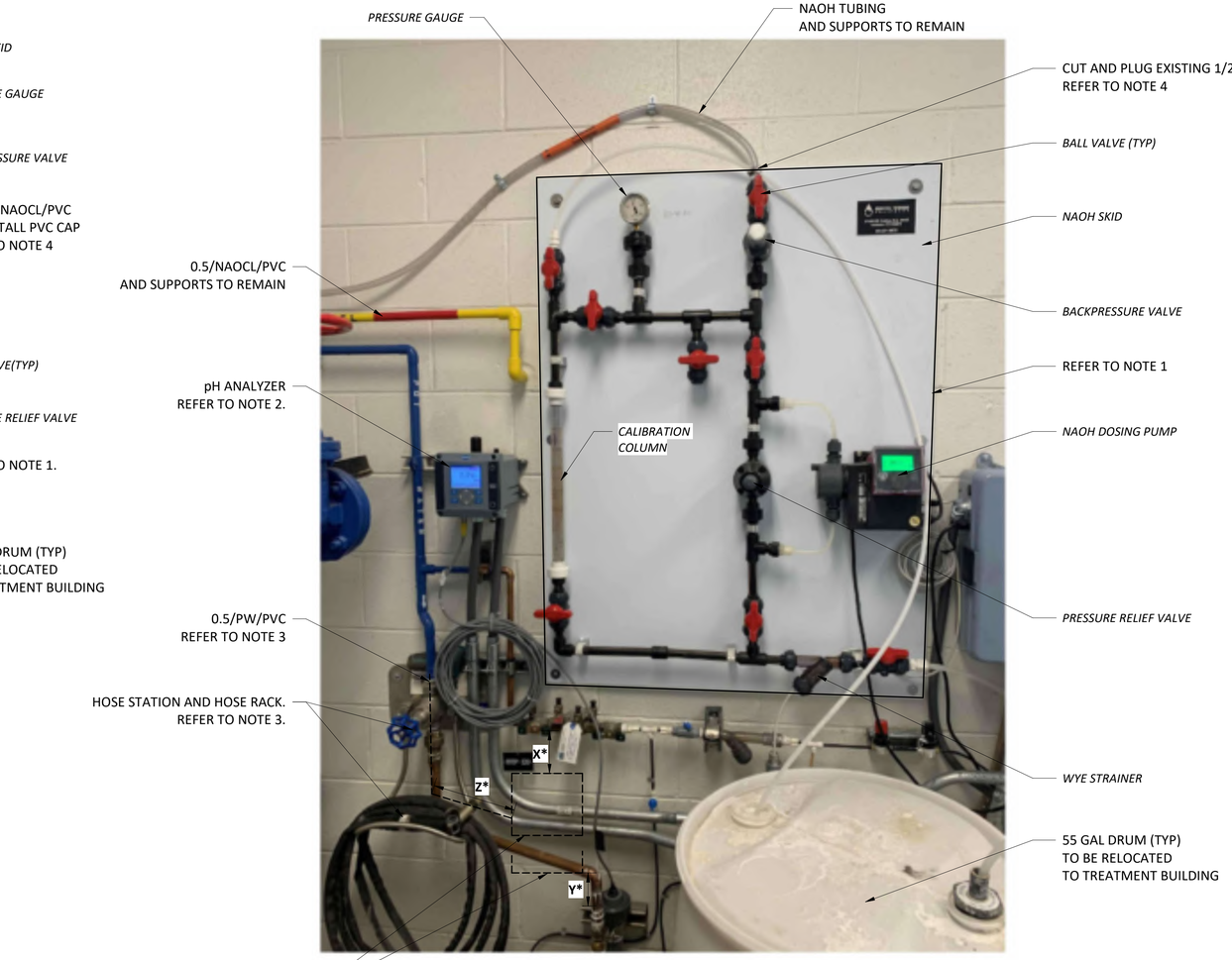
NOTES

1. CONTRACTOR TO RELOCATE EXISTING CHEMICAL SKIDS, MOUNTING HARDWARE, AND ANCILLARY EQUIPMENT AND CHEMICAL DRUMS TO CHEMICAL STORAGE ROOMS IN THE TREATMENT BUILDING. PATCH HOLES IN CMU FROM MOUNTING HARDWARE; PAINT TO MATCH ORIGINAL WALL.
2. RELOCATE PH ANALYZER 2 FT TO THE RIGHT OF THE EXISTING LOCATION, INCLUDING RELOCATION OF CONDUIT AS REQUIRED. CONTRACTOR TO VERIFY LOCATION WITH OWNER.
3. CONTRACTOR TO FIELD RELOCATE .5/PW/PVC AND HOSE STATION. ROUTE AND HOSE STATION LOCATION AS SHOWN APPROXIMATELY. CONTRACTOR TO VERIFY LOCATION WITH OWNER.
4. CONTRACTOR TO BE PREPARED FOR CHEMICAL TO BE PRESENT IN PIPES; CAPTURE AND DISPOSE OF IN ACCORDANCE WITH LOCAL AND FEDERAL REGULATIONS.

NAOCL DOSING PANEL

SCALE: NTS



LEGEND: X* = 0'-6" MIN Y* = 0'-6" MIN Z* = 1'-0"

NAOH DOSING PANEL

SCALE: NTS

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FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

MECHANICAL
CHEMICAL EQUIPMENT RELOCATION PLAN

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TAYLOR M. GERTIG
CO P.E. NO. 57138

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DESIGNED	M. FREYTAG
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CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 35 of 70

Dwg. No. M-104

4131-002-09

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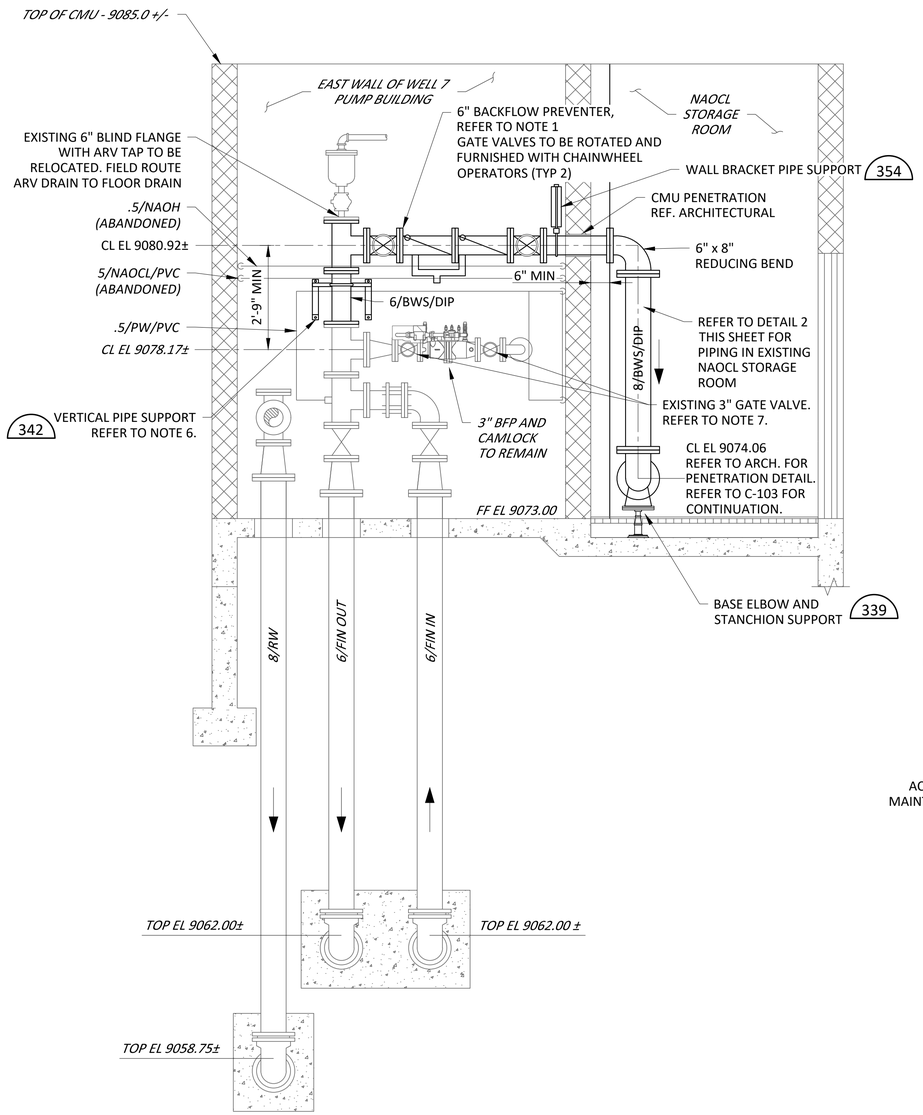
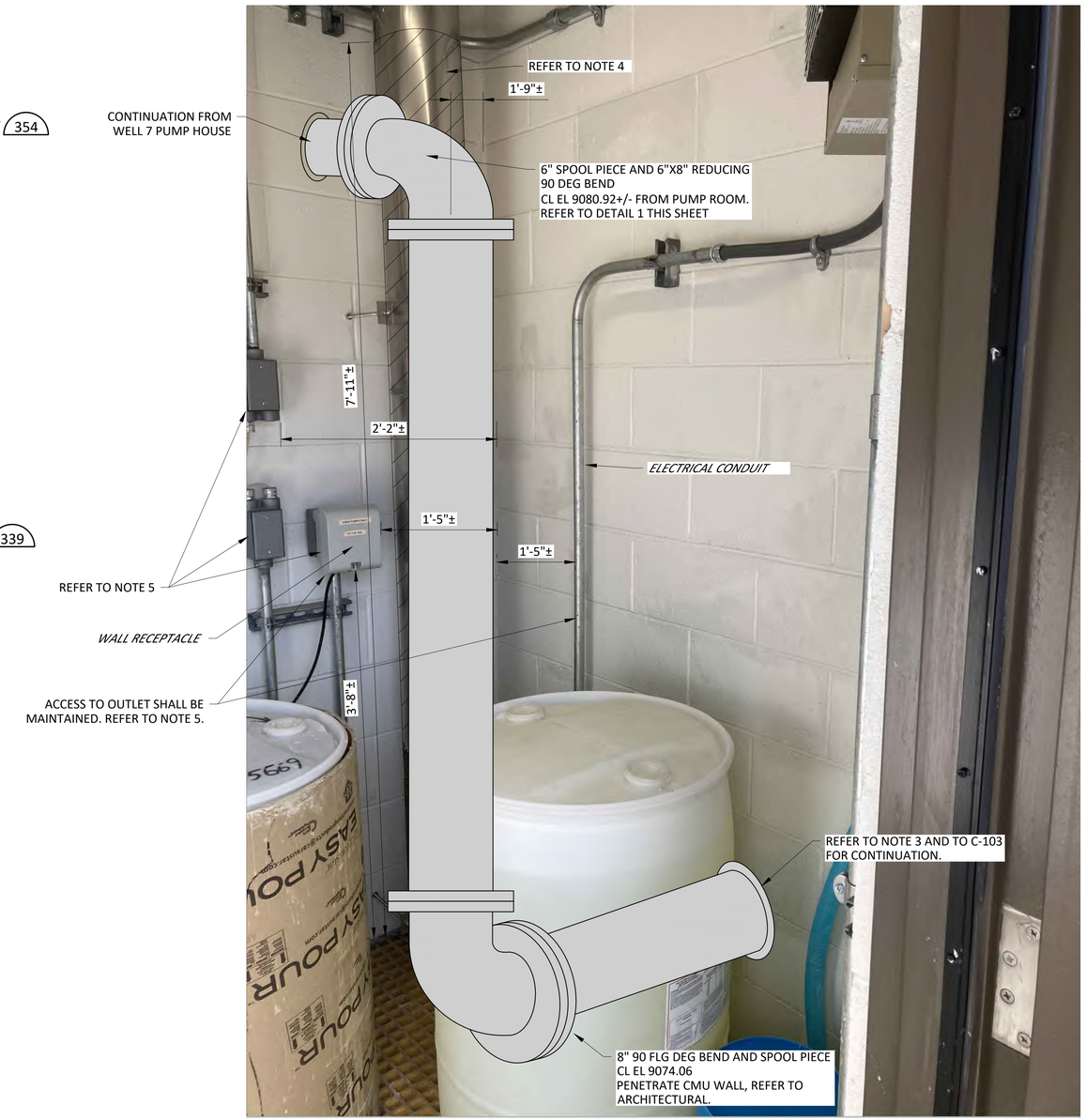
NOTES:

1. BACKFLOW PREVENTER SHALL BE FEBCO MASTERSERIES® LF860 LARGE REDUCED PRESSURE ZONE BACKFLOW PREVENTION ASSEMBLY OR APPROVED EQUAL.
2. CONTRACTOR SHALL VERIFY EXISTING ELEVATIONS AND DIMENSIONS BEFORE BEGINNING WORK IN THIS AREA.
3. INSULATE THE EXPOSED 8" EXTERIOR DIP PIPING. ASSUME APPROXIMATELY 12" OF 8" PIPING AND AN 8" 90 DEGREE BEND TO BE INSULATED.
4. CONTRACTOR SHALL DEMOLISH 6-INCH SS DUCT AND SUPPORTS TO THE EXTENT SHOWN, CAP, AND REPAIR SUPPORT WALL PENETRATIONS.
5. CONTRACTOR TO FIELD VERIFY LOCATIONS OF EXISTING ITEMS AND REROUTE CONDUIT AND RECEPTACLE IF NEEDED.
6. REROUTE 0.5/PW/PVC AS REQUIRED TO ACCOMMODATE PIPE SUPPORT.
7. CONTRACTOR TO UNBOLT EXISTING GATE VALVES (TYP 2), ROTATE 90 DEGS SO THAT HANDWHEELS FACE INTO THE ROOM, AND REBOLT. REPAIR ANY DAMAGE TO COATINGS. REFER TO DIVISION 9.



WELL 7 PUMP HOUSE, EAST WALL BACKFLOW PREVENTER 1

SCALE: = 1/2"=1'-0"



WELL 7 PUMP HOUSE, NAOCL STORAGE ROOM 2

SCALE: = NOT TO SCALE

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TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

MECHANICAL
PUMP ROOM MODIFICATIONS

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 8/1/2025

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DESIGNED	M. FREYTAG
DRAWN	R.PEMBERTON
CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

Seq. 36 of 70
Dwg. No. M-105
4131-002-09

PRINTED: 8/1/2025 8:53 AM C:\Users\rpemberton\DC\ACCDocs\Plummer Associates\4131-002-09_WELL_7\Project Files\Plummer\Sheets\Mechanical\M-105_PUMP ROOM MODIFICATIONS.dwg SAVED: 7/30/2025 3:43 PM SAVED BY: Rpemberton USER: Pemberton, Ron

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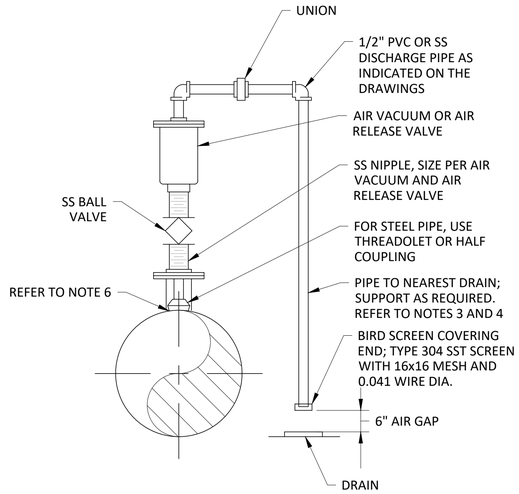
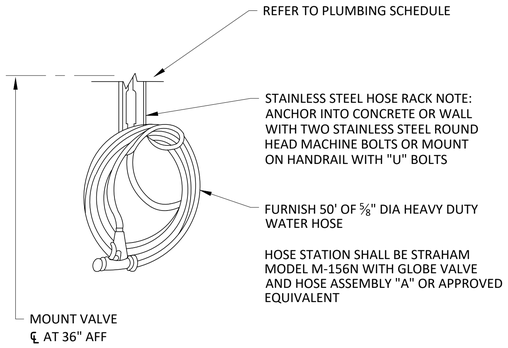


NOTES:

1. VALVE SIZE SHALL BE AS INDICATED ON THE DRAWINGS.
2. SERVICE TAP AND PLUG VALVE SHALL MATCH VALVE INLET SIZE.
3. INTERIOR DRAIN PIPES SHALL BE ROUTED TO NEAREST DRAIN OR ROUTED OUTSIDE (DOWN TO GRADE).
4. CONTRACTOR TO FABRICATE UNI-STRUT SUPPORT FOR THE DRAIN PIPING.
5. VALVE AND DRAIN PIPING TO BE HEAT TRACED AND INSULATED.
6. A FLANGED TEE AND COMPANION FLANGE SHOULD BE USED FOR ANY APPURTENANCES ON DIP IN LIEU OF DIRECT TAPPING.

AIR VACUUM & AIR RELEASE 302

NOT TO SCALE

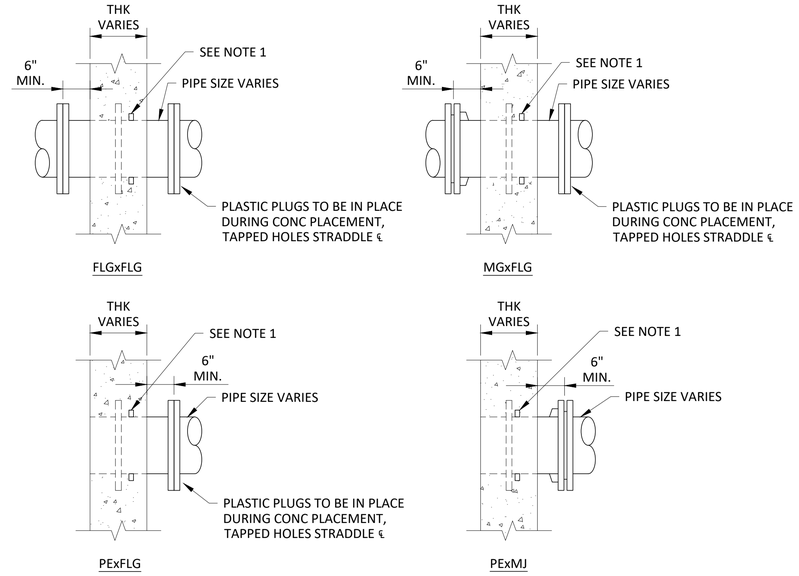


NOTES:

1. REFER TO SECTION 10 40 00 SAFETY SIGN FOR SIGNAGE.
2. SERVICE LINE, VALVES, AND ADAPTER SHALL BE THE SIZE AS INDICATED ON THE DRAWINGS.

HOSE STATION 312

NOT TO SCALE

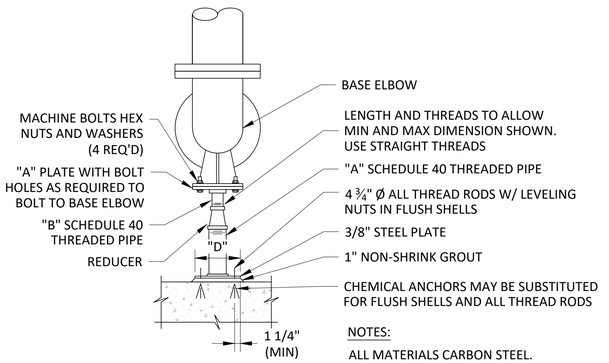


NOTE:

1. PROVIDE TYPE II WATER SEAL PER SPECIFICATION DIVISION 03 AROUND ALL PENETRATIONS INTO SUBMERGED OR POTENTIALLY SUBMERGED STRUCTURES. WATER STOP NEAREST WET SIDE.

CAST-IN-PLACE WALL PIPE 322

NOT TO SCALE



NOTES:

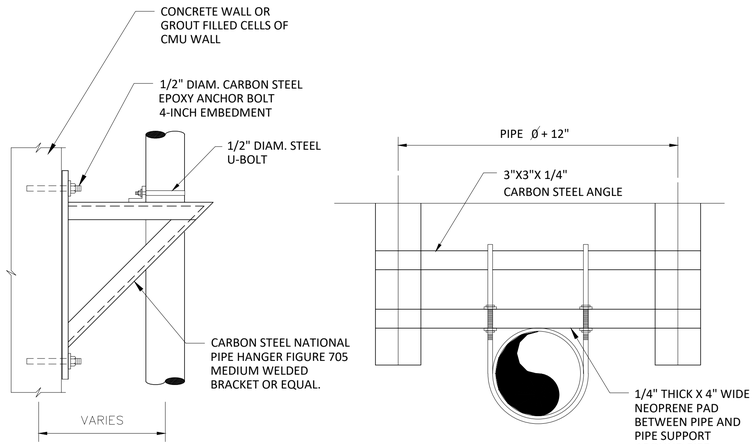
ALL MATERIALS CARBON STEEL.

ADJUSTABLE PIPE SADDLE SUPPORT SCHEDULE DIMENSIONS IN INCHES				
SIZE OF SUPPORTED PIPE	PIPE SIZE "C"	PIPE SIZE "B"	"D"	"A"
* 2 1/2	2 1/2	1 1/2	9	5 x 1/4
3	2 1/2	1 1/2	9	5 x 1/4
3 1/2	2 1/2	1 1/2	9	5 x 1/4
4	3	2 1/2	9	6 x 1/4
6	3	2 1/2	9	6 x 1/4
8	4	3	9	7 x 3/8
10	4	3	9	7 x 3/8

*USE 2 1/2" SUPPORTS FOR PIPES LESS THAN 2 1/2"Ø

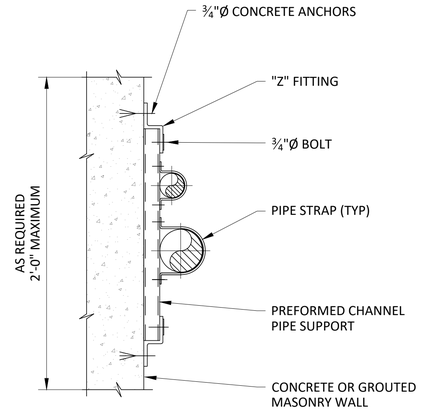
BASE ELBOW STANCHION SUPPORT DETAIL 339

NOT TO SCALE



VERTICAL PIPE SUPPORT 342

NOT TO SCALE



NOTE:

1. SPACE FLUSH MOUNT PIPE SUPPORTS AT 5'-0" MAXIMUM.
2. MAX LOAD PER CHANNEL = 1500 LBS. (UNIFORM LOAD).
3. ALL MATERIALS SHALL BE TYPE 316 STAINLESS STEEL.
4. ALL HARDWARE & FASTENERS SHALL BE TYPE 316 STAINLESS STEEL.

FLUSH MOUNT PIPE SUPPORT 348

NOT TO SCALE

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TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

MECHANICAL
STANDARD DETAILS I

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 7/30/2025

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DESIGNED M. FREYTAG
DRAWN D. WUBSHET
CHECKED T. GERTIG
REVIEWED P. O'BRIEN

Seq. 37 of 70
Dwg. No. M-900
4131-002-09

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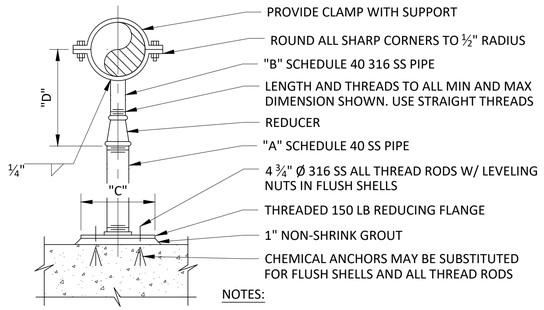


NOTES:

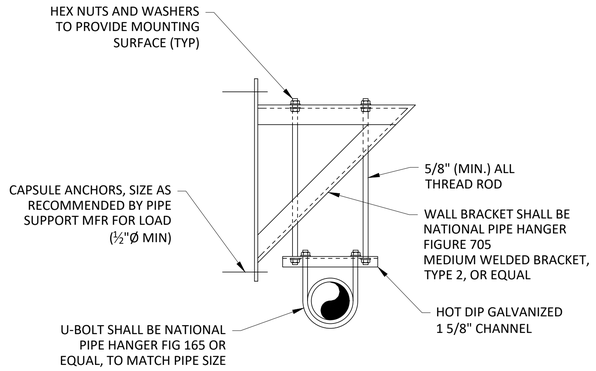
ALL MATERIALS 316 SS.

ADJUSTABLE PIPE SADDLE SUPPORT SCHEDULE DIMENSIONS IN INCHES					
SIZE OF SUPPORTED PIPE	PIPE SIZE "A"	PIPE SIZE "B"	"C"	"D" MINIMUM	"D" MAXIMUM
* 2 1/2	2 1/2	1 1/2	9	8	13
3	2 1/2	1 1/2	9	8 1/2	13 1/2
3 1/2	2 1/2	1 1/2	9	8 1/2	13 1/2
4	3	2 1/2	9	9 1/2	14
6	3	2 1/2	9	10 1/2	15 1/2
8	3	2 1/2	9	11 1/2	16 1/2
10	3	2 1/2	9	13 1/2	18 1/2
12	3	2 1/2	9	15	19 1/2
14	4	3	11	16 1/2	20 1/2
16	4	3	11	17 1/2	22 1/2
18	6	3 1/2	13 1/2	19 1/2	24
20	6	3 1/2	13 1/2	21	25 1/2
24	6	4	13 1/2	23 1/2	28 1/2
30	6	4	13 1/2	27	31 1/2
32	6	4	13 1/2	28 1/2	32 1/2
36	6	4	13 1/2	30 1/2	34 1/2

*USE 2 1/2" SUPPORTS FOR PIPES LESS THAN 2 1/2"Ø

ADJUSTIBLE PIPE SADDLE SUPPORT 352

NOT TO SCALE

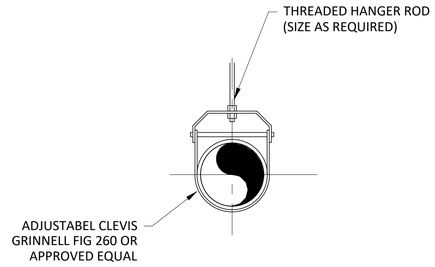


NOTE:

1. ALL MATERIALS SHALL BE CARBON STEEL, UNLESS OTHERWISE NOTED.

WELDED STEEL WALL BRACKET 354

NOT TO SCALE

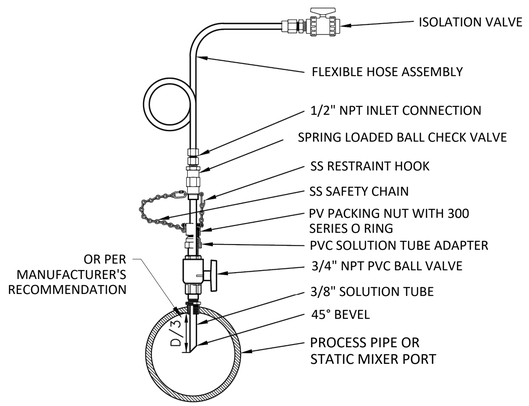


NOTES:

1. ADJUSTABLE CLEVIS HANGERS AND BEAM CLAMPS SHALL BE 316 STAINLESS STEEL.
2. FOR INSULATED PIPING, FURNISH STAINLESS STEEL PROTECTION SHEILD PER SECTION 40 05 07.
3. FOR CLEVIS HANGER SUPPORT CONNECTION TO BEAMS AND PURLINS, USE BEAM CLAMP NATIONAL PIPE HANGER FIG. 680 IN 316 SS OR ENGINEER APPROVED EQUAL.

ADJUSTABLE CLEVIS DETAIL 355

NOT TO SCALE



CHEMICAL INJECTION ASSEMBLY DETAIL 387

NOT TO SCALE

PLUMMER
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303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

MECHANICAL
STANDARD DETAILS II

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TAYLOR M. GERTIG
CO P.E. NO. 57138
DATE: 7/30/2025

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DESIGNED	M. FREYTAG
DRAWN	D. WUBSHET
CHECKED	T. GERTIG
REVIEWED	P. O'BRIEN

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Dwg. No. M-901
4131-002-09

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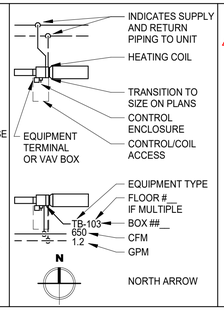
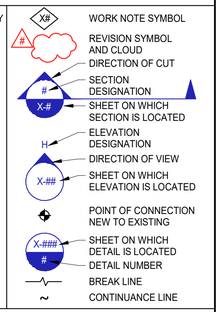
MECHANICAL LEGEND

ALL SYMBOLS IN LEGEND MAY NOT NECESSARILY BE USED ON THIS PROJECT

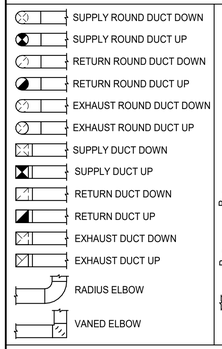
ABBREVIATIONS AND DESCRIPTIONS

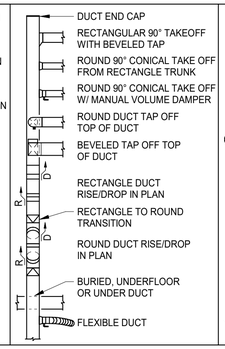
AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
BBD	BAROMETRIC BACKDRAFT DAMPER
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
℄ EL.	CENTER LINE ELEVATION
DIA, D, Ø	DIAMETER
EA	EXHAUST AIR
I.E.	INVERT ELEVATION
MA	MIXED AIR
MD	MOTORIZED DAMPER
MVD	MANUAL VOLUME DAMPER
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
OA	OUTSIDE AIR
RA	RETURN AIR
REL	RELIEF AIR
SA	SUPPLY AIR
TCEAD	TEMPERATURE CONTROL EXHAUST AIR DAMPER
TCOAD	TEMPERATURE CONTROL OUTSIDE AIR DAMPER
TCRAD	TEMPERATURE CONTROL RETURN AIR DAMPER
TCP	TEMPERATURE CONTROL PANEL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VTR	VENT THROUGH ROOF
(N)	NEW
(E)	EXISTING
(R)	RELOCATED
(F)	FUTURE
	EXISTING WORK IS SHOWN AS LIGHT LINES
	TO BE DEMOLISHED WORK IS SHOWN WITH BOLD DASHED LINES
	NEW WORK IS SHOWN AS BOLD SOLID LINES

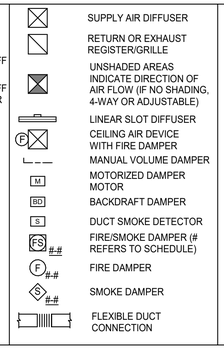


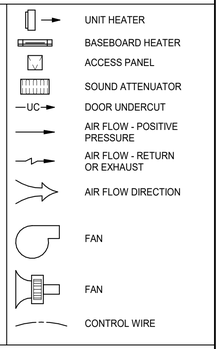


SHEET METAL FITTINGS AND EQUIPMENT



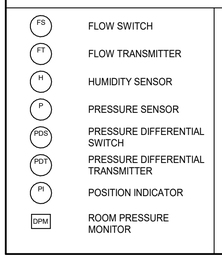


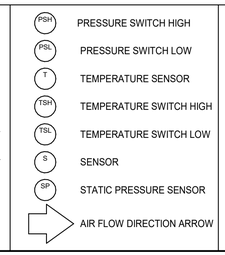


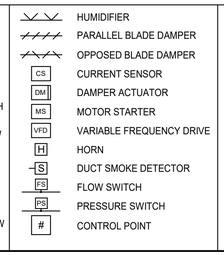


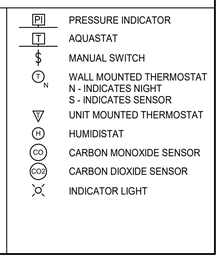
PIPING DESIGNATIONS, FITTINGS AND EQUIPMENT

CONTROL DEVICES









COMPLIANCE FOR ASHRAE STANDARD 183

LOCATION:	FRISCO, COLORADO; 9100 FT. ELEVATION, -39.574432 DEGREES LATITUDE, -106.097519 DEGREES LONGITUDE.	
OUTDOOR CONDITIONS:	SUMMER	= 85 DEGREES F / 56 DEGREES (MEAN COINCIDENT W.B.)
	WINTER	= -25 DEGREES F
INDOOR CONDITIONS:	COOLING	= NA
	HEATING	= 55 DEGREES F (60 DEG F FOR CAUSTIC ROOM)
ENVELOPE CHARACTERISTICS:	GLASS SHADING COEF.	= 0.45
	GLASS "U" FACTOR	= 0.29
	GLASS LOW-E	= NO
	GLASS INTERIOR SHADING	= NO
	WALL INSULATION "U"	= 0.71
	ROOF INSULATION "U"	= 0.28
LOAD CALCULATION METHOD:	COOLING	= TETD/TA
	HEATING	= UATD

SPECIAL CONDITIONS:
FACILITY HAS NO MECHANICAL COOLING. BUILDING IS NOT REGULARLY OCCUPIED.

PROJECT NARRATIVE

THE MAIN VESSEL AREA WILL BE PROVIDED WITH OUTDOOR AIR INTAKE LOUVERS WITH MOTORIZED DAMPERS AND A DEDICATED EXHAUST FAN TIED TO A THERMOSTAT IN THE SPACE TO ENABLE THE VENTILATION SYSTEM DURING TIMES OF HIGH TEMPERATURES. ELECTRIC UNIT HEATERS ARE TO BE PROVIDED FOR HEATING.

THE CHEMICAL STORAGE ROOMS ARE NOT REQUIRED TO BE VENTILATED PER CODE DUE TO THE LOW VOLUME OF CHEMICALS STORED. EACH ROOM IS TO BE PROVIDED WITH AN ELECTRIC UNIT HEATER FOR HEATING.

CONTROL OF ALL EQUIPMENT WILL BE DONE THROUGH LOCAL CONTROLS.

DUCTWORK CONSTRUCTION TABLE

SERVICE	TYPE	INSULATION CLIMATE ZONE 5-8	SMACNA CLASS SEAL	DESIGN PRESSURE CLASS (IN. W.C.)
GENERAL BUILDING EXHAUST	ALUMINUM, ROUND OR RECTANGULAR	(1)	A	+/-3

REMARKS:
(1) NO INSULATION FOR DUCTWORK UPSTREAM OF FAN. DOWNSTREAM OF FAN TO BE R12, WRAPPED RIGID BOARD. REFER TO THE SPECIFICATIONS.

SEQUENCES OF OPERATION

PROVIDE ALL RELAYS AND WIRING TO MAKE THE SEQUENCES WORK AS DESCRIBED BELOW. PROVIDE 24V THERMOSTATS.

MAIN TREATMENT AREA:

UNIT HEATERS (EUH-1 AND EUH-2):
ELECTRIC UNIT HEATER SHALL OPERATE IN RESPONSE TO WALL MOUNTED THERMOSTAT AND CYCLE ON (FAN AND ELEMENT) TO MAINTAIN A SPACE HEATING SETPOINT OF 55°F (ADJ).

EXHAUST FAN (EF-1/L-2 (MD), L-3 (MD)):
WHEN THE TEMPERATURE IN THE SPACE EXCEEDS THE SPACE TEMPERATURE SETPOINT, 80°F (ADJ), THE ASSOCIATED MOTORIZED DAMPERS (L-2, L-3) SHALL OPEN AND THE EXHAUST FAN (EF-1) SHALL TURN ON AT A CONSTANT VOLUME. WHEN THE TEMPERATURE IN THE SPACE DROPS BELOW 80°F (ADJ), THE EXHAUST FAN SHALL TURN OFF AND THE DAMPERS SHALL CLOSE. INTERLOCK EXHAUST FAN (EF-1) OPERATION TO DAMPER (L-2, L-3) POSITION SUCH THAT FAN CANNOT OPERATE UNLESS DAMPERS ARE OPEN.

NaOH ROOM:

UNIT HEATER (EUH-3):
ELECTRIC UNIT HEATER SHALL OPERATE IN RESPONSE TO WALL MOUNTED THERMOSTAT AND CYCLE ON (FAN AND ELEMENT) TO MAINTAIN A SPACE HEATING SETPOINT OF 65°F (ADJ).

NaOCl ROOM:

UNIT HEATER (EUH-4):
ELECTRIC UNIT HEATER SHALL OPERATE IN RESPONSE TO WALL MOUNTED THERMOSTAT AND CYCLE ON (FAN AND ELEMENT) TO MAINTAIN A SPACE HEATING SETPOINT OF 55°F (ADJ).

ADOPTED/ENFORCED CODES REQUIRED

2018 INTERNATIONAL BUILDING CODE
2018 INTERNATIONAL MECHANICAL CODE
2018 INTERNATIONAL PLUMBING CODE
2018 INTERNATIONAL FUEL GAS CODE
2018 INTERNATIONAL ENERGY CONSERVATION CODE
2018 INTERNATIONAL FIRE CODE
2023 NATIONAL ELECTRICAL CODE
AND SUMMIT FIRE AND RESCUE AMENDMENTS TO BUILDING FIRE AND MECHANICAL CODE

MECHANICAL GENERAL NOTES

1. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY. WHATEVER IS CALLED FOR IN EITHER IS BINDING AS THOUGH CALLED FOR IN BOTH.
2. DUCT AND PIPE SIZE DIMENSIONS ARE IN INCHES UNLESS NOTED OTHERWISE.
3. THE EQUIPMENT SPECIFIED ON THE DRAWINGS HAVE BEEN SELECTED AS THE BASIS OF DESIGN. THE USE OF REVIEWED OR SPECIFIED EQUALS SHALL BE COORDINATED BY THE CONTRACTOR AS TO SPACE REQUIREMENTS, EQUIPMENT DIMENSIONS AND PERFORMANCE. ANY ADDITIONAL COSTS EITHER DIRECTLY OR INDIRECTLY CAUSED BY EQUALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL DESIGN INTENT, ARRANGEMENT AND EXTENT OF SYSTEMS. DO NOT SCALE DRAWINGS NOR USE AS SHOP DRAWINGS. WHERE ALTERNATE ROUTING, OFFSETS AND TRANSITIONS ARE REQUIRED FOR FIELD COORDINATION OF ALL TRADES, THIS CONTRACTOR SHALL MAKE CHANGES WITHOUT ADDITIONAL COSTS.
5. CONTRACTOR SHALL NOT SHUT-OFF/PUT OUT OF SERVICE ANY SYSTEMS/SERVICES WITHOUT FIRST COORDINATING ALL DOWNTIME WITH OWNER'S PERSONNEL. CONTRACTOR SHALL PROVIDE A DETAILED M.O.P. AS REQUIRED. DO NOT BEGIN WORK WITHOUT WRITTEN APPROVAL.
6. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY DIRECTED OTHERWISE.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND INSTALLING SLEEVES, INSERTS AND SUPPORTS AS REQUIRED FOR THIS SCOPE OF WORK AND/OR CORE DRILL REQUIREMENTS. COORDINATE WITH GENERAL CONTRACTOR AND STRUCTURAL ENGINEER.
8. CONTRACTOR SHALL CLOSELY COORDINATE NEW MECHANICAL WITH ALL NEW PROCESS MECHANICAL, PLUMBING, ELECTRICAL, FIRE PROTECTION, ARCHITECTURAL AND STRUCTURAL MEMBERS. REFER TO DIVISION 23 SPECIFICATIONS FOR CEILING SPACE ALLOCATION PRIORITIES.
9. CONTRACTOR SHALL FIELD VERIFY ALL MECHANICAL ITEMS PRIOR TO SUBMITTING A BID. NO ADDITIONAL COST WILL BE ALLOWED FOR CONTRACTOR'S FAILURE TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS.
10. ALL MECHANICAL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE CODES LISTED ON THIS SHEET AND THE ARCHITECTURAL CODE PLAN.
11. CONTRACTOR SHALL PROVIDE SUBMITTALS ON ITEMS LISTED IN THE MECHANICAL SCHEDULES AND AS REQUIRED IN EACH SECTION OF SPECIFICATION TO THE ENGINEER/OWNER FOR REVIEW PRIOR TO THE ORDER, PURCHASE OR INSTALLATION OF THESE SAME ITEMS.
12. CONTRACTOR SHALL CONSTRUCT AND INSTALL DUCTWORK ACCORDING TO SMACNA STANDARDS AS A MINIMUM REQUIREMENT. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
13. ALL DUCT DIMENSIONS ARE OUTSIDE DIMENSIONS. WHERE DUCT LINER IS USED, THE THICKNESS OF THE LINER TO MAINTAIN THE CLEAR INSIDE DIMENSION HAS BEEN INCLUDED. REFER TO DUCT INSULATION / LINER SCHEDULE AND/OR DIVISION 23 OF THE SPECIFICATIONS.
14. ALL OPENINGS FROM EXHAUST DUCTS, EXHAUST FANS, GRAVITY ROOF VENTS, INTAKE LOUVERS AND GOOSENECKS SHALL BE A MINIMUM OF 12" ABOVE THE TOP OF THE FINISHED ROOFING SURFACE AND 36" ABOVE THE TOP OF FINISHED GRADE.
15. MOUNT THERMOSTAT AT 42" ON CENTER ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED (ADA REQUIREMENT). ALIGN WITH OTHER ADJACENT DEVICES ON WALL.
16. PROVIDE REDLINE MARK-UPS FOR ANY FIELD CHANGES OR MODIFICATIONS ON THE CONSTRUCTION DOCUMENTS. REDLINE DRAWINGS SHALL BE PROVIDED WHETHER COORDINATION DRAWINGS ARE REQUIRED OR NOT.
17. EQUIPMENT E.E.R. AND/OR C.O.P. VALUES SHALL COMPLY WITH THE CURRENT EDITION OF THE INTERNATIONAL ENERGY CODE.

