

GENERAL NOTES

- NO CONSTRUCTION SHALL BE STARTED WITHOUT A NOTICE TO PROCEED (NTP) BY THE CITY ENGINEERING DEPARTMENT. THE CITY ENGINEERING DEPARTMENT AND THE ENGINEER OF RECORD (EOR) SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY CONSTRUCTION WORK DONE PRIOR TO NOTICE TO PROCEED BEING ISSUED OR WITHOUT INSPECTION WILL BE REJECTED.
- CONTRACTOR SHALL VERIFY ALL CONDITIONS ON THE JOB SITE INCLUDING BUT NOT LIMITED TO, ALL DIMENSIONS, GRADES, ELEVATIONS, EXTENT AND COMPATIBILITY TO THE EXISTING SITE CONDITIONS, AND WITH THE WORK DESCRIBED ON THE ENGINEER'S DRAWINGS. ANY DISCREPANCIES OR UNEXPECTED CONDITIONS THAT AFFECT OR CHANGE THE WORK DESCRIBED IN THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY. CONTRACTOR SHALL NOT PROCEED WITH ANY OF THE WORK IN THE AREA OF DISCREPANCIES UNTIL ALL SUCH DISCREPANCIES ARE RESOLVED. IF THE CONTRACTOR CHOOSES TO PERFORM WORK, THEN IT IS UNDERSTOOD THAT THE CONTRACTOR IS CHOOSING TO PROCEED AT THE CONTRACTOR'S OWN RISK AND SHALL INCU ALL COSTS, IF ANY, TO RESOLVE THE ISSUES TO THE SATISFACTION OF THE ENGINEER.
- A CITY INSPECTOR ACTING ON BEHALF OF THE CITY MAY REQUIRE REVISIONS TO THE PLANS TO SOLVE UNFORESEEN PROBLEMS THAT MAY ARISE IN THE FIELD.
- CHANGES TO THE APPROVED PLANS REQUIRE PLAN SHEET MODIFICATION TO BE SUBMITTED TO THE CITY FOR APPROVAL PRIOR TO CONSTRUCTION. ANY WORK PERFORMED DIFFERENT FROM THE APPROVED PLANS OR WORK PERFORMED WITHOUT INSPECTION WILL BE REQUIRED BY THE CITY TO BE REMOVED AND RECONSTRUCTED TO CONFORM.
- ALL CONSTRUCTION WORK AND INSTALLATIONS SHALL CONFORM TO THE CITY STANDARDS AND SPECIFICATIONS, AND ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE CITY.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT "UNDERGROUND LOCATE SERVICE" AT 1-800-332-2344 AT LEAST 48 BUSINESS-DAY HOURS PRIOR TO THE START OF CONSTRUCTION FOR THE LOCATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO POWER, WATER, SEWER, STORMWATER, GAS, CABLE TV AND TELEPHONE UNDERGROUND FACILITIES. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR CONTACTING THE APPROPRIATE PUBLIC AGENCY FOR THE LOCATION OF UNDERGROUND FACILITIES.
- ALL UTILITIES SHOWN ARE ACCURATE TO THE EXTENT OF AVAILABLE RECORDS AND KNOWLEDGE. THE CONTRACTOR HAS THE TOTAL RESPONSIBILITY TO VERIFY THE LOCATION OF EXISTING UNDERGROUND UTILITIES AND TO NOTIFY THE UTILITY COMPANIES WHEN WORKING IN THEIR PROXIMITY. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. OREGON LAW REQUIRES THE CONTRACTOR TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-010 THROUGH 952-001-0090. THE CONTRACTOR MAY OBTAIN COPIES OF THE RULES BY CALLING THE OREGON UTILITY NOTIFICATION CENTER AT (503)232-2987.
- ALL GRADING SHALL BE IN CONFORMANCE WITH THE CURRENT CITY STANDARDS AND SPECIFICATIONS AND CURRENT GRADING ORDINANCE. ALL SUBGRADE MATERIAL SHALL BE CONSIDERED CLASS A AND COMPACTED TO 95% OF OPTIMUM DENSITY AS REQUIRED BY THE CITY'S STANDARDS AND SPECIFICATIONS.
- ALL FINAL CUT AND FILL SLOPES SHALL NOT EXCEED A GRADE OF 2 HORIZONTAL TO 1 VERTICAL UNLESS OTHERWISE APPROVED BY THE CITY. LESSER CUT AND FILL SLOPES ARE REQUIRED ON HIGHER CLASSIFICATION STREETS UNLESS OTHERWISE APPROVED ON THE PLANS.
- ALL UNSUITABLE SOILS MATERIALS, RUBBISH AND DEBRIS RESULTING FROM GRADING OPERATIONS SHALL BE REMOVED FROM THE JOB SITE AND DISPOSED OF PROPERLY.
- THE CONTRACTOR SHALL EMPLOY ALL LABOR, EQUIPMENT, AND METHODS REQUIRED TO PREVENT DUST AND EROSION IN AMOUNTS DAMAGING TO PROPERTY, CULTIVATED VEGETATION AND DOMESTIC ANIMALS OR CAUSING A NUISANCE TO PERSONS OCCUPYING BUILDINGS IN THE VICINITY OF THE JOB SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED BY DUST AND EROSION RESULTING FROM CONSTRUCTION.
- THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE INDUSTRIAL SAFETY REGULATIONS. THE CITY AND DESCHUTES COUNTY AND THEIR OFFICIALS, THE EOR, AND THE OWNER ARE NOT BE RESPONSIBLE FOR ENFORCING SAFETY REGULATIONS.
- MATERIAL QUANTITIES USED, NOTED, OR PROVIDED IN A SEPARATE ITEMIZED QUANTITY TAKE-OFF ARE AN EOR'S OPINION OF PROBABLE MATERIAL REQUIREMENTS, AND IS AN ESTIMATE ONLY. CONTRACTORS HAVE THE SOLE RESPONSIBILITY OF MAKING THEIR OWN QUANTITY TAKE-OFF AND COST ESTIMATE.
- ALL WORK IN THE PUBLIC RIGHT OF WAY SHALL BE PERFORMED BY A CITY APPROVED QUALIFIED CONTRACTOR (INCLUDING SUBCONTRACTORS).
- RIGHT-OF-WAY PERMITS ARE REQUIRED AND ARE INCLUSIVE OF ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY OR PUBLIC EASEMENTS (PUBLIC UTILITY EASEMENTS, PUBLIC ACCESS EASEMENTS, PUBLIC SEWER/WATER/STORMWATER EASEMENTS, ETC.) NO WORK WILL BE PERMITTED ON PRIVATE PROPERTY, OUTSIDE RECORDED PUBLIC EASEMENTS OR WHERE REQUIRED BY LAND USE, UNDER THIS APPROVED RIGHT-OF-WAY PERMIT.
- CITY ENGINEER'S SIGNATURE DOES NOT CONSTITUTE APPROVAL OF FACILITIES PROPOSED ON PRIVATE PROPERTY. SEPARATE PERMITS ISSUED BY THE BUILDING DEPARTMENT ARE REQUIRED AND SHALL BE OBTAINED BY THE DEVELOPER FOR FACILITIES LOCATED OUTSIDE OF THE PUBLIC RIGHT-OF-WAY.

UTILITY NOTES

- ANY WORK WITHIN EXISTING OR FUTURE PUBLIC RIGHT-OF-WAY OR PUBLIC EASEMENTS, INCLUDING PUBLIC UTILITY EASEMENTS, CAN BE PERFORMED UNDER THIS PERMIT OR A SEPARATE RIGHT-OF-WAY PERMIT ISSUED BY THE CITY OF BEND.
- ALL WATER MAIN CONNECTIONS TO BE DESIGNED AND CONSTRUCTED WITH CROSS CONNECTION PROTECTION.
- CONTRACTOR SHALL OBTAIN HYDRANT METER PERMIT FOR USE OF TESTING WATER MAIN THROUGH THE CITY'S PERMITTING SOFTWARE.
- ALL RESTORATION TO BE COMPLETED AS SOON AS POSSIBLE UPON COMPLETION AND APPROVAL FROM THE INSPECTOR FOR ON-SITE WORK AND UNDERGROUND WORK. ALL RESTORATION SHALL COMPLY WITH CITY OF BEND STANDARDS AND SPECIFICATIONS.
- THESE PLANS WILL EXPIRE ONE YEAR FROM THE "CITY OF BEND ENGINEER" SIGNATURE DATE ON THE COVER UNLESS AN EXTENSION IS OTHERWISE APPROVED IN WRITING FROM THE CITY ENGINEER.
- PRIVATE INSPECTIONS WILL BE REQUIRED PER PART V OF THE CITY OF BEND STANDARDS AND SPECIFICATIONS, UNLESS SPECIFIED OTHERWISE.
- ALL PROJECTS MUST ABDIE BY THE PROJECT SCHEDULE REVIEWED AND APPROVED BY THE CITY PRIOR TO COMMENCING WORK.
- ALL WORK MUST BE CONDUCTED IN CONFORMANCE WITH THE PROJECT'S CONTRACT DOCUMENTS AND PRE-CONSTRUCTION MEETING MINUTES (FOR PRIVATE DEVELOPMENT, THE PUBLIC FACILITIES IMPROVEMENT AGREEMENT - PFI).
- WORK HOURS ON PERMITS OUTSIDE OF THE ROADWAY SHALL BE LIMITED TO 7:00 AM TO 6:30 PM AND SHALL COMPLY WITH THE NOISE LIMITATIONS PER CITY OF BEND MUNICIPAL CODE 5.50. WORK OUTSIDE OF THESE HOURS SHALL REQUIRE A NOISE AND NIGHT WORK PERMIT SUBJECT TO THE REVIEW AND APPROVAL OF THE ASSISTANT CITY ENGINEER. INSPECTION TIMES WILL BE LIMITED TO 7:30 AM TO 2:30 PM UNLESS OTHERWISE APPROVED BY THE (ASSISTANT) CITY ENGINEER. WORK HOURS ON OPEN ROADS WILL BE DETAILED IN THE TRAFFIC CONTROL NOTES SECTION OF THIS DOCUMENT.
- ANY DAMAGE TO PRIVATE PROPERTY MUST BE REPAIRED TO PRE-CONSTRUCTION CONDITIONS OR BETTER.

STREET NOTES

- IF ANY WORK (NEW CONSTRUCTION OR RECONSTRUCTION) IMPACTS A CURB WHERE THERE IS A PEDESTRIAN WALKWAY (E.G. A SIDEWALK OR TRAIL/PATH) INTERSECTING A ROADWAY THEN A NEW RAMP OR REPLACEMENT OF AN EXISTING NON-COMPLIANT CURB RAMP MUST BE CONSTRUCTED.
- IF ANY NEW WORK INCLUDES RESURFACING THROUGH A STREET LEVEL PEDESTRIAN WALKWAY (E.G. MARKED OR UNMARKED CROSSWALK), EVEN IF THE WORK IS NOT THE FULL WIDTH OF THE ROADWAY, CURB RAMPS MUST BE BUILT OR RECONSTRUCTED ON BOTH ENDS OF THE CROSSWALK.
- IF ANY NEW SIDEWALK WORK CONNECTING TO AN EXISTING NON-COMPLIANT RAMP THAT REQUIRES ANY MODIFICATION TO ANY PORTION OF THE RAMP TO MEET CURRENT SIDEWALK DESIGN STANDARDS, THEN THE ENTIRE RAMP SHALL BE RECONSTRUCTED TO CURRENT STANDARDS.
- IF ANY UTILITY TRENCH WORK IMPACTS A CURB AT A CROSS WALK, WITH OR WITHOUT A RAMP, A CURB RAMP MUST BE CONSTRUCTED TO CITY OF BEND STANDARDS WHERE A NON-COMPLIANT CURB RAMP EXISTS, IT MUST BE REPLACED.
- IF UTILITY TRENCH WORK DOES NOT IMPACT A CURB RAMP BUT IS LIMITED TO A PORTION OF THE PAVEMENT, INCLUDING A PORTION OF THE CROSS WALK, REPLACEMENT OF AN EXISTING NON-COMPLIANT CURB RAMP MAY NOT BE REQUIRED (DEPENDENT ON OVERALL PROJECT SCOPE AND REQUIRED PAVEMENT RESTORATION LIMITS).
- ANY WORK WITHIN THE PUBLIC RIGHT-OF-WAY THAT DISTURBS A PEDESTRIAN SIDEWALK, PATH, OR TRAIL REQUIRES THE REPLACEMENT OF THAT FACILITY TO CURRENT CITY AND PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) STANDARDS. THIS INCLUDES BUT IS NOT LIMITED TO ALL ADA RAMPS, CONCRETE SIDEWALKS/PATHS, ASPHALT TRAILS, DRIVEPADS, CROSSWALKS, AND SIGNAGE.
- IF ANY ADA RAMPS ARE IDENTIFIED TO BE CONSTRUCTED, THE CONTRACTOR SHALL CONSTRUCT PERPENDICULAR RAMPS PER CITY STANDARDS. DIAGONAL OR PARALLEL RAMPS SHALL ONLY BE USED IF THERE ARE UNIQUE SITE CONSTRAINTS THAT PROHIBIT CONSTRUCTION OF PERPENDICULAR RAMPS. ALL VARIATIONS FROM PERPENDICULAR RAMPS ARE AT THE DISCRETION OF THE CITY ENGINEER.
- THE CITY PREFERENCES THAT VACUUM EXCAVATION AND ASPHALT CORE SAW BE USED TO POTHOLE UTILITIES. ALTERNATE METHODS MAY BE ALLOWED, BUT REQUIRE APPROVAL AS A CONDITION OF THE PERMIT.
- ASPHALT RESTORATION LIMITS WILL BE DETERMINED WITH PERMIT PLAN APPROVAL. ALTERATIONS TO THE RESTORATION LIMITS MAY BE NECESSARY DURING CONSTRUCTION.

CONSTRUCTION, INSPECTION, AND NOTIFICATION NOTES

- PERMITTEE SHALL REQUEST INSPECTIONS A MINIMUM OF 24 BUSINESS-DAY HOURS IN ADVANCE.
- THE PERMITTEE SHALL REQUEST FINAL INSPECTION NO LATER THAN 48 HOURS AFTER THE WORK IS COMPLETE.
- THE CITY CAN INSPECT ANY PORTION OF THE PROJECT AT ANY TIME. THE INSPECTION SHALL BE PERFORMED BY CITY INSPECTORS AND MAY REQUIRE INSPECTION BY THE ENGINEER OF RECORD OR THIRD PARTY INSPECTORS PART V OF THE CITY STANDARDS. PRIOR TO CONSTRUCTION, A PRE-CONSTRUCTION MEETING WILL BE REQUIRED WHEN CITY ASSETS ARE BEING CONSTRUCTED. THE PERMITTEE / CONTRACTOR IS REQUIRED TO REQUEST ALL INSPECTIONS PER THE REQUIREMENTS OF THE PERMIT.
- INSPECTIONS ARE REQUIRED FOR CITY UTILITY CROSSINGS AND FINAL STREET RESTORATION.
- OUTSTANDING AND INCOMPLETE PERMITS MAY CONSTITUTE RESTRICTED PERMITTING TO THE APPLICANT AND CONTRACTOR(S).
- THE PERMITTEE AND CONTRACTOR ARE RESPONSIBLE FOR ANY DAMAGE TO PUBLIC AND PRIVATE PROPERTY. ALL DAMAGE INFILCTED BY THE CONTRACTOR (OR SUB-CONTRACTORS) DURING THE PROJECT'S CONSTRUCTION ACTIVITIES SHALL BE REPAIRED TO PRE-CONSTRUCTION CONDITIONS AND TO THE SATISFACTION OF THE PROPERTY OWNER.

GRADING AND ESC NOTES

- PRIOR TO ANY GRADING/CLEARING OF A PROJECT SITE, BMPS MUST BE INSTALLED, INSPECTED, AND APPROVED BY THE CITY OF BEND.
- PRIOR TO ANY GRADING/CLEARING OF THE PROJECT SITE, TREE PROTECTION FENCING MUST BE INSTALLED TO CITY OF BEND STANDARDS, INSPECTED AND APPROVED BY THE CITY OF BEND. ALL TREE PROTECTION FENCING MUST BE MAINTAINED AS APPROVED DURING THE PROGRESSION OF THE PROJECT.
- THE ENGINEER OF RECORD (EOR) CAN PROVIDE ADDITIONAL BEST MANAGEMENT PRACTICES (BMPS) FROM SECTION 9.4.3 IN THE CENTRAL OREGON STORMWATER MANUAL (COSM) THAT APPLY TO THE PROJECT.
- HOLD A PRE-CONSTRUCTION MEETING THAT INCLUDES THE CITY OF BEND INSPECTOR, EOR AND CONTRACTOR TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS. WHERE TREE PROTECTION IS REQUIRED BY LAND USE AND/OR BEND MUNICIPAL CODE, A CITY PLANNER MUST BE NOTIFIED OF THE TREE PROTECTION FENCING INSTALLATION FOR INSPECTION.
- ESC PLAN(S) MUST BE KEPT ON SITE AT ALL TIMES WHEN WORK IS OCCURRING.
- THE ESC MEASURES SHOWN ON THIS PLAN ARE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THE MEASURES MUST BE UPGRADED AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL EROSION AND SEDIMENT CONTROL REGULATIONS.
- THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE FOLLOWED IN ORDER TO BEST MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENTATION CONTROL PROBLEMS:
 - FENCE OR FLAG AREAS TO BE PROTECTED OR LEFT UNDISTURBED DURING CONSTRUCTION. INSTALL TREE PROTECTION FENCING.
 - INSTALL GRAVELED OR PAVED CONSTRUCTION ENTRANCES, EXITS, AND PARKING AREAS TO REDUCE THE TRACKING OF SEDIMENT ONTO PUBLIC AND PRIVATE ROADS.
 - CLEAR AND GRUB SUFFICIENTLY FOR INSTALLATION OF TEMPORARY ESC BMPS.
 - INSTALL TEMPORARY ESC BMPS, CONSTRUCTING SEDIMENT TRAPPING BMPS AS ONE OF THE FIRST STEPS PRIOR TO GRADING.
 - CLEAR, GRUB AND GRADE INDIVIDUAL LOTS AND ROUGH GRADE FOR ROADS AND UTILITY LOCATIONS.
 - CLEAR, GRUB AND GRADE INDIVIDUAL LOTS OR GROUPS OF LOTS.
 - TEMPORARILY STABILIZE A LOT OR GROUPS OF LOTS, THROUGH RE-VEGETATION OR OTHER APPROPRIATE BMPS, WHERE SUBSTANTIAL CUT OR FILL SLOPES ARE THE RESULT OF SITE GRADING.
 - CONSTRUCT ROADS, BUILDINGS, PERMANENT STORMWATER FACILITIES (I.E. INLETS, PONDS, UIC FACILITIES, ETC.).
 - PROTECT ALL PERMANENT STORMWATER FACILITIES UTILIZING THE APPROPRIATE BMPS.
 - REMOVE TEMPORARY ESC CONTROLS WHEN PERMANENT STORMWATER FACILITIES HAVE BEEN INSTALLED, ALL LAND-DISTURBING ACTIVITIES HAVE CEASED, AND VEGETATION HAS BEEN ESTABLISHED IN THE AREAS NOTED ON THE ACCEPTED ESC PLAN(S).
 - RETAIN THE DUFF LAYER, NATIVE TOPSOIL, AND NATURAL VEGETATION IN AN UNDISTURBED STATE TO THE MAXIMUM EXTENT AND DURATION PRACTICAL.
 - INSPECT ALL ROADWAYS ADJACENT TO THE CONSTRUCTION ACCESS ROUTE AT THE END OF EACH DAY. SIGNIFICANT AMOUNTS OF SEDIMENT THAT LEAVES THE CONSTRUCTION SITE MUST BE CLEANED UP WITHIN 24 HOURS. VACUUMING OR DRY SWEEPING MUST BE USED TO CLEAN UP RELEASED SEDIMENT AND SEDIMENT MUST NOT BE INTENTIONALLY WASHED INTO STORM SEWERS, DRAINAGE WAYS, OR WATER BODIES.
 - COVER AND SECURE ALL DUMP TRUCK LOADS LEAVING THE CONSTRUCTION SITE TO MINIMIZE SPILLAGE ON ROADS.
 - RESTORE CONSTRUCTION ACCESS ROUTE EQUAL TO OR BETTER THAN THE PRE-CONSTRUCTION CONDITION.
 - STABILIZE EXPOSED UNWORKED SOILS (INCLUDING STOCKPILES), WHETHER AT FINAL GRADE OR NOT, WITHIN 10 CALENDAR DAYS DURING THE REGIONAL DRY SEASON (JULY 1 THROUGH SEPTEMBER 30) AND WITHIN 5 CALENDAR DAYS DURING THE REGIONAL WET SEASON (OCTOBER 1 THROUGH JUNE 30).
 - PROTECT INLETS, DRYWELLS, CATCH BASINS AND OTHER STORMWATER MANAGEMENT FACILITIES FROM SEDIMENT, WHETHER OR NOT FACILITIES ARE OPERABLE.
 - KEEP ROADS ADJACENT TO INLETS CLEAN BY DRY SWEEPING. WASHING THE ROADWAYS WILL NOT BE PERMITTED.
 - INSPECT INLETS WEEKLY AT A MINIMUM AND DAILY DURING AND AFTER STORM EVENTS. CLEAN OR REMOVE AND REPLACE INLET PROTECTION DEVICES BEFORE SIX INCHES OF SEDIMENT CAN ACCUMULATE.
 - INSTALL SEDIMENT CONTROLS ALONG THE SITE PERIMETER ON ALL DOWN GRADIENT SIDES OF THE CONSTRUCTION SITE BEFORE COMMENCING EARTH DISTURBING ACTIVITIES.
- WHENEVER POSSIBLE, CONSTRUCT STORMWATER CONTROL FACILITIES (DETENTION/RETENTION STORAGE POND OR SWALES) BEFORE GRADING BEGINS. THESE FACILITIES SHOULD BE OPERATIONAL BEFORE THE CONSTRUCTION OF IMPERVIOUS SITE IMPROVEMENTS.
- STOCKPILE MATERIALS (SUCH AS TOPSOIL) ON SITE MUST BE KEPT OFF OF ROADWAY AND SIDEWALKS/PATHS/TRAILS.
- COVER, CONTAIN AND PROTECT ALL CHEMICALS, LIQUID PRODUCTS, PETROLEUM PRODUCT, AND NON-INERT WASTES PRESENT ON SITE FROM VANDALISM. MAINTAIN A SUPPLY OF MATERIALS ON HAND TO ADDRESS AND CONTAIN SPILLS.
- LOCATE DESIGNATED VEHICLE AND EQUIPMENT SERVICE AREAS, FUEL, AND MATERIALS AWAY FROM DRAINAGE INLETS, WATER COURSES, AND CANALS. PROPERLY CONTAIN AREAS USING BERMS, SAND BAGS, OR OTHER BARRIERS.
- REGULARLY INSPECT AND MAINTAIN EQUIPMENT, ESPECIALLY FOR DAMAGED HOSES AND LEAKY GASKETS. CONDUCT MAINTENANCE AND REPAIR OF HEAVY EQUIPMENT AND VEHICLES (I.E. OIL CHANGES, FUEL TANK DRAIN DOWN, ETC) THAT MAY RESULT IN DISCHARGE OR SPILLAGE OF POLLUTANTS USING SPILL PREVENTION MEASURES, SUCH AS DRIP PANS. CLEAN ALL CONTAMINATED SURFACES IMMEDIATELY FOLLOWING ANY DISCHARGE OR SPILL INCIDENT. PERFORM REPAIRS ON SITE USING TEMPORARY PLASTIC OR OIL ABSORBING BLANKETS BENEATH THE VEHICLE.
- DESIGNATE AN AREA FOR CLEANING PAINTING EQUIPMENT AND TOOLS. NEVER CLEAN BRUSHES OR RINSE CONTAINERS INTO THE STREET, GUTTER, DRAINAGE INLET, OR WATERWAY.
- APPLY LANDSCAPING OR AGRICULTURAL CHEMICALS, INCLUDING FERTILIZERS AND PESTICIDES, IN SUCH A MANNER, AND AT APPLICATIONS RATES, THAT PREVENTS THE RUNOFF OF CHEMICALS INTO STORMWATER FACILITIES.
- INSPECT ON A REGULAR BASIS (AT A MINIMUM WEEKLY, AND DAILY DURING/AFTER A RUNOFF PRODUCING STORM EVENT) AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL BMPS TO ENSURE SUCCESSFUL PERFORMANCE OF THE BMPS.
- REMOVE TEMPORARY ESC BMPS WITHIN 30 DAYS AFTER THE TEMPORARY BMPS ARE NO LONGER NEEDED. PERMANENTLY STABILIZE AREAS THAT ARE DISTURBED DURING THE REMOVAL PROCESS.
- KEEP SEDIMENT ON THE PROJECT SITE, TO THE MAXIMUM EXTENT PRACTICAL.
- CONTROL FUGITIVE DUST FROM CONSTRUCTION ACTIVITY. DUST CONTROL MUST BE CONTINUOUS, PARTICULARLY DURING THE DRY SEASON.
- DESIGNATE THE LOCATION OF A SLURRY PIT WHERE CONCRETE TRUCKS AND EQUIPMENT CAN BE WASHED OUT. SLURRY PITS ARE NOT TO BE LOCATED IN, OR UPSTREAM OF, A SWALE, DRAINAGE AREA, STORMWATER FACILITY, WATER BODY, OR IN AN AREA WHERE A STORMWATER FACILITY EXISTS OR IS PROPOSED.
- THIS PERMIT ALLOWS FOR GRADING IN CONFORMANCE WITH COSM, BEND MUNICIPAL CODE TITLE 16 AND CITY OF BEND STANDARDS. BLASTING WILL NOT BE PERMITTED UNLESS COMPLIANT WITH BEND MUNICIPAL CODE 16.10.090, CITY STANDARDS, AND ORES 480.010 THROUGH 480.290. BLASTING PLANS, PRE-BLAST SURVEY AND A DRAFT BLASTING NOTICE (OSS 00335) MUST BE PROVIDED TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO BLASTING. ROCK CRUSHING MUST BE ISSUED UNDER A SEPARATE PERMIT AND IS NOT PERMITTED UNDER THIS PERMIT.

[ENGINEERS STAMP]

[PROJECT NAME]

CITY PROJECT # XXXXX

GENERAL NOTES

DESHUTES COUNTY, OREGON

[COMPANY NAME]

[COMPANY ADDRESS]

NOTICE TO EXCAVATORS:
ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.
(NOTE: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503)232-2987).

DESIGNED BY: XX
DRAWN BY: XX
SCALE: XXXX
FILE: XXXXX
DATE: XX/XX/20XX

VERIFY SCALES
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ON ORIGINAL DRAWING

SHEET:

G1.1

COB # XXXX

Dig Safely.
Call the Oregon One-Call Center
1-800-332-2344

POSSIBLE UNDERGROUND FACILITY OWNERS

1

	1	2	3	4	5	6	
A	[PLAN VIEW (AREA CAN BE RESIZED TO FIT PROJECT)]					A	
B						B	
C						C	
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Plotted: 5/20/25 at 10:11am By: delmore

1 2 3 4 5 6

[ENGINEERS STAMP]

[PROJECT NAME]
CITY PROJECT # XXXXX

[SHEET TITLE]
DESCHUTES COUNTY, OREGON

[COMPANY ADDRESS]
CITY OF BEND

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A

[PLAN VIEW (AREA CAN BE RESIZED TO FIT PROJECT)]

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[PROFILE VIEW (AREA CAN BE RESIZED TO FIT PROJECT)]

[PROFILE SCALE]

[ENGINEERS
STAMP]

[PROJECT NAME]

CITY PROJECT # XXXXX

[SHEET TITLE]

DESCHUTES COUNTY, OREGON



[COMPANY NAME]

REVISIONS:
XX XXXX/20XX
REV/ITLE

[COMPANY ADDRESS]

DESIGNED BY: XX
DRAWN BY: XX
SCALE: PER PLANS
FILE: XXXX
DATE:
XX/XX/20XXVERIFY SCALES
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ON ORIGINAL DRAWING

SHEET:

CX.X

COB # XXXX

[NORTH ARROW]
[PLAN SCALE]

A

B

C

D

[GENERAL DETAIL BORDERS SHOWN FOR
REFERENCE SCALING ONLY]

DRAWN BY	REV. DATE	CITY OF BEND STANDARD DRAWING 710 NW WALL ST., BEND, OREGON 97701	SCALE: NTS DATE: XXXXXXXX APPR
OFF	REV. DATE		STD DWG: [DETAIL #]
		[DETAIL NAME]	STD DWG: [DETAIL #]

[INSERT CITY OF BEND DETAILS AS
A TIFF FILE WITH A WIDTH OF 6.5]

DRAWN BY	REV. DATE	CITY OF BEND STANDARD DRAWING 710 NW WALL ST., BEND, OREGON 97701	SCALE: NTS DATE: XXXXXXXX APPR
OFF	REV. DATE		STD DWG: [DETAIL #]
		[DETAIL NAME]	STD DWG: [DETAIL #]

[ENGINEERS
STAMP]

[PROJECT NAME]

CITY PROJECT # XXXXX

CITY STANDARD DETAILS

DESCHUTES COUNTY, OREGON

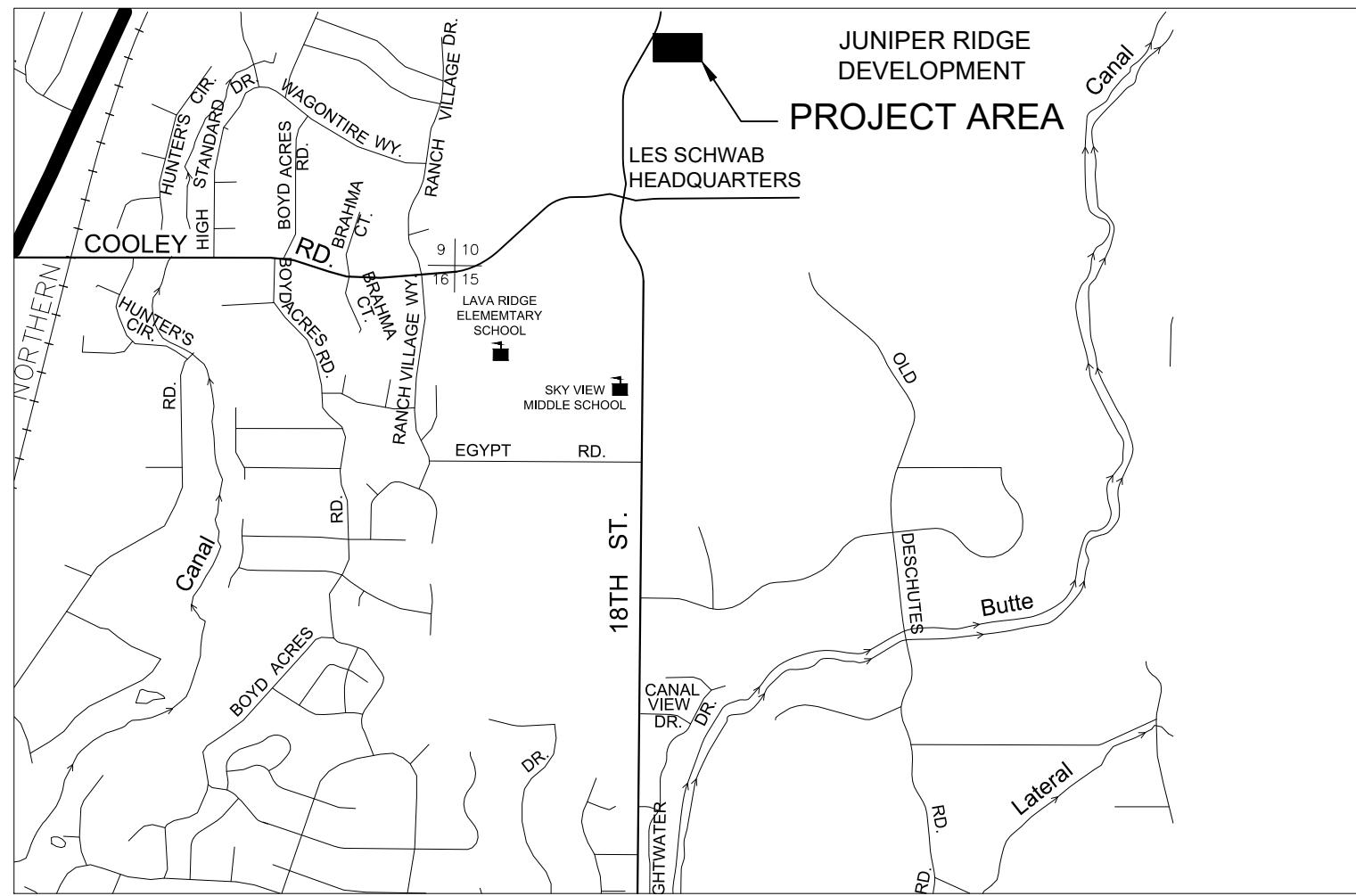


[NO MORE THAN 8 STANDARD
DETAILS PER SHEET]

DESIGNED BY: XX	DRAWN BY: XX	[COMPANY NAME]	REVISIONS: XX XXX/20XX REV/FILE
SCALE: PER PLANS	FILE: XXXX	[COMPANY ADDRESS]	DATE: XX/XX/20XX

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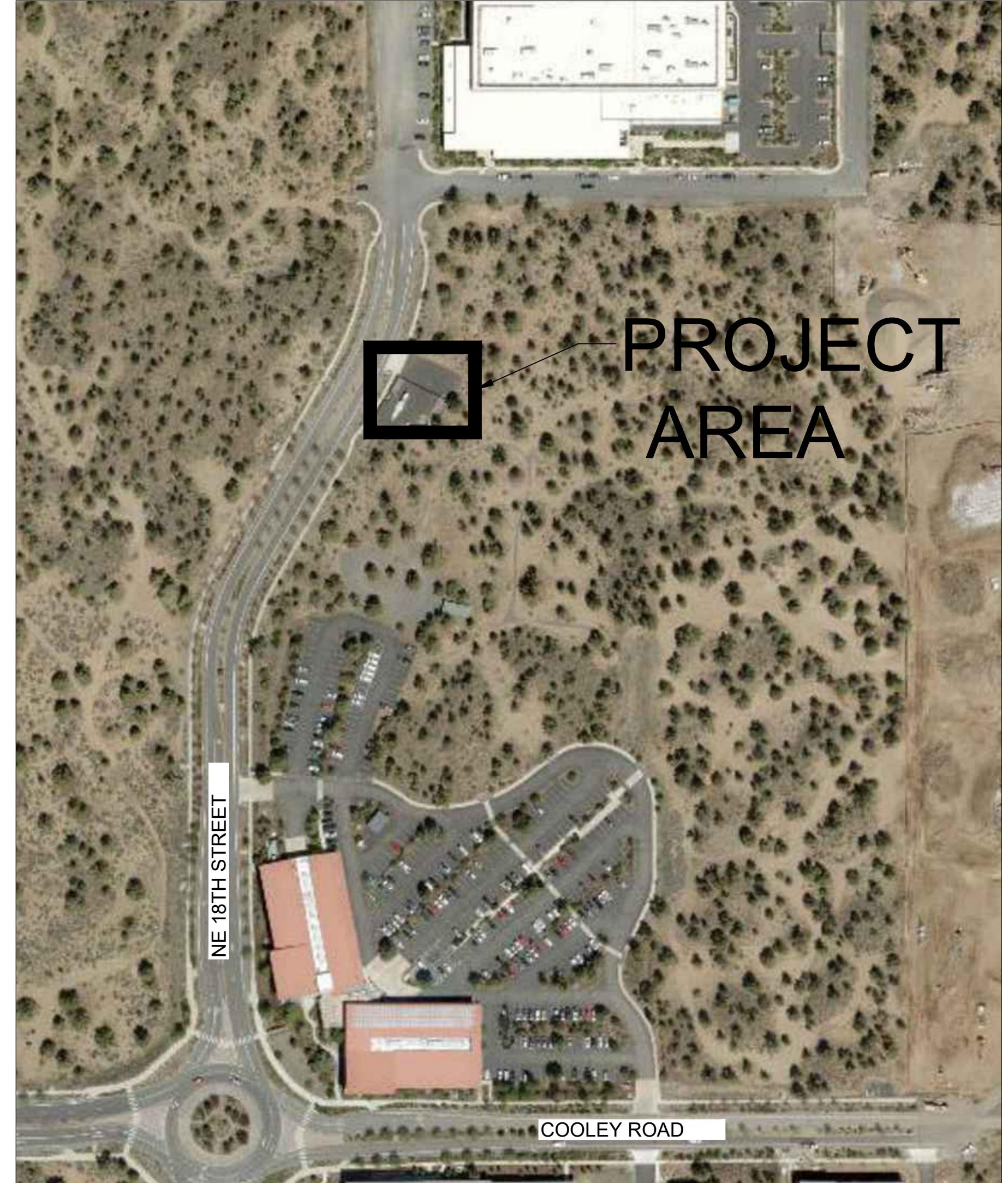


CITY OF BEND



VICINITY MAP

SCALE: N.T.S.



SITE PLAN

SCALE: N.T.S.

[PROJECT NAME HERE]
[LIFT STATION NAME HERE]

SITE ADDRESS: [ADDRESS HERE]

DATE: [DATE HERE]

CITY PROJECT NUMBER: [IF APPLICABLE]

CITY OF BEND, DESCHUTES COUNTY, OREGON

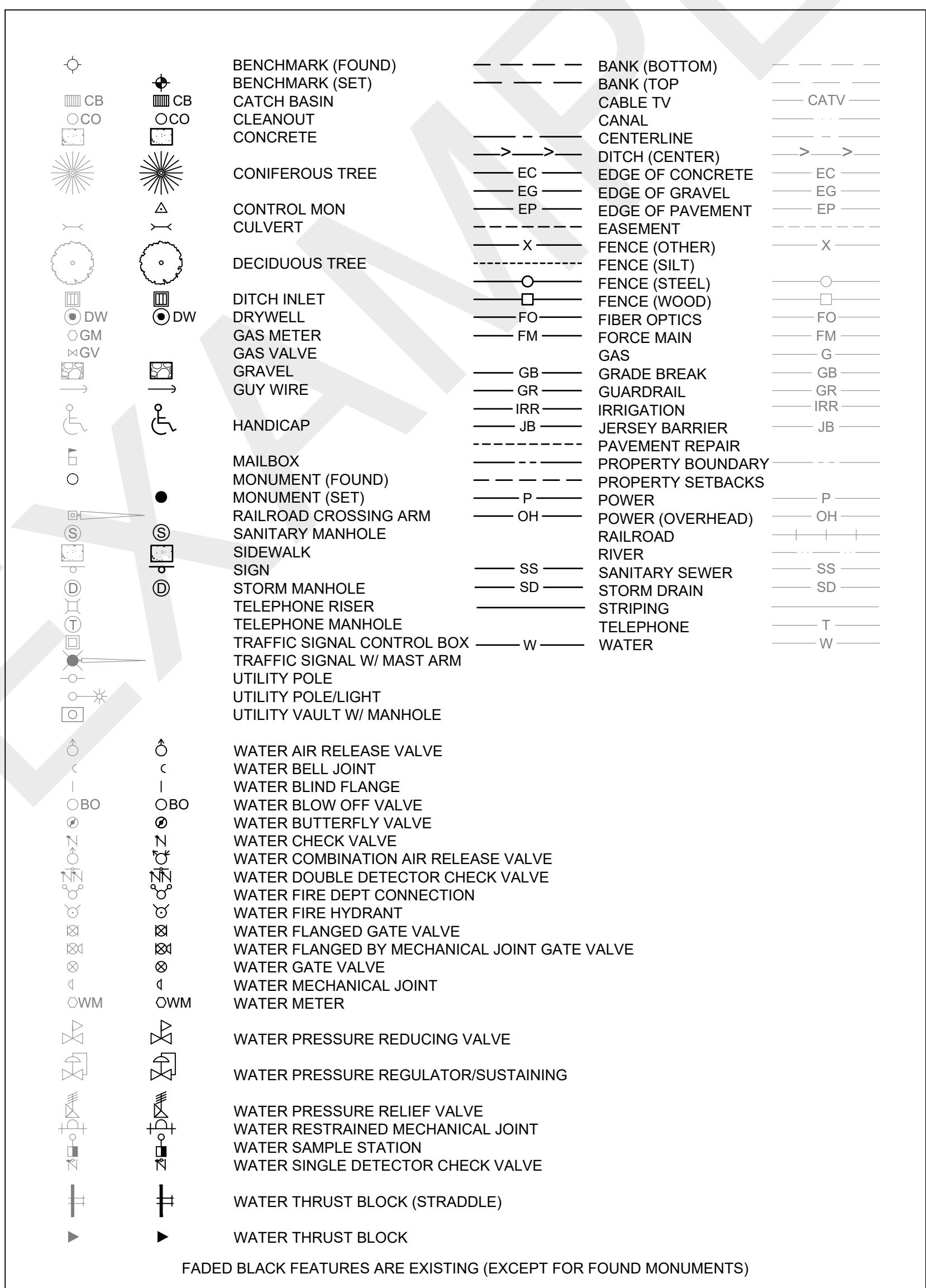
OWNER:
CITY OF BEND
UTILITY'S DEPARTMENT
62975 BOYD ACRES ROAD
BEND, OR 97701

SCHEDULE OF IMPROVEMENTS:
CITY OF BEND:

STAMP
[ENGINEERS]

(PROJECT NAME)
(LIFT STATION NAME)
COVER
DESCHUTES COUNTY, OREGON

LEGEND:



APPROVALS:

CITY OF BEND
ENGINEER:

NOTE: SIGNATURE DOES NOT GRANT APPROVAL TO COMMENCE CONSTRUCTION.

[REQUIRED UTILITY: _____]

[REQUIRED UTILITY: _____]

[REQUIRED UTILITY: _____]

[REQUIRED UTILITY: _____]

PERMANENT BENCH MARKS USED:

IDENTIFICATION	DESCRIPTION
NOT APPLICABLE	



ENGINEERING

REVISIONS: _____

[COMPANY NAME]
[COMPANY ADDRESS
AND PHONE NUMBER]

DESIGNED BY: _____
DRAWN BY: _____
SCALE: _____
FILE: _____
DATE: _____

VERIFY SCALES
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ON ORIGINAL DRAWING

SHEET: _____

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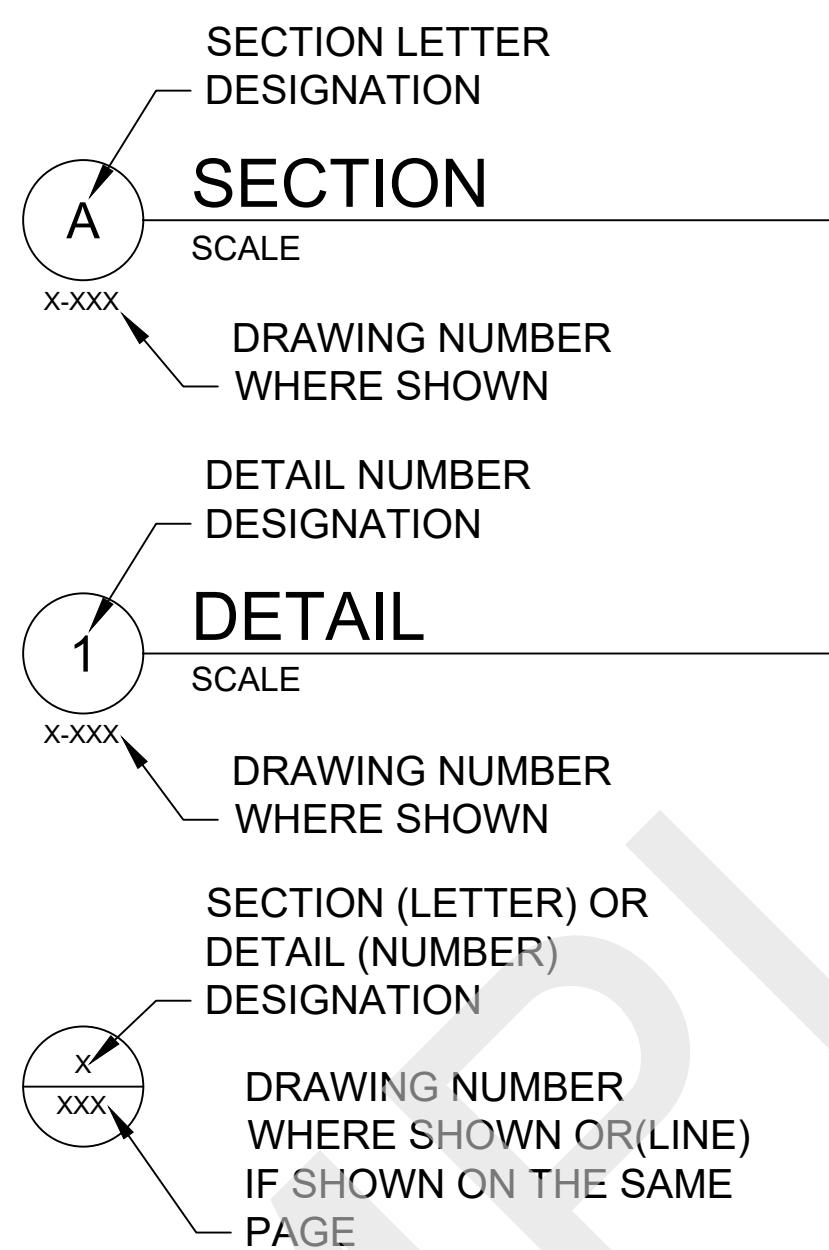
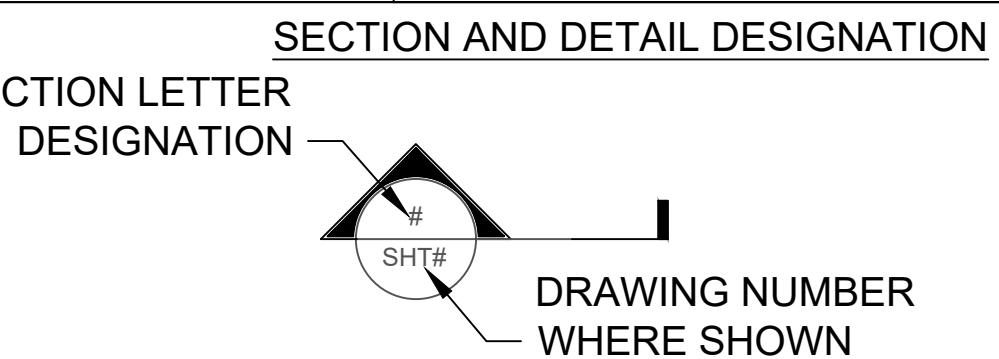
COB # (XXXXXX)

FOR SAMPLE ONLY
RECORD DRAWINGS

REVISIONS DRAWN BY: XX DATE: XX/XX/XX
THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF
INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN
DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF
CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR
OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

DRAWING INDEX

	1	G-000	COVER
	2	G-001	INDEX, SIGNATURE BLOCK, AND NOTES
A	3	G-002	GENERAL LEGEND AND PIPING SYMBOLS
	4	G-003	PROCESS EQUIPMENT LEGEND AND PIPING SYMBOLS
	5	G-004	INSTRUMENTATION LEGEND AND SYMBOLS
	6	G-005	ELECTRICAL NOTES AND STANDARD SYMBOLS
	7	G-006	ELECTRICAL NOTES AND STANDARD SYMBOLS
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B	12	C-003	GRADING AND DRAINAGE
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	15	C-006	CIVIL DETAILS
	16	L-001	LANDSCAPE PLAN AND DETAILS (INCLUDE IF REQUIRED)
	17	L-002	IRRIGATION PLAN AND DETAILS (INCLUDE IF REQUIRED)
	18	M-101	LIFT STATION MECHANICAL PLAN
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C	20	M-103	MECHANICAL DETAILS
	21	M-104	MECHANICAL DETAILS
	22	I-001	STANDARD P&ID CONSTANT
	24	I-002	TEMPLATE (50 I/Os) PANEL LAYOUT
	25	I-003	(50 I/Os) BILL OF MATERIALS
	26	I-004	(50 I/Os) PWR WIRING SCHEMATIC
	27	I-005	(50 I/Os) PWR WIRING SCHEMATIC
	28	I-006	(50 I/Os) DIGITAL INPUT MODULE 1
	29	I-007	(50 I/Os) DIGITAL INPUT MODULE 2
	30	I-008	(50 I/Os) ANALOG INPUT MODULE
	31	I-009	INTRINSIC SAFETY RELAY PANEL (ISRP)
	32	I-010	COMMUNICATION NETWORK DIAGRAM
	33	E-001	ELECTRICAL SITE PLAN
	34	E-002	MAIN CONTROL CABINET LAYOUT
	35	E-003	ELECTRICAL ONE LINE DIAGRAM
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D	37	E-005	WETWELL ISOLATION PEDESTAL
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	41	E-009	PUMP STATION FLOW LOOP SHEET
	42	E-010	WETWELL LEVEL LOOP SHEET
	43	E-011	STANDBY GENERATOR LOOP SHEET
	44	E-012	AUTO-TRANSFER SWITCH LOOP SHEET
	45	E-013	WETWELL HIGH HIGH LEVEL LOOP SHEET
	46	E-014	HATCH INTRUSION LOOP SHEET
	47	E-015	MAIN CONTROL CAB INSTRUCTION LOOP SHEET



DESIGN DETAIL DESIGNATION

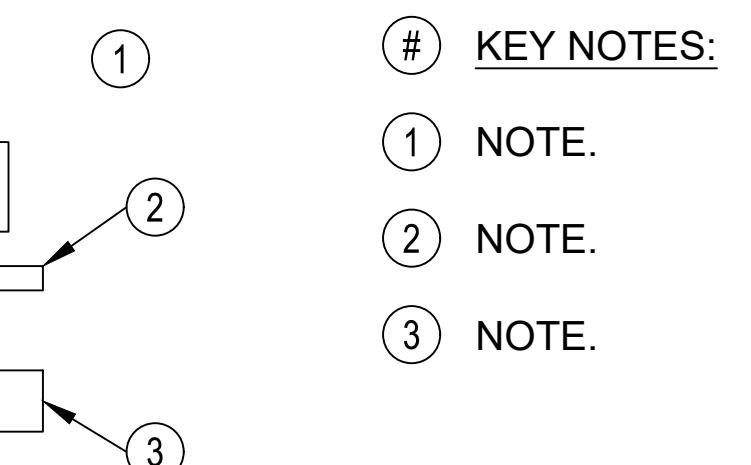
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DESIGN DETAIL DESIGNATION (SHOWN IN DESIGN DETAIL DOCUMENTATION)

NOTES:

1. ALL DESIGN DETAILS ARE TYPICAL AND MUST BE USED IF DESIGN DETAIL DESIGNATION IS NOT SHOWN.
2. THE TERM STANDARD DETAIL, OR A FORM OF IT, IS SYNONYMOUS WITH DESIGN DETAIL AND REFERS TO THE DESIGN DETAILS FOUND IN THIS SET OF CONTRACT DOCUMENTS.
3. THE DESIGN DETAILS REPRESENT THE CHARACTER AND NATURE OF THE WORK REQUIRED THROUGHOUT THE PROJECT. ALL ASSOCIATED WORK SHALL BE IN ACCORDANCE WITH THE DESIGN DETAILS SHOWN WHETHER THE DETAILS ARE SPECIFICALLY REFERENCED OR NOT.

