CONSTRUCTION PLANS

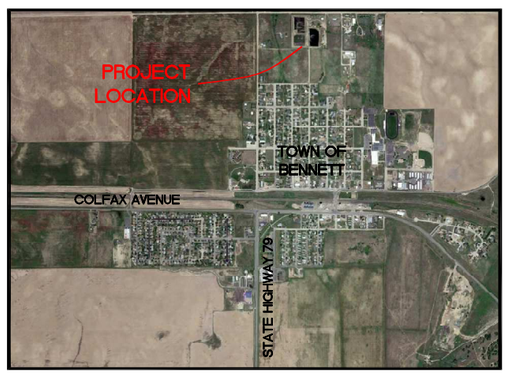
FOR THE

PHASE 2 RECYCLED WATER PUMP STATION

PREPARED FOR

TOWN OF BENNETT

MARCH 2022



LOCATION MAP
NOT TO SCALE

Know what's below. Call before you dig

DRAWING INDEX

SHEET	DWG NO.	DESCRIPTION
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3	C2	YARD PIPING AND DETAILS
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5	A2	REFLECTED CEILING PLAN
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26	E3	ELECTRICAL SITE PLAN
27	E4	BUILDING PLAN VIEW

OWNER
TOWN OF BENNETT
207 MUEGGE WAY
BENNETT, CO 80102
303-644-3249
ATTN: ROBIN PRICE, PUBLIC WORKS DIRECTOR

CONSULTANTS

LOCATES DIVERSIFIED UNDERGROUND, INC.
SURVEY DALEY LAND SURVEYING, INC.

SURVEY INFORMATION

COORDINATE SYSTEM IS MODIFIED STATE PLANE ZONE 502 REFERENCED TO NAVD88
NGS BENCHMARK D259, PUBLISHED ELEVATION 5458.57 FEET.

TOWN OF BENNETT STANDARD NOTES:

1. All construction shall conform to the Town of Bennett's Design and Construction Standards.
2. All materials and workmanship shall be subject to inspection by the Town's Public Works and Engineering Division. The Town reserves the right to accept or reject any such materials and workmanship that does not conform to its Standards and Specifications.
3. Contractor shall notify the Engineering Division or the Department of Public Works a minimum of 48 hours and a maximum of 96 hours prior to starting construction.
4. Location of existing utilities shall be verified by the Contractor prior to actual construction.
5. The Contractor shall have one (1) signed copy of the plans and (1) copy of the Design and Construction Standards at the job site at all times.
6. A plan for traffic control during construction shall be submitted to the Town for acceptance with the permit application. An excavation public improvements construction permit will not be issued without an approved traffic control plan for traffic control during construction.

ADDITIONAL PROJECT NOTES:

7. THE TOWN IS FURNISHING THE 12" C900 DR18 PVC PIPE ONLY. ALL FITTINGS, APPURTENANCES, AND OTHER PIPE SIZES ARE TO BE FURNISHED BY THE CONTRACTOR.
8. REFER TO THE TOWN OF BENNETT STANDARDS (LATEST VERSION) FOR UTILITY CONSTRUCTION INFORMATION AND DETAILS.
9. CONTRACTOR SHALL CALL FOR UTILITY LOCATES AND POTHOLE EXISTING UTILITIES PRIOR TO CONSTRUCTION.
10. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING AND SUBMITTING EROSION CONTROL PLANS TO THE TOWN FOR APPROVAL PRIOR TO CONSTRUCTION.
11. SITE RESTORATION SHALL CONFORM TO TOWN STANDARDS.

MSK Consulting, LLC
7157 S. Andes Circle
Centennial, CO 80016
303-903-0918

W2 Engineers, LLC
19255 W. 84th Place
Arvada, CO 80007
720-331-2332

LINE IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH, ADJUST ACCORDINGLY

REVISIONS

NO.	DESCRIPTION	DATE

MSK PROJECT NO:	38-002-02
DRAWN BY:	DLT
DESIGNED BY:	DLT
CHECKED BY:	WR
DATE:	MARCH 28, 2022
SCALE:	NO SCALE

TOWN OF BENNETT

PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

COVER SHEET AND NOTES

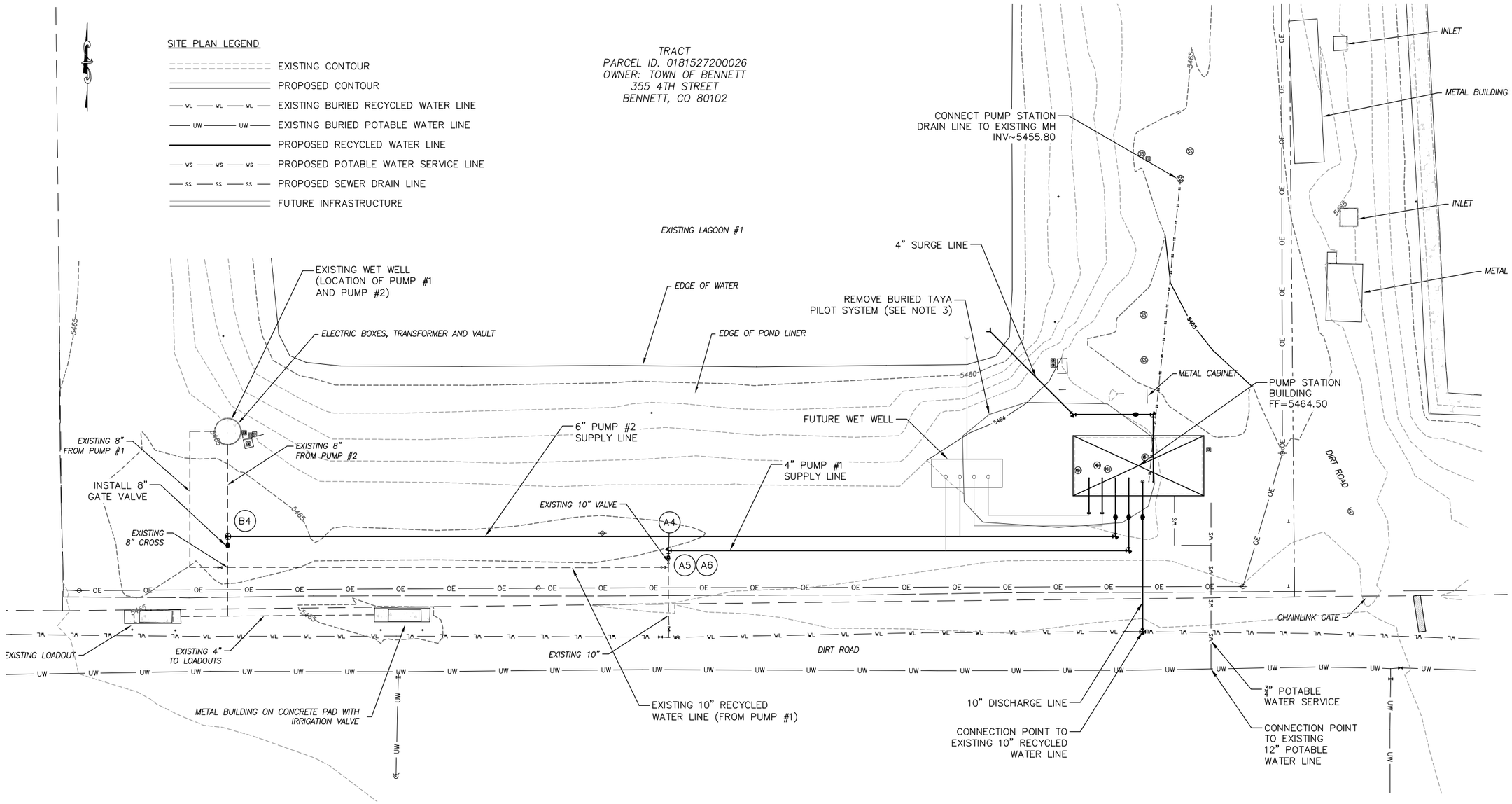
G1

SHEET 1 OF 27

SITE PLAN LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING BURIED RECYCLED WATER LINE
- EXISTING BURIED POTABLE WATER LINE
- PROPOSED RECYCLED WATER LINE
- PROPOSED POTABLE WATER SERVICE LINE
- PROPOSED SEWER DRAIN LINE
- FUTURE INFRASTRUCTURE

TRACT
PARCEL ID. 0181527200026
OWNER: TOWN OF BENNETT
355 4TH STREET
BENNETT, CO 80102



NOTES:
1. ALL FITTINGS AND VALVES ARE TO BE RESTRAINED PER TOWN STANDARDS.
2. PIPE INSTALLATION SHALL BE PER TOWN STANDARDS AND UTILIZE THE CLASS B ALTERNATIVE COMPACTED BEDDING DETAIL.
3. CONTRACTOR TO REMOVE THE EXISTING BURIED TAYA PILOT SYSTEM. THIS INCLUDES REMOVAL OF ALL COMPONENTS AND BACKFILLING THE AREA WITH SUITABLE MATERIAL (SEE GEOTECH REPORT AND STRUCTURAL DRAWINGS FOR DEPTH AND REPLACEMENT SOIL SPECIFICATION). THE FOOTPRINT OF EXCAVATED AND REPLACED MATERIAL SHALL EXTEND TO THE PROPOSED PUMP STATION'S FOUNDATION. ALL ASSOCIATED CABINETS, CONDUIT, WIRING, AND MISCELLANEOUS PARTS SHALL ALSO BE REMOVED. All REMOVED ITEMS SHALL BE DISPOSED OF OFFSITE.

RECYCLED WATER LINE (FROM PUMP #1)

Item	Location	Dia.	Northing	Easting	Inv Elev
A1	AT BUILDING	6	1,159,458.8480	3,301,764.5573	5,458.25
A2	GATE VALVE	6	1,159,447.8480	3,301,764.5573	5,458.25
A3	90 BEND	6	1,159,438.3863	3,301,764.5573	5,458.25
A4	90 BEND	6	1,159,438.3863	3,301,634.3460	5,459.25
A5	10x6 REDUCER	6	1,159,436.7503	3,301,634.3460	TBD
A6	EXISTING VALVE	10	1,159,435.7797	3,301,634.3460	TBD

RECYCLED WATER LINE (FROM PUMP #2)

Item	Location	Dia.	Northing	Easting	Inv Elev
B1	AT BUILDING	6	1,159,458.8480	3,301,760.8073	5,458.25
B2	GATE VALVE	6	1,159,447.8480	3,301,760.8073	5,458.25
B3	90 BEND	6	1,159,442.3863	3,301,760.8073	5,458.25
B4	8x6 TEE	6	1,159,442.3863	3,301,509.7365	5,457.25

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303-903-0918

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720-331-2332

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DRAWN BY:	DLT
DESIGNED BY:	DLT
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SCALE:	1"=30'

TOWN OF BENNETT

PHASE 2 RECYCLED WATER PUMP STATION

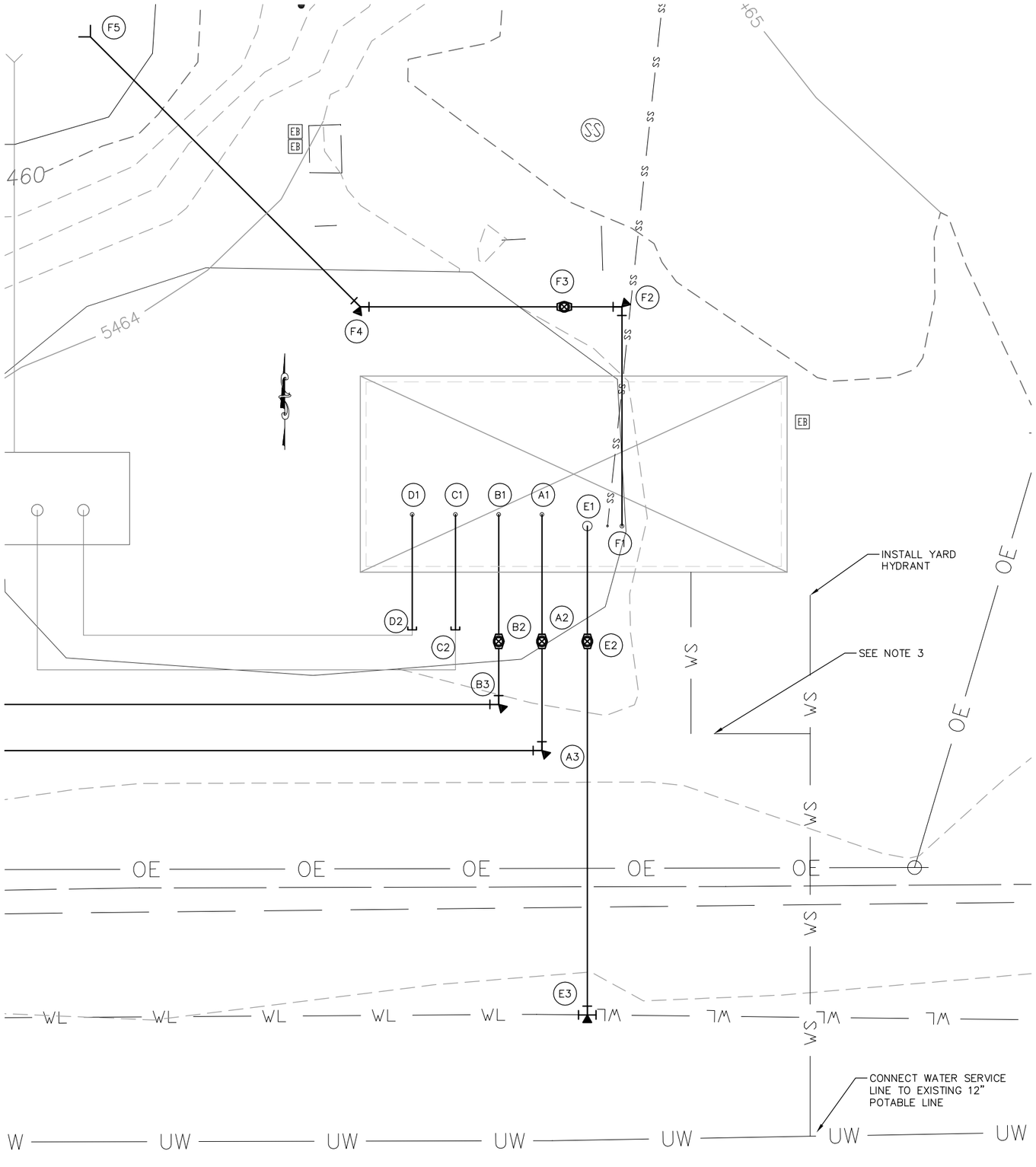
60% DRAWINGS

SITE PLAN

C1

SHEET 2 OF 27

Know what's below. Call before you dig.



RECYCLED WATER LINE (FROM PUMP #1)

Item	Location	Dia.	Northing	Easting	Inv Elev
A1	AT BUILDING	6	1,159,458.8480	3,301,764.5573	5,458.25
A2	GATE VALVE	6	1,159,447.8480	3,301,764.5573	5,458.25
A3	90 BEND	6	1,159,438.3863	3,301,764.5573	5,458.25
A4	90 BEND	6	1,159,438.3863	3,301,634.3460	5,459.25
A5	10x6 REDUCER	6	1,159,436.7503	3,301,634.3460	TBD
A6	EXISTING VALVE	10	1,159,435.7797	3,301,634.3460	TBD

RECYCLED WATER LINE (FROM PUMP #2)

Item	Location	Dia.	Northing	Easting	Inv Elev
B1	AT BUILDING	6	1,159,458.8480	3,301,760.8073	5,458.25
B2	GATE VALVE	6	1,159,447.8480	3,301,760.8073	5,458.25
B3	90 BEND	6	1,159,442.3863	3,301,760.8073	5,458.25
B4	8x6 TEE	6	1,159,442.3863	3,301,509.7365	5,457.25

RECYCLED WATER LINE (FROM FUTURE PUMP #3)

Item	Location	Dia.	Northing	Easting	Inv Elev
C1	AT BUILDING	6	1,159,458.8480	3,301,757.0573	5,458.25
C2	CAP	6	1,159,448.8480	3,301,757.0573	5,458.25

RECYCLED WATER LINE (FROM FUTURE PUMP #4)

Item	Location	Dia.	Northing	Easting	Inv Elev
D1	AT BUILDING	6	1,159,458.8480	3,301,753.3073	5,458.25
D2	CAP	6	1,159,448.8480	3,301,753.3073	5,458.25

DISCHARGE LINE

Item	Location	Dia.	Northing	Easting	Inv Elev
E1	AT BUILDING	10	1,159,457.8480	3,301,768.4896	5,458.08
E2	GATE VALVE	10	1,159,447.8480	3,301,768.4896	5,458.08
E3	CONNECTION	10	1,159,415.4675	3,301,768.4896	5,459.08

SURGE LINE

Item	Location	Dia.	Northing	Easting	Inv Elev
F1	AT BUILDING	4	1,159,457.8480	3,301,771.4896	5,458.33
F2	90 BEND	4	1,159,476.8480	3,301,771.4896	5,458.33
F3	GATE VALVE	4	1,159,476.8480	3,301,766.4896	5,458.33
F4	45 BEND	4	1,159,476.8480	3,301,748.8073	5,458.33
F5	DISCHARGE	4	1,159,469.6871	3,301,512.5765	5,454.83

NOTES:
1. ALL FITTINGS AND VALVES ARE TO BE RESTRAINED PER TOWN STANDARDS.
2. PIPE INSTALLATION SHALL BE PER TOWN STANDARDS AND UTILIZE THE CLASS B ALTERNATIVE COMPACTED BEDDING DETAIL.
3. CONTRACTOR SHALL NOT CONNECT THE WATER SERVICE LINE INTO THE BUILDING. PROVIDE A 24" GAP BETWEEN THE SERVICE LINES AND CAP EACH.

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Centennial, CO 80016
303-903-0918

W2 Engineers, LLC
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Arvada, CO 80007
720-331-2332

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REVISIONS

NO.	DESCRIPTION	DATE

MSK PROJECT NO: 38-002-02
DRAWN BY: DLT
DESIGNED BY: DLT
CHECKED BY: DLT
DATE: MARCH 28, 2022
SCALE: 1"=30'

TOWN OF BENNETT

PHASE 2 RECYCLED WATER PUMP STATION

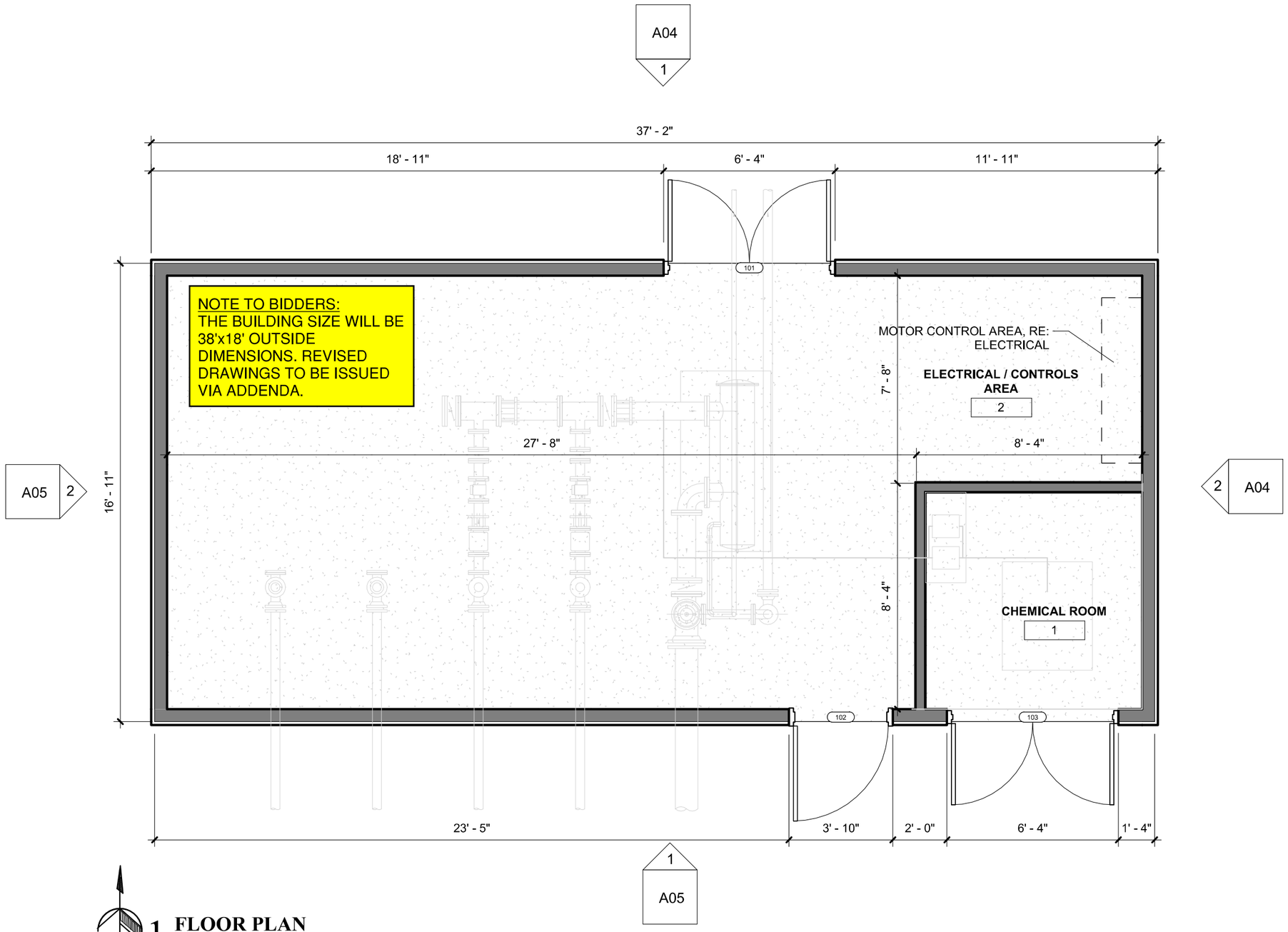
60% DRAWINGS

YARD PIPING PLAN

C2

SHEET 3 OF 27

811 Know what's below. Call before you dig.



1 **FLOOR PLAN**
1/4" = 1'-0"

HAUSER ARCHITECTS
970.669.8220
3780 East 15th Street, Suite 201
Loveland, Colorado 80538
E-mail: info@hauserarchitectspc.com

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REVISIONS NO.	DESCRIPTION	DATE