DRAWING LIST - MECHANICAL

CONTACT LIST

DENVER AND COLORADO SPRINGS OFFICES
14143 DENVER WEST PKWY, SUITE 550
GOLDEN, CO 80401
303.422.7400

TAMPA BAY AND MELBOURNE OFFICES
6556 N. WICKHAM ROAD, SUITE 104
MELBOURNE, FL 32940
321.241.4142

PROJECT ENGINEER / DESIGNER
KARI NELSON
303.405.2890
KNELSON@BCER.COM

PROJECT MANAGER
SARA PERSILY
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BCER ENGINEERING | TECHNOLOGY | LIFE SAFETY
BCER PROJECT 121624017

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

HVAC
HVAC GENERAL INFORMATION

COLORADO LICENSED PE 32983 PROFESSIONAL ENGINEER
7/31/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	KN
DRAWN	KN
CHECKED	MS
REVIEWED	MS

Seq. 39 of 70
Dwg. No. H-001
4131-002-09

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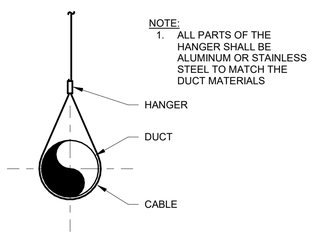
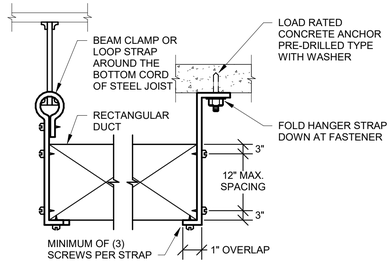
DUCT HANGERS AND SUPPORTS

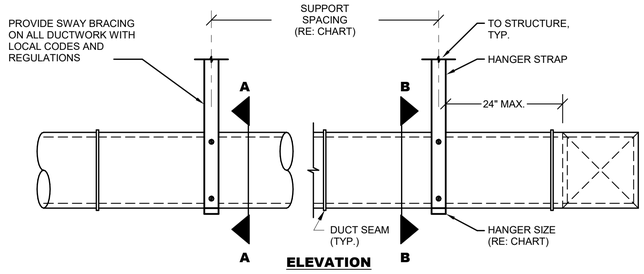
	CONDITION	WIDTH (IN.)	MINIMUM WIDTH (IN)	MINIMUM GAUGE	MAXIMUM SPACING (FT.)	ANGLE (IN.)	THICKNESS (IN.)	MAXIMUM SPACING (FT.)
RECTANGULAR	HORIZONTAL	UP TO 30	1	16	8	-	-	-
	HORIZONTAL	31 TO 48	1 1/2	16	8	-	-	-
	HORIZONTAL ON WALL	UP TO 18	1 1/2	16	8	1 x 1	1/8	8
	HORIZONTAL ON WALL	19 TO 40	-	-	-	1-1/2 x 1-1/2	1/8	4
	VERTICAL ON WALL	UP TO 24	1 1/2	16	10			
	VERTICAL ON WALL	25 TO 36	-	-	-	1 x 1	1/8	10
ROUND	HORIZONTAL	UP TO 18	1	16	10			
	HORIZONTAL	19 TO 36	1	12	10			



SECTION A-A
ROUND DUCT SUPPORT



SECTION B-B
HANGER STRAP SUPPORT

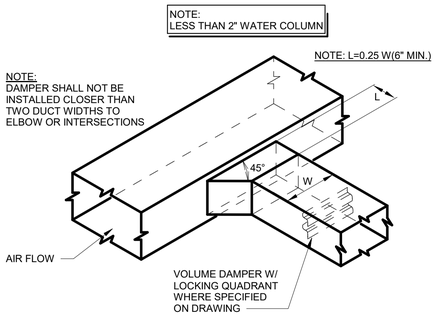


ELEVATION

ADDITIONAL DUCT SUPPORT REQUIREMENTS:
1. 2 TO 24-INCH FROM FLEXIBLE CONNECTIONS OF FANS.
2. 12 TO 36-INCH FROM THE MAIN DUCT TO THE FIRST HANGER OF LONG BRANCH DUCTS.
3. 2 TO 12-INCH FROM THE ENDS OF ALL BRANCH DUCTS AND LINEAR DIFFUSER PLENUMS.
4. 2 TO 24-INCH FROM FIRE OR FIRE/SMOKE DAMPER BREAK-AWAY JOINTS.

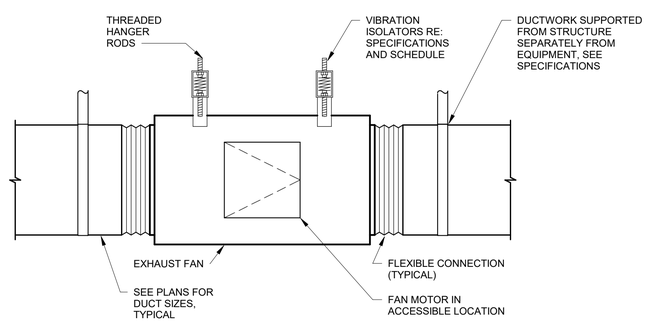
DUCT SUPPORT DETAIL 1

SCALE: 1 1/2" = 1'-0"



BRANCH DUCT TAKE-OFF DETAIL 2

SCALE: 1 1/2" = 1'-0"



INLINE FAN MOUNTING DETAIL 3

SCALE: 12" = 1'-0"

FAN SCHEDULE

PLAN CODE	MFR.	MODEL	INSTALLED MFR.	INSTALLED MODEL	SYSTEM	FAN TYPE	CFM	S.P. (IN W.C.)	WHEEL TYPE / DIAMETER	FAN RPM (APPROX.)	DRIVE TYPE	H.P.	DAMPER TYPE	DAMPER SIZE	MOUNTING TYPE	ELEC. VOLT/PH.	APPROX. WEIGHT (LBS.)	NOTES
EF-1	GREENHECK	SQ-16-M2-VG			GENERAL EXHAUST	INLINE	4000	0.75	BI / 20.0	1,525	DIRECT	2	BDD	24X24	SUSPENDED	480/3	200	(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)

FAN SCHEDULE PROJECT SPECIFIC NOTES

1. FAN TO BE PROVIDED WITH VARIABLE SPEED (VARI-GREEN) MOTOR.
2. PROVIDE WITH POWDER-COATED SPRING VIBRATION HANGING ISOLATOR KIT.
3. PROVIDE SIDE DISCHARGE AND SQUARE DUCT MOUNTING COLLAR.
4. FAN AND ACCESSORIES TO BE COATED WITH HI-PRO POLYESTER, WHEEL TO BE ALUMINUM.
5. PROVIDE ALUMINUM BACKDRAFT DAMPER.
6. REFER TO H-001 FOR SEQUENCE OF OPERATION.
7. PROVIDE DISCONNECT SWITCH.
8. PROVIDE MOTOR WITH SHAFT GROUNDING.
9. FILTER PRESSURE DROP FOR FAN SIZE "BASED ON MEDIUM DIRTY RANGE; NOT CLEAN".
10. UNIT PRESSURE DROPS NEED TO BE ADJUSTED BY MANUFACTURER DURING SHOP DRAWING PHASE.
11. MOTOR HORSEPOWER ADJUSTMENTS TO INCLUDE REVISIONS NEEDED FOR UNIT DELTA P ADJUSTMENTS, COST OF INCREASE TO BE BORNE BY MANUFACTURER.
12. INTEGRAL OR STANDALONE DISCONNECT AIC/SCCR SHALL MATCH THE AIC RATING OF THE PANELBOARD FEEDING THE EQUIPMENT, UNLESS OTHERWISE SPECIFIED IN THE ELECTRICAL DRAWINGS. IF INFORMATION IS NOT AVAILABLE, THE INTEGRAL OR STANDALONE DISCONNECT AIC/SCCR SHALL BE 65KAIC. THE VENDOR/CONTRACTOR SHALL REVIEW THE ELECTRICAL DRAWINGS DURING BID TIME.

LOUVER SCHEDULE

PLAN CODE	MFR.	MODEL	INSTALLED MFR.	INSTALLED MODEL	SERVICE	DIMENSIONS (IN) W	H	D	FREE AREA (SQ. FT.)	CFM	FPM	APD IN. W.C.	MOUNTING TYPE	MATERIAL	NOTES
L-1	GREENHECK	ESD-435			EXHAUST	80	16	4	3.5	4000	1143	0.18	FRAME	ALUMINUM	(1) (3)
L-2	GREENHECK	ESD-435			INTAKE	64	24	4	5.1	2000	392	0.025	FRAME	ALUMINUM	(1) (2) (3)
L-3	GREENHECK	ESD-435			INTAKE	64	24	4	5.1	2000	392	0.025	FRAME	ALUMINUM	(1) (2) (3)

LOUVER SCHEDULE PROJECT SPECIFIC NOTES

1. PROVIDE ALUMINUM BIRDSCREEN.
2. PROVIDE ALUMINUM MOTORIZED DAMPER, WITH 120V/1 ACTUATOR(S).
3. KYNAR FINISH, COLOR BY ARCHITECT.

UNIT HEATER SCHEDULE (ELECTRIC)

PLAN CODE	MFR.	MODEL	INSTALLED MFR.	INSTALLED MODEL	DISCHARGE	KW	FLA	CFM	EAT (°F)	LAT (°F)	THROW (FT.)	TOTAL AMPS	ELEC. VOLT/PH.	NOTES
EUH-1	INDEECO	UHIR			HORIZONTAL	10	12.4	650	55	114.0	18	12.4	480/3	1, 2, 3, 4, 5
EUH-2	INDEECO	UHIR			HORIZONTAL	7.5	9.4	650	55	99.2	18	9.39	480/3	1, 2, 3, 4, 5
EUH-3	INDEECO	UHIR			HORIZONTAL	3.7	4.7	350	60	100.5	15	4.66	480/3	1, 2, 3, 4, 5
EUH-4	INDEECO	UHIR			HORIZONTAL	3.7	4.7	350	55	95.5	15	4.66	480/3	1, 2, 3, 4, 5

UNIT HEATER SCHEDULE PROJECT SPECIFIC NOTES

1. PROVIDE REMOTE THERMOSTAT.
2. PROVIDE 24DC CONTROL TRANSFORMER.
3. LIGHT COMMERCIAL HORIZONTAL MOUNT UNIT HEATER WITH INTEGRAL MOUNTING BRACKET. SUPPORT FROM WALL, WITH BOTTOM OF UNIT 8'-0" A.F.F.
4. PROVIDE INTEGRAL POWER DISCONNECT.
5. INTEGRAL OR STANDALONE DISCONNECT AIC/SCCR SHALL MATCH THE AIC RATING OF THE PANELBOARD FEEDING THE EQUIPMENT, UNLESS OTHERWISE SPECIFIED IN THE ELECTRICAL DRAWINGS. IF INFORMATION IS NOT AVAILABLE, THE INTEGRAL OR STANDALONE DISCONNECT AIC/SCCR SHALL BE 65KAIC. THE VENDOR/CONTRACTOR SHALL REVIEW THE ELECTRICAL DRAWINGS DURING BID TIME.

GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE

PLAN CODE	MFR.	TYPE	MODEL	INSTALLED MFR.	INSTALLED MODEL	FRAME	MATERIAL	FINISH	DAMPER TYPE	LEGEND	NOTES
EG-1	PRICE	EXHAUST GRILLE	630			DUCT MOUNTED	ALUMINUM	WHITE	AL OBD	FACE SIZE SHOWN ON PLANS	3/4" BLADE SPACING, 45 DEGREE DEFLECTION

CAPACITY CONVENTIONS

- STATIC PRESSURES AND AIR PRESSURE DROPS ARE AT ALTITUDE OF PROJECT.
- HEATING AND COOLING OUTPUT CAPACITIES ARE AT ALTITUDE OF PROJECT.
- HORSEPOWERS ARE CORRECTED FOR PROJECT ALTITUDE.
- NATURAL GAS INPUTS ARE AT SEA LEVEL.

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BCER PROJECT 121624017

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

HVAC

HVAC SCHEDULES AND DETAILS

COLORADO LICENSED 32983 PROFESSIONAL ENGINEER
7/31/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	KN
DRAWN	KN
CHECKED	MS
REVIEWED	MS
Seq.	40 of 70
Dwg. No.	H-002
	4131-002-09

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COMcheck Software Version COMcheckWeb

Mechanical Compliance Certificate

Project Information

Energy Code:	2018 IECC
Project Title:	Town of Frisco, Well 7
Location:	Frisco, Colorado
Climate Zone:	7
Project Type:	New Construction

Construction Site:
612 Recreation Way
Frisco, Colorado 80443

Owner/Agent:
Town of Frisco
102 School Road
Frisco, Colorado 80443

Designer/Contractor:
BCER ENGINEERING
14143 Denver West Pkwy, Ste. 550
Golden, Colorado 80401

Additional Efficiency Package(s)

Credits: 1.0 Required 1.0 Proposed
Reduced Lighting Power, 1.0 credit

Mechanical Systems List

Quantity	System Type & Description
1	EUH-1 (Unknown w/ PerimeterSystem): Heating: 1 each - Unit Heater, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies
1	EUH-2 (Unknown w/ PerimeterSystem): Heating: 1 each - Unit Heater, Electric, Capacity = 25 kBtu/h No minimum efficiency requirement applies
2	EUH-3 AND EUH-4 (Unknown w/ PerimeterSystem): Heating: 2 each - Unit Heater, Electric, Capacity = 12 kBtu/h No minimum efficiency requirement applies

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

KARI NELSON, PE - SENIOR MECHANICAL — Name - Title
Signature
07/22/25 — Date

COMcheck Software Version COMcheckWeb

Inspection Checklist

Energy Code: 2018 IECC

Requirements: 100.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C406 [PR9][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C403.12.2, C403.12.3 [FO9][3]	Snow/ice melting system and freeze protection systems have sensors and controls configured to limit service for pavement temperature and outdoor temperature. future connection to controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6][3]	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.6.3 [PL7][3]	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.7 [PL8][3]	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41][3]	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.11.3 [ME61][2]	HVAC piping insulation insulated in accordance with Table C403.11.3. Insulation exposed to weather is protected from damage and is provided with shielding from solar radiation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.8.1 [ME65][1]	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system bhp.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. *See the Mechanical Systems list for values.*
C403.8.3 [ME117][2]	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Single fans with motor nameplate horsepower of = 5 hp.
C403.12.1 [ME71][2]	Systems that heat outside the building envelope are radiant heat systems controlled by an occupancy sensing device or timer switch.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.2.2 [ME59][1]	Natural or mechanical ventilation is provided in accordance with International Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.1 [ME59][1]	Demand control ventilation provided for spaces >500 ft2 and >25 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.2 [ME115][3]	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.6 [ME141][3]	HVAC systems serving guestrooms in Group R-1 buildings with > 50 guestrooms: Each guestroom is provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.7.6.1 and C403.7.6.2).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.4 [ME57][1]	Exhaust air energy recovery on systems meeting Table C403.7.4(1) and C403.7.4(2).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.5 [ME116][3]	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.11.1, C403.11.2 [ME60][2]	HVAC ducts and plenums insulated in accordance with C403.11.1 and constructed in accordance with C403.11.2, verification may need to occur during Foundation Inspection.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.4.1.4 [ME63][2]	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C408.2.2.1 [ME53][3]	Air outlets and zone terminal devices have means for air balancing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.5, C403.5.1, C403.5.2 [ME123][3]	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2..	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

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NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

HVAC
HVAC COMCHECK

COLORADO LICENSED PROFESSIONAL ENGINEER 32983 — 7/31/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

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Seq. 41 of 70

Dwg. No. H-003

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Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.6 [EL26][2]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.7 [EL27][2]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.8.2, C405.8.2.1 [EL28][2]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.9 [EL29][2]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.3 [FI8][3]	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.2 [FI27][3]	HVAC systems and equipment capacity does not exceed calculated loads.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1 [FI47][3]	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.1.2 [FI38][3]	Thermostatic controls have a 5 °F deadband.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1.3 [FI20][3]	Temperature controls have setpoint overlap restrictions.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.2 [FI39][3]	Each zone equipped with setback controls using automatic time clock or programmable control system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Zones operated continuously.
C403.2.4.2.1., C403.2.4.2.2 [FI40][3]	Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C408.1.1 [FI57][1]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.1 [FI28][1]	Commissioning plan developed by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.3.1 [FI31][1]	HVAC equipment has been tested to ensure proper operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Unitary or packaged HVAC eqiupment without supply air economizers.
C408.2.3.2 [FI10][1]	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.2.4 [FI29][1]	Preliminary commissioning report completed and certified by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.1 [FI7][3]	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.3 [FI43][1]	An air and/or hydronic system balancing report is provided for HVAC systems.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.4 [FI30][1]	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

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BCER PROJECT 121624017

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

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TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

HVAC

HVAC COMCHECK

COLORADO LICENSED 32983 PROFESSIONAL ENGINEER
7/31/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

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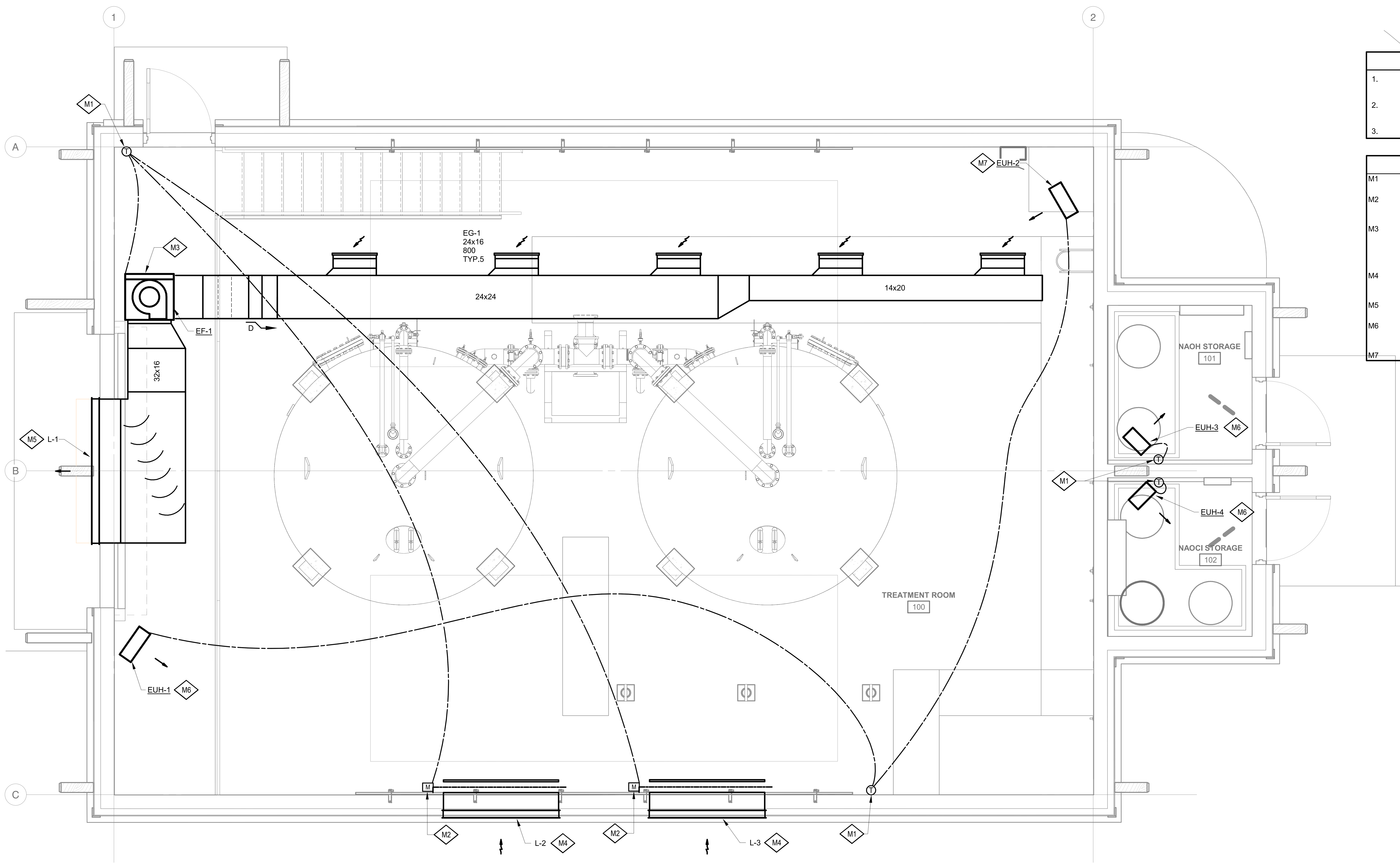

GENERAL NOTES

1. PROVIDE MANUAL BALANCING DAMPERS FOR ALL TAKEOFFS. DAMPERS TO BE THE SAME MATERIAL AS THE DUCTWORK IN WHICH THEY ARE LOCATED.
2. REFER TO DUCT MATERIAL SCHEDULE FOR ACCEPTABLE DUCTWORK MATERIAL.
3. DO NOT ROUTE DUCTWORK OVER ELECTRICAL EQUIPMENT.

WORK NOTES

M1	MOUNT THERMOSTAT/SENSOR ON INSULATED SUB-BASE.
M2	PROVIDE MOTORIZED DAMPER WITH ACTUATOR(S). INTERLOCK OPERATION WITH ASSOCIATED EXHAUST FAN AND ASSOCIATED THERMOSTAT.
M3	EXHAUST FAN IS A HOUSED FAN WITH SIDE DISCHARGE. PROVIDE FLEXIBLE ISOLATION AT DUCT CONNECTIONS, REFER TO DETAIL. MOUNT DUCT OVER WALKWAY, OUT OF PATH OF OVERHEAD DOOR AND AS HIGHEST POSSIBLE. MAINTENANCE ACCESS THROUGH THE BOTTOM OF THE FAN.
M4	MOUNT LOUVER AS HIGH AS POSSIBLE IN WALL. COORDINATE EXACT LOCATION WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.
M5	MOUNT LOUVER PER STRUCTURAL AND ARCHITECTURAL DRAWINGS.
M6	MOUNT UNIT HEATER AS HIGH AS POSSIBLE, APPROXIMATELY 8' ABOVE FINISHED FLOOR.
M7	MOUNT UNIT HEATER APPROXIMATELY 10'-6" ABOVE FINISHED FLOOR.

TREATMENT BUILDING HVAC PLAN

SCALE: 3/8" = 1'-0"

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TOWN OF FRISCO
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HVAC
HVAC PLAN

COLORADO LICENSED PROFESSIONAL ENGINEER 32983
7/31/2025

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PLUMBING LEGEND

ALL SYMBOLS IN LEGEND MAY NOT NECESSARILY BE USED ON THIS PROJECT

ABBREVIATIONS AND DESCRIPTIONS

AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
FF	FINISHED FLOOR
UNO	UNLESS NOTED OTHERWISE
℄ EL.	CENTER LINE ELEVATION
	COLD WATER (CW)
	HOT WATER (HW)
	HOT WATER CIRCULATING (HWC)
—W—	SANITARY WASTE ABOVE GRADE OR FLOOR
—BD—	SANITARY (BUILDING DRAIN) BELOW GRADE OR FLOOR
	SANITARY VENT (V)
	POINT OF CONNECTION NEW TO EXISTING
DIA, D	DIAMETER

I.E.	INVERT ELEVATION
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
—SD—	STORM/RAINWATER DRAIN ABOVE FLOOR OR GRADE
— —SD— —	STORM/RAINWATER DRAIN BELOW FLOOR OR GRADE
—OD—	OVERFLOW DRAIN ABOVE FLOOR OR GRADE
— —OD— —	OVERFLOW DRAIN BELOW FLOOR OR GRADE
— —S/O— —	PIPING TO SAND/OIL INTERCEPTOR BELOW FLOOR OR GRADE
	EXISTING WORK IS SHOWN AS LIGHT LINES
	TO BE DEMOLISHED WORK IS SHOWN WITH BOLD DASHED LINES
	NEW WORK IS SHOWN AS BOLD SOLID LINES

TYP	TYPICAL
VTR	VENT THROUGH ROOF
— PW —	PLANT WATER
— GW —	GREASE WASTE
— NP —	NON-POTABLE WATER
— G —	NATURAL GAS
— LP —	LIQUIFIED PETROLEUM GAS
— CA —	COMPRESSED AIR
— PD —	PUMP DISCHARGE
— D —	DRAIN
— TW —	TEMPERED WATER
(N)	NEW
(E)	EXISTING
(R)	RELOCATED
(F)	FUTURE
W#	PLUMBING RISER REFERENCE
	RISER NUMBER

X#	WORK NOTE SYMBOL
#	REVISION SYMBOL AND CLOUD
	DIRECTION OF CUT
# / X-#	SECTION DESIGNATION / SHEET ON WHICH SECTION IS LOCATED
H	ELEVATION DESIGNATION
X-##	DIRECTION OF VIEW / SHEET ON WHICH ELEVATION IS LOCATED
	POINT OF CONNECTION NEW TO EXISTING
X-### / #	SHEET ON WHICH DETAIL IS LOCATED / DETAIL NUMBER
	BREAK LINE
~	CONTINUANCE LINE

VALVES AND FITTINGS

	ELBOW UP
	ELBOW DOWN
	TEE UP
	TEE DOWN
	RISE OR DROP
	BRANCH-TOP CONNECTION
	BRANCH-BOTTOM CONNECTION
	GATE VALVE IN VERTICAL
	P-TRAP
	PIPE CAP OR PLUG
	UNION
	WALL HYDRANT WITH VACUUM BREAKER
	HOSE BIBB WITH VACCUM BREAKER
	EXPANSION JOINT
	PIPE ANCHOR
	PIPE ALIGNMENT GUIDE
	FLEXIBLE CONNECTION

	STRAINER
	STRAINER WITH BLOW/OFF VALVE
	FLOOR SINK (1/2 GRATE SHOWN)
	FLOOR DRAIN
	ROOF DRAIN
	OVERFLOW DRAIN
	CLEANOUT, FLOOR (FCO) OR GRADE (GCO)
	CLEANOUT, WALL (WCO)
	CLEANOUT PLUG (LCO)
	DOWNSPOUT NOZZLE
M	METER (GAS OR WATER)
	STEAM TRAP (INCICATE TYPE)
	TEMPERATURE GAUGE

	BALL VALVE
	GATE VALVE
	PLUG VALVE
S	SOLENOID VALVE
	PRESSURE REDUCING VALVE
	CHECK VALVE
	GLOBE VALVE
	THERMOSTATIC MIXING VALVE
	BUTTERFLY VALVE
	CIRCUIT SETTER
	CIRCUIT SETTER ASSEMBLY RE: PLUMBING DETAIL
	GAS COCK
	TEMPERATURE/PRESSURE RELIEF VALVE
	AUTOMATIC AIR VENT
	MANUAL AIR VENT

	GAS PRESSURE REGULATOR
T	PRESSURE/TEMPERATURE TAP
	PRESSURE GAUGE W/ COCK
FS	FLOW SWITCH
PS	PRESSURE SWITCH
PI	PRESSURE INDICATOR
	WELL
	GAUGE COCK
	WATER HAMMER ARRESTER W/ BALL VALVE
T	AQUASTAT
	VACUUM BREAKER
	VALVE IN YARD BOX
	HOSE END BALL VALVE WITH VACUUM BREAKER
BFP	BACKFLOW PREVENTER
	BACKFLOW PREVENTER

PROJECT NARRATIVE

THIS PROJECT CONSISTS OF WATER AND DRAINAGE. WATER WILL BE SUPPLIED TO A HOSE BIBB FOR WASH DOWN AND AN EXTERIOR WATER CONNECTION FOR UTILITY CONNECTION.

DRAINS AND RELIEF VENT WILL BE PROVIDED FOR GENERAL CLEANUP. DRAINAGE SYSTEM WILL INCLUDE A SUMP PUMP/ SUMP PIT TO LIFT WATER TO EXIT THE BUILDING.

PLUMBING GENERAL NOTES

1. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY. WHATEVER IS CALLED FOR IN EITHER IS BINDING AS THOUGH CALLED FOR IN BOTH.
2. THE EQUIPMENT SPECIFIED ON THE DRAWINGS HAVE BEEN SELECTED AS THE BASIS DESIGN. THE USE OF REVIEWED OR SPECIFIED EQUALS SHALL BE COORDINATED BY THE CONTRACTOR FOR SPACE REQUIREMENTS, EQUIPMENT DIMENSIONS AND PERFORMANCE.
3. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL DESIGN INTENT, ARRANGEMENT AND EXTENT OF SYSTEMS. DO NOT SCALE DRAWINGS NOR USE AS SHOP DRAWINGS. WHERE ALTERNATE ROUTING, OFFSETS AND TRANSITIONS ARE REQUIRED FOR FIELD COORDINATION OF ALL TRADES, THIS CONTRACTOR SHALL MAKE CHANGES WITHOUT ADDITIONAL COSTS.
4. CONTRACTOR SHALL NOT SHUT-OFF/PUT OUT OF SERVICE ANY SYSTEMS/SERVICES WITHOUT FIRST COORDINATING ALL DOWNTIME WITH OWNER'S PERSONNEL. CONTRACTOR SHALL PROVIDE A DETAILED M.O.P. AS REQUIRED. DO NOT BEGIN WORK WITHOUT WRITTEN APPROVAL.
5. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY DIRECTED OTHERWISE.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION AND INSTALLING SLEEVES, INSERTS AND SUPPORTS AS REQUIRED FOR THIS SCOPE OF WORK AND/OR CORE DRILL REQUIREMENTS. COORDINATE WITH GENERAL CONTRACTOR AND STRUCTURAL ENGINEER AS REQUIRED.
7. CONTRACTOR SHALL CLOSELY COORDINATE NEW PLUMBING WITH ALL MECHANICAL, PLUMBING, ELECTRICAL, FIRE PROTECTION, ARCHITECTURAL AND STRUCTURAL MEMBERS. REFER TO DIVISION 22 FOR CEILING SPACE ALLOCATION PRIORITIES.
8. CONTRACTOR SHALL FIELD VERIFY ALL PLUMBING ITEMS PRIOR TO SUBMITTING A BID. NO ADDITIONAL COST WILL BE ALLOWED FOR CONTRACTOR'S FAILURE TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS.
9. ALL PLUMBING SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE CODES LISTED ON THIS SHEET AND THE ARCHITECTURAL CODE PLAN.
10. CONTRACTOR SHALL PROVIDE SUBMITTALS ON ITEMS LISTED IN THE PLUMBING SCHEDULES AND AS REQUIRED IN EACH SECTION OF SPECIFICATION TO THE ENGINEER FOR REVIEW PRIOR TO THE ORDER, PURCHASE OR INSTALLATION OF THESE SAME ITEMS.
11. PROVIDE WATER HAMMER ARRESTERS AT ALL QUICK CLOSING VALVES WITH ISOLATION VALVE AND WITH ACCESS OR ACCESS PANEL.
12. ALL THREADED HOSE CONNECTIONS TO DOMESTIC WATER SYSTEM SHALL HAVE AN APPROVED VACUUM BREAKER. IE: HOSE BIBBS, WALL HYDRANTS, SYSTEM DRAINS, EQUIPMENT DRAINS, ETC.
13. IT IS THE PLUMBING CONTRACTORS RESPONSIBILITY TO PROVIDE BACKFLOW PREVENTION AS REQUIRED BY CODE TO ALL PLUMBING, MECHANICAL EQUIPMENT AND IRRIGATION, INCLUDING BUT NOT LIMITED TO COFFEE MAKERS, JUICE MACHINES, TEA BREWERS, ICE MAKERS, LABORATORY HOODS, ETC.
14. PROVIDE REDLINE MARKUPS OF ANY FIELD CHANGES OR MODIFICATIONS ON THE CONSTRUCTION DOCUMENTS. REDLINE DRAWINGS SHALL BE REQUIRED WHETHER COORDINATION DRAWINGS ARE REQUIRED OR NOT.

ADOPTED/ENFORCED CODES REQUIRED

2018 INTERNATIONAL BUILDING CODE
2018 INTERNATIONAL MECHANICAL CODE
2018 INTERNATIONAL PLUMBING CODE
2018 INTERNATIONAL FUEL GAS CODE
2018 INTERNATIONAL ENERGY CONSERVATION CODE
2018 INTERNATIONAL FIRE CODE
2023 NATIONAL ELECTRICAL CODE
AND SUMMIT FIRE AND RESCUE AMENDMENTS TO BUILDING FIRE AND MECHANICAL CODE

DRAWING LIST - PLUMBING

P-001	PLUMBING GENERAL INFORMATION
P-002	PLUMBING SCHEDULES
P-100	UNDERGROUND TREATMENT BUILDING PLUMBING PLAN
P-101	LOWER TREATMENT BUILDING PLUMBING PLAN
P-102	UPPER TREATMENT BUILDING PLUMBING PLAN
P-900	PLUMBING DETAILS
P-901	PLUMBING DETAILS
TOTAL # OF SHEETS: 7	

CONTACT LIST

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14143 DENVER WEST PKWY, SUITE 550
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321.241.4142

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BCER PROJECT 121624017

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
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102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

PLUMBING

PLUMBING GENERAL INFORMATION

COLORADO LICENSED
MICHAEL HUFFMAN
32983
PROFESSIONAL ENGINEER
7/31/2025

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PLUMBING FIXTURE SCHEDULE

PLAN CODE	DESCRIPTION	LOCATION	FIXTURE					FLUSH VALVE / FAUCET					GPF/GPM	FIXTURE MOUNTING HEIGHT A.F.F.	NOTES
			MFR.	MODEL	MOUNTING STYLE	FIXTURE INSTALLED		MFR.	MODEL	FIXTURE INSTALLED		STYLE			
						MFR.	MODEL			MFR.	MODEL				
HB-1	HOSE BIBB	TREATMENT ROOM	-	-	WALL			WOODFORD	MODEL 24			WHEEL HANDLE	FULL FLOW	MECH PLANS	PROVIDE METAL WHEEL HANDLE
FD-1	FLOOR DRAIN	TREATMENT ROOM	J. R. SMITH	2110Y	FLOOR			-	-			-	-	-	2
FS-1	FLOOR SINK	TREATMENT ROOM	J. R. SMITH	3003Y-12	FLOOR			-	-			-	-	-	1, 3

NOTES

1. PROVIDE WITH 314 STAINLESS STEEL 1/2 GRATE, 304 STAINLESS STEEL INTERIOR.
2. ROUND STAINLESS STEEL STRAINER.
3. PROVIDE WITH BOTTOM DOME STRANER.

BACKFLOW PREVENTER ASSEMBLY SCHEDULE

PLAN CODE	TYPE	SYSTEM	MFR.	MODEL	INSTALLED		QUANTITY	LINE SIZE (INCHES)	ASSE STANDARD	NOTES
					MFR.	MODEL				
BFP-1	HORIZONTAL REDUCED PRESSURE	PLANT WATER	WATTS	LF909/LFF113FP			1	4	1013	1, 2, 3, 4

NOTES

1. PROVIDE TESTING AND CERTIFICATION IN ACCORDANCE WITH COLORADO REQUIREMENTS.
2. PROVIDE FUNNEL WITH LINE SIZE DISCHARGE RELIEF PIPING TO FLOOR SINK.
3. REFER TO DETAIL FOR PIPING ASSEMBLY.
4. PROVIDE WITH 120V/1PH POWER CONNECTION TO SHUT-DOWN DEVICE CONTROL MODULE.

SUMP PUMP SCHEDULE

PLAN CODE	MFR.	MODEL	INSTALLED		GPM TOTAL CAPACITY	HEAD	BASIN	HP	VOLT/PH	NOTES
			MFR.	MODEL						
SP-1	WEIL (OR APPROVED EQUAL)	A414-3D6P-TRVF			50	20	3'x3'x4'	1/2	480/3	1, 2, 3

NOTES

1. PROVIDE DUPLEX PUMP SYSTEM, CONTROL PANEL, WITH EXTRA SET OF DRY CONTACTS FOR CONNECTIONS TO BUILDING AUTOMATION SYSTEM.
2. PROVIDE HIGH WATER ALARM (AUDIBLE) AND LIGHT. PROVIDE 4 FLOAT SYSTEM. ALL COMPONENTS TO BE COMPATIBLE.
3. INTEGRAL OR STANDALONE DISCONNECT AIC/SCCR SHALL MATCH THE AIC RATING OF THE PANELBOARD FEEDING THE EQUIPMENT, UNLESS OTHERWISE SPECIFIED IN THE ELECTRICAL DRAWINGS. IF INFORMATION IS NOT AVAILABLE, THE INTEGRAL OR STANDALONE DISCONNECT AIC/SCCR SHALL BE 65KAIC. THE VENDOR/CONTRACTOR SHALL REVIEW THE ELECTRICAL DRAWINGS DURING BID TIME.

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PLUMBING

PLUMBING SCHEDULES

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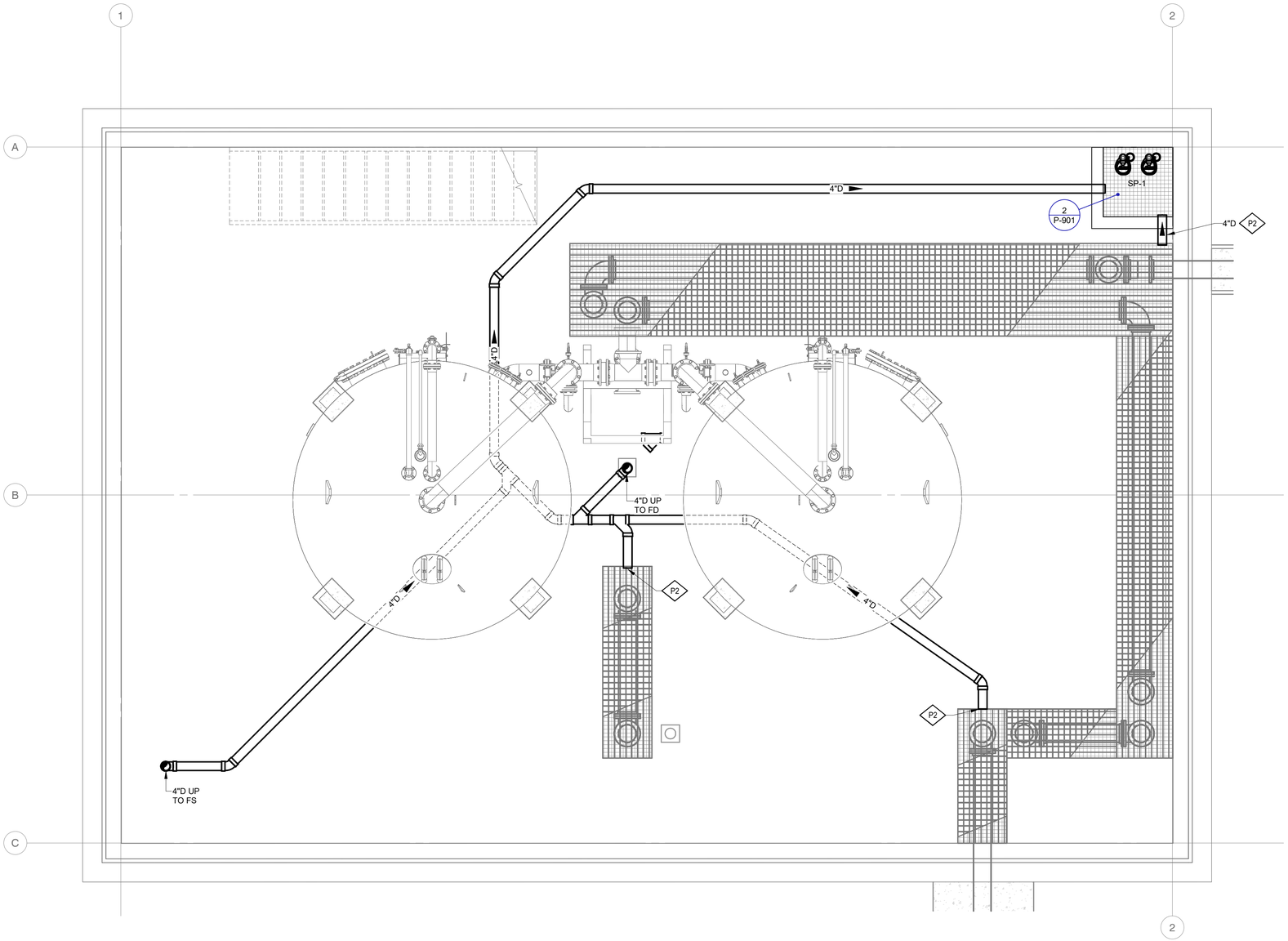

LOWER LEVEL PLUMBING PLAN AT EL. 9060.50'

SCALE: 3/8" = 1'-0"

GENERAL NOTES

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PLUMBING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
2. RUN WASTE PIPING AT 1/8" PER FOOT SLOPE.