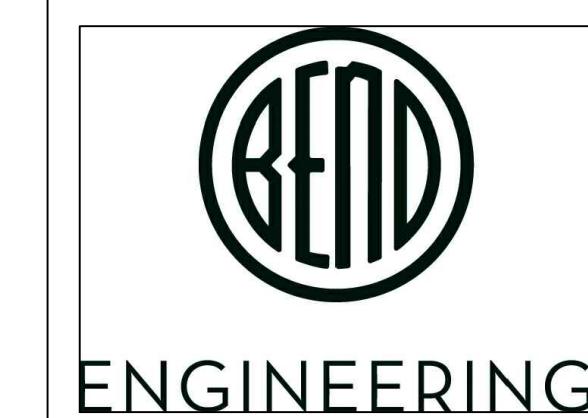
KEY NOTE DESIGNATION



CONSTRUCTION NOTES:

1. NO CONSTRUCTION SHALL BE STARTED WITHOUT A NOTICE TO PROCEED BY THE CITY ENGINEERING DEPARTMENT. THE CITY ENGINEERING DEPARTMENT AND THE DESIGN ENGINEER SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY CONSTRUCTION WORK DONE PRIOR TO NOTICE TO PROCEED BEING ISSUED OR WITHOUT INSPECTION WILL BE REJECTED.
2. CONTRACTOR SHALL VERIFY ALL CONDITIONS ON THE JOB SITE INCLUDING BUT NOT LIMITED TO, ALL DIMENSIONS, GRADES, ELEVATIONS, EXTENT AND COMPATIBILITY TO THE EXISTING SITE CONDITIONS, AND WITH THE WORK DESCRIBED ON THE ENGINEER'S DRAWINGS. ANY DISCREPANCIES OR UNEXPECTED CONDITIONS THAT AFFECT OR CHANGE THE WORK DESCRIBED IN THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY. CONTRACTOR SHALL NOT PROCEED WITH ANY OF THE WORK IN THE AREA OF DISCREPANCIES UNTIL ALL SUCH DISCREPANCIES ARE RESOLVED. IF THE CONTRACTOR CHOOSES TO DO SO, THEN IT IS UNDERSTOOD THAT THE CONTRACTOR IS CHOOSING TO PROCEED AT THE CONTRACTOR'S OWN RISK AND SHALL INCU ALL COSTS, IF ANY TO RESOLVE THE ISSUES TO THE SATISFACTION OF THE ENGINEER.
3. A CITY INSPECTOR ACTING ON BEHALF OF THE CITY MAY REQUIRE REVISIONS IN PLANS TO SOLVE UNFORESEEN PROBLEMS THAT MAY ARISE IN THE FIELD.
4. ALL CONSTRUCTION WORK AND INSTALLATIONS SHALL CONFORM TO THE CITY STANDARDS AND SPECIFICATIONS, AND ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE CITY.
5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT "UNDERGROUND LOCATE SERVICE" AT 1-800-332-2344 AT LEAST 48 BUSINESS-DAY HOURS PRIOR TO THE START OF CONSTRUCTION FOR THE LOCATION OF POWER, GAS, CABLE TV AND TELEPHONE UNDERGROUND FACILITIES. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR CONTACTING THE APPROPRIATE PUBLIC AGENCY FOR THE LOCATION OF UNDERGROUND FACILITIES.
6. ALL UTILITIES SHOWN ARE ACCURATE TO THE EXTENT OF AVAILABLE RECORDS AND KNOWLEDGE. NO POTHOLING TO VERIFY THE LOCATION OF EXISTING UNDERGROUND UTILITIES WAS AUTHORIZED BY THE OWNER. THE CONTRACTOR HAS THE TOTAL RESPONSIBILITY TO VERIFY THE PROXIMITY. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER. THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503)232-2987.
7. ALL GRADING SHALL BE IN CONFORMANCE WITH THE CURRENT CITY STANDARDS AND SPECIFICATIONS AND CURRENT GRADING ORDINANCE. ALL SUBGRADE MATERIAL SHALL BE CONSIDERED CLASS A AND COMPAKTED TO 95% OF OPTIMUM DENSITY. AS SPECIFIED IN THESE PLANS, ALL FILL MATERIAL SHALL BE COMPAKTED TO 95% RELATIVE COMPAKTION PER THE CITY TESTING REQUIREMENTS.
8. ALL FINAL CUT SLOPES SHALL NOT EXCEED A GRADE OF 2 TO 1 VERTICAL UNLESS OTHERWISE APPROVED. FILL SLOPES SHALL NOT EXCEED A GRADE OF 2 HORIZONTAL TO 1 VERTICAL UNLESS OTHERWISE APPROVED BY THE ENGINEER.
9. ALL UNSUITABLE SOILS MATERIALS, RUBBISH AND DEBRIS RESULTING FROM GRADING OPERATIONS SHALL BE REMOVED FROM THE JOB SITE AND DISPOSED OF PROPERLY.
10. THE CONTRACTOR SHALL EMPLOY ALL LABOR, EQUIPMENT, AND METHODS REQUIRED TO PREVENT DUST IN AMOUNTS DAMAGING TO PROPERTY, CULTIVATED VEGETATION AND DOMESTIC ANIMALS OR CAUSING A NUISANCE TO PERSONS OCCUPYING BUILDINGS IN THE VICINITY OF THE JOB SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED BY DUST RESULTING FROM CONSTRUCTION.
11. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE INDUSTRIAL SAFETY REGULATIONS. THE CITY AND DESCHUTES COUNTY AND THEIR OFFICIALS, THE ENGINEER, AND THE OWNER SHALL NOT BE RESPONSIBLE FOR ENFORCING SAFETY REGULATIONS.
12. MATERIAL QUANTITIES USED, NOTED, OR PROVIDED IN A SEPARATE ITEMIZED QUANTITY TAKE-OFF ARE AN ENGINEER'S OPINION OF PROBABLE MATERIAL REQUIREMENTS, AND IS AN ESTIMATE ONLY. CONTRACTOR'S HAVE THE SOLE RESPONSIBILITY OF MAKING THEIR OWN QUANTITY TAKE-OFF AND COST ESTIMATE.
13. ALL WORK SHALL BE PERFORMED BY A CITY APPROVED CONTRACTOR.
14. UTILITIES SHALL HAVE THE RIGHT TO INSTALL, MAINTAIN, AND OPERATE THEIR EQUIPMENT ABOVE AND BELOW GROUND AND ALL OTHER RELATED FACILITIES WITHIN THE PUBLIC UTILITY EASEMENTS (PUE) IDENTIFIED ON THIS PLAT MAP AS MAY BE NECESSARY OR DESIRABLE IN SERVING THE LOTS IDENTIFIED HEREIN, INCLUDING THE RIGHT OF ACCESS TO SUCH FACILITIES AND THE RIGHT TO REQUIRE THE REMOVAL OF ANY OBSTRUCTIONS INCLUDING TREES AND VEGETATION THAT MAY BE PLACED WITHIN IN THE PUE AT THE LOT OWNERS EXPENSE. AT NO TIME MAY ANY PERMANENT STRUCTURES BE PLACED WITHIN THE PUE OR ANY OTHER OBSTRUCTION WHICH INTERFERES WITH THE USE OF THE PUE WITHOUT PRIOR WRITTEN APPROVAL OF THE UTILITIES AND FACILITIES IN THE PUE.
15. CITY ENGINEER'S SIGNATURE DOES NOT CONSTITUTE APPROVAL OF FACILITIES PROPOSED ON PRIVATE PROPERTY. SEPARATE PERMITS ISSUED BY THE BUILDING DEPARTMENT ARE REQUIRED AND SHALL BE OBTAINED BY THE DEVELOPER FOR FACILITIES LOCATED OUTSIDE OF THE PUBLIC RIGHT-OF-WAY.
16. ANY WORK WITHIN EXISTING PUBLIC RIGHT-OF-WAY OR DEDICATED CITY EASEMENTS REQUIRES A SEPARATE RIGHT-OF-WAY EXCAVATION PERMIT OBTAINED FROM THE CITY ENGINEERING DIVISION.

SANITARY SEWER SYSTEM



APPROVED FOR
CONSTRUCTION

STAMP
[ENGINEERS]

(PROJECT NAME)
GENERAL
INDEX, NOTES, AND SIGNATURE BLOCK
DESHUTES COUNTY, OREGON

REVISIONS:

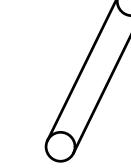
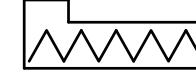
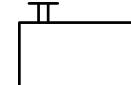
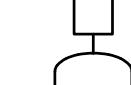
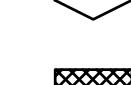
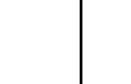
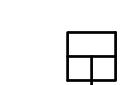
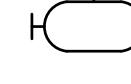
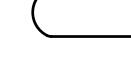
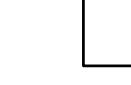
[COMPANY NAME]
[COMPANY ADDRESS
AND PHONE NUMBER]

DESIGNED BY:
DRAWN BY:
SCALE:
FILE:
DATE:
VERIFY SCALES
0 ■ 1"
BAR EQUALS ONE INCH
ON ORIGINAL DRAWING

SHEET:
G-001
COB # (XXXXXX)

DATE
FOR SAMPLE ONLY
RECORD DRAWINGS
REVISIONS DRAWN BY: XX DATE: XX/XX/XX
THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF
INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN
DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF
CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR
OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

1	2	3	4	5	6
ABBREVIATIONS					
@	AT	FA	FIRST AID KIT	OC	ON CENTER
A/B	AERATION BASIN	FAB	FABRICATION	OD	OUTSIDE DIAMETER, OVERFLOW DRAIN
AB	ANCHOR BOLT	FFE	FINISHED FLOOR ELEVATION	O.F.	OUTSIDE FACE
ABDN	ABANDONED	FACIL	FACILITY	OFE	OWNER-FURNISHED EQUIPMENT
ACBD	ACOUSTIC BOARD	FCA	FLANGED COUPLING ADAPTER	OVHD	OVERHEAD
ACST	ACOUSTICAL TILE	FCTY	FACTORY	O TO O	OUT TO OUT
AD	AREA DRAIN	FD	FLOOR DRAIN	OPNG	OPENING
ADDL	ADDITIONAL	FDN	FOUNDATION	OPP	OPPOSITE
ADJ	ADJACENT	FEXT	FIRE EXTINGUISHER		
AFF	ABOVE FINISH FLOOR	FFL	FINISHED FLOOR	PC	POINT OF CURVATURE
AHR	ANCHOR	FLL	FLOW LINE ELEVATION	PCV	PRESSURE CONTROL VALVE
AL	ALUMINUM	FLEX	FLEXIBLE	P/C	PRIMARY CLARIFIERS
ALTN	ALTERNATE	FLG	FLANGE	PD	PEAK DAY
APPROX	APPROXIMATE	FL	FLOOR	PHF	PEAK HOUR FLOW
APVD	APPROVED	FNSH	FINISH	PI	POINT OF INTERSECTION
ARCH.	ARCHITECTURAL	FOT	FLAT ON TOP	P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
ASSY	ASSEMBLY			PJF	PREMOLDED JOINT FILLER
AVG	AVERAGE	GA	GAUGE, GAGE	PL	PLATE
BD	BOARD	GB	GRAB BAR	UON	UNLESS OTHERWISE NOTED
BETW	BETWEEN	GAL	GALLON	UNO	UNLESS NOTED OTHERWISE
BF	BOTTOM FACE	GALV	GALVANIZED	UR	URINAL
BLDG	BUILDING	GALVS	GALVANIZED STEEL	POT	POINT ON TANGENT
BM	BEAM	GPD	GALLONS PER DAY	PR	PAIR
BOD	BOTTOM OF DUCT	GRTG	GRATING	PRV	PRESSURE REDUCING VALVE
BOT	BOTTOM	GVL	GRAVEL	PS	PUMP STATION
BRG	BEARING	GWB	GYPSUM WALLBOARD	PSF	POUNDS PER SQUARE FOOT
BST	BOTTOM OF STEEL	GYP PLAS	GYPSUM PLASTER	PSI	POUNDS PER SQUARE INCH
CAB.	CABINET			PTD	POINT OF TANGENCY
CCP	CONCRETE CYLINDER PIPE	H.A.S	HEADED ANCHOR STUD	PTD/R	PAPER TOWEL DISPENSER/RECPACTLE
C/C	CHLORINE CONTACT	HD	HUB DRAIN	PTRD	PRESSURE TREATED
CEM PLAS	CEMENT PLASTER	HDR	HARDNER	PVC	POINT OF VERTICAL CURVATURE
CHEM	CHEMICAL	HGT	HEIGHT	PVI	POINT OF VERTICAL INTERSECTION
CHKD PL	CHECKERED PLATE	HM	HOLLOW METAL	PVMT	PAVEMENT
CFM	CUBIC FEET PER MINUTE	HORIZ	HORIZONTAL	PVT	POINT OF VERTICAL TANGENCY
CI	CAST IRON	HPT	HIGH POINT		
CIP	CAST IN PLACE	HR	HANDRAIL	QDRNT	QUADRANT
CJ	CONSTRUCTION JOINT	HR	HOUR	QTY	QUANTITY
CL_2	CENTER LINE	HS	HIGH STRENGTH	R	R-VALUE (INSULATION)
CLG	CEILING	I&C	INSTRUMENTATION AND CONTROL	R OR RAD	RADIUS
CLR	CLEAR	ID	INSIDE DIAMETER	R	RISER
CMP	CORRUGATED METAL PIPE	IE	INVERT ELEVATION	RC	REINFORCED CONCRETE
CMU	CONCRETE MASONRY UNITS	I.F.	INSIDE FACE	RCP	REINFORCED CONCRETE PIPE
COB	CITY OF BEND	INFL	INFLUENT	RD	ROOF DRAIN
COL	COLUMN	INSTL	INSTALL	RDCR	REDUCER
CONC	CONCRETE	INSUL	INSULATION	REHAB	REHABILITATE
CONN	CONNECTION	INTR	INTERIOR	REINF	REINFORCE, REINFORCED, REINFORCING
CONST	CONSTRUCTION	INVT	INVERT	REQD	REQUIRED
CONT	CONTINUOUS	ITG	INSULATED TEMPERED GLASS	RESIL	RESILIENT
COR	CORNER			RM	ROOM
CPLG	COUPLING	JT	JOINT	RO	ROUGH OPENING
CPVC	CHLORINATED POLYVINYL CHLORIDE			RST	REINFORCING STEEL
C TO C	CENTER TO CENTER	L	LENGTH OF CURVE		
CTR	CENTER	LB	POUNDS	S	SOUTH
CTRD	CENTERED	LB/D	POUNDS PER DAY	S.A.T.	SUSPENDED ACOUSTICAL TILE
CU FT	CUBIC FEET	LG	LONG	S/C	SECONDARY CLARIFIERS
△	CENTRAL ANGLE	LLV	LONG LEG VERTICAL	SCBA	SELF CONTAINED BREATHING APPARATUS
DAFT	DISSOLVED AERATION FLOTATION THICKENING	LNTL	LINTEL	SCHED	SCHEDULE
DBA	DEFORMED BAR ANCHOR	LONG.	LONGITUDINAL	SD	SOAP DISPENSER, STORM DRAIN
DBL	DOUBLE	LPT	LOW POINT	SECT	SECTION
DET	DETAIL	LT	LIGHT	SG	SAFETY GLASS
DIA	DIAMETER			SH	SHEET
DIAG	DIAGONAL	MATL	MATERIAL	SHTG	SHEETING
DIM	DIMENSION	MAX	MAXIMUM	SIM	SIMILAR
DIP.	DUCTILE IRON PIPE	MB	MACHINE BOLT	SLV	SHORT LEG VERTICAL
DIR	DIRECTION	MCC	MOTOR CONTROL CENTER	S.O.	SHUTOFF
DISCH	DISCHARGE	MECH	MECHANICAL	SPEDC	SPECIFIED
DN	DOWN	MFR	MANUFACTURER	SPECS	SPECIFICATIONS
DS	DOWN SPOUT	MGD	MILLION GALLONS PER DAY	SPG	SPACING
DWG	DRAWING	MG/L	MILLIGRAMS PER LITRE	SQ	SQUARE
DWL	DOWEL	MH	MANHOLE	SST	STAINLESS STEEL
E	EAST	MIN	MINIMIM	STA	STATION
EA	EACH	MISC	MISCELLANEOUS	STD	STANDARD
ECC	ECCENTRIC	MLSS	MIXED LIQUOR SUSPENDED SOLIDS	STIF	STIFFENER
EF	EACH FACE	MLVSS	MIXED LIQUOR VOLATILE SUSPENDED SOLIDS	STOR	STORAGE
EFL	EFFLUENT	MO	MASONRY OPENING	STR	STRAIGHT
EL	ELEVATION	MON	MONUMENT	STRUCT	STRUCTURAL, STRUCTURE
ELB	ELBOW	MTG	MOUNTING	STL	STEEL
ELEC	ELECTRICAL	MTL	METAL	SWD	SIDE WATER DEPTH
EP	EDGE OF PAVEMENT	MTR	METERING	SYMM	SYMMETRICAL
EQL	EQUAL			T	TINTED
EQL SP	EQUALLY SPACED	N	NORTH	T	TANGENT LENGTH
EOPT	EQUIPMENT	NIC	NOT IN CONTRACT	T&B	TOP AND BOTTOM
EW	EACH WAY	NO.	NUMBER	TAS	THREADED ANCHOR STUD
EXP JT	EXPANSION JOINT	NOM	NOMINAL	TC	TOP OF CONCRETE, TOP OF CURB
EXT	EXTERIOR, EXTERNAL, EXTENSION	NORM	NORMAL	TEMP	TEMPERED, TEMPERATURE
EXST	EXISTING	NTS	NOT TO SCALE	TF	TOP FACE

1	2	3	4	5	6	
		EQUIPMENT				
A	VARIABLE SPEED CONTROLLER (ELEC)  BAR SCREEN, MECHANICAL  INLINE SLUDGE SCREEN  BLOWER OR CENTRIFUGAL FAN  SLIDING VANE COMPRESSOR  BOILER  BURNER, WASTE GAS  CENTRIFUGE  CHILLER  COMPRESSOR, ROTARY SCREW  COMPRESSOR, PISTON  DIFFUSER HEADER  ENGINE  EJECTOR, PNEUMATIC  FILTER OR FILTER-SILENCER, INLET AIR  RIGHT ANGLE GEAR  TURBINE GENERATOR  GRINDER  HEAT EXCHANGER, PLATE TYPE  HEAT EXCHANGER, SPIRAL TYPE  HEAT EXCHANGER, STRAIGHT TUBE TYPE  HEAT EXCHANGER, U-TUBE TYPE 	MIXER  MIXER, HORIZONTAL SURFACE  MIXER, INLINE STATIC  MOTOR  PUMP, CENTRIFUGAL  PUMP, DIAPHRAGM  PUMP, DIAPHRAGM OPERATED  PUMP, GEAR  PUMP, IN-LINE CENTRIFUGAL  PUMP, METERING  PUMP, PROGRESSIVE CAVITY  PUMP, ROTARY LOBE  PUMP, SUBMERSIBLE  PUMP, VERTICAL  PUMP, LINE SHAFT  WEIR  STOP LOG  SLIDE GATE (NORMALLY CLOSED)  SLIDE GATE (NORMALLY OPEN)  RECTANGULAR BUTTERFLY VALVE (NORMALLY CLOSED)  RECTANGULAR BUTTERFLY VALVE (NORMALLY OPEN)  SLIDE GATE (NORMALLY CLOSED)  SLIDE GATE (NORMALLY OPEN)  TELESCOPIC GATE VALVE 	FLAP GATE  SCREEN, ROTARY OVERFLOW  SILENCER  CONDENSATE TANK 	RECEIVER OR PRESSURE VESSEL  TANK, DOUBLE WALLED  TANK 	PROCESS LINES	
A						
B						
C						
D						
		EQUIPMENT				
		EQUIPMENT				
		VALVES				
		VALVE OPERATORS				
		FITTINGS/LINE STRAINERS				
		GENERAL NOTES				
		FOR SAMPLE ONLY				
		REVISIONS:				
		RECORD DRAWINGS				
		REVISIONS DRAWN BY: XX DATE: XX/XX/XX				
		THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.				
		VERIFY SCALES 0 1" BAR EQUALS ONE INCH ON ORIGINAL DRAWING				
		SHEET: G-003 COB # (XXXXXX)				

STAMP
[ENGINEERS]

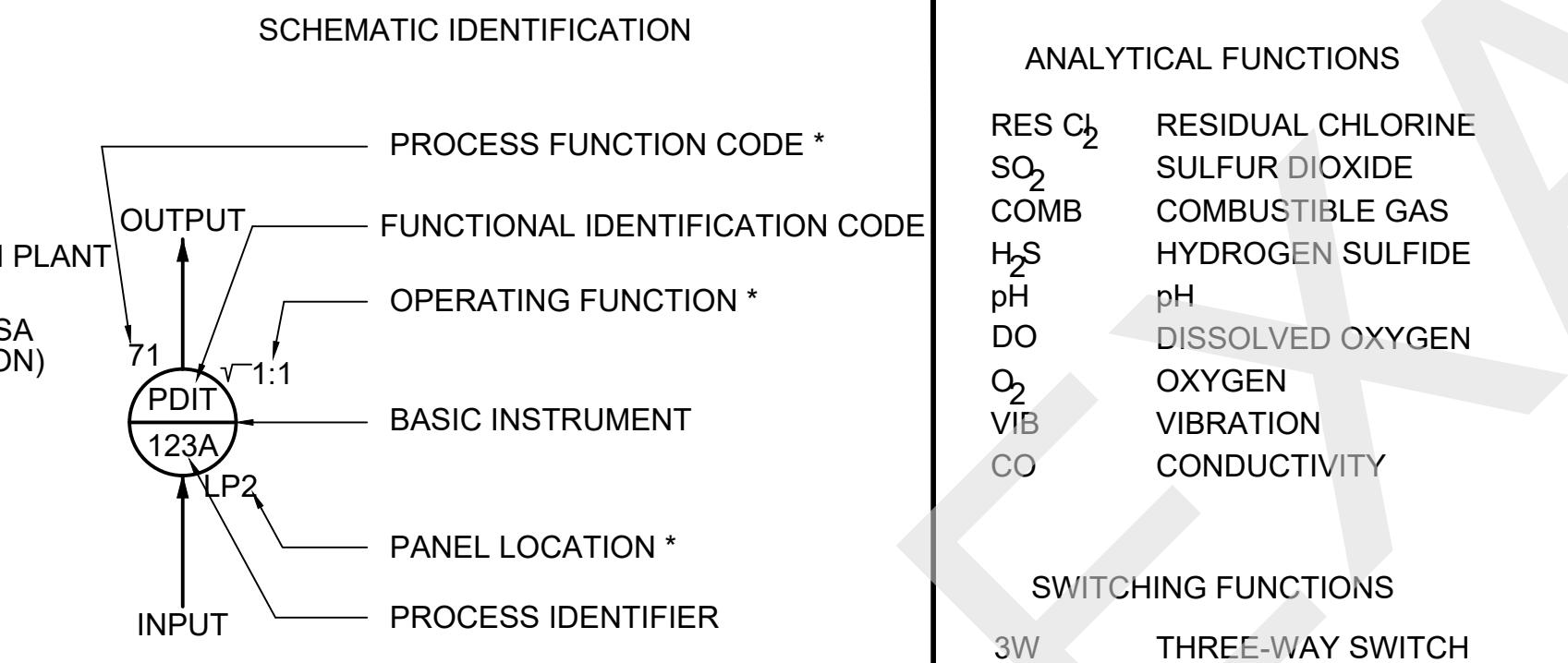
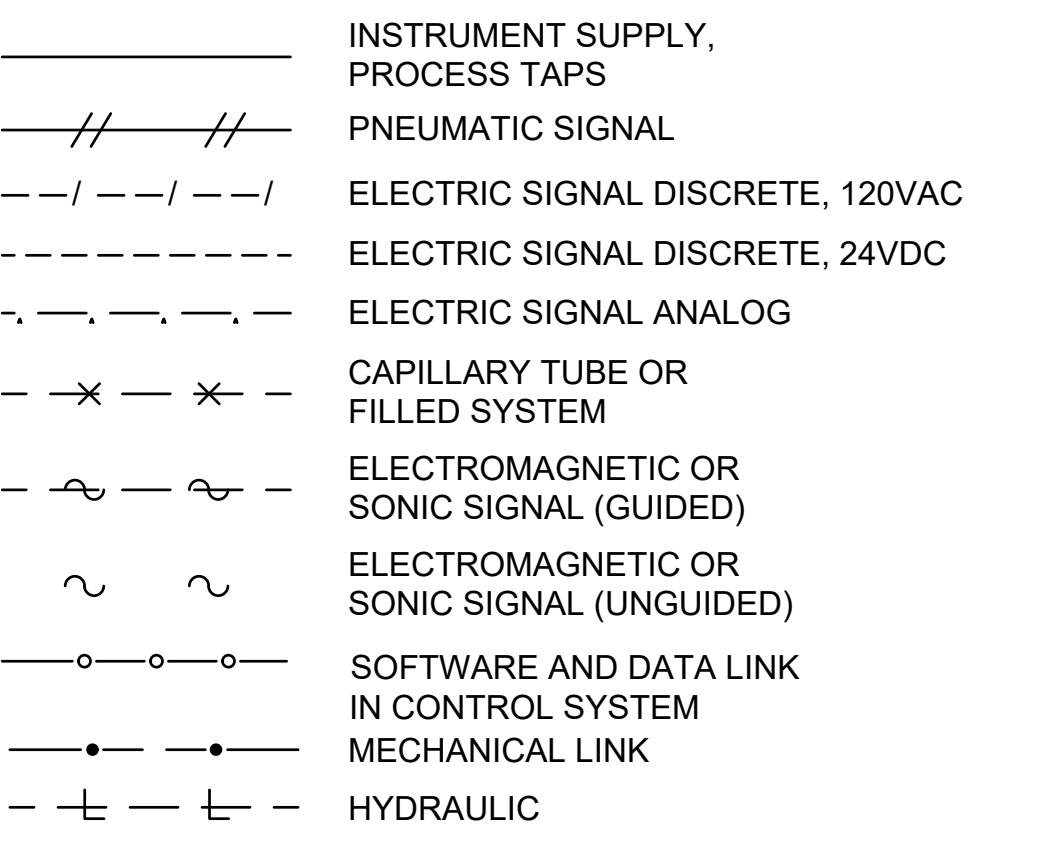
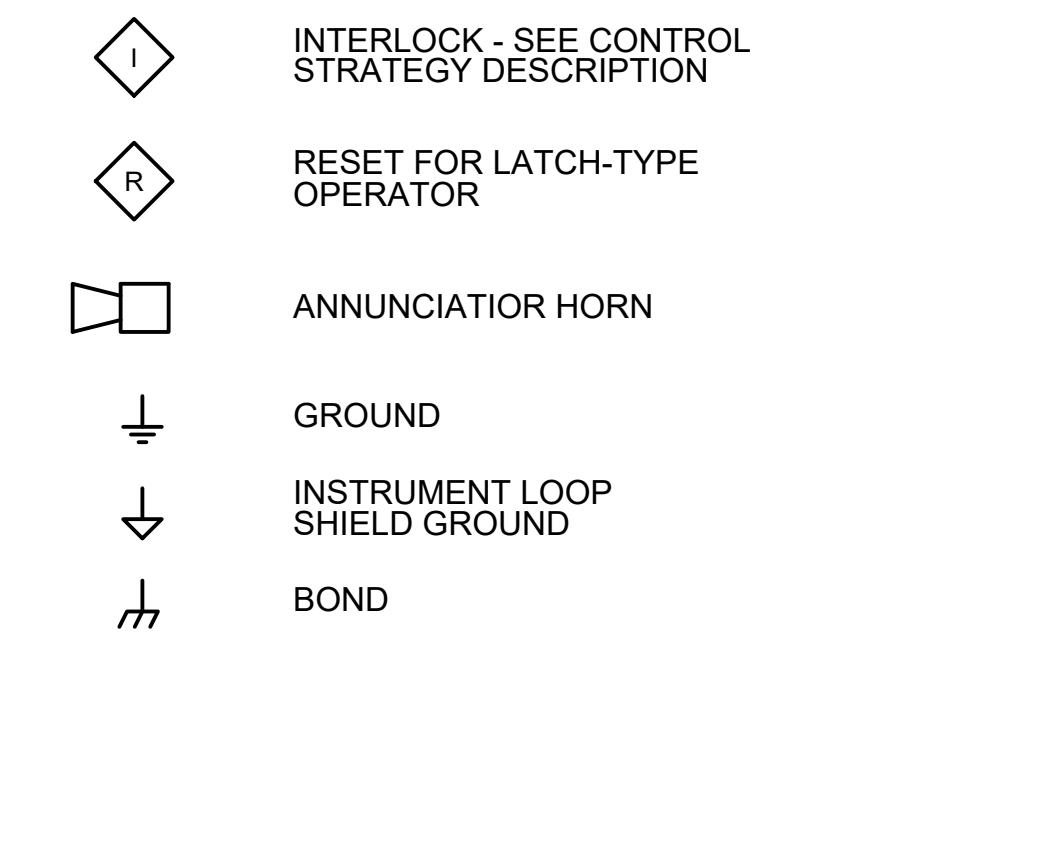
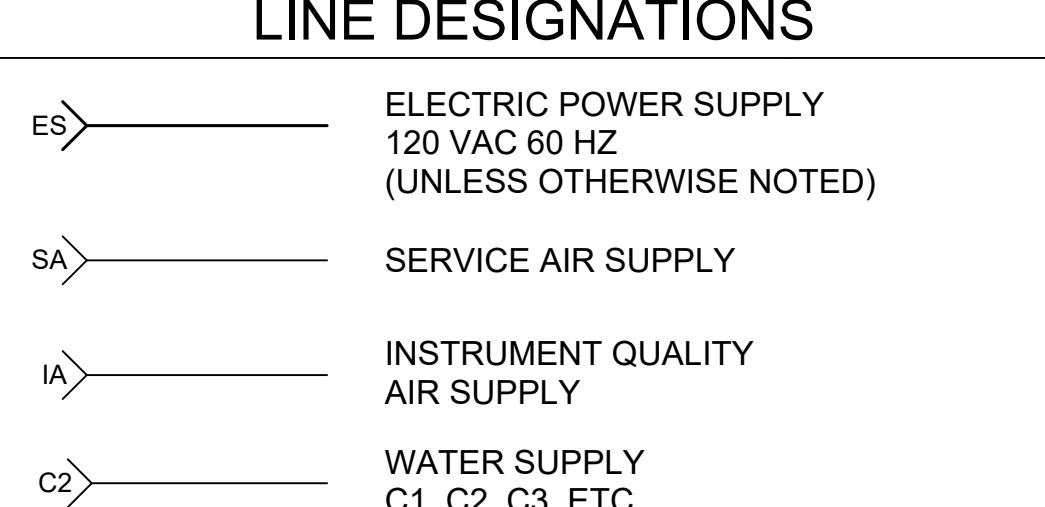
(PROJECT NAME)
GENERAL

PROCESS EQUIPMENT LEGEND AND PIPING SYMBOLS
DESCHUTES COUNTY, OREGON

[COMPANY NAME]
[COMPANY ADDRESS AND PHONE NUMBER]

DESIGNED BY:
DRAWN BY:
SCALE:
FILE:
DATE:
VERIFY SCALES
0 1"
BAR EQUALS ONE INCH
ON ORIGINAL DRAWING

SHEET:
G-003
COB # (XXXXXX)

1		2		3		4		5		6		A									
FUNCTIONAL IDENTIFICATION					INSTRUMENT AND FUNCTION SYMBOLS					PRIMARY ELEMENT SYMBOLS											
		FIRST LETTER		SUCCEEDING LETTERS																	
		MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION																
A	ANALYSIS			ALARM																	
B	BURNER, COMBUSTION			CLOSE-STOP DECREASE																	
C	CONDUCTIVITY, pH (ACIDITY)			CLOSE	CONTROL OR CONTROLLER																
D	DENSITY	DIFFERENTIAL		OPEN-START-INCREASE																	
E	VOLTAGE			SENSOR (PRIMARY ELEMENT)																	
F	FLOW RATE	RATIO (FRACTION)					FAIL														
G	GAS			GLASS VIEWING DEVICE																	
H	HAND						H-HIGH-(ALARM) HH-HIGH-(SHUTDOWN)														
I	CURRENT (ELECTRICAL)			INDICATE																	
J	POWER	SCAN																			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE			CONTROL STATION																
L	LEVEL			LIGHT			L-LOW-(ALARM) LL-LOW-(SHUTDOWN)														
M	MOISTURE	MOMENTARY	ON OR OPERATE				MIDDLE, INTERMEDIATE														
N			SET POINT																		
O	UNCLASSIFIED		OPEN ORIFICE, RESTRICTION POINT (TEST) CONNECTION				OVERLOAD														
P	PRESSURE, VACUUM				PNEUMATIC																
Q	QUANTITY	INTEGRATE, TOTALIZE			INTEGRATE OR TOTALIZE																
R	RADIATION		RECORD																		
S	SPEED, FREQUENCY, SOLENOID	SAFETY			SWITCH OR SAFETY																
T	TEMPERATURE				TRANSMIT																
U	MULTIVARIABLE		MULTIFUNCTION		MULTIFUNCTION																
V	VIBRATION			VALVE, DAMPER, LOUVRE																	
W	MECHANICAL ANALYSIS																				
X	WEIGHT, FORCE		WELL																		
Y	ON/OFF	X AXIS	UNCLASSIFIED	UNCLASSIFIED																	
Z	EVENT, STATE, PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT																	
	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED - FINAL CONTROL ELEMENT																	
TYPICAL INSTRUMENT IDENTIFICATION																					
FIELD TAG IDENTIFICATION							SCHEMATIC IDENTIFICATION														
EXAMPLEWRF-001-PDSHH-001-1010-A1																					
* OPTIONAL																					
CITY DEPARTMENT IDENTIFIER - (3 CHARACTER)							WATER RECLAMATION PLANT SPECIFIC - (4 CHARACTERS)														
1. C - COLLECTIONS OPERATIONS 2. W - WATER OPERATIONS 3. D - DRAINAGE OPERATIONS 4. WRF - WATER RECLAMATION PLANT							LOOP NUMBER - (4 NUMERALS)														
FACILITY IDENTIFIER - (UP TO 4 CHARACTER)							SUFFIX - (UP TO 2 CHARACTERS)														
1. XXXX - COLLECTION PUMP STATIONS 2. XXXX - WATER RESERVOIR 3. XXXX - STORM SEWER STATIONS 4. XXXX - PRESSURE (XXX)							USED ONLY WHEN 2 OR MORE INSTRUMENTS ARE IN THE LOOP														
EQUIPMENT ACRONYM OR ISA - (UP TO 5 CHARACTER)							SEE DWG WPRV015-G002 FOR DETAILS														
INSTRUMENT OPERATING FUNCTIONS																					
ANALYTICAL FUNCTIONS																					
RES C ₂ RESIDUAL CHLORINE SO ₂ SULFUR DIOXIDE COMB COMBUSTIBLE GAS H ₂ S HYDROGEN SULFIDE pH pH DO DISSOLVED OXYGEN O ₂ OXYGEN VIB VIBRATION CO CONDUCTIVITY																					
SWITCHING FUNCTIONS																					
3W THREE-WAY SWITCH EH EMERGENCY HIGH (24VDC BACKED) MS MOTOR-RATED SWITCH HA HAND-AUTO SELECTION HOA HAND-OFF-AUTO SELECTION JOA JOG-OFF-AUTO SELECTION S/S START-STOP L/L LEAD-LAG SELECTION LLCO LOW LEVEL CUT OFF F/S FAST-SLOW SELECTION OCA OPEN-CLOSE-AUTO SELECTION OSC OPEN-STOP-CLOSE SELECTION SEL SELECTOR SWITCH O/O ON-OFF SELECTION M/A MANUAL-AUTO SELECTION L/R LOCAL-REMOTE SELECTION ESD EMERGENCY SHUTDOWN ACK ACKNOWLEDGE (ALARM) D/P DIFFERENTIAL PRESSURE I/P CURRENT TO PRESSURE IBD INBOARD BEARING OBD OUTBOARD BEARING RSP REMOTE SET POINT RST RESET																					
INSTRUMENT SIGNAL SYMBOLS																					
																					
MISCELLANEOUS SYMBOLS																					
																					
LINE DESIGNATIONS																					
																					
GENERAL NOTES																					
<ol style="list-style-type: none"> 1. THIS DRAWING IS GENERAL IN NATURE. SOME SYMBOLS SHOWN HERE MAY NOT BE USED. 2. REFER TO DRAWING G-002 AND G-003 FOR EQUIPMENT AND PIPE COMMODITY DESIGNATIONS. 3. TAG NAMING CONVENTION IS NOT FINALIZED IN THIS REVISION. 																					
FOR SAMPLE ONLY																					
REVISIONS DRAWN BY: XX DATE: XX/XX/XX																					
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VERIFY SCALES 0 ■ 1" BAR EQUALS ONE INCH ON ORIGINAL DRAWING																					
RECORD DRAWINGS																					
G-004																					
COB # (XXXXXX)																					

1	2	3	4	5	6																																																			
CIRCUITS AND RACEWAYS		GROUNDING	WIRING DEVICES	MOTORS AND EQUIPMENT	GENERAL NOTES																																																			
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STAMP
[ENGINEERS]

(PROJECT NAME)
GENERAL
ELECTRICAL NOTES AND STANDARD SYMBOLS
DESHUTES COUNTY, OREGON

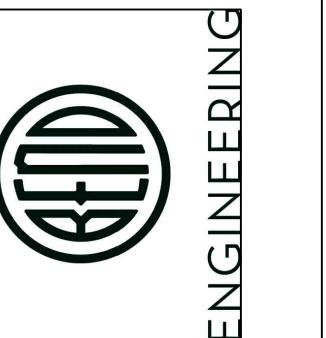
[COMPANY ADDRESS AND PHONE NUMBER]
[COMPANY NAME]
REVISIONS:
DESIGNED BY:
DRAWN BY:
SCALE:
FILE:
DATE:
VERIFY SCALES
0 ■ 1"
BAR EQUALS ONE INCH ON ORIGINAL DRAWING
SHEET:
G-005

COB # (XXXXXX)

1	2	3	4	5	6		
CONTROL DIAGRAM SYMBOLS					ONE LINE DIAGRAM SYMBOLS		
GENERAL	PUSHBUTTONS	CONTROL RELAYS	INDICATING LIGHTS				
A ENCLOSURE BOUNDARY, EXISTING ENCLOSURE BOUNDARY, NEW CONDUCTORS CONNECTED CONDUCTORS NOT CONNECTED TERMINAL POINT FOR EXTERNAL CONNECTIONS EXISTING EQUIPMENT	 INPUT SWITCHES LIQUID LEVEL ACTIVATED SWITCH OPENS ON RISING LEVEL CLOSES ON RISING LEVEL PRESSURE OR VACUUM ACTIVATED SWITCH OPENS ON RISING PRESSURE CLOSES ON RISING PRESSURE TEMPERATURE ACTIVATED SWITCH OPENS ON RISING TEMPERATURE CLOSES ON RISING TEMPERATURE FLOW ACTIVATED SWITCH OPENS ON INCREASE IN FLOW CLOSES ON INCREASE IN FLOW LIMIT SWITCH DIRECTLY ACTIVATED, SPRING RETURN NORMALLY OPEN NORMALLY OPEN - HELD CLOSED NORMALLY CLOSED NORMALLY CLOSED - HELD OPEN FOOT OPERATED SWITCH OPENS BY FOOT PRESSURE CLOSES BY FOOT PRESSURE TIME DELAY SWITCH NORMALLY OPEN CONTACT CLOSES AFTER TIME DELAY WHEN COIL IS ENERGIZED, OPENS INSTANTANEOUSLY WHEN DE-ENERGIZED NORMALLY CLOSED CONTACT OPENS AFTER TIME DELAY WHEN COIL IS ENERGIZED, CLOSES INSTANTANEOUSLY WHEN DE-ENERGIZED NORMALLY OPEN CONTACT CLOSES INSTANTANEOUSLY WHEN COIL IS ENERGIZED, OPENS AFTER TIME DELAY WHEN DE-ENERGIZED NORMALLY CLOSED CONTACT OPENS INSTANTANEOUSLY WHEN COIL IS ENERGIZED, CLOSES AFTER TIME DELAY WHEN DE-ENERGIZED	 TIMING RELAYS OPERATING COIL ON or OFF DELAY RANGE: SEC/MIN SET: SEC/MIN NORMALLY OPEN TR3 (LINE) OR TC (LINE) OR TO (LINE) TR3 (LINE) OR TO (LINE) OR TC (LINE) OPERATING COIL C OPERATING COILS C = CONTACTOR, LIGHTING OR GENERAL USE F = FAST OR FORWARD M = MAIN OR LINE 1M = FIRST MAIN OR WYE 2M = SECOND MAIN OR DELTA R = RUN OR REVERSE S = SLOW OR START MAIN CONTACTS SIZE	 TRANSFORMERS 480V 120V 50:5 CONTROL TRANSFORMER, PRIMARY AND SECONDARY VOLTAGES SHOWN. SIZE AS SHOWN OR SPECIFIED. CURRENT TRANSFORMER, PRIMARY/SECONDARY TURNS RATIO SHOWN. ■ INDICATED POLARITY				
B MCP CIRCUIT BREAKER, THERMAL-MAGNETIC, 3 POLE, UON. MODIFIERS: /M MAGNETIC ONLY /2P POLES, IF OTHER THAN 3 FUSE SIZE FUSE MODIFIERS: CLF = CURRENT LIMITING FUSE DE = DUAL ELEMENT F = CLASS F NEON BLOWN FUSE INDICATOR				 CONTACTORS C C = CONTACTOR, LIGHTING OR GENERAL USE F = FAST OR FORWARD M = MAIN OR LINE 1M = FIRST MAIN OR WYE 2M = SECOND MAIN OR DELTA R = RUN OR REVERSE S = SLOW OR START MAIN CONTACTS SIZE			
C 2 POSITION MAINTAINED CONTACT CLOSED IN POSITION 1 CLOSED IN POSITION 2 2-POSITION SPRING RETURNED TO RIGHT CLOSED IN POSITION 1 CLOSED IN POSITION 2 3-POSITION MAINTAINED CONTACT CLOSED IN POSITION 1 CLOSED IN POSITION 2 CLOSED IN POSITION 3		 OUTPUT LOADS AND DEVICES MOTOR SPACE HEATER, WATTAGE SHOWN MAGNETIC COIL SOLENOID HOUR METER (ELAPSED TIME) TIME CONTROLLER					
D							

STAMP
[ENGINEERS]

(PROJECT NAME)
GENERAL
ELECTRICAL NOTES AND STANDARD SYMBOLS
DESHUTES COUNTY, OREGON



REVISIONS:

[COMPANY NAME]
[COMPANY ADDRESS AND PHONE NUMBER]

DESIGNED BY:
DRAWN BY:
SCALE:
FILE:
DATE:
VERIFY SCALES
0 1"
BAR EQUALS ONE INCH ON ORIGINAL DRAWING

SHEET:
G-006

COB # (XXXXXX)

FOR SAMPLE ONLY

RECORD DRAWINGS

REVISIONS DRAWN BY: XX DATE: XX/XX/XX
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GENERAL STRUCTURAL NOTES (GSN)

GENERAL

G1. **SCOPE**
THE NOTES ON THIS SHEET AND THE STANDARD STRUCTURAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT WHETHER SPECIFICALLY CALLED OUT OR NOT, EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY ON STRUCTURAL SHEETS. IF THERE ARE QUESTIONS, THEY SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER AND ANSWERED IN WRITING PRIOR TO CONSTRUCTION.

G2. **APPLICABLE SPECIFICATIONS AND CODES**
A. INTERNATIONAL BUILDING CODE, IBC 2012 WITH APPLICABLE EDITIONS OF THE CODE REFERENCED STANDARDS.
B. LOCAL JURISDICTION AMENDMENTS

G3. **DESIGN CRITERIA**
1. APPLIES TO ALL STRUCTURES (UNO)
A. DEAD LOAD:
1. ACTUAL TRIBUTARY STRUCTURE WEIGHT
2. SUPERIMPOSED DEAD LOAD: X PSF
B. LIVE LOAD:
1. ROOF: XX PSF (NOT REDUCIBLE)
C. SNOW LOAD:
1. GROUND SNOW LOAD: XX PSF
2. FLAT ROOF SNOW LOAD: XX PSF
3. EXPOSURE FACTOR C₁: XX
4. IMPORTANCE FACTOR I₁: XX
5. THERMAL FACTOR C₂: XX

D. **SEISMIC**
1. RISK CATEGORY: X
2. IMPORTANCE FACTOR: X
3. SPECTRAL RESPONSE ACCELERATION, S₁: XXXX
4. SPECTRAL RESPONSE ACCELERATION, S₂: XXXX
5. SITE CLASS: X
6. SEISMIC DESIGN CATEGORY: X
7. SPECTRAL RESPONSE COEFFICIENT, S₀: XXX
8. SPECTRAL RESPONSE COEFFICIENT, S₁: XXX
9. BASIC SEISMIC FORCE RESISTING SYSTEM: STEEL ORDINARY CANTILEVER COLUMN
10. ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE
11. RESPONSE MODIFICATION FACTOR R: XXX
12. SEISMIC RESPONSE COEFFICIENT C₂: XXX
13. DESIGN BASE SHEAR V: XX.XXXX

E. **WIND**
1. BASIC WIND SPEED: XXX MPH
2. EXPOSURE: C
3. ENCLOSURE: OPEN

G4. **GEOTECHNICAL DATA IS ASSUMED: ADOBBLE [NET] SOIL BEARING:** XXXX PSF

G5. **SAFETY**
SAFETY AND STRUCTURE STABILITY DURING CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. STRUCTURES HAVE BEEN DESIGNED TO RESIST THE DESIGN LIVE LOADS ONLY AS A COMPLETED STRUCTURE.

G6. **OPENINGS**
OPENINGS FOR PIPES, DUCTS, CONDUITS, ETC. ARE NOT ALL SHOWN ON THE STRUCTURAL DRAWINGS. COORDINATE AND PROVIDE OPENINGS AS REQUIRED TO ACCOMMODATE ALL WORK SHOWN OR SPECIFIED IN THE CONTRACT DOCUMENTS AND OTHERWISE REQUIRED FOR THE FURNISHING OF A FUNCTIONALLY COMPLETE PROJECT. REINFORCE AROUND OPENINGS PER STANDARD STRUCTURAL DETAILS UNLESS OTHERWISE SHOWN.

G7. **SPECIAL INSPECTIONS**
SPECIAL INSPECTIONS ARE REQUIRED IN ACCORDANCE WITH CHAPTER 1 AND CHAPTER 17 OF THE IBC. PAYMENT FOR THESE INSPECTIONS IS NOT THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE FOR FULL ACCESS TO THE WORK BY THE SPECIAL INSPECTOR AND SHALL PROVIDE FOR THESE INSPECTIONS IN HIS CONSTRUCTION SCHEDULE IN ACCORDANCE WITH THE SPECIFICATIONS.

G8. **STANDARD DETAILS:**
THE STANDARD DETAILS DEPICT TYPICAL DETAILING TO BE USED ON THIS PROJECT. IF CONDITIONS ARE NOT EXPLICITLY SHOWN ON THE DRAWINGS THEY SHALL BE MADE SIMILAR TO THE STANDARD DETAILS. OBTAIN APPROVAL OF ENGINEER IN WRITING FOR SIMILAR CONDITIONS PRIOR TO CONSTRUCTION.

G9. **EXISTING CONSTRUCTION:**
THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS OF EXISTING CONSTRUCTION AS REQUIRED TO COORDINATE NEW CONSTRUCTION. SUBMIT REQUIRED CHANGES FOR APPROVAL.

G10. **EQUIPMENT LOADING:**
CONTRACTOR TO SUBMIT FOR REVIEW ALL EQUIPMENT SIZES, OPERATING WEIGHTS, VIBRATION FORCES, SUPPORT LOCATIONS, ALONG WITH ANY FLOOR OPENINGS, NOTCHES, AND RECESSES REQUIRED BY SUCH EQUIPMENT. CONCRETE SUPPORT PADS AND/OR FRAMING REQUIRED TO SUPPORT SAID EQUIPMENT SHALL NOT BE FABRICATED AND PLACED UNTIL THE CONCRETE SUPPORT PADS AND/OR FRAMING IS APPROVED TO SUPPORT THE EQUIPMENT.