HAUSER PROJECT NO:	21-078
DRAWN BY:	
DESIGNED BY:	
CHECKED BY:	
DATE:	MARCH 28, 2022
SCALE:	AS INDICATED

TOWN OF BENNETT

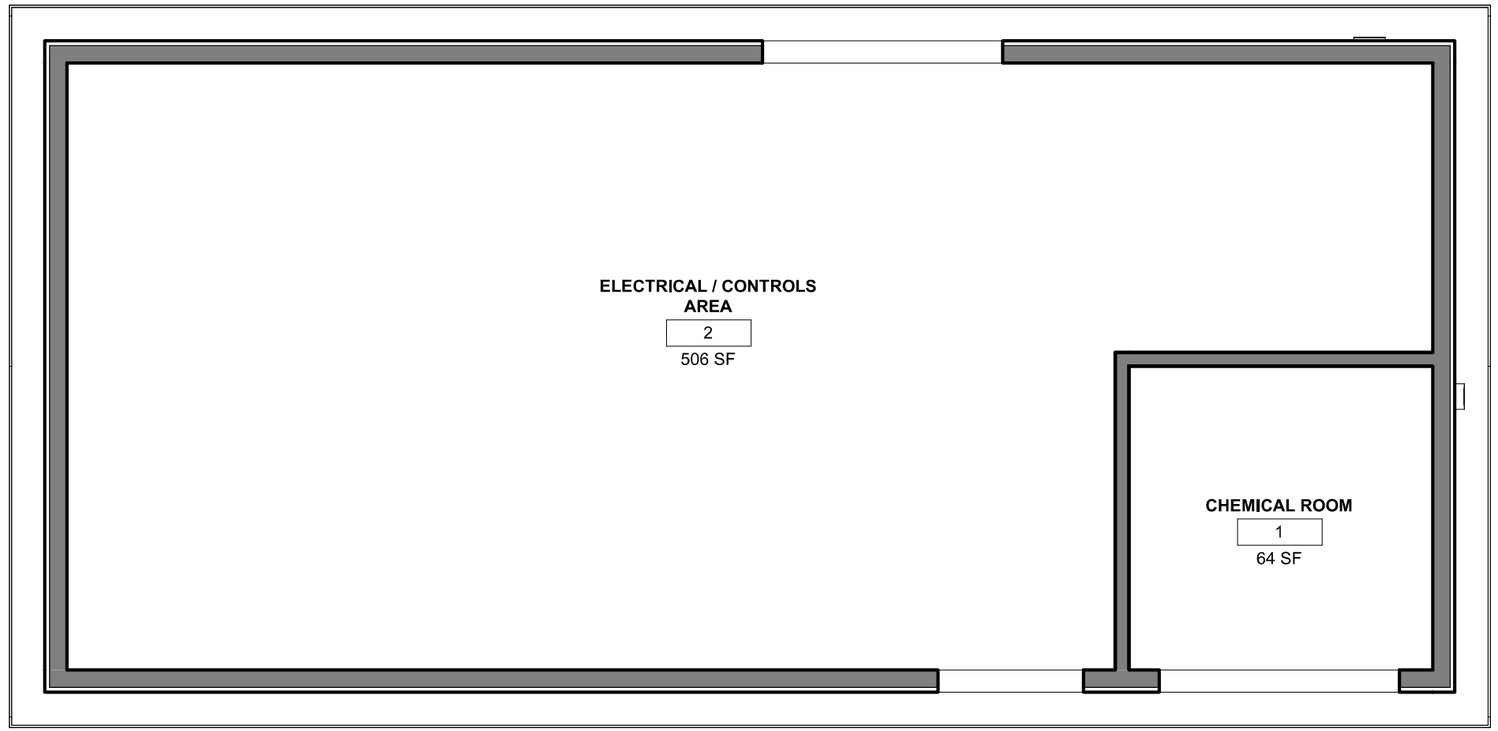
PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

FLOOR PLAN

A1

SHEET 5 OF 27



1 **REFLECTED CEILING PLAN**
1/4" = 1'-0"

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DESIGNED BY:	
CHECKED BY:	
DATE:	MARCH 28, 2022
SCALE:	AS INDICATED

TOWN OF
BENNETT

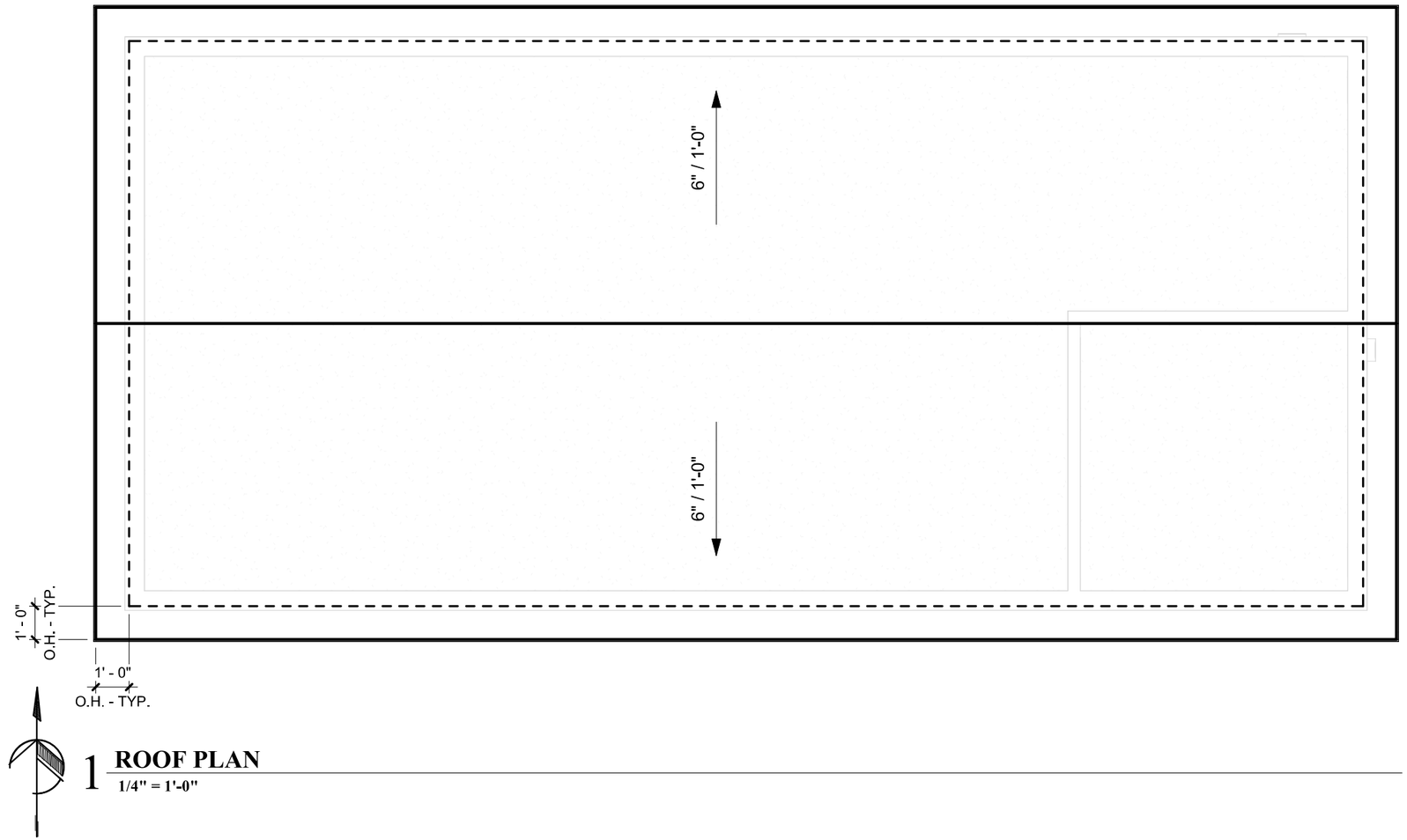
PHASE 2
RECYCLED
WATER PUMP
STATION

60%
DRAWINGS

REFLECTED
CEILING PLAN

A2

SHEET 6 OF 27



1 **ROOF PLAN**
1/4" = 1'-0"

HAUSER
ARCHITECTS
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Loveland, Colorado 80538
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REVISIONS NO.	DESCRIPTION	DATE

HAUSER PROJECT NO: 21-078
DRAWN BY:
DESIGNED BY:
CHECKED BY:
DATE: MARCH 28, 2022
SCALE: AS INDICATED

TOWN OF BENNETT

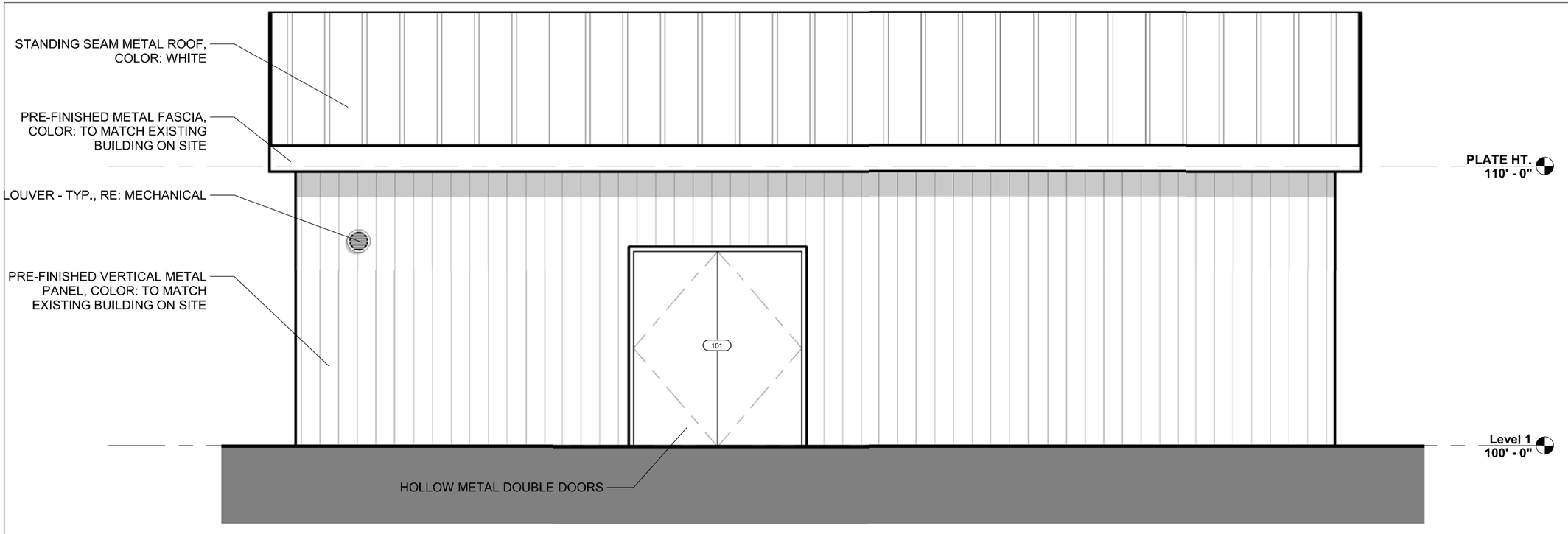
PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

ROOF PLAN

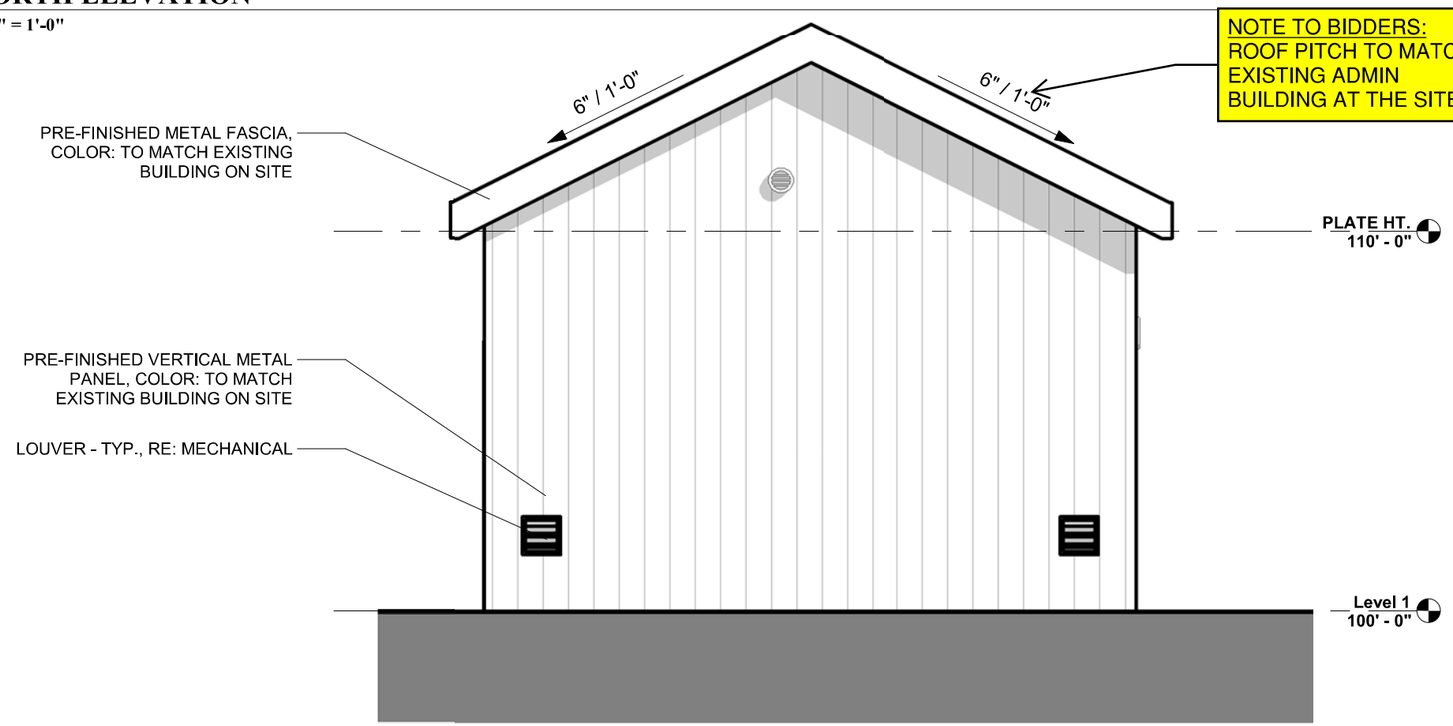
A3

SHEET 7 OF 27



1 NORTH ELEVATION

1/4" = 1'-0"



2 EAST ELEVATION

1/4" = 1'-0"

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TOWN OF BENNETT

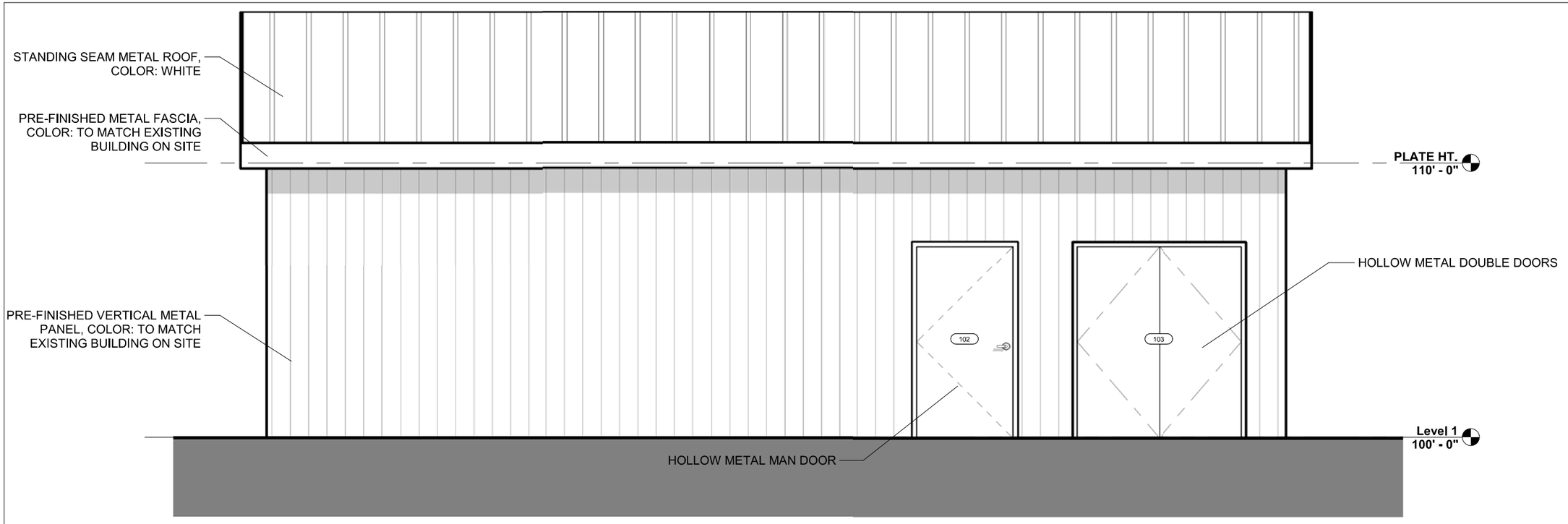
PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

BUILDING ELEVATIONS

A4

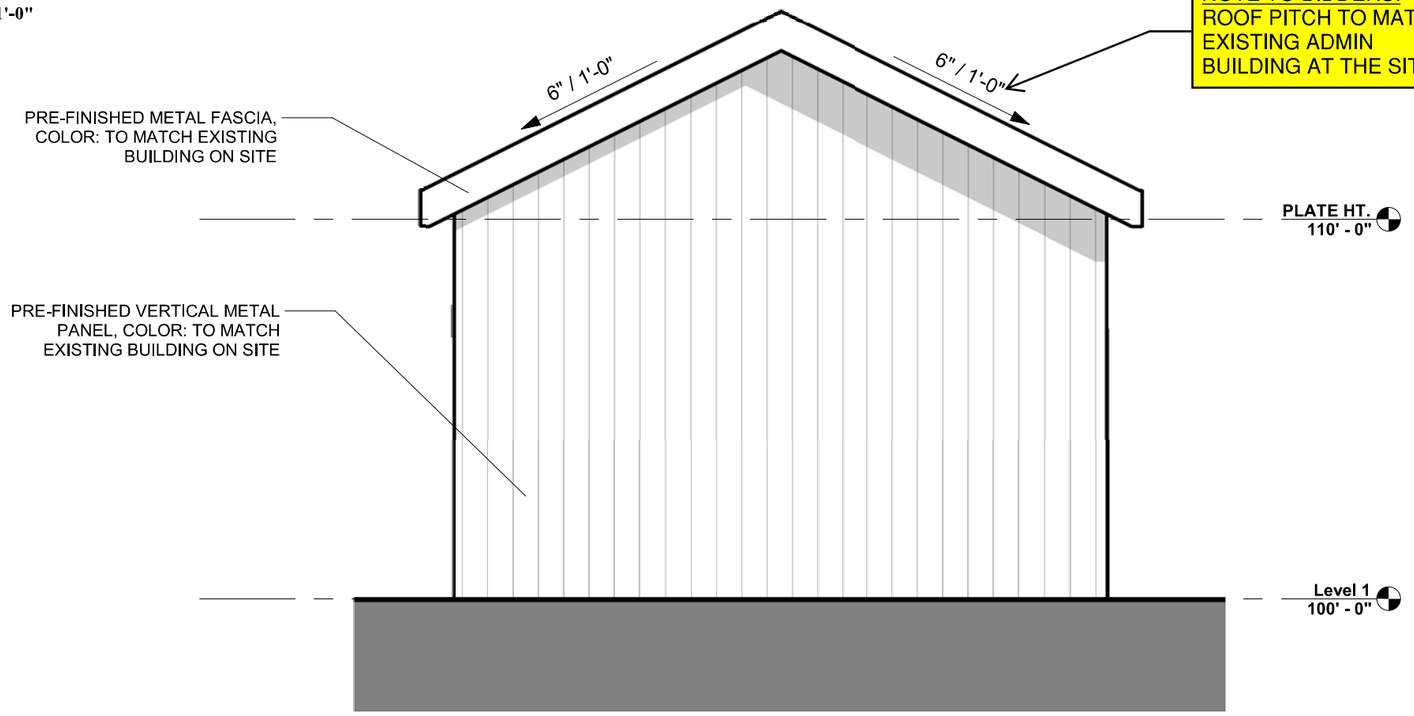
SHEET 8 OF 27



1 SOUTH ELEVATION

1/4" = 1'-0"

NOTE TO BIDDERS:
ROOF PITCH TO MATCH EXISTING ADMIN BUILDING AT THE SITE.



2 WEST ELEVATION

1/4" = 1'-0"

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970.669.8220
3780 East 15th Street, Suite 201
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REVISIONS	NO.	DESCRIPTION	DATE

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TOWN OF BENNETT

PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

BUILDING ELEVATIONS

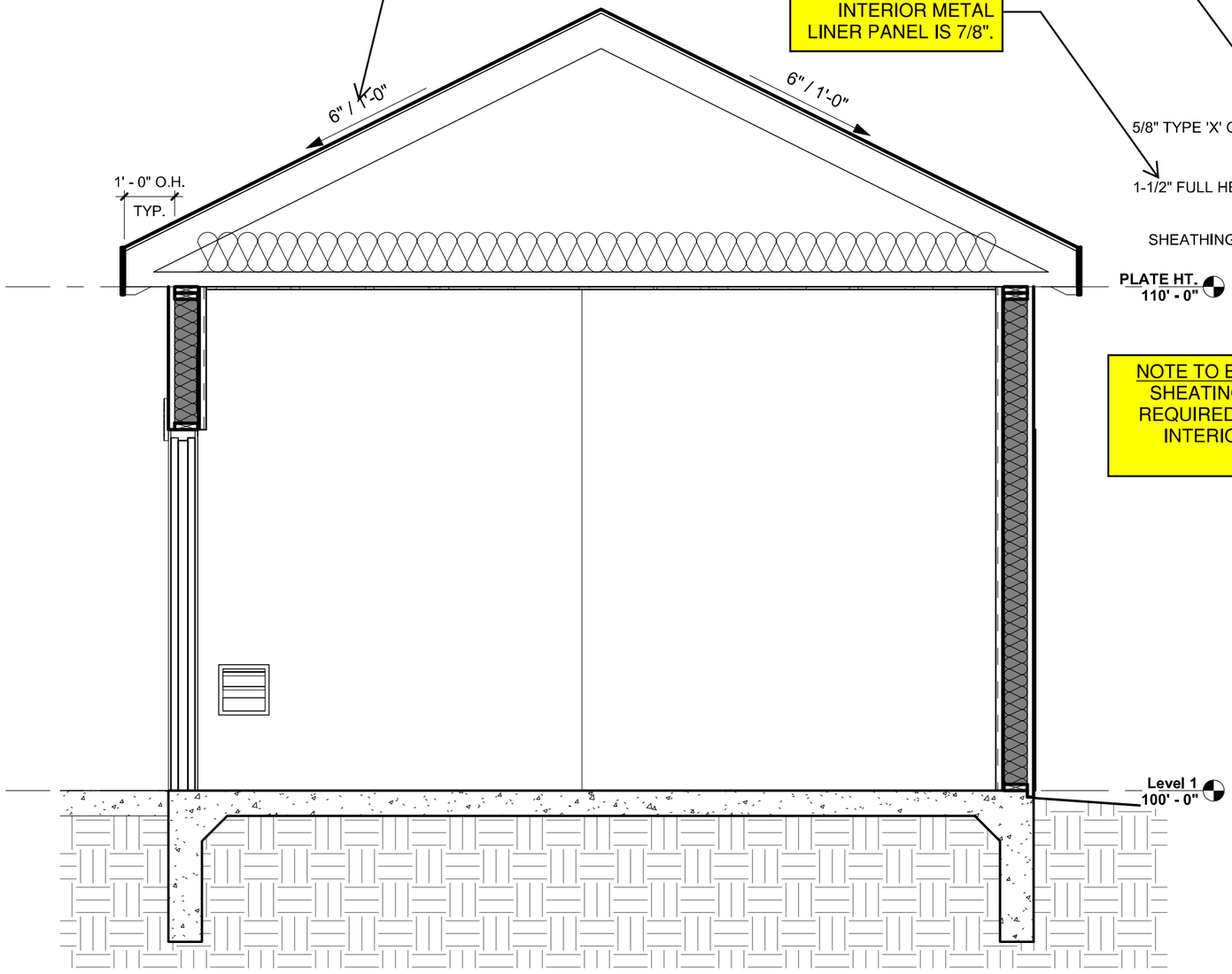
A5

SHEET 9 OF 27

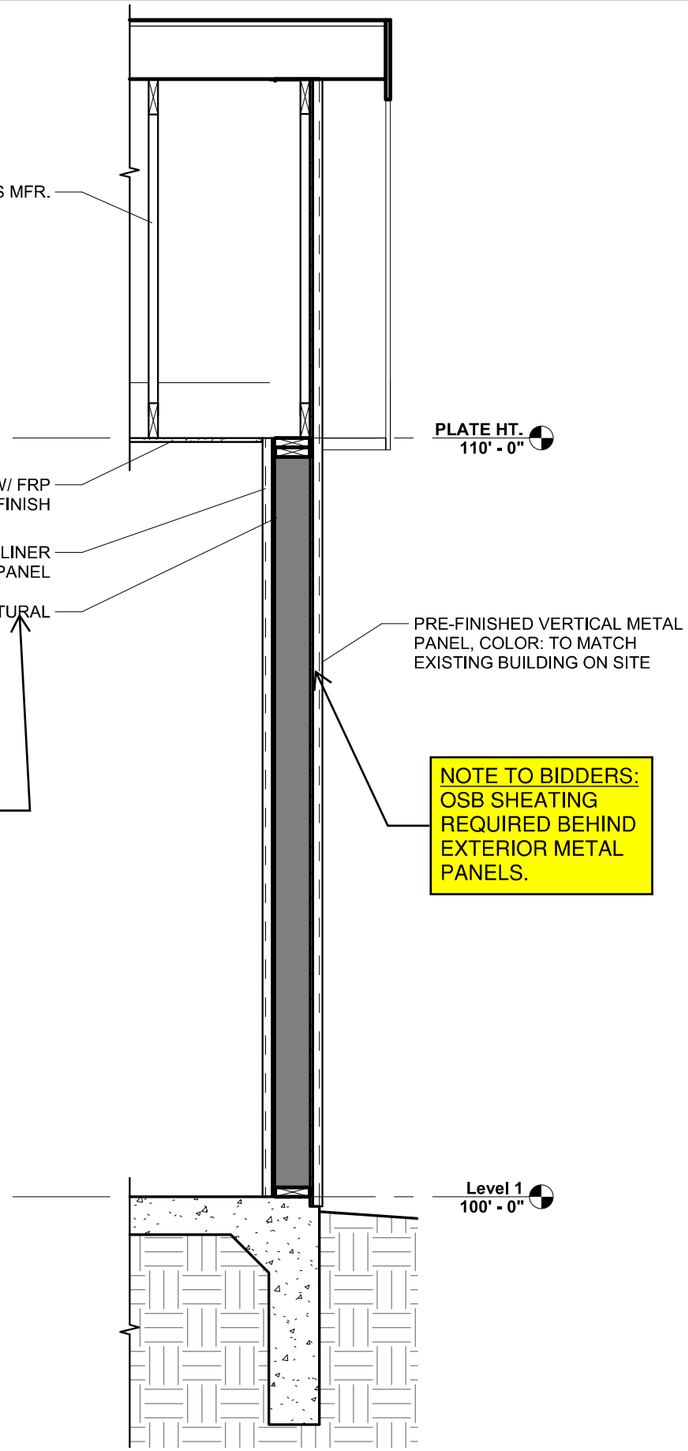
NOTE TO BIDDERS:
ROOF PITCH TO MATCH EXISTING ADMIN BUILDING AT THE SITE.