WORK NOTES

P2	PROVIDE 4"WASTE TRENCH OUTLET. PIPE TO BE SET LEVEL WITH BOTTOM OF TRENCH.

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PLUMBING

UNDERGROUND TREATMENT BUILDING PLAN

COLORADO LICENSED PROFESSIONAL ENGINEER 32983
7/31/2025

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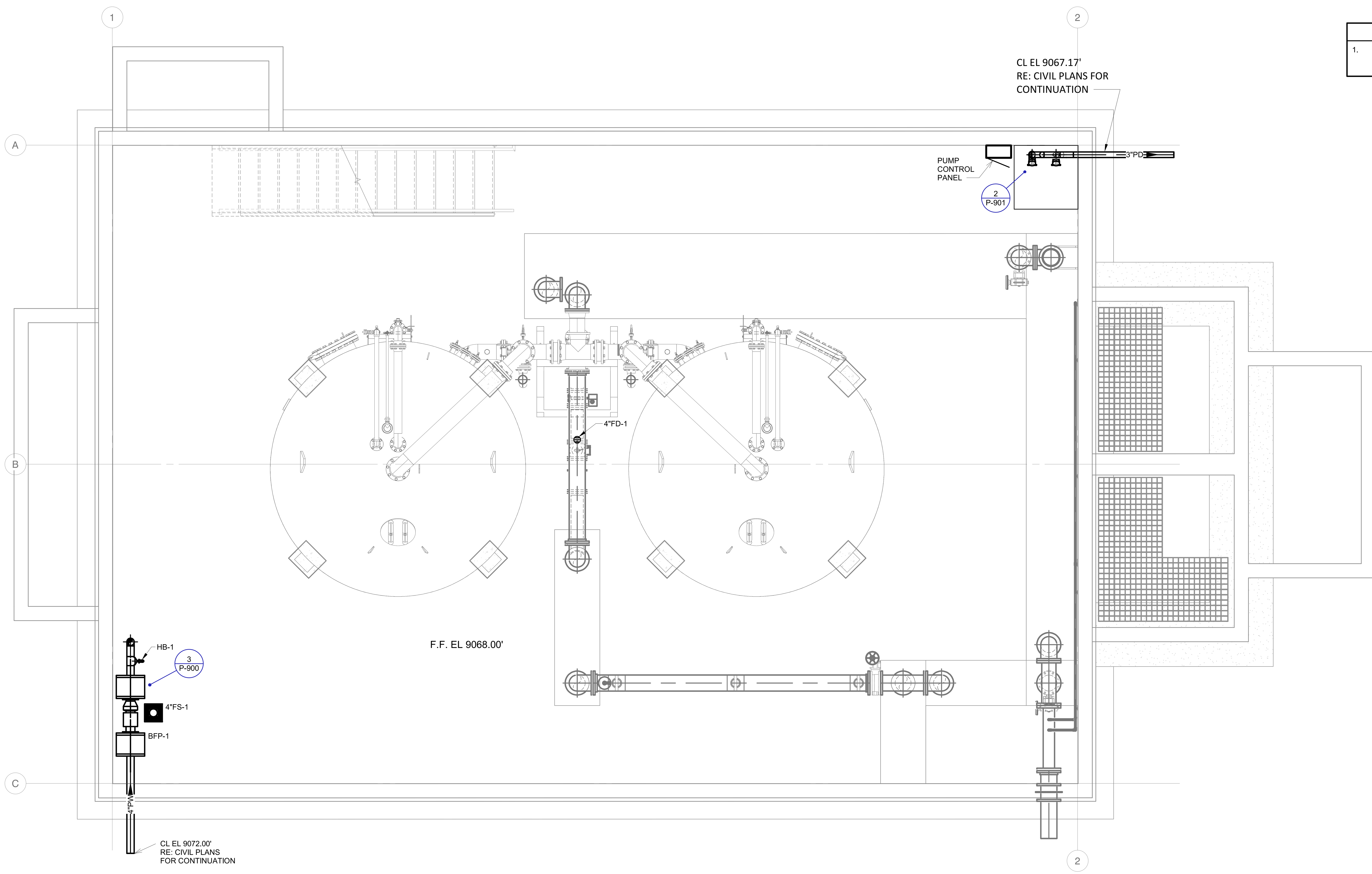

GENERAL NOTES

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PLUMBING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.

LOWER LEVEL PLUMBING PLAN AT EL. 9068.00'

SCALE: 3/8" = 1'-0"

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BCER PROJECT 121624017

PLUMMER
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303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

PLUMBING
LOWER TREATMENT BUILDING PLUMBING PLAN

COLORADO LICENSED PROFESSIONAL ENGINEER 32983
7/31/2025

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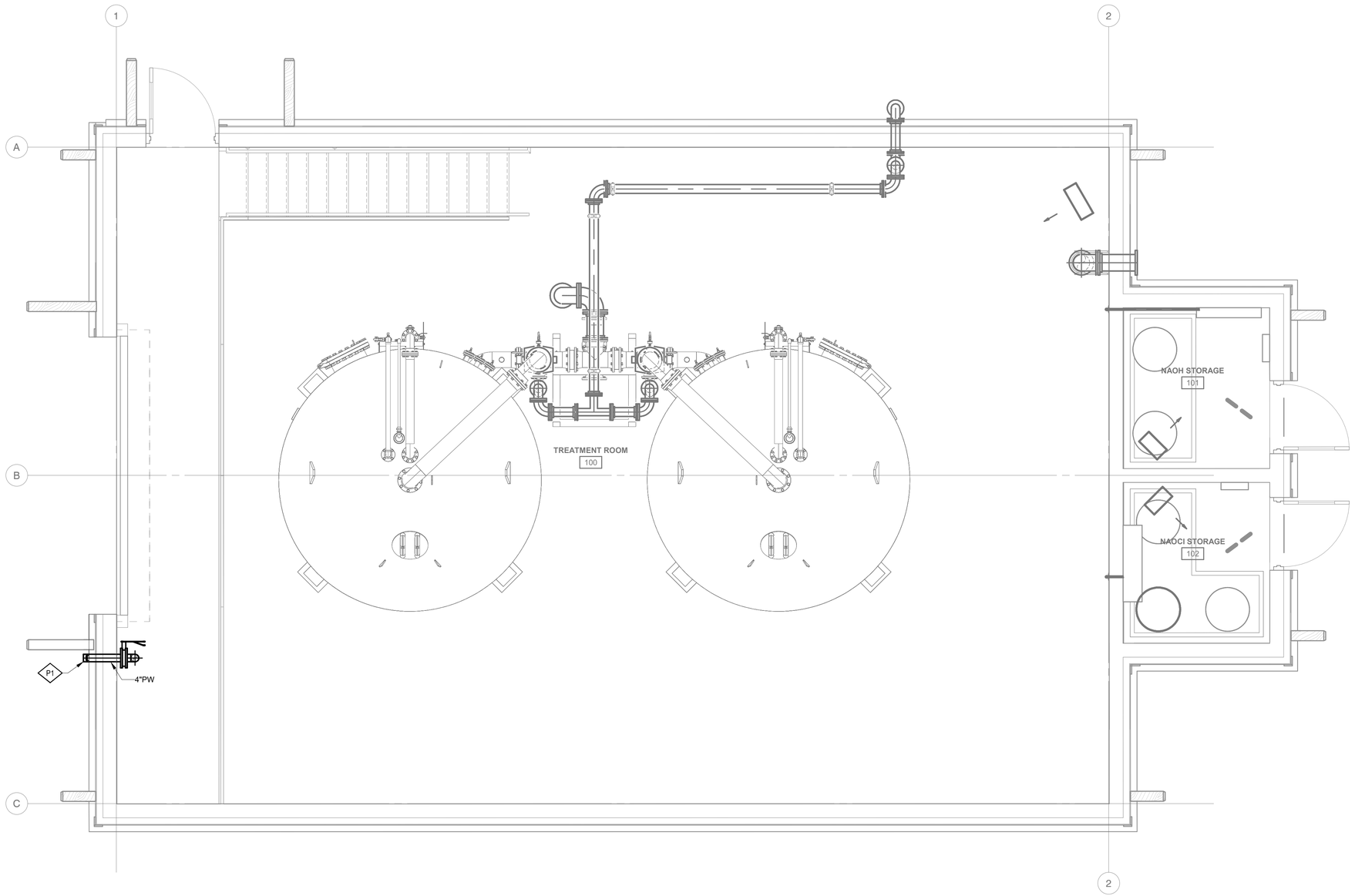
Dwg. No. P-101

4131-002-09



GENERAL NOTES

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PLUMBING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.

WORK NOTES

P1	PROVIDE 2-1/2" CAMLOCK CONNECTION MOUNTED TO EXTERIOR WALL.

UPPER LEVEL PLUMBING PLAN AT EL. 9075.00'

SCALE: 3/8" = 1'-0"

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PLUMBING

UPPER TREATMENT BUILDING PLUMBING PLAN

COLORADO LICENSED 32983 PROFESSIONAL ENGINEER
7/31/2025

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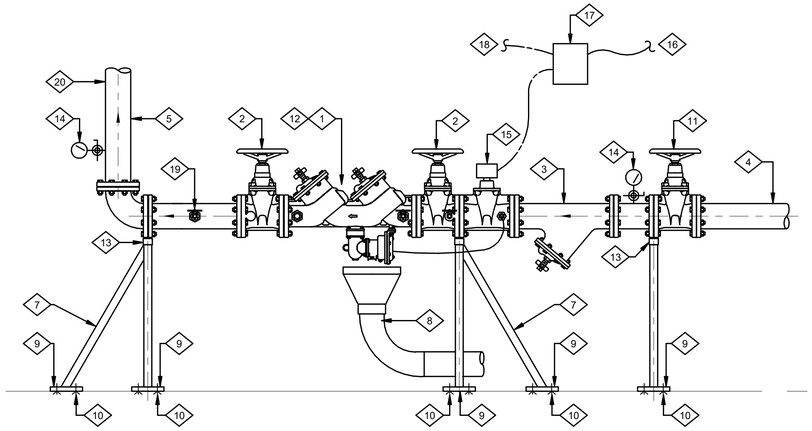

ELEVATION

REDUCED PRESSURE BACKFLOW PREVENTER DETAIL 3

SCALE: 1 1/2" = 1'-0" P-101

WORK NOTES FOR DOMESTIC WATER MAIN BACKFLOW PREVENTER:

1. REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY WITH MONITOR SWITCH AND FLOOD CONTROL INTEGRATED SYSTEM.
2. NON RISING STEM GATE VALVE WITH SOFT SEATS FURNISHED WITH BACKFLOW PREVENTER.
3. FLANGED WYE STRAINER WITH BLOW DOWN VALVE PIPED TO FLOOR DRAIN.
4. PLANT WATER MAIN FROM YARD.
5. PLANT WATER TO BUILDING FIXTURES.
6. WAFER CHECK VALVE.
7. PIPE SUPPORT OR PIPE STAND. 1 1.2" DIA. STEEL PIPE MIN. SET PLUMB. PROVIDE AUXILIARY ANGLED SUPPORTS BOLTED TO FLOOR TO PREVENT SWAY, MIN. OF 2 SUPPORTS FOR EACH BFP.
8. EXTEND INDIRECT DRAIN TO FLOOR SINK, SIZE TO MATCH FUNNEL DRAIN SIZE. PIPING TO BE COPPER WITH SOLDER JOINTS. SUPPORT FROM FLOOR WITH UNISTRUT AND ANCHOR SECURELY TO AVOID MOVEMENT.
9. 6x6x1/8 INCH FLOOR PLATE FOR PIPE SUPPORT.
10. CONCRETE ANCHORS.
11. BUILDING ISOLATION VALVE.
12. PROVIDE TESTING AND REPORT ON BACKFLOW PREVENTERS IN ACCORDANCE WITH THE CROSS CONNECTION STANDARDS AND STATE PLUMBING CODE REQUIREMENTS.
13. FLANGE SADDLE.
14. PRESSURE GAUGE.
15. FLOOD CONTROL INTEGRATED SYSTEM SOLENOID CONTROL VALVE. INSTALL PER MANUFACTURER RECOMMENDATIONS. RE: SCHEDULE.
16. COORDINATE ELECTRICAL REQUIREMENTS WITH ELECTRICAL CONTRACTOR.
17. ELECTRONIC SOLENOID TIMER.
18. WIRE ELECTRONIC SOLENOID TIMER TO LOCAL ALARM SYSTEM.
19. HOSE BIBB.
20. PROVIDE VERTICAL PIPE SUPPORTS PER PLUMBING PIPE SUPPORT DETAIL.

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PLUMBING

PLUMBING DETAILS

COLORADO LICENSED 32983 PROFESSIONAL ENGINEER
7/31/2025

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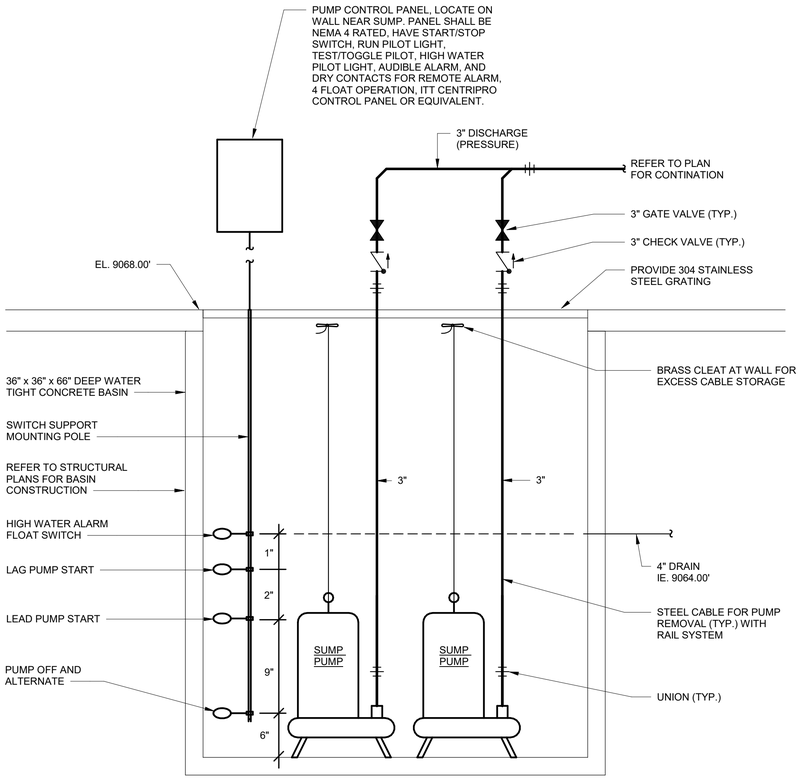
	THERMAL SHIELD		HUB AND SPIGOT & NO-HUB CAST IRON PIPE		PVC		COPPER TUBE & DWV COPPER	
MAXIMUM VERTICAL SPACING (FT.)	-		15		10a		10	
PIPE SIZE (IN.)	LENGTH (IN.)	THICKNESS (IN.)	MAX HORIZONTAL SPACING (FT.)(b)	MIN. ROD SIZE (IN.)	MAX HORIZONTAL SPACING (FT.)	MIN. ROD SIZE (IN.)	MAX HORIZONTAL SPACING (FT.)	MIN. ROD SIZE (IN.)
1/2	12	0.048	-	-	-	-	6	3/8
3/4	12	0.048	-	-	-	-	6	3/8
1	12	0.048	-	-	-	-	6	3/8
1 1/4	12	0.048	5	3/8	4	3/8	6	3/8
1 1/2	12	0.048	5	3/8	4	3/8	10	3/8
2	12	0.048	5	3/8	4	3/8	10	3/8
2 1/2	12	0.048	5	1/2	4	1/2	10	1/2
3	12	0.048	5	1/2	4	1/2	10	1/2
4	12	0.06	5	1/2	4	1/2	10	5/8

PLUMBING PIPE SUPPORT DETAIL - INSULATED & NON-INSULATED 1

SCALE: 1 1/2" = 1'-0"



SUMP PUMP DETAIL 2

SCALE: 1 1/2" = 1'-0" P-100

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PLUMBING
PLUMBING DETAILS

COLORADO LICENSED 32983 PROFESSIONAL ENGINEER
7/31/2025

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Dwg. No. P-901
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ELECTRICAL GENERAL PROVISIONS

1. THE NOTES CONTAINED ON THIS SHEET ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR WHEN WORKING IN THE FIELD AND CONTAIN EXCERPTS FROM THE SPECIFICATION SECTIONS. HOWEVER, THE CONTRACTOR IS HEREBY ADVISED THAT THE CONTRACT DOCUMENTS CONSIST OF BOTH THE DRAWINGS AND THE SPECIFICATIONS, AND THAT THE CONTRACTOR MUST COMPLY FULLY WITH BOTH THE BOUND DRAWINGS AND THE BOUND SPECIFICATIONS.
2. THE TERM "PROVIDE" USED IN THE DRAWINGS AND SPECIFICATIONS IMPLIES THE CONTRACTOR IS TO FURNISH, TRANSPORT, INSTALL, CONNECT, WARRANT AND START-UP, INCLUSIVELY.
3. WHERE NOTES ON THE DRAWING INDICATE THAT THE CONTRACTOR SHALL FIELD-VERIFY, THE INTENT IS FOR THE CONTRACTOR TO INVESTIGATE TO THE EXTENT NECESSARY TO PROVIDE THE WORK AND MATERIALS PRIOR TO BIDDING AND INCLUDE ALL COSTS IN THE BID PRICE. THE CONTRACT PRICE SHALL NOT BE INCREASED WHEN THE CONTRACTOR HAS NOT INVESTIGATED PER THE NOTES DIRECTING THAT BE DONE.
4. CODES
   - 4.1. ENTIRE INSTALLATION SHALL BE ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS
     - 4.1.1. NFPA 70, NATIONAL ELECTRICAL CODE, 2020 EDITION.
     - 4.1.2. NFPA 101, LIFE SAFETY CODE, 2021 EDITION.
     - 4.1.3. NFPA 820, STANDARD FOR FIRE PROTECTION IN WASTEWATER TREATMENT AND COLLECTION FACILITIES, 2020 EDITION.
     - 4.1.4. NFPA 780, LIGHTNING PROTECTION, 2020 EDITION.
     - 4.1.5. NESC/IEEE C2: NATIONAL ELECTRIC SAFETY CODE, 2017 EDITION.
5. AREA CLASSIFICATION
   - 5.1. THE FOLLOWING AREAS ARE RATED FOR THE STATED HAZARD CLASSIFICATION PER NFPA 820 AND TABLE 4.2.2;
     - 5.1.1. NOT APPLICABLE.
6. ENVIRONMENTAL RATINGS
   - 6.1. THE FOLLOWING AREAS SHALL HAVE THE FOLLOWING ENVIRONMENTAL RATINGS;
     - 6.1.1. ELECTRICAL ROOM - AIR-CONDITIONED
     - 6.1.2. LIFT STATION AREAS - DAMP, VENTILATED, AND HEATED
7. ENCLOSURE RATINGS
   - 7.1. PROVIDE ENCLOSURE FOR EQUIPMENT BASED UPON THE FOLLOWING CONDITIONS;
     - 7.1.1. AIR-CONDITIONED AREAS, NEMA 12.
     - 7.1.2. DRY, VENTILATED, AND HEATED AREAS, NEMA 12.
     - 7.1.3. DAMP, VENTILATED, AND HEATED AREAS, NEMA 4 PAINTED STEEL.
     - 7.1.4. WET, VENTILATED, AND HEATED AREAS, NEMA 4X 316 STAINLESS STEEL.
     - 7.1.5. OUTDOORS, NEMA 4X 316 STAINLESS STEEL.
     - 7.1.6. INDOOR CHEMICAL AREAS, NEMA 4X POLYCARBONATE.
     - 7.1.7. OUTDOOR CHEMICAL AREAS, NEMA 4X 316 STAINLESS STEEL.
8. WORKMANSHIP
   - 8.1. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE CONTRACT DOCUMENTS, (INCLUDING BOTH DRAWINGS AND SPECIFICATIONS), INDUSTRY STANDARDS, AND ALL APPLICABLE CODES.
   - 8.2. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A PROFESSIONAL WORKMANLIKE MATTER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND ACCEPTED BY ENGINEER/OWNER.
   - 8.3. CORRECTION OF ANY DEFECTS SHALL BE COMPLETE WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MANY HAVE BEEN DAMAGED.
   - 8.4. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED RECOMMENDATIONS FOR SERVICE INTENDED AS INTERPRETED BY THE ENGINEER. THE INSTALLATION OF ALL EQUIPMENT SHALL BE MADE BY EXPERIENCED CRAFTSMAN IN A NEAT WORKMANLIKE MANNER. ALL MATERIALS, TOOLS, COSTS AND SERVICES NECESSARY TO COMPLETELY INSTALL ALL ELECTRICAL WORK SHALL BE FURNISHED BY THE CONTRACTOR.
9. DOCUMENTATION
   - 9.1. CONTRACTOR SHALL MAINTAIN A SET OF PRINTS AND MARK-UP DURING CONSTRUCTION TO REFLECT "AS-BUILT" CONDITIONS. PRINTS SHALL BE DELIVERED TO THE ENGINEER UPON COMPLETION OF THE PROJECT AS A COMPLETE SET OF REQUIRED DRAWINGS.

EXISTING CONDITIONS

1. THE CONTRACTOR SHALL INSPECT THE SITE PRIOR TO BID TO EVALUATE EXISTING CONDITIONS. INSTALLATION OF THE NEW FACILITIES WILL REQUIRE FIELD COORDINATION WITH PLANT OPERATIONS TO PERMIT MAINTENANCE OR OPERATION DURING CONSTRUCTION. DURATION OF POWER OUTAGES SHALL BE MINIMUM REQUIRED FOR SAFE INSTALLATION AND SHALL BE SCHEDULED WITH AND APPROVED BY THE OWNER.
2. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID EXISTING UNDERGROUND UTILITIES INCLUDING PROCESS PIPING, WATER LINES, CHEMICAL FEED PIPING, ELECTRICAL CONDUITS, HAND EXCAVATION SHALL BE REQUIRED IN CONGESTED AREAS WHERE THE EXACT LOCATIONS OF ALL UTILITIES IN UNKNOWN. LOCATIONS SHOWN FOR THE EXISTING UNDERGROUND UTILIZES ARE APPROXIMATE ONLY. NOT ALL THE EXISTING UNDERGROUND UTILITIES ARE SHOWN. FIELD ADJUST LOCATIONS OF THE NEW FACILITIES TO ACCOMMODATE THE EXISTING SITE CONDITIONS AND UNDERGROUND UTILITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE ALL UNDERGROUND UTILITIES BEFORE DIGGING. CONTRACTOR SHALL COORDINATE THE EFFORT WITH THE OWNER.

SEQUENCING

1. EXISTING FACILITIES TO REMAIN IN OPERATION AT ALL TIMES. SEQUENCE WORK AND PROVIDE TEMPORARY SYSTEMS AS REQUIRED TO MAINTAIN OPERATIONS.
2. PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. WHEN WORK MUST BE PERFORMED ON ENERGIZED EQUIPMENT OR CIRCUITS, USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS.

DEMOLITION

1. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL AND PLUMBING DEMOLITION WORK DRAWINGS TO DETERMINE AND COORDINATE THE EXTENT OF THE DEMOLITION WORK REQUIRED FOR THE PROJECT.
2. REMOVE ALL EXISTING BRANCH CIRCUITING AND EQUIPMENT (STARTERS, DISCONNECTS, DEVICES, WIRING, CABLES, AND CONDUIT), TO ALL LOADS THAT ARE BEING REMOVED BACK TO THE SOURCE OF SUPPLY UNLESS NOTED OTHERWISE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO CHECK THE FUNCTION OF EACH CONDUCTOR BEFORE REMOVING OR DISCONNECTING.
4. GRIND ALL ANCHOR BOLTS FLUSH WITH SURFACE AND PATCH/FILL ALL CONDUIT OPENS IN SLAB AND/OR WALL.

MATERIALS

1. ALL MATERIALS SHALL BE NEW AND BEAR UNDERWRITERS LABELS WHERE APPLICABLE.
2. POWER CONDUCTORS AND CABLES
   - 2.1. UNLESS NOTED OTHERWISE, CONDUCTOR SIZES INDICATED ARE BASED ON COPPER CONDUCTORS. DO NOT PROVIDE CONDUCTORS SMALLER THAN THOSE INDICATED.
   - 2.2. SMALLEST POWER WIRING SHALL BE 12 AWG.
   - 2.3. SINGLE CONDUCTORS CONSTRUCTION:
     - 2.3.1. UNLESS OTHERWISE INDICATED, ALL CONDUCTORS SHALL BE COPPER AND SHALL BE STRANDED. SOLID CONDUCTORS SHALL BE ALLOWED ON 120-V LIGHTING AND RECEPTACLE CIRCUITS.
   - 2.4. INSULATION REQUIREMENTS:
     - 2.4.1. CONDUCTOR SIZES NO. 6 AND LARGER PROVIDE CONDUCTORS WITH TYPE RHH OR RHW.
     - 2.4.2. CONDUCTOR SIZES SMALLER THAN NO. 6 PROVIDE CONDUCTORS WITH XHHW.
     - 2.4.3. FOR LIGHTING AND RECEPTACLES, PROVIDE CONDUCTORS WITH THHN OR THWN.
   - 2.5. WHERE FLEXIBLE CORDS AND CABLES ARE SPECIFIED, PROVIDE TYPE SO, 600 V WITH THE NUMBER AND SIZE OF COPPER CONDUCTORS INDICATED.
   - 2.6. WHERE MULTIPLE CONDUCTOR CABLES ARE SPECIFIED, PROVIDED CABLES THAT ARE UL CABLE TRAY RATED.
3. GROUNDING AND BONDING
   - 3.1. CONTRACTOR SHALL PROVIDE A GROUNDING SYSTEM AS REQUIRED BY THE NEC AND IEEE GREEN BOOK. THE INSTALLED GROUNDING SYSTEM SHALL HAVE A RESISTANCE OF LESS THAN 5 OHMS TO GROUND. PROVIDE CONTINUOUS #4/0 TINNED COPPER GROUNDING SYSTEM. GROUND RODS SHALL BE COPPER CLAD STEEL 3/4" DIAMETER X 10' LENGTH. CONNECTIONS SHALL BE EXOTHERMIC WELDS.
4. HANGERS AND SUPPORTS
   - 4.1. ALL STRUT, SUPPORTING AND FASTENING DEVICES SHALL BE 316 STAINLESS STEEL.
   - 4.2. PROVIDE LEVELING NUTS AND 3/4" GROUT UNDER ALL FLOOR MOUNTED BASE PLATES.
   - 4.3. PROVIDE GROUNDING AT ALL OUTDOOR STRUT SWITCHRACKS.
5. RACEWAYS AND BOXES
   - 5.1. ALL RACEWAY INSTALLATIONS SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL COMPONENTS. ALL EXPOSED RACEWAY SHALL BE INSTALLED PARALLEL TO BEAMS, CEILINGS, FLOORS AND WALLS. SEE RACEWAY SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
   - 5.2. ALL CONDUITS SHALL BE INSTALLED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE.
   - 5.3. ALL RACEWAY INSTALLATIONS, CROSSING EXPANSION JOINTS OR TRANSITIONS FROM BELOW GRADE TO EXPOSED ABOVE GRADE, SHALL HAVE EXPANSION OR EXPANSION/DEFLECTION TYPE FITTINGS AS SPECIFIED FOR THE APPLICATION
   - 5.4. THREADED, INSULATED, AND GASKETED GALVANIZED STEEL HUBS RATED AS A RAIN-TIGHT CONNECTION SHALL BE USED FOR ALL CONDUITS PENETRATING ALL ENCLOSURES, PANELBOARDS, STARTERS, TERMINATION BOXES, MCC, PLC CABINETS, ETC. BUSHING SHALL BE GROUNDING OR NON-GROUNDING TYPE PER NFPA 70.
   - 5.5. GALVANIZED STEEL CONDUIT SHALL NOT BE IN DIRECT CONTACT WITH CONCRETE OR GROUT.
   - 5.6. FLEXIBLE CONDUIT SHALL BE TYPE LFNC FLEXIBLE SEAL TIGHT CONDUIT FOR 3/4" AND 1" SIZES, CONNECTORS SHALL BE UL LISTED (1/2" LFNC FLEX SHALL BE ALLOWED FOR INSTRUMENTS WITH 1/2" THREADED HUB ENTRIES). USE GALVANIZED STEEL CORE LIGHT TIGHT FLEXIBLE METAL CONDUIT FOR SIZED 1 1/4" AND LARGER, CONNECTORS SHALL BE GALVANIZED STEEL. MAXIMUM LENGTH OF FLEX CONDUIT SHALL BE 18".
   - 5.7. CONDUIT APPLICATION
     - 5.7.1. INDOORS-EXPOSED, RIGID GALVANIZED STEEL CONDUIT
     - 5.7.2. OUTDOORS-EXPOSED, RIGID GALVANIZED STEEL CONDUIT
     - 5.7.3. CONDUIT STUB-UPS THROUGH CONCRETE, PVC COATED RIGID GALVANIZED STEEL CONDUIT
     - 5.7.4. CONDUIT CONCEALED IN CONCRETE SLABS OR WALLS, PVC SCHEDULE 80-EB
6. UNDERGROUND DUCTS AND RACEWAYS
   - 6.1. THE DUCTBANK ROUTING SHOWN ON THE DRAWING(S) IS APPROXIMATE. THE EXACT DUCTBANK ROUTING, CABLE LENGTH, AND CONDUIT LENGTH SHALL BE VERIFIED IN THE FIELD.
   - 6.2. ALL UNDERGROUND SINGLE CONDUITS, AND DUCTBANKS OF MULTIPLE CONDUITS, SHALL BE PVC SCHEDULE 40-EB CONDUIT, ENCASED IN REINFORCED RED CONCRETE, AND THE CONCRETE DYED RED BEFORE PLACEMENT, AS SPECIFIED. MINIMUM CONDUIT SIZE SHALL BE 1 INCH.
   - 6.3. BENDS 2" AND SMALLER SCHEDULE 40-EB. LARGER THAN 2" SHALL BE PVC COATED GALVANIZED STEEL CONDUIT.
7. IDENTIFICATIONS
   - 7.1. ELECTRICAL EQUIPMENT AND DEVICES SHALL BE PROVIDED WITH WHITE WITH ENGRAVED BLACK LETTERING PHENOLIC NAMEPLATES, MECHANICALLY FASTENED WITH SS SCREWS OR RIVETS.
   - 7.2. NAMEPLATES SHALL HAVE EQUIPMENT TAG NUMBER AS WELL AS DESCRIPTION AND SERVED FROM LOCATION INCLUDED.
8. PANELBOARDS
   - 8.1. ALL PANEL SCHEDULES SHALL BE RETYPED AND LAMINATED TO REFLECT UP TO DATE CONDITIONS. TRACE EXISTING CIRCUITS.
   - 8.2. CONTRACTOR SHALL BE RESPONSIBLE FOR SIZING CONDUCTORS AND CONDUITS PER THE NEC.
   - 8.3. CIRCUIT BREAKERS FOR INSTALLATION IN EXISTING PANELBOARDS SHALL BE BY THE MANUFACTURER OF THAT PANELBOARD. CIRCUIT BREAKERS SHALL MATCH THE SHORT CIRCUIT RATINGS. NEW EQUIPMENT FOR DISTRIBUTION SHALL MATCH EXISTING EQUIPMENT.
   - 8.4. ALL RECEPTACLES BRANCH CIRCUITS OVER 75' IN LENGTH SHALL USE #10 AWG CONDUCTORS (FOR VOLTAGE DROP).
   - 8.5. CONTRACTOR MAY COMBINE HOMERUNS TO 120V PANELBOARD CIRCUIT PER NEC. COMBINING MORE THAN THREE 120V CIRCUITS WILL NOT BE ALLOWED.
   - 8.6. UNLESS OTHER SPECIFIED, PANELBOARD ENCLOSURES SHALL BE NEMA 3R, EXCEPT THOSE IN CORROSIVE ARES OR OUTSIDE SHALL BE NEMA 4X STAINLESS STEEL.
9. WIRING DEVICES
   - 9.1. PROVIDE WEATHERPROOF GALVANIZED STEEL TOGGLE SWITCH COVERS FOR WET LOCATIONS, CHEMICAL AREAS AND OUTSIDE MOUNTED SWITCHES.
   - 9.2. PROVIDE GALVANIZED STEEL SELF CLOSING WEATHERPROOF RECEPTACLE COVERS FOR WET , DAMP AND CHEMICAL AREAS.
   - 9.3. PROVIDE GALVANIZED STEEL WEATHERPROOF IN USE COVERS FOR RECEPTACLES MOUNTED OUTSIDE AND THOSE LOCATION IN WET, DAMP AND CHEMICAL AREAS FEEDING EQUIPMENT.
10. LIGHTNING PROTECTION
    - 10.1. CONTRACTOR SHALL PROVIDE A UL 96A MASTER LABEL LIGHTNING PROTECTION SYSTEM INCLUDING GROUND RODS AT LIGHTING PROTECTION SYSTEM DOWN CONDUCTOR. INTERCONNECT EACH SYSTEM GROUNDS WITH A CONTINUOUS #4/0 COPPER TINNED COPPER GROUNDING SYSTEM.
    - 10.2. THE FOLLOWING FACILITIES AND/OR BUILDINGS SHALL BE PROVIDED WITH A LIGHTNING PROTECTION SYSTEM.
      - 10.2.1. TREATMENT BUILDING AS DETERMINED BY LIGHTING PROTECTION CONTRACTOR.
11. CONCRETE PADS
    - 11.1. PROVIDE 4" CONCRETE HOUSEKEEPING PADS ON ALL FREE STANDING EQUIPMENT AND PANELS.
    - 11.2. UNLESS OTHERWISE SHOWN ON DRAWINGS, PROVIDE A 6" CONCRETE PAD FOR ALL OUTDOOR SWITCHRACKS, PADS SHALL EXTEND 1''-0" ON SIDES AND BACK, AND 3'-0" FROM THE FRONT OF THE EQUIPMENT.

INSTALLATION

1. REFER TO MECHANICAL DRAWINGS AND APPROVED MANUFACTURER'S SHOPS DRAWINGS FOR THE EXACT LOCATION OF ALL EQUIPMENT. COORDINATE EXACT EQUIPMENT STUB-UP LOCATIONS WITH EQUIPMENT MANUFACTURER, PRIOR TO ROUGH-IN.
2. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS NECESSARY FOR THE EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED OF THEIR WORK.
4. CORING OF AN EXISTING STRUCTURE SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER/ENGINEER. CORING THROUGH STRUCTURAL BEAMS IS STRICTLY PROHIBITED WITHOUT PRIOR WRITTEN APPROVAL FROM THE OWNER/ENGINEER.
5. CONDUIT AND DEVICE LOCATIONS ARE SHOWN DIAGRAMMATICALLY ONLY. CONTRACTOR SHALL FIELD LOCATE OR ROUTE AS REQUIRED.
6. MAINTAIN MAXIMUM PRACTICAL OPEN FLOOR SPACE AND WORKING SPACE AROUND EQUIPMENT. ROUTE CONDUITS SO NOT TO CREATE A TRIPPING HAZARD OR INTERFERE WITH OPERATING EQUIPMENT.
7. CONDUITS SHALL BE CONCEALED TO GREATEST EXTENT POSSIBLE, UNLESS OTHERWISE APPROVED BY OWNER.

COORDINATION

1. CONTRACTOR SHALL COORDINATE ALL WORK WITH ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING AND SPECIAL SYSTEMS DRAWINGS. COORDINATE MECHANICAL AND PLUMBING EQUIPMENT SIZES AND LOCATIONS WITH MECHANICAL AND PLUMBING DRAWINGS, SCHEDULES AND SPECIFICATIONS. PROVIDE REQUIRED ELECTRICAL DISCONNECT SWITCHES, FUSES, CIRCUIT BREAKERS, STARTERS AND CONTROLS, BRANCH CIRCUITS, FEEDERS, ELECTRICAL EQUIPMENT AND DEVICES, AND WIRING REQUIRED FOR A COMPLETE FUNCTIONAL SYSTEM.
2. HVAC: WHEN NOT IDENTIFIED ON DRAWINGS, CONDUIT AND WIRING FOR THERMOSTATS SHALL BE 3#14, 3/4" CONDUIT. CONDUIT AND WIRING FOR MOTORIZED DAMPER SHALL BE 3#14, 3/4" CONDUIT

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303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ELECTRICAL
ELECTRICAL NOTES

COLORADO LICENSED
LUIS W. CANTU
66311
PROFESSIONAL ENGINEER
09/10/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	N.TOUSSAINT
DRAWN	N. TOUSSAINT
CHECKED	T.GERTIG
REVIEWED	M.BARRERA

Seq. 51 of 70
Dwg. No. E-000
4131-002-09

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ONE-LINE DIAGRAM SYMBOLS

- ELECTRIC SERVICE METER
- WEATHERHEAD
- 60A — FUSE, RATING AS SHOWN
- ATS 100A 4P — TRANSFER SWITCH, SIZE AND NUMBER OF POLES AS SHOWN, ATS-AUTOMATIC, MTS-MANUAL, SATS-SERVICE ENTRANCE AUTO
- 3-CTS — INSTRUMENT CLASS CURRENT TRANSFORMER, NUMBER AS SHOWN
- 2-PTS — VOLTAGE TRANSFORMER, INSTRUMENT CLASS, FUSED PRIMARY AND SECONDARY, NUMBER AS INDICATED
- 1-BYZ — ZERO SEQUENCE INSTRUMENT CLASS CURRENT TRANSFORMER, NUMBER AS SHOWN
- 60A 3P — LOW VOLTAGE THERMAL MAGNETIC CIRCUIT BREAKER, SIZE AND NUMBER OF POLES AS INDICATED
- SIZE-2 — FULL VOLTAGE, NON-REVERSING MOTOR STARTER, SIZE AS INDICATED
- SIZE-3 — FULL VOLTAGE, NON-REVERSING COMBINATION MOTOR STARTER, SIZE AS INDICATED
- SIZE-1 — FULL VOLTAGE, TWO SPEED MOTOR STARTER, SIZE AS INDICATED
- SIZE-1 — FULL VOLTAGE, REVERSING MOTOR STARTER, SIZE AS INDICATED

- ## — MOTOR, HORSEPOWER AS INDICATED
- MOTOR WINDING HEATER
- MOTOR OR STARTER ENCLOSURE SPACE HEATER
- MOISTURE/LEAKAGE SENSOR
- THERMISTORS
- RESISTANCE TEMPERATURE DETECTORS (RTD'S) AND THERMISTORS
- RESISTANCE TEMPERATURE DETECTORS (RTD'S)
- 60A / 40A — FUSED DISCONNECT SWITCH, SIZE AS INDICATED, SWITCH/FUSE
- 60A — NONFUSED DISCONNECT SWITCH, SIZE AS INDICATED
- VS — VIBRATION SWITCH
- LS — LEVEL SWITCH
- PS — PRESSURE SWITCH
- FS — FLOW SWITCH
- T — THERMOSTAT
- ELECTRICAL CONNECTION

- PUSH BUTTON CONTROL STATION, FUNCTION AS INDICATED ON SCHEMATIC
- SELECTOR SWITCH CONTROL STATION, FUNCTION AS INDICATED ON SCHEMATIC
- S — SOLENOID OPERATED VALVE
- 15KV / 300KVA / 480V — TRANSFORMER, SIZE AS INDICATED, PRIMARY AND SECONDARY VOLTAGE AS INDICATED
- AMPS — DRAWOUT TYPE VACUUM BREAKER, SIZE AS INDICATED
- 400A / 52 — DRAWOUT TYPE VACUUM BREAKER, SIZE AS INDICATED
- 400A — MEDIUM VOLTAGE FUSED MOTOR CONTROLLER
- DRAWOUT TYPE EQUIPMENT OF DEVICE
- MEDIUM VOLTAGE CABLE TERMINATION
- MEDIUM VOLTAGE AIR INTERRUPTER SWITCH
- MEDIUM VOLTAGE FUSED AIR INTERRUPTER SWITCH
- K1 — MECHANICAL KEY INTERLOCK "K1" DENOTES SEQUENCE K1
- LA — LIGHTNING ARRESTER
- JUNCTION BOX

- SPECIAL CAPACITOR
  SC - SURGE CAPACITOR
  PF - POWER FACTOR CORRECTION CAPACITOR
- THREE PHASE DELTA CONNECTION
- THREE PHASE GROUNDED WYE CONNECTION
- THREE PHASE UNGROUNDED WYE CONNECTION
- CONDUIT SEALOFF
- CIRCUIT BREAKER - THERMAL MAGNETIC 3 POLE UNLESS INDICATED OTHERWISE CONTINUOUS AMP TRIP SETTING INDICATED
- XXXA / XXXA — CIRCUIT BREAKER WITH CURRENT LIMITING FUSES - TRIP AND FUSE RATING INDICATED. 3 POLE UNLESS INDICATED OTHERWISE.
- XXXA — FUSED SWITCH - SWITCH AND FUSE CURRENT RATING INDICATED. 3 POLE UNLESS INDICATED OTHERWISE.
- XXXA — SWITCH - CURRENT RATING INDICATED. 3 POLE UNLESS INDICATED OTHERWISE
- XXXAF / XXXAT — DRAWOUT AIR CIRCUIT BREAKER LOW VOLTAGE. FRAME SIZE AND TRIP SETTING INDICATED.