CONCRETE
C1. **DESIGN STRENGTHS:**
F'c = 4500 PSI
Fy = 60,000 PSI
C2. **CONCRETE COVER**
UNLESS OTHERWISE NOTED, PROVIDE CONCRETE COVER FOR REINFORCING AS FOLLOWS:
CONCRETE DEPOSITED AGAINST EARTH: 3"
ALL OTHER: 2"
SEE DRAWINGS FOR EXCEPTIONS
C3. SEE SPECIFICATIONS FOR REINFORCING PLACEMENT REQUIREMENTS.
C4. REFER TO OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION FOR EMBEDDED ITEMS AND PENETRATIONS NOT SHOWN ON STRUCTURAL DRAWINGS. AS REQUIRED TO ACCOMMODATE ALL WORK SHOWN OR SPECIFIED IN THE CONTRACT DOCUMENTS AND OTHERWISE REQUIRED FOR THE FURNISHING OF A FUNCTIONALLY COMPLETE PROJECT. REINFORCE AROUND OPENINGS PER STANDARD STRUCTURAL DETAILS UNLESS OTHERWISE SHOWN.

CONCRETE (continued)

C5. PROVIDE 3/4" CHAMFERS AT ALL EXPOSED EDGES NOT ALL CHAMFERS MAY BE SHOWN ON DRAWINGS.
C6. FIELD ADJUST REINFORCING AT OPENINGS AND EMBEDDED ITEMS AS INDICATED.
C7. ANCHOR BOLTS NOT SPECIFIED BY ENGINEER SHALL BE DESIGNED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER, RETAINED BY THE CONTRACTOR, IN ACCORDANCE WITH APPLICABLE PROJECT AND CODE REQUIREMENTS. SUBMIT AS A SHOP DRAWING FOR REVIEW AND APPROVAL BY THE ENGINEER. COORDINATE LOCATION, SIZE AND EMBEDMENT PRIOR TO CASTING CONCRETE.
C8. ABSOLUTELY NO WELDING OF REINFORCING BARS OR TORCHING TO BEND REINFORCING BARS SHALL BE ALLOWED WITHOUT SPECIFIC APPROVAL FROM THE STRUCTURAL ENGINEER.

C9. ALL CAST IN PLACE AND POST-INSTALLED ANCHORS INDICATED IN THE STRUCTURAL DOCUMENTS SHALL COMPLY WITH APPENDIX D OF ACI 318 AND CHAPTER 19 OF THE IBC. ALL EXPANSION AND ADHESIVE ANCHORS SHALL HAVE THE ICC REPORT SHOWING EQUIVALENT LOAD CAPACITY. SUBMIT AND INSTALL PER THE ICC EVALUATION REPORT.

STEEL

S1. **DESIGN STRENGTHS:**
HSS SECTIONS: Fy=46 KSI
ALL OTHER PLATES AND SHAPES: Fy=36 KSI
S2. **DIMENSIONS:**
TO CENTERLINES OF COLUMNS AND BEAMS, TOP SURFACES OF BEAMS AND TUBES AND BACKS OF CHANNELS AND ANGLES UNO.
S3. **ELEVATIONS:**
TOP OF STEEL REFERS TO TOP SURFACE OF MEMBER OR FLANGE UNO.
S4. **FILLET WELDS:**
WHEN FILLET WELD SIZE IS NOT INDICATED, PROVIDE MAXIMUM WELD SIZE BASED ON MATERIAL THICKNESS IN ACCORDANCE WITH AISC SPECIFICATIONS.
S5. **BOLTED CONNECTIONS:**
ALL BOLTED STRUCTURAL CONNECTIONS ARE BEARING TYPE CONNECTIONS UNLESS OTHERWISE SPECIFIED TO BE SLIP-CRITICAL. PROVIDE LOAD INDICATING WASHERS AT SLIP-CRITICAL CONNECTIONS.

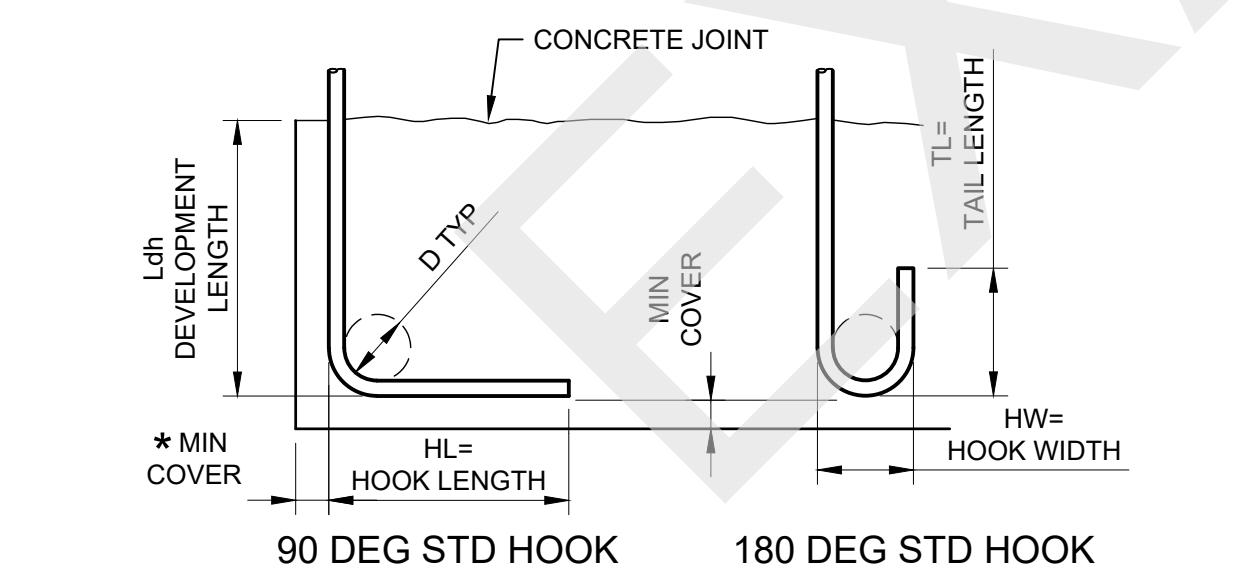
S6. **STEEL MANUAL:**
CONFORM TO AISC 360, STEEL CONSTRUCTION MANUAL AND AISC 341, SEISMIC DESIGN MANUAL.

STEEL DECK:

SD1. THE DESIGN, FABRICATION, AND ERECTION OF METAL DECKING SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE SDI SPECIFICATIONS AND THE SDI DIAPHRAGM MANUAL.
SD2. STEEL ROOF DECK IS 1-1/2 INCH X 18 GAUGE DESIGNED FOR THE DEAD, SNOW AND LIVE LOADS INDICATED.
SD3. STEEL ROOF DECK IS TO BE A STRUCTURAL DIAPHRAGM AND SHALL BE CONNECTED TO THE STRUCTURE AS INDICATED IN THE METAL DECK SCHEDULE.
SD4. THE PLANS INDICATE DECK SPAN DIRECTION.
SD5. SUSPENDED CEILINGS, LIGHT FIXTURES, DUCTS, AND OTHER UTILITIES SHALL NOT BE SUPPORTED FROM THE STEEL DECK.

FINISHES:

F1. COLOR OF ROOF.
F2. COLOR OF SUPPORT STEEL.

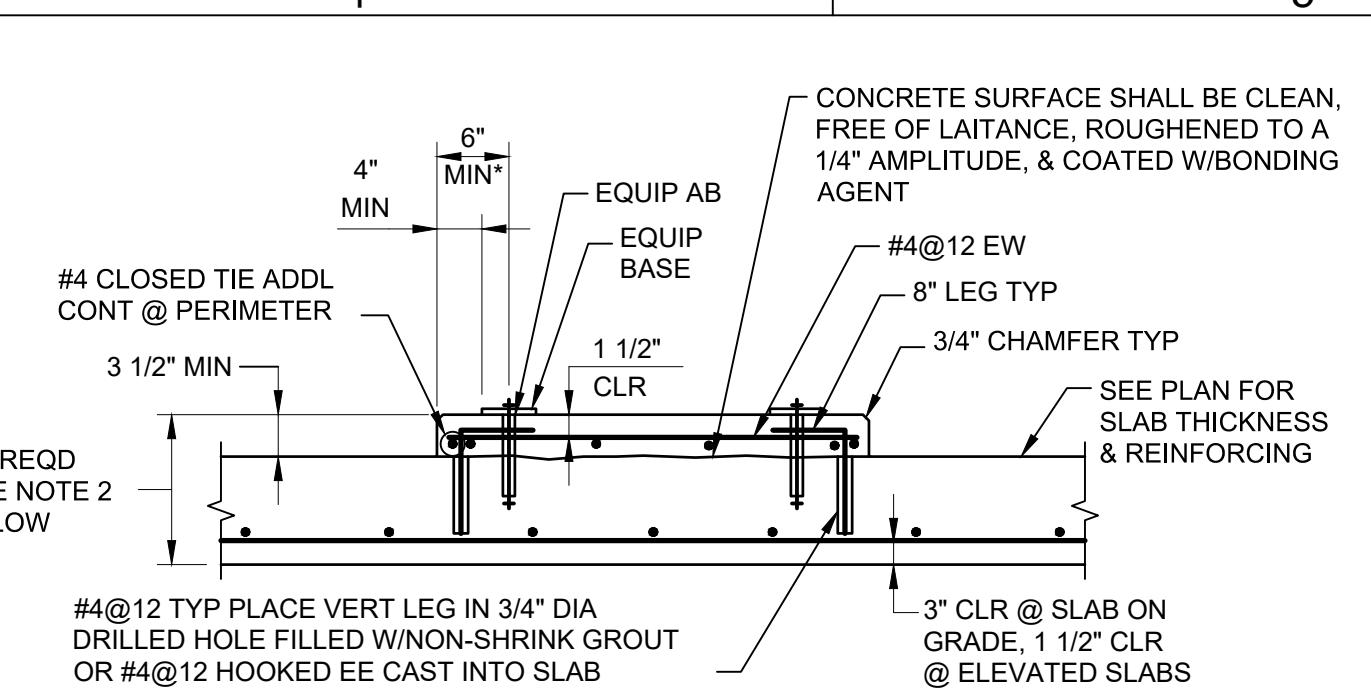


BAR SIZE GRADE 60	HL	HW	TL	D	f'c = 4.0 OR 4.5 KSI
#3	6"	3"	3"	2 1/4"	6"
#4	8"	4"	4 1/2"	3"	7"
#5	10"	5"	5"	3 3/4"	9"
#6	1'-0"	6"	6"	4 1/2"	10"
#7	1'-2"	7"	7"	5 1/4"	12"
#8	1'-4"	8"	8"	6"	14"
#9	1'-7"	11 3/4"	10 1/2"	9 1/2"	15"
#10	1'-10"	1'-1 1/4"	11 1/2"	10 3/4"	17"
#11	2'-0"	1'-2 3/4"	1'-1"	12"	19"

* COMPLYING WITH MINIMUM COVER REQUIREMENTS OF ACI 318, 12.5.3. OTHERWISE Ldh MUST BE RE-CALCULATED.

REINFORCING HOOK SCHEDULE

1"=1'-0"



NOTES:

1. PROVIDE ABOVE PAD UNDER ALL STATIC, NON-VIBRATING ELECTRICAL AND MECHANICAL EQUIPMENT SUPPORTED ON STRUCTURAL SLABS. ALSO PROVIDE FOR EQUIPMENT WEIGHING LESS THAN 5000 POUNDS WHICH ARE SUPPORTED ON GRADE OR WHERE SPECIFICALLY NOTED ON PLANS. STRUCTURAL ENGINEER TO REVIEW AND PROVIDE PROJECT SPECIFIC DESIGN FOR ALL EQUIPMENT PADS.
2. PAD THICKNESS SHALL BE THE LARGER OF SLAB THICKNESS PLUS 3 1/2" OR MINIMUM PAD THICKNESS FROM TABLE. PROVIDE AN ADDITIONAL LAYER OF #4@12 EACH WAY WITH 1 1/2" CLEAR TOP AND BOTTOM FOR EACH 8" ADDITIONAL PAD THICKNESS EXCEEDING THE 3 1/2" MINIMUM THICKNESS. ALTERNATIVELY, THICKEN SLAB ON GRADE BELOW EQUIPMENT PAD AS REQD TO MAINTAIN MIN 3" COVER ON ANCHOR BOLTS.

MINIMUM PAD THICKNESS TABLE

AB DIA	MIN PAD THK
1/4" DIA	5"
3/8" DIA	6 1/2"
1/2" DIA	8"
5/8" DIA	9 1/2"
3/4" DIA	11"
7/8" DIA	12 1/2"
1" DIA	14"

PAD NOTES:

1. ABOVE PAD DETAILS APPLY FOR SUPPORT OF STATIC, NON-VIBRATING EQUIPMENT UNLESS INDICATED OTHERWISE ON THE DRAWINGS. STRUCTURAL ENGINEER TO REVIEW AND PROVIDE PROJECT SPECIFIC DESIGN FOR EQUIPMENT PADS.
2. BEFORE EQUIPMENT SUPPORT PADS ARE CAST, THE PAD SIZES AND REINFORCING SHALL BE APPROVED BY THE ENGINEER AS BEING CAPABLE OF SUPPORTING EQUIPMENT TO BE PLACED THEREON. EQUIPMENT BASE DIMENSIONS SHALL BE THE LARGER OF AS DETERMINED BY THE EQUIPMENT MANUFACTURER OR AS INDICATED ON THE DRAWINGS. SUBMIT ALL EQUIPMENT DIMENSIONS AND LOADS TO ENGINEER. THE SIZE, NUMBER, TYPE, LOCATION AND THREAD PROJECTION OF THE ANCHOR BOLTS (AB) SHALL BE AS DETERMINED BY THE EQUIPMENT MANUFACTURER AND SHALL BE AS APPROVED BY THE ENGINEER. AB SHALL BE HELD IN POSITION WITH A TEMPLATE WHILE EQUIPMENT PAD IS CAST.
3. 6" MINIMUM PAD EDGE DIMENSION TO EQUIPMENT AB APPLIES FOR ALL EQUIPMENT SUPPORT PADS.

TYPICAL EQUIPMENT SUPPORT PAD

2 N.T.S.

LAP SPLICING AND EMBEDMENT LENGTHS f'c = 4.0 ksi f' = 60 ksi f'c = 4.5 ksi		
BAR	BARS SPACED GREATER THAN 4"	BARS SPACED LESS THAN OR EQUAL TO 4"
#3	14"	20"
#4	19"	32"
#5	29"	46"
#6	39"	62"
#7	55"	87"
#8	69"	107"
#9	76"	116"
#10	97"	140"
#11	120"	146"

NOTES:

1. PROVIDE MINIMUM LAP SPLICING LENGTHS AND EMBEDMENTS PER TABLE UNLESS NOTED OTHERWISE. EMBEDMENT LENGTH EQUALS THE LAP SPLICING LENGTH UNLESS OTHERWISE NOTED.
2. BAR SPACING AT LAP SPLICING IS THE MINIMUM CLEAR DISTANCE BETWEEN LAPPED BARS PLUS ONE BAR DIAMETER.
3. ALL SPLICES TO BE CONTACT SPLICES AND WIRED TOGETHER UNLESS OTHERWISE APPROVED BY ENGINEER.

SCHEDULE-ANCHOR BOLT TYPE A			
D	A	B	K
3/8"	1"	6"	2 3/4"
1/2"	1 1/4"	8"	3"
5/8"	1 1/2"	10"	3 1/4"
3/4"	1 3/4"	12"	3 1/2"
7/8"	2"	14"	3 3/4"
1"	2 1/4"	16"	4"
1 1/8"	2 1/2"	18"	4 1/4"
1 1/4"	2 3/4"	20"	4 1/2"
1 3/8"	3"	22"	4 3/4"
1 1/2"	3 1/4"	24"	5"
1 3/4"	3 3/4"	28"	5 1/2"
2"	4 1/4"	32"	6"
2 1/2"	5 1/2"	48"	7"
3"	6 1/4"	66"	8"

NOTES:

1. PROVIDE SST ANCHOR BOLTS WHERE INDICATED IN SECTIONS AND DETAILS.
2. STANDARD BOLT THREAD LENGTH MAY BE USED WHERE APPLICABLE.
3. DIMENSION IN SCHEDULE OR STANDARD BOLT HEAD.

ANCHOR BOLT DETAIL

5 N.T.S.

||
||
||

WASTEWATER PUMP STATION AND FORCE MAIN DESIGN

DATA SUMMARY TABLE 1

BASIN CHARACTERISTICS

LOCATION	ADDRESS AND CROSS STREET
BASIN AREA	XXX ACRES
EQUIVALENT DWELLING UNITS (EDU) PER ACRE	X.X
PERSON PER EDU	X.X
POPULATION EQUIVALENT	XXXX
AVERAGE PER CAPITA FLOW	XX GPD
INFILTRATION AND INFLOW, PEAK WET WEATHER FLOW (PWWF)	XXX,XXX GPD
AVERAGE DAILY FLOW	XXX,XXX GPD
PEAK HOURLY FLOW	XXX GPM

PUMP STATION

TYPE	DUPLEX SUBMERSIBLE, NON-CLOG, VARIABLE SPEED PUMPS
CAPACITY (PER PUMP)	XXX GPM @ XX FEET TDH (STATIC HEAD = XX FT)
HORSEPOWER, HP	XX HP EACH WITH VARIABLE FREQUENCY DRIVES
MOTOR DATA	Xxx VOLT X PHASE XX CYCLE
FIRM CAPACITY OF PUMP STATION	XXX MGD (XXX GPM)
MAXIMUM PUMP STARTS PER HOUR	X - SEE NOTE 4
WET WELL VOLUME	XXX GALLONS (PUMPS OFF TO LEAD PUMP)
LEVEL CONTROL TYPE	PRESSURE SENSORS LEVEL CONTROL
OVERFLOW POINT	MANHOLE NUMBER AND ELEVATION
OVERFLOW LOCATION	DESCRIPTION
AVERAGE TIME TO OVERFLOW	TIME AND DESCRIPTION, XX HOURS AT XX GPM DESIGN AVERAGE INFLUENT FLOW - SEE NOTE 1
TELEMETRY	BY CITY
TRANSFER SWITCH	AUTOMATIC
STANDBY POWER TYPE	XXX KW STATIONARY DIESEL POWERED STANDBY GENERATOR
FUEL TANK CAPACITY	XX HRS/DAYS (XXX GALLONS)
EPA RELIABILITY CLASS	1
FLOW METER	"X" MAGNETIC (DESCRIPTION)
CONTROL	CONSTANT SPEED OR VFD - PER CITY APPROVAL

FORCE MAIN

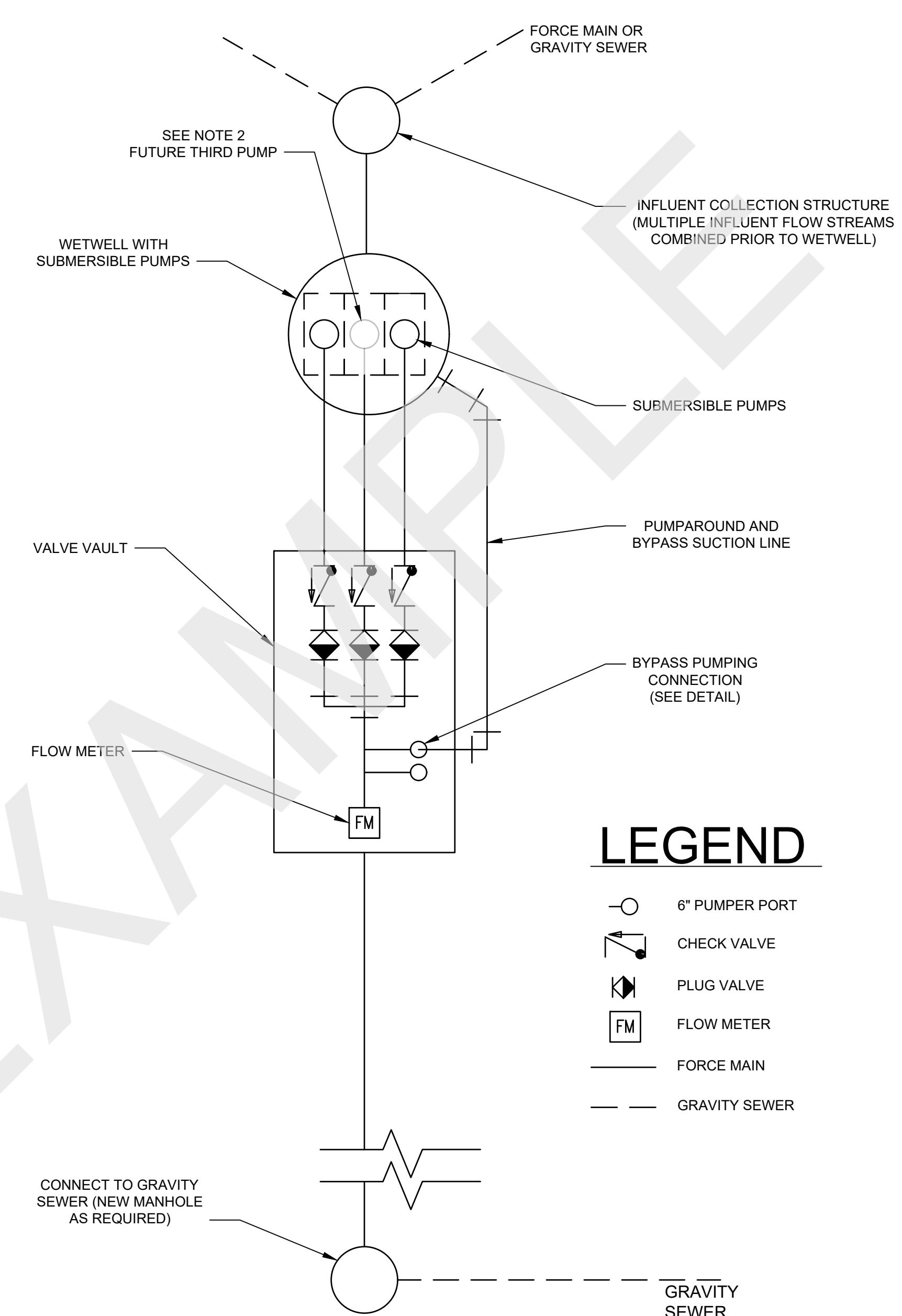
TYPE AND LENGTH	XXXX FEET, TYPE
FORCEMAIN VELOCITY	X.X FEET PER SECOND
PROFILE	DESCRIPTION
AIR RELEASE VALVE	QUANTITY, DESCRIPTION
DISCHARGE LOCATION	MANHOLE NUMBER AND ELEVATION
AVERAGE DETENTION TIME	XX HOURS
ODOR CONTROL SYSTEM	DESCRIPTION

OPERATING LEVELs

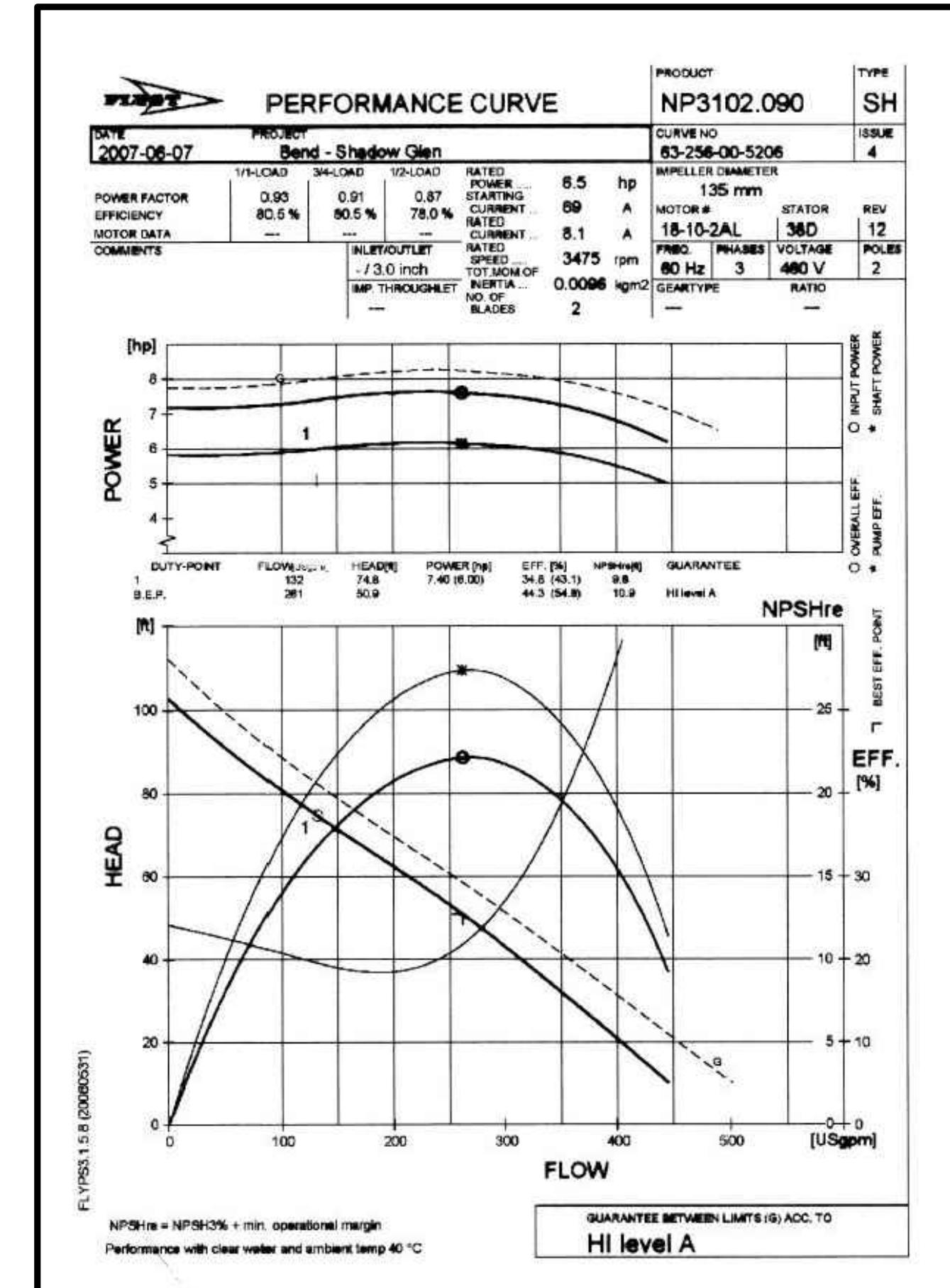
GROUND ELEVATION	XXXX.XX
OVERFLOW ALARM ELEVATION	FLOAT CONTROL SYSTEM? (BACKUP)
LAG PUMP ON/HIGH WATER ALARM ELEVATION XXXX.XX	PRESSURE PROBE (PROVIDE DISTANCE FROM WET WELL FLOOR IN FEET) SAME AS LEVEL INDICATOR DIGITAL DISPLAY
LEAD PUMP ON ELEVATION XXXX.XX	PRESSURE PROBE (PROVIDE DISTANCE FROM WET WELL FLOOR IN FEET) SAME AS LEVEL INDICATOR DIGITAL DISPLAY
ALL PUMPS OFF ELEVATION XXXX.XX	PRESSURE PROBE (PROVIDE DISTANCE FROM WET WELL FLOOR IN FEET) SAME AS LEVEL INDICATOR DIGITAL DISPLAY
WETWELL FLOOR ELEVATION XXXX.XX	PRESSURE PROBE (0.00 FEET)

LANDSCAPING

LANDSCAPING AREA	SQUARE FEET AND DESCRIPTION
IRRIGATION SYSTEM	TYPE
CONTROL VALVES	NUMBER AND TYPE
BACKFLOW DEVICE	SIZE AND TYPE



PUMP STATION SCHEMATIC



EXAMPLE PUMP PERFORMANCE CURVE

PUMP STATION SCHEMATIC

1. DESIGN ENGINEER TO FILL IN DESIGN INFORMATION IN THE TABLE FOR APPROVAL BY CITY OF BEND. PUMP STATION WETWELL SHALL CONFORM TO ANSI/HYDRAULIC INSTITUTE STANDARD 9.8.
2. RESERVED FOR FUTURE THIRD PUMP IN PUMP STATION.
3. PUMP SELECTION DESIGN POINT SHALL CONFORM TO HYDRAULIC INSTITUTE STANDARDS 9.6.3
4. PUMP STATION WETWELL STORAGE VOLUME PER HYDRAULIC INSTITUTE STANDARD 9.8 BASED ON THE MAXIMUM PUMP CYCLE TIME, LESS THAN EIGHT (8) STARTS PER HOUR.

FOR SAMPLE ONLY	
REVISIONS DRAWN BY: XX DATE: XX/XX/XX	
THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.	
REVISIONS:	FILE:
DESIGNED BY:	DRAWN BY:
SCALE:	FILE:
VERIFY SCALES	DATE:
0	1"
BAR EQUALS ONE INCH ON ORIGINAL DRAWING	
SHEET:	
G-008	
COB # (XXXXXX)	

STAMP
[ENGINEERS]

(PROJECT NAME)
GENERAL
BASIS OF DESIGN
DESCHUTES COUNTY, OREGON



REVISIONS:

[COMPANY NAME]
[COMPANY ADDRESS
AND PHONE NUMBER]

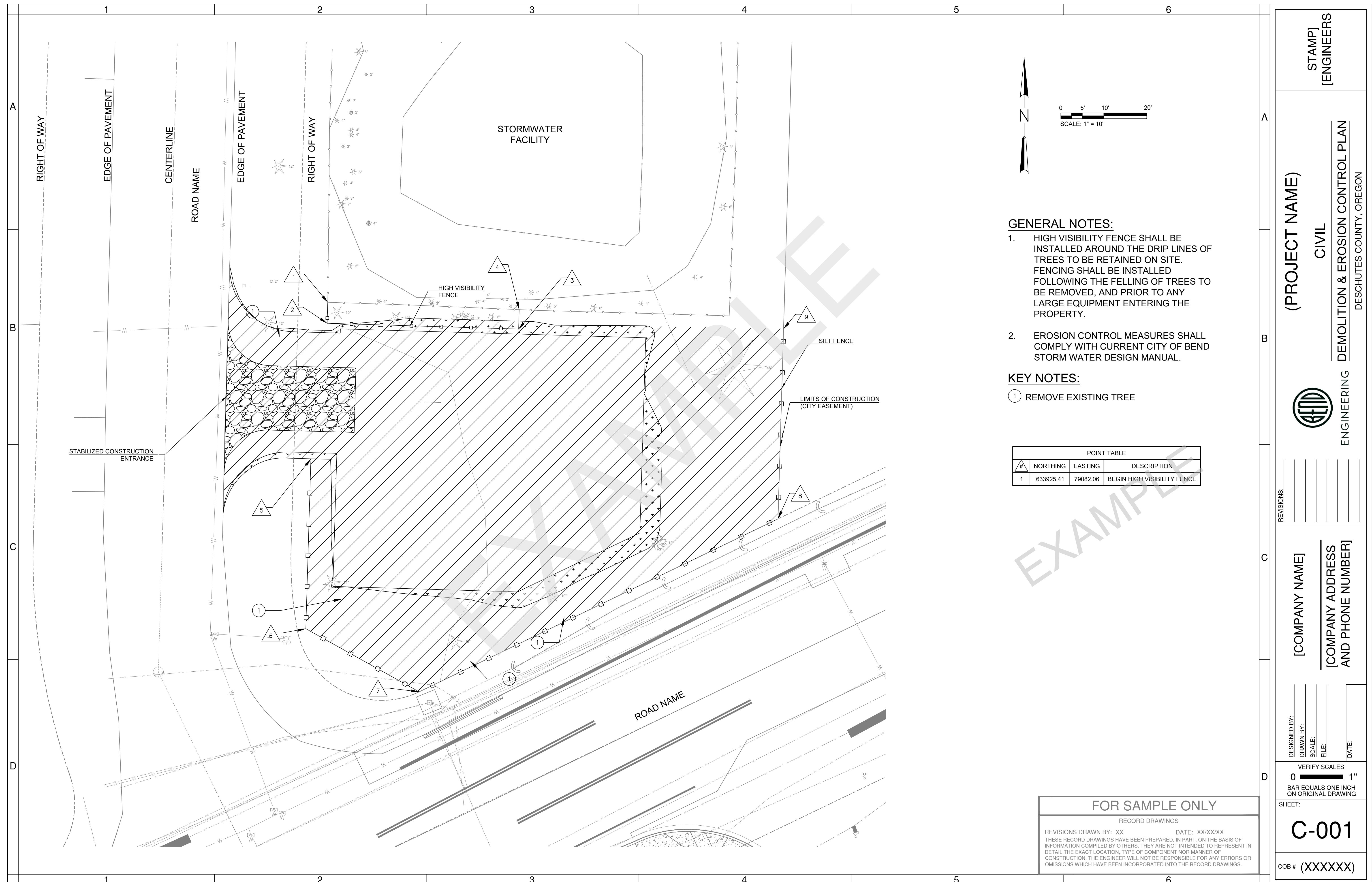
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FILE:
DATE:

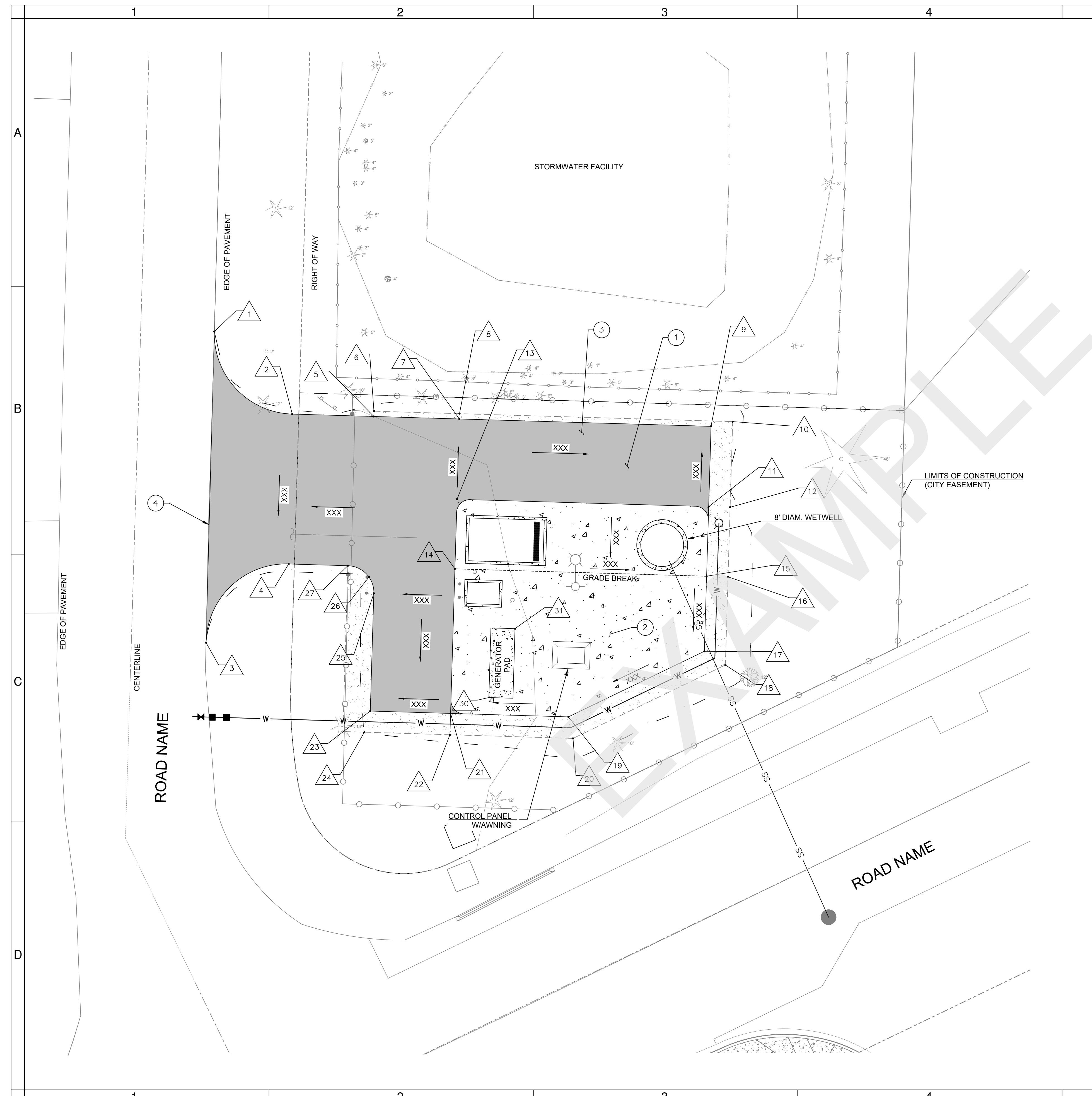
VERIFY SCALES
0 ■ 1"
BAR EQUALS ONE INCH
ON ORIGINAL DRAWING

SHEET:

G-008

COB # (XXXXXX)





KEY NOTES:

- 1 COMMERCIAL HMA
- 2 REINFORCED CONCRETE PAD.
- 3 GRAVEL SURFACING SECTION.
- 4 SAWCUT EXISTING ASPHALT CONC. PAVEMENT.
TACKCOAT PER ODOT STANDARD.

5' 10' 20'

SCALE: 1" = 10'

POINT TABLE			
#	NORTHING	EASTING	DESCRIPTION
1	633933.96	79059.23	BEGIN ASPHALT
2	633918.57	79073.79	PT, ASPHALT
3	633875.90	79057.68	END ASPHALT
4	633890.57	79073.11	PC, ASPHALT
5	633918.13	79089.01	BEGIN GRAVEL
6	633919.12	79089.04	AP, GRAVEL
7	633917.65	79104.99	GRADE BREAK, CONCRETE & GRAVEL
8	633918.65	79105.02	GRADE BREAK, GRAVEL
9	633916.28	79152.00	AP, CONCRETE & GRAVEL
10	633917.16	79156.04	AP, GRAVEL
11	633901.28	79151.56	AP, CONCRETE
12	633901.16	79155.56	GRADE BREAK, GRAVEL
13	633902.66	79104.55	AP, CONCRETE
14	633889.67	79104.16	GRADE BREAK, CONCRETE
15	633888.29	79151.18	GRADE BREAK, CONCRETE
16	633888.17	79155.17	GRADE BREAK, GRAVEL
17	633874.27	79150.75	AP, CONCRETE & GRAVEL
18	633871.73	79154.68	AP, GRAVEL
19	633862.03	79125.36	AP, CONCRETE & GRAVEL
20	633858.01	79126.22	AP, GRAVEL
21	633862.68	79103.35	AP, CONCRETE
22	633858.68	79103.23	GRADE BREAK, GRAVEL
23	633863.12	79088.36	AP, CONCRETE & GRAVEL
24	633859.15	79087.24	AP, GRAVEL
25	633885.10	79089.02	PC, ASPHALT & GRAVEL
26	633888.14	79088.11	END GRAVEL
27	633890.25	79084.17	PT, ASPHALT
28	633894.97	79113.74	VALVE VAULT
29	633894.24	79142.88	WETWELL
30	633867.64	79110.57	GENERATOR PAD
31	633880.50	79115.45	GENERATOR PAD

FOR SAMPLE ONLY

RECORD DRAWINGS

STAMP] [ENGINEERS

(PROJECT NAME)	
CIVIL	
GRADING AND DRAINAGE PL	DESCHUTES COUNTY, OREGON

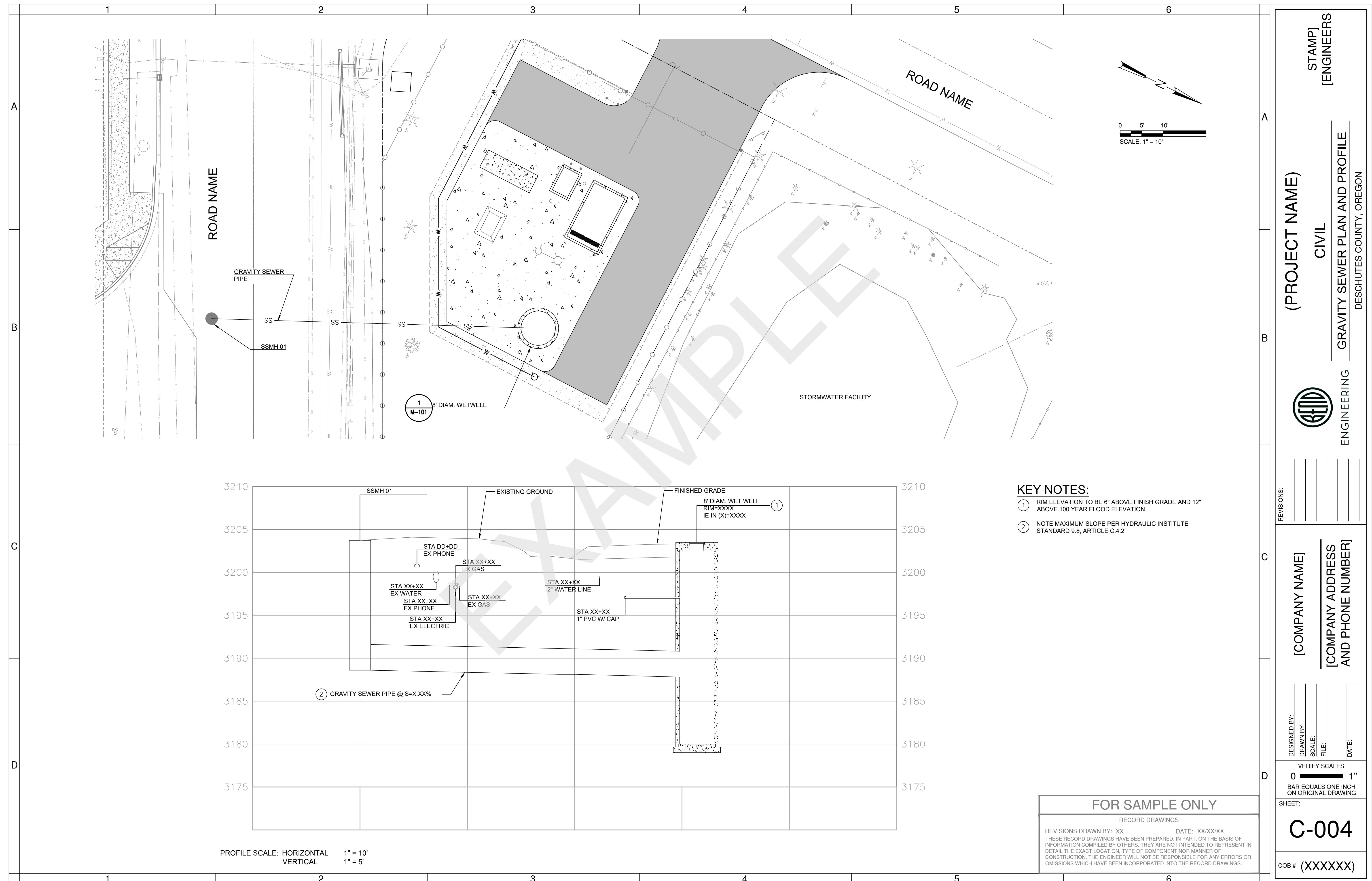
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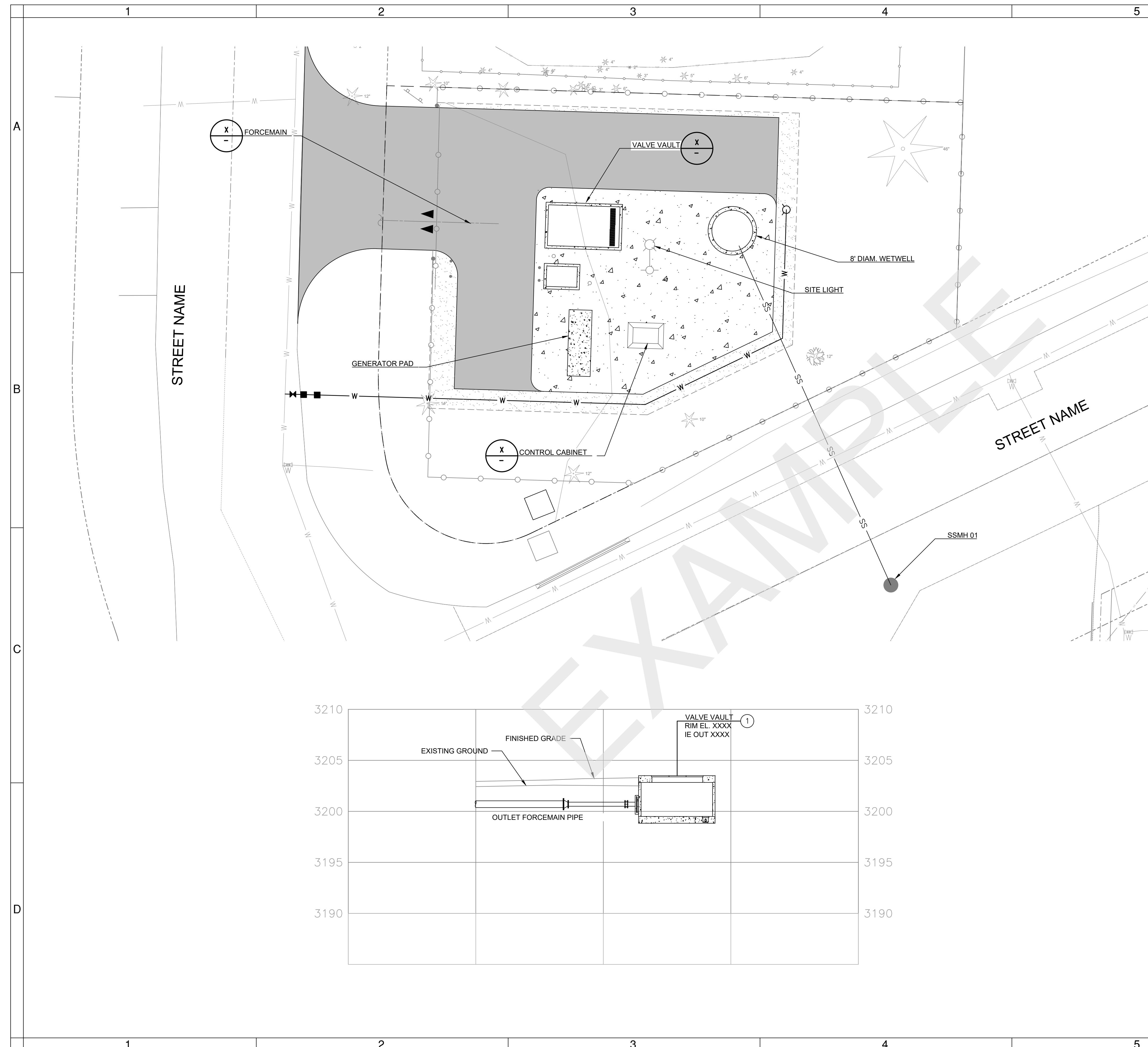
[COMPANY NAME]

[COMPANY ADDRESS
AND PHONE NUMBER]

<u>DESIGNED</u>	<u>DRAWN BY</u>	<u>SCALE:</u>	<u>FILE:</u>	<u>DATE:</u>
VERIFY SCALES				
0				1"
BAR EQUALS ONE INCH ON ORIGINAL DRAWING				

C-003





KEY NOTES:

1 RIM ELEVATION TO BE 6" ABOVE FINISH GRADE AND 12"
ABOVE 100 YEAR FLOOD ELEVATION.

5' 10' 20'

SCALE: 1" = 10'

STAMP] [ENGINEERS

STAMP] [ENGINEERS

**CIVIL
DRCE MAIN SEWER PLAN AND PROFILE
DESCHUTES COUNTY, OREGON**

CINEFEST

EN

1

[COMPANY ADDRESS
AND PHONE NUMBER]

WNB1.	E:		
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SC FII DA
VERIFY SCALES
1"
EQUALS ONE INCH
ORIGINAL DRAWING

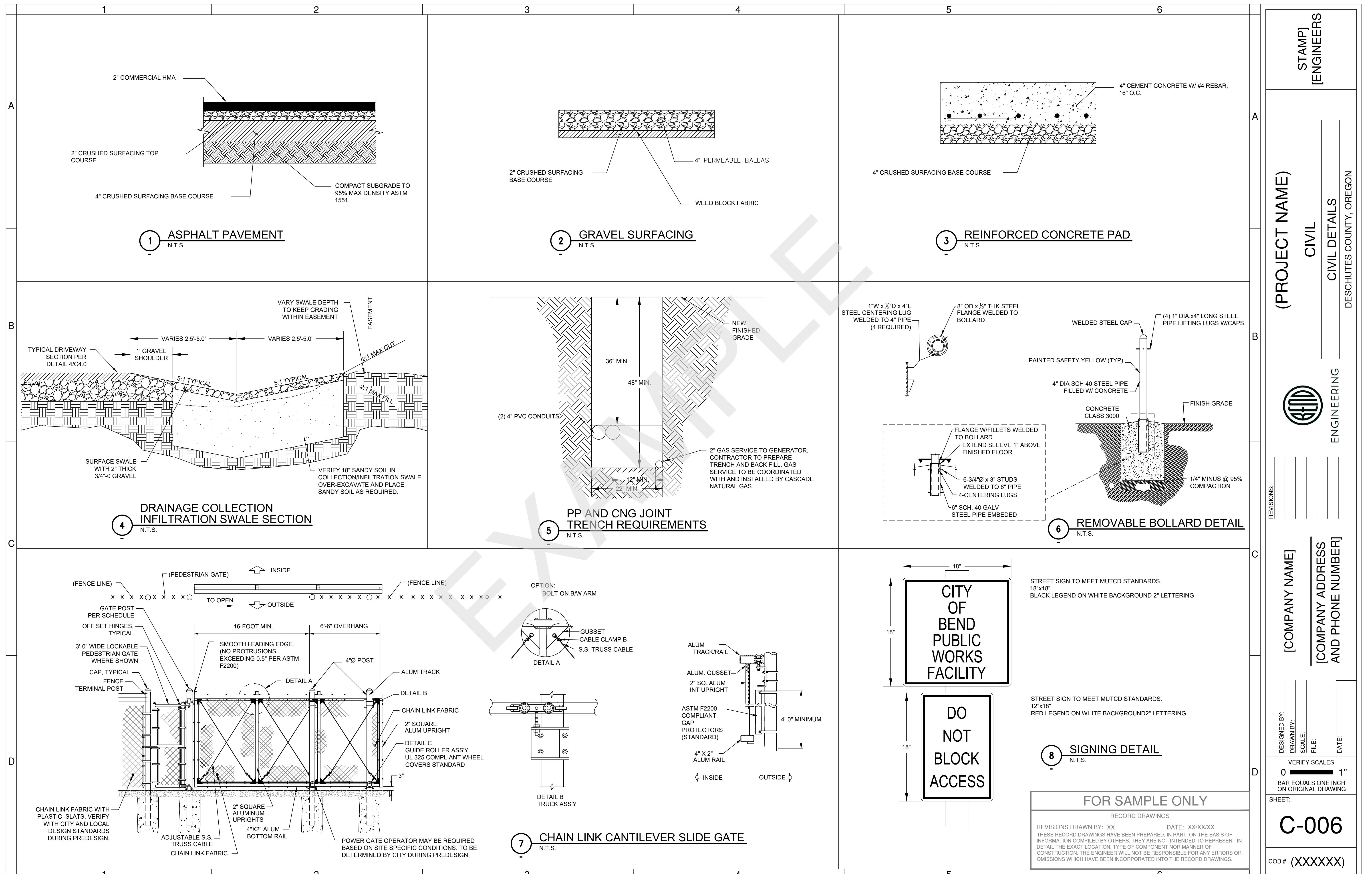
C-005

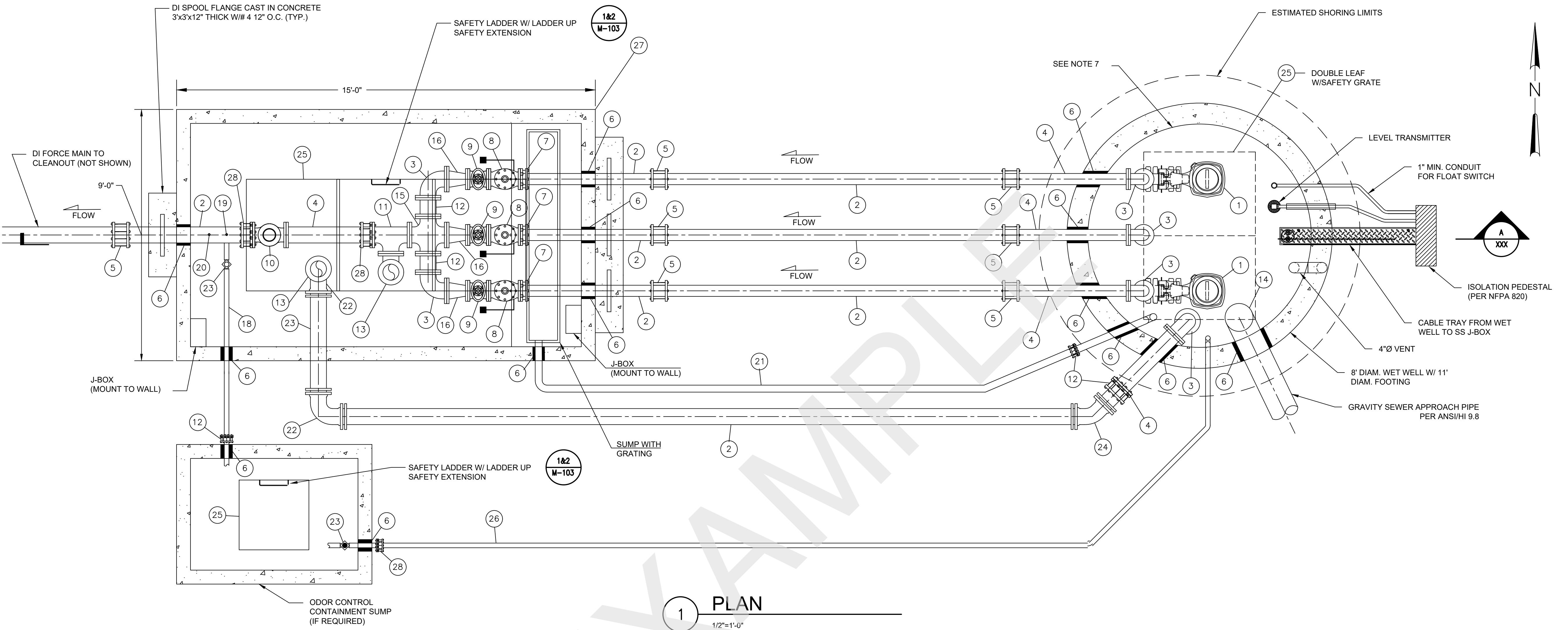
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FOR SAMPLE ONLY

RECORD DRAWINGS

REVISIONS DRAWN BY: XX DATE: XX/XX/XX
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OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.