NOTE TO BIDDERS:
CEILING MATERIAL WILL BE 7/8" METAL LINER PANEL

NOTE TO BIDDERS:
INTERIOR METAL LINER PANEL IS 7/8".



1 **BUILDING SECTION**
3/8" = 1'-0"



NOTE TO BIDDERS:
SHEATING IS NOT REQUIRED BEHIND INTERIOR LINER PANEL.

NOTE TO BIDDERS:
OSB SHEATING REQUIRED BEHIND EXTERIOR METAL PANELS.

2 **TYPICAL WALL SECTION**
1/2" = 1'-0"

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970.669.8220
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Loveland, Colorado 80538
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TOWN OF BENNETT

PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

BUILDING SECTIONS

A6

SHEET 10 OF 27

DOOR SCHEDULE

MARK	DOOR TYPE	SIZE			DOOR PANEL			FRAME		HARDWARE					Comments
		WIDTH	HEIGHT	THICKNESS	DOOR MATERIAL	DOOR FINISH	DOOR GLAZING	FRAME MATERIAL	FRAME FINISH	CLOSER	EXIT DEVICE	LOCKSET	PRIVACY LOCKSET	PUSH / PULL	
101	A	6' - 0"	7' - 0"	0' - 1 3/4"	HOLLOW METAL	PAINT	-	HOLLOW METAL	PAINT						6-1/2" METAL FRAME
102	B	3' - 6"	7' - 0"	0' - 1 3/4"	HOLLOW METAL	PAINT	-	HOLLOW METAL	PAINT						6-1/2" METAL FRAME
103	A	6' - 0"	7' - 0"	0' - 1 3/4"	HOLLOW METAL	PAINT	-	HOLLOW METAL	PAINT						6-1/2" METAL FRAME

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TOWN OF BENNETT

PHASE 2
RECYCLED WATER PUMP STATION

60%
DRAWINGS

DOOR SCHEDULE

A7

SHEET 11 OF 27

GENERAL NOTES

1. PROJECT SCOPE: THESE STRUCTURAL DRAWINGS MAY ONLY BE USED TO CONSTRUCT THE RECLAIMED WATER FACILITY LOCATED IN BENNETT, COLORADO.

2. BUILDING CODE: THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, (2018 EDITION). ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THIS CODE AND STATE OF COLORADO REQUIREMENTS.

3. DESIGN LOADS:
CLASSIFICATION OF BUILDINGS AND OTHER STRUCTURES FOR IMPORTANCE FACTORS: CATEGORY II

DEAD LOADS:
IN ACCORDANCE WITH SECTION 1606
WEIGHTS OF MATERIALS AND CONSTRUCTION AS PER EACH AREA

LIVE LOADS:
IN ACCORDANCE WITH SECTION 1607

ROOF	20 PSF
FLOOR	150 PSF

SNOW LOADS:
IN ACCORDANCE WITH SECTION 1608 AND TOWN OF BENNETT CODE AMENDMENTS
GROUND SNOW 30 PSF

WIND LOADS:
IN ACCORDANCE WITH SECTION 1609 AND CHAPTER 26 OF ASCE 7.

V3S	115 MPH
EXPOSURE	C

SEISMIC DESIGN CRITERIA:
IN ACCORDANCE WITH SECTION 1613 AND CHAPTER 11 OF ASCE 7.
PROJECT COORDINATES: 39.765, -104.429
SITE CLASS: D
RISK CATEGORY: II

S_S:	0.161	S_1:	0.050
S_{MS}:	0.257	S_{M1}:	0.121
S_{DS}:	0.171	S_{D1}:	0.080

4. CONSTRUCTION METHOD:
A. THE STRUCTURAL DRAWINGS REPRESENT THE FINAL STRUCTURE. THE DRAWINGS DO NOT INDICATE THE CONTRACTORS MEANS, METHODS, TECHNIQUES, SEQUENCES OF CONSTRUCTION AND JOB SITE SAFETY. THE ENGINEER OF RECORD IS NOT RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO FOLLOW PLANS, SPECIFICATIONS, AND/OR ENGINEERING RECOMMENDATIONS, NOR IS THE ENGINEER OF RECORD RESPONSIBLE FOR ECONOMIC LOSS AND/OR DELAYS OF THE CONTRACTOR OR SUBCONTRACTORS.
B. ALL CONSTRUCTION SHALL BE ADEQUATELY BRACED TO PREVENT DISTORTION AND DAMAGE DUE TO CONSTRUCTION LOADS AND NATURAL FORCES.

5. TRADE COORDINATION:
A. THE STRUCTURAL DRAWINGS ARE INTENDED TO BE USED IN CONJUNCTION WITH THE ARCHITECTURAL, ELECTRICAL, MECHANICAL, PLUMBING AND SITE DRAWINGS. CONFLICTS IN DIMENSION AND INTERFERENCE SHALL BE DIRECTED TO THE ENGINEER PRIOR TO CONSTRUCTION.

6. OPENINGS:
A. OPENINGS, SLEEVES, POCKETS, ETC. SHALL NOT BE PLACED IN BEAMS, JOISTS, COLUMNS, ETC. UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS. NOTIFY THE ENGINEER WHEN DRAWINGS BY OTHERS SHOW OPENINGS, SLEEVES, POCKETS, ETC. NOT SHOWN ON THE STRUCTURAL DRAWINGS, BUT WHICH ARE LOCATED IN STRUCTURAL MEMBERS.

FOUNDATIONS

1. GEOTECHNICAL INVESTIGATION:
A. A GEOTECHNICAL REPORT BY KUMAR & ASSOCIATES, INC. DATED JANUARY 19, 2022 (PROJECT NO. 21-3-256) IS AVAILABLE. THE CONTRACTOR SHALL BE FAMILIAR WITH ALL OF THE REPORT REQUIREMENTS. THE FOLLOWING DESIGN PARAMETERS HAVE BEEN ASSUMED BASED ON THIS REPORT. SHOULD THE FOLLOWING DESIGN PARAMETERS VARY FROM THOSE OF THE GEOTECHNICAL REPORT, THE MORE STRINGENT REQUIREMENTS SHALL APPLY. IF CONDITIONS DIFFER FROM THOSE PRESENTED HEREIN, THE ENGINEER SHALL BE NOTIFIED BEFORE CONTINUATION OF THE WORK.

3. COMPACTED FILL:
A. THE AREA BELOW THE BUILDING FOOTPRINT SHALL BE OVER EXCAVATED TO THE DEPTH OF EXCAVATION TO REMOVED THE BURIED TAYA PILOT SYSTEM. SEE SITE PLAN FOR APPROXIMATE LIMITS AND ADDITIONAL INFORMATION.
B. USE ONLY APPROVED, NON-EXPANSIVE, GRANULAR MATERIAL AS FILL AS RECOMMENDED BY THE SUPERVISING GEOTECHNICAL ENGINEER.
C. SUBGRADE COMPACTION SHALL BE MADE IN LIFTS NOT TO EXCEED 8", AT OPTIMUM OR WITHIN 2% OPTIMUM WATER CONTENT, AND TO 98% OF ASTM D698-78 BELOW FOOTINGS, 95% OF ASTM D698-78 BELOW SLABS, OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
D. IF THE AREA OF OVER EXCAVATION IS BACKFILLED WITH THE EXISTING ONSITE FILL, SUBGRADE COMPACTION SHALL BE MADE IN LIFTS NOT TO EXCEED 8", AT OPTIMUM OR WITHIN 2% OPTIMUM WATER CONTENT, AND TO 98% OF ASTM D698-78.

4. FLOOR SLABS:
A. SLAB-ON-GRADE SHALL BE ISOLATED FROM ALL WALLS AND COLUMNS USING A 1/2" JOINT OF TWO LAYERS OF TEMPERED HARDBOARD WITH A SILICONE LUBRICANT BETWEEN THE BOARDS. (UNLESS NOTED OTHERWISE).
B. SLAB-ON-GRADE SHALL BE ISOLATED FROM SERVICE PENETRATIONS WITH 1/2" FIBERBOARD OR EQUIVALENT APPROVED ISOLATION JOINT.
C. SAWCUT CONCRETE (WITHIN 18 HOURS OF PLACING CONCRETE) SUCH THAT NO MORE THAN 225 SQUARE FEET OF SLAB ARE WITHIN A GRID. SAWCUT JOINTS SHOULD BE SPACED AT NO MORE THAN 15 FEET ON CENTER OR AS INDICATED ON THE DRAWINGS.
D. A MINIMUM OF 4-INCH LAYER OF CLEAN, GRADED GRAVEL OR CRUSHED ROCK DEVOID OF FINES SHOULD BE PLACED BENEATH SLAB.

5. EQUIPMENT SLABS
A. EQUIPMENT SLABS SHOULD BE SUPPORTED ON 6" OF AGGREGATE BASE COURSE (ABC) CLASS 6 AS DEFINED IN CDOT STANDARD SPECIFICATIONS, SECTION 703.

STRUCTURAL MATERIALS

1.0 CONCRETE:

1.1 GENERAL REQUIREMENTS:
A. 28-DAY COMPRESSIVE STRENGTH FOR CONCRETE SHALL BE AS FOLLOWS:

SLAB-ON-GRADE	4,500 PSI
GRADE BEAMS/FOUNDATION WALLS	4,500 PSI

B. MAXIMUM CONCRETE SLUMP SHALL BE AS FOLLOWS:

INTERIOR SLABS	5" MAX
ALL OTHER CONCRETE	4" MAX

C. AIR ENTRAINMENT SHALL BE AS FOLLOWS:

INTERIOR SLABS	1-3%
ALL OTHER CONCRETE	5-7%

D. ALL CONCRETE SHALL BE MIXED, TRANSPORTED AND PLACED IN ACCORDANCE WITH THE ACI STANDARDS 318.
E. ALL CONCRETE SHALL BE CONSTRUCTED WITHIN THE TOLERANCES SPECIFIED IN ACI STANDARD 117.
F. ALL VERTICAL SURFACES OF CONCRETE SHALL BE FORMED.
G. SLAB-ON-GROUND SHALL BE AS INDICATED ON THE DRAWINGS. UNLESS OTHERWISE INDICATED, SLAB SHALL BE FINISHED IN ACCORDANCE WITH ACI STANDARD 302 FOR CLASS 2 FLOORS.
H. CEMENT TO BE ASTM C150 TYPE I. CLASS C FLY ASH SHALL NOT BE SUBSTITUTED FOR CEMENT.
I. ALL OPENINGS THROUGH CONCRETE MARKED ON THESE DRAWINGS SHALL HAVE (2)-#5 BARS AROUND EACH FACE OF THE OPENING AND EXTENDING A MINIMUM OF 2'-0" BEYOND EACH EDGE OF THE OPENING.
J. CONDUIT EMBEDDED IN CONCRETE SHALL BE LOCATED WITHIN THE MIDDLE THIRD OF CONCRETE SLAB OR WALL. ALUMINUM CONDUIT SHALL NOT BE EMBEDDED IN CONCRETE.

1.2 CONCRETE REINFORCING:
A. DETAIL ALL BARS IN ACCORDANCE WITH THE LATEST EDITIONS OF THE ACI DETAILING MANUAL AND ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE
B. PROVIDE ALL ACCESSORIES NECESSARY TO SUPPORT REINFORCING AT POSITIONS SHOWN ON THE PLANS
C. ALL REINFORCING BARS SHALL BE OF NEW BILLET STEEL CONFORMING TO ASTM A615, GRADE 60 FOR #4, #5, #6 & #7 BARS. GRADE 40 FOR #3 BARS. GRADE 60 BARS SHALL NOT BE FIELD-BENT.
D. REINFORCING STEEL SHALL BE PLACED TO PROVIDE THE FOLLOWING MINIMUM CONCRETE COVER IN ACCORDANCE WITH ACI 318, UNO:

SLAB-ON-GRADE	1/2 SLAB DEPTH
FOOTINGS, WALLS, GRADE BEAMS	2" (3" WHEN CAST AGAINST EARTH)

E. REBAR SPLICES SHALL CONSIST OF TIED LAPS AT LEAST 50 BAR DIAMETERS IN ALL CASES. OFFSET SPLICE LOCATION FOR BARS IN ONE LAYER BY AT LEAST 24 INCHES.
F. ALL WELDED WIRE MESH SHALL BE 6X6-W1.4XW1.4 (UNO) CONFORMING TO ASTM A185.
G. PROVIDE 6X6-W1.4XW1.4 WWF AS MINIMUM REINFORCING IN MECHANICAL PADS (IF APPLICABLE). SEE MECHANICAL DRAWINGS FOR PAD SIZES, LOCATIONS AND PADS REQUIRING GREATER REINFORCING.
H. ALL STIRRUPS SHALL HAVE A MINIMUM OF 2-#4 HORIZONTAL REINFORCING BARS PROVIDED AS SPACERS WHEN NO OTHER HORIZONTAL REINFORCING IS REQUIRED
I. ALL REINFORCING BARS, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE.
J. MINIMUM OF ONE BAR PER REINFORCING LAYER SHALL BE PLACED BETWEEN OPENINGS IN SLABS AND WALLS.

2.0 LUMBER

A. STUD LUMBER SHALL BE STANDARD GRADE OR BETTER DOUGLAS FIR (19% MAX MOISTURE CONTENT).
B. ALL LUMBER SHALL BE NAILED IN ACCORDANCE WITH THE IBC TABLE 2304.10.1 OR AS NOTED ON THE PLANS. THE MOST STRINGENT REQUIREMENT GOVERNS.
C. MULTIPLE STUD POSTS SHALL HAVE SOLID BLOCKING UNDER THE SOLE PLATE EQUAL TO THE CROSS-SECTIONAL AREA OF THE POST. ALL POSTS SHALL BE SECURELY NAILED TO PLYWOOD SHEATHING TO PROVIDE BRACING PARALLEL TO THE WALL. THE INDIVIDUAL MEMBERS OF MULTIPLE STUDS SHALL BE NAILED TOGETHER USING (2)-16D NAILS AT 16" OC STAGGERED. NOTCHES OR HOLES THROUGH POSTS SHALL NOT REDUCE THE CROSS-SECTIONAL AREA OF THE POST BY MORE THAN 25%.
D. MINIMUM 1 TRIMMER STUD AT HEADERS SHALL BE UNDER THE HEADER. TWO KING STUDS ADJACENT TO THE HEADER ARE REQUIRED IN ADDITION TO THE NUMBER OF TRIM STUDS INDICATED.
E. MINIMUM 3 STUDS AT ALL EXTERIOR WALL CORNERS.
F. ALL SILLS AND PLATES RESTING ON CONCRETE SHALL BE PRESSURE TREATED DOUGLAS FIR.
G. EPOXY BOLT ANCHORS SHALL BE HILTI-HIT HY 100 OR APPROVED EQUAL WITH ½" DIA THREADED ROD AND 4" MIN EMBED.
H. EPOXY BOLTS SHALL BE PLACED 8" FROM THE END OF A BOARD OR FROM A HOLE OR NOTCH GREATER THAN ⅓ THE WIDTH OF THE PLATE, AND PLACED AT 24" INTERVALS. SIMPSON HDU8-SDS2.5 (OR APPROVED EQUAL) SHALL BE ATTACHED TO ALL KINGS STUDS AND EXTERIOR CORNER STUDS, UNO.
I. ALL BOLT HEADS AND NUTS BEARING ON WOOD SHALL HAVE WASHERS.

3.0 SHEATHING

A. ROOF SHEATHING SHALL BE 7/16 INCH, BLOCKED (2X4 LAID FLAT), APA (40/20). NAIL SHEATHING WITH 8D NAILS 1 ¾" PENETRATION USING 6" SPACING.
B. SHEATHING FOR ALL EXTERIORS WALLS SHALL BE 7/16 INCH, APA (40/20). NAIL SHEATHING WITH 8D NAILS, 1 ¾" PENETRATION USING 6" SPACING.
C. SHEATHING SHALL BE PLACED WITH THE 8'-0" DIMENSION PERPENDICULAR TO TRUSSES OR STUD FRAMING WITH JOINTS STAGGERED. PANEL END JOINTS SHALL OCCUR CENTERED ON A STUD. SHEATHING ENDS AND EDGES TO HAVE MIN. 1/16" AND MAX. 1/8" GAP.

4.0 PRE-ENGINEERED WOOD TRUSSES:

A. ROOF TRUSSES SHALL BE DESIGNED FOR THE LOADS INDICATED ON THE DRAWINGS. INCLUDE ADDITIONAL BOTTOM CHORD DEAD LOAD OF 5 PSF IF SUSPENDING INTERIOR PARTITIONS FROM TRUSSES. LOAD COMBINATIONS SHALL BE IN ACCORDANCE WITH IBC.
B. TRUSSES SHALL BE DESIGNED FOR A ROOF DEFLECTION OF L/240 FOR DEAD LOAD PLUS FULL LIVE LOAD.
C. ROOF TRUSS LUMBER SHALL BE DOUGLAS FIR-LARCH OR SPRUCE-PINE-FIR (19% MAX. MOISTURE CONTENT), "NO. 1" GRADE, TYPICAL.
D. CALCULATIONS AND DRAWINGS INCLUDING BRACING MEMBERS AND TRUSS TO TRUSS HANGERS FOR ALL ROOF TRUSSES, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER IN THE STATE OF COLORADO, SHALL BE SUBMITTED FOR APPROVAL A MINIMUM OF TWO WEEKS PRIOR TO FABRICATION.
E. TRUSSES SHALL BE BRACED FOR STRENGTH REQUIREMENTS ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS. TRUSS WEBS AND BOTTOM CHORDS SHALL BE DIAGONALLY BRIDGED ACCORDING TO THE RECOMMENDATIONS OF SBCA & TPI PUBLICATION "BCSI - GUIDE TO GOOD PRACTICE FOR HANDLING, INSTALLING, RESTRAINING & BRACING METAL PLATE CONNECTED WOOD TRUSSES" TO PROVIDE A RIGID ROOF DIAPHRAGM.
F. ALL TRUSSES SHALL HAVE SIMPSON H2.5A (OR APPROVED EQUAL) CONNECTIONS TO TOP PLATE.
G. TRUSSES SHALL BE POSITIONED TO ALLOW SHEAR WALL SHEATHING TO BE CONTINUOUS UP TO THE EXTERIOR ROOF PLANE. SHEATHING TO BE NAILED TO THE TRUSS TOP AND BOTTOM CHORDS AND WEB MEMBERS W/10D NAILS @ 6" O.C. DO NOT NAIL THROUGH PRESSED METAL TRUSS CONNECTOR PLATES.

STRUCTURAL SHOP DRAWINGS

1.0 GENERAL REQUIREMENTS:
A. THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD MUST BE SECURED ON ALL STRUCTURAL SUBMITTALS.
B. DO NOT REPRODUCE CONTRACT DOCUMENTS OR COPY STANDARD PRINTED INFORMATION AS THE BASIS OF SHOP DRAWINGS
C. VERIFY ALL OPENINGS WITH OTHER DRAWINGS
D. CONTRACTOR SHALL REVIEW AND STAMP ALL SHOP DRAWINGS PRIOR TO SUBMITTAL. ANY ITEMS NOT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS SHALL BE FLAGGED BY THE CONTRACTOR.
E. ALL VARIATIONS FROM THE CONTRACT DOCUMENTS ON THE SHOP DRAWINGS SHALL BE CLOUDED. ANY VARIATIONS NOT CLOUDED SHALL NOT BE CONSIDERED APPROVED.
F. ANY ITEMS NOT FLAGGED BY THE ENGINEER SHALL NOT BE CONSIDERED CHANGES TO THE CONTRACT DOCUMENTS.
G. THE SHOP DRAWINGS DO NOT REPLACE THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL MAKE SURE THE STRUCTURE IS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
H. ALL DIMENSIONS AND ELEVATIONS TO BE VERIFIED BY THE ENGINEER.
I. ALLOW A MINIMUM OF TWO WEEKS FOR ENGINEER REVIEW, PRIOR TO FABRICATION OR CONSTRUCTION.

1.1 ITEMS TO BE SUBMITTED FOR REVIEW:
A. PROVIDE CONCRETE REINFORCING BAR SCHEDULES, ELEVATIONS AND STEEL EMBED DRAWINGS.
B. PROVIDE CONCRETE MIX DESIGN INCLUDING WEIGHTS AND SOURCES OF ALL INGREDIENTS INCLUDING CEMENT, POZZOLAN, AGGREGATES, WATER, ADDITIVES AND THE WATER TO CEMENTITIOUS MATERIAL RATIO.
C. PROVIDE PRE-ENGINEERED WOOD TRUSS LAYOUT AND DETAILS INCLUDING BRACING & HANGERS.