MISCELLANEOUS

- P:PLCXXX-XX — PLC POWER WIRE CALLOUT
- C:PLCXXX-XX — PLC CONTROL WIRE CALLOUT
- PPXXX-XX — POWER PANEL WIRE CALLOUT
- LPXXX-XX — LIGHTING PANEL WIRE CALLOUT
- MCCXXX-XX — MCC WIRE CALLOUT
- XXX-XXX-XX — EQUIPMENT CALLOUT
- XX / XXX-XX — EQUIPMENT CALLOUT
- XXX-XXX-XX / XXX-XXX-XX — DOUBLE CALLOUT
- XXX-XXX-XX / XXX-XXX-XX / XXX-XXX-XX — TRIPLE WIRE CALLOUT
- ELECTRICAL EQUIPMENT
- INSTRUMENT

NOTES

1. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND LOCAL ELECTRICAL CODES.
2. ALL JUNCTION BOXES SHALL BE NEMA 4X, 316 STAINLESS STEEL, RUN STRUT VERTICALLY DIRECTION, WITH 316 STAINLESS STEEL MOUNTING HARDWARE.
3. MAINTAIN MAXIMUM PRACTICAL OPEN FLOOR SPACE AND WORKING SPACE AROUND EQUIPMENT. ROUTE CONDUITS SO NOT TO CREATE A TRIPPING HAZARD OR INTERFERE WITH OPERATING EQUIPMENT.
4. CONDUITS SHALL BE CONCEALED TO GREATEST EXTENT POSSIBLE, UNLESS OTHERWISE APPROVED BY OWNER.
5. COORDINATE EXACT EQUIPMENT STUB-UP LOCATIONS WITH EQUIPMENT MANUFACTURER, PRIOR TO ROUGH-IN.
6. EXPOSED/ABOVE GROUND CONDUIT WITHIN CHEMICAL AREAS SHALL BE SCHEDULE 80 PVC (3/4" MINIMUM). ALL EXPOSED/ABOVE GROUND CONDUIT NOT WITHIN CHEMICAL ARES SHALL BE ALUMINUM RIGID METALLIC CONDUIT (3/4" MINIMUM). CONDUIT STUB UPS EMERGING FROM CONCRETE SHALL BE PVC COATED GALVANIZED RIGID STEEL.
7. ALUMINUM CONDUIT SHALL NOT BE IN DIRECT CONTACT WITH CONCRETE OR GROUT.
8. CONDUIT WITHIN CHEMICAL AREAS SHALL BE CONCEALED WITHIN SLAB, WALLS, AND ROOF EXCEPT FOR PANELS AND VIBRATING EQUIPMENT. CONCEALED CONDUIT SHALL BE SCHEDULED 80 PVC (3/4" MINIMUM). FLEXIBLE CONDUIT SHALL BE TYPE LFNC FLEXIBLE SEAL TIGHT CONDUIT FOR 3/4" MINIMUM TO 2" SIZES, CONNECTORS SHALL BE UL LISTED (1/2" LFNC FLEX SHALL BE ALLOWED FOR INSTRUMENTS WITH 1/2" THREADED HUB ENTRIES, ALL OTHER FLEX SHALL E 3/4" OR LARGER). USE ALUMINUM CORE LIGHT TIGHT FLEXIBLE METAL CONDUIT FOR SIZED 2 1/2" AND LARGER, CONNECTORS SHALL BE ALUMINUM. MAXIMUM LENGTH OF FLEX CONDUIT SHALL BE 18". ALL CONDUIT SHALL BE MOUNTED ON STRUCTURE.
9. ALL FASTENERS AND ANCHOR BOLTS SHALL BE 316 STAINLESS STEEL EPOXY TYPE. WASHERS AND NUTS SHALL BE 316 STAINLESS STEEL.
10. USE ALUMINUM GROUNDING TYPE MYERS HUBS WITH INSULATED THROATS FOR ENCLOSURE ENTRIES.

ELECTRICAL SYMBOLS

- GROUND ROD
- GROUND TEST WELL
- EXOTHERMIC WELD
- TELEPHONE OUTLET
- COMMUNICATIONS OUTLET
- STRUCTURED WIRE OUTLET
- CONVENIENCE RECEPTACLE, 120V.
- RECEPTACLE, 240V,1PH OR 208V,1PH
- WELDING RECEPTACLE
- M — MOTOR
- FIELD INSTRUMENT OR DEVICE
- PUSH BUTTON CONTROL STATION IN FIELD, LOCATION AND FUNCTION AS INDICATED
- NEMA 4X STAINLESS STEEL JUNCTION BOX
- GROUND
- POWER OR SERVICE POLE
- CM — CONDUIT MARKER
- CONDUIT EXPANSION JOINT

- A LP-2 — CEILING MOUNTED FIXTURE
  a = DENOTES SWITCH
  A = DENOTES FIXTURE TYPE
  LP-2 = DENOTES POWER CIRCUIT
  SEE FIXTURE SCHEDULE
- X — WALL MOUNTED LIGHT, TYPE AS NOTED
- X — POLE MOUNTED LIGHT, TYPE AS NOTED
- e B LP-2 — FLUORESCENT STRIP LIGHT
  a = DENOTES SWITCH
  A = DENOTES FIXTURE TYPE
  LP-2 = DENOTES POWER CIRCUIT
- UNSWITCHED LIGHT, TYPE AS NOTED
- ES — EMERGENCY EXIT SIGN SEE FIXTURE SCHEDULE
- EMERGENCY FIXTURE SEE FIXTURE SCHEDULE
- ER — EMERGENCY REMOTE LAMP HEADS SEE FIXTURE SCHEDULE
- W — WALL PACK SEE FIXTURE SCHEDULE
- a $3 — 3-POLE LIGHT SWITCH
  a = DENOTES SWITCH
- a $ — SINGLE LIGHT SWITCH
  a = DENOTES SWITCH

- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- CONDUIT END
- UNDERGROUND CONDUIT
- UNDERGROUND DUCTBANK
- EXPOSED CONDUIT
- CONCEALED CONDUIT, AS NOTED ON PLANS
- GROUND WIRE
- CONDUIT HOME RUN
- FLEXIBLE CONDUIT OR CABLE
- S — DETECTOR
- SOLID STATE DEVICE SUCH AS RECTIFIER OR SCR DRIVE.
- ALARM INDICATING DEVICE:
  BZ = BUZZER
  CH = CHIME

ELECTRICAL ABBREVIATIONS

A	AMP
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AL	ALUMINUM
AUTO	AUTOMATIC
AUX	AXIAL
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BKR	BREAKER
BLDG	BUILDING
C	CONDUCTORS, CONDUIT
C/C	CENTER TO CENTER
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CM	CONDUIT MARKER
CMH	COMMUNICATION MANHOLE
COND	CONDUIT
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
DISC	DISCONNECT
DWG	DRAWING
EHU	ELECTRIC UNIT HEATER
EL	ELEVATION
ELEV	ELEVATION
EMH	ELECTRICAL MANHOLE
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EP	EXPLOSION PROOF
ETM	ELAPSED TIME METER
EX	EXISTING
EXIST	EXISTING
FDR	FEEDER
FLEX	FLEXIBLE CONDUIT
FLR	FLOOR
FO	FIBER OPTIC
FT	FEET
FUT	FUTURE
FWD	FORWARD
G	GROUND
GALV	GALVANIZED
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GRD	GROUND
HID	HIGH INTENSITY DISCHARGE
HH	HANDHOLE
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HZ	HERTZ
I/O	INPUT OUTPUT
INST	INSTANTANEOUS
INSTR	INSTRUMENT
JB	JUNCTION BOX
J-BOX	JUNCTION BOX
kCMIL	1,000 CIRCULAR MILS
KVA	KILO VOLTS AMPERES
KW	KILOWATTS
KWH	KILOWATT HOUR
LO	LOCKOUT
LOC	LOCAL
LOS	LOCKOUT STOP
LTG	LIGHTING
LTS	LIGHTS
M	MOTOR
MA	MILLIAMP
MAN	MANUAL
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR	MANUFACTURER
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTR	MOTOR
N	NEUTRAL
NC	NORMALLY CLOSED
NEU	NEUTRAL
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OH	OVERHEAD
PB	PULL BOX, PUSHBUTTON
PC	PHOTO CELL
PF	POWER FACTOR
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
POT	POTENTIOMETER
PP	POWER POLE
PQM	POWER QUALITY METER
PR	PAIR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST
PVC	POLYVINYL CHLORIDE
REC	RECEPTACLE
RECPTS	RECEPTACLE
REQ'D	REQUIRED
REV	REVERSE
RGS	RIGID GALVANIZED STEEL
RTD	RESISTANCE TEMPERATURE DETECTORS
RTU	REMOTE TERMINAL UNIT
SCH	SCHEDULE
SEC	SECOND, SECONDARY
SH	SHIELD
SHLD	SHIELDED
SHT	SHEET
SOV	SOLENOID VALVE
SP	SPARE
SS	STAINLESS STEEL
SSTR	SOLID STATE STARTER
STA	STATION
STD	STANDARD
STR	STARTER
SW	SWITCH
TB	TERMINAL BLOCK
TDD	TIME DELAY DE-ENERGIZED
TDE	TIME DELAY ENERGIZED
TERM	TERMINAL
TP	TWISTED PAIR
TSP	TWISTED SHIELDED PAIR
T'STAT	THERMOSTAT
TYP	TYPICAL
UG	UNDERGROUND
V	VOLTAGE
VAC	VOLTAGE ALTERNATING CURRENT
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS, WIRE
WHD	WATTHOUR DEMAND METER
WHM	WATTHOUR METER
WP	WEATHERPROOF
XFRM	TRANSFORMER
XMTR	TRANSMITTER

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TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ELECTRICAL
LEGEND

COLORADO LICENSED
LUIS W. CANTU
66311
PROFESSIONAL ENGINEER
09/10/2025

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DESIGNED	N.TOUSSAINT
DRAWN	N. TOUSSAINT
CHECKED	T.GERTIG
REVIEWED	M.BARRERA

Seq. 52 of 70
Dwg. No. E-001
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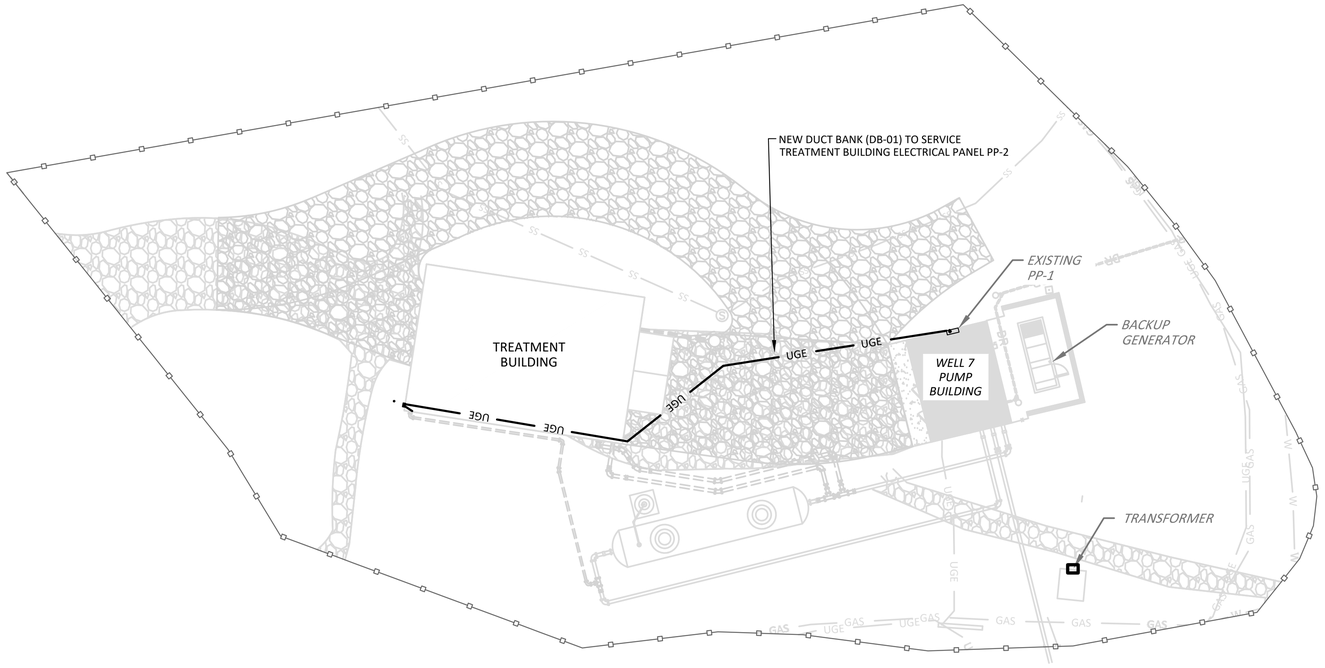

PROPOSED SITE PLAN

SCALE= 1:16

GRAPHIC SCALE : 1" = 16'

CONDUIT	CIRCUIT ID
1	INC SER:01
2	CONTROLS

DUCTBANK 01

NTS

DUCTBANK AND CONDUIT NOTES:

1. ALL DUCT BANKS SHALL BE CONCRETE ENCASED EXCEPT IN TURNED AREAS.
2. ENTIRE UNDERGROUND SERVICE ENTRANCE SHALL BE ENCASED. ALL ENCASED CONDUITS SHALL BE TIED TO SPACERS. SURVEY STAKES SHALL BE USED AT EVERY BASE SPACER AS A TIE DOWN TO PREVENT DUCTS FROM FLOATING.
3. DUCT IS TO HAVE A MINIMUM OF 3" (+1",-0") CONCRETE ENVELOPE ABOVE AND BELOW AND 2" MINIMUM IN BETWEEN.
4. CONCRETE SHALL BE PROPERLY VIBRATED WHEN INSTALLED TO ASSURE COMPLETE FLOW UNDER, AROUND AND BETWEEN ALL DUCTS TO ELIMINATE ANY AIR POCKETS.
5. BACK FILL OF TRENCHES IN EXISTING PAVED AREAS SHALL BE DONE WITH NATIVE SOILS MECHANICALLY COMPACTED OR FLOW ABLE FILL THAT WILL SET UP AND PROVIDE COMPACTING FOR QUICK TRENCH CLOSURE..
6. ALL RISER CONDUIT BENDS AND ABOVE GROUND CONDUIT SHALL BE RIGID METAL CONDUIT. PROVIDE PVC TO METAL COUPLING AT ENDS OF STRAIGHT UNDERGROUND RUNS.
7. CONDUIT TO BE PVC CONDUIT TYPE 40 FOR CONCRETE ENCASEMENT, SIZE AND NUMBER AS INDICATED ON DRAWINGS. ALL CONDUIT AND WIRE SPECIFIED IT "TO" THE EQUIPMENT OR DEVICE AND ALL SHALL BE LABELED.
8. CONCRETE ENCASEMENT: ALL CONCRETE TO HAVE COMPRESSIVE STRENGTH OF 2800 PSI AT 28 DAYS. NO AGGREGATE LARGER THAN 3/4".
9. INSTALL SPACERS EVERY 5 FEET. ALL SPACERS TO PROVIDE 3" VERTICAL AND HORIZONTAL SEPARATION BETWEEN CONDUITS.
10. INSTALL #5 STEEL REINFORCING RODS THROUGH THE INTERNAL VERTICAL CHANNELS AT BOTH OUTER EDGES OF SPACER AND DRIVE REINFORCING RODS INTO EARTH TO ANCHOR ASSEMBLY.
11. INSTALL #5 STEEL REINFORCING RODS ACROSS TOP OF CAP AND IN EACH CORNER OF THE CONCRETE ENCASEMENT.
12. TIE HORIZONTAL AND VERTICAL RODS TOGETHER WITH #16 STEEL TIE WIRE.
13. GROUND THE STEEL REINFORCING RODS AT 20 FEET SPANS MAXIMUM. CONNECT TO 4/0 GROUND CONDUCTOR ON TOP OF DUCT BANK.
14. DUCT BANKS SHALL BE DEEPER WHERE INSTALLED UNDER NEW AND EXISTING BUILDINGS. INSTALL SO TOP OF ENCASEMENT IS AT BOTTOM OF FOOTER.
15. POWER AND COMMUNICATION CABLES CAN RUN IN THE SAME DUCT BANK BUT MUST BE IN SEPARATE CONDUITS.
16. POWER AND COMMUNICATION CONDUIT SHALL RUN UNDER TREATMENT BUILDING.
17. POWER CONDUCTOR SHALL TERMINATE AT TREATMENT BUILDING MAIN DISCONNECT.
18. COMMUNICATION CONDUIT SHALL TERMINATE AT PLC-1. REFER TO E-004 FOR CONTROL PANEL LOCATION.

ELECTRICAL NOTES:

1. REFER TO SHEET E-000 FOR ADDITIONAL NOTES.
2. THIS DRAWING INCLUDES A CONTINUATION OF ELECTRICAL EQUIPMENT, CONDUIT AND WIRE. REFER TO CABLE AND CONDUIT SCHEDULE ON SHEET E-006.

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ELECTRICAL
SITE PLAN & DUCTBANK SCHEDULE

COLORADO LICENSED
LUIS M. CANTU
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PROFESSIONAL ENGINEER
09/10/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED M. TRUSSANT
DRAWN M. TRUSSANT
CHECKED T. GERTIG
REVIEWED M. BARRERA

Seq. 53 of 70
Dwg. No. E-002
4131-002-09

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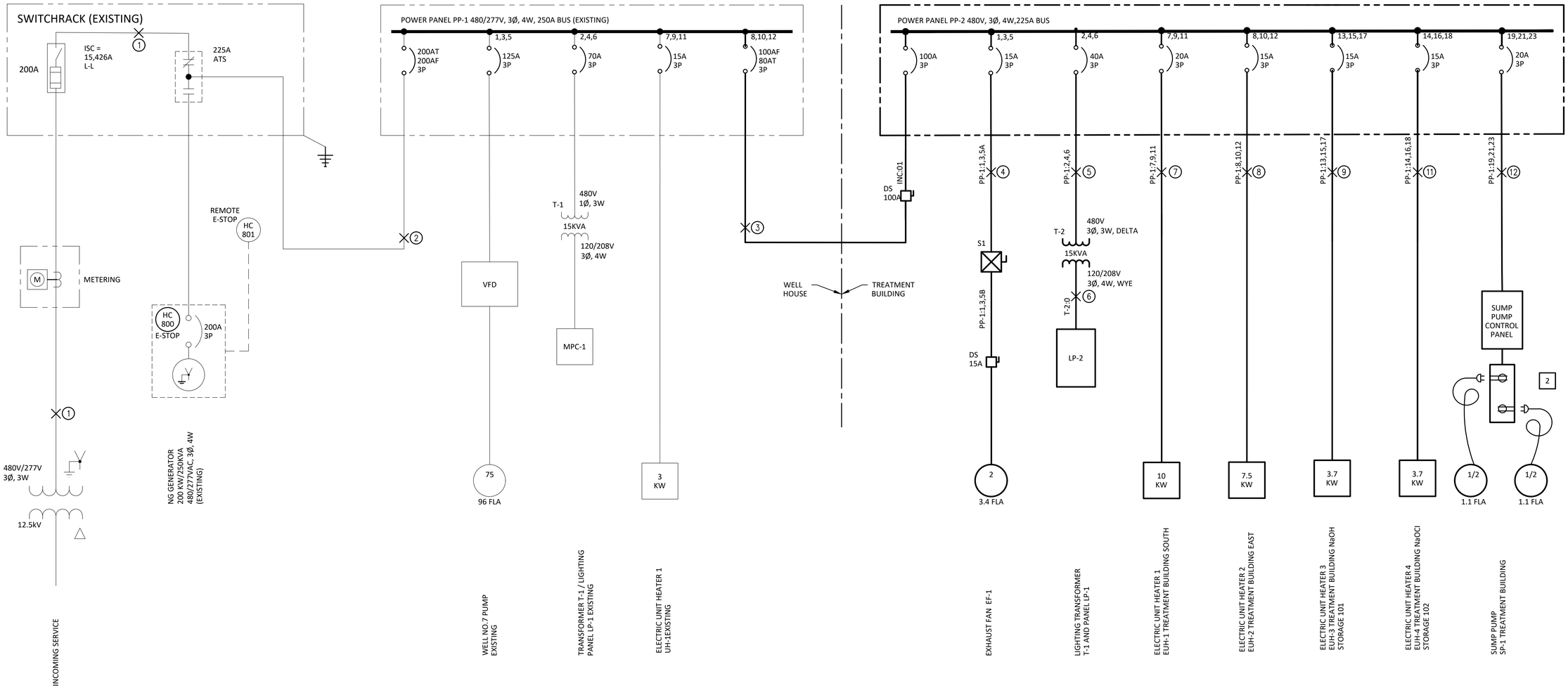

MODIFIED

PP-1 ONE-LINE DIAGRAM

NTS

UTILITY TRANSFORMER AVAILABLE FAULT CIRCUIT

1	ISCA (XFORM SECONDARY)	L-L	15,426 A

*REFER TO SPECIFICATION 26 05 73 FOR ARC-FLASH HAZARD ANALYSIS REQUIREMENTS

LOAD SCHEDULE

	Item Name	Tag	Load Power Information: Volts	Phase	Rating (HP)	KW	FLA (Total)	Utilization (%)	Standby Power
WELL HOUSE	WELL NO. 7	WELL-7	480	3	75	56	96.0	100%	YES
	WELL 7 UNIT HEATER	UH-1	480	3		7.5	12.4	50%	YES
	Transformer T-1	T-1	480	3			10.0	100%	YES
TREATMENT BUILDING	EXHAUST FAN	EF-1	480	3	2	1	3.4	100%	YES
	ELECTRIC UNIT HEATER TREATMENT BLDG	EUH-1	480	3		10.0	12.4	50%	YES
	ELECTRIC UNIT HEATER TREATMENT BLDG	EUH-2	480	3		7.5	9.4	50%	YES
	ELECTRIC UNIT HEATER NaOH Storage 101	EUH-3	480	3		3.7	4.7	50%	YES
	ELECTRIC UNIT HEATER NaOCL Storage 102	EUH-4	480	3		3.7	4.7	50%	YES
	Transformer T-2	T-2	480	3			16.0	100%	YES
	Sump Pump Panel		480	3			5.5	50%	YES

SUMMARY		Connected	DEMAND
	KVA	145.0	124.6
	AMPERES	174.4	149.905

AVAILABLE SHORT CIRCUIT CALCULATIONS AND RATINGS

Eqp. Number	Item Name	Item Type	Calculations: SCA (L-L) (kA)	Calculations: SCA (L-N) (kA)	Ratings: SCCR (kA)	Ratings: AIC (kA)
1	SERVICE ENTRANCE	SERVICE/TRANSFER EQUIPMENT	15.43	9.41	65	65
2	SERVICE ENTRANCE TO PANEL PP-1	POWER PANEL PP-1	11.02	6.62	-	-
3	PANEL PP-1 TO PANEL PP-2	POWER PANEL PP-2	7.01	4.15	22	22
4	EF-1 GENERAL EXHAUST FAN	EXHAUST FAN EF-1	2.30	1.11	65	65
5	TRANSFORMER T-1	TRANSFORMER T-1	4.61	2.98	10	10
6	LIGHTING PANEL LP-1	LIGHTING PANEL LP-1	4.25	2.92	10	10
7	ELECTRIC UNIT HEATER EUH-1	HVAC EQUIPMENT	2.30	1.11	65	65
8	ELECTRIC UNIT HEATER EUH-2	HVAC EQUIPMENT	2.30	1.11	65	65
9	ELECTRIC UNIT HEATER EUH-3	HVAC EQUIPMENT	2.30	1.11	65	65
10	ELECTRIC UNIT HEATER EUH-4	HVAC EQUIPMENT	2.30	1.11	65	65
11	SUMP PUMP CONTROL PANEL	ELECTRICAL PANEL	2.30	1.11	65	65

ELECTRICAL NOTES: #

1. FURNISH AND INSTALL WIRING AND CONNECT EACH EQUIPMENT OR DEVICE WITH ASSOCIATED INSTRUMENTATION AND CONTROLS TO INCLUDE: CONDUIT, WIRE, JUNCTION BOXES, FITTINGS, STARTERS, DISCONNECT SWITCHES, AND ACCESSORIES.
2. COORDINATE WITH SUMP PUMP MANUFACTURER FOR A 3-PHASE 480 VAC FOR RECEPTACLE PLUG. ALTERNATIVELY, CONTRACTOR MAY USE 3-PHASE PIN AND SLEEVE CONNECTOR.

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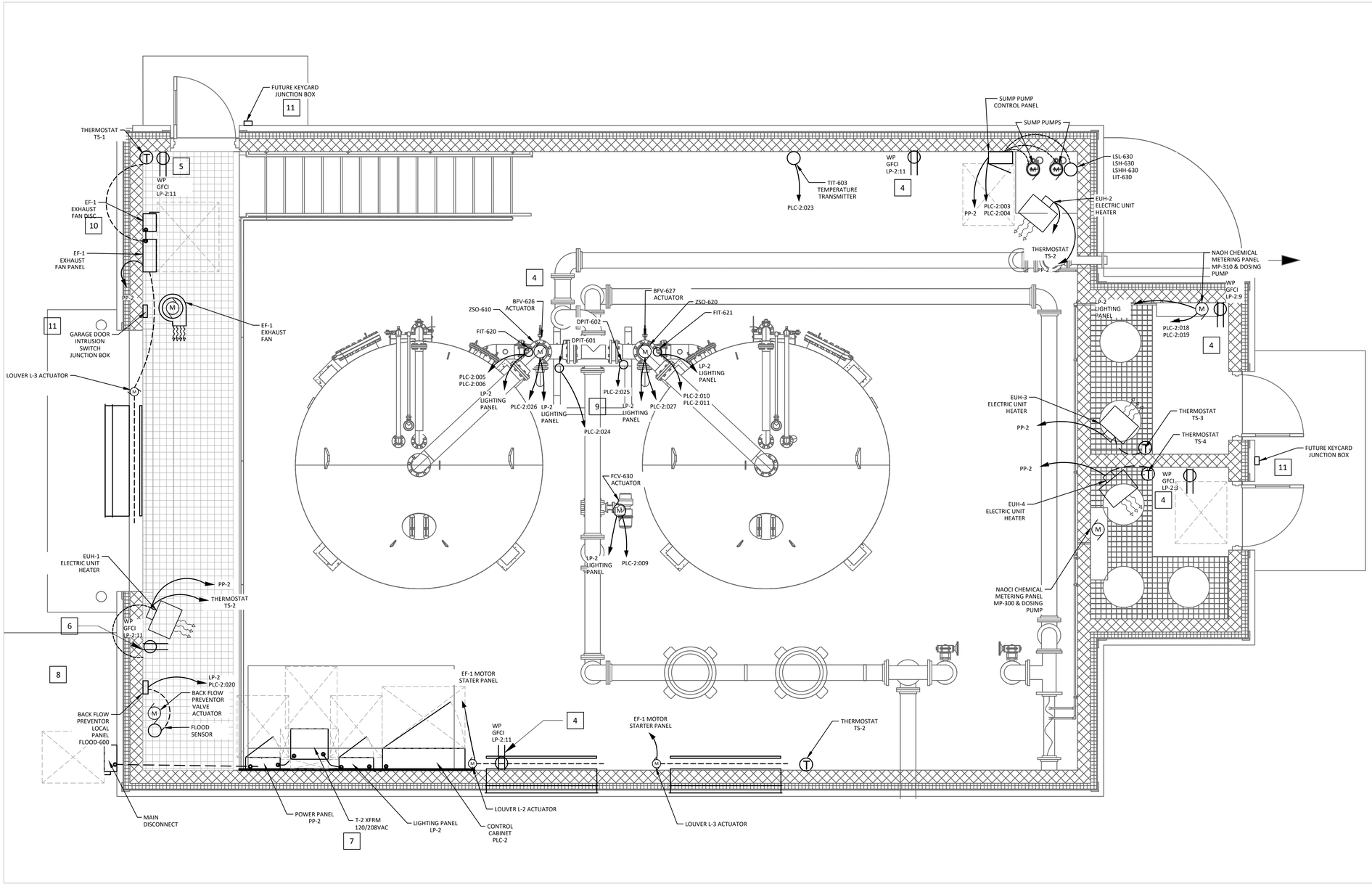

ELECTRICAL NOTES: #

1. REFER SHEET E-000 FOR ADDITIONAL NOTES.
2. ROUTE ALL CONDUIT EMBEDDED IN FLOOR SLAB CONCRETE AND WALLS
3. REFER TO MECHANICAL HVAC SHEETS FOR HVAC INFORMATION INCLUDING LOUVERS, EXHAUST FAN HEATERS, AND THERMOSTAT.
4. CONTRACTOR TO INSTALL FLOW TRANSMITTER AND ACTUATED VALVE PER MECHANICAL SHEET DRAWINGS.
5. INSTALL RECEPTACLE 18" AFF CLOSE TO ENTRANCE GROUND FLOOR LEVEL GRATE.
6. INSTALL RECEPTACLE 18" AFF.
7. REFER TO SHEET E-006 FOR CIRCUIT TERMINATIONS ON PANELBOARD.
8. BACK FLOW PREVENTION VALVE PANEL TO BE INSTALLED 5'-0" AFF. REFER TO MECHANICAL SHEET M-101 FOR VALVE LOCATION.
9. DPIT-601 AND DPIT-602 TO BE MOUNTED ON UNISTRUT.
10. INSTALL EF-1 DISCONNECT 4'-0" FINISHED FLOOR ABOVE GRATE.
11. CONTRACTOR TO INSTALL 1" INCH POWER CONDUIT AND 3/4" CONTROLS CONDUIT AND LIGHTING PANEL AND PLC-2 TO JUNCTION BOX.

INSTRUMENTATION & POWER PLAN

SCALE: 3/8"=1'-0"

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102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ELECTRICAL

POWER PLAN

COLORADO LICENSED
LUIS W. CANTU
66311
PROFESSIONAL ENGINEER
9/10/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	N.TOUSSAINT
DRAWN	N. TOUSSAINT
CHECKED	T.GERTIG
REVIEWED	M.BARRERA

Seq. 55 of 70
Dwg. No. E-004
4131-002-09

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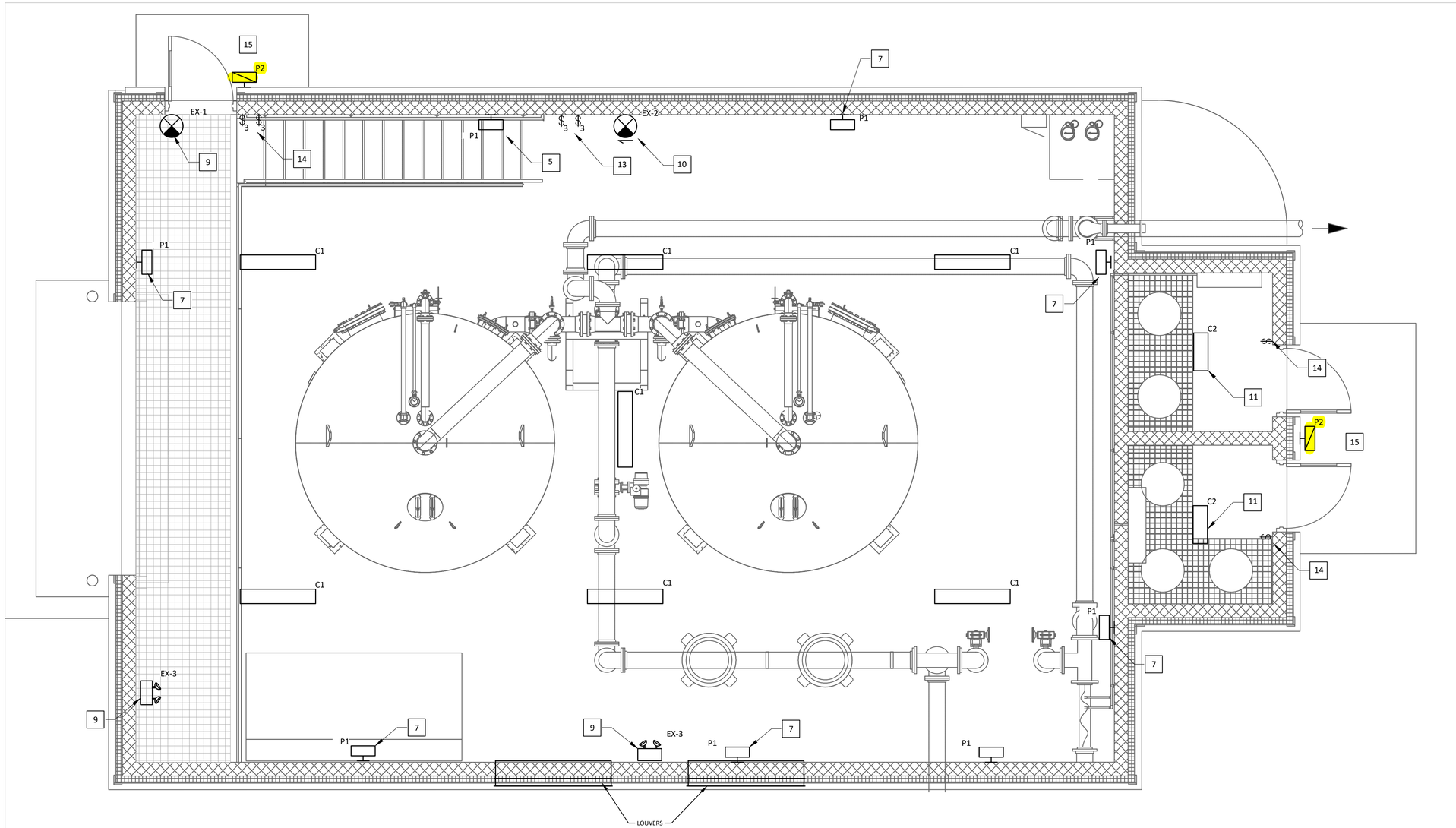

LIGHTING PLAN

SCALE: 3/8"=1'-0"

GENERAL NOTES:

1. REFER TO SHEET E-000 FOR ADDITIONAL NOTES.
2. SUSPENDED FIXTURES ARE TYPE "C1" UNLESS OTHERWISE NOTED. INSTALL FIXTURES 23'-6" AFF.
3. EXTERIOR LIGHTS SHALL BE ACTUATED WITH PHOTOCELL AND MOTION SENSORS TO MINIMIZE UNNECESSARY LIGHT OPERATION.
4. ALL EXTERIOR LIGHTING FIXTURES SHALL BE FULL CUTOFF OR HAVE SHIELDING TO REDUCE OFF-SITE LIGHTING AND SHALL BE ARRANGED TO MITIGATE LIGHT NOISE.
5. ATTACH FIXTURES TYPE "P1" TO WALL UNLESS OTHERWISE NOTED. INSTALL FIXTURES 11'-6" AFF. FIXTURES POSITIONED ABOVE STAIRS SHALL BE 11'-6" ABOVE STAIRS.
6. ATTACH FIXTURES TYPE "EX-1", "EX-2", AND "EX-3" TO WALL UNLESS OTHERWISE NOTED. INSTALL FIXTURES 9'-0" AFF.
7. MOUNT FIXTURE 10'-0" AFF.
8. REVIEW LUMINARIE SCHEDULE FOR FIXTURE TYPES.
9. MOUNT FIXTURES TO WALL TYPE "P2" AND "P1" UNLESS OTHERWISE NOTED.
10. MOUNT FIXTURE 10'-0" AFF.
11. MOUNT FIXTURE TO CEILING.
12. EMERGENCY LIGHT FIXTURE AND EMERGENCY SIGNS ALWAYS BE CONNECTED TO AN UN-SWITCHED PHASE CONDUCTOR FOR "EX-1", "EX-2", AND "EX-3".
13. MOUNT SWITCH TO WALL 4'-0" AFF.
14. MOUNT SWITCH TO WALL ABOVE GRATE CLOSE TO ENTRANCE 4'-0 AFF.
15. MOUNT OUTDOOR FIXTURE 7'-0" AFF
16. OUTDOOR LUMINAIRE SHALL COME ON AT NIGHT BY PHOTOCELL OR UPON LOSS OF UTILITY POWER, LOCKED TO THE EMERGENCY LIGHTS.