KEY NOTES:

1	SUBMERSIBLE PUMPS, NOTE 6	17	NOT USED THIS SHEET
2	DUCTILE IRON, PLAIN END	18	PIPE FOR FUTURE ODOR CONTROL CHEMICAL FEED PENETRATION WITH CAP, NOTE 5
3	DUCTILE IRON 90° BEND, FL	19	TAPPING SADDLE WITH 1" BALL VALVE
4	DUCTILE IRON PIPE, FLANGE X PLAIN END	20	PRESSURE TRANSMITTER ASSEMBLY WITH SADDLE TAP
5	FLEXIBLE COUPLING	21	PVC SDR 35 DRAIN LINE
6	LINK SEAL	22	90° BEND, MJ
7	DISMANTLING JOINT	23	ISOLATION BALL VALVE IN VALVE BOX
8	SWING CHECK VALVE W/ SPRING AND LEVER, FLANGED	24	45° BEND, MJ
9	PLUG VALVE, FLANGED	25	ALUMINUM, H20 LOAD RATED ACCESS HATCH
10	FLOW METER, FLANGED	26	4" DUCTILE IRON DRAIN LINE
11	TEE, FLANGED	27	PRECAST VALVE VAULT, SEE NOTE 1
12	PROVIDE FLANGED COUPLING ADAPTER FOR DIFFERENTIAL SETTLEMENT	28	FLANGED COUPLING ADAPTER
13	PUMPER PORT WITH ALUMINUM CAM LOCK FITTINGS (2 TYP.) MALE W/ CAP		
14	DOWN TURNED TEE		
15	CROSS, FLANGED		
16	REDUCER, FLANGED		

GENERAL NOTES:

1. VALVE VAULT SHALL BE PRECAST. (4' MAX DEPTH RIM TO FLOOR)
2. ALL PIPE AND FITTINGS IN WETWELL SHALL BE DUCTILE IRON CLASS 52 WITH FLANGED JOINTS AND EPOXY COATED.
3. ALL PENETRATIONS SHALL BE CORE DRILLED AND SECURED/SEALED WITH LINK SEAL.
4. ALL HARDWARE AND FASTENERS TO BE 316 STAINLESS STEEL.
5. CITY OF BEND RESERVES THE RIGHT TO REQUIRE ODOR CONTROL SECONDARY CONTAINMENT SUMP AND ODOR CONTROL CHEMICAL FEED BASED ON LOCAL SITE REQUIREMENTS.
6. SUBMERSIBLE PUMPS TO BE FLYGT WITH N-IMPELLER OR APPROVED EQUAL. SEE G-008 FOR ADDITIONAL DESIGN DETAIL INFORMATION.
7. PROVIDE THERMOPLASTIC LINER SYSTEM PER CITY STANDARDS SPECIFICATION SECTION 44 42 73.01, PREDL SYSTEMS, OR EQUAL.
8. CONTRACTOR TO INSTALL SST GUIDE RAILS AND PUMP DISCHARGE PIPING FOR FUTURE THIRD PUMP.
9. BYPASS SUCTION END OF PIPE TO BE 2'-0" BELOW GRAVITY APPROACH SEWER INVERT.
10. ALL PIPE AND FITTING SIZES TO BE DETERMINED BASED ON SITE SPECIFIC REQUIREMENTS.

FOR SAMPLE ONLY

BECQBD DBAWINGS

REVISIONS DRAWN BY: XX DATE: XX

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DETALIE THE EXACT LOCATION, TYPE OF COMPONENT NOT MANUFACTURED OR CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR

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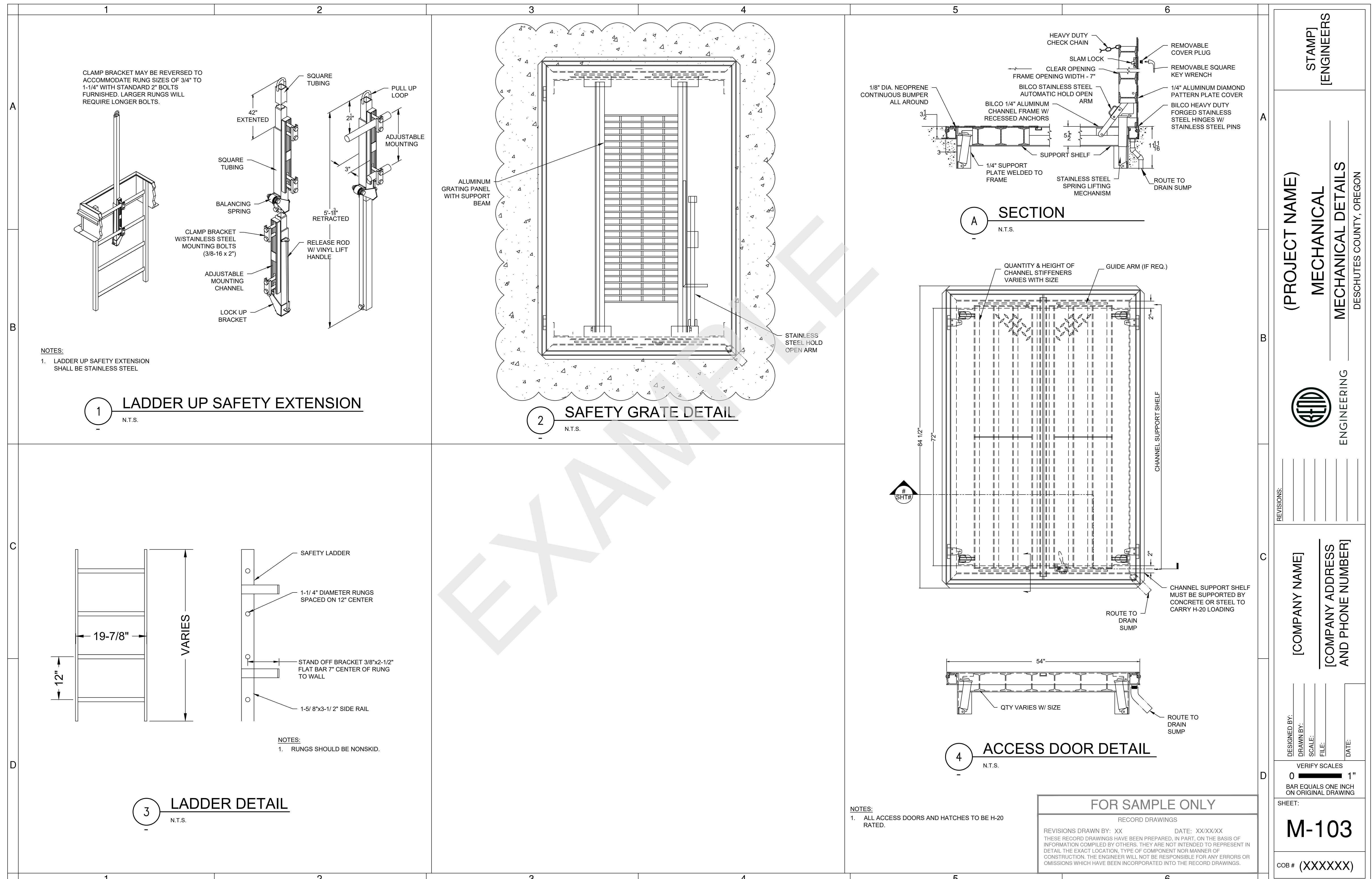
PROJECT NAME) (STAMP)
MECHANICAL [ENGINEERS]
LIFT STATION MECHANICAL PLAN
DESCHUTES COUNTY, OREGON

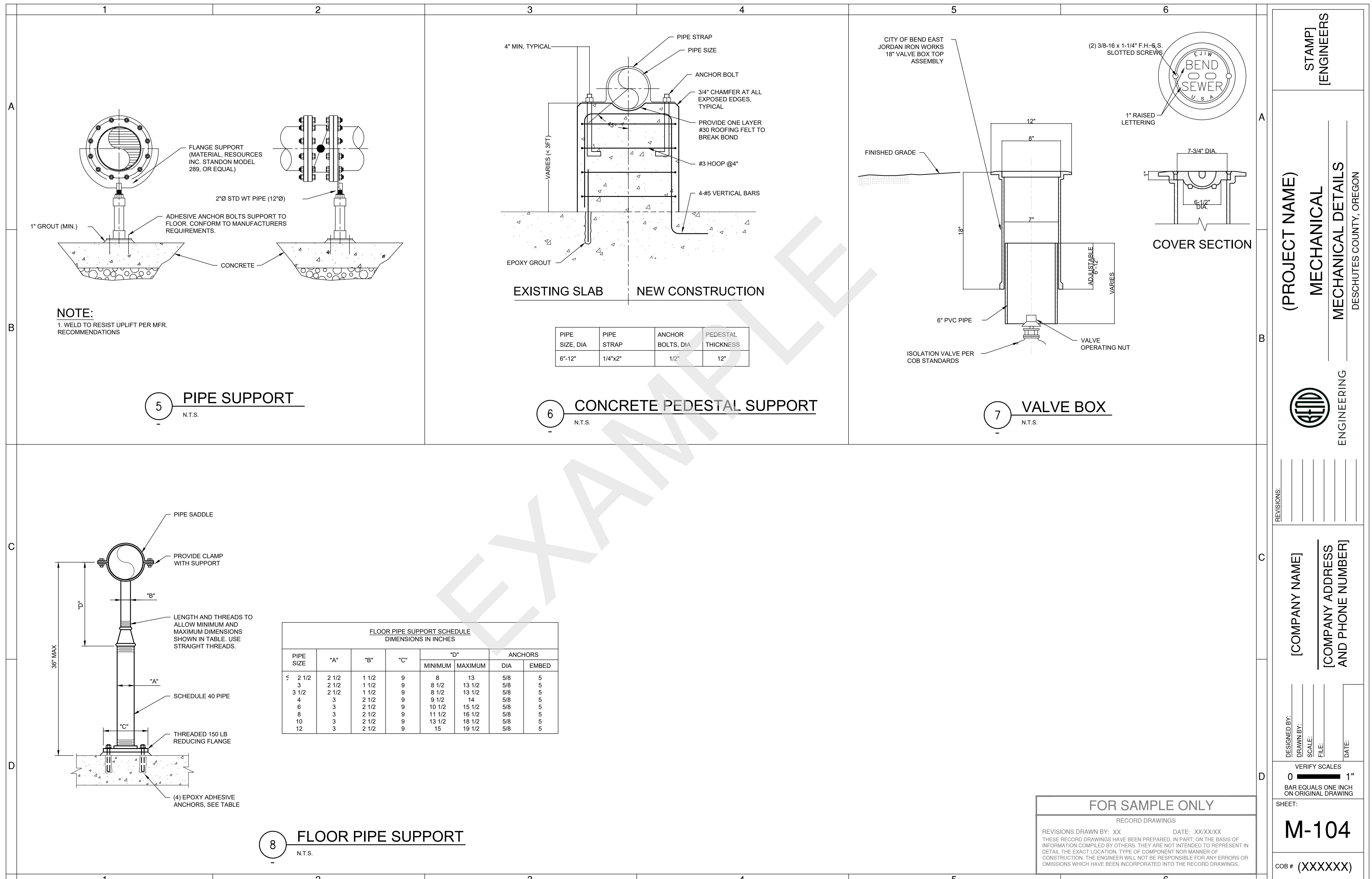
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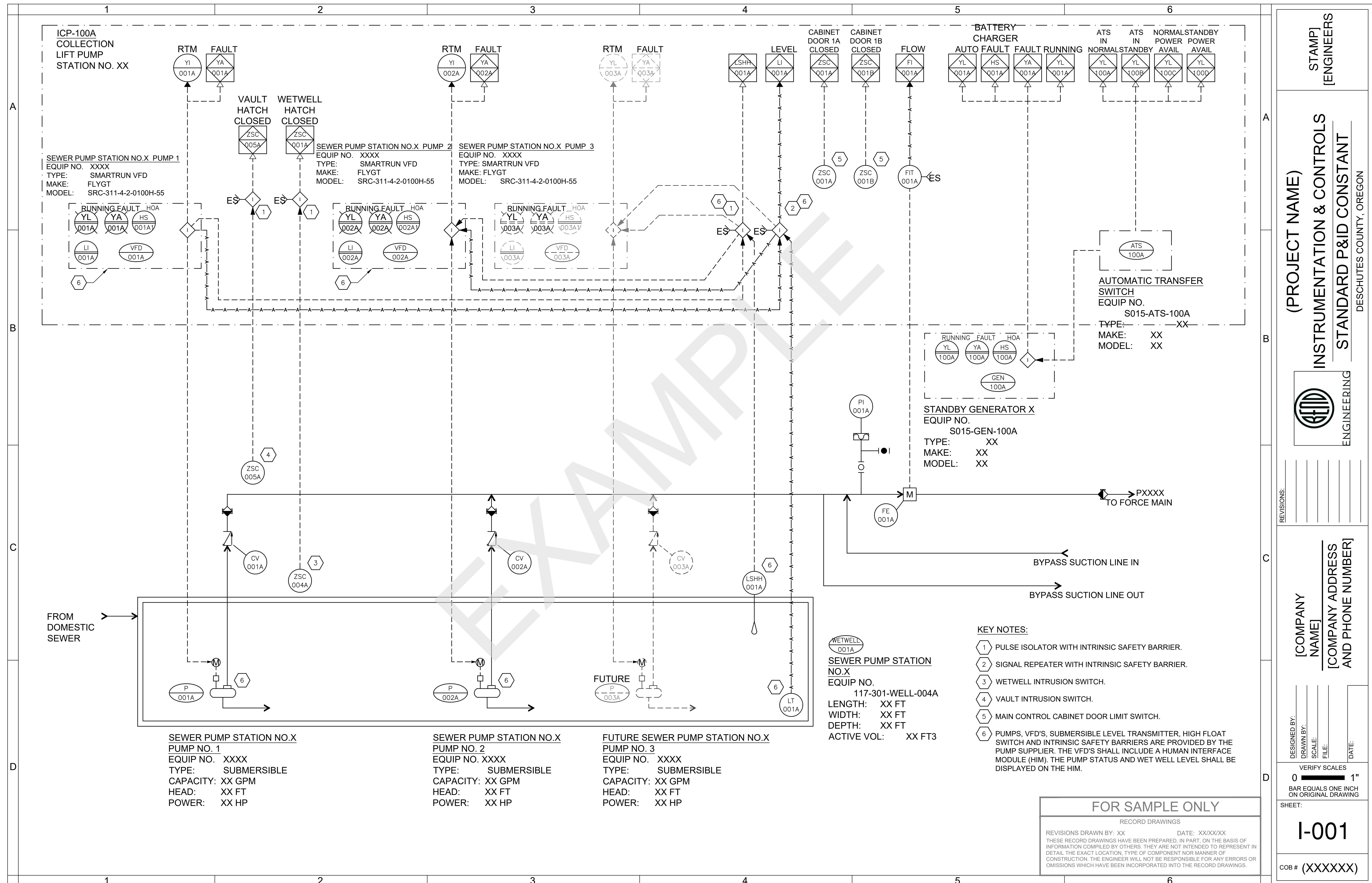


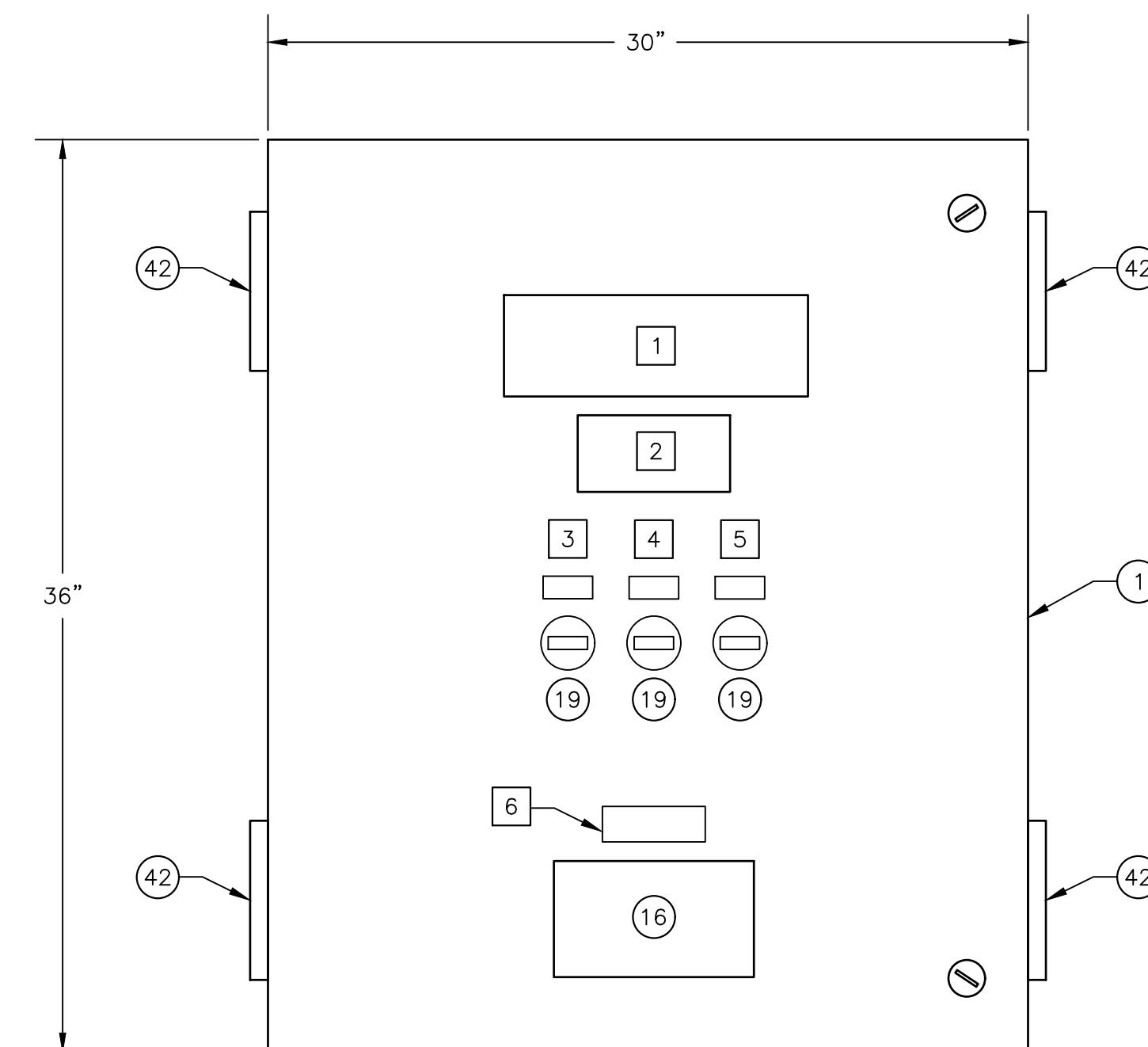
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M-101
COB # **(XXXXXX)**

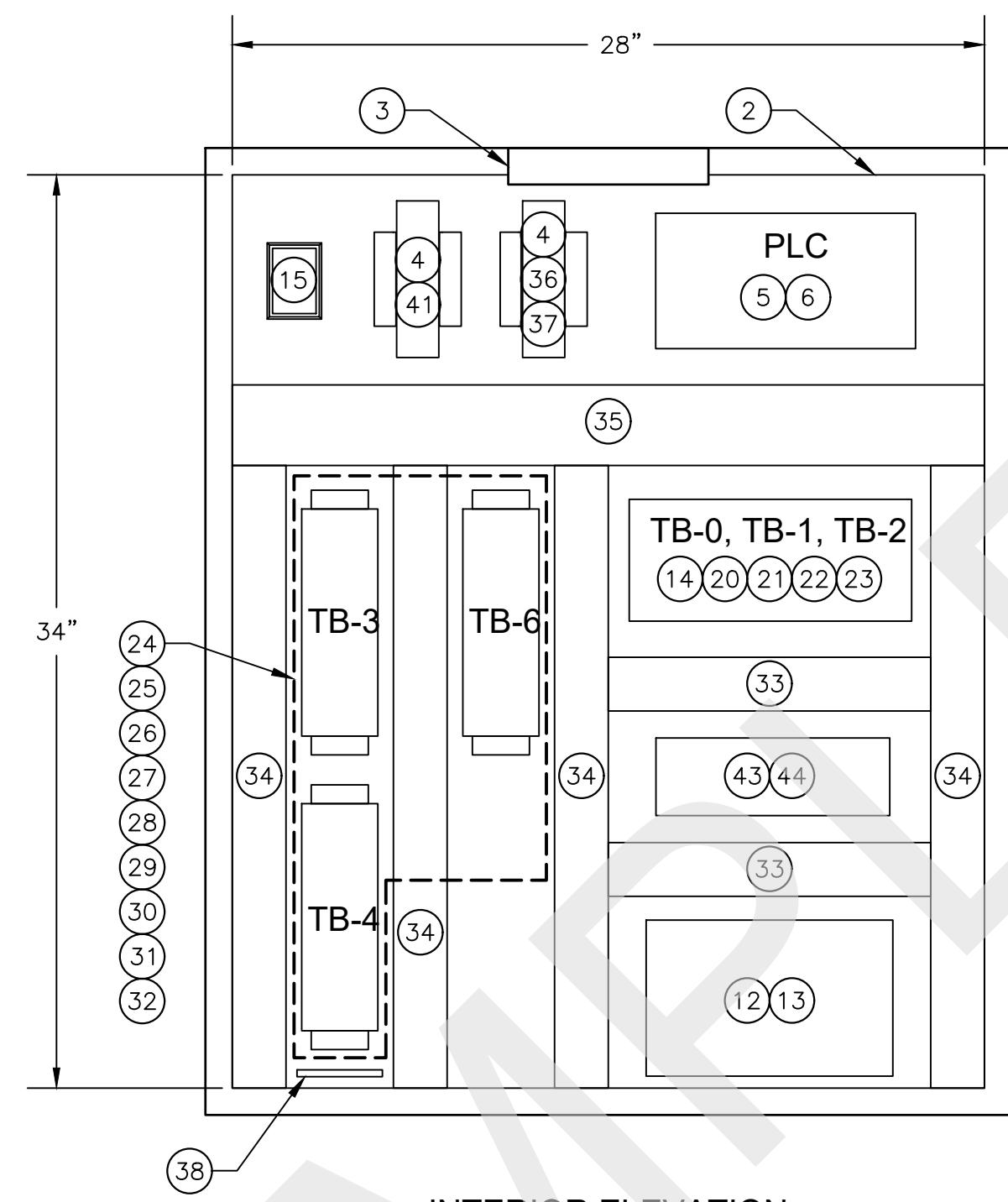








EXTERIOR FRONT ELEVATION



INTERIOR ELEVATION

**CONTROL PANEL
PANEL LAYOUT ELEVATION**

1
N.T.S.

GENERAL NOTES:

1. PANEL CONSTRUCTION PER NEC 2014, UL 508A REQUIREMENTS, FOLLOW NFPA 79 WHERE APPLICABLE.
2. PANEL WIRING EXCEPT WHERE OTHER SPECIFIED:
 - SINGLE WIRES SHALL BE THHN 16AWG, EXCEPT WHERE INTENDED FOR POWER OR MOTOR CIRCUITS WHICH SHALL BE 12AWG, MIN.
 - COLOR CODE SHALL FOLLOW UL 508A.
 - TWISTED PAIR ANALOG SIGNAL CABLE SHALL BE BELDEN 8760 OR EQUAL.
 - EACH WIRE SHALL BE IDENTIFIED WITH A PERMANENT WIRE LABEL, P/N BRADY LAT-18-361.
3. PANEL FABRICATOR SHALL PROVIDE ENGRAVED NAMEPLATES AS INDICATED AND LOCATED ON THIS DRAWING. REFERENCE OWNER'S ELECTRICAL SPECIFICATIONS FOR MATERIAL, FABRICATION, AND INSTALLATION DETAILS.
4. PANEL FABRICATOR TO LABEL ALL FUSES, TERMINAL BLOCKS, CIRCUIT BREAKERS WITH DEVICE DESIGNATION OR WIRE NUMBER AS SHOWN USING MANUFACTURER APPROPRIATE LABELING SYSTEM.
5. CONTROL PANEL SHALL NOT BE FABRICATED WITH A FALSE FRONT.
6. PROVIDE A MINIMUM OF 10% AVAILABLE TERMINAL BLOCKS.
7. PANEL LAYOUT SHALL RESERVE SPACE TO ADD A MINIMUM OF TWO PLC EXPANSION MODULES.

LEGEND:

INDICATES BILL OF MATERIALS (BOM) ITEM;
REFERENCE SHEET I-003

INDICATES NAMEPLATE ITEM; REFERENCE SHEET
I-003

STAMP
[PROJECT NAME]
[ENGINEERS]

**CONTROL PANEL TYPE B
TEMPLATE (50 I/Os) PANEL LAYOUT**
DESHUTES COUNTY, OREGON



DESIGNER: _____

REVISIONS: _____

[COMPANY
NAME]
[COMPANY ADDRESS
AND PHONE NUMBER]

VERIFY SCALES
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ON ORIGINAL DRAWING

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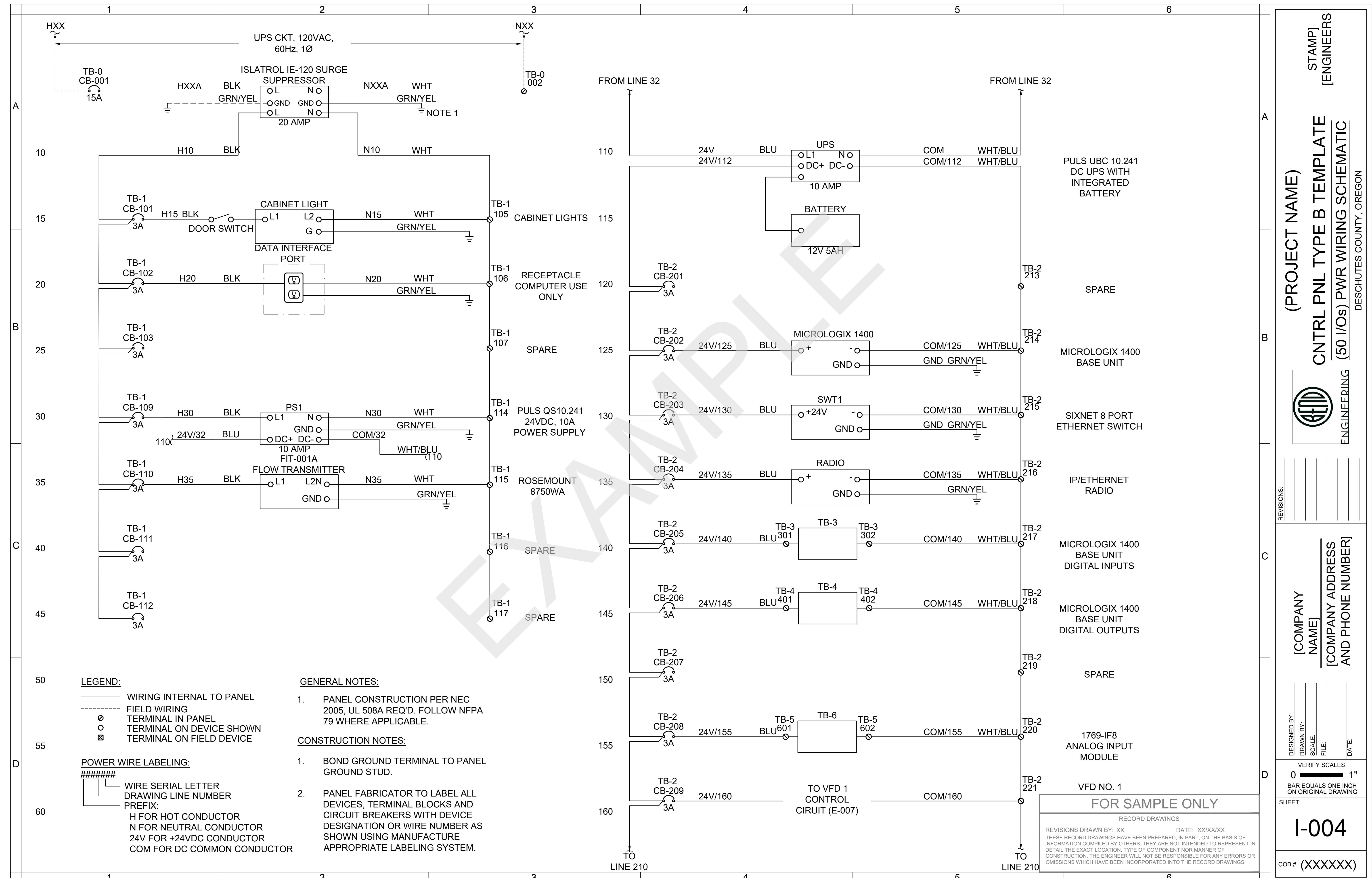
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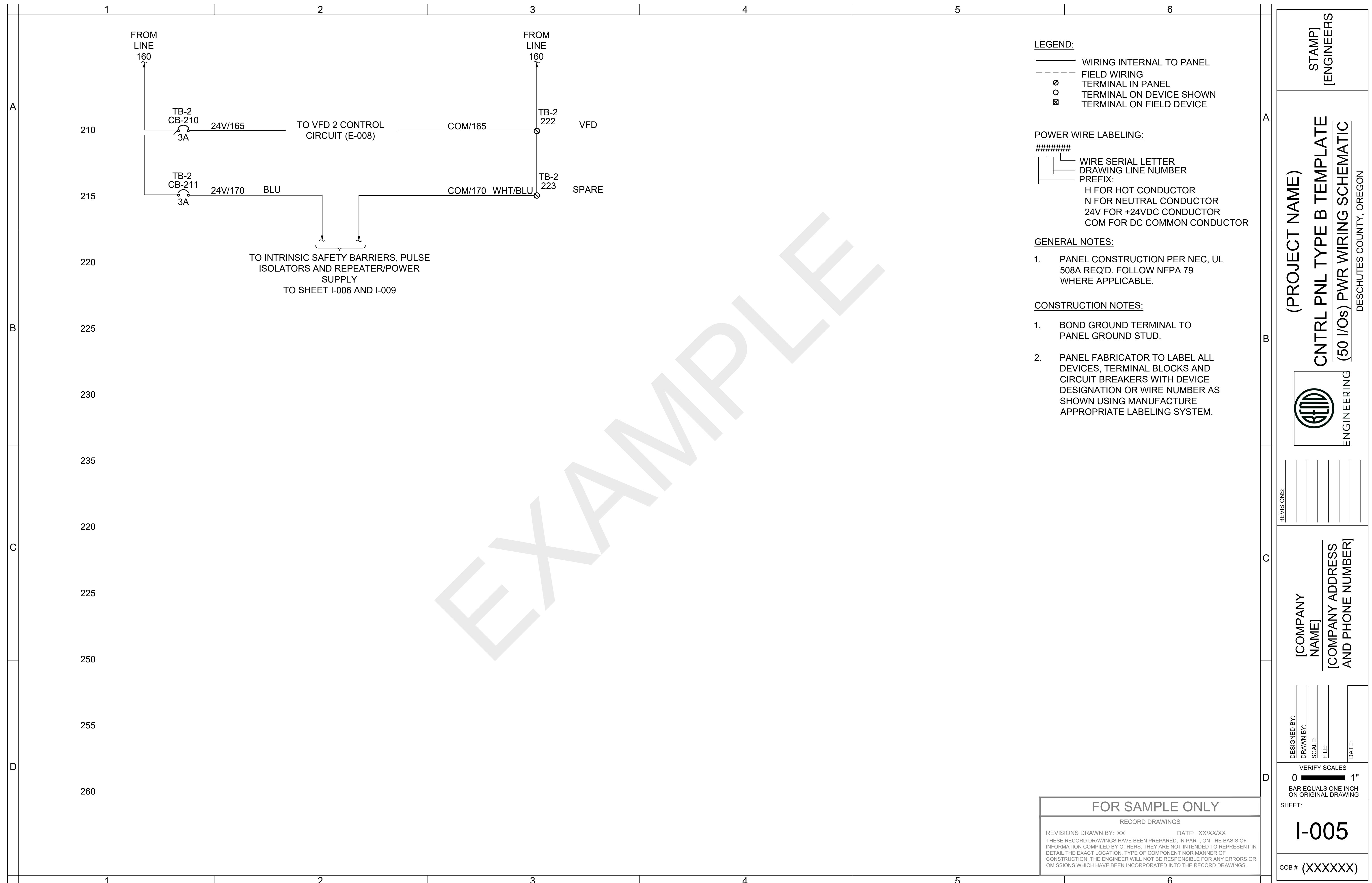
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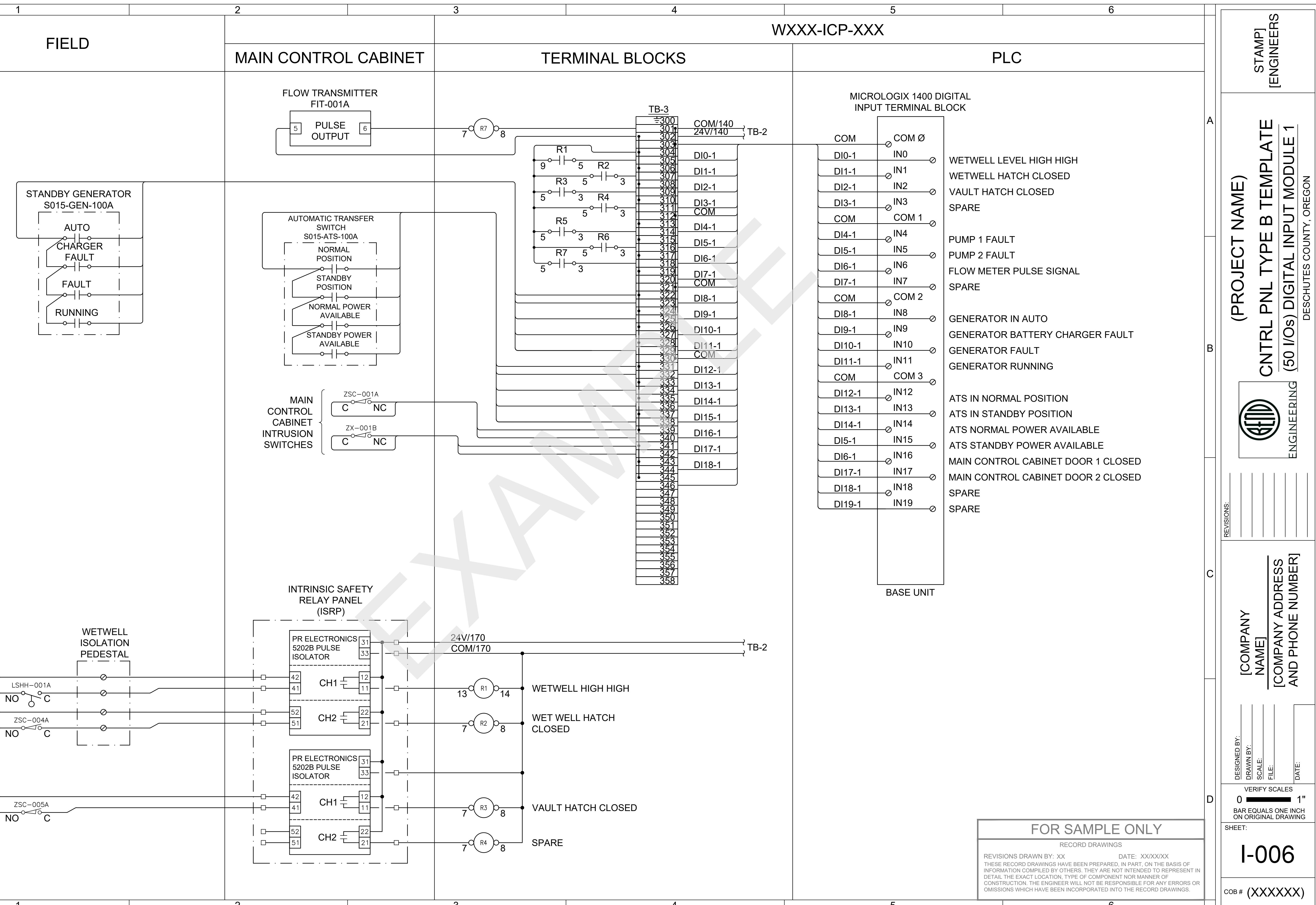
RECORD DRAWINGS

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SHEET:
I-002







STAMP
[ENGINEERS]

(PROJECT NAME)
CNTRL PNL TYPE B TEMPLATE
(50 I/Os) DIGITAL INPUT MODULE 1
DESHUTES COUNTY, OREGON



REVISIONS: _____

[COMPANY NAME]
[COMPANY ADDRESS AND PHONE NUMBER]

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FILE:
DATE:

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ON ORIGINAL DRAWING

SHEET:

I-006

COB # (XXXXXX)

1	2	3	4	5	6	
FIELD	MAIN CONTROL CABINET	TERMINAL BLOCKS		PLC		
		TERMINAL BLOCKS	PLC	PLC	PLC	
A				MICROLOGIX 1400 DIGITAL OUTPUT TERMINAL BLOCK BASE UNIT	SPARE	SPARE
B					SPARE	
C					SPARE	
D					SPARE	

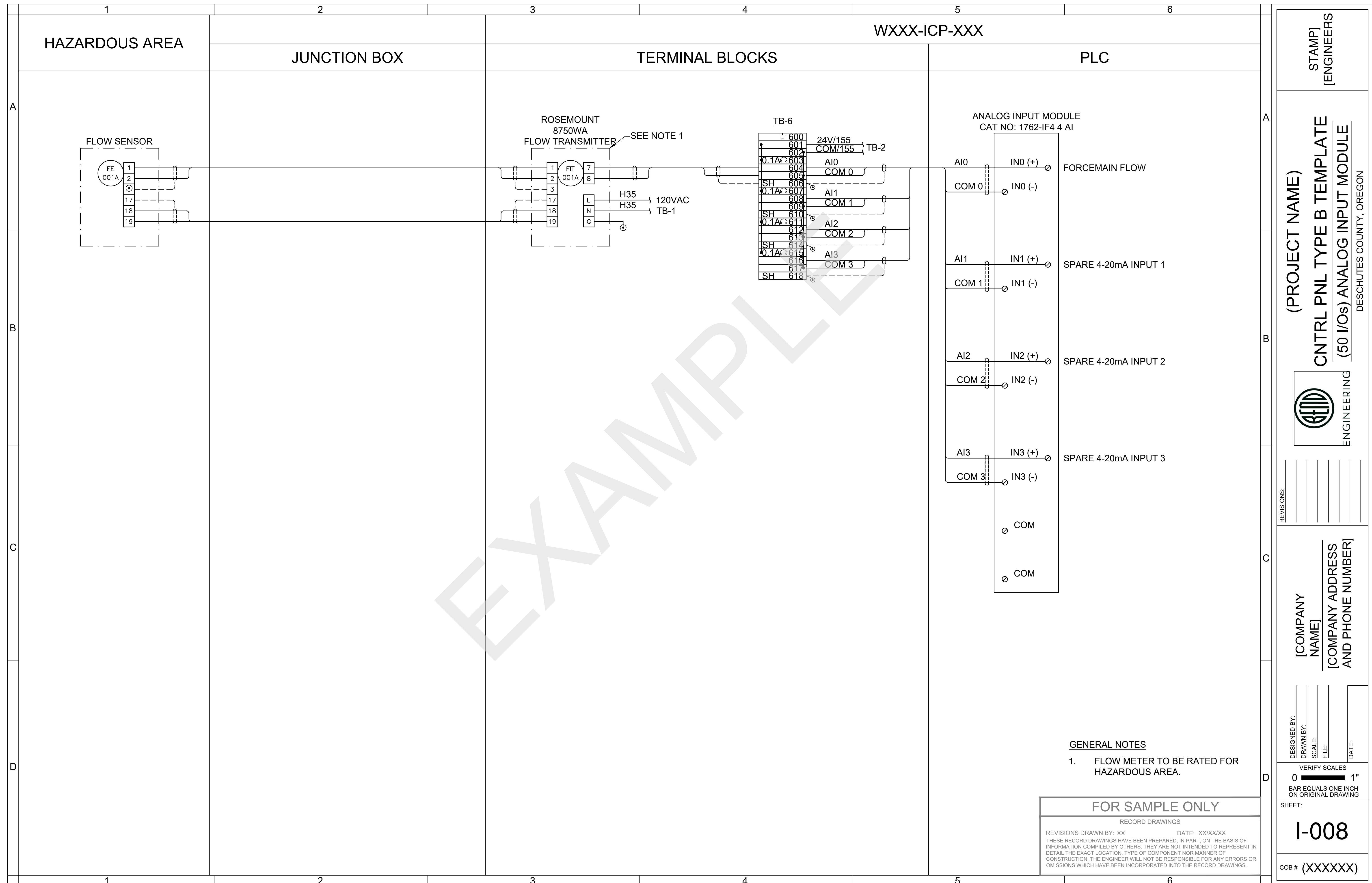
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[ENGINEERS]

(PROJECT NAME)
CNTRL PNL TYPE B TEMPLATE
(50 I/Os) DIGITAL INPUT MODULE 2
DECHUTES COUNTY, OREGON

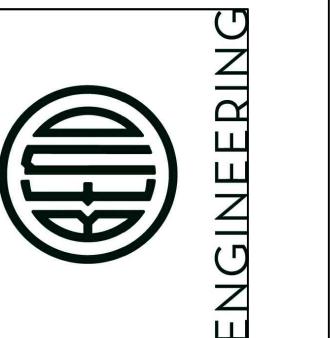


REVISIONS:



STAMP
[ENGINEERS]

(PROJECT NAME)
CNTRL PNL TYPE B TEMPLATE
(50 I/Os) ANALOG INPUT MODULE
DESCHUTES COUNTY, OREGON



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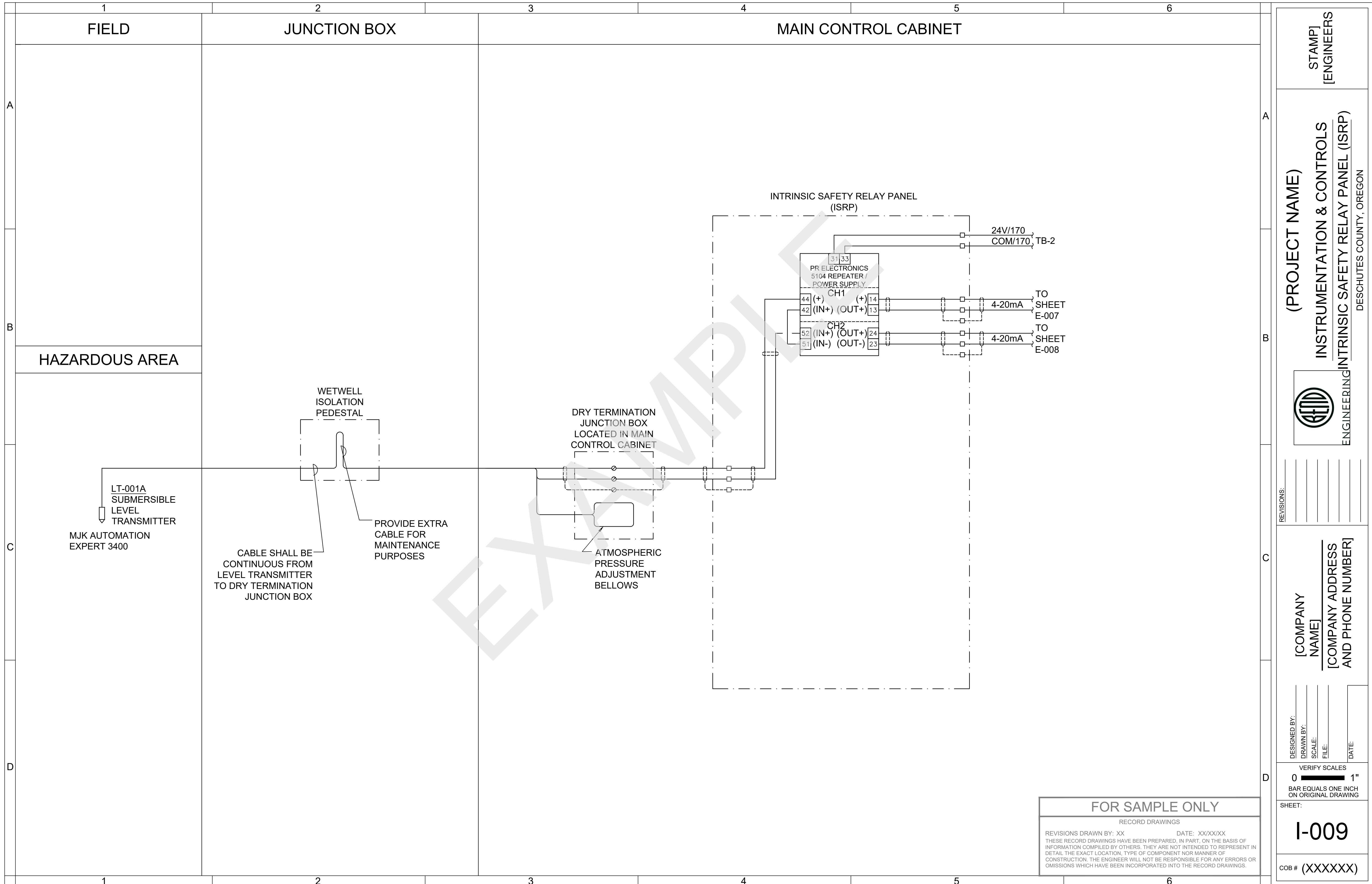
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COB # (XXXXXX)



STAMP
[ENGINEERS]

PROJECT NAME
INSTRUMENTATION & CONTROLS
INTRINSIC SAFETY RELAY PANEL (ISRP)