SPECIAL INSPECTIONS

SPECIAL INSPECTION	CONTINUOUS	PERIODIC
INSPECTION OF REINFORCING STEEL AND PLACEMENT.		X
INSPECTION OF ANCHORS INSTALLED IN HARDENED CONCRETE.		X
VERIFYING USE OF REQUIRED DESIGN MIX.		X
AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	
INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	
INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.		X
INSPECT FORMWORK FOR SHAPE. LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.		X
VERIFY MATERIALS BELOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE DESIGN BEARING CAPACITY.	X	
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	X	
VERIFY USE OF PROPER MATERIALS. DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.		X
PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	X	

Otak

REVISIONS

NO.	DESCRIPTION	DATE

LINE IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH, ADJUST ACCORDINGLY

OTAK PROJECT NO: 20205
DRAWN BY: DAG
DESIGNED BY: DAG
CHECKED BY: DAG
DATE: MARCH 28, 2022
SCALE:

TOWN OF BENNETT

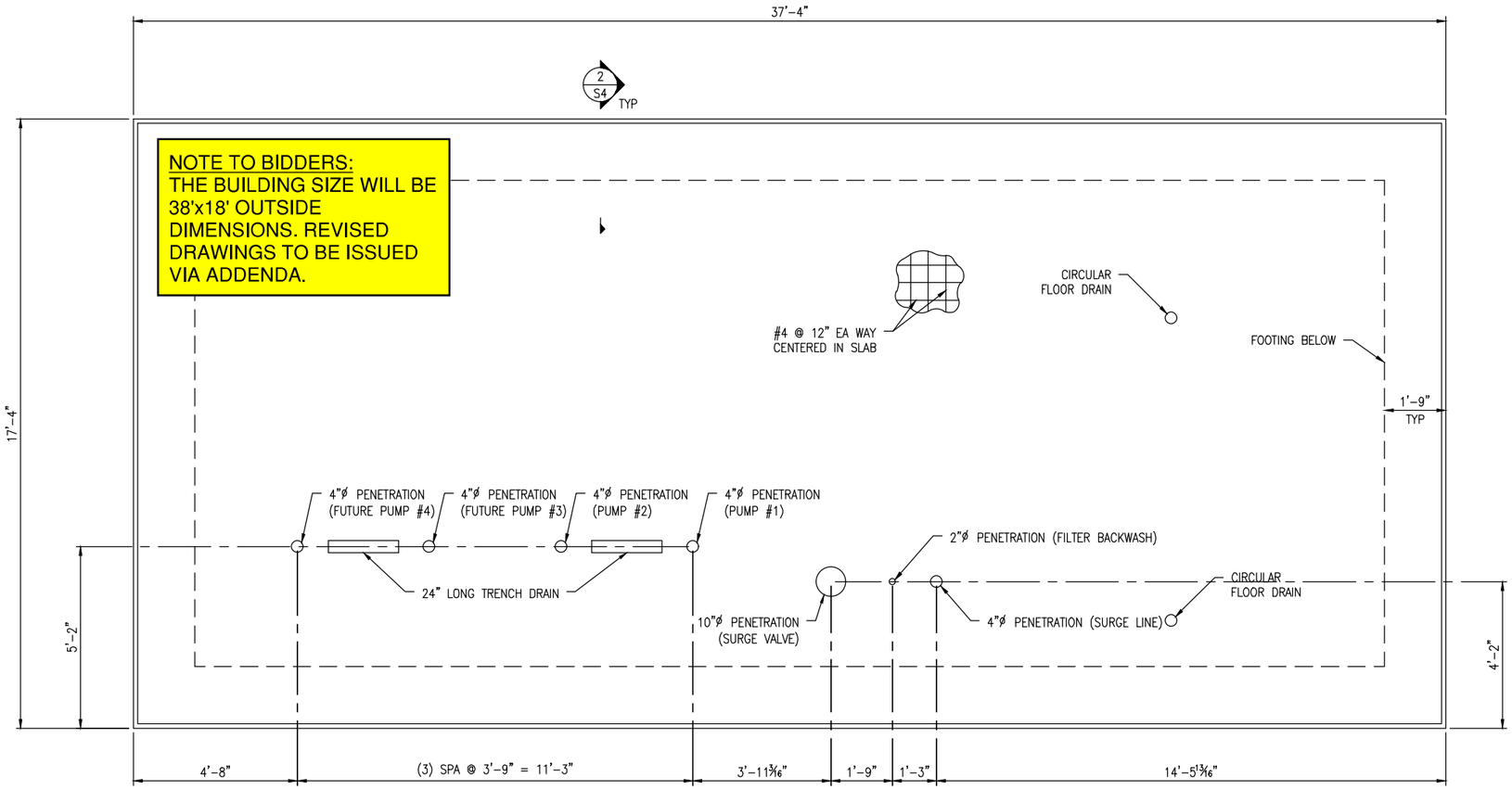
PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

GENERAL NOTES AND SPECIAL INSPECTIONS

S1

SHEET 11 OF 27



NOTE:
1. SIZE AND LOCATION OF FLOOR DRAINS ARE APPROXIMATE. SEE MECHANICAL DRAWINGS FOR FINAL DRAIN SIZE. FINAL DRAIN LOCATION TO BE DETERMINED BY THE CONTRACTOR.

1/S2 FOUNDATION PLAN

Otak

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REVISIONS

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DRAWN BY:	DAG
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DATE:	MARCH 28, 2022
SCALE:	

TOWN OF BENNETT

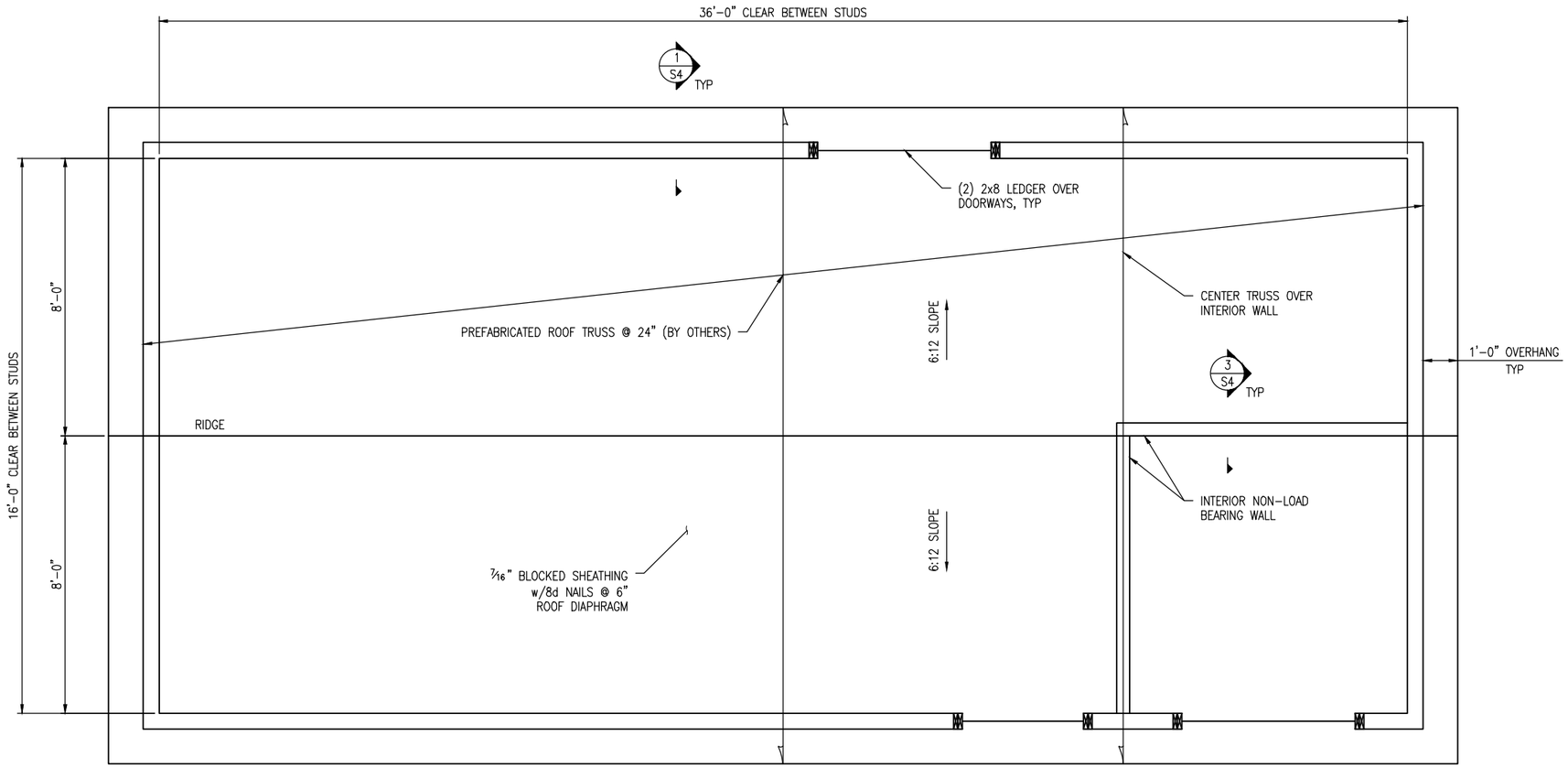
PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

FOUNDATION PLAN

S2

SHEET 12 OF 27



NOTE TO BIDDERS:
THE BUILDING SIZE WILL BE 38'x18' OUTSIDE DIMENSIONS. REVISED DRAWINGS TO BE ISSUED VIA ADDENDA.

1/S3 ROOF FRAMING PLAN

Otak

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REVISIONS

NO.	DESCRIPTION	DATE

OTAK PROJECT NO: 20205	
DRAWN BY:	DAG
DESIGNED BY:	DAG
CHECKED BY:	DAG
DATE:	MARCH 28, 2022
SCALE:	

TOWN OF BENNETT

PHASE 2 RECYCLED WATER PUMP STATION

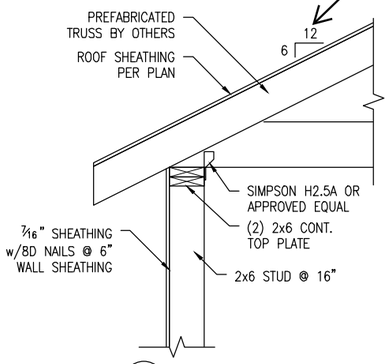
60% DRAWINGS

ROOF FRAMING PLAN

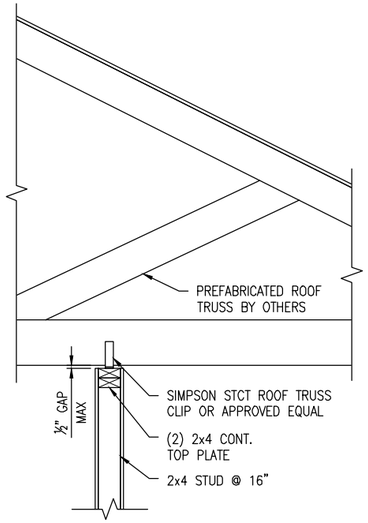
S3

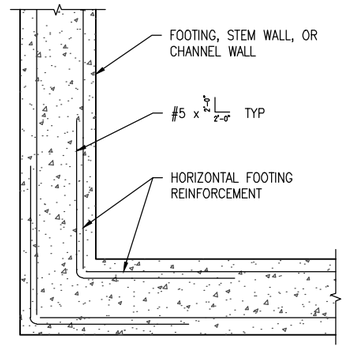
SHEET 13 OF 27

NOTE TO BIDDERS:
ROOF PITCH TO MATCH EXISTING ADMIN BUILDING AT THE SITE.

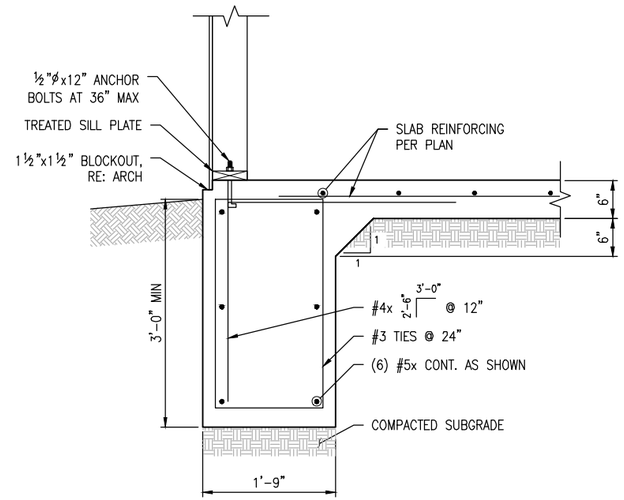


1/S4 TYPICAL EAVE DETAIL

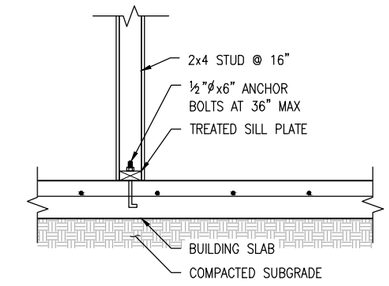




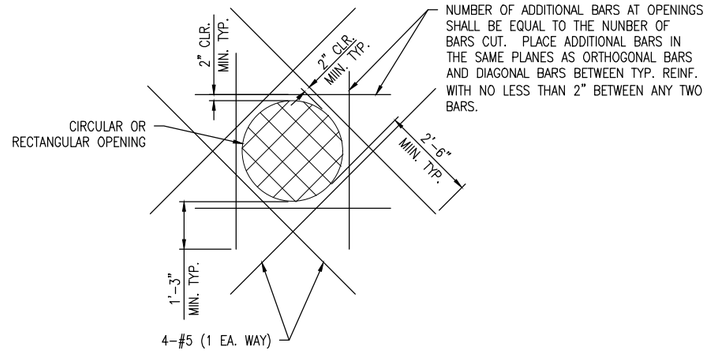
4/S4 CORNER REINFORCING DETAIL



2/S4 TYPICAL FOOTING DETAIL



3/S4 INTERIOR NON-LOAD BEARING WALL DETAIL



5/S4 PENETRATION REINFORCING DETAIL

Otak

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REVISIONS

NO.	DESCRIPTION	DATE

OTAK PROJECT NO: 20205	
DRAWN BY:	DAG
DESIGNED BY:	DAG
CHECKED BY:	DAG
DATE:	MARCH 28, 2022
SCALE:	

TOWN OF BENNETT

PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

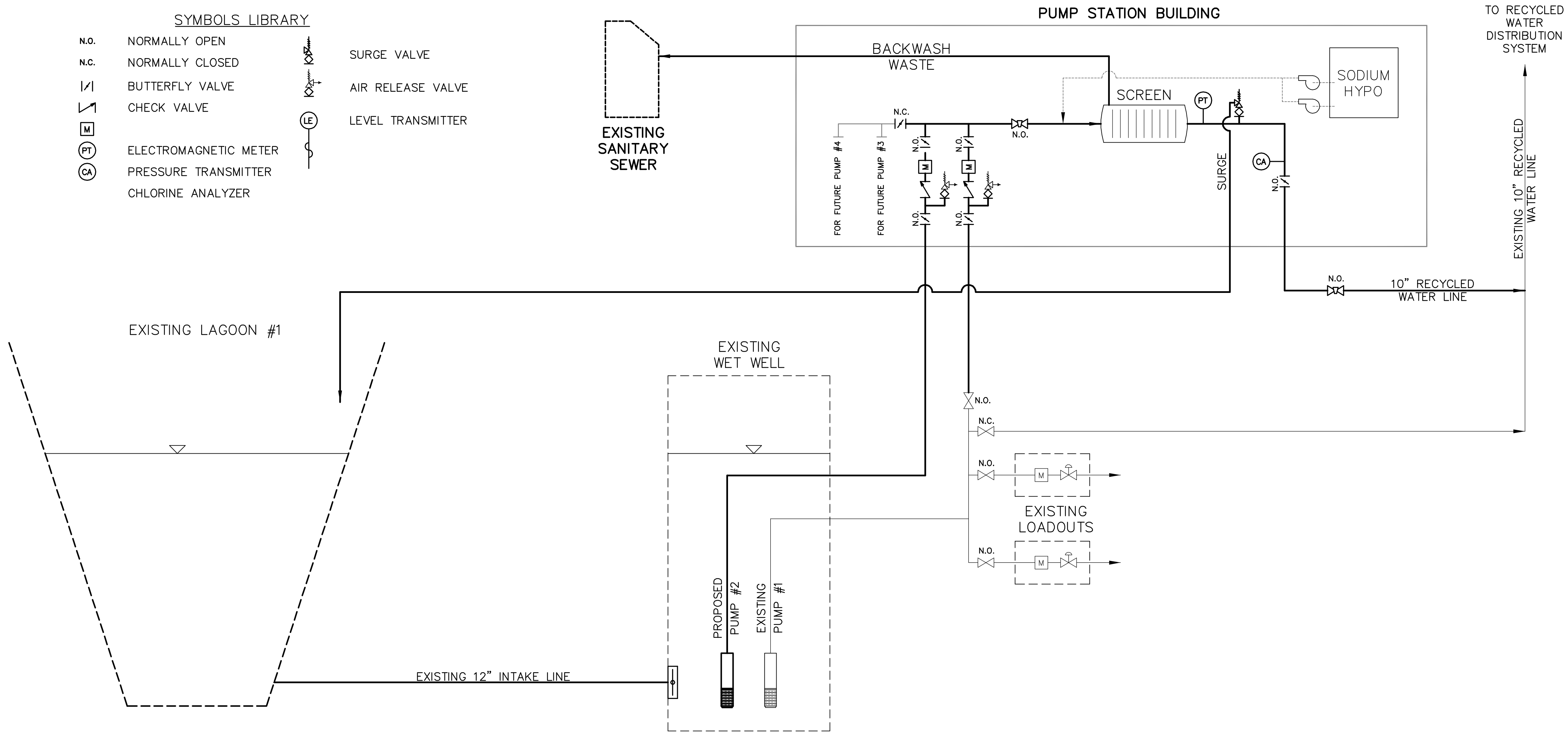
STRUCTURAL DETAILS

S4

SHEET 14 OF 27

A B C D E F G

1 2 3 4 5



PROCESS FLOW DIAGRAM

EQUIPMENT SUMMARY

PUMPS:

QUANTITY:	1
MANUFACTURER:	WILO
MODEL #:	SPI 6.300-6
RATED CAPACITY:	250 GPM 250 FT
MOTOR:	25 HP

MAGMETERS:

QUANTITY:	2
MANUFACTURER:	McCROMETER
MODEL #:	ULTRAMAG 30107-09

PRESSURE TRANSMITTERS:

QUANTITY:	1
MANUFACTURER:	XXXX
MODEL #:	XXXX

SODIUM HYPOCHLORITE SYSTEM:

QUANTITY:	2
MANUFACTURER:	STENNER
MODEL #:	XXX

SCREEN:

QUANTITY:	1
MANUFACTURER:	VAF
MODEL #:	V-1500
RATED CAPACITY:	1,500 GPM

CHECK VALVE:

QUANTITY:	2
MANUFACTURER:	VALMATIC
MODEL #:	SURGEBUSTER

SURGE VALVE:

QUANTITY:	1
MANUFACTURER:	CLA-VAL
MODEL #:	52-03 SAV

AIR RELEASE/VACUUM BREAKER VALVE:

QUANTITY:	2
SIZE:	2-INCH
MANUFACTURER:	ARI
MODEL #:	D-025

MSK Consulting, LLC
7157 S. Andes Circle
Centennial, CO 80016
303-903-0918

W2 Engineers, LLC
19255 W. 84th Place
Arvada, CO 80007
720-331-2332

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IF NOT ONE INCH, ADJUST ACCORDINGLY

REVISIONS

NO.	DESCRIPTION	DATE

MSK PROJECT NO:	38-002-02
DRAWN BY:	DLT
DESIGNED BY:	DLT
CHECKED BY:	DLT
DATE:	MARCH 28, 2022
SCALE:	NO SCALE

TOWN OF BENNETT

PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

PROCESS FLOW DIAGRAM AND EQUIPMENT SUMMARY

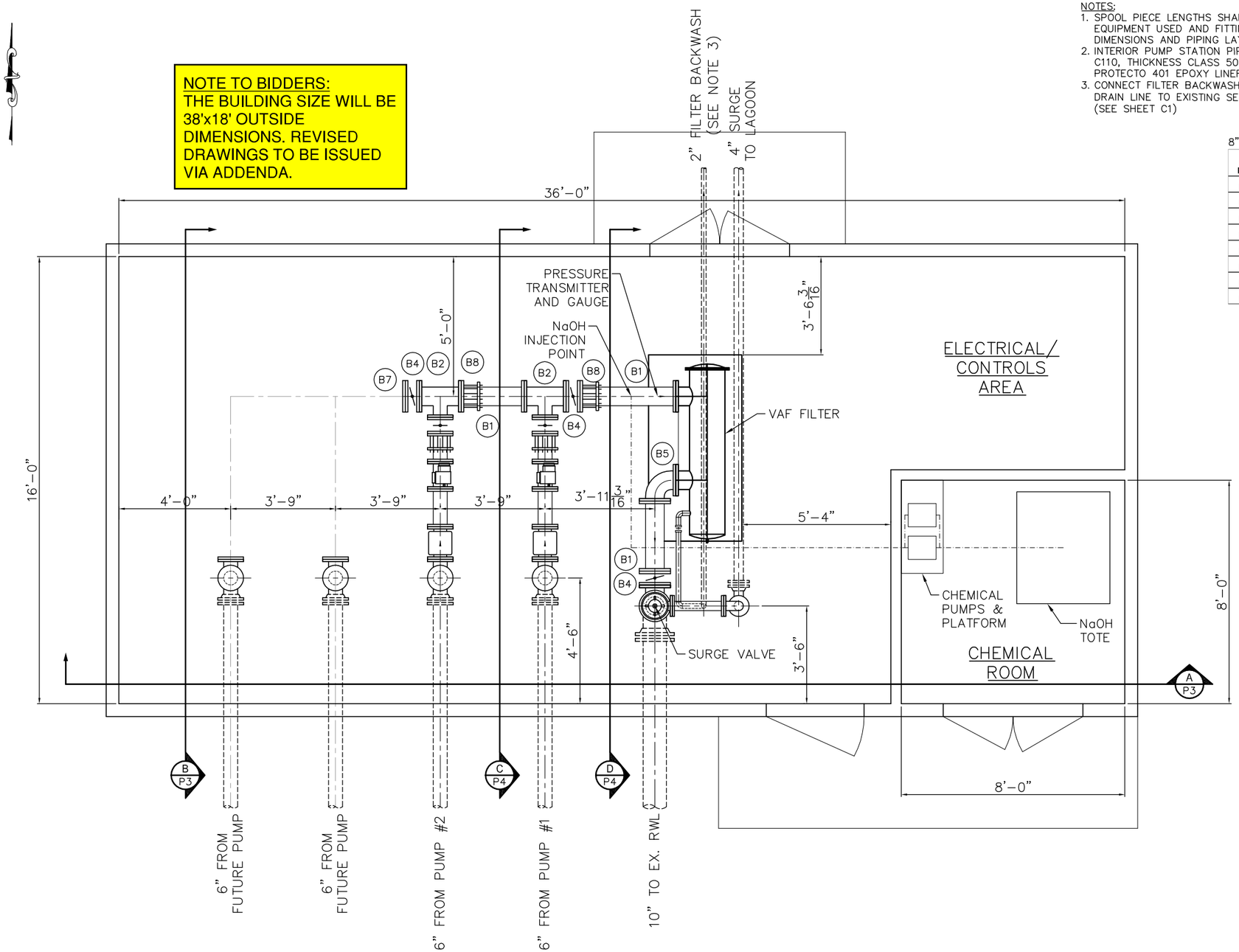
P1

NOTE TO BIDDERS:
THE BUILDING SIZE WILL BE 38'x18' OUTSIDE DIMENSIONS. REVISED DRAWINGS TO BE ISSUED VIA ADDENDA.