LUMINAIRE SCHEDULE

ID	FIXTURE TYPE	MANUFACTURER AND MODEL	DESCRIPTION
C1	48" HIGH BAY	LITHONIA FEM LED L48	10,000 LUMENS, FROSTED POLYCARBONATE (FST), MEDIUM DISTRIBUTION, 120V 60HZ, 4000K, 90CRI, 63 WATTS
C2	24" HIGH BAY	LITHONIA FEM LED L24	4,000 LUMENS, FROSTED POLYCARBONATE (FST), MEDIUM DISTRIBUTION, 120V 60HZ, 4000K, 90CRI, 26 WATTS
P1	WALLPACK	LITHONIA TWH LED	LED WALL PACK TWH, 6,200 LUMENS P3, 40K 70 CRI, 120 VAC. LIGHTING SETTING AT STEP 4 , 44 WATTS
P2	WALLPACK	HOLOPHANE, HLWPC2	LED WALL PACK, 7800 P30 LUMENS, 120v, 5000K, AUTOSENSING VOLTAGE, 80CRI, T4M, EMERGENCY BATTERY
EX-1	EXIT	LITHONIA, LHQM LED	EXIT FIXTURE WITH TWIN WHITE LED LAMPS, HIGH-OUTPUT NI-CAD 9.6V BATTERY, 8" RED LETTERING WITH SELF DIAGNOSTICS.
EX-2	EMERGENCY RUNNING MAN	LITHONIA, ECRM	ECRM RUNNING MAN LED FIXTURE WITH TWIN WHITE LED LAMP HEADS, EMERGENCY BATTERY
EX-3	EMERGENCY LIGHTS	LITHONIA, EU2C LED	EMERGENCY LED LIGHTING UNIT, FROG LIGHTS

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102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ELECTRICAL
LIGHTING PLAN

COLORADO LICENSED
LUIS W. CANTU
66311
PROFESSIONAL ENGINEER
09/10/2025

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DESIGNED N.TOUSSAINT
DRAWN N. TOUSSAINT
CHECKED T.GERTIG
REVIEWED M.BARRERA

Seq. 56 of 70
Dwg. No. E-005
4131-002-09

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ELECTRICAL PANELBOARD SCHEDULE

PANEL: LP-2
VOLTAGE: 208Y/120 VAC, 3 PHASE, 4 WIRE
BUS SIZE: 150A
MAIN SIZE: 100A
SCCR: 10 KAIC

LOCATION: Treatment Building South Wall
MOUNTING: SURFACE, NEMA 4X SST
FED FROM: XFRM T-2
MAIN TYPE: CIRCUIT BREAKER
NOTES: 24 CIRCUITS

CIRCUIT TITLE	BREAKER CKT NO.	BREAKER AMP	BREAKER POLE	LOAD VA PHASE A	LOAD VA PHASE B	LOAD VA PHASE C	LOAD VA PHASE A	LOAD VA PHASE B	LOAD VA PHASE C	BREAKER POLE	BREAKER AMP	BREAKER CKT NO.	CIRCUIT TITLE
NAOH- CHEMICAL METERING PANEL	1	20	1	360			180			1	15	2	FLOOD PROTECTION VALVE
RECEPTACLES - NAOCI STORAGE	3	20	1		720			180		1	15	4	BFV-628 ACTUATOR
EMERGENCY LIGHTING	5	20	1			50			180	1	15	6	BFV-629 ACTUATOR
NAOCI- CHEMICAL METERING PANEL	7	20	1	360			180			1	15	8	FIT-620
RECEPTACLES - NaOH STORAGE	9	20	1		720			180		1	15	10	FIT-621
RECEPTACLES - TREATMENT	11	20	1			1200			720	1	20	12	PLC-2
FCV-630 ACTUATOR	13	20	1	180			1800			1	20	14	GARAGE DOOR OPENER
SPARE	15	20	1					50		1	15	16	SPARE
SPARE	17	20	1							1	20	18	SPARE
TOTAL LOAD				900	1440	1250	2160	410	900				

PHASE A LOAD (VA) = 3060
PHASE B LOAD (VA) = 1850
PHASE C LOAD (VA) = 2150
TOTAL LOAD (VA) = 7060

ELECTRICAL PANELBOARD SCHEDULE

PANEL: PP-2
VOLTAGE: 480/277 VAC, 3 PHASE, 4 WIRE
BUS SIZE: 225A
MAIN SIZE: 100A
SCCR: 22 KAIC

LOCATION: TREATMENT BUILDING SOUTH WALL
MOUNTING: SURFACE
FED FROM: PP-1
MAIN TYPE: CIRCUIT BREAKER
NOTES:

CIRCUIT TITLE	BREAKER CKT NO.	BREAKER AMP	BREAKER POLE	LOAD VA PHASE A	LOAD VA PHASE B	LOAD VA PHASE C	LOAD VA PHASE A	LOAD VA PHASE B	LOAD VA PHASE C	BREAKER POLE	BREAKER AMP	BREAKER CKT NO.	CIRCUIT TITLE
EXHAUST FAN EF-1	1	15	3	1632			5000			3	60	2	TRANSFORMER T-2
	3				1632			5000				4	
	5					1632			5000			6	
EUH-1	7	20	3	3333			2500			3	15	8	EUH-2
	9				3333			2500				10	
	11					3333			2500			12	
EUH-3	13	15	3	1233			1233			3	15	14	EUH-4
	15				1233			1233				16	
	17					1233			1233			18	
SPARE	19	20	3				1000			3	20	20	SUMP PUMP CONTROL PANEL
	21							1000				22	
	23								1000			24	
TOTAL LOAD				4965.3	4965	4965	7500	7500	7500				

PHASE A LOAD (VA) = 12465
PHASE B LOAD (VA) = 12465
PHASE C LOAD (VA) = 12465
TOTAL LOAD (VA) = 37395

CONDUIT AND WIRE SCHEDULE

CIRCUIT ID	CONDUIT	WIRE	TERMINATIONS FROM	TERMINATIONS TO
INC:1	2"	4-#3AWG+#8G	POWER PANEL PP-1	POWER PANEL PP-2
PP-1:1,3,5A	1"	3-#12AWG+#12G	POWER PANEL PP-2	GENERAL EXHAUST FAN EF-1 PANEL
PP-1:1,3,5B	1"	3-#12AWG+#12G	GENERAL EXHAUST FAN EF-1 PANEL	GENERAL EXHAUST FAN EF-1
L-1	3/4"	2-12AWG+#12G	GENERAL EXHAUST FAN EF-1 PANEL	LOUVER L-1 ACTUATOR
L-2	3/4"	2-12AWG+#12G	GENERAL EXHAUST FAN EF-1 PANEL	LOUVER L-2 ACTUATOR
L-3	3/4"	2-12AWG+#12G	GENERAL EXHAUST FAN EF-1 PANEL	LOUVER L-3 ACTUATOR
PP-1:2,4,6	1"	3-#6AWG+#10G	POWER PANEL PP-2	LIGHTING TRANSFORMER T-2
T-2:0	2"	3-#2/0AWG+#10G	TRANSFORMER T-2	LIGHTING PANEL LP-2
PP-2:7,9,11	1"	3-#12AWG+#12G	POWER PANEL PP-2	ELECTRIC UNIT HEATER EUH-1
PP-2:8,10,12	1"	3-#12AWG+#12G	POWER PANEL PP-2	ELECTRIC UNIT HEATER EUH-2
PP-2:13,15,17	1"	3-#12AWG+#12G	POWER PANEL PP-2	ELECTRIC UNIT HEATER EUH-3
PP-2:14,16,18	1"	3-#12AWG+#12G	POWER PANEL PP-2	ELECTRIC UNIT HEATER EUH-4
PP-2:19, 21, 23	1"	3-#12AWG+#12G	POWER PANEL PP-2	SUMP PUMP CONTROL PANEL

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102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ELECTRICAL
SCHEDULES

COLORADO LICENSED
LUIS W. CANTU
66311
PROFESSIONAL ENGINEER
09/10/2025

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DESIGNED N.TOUSSAINT
DRAWN N. TOUSSAINT
CHECKED T.GERTIG
REVIEWED M.BARRERA

Seq. 57 of 70
Dwg. No. E-006
4131-002-09

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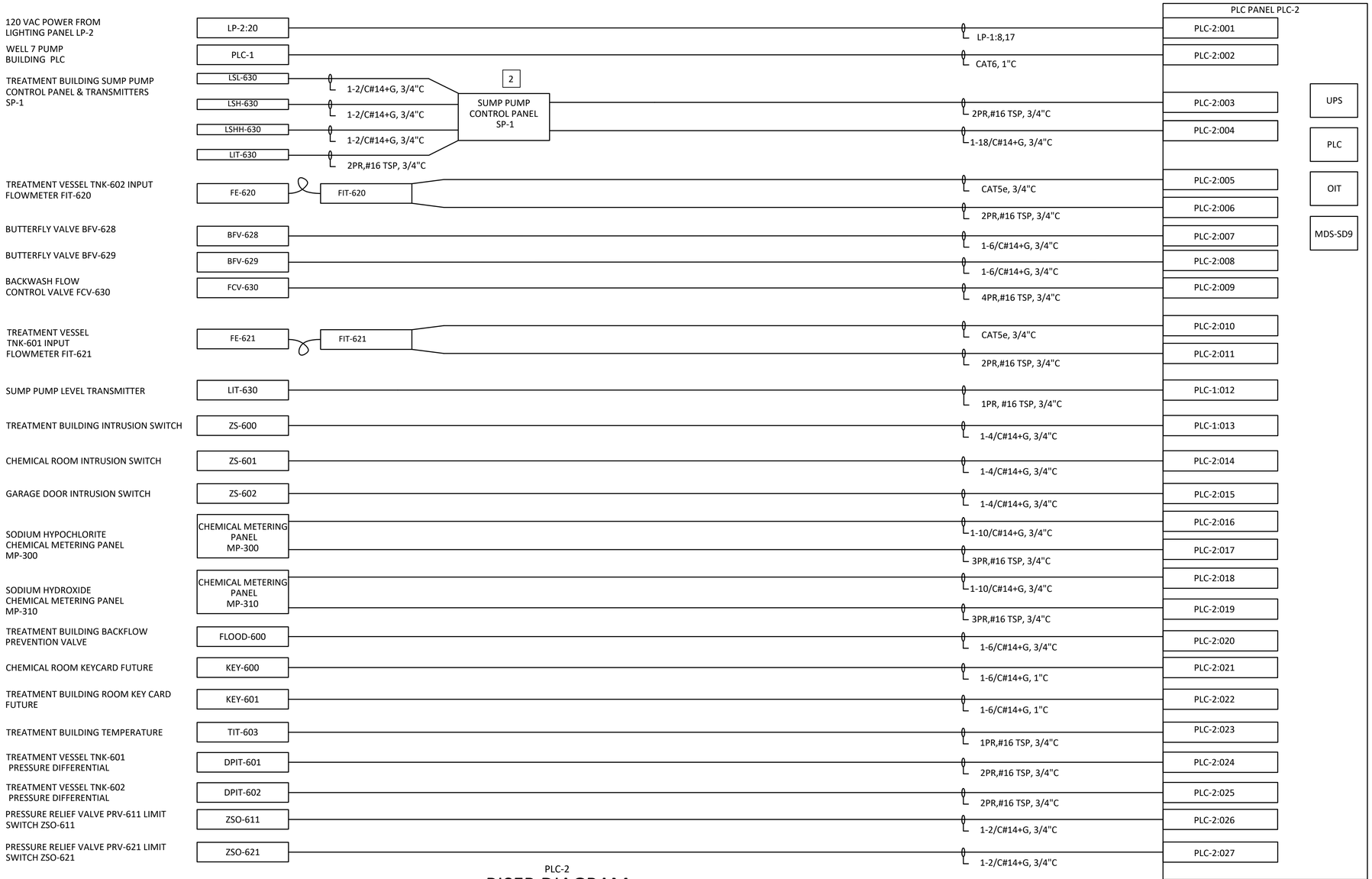

PLC-2

RISER DIAGRAM

INSTRUMENTATION AND CONTROL NOTES: #

1. ROUTE ALL CONDUITS EMBEDDED IN SLAB CONCRETE AND WALLS.
2. ROUTE LEVEL SWITCHES AND TRANSMITTER SIGNALS TO PLC PANEL AFTER LANDING ON SUMP PUMP PANEL.

POINT	POINT NO.	EQUIPMENT TAG	EQUIPMENT NAME	FUNCTION
AI	1	FIT-620	TREATMENT VESSEL TNK-602 INPUT FLOW METER	FLOW INDICATION
AI	2	FIT-621	TREATMENT VESSEL TNK-601 INPUT FLOW METER	FLOW INDICATION
AI	3	FCV-630	BACKWASH FLOW CONTROL VALVE	VALVE POSITION INDICATION
AI	4	LIT-630	SUMP LEVEL	LEVEL INDICATION
AI	5	TIT-603	TREATMENT BUILDING TEMPERATURE	TEMPERATURE INDICATION
AI	6	MP-300	SODIUM HYPOCHLORITE PUMP	SPEED INDICATION
AI	7	MP-310	SODIUM HYDROXIDE PUMP	SPEED INDICATION
AI	8	DPIT-601	TREATMENT VESSEL TNK-601 DIFFERENTIAL PRESSURE	
AI	9	DPIT-602	TREATMENT VESSEL TNK-602 DIFFERENTIAL PRESSURE	
AI	10		SPARE	
AI	11		SPARE	
AI	12		SPARE	
AI	13		SPARE	
AI	14		SPARE	
AI	15		SPARE	
AI	16		SPARE	
AO	1	FCV-630	BACKWASH FLOW CONTROL VALVE	VALVE POSTION COMMAND
AO	2	MP-300	SODIUM HYPOCHLORITE PUMP	SPEED CONTROL
AO	3	MP-310	SODIUM HYDROXIDE PUMP	SPEED CONTROL
AO	4		SPARE	

POINT	POINT NO.	EQUIPMENT TAG	EQUIPMENT NAME	FUNCTION
DI	1	ZS-600	TREATMENT BULDING INTRUSTION SWITCH	INTRUSTION ALARM
DI	2	ZS-601	CHEMICAL INTRUSTION SWITCH	INTRUSTION ALARM
DI	3	ZS-602	GARAGE DOOR INTRUSTION SWITCH	INTRUSTION ALARM
DI	4	YS-604	POWER FAILURE	ALARM
DI	5	PLC-1	24VDC POWER SUPPLY	ALARM
DI	6	SP-1	TREATMENT BUILDING SUMP PUMP 1 CONTROL PANEL	RUN STATUS
DI	7	SP-1	TREATMENT BUILDING SUMP PUMP 1 CONTROL PANEL	HOA POSITION
DI	8	SP-1	TREATMENT BUILDING SUMP PUMP 1 CONTROL PANEL	FAULT STATUS
DI	9	SP-1	TREATMENT BUILDING SUMP PUMP 2 CONTROL PANEL	RUN STATUS
DI	10	SP-1	TREATMENT BUILDING SUMP PUMP 2 CONTROL PANEL	HOA POSITION
DI	11	SP-1	TREATMENT BUILDING SUMP PUMP 2 CONTROL PANEL	FAULT STATUS
DI	12	LSL-630	SUMP LEVEL SWITCH	LEVEL LOW
DI	13	LSH-630	SUMP LEVEL SWITCH	LEVEL HIGH
DI	14	LSHH-630	SUMP LEVEL SWITCH	LEVEL HIGH HIGH
DI	15	MP-300	SODIUM HYPOCHLORITE PUMP	RUN STATUS
DI	16	MP-310	SODIUM HYDROXIDE PUMP	RUN STATUS
DI	17	MP-300	SODIUM HYPOCHLORITE PUMP	FAULT STATUS
DI	18	MP-310	SODIUM HYDROXIDE PUMP	FAULT STATUS
DI	19	MP-300	SODIUM HYPOCHLORITE PUMP	HOA AUTO POSITION
DI	20	MP-310	SODIUM HYDROXIDE PUMP	HOA AUTO POSITION

POINT	POINT NO.	EQUIPMENT TAG	EQUIPMENT NAME	FUNCTION
DI	21	MP-300	SODIUM HYPOCHLORITE PUMP	HOA HAND POSITION
DI	22	MP-310	SODIUM HYDROXIDE PUMP	HOA HAND POSITION
DI	23	FLOOD-600	TREATMENT BUILDING FLOOD PROTECTION VALVE	ALARM
DI	24	BFV-628	TREATMENT VESSEL TNK-601 BW ISOLATION VALVE	OPEN/CLOSE INDICATION
DI	25	BFV-629	TREATMENT VESSEL TNK-602 BACKWASH ISOLATION VALVE	OPEN/CLOSE INDICATION
DI	26	ZSO-611	PRV-611 VALVE LIMIT SWITCH	OPEN INDICATION
DI	27	ZS0-621	PRV-621 VALVE LIMIT SWITCH	OPEN INDICATION
DI	28	EF-1	BUILDING EXHAUST FAN	RUN STATUS
DI	29	EF-1	BUILDING EXHAUST FAN	FAULT STATUS
DI	30	EF-1	BUILDING EXHAUST FAN	HOA POSITION
DI	31		SPARE	
DI	32		SPARE	
DO	2	BFV-628	TREATMENT VESSEL TNK-601 BW ISOLATION VALVE	OPEN/CLOSE COMMAND
DO	3	BFV-629	TREATMENT VESSEL TNK-602 BW ISOLATION VALVE	OPEN/CLOSE COMMAND
DO	4	MP-300	SODIUM HYPOCHLORITE PUMP	STOP COMMAND
DO	5	MP-310	SODIUM HYDROXIDE PUMP	STOP COMMAND
DO	6	MP-300	SODIUM HYPOCHLORITE PUMP	START COMMAND
DO	7	MP-310	SODIUM HYDROXIDE PUMP	START COMMAND
DO	8		SPARE	

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102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ELECTRICAL
RISER DIAGRAMS

COLORADO LICENSED
LUIS M. CANTU
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PROFESSIONAL ENGINEER
09/10/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED N.TOUSSAINT
DRAWN N. TOUSSAINT
CHECKED T.GERTIG
REVIEWED M.BARRERA

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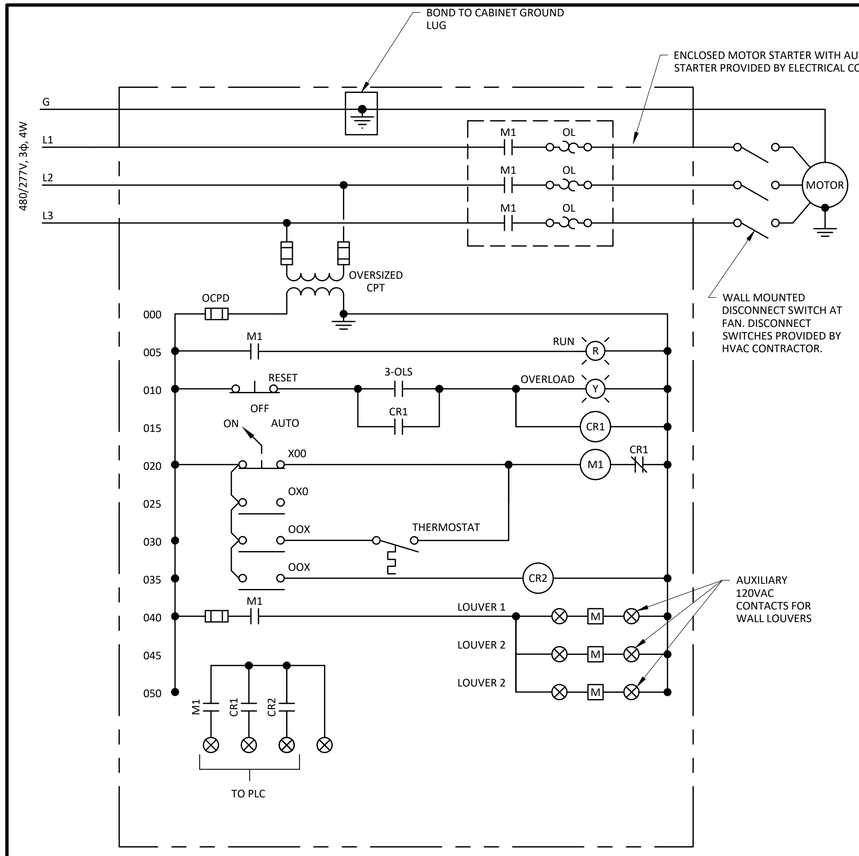
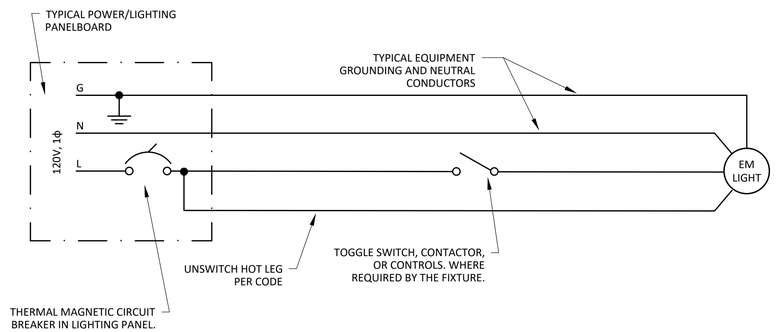
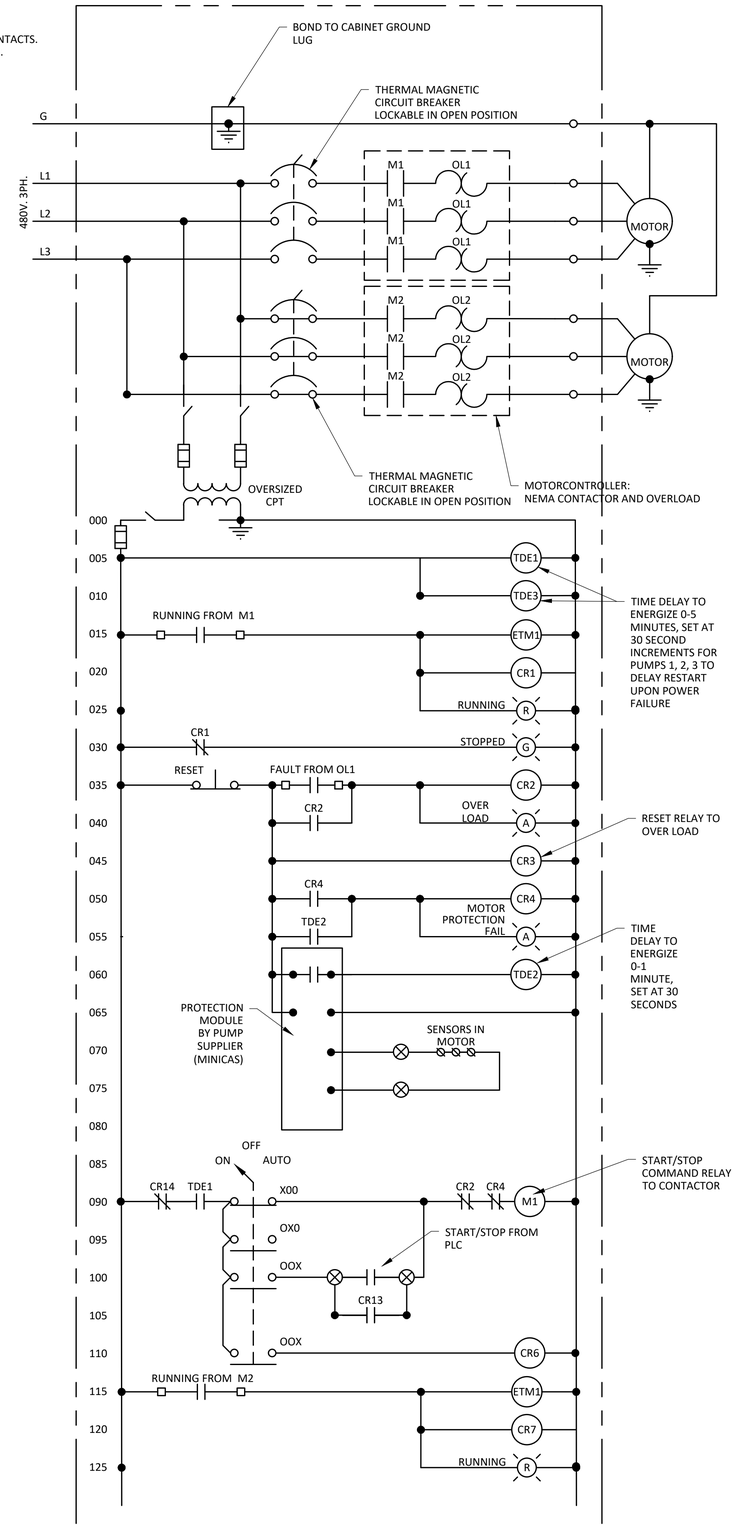


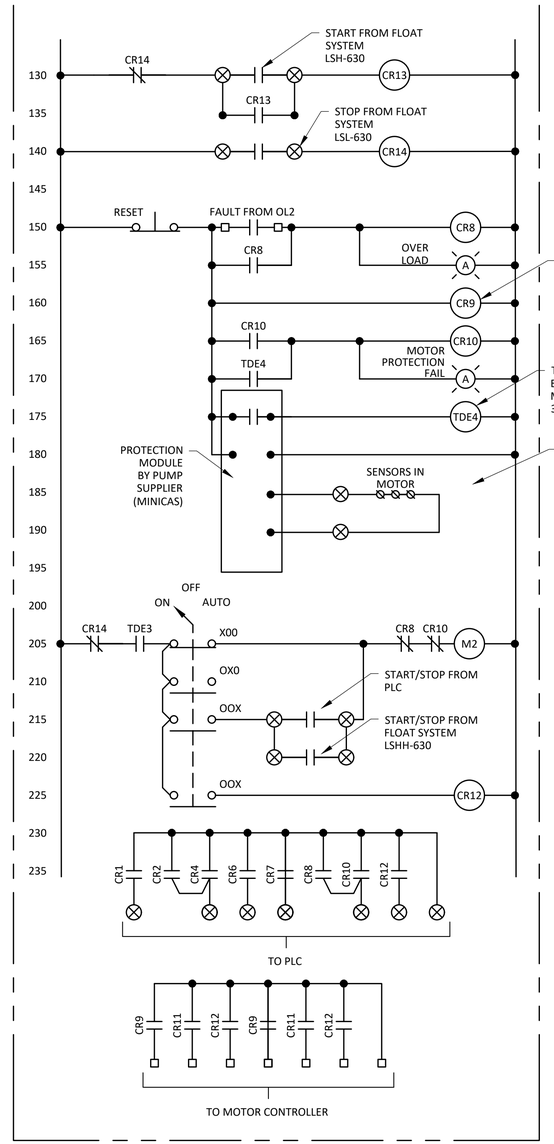
EXHAUST FAN 4

FOR FAN EF-1



TYP. EMERGENCY LIGHT WIRING 1





TREATMENT BUILDING SUMP PUMP PANEL

SP-1

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REVIEWED	M.BARRERA

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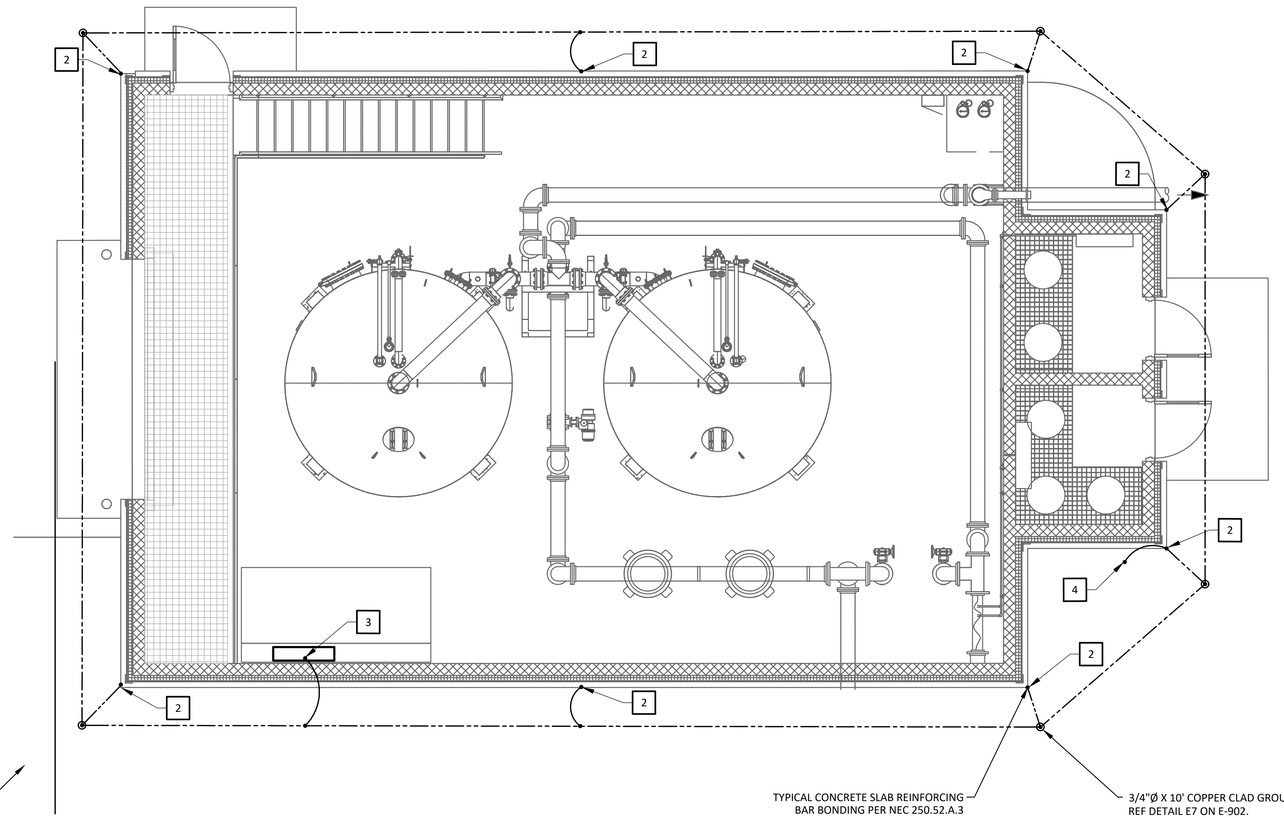
ELECTRICAL NOTES:

1. INSTALL GROUND RING AND GROUNDING CONNECTIONS PER NFPA 70. SEE GROUNDING SCHEMATICS ON SHEET E-902. GROUNDING SYSTEM INCLUDES THE INSTALLATION OF A LIGHTNING PROTECTION SYSTEM WITH UL CERTIFICATE.
2. BOND GROUNDING RING TO BUILDING STEEL.
3. CONNECT GROUNDING ELECTRODE SYSTEM TO POWER PANEL PP-2.
4. BOND GROUNDING RING TO PIPING.
5. COORDINATE GROUNDING WITH LIGHTING PROTECTION, SEE GROUNDING DETAIL AND SPECIFICATIONS 26 05 26 & 26 41 00.



GROUNDING PLAN

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

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TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ELECTRICAL

E-009 GROUNDING PLAN

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04/10/2025

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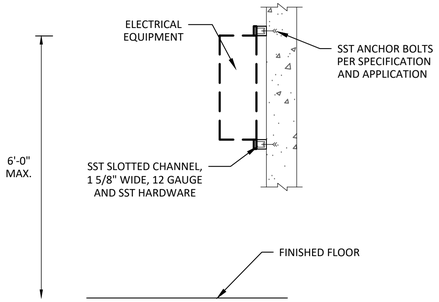
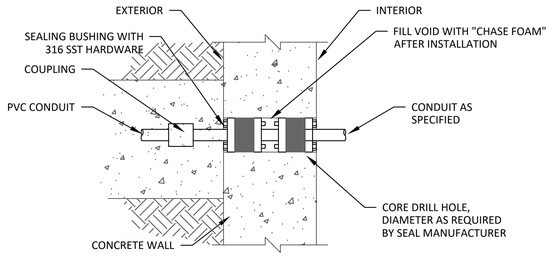


EQUIPMENT WALL MOUNT

NTS

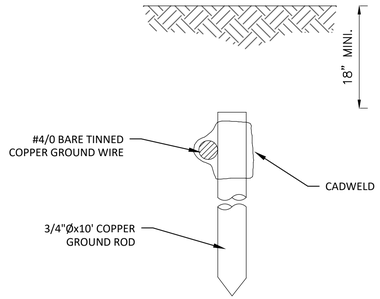
E4



CONDUIT ENTRANCE - BELOW GRADE
CONDUIT ENTRY

NTS

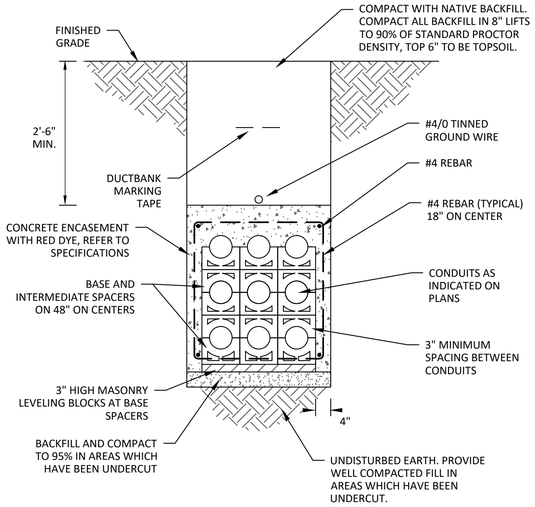
E3



GROUND ROD

NTS

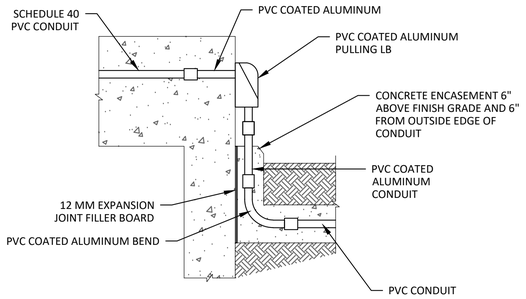
E7



CONCRETE ENCASEMENT
DUCTBANK

NTS

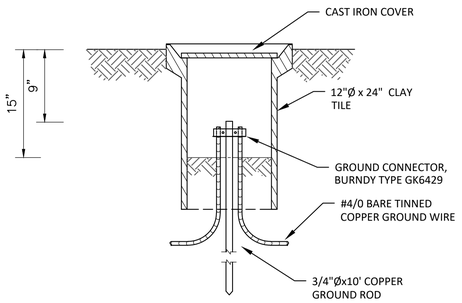
E12



IN-SLAB CONDUIT ENTRY

NTS

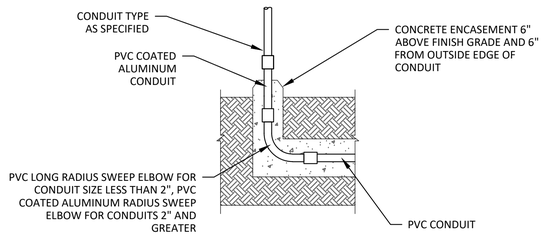
E5



GROUND TEST WELL

NTS

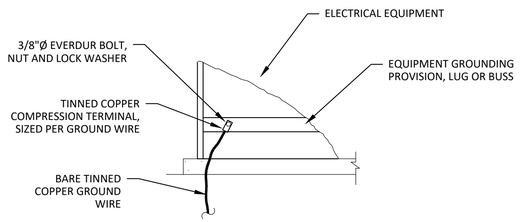
E6



AT GRADE
CONDUIT STUB UP

NTS

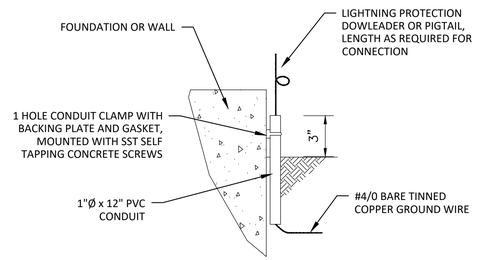
E11



EQUIPMENT GROUND CONNECTION

NTS

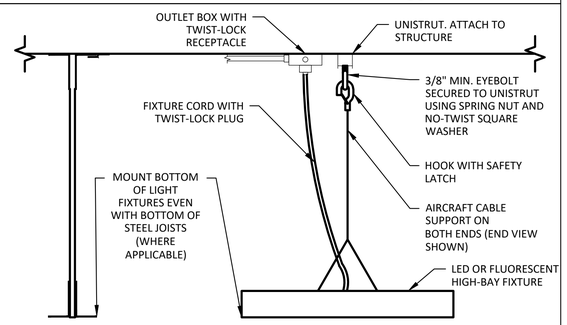
E9



GROUND STUB

NTS

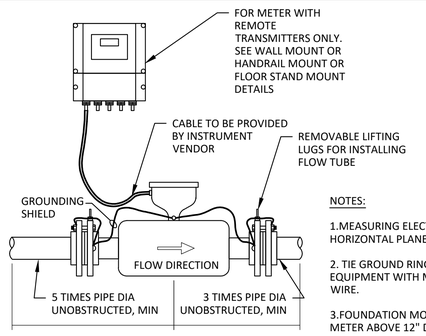
E10



HIGHBAY MOUNTING

SCALE: NTS

922



NOTES:

1.MEASURING ELECTRODES MUST BE IN HORIZONTAL PLANE.

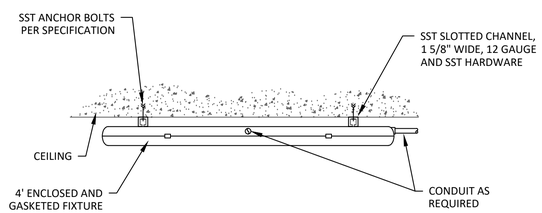
2. TIE GROUND RINGS TO TRANSMITTER EQUIPMENT WITH MIN 12 AWG GROUND WIRE.

3.FOUNDATION MOUNTS REQUIRED FOR METER ABOVE 12" DIAMETER.

FLOW TRANSMITTER - MAGNETIC

SCALE: NTS

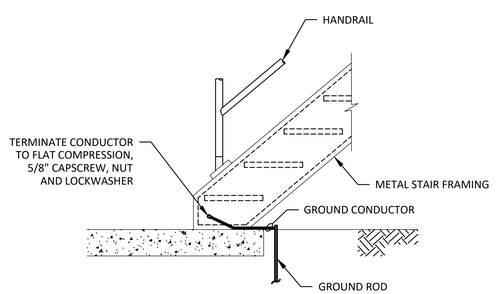
836



CEILING MOUNTED FIXTURE

SCALE: NTS

790



GENERAL STAIRWAY MOUNTING

SCALE: NTS

753

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TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ELECTRICAL

STANDARD DETAILS I

COLORADO LICENSED
LEWIS W. CANTU
66311
PROFESSIONAL ENGINEER
09/10/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED	N.TOUSSAINT
DRAWN	N. TOUSSAINT
CHECKED	T.GERTIG
REVIEWED	M.BARRERA

Seq. 61 of 70

Dwg. No. E-900

4131-002-09

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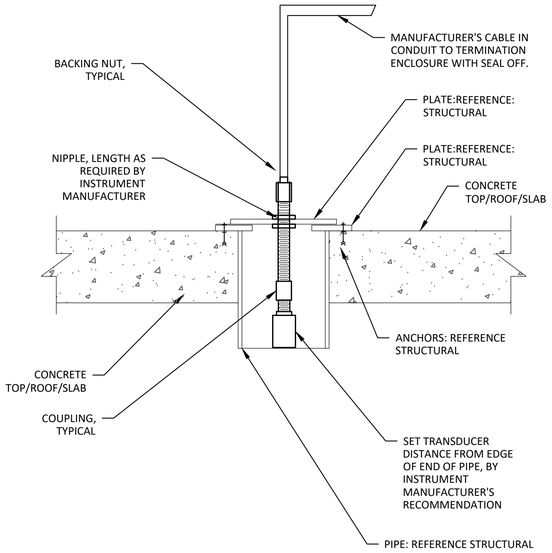
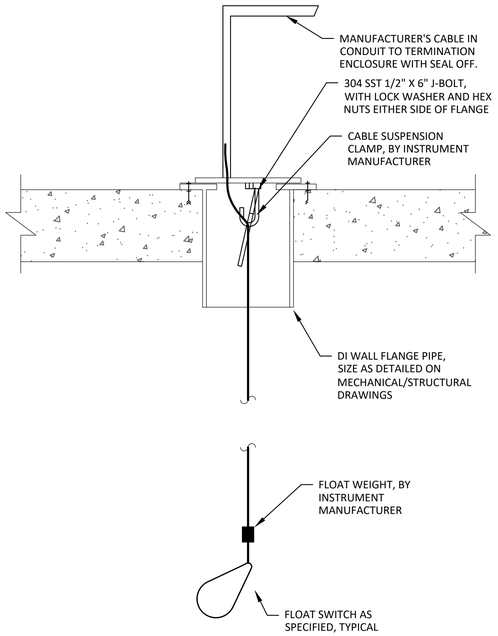
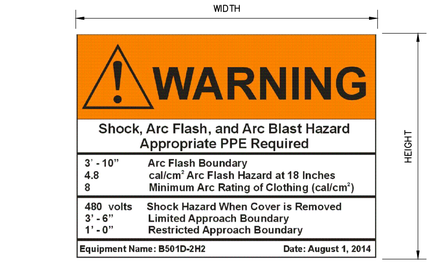


LEVEL TRANSDUER FLANGE MOUNT
NTS
820



SELF-WEIGHTED FLOAT SWITCH WALL FLANGE MOUNT
NTS
821

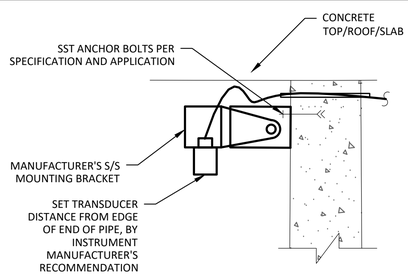


NOTES:

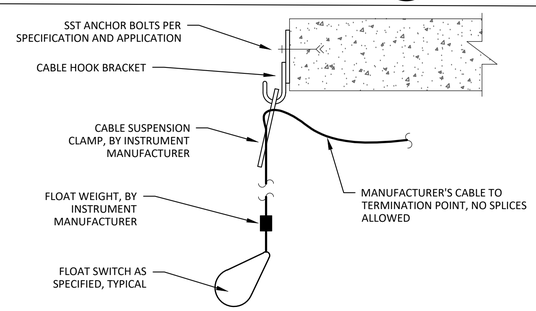
1. PROVIDE SELF-ADHESIVE VINYL LABEL TO AFFIX TO ELECTRICAL EQUIPMENT TO WARN OF ARC FLASH HAZARDS.
2. THE LABEL FORMAT AND TEXT CAN BE MODIFIED PROVIDED THAT THE INFORMATION REQUIRED BY NFPA 70E.
3. THE LABEL SHALL BE LOCATED ON THE EQUIPMENT TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF THE EQUIPMENT.
4. THE SIZE OF THE LABEL SHALL BE MINIMUM:

EQUIPMENT TYPE	HEIGHT	WIDTH
INDOOR	2"	3"
OUTDOOR	3"	4.5"

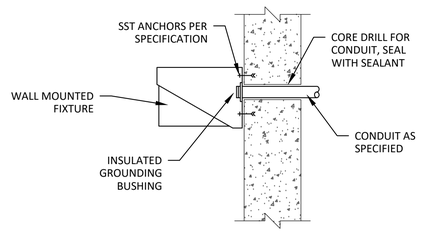
ARC FLASH WARNING LABEL
SCALE: NTS
1716



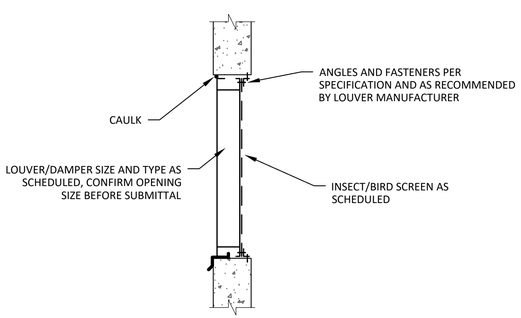
LEVEL TRANSDUCER WALL BRACKET MOUNT
NTS
808



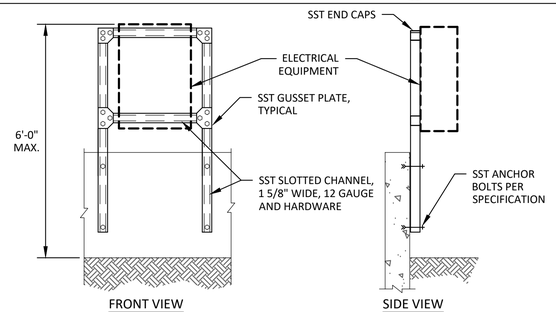
SELF-WEIGHTED FLOAT SWITCH CABLE HOOK BRACKET
NTS
827



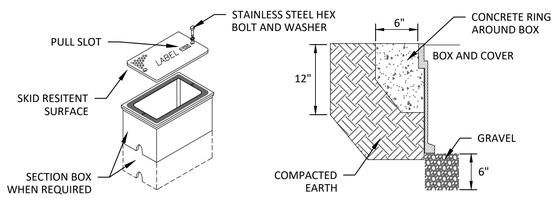
WALL MOUNTED FIXTURE
SCALE: NTS
791



LOUVER MOUNTING DETAIL 1
SCALE: NTS
900



SMALL ELECT RACK WALL MOUNT
SCALE: NTS
703



NOTES:
1. PULLBOX SHALL BE A POLYMER CONCRETE REINFORCED WITH HEAVY WEAVE FIBERGLASS REINFORCING WITH COMPRESSIVE STRENGHTH OF NOW LESS THAN 10,000 PSI.
2. COVER AND BOX SHALL BE H-20 RATED.
3. PROVIDE STAINLESS STEEL BOLTS AND INSERTS.
4. PROVIDE WITH (2) 2 1/2" MOUSEHOLES.
5. PROVIDE LABEL, "ELECTRICAL" OR "COMMUNICATION", AS APPLICABLE OR INDICATED.