DESCHUTES COUNTY, OREGON



REVISIONS:
[REVISIONS]

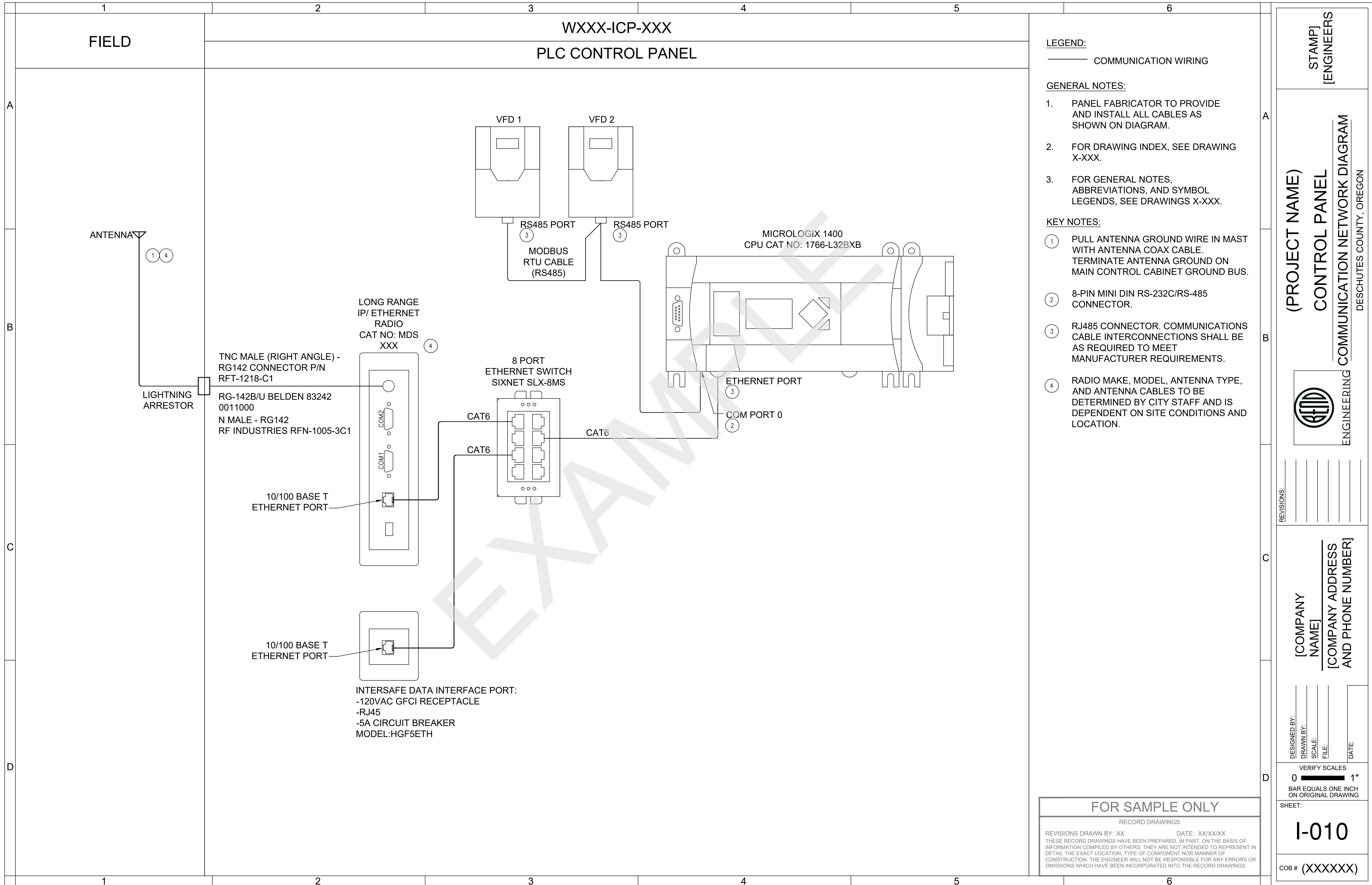
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AND PHONE NUMBER]

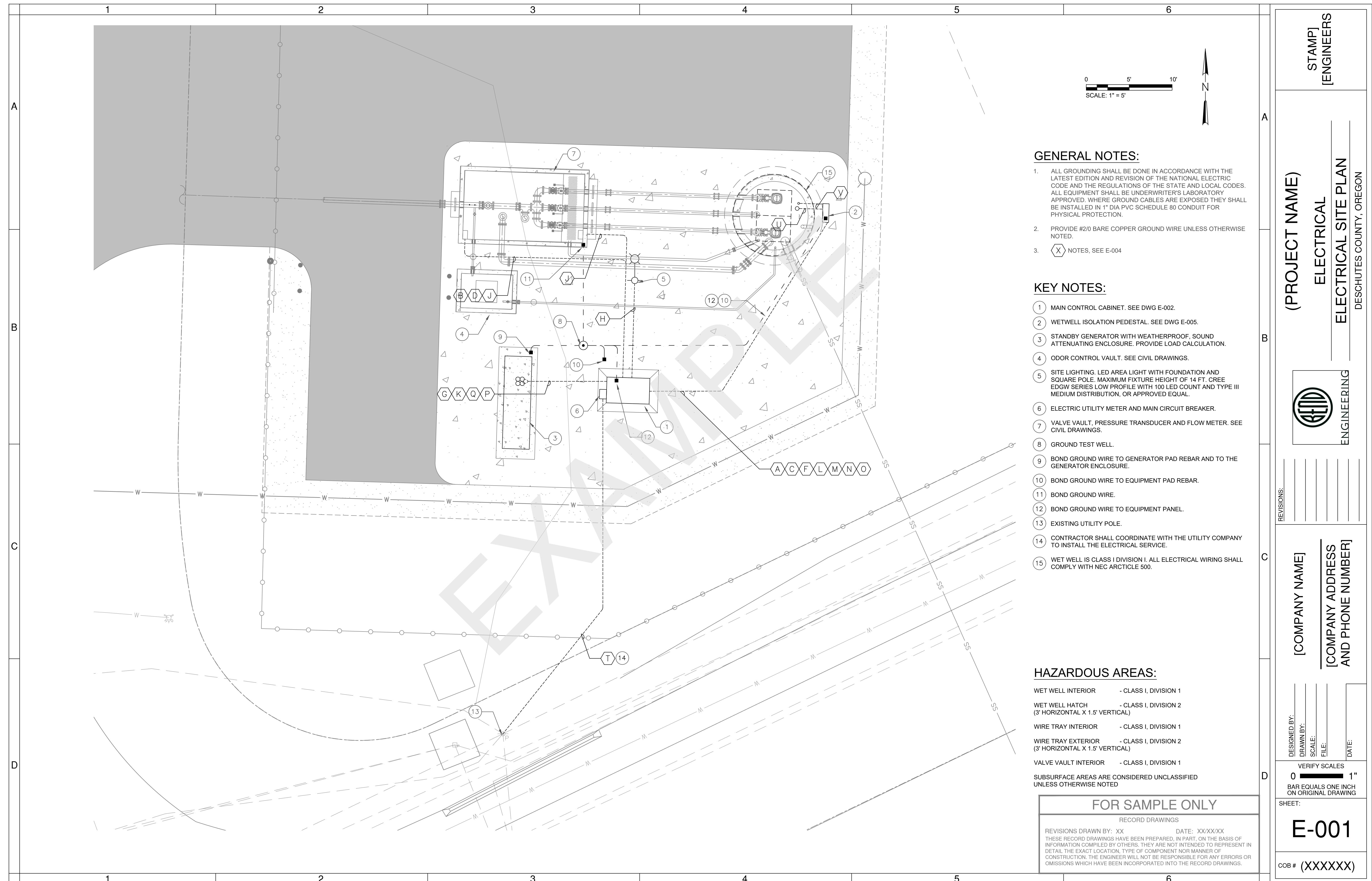
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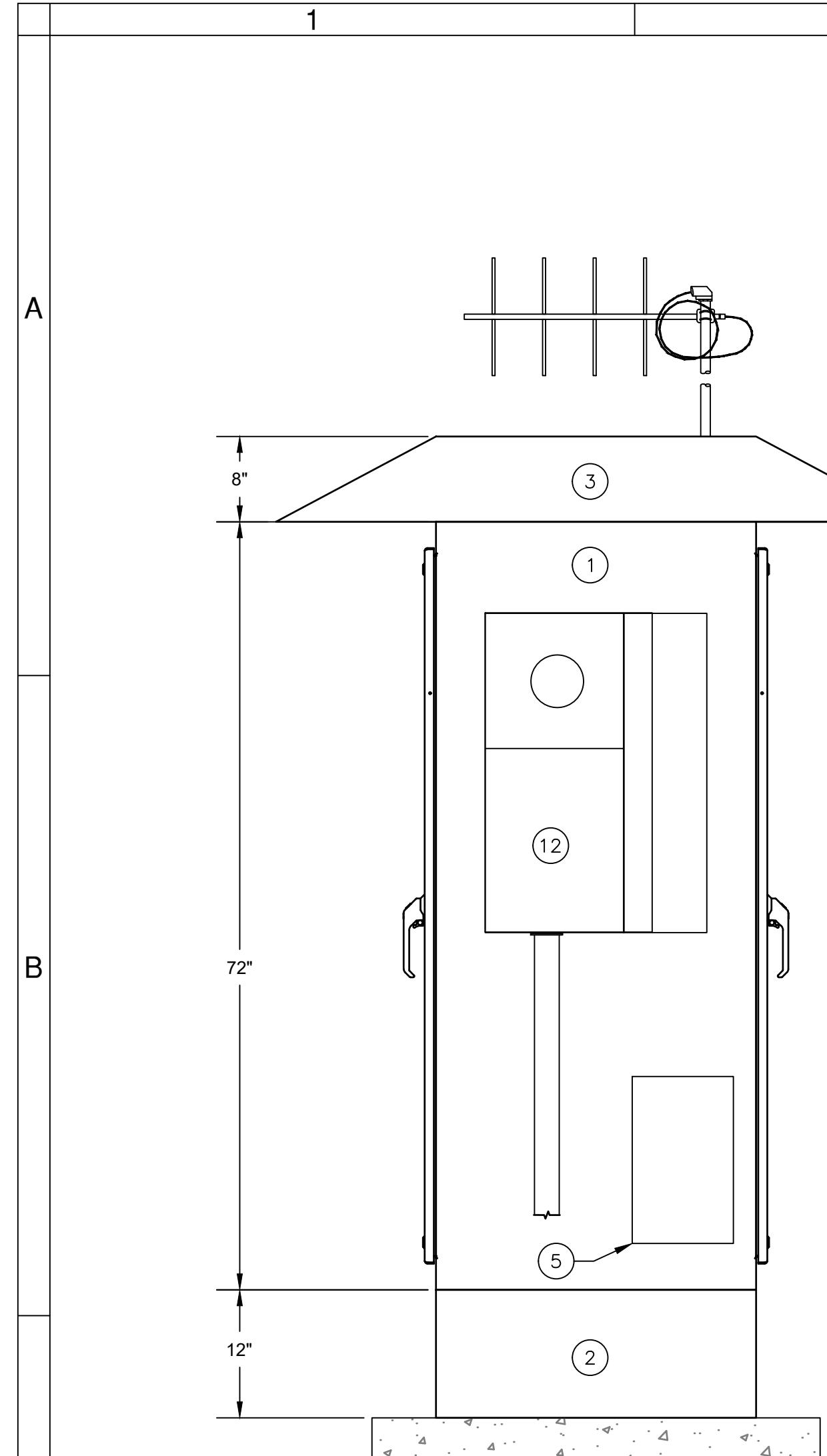
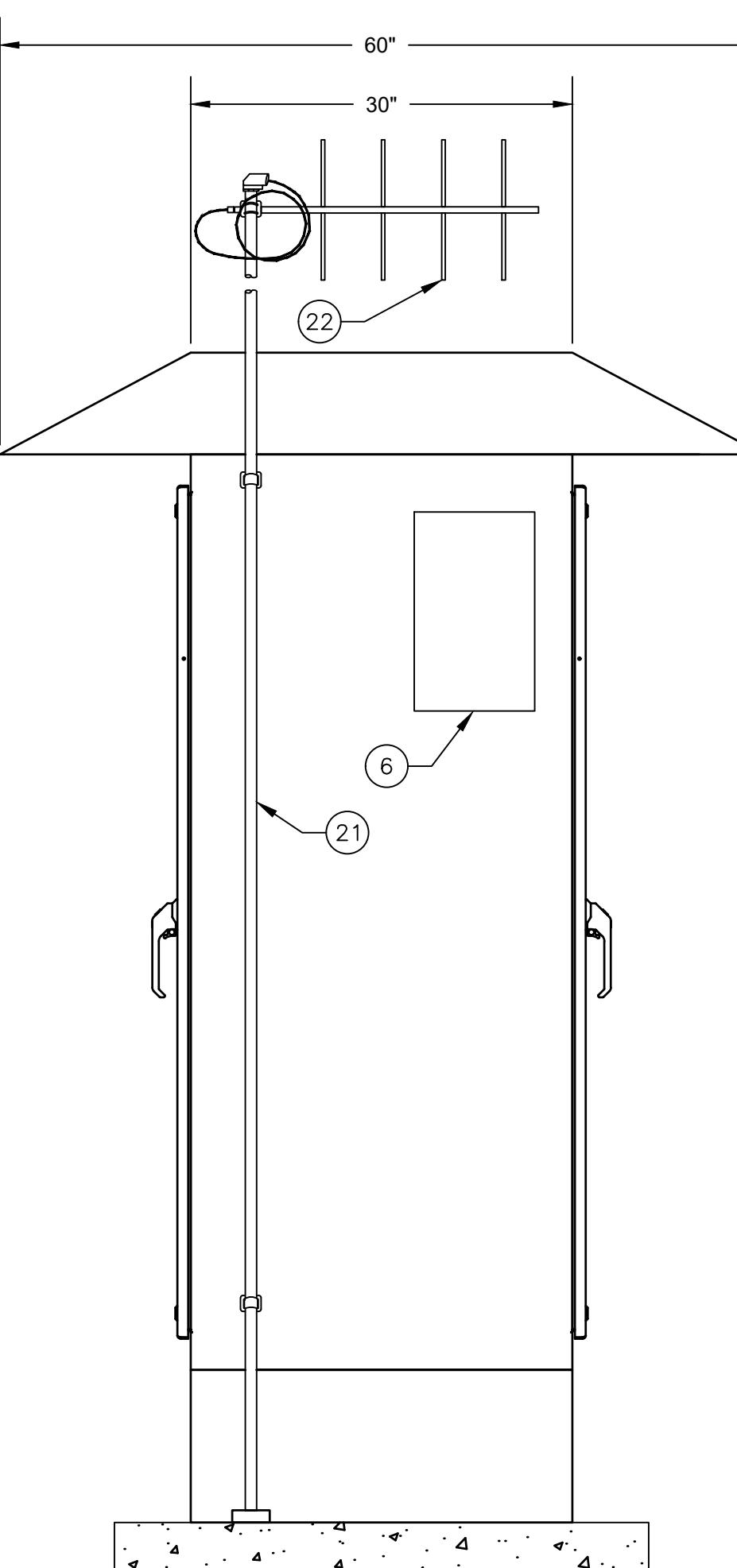
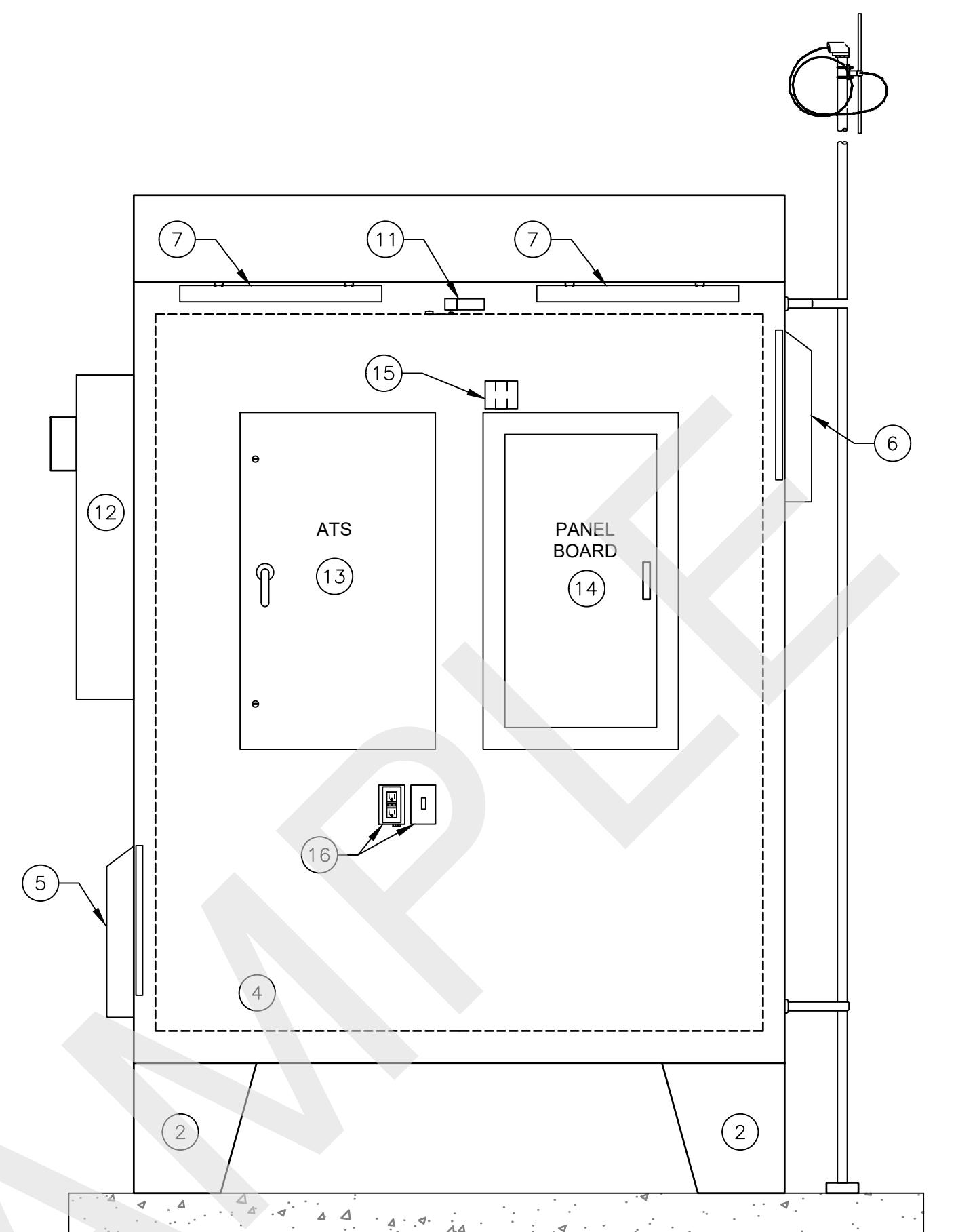
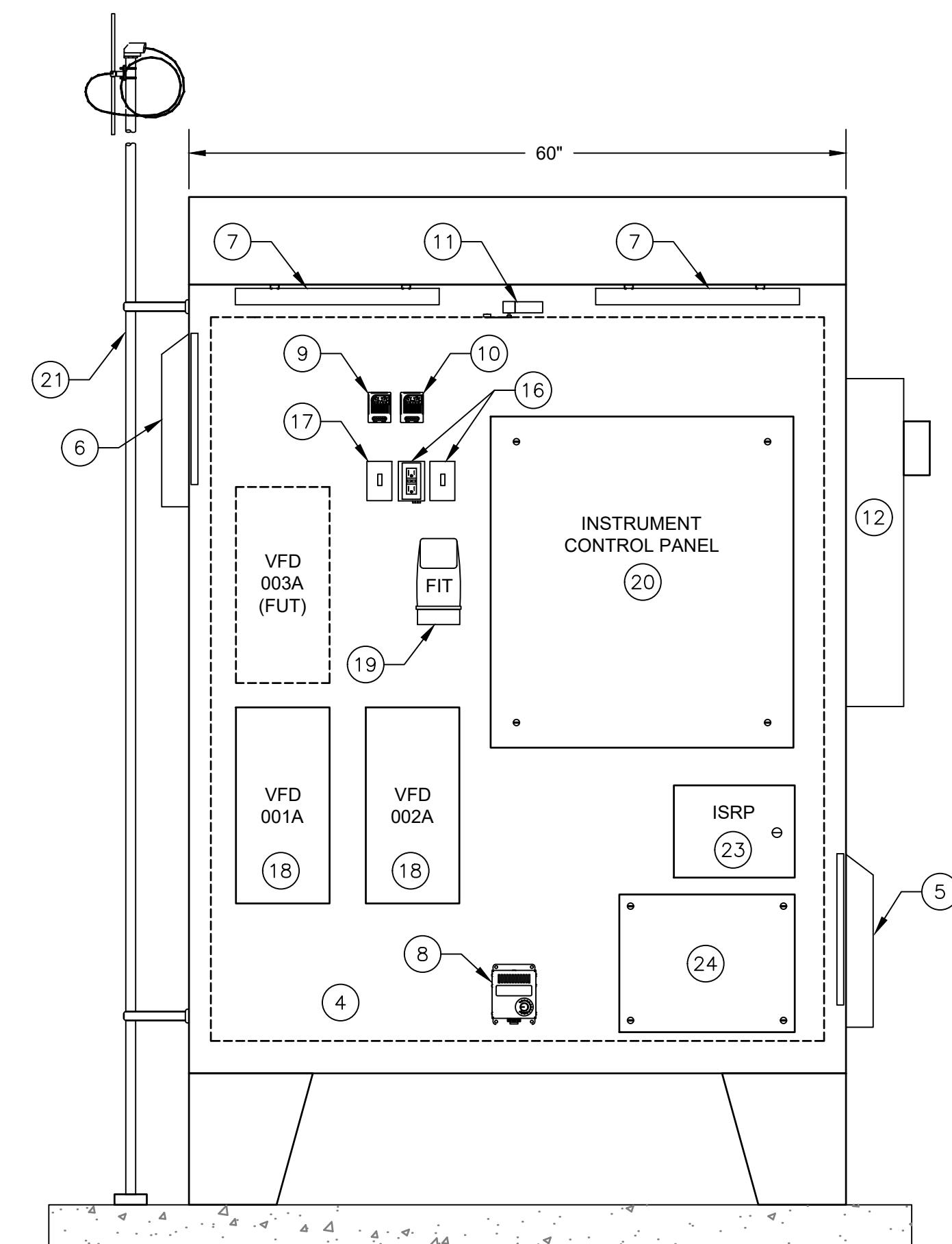
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I-009

COD # (XXXXXX)





CABINET
LEFT EXTERIOR
ELEVATIONCABINET
RIGHT EXTERIOR
ELEVATIONCABINET
FRONT INTERIOR
ELEVATIONCABINET
BACK INTERIOR ELEVATION

KEY NOTES:

- (1) ENCLOSURE, 2-DOOR DUAL ACCESS
- (2) FLOOR STAND
- (3) RAINHOOD / SUNHOOD
- (4) MOUNTING PAN
- (5) COOLING FAN WITH FILTER
- (6) LOUVER WITH FILTER
- (7) CABINET LIGHT
- (8) CABINET HEATER
- (9) THERMOSTAT, COOLING
- (10) THERMOSTAT, HEATING
- (11) INTRUSION SWITCH
- (12) ELECTRIC SERVICE METER WITH MAIN BREAKER
- (13) AUTOMATIC TRANSFER SWITCH
- (14) PANEL BOARD
- (15) SURGE PROTECTION DEVICE
- (16) DUPLEX RECEPTACLE AND CABINET LIGHT SWITCH
- (17) LIGHT SWITCH, SITE LIGHT
- (18) SMARTRUN VFD

- (19) FLOW TRANSMITTER
- (20) INSTRUMENT CONTROL PANEL (ICP)
- (21) ANTENNA MAST, THREADED AT TOP WITH WEATHERHEAD
- (22) ANTENNA, NOTE 5
- (23) INTRINSIC SAFETY RELAY PANEL
- (24) LEVEL TRANSMITTER DRY TERMINATION J-BOX

CONSTRUCTION NOTES:

1. MAIN CONTROL CABINET SHALL BE NEMA 12 RATED, PAINTED STEEL WITH FLOOR STAND. CABINET DOORS SHALL BE FITTED WITH GASKETS, PADLOCKABLE HASPS, AND DOORS THAT LATCH OPEN. RAINHOOD/SUNHOOD SHALL BE CUSTOM FABRICATED FROM 12 GAUGE STEEL PAINTED WITH ANSI 61 LIGHT GREY POLYESTER POWDER FINISH TO MATCH ENCLOSURE.
2. PANEL CONSTRUCTION PER NEC AND UL508A REQUIREMENTS. FOLLOW NFPA 79 WHERE APPLICABLE. THE INTERIOR OF THE MAIN CONTROL CABINET SHALL BE DESIGNED AND FABRICATED TO MEET IP20 "FINGER-SAFE" REQUIREMENTS IN ACCORDANCE WITH IEC 60529; THERE SHALL BE NO EXPOSED LIVE PARTS AS DEFINED BY NFPA 70E. ALL INTERCONNECTIONS BETWEEN PANEL COMPONENTS INSIDE THE LARGER ELECTRICAL ENCLOSURE SHALL BE INSTALLED IN EMT, RGS, METAL WIREWAY, OR LIQUID TIGHT METALLIC FLEXIBLE CONDUIT.
3. NO PENETRATIONS THROUGH THE TOP OF THE ENCLOSURE ARE ALLOWED. ALL PENETRATIONS SHALL BE MADE WITH AN APPROVED FITTING AND GASKET.
4. DO NOT ROUTE 120VAC WIRING WITHIN THE SAME RACEWAY AS DC ANALOG SIGNAL CABLES.
5. THE CITY OF BEND WILL DETERMINE THE RADIO TYPE, ANTENNA TYPE, MOUNTING HEIGHT, AND CABLE TYPE TO BE PROVIDED AND INSTALLED BY THE DEVELOPER. AT THE PRE-DESIGN STAGE, THE DEVELOPER SHALL COORDINATE FOR A TELEMETRY SIGNAL SURVEY TO BE PERFORMED WITH THE CITY OF BEND UTILITY DEPARTMENT AS REQUIRED TO DETERMINE RADIO COMMUNICATION EQUIPMENT REQUIREMENTS.
6. ALL UTILIZATION AND DISTRIBUTION EQUIPMENT, INCLUDING LIGHTING AND HEATING, SHALL BE WIRED FROM OR TO A SOURCE OTHER THAN THE PLC CONTROL PANEL. THIS REQUIRES A LOAD CENTER INSIDE THE MAIN CONTROL CABINET FOR POWER DISTRIBUTION.
7. EXCEPT AS OTHERWISE NOTED, PANEL WIRING SHALL BE AS FOLLOWS:
 - SINGLE WIRES SHALL BE THHN #16 AWG, EXCEPT WHERE INTENDED FOR POWER OR MOTOR CIRCUITS WHICH SHALL BE #14 AWG, MINIMUM.
 - COLOR CODE SHALL FOLLOW UL508A.
 - TWISTED PAIR ANALOG SIGNAL CABLE SHALL BE BELDEN 8760, OR EQUAL.
 - EACH WIRE SHALL BE IDENTIFIED WITH A PERMANENT WIRE LABEL, BRADY LAT-18-361.

MAIN CONTROL CABINET
LAYOUT ELEVATION1
N.T.S.

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VERIFY SCALES
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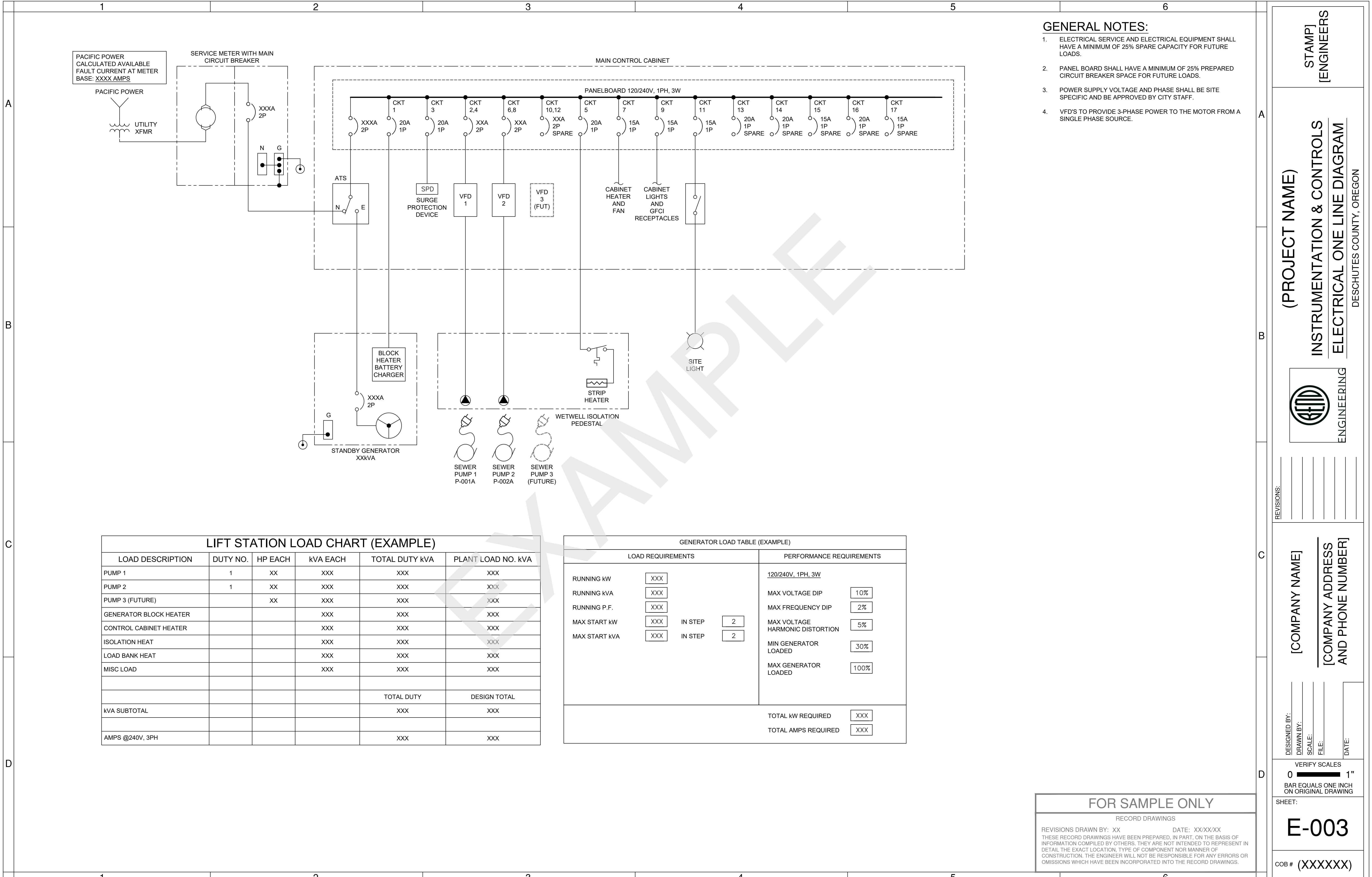
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COB # (XXXXXX)

STAMP
[ENGINEERS]

(PROJECT NAME)
INSTRUMENTATION & CONTROLS
MAIN CONTROL CABINET LAYOUT
DESCHUTES COUNTY, OREGON

[COMPANY NAME]
[COMPANY ADDRESS
AND PHONE NUMBER]



CONDUIT AND WIRE SCHEDULE						
CONDUIT USE	CONDUIT DESIGNATION	CONDUIT SIZE	CONDUIT TYPE	CONDUCTOR SIZE AND NUMBER OF CONDUCTORS	CONDUIT FROM	CONDUIT TO
FLOAT SWITCH LSHH WETWELL HATCH LIMIT SWITCH	(A)	1 INCH	PVC	6#14	THE MAIN CONTROL CABINET	THE ISOLATION PEDESTAL
FLOW SENSOR	(B)	1 INCH	PVC	MANUFACTURER CABLE	THE MAIN CONTROL CABINET	THE FLOW METER VAULT
SUBMERSIBLE LEVEL TRANSMITTER	(C)	3/4 INCH	PVC	MANUFACTURER CABLE	THE MAIN CONTROL CABINET	THE ISOLATION PEDESTAL
VALVE VAULT HATCH LIMIT SWITCH	(D)	1 INCH	PVC	3#14	THE MAIN CONTROL CABINET	THE FLOW METER VAULT
SEAL FAIL / OVER TEMP	(E)	1 INCH	PVC	8#14	THE MAIN CONTROL CABINET	THE ISOLATION PEDESTAL
GENERATOR CONTROL SIGNALS (ATS)	(F)	1 INCH	PVC	8#14	THE MAIN CONTROL CABINET	THE GENERATOR
OUTSIDE AREA LIGHT	(G)	1 INCH	PVC	2#12, 1#12G	THE MAIN CONTROL CABINET	THE LIGHT POLE
VALVE VAULT SPARE	(H)	1 INCH	PVC	PULL CORD	THE MAIN CONTROL CABINET	THE VALVE VAULT
GENERATOR BATTERY CHARGER / BLOCK HEATER	(I)	1 INCH	PVC	4#10, 2#10G	THE MAIN CONTROL CABINET	THE GENERATOR
ISOLATION PEDESTAL HEATER	(J)	1 INCH	PVC	2#12, 1#12G	THE MAIN CONTROL CABINET	THE ISOLATION PEDESTAL
PUMP #1	(K)	1 INCH	PVC	3#8, 1#10G	THE MAIN CONTROL CABINET	THE ISOLATION PEDESTAL
PUMP #2	(L)	1 INCH	PVC	3#8, 1#10G	THE MAIN CONTROL CABINET	THE ISOLATION PEDESTAL
PUMP #3 (FUTURE)	(M)	1 INCH	PVC	3#8, 1#10G	THE MAIN CONTROL CABINET	THE ISOLATION PEDESTAL
GENERATOR MONITORING SIGNALS (PLC)	(N)	1 INCH	PVC	8#14	THE MAIN CONTROL CABINET	THE GENERATOR
GENERATOR POWER	(O)	2 INCH	PVC	3#10, 1#6G	THE MAIN CONTROL CABINET	THE GENERATOR
UNDERGROUND SERVICE	(P)	3 INCH	PVC	PULL ROPE	UNDERGROUND SERVICE	MAIN CONTROL ENCLOSURE PAD
SUBMERSIBLE LEVEL TRANSMITTER	(Q)	1 INCH	PGRC	MANUFACTURER CABLE	THE WET WELL	THE ISOLATION PEDESTAL
FLOAT SWITCH LSHH	(R)	3/4 INCH	PGRC	MANUFACTURER CABLE	THE WET WELL	THE ISOLATION PEDESTAL
ANTENNA SUPPORT	(W)	2 INCH	PGRC	MANUFACTURER CABLE	THE MAIN CONTROL CABINET	WEATHER HEAD

GENERAL NOTES: (CONDUIT INSTALLATION)

1. ALL STRUT AND MOUNTING HARDWARE MUST BE STAINLESS STEEL.
2. MYERS HUB FITTING MUST BE USED ON ALL CONDUIT PENETRATIONS.
3. ALL CONDUIT MUST BE SCHEDULE 80 PVC.
4. THE PROPER TOOLS MUST BE USED WHILE CUTTING, THREADING, BENDING, AND TIGHTENING ANY PVC COATED CONDUIT.
5. THE PVC COATING MUST REMAIN INTACT ONLY 1 INCH OF THE COATING MAY BE REMOVED AT THE END OF THE CONDUIT TO ALLOW FOR THE THREAD.
6. ANY CONDUIT WITH THE DAMAGED COATING MUST BE REPLACED.
7. THE COATING TOUCH UP PAINT IS ONLY TO BE USED FOR COSMETIC BLEMISHES.
8. ALL THREADED CONNECTIONS MUST BE COPPER COATED AND TIGHTENED APPROPRIATELY.
9. ALL UNDERGROUND CONDUIT RUNS MUST BE INSPECTED PRIOR TO BACKFILL.

STAMP
[ENGINEERS]

(PROJECT NAME)

INSTRUMENTATION & CONTROLS
CONDUIT AND WIRE SCHEDULE

DESHUTES COUNTY, OREGON



REVISIONS:

[COMPANY NAME]

[COMPANY ADDRESS
AND PHONE NUMBER]

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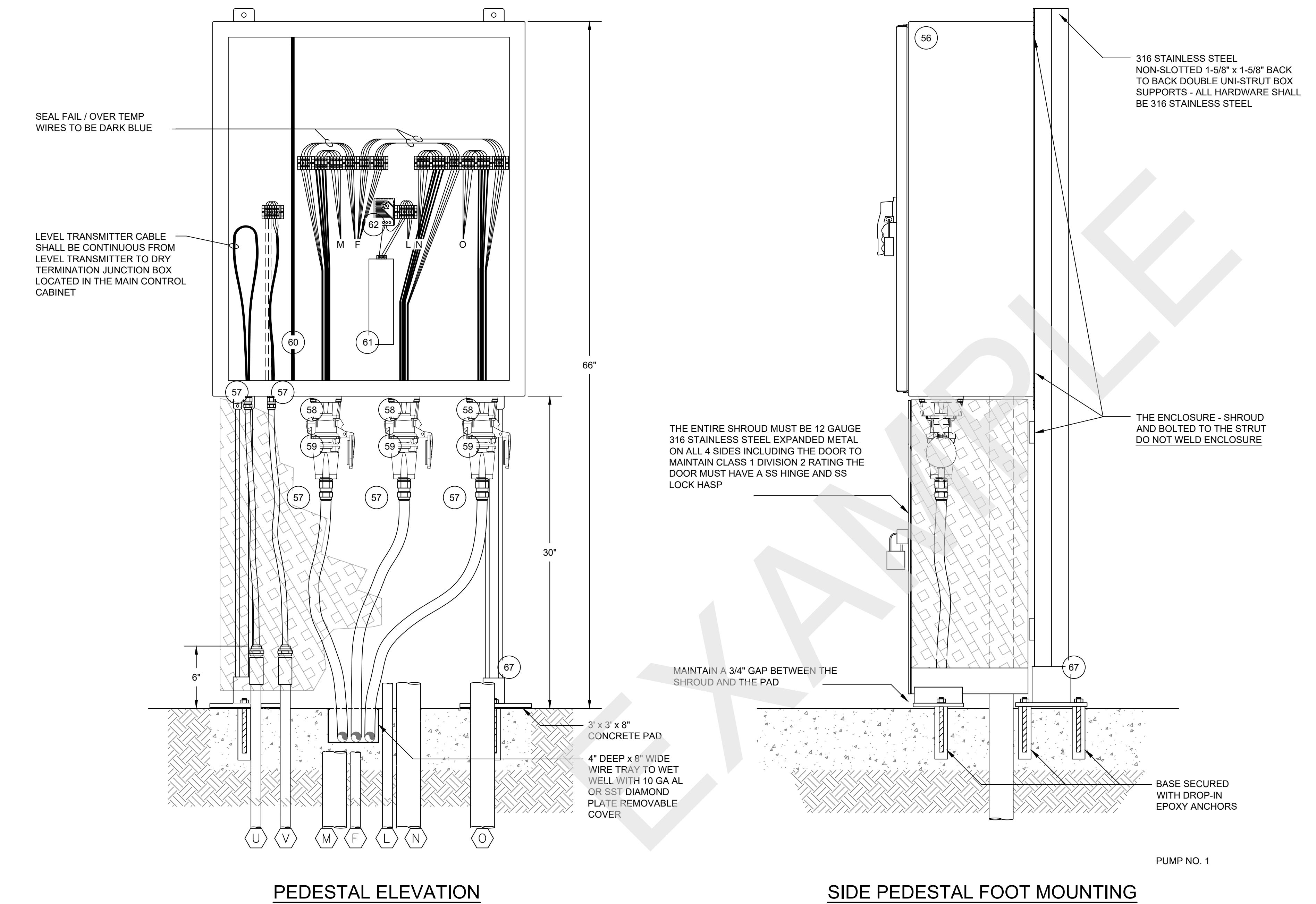
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COB # (XXXXXX)

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PEDESTAL ELEVATION

SIDE PEDESTAL FOOT MOUNTING

BOTTOM ENCLOSURE

WET WELL ISOLATION
PEDESTAL ELEVATION
1 N.T.S.

FOR SAMPLE ONLY

RECORD DRAWINGS

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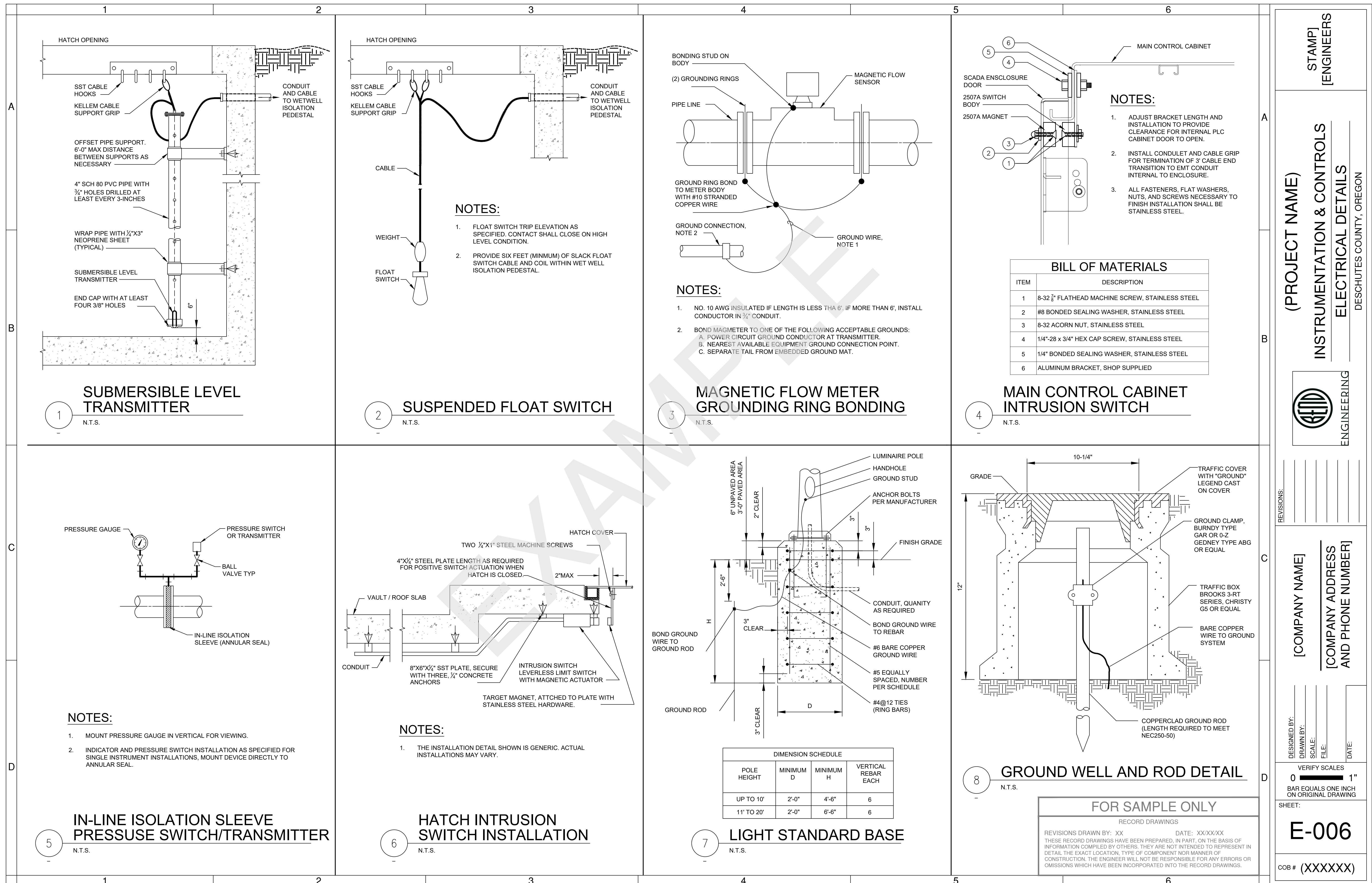
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ENGINEERS

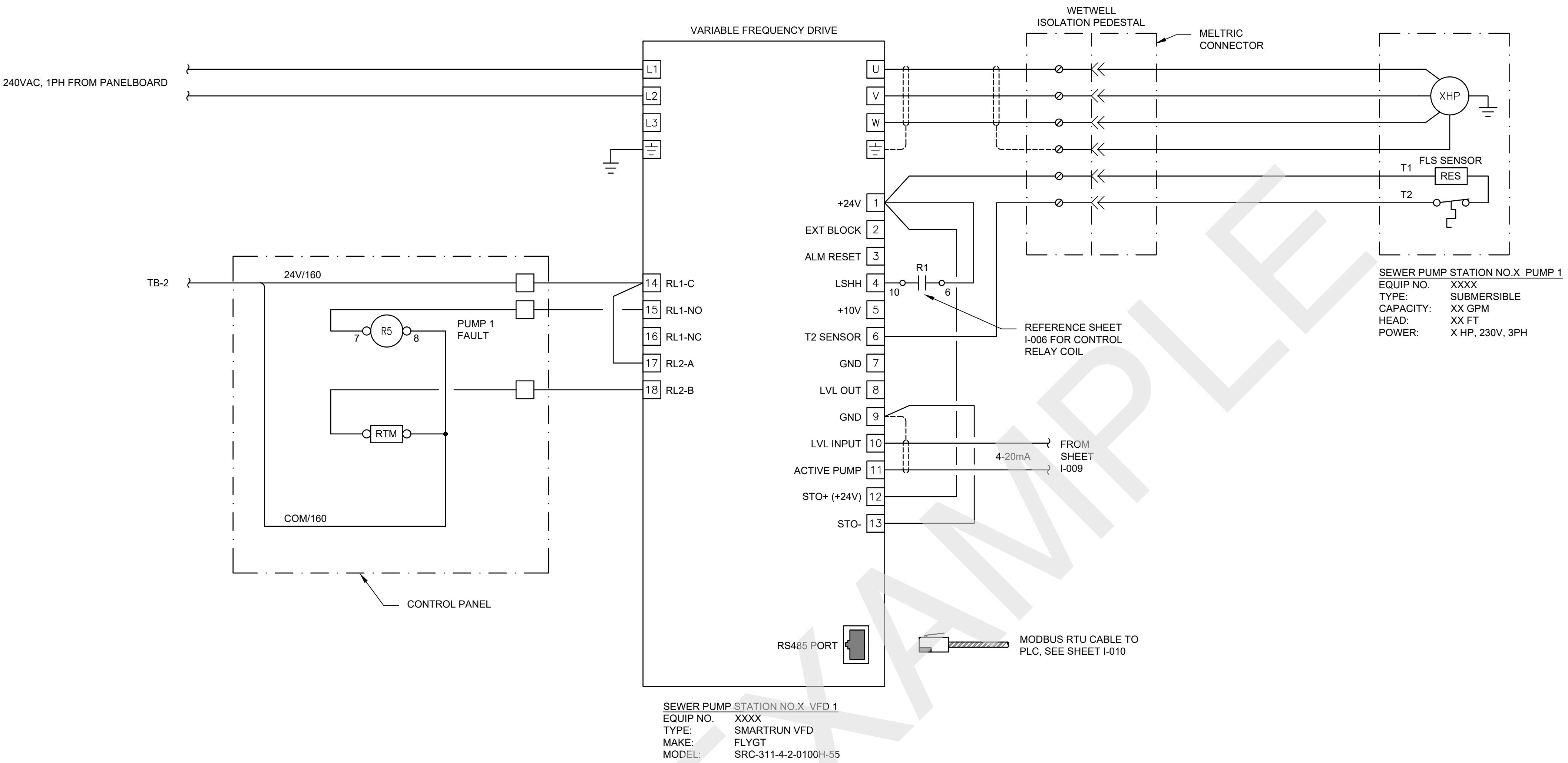
(PROJECT NAME)
INSTRUMENTATION & CONTROLS
WETWELL ISOLATION PEDESTAL
DESCHUTES COUNTY, OREGON

REVISIONS: _____
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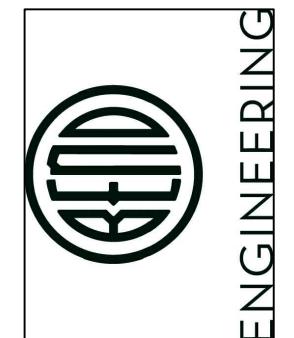
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[ENGINEERS]

(PROJECT NAME)
SEWER PUMP STATION NO. X
PUMP 1 WIRING DIAGRAM
DESCHUTES COUNTY, OREGON



REVISIONS: _____
[COMPANY NAME]
[COMPANY ADDRESS AND PHONE NUMBER]