NOTES:
1. SPOOL PIECE LENGTHS SHALL BE DETERMINED BY CONTRACTOR BASED ON EQUIPMENT USED AND FITTINGS INSTALLED. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND PIPING LAYOUT PRIOR TO INSTALLATION.
2. INTERIOR PUMP STATION PIPING SHALL BE FLANGED DUCTILE IRON PIPE, AWWA C110, THICKNESS CLASS 50, AWWA C151, AND SHALL BE EPOXY LINED WITH PROTECTO 401 EPOXY LINER.
3. CONNECT FILTER BACKWASH LINE 4" DRAIN LINE OUTSIDE OF BUILDING. ROUTE 4" DRAIN LINE TO EXISTING SEWER MANHOLE NORTH OF THE PUMP STATION BUILDING (SEE SHEET C1)

8" DIAMETER PIPING

NO.	DESCRIPTION	DIA. (IN)	CONNECTION
B1	SPOOL PIECE	8	FL
B2	REDUCING TEE	8 x 4	FL
B3	TEE	8	FL
B4	BFV	8	FL
B5	90° BEND	8	FL
B6	CONCENTRIC REDUCER	8 x 4	FL
B7	BLIND FLANGE	8	FL
B8	FLG. COUPLING ADAPTER	8	FL



PLAN VIEW

MSK Consulting, LLC
7157 S. Andes Circle
Centennial, CO 80016
303-903-0918

W2 Engineers, LLC
19255 W. 84th Place
Arvada, CO 80007
720-331-2332

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REVISIONS

NO.	DESCRIPTION	DATE
1	REVISION #1	5/28/20

MSK PROJECT NO: 38-002-02
DRAWN BY: DLT
DESIGNED BY: DLT
CHECKED BY: DLT
DATE: MARCH 28, 2022
SCALE: 3/8"=1'-0"

TOWN OF BENNETT

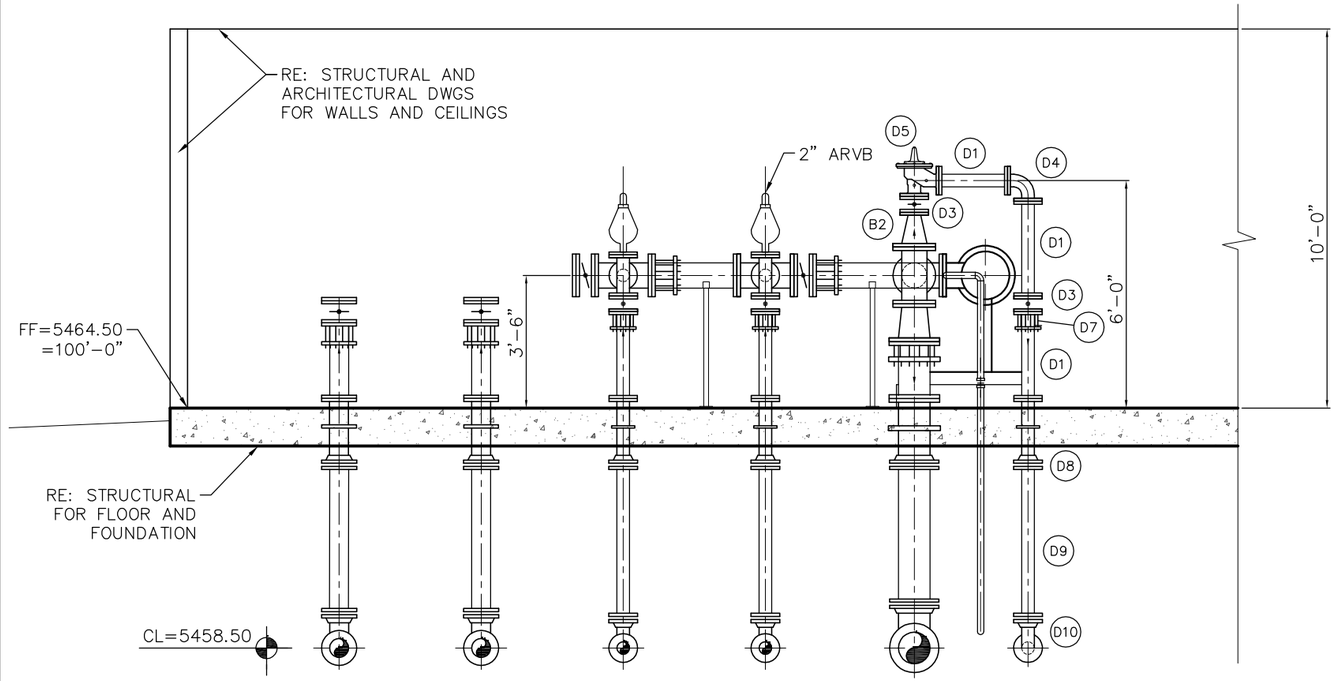
PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

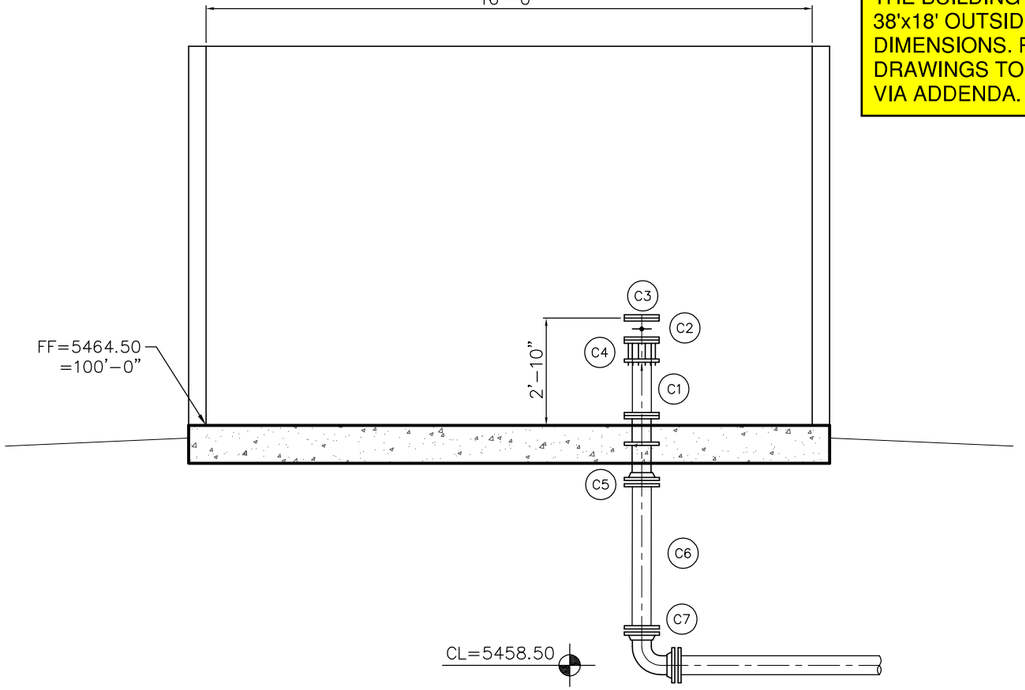
PLAN VIEW

P2

SHEET 16 OF 27



A/P2 SECTION VIEW



B/P2 SECTION VIEW

NOTE TO BIDDERS:
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NOTES:
1. SPOOL PIECE LENGTHS SHALL BE DETERMINED BY CONTRACTOR BASED ON EQUIPMENT USED AND FITTINGS INSTALLED. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND PIPING LAYOUT PRIOR TO INSTALLATION.
2. INTERIOR PUMP STATION PIPING SHALL BE FLANGED DUCTILE IRON PIPE, AWWA C110, THICKNESS CLASS 50, AWWA C151, AND SHALL BE EPOXY LINED WITH PROTECTO 401 EPOXY LINER.

10" DIAMETER PIPING

NO.	DESCRIPTION	DIA. (IN)	CONNECTION
A1	SPOOL PIECE	10	FL
A2	CONCENTRIC REDUCER	10 x 8	FL
A3	FLG. COUPLING ADAPTER	10	FL
A4	WALL PIPE	10	FL x MJ
A5	SPOOL PIECE	10	PE x PE
A6	90° BEND	10	MJ

8" DIAMETER PIPING

B1	SPOOL PIECE	8	FL
B2	REDUCING TEE	8 x 4	FL
B3	TEE	8	FL
B4	BFV	8	FL
B5	90° BEND	8	FL
B6	CONCENTRIC REDUCER	8 x 4	FL
B7	BLIND FLANGE	8	FL
B8	FLG. COUPLING ADAPTER	8	FL

6" DIAMETER PIPING

NO.	DESCRIPTION	DIA. (IN)	CONNECTION
C1	SPOOL PIECE	6	FL
C2	BFV	6	FL
C3	BLIND FLANGE	6	FL
C4	FLG. COUPLING ADAPTER	6	FL
C5	WALL PIPE	6	FL x MJ
C6	SPOOL PIECE	6	PE x PE
C7	90° BEND	6	MJ
C8	MAGMETER	6	FL
C9	CHECK VALVE	6	FL

4" DIAMETER PIPING

NO.	DESCRIPTION	DIA. (IN)	CONNECTION
D1	SPOOL PIECE	4	FL
D2	TEE	4	FL
D3	BFV	4	FL
D4	90° BEND	4	FL
D5	SURGE VALVE	4	FL
D6	BLIND FLANGE	4	FL
D7	FLG. COUPLING ADAPTER	4	FL
D8	WALL PIPE	4	FL x MJ
D9	SPOOL PIECE	4	PE x PE
D10	90° BEND	4	MJ

MSK Consulting, LLC
7157 S. Andes Circle
Centennial, CO 80016
303-903-0918

W2 Engineers, LLC
19255 W. 84th Place
Arvada, CO 80007
720-331-2332

LINE IS ONE INCH ON ORIGINAL DRAWING

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REVISIONS

NO.	DESCRIPTION	DATE
1	REVISION #1	5/28/20

MSK PROJECT NO: 38-002-02
DRAWN BY: DLT
DESIGNED BY: DLT
CHECKED BY: DLT
DATE: MARCH 28, 2022
SCALE: 1/8"=1'-0"

TOWN OF BENNETT

PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

PIPING SECTION VIEWS

P3

SHEET 17 OF 27

10" DIAMETER PIPING

NO.	DESCRIPTION	DIA. (IN)	CONNECTION
A1	SPOOL PIECE	10	FL
A2	CONCENTRIC REDUCER	10 x 8	FL
A3	FLG. COUPLING ADAPTER	10	FL
A4	WALL PIPE	10	FL x MJ
A5	SPOOL PIECE	10	PE x PE
A6	90° BEND	10	MJ

8" DIAMETER PIPING

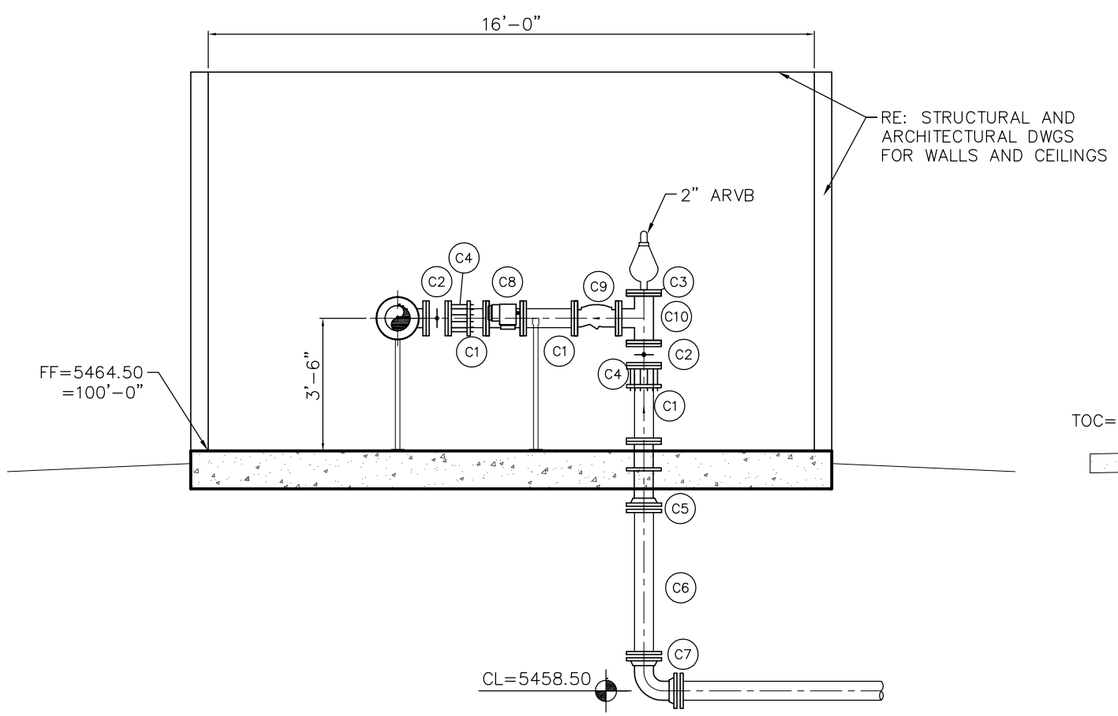
B1	SPOOL PIECE	8	FL
B2	REDUCING TEE	8 x 4	FL
B3	TEE	8	FL
B4	BFV	8	FL
B5	90° BEND	8	FL
B6	CONCENTRIC REDUCER	8 x 4	FL
B7	BLIND FLANGE	8	FL
B8	FLG. COUPLING ADAPTER	8	FL

6" DIAMETER PIPING

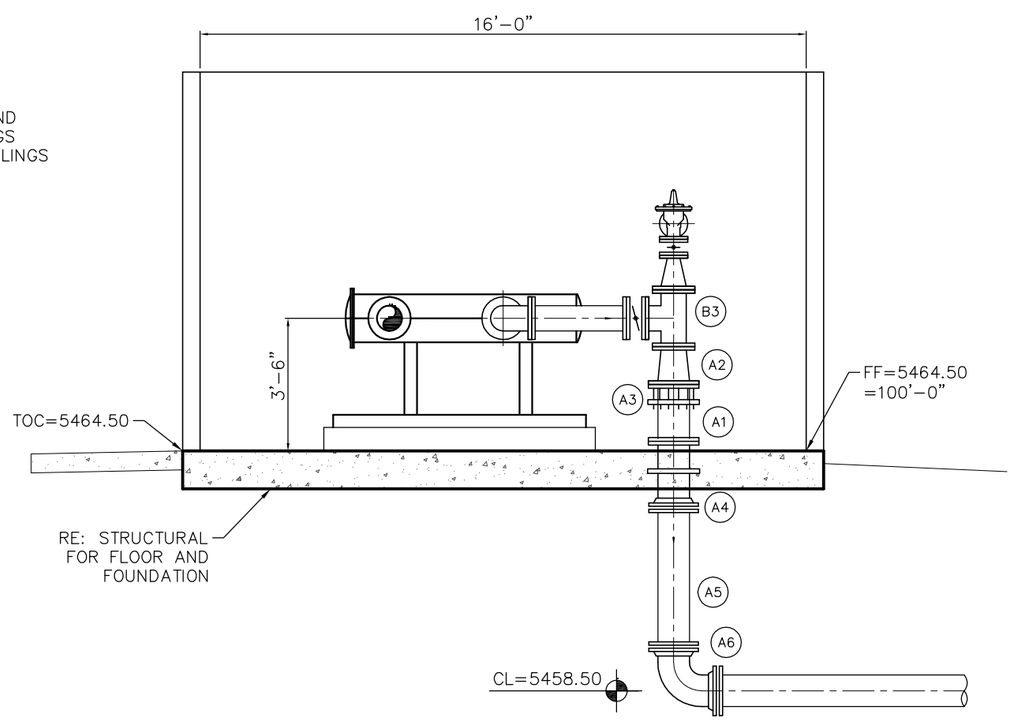
NO.	DESCRIPTION	DIA. (IN)	CONNECTION
C1	SPOOL PIECE	6	FL
C2	BFV	6	FL
C3	BLIND FLANGE	6	FL
C4	FLG. COUPLING ADAPTER	6	FL
C5	WALL PIPE	6	FL x MJ
C6	SPOOL PIECE	6	PE x PE
C7	90° BEND	6	MJ
C8	MAGMETER	6	FL
C9	CHECK VALVE	6	FL
C10	TEE	6	FL

NOTES:
1. SPOOL PIECE LENGTHS SHALL BE DETERMINED BY CONTRACTOR BASED ON EQUIPMENT USED AND FITTINGS INSTALLED. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND PIPING LAYOUT PRIOR TO INSTALLATION.
2. INTERIOR PUMP STATION PIPING SHALL BE FLANGED DUCTILE IRON PIPE, AWWA C110, THICKNESS CLASS 50, AWWA C151, AND SHALL BE EPOXY LINED WITH PROTECTO 401 EPOXY LINER.

NOTE TO BIDDERS:
THE BUILDING SIZE WILL BE 38'x18' OUTSIDE DIMENSIONS. REVISED DRAWINGS TO BE ISSUED VIA ADDENDA.



C/P2 SECTION VIEW



D/P2 SECTION VIEW

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REVISIONS

NO.	DESCRIPTION	DATE
1	REVISION #1	5/28/20

MSK PROJECT NO:	38-002-02
DRAWN BY:	DLT
DESIGNED BY:	DLT
CHECKED BY:	DLT
DATE:	MARCH 28, 2022
SCALE:	1/8"=1'-0"

TOWN OF BENNETT

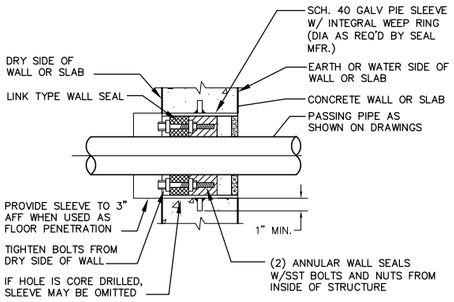
PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

PIPING SECTION VIEWS

P4

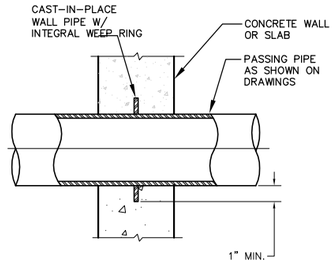
SHEET 18 OF 27



NOTE:

WHEN WALL/FLOOR IS EXISTING, CORE DRILL (SIZE AS REQ'D BY SEAL MFR) AND PROVIDE TWO ANNULAR SEALS W/ SST BOLTS AND NUTS AS SHOWN ABOVE

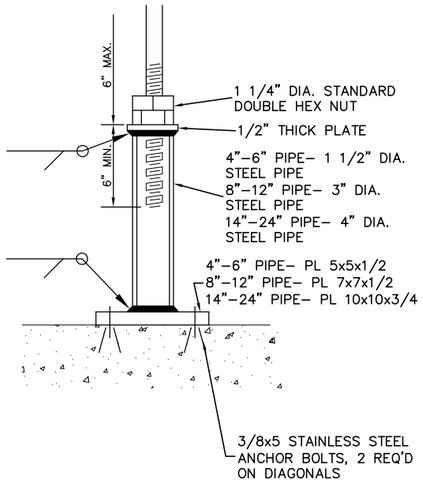
TYPE "A"



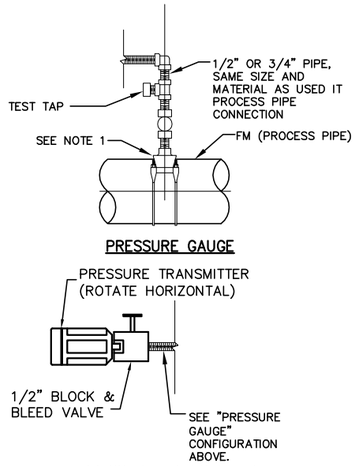
TYPE "B"

NOTES:
1. USE "TYPE A" FOR PENETRATIONS THROUGH CONCRETE BUILDING WALLS AND FLOORS.
2. USE "TYPE B" FOR WET WELL PENETRATION.

301 PIPE PENETRATIONS
N.T.S.

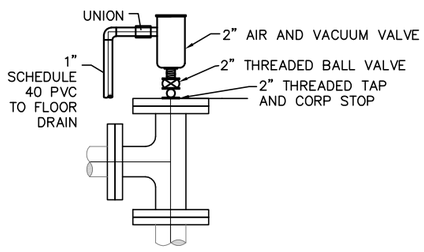


311 ADJUSTABLE PIPE & VALVE SUPPORT
N.T.S.



NOTES:
1. FOR DUCTILE IRON (ALL SIZES) USE PIPE SADDLE WITH BUSHING.
2. MOUNT DEVICE DIRECTLY ABOVE DIAPHRAGM SEAL.

321 PRESSURE GAUGE/TRANSMITTER INSTALLATION
N.T.S.



NOTE:
1. FOR DUCTILE IRON PIPE
2. CONTRACTOR TO INSTALL UNIONS ON ALL AIR RELEASE LINES.

322 ARVB INSTALLATION
N.T.S.

MSK Consulting, LLC
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REVISIONS

NO.	DESCRIPTION	DATE

MSK PROJECT NO: 38-008-02
DRAWN BY: DLT
DESIGNED BY: DLT
CHECKED BY: WR
DATE: MARCH 28, 2022
SCALE: NO SCALE

TOWN OF BENNETT

PHASE 2 RECYCLED WATER PUMP STATION

60% DRAWINGS

INTERIOR PIPING DETAILS

P5

SHEET 19 OF 27

GENERAL MECHANICAL REQUIREMENTS:

CODES AND PERMITS
WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL CODES, REGULATIONS AND ORDINANCES. PERMITS NECESSARY FOR PERFORMANCE OF WORK SHALL BE SECURED AND PAID FOR BY THE CONTRACTOR.

PRE-BID
FOR EXISTING BUILDINGS, THE BIDDERS SHALL PERFORM A BUILDING AND SPACE SITE VISIT PRIOR TO BID. THE ACT OF SUBMITTING A BID INDICATES THE BIDDER DOES AGREE THEY HAVE A FULL UNDERSTANDING OF THE SCOPE OF WORK INVOLVED WITH THE EXISTING CONDITIONS.

DRAWINGS AND COORDINATION
DRAWINGS FOR MECHANICAL WORK ARE DIAGRAMMATIC IN NATURE, AND ARE NOT INTENDED TO BE SCALED FOR EXACT MEASUREMENTS NOR TO SERVE AS SHOP DRAWINGS. CHANGES FROM THE PLANS MADE WITHOUT CONSENT OF THE ENGINEER SHALL RELIEVE THE ENGINEER OF RESPONSIBILITY FOR ALL CONSEQUENCES ARRIVING OUT OF SUCH CHANGES. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. WHERE CONDITIONS REQUIRE REASONABLE CHANGES TO THOSE INDICATED ON THE DRAWINGS, MAKE SUCH CHANGES WITHOUT ADDITIONAL COST TO THE OWNER. COORDINATE ALL WORK WITH OTHER TRADES.