SITE PULLBOX
SCALE: NTS
770

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102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ELECTRICAL
STANDARD DETAILS II

COLORADO LICENSED
LUIS M. CANTU
66311
PROFESSIONAL ENGINEER
09/10/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED N.TOUSSAINT
DRAWN N. TOUSSAINT
CHECKED T.GERTIG
REVIEWED M.BARRERA

Seq. 62 of 70
Dwg. No. E-901
4131-002-09

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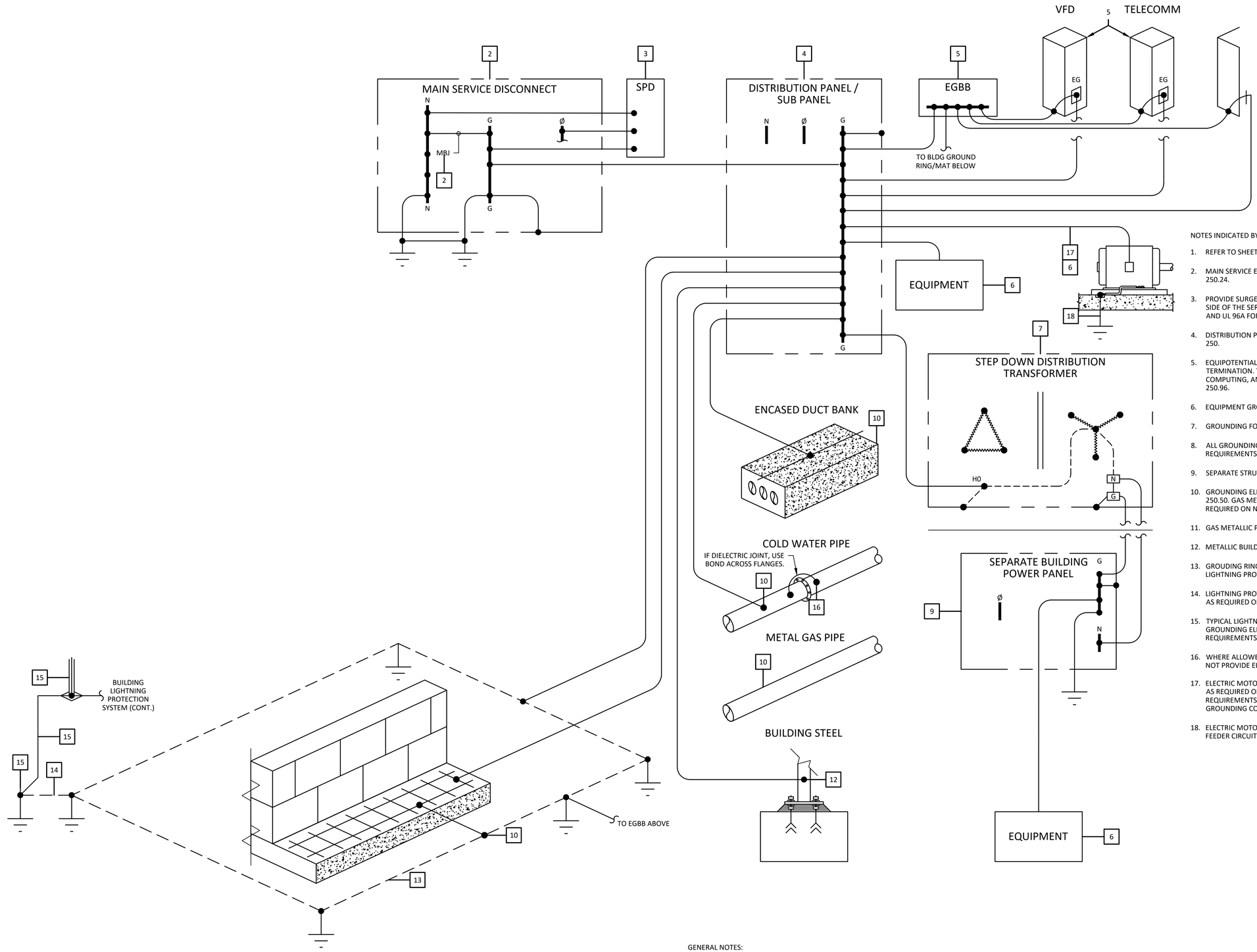

BUILDING FOUNDATION AND GROUNDING RING/MAT

NOTES INDICATED BY [#]

1. REFER TO SHEET E-000 FOR ADDITIONAL NOTES.
2. MAIN SERVICE ENTRANCE DISCONNECT CABINET WITH MAIN BONDING JUMPER. SEE NEC 250.24.
3. PROVIDE SURGE PROTECTOR DEVICE (SPD) TYPE 1 OR TYPE 2 CONNECTED ON THE LOAD SIDE OF THE SERVICE ENTRANCE DISCONNECT. SPD TO COMPLY WITH NFPA 70, NFPA 780, AND UL 96A FOR LIGHTNING PROTECTION.
4. DISTRIBUTION PANEL OR SUBPANEL SUPPLIED BY A FEEDER TO COMPLY WITH NEC 215.6 & 250.
5. EQUIPOTENTIAL GROUNDING AND BONDING BAR OR INTERSYSTEM BONDING TERMINATION. TYPICAL FOR BONDING AND GROUNDING TELECOMMUNICATION, COMPUTING, AND ELECTRONIC POWER CONVERTER ENCLOSURES. SEE NEC 250.94 & 250.96.
6. EQUIPMENT GROUNDING REFER TO NEC 250 PART VI - EQUIPMENT GROUNDING.
7. GROUNDING FOR SEPARATELY DERIVED SYSTEMS SEE NEC 250.30.
8. ALL GROUNDING SYSTEMS SHALL BE PERFORMED IN ACCORDANCE TO NFPA 70 REQUIREMENTS.
9. SEPARATE STRUCTURE SUPPLIED BY FEEDER OR BRANCH CIRCUIT. SEE NEC 250.32.
10. GROUNDING ELECTRODE SYSTEM AND GROUNDING ELECTRODE CONDUCTOR. SEE NEC 250.50. GAS METAL PIPES MUST NOT BE PART OF THE GROUNDING ELECTRODE SYSTEM AS REQUIRED ON NEC 250.52.B.
11. GAS METALLIC PIPE MUST BE BONDED PER NEC 250.104.B
12. METALLIC BUILDING STRUCTURE TO BE BONDED PER 250.104.B
13. GROUDING RING. COMPLY WITH INSTALLATION WITH NEC 250.53.F AND NFPA 780 LIGHTNING PROTECTION. THE MOST STRINGENT INSTALLATION METHOD MUST BE USED.
14. LIGHTNING PROTECTIONS SYSTEM AND GROUNDING SYSTEM ELECTRODE MUST BE BONDED AS REQUIRED ON NEC 250.106 AND NFPA 780.
15. TYPICAL LIGHTNING PROTECTION SYSTEM. AERIAL MAST, DOWN CONDUCTOR, AND GROUNDING ELECTRODE. LIGHTNING PROTECTION SYSTEM MUST COMPLY WITH REQUIREMENTS OF NFPA 780, UL96A, AND MUST BE UL MASTER LABELED CERTIFIED.
16. WHERE ALLOWED AND REQUIRED. WATER PIPING WITH DIELECTRIC FLANGES THAT DOES NOT PROVIDE ELECTRICAL CONTINUITY MUST BE BONDED ACROSS THE FLANGE.
17. ELECTRIC MOTOR MUST BE GROUNDED WITH THE EQUIPMENT GROUNDING CONDUCTOR AS REQUIRED ON NEC 250 PART VI. MOTOR CONTROLLER MUST FOLLOW GROUNDING REQUIREMENTS OF NEC 430.245. MOTOR FEED CIRCUIT MUST INCLUDE EQUIPMENT GROUNDING CONDUCTOR.
18. ELECTRIC MOTOR METALLIC FRAME IS NOT SOLIDLY BONDED AND GROUNDED BY MOTOR FEEDER CIRCUIT. MOTOR METAL FRAME MUST BE GROUNDED ACCORDING NEC 430.243.

GENERAL NOTES:

1. REFER TO E-000 FOR ADDITIONAL NOTES.
2. GROUNDING AND BONDING DIAGRAM ILLUSTRATES THE MOST COMMON AND GENERAL FEATURES FOR GROUNDING AND BONDING ON A STANDARD FACILITY. THIS DETAIL PROVIDES GUIDANCE FOR GROUNDING AND BONDING. ALL REQUIREMENTS FOR GROUNDING AND BONDING ARE FOUND THROUGHOUT DIFFERENT ARTICLES IN NEC SUCH AS ARTICLE 215, 230, 250, & AMONG OTHER GROUNDING STANDARDS AND CODES.
3. CONTRACTOR MUST HAVE KNOWLEDGE OF THE GROUNDING, BONDING, AND INTERCONNECTION WITH OTHER SYSTEMS SUCH AS LIGHTNING PROTECTION SYSTEMS DESCRIBED IN NFPA 780 AND THE IEEE C2. CONTRACTOR MUST INFORM ANY DISCREPANCIES AND REFER QUESTIONS REGARDING GROUNDING AND BONDING TO THE DESIGN ENGINEER, ELECTRICAL UTILITY, OR AUTHORITY HAVING JURISDICTION PRIOR COMPLETION OF THE ELECTRICAL SYSTEM GROUNDING AND BONDING.

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102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ELECTRICAL

GROUNDING DETAILS

COLORADO LICENSED
LUIS W. CANTU
66311
PROFESSIONAL ENGINEER
09/10/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED N.TOUSSAINT
DRAWN N. TOUSSAINT
CHECKED T.GERTIG
REVIEWED M.BARRERA

Seq. 63 of 70
Dwg. No. E-902
4131-002-09

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FITTING SYMBOLS

- UNION
- BLIND FLANGE
- CLEANOUT
- PLUG
- QUICK COUPLING
- REDUCER
- SPRAY NOZZLE
- HOSE STATION
- YARD HYDRANT
- EYE WASH STATION
- FLEXIBLE HOSE
- FLEXIBLE COUPLING
- SIGHT GLASS
- DRAIN
- OFF GAS DEMISTER
- Y STRAINER
- SILENCER
- AIR FILTER
- EJECTOR
- EDUCTOR
- ROTAMETER
- DIFFUSER
- RUPTURE DISK
- CALIBRATION CHAMBER
- FINE BUBBLE DIFFUSER
- COURSE BUBBLE DIFFUSER
- STATIC MIXER

VALVE SYMBOLS

- BALL CHECK VALVE
- SWING CHECK VALVE
- SILENT CHECK VALVE
- DOUBLE DOOR CHECK VALVE
- DUCKBILL CHECK VALVE
- BALL VALVE
- VENTED BALL VALVE
- V-PORT BALL VALVE
- GATE VALVE
- KNIFE GATE VALVE
- BUTTERFLY VALVE
- PLUG VALVE
- PINCH VALVE
- GLOBE VALVE
- CONE VALVE
- DIAPHRAGM VALVE
- ELLIPTICAL/DIAPHRAGM CONTROL VALVE
- SLEEVE OR PLUNGER VALVE
- NEEDLE VALVE
- PETCOCK VALVE
- BACK PRESSURE VALVE
- MUD VALVE
- 3-WAY VALVE
- 4-WAY VALVE
- SPRING LOADED PRESSURE RELIEF VALVE
- SURGE RELIEF VALVE
- PRESSURE REGULATING VALVE
- FLOW CONTROL VALVE
- AIR/VACUUM RELEASE VALVE
- PULSATION DAMPENER
- FOOT VALVE

GATE AND ACTUATOR SYMBOLS

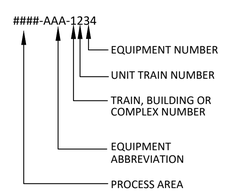
- SLIDE GATE
- SLIDE GATE
- SLUICE GATE
- WEIR GATE
- STOP GATE
- FLAP GATE
- M — MOTORIZED
- P — PNEUMATIC
- E — ELECTRIC
- H — HYDRAULIC

TYPICAL VALVE ANNOTATIONS	
FO	FAIL OPEN
FC	FAIL CLOSE
FI	FAIL INDETERMINATE
FAI	FAIL AS IS
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
LO	LOCKED OPEN
LC	LOCKED OPEN
M	MODULATING

FOUL AIR DUCT SYMBOLS

- MANUAL BALANCING DAMPER
- PRESSURE RELIEF DAMPER
- INLET VANE DAMPER
- BUBBLE TIGHT DAMPER

EQUIPMENT IDENTIFICATION

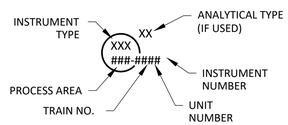


FIELD INSTRUMENT SYMBOLS

- MAGNETIC FLOW METER - FULL
- PROPELLER/TURBINE/PADDLEWHEEL FLOW METER
- THERMAL MASS FLOW METER
- MAGNETIC FLOW METER - INSERT
- ULTRASONIC FLOW METER
- VENTURI TUBE FLOW METER
- PARSHALL FLUME FLOW METER
- IN-LINE PRESSURE DIAPHRAGM
- ORIFICE
- UNDEFINED FLOW METER
- SUBMERSIBLE PRESSURE/LEVEL
- FLOAT SWITCH
- TEMPERATURE SWITCH
- ULTRASONIC LEVEL
- RADAR LEVEL
- UNDEFINED INSTRUMENT

INSTRUMENTATION IDENTIFICATION

	INSTRUMENT TYPE
AE	ANALYTICAL ELEMENT
AIT	ANALYTICAL INDICATING TRANSMITTER
FE	FLOW ELEMENT
FI	FLOW INDICATOR
FIT	FLOW INDICATING TRANSMITTER
F/LIT	FLOW/LEVEL INDICATING TRANSMITTER
FS	FLOW SWITCH
FSL	FLOW SWITCH LOW
FQI	FLOW TOTALIZER INDICATOR
LE	LEVEL ELEMENT
LIT	LEVEL INDICATING TRANSMITTER
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW LOW
LSs	LEVEL SWITCH SWITCHES
LT	LEVEL TRANSMITTER
PDI	PRESSURE DIFFERENTIAL INDICATOR
PDIT	PRESSURE DIFFERENTIAL INDICATING TRANSMITTER
PDSH	DIFFERENTIAL PRESSURE SWITCH HIGH
PI	PRESSURE INDICATOR
PIT	PRESSURE INDICATING TRANSMITTER
PT	PRESSURE TRANSDUCER
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TIT	TEMPERATURE INDICATING TRANSMITTER
TSH	TEMPERATURE SWITCH HIGH
VEX	VELOCITY ELEMENT X AXIS
VEY	VELOCITY ELEMENT Y AXIS
WI	WEIGHT INDICATOR
WIT	WEIGHT INDICATING TRANSMITTER



ANALYTICAL IDENTIFICATION

ANALYTICAL TYPE IDENTIFIER	
CL2	CHLORINE RESIDUAL
COND	CONDUCTIVITY
DO	DISSOLVED OXYGEN
GAS	COMBUSTIBLE GAS
NH3	AMMONIA
OP	ORTHOPHOSPHATE
ORP	OXYGEN REDUCTION POTENTIAL
pH	pH
TEMP	TEMPERATURE
TOC	TOTAL ORGANIC CARBON
TURB	TURBIDITY
UVT	ULTRAVIOLET TRANSMISSIVITY

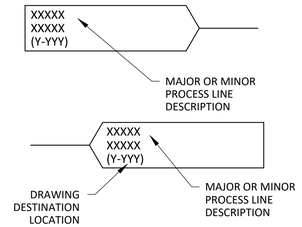
EQUIPMENT SYMBOLS

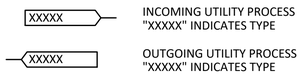
- DIAPHRAGM PUMP
- GENERIC PUMP

PROCESS LINE TYPES

- MAJOR PROCESS LINE, TYPICALLY TREATED FLOW
- MINOR PROCESS LINE, TYPICALLY SECONDARY FLOW
- UTILITY PROCESS LINE, TYPICALLY SERVICE WATER OR DRAIN
- EXISTING MAJOR PROCESS LINE, AS LABELED
- EXISTING MINOR PROCESS LINE, AS LABELED
- EXISTING UTILITY PROCESS LINE, AS LABELED
- FUTURE MAJOR PROCESS LINE
- FUTURE MINOR PROCESS LINE
- FUTURE UTILITY PROCESS LINE

CROSS REFERENCE SYMBOLS





INSTRUMENTATION SIGNAL SYMBOLS

- PLC DATA HIGHWAY
- PNEUMATIC AIR LINE
- WIRED SIGNAL
- HYDRAULIC HOSE
- D — DISCRETE INPUT INTO PLC
- D — DISCRETE OUTPUT FROM PLC
- A — ANALOG INPUT INTO PLC
- A — ANALOG OUTPUT FROM PLC

CONTROL PANEL SYMBOLS

- R — RUNNING — INDICATOR LIGHT
- RESET — PUSH BUTTON
- ETM — ELAPSED TIME METER
- TIMER — KEYPAD
- SWITCH

SWITCH TYPE IDENTIFIER	
HOA	HAND-OFF-AUTO
OOA	ON-OFF-AUTO
OO	ON-OFF
LOR	LOCAL-OFF-REMOTE

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REVIEWED	M.BARRERA

Seq. 64 of 70

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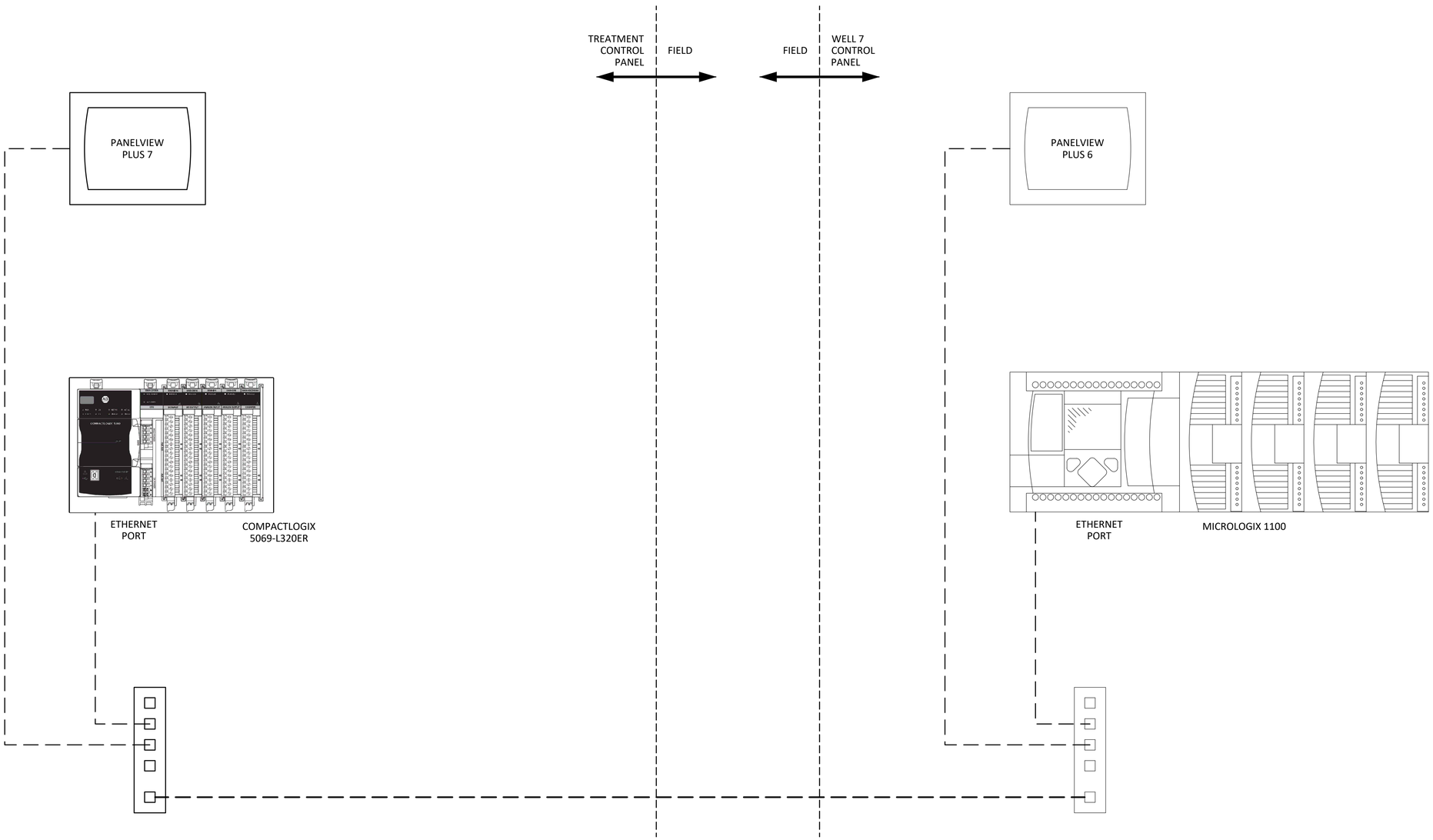

TREATMENT CONTROL PANEL

WELL 7 CONTROL PANEL

PLUMMER
1221 AURARIA PKWY | DENVER, CO 80204
303-300-3464 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

TOWN OF FRISCO
102 SCHOOL ROAD
PO BOX 4100
FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

INSTRUMENTATION
COMMUNICATION

COLORADO LICENSED
LUIS W. CANTU
66311
PROFESSIONAL ENGINEER
09/10/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED N.TOUSSAINT
DRAWN N. TOUSSAINT
CHECKED T.GERTIG
REVIEWED M.BARRERA

Seq. 65 of 70
Dwg. No. I-002
4131-002-09

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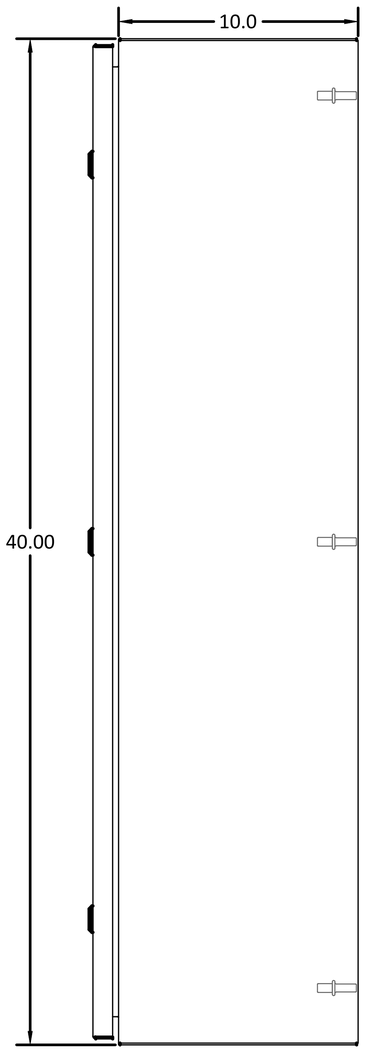
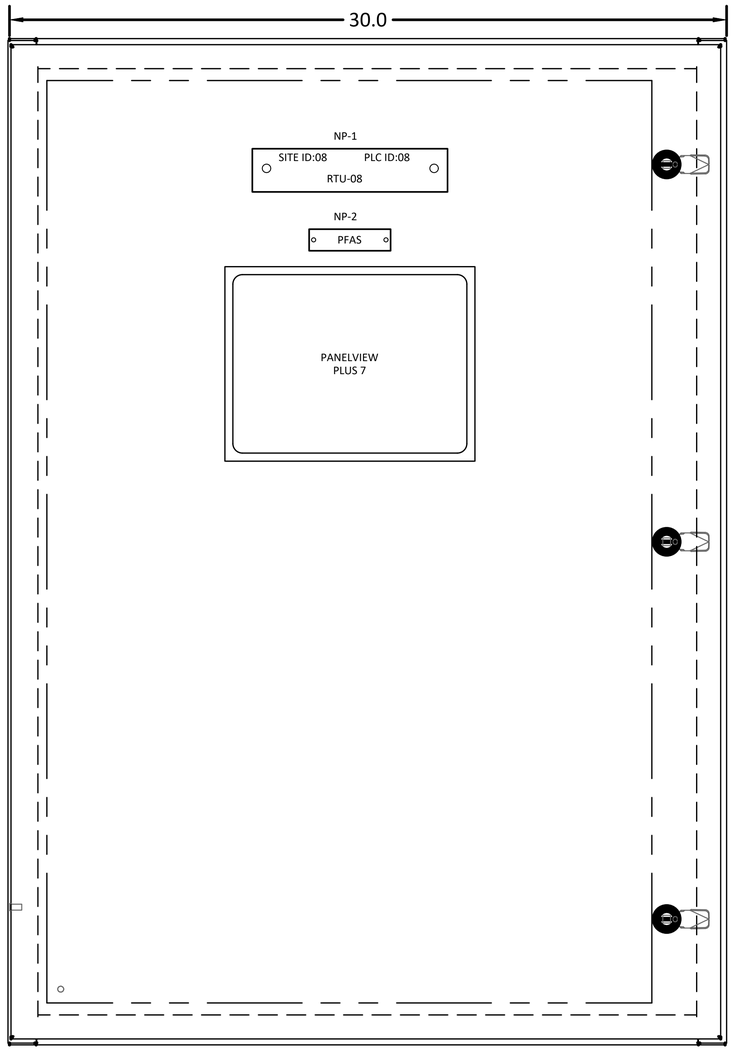
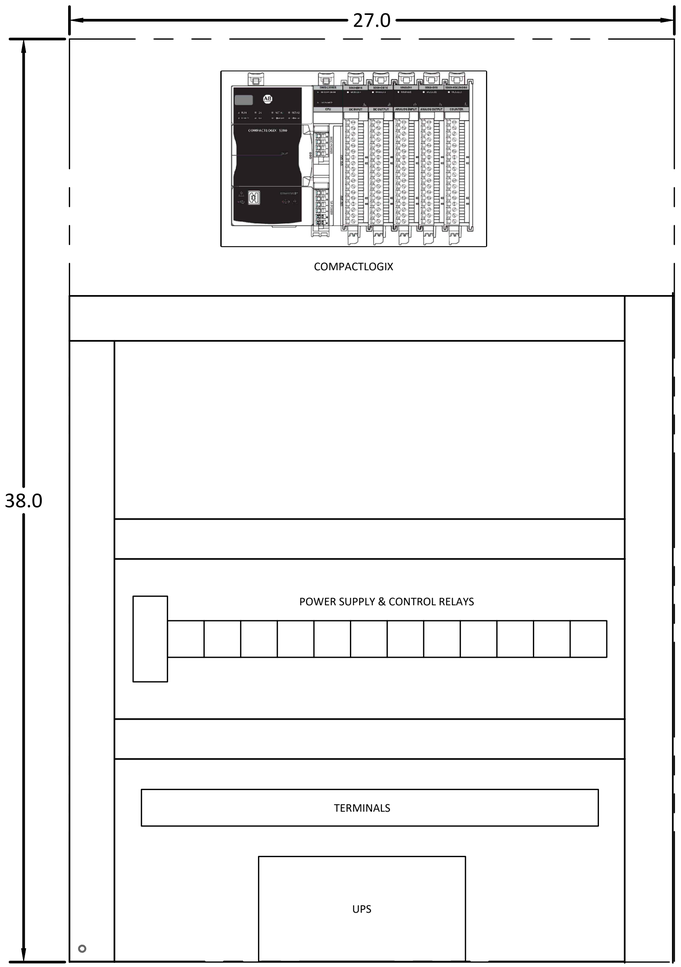
NAMEPLATE SCHEDULE				
TAG	QTY	SIZE (H X L)	LETTER SIZE	LEGEND
NP-1	1	2"x7.5"	1/4"	SITE ID:08 PLC ID:08 RTU-08
NP-2	1	1"x2"	1/4"	PFAS



RIGHT SIDE



FRONT



SUB-PANEL

PLUMMER

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TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

INSTRUMENTATION
CONTROL PANEL

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Dwg. No. I-003
4131-002-09

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FITTING SYMBOLS

- UNION
- BLIND FLANGE
- CLEANOUT
- PLUG
- QUICK COUPLING
- REDUCER
- SPRAY NOZZLE
- HOSE STATION
- YARD HYDRANT
- EYE WASH STATION
- FLEXIBLE HOSE
- FLEXIBLE COUPLING
- SG — SIGHT GLASS
- DRAIN
- OFF GAS DEMISTER
- Y STRAINER
- SILENCER
- AIR FILTER
- EJECTOR
- EDUCTOR
- ROTAMETER
- DIFFUSER
- RUPTURE DISK
- CALIBRATION CHAMBER
- FINE BUBBLE DIFFUSER
- COURSE BUBBLE DIFFUSER
- STATIC MIXER

VALVE SYMBOLS

- BALL CHECK VALVE
- SWING CHECK VALVE
- SILENT CHECK VALVE
- DOUBLE DOOR CHECK VALVE
- DUCKBILL CHECK VALVE
- BALL VALVE
- VENTED BALL VALVE
- V-PORT BALL VALVE
- GATE VALVE
- KNIFE GATE VALVE
- BUTTERFLY VALVE
- PLUG VALVE
- PINCH VALVE
- GLOBE VALVE
- CONE VALVE
- DIAPHRAGM VALVE
- ELLIPTICAL/DIAPHRAGM CONTROL VALVE
- SLEEVE OR PLUNGER VALVE
- NEEDLE VALVE
- PETCOCK VALVE
- BACK PRESSURE VALVE
- MUD VALVE
- 3-WAY VALVE
- 4-WAY VALVE
- SPRING LOADED PRESSURE RELIEF VALVE
- SURGE RELIEF VALVE
- PRESSURE REGULATING VALVE
- FLOW CONTROL VALVE
- AIR/VACUUM RELEASE VALVE
- PULSATION DAMPENER
- FOOT VALVE

GATE AND ACTUATOR SYMBOLS

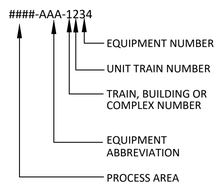
- SLIDE GATE
- SLIDE GATE
- SLUICE GATE
- WEIR GATE
- STOP GATE
- FLAP GATE
- M — MOTORIZED
- P — PNEUMATIC
- E — ELECTRIC
- H — HYDRAULIC

TYPICAL VALVE ANNOTATIONS	
FO	FAIL OPEN
FC	FAIL CLOSE
FI	FAIL INDETERMINATE
FAI	FAIL AS IS
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
LO	LOCKED OPEN
LC	LOCKED OPEN
M	MODULATING

FOUL AIR DUCT SYMBOLS

- MANUAL BALANCING DAMPER
- PRESSURE RELIEF DAMPER
- INLET VANE DAMPER
- BUBBLE TIGHT DAMPER

EQUIPMENT IDENTIFICATION

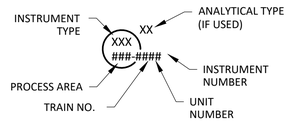


FIELD INSTRUMENT SYMBOLS

- MAGNETIC FLOW METER - FULL
- PROPELLER/TURBINE/PADDLEWHEEL FLOW METER
- THERMAL MASS FLOW METER
- MAGNETIC FLOW METER - INSERT
- ULTRASONIC FLOW METER
- VENTURI TUBE FLOW METER
- PARSHALL FLUME FLOW METER
- IN-LINE PRESSURE DIAPHRAGM
- ORIFICE
- UNDEFINED FLOW METER
- SUBMERSIBLE PRESSURE/LEVEL
- FLOAT SWITCH
- TEMPERATURE SWITCH
- ULTRASONIC LEVEL
- RADAR LEVEL
- UNDEFINED INSTRUMENT

INSTRUMENTATION IDENTIFICATION

	INSTRUMENT TYPE
AE	ANALYTICAL ELEMENT
AIT	ANALYTICAL INDICATING TRANSMITTER
FE	FLOW ELEMENT
FI	FLOW INDICATOR
FIT	FLOW INDICATING TRANSMITTER
F/LIT	FLOW/LEVEL INDICATING TRANSMITTER
FS	FLOW SWITCH
FSL	FLOW SWITCH LOW
FQI	FLOW TOTALIZER INDICATOR
LE	LEVEL ELEMENT
LIT	LEVEL INDICATING TRANSMITTER
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW LOW
LSs	LEVEL SWITCH SWITCHES
LT	LEVEL TRANSMITTER
PDI	PRESSURE DIFFERENTIAL INDICATOR
PDIT	PRESSURE DIFFERENTIAL INDICATING TRANSMITTER
PDSH	DIFFERENTIAL PRESSURE SWITCH HIGH
PI	PRESSURE INDICATOR
PIT	PRESSURE INDICATING TRANSMITTER
PT	PRESSURE TRANSDUCER
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TIT	TEMPERATURE INDICATING TRANSMITTER
TSH	TEMPERATURE SWITCH HIGH
VEX	VELOCITY ELEMENT X AXIS
VEY	VELOCITY ELEMENT Y AXIS
WI	WEIGHT INDICATOR
WIT	WEIGHT INDICATING TRANSMITTER



ANALYTICAL IDENTIFICATION

ANALYTICAL TYPE IDENTIFIER	
CL2	CHLORINE RESIDUAL
COND	CONDUCTIVITY
DO	DISSOLVED OXYGEN
GAS	COMBUSTIBLE GAS
NH3	AMMONIA
OP	ORTHOPHOSPHATE
ORP	OXYGEN REDUCTION POTENTIAL
pH	pH
TEMP	TEMPERATURE
TOC	TOTAL ORGANIC CARBON
TURB	TURBIDITY
UVT	ULTRAVIOLET TRANSMISSIVITY

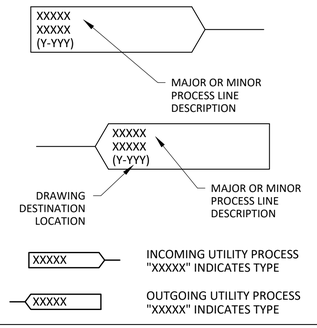
EQUIPMENT SYMBOLS

- METERING PUMP
- GENERIC PUMP
- SUMP PUMP
- SC — SPENT CARBON

PROCESS LINE TYPES

- MAJOR PROCESS LINE, TYPICALLY TREATED FLOW
- MINOR PROCESS LINE, TYPICALLY SECONDARY FLOW
- UTILITY PROCESS LINE, TYPICALLY SERVICE WATER OR DRAIN
- EXISTING MAJOR PROCESS LINE, AS LABELED
- EXISTING MINOR PROCESS LINE, AS LABELED
- EXISTING UTILITY PROCESS LINE, AS LABELED
- FUTURE MAJOR PROCESS LINE
- FUTURE MINOR PROCESS LINE
- FUTURE UTILITY PROCESS LINE

CROSS REFERENCE SYMBOLS



INSTRUMENTATION SIGNAL SYMBOLS

- PLC DATA HIGHWAY
- PNEUMATIC AIR LINE
- WIRED SIGNAL
- HYDRAULIC HOSE
- D — DISCRETE INPUT INTO PLC
- D — DISCRETE OUTPUT FROM PLC
- A — ANALOG INPUT INTO PLC
- A — ANALOG OUTPUT FROM PLC

CONTROL PANEL SYMBOLS

- R — RUNNING — INDICATOR LIGHT
- RESET — PUSH BUTTON
- ETM — ELAPSED TIME METER
- TIMER — KEYPAD
- SWITCH

SWITCH TYPE IDENTIFIER	
HOA	HAND-OFF-AUTO
OOA	ON-OFF-AUTO
OO	ON-OFF
LOR	LOCAL-OFF-REMOTE

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FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ELECTRICAL
PI&D LEGEND

COLORADO LICENSED
LUIS W. CANTU
66311
PROFESSIONAL ENGINEER
09/10/2025

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REVIEWED	M.BARRERA

Seq. 67 of 70

Dwg. No. PID-001

4131-002-09

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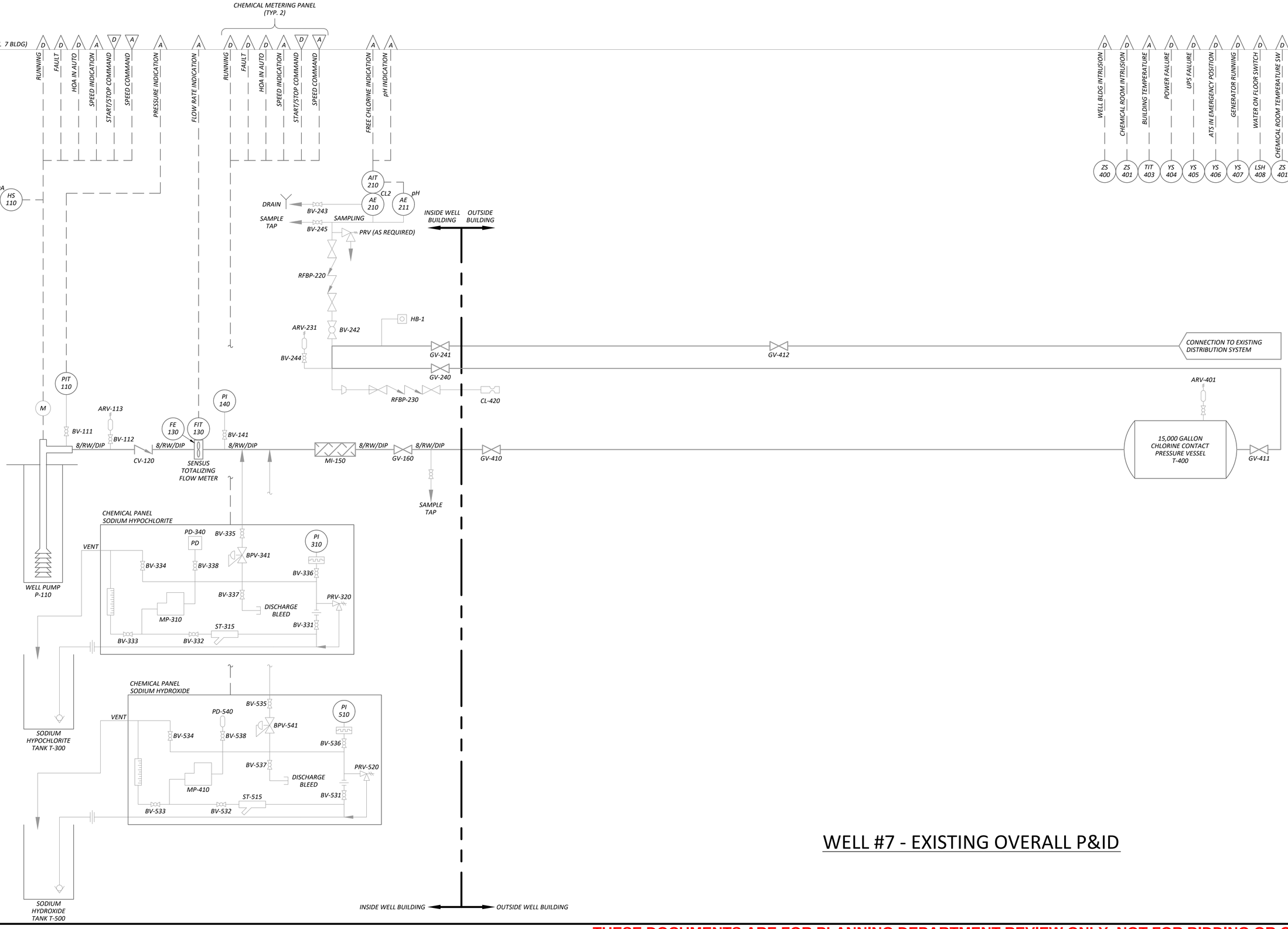

WELL #7 - EXISTING OVERALL P&ID

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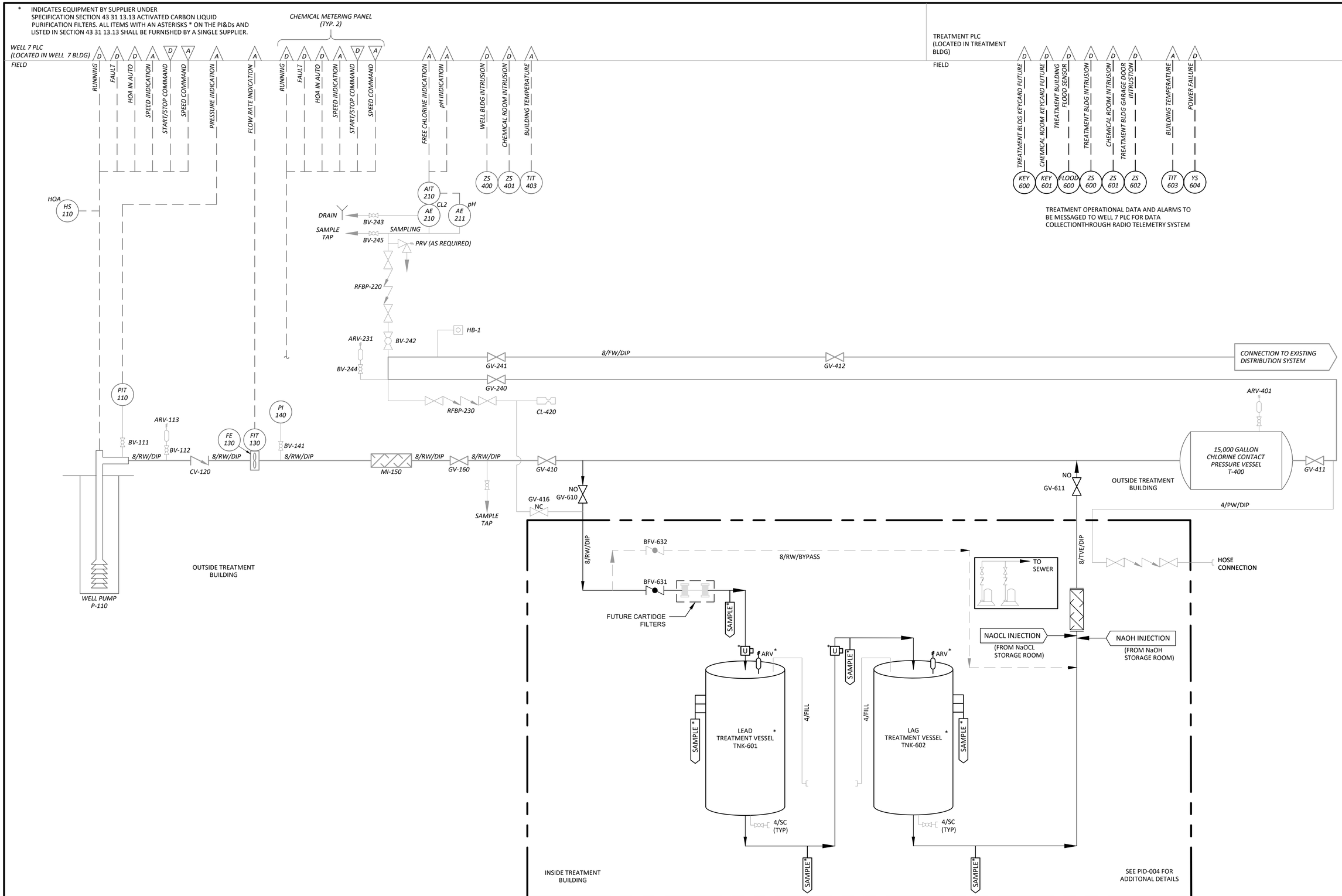
* INDICATES EQUIPMENT BY SUPPLIER UNDER SPECIFICATION SECTION 43 31 13.13 ACTIVATED CARBON LIQUID PURIFICATION FILTERS. ALL ITEMS WITH AN ASTERISKS * ON THE PI&Ds AND LISTED IN SECTION 43 31 13.13 SHALL BE FURNISHED BY A SINGLE SUPPLIER.