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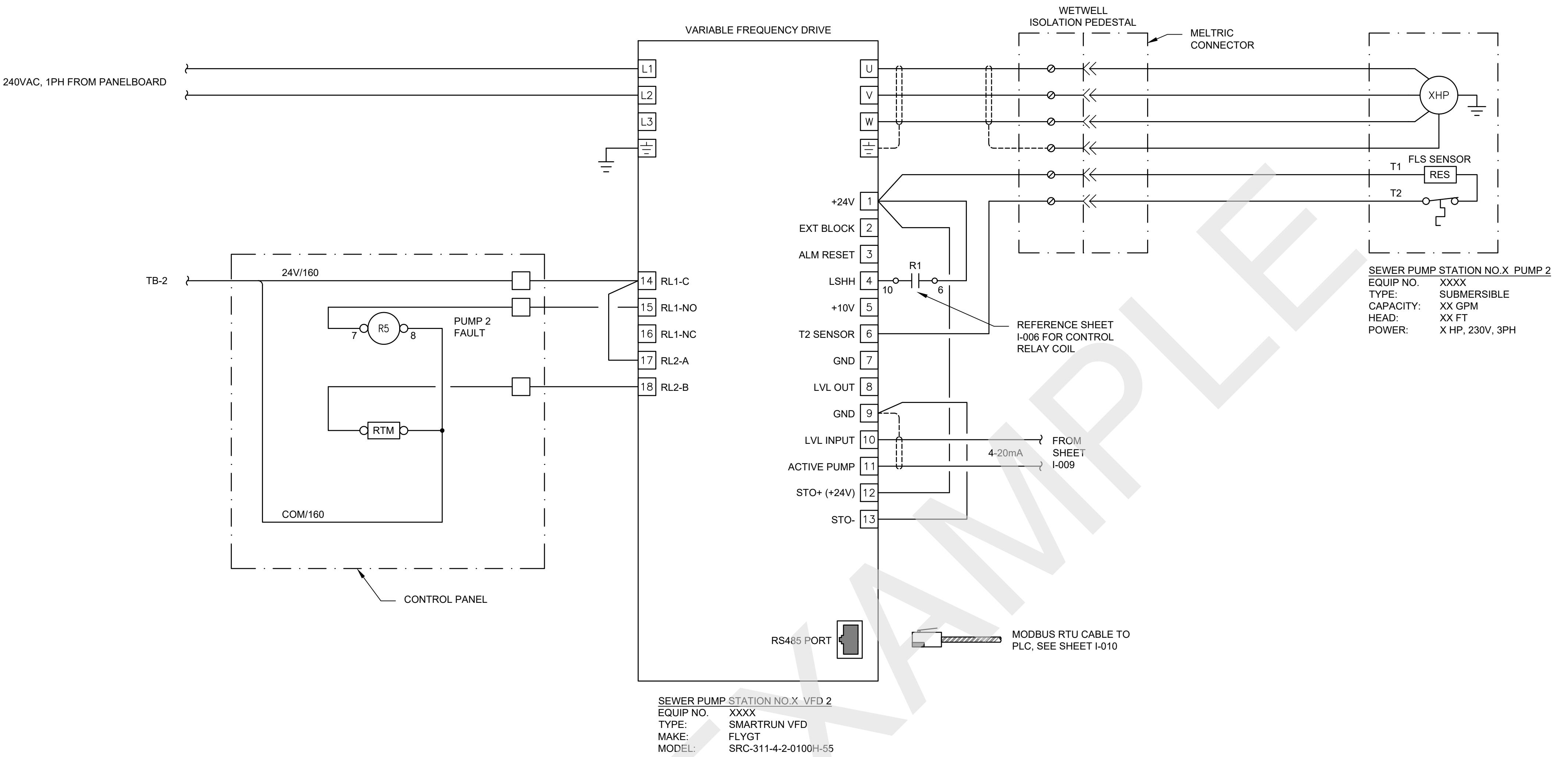
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PUMP 2 WIRING DIAGRAM
DESCHUTES COUNTY, OREGON

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[COMPANY ADDRESS
AND PHONE NUMBER]

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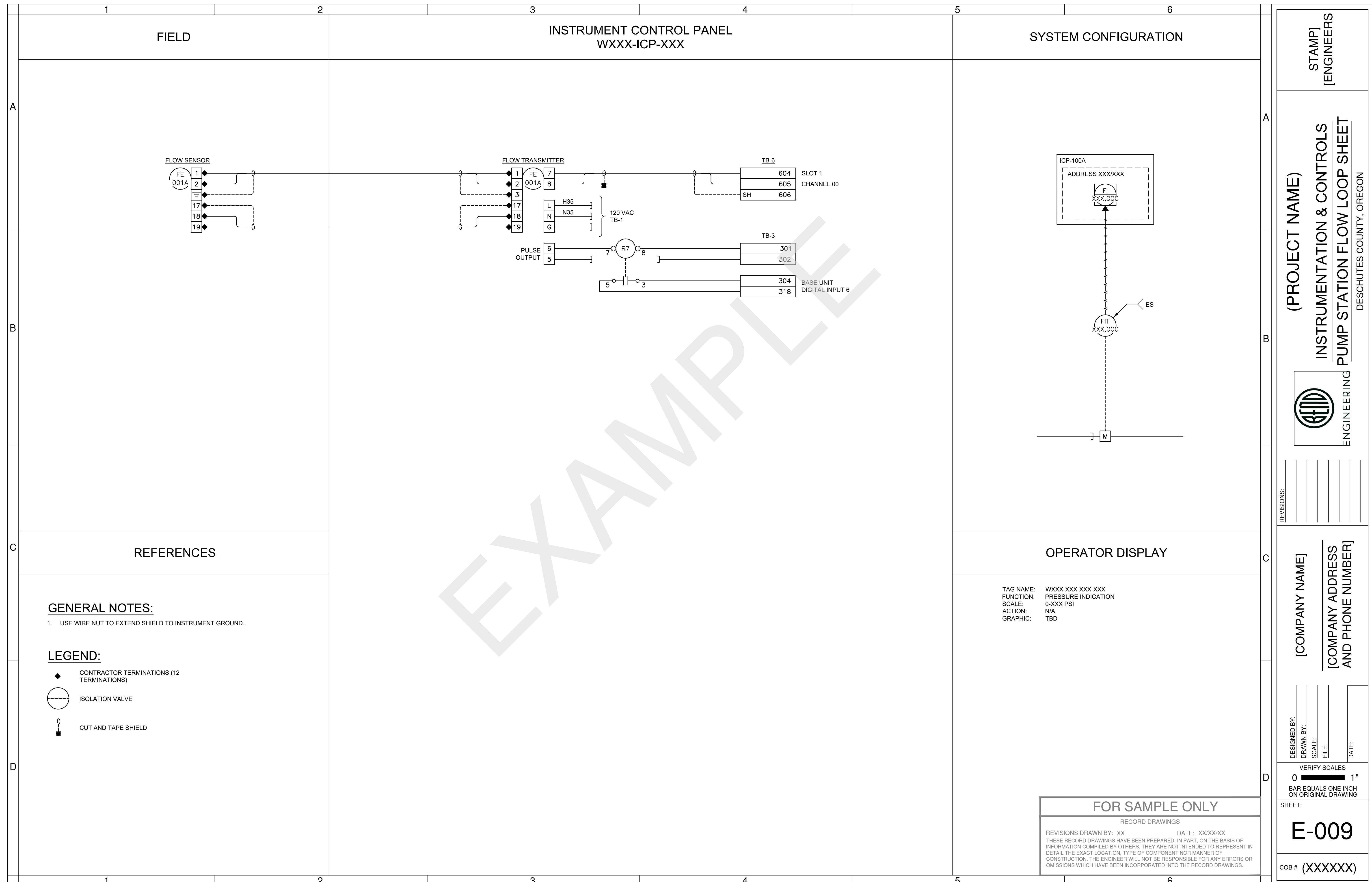


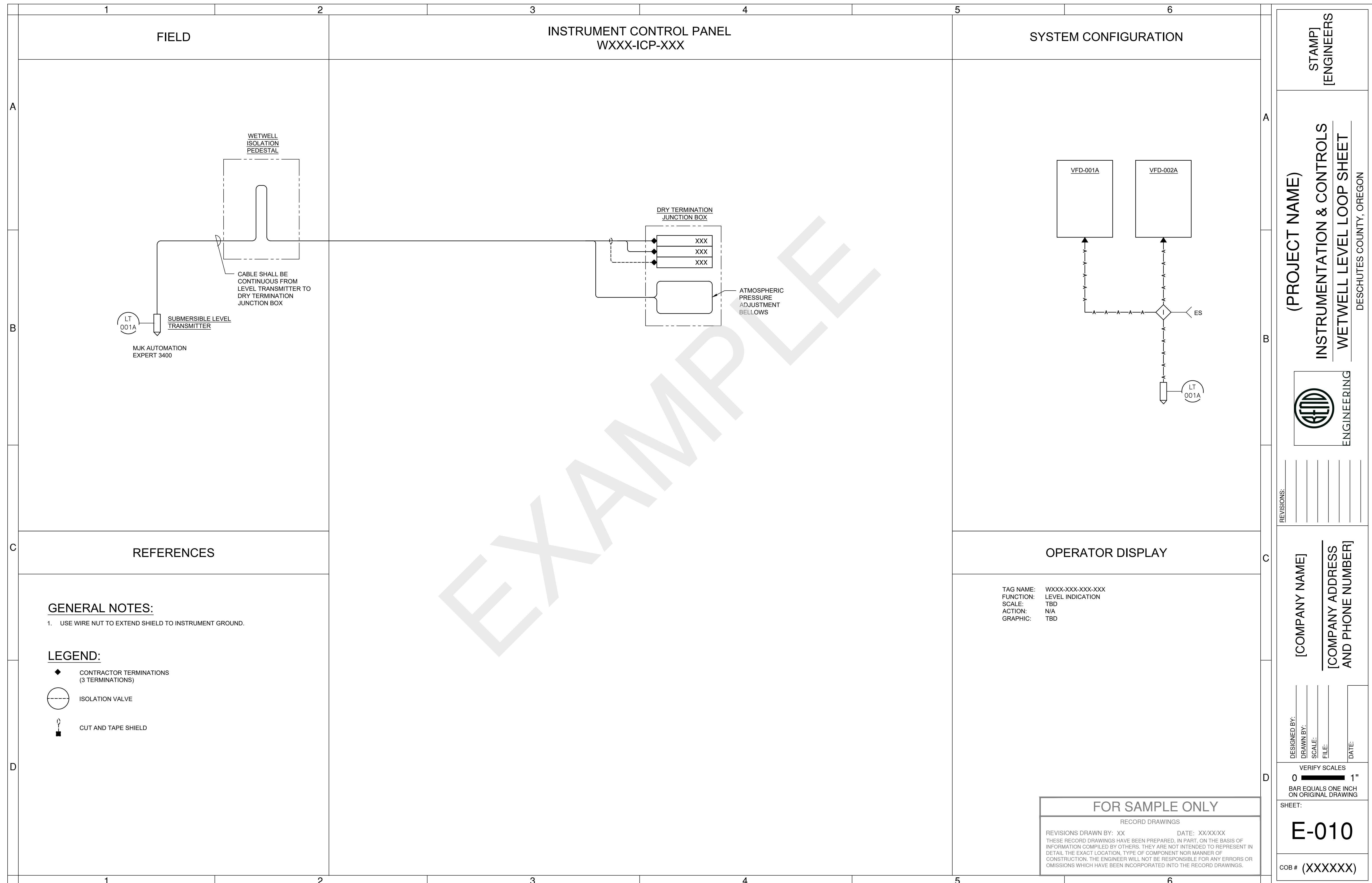
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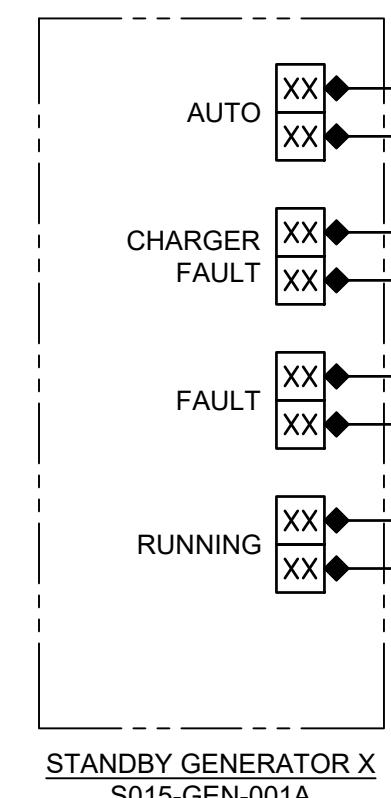
RECORD DRAWINGS

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INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN
DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF
CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR
OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

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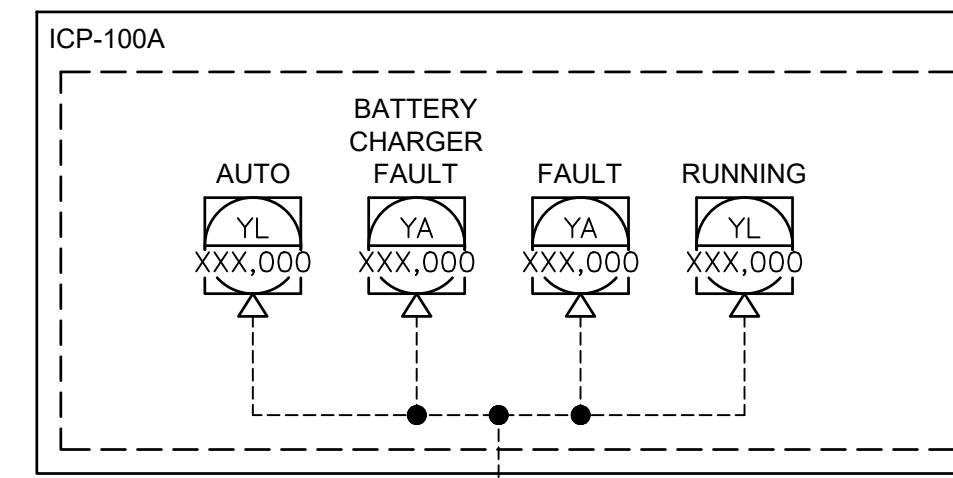
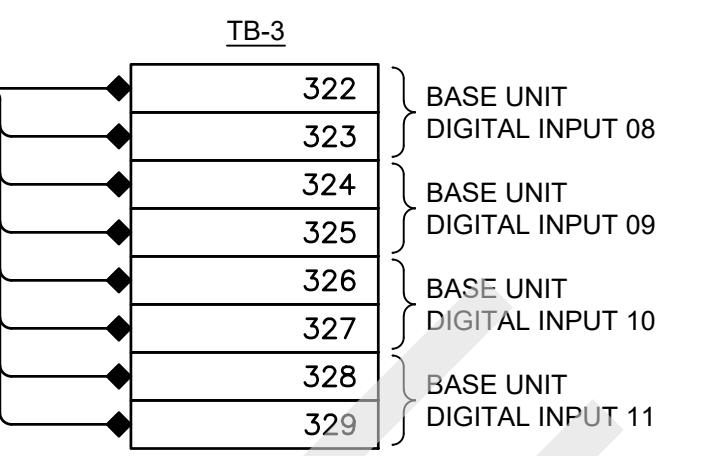


FIELD

INSTRUMENT CONTROL PANEL

WXXX-ICP-XXX

SYSTEM CONFIGURATION



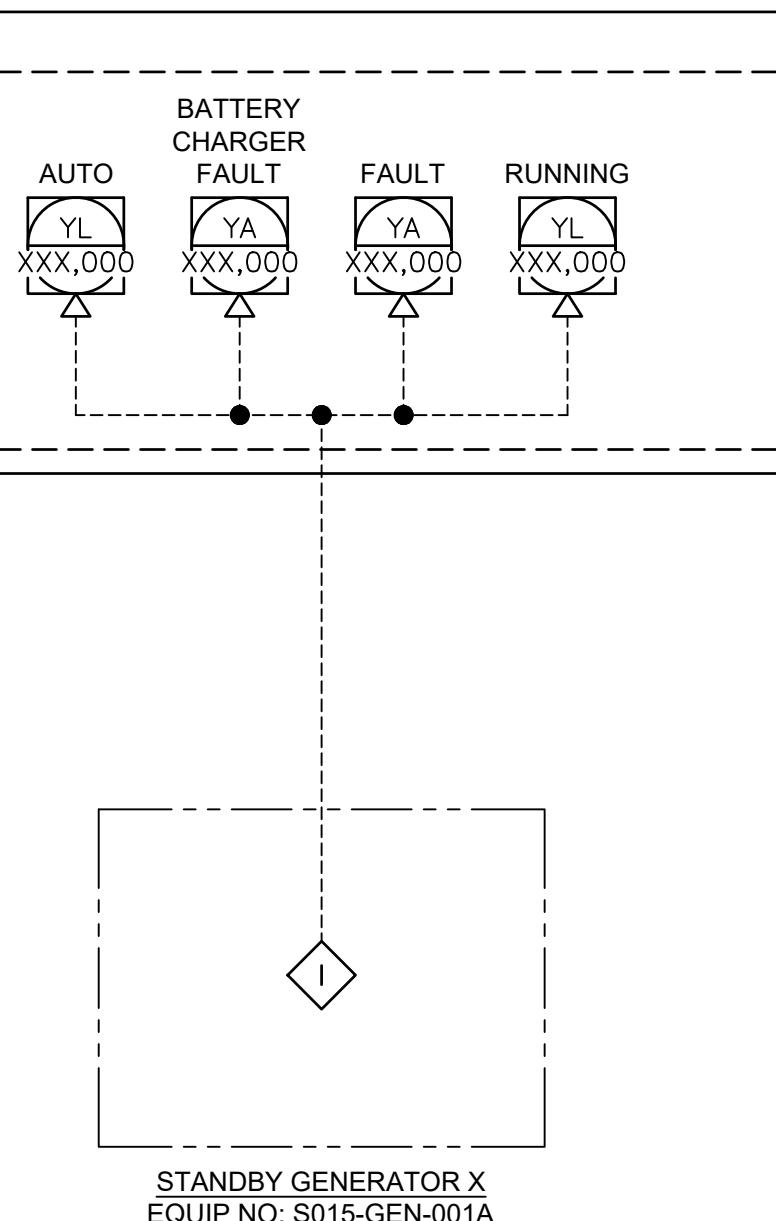
REFERENCES

GENERAL NOTES:

1. USE WIRE NUT TO EXTEND SHIELD TO INSTRUMENT GROUND.

LEGEND:

- ◆ CONTRACTOR TERMINATIONS (16 TERMINATIONS)
- ISOLATION VALVE
- CUT AND TAPE SHIELD



STANDBY GENERATOR X
EQUIP NO: S015-GEN-001A

OPERATOR DISPLAY

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SCALE: N/A
ACTION: CLOSE WHEN IN AUTO
GRAPHIC: TBD

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FUNCTION: BATTERY CHARGER FAULT
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ACTION: OPEN ON FAULT CONDITION
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FUNCTION: STANDBY GENERATOR FAULT
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ACTION: OPEN ON FAULT CONDITION
GRAPHIC: TRD

TAG NAME: WXXX-XXX-XXX-XXX
FUNCTION: STANDBY GENERATOR RUNNING
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ACTION: CLOSE ON RUNNING STATUS
GRAPHIC: TBR

FOR SAMPLE ONLY

RECORD DRAWINGS

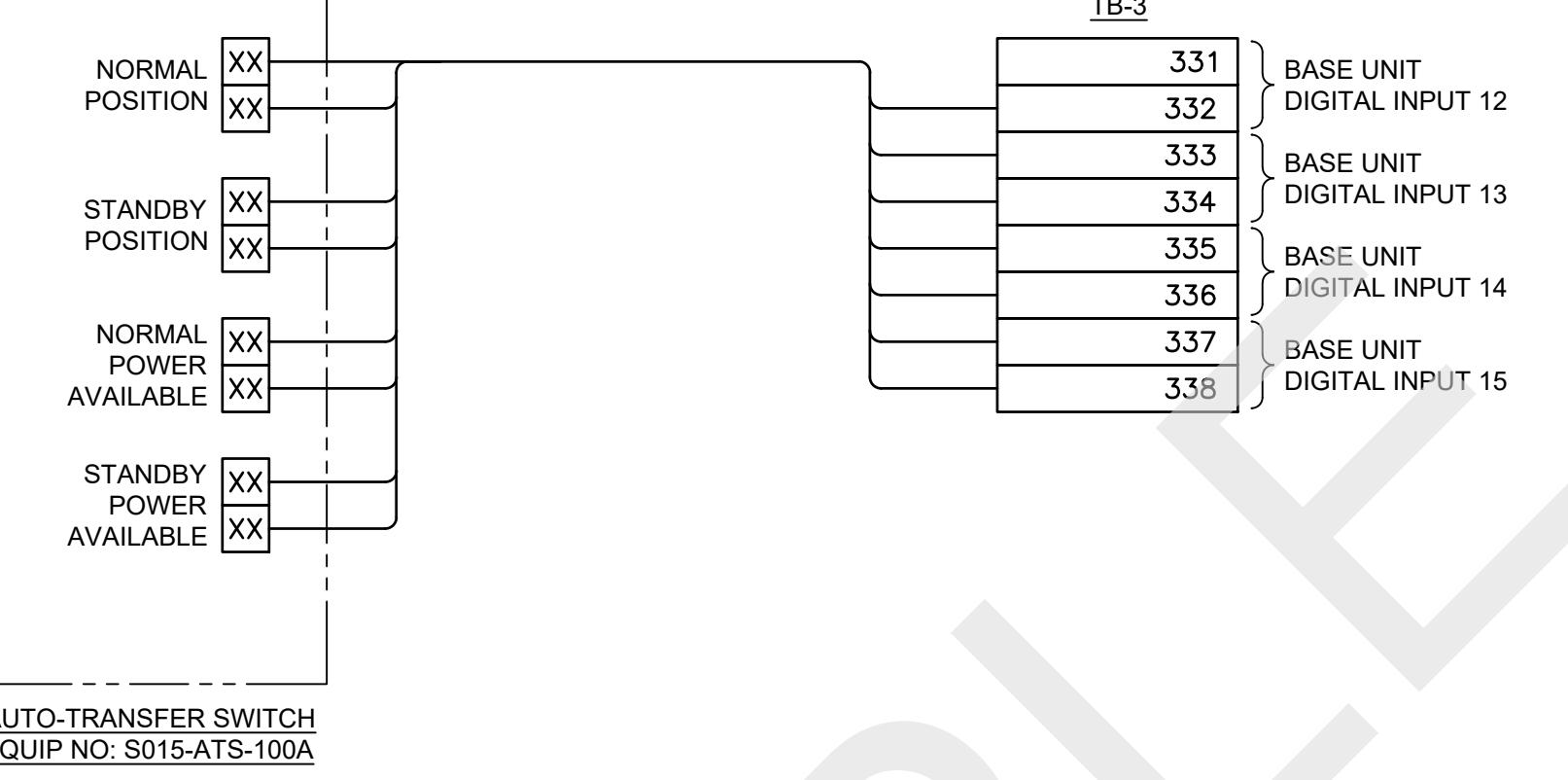
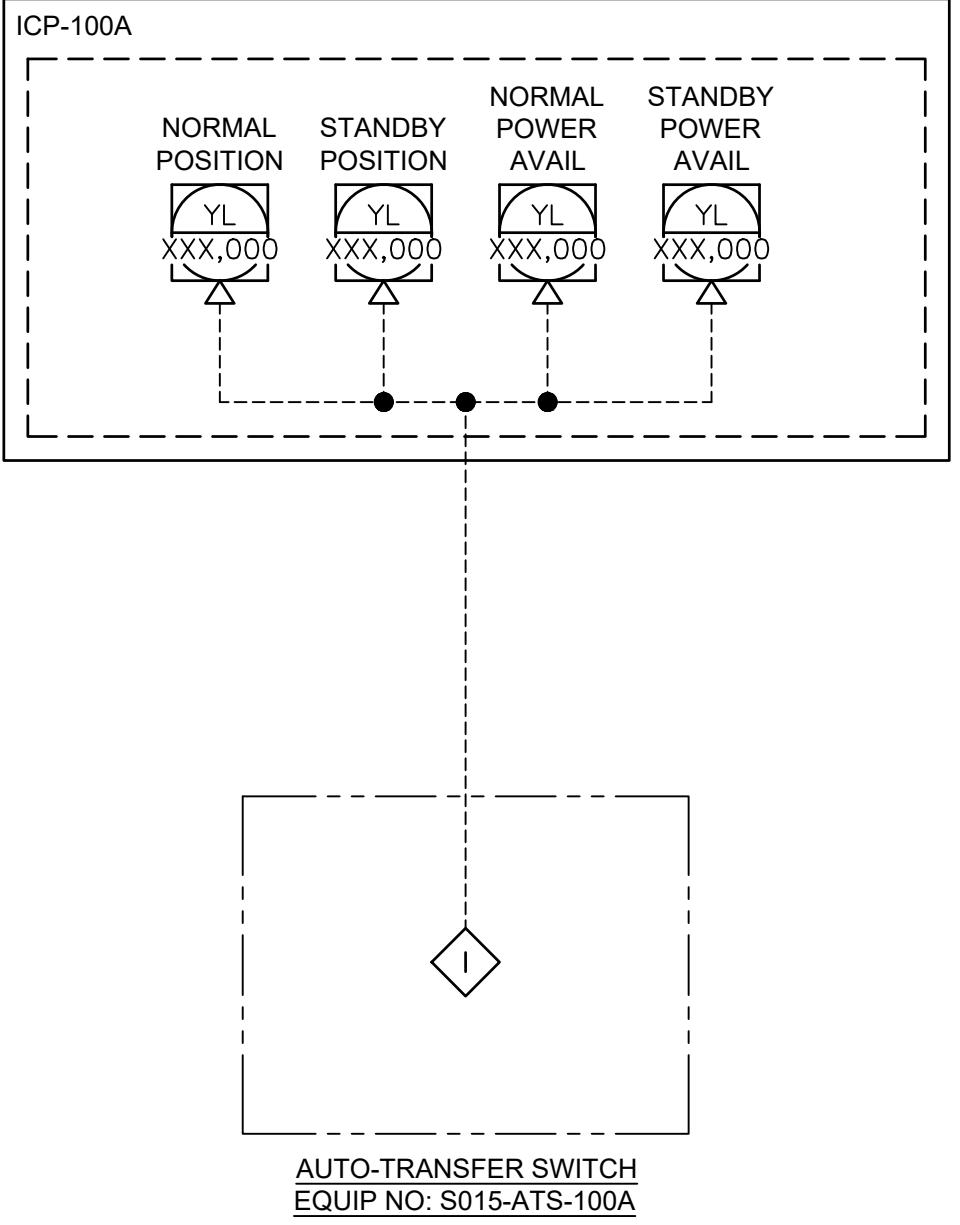
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THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

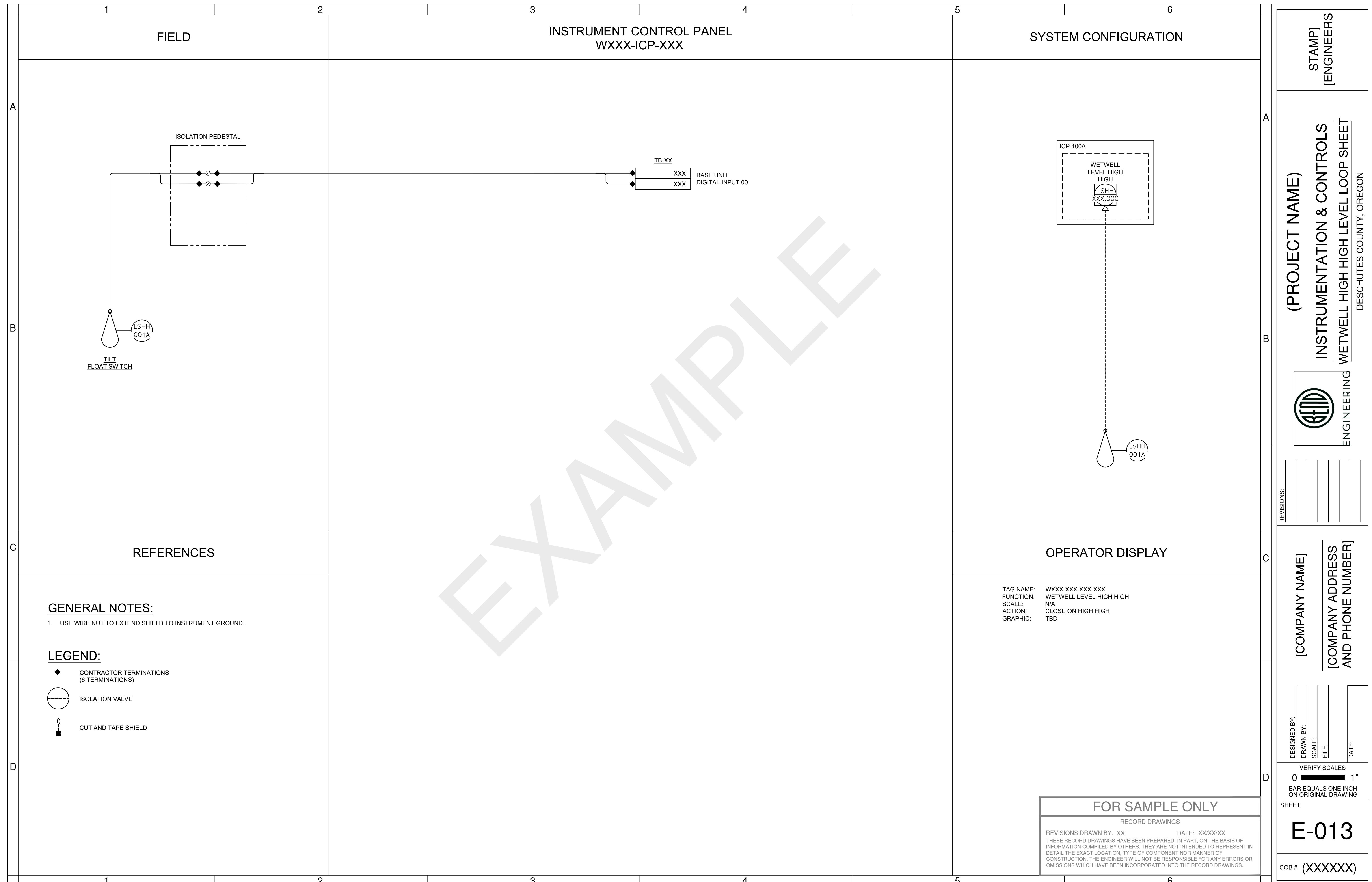


ENGINEERING

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REVISIONS: _____ _____ _____ _____ _____				
[COMPANY NAME]				
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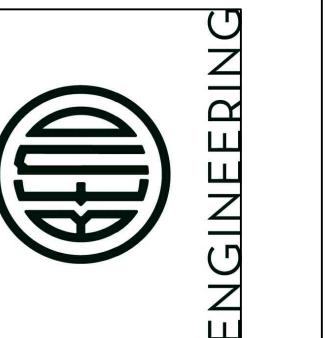
E-011

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		FIELD	INSTRUMENT CONTROL PANEL WXXX-ICP-XXX	SYSTEM CONFIGURATION		
A						
B						
C	REFERENCES			OPERATOR DISPLAY		
D	<p>GENERAL NOTES:</p> <p>1. USE WIRE NUT TO EXTEND SHIELD TO INSTRUMENT GROUND.</p> <p>LEGEND:</p> <ul style="list-style-type: none"> ◆ CONTRACTOR TERMINATIONS (0 TERMINATIONS) ○ ISOLATION VALVE □ CUT AND TAPE SHIELD 			<p>TAG NAME: WXXX-XXX-XXX-XXX FUNCTION: ATS NORMAL POSITION SCALE: N/A ACTION: CLOSE WHEN IN NORMAL POSITION GRAPHIC: TBD</p> <p>TAG NAME: WXXX-XXX-XXX-XXX FUNCTION: ATS STANDBY POSITION SCALE: N/A ACTION: CLOSE WHEN IN STANDBY POSITION GRAPHIC: TBD</p> <p>TAG NAME: WXXX-XXX-XXX-XXX FUNCTION: NORMAL POWER AVAILABLE SCALE: N/A ACTION: CLOSE WHEN NORMAL POWER AVAILABLE GRAPHIC: TBD</p> <p>TAG NAME: WXXX-XXX-XXX-XXX FUNCTION: STANDBY POWER AVAILABLE SCALE: N/A ACTION: CLOSE WHEN STANDBY POWER AVAILABLE GRAPHIC: TBD</p>	<p>REVISIONS: _____</p> <p>DESIGNED BY: _____ DRAWN BY: _____ DRAWN DATE: _____</p> <p>VERIFY SCALES 0  1" BAR EQUALS ONE INCH ON ORIGINAL DRAWING</p> <p>FOR SAMPLE ONLY RECORD DRAWINGS</p> <p>REVISIONS DRAWN BY: XX DATE: XX/XX/XX THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.</p> <p>COB # (XXXXXX)</p>	<p>(PROJECT NAME)</p> <p>INSTRUMENTATION & CONTROLS</p> <p>ENGINEERING AUTO-TRANSFER SWITCH LOOP SHEET</p> <p>DESCHUTES COUNTY, OREGON</p> <p>E-012</p>



STAMP
[ENGINEERS]

(PROJECT NAME)
INSTRUMENTATION & CONTROLS
WETWELL HIGH HIGH LEVEL LOOP SHEET
DESCHUTES COUNTY, OREGON



REVISIONS: _____
[COMPANY NAME]
[COMPANY ADDRESS
AND PHONE NUMBER]

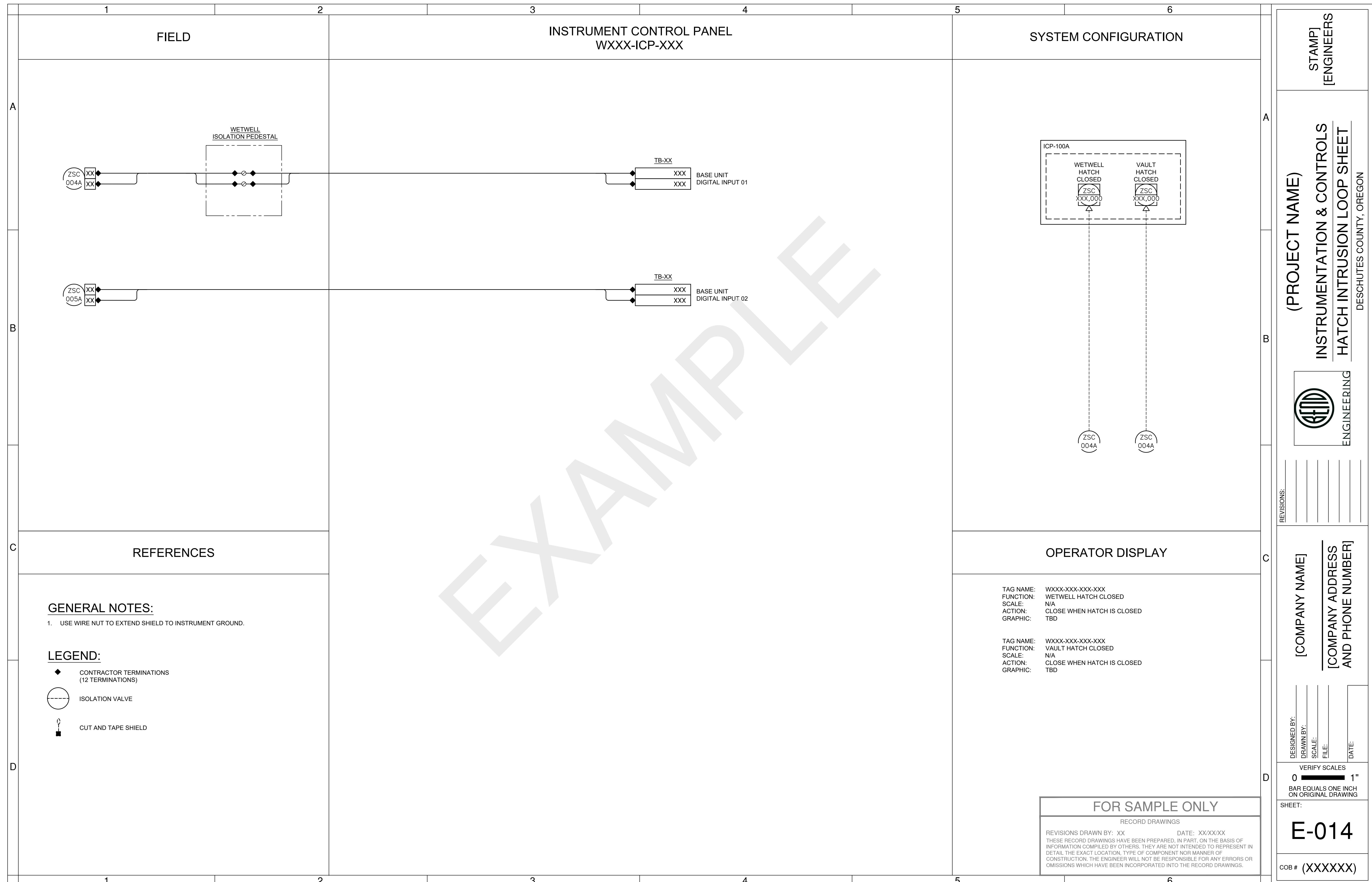
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SHEET:

E-013

COB # (XXXXXX)



STAMP
[ENGINEERS]

(PROJECT NAME)
INSTRUMENTATION & CONTROLS
HATCH INTRUSION LOOP SHEET
DESCHUTES COUNTY, OREGON



REVISIONS:

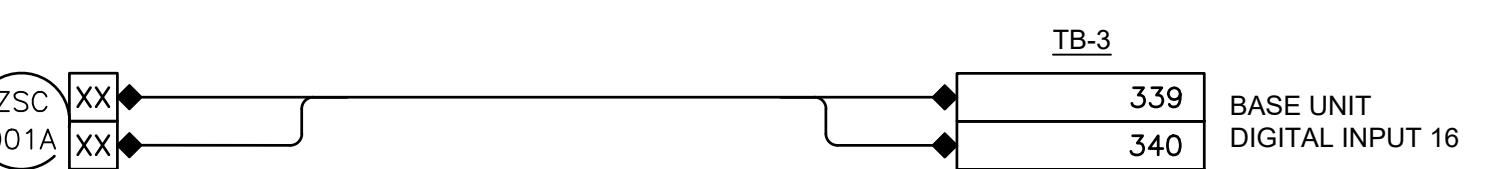
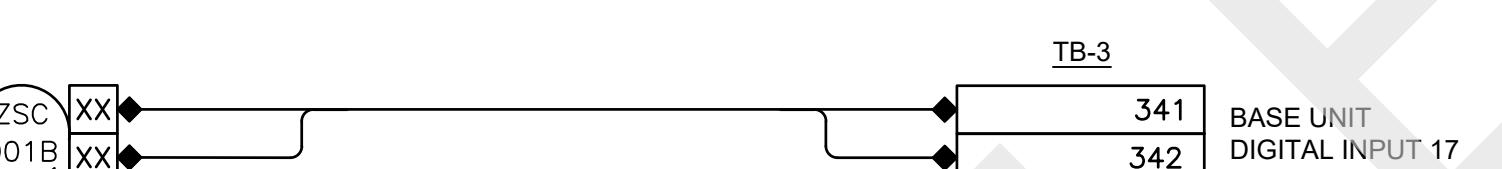
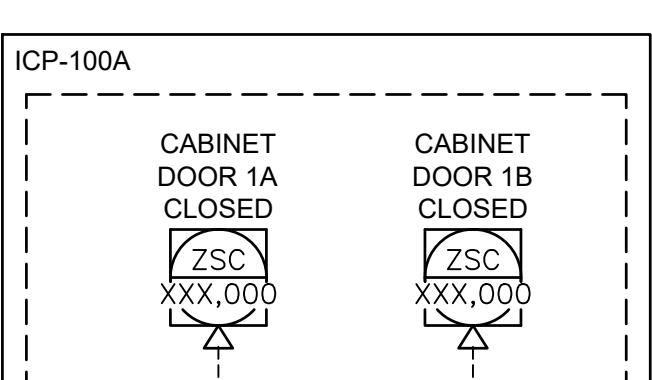
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[COMPANY ADDRESS AND PHONE NUMBER]

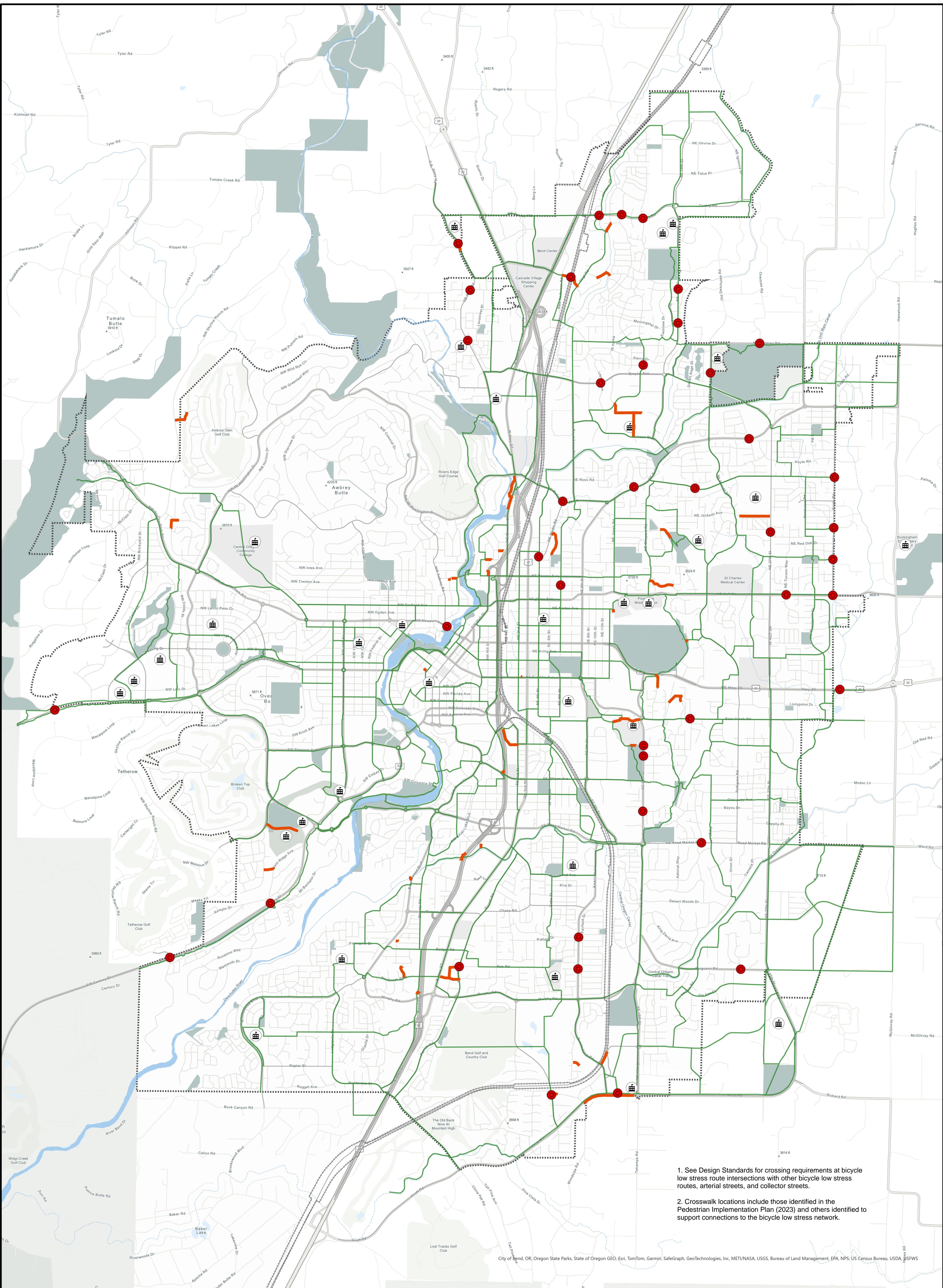
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SHEET:
E-014

COB # (XXXXXX)

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FIELD		INSTRUMENT CONTROL PANEL WXXX-ICP-XXX			SYSTEM CONFIGURATION
A	  <p>MAIN CONTROL CABINET INTRUSION SWITCHES</p>				
B					
C	REFERENCES			OPERATOR DISPLAY	
D	<p>GENERAL NOTES:</p> <ol style="list-style-type: none"> 1. USE WIRE NUT TO EXTEND SHIELD TO INSTRUMENT GROUND. <p>LEGEND:</p> <ul style="list-style-type: none"> ◆ CONTRACTOR TERMINATIONS (0 TERMINATIONS) ○ ISOLATION VALVE □ CUT AND TAPE SHIELD 			<p>REVISIONS: _____</p> <p>TAG NAME: WXXX-XXX-XXX-XXX FUNCTION: MAIN CONTROL CABINET DOOR 1A CLOSED SCALE: N/A ACTION: CLOSE WHEN DOOR IS CLOSED GRAPHIC: TBD</p> <p>TAG NAME: WXXX-XXX-XXX-XXX FUNCTION: MAIN CONTROL CABINET DOOR 1B CLOSED SCALE: N/A ACTION: CLOSE WHEN DOOR IS CLOSED GRAPHIC: TBD</p> <p>DESIGNED BY: _____ DRAWN BY: _____ SCALE: _____ FILE: _____ DATE: _____</p> <p>VERIFY SCALES 0 _____ 1" BAR EQUALS ONE INCH ON ORIGINAL DRAWING</p> <p>REVISIONS DRAWN BY: XX DATE: XX/XX/XX THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.</p> <p>FOR SAMPLE ONLY RECORD DRAWINGS E-015 COB # (XXXXXX)</p>	



APPENDIX C CONNECTOR ROUTES AND CROSSINGS

- Major Streets
- Local Streets
- Schools
- Parks
- City Limits
- Low Stress Network
- Marked/Enhanced Crosswalk
- Connector Route

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Mi



CITY OF BEND

This map is for reference purposes only. Care was taken in the creation of this map, but it is provided "AS IS." Please contact the City of Bend to verify map information or to report any errors.