WARRANTY
WORKMANSHIP, MATERIALS, EQUIPMENT AND PROPER OPERATION SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE FROM THE OWNER. INITIAL ACCEPTANCE OF WORK SHALL NOT WAIVE THIS GUARANTEE. THIS GUARANTEE SHALL NOT INCLUDE NORMAL MAINTENANCE REQUIRED BY THE OWNER AS DESCRIBED IN EQUIPMENT OPERATION AND MAINTENANCE MANUALS.

SUBMITTALS
CONTRACTOR SHALL SUBMIT TO THE ARCHITECT/ENGINEER A PORTABLE DOCUMENT FORMAT "PDF" COPY OF SUBMITTAL BROCHURES FOR REVIEW. PROVIDE INFORMATION ON ALL MAJOR EQUIPMENT AS LISTED ON DRAWING EQUIPMENT SCHEDULES, AS WELL AS VALVES, DUCTWORK ACCESSORIES AND TEMPERATURE CONTROL DIAGRAMS AS APPLICABLE.

OPERATION AND MAINTENANCE MANUALS
CONTRACTOR SHALL FURNISH AT THE COMPLETION OF THE PROJECT A PORTABLE DOCUMENT FORMAT "PDF" COPY OF COMPLETE OPERATION AND MAINTENANCE MANUALS TO THE ARCHITECT/ENGINEER FOR REVIEW PRIOR TO TURNOVER TO OWNER. MANUALS TO BE BOUND AND INCLUDE INSTALLATION INSTRUCTIONS, REPLACEMENT PARTS LISTS AND MAINTENANCE INFORMATION ON ALL EQUIPMENT AS DESCRIBED IN THE SUBMITTALS SECTION. COMPLETED OPERATION AND MAINTENANCE MANUALS ARE TO BE FORWARDED TO THE OWNER WITHIN 90 DAYS AFTER OWNER BUILDING ACCEPTANCE.

PRODUCT SUBSTITUTIONS
MANUFACTURER MODEL NUMBERS LISTED ON THE DRAWINGS AND/OR SPECIFICATIONS ARE TO BE CONSIDERED AS THE BASIS OF DESIGN. WHERE TWO OR MORE ALTERNATE MANUFACTURERS OR MATERIALS ARE LISTED, THE CHOICE OF THESE SHALL BE OPTIONAL WITH THE CONTRACTOR. PRIOR TO THE AWARDING OF THE CONTRACT, CONTRACTOR MAY REQUEST A PROPOSED SUBSTITUTION OF MATERIALS IN WRITING TO THE ARCHITECT/ENGINEER NO LATER THAN SEVEN DAYS PRIOR TO THE RECEIPT OF BIDS. THE COST OF ANY CHANGES REQUIRED BY OTHER TRADES, INCLUDING A/E DESIGN, DUE TO THE USE OF EQUIPMENT AND/OR MATERIALS OTHER THAN THAT OF THE BASIS OF DESIGN SHALL BE PAID BY THE CONTRACTOR.

RECORD DRAWINGS
CONTRACTORS SHALL MAINTAIN A COMPLETE AND ACCURATE SET OF MARKED UP DRAWINGS SHOWING ACTUAL LOCATIONS OF INSTALLED WORK. THESE DRAWINGS ARE TO BE FORWARDED TO THE OWNER AS PART OF THE OPERATION AND MAINTENANCE MANUALS AT THE COMPLETION OF THE PROJECT.

ACCESS DOORS
PROVIDE ALL ACCESS DOORS/PANELS AS REQUIRED FOR ACCESS TO VALVES, DAMPERS, CONTROL DEVICES, FILTERS AND ANY OTHER ITEMS FOR WHICH ACCESS IS REQUIRED FOR EITHER OPERATION OR SERVICING. WHERE ACCESS DOORS ARE TO BE INSTALLED IN ASSEMBLIES REQUIRED TO HAVE A SPECIFIC FIRE RATING, ACCESS DOORS SHALL ALSO BE FIRE RATED.

PIPING AND DUCTWORK SEALANT THROUGH RATED ASSEMBLIES
PENETRATIONS SHALL BE SEALED AS REQUIRED IN ACCORDANCE WITH BUILDING AND MECHANICAL CODES TO RESIST THE PASSAGE OF FLAME AND PRODUCTS OF COMBUSTION IN ORDER TO MAINTAIN THE RESISTANCE RATING OF THE CONSTRUCTION BEING PENETRATED.

PROTECTION OF MATERIALS AND EQUIPMENT
CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL WORK, MATERALS, AND EQUIPMENT PROVIDED UNDER THIS SECTION. PIPE OPENINGS SHALL BE CLOSED WITH CAPS OR PLUGS TO PREVENT THE ENTRANCE OF DEBRIS DURING CONSTRUCTION. ALL DUCTWORK OPENINGS SHALL BE SEALED CLOSED DURING CONSTRUCTION.

ALTITUDE
SUPPLIERS SHALL CONFIRM THAT ALL EQUIPMENT BEING FURNISHED IS APPROPRIATE FOR USE AT THE ALTITUDE OF THE SITE.

EQUIPMENT AND PIPING IDENTIFICATION
PROVIDE EQUIPMENT LABELS FOR ALL MAJOR EQUIPMENT, INCLUDING BUT NOT LIMITED TO AIR HANDLING SYSTEMS, FANS, VAV BOXES, CONTROLS, DAMPERS, CONTROL VALVES AND PUMPS.
PROVIDE PIPE MARKERS ON CW, HW AND HWC SYSTEMS. LABELS TO BE AT MAXIMUM 8 FEET APART, WITH FLOW DIRECTION INDICATED, AS APPLICABLE.
ADDITIONALLY, PROVIDE LABELING ON POTABLE WATER MANIFOLDS INDICATING PLUMBING FIXTURE SERVED BY THE OUTLET, AS APPLICABLE.
LABELS SHALL BE AFFIXED OR ADHERED PERMANENTLY TO EQUIPMENT. EQUIPMENT INSTALLED INDOORS TO BE LABELED WITH EMBOSSING TAPE.
EQUIPMENT INSTALLED OUTDOORS TO BE LABELED WITH ENGRAVED PLASTIC LAMINATE SIGNS.
PIPE MARKERS TO BE SELF-ADHESIVE, MANUFACTURED FOR SUCH PURPOSE.

STARTERS AND DISCONNECTS
EQUIPMENT STARTERS SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR. EQUIPMENT DISCONNECTS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR UNLESS NOTED OTHERWISE ON THE DRAWINGS. STARTERS SHALL BE NEMA TYPE, AND SHALL INCLUDE PHASE MONITORING FOR MOTORS 5 HP AND LARGER.

TESTING
TESTING SHALL BE PERFORMED ON THE FOLLOWING SYSTEMS SPECIFIED. ALL SYSTEMS LISTED MAY NOT BE INCLUDED IN PROJECT, REFER TO DRAWINGS FOR APPLICABLE SYSTEMS.
SOIL, WASTE AND STORM DRAINAGE PIPING SHALL BE TESTED IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL CODES.
DOMESTIC WATER PIPING SHALL BE TESTED AND PROVEN WATERTIGHT UNDER A PRESSURE NOT LESS THAN THE WORKING PRESSURE OF THE SYSTEM FOR A 24 HOUR PERIOD.
DOMESTIC WATER PIPING SYSTEM SHALL BE CHLORINATED AND STERILIZED IN ACCORDANCE WITH REQUIREMENTS OF LOCAL JURISDICTION.
NATURAL GAS PIPING SHALL BE TESTED WITH AN AIR PRESSURE OF MINIMUM TWO TIMES THE DESIGN SYSTEM PRESSURE, BUT NO LESS THAN 3 PSIG, FOR A PERIOD OF 24 HOURS WITHOUT PRESSURE DROP.

BALANCING
SYSTEM BALANCING SHALL BE PERFORMED BY A CERTIFIED BALANCING CONTRACTOR. BALANCE ALL SYSTEMS INCLUDING AIRFLOW TO AND FROM ALL OPENINGS, AND PUMPED WATER SYSTEMS INCLUDING DOMESTIC WATER RECIRCULATION SYSTEMS AS APPLICABLE. MAKE ANY ADJUSTMENTS NECESSARY TO RESULT IN CONDITIONS INDICATED AND PROVIDE READJUSTMENTS TO ITEMS IN REPORT AS MAY BE REQUESTED BY ARCHITECT/ENGINEER. SUBMIT TWO COPIES OF TEST AND BALANCE REPORT FOR APPROVAL. FAN AND PUMP SYSTEMS TO BE BALANCED WITHIN PLUS OR MINUS 5 PERCENT OF LISTED VALUES. AIR INLETS AND OUTLETS TO BE BALANCED WITHIN PLUS 10 PERCENT OR MINUS 5 PERCENT OF LISTED VALUES. BALANCE REPORT TO INCLUDE:

- UNIT IDENTIFICATION
- MANUFACTURER AND NAMEPLATE DATA
- EQUIPMENT NAMEPLATE AMPERAGE AND ACTUAL AMPERAGE
- RPM (DESIGN AND ACTUAL)
- FAN CFM (DESIGN AND ACTUAL)
- FAN STATIC PRESSURE (DESIGN AND ACTUAL)
- PUMP GPM (DESIGN AND ACTUAL)
- PUMP DISCHARGE AND SUCTION PRESSURE
- REGISTER, GRILLE, DIFFUSER REFERENCE NUMBER AND LOCATION
- INLET/OUTLET CFM (DESIGN AND ACTUAL)
- FLOW DEVICE PRESSURE DROP, CFM OR GPM

A FINAL BALANCING REPORT SHALL BE PROVIDED TO THE OWNER AFTER COMPLETION OF THE PROJECT.

CLEANING
AT THE COMPLETION OF WORK, ALL FIXTURES AND EQUIPMENT SHALL BE THOROUGHLY CLEANED AND DELIVERED IN A CONDITION SATISFACTORY TO THE ARCHITECT. ALL FILTERS SHALL BE REPLACED WITH NEW PRIOR TO OWNER ACCEPTANCE OF THE BUILDING.

INSULATION NOTES AND MECH ENERGY CODE

1 THE MECHANICAL DESIGN IS BASED ON THE 2018 INTERNATIONAL ENERGY CONSERVATION CODE.

2 ALL SUPPLY, RETURN AND EXHAUST DUCTWORK SHALL BE SEALED AIRTIGHT WITH DUCT SEALANT ALONG ALL SEAMS AND JOINTS.

HVAC LEGEND:

- RECT DUCT (NEW SHADED/EXISTING UNSHADED)
- ROUND DUCT (NEW SHADED/EXISTING UNSHADED)
- RECT DUCT SIZE CHANGE
- RECT DUCT CHANGE TO ROUND
- RECT ELBOW UP (SUPPLY)
- RECT ELBOW UP (NON-SUPPLY)
- RECT ELBOW DOWN (SUPPLY)
- RECT ELBOW DOWN (NON-SUPPLY)
- ROUND ELBOW UP
- ROUND ELBOW DOWN
- RECT ELBOW W/ TURNING VANES
- ROUND ELBOW
- ROUND TAKE-OFF W/ DAMPER FROM RECT MAIN
- ROUND TAKE-OFF W/ DAMPER FROM ROUND MAIN
- RECT TAKE-OFF W/ DAMPER FROM RECT MAIN
- RECT TAKE-OFF W/ DAMPER FROM ROUND MAIN
- DIFFUSER WITH FLEX DUCT
- RETURN GRILLE (UNDUCTED)
- RETURN/EXHAUST GRILLE (DUCTED)
- AIRFLOW PATTERNS
- (T) THERMOSTAT WITH ZONE TAG
- (S) SENSOR WITH ZONE TAG
- (C) CARBON DIOXIDE SENSOR
- (F) FIRE DAMPER TAG
- (FS) FIRE/SMOKE DAMPER WITH DUCT DETECTOR
- (SD) SMOKE DAMPER WITH DUCT DETECTOR
- DUCT WITH VOLUME DAMPER
- DUCT WITH MOTORIZED DAMPER
- DUCT WITH COUNTERBALANCED DAMPER
- DEMOLISHED DUCTWORK
- RL — REFRIGERANT LIQUID
- RS — REFRIGERANT SUCTION
- HP — REFRIGERANT HIGH PRESSURE
- LP — REFRIGERANT LOW PRESSURE

GENERAL MECHANICAL NOTES

1 MECHANICAL WORK SHALL COMPLY WITH ALL APPLICABLE CODES. VERIFY ALL REQUIREMENTS PRIOR TO SUBMITTING BID OR COMMENCING WORK. THE MECHANICAL DESIGN IS BASED ON THE 2018 INTERNATIONAL MECHANICAL CODE.

2 ALL DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL – CONSTRUCTION AND INSTALLATION SHALL CONFORM TO THE CURRENT EDITION OF SMACNA OR AS REQUIRED BY ALL APPLICABLE CODES.

3 CONSTRUCT ALL EXHAUST DUCTWORK TO SMACNA 1" PRESSURE CLASS.

4 DIMENSIONS OF DUCTWORK SHOWN INDICATES CLEAR INSIDE DIMENSIONS – WHERE DUCT LINER IS TO BE ADDED, INCREASE THE SIZE OF SHEET METAL ACCORDINGLY.

5 MAINTAIN A MINIMUM 10'-0" SEPARATION FROM OUTSIDE AIR INTAKES TO EXHAUST TERMINATIONS AND PLUMBING VENTS.

6 MAINTAIN A MINIMUM 3'-0" SEPARATION FROM EXHAUST TERMINATIONS TO OPERABLE WINDOWS AND DOORS.

7 WALL MOUNTED THERMOSTATS AND SENSORS SHALL BE INSTALLED 48" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE. THERMOSTATS AND SENSORS LOCATED ON EXTERIOR WALL SURFACES SHALL BE PROVIDED WITH AN INSULATED SUB-BASE.

8 THERMOSTATS FOR COOLING AND HEATING EQUIPMENT SHALL BE 7-DAY PROGRAMMABLE TYPE, 4 PERIODS PER DAY, 10-HOUR BATTERY BACK-UP, 2-HOUR OVERRIDE, 5 DEG DEAD-BAND, HEAT/COOL/OFF/AUTO CHANGEOVER, AUTO SETBACK TO 55 DEG F (HEAT) AND 85 DEG F (COOL), LCD BACKLIT DISPLAY, HARD WIRED POWER, HARD WIRED CONTROL.

9 TEMPORARY HEATING: THE PERMANENT HVAC SYSTEM MAY NOT BE UTILIZED FOR HEATING UNTIL ALL GYPSUM WORK IS COMPLETED AND HAS BEEN PAINTED. IF THE PERMANENT HVAC SYSTEM IS UTILIZED DURING CONSTRUCTION, ALL DUCT INTAKES SHALL BE COVERED WITH FILTER MEDIA (MERV-8 RATING). IF EXCESSIVE DUST OR DEBRIS HAS ENTERED THE SYSTEM THEN ALL COIL AND DUCT SURFACES SHALL BE CLEANED. NEW FILTERS ARE TO BE PROVIDED JUST PRIOR TO TURNOVER TO OWNER. TEMPORARY HEATING OF THE BUILDING PRIOR TO ANY USE OF THE PERMANENT HVAC SYSTEM SHALL BE THE RESPONSIBILITY OF THE G.C.

10 TEMPERATURE CONTROLS SHALL BE DESIGN BUILD, CUSTOM, FIELD FABRICATED TO MATCH CORRESPONDING EQUIPMENT. THE SYSTEM SHALL UTILIZE STAND ALONE ELECTRONIC COMPONENTS. THE CONTRACTOR SHALL PROPERLY SELECT, PROVIDE AND INSTALL SYSTEM(S) INCLUDING ALL COMPONENTS NECESSARY FOR A FULL AND COMPLETE, OPERATIONAL SYSTEM. THIS INCLUDES, BUT IS NOT LIMITED TO: LOW VOLTAGE WIRING, THERMOSTATS, DAMPER MOTORS, SOLENOIDS, RELAYS, CONTACTORS, STARTERS, TIME CLOCKS, CONTROL PANELS, SYSTEM COMMISSIONING AND OWNER TRAINING. ALL LINE VOLTAGE INTERFACING SHALL BE COORDINATED DIRECTLY WITH THE ELECTRICAL CONTRACTOR. PROVIDE SUBMITTALS ON COMPONENTS AND WIRING DIAGRAMS PRIOR TO ORDERING

11 HANGING, ANCHORING AND SUPPORT OF EQUIPMENT, DUCTS, PIPING AND ACCESSORIES IS DESIGN BUILD BY THE MC. THE SUPPORTS SHALL MEET CODE.

12 ALWAYS INSTALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

MECHANICAL DRAWING INDEX

INTEGRATED MECHANICAL
320 MAPLE ST, SUITE 110
FORT COLLINS
COLORADO 80521
INT-MECH.COM
970.556.0570
FRONT-DESK@INT-MECH.COM

LINE IS ONE INCH ON ORIGINAL DRAWING
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REVISIONS

NO.	DESCRIPTION	DATE
1		
2		
3		
4		
5		

INT. MECH. PROJECT NO:	22-035
DRAWN BY:	JKM
DESIGNED BY:	JKM
CHECKED BY:	SAK
DATE:	MAR. 28TH 2022
SCALE:	NOT TO SCALE

TOWN OF BENNETT

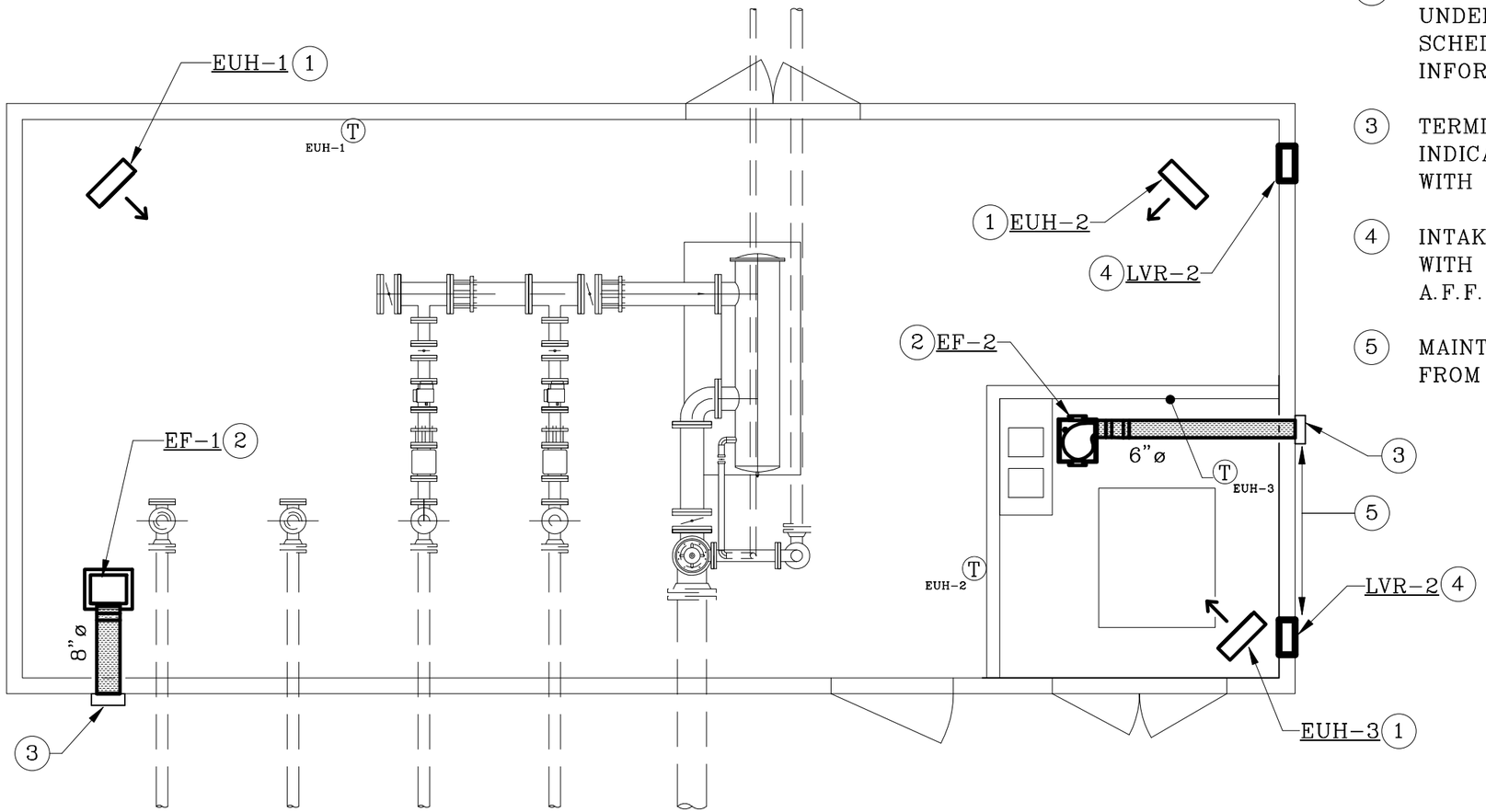
PHASE 1 RECYCLED WATER PUMP STATION

60% CONSTRUCTION DRAWINGS

HVAC NOTES, LEGEND AND INDEX

M1

SHEET 20 OF 27



MECHANICAL FLOOR PLAN

1/4" = 1'-0"

0" 1" 2"

FLAG NOTES:

1. ELECTRIC UNIT HEATER SUSPENDED FROM BOTTOM CORD OF STRUCTURE WITH BOTTOM OF HEATER AT 8'-0" A.F.F. REFER TO SCHEDULES FOR MORE INFORMATION.
2. EXHAUST DUCT FAN INSTALLED TIGHT TO UNDERSIDE OF STRUCTURE. REFER TO SCHEDULES AND DETAILS FOR MORE INFORMATION.
3. TERMINATE EXHAUST DUCTWORK OF SIZE INDICATED THROUGH EXTERIOR SIDEWALL WITH MANUFACTURER'S WALL CAP.
4. INTAKE LOUVER INSTALLED LOW IN WALL WITH BOTTOM OF LOUVER AT 1'-6" A.F.F.
5. MAINTAIN 10'-0" CLEARANCE RADIALLY FROM INTAKE AND EXHAUST POINT.

INTEGRATED MECHANICAL
320 MAPLE ST, SUITE 110
FORT COLLINS
COLORADO 80521
INT-MECH.COM
970.556.0570
FRONT-DESK@INT-MECH.COM

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REVISIONS		
NO.	DESCRIPTION	DATE

INT. MECH. PROJECT NO:	22-033
DRAWN BY:	JKM
DESIGNED BY:	JKM
CHECKED BY:	SAK
DATE:	MAR 28TH 2022
SCALE:	REF: PLAN

TOWN OF BENNETT

PHASE 1 RECYCLED WATER PUMP STATION

60% CONSTRUCTION DRAWINGS

HVAC NOTES, LEGEND, AND INDEX

M2

LOUVER SCHEDULE

NUMBER	MAKE & MODEL NUMBER	FIXED	CONST	DUTY	WIDTH INCHES	HEIGHT INCHES	DEPTH INCHES	CFM	SF FREE AREA	FPM @ CFM	APD @ CFM	H20 PENE VEL-FPM	FRAME STYLE	COLOR	SCREEN	REMARKS
LVR-1	POTTORFF EFD-435	YES	ALUM	INTAKE	12	12	4	110	0.3	373	0.02"	966	FLANGED	PER ARCH	BIRD	(1)
LVR-2	POTTORFF EFD-435	YES	ALUM	INTAKE	12	12	4	225	0.3	764	0.08"	966	FLANGED	PER ARCH	BIRD	(1)

(1) PRIMER FINISH - TO BE FIELD PAINTED BY GC TO PER ARCHITECT

EXHAUST FAN SCHEDULE

NUMBER	MAKE & MODEL NUMBER	TYPE	DUTY	CFM	FAN SPEED	EXT STATIC	MOTOR HP/W	SONES	DRIVE TYPE	SPEED CONTROL	GRILLE TYPE	HOUSING CONST	CONTROL	ELEC DATA	REMARKS
EF-1	COOK GCVF-180	CEILING CABINET	EXHAUST	225	1,478 RPM	0.35"	59.7W	6.5	DIRECT	EC	PLASTIC	GALV	(A)	120/1	(1) (2) (3) (5)
EF-2	COOK GC-148	CEILING CABINET	EXHAUST	110	1,075 RPM	0.35"	37 W	2.5	DIRECT	YES	PLASTIC	GALV	(A)	120/1	(1) (2) (4)

(1) GRAVITY BACKDRAFT DAMPER (2) SPEED CONTROLLER MOUNTED AT FAN FOR PURPOSES OF BALANCING

(3) WITH FACTORY BUILT 8"Ø WALL CAP AND BIRD SCREEN. (4) WITH FACTORY BUILT 6"Ø WALL CAP AND BIRD SCREEN.