WELL #7 - MODIFIED P&ID

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TOWN OF FRISCO
102 SCHOOL ROAD
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FRISCO CO 80443

TOWN OF FRISCO
WELL 7 PFAS MITIGATION IMPROVEMENTS

ELECTRICAL
PROPOSED P&ID

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09/10/2025

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Seq. 69 of 70

Dwg. No. PID-003

4131-002-09

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TREATMENT PLC
(LOCATED IN TREATMENT BLDG)

FIELD

CHEMICAL METERING PANEL (TYP. 2)

D RUNNING
D FAULT
D HOA IN AUTO
A SPEED INDICATION
D START/STOP COMMAND
A SPEED COMMAND

EXISTING WELL 7 CHEMICAL FEED I/O MOVED TO NEW PLC IN PFAS BLDG

A *FREE CHLORINE INDICATION*
A *pH INDICATION*

A SUMP LEVEL
A *TREATMENT VESSEL TNK-601 PRESSURE DIFFERENTIAL*

A/A BACKWASH CONTROL VALVE
A VESSEL 1 FLOW
D/D VESSEL 1 BACKWASH ISOLATION VALVE CONTROL

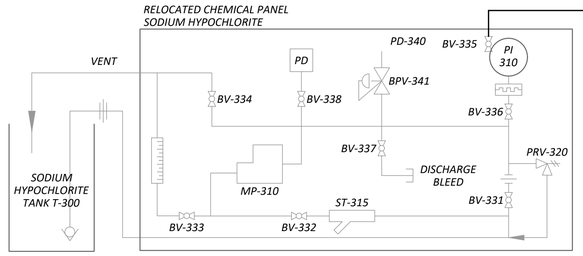
D/D VESSEL 2 BACKWASH ISOLATION VALVE CONTROL
A VESSEL 2 FLOW

D *PFAS BLDG KEYCARD FUTURE* — KEY 600
D *CHEMICAL ROOM KEYCARD FUTURE* — KEY 601
D *PFA BUILDING FLOOD SENSOR* — FLOOD 600
D *PFAS BLDG INTRUSION* — ZS 600
D *CHEMICAL ROOM INTRUSION* — ZS 601
D *PFAS BLDG GARAGE DOOR INTRUSION* — ZS 602
A *BUILDING TEMPERATURE* — TIT 603
D *POWER FAILURE* — YS 604

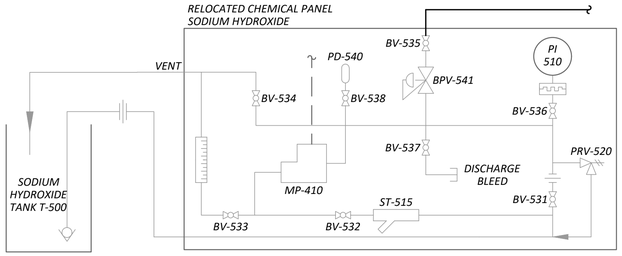
PFAS OPERATIONAL DATA AND ALARMS TO BE MESSAGED TO WELL 7 PLC FOR DATA COLLECTION THROUGH CAT 6 CABLE

A *TREATMENT VESSEL TNK-602 PRESSURE DIFFERENTIAL*

RELOCATED CHEMICAL PANEL SODIUM HYPOCHLORITE



RELOCATED CHEMICAL PANEL SODIUM HYDROXIDE

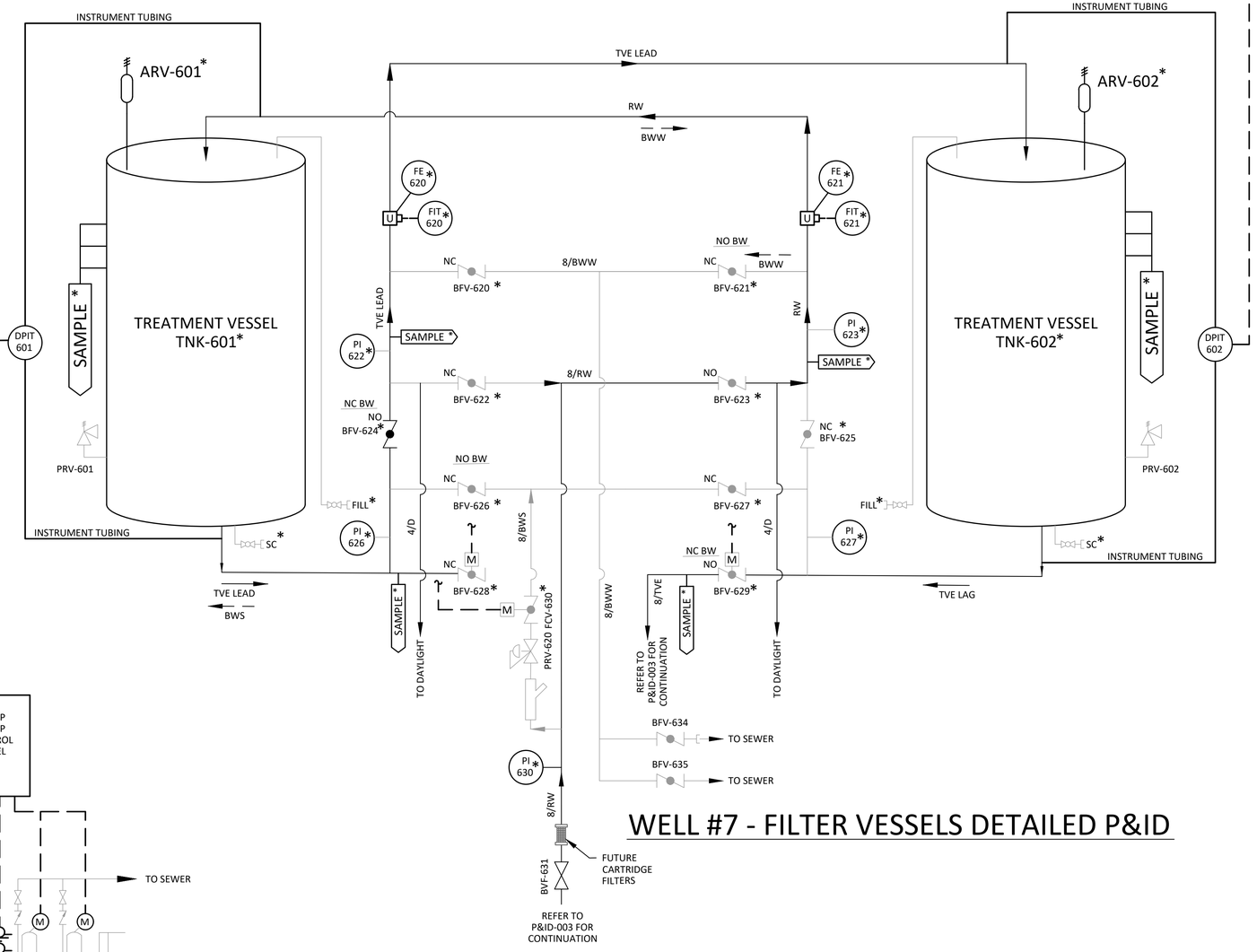


PROCESS NOTES:

1. PRIMARY FLOW ARROWS ARE INDICATED FOR AN OPERATING SCENARIO OF TNK-601 IN LEAD AND TNK-602 IN LAG. SECONDARY ARROWS ARE INDICATED FOR TNK-601 IN BACKWASH MODE.
2. PRIMARY VALVE POSITIONS ARE INDICATED FOR FORWARD FLOW WITH TNK-601 IN LEAD AND TNK-602 IN LAG. SECONDARY VALVE POSITIONS ARE INDICATED FOR TNK-601 IN BACKWASH MODE. NO = NORMALLY OPEN, NC = NORMALLY CLOSED.
3. VALVE POSITIONS ARE INDICATED IN THE FOLLOWING FORMAT:

PRIMARY POSITION
BACKWASH POSITION

PRIMARY FLOW PATH
BWS



WELL #7 - FILTER VESSELS DETAILED P&ID

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04/10/2025

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Seq. 70 of 70

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4131-002-09

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Town of Frisco, Colorado

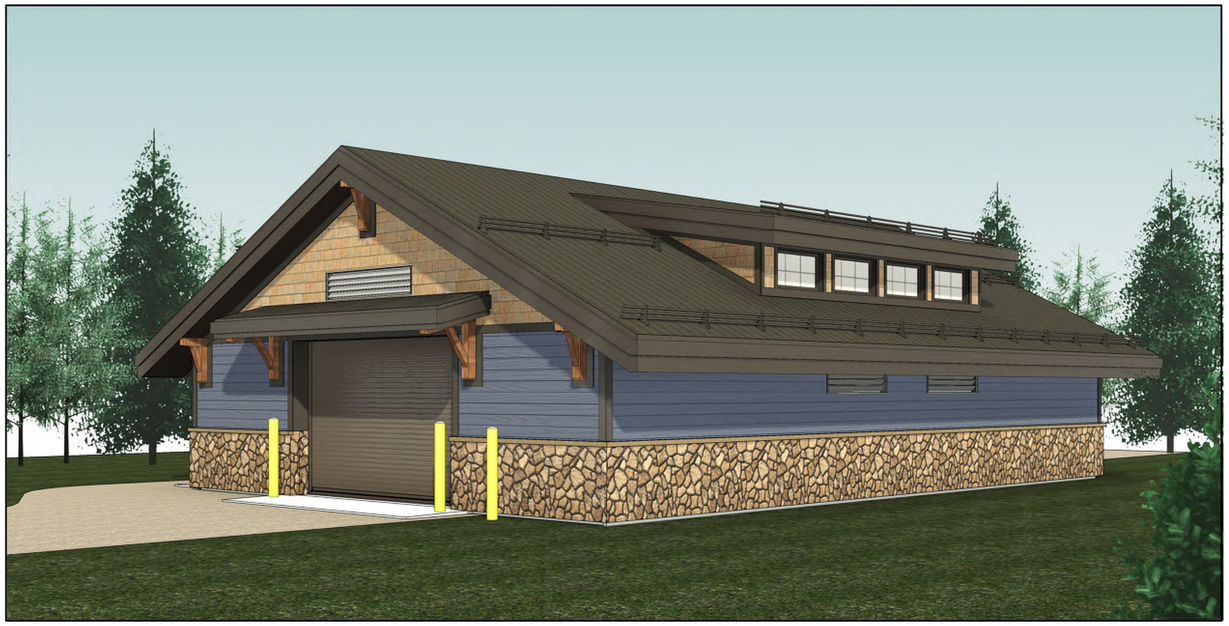
EIDOSARCH.COM

WELL 7 PFAS MITIGATION IMPROVEMENTS

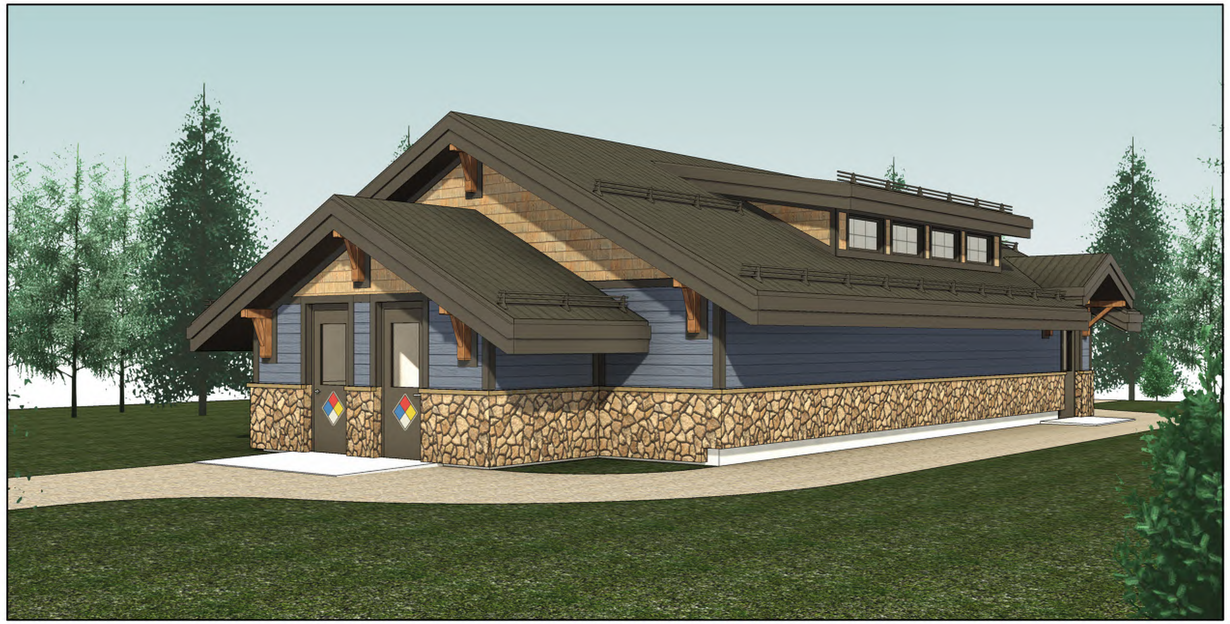
04.24.2025

Eidos ARCHITECTS

Perspective - Southwest Corner



Perspective - Southeast Corner



Perspective - Northwest Corner

Perspective - Northeast Corner

Engineer's Compliance Letter – IES Cutoff / Dark Sky

This letter documents that the specified luminaire listed below complies with the Illuminating Engineering Society (IES) cutoff performance criteria commonly referenced for dark-sky compliance. The criteria cited by the Town require: at least 90% of lumens below 80°, no more than 10% of lumens between 80°–90°, and no more than 2.5% of lumens at or above 90°.

Specified Luminaire:

- Manufacturer: Holophane (Acuity Brands)
- Model: HLWPC2 – Wallpack® Full Cutoff LED
- Configuration: P30 performance package, T4M (Type IV Medium) distribution, 80 CRI, 120 V, 5000 K

Basis of Compliance:

1. Per IES cutoff definitions, a **Cutoff** luminaire must limit luminous intensity such that no more than 10% of lumens are within 80–90° and no more than 2.5% at or above 90°. A **Full Cutoff** luminaire further requires 0% at or above 90° and ≤10% between 80–90°.
2. The product outdoor photometric report under BUG (backlight, uplight, glare) rating show at 80-90° 2.4% lumens forwards and 0.9% lumens backlight. This sums 3.3% at the 80-90° lighting angle. BUG rating also shows 0% lighting above 90°, zero uplight.
3. Manufacturer photometry for HLWPC2 P30 T4M shows 0.0% lumens above 90° and 3.3% lumens between 80–90°, i.e., ≥96.7% of lumens are below 80°. This satisfies both the stated project criteria and the IES 'Full Cutoff' condition (0% ≥90°; ≤10% 80–90°).
4. Town of Frisco code requires exterior fixtures to conform to IESNA **full cutoff** (fully shielded) and minimize upward light; the HLWPC2 'Full Cutoff LED' meets this requirement.

Photometric Data (HLWPC2 P30 50K T4M, EM absolute photometry):

- Total luminaire lumens (test condition): 1,299.1 lm
- Zonal lumens 80–90°: 43.4 lm (3.3%)
- Zonal lumens ≥90°: 0.0 lm (0.0%)
- BUG (from spec sheet for P30/T4M 50K 70 CRI): B2 U0 G2 (uplight = U0)

Note: The EM (emergency) photometry operates at reduced wattage but uses the same optical system; therefore, the distribution percentages by angle are representative of the standard

operating mode. Manufacturer data indicate CRI/CCT options change lumen output via multipliers but do not alter the distribution pattern.

Conclusion: The Holophane HLWPC2 P30 T4M (80 CRI, 120 V, 5000 K) qualifies as a full-cutoff, zero-uplight wallpack. It meets or exceeds the project's dark-sky criteria of ≥90% of lumens below 80°, ≤10% between 80–90°, and ≤2.5% at or above 90°.

References:

- Frisco Town Code general requirements § 180-6.16.3.A Outdoor Lighting
- Holophane HLWPC2 P30 50K T4M Outdoor Photometric report (Attached)
- HWPC2 Wallpack Full Cutoff LED Datasheet (Attached)

Reviewer: Ahmad AlRamadan Date: 9/10/2025

HOLOPHANE®
LEADER IN LIGHTING SOLUTIONS

Catalog Number	
Notes	Type

HLWPC2

Wallpack® Full Cutoff LED

Mechanical

- Heavy grade A360 cast aluminum (aluminum with <1% copper)
- Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering
- Mounts to a standard junction box
- Wet location listed
- IP65 rated housing, down light only
- ¾" painted threaded entry(¾" - 14 NPT) on each side and on top, accepts ¾" and ½" conduit
- ¾" threaded plugs are painted on each side
- Vibration tested to 1.5G per ANSI C136.31.

Electrical

- Certified by UL or CSA
- Rated for -40°C (-40°F) minimum ambient
- A programmable electronic driver with 0-10V control leads
- Available in: 120-277V 50/60 Hz and 347-480V 50/60 Hz,
- Standard: 3000K, 4000K and 5000K CCT (>70 CRI)
- Optional >80 CRI (3000K, 4000K and 5000K CCT)
- Internally mounted emergency battery backup for operation in an ambient temperature ranging from -20°C (-4°F) to 30°C (86°F), available with P10 thru P40 performance packages, non CEC compliant
- All surge protection meets ANSI/IEEE C62.41.2 10kV/10kA
- Standard surge protection is 20kV/10kA per ANSI C136.2
- Optional surge protection is 10kV/5kA per ANSI C136.2

Optical

- Light engine housing is IP66 rated
- Acrylic optical system
- Type V: E (entry), M (medium), R (rectangle) & W (wide)
- Asymmetric

Controls

- Field adjustable output (A0)
- Button style photocontrol (PE)
- Motion sensor & ambient photocontrol combination for mounting low (8-15') (MASL) and high (15-30') (MASH) mounting heights

Certification and Standards

- Luminaire is CSA listed, US and Canada
- Suitable for operation in an ambient temperature up to 40°C/104°F per UL or CSA certification
- Design lights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- LM-79 compliant
- The projected LED Lumen Maintenance Shall be based only on IES LM-80-08 and TM-21

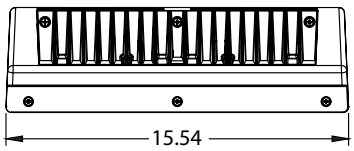
Government Procurement

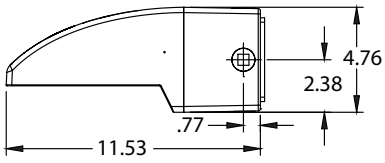
BAA – Buy America(n) Act: Product qualifies as a domestic end product under the Buy American Act as implemented in the FAR and DFARS. Product also qualifies as manufactured in the United States under DOT Buy America regulations.
BABA – Build America Buy America: Product qualifies as produced in the United States under the definitions of the Build America, Buy America Act.
Please refer to www.acuitybrands.com/buy-american for additional information.

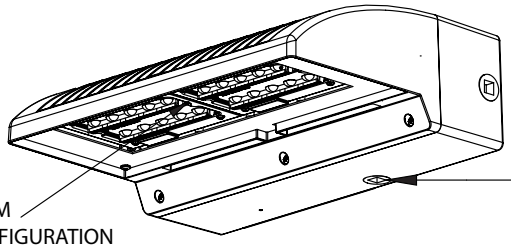
Warranty

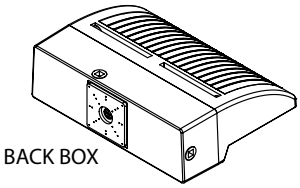
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions.

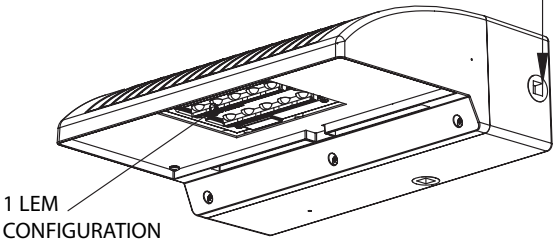
Note: Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.











Note: Maximum weight 22 lbs.

HLWPC2

Wallpack® Full Cutoff LED

ORDERING INFORMATION

Example: HLWPC2 P20 40K MVOLT T3M BZSDP

Series	Lumen Package	Color Temperature	Voltage	Optics	Color	CRI
HLWPC2 Wallpack Full Cutoff LED	1 LEM Package P10 3,100 lm P20 5,600 lm 2 LEM Package P30 7,800 lm P40 9,900 lm P50 11,700 lm (Nominal Lumens, 4000K)	AMB True Amber 30K 3,000 K CCT 40K 4,000 K CCT 50K 5,000 K CCT	120 120 volts 208 208 volts 240 240 volts 277 277 volts 347 347 volts 480 480 volts HVOLT 347/480 volts MVOLT 120-277 volts	T2S Type 2 Short T2M Type 2 Medium T3S Type 3 Short T3M Type 3 Medium T4M Type 4 Medium TFTM Forward Throw Medium ASYDF Asymmetric Diffuse SYMDF Symmetric Diffuse	BKSDP Black BZSDP Bronze GYSDP Grey WHSDP White	Blank 70 CRI (STD) 80CRI 80 CRI

Options:

Adjustable/Programmable Options

A0 Field Adjustable Output

Circuit Options

2CI 2 Independent Circuits

Control - Motion Sensor Options

MASL[1,2] Motion / Ambient Sensor, 8-15' Mounting Height Ambient Sensor Enabled at 5 FC

MASH[1,2] Motion / Ambient Sensor, 15-30' Mounting Height Ambient Sensor Enabled at 5 FC

Control - Photocontrol Options

PE Button Style Photocontrol

P3 N.E.M.A. Twistlock Receptacle Mount -3 PIN

P7 N.E.M.A. Twistlock Receptacle Mount -7 PIN

PCLL DTL Long Life Twistlock Photocontrol for Solid State

PSC Shorting Cap

Fuse Option

SF Single Fuse

DF Double Fuse

Safety Option

EM Integral Emergency Battery

TP Tamper Resistant Hardware

Surge Protection Option - 20kV/10kA is Standard

10KV 10kV/5kA Surge Protection, in place of 20kV/10kA

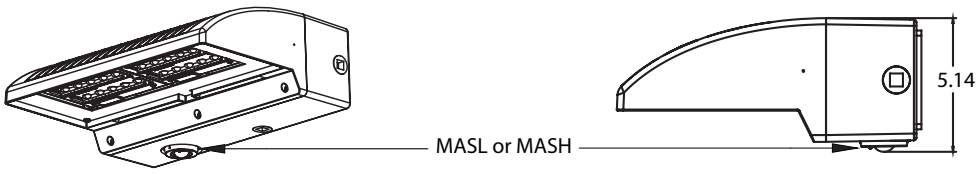
Notes

1 MASL and MASH sensors are not allowed with P10 lumen package option selected.

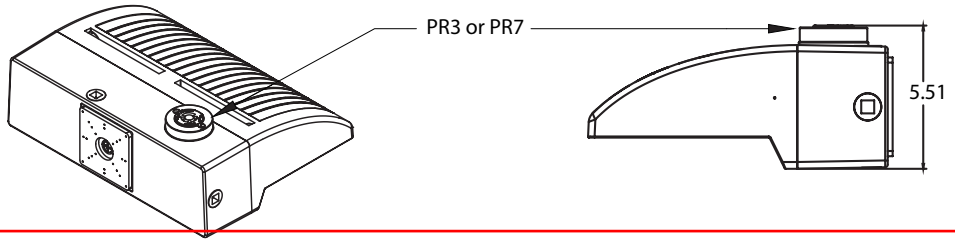
2 MASL and MASH options reduce luminaire light output to roughly 30% (not full OFF) when no motion is detected. When motion is detected, light output temporarily increases to 100%.

Options Location

Motion/Ambient Sensor mount options for Low (8-15') (MASL) and Height (15-30') (MASH) applications

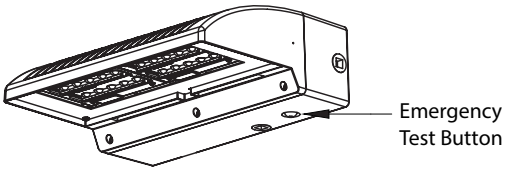


N.E.M.A. Twistlock Receptacle P3 and P7 Options, P7 Shown

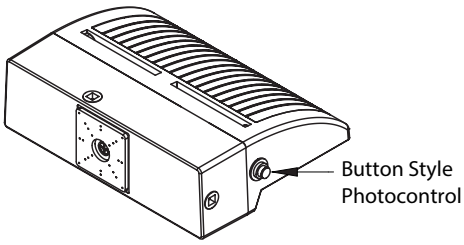


Internal Emergency Battery Test Button - EM Option

Test Button - EM Option



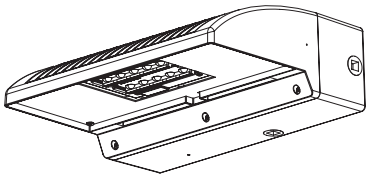
Button Style Photocontrol - PE Option



Driver & LEM Configuration Based on Circuit Options

Number of LEMs & Drivers / Circuit		Sinlge Circuit (std.)		Two Circuit (2CI option)	
		LEMs	Drivers	LEMs	Drivers
Lumen Maintenance Factor	P10	1	1	-	-
	P20	1	1	2	2
	P30	2	1	2	2
	P40	2	1	2	2
	P50	2	1	-	-

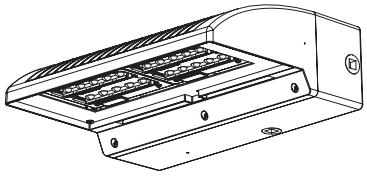
1 LEM Luminaire



SPD Based on Circuit Options

Number of LEMs & Drivers / Circuit		Sinlge Circuit (std.)				Two Circuit (2CI option)			
		LEMs	Drivers	No. of SPDs	SPD	LEMs	Drivers	No. of SPDs	SPD
Lumen Maintenance Factor	P10	1	1	1	20kV/10kA	-	-	-	-
	P20	1	1	1	20kV/10kA	2	2	2	10kV/5kA
	P30	2	1	1	20kV/10kA	2	2	2	10kV/5kA
	P40	2	1	1	20kV/10kA	2	2	2	10kV/5kA
	P50	2	1	1	20kV/10kA	-	-	-	-

2 LEM Luminaire



Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platform noted in a 25°C ambient, based on 6,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

The italicized data is extrapolated beyond the TM-21 standard.

E = (LM) x (CU) x (LAT) x (LLD)
LM and CU are obtained from published photometry.

Operating Hours (Standard)		0	25,000	30,000	36,000	45,000	50,000	60,000	75,000	100,000
Lumen Maintenance Factor	P10	1	0.98	0.97	0.96	0.96	0.95	0.95	0.94	0.92
	P20	1	0.97	0.95	0.94	0.93	0.92	0.90	0.88	0.85
	P30	1	0.98	0.97	0.96	0.96	0.95	0.95	0.94	0.92
	P40	1	0.97	0.95	0.94	0.93	0.92	0.90	0.88	0.85

Operating Hours (2CI Option)		0	25,000	30,000	36,000	45,000	50,000	60,000	75,000	100,000
Lumen Maintenance Factor	P10	1	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
	P20	1	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
	P30	1	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
	P40	1	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Single Circuit Application

Ambient		P10	P20	P30	P40	P50
0°C	32°F	1.02	1.03	1.03	1.04	1.05
10°C	50°F	1.01	1.02	1.02	1.03	1.03
20°C	68°F	1.01	1.01	1.01	1.01	1.01
25°C	77°F	1.00	1.00	1.00	1.00	1.00
30°C	86°F	0.99	0.99	0.99	0.99	0.99
40°C	104°F	0.98	0.97	0.98	0.97	0.97

Optional Two Independent Circuit (2CI) Application

Ambient		P20	P30	P40
0°C	32°F	1.02	1.02	1.02
10°C	50°F	1.01	1.01	1.02
20°C	68°F	1.00	1.01	1.01
25°C	77°F	1.00	1.00	1.00
30°C	86°F	0.99	0.99	0.99
40°C	104°F	0.98	0.98	0.98

Electrical Load

Single Circuit Application

LEDs	Drive Current (mA)	System Watts/ Circuit	Current (A)					
			120	208	240	277	247	480
P10	700	28	0.23	0.13	0.12	0.10	0.08	0.06
P20	1400	47	0.41	0.24	0.20	0.18	0.14	0.10
P30	1050	71	0.63	0.37	0.32	0.29	0.22	0.18
P40	1420	95	0.78	0.45	0.40	0.35	0.27	0.20
P50	1720	115	0.95	0.55	0.48	0.42	0.33	0.24

Optional Two Independent Circuit (2CI) Application

LEDs	Drive Current (mA)	System Watts/ Circuit	Current (A)					
			120	208	240	277	247	480
P10	-	-	-	-	-	-	-	-
P20	700	22	0.10	0.06	0.05	0.04	-	-
P30	1000	32	0.14	0.08	0.07	0.06	-	-
P40	1250	47	0.18	0.10	0.09	0.08	-	-
P50	-	-	-	-	-	-	-	-

Operating Characteristics

LED Package	Distribution	System Watts	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P10	T2S	28	2,904	104	1	0	1	3,128	112	1	0	1	3,168	113	1	0	1
	T2M	28	2,887	103	1	0	1	3,110	111	1	0	1	3,149	112	1	0	1
	T3S	28	2,964	106	1	0	1	3,194	114	1	0	1	3,234	116	1	0	1
	T3M	28	2,801	100	1	0	1	3,017	108	1	0	1	3,055	109	1	0	1
	T4M	28	2,858	102	1	0	1	3,079	110	1	0	1	3,118	111	1	0	1
	TFTM	28	2,979	106	1	0	1	3,209	115	1	0	1	3,250	116	1	0	1
	SYMDF	28	2,771	99	1	0	1	2,986	107	1	0	1	3,023	108	1	0	1
	ASYDF	28	2,756	98	1	0	1	2,969	106	1	0	1	3,007	107	1	0	1
P20	T2S	47	5,303	113	1	0	1	5,713	122	1	0	1	5,785	123	1	0	1
	T2M	47	5,272	112	1	0	2	5,680	121	1	0	2	5,751	122	1	0	2
	T3S	47	5,414	115	1	0	2	5,832	124	1	0	2	5,906	126	1	0	2
	T3M	47	5,115	109	1	0	2	5,510	117	1	0	2	5,580	119	1	0	2
	T4M	47	5,220	111	1	0	2	5,623	120	1	0	2	5,694	121	1	0	2
	TFTM	47	5,440	116	1	0	2	5,861	125	1	0	2	5,935	126	1	0	2
	SYMDF	47	5,062	108	2	0	2	5,453	116	2	0	2	5,522	117	2	0	2
	ASYDF	47	5,033	107	1	0	1	5,422	115	2	0	1	5,491	117	2	0	1
P30	T2S	71	7,319	103	2	0	2	7,884	111	2	0	2	7,984	112	2	0	2
	T2M	71	7,276	102	2	0	2	7,838	110	2	0	2	7,937	112	2	0	2
	T3S	71	7,472	105	1	0	2	8,049	113	2	0	2	8,151	115	2	0	2
	T3M	71	7,059	99	2	0	2	7,604	107	2	0	2	7,700	108	2	0	2
	T4M	71	7,203	101	2	0	2	7,760	109	2	0	2	7,858	111	2	0	2
	TFTM	71	7,508	106	1	0	2	8,088	114	2	0	2	8,190	115	2	0	2
	SYMDF	71	6,985	98	2	0	2	7,525	106	3	0	3	7,620	107	3	0	3
	ASYDF	71	6,946	98	2	0	2	7,483	105	2	0	2	7,578	107	2	0	2
P40	T2S	95	9,320	98	2	0	2	10,041	106	2	0	2	10,168	107	2	0	2
	T2M	95	9,266	98	2	0	2	9,982	105	2	0	3	10,108	106	2	0	3
	T3S	95	9,515	100	2	0	2	10,251	108	2	0	2	10,381	109	2	0	2
	T3M	95	8,989	95	2	0	2	9,684	102	2	0	2	9,807	103	2	0	2
	T4M	95	9,174	97	2	0	2	9,883	104	2	0	3	10,008	105	2	0	3
	TFTM	95	9,561	101	2	0	2	10,300	108	2	0	2	10,431	110	2	0	2
	SYMDF	95	8,896	94	3	0	3	9,583	101	3	0	3	9,705	102	3	0	3
	ASYDF	95	8,846	93	2	0	2	9,530	100	2	0	2	9,650	102	2	0	2
P50	T2S	115	10,972	95	2	0	2	11,820	103	2	0	2	11,969	104	2	0	2
	T2M	115	10,908	95	2	0	3	11,751	102	2	0	3	11,900	103	2	0	3
	T3S	115	11,202	97	2	0	2	12,067	105	2	0	2	12,220	106	2	0	2
	T3M	115	10,582	92	2	0	2	11,400	99	2	0	3	11,544	100	2	0	3
	T4M	115	10,799	94	2	0	3	11,634	101	2	0	3	11,781	102	2	0	3
	TFTM	115	11,256	98	2	0	2	12,126	105	2	0	2	12,279	107	2	0	2
	SYMDF	115	10,472	91	3	0	3	11,282	98	3	0	3	11,424	99	3	0	3
	ASYDF	115	10,414	91	2	0	2	11,219	98	3	0	2	11,361	99	3	0	2

Use the following to scale 70CRI to 80CRI.

CCT	Multiplier
3000K	0.909
4000K	0.886
5000K	0.865

All IES files available on product web page

Operating Characteristics (continued)

LED Package	Distribution	System Watts	30K + 2CI Option (3000K, 70 CRI)					40K + 2CI Option (4000K, 70 CRI)					50K + 2CI Option (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P20	T2S	49	5,015	102	1	0	1	5,402	110	1	0	1	5,471	112	1	0	1
	T2M	49	4,985	102	1	0	2	5,371	110	1	0	2	5,439	111	1	0	2
	T3S	49	5,120	104	1	0	1	5,515	113	1	0	2	5,585	114	1	0	2
	T3M	49	4,837	99	1	0	2	5,210	106	1	0	2	5,276	108	1	0	2
	T4M	49	4,936	101	1	0	2	5,317	109	1	0	2	5,385	110	1	0	2
	TFTM	49	5,144	105	1	0	2	5,542	113	1	0	2	5,612	115	1	0	2
	SYMDF	49	4,786	98	2	0	2	5,156	105	2	0	2	5,222	107	2	0	2
	ASYDF	49	4,760	97	1	0	1	5,127	105	1	0	1	5,192	106	1	0	1
P30	T2S	70	6,769	97	1	0	1	7,293	104	2	0	2	7,385	106	2	0	2
	T2M	70	6,730	96	2	0	2	7,250	104	2	0	2	7,342	105	2	0	2
	T3S	70	6,911	99	1	0	2	7,445	106	1	0	2	7,539	108	1	0	2
	T3M	70	6,529	93	2	0	2	7,033	100	2	0	2	7,123	102	2	0	2
	T4M	70	6,663	95	2	0	2	7,178	103	2	0	2	7,269	104	2	0	2
	TFTM	70	6,945	99	1	0	2	7,481	107	1	0	2	7,576	108	2	0	2
	SYMDF	70	6,461	92	2	0	2	6,960	99	2	0	2	7,049	101	2	0	2
	ASYDF	70	6,425	92	2	0	2	6,922	99	2	0	2	7,009	100	2	0	2
P40	T2S	89	8,370	94	2	0	2	9,017	101	2	0	2	9,131	103	2	0	2
	T2M	89	8,321	93	2	0	2	8,964	101	2	0	2	9,078	102	2	0	2
	T3S	89	8,545	96	2	0	2	9,205	103	2	0	2	9,322	105	2	0	2
	T3M	89	8,073	91	2	0	2	8,696	98	2	0	2	8,807	99	2	0	2
	T4M	89	8,238	93	2	0	2	8,875	100	2	0	2	8,987	101	2	0	2
	TFTM	89	8,586	96	2	0	2	9,250	104	2	0	2	9,367	105	2	0	2
	SYMDF	89	7,989	90	3	0	3	8,606	97	3	0	3	8,715	98	3	0	3
	ASYDF	89	7,944	89	2	0	2	8,558	96	2	0	2	8,666	97	2	0	2

Use the following to scale 70CRI to 80CRI.