City of Bend Approved Street Trees

Informational Links by Common Name

Common Name	Genus	Species	Subspecies Variety/ Cultivar	Height	Spread
Class 1	FOR USE BENEATH POWERLINES - 4ft minimum Planter Strip width - 20 ft spacing				
Paper bark Maple	Acer	<i>griseum</i>		25'	20'
Crimson Sentry Norway Maple	Acer	<i>platanoides</i>	Crimson sentry	25'	15'
Apple Serviceberry	Amelanchier	<i>grandiflora</i>		25'	25'
Autumn Brilliance Serviceberry * Single trunk form only	Amelanchier	<i>grandiflora</i>	Autumn Brilliance	25'	25'
Smooth Juneberry	Amelanchier	<i>laevis</i>		25'	25'
Ginko	Biloba	Goldspire		16'	6'
Ruby Vase Parrotia	Parrotia	<i>persica</i>	Ruby Vase	25'	20'
Vanessa Persian Parrotia	Parrotia	<i>persica</i>	Vanessa	25'	20'
Amur Chokecherry	Prunus	<i>maackii</i>		25'	20'
Flowering Cherry Plum	<u>Prunus</u>	<i>cerasifera</i>		20'	20'
Summer Sprite Linden	Tilia	<i>cordata</i>	Halka	25'	20'
City Sprite Zelkova	Zelkova	<i>serrata</i>	JFS-KW1	25'	20'
Amur Maple * single trunk form only	Acer	<i>tataricum</i>	ginnala	20'	20'
CLASS 2	4' Minimum Planter Strip width - 20 ft spacing				
Tatarian maple * single trunk form only	Acer	<i>Tartarium</i>		30'	18'
Common Chokecherry	Prunus	<i>virginiana</i>	virginiana	30'	20'
Spring Flurry Serviceberry * Single trunk form only	Amelanchier	<i>laevis</i>	Spring flurry	28'	20'
Thornless Cockspur Hawthorne * Thornless only	Crataegus	<i>crus-galli</i>	Inermis	30'	25'
Western Serviceberry	Amelanchier	<i>alnifolia</i>		30'	20'
Hedge Maple	Acer	<i>campestre</i>		40'	20'
Rocky Mountain Maple	Acer	<i>glabrum</i>		30'	20'
Bigtooth Maple	Acer	<i>grandidentatum</i>		35'	25'
Sensation Box Elder	Acer	<i>negundo</i>	Sensation	45'	30'
Autumn Blaze Red Maple	Acer	<i>rubrum</i>	Freemanii	50'	35'
Red Sunset Maple	Acer	<i>rubrum</i>	Franksred	45'	45'
Rising Fire American Hornbeam	Carpinus	<i>caroliniana</i>	Rising Fire	30'	15'
Amur Maackia	Maackia	<i>amurensis</i>	Maacnificent	35'	25'
Columnar Sargent Cherry	Prunus	<i>sargentii</i>	Columnaris	35'	15'
Upright English Oak	Quercus	<i>robur</i>	Fastigiata	50'	25'

Informational Links by Common Name		Genus	Species	Subspecies Variety/ Cultivar	Height	Spread
Skymaster English Oak		Quercus	<i>robur</i>	Skymaster	50'	25'
Ware's Oak		Quercus	<i>warei</i>	Nadler	35'	25'
McNair Red Horse Chestnut		<u>Sesculus</u>	<i>x carnea</i>		35'	25'
CLASS 3	5' Minimum Planter Strip Width -25ft spacing					
European Hornbeam		Carpinus	<i>betulus</i>		50'	35'
Prairie Sentinel Hackberry		Celtis	<i>occidentalis</i>	prairie sentinel	45'	15'
Western Hackberry		Celtis	<i>reticulata</i>		30'	30'
Thornless Honey Locust * Thornless variety only		Gleditsia	<i>triacanthos</i>	Inermis	40'	40'
Persian Parrotia *Single trunk variety only		Parrotia	<i>persica</i>		50'	30'
Boulevard Linden		Tilia	<i>americana</i>	boulevard	50'	25'
Sterling Linden		Tilia	<i>tomentosa</i>	Sterling	45'	35'
Box Elder *Single trunk variety only		<u>Acer</u>			70'	70'
CLASS 4	6' minimum Planter Strip Width - 30 foot spacing					
Crimson King Norway Maple		Acer	<i>platanoides</i>	Crimson King	40'	35'
Emerald Avenue Hornbeam		Carpinus	<i>betulus</i>	JFS-KW1CB	40'	35'
Northern Catalpa		Catalpa	<i>speciosa</i>		60'	40'
Heartland Catalpa		Catalpa	<i>speciosa</i>	Heartland	50'	25'
Magnifica Hackberry		Celtis	<i>occidentalis</i>	magnifica	50'	40'
London Planetree		Platanus	<i>acerifolia</i>		80'	40'
English Oak		Quercus	<i>robur</i>		65'	45'
CLASS 5	For Planter Strips 7' and above - 35ft spacing					
American Linden		Tilia	<i>americana</i>		60'	30'
Silver Linden		Tilia	<i>tomentosa</i>		50'	35'
Sugar Maple		Acer	<i>saccharum</i>		80'	50'
Espresso Kentucky Coffee Tree		Gymnocladus	<i>dioicus</i>	Espresso	50'	40'
Scarlet Oak		Quercus	<i>coccinea</i>		75'	40'
Northern Red Oak		Quercus	<i>rubra</i>		75'	40'
CLASS 6	For Planter Strips 10' and above - 35ft spacing					
Norway Maple		Acer	<i>platanoides</i>		45'	40'
Ponderosa Pine/Pinus Ponderosa		Pinus			70'	26'
Pinus contorta, Larix occidentalis, Calocedrus decurrens						

Informational Links by Common Name	Genus	Species	Subspecies Variety/ Cultivar	Height	Spread
Greenspire Littleleaf Linden	Tilia	<i>cordata</i>	Greenspire	50'	30'
Bristlecone pine/ Pinus artistata				40'	20'
Crimson Spire Oak	Crimschmidt			45'	15'
Bosnian pine	Pinus	<i>heldreichii</i>		40'	10'
Engelmann spruce/ picea engalmanni	Picea	<i>engelmannii</i>		90'	3'



City of Bend Approved Plant List

Name	Latin name	Description	Height	Spread	Attributes	Sun or shade?	Water Need	Category	Native?	Flower:
Shrubs										
Coralberry, Hancock	<i>Symphoricarpos x chenaultii</i> 'Hancock'	A low-growing shrub which works well on slopes for erosion control. Provides a shelter for wildlife. Produces white flowers followed by sparse pink berries. Green leaves change to yellow in fall. Indian currant coralberry (<i>Symphoricarpos orbiculatus</i>) is similar but larger in size.	1 1/2-2'	6-8'	Attracts birds, Deer resistant	Full sun to part shade	Moderate	Small shrubs		
Cotoneaster, cranberry	<i>Cotoneaster apiculatus</i>	A semi-broadleaf evergreen. Dark, shiny, green leaves change to burgundy in the fall. Interesting mounding type of growth habit. Produces tiny pink flowers followed by a red cranberry-like fruit that persists into winter. East-facing exposure is best. Not invasive in Central Oregon.	3'	3-6'	Fire resistant, Deer resistant	Full sun to part shade	Moderate	Small shrubs		
Currant, alpine	<i>Ribes alpinum</i>	Small shrub. Good in mass plantings to create a shrub border. Dense with bright green foliage and bland, yellow fall color.	3-5'	4-5'	Deer resistant	Full sun to part shade	Low	Small shrubs		
Fernbush or desert sweet	<i>Chamaebatiaria millefolium</i>	Semi-evergreen shrub with fuzzy, scented, fern-like green leaves. Produces white flowers in summer. Irregular, unkempt-looking growth habit.	3-6'	3-6'	Attracts butterflies, Attracts pollinators, Deer resistant	Full sun	Very Low	Small shrubs	yes	
Kelsey dogwood	<i>Cornus stolonifera</i> 'Kelseyi'	Plant has a compact rounded growth habit with white flowers in spring. Red stems provide winter interest.	2-3'	2-3'	Rain gardens, Deer resistant, Fire resistant	Full sun to part shade	Moderate	Small shrubs		

Potentilla or cinquefoil	<i>Potentilla fruticosa</i>	Hardy, bushy shrub with small grayish-green leaves. Produces flowers all summer long in shades of yellow, gold, white, pink, red, and orange. Cultivars include 'Abbottswood', 'Gold Drop', 'Goldfinger', 'Tangerine', and many others. Works well as a shrub border.	2-4'	2-4'	Deer resistant	Full sun	Low	Small shrubs		
Rabbitbrush, gray	<i>Chrysothamnus nauseosus</i>	Late-blooming, irregular-shaped shrub. Produces yellow flowers. Bluish-green, needle-like foliage. Can be pruned each season in spring. Reseeds easily. Green Rabbitbrush (<i>Chrysothamnus viscidiflorus lanceolatus</i>) is another native that is similar but more compact with green leaves.	2-6'	2-4'	Attracts butterflies, Attracts pollinators, Deer resistant	Full sun	Very Low	Small shrubs	yes	
Sage, Russian	<i>Perovskia atriplicifolia</i>	Fine, feathery textured shrub that performs more like a perennial. Silvery-gray, finely dissected leaves with a sage-like aroma. May die back in winter and can be cut back in late fall or early spring. Produces beautiful lavender-blue flowers in late summer. Do not overwater. Will reseed or spread by rhizomes. Better cultivars include 'Blue Spires' (sterile, so will not reseed), 'Lacey Blue' (dwarf), and 'Little Spires' (dwarf).	3-5'	3-4'	Deer resistant	Full sun	Low	Small shrubs		
Spirea	<i>Spiraea species</i>	Popular, clump-forming shrub which produces white or pink bowl-shaped flowers. Leaves are generally green but can be tinted in shades of red or yellow. Many cultivars available, including 'Anthony Waterer', 'Gold Mound', 'Goldflame', 'Little Princess', and 'Neon Flash'. Plant is very easy to care for. Native spirea (<i>S. douglasii</i>) has attractive pink blooms and can be used in a rain garden.	2-4'	2-4'	Rain gardens,Deer resistant,Fire resistant	Full sun to part shade	Moderate	Small shrubs	yes	

Spirea, blue mist or bluebeard	<i>Caryopteris x clandonensis</i>	Dense, rounded shrub with grayish-green leaves. Produces lavender-blue flowers in late summer. Foliage has a sage-like scent. Nice color for late season. Attracts bees. Can dieback in winter and be cut back like a perennial in early spring. Will reseed. Cultivars include 'Blue Mist' and 'Dark Knight'.	3-5'	3-5'	Attracts butterflies, Attracts pollinators, Deer resistant	Full sun to part shade	Low	Small shrubs		
Sumac, Gro-Low	<i>Rhus aromatica</i>	Mounding shrub with dark green leaves. Fall color is orange to red to purple. Tiny yellow flowers change to fuzzy red fruit. Prefers additional moisture.	1-3'	5-7'	Rain gardens, Deer resistant	Full sun to part shade	Low	Small shrubs		
Abelia, fragrant	<i>Abelia mosanensis</i>	An interesting shrub with loose, upright arching stems. Very fragrant pink flowers open in spring. Orange to red fall color. No serious pests. This species of abelia is more cold hardy than others. Varieties include 'Sweet Emotion®'.	4-6'	4-6'	Attracts butterflies, Attracts pollinators, Deer resistant, Fire resistant	Full sun to part shade	Moderate	Medium shrubs		
Barberry	<i>Berberis species</i>	Commonly used small- or medium-sized shrub with a dense, rounded growth habit. Branches have spines and small leaves in various foliage colors, ranging from purplish red to gold. Produces small yellow flowers followed by ornamental red fruit that persists into winter. Not invasive in Central Oregon. Varieties include 'Crimson Pygmy' (dwarf), 'Rose Glow', 'Aurea' (gold leaf and sterile).	4-6'	4-6'	Deer resistant, Fire resistant	Full sun to part shade	Low	Medium shrubs		
Bitterbrush	<i>Purshia tridentata</i>	A native semi-evergreen shrub with grayish-green leaves. Produces creamy-yellow flowers in spring followed by reddish berries. Very drought tolerant. Important forage for deer and elk.	5-8'	4-8'		Full sun to part shade	Very Low	Medium shrubs	yes	

Burning bush, dwarf	<i>Euonymus alatus 'Compactus'</i>	Rounded shrub with green leaves and “winged” bark. Excellent scarlet fall color. Creates a nice shrub border. Does best with east-facing exposure.	4-6'	4-6'	Fire resistant	Full sun to part shade	Moderate	Medium shrubs			
Chokeberry, black	<i>Aronia melanocarpa</i>	An upright, multi-stem shrub with glossy, green leaves and white flowers in spring. Blackish fruit is edible and can be used to make juices, jellies, and jams. Plant has high wildlife value and red-dish-purple fall color. Varieties include 'Autumn Magic' and 'Viking'.	3-6'	3-6'	Rain gardens, Attracts birds	Full sun to part shade	Low	Medium shrubs			
Currant, golden	<i>Ribes aureum</i>	Produces yellow flowers followed by edible purple fruit. Fall color can be red to yellow. Prefers additional moisture.	4-6'	4-6'	Rain gardens, Attracts birds, fire resistant	Full sun to part shade	Low	Medium shrubs	yes		
Fothergilla	<i>Fothergilla major</i>	An attractive shrub with seasonal interest from the white, scented, brush-like blooms in spring to the spectacular fall color. Nice rounded growth habit. Will perform best in a north- or east-facing location. Varieties include 'Blue Shadow' and 'Mt. Airy'. The 'Mt. Airy' variety has performed great in the OSU Demonstration Garden in Redmond.	5-6'	5-6'	Deer resistant, Fire resistant	Full sun to part shade	Moderate	Medium shrubs			
Hydrangea	<i>Hydrangea arborescens</i> or <i>Hydrangea paniculata</i>	Smooth hydrangea (H. arborescens) and Panicle hydrangea (H. paniculata) varieties do best in Central Oregon. These shrubs produce nice, medium-green foliage and very showy flowers that range from white to pink. Varieties that have performed well include 'Annabelle', 'Grandiflora', 'Limelight', 'Little Lime', 'Little Lamb', and 'Quickfire'.	3-5'	4-6'	Fire resistant	Full sun to part shade	Moderate	Medium shrubs			

Meyer Lilac	<i>Syringa meyeri</i>	A compact, spreading lilac with very fragrant blooms. Tolerates tough growing conditions. Showy purple flowers, typically in May. Cultivars include 'Palibin' at 4-5' tall.	4-8'	6-8'	Deer resistant, Fire resistant	Full sun to part shade	Low	Medium shrubs			
Plum, cistena or purpleleaf sandcherry	<i>Prunus x cistena</i>	Fast-growing, medium-sized shrub with purple foliage during the summer. Produces pinkish- white flowers in spring. Will send up suckers.	4-6'	4-6'	Attracts pollinators, Fire resistant	Full sun	Low	Medium shrubs			
Rose	<i>Rosa species</i>	Hardy shrub roses and regular rose bushes are known for their blossoms, which are beautiful in color and scent. Most have green foliage, masses of flowers, and an arching or climbing type of growth habit. May bloom continuously or once during the season. Some display excellent fall color and ornamental rose hips in late fall/winter. Spiny branches make them less desirable for deer. Wood's Rose (<i>R. woodsia</i>), a native wild rose in Central Oregon, has a spreading growth habit. Produces single pink flowers in summer. There are too many rose varieties to mention; however, some of the more adaptable hardy shrub roses include those in the Meidiland series and Morden (Parkland) series.	2-6'	2-6'	Fire resistant	Full sun to part shade	Low	Medium shrubs	yes		
Sagebrush, big	<i>Artemesia tridentata sub. tridentata</i>	Woody-based shrub with soft, aromatic, silvery-gray foliage. White to yellowish feathery flowers in spring. Can be pruned to be kept tidy. This plant is an important winter browse plant for native wildlife. There are other species of Artemesia that are native to Central Oregon.	3-6'	3-6'		Full sun	Very Low	Medium shrubs	yes		

Sandcherry, western	<i>Prunus besseyi</i>	Open, irregular growth habit. Produces fragrant white flowers in spring followed by an edible black fruit. Leaves are a grayish-green that change to coppery-red in fall. Can sucker if overwatered.	4-6'	4-6'	Attracts birds, Attracts pollinators, Fire resistant	Full sun to part shade	Low	Medium shrubs	yes		
Snowberry	<i>Symphoricarpos albus</i>	Upright, arching shrub with bluish-green leaves. Pink flowers in summer change to white, rounded fruit that persists through the winter.	4-6'	4-6'	Rain gardens,Attracts birds,Deer resistant,Fire resistant	Full sun to part shade	Low	Medium shrubs	yes		
Viburnum, compact American cranberry	<i>Viburnum trilobum 'Compactum'</i>	An excellent compact, rounded shrub. Green, maple-like foliage in summer changes to orange-red in fall. Produces white flowers followed by minimal red fruit in fall. East-facing exposure is best. Compact European Cranberry (<i>Viburnum opulus 'Compactum'</i>) is very similar.	4-6'	4-6'	Rain gardens, Attracts birds, Deer resistant, Fire resistant	Full sun to part shade	Moderate	Medium shrubs			
Oregon grape	<i>Mahonia aquifolium</i>		6'	3'		Full sun to part shade	Low, Moderate	Medium shrubs	yes		
Oak leaf sumac	<i>Rhus trilobata</i>		8'	4'		Full sun to part shade		Medium shrubs	yes		
			6'	4'		shade		Medium shrubs	yes		
Golden currant	<i>Ribes aureum</i>		10'	8'		Full sun to part shade	Moderate,w	Medium shrubs	yes		
Wax currant	<i>Ribes cereum</i>		8'	5'		Full sun to part shade	Very Low, Low	Medium shrubs	yes		
Green leaf manzanita	<i>Arctostaphylos patula</i>		4'	4'		Full sun to part shade	Low Moderate, W	Medium shrubs	yes		
Narrowleaf yucca	<i>Yucca angustissima</i>		2'	2'		Full sun to part shade	Very Low, Low Moderate, W	Medium shrubs	yes		
Douglas spirea	<i>Spirea douglasii</i>					Full sun to part shade		Medium shrubs	yes		
Mockorange	<i>Philadelphus lewisii</i>		6'	6'		Full sun to part shade	Low, Moderate	Medium shrubs	yes		
Woods' rose	<i>Rosa woodsii</i>		6'	4'		Full sun to part shade	Low, Moderate Moderate, W	Medium shrubs	yes		
Oceanspray	<i>Holodiscus discolor</i>					Full sun to part shade		Medium shrubs	yes		
			8'	5'		shade	Low	Medium shrubs	yes		
Rock spirea	<i>Holodiscus microphyllus</i>		4'	3'		Full sun to part shade		Medium shrubs	yes		
Birchleaf spirea	<i>Spirea betulifolia</i>		3'	3'		Full sun to part shade	Moderate	Medium shrubs	yes		
			3'	3'		shade		Medium shrubs	yes		
Desert sage	<i>Salvia dorrii</i>		2'	2'		Full sun to part shade	Very Low, Low	Medium shrubs	yes		

Desert sweet	<i>Chamaebatiaaria millifolium</i>		8'	6'		Full sun to part shade	Very Low, Low	Medium shrubs	yes	
Ninebark	<i>Physocarpus species</i>	Shrubby-type plant with dense, green, purple, or golden foliage. Produces white flowers in summer. Distinct peeling bark. Can be used as a hedge. Easy to grow. Varieties include Diablo® (purple foliage), 'Dart's Gold', Summer Wine™ (smaller), and Little Devil™ (smaller). Pacific ninebark (<i>P. capitatus</i>) is a native with green leaves in summer.	6-8'	6-8'	Rain gardens, Deer resistant	Full sun to part shade	Low	Large shrubs	yes	
Oceanspray or desert Oceanspray	<i>Holodiscus discolor</i> or <i>H. dumosus</i>	This native shrub has arching to upright branches and an irregular growth habit. Best known for its fragrant, attractive cream-colored flowers that hang in clusters from the branches in summer. <i>H. dumosus</i> (Desert Oceanspray) is smaller (6 to 8 feet) and more adaptable to Very Low.	10-15'	15-20'	Attracts butterflies, Attracts birds, Fire resistant, Rain gardens	Full sun to part shade	Low	Large shrubs	yes	
Red osier or redtwig Dogwood	<i>Cornus stolonifera</i>	A rounded, broad-spreading, multi-stemmed shrub with dark green leaves in summer that turn reddish-purple in fall. Notorious for its bright red, shiny stems in winter. Produces white flowers May to June. Cultivars include 'Baileyi', 'Flaviramea' (yellow twigs), and 'Isanti'. Can tolerate dry conditions but prefers more moisture.	7-9'	10'+	Rain gardens,Fire resistant	Full sun to part shade	Moderate	Large shrubs		
Rose of Sharon	<i>Hibiscus syriacus</i>	This late-blooming shrub can work well in a shrub border. Large blooms in a variety of colors in late summer. Has an upright, vase-like growth habit. Select more cold-hardy varieties.	8-12'	6-10'	Fire resistant,Deer resistant	Full sun to part shade	Moderate	Large shrubs		

Serviceberry or juneberry	<i>Amelanchier</i> species	An upright, less dense, native shrub with green leaves. White flowers in spring followed by edible, bluish-purple berries that are good for jams or jellies. Excellent yellow, orange, and red fall colors. Several varieties available including 'Regent' (more compact). Related species include <i>A. canadensis</i> (Shadblow serviceberry).	6-10'	5-12'	Rain gardens, attracts butterflies, attracts birds, fire resistant, deer resistant	Full sun to part shade	Low	Large shrubs	yes	
Smokebush or smoketree	<i>Cotinus coggygria</i>	A large ornamental shrub with unique foliage and showy parts of the flower that result in smoke-like plumes. Foliage is green or purplish, depending on variety. Varieties include 'Grace' and 'Royal Purple'.	10-15'	10-15'	Deer resistant	Full sun to part shade	Moderate	Large shrubs		
Sumac, smooth or staghorn sumac	<i>Rhus glabra</i> or <i>Rhus typhina</i>	A bushy, tropical-like shrub with dark green leaves in summer that change to beautiful red, orange, and yellow colors in fall. Not suitable for small planting areas as it will sucker to produce groves. Female plants produce a red, hairy fruit, which persists into winter. <i>R. typhina</i> (Staghorn sumac) is similar to smooth sumac but branches are covered in fine hairs to produce a velvety touch. Varieties include Laceleaf Staghorn Sumac (<i>R. typhina</i> 'Laciniata'), which has lacy, finely dissected leaves.	8-15'	10-15'	Rain gardens, Deer resistant	Full sun to part shade	Low	Large shrubs		
Viburnum, nannyberry	<i>Viburnum lentago</i>	Large ornamental shrub with glossy, green leaves. Produces large clusters of white flowers in late spring followed by fruit that emerges green and changes from red to purple to black. Will sucker some. Also available in tree form. Excellent red to purple fall color.	15-18'	6-10'	Rain gardens, Attracts birds, Deer resistant, Fire resistant	Full sun to part shade	Low	Large shrubs		

Viburnum, wayfaring tree	<i>Viburnum lantana</i>	Large ornamental shrub with fuzzy, leathery, green leaves. Produces large clusters of white flowers in late spring followed by black fruit when ripe. Excellent purplish-red fall color. Pest free. Varieties include: 'Mohican' (compact at 6- to 8-inch height and 6- to 9-inch spread). Easy to grow. Use as a hedge or specimen plant.	10-15'	10-15'	Attracts birds, Deer resistant, Fire resistant	Full sun to part shade	Low	Large shrubs		
Willow	<i>Salix species</i>	Fast-growing shrubs with narrow leaves and dense branching. Several native and cultivated varieties available. Can be susceptible to insect and disease. Popular cultivated varieties include Dapple willow (<i>S. integra</i> 'Hakuro-nishiki') and Arctic Blue willow (<i>S. purpurea</i>).	6-30'	5-20'	Rain gardens, Fire resistant	Full sun	Moderate	Large shrubs	yes	
Oregon grape	<i>Mahonia aquifolium</i>	Native upright evergreen with shiny, dark green leaves in summer changing to purplish-red in the fall. Oregon state flower. Yellow flowers in the spring followed by bluish-black berries.	5-6'	5-6'	Rain gardens, Attracts pollinators, Attracts birds, Attracts butterflies, Fire resistant, Deer resistant	Full sun to part shade	Very Low	Shrubs/ Evergreen	yes	
Holly, creeping	<i>Mahonia repens</i>	Similar to Oregon grape holly but smaller in size. Spreading green leaves turning purplish-red in fall. Yellow flowers followed by bluish-black berries.	12-18"	2'	Rain gardens, Attracts butterflies, Attracts pollinators, Deer resistant, Fire resistant	Full sun to part shade	Very Low	Shrubs/ Evergreen	yes	
Kinnickinnick	<i>Arctostaphylos uvar-ursi</i>	A native, mat-forming shrub with glossy, green leaves. A pinkish-white flower in spring followed by a red berry in the fall. A reddish fall color. Varieties are available.	4-8"	10-15'	Attracts butterflies, Attracts pollinators, Fire resistant	Full sun	Very Low	Shrubs/ Evergreen	yes	
Mountain mahogany, curl-leaf	<i>Cercocarpus ledifolius</i>	Upright, coarse-textured shrub with small dark green leaves emerging from slender gray stems. Seeds have an interesting, silky, corkscrew-shaped tail.	10-15'	10-15'		Full sun, Full sun to part shade	Very Low	Shrubs/ Evergreen	yes	

P.J.M. rhododendron and azaleas	<i>Rhododendron x P.J.M.</i> and <i>Rhododendron</i> species	The P.J.M. Rhododendron is an attractive broadleaf evergreen with dark green foliage and is resistant to root weevil damage. Gets covered with lavender- pink blooms. One of the more cold-hardy varieties for this area. Other cold-tolerant azaleas for this area include varieties found in the Northern Lights and Exbury series. Both rhododendron and azaleas should be planted with north- or east-facing exposure.	3-5'	3-7'	Attracts butterflies, Fire resistant	Prefers shade	Moderate	Shrubs/ Evergreen		
Yucca	<i>Yucca</i> species	Recognized by their sword-like leaves in various shade of green, gray-green, or variegated green and yellow. Produces stalks of white flowers during the growing season. Several varieties available.	2-4'	2-4'	Attracts butterflies, Deer resistant, Fire resistant	Full sun	Low	Shrubs/ Evergreen		
Greenleaf Manzanita	<i>Arctostaphylos patula</i>	Oval, somewhat spreading shrub with flattened, shiny, bright green leaves. Very distinct, smooth, reddish brown bark, which provides interesting winter texture. Pinkish-white flowers in spring.	4-6'	4-6'	Attracts butterflies, Attracts pollinators	Full sun to part shade	Very Low	Shrubs/ Evergreen	yes	
Ornamental Grass/Bunch Grass										
Avena, blue or blue oat grass	<i>Helictotrichon sempervirens</i>	Dense, rounded clump grass. Bluish-green blades that become graceful and arching with maturity. Produces brown oat-like seed heads. Overwatering affects leaf color.	2-4'	2-3'	Rain gardens, Deer resistant	Full sun	Moderate	Ornamental grasses		
Black mondo grass	<i>Ophiopogon planiscapus</i> 'Nigrescens'	Interesting leaf color for any landscape. Foliage is dark, purplish-black. Flowers are purple followed by purple berries. Can be used in mass plantings.	5-6"	5-6"	Rain gardens, Deer resistant	Full sun to part shade	Moderate	Ornamental grasses		

Bluestem, little	<i>Schizachyrium scoparium</i>	Densely tufted clump grass with grayish-green leaves that change to red in fall. Produces spike-like flowers in summer. Cultivars include 'Prairie Blues', 'The Blues', 'Prairie Munchkin' and 'Little Heaven'.	2-3'	1-2'	Deer resistant	Full sun	Low	Ornamental grasses		
Feather reed grass, Karl Foerster	<i>Calamagrostis x acutiflora</i>	Beautiful, upright, narrow-growing ornamental grass. Used as a single specimen or in stands. Green blades with a feathery, purplish plume that blooms in summer. Prefers additional moisture. The flower changes to a tan seed head in late summer. Provides excellent winter texture. Can be cut back to the ground in early spring. Sterile and will not reseed. Other varieties include 'Overdam' and 'Avalanche'.	3-6'	1-2'	Rain gardens, Deer resistant		Low	Ornamental grasses		
Fescue, blue	<i>Festuca ovina glauca</i>	Attractive clump-forming grass. Silvery-blue blades are a nice contrast in the landscape. Produces a light tan flower in summer. Can provide winter texture. Prefers additional moisture. Cultivars include 'Elijah's Blue' (compact) and 'Boulder Blue'. Idaho Fescue (<i>F. idahoensis</i>) is a native fescue that heavily reseeds, so it is best used in restoration sites.	10-12"	10-12"	Deer resistant	Full sun	Low	Ornamental grasses	yes	
Fountain grass	<i>Pennisetum alopecuroides</i>	An arching, rounded ornamental grass. Attractive bronze "foxtail" flowers are produced in summer. Also available in some annual varieties. Cultivars include 'Hamelin' (dwarf) and 'Little Bunny' (dwarf).	2-3'	2-3'	Deer resistant	Full sun	Low	Ornamental grasses		
Indian ricegrass	<i>Oryzopsis hymenoides</i>	Upright, clump-forming grass with interesting, airy seed heads. Great for a dry, rocky location.	1-2'	2-3'	Rain gardens	Full sun	Very Low	Ornamental grasses	yes	

Miscanthus grass or maiden hair grass	<i>Miscanthus sinensis</i>	One of the most beautiful ornamental grasses. Graceful, arching type of growth habit. Green or variegated foliage. Produces airy, white to russet plumes in late summer, depending on variety. Not invasive in Central Oregon because seeds likely do not have time to mature (ripen). Cultivars include 'Gracillimus' (very drought tolerant) and 'Morning Light'.	5-8'	3-5'	Deer resistant	Full sun to part shade	Moderate	Ornamental grasses			
Switch grass	<i>Panicum virgatum</i>	Narrow, upright, clump-forming grass. Metallic blue blades of grass that change to yellow in fall. Produces airy, purple flowers. Prefers additional moisture. Heights vary with different cultivars including 'Cheyenne', 'Heavy Metal', 'Hot Rod', and 'Shenandoah'.	3-4'	3-4'	Rain gardens,Attracts birds,Deer resistant	Full sun to part shade	Low	Ornamental grasses			
Tufted hair grass	<i>Deschampsia caespitosa</i>	Arching, mounding clump of green grass with unique, showy blooms and seed heads. Good container garden plant.	2-3'	1-3'	Rain gardens, Deer resistant	Full sun to part shade	Moderate	Ornamental grasses			
Indian ricegrass	<i>Oryzopsis hymenoides</i>		2'	1.5'		Full sun to part shade	Low	Native Grasses			
Idaho fescue	<i>Festuca idahoensis</i>		2'	1'		Full sun to part shade	Low, Moderate	Native Grasses			
			2'	1'		shade		Native Grasses			
Great Basin Wildrye	<i>Elymus cinereus</i>		6'	2'		Full sun to part shade	Low, Moderate	Native Grasses			
Sandberg bluegrass	<i>Poa secunda</i>		1'	1'		Full sun to part shade	Very Low, Low	Native Grasses			
Groundcovers											
Dianthus, garden carnation, or pinks	<i>Dianthus species</i>	Green or grayish-green foliage covered with blooms. Clump-forming growth habit. Some varieties are fragrant. Cultivars include 'Firewitch'. Good for use in rock gardens.	2-12"	6-16"	Attracts butterflies,Deer resistant,Fire resistant	Full sun to part shade	Low	Groundcovers			Pink, white, red
False rock cress	<i>Aubrieta deltoidea</i>	Mat-forming, spreading perennial with grayish-green foliage. Attractive masses of flowers in spring. Good for use in rock gardens.	3-8"	10-15"	Attracts butterflies,Fire resistant	Full sun to part shade	Low	Groundcovers			Purple, pink

Hardy cactus	<i>Cactaceae family</i>	A large group of succulent plants in many shapes and sizes, often covered with spines. Winter-hardy cactus. Good for use in rock gardens.	3-48"	3-48"	Attracts butterflies, Deer resistant, Fire resistant	Full sun to part shade	Very Low	Groundcovers		Purple, pink, red, yellow, white
Hens and chicks	<i>Sempervivum species</i>	A unique groundcover with green, succulent, rosette-shaped foliage. The parent plant produces flowers and smaller plants or "chicks." Excellent in rock walls.	2-6"	6-10"	Deer resistant, Fire resistant	Full sun to part shade	Very Low	Groundcovers		Pink, star-shaped rise up on a stalk from the "hen"
Ice plant	<i>Delosperma species</i>	Very low-growing groundcover with succulent, green foliage that changes to reddish-bronze in winter. Not suitable for areas with long-term snow cover. Yellow ice plant is one of the most cold-hardy ice plants. Cultivars and varieties include <i>D. cooperi</i> (Purple Iceplant), Lavender Ice and Mesa Verde®. This is not the same plant as the invasive species <i>Carpobrotus edulis</i> found in California. Great for use in rock gardens.	1-3"	24-30"	Attracts pollinators, Fire resistant	Full sun to part shade	Very Low	Groundcovers		Multiple colors, daisy-like
Mount Atlas daisy or mat daisy	<i>Anacyclus depressus</i>	Feathery, silvery-green foliage. Can slowly self-seed in an area. Good for use in rock gardens.	1-2"	10-12"		Full sun	Very Low	Groundcovers		Small white, daisy-like with crimson on the underside of the petals
Partridge feather	<i>Tanacetum densum ssp. Amani</i>	Gray, feather-like foliage and yellow, button-shaped flowers.	4-6"	18-24"	Deer resistant	Full sun to part shade	Low	Groundcovers		Yellow
Phlox, creeping or moss	<i>Phlox subulata</i>	A very popular spring bloomer. Linear, green leaves form a low-growing mat. Lots of cultivars are available. <i>P. diffusa</i> is one of the native, creeping phlox with pink blooms. Good for use in rock gardens.	4-6"	18-24"	Fire resistant	Full sun	Low	Groundcovers	yes	White, blue, pink, striped
Poppy mallow or prairie winecup	<i>Callirhoe involucrata</i>	Fine, green-leaved foliage with trailing stems; blooms for several months. Unique, cup-like blossoms.	6-8"	24-36"	Fire resistant, Attracts butterflies	Full sun to part shade	Low	Groundcovers		Magenta

Potentilla, creeping	<i>Potentilla verna-nana</i>	A mat-forming groundcover with green or silver leaves and bright yellow, saucer-shaped blooms. Can be used between pavers; tolerates light foot traffic. Native potentilla available.	2-3"	4-6"	Rain gardens, Deer resistant	Full sun to part shade	Low	Groundcovers	yes	Yellow
Pussytoes or cat's ears	<i>Antennaria species</i>	A mat-forming perennial with silvery-white, hairy foliage. Works well in rock walls and between pavers. Native and cultivated varieties available. Good for use in rock gardens.	2-12"	8-10"	Fire resistant	Full sun	Very Low	Groundcovers	yes	Pink, white
Sea thrift	<i>Armeria maritima</i>	Clump-forming perennial with grass-like foliage. Flowers rise up above the mound with pink or white pom-pom-type flowers. Good for use in rock gardens.	6-10"	8-12"	Fire resistant, Deer resistant	Full sun to part shade	Low	Groundcovers		Bright pink, white
Snow-in-summer	<i>Cerastium tomentosum</i>	Fast-growing; covers a large area quickly. Provides a nice contrast with silvery-gray, woolly foliage. Good for use in rock gardens.	6-12"	24-36"	Deer resistant, Fire resistant	Full sun to part shade	Low	Groundcovers		White
Soapwort	<i>Saponaria ocymoides</i>	An attractive groundcover with bright pink flowers in late spring. Good for use in rock gardens.	4-5"	15-18"	Attracts pollinators, Fire resistant, Deer resistant	Full sun to part shade	Low	Groundcovers		Pink
Speedwell	<i>Veronica species</i>	Low-growing ground-cover with glossy or fuzzy, green leaves. Very showy in full bloom. Good for use in rock gardens.	1-6"	12-18"	Fire resistant, Deer resistant	Full sun to part shade	Low	Groundcovers		Blue, pink, white
Stonecrop	<i>Sedum species</i>	Groundcover with succulent foliage in shades of green to blue. Many drought-resistant varieties. Great for use in rock gardens.	2-12"	6-24"	Fire resistant	Full sun to part shade	Very Low	Groundcovers		White, yellow, pinkish-red
Sulfur buckwheat	<i>Eriogonum umbellatum</i>	Mat-forming perennial with green leaves. Both native and cultivated varieties available.	6-10"	24-36"	Rain gardens, Attracts butterflies, Deer resistant	Full sun	Very Low	Groundcovers	yes	Yellow
Thyme	<i>Thymus species</i>	Low-growing groundcover with fragrant leaves in shades of light to dark green, yellow, or variegated. Attractive in mass plantings when blooming. Works well between pavers and in rock walls.	1-4"	6-18"	Fire resistant, Deer resistant	Full sun to part shade	Low	Groundcovers		Pink, white, purple

Thyme, woolly	<i>Thymus pseudolanuginosus</i>	Very low-growing, mat-forming ground-cover. Sage-green, woolly leaves change to a purplish color in winter. Tolerates light foot traffic. Works well between flagstones, pavers, and in rock walls.	1/2-1"	12-18"	Fire resistant,Deer resistant	Full sun	Very Low	Groundcovers	yes	Pinkish purple	
Kinnikinnick	<i>Arctostaphylos uva-ursi</i>		1	8		Full sun to part shade	Low, Moderate	Groundcovers	yes		
Spiny phlox	<i>Phlox hoodii</i>		0.5	1		Full sun to part shade	Low	Groundcovers	yes		
Wild strawberry	<i>Fragaria virginiana</i>		0.5	1		Full sun to part shade	Low,Moderate	Groundcovers	yes		
Longleaf phlox	<i>Phlox longifolia</i>		0.5	1		Full sun to part shade	Low	Groundcovers	yes		
Rosy pussytoes	<i>Antennaria rosea</i>		0.5	1		Full sun to part shade	Low, Moderate	Groundcovers	yes		
Sedum	<i>Sedum (all species)</i>		0.5	1.5		Full sun to part shade	Low,Moderate	Groundcovers	yes		
White rock cress	<i>Arabis species</i>	Low-growing perennial with dark green or variegated foliage. Produces masses of tiny flowers in spring. Native and cultivated varieties available. Good for use in rock gardens.	6-12"	12-20"	Fire resistant,Deer resistant	Full sun to part shade	Low	Groundcovers		White, pink	
Perennials											
Agastache or hummingbird mint	<i>Agastache species</i>	A tall border perennial with grayish-green, mint-scented leaves. Produces beautiful fragrant tubular flowers. Blooms later in summer. Several varieties available, some are more cold hardy than others. Attracts hummingbirds.	24-30"	15-18"	Attracts butterflies,Attracts birds,Deer resistant	Full sun	Low	Perennials		Organge, pink, rose, blue	
Basket-of-gold	<i>Aurinia saxatilis</i>	Gray-green foliage. Provides spring color with blooms in shades of gold to light yellow. Pruning is suggested after flowering to maintain shape. Excellent in rock gardens or in mass plantings.	8-18"	6-12"	Fire resistant,Deer resistant	Full sun	Low	Perennials		Gold to yellow, tiny flowers in clusters	
Bellflower	<i>Campanula carpatica</i>	This species of bellflower has a more compact growth habit. Flowers are typically bell-shaped. Good for use in rock gardens. Cultivars include 'Deep Blue Clips', 'Rapido Blue', 'Rapido White', and 'White Clips'.	6-10"	8-12"	Fire resistant	Full sun to part shade	Moderate	Perennials		Blue, purple, white	

Black-eyed Susan	<i>Rudbeckia species</i>	Late-blooming perennial that looks excellent in mass plantings. Bright, golden, daisy-like flowers with black-yellow centers. Good as a cut or dried flower.	1-4'	1-2'	Attracts butterflies, Deer resistant	Full sun to part shade	Very Low	Perennials		Golden yellow, orange with a black, brown, green or yellow center
Blanket flower	<i>Gaillardia varieties</i>	Grayish-green foliage and daisy-like flowers in various colors. Very drought tolerant. May be short lived. Fuzzy, round seed head follows flowering; keep deadheaded for continuous bloom. Long-blooming perennial. Native and cultivated varieties available.	8-36"	12-24"	Attracts butterflies, Deer resistant, Fire resistant, Rain gardens	Full sun	Low	Perennials	yes	Red petals tipped in gold, all gold, or burgundy with reddish-brown centers
Bleeding heart	<i>Dicentra species</i>	A great shade-loving perennial that produces very showy heart-shaped flowers. Western Bleeding Heart (<i>D. formosa</i>) has pink blooms. Several cultivated varieties available. Easy to care for plant. Can be cut back when spent. Attracts hummingbirds.	3'	3'	Rain gardens, Attracts birds, Deer resistant	Prefers shade	Low	Perennials	yes	Pink, white, red
Catmint	<i>Nepeta species</i>	A long-blooming perennial with trumpet-shaped flowers and grayish-green, fragrant foliage. Cut back plant for repeat blooming. Attractive to cats. It is best to avoid seed-grown varieties as they have a tendency to spread. Instead, select cultivated varieties such as 'Walkers Low' and 'Select Blue'.	12-28"	18-26"	Attracts butterflies, Attracts pollinators, Deer resistant	Full sun to part shade	Low	Perennials		Blue to lavender trumpet shaped
Columbine	<i>Aquilegia species</i>	A dainty perennial with a spurred, trumpet-shaped flower in multi-colored blooms. Foliage is grayish-green with shamrock-like foliage. Deadhead to encourage prolonged blooming. Partial shade for improved drought tolerance. Short lived but will reseed. Western Columbine (<i>A. formosa</i>) has a red and yellow bloom. Many cultivated varieties available. Attracts hummingbirds.	10-36"	10-12"	Rain gardens, Attracts birds, Deer resistant, Fire resistant	Full sun to part shade	Moderate	Perennials	yes	Pink, white, yellow, red, blue, orange, purple

Coneflower	<i>Echinacea species</i>	A perennial herb with large daisy-like flowers that are both single- and double-blooming in various colors. Late-season bloomer. Makes a good cut or dried flower. Dried seed heads can provide food for birds. Several cultivated varieties available; some more adaptable than others.	2-3'	1 1/2-2'	Rain gardens, Attracts butterflies, Attracts pollinators, Fire resistant, Deer resistant	Full sun	Low	Perennials	Purple, pinkish, white, green, yellow, orange
Coral bells	<i>Heuchera sanguinea</i>	Attractive foliage that is dark green or other various colors; foliage has scalloped edges. Flower stalks rise up above the foliage and produce delicate blooms. Performs best in light shade. Native and cultivated varieties available. Best with east-facing exposure. Attracts hummingbirds.	12-20"	12-15"	Attracts birds, Fire resistant	Full sun to part shade	Moderate	Perennials	Red, white, pink, yellow
Coreopsis or tickseed	<i>Coreopsis species</i>	Either a short- or long-lived perennial, depending on variety. Produces single and double daisy-like flowers in various colors. Green foliage and wiry stems. Cultivars include 'Moonbeam', 'Sunburst', and 'Zagreb'.	10-24"	12-18"	Rain gardens, Attracts butterflies, Deer resistant, Fire resistant	Full sun to part shade	Low	Perennials	Golden yellow, light yellow, pink, red
Cranesbill	<i>Geranium varieties</i>	This plant is known as the perennial geranium. Mounding-type growth habit with green foliage and various colored, saucer-shaped blooms. Varieties such as 'Rozanne' are very showy and everblooming. Some may be deer resistant.	1-2'	1-2'	Fire resistant, Deer resistant	Full sun to part shade	Low	Perennials	Pinks, white, blues
Crocosmia	<i>Crocosmia species</i>	Green sword-like foliage and showy flowers in summer. Attracts hummingbirds. Good for cut flowers.	2-3'	1-2'	Attracts butterflies, Attracts birds, Deer resistant	Full sun to part shade	Low	Perennials	Scarlet-red, orange, yellow

Daylily	<i>Hemerocallis</i> species	A very popular perennial that works well in a border or in mass plantings. Long, wide, grass-like green foliage with a mounding type of growth habit. Large lily-shaped flowers bloom for only one day then die and are replaced by new blooms. Better flower presentation with additional moisture. Many cultivars available.	1-4'	1-3'	Attracts butterflies, Fire resistant	Full sun to part shade	Low	Perennials		Multiple colors
Delphinium	<i>Delphinium</i> varieties	Extremely popular for their tall upright growth habit and beautiful spike flowers in various colors. For use in a border and for cutting flowers.	1-7'	1-3'	Deer resistant, Fire resistant	Full sun to part shade	Low	Perennials		Blues, purples, whites, pinks
Flax, Blue	<i>Linum perenne</i>	A native, self-sowing wildflower with delicate leaves and stems. Excellent in mass plantings or meadows. Deadhead to promote longer Gayfeather or Blazing Star. <i>Liatris</i> species A tall border perennial with spike-like blooms atop leafy, grass-like foliage. Cultivars include 'Kobold'. Height: 12-36" Spread: 8-15" Flower: Pinkish-purple Bloom time: July-September. <i>Globe Thistle</i> <i>Echinops ritro</i> A unique, tall perennial that works well in a border. Gray to green, prickly foliage and Perennials—blooming, prevent reseeding, and keep tidy.	12-20"	12-14"	Attracts pollinators, fire resistant, deer resistant	Full sun to part shade	Very Low	Perennials	yes	Light blue, white
Gayfeather or blazing star	<i>Liatris</i> species	A tall border perennial with spike-like blooms atop leafy, grass-like foliage. Cultivars include 'Kobold'.	12-36"	8-15"	Rain gardens, Attracts butterflies, Attracts birds, Attracts pollinators, Deer resistant	Full sun	Low	Perennials		Pinkish-purple
Globe thistle	<i>Echinops ritro</i>	A unique, tall perennial that works well in a border. Gray to green, prickly foliage and attractive globe-shaped flower heads.	2-3'	2-3'	Attracts butterflies, attracts pollinators, deer resistant	Full sun	Low	Perennials		Pale purplish-blue

Heartleaf bergenia	<i>Bergenia cordifolia</i>	Large, glossy, green leaves in summer that change to burgundy in fall. Bell-shaped flowers rise up on a spike.	12-14"	12-18"	Fire resistant, Deer resistant	Prefers shade	Moderate	Perennials		Pink, white
Hosta lily	<i>Hosta species</i>	A shade perennial with attractive foliage in various shades of green to blue. A flower stalk rises up from the leaves with a fragrant, bell-shaped flower. Many cultivars available.	6-36"	20-24"	Fire resistant	Prefers shade	Moderate	Perennials		Purple, lavender, or white flowers hang from a spike
Iris, tall bearded	<i>Iris hybrids</i>	Bluish-green, sword-like leaves. Large, sophisticated flowers in every shade and often bicolor and fragrant. Lift and divide clumps every few (3 to 4) years to keep maintained. Makes a nice cut flower. Requires less water after blooming.	16-30"	14-24"	Rain gardens, Fire resistant, Deer resistant	Full sun	Moderate	Perennials		Multiple colors
Lavender	<i>Lavandula angustifolia</i>	English lavenders are very adaptable to the high desert. Gray-green foliage with showy, fragrant lavender-blue spikes. French Lavender (<i>Lavandula intermedia</i>) varieties are often used by large scale growers. Spanish lavender (<i>Lavandula stoechas</i>) is not as hardy. Many cultivars available in different sizes.	12-24"	24-48"	Attracts butterflies, Attracts pollinators, Fire resistant, Deer resistant	Full sun	Low	Perennials		Lavender-blue, white, pink
Ligularia	<i>Ligularia dentata 'Othello'</i>	Large, robust, dark green leaves emerge in spring followed by tall flower stems with yellow blooms. Good option for shady sites. Several other Ligularia varieties available.	35-45"	29-35"	Deer resistant	Prefers shade	Moderate	Perennials		Golden-yellow
Orange globe mallow	<i>Sphaeralcea munroana</i>	An attractive native plant for Central Oregon. Gray-greenish leaves and showy orange blossoms.	36-42"	24"	Deer resistant	Full sun	Very Low	Perennials	yes	Orange
Oregon sunshine	<i>Eriophyllum lanatum</i>	Gray to green leaves covered by soft white hairs make this native plant very drought tolerant. Easy to grow. Daisy-like flowers. Attracts hummingbirds.	4-24"	20-24"	Attracts butterflies, Attracts birds, Attracts pollinators	Full sun	Very Low	Perennials	yes	Yellow

Pasque flower	<i>Pulsatilla species</i>	A mounded, compact growth habit with feathery leaves, a cup-shaped flower, and silky seed head. Will reseed. Good for use in rock gardens. Can provide early season nectar for honeybees.	4-8"	8"	Attracts pollinators, Deer resistant	Full sun	Low	Perennials		Purple, pink, white
Penstemon or beardtongue	<i>Penstemon species</i>	Excellent perennial for a dry garden. Available in several varieties and flower colors. Great specimen plant. There are large numbers of native and cultivated species. Attracts humming-birds. Some are deer-resistant, but not all.	4-48"	6-36"	Attracts butterflies, Attracts birds, Fire resistant	Full sun to part shade	Low	Perennials	yes	Pink, purple, blue, red, white
Penstemon, pineleaf	<i>Penstemon pinifolius</i>	Bright green, needle-like foliage and tubular-shaped flowers. Long-blooming (6 to 8 weeks) perennial. Many cultivated varieties available. Attracts hummingbirds.	6-12"	15-24"	Attracts birds, Fire resistant	Full sun	Very Low	Perennials		Yellow, orange, peach
Phlox, tall garden	<i>Phlox paniculata</i> varieties	Tall, upright-blooming perennial in various flower colors. Dark green foliage. Flowers are very fragrant; good for cut flowers. Look for powdery mildew resistant varieties such as 'David' (white).	24-36"	12-24"	Rain gardens, Attracts butterflies, Attracts pollinators, Fire resistant	Full sun	Low	Perennials		Multiple colors
Salvia or sage	<i>Salvia sylvestris</i>	Perennial herb with a shrub-like growth habit and grayish-green or multi-colored foliage. Formal, spike-like flowers in various colors. Attracts bees. Deadhead to encourage a second bloom. Some, such as 'East Friesland', will reseed heavily. Cultivars that should not reseed include 'May Night', 'Marcus', 'Blue Hill', and 'Caradonna'. Native Purple Sage (<i>S. dorrii</i>) has a more shrub-like form.	18-28"	24-34"	Attracts butterflies, Attracts pollinators, Deer resistant	Full sun	Low	Perennials	yes	Purple, rose, blue spikes

Sea holly	<i>Eryngium species</i>	This long-lived perennial has unique flowers and a silver, spiny leaf that makes it a showstopper when in bloom. Adds unique architecture to the garden. Will send down a deep tap root, becoming more drought tolerant over time. Great for cut and dried flowers. Cultivars include 'Big Blue'.	24-36"	24-36"	Attracts butterflies, attracts pollinators, deer resistant	Full sun	Low	Perennials	Iridescent blue
Sedum, tall	<i>Sedum species</i>	Succulent, green foliage that changes to purplish-red fall color. Late-blooming perennial. Small, star-shaped flowers form a large cluster atop stems. Good for cut or dried flowers. Cultivars include 'Autumn Fire' (an improved form of 'Autumn Joy' with sturdier stems).	18-24"	18-24"	Attracts butterflies, Fire resistant	Full sun	Low	Perennials	Rosy-red, white
Siberian bugloss	<i>Brunnera macrophylla</i>	Attractive, silver-and-green, heart-shaped foliage and dainty blue flowers brighten up a shady spot in the garden. Cultivars include 'Jack Frost'. Can also be used as a groundcover.	12-18"	18-30"	Fire resistant, Deer resistant	Prefers shade	Moderate	Perennials	Blue
Torch lily or Red-hot poker	<i>Kniphofia uvaria</i>	Stiff, bluish-green, tufted grass-like foliage. Unique flower clusters arise on spikes above the foliage. Several sizes and varieties available. Attracts hummingbirds.	12-48"	24-36"	Deer resistant, Fire resistant		Very Low	Perennials	Orange, yellow, white, green, often multicolored

Yarrow	<i>Achillea species</i>	Fern-like foliage in shades of green to gray. Long blooming and very drought tolerant. Makes nice cut or dried flowers. Native variety is common yarrow (<i>A. millefolium</i>), which blooms white and will spread. Yarrows are fast growing and can spread significantly or reseed, so be sure to plant according-ly. Can be used in mass plantings. Some varieties are used as a turfgrass alternative. Seed-propagated varieties will reseed easily. Cultivars that will not reseed include 'Coro-nation Gold', 'Moonshine', and 'Red Velvet'.	6-48"	12-48"	Rain gardens, Attracts butterflies, Deer resistant, Fire resistant	Full sun	Low	Perennials		White, red, yellow, pink
	<i>Erysimum capitatum</i>		3'	1'		Full sun to part shade	Low, Moderate		yes	
Pacific lupine	<i>Lupinus lepidus</i>		1'	1.5'		Full sun to part shade	Low, Moderate		yes	
Velvet lupine						Full sun to part shade			yes	
Blue-eyed grass	<i>Sisyrinchium idahoense</i>		1'	0.5'		Full sun to part shade	Moderate, W		yes	
Orange globemallow	<i>Sphaeralcea munroana</i>		3'	2		Full sun to part shade	Very Low, Low, Moderate		yes	
Blue flax	<i>Linum lewisii</i>		3'	1.5		Full sun to part shade	Very Low, Low, Moderate		yes	
Palmer's penstemon	<i>Penstemon palmeri</i>		5'	2		Full sun to part shade	Very Low, Low		yes	
Showy Townsend daisy	<i>Townsendia florifer</i>		1'	0.5'		Full sun to part shade	Low, Moderate		yes	
Western blue flag iris	<i>Iris missouriensis</i>		2'	1'		Full sun to part shade	Moderate, W		yes	
Sickle-keeled lupine	<i>Lupinus albicaulis</i>		3'	3'		Full sun to part shade	Low, Moderate		yes	
California poppy	<i>Eschscholzia californica</i>		1.5'	1'		Full sun to part shade	Very Low, Low		yes	
	<i>Penstemon humilis</i>		1.5	1'		Full sun to part shade	Very Low, Low		yes	
Oregon Sunshine	<i>Eriophyllum lanatum</i>		2'	1.5'		Full sun to part shade	Low, Moderate		yes	
Davidson's penstemon	<i>Penstemon davidsonii</i> var. <i>praeteritus</i>		1'	2'		Full sun to part shade	Low, Moderate		yes	
Shrubby penstemon	<i>Penstemon fruticosus</i>		1'	1'		Full sun to part shade	Low		yes	
Firecracker penstemon	<i>Penstemon eatonii</i>		3'	1.5'		Full sun to part shade	Very Low, Low		yes	