(5) EC MOTOR IS IECC REQUIRED - DO NOT VE

(A) CONTINUOUS OPERATION 24/7

ELECTRIC HEATER SCHEDULE

NUMBER	MAKE & MODEL NUMBER	ORIEN-TATION	TOTAL WATTS	CFM	HOUSING CONST	HOUSING COLOR	TSTAT	INTERNAL DISCONN	ELEC DATA	AMPS	REMARKS
EUH-1	MARKEL P3P510CA1N	UNIT	5,000	400	18 GA STEEL	STD	(A)	YES	480/3	6.1	(1)
EUH-2	MARKEL P3P510CA1N	UNIT	5,000	400	18 GA STEEL	STD	(A)	YES	480/3	6.1	(1)
EUH-3	MARKEL P3P103CA1N	UNIT	3,300	400	18 GA STEEL	STD	(A)	YES	480/3	4.0	(1)

(1) SUSPENDED FROM STRUCTURE WITH FACTORY PROVIDED BRACKET (A) 24V WALL MOUNTED THERMOSTAT - MARKEL SDHW1001

NOTE TO BIDDERS:
APPROVED EQUALS WILL BE ACCEPTED FOR HVAC EQUIPMENT.

INTEGRATED MECHANICAL
320 MAPLE ST, SUITE 110
FORT COLLINS
COLORADO 80521
INT-MECH.COM
970.556.0570
FRONT-DESK@INT-MECH.COM

IF NOT ONE INCH, ADJUST ACCORDINGLY

REVISIONS

NO.	DESCRIPTION	DATE

INT. MECH. PROJECT NO: 22-033
DRAWN BY: JKM
DESIGNED BY: JKM
CHECKED BY: SAK
DATE: MAR 28TH 2022
SCALE: NOT TO SCALE

TOWN OF BENNETT

PHASE 1 RECYCLED WATER PUMP STATION

60% CONSTRUCTION DRAWINGS

HVAC SCHEDULES

M3

INSULATION NOTES AND PLUMBING ENERGY CODE

1 THE MECHANICAL DESIGN IS BASED ON THE 2018 INTERNATIONAL ENERGY CONSERVATION CODE.

2 COMMERCIAL POTABLE COLD WATER PIPING SHALL BE INSULATED USING FIBERGLASS INSULATION WITH ALL SERVICE JACKET HAVING MAXIMUM 'K' FACTOR OF 0.27. INSULATION THICKNESS SHALL BE 0.5". DO NOT REMOVE THIS ITEM FROM THE PROJECT AS IT IS REQUIRED FOR CONDENSATE CONTROL.

GENERAL PLUMBING NOTES

1 PLUMBING WORK SHALL COMPLY WITH ALL APPLICABLE CODES. VERIFY ALL REQUIREMENTS PRIOR TO SUBMITTING BID OR COMMENCING WORK. THE PLUMBING DESIGN IS BASED ON THE 2018 INTERNATIONAL PLUMBING CODE.

2 WASTE AND VENT PIPING BELOW SLAB SHALL BE SCHEDULE 40, DWV, PVC, PLASTIC. FITTINGS SHALL BE PVC.

3 WASTE AND VENT PIPING ABOVE SLAB SHALL BE SCHEDULE 40, DWV, PVC, PLASTIC. FITTINGS SHALL BE PVC.

4 POTABLE WATER PIPING BELOW GRADE SHALL BE TYPE K, SOFT DRAWN, COPPER WITHOUT JOINTS.

5 POTABLE WATER PIPING 2" AND SMALLER SHALL BE PEX-A TUBING MANUFACTURED BY UPONOR/WIRSBO OR APPROVED EQUAL. FITTINGS SHALL BE EXPANSION TYPE WITH SECONDARY EXPANSION RING (NOT CRIMPED). CW SHALL BE RUN IN BLUE PIPE, HW & HWC IN RED, OTHER SYSTEMS CLEAR. PIPING SHALL BE PROPERLY SUPPORTED USING PLENUM RATED GALVANIZED TROUGHS OR CHANNELS HUNG AT MAXIMUM 8' INTERVALS. UNSUPPORTED PEX MAY NOT EXCEED 32".

6 PUSH-TO-CONNECT PLUMBING FITTINGS (I.E. SHARKBITE OR SIMILAR) AND PULLED TEE FITTINGS WILL NOT BE ACCEPTED.

7 POTABLE WATER VALVES SHALL BE FULL PORT, BALL TYPE.

8 HANGING, ANCHORING AND SUPPORT OF EQUIPMENT, PIPING AND ACCESSORIES IS DESIGN BUILD BY THE PC. THE SUPPORTS SHALL MEET CODE.

9 ALWAYS INSTALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

PLUMBING LEGEND:

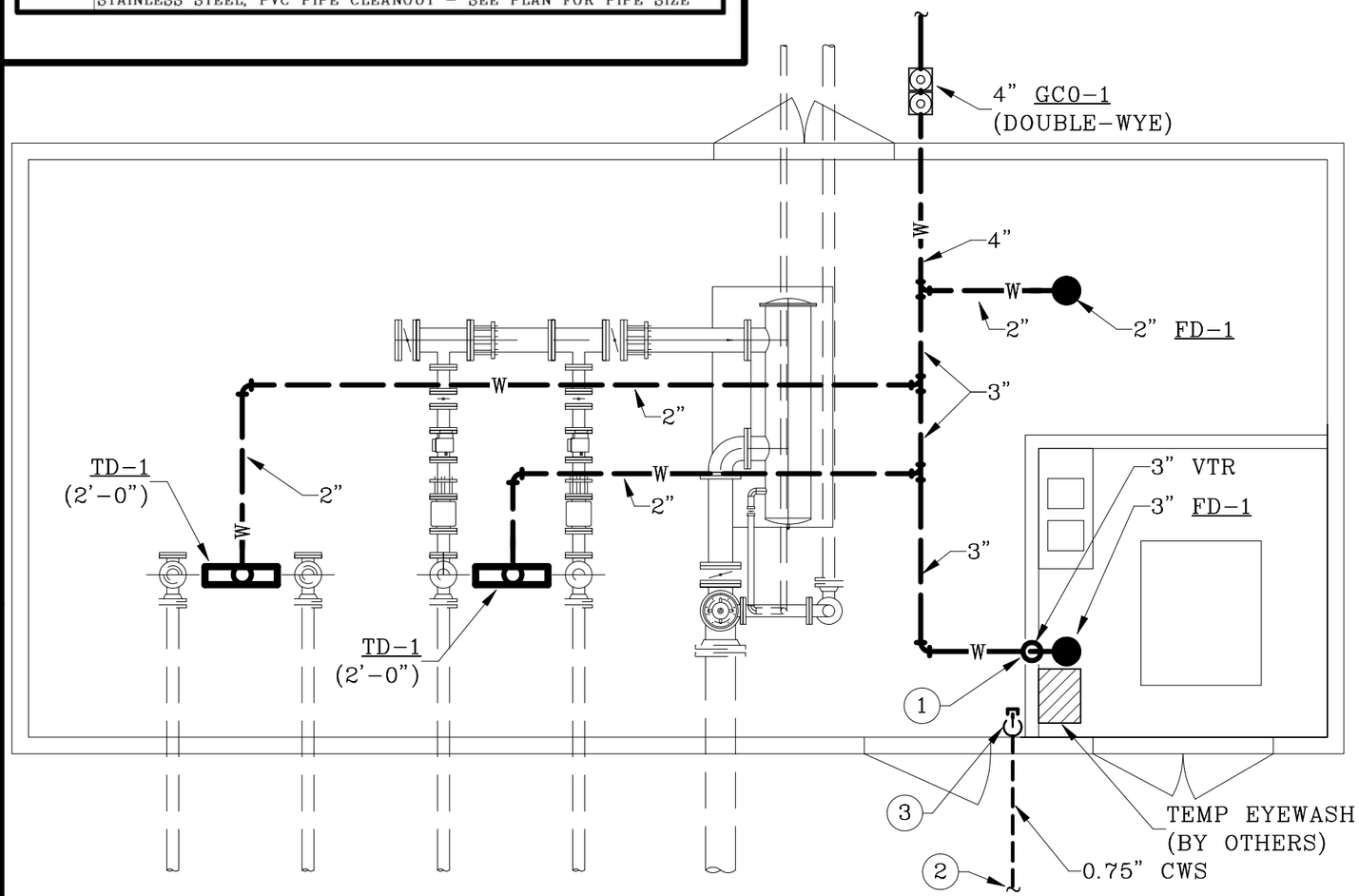
—CW—	COLD WATER PIPING		BALL VALVE
—HW—	HOT WATER PIPING		GATE VALVE
—TW—	TEMPERED WATER		T & P RELIEF VALVE
—V—	VENT PIPING		SOLENOID VALVE
—W—	WASTE PIPING		BALANCE VALVE
	PIPE ELBOW DOWN		CHECK VALVE
	PIPE ELBOW UP		UNION
	PIPE TEE UP		FLOOR/GRADE CLEANOUT
	PIPE TEE DOWN		FLOOR DRAIN/SINK
	PIPE CAP		WALL CLEANOUT
	PIPE CONTINUATION	I.E.	INVERT ELEVATION

PLUMBING FIXTURE SCHEDULE

FIXTURE TAG	FIXTURE SPECIFICATIONS
FD-1	FLOOR DRAIN •DRAIN – ZURN EZ1-PV, PVC DRAIN BODY, MEMBRANE CLAMP/ FLASHING COLLAR, SEEPAGE SLOTS, 5" DIAMETER NICKEL BRONZE STRAINER, ADJUSTABLE HEAD HEIGHT, CONCRETE SHIELD •TRAP SEAL PROSET OR SURE SEAL ELASTOMERIC SELF CLOSING TRAP SEAL – SEE PLAN FOR DRAIN SIZE
GCO-1	GRADE CLEANOUT – ZURN CO-2449, ADJUSTABLE HEIGHT PVC RISER, NICKEL BRONZE FRAME AND COVER, PVC BODY – SEE PLAN FOR SIZE
TD-1	TRENCH DRAIN •TRENCH DRAIN – ZURN Z-886, 6" WIDE PREFABRICATED MODULAR DRAIN SYSTEM, EXTRA HEAVY DUTY GALVANIZED GRATE AND FRAME ASSEMBLY – ACTUAL SECTION SIZING SHALL BE ACCOMPLISHED BY THE PLUMBING CONTRACTOR
WCO-1	WALL CLEANOUT – ZURN Z-1469 COVER PLATE, POLISHED 304 STAINLESS STEEL, PVC PIPE CLEANOUT – SEE PLAN FOR PIPE SIZE

FLAG NOTES:

1. 2" VENT UP TO 3" VTR. THIS VENT SHALL SERVE AS COMBINATION WASTE AND VENT FOR ALL WASTE FIXTURES IN BUILDING.
2. REFER TO SITE PLAN FOR CONTINUATION.
3. 0.75" CW UP THROUGH SLAB. CAP PIPING FOR FUTURE CONNECTION. LINE SHALL NOT BE ACTIVATED OR USED AT THIS TIME.



PLUMBING FLOOR PLAN

1/4" = 1'-0"

0" 1" 2"

INTEGRATED MECHANICAL
320 MAPLE ST, SUITE 110
FORT COLLINS
COLORADO 80521
INT-MECH.COM
970.556.0570
FRONT-DESK@INT-MECH.COM

LINE IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH, ADJUST ACCORDINGLY

REVISIONS			
NO.	DESCRIPTION	DATE	

INT MECH PROJECT NO: 22-033

DRAWN BY: JKM
DESIGNED BY: JKM
CHECKED BY: SAK
DATE: MAR 28TH 2022
SCALE: AS NOTED

TOWN OF BENNETT

PHASE 1 RECYCLED WATER PUMP STATION

60% CONSTRUCTION DRAWINGS

PLUMBING NOTES, PLAN, SCHEDULES, AND LEGEND

M4

SHEET 23 OF 27

ONE LINE DIAGRAM LEGEND

1500KVA
2.4KV-480Y/277
3Ø, 60 HZ — TRANSFORMER WITH PRIMARY AND SECONDARY VOLTAGE, AND KVA RATING AS NOTED.

20 — 22: 3#8,#10G,2" — CIRCUIT NO. 22 WITH #8 INSULATED CONDUCTORS, 1#10 BARE GROUND WIRE ALL IN 2" CONDUIT TO 20 HP MOTOR.

AUXILIARY ITEMS MAY NOT BE SHOWN COMPLETELY
15 — ONE-LINE SHOWING POWER AND CONTROL TO A PACKAGE UNIT, AS FOR EXAMPLE A STEAM GENERATOR OR AN AIR HANDLING UNIT, SHALL IMPLY THAT ANY AND ALL ASSOCIATED EQUIPMENT SHALL ALSO BE INSTALLED AND WIRED AS REQUIRED BY THE EQUIPMENT FURNISHED.

INDICATES THAT ALL OR PART OF CIRCUIT MAY BE ROUTED IN DUCT BANK OR UNDERGROUND. CONDUIT SIZE SHOWN ON ONE-LINE IS ABOVE GROUND AND/OR INSIDE OF STRUCTURE. SEE DUCT BANK SCHEDULE AND SECTIONS FOR CONDUIT SIZE OF UNDERGROUND PORTION OF CIRCUIT.

HIGH VOLTAGE DRAWOUT AIR OR VACUUM CIRCUIT BREAKER.

3P-20 — LOW VOLTAGE AIR CIRCUIT BREAKER, 3 POLE, 20 AMPERE.

S4 — SIZE 4 COMBINATION MAGNETIC MOTOR STARTER.

S4 — SIZE 4 REDUCED VOLTAGE SOFT STARTER

LOW VOLTAGE DRAWOUT AIR CIRCUIT BREAKER.

HIGH VOLTAGE DRAWOUT CONTACTOR.

FUSE AND DISCONNECT SWITCH.

S2 — SIZE 2 COMBINATION MAGNETIC MOTOR STARTER, REVERSING OR 2 SPEED.

POTENTIAL TRANSFORMER.

CURRENT TRANSFORMER.

CONDUIT & WIRING INSTALLATION LEGEND

CONDUIT EXPOSED.

CONDUIT CONCEALED.

CONDUIT TURNING UP, CONDUIT TURNING DOWN.

CONDUIT PLUGGED FLUSH, CONDUIT CAPPED.

L2-5 — TYPICAL FOR HOME RUN TO BE ROUTED TO LIGHTING PANEL L2 AND CONNECTED TO CIRCUIT #5 (MINIMUM NO. 12 AWG CONDUCTORS & ¾" CONDUIT.)

A — LIGHTING FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE.

11 — FLUORESCENT FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE.

LP1-3 — RECEPTACLE POWERED FROM LIGHTING PANEL LP1, CIRCUIT 3.

A LP2-2 — LIGHTING FIXTURE POWERED FROM LIGHTING PANEL LP2, CIRCUIT 2 (NON-SWITCHED.)

LPA-4 / 11 — LIGHTING FIXTURE POWERED FROM LIGHTING PANEL LPA, CIRCUIT 4

A / 11 — LIGHTING FIXTURE POWERED VIA SWITCH A.

E — UNDERGROUND CONCRETE ENCASED ELECTRICAL DUCT BANK.

UNDERGROUND CONCRETE ENCASED ELECTRICAL BANK ROUTED BENEATH SLAB-ON-GRADE.

DIRECT BURIED CONDUIT.

GROUND CONDUCTOR.

SCHEMATIC SYMBOLS

- WIRE CONNECTION POINT
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- STARTER, CONTACTOR OR RELAY COIL
- NORMALLY OPEN PUSH BUTTON
- NORMALLY CLOSED PUSH BUTTON
- MAINTAINED PUSH BUTTON
- NORMALLY CLOSED GEARED LIMIT SWITCH
- NORMALLY OPEN GEARED LIMIT SWITCH
- INDICATING LIGHT
- FUSE
- CONTROL POWER TRANSFORMER
- SWITCH
- MS — MANUAL STARTER
- OL — OVERLOAD
- FLOAT SWITCH (CLOSING ON RISING LEVEL)
- FLOAT SWITCH (OPENING ON RISING LEVEL)
- PRESSURE SWITCH (CLOSING ON RISING PRESSURE)
- PRESSURE SWITCH (OPENING ON RISING PRESSURE)
- VACUUM SWITCH (CLOSING ON INCREASING VACUUM)
- VACUUM SWITCH (OPENING ON INCREASING VACUUM)
- TEMPERATURE SWITCH (CLOSING ON RISING TEMPERATURE)
- TEMPERATURE SWITCH (OPENING ON RISING TEMPERATURE)
- FLOW ACTUATED SWITCH (CLOSING ON INCREASE IN FLOW)
- FLOW ACTUATED SWITCH (OPENING ON INCREASE IN FLOW)
- ON TIME DELAY SWITCH (NORMALLY OPEN WITH TIME DELAY CLOSING AFTER COIL IS ENERGIZED)
- ON TIME DELAY SWITCH (NORMALLY CLOSED WITH TIME DELAY OPENING AFTER COIL IS ENERGIZED)
- OFF TIME DELAY SWITCH (NORMALLY OPEN WITH TIME DELAY OPENING AFTER COIL IS DE-ENERGIZED)
- OFF TIME DELAY SWITCH (NORMALLY CLOSED WITH TIME DELAY CLOSING AFTER COIL IS DE-ENERGIZED)
- TORQUE SWITCH (NORMALLY OPEN)
- TORQUE SWITCH (NORMALLY CLOSED)
- LIMIT SWITCH (NORMALLY OPEN)
- LIMIT SWITCH (NORMALLY OPEN, HELD CLOSED)
- LIMIT SWITCH (NORMALLY CLOSED)
- LIMIT SWITCH (NORMALLY CLOSED, HELD OPEN)
- DIFFERENTIAL PRESSURE SWITCH (NORMALLY OPEN, CLOSING ON INCREASING DIFF.)
- DIFFERENTIAL PRESSURE SWITCH (NORMALLY CLOSED, OPENING ON INCREASING DIFF.)
- SURGE — 24 VDC SURGE PROTECTION

SWITCH & OUTLET SYMBOLS

- S^{A} SINGLE POLE SWITCH, A=SWITCH DESIGNATION
- S_2^{A} TWO POLE SWITCH, A=SWITCH DESIGNATION
- S_3^{A} THREE-WAY SWITCH, A=SWITCH DESIGNATION
- S^{A} FOUR-WAY SWITCH, A=SWITCH DESIGNATION
- S_{WP}^{A} WEATHERPROOF SWITCH, A=SWITCH DESIGNATION
- S_{KO}^{A} KEY OPERATED SWITCH, A=SWITCH DESIGNATION
- S_{EP}^{A} EXPLOSION PROOF SWITCH, A=SWITCH DESIGNATION
- SO^{A} OCCUPANCY SENSOR SWITCH, A=SWITCH DESIGNATION
- DUPLEX RECEPTACLE 120 VOLT
- 240V, 1 PHASE RECEPTACLE, TYPICAL AMPERE RATING NOTED
- 480V, 3 PHASE WELDING RECEPTACLE, TYPICAL AMPERE RATING NOTED

MISCELLANEOUS SYMBOLS

- E — ETHERNET PORT
- T — THERMOSTAT
- J — JUNCTION BOX
- DISCONNECT SWITCH
- COMBINATION STARTER
- POWER PANEL
- LIGHTING PANEL
- MISCELLANEOUS PANEL

ABBREVIATIONS

A	AMBER, AMPERE, ALARM
AC	ALTERNATING CURRENT
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AM	AMMETER
ATO	AUTOMATIC THROWOVER
AWG	AMERICAN WIRE GAUGE
C	CLOSE, COUNTER, CONTACTOR
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CD	CONTROL DAMPER
CKT	CIRCUIT
CL2	CHLORINE
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CS	CONTROL STATION
CT	CYCLE TIMER, CURRENT TRANSFORMER
CTM	CYCLE TIMER MOTOR
2/C	2 CONDUCTOR
4"C	4" CONDUIT
DC	DIRECT CURRENT
DM	DAMPER MOTOR, DEMAND METER
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DPS	DIFFERENTIAL PRESSURE SWITCH
DS	DISCONNECT SWITCH
E	ELECTRIC OPERATOR FOR CONTROL DAMPER OR VALVE
EMH	ELECTRICAL MANHOLE
ETM	ELAPSED TIME METER
EX	EXISTING
F	FORWARD
FS	FLOW SWITCH
G	GREEN, GROUND
GFI	GROUND FAULT INTERRUPTER
GLS	GEARED LIMIT SWITCH
#8G	#8 GROUND WIRE
H	HIGH, HUMIDISTAT
HH	HANDHOLE
HMT	HIGH MOTOR TEMPERATURE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
HP	HORSEPOWER
HWCO	HIGH WATER CUTOFF
HZ	HERTZ (CYCLE)
I/O	INPUT/OUTPUT
J	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVAR
KW	KILOWATT
KWH	KILOWATT HOUR
L	LOW, LEVEL
LA	LIGHTNING ARRESTOR
LAN	LOCAL AREA NETWORK
LP	LIGHTING PANEL
LS	LIMIT SWITCH, LEVEL SWITCH
LWCO	LOW WATER CUTOFF
M	MAGNETIC MOTOR STARTER
MA	MILLIAMPERE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCM	THOUSAND CIRCULAR MIL
MD	MOISTURE DETECTOR
MH	MANHOLE, MOUNTING HEIGHT
MOV	MOTOR OPERATED VALVE
MS	MANUAL MOTOR STARTER
MSH	MOTOR SPACE HEATER
N	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN, NUMBER
O	OPEN
OL	OVERLOAD
PB	PUSH BUTTON, PULL BOX
PF	POWER FACTOR METER
PH	PHASE (CHEMICAL TERM)
PLC	PROGRAMMABLE LOGIC CONTROLLER
PP	POWER PANEL
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER, PROGRAM TIMER
2P	2 POLE
R	RED, RAISE, RELAY, REVERSE
RECP	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RTD	RESISTANCE TYPE TEMP DETECTOR
RTU	REMOTE TERMINAL UNIT
RVSS	REDUCED VOLTAGE SOLID STATE STARTER
S2	SIZE 2 STARTER
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SP	SINGLE POLE
SPDT	SINGLE POLE DOUBLE THROW
SPST	SINGLE POLE SINGLE THROW
SS	SELECTOR SWITCH
SV	SOLENOID VALVE
SWB	SWITCHBOARD
SWGR	SWITCHGEAR
T	THERMOSTAT, TIMER, TOTALIZER
TACH	TACHOMETER
TB	TERMINAL BLOCK
TD	TIME DELAY RELAY
TEMP	TEMPERATURE
TQ	TORQUE
TS	TEMPERATURE SWITCH
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTS
VA	VOLT AMPERE
VLS	VALVE LIMIT SWITCH
VM	VOLTMETER
W	WHITE, WATTS
WH	WATTHOUR METER
WM	WATT METER
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
Y	YELLOW
Z	AUXILIARY RELAY
ZS	POSITION SWITCH

AREA DESIGNATIONS

THE SPECIAL AREA DESIGNATION BOXES, AS DEFINED BELOW, ARE LOCATED ON THE PLAN DRAWINGS TO DEFINE ELECTRICAL INSTALLATION REQUIREMENTS. DESIGNATION BOXES ARE LOCATED WITHIN ROOM OR BELOW ROOM NUMBER. ALL INDOOR AREAS NOT INDICATED OTHERWISE ARE AREA TYPE 1 AND MINIMUM NEMA TYPE 1 ENCLOSURES.