CCT	Multiplier
3000K	0.909
4000K	0.886
5000K	0.865

All IES files available on product web page

LED Package	Distribution	System Watts	AMB (Wavelength)					LED Package	Distribution	System Watts	AMB (Wavelength)				
			Lumens	LPW	B	U	G				Lumens	LPW	B	U	G
P10	T2S	28	1,061	38	0	0	1	P30	T2S	28	1,975	71	0	0	1
	T2M	28	1,054	38	0	0	1		T2M	28	1,964	70	0	0	1
	T3S	28	1,083	39	0	0	1		T3S	28	2,016	72	0	0	1
	T3M	28	1,023	37	0	0	1		T3M	28	1,905	68	0	0	1
	T4M	28	1,044	37	0	0	1		T4M	28	1,944	69	0	0	1
	TFTM	28	1,088	39	0	0	1		TFTM	28	2,026	72	0	0	1
	SYMDF	28	1,012	36	1	0	1		SYMDF	28	1,885	67	1	0	1
	ASYDF	28	1,007	36	0	0	1		ASYDF	28	1,875	67	0	0	1

Options Matrix

Parameters		LED AMB	Options (Start with SF, DF, 2CI or EM if being used)													
			PE	P3	P7	PSC	PCLL	MASH	MASL	SF	DF	TP	10kV	AO	2CI	EM
LED Performance Package	P10	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	N	Y
	P20	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P30	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P40	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P50	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
Voltage	AS	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y
	AH	Y	N	Y	Y	Y	N	N	N	N	N	Y	Y	Y	N	N
	12	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
	20	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
	24	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
	27	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
	34	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	N	N
	48	Y	N	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	N	N
Options	PE	Y		N	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y
	P3	Y	N		N	M	Y	N	N	Y	Y	Y	Y	N	N	N
	P7	Y	N	N		M	Y	N	N	Y	Y	Y	Y	N	N	N
	PSC	Y	N	M	M		N	N	N	Y	Y	Y	Y	N	N	N
	PCLL	Y	N	Y	Y	N		N	N	Y	Y	Y	Y	N	N	N
	MASH	Y	N	N	N	N	N		N	Y	Y	Y	Y	N	N	N
	MASL	Y	N	N	N	N	N	N		Y	Y	Y	Y	N	N	N
	SF	Y	Y	Y	Y	Y	Y	Y	Y		N	Y	Y	Y	Y	Y
	DF	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	Y	Y	Y	Y
	TP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y
	10kV	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	M	M
	AO	Y	Y	N	N	N	N	N	N	Y	Y	Y	Y		N	N
	2CI	P30	N	N	N	N	N	N	N	Y	Y	Y	M	N		N
	EM	Y	Y	N	N	N	N	N	N	Y	Y	Y	M	N	N	

Notes

I = Included with option

M = Must have: one of these must be installed for the luminaire to operate

N = Combination Not available

P30 = Valid Option Combination, not available with P10 Performance Packabe

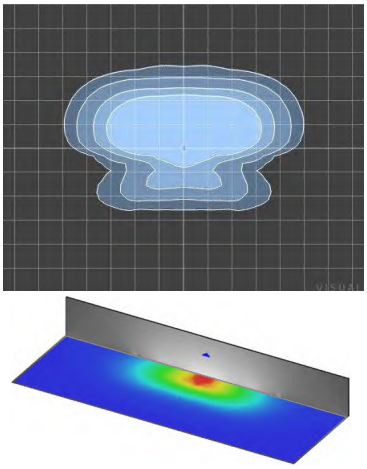
Y = Valid Option Combination

Photometric Diagrams

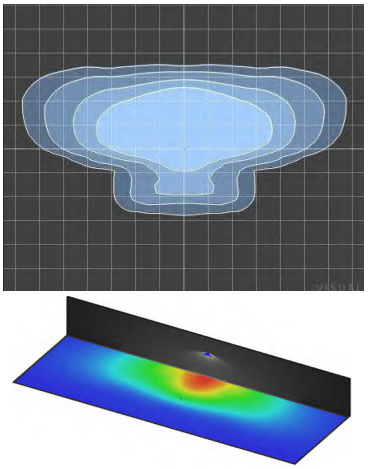
To see complete photometric reports or download .ies files for this product, visit the Holophane's Wallpack FCO LED homepage. Isofootcandle plots for the HLWPC2 P30 40K. Distance are in units of mounting height (12"). Grid is 10'x10'.

0.1 fc	1 fc	0.2 fc	0.5 fc

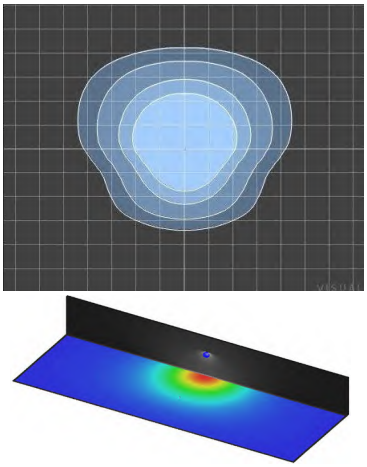
HLWPC2 P30 40K XX T2S



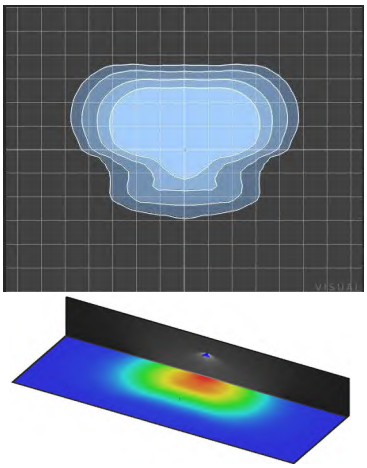
HLWPC2 P30 40K XX T2M



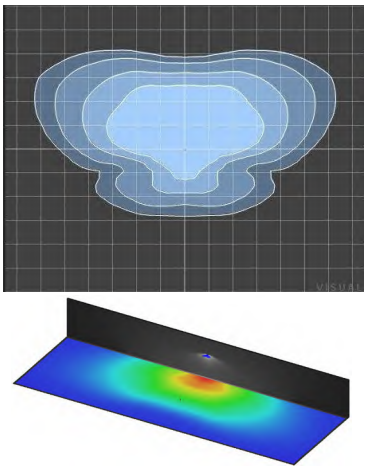
HLWPC2 P30 40K XX ASYDF



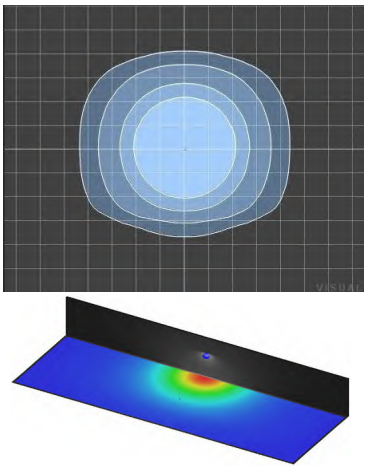
HLWPC2 P30 40K XX T3S



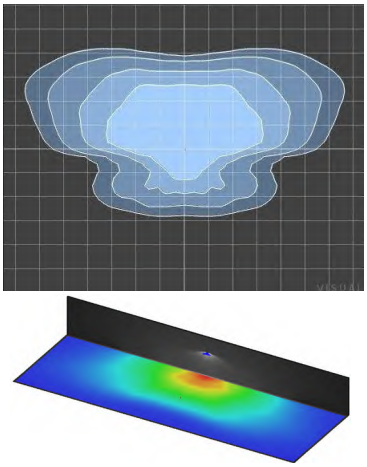
HLWPC2 P30 40K XX T3M



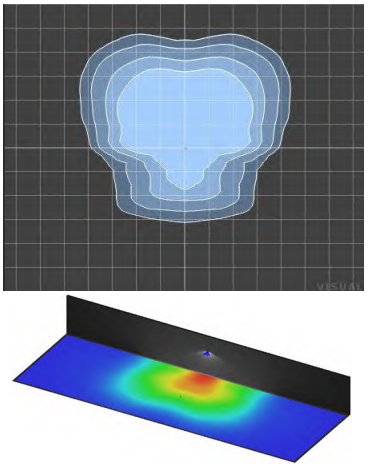
HLWPC2 P30 40K XX SYMDF



HLWPC2 P30 40K XX T4M

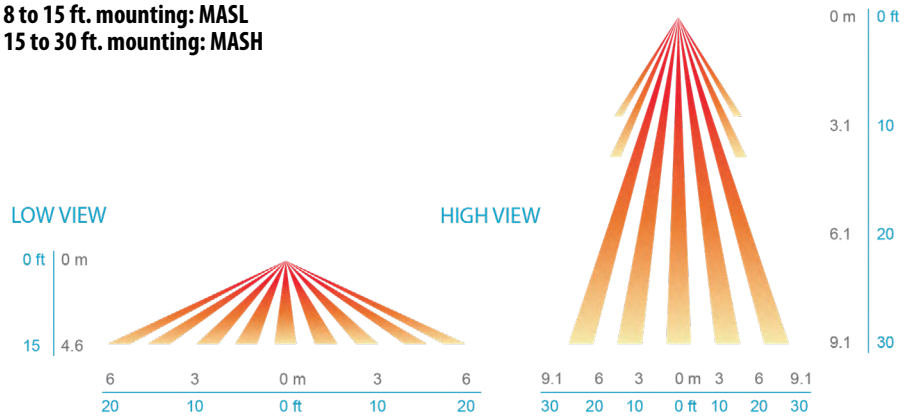


HLWPC2 P30 40K XX TFTM



Coverage Pattern

8 to 15 ft. mounting: MASL
15 to 30 ft. mounting: MASH



Control Options

Button Style Photocontrol

PE

N.E.M.A. Receptacle

P3

P7

Motion & Ambient Combined Sensor

MASL/MASH

MASL and MASH options reduce luminaire light output to roughly 30% (not full OFF) when no motion is detected. When motion is detected, light output increases to 100%.

Field Adjustable Output Module

The Field Adjustable Output (AO) module is an onboard device that adjusts the light output and input voltage to meet specific requirements, allowing a single fixture configuration to be flexibly applied in many different applications. The AO option is available on the HLWPC2 series.

P10 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	94%	95%
6	83%	82%
5	71%	69%
4	59%	57%
3	46%	45%
2	34%	33%
1	21%	21%

P20 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	95%	94%
6	84%	80%
5	73%	67%
4	61%	54%
3	48%	42%
2	35%	30%
1	21%	18%

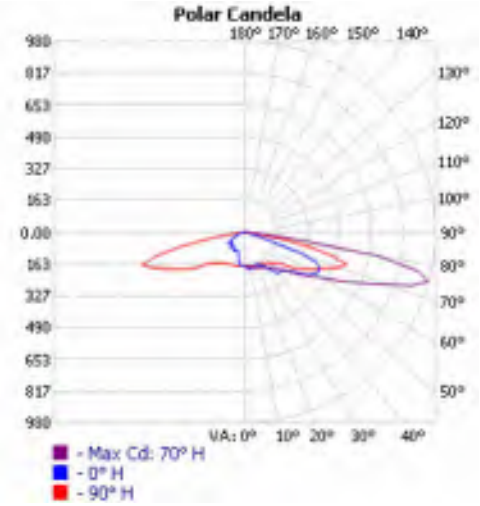
P30 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	95%	94%
6	84%	80%
5	73%	67%
4	61%	54%
3	48%	42%
2	35%	30%
1	21%	18%

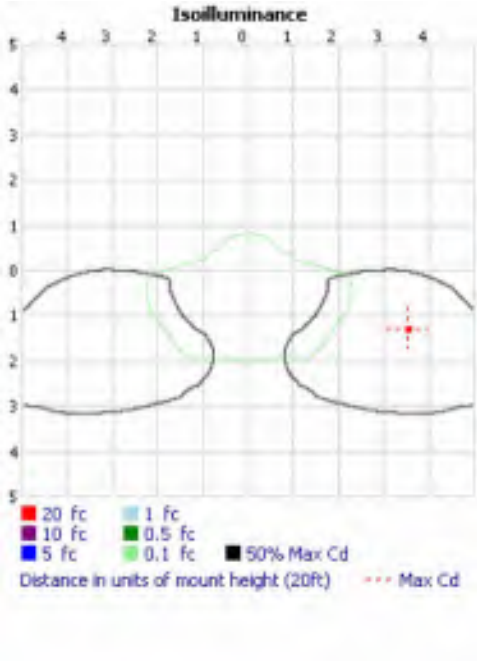
P40 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	95%	95%
6	85%	82%
5	74%	68%
4	62%	55%
3	49%	43%
2	36%	30%
1	21%	17%

P50 - AS and AH		
AO Position	% Lumens	% Wattage
8	100%	100%
7	96%	95%
6	86%	81%
5	75%	68%
4	64%	55%
3	51%	42%
2	37%	29%
1	22%	17%

OUTDOOR PHOTOMETRIC REPORT
CATALOG: HLWPC2 P30 50K XX T4M XXXX EM

Test #:	ISF 35531HP44
Test Lab:	SCALED PHOTOMETRY
Catalog:	HLWPC2 P30 50K XX T4M XXXX EM
Description:	Wallpack Full Cutoff LED, LED Performance Package P30, 5000 series CCT, 70CRI, Voltage, Type IV Medium, Paint finish, with Integral Emergency Battery
Series:	HLWPC2 Wallpack
Lamp Output:	Total luminaire Lumens: 1299.2, absolute photometry *
Input Wattage:	6
Luminous Opening:	Rectangle (L: 6.48", W: 15.48")
Max Cd:	975.5 at Horizontal: 70°, Vertical: 75°
Roadway Class:	MEDIUM, TYPE IV





*Test based on absolute photometry where lamp lumens=lumens total.
*Cutoff Classification and efficiency cannot be properly calculated for absolute photometry.

Zonal Lumen Summary

Zone	Lumens	% Luminaire
0-30	134.5	10.4%
0-40	239.4	18.4%
0-60	622.9	47.9%
60-90	676.3	52.1%
70-100	346.1	26.6%
90-120	0.000	0%
0-90	1,299.2	100%
90-180	0.000	0%
0-180	1,299.2	100%

Lumens Per Zone

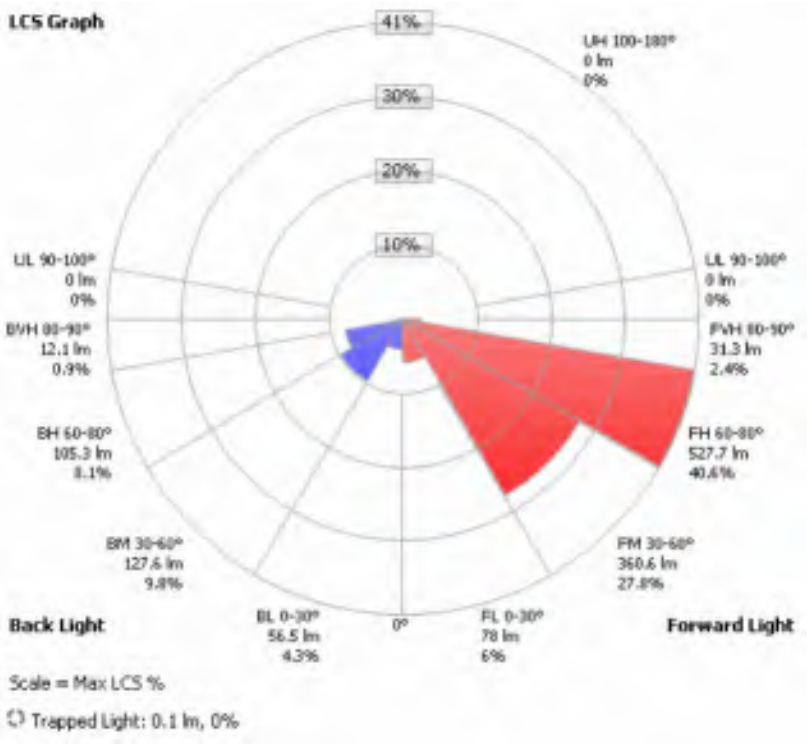
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	16.8	1.3%	90-100	0.000	0%
10-20	46.8	3.6%	100-110	0.000	0%
20-30	71.0	5.5%	110-120	0.000	0%
30-40	104.9	8.1%	120-130	0.000	0%
40-50	154.7	11.9%	130-140	0.000	0%
50-60	228.8	17.6%	140-150	0.000	0%
60-70	330.2	25.4%	150-160	0.000	0%
70-80	302.5	23.3%	160-170	0.000	0%
80-90	43.6	3.4%	170-180	0.000	0%

Roadway Summary

Distribution:	TYPE IV, MEDIUM	
Max Cd, 90 Deg Vert:	0.000	
Max Cd, 80 to <90 Deg:	694.9	
	Lumens	% Lamp
Downward Street Side:	997.6	76.8%
Downward House Side:	301.5	23.2%
Downward Total:	1,299.1	100%
Upward Street Side:	0.000	0%
Upward House Side:	0.000	0%
Upward Total:	0.000	0%
Total Lumens:	1,299.1	100%

LCS Table

BUG Rating	**B0 - U0 - G1**	
Forward Light	Lumens	Lumens %
Low(0-30):	78.0	6%
Medium(30-60):	360.6	27.8%
High(60-80):	527.7	40.6%
Very High(80-90):	31.3	2.4%
Back Light		
Low(0-30):	56.5	4.3%
Medium(30-60):	127.6	9.8%
High(60-80):	105.3	8.1%
Very High(80-90):	12.1	0.9%
Uplight		
Low(90-100):	0.000	0%
High(100-180):	0.000	0%
Trapped Light:	0.1	0%


LCS Graph
41%
30%
20%
10%
UH 100-180°
0 lm
0%
UL 90-100°
0 lm
0%
UL 90-100°
0 lm
0%
BVH 80-90°
12.1 lm
0.9%
FVH 80-90°
31.3 lm
2.4%
BH 60-80°
105.3 lm
8.1%
FH 60-80°
527.7 lm
40.6%
BM 30-60°
127.6 lm
9.8%
FM 30-60°
360.6 lm
27.8%
BL 0-30°
56.5 lm
4.3%
0°
FL 0-30°
78 lm
6%
Back Light
Forward Light
Scale = Max LCS %
Trapped Light: 0.1 lm, 0%

Candela Table - Type C

	0	15	25	35	45	55	65	75	85	90	105	115	125	135	145	155	165	175	180
0	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172
5	185	185	184	182	180	178	176	173	172	172	172	172	173	173	173	172	172	172	172
10	190	190	189	187	187	186	184	179	176	175	174	173	171	167	164	162	161	161	160
15	179	179	179	181	185	189	190	187	179	178	174	169	160	149	137	129	127	126	124
20	178	175	174	176	179	187	193	193	183	179	172	158	133	116	105	100	99	99	99
25	185	183	181	179	180	184	195	199	187	180	167	134	105	92	90	93	98	101	101
30	199	198	195	192	189	189	199	208	195	185	160	110	88	87	93	100	106	111	111
35	235	230	227	221	212	206	213	225	209	192	149	98	87	90	93	94	97	100	100
40	273	272	268	263	255	259	249	239	224	205	130	100	91	89	90	92	90	91	92
45	276	282	301	312	300	328	298	265	251	223	119	109	85	87	86	83	93	107	109
50	313	310	326	349	356	387	394	294	287	255	113	99	82	80	84	112	90	85	84
55	378	367	385	406	416	433	436	376	378	325	110	92	79	89	124	91	85	81	80
60	421	417	458	499	485	484	477	471	474	379	104	87	97	139	106	127	114	80	78
65	426	433	515	616	597	572	589	594	583	443	99	110	151	146	129	96	72	60	57
70	300	376	501	687	702	693	754	755	731	521	95	155	173	108	78	55	46	40	39
75	42	57	138	414	770	852	924	870	696	467	117	140	115	62	42	26	24	22	22
80	23	27	35	61	126	387	693	517	266	195	114	135	48	22	10	7	6	6	6
85	6	6	10	12	15	23	39	61	35	27	75	54	15	7	3	1	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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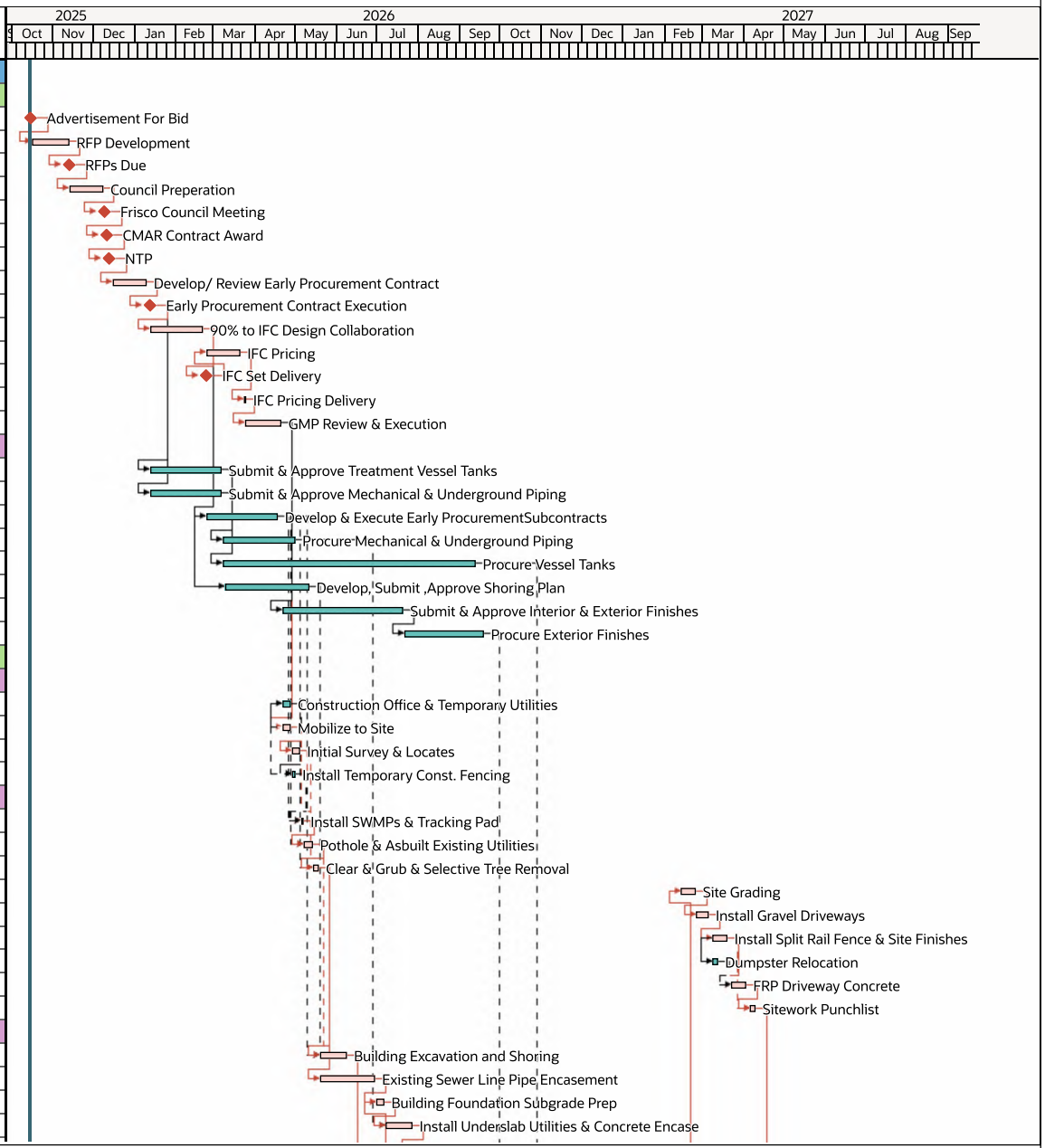
PFAS

10-Sep-25 05:23 p.m.

Frisco - PFAS

ID	Name	Duration	Start	Finish
Frisco - PFAS	Frisco - PFAS	388d	15-Oct-25	09-Apr-27
Preconstruction	Preconstruction	243d	15-Oct-25	18-Sep-26
A1350	Advertisement For Bid	0d	15-Oct-25 C	
A1360	RFP Development	20d	16-Oct-25	12-Nov-25
A1590	RFPs Due	0d	13-Nov-25	
A1600	Council Preperation	18d	13-Nov-25	08-Dec-25
A1570	Frisco Council Meeting	0d	09-Dec-25	
A1370	CMAR Contract Award	0d	11-Dec-25	
A1610	NTP	0d	12-Dec-25	
A1380	Develop/ Review Early Procurement ...	20d	15-Dec-25	09-Jan-26
A1390	Early Procurement Contract Execution	0d	12-Jan-26	
A1400	90% to IFC Design Collaboration	30d	12-Jan-26	20-Feb-26
A1510	IFC Pricing	20d	23-Feb-26	20-Mar-26
A1500	IFC Set Delivery	0d	23-Feb-26	
A1520	IFC Pricing Delivery	1d	23-Mar-26	23-Mar-26
A1530	GMP Review & Execution	20d	24-Mar-26	20-Apr-26
Submittals & ...	Submittals & Procurement	180d	12-Jan-26	18-Sep-26
A1430	Submit & Approve Treatment Vessel ...	40d	12-Jan-26	06-Mar-26
A1450	Submit & Approve Mechanical & Un...	40d	12-Jan-26	06-Mar-26
A1410	Develop & Execute Early Procureme...	40d	23-Feb-26	17-Apr-26
A1460	Procure Mechanical & Underground ...	55d	07-Mar-26	30-Apr-26
A1440	Procure Vessel Tanks	190d	07-Mar-26	12-Sep-26
A1420	Develop, Submit ,Approve Shoring Pl...	46d	09-Mar-26	11-May-26
A1470	Submit & Approve Interior & Exterior...	65d	21-Apr-26	20-Jul-26
A1480	Procure Exterior Finishes	60d	21-Jul-26	18-Sep-26
Construction	Construction	254d	21-Apr-26	09-Apr-27
General	General	10d	21-Apr-26	04-May-26
A1020	Construction Office & Temporary Uti...	5d	21-Apr-26	27-Apr-26
A1000	Mobilize to Site	5d	21-Apr-26	27-Apr-26
A1080	Initial Survey & Locates	5d	28-Apr-26	04-May-26
A1010	Install Temporary Const. Fencing	3d	28-Apr-26	30-Apr-26
Sitework	Sitework	244d	05-May-26	09-Apr-27
A1050	Install SWMPs & Tracking Pad	2d	05-May-26	06-May-26
A1040	Pothole & Asbuilt Existing Utilities	5d	07-May-26	13-May-26
A1060	Clear & Grub & Selective Tree Removal	3d	14-May-26	18-May-26
A1260	Site Grading	8d	12-Feb-27	23-Feb-27
A1270	Install Gravel Driveways	8d	24-Feb-27	05-Mar-27
A1280	Install Split Rail Fence & Site Finishes	10d	08-Mar-27	19-Mar-27
A1290	Dumpster Relocation	5d	08-Mar-27	12-Mar-27
A1300	FRP Driveway Concrete	10d	22-Mar-27	02-Apr-27
A1330	Sitework Punchlist	5d	05-Apr-27	09-Apr-27
Treatment Bui...	Treatment Building	203d	19-May-26	25-Feb-27
A1070	Building Excavation and Shoring	15d	19-May-26	08-Jun-26
A1560	Existing Sewer Line Pipe Encasement	30d	19-May-26	29-Jun-26
A1100	Building Foundation Subgrade Prep	5d	30-Jun-26	06-Jul-26
A1110	Install Underslab Utilities & Concrete...	15d	07-Jul-26	27-Jul-26



Adam's View

No Filter

1 / 2

Adam Rice

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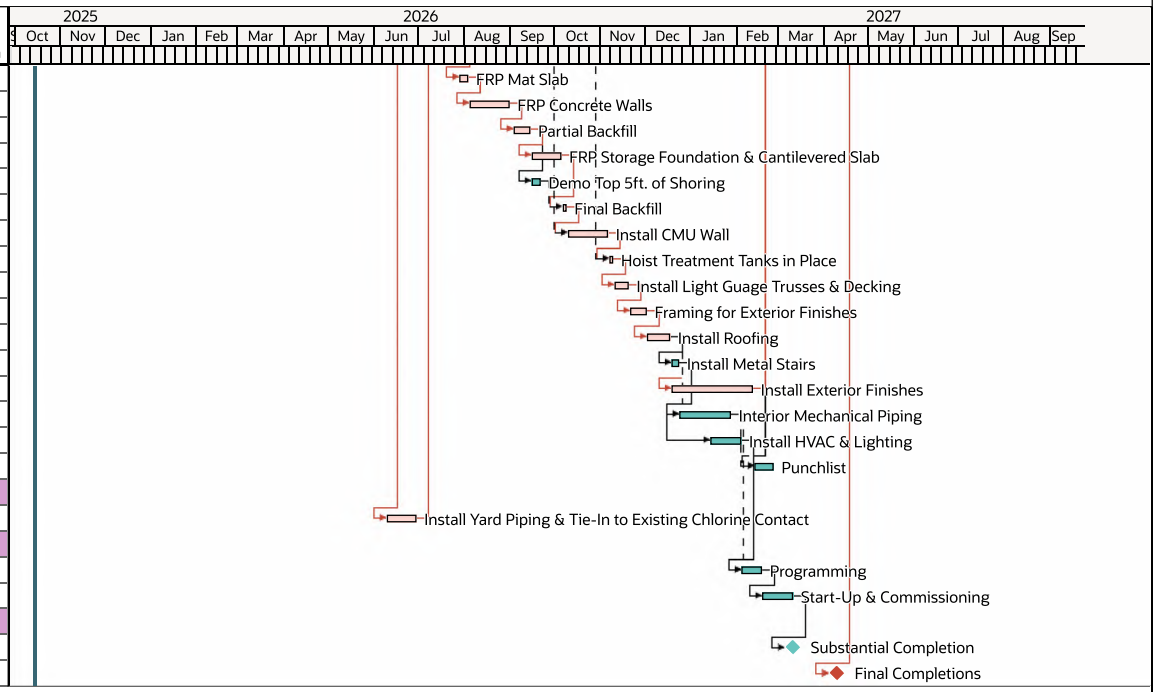
PFAS

10-Sep-25 05:23 p.m.

Frisco - PFAS

ID	Name	Duration	Start	Finish
A1120	FRP Mat Slab	5d	28-Jul-26	03-Aug-26
A1130	FRP Concrete Walls	20d	04-Aug-26	31-Aug-26
A1150	Partial Backfill	8d	03-Sep-26	14-Sep-26
A1140	FRP Storage Foundation & Cantileve...	15d	15-Sep-26	05-Oct-26
A1170	Demo Top 5ft. of Shoring	5d	15-Sep-26	21-Sep-26
A1160	Final Backfill	3d	06-Oct-26	08-Oct-26
A1180	Install CMU Wall	20d	09-Oct-26	05-Nov-26
A1190	Hoist Treatment Tanks in Place	2d	06-Nov-26	09-Nov-26
A1200	Install Light Guage Trusses & Decking	8d	10-Nov-26	19-Nov-26
A1210	Framing for Exterior Finishes	8d	20-Nov-26	01-Dec-26
A1220	Install Roofing	12d	02-Dec-26	17-Dec-26
A1250	Install Metal Stairs	4d	18-Dec-26	23-Dec-26
A1230	Install Exterior Finishes	40d	18-Dec-26	11-Feb-27
A1240	Interior Mechanical Piping	25d	24-Dec-26	27-Jan-27
A1310	Install HVAC & Lighting	15d	14-Jan-27	03-Feb-27
A1320	Punchlist	10d	12-Feb-27	25-Feb-27
Utilties	Utilties	15d	09-Jun-26	29-Jun-26
A1090	Install Yard Piping & Tie-In to Existin...	15d	09-Jun-26	29-Jun-26
Start-Up & Co...	Start-Up & Commissioning	25d	04-Feb-27	10-Mar-27
A1490	Programming	10d	04-Feb-27	17-Feb-27
A1340	Start-Up & Commissioning	15d	18-Feb-27	10-Mar-27
Completion M...	Completion Milestones	22d	10-Mar-27	09-Apr-27
A1540	Substantial Completion	0d		10-Mar-27
A1550	Final Completions	0d		09-Apr-27



Adam's View

No Filter

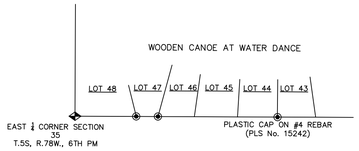
2 / 2

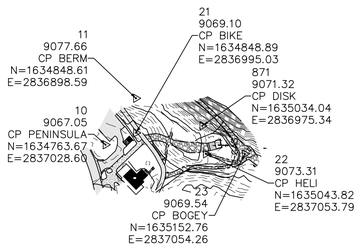
Adam Rice

A TOPOGRAPHIC MAP OF

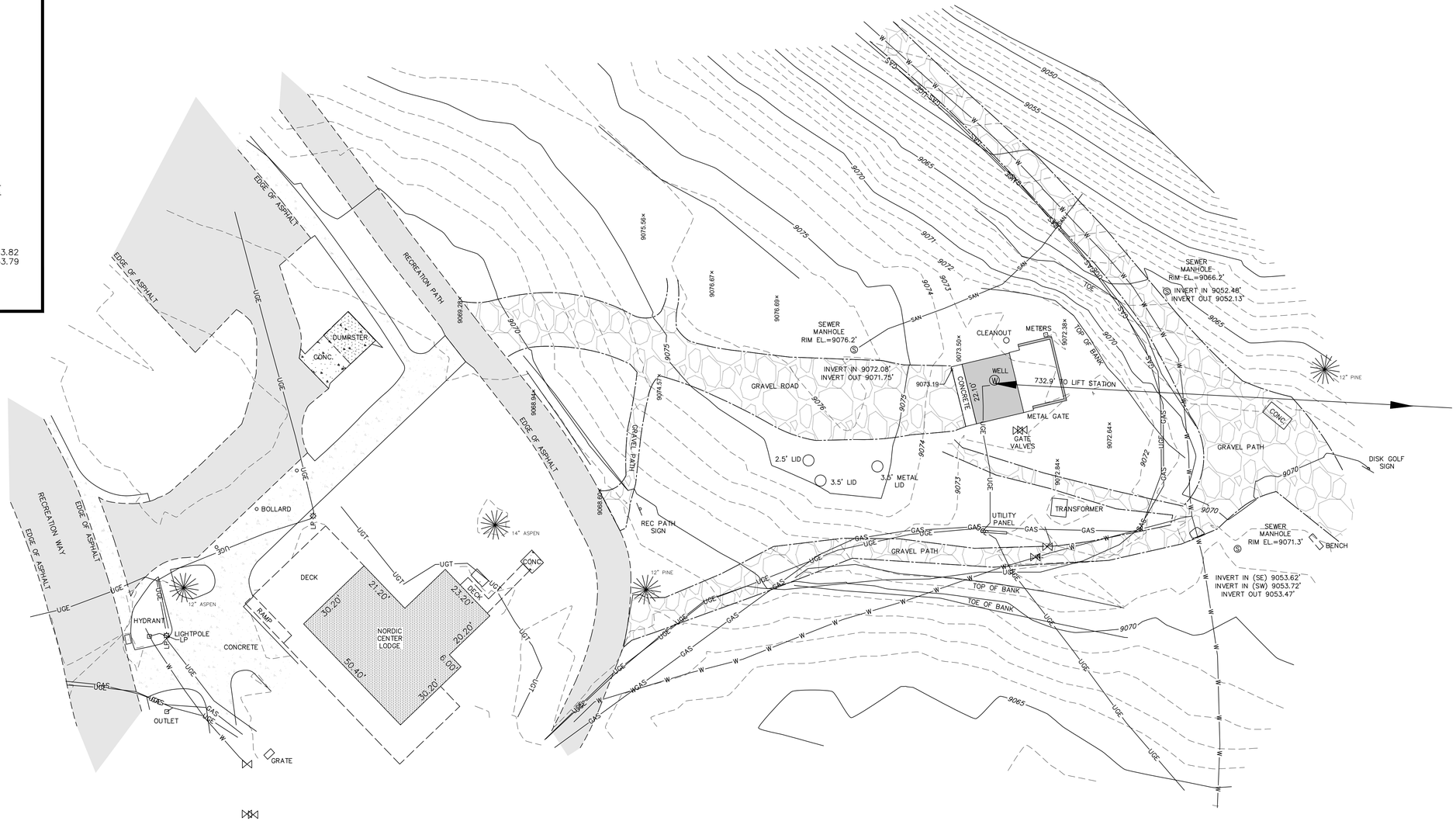
TOWN OF FRISCO WELL #7 PRA IMPROVEMENTS PROJECT

SUMMIT COUNTY, COLORADO





GRAPHIC SCALE
1 inch = 200 ft.



SURVEYOR'S CERTIFICATE

I, ELIZABETH K. SCHMIDT, A PROFESSIONAL LAND SURVEYOR REGISTERED UNDER THE LAWS OF THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS TOPOGRAPHIC MAP WAS MADE BY ME AND UNDER MY SUPERVISION, AND THAT THE MAP IS ACCURATE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

DATE: _____

ELIZABETH K. SCHMIDT
COLORADO P.L.S. 37047

GENERAL NOTES

1. DATE OF SURVEY: OCTOBER 2023.
2. CONTOUR INTERVAL = ONE FOOT.
3. PROJECT BENCHMARK: HELD ELEVATION 9127.79' NGS SURVEY CONTROL MONUMENT "B449". NAVD 88.
4. BASIS OF BEARINGS: THE FOUND MONUMENTS ALONG THE EAST BOUNDARY LINE OF WOODEN CANOE AT WATER DANCE ON LAKE DILLON, BEING N 00°08'04" W. RECEPTION NUMBER 517527.
5. SCHMIDT LAND SURVEYING, INC. DID NOT PERFORM A TITLE SEARCH OF THE SUBJECT PROPERTY TO ESTABLISH OWNERSHIP, EASEMENTS OR RIGHTS-OF-WAY OF RECORD.

NOTICE:
ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF CERTIFICATION SHOWN HEREON.

LEGEND

◉	PIN & CAP
△	RANDOM SURVEY CONTROL POINT
	FIRE HYDRANT
WV	WATER VALVE
S	SEWER MANHOLE
	SIGN
3"	TREE WITH TRUNK DIAMETER
W	WATER LINE
UGE	UNDERGROUND ELECTRIC
UGT	UNDERGROUND TELEPHONE
GAS	UNDERGROUND GAS

Drawn EKS	Dwg 1810 TP.dwg	Project 1810
Date 10/23/23	Scale 1" = 20'	Sheet 1 of 1

SCHMIDT
LAND SURVEYING, INC.
P.O. Box 5761
FRISCO, CO 80443 970-409-9963

COLORADO
Department of Public Health & Environment

April 10, 2025

Chris McGinnis
Public Works Director
Town of Frisco
PO Box 4100
Frisco, CO 80443

Re: Town of Frisco Drinking Water Revolving Fund (DWRF)
Publication of Categorical Exclusion
DWRF Project No. 240051D-A, Summit County

Dear Chris McGinnis:

In conformance with the requirements of the National Environmental Policy Act and the Colorado State Environmental Review Process, the Water Quality Control Division has determined that the Town of Frisco's drinking water project qualifies for a Categorical Exclusion. The Categorical Exclusion is available to the public at the following web address:

https://cdphe.colorado.gov/water-quality/funding-grants-and-loans/low-interest-loans/water-quality-categorical-exclusions

Should you have any questions, please contact me at 303-692-6273, or by email at ana.ruiz@state.co.us. We look forward to working with you on completing this important project.

Sincerely,

Ana Ruiz
Project Manager
Infrastructure Unit - SRF Program
Water Quality Control Division

cc: Ryan Thompson, Water System Supervisor, Town of Frisco
Taylor Gertig, Plummer Associates
Erin Reiley, Project Manager, WQCD SRF Team
Aly Ulibarri, Work Group Lead, WQCD SRF Team
Margaret Talbott, Unit Manager, WQCD Infrastructure Unit