AREA TYPE 1 — INDOOR AND DRY AREA. REQUIRES MINIMUM NEMA TYP 1 ENCLOSURES FOR ALL EQUIPMENT AND GASKETED FITINGS IN CONDUIT SYSTEMS.

AREA TYPE 1A — CORROSIVE CHEMICAL FEED AND STORAGE ROOMS. CONDUIT SYSTEM SHALL BE EXPOSED PVC COATED CONDUIT WITH FITTINGS, AND ACCESSORIES.

AREA TYPE 4 — INDOOR WET LOCATIONS SUCH AS VAULTS, HOSEDOWN AREAS, BASEMENTS, ETC. MINIMUM NEMA TYPE 4 ENCLOSURE FOR EQUIPMENT AND GASKETED FITTINGS IN A CONDUIT SYSTEM.

AREA TYPE 7A — CLASS 1, DIVISION 1 AREA AS DEFINED BY NEC. ALL EQUIPMENT AND CONDUIT SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.

AREA TYPE 7B — CLASS 1, DIVISION 2, GROUP C AND D (METHANE, GASOLINE) AS DEFINED BY NEC. EQUIPMENT AND CONDUIT SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.

AREA TYPE 12 — INDOOR, DRY, DIRTY AREA. REQUIRES MINIMUM NEMA TYPE 12 GASKETED ENCLOSURES FOR ALL EQUIPMENT AND GASKETED FITTINGS IN CONDUIT SYSTEMS.

AREA TYPE 4X — OUTDOOR AND INDOOR WET LOCATIONS SUBJECT TO CORROSION. CONDUIT SYSTEM SHOULD BE PVC COATED RIGID GALVANIZED STEEL WITH PVC COATED FITTINGS, BOXES, AND STAINLESS STEEL HARDWARE.

GENERAL REQUIREMENTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS NOT SHOWN ON THE PLANS. THIS SHALL INCLUDE ALL CONDUITS SHOWN ON THE ONE-LINES AND HOME-RUNS SHOWN ON THE PLAN DRAWINGS. CONDUITS SHALL BE ROUTED AS DEFINED IN THE SPECIFICATIONS.
2. SPARE WIRES SHALL BE TAPED AND COILED.
3. IF EQUIPMENT SUPPLIED BY MANUFACTURER HAS A LARGER LOAD THAN VALUE SHOWN, THE CABLE CONDUIT AND ELECTRICAL EQUIPMENT SHALL BE ENLARGED, AS REQUIRED, TO ACCOMODATE THE HIGHER VALUE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING PROPERLY SIZED STARTER OVERLOADS FOR EQUIPMENT FURNISHED.
5. LIGHTING AND RECEPTACLE CIRCUITS DESIGNATED ON THE FLOOR PLANS ARE NOT SHOWN ON THE ONE-LINES. CONDUCTORS FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM NO. 12 AWG, CONDUIT FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM ¾".
6. IN AREAS WHERE THERE ARE OVERHEAD BRIDGE CRANES, HOISTS, ETC., NO CONDUITS SHALL BE RUN OVERHEAD THAT WILL INTERFERE WITH THE OPERATION OF THE EQUIPMENT.

GENERAL NOTES

1. SOLID LINES —— INDICATE NEW WORK OR EQUIPMENT.
2. DOTTED LINES . . . . INDICATE EXISTING WORK OR EQUIPMENT.
3. DASHED LINES _ _ INDICATE FUTURE WORK OR EQUIPMENT.
4. THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
5. INFORMATION RELATED TO CIRCUIT IDENTIFICATION, WIRE & CONDUIT SIZES, AND ROUTING, IS ON THE FOLLOWING DRAWING TYPES.
   A. ONE-LINE DIAGRAMS SHOW CIRCUIT IDENTIFICATION, WIRE QUANTITY AND SIZES, AND CONDUIT SIZE WITHIN STRUCTURES. ONE-LINE DIAGRAMS ALSO INDICATE ORIGIN AND DESTINATION OF CIRCUITS, AND IDENTIFY CIRCUITS ROUTED UNDERGROUND.
   B. FOR CIRCUITS WITHOUT UNDERGROUND PORTIONS, BUILDING FLOOR PLANS SHOW LOCATION OF EQUIPMENT FOR DETERMINING CIRCUIT LENGTH WITHIN THE STRUCTURE. FOR CIRCUITS WITH UNDERGROUND PORTIONS, ANTICIPATED PENETRATION OF UNDERGROUND CONDUITS ARE SHOWN ON STRUCTURE PLANS FOR DETERMINING THE LENGTH OF IN-STRUCTURE PORTIONS OF CIRCUITS. BUILDING FLOOR PLANS MAY ALSO SHOW HOME RUNS FOR LIGHTING, RECEPTACLE, AND OTHER MISCELLANEOUS EQUIPMENT CIRCUITS.
   C. SITE PLANS INDICATE THE GENERAL ROUTING OF UNDERGROUND CONDUITS AND DUCT BANKS. CIRCUITS ROUTED IN UNDERGROUND CONDUITS OR DUCT BANKS ARE INDICATED IN DUCT BANK SECTIONS REFERENCED ON THE SITE PLAN.
   D. DUCT BANK SECTIONS AND SCHEDULES IDENTIFY CONDUIT SIZE, CONDUIT MATERIAL, ARRANGEMENT OF THE UNDERGROUND CONDUITS, AND CIRCUITS ROUTED IN EACH UNDERGROUND CONDUIT.
6. CLOUDED MARKINGS INDICATE WORK IN EXISTING AREAS THAT IS NEW OR NEW WORK ON AN EXISTING PIECE OF EQUIPMENT.

BROWNS HILL ENGINEERING
LITTLETON, CO 80127
(720) 344-7771

LINE IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH, ADJUST ACCORDINGLY

REVISIONS	NO.	DESCRIPTION	DATE

BROWNS HILL ENGINEERING	22-344 E01
DRAWN BY:	MAN
DESIGNED BY:	TFW
CHECKED BY:	TFW
DATE:	MARCH 28, 2022
SCALE:	XXX

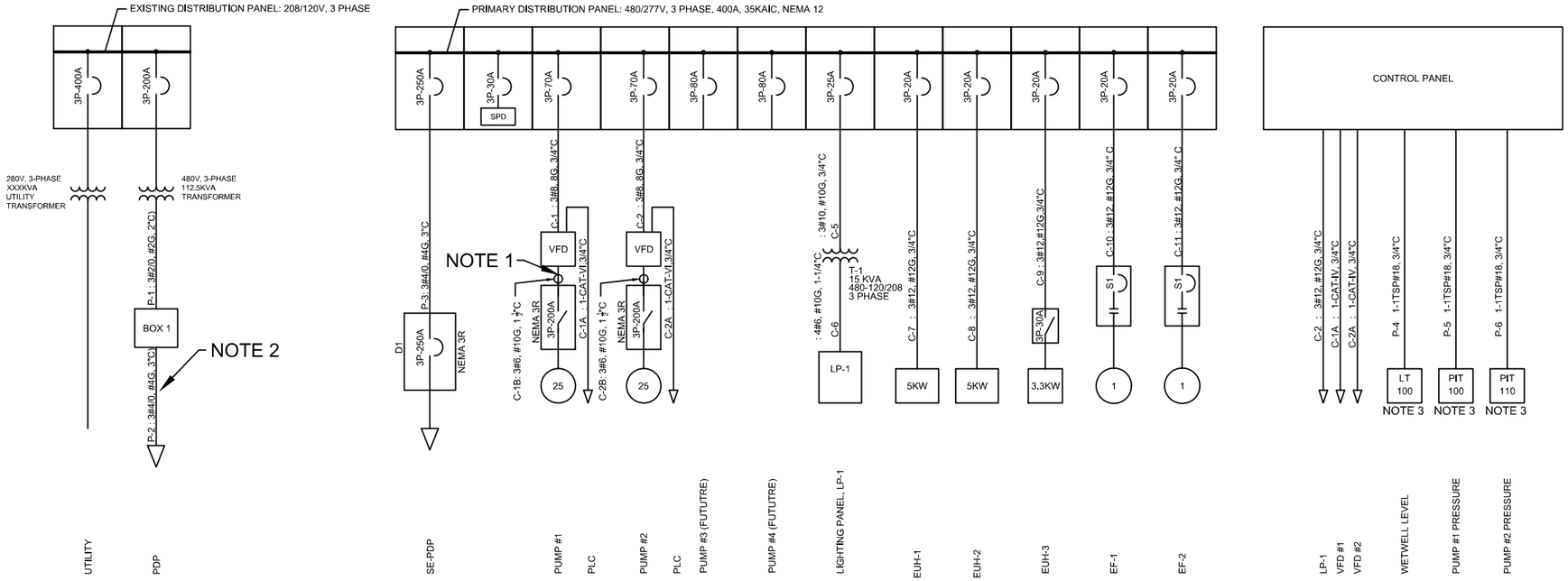
BENNETT WWTP
PUMP STATION

60%
DRAWINGS

DRAWING
LEGEND

E1

SHEET 24 OF 28



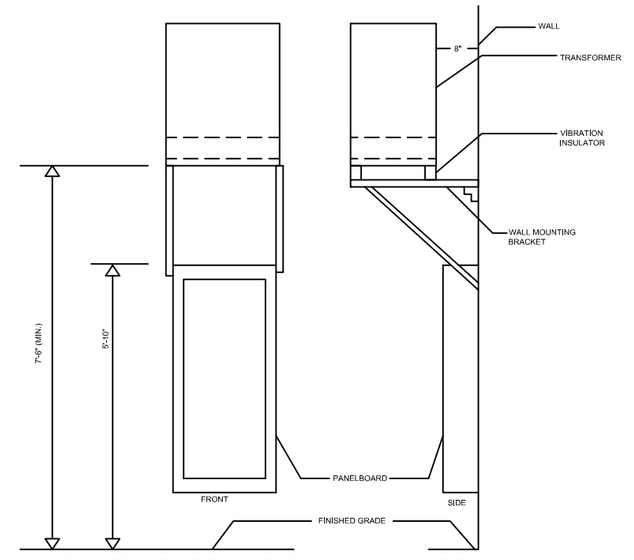
SERVICE ENTRANCE & EXISTING DISTRIBUTION PANEL ONE-LINE DIAGRAM
(ONLY CIRCUITS EFFECTED BY THIS CONTRACT ARE SHOWN)

PRIMARY DISTRIBUTION PANEL ONE-LINE DIAGRAM

BENNETT PUMP STATION CONTROL PANEL ONE-LINE DIAGRAM

NAME:	LP1		BUS:	COPPER			MAINS:	3P-50A		
SERVICE:	120/208 VAC		RATING:	100A			LOCATION:	WWTP PUMP STATION		
MOUNTING:	SURFACE, NEMA 12		AIC RATING:	10,000A						
V.A.					CIRCUIT NUMBER				V.A.		
A	B	C	LOAD	PHASE	BREAKER			BREAKER	PHASE	LOAD	A	B	C
90			LIGHTS	1	20	1	2	20	1	CONTROL PANEL	500		
	720		RECEPTS - NORTH	1	20	3	4	20	1	VAF FILTER		50	
		900	RECEPTS - SOUTH	1	20	5	6	20	1				0
0				1	20	7	8	20	1		0		
	0			1	20	9	10	20	1			0	
		0		1	20	11	12	20	1				0
0				1	20	13	14	20	1		0		
	0			1	20	15	16	20	1			0	
		0		1	20	17	18	20	1				0
0				1	20	19	20	20	1		0		
	0			1	20	21	22	20	1			0	
		0		1	20	23	24	20	1				0
0				1	20	25	26	20	1		0		
	0			1	20	27	28	20	1			0	
		0		1	20	29	30	20	1				0
90	720	900	TOTALS PER PHASE PER SIDE								500	50	0
590	770	900	TOTALS PER PHASE										
	2260		PANEL TOTAL										

NOTES:
1) SINEWAVE FILTER TO BE ADDED RIGHT AFTER THE VFD FOR BOTH PUMP # 1 & 2. THIS IS DUE TO THE EXTENDED DISTANCE BETWEEN THE DRIVE AND PUMP.
2) THE CIRCUIT FROM THE EXISTING DISTRIBUTION PANEL TO BOX 1 SHALL REMAIN AS IT IS. NEW WIRE AND CONDUIT SHALL BE ROUTED FROM BOX 1 TO THE BUILDING DISCONNECT (D1).
3) THIS IS AN EXISTING INSTRUMENT. ROUTE THE CIRCUIT TO THE NEW PUMP STATION BUILDING.



PANELBOARD AND TRANSFORMER MOUNTING DETAIL

BROWNS HILL
ENGINEERING
LITTLETON, CO 80127
(720) 344-7771

LINE IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH, ADJUST ACCORDINGLY

REVISIONS

NO.	DESCRIPTION	DATE

BROWNS HILL ENGINEERING 22-344 E01

DRAWN BY:	MAN
DESIGNED BY:	TFW
CHECKED BY:	TFW
DATE:	MARCH 28, 2022
SCALE:	XXX

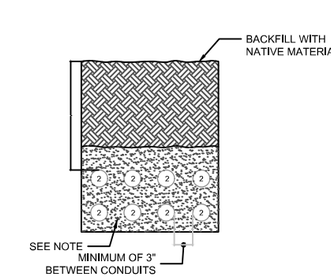
BENNETT WWTP PUMP STATION

60% DRAWINGS

ONE LINE DRAWINGS

E2

SHEET 25 OF 28

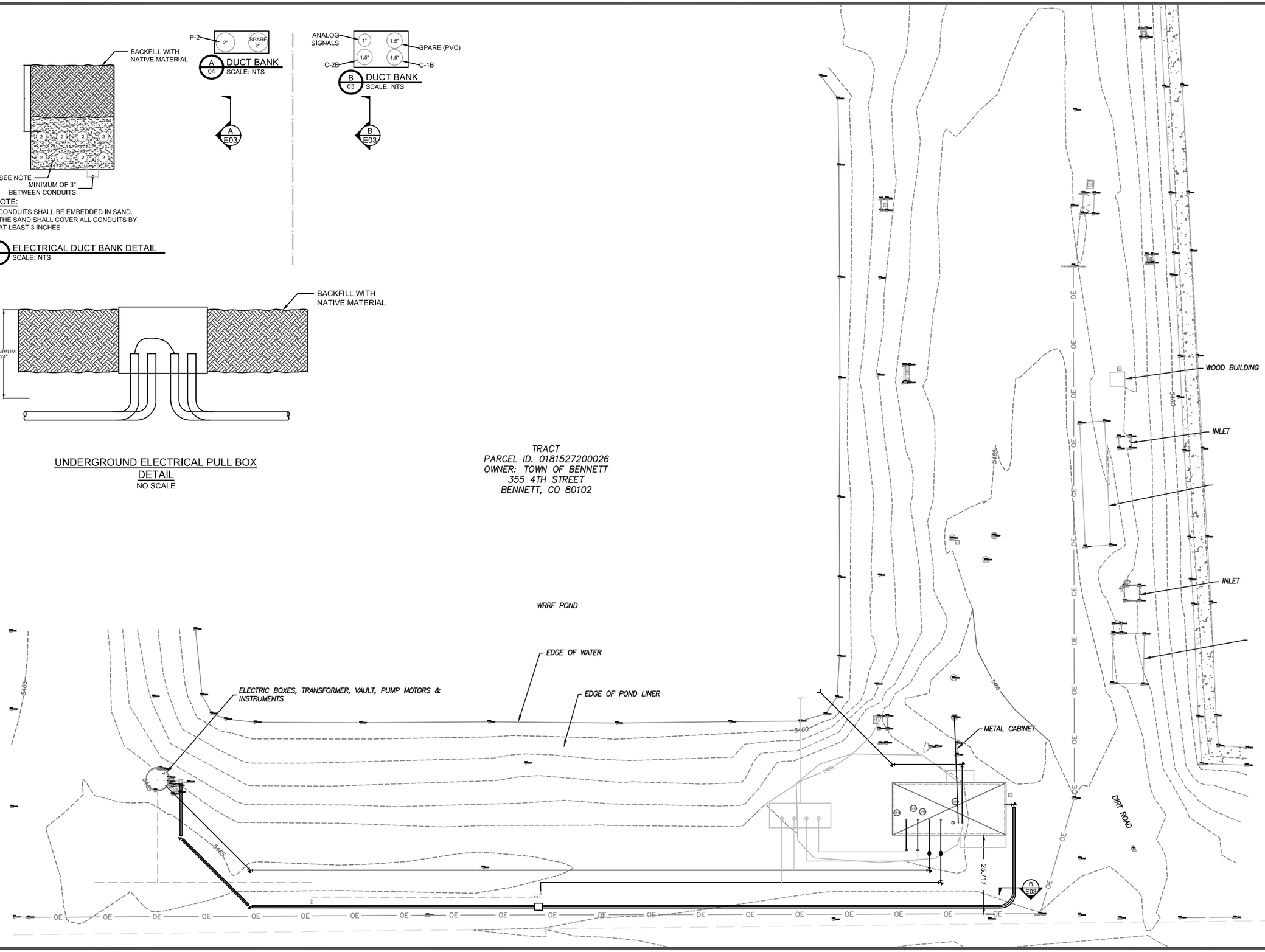


NOTE:
CONDUITS SHALL BE EMBEDDED IN SAND.
THE SAND SHALL COVER ALL CONDUITS BY
AT LEAST 3 INCHES

2 - ELECTRICAL DUCT BANK DETAIL
SCALE: NTS

UNDERGROUND ELECTRICAL PULL BOX
DETAIL
NO SCALE

TRACT
PARCEL ID. 0181527200026
OWNER: TOWN OF BENNETT
355 4TH STREET
BENNETT, CO 80102



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DRAWINGS

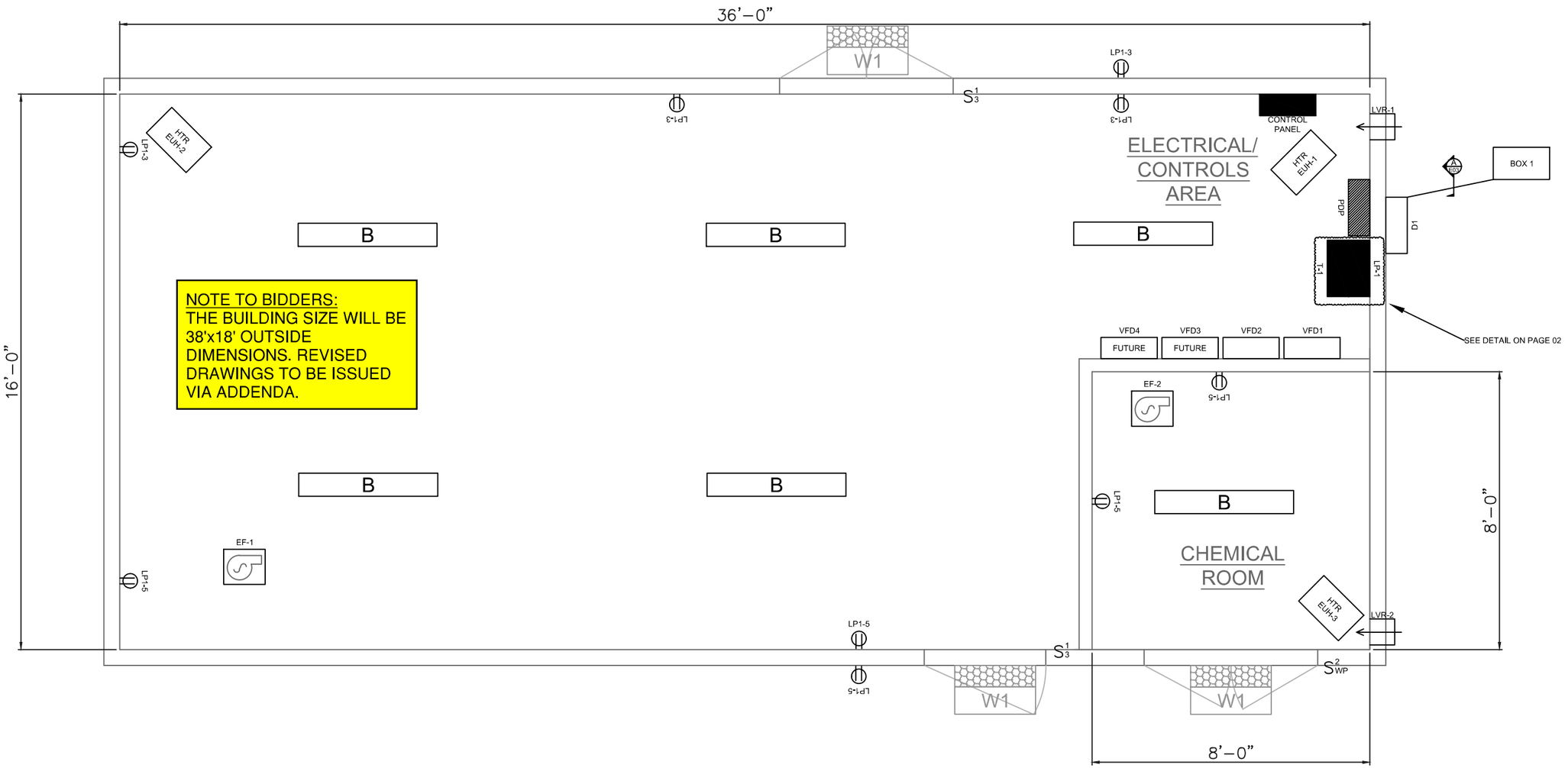
ELECTRICAL SITE PLAN

E3

SHEET 26 OF 28

LIGHTING FIXTURE SCHEDULE				
SYMBOL	LAMP	MTG HEIGHT	DESCRIPTION	MANUFACTURER
B	LED, 120V	MOUNT AT 10' AFF	4 FOOT FIXTURE-HEAVY DUTY AND MOUNTING HARDWARE SUITABLE FOR WET OR DUSTY LOCATIONS	DIALIGHT: LPM 3C4M2P
W1	LED, 120V	1 FT ABOVE DOOR	DIE CAST ALUMINUM FOR RUGGED MOUNTING AND HEAT DISSIPATION, SPECULAR REFLECTOR, VERTICAL LAMP AND REFRACTOR WITH PHOTOELECTRIC CONTROL	HUBBELL: LNC2-12LU-4K-4-BBU

NOTE TO BIDDERS:
APPROVED EQUALS WILL BE ACCEPTED FOR ELECTRICAL EQUIPMENT.



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BUILDING PLAN VIEW

E4