Rocky Mtn penstemon	<i>Penstemon strictus</i>		3'	2'		Full sun to part shade	Low, Moderate		yes	
Blue Mtn penstemon	<i>Penstemon venustus</i>		2'	1'		Full sun to part shade	Low, Moderate		yes	
Sulphur buckwheat	<i>Eriogonum umbellatum</i>		1'	2'		Full sun to part shade	Very Low, Low		yes	
Creamy buckwheat	<i>Eriogonum heracleoides</i>		2'	2'		Full sun to part shade	Very Low, Low, Moderate		yes	
Arrowleaf buckwheat	<i>Eriogonum compositum</i>		2'	2'		Full sun to part shade	Very Low, Low, Moderate		yes	
Round-headed buckwheat	<i>Eriogonum sphaerocephalum</i>		1'	1'		Full sun to part shade	Very Low, Low		yes	
Cutleaf daisy	<i>Erigeron compositus</i>		0.5'	0.5'		Full sun to part shade	Low, Moderate	Low, Moderate	yes	
Linear-leaf fleabane	<i>Erigeron linearis</i>		<1'	1'		Full sun to part shade	Very Low, Low		yes	
Sticky geranium	<i>Geranium viscosissimum</i>		2'	2'		Full sun to part shade	Low, Moderate		yes	
Tapertip hawksbeard	<i>Crepis acuminata</i>		2'	1'		Full sun to part shade	Low		yes	
Cushion buckwheat	<i>Eriogonum ovalifolium</i>		1'	1		Full sun to part shade	Very Low, Low		yes	
Tufted evening primrose	<i>Oenothera cespitosa</i>		1'	1'		Full sun to part shade	Very Low, Low, Moderate		yes	
Coyote mint	<i>Monardella odoratissima</i>		2'	2'		Full sun to part shade	Very Low, Low		yes	
Orange sneezeweed	<i>Hymenoxys hoopesii</i>		3'	1.5'		Full sun to part shade	Moderate, W		yes	
Snow buckwheat	<i>Eriogonum niveum</i>		2'	2'		Full sun to part shade	Low, Moderate		yes	
Showy fleabane	<i>Erigeron speciosus</i>		1'	1'		Full sun to part shade	Low, Moderate		yes	
Pineleaf penstemon	<i>Penstemon pinifolius</i>		1'	1.5'		Full sun to part shade	Low, Moderate		yes	
Narrowleaf milkweed	<i>Asclepias fascicularis</i>		2.5'	2'		Full sun to part shade	Moderate, W		yes	
Showy milkweed	<i>Asclepius speciosa</i>		3'	2'		Full sun to part shade	Moderate, W		yes	
Western yarrow	<i>Achillea millefolium</i>		3'	1.5'		Full sun to part shade	Low, Moderate		yes	
False goldenaster	<i>Heterotheca villosa</i>		2'	2'		Full sun to part shade	Low, Moderate		yes	
Giant hyssop	<i>Agastache rupestris</i>		3'	2'		Full sun to part shade	Low, Moderate		yes	

Nettleleaf giant hyssop	<i>Agastache urticifolia</i>		3'	3'		Full sun to part shade	Low, Moderate		yes	
Scarlet gilia	<i>Ipomopsis aggregata</i>		3'	1'		Full sun to part shade	Low, Moderate		yes	
Fivenerve sunflower	<i>Helianthella quinquenervis</i>		4'	2'		Full sun to part shade	Moderate		yes	
Blanketflower	<i>Gaillardia aristata</i>		2'	1'		Full sun to part shade	Very Low, Low, Moderate		yes	
Rocky Mtn bee plant	<i>Cleome serrulata</i>		4'	2'		Full sun to part shade	Low, Moderate		yes	
Bearded penstemon	<i>Penstemon barbatus</i>		3'	1.5'		Full sun to part shade	Low,Moderate		yes	
Glaucus penstemon	<i>Penstemon euglaucus</i>		2'	1.5'		Full sun to part shade	Low, Moderate		yes	
Richardson's penstemon	<i>Penstemon richardsonii</i>		1'	2'		Full sun to part shade	Very Low,Low,Moderate		yes	
Pearly everlasting	<i>Anaphalis margaritacea</i>		1.5'	1'		Full sun to part shade	Low, Moderate		yes	
Fringed sage	<i>Artemisia frigida</i>		1'	2'		Full sun to part shade	Low		yes	
Goldenrod	<i>Solidago canadensis</i>		4'	2'		Full sun to part shade	Moderate,w		yes	
Fireweed	<i>Chamerion angustifolium</i>		4'	1'		Full sun to part shade	Moderate		yes	
Douglas aster	<i>Symphyotrichum subspicatum</i>		3'	2'		Full sun to part shade	Moderate		yes	

Water Efficient Landscape Permit

Design Templates for Right-of-Ways

March 07, 2024

Prepared for:

City of Bend

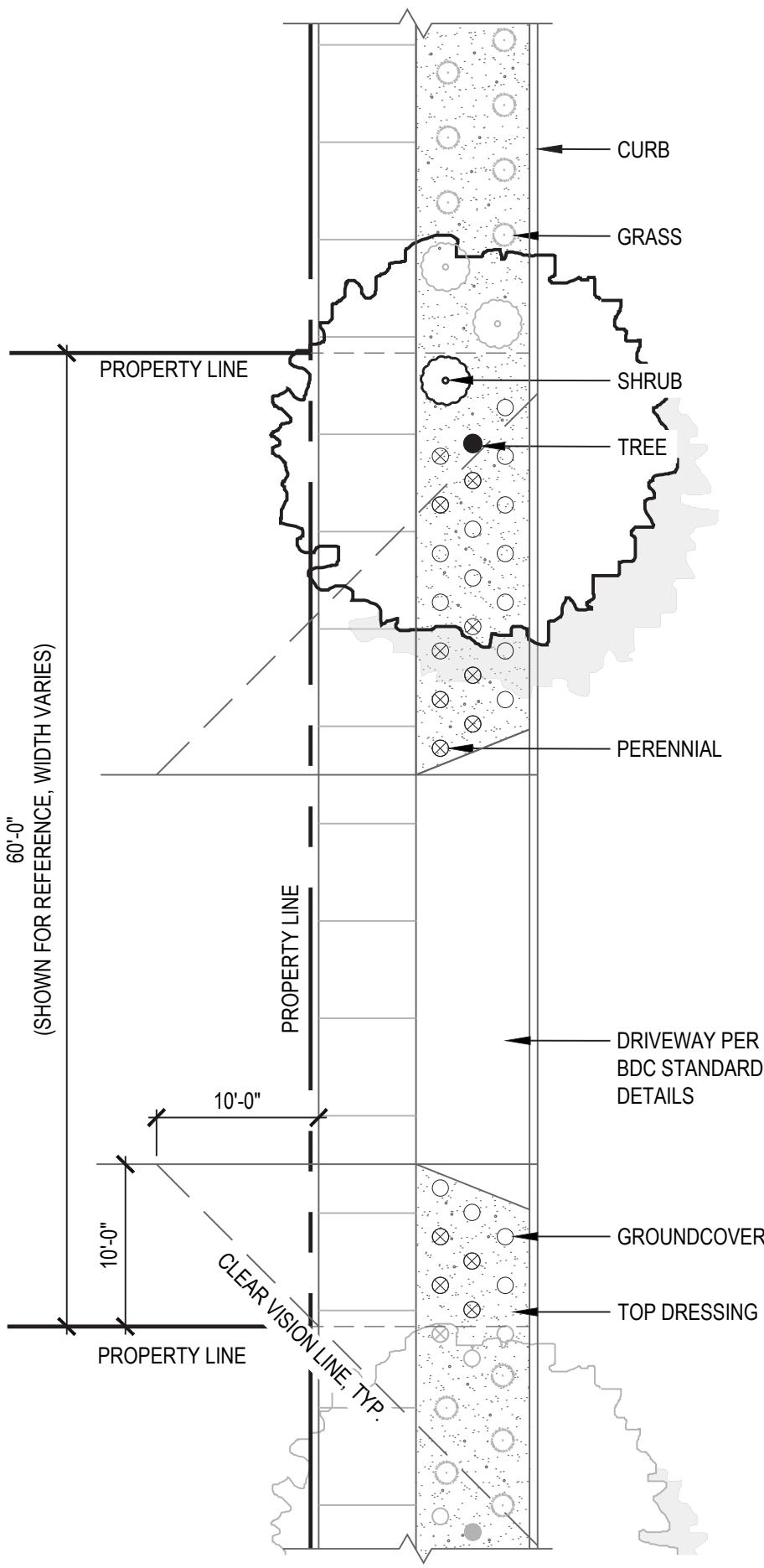
Prepared by:

SZABO LANDSCAPE
ARCHITECTURE
1000 nw wall st., suite 205 | bend, or 97703 | www.szabo-la.com



Narrow Planting Strip Templates

Right-of-Way Planting Strips
8' or Less in Width



NOTES:

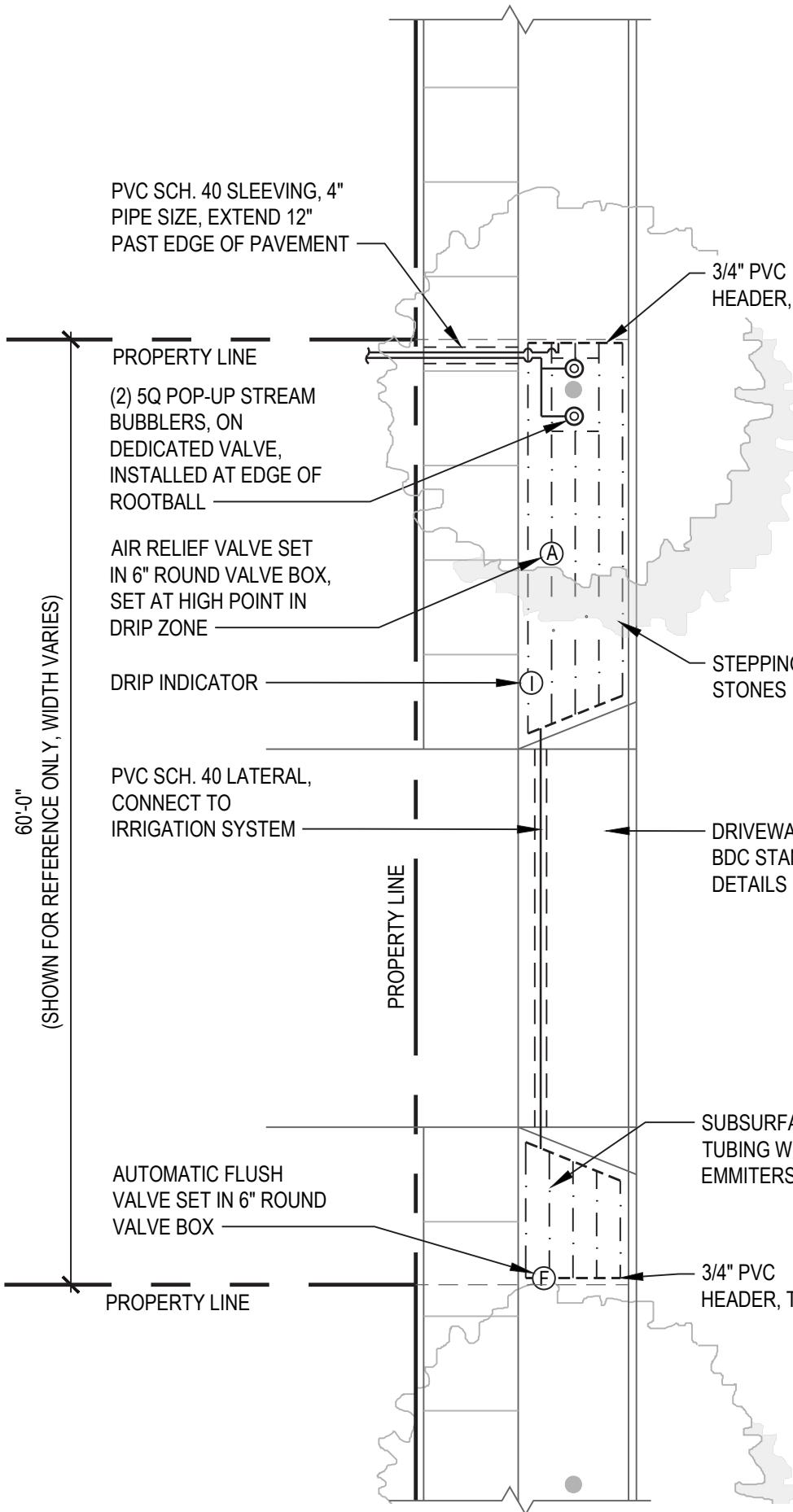
1. ALL PLANT MATERIAL IN CLEAR VISION AREA MUST STAY UNDER 24" HEIGHT
2. SOIL SHALL BE AMENDED PER C.O.B. STANDARD SPECIFICATIONS PART II, CHAPTER 12.2.4.2
3. TREE SPACING VARIES, REFER TO STANDARDS AND SPECIFICATIONS CHAPTER 12.2.3.5
4. ALL PLANTING & IRRIGATION SHALL BE INSTALLED PER C.O.B. STANDARDS & SPECIFICATIONS PART II, CHAPTER 12
5. PLANT QUANTITY DEPENDENT ON PARKWAY WIDTH AND DESIGN VARIATIONS. MINIMUM 50% COVERAGE AT MATURITY. APPROX. 10 PLANTS/ 100 SQFT.
6. ANY PLANT SUBSTITUTIONS SHALL BE SUBMITTED TO THE CITY OF BEND FOR APPROVAL. APPROVED PLANTS ARE AVAILABLE ON THE CITY OF BEND APPROVED PLANT LIST.
7. PLANT SPECIES MAY NOT EXCEED MORE THAN 25% ORNAMENTAL / BUNCH GRASS.
8. LAWN IS PROHIBITED WITHIN THE PUBLIC RIGHT-OF-WAY
9. PLANTING AREA SHALL BE TOP-DRESSED WITH MINIMUM 2" THICK LAYER OF SHREDDED BARK OR ROCK MULCH

TYPICAL PLANT LAYOUT FOR NARROW STRIPS

SCALE: 1" = 10'-0"



CITY OF BEND
WATER CONSERVATION



NOTES:

1. DRILINE SHALL BE BURIED 2" BELOW FINISH SOILGRADE AND ANCHORED WITH LANDSCAPE STAPLES 5' ON CENTER, SEE DETAIL
2. ALL PLANTING AND IRRIGATION SHALL BE INSTALLED PER C.O.B. STANDARDS & SPECIFICATIONS, PART II CHAPTER 12
3. ONLY DRIP IRRIGATION OR PC MSBN MULTI STREAM BUBBLER NOZZLE ON A POP UP MAY BE USED IN RIGHT OF WAYS OF 8FT OR LESS
4. TREES SHALL BE IRRIGATED ON SEPARATE VALVE/ZONE FROM UNDERSTORY PLANTING



TYPICAL DRIP IRRIGATION LAYOUT FOR NARROW STRIPS

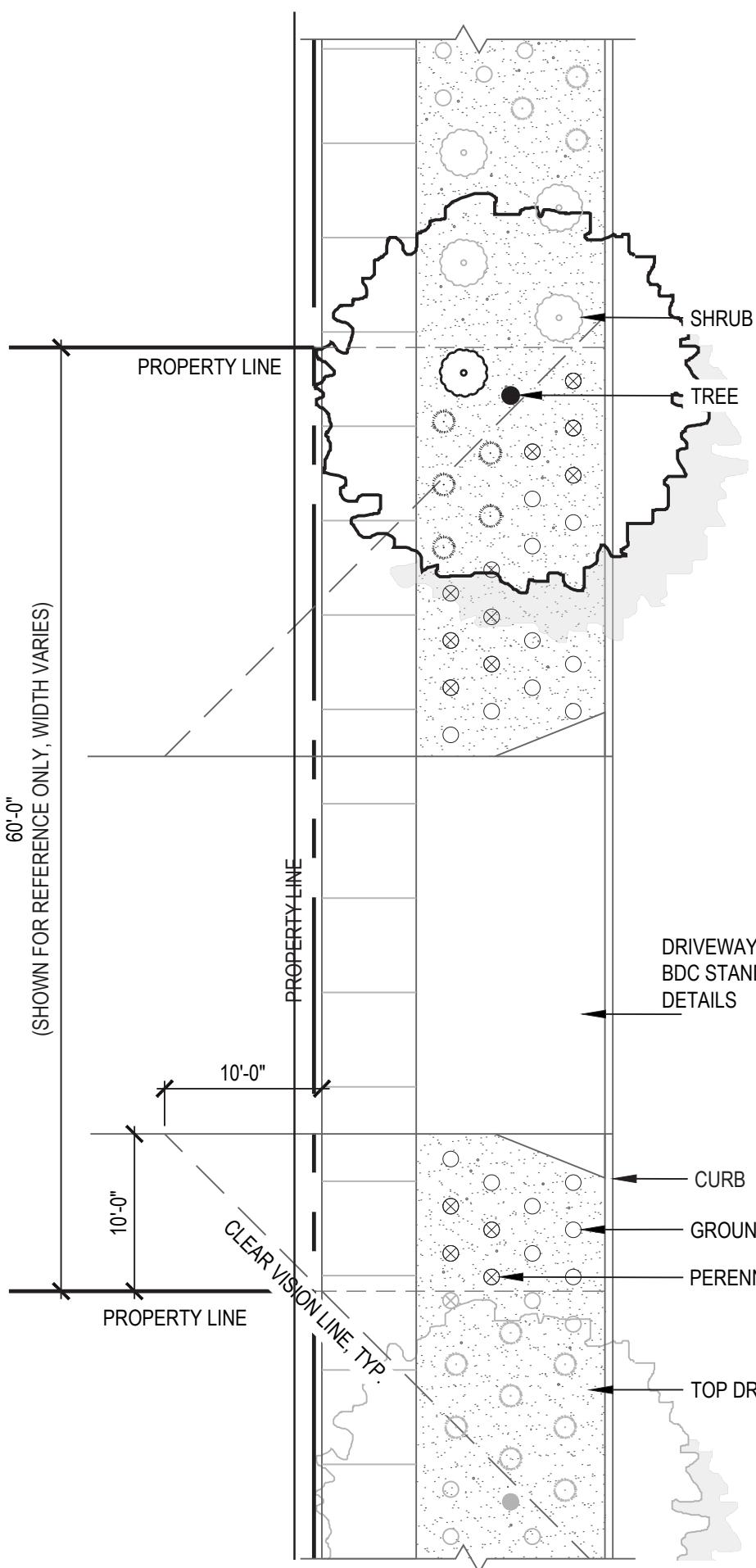
SCALE: 1" = 10'-0"

CITY OF BEND
WATER CONSERVATION



Wide Planting Strip Templates

Right-of-Way Planting Strips
Greater than 8' in Width



NOTES:

1. ALL PLANT MATERIAL IN CLEAR VISION AREA MUST STAY UNDER 24" HEIGHT
2. SOIL SHALL BE AMENDED PER C.O.B. STANDARD SPECIFICATIONS PART II CHAPTER 12.2.4.2
3. TREE SPACING VARIES, REFER TO STANDARDS AND SPECIFICATIONS CHAPTER 12.2.3.5
4. ALL PLANTING & IRRIGATION SHALL BE INSTALLED PER C.O.B. STANDARDS & SPECIFICATIONS PART II CHAPTER 12
5. PLANT QUANTITY DEPENDENT ON PARKWAY WIDTH AND DESIGN VARIATIONS. MINIMUM 50% PLANT COVERAGE AT MATURITY. APPROX. 10 PLANTS/100 SQ. FT
6. ANY PLAN SUBSTITUTIONS SHALL BE SUBMITTED TO THE CITY OF BEND FOR APPROVAL. APPROVED PLANTS ARE AVAILABLE ON THE CITY OF BEND APPROVED PLANT LIST.
7. PLANT SPECIES MAY NOT EXCEED MORE THAN 25% ORNAMENTAL / BUNCH GRASS.
8. LAWN IS PROHIBITED WITHIN THE PUBLIC RIGHT-OF-WAY
9. PLANTING AREA SHALL BE TOP-DRESSED WITH MINIMUM 2" THICK LAYER OF SHREDDED BARK OR ROCK MULCH

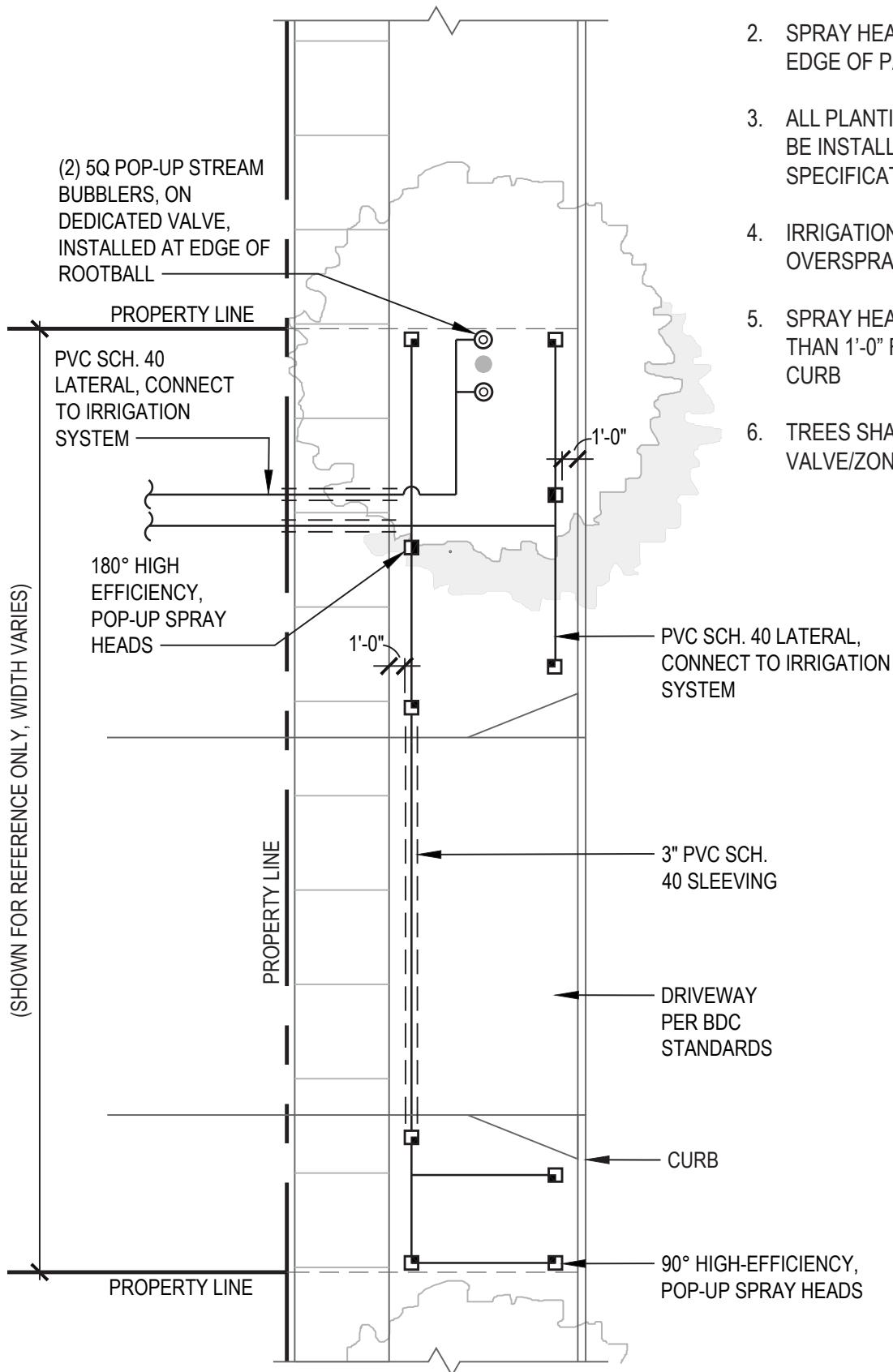


CITY OF BEND
WATER CONSERVATION

SCALE: 1" = 10'-0"

NOTES:

1. HIGH EFFICIENCY NOZZLES USED IN AREAS GREATER THAN 8FT IN SMALLEST DIMENSION
2. SPRAY HEADS SHALL BE OFFSET 12" FROM EDGE OF PAVEMENT
3. ALL PLANTING AND IRRIGATION SHALL BE INSTALLED PER C.O.B. STANDARDS & SPECIFICATIONS PART II CHAPTER 12
4. IRRIGATION MAY NOT RESULT IN ANY OVERSPRAY OUTSIDE OF PLANTER AREA
5. SPRAY HEADS SHALL BE LOCATED NO CLOSER THAN 1'-0" FROM ADJACENT HARDCAPE OR CURB
6. TREES SHALL BE IRRIGATED ON SEPARATE VALVE/ZONE FROM UNDERSTORY PLANTING



TYPICAL SPRAY IRRIGATION LAYOUT FOR WIDE STRIPS

SCALE: 1" = 10'-0"



CITY OF BEND
WATER CONSERVATION



Plant Palettes

PRE-APPROVED VERY LOW WATER-USE PALETTE

WOODY SHRUBS



ARCTOSTAPHYLOS C. 'PANCHITO'
(PANCHITO MANZANITA)
HT: 1'-2' / W: 5'-6'



CHAMAEBATIARIA MILLEFOLIUM
(FERNBUSH)
HT: 3'-6' / W: 3'-6'



RIBES CEREUM
(WAX CURRENT)
HT: 4'-6' / W: 4'-6'



SALVIA DORII
(PURPLE SAGE)
HT: 2'-3' / W: 2'-3'

ORNAMENTAL GRASSES



ACHNATHERUM HYMENOIDES
(INDIAN RICEGRASS)
HT: 1'-2' / W: 1'-2'



PSEUDOROEGRNERIA SPICATA
(BLUEBUNCH WHEATGRASS)
HT: 1'-2' / W: 1'-2'



FESTUCA IDAHOENSIS
(IDAHO FESCUE)
HT: 2'-3' / W: 2'



KOELERIA MACRANTHA
(PRAIRIE JUNEGRASS)
HT: 1'-3' / W: 1'-3'

PERENNIALS



ACHILLEA MILLEFOLIUM
(YARROW)
HT: 2'-3' / W: 1'-2'



LINUM LEWISII
(BLUE FLAX)
HT: 1'-3' / W: 2'-3'



ARTEMESIA A. 'POWIS CASTLE'
(POWIS CASTLE SILVER SAGE)
HT: 2' / W: 1'-2'



PENSTEMON PINIFOLIUS
(PINELEAF PENSTEMON)
HT: 1' / W: 2'

GROUNDCOVERS



ANTENNARIA ROSEA
(ROSY PUSSYTOES)
HT: 1' / W: 1'



ERIOGONUM UMBELLATUM
(SULPHUR BUCKWHEAT)
HT: 1' / W: 1'



ERIOPHYLLUM LANATUM
(OREGON SUNSHINE)
HT: 1'-2' / W: 1'-2'



PENSTEMON DAVIDSONII
(DAVIDSON'S PENSTEMON)
HT: 1' / W: 1'-2'

NOTES:

1. DEVIATION FROM APPROVED PLANT LIST REQUIRES APPROVAL FROM THE CITY OF BEND CONSERVATION DEPARTMENT
2. TREES SHALL BE SELECTED FROM THE CITY OF BEND PRE-APPROVED STREET TREE LIST PER BEND DESIGN STANDARDS AND SPECIFICATIONS PART II, CHAPTER 12



CITY OF BEND
WATER CONSERVATION

VERY LOW WATER-USE RENDERINGS



NOTES:

1. TOP IMAGE DEPICTS A 7' WIDE PLANTING STRIP, BOTTOM IMAGES DEPICTS A 12' WIDE PLANTING STRIP.
2. RENDERINGS ARE SHOWN FOR REFERENCE ONLY TO CONVEY DESIGN AESTHETIC FOR DIFFERENT PLANT PALETTES.



CITY OF BEND
WATER CONSERVATION

PRE-APPROVED LOW WATER-USE PALETTE

WOODY SHRUBS



CARYOPTERIS X CLANODENSIS
(BLUEBEARD)
HT: 2'-3' / W: 2'-3'



PEROVSKIA ATRIPLICIFOLIA
(RUSSIAN SAGE)
HT: 2'-3' / W: 2'-3'



POTENTILLA FRUTICOSA
(CINQUEFOIL)
HT: 2'-4' / W: 3'-5'



RHUS AROMATICA 'GRO-LOW'
(GRO-LOW SUMAC)
HT: 2'-3' / W: 6'-8'

ORNAMENTAL GRASSES



CALAMAGROSTIS A. 'K. FOERSTER'
(K.F. FEATHER REED GRASS)
HT: 2'-3' / W: 3'-5'



PANICUM VIRGATUM
(SWITCHGRASS)
HT: 3'-6' / W: 3'-6'



FESTUCA OVINA GLAUCA
(BLUE FESCUE)
HT: 1'-2' / W: 1'-2'



SCHIZACHYRIUM SCOPARIUM
(LITTLE BLUESTEM)
HT: 1'-3' / W: 1'-2'

PERENNIALS



HEMEROCALLIS SPP.
(DAYLILY)
HT: 1'-2' / W: 1'-2'



LAVANDULA ANGUSTIFOLIA
(ENGLISH LAVENDER)
HT: 2'-3' / W: 2'-4'



NEPETA RACEMOSA
(CATMINT)
HT: 1'-2' / W: 1'-3'



PENSTEMON STRICTUS
(ROCKY MOUNTAIN PENSTEMON)
HT: 1'-2' / W: 1'-2'

GROUNDCOVERS



ARCTOSTAPHYLOS UVA-URSI
(KINNIKINNICK)
HT: 1' W: 2'-4'



ARMERIA MARITIMA
(SEA THRIFT)
HT: 1' / W: 1'



PHLOX STOLONIFERA
(CREEPING PHLOX)
HT: 1' / W: 1'-2'



THYMUS SERPYLLUM
(CREEPING THYME)
HT: 6" / W: 1'

NOTES:

1. DEVIATION FROM APPROVED PLANT LIST REQUIRES APPROVAL FROM THE CITY OF BEND CONSERVATION DEPARTMENT.
2. TREES SHALL BE SELECTED FROM THE CITY OF BEND PRE-APPROVED STREET TREE LIST PER BEND DESIGN STANDARDS AND SPECIFICATIONS PART II, CHAPTER 12



CITY OF BEND
WATER CONSERVATION

LOW WATER-USE RENDERINGS



NOTES:

1. TOP IMAGE DEPICTS A 7' WIDE PLANTING STRIP, BOTTOM IMAGES DEPICTS A 12' WIDE PLANTING STRIP.
2. RENDERINGS ARE SHOWN FOR REFERENCE ONLY TO CONVEY DESIGN AESTHETIC FOR DIFFERENT PLANT PALETTES.



CITY OF BEND
WATER CONSERVATION

PRE-APPROVED MODERATE WATER-USE PALETTE

WOODY SHRUBS



Buddleja x 'Blue Chip'
(BLUE CHIP BUTTERFLY BUSH)
HT: 2'-3' / W: 3'-4'



EUONYMUS ALATUS 'COMPACTUS'
(COMPACT BURNING BUSH)
HT: 5'-6' / W: 5'-6'



SPIREA JAPONICA VARIETIES
(SPIREA)
HT: 4'-6' / W: 4'-6'



VIBURNUM TINUS 'COMPACTUM'
(COMPACT CRANBERRY BUSH)
HT: 3'-6' / W: 3'-6'

ORNAMENTAL GRASSES



DESCHAMPSIA CESPITOSA
(TUFTED HAIR GRASS)
HT: 2'-3' / W: 2'-3'



PENSTEMON ALOPECURUS 'HAMELIN'
(HAMELIN FOUNTAIN GRASS)
HT: 2'-3' / W: 2'-3'



HELIOTRITCHON SEMPERVIRENS
(BLUE OAT GRASS)
HT: 2'-3' / W: 2'-3'



SESLERIA AUTUMNALIS
(AUTUMN MOORE GRASS)
HT: 1'-2' / W: 1'-2'

PERENNIALS



AGASTACHE 'BLUE FORTUNE'
(BLUE FORTUNE HYSSOP)
HT: 2'-3' / W: 2'-3'



IRIS SPP.
(BEARDED IRIS)
HT: 18" / W: 18"



LEUCANTHEMUM
(SHASTA DAISY)
HT: 1'-3' / W: 1'-2'



ECHINACEA SPP.
(CONEFLOWER)
HT: 2'-3' / W: 1'-2'

GROUNDCOVERS



GALIUM ODOURATUM
(SWEET WOODRUFF)
HT: 1' / W: 1'-2'



GERANIUM 'TINY MONSTER'
(HARDY GERANIUM)
HT: 1' / W: 1'-2'



IBERIS SEMPERVIRENS
(EVERGREEN CANDYTUFT)
HT: 6"-1' / W: 1'-2'



SYMPHYOTRICHUM 'WOOD'S BLUE'
(WOODS BLUE ASTER)
HT: 1' / W: 1'-2'

NOTES:

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CITY OF BEND
WATER CONSERVATION

MODERATE WATER-USE RENDERINGS



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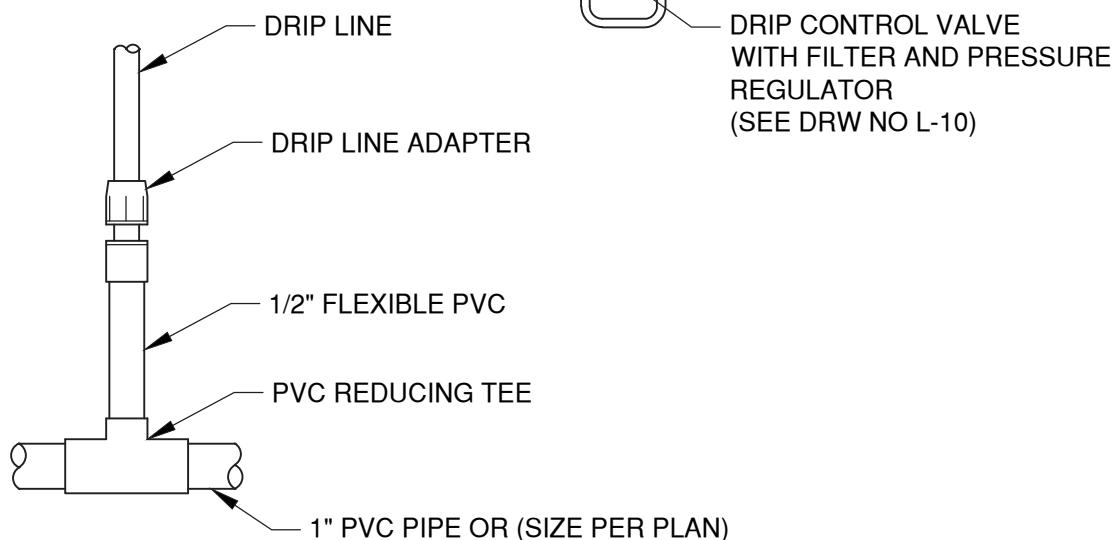
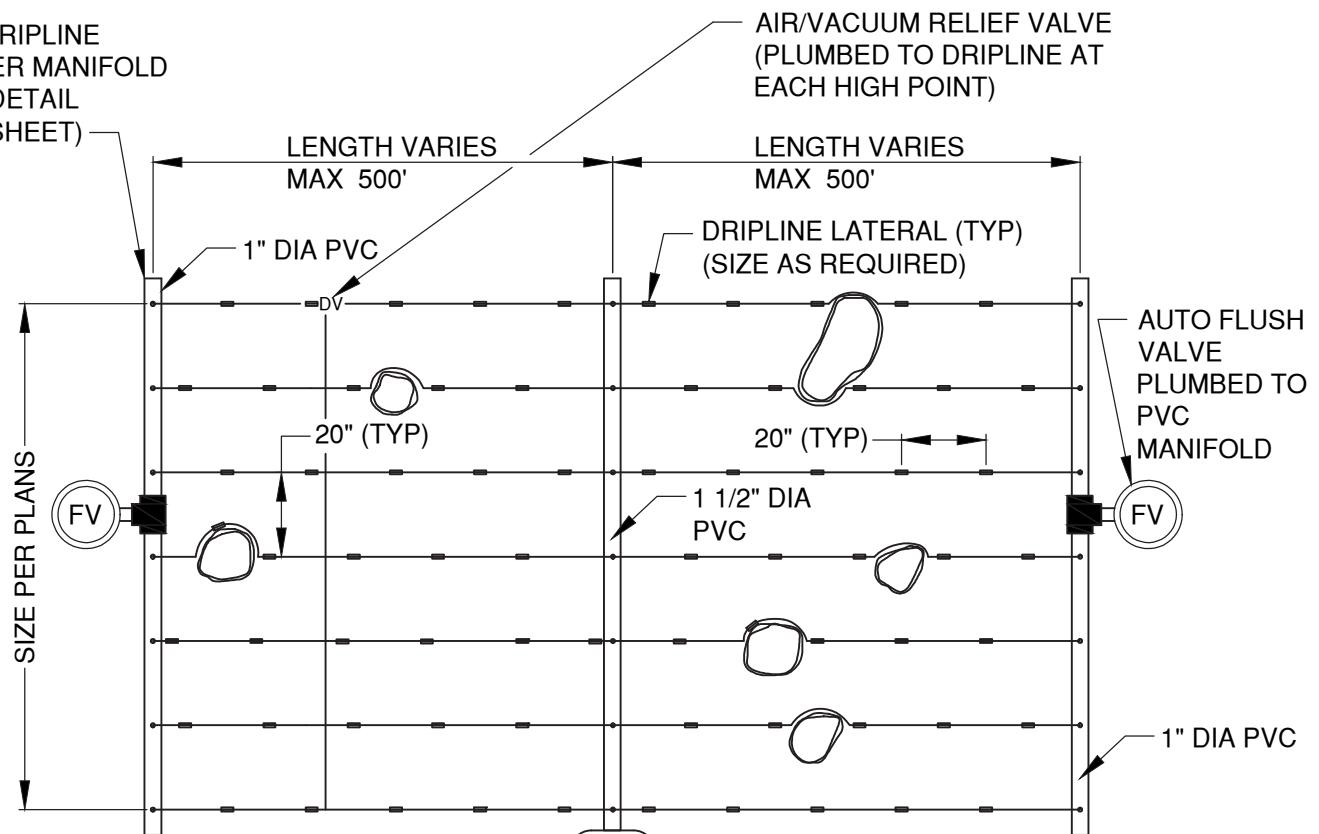


CITY OF BEND
WATER CONSERVATION



STANDARD DETAILS

PVC DRIPLINE
FEEDER MANIFOLD
(SEE DETAIL
THIS SHEET)



TYPICAL PVC DRIPLINE MANIFOLD CONNECTION

NOTES:

1. RELOCATE DRIP LINES AROUND OBSTACLES AS NEEDED

DRAWN	LJC
DIV	LNDSCP
REV	DATE

BEND
CITY OF BEND

CITY OF BEND

STANDARD DRAWING

710 NW WALL ST., BEND, OREGON 97701

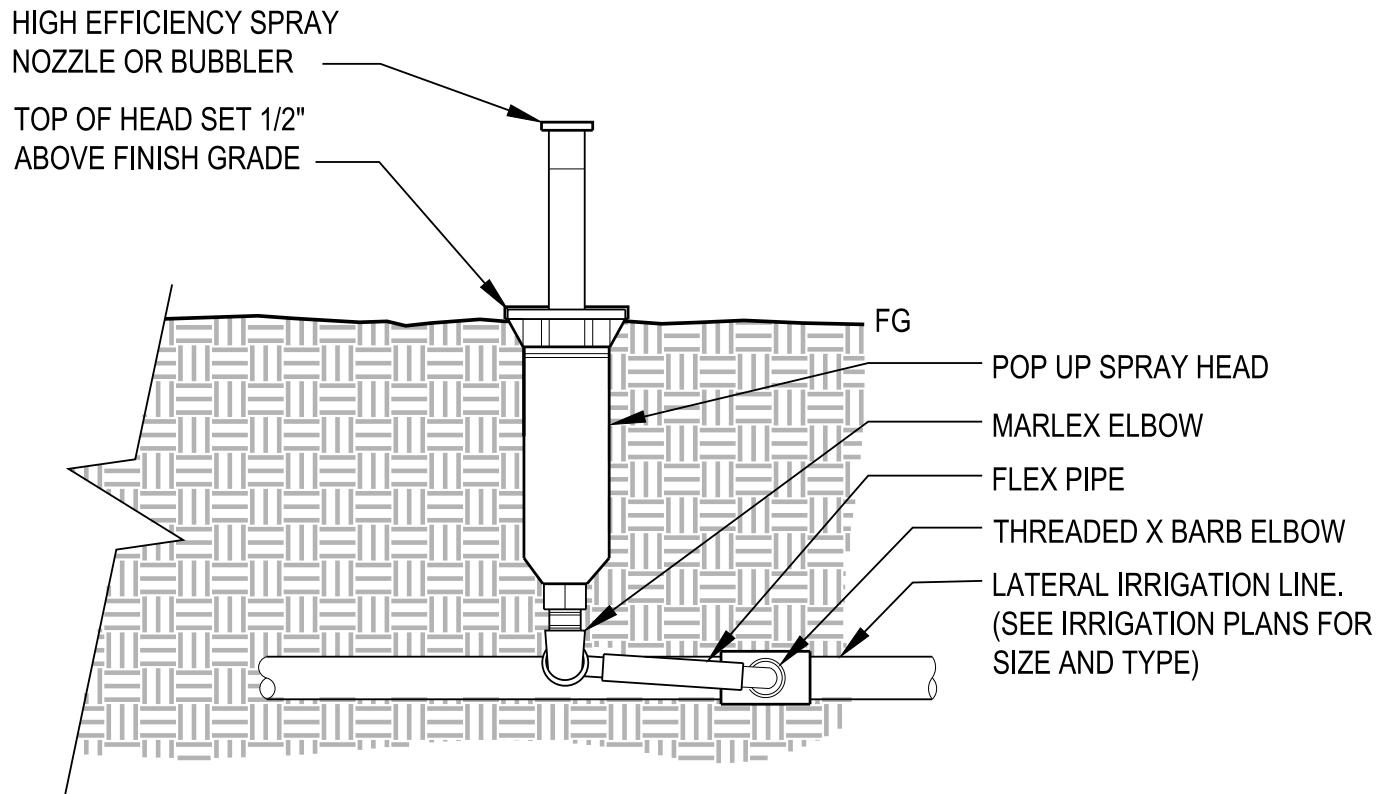
PLANTING OR TURF BED DRIP LAYOUT

SCALE NTS

DATE 12/1/17

APPR

STD DWG L-1

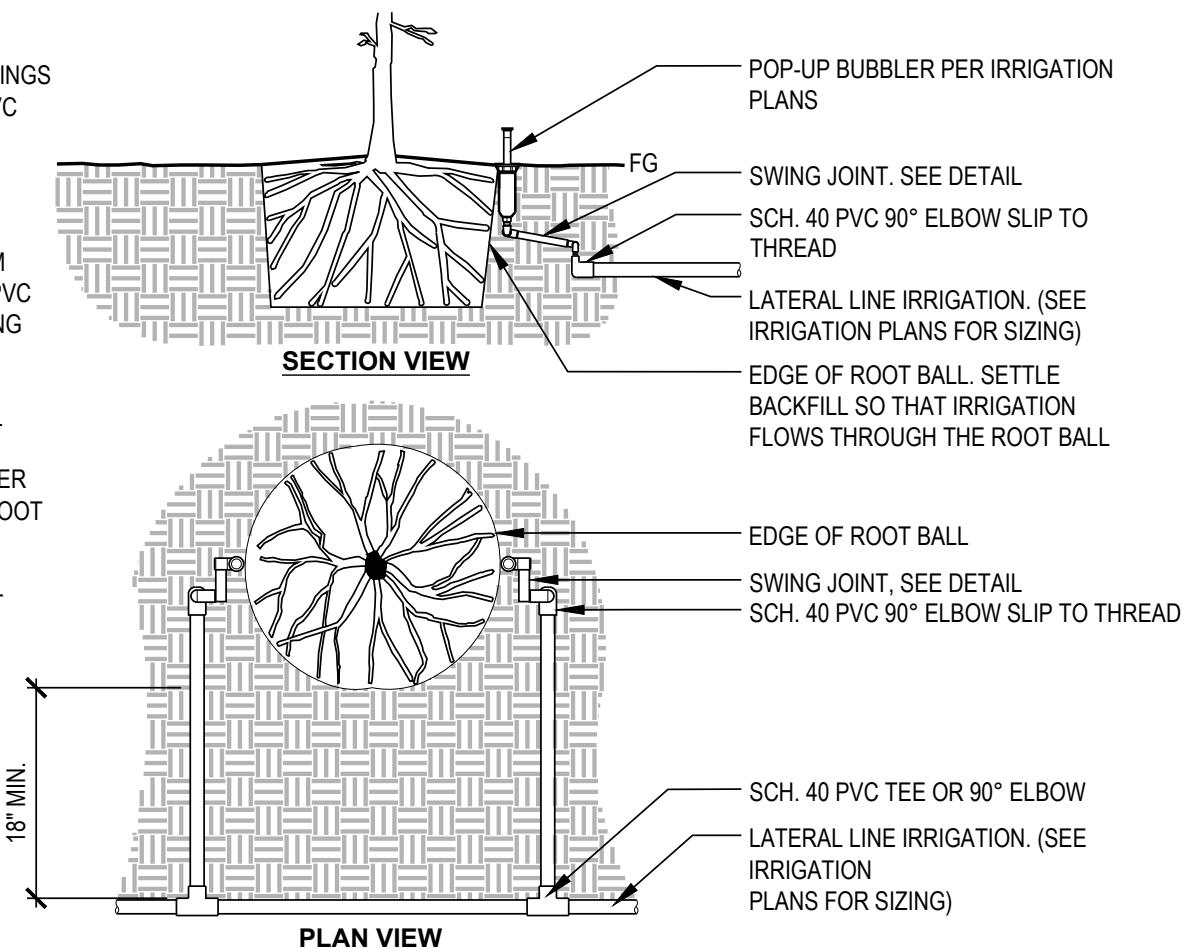


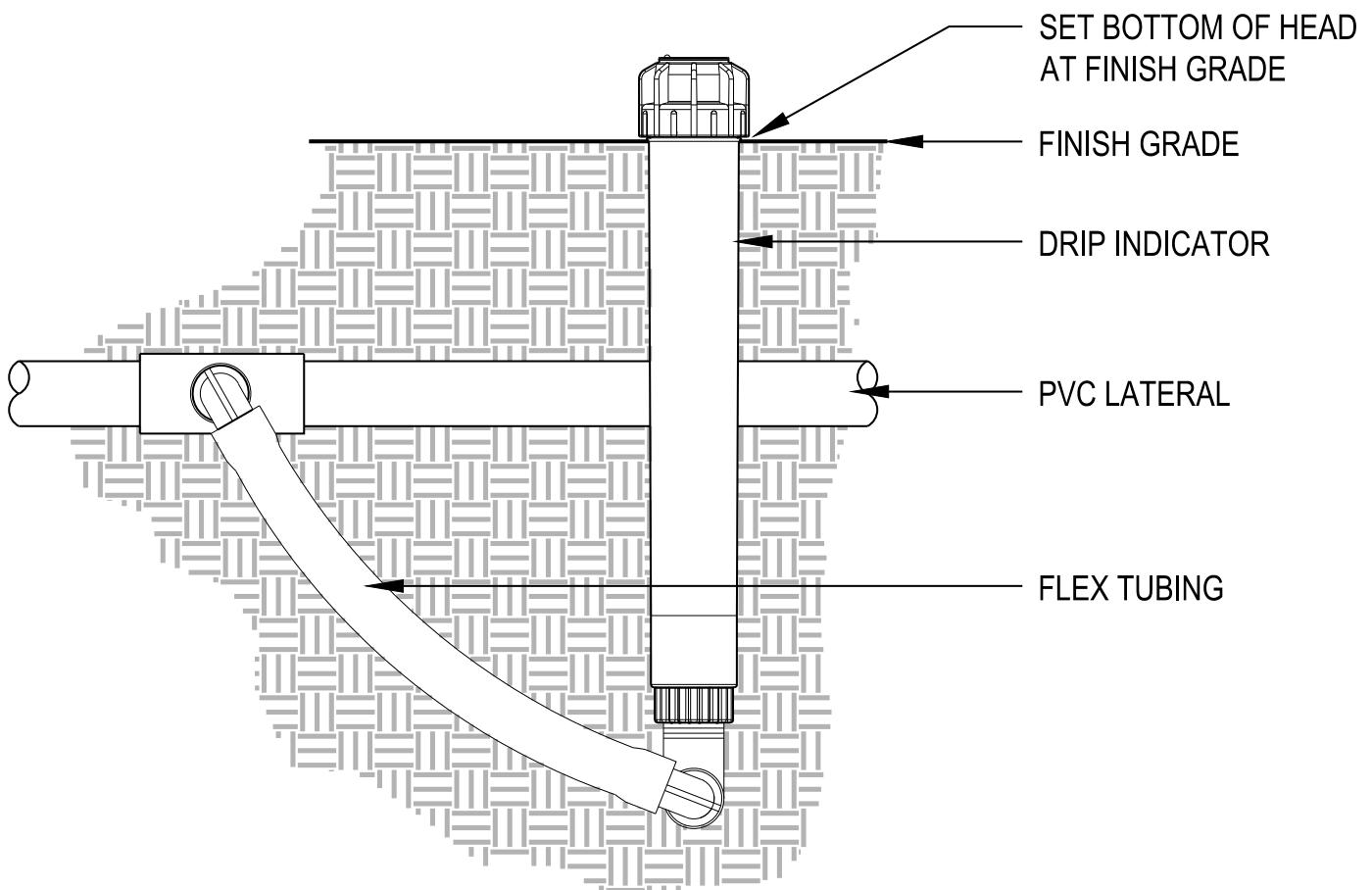
NOTES:

1. CONTRACTOR SHALL SETTLE SOIL AROUND SPRAY HEAD AFTER INSTALLATION.
2. ALL SPRAY HEADS SHALL HAVE CHECK VALVES.
3. ALL SCH. 40 TO SCH. 80 PVC CONNECTIONS SHALL BE MADE USING TEFLON TAPE.

Notes:

1. ALL IRRIGATION FITTINGS SHALL BE SCH. 40 PVC UNLESS SPECIFIED OTHERWISE.
2. ALL THREADED CONNECTIONS FROM SCH. 40 TO SCH. 80 PVC SHALL BE MADE USING TEFLON TAPE.
3. CONTRACTOR SHALL SETTLE THE AREA AROUND THE BUBLER AND EDGE OF THE ROOT BALL SO THAT ALL IRRIGATION FLOWS THROUGH THE ROOT BALL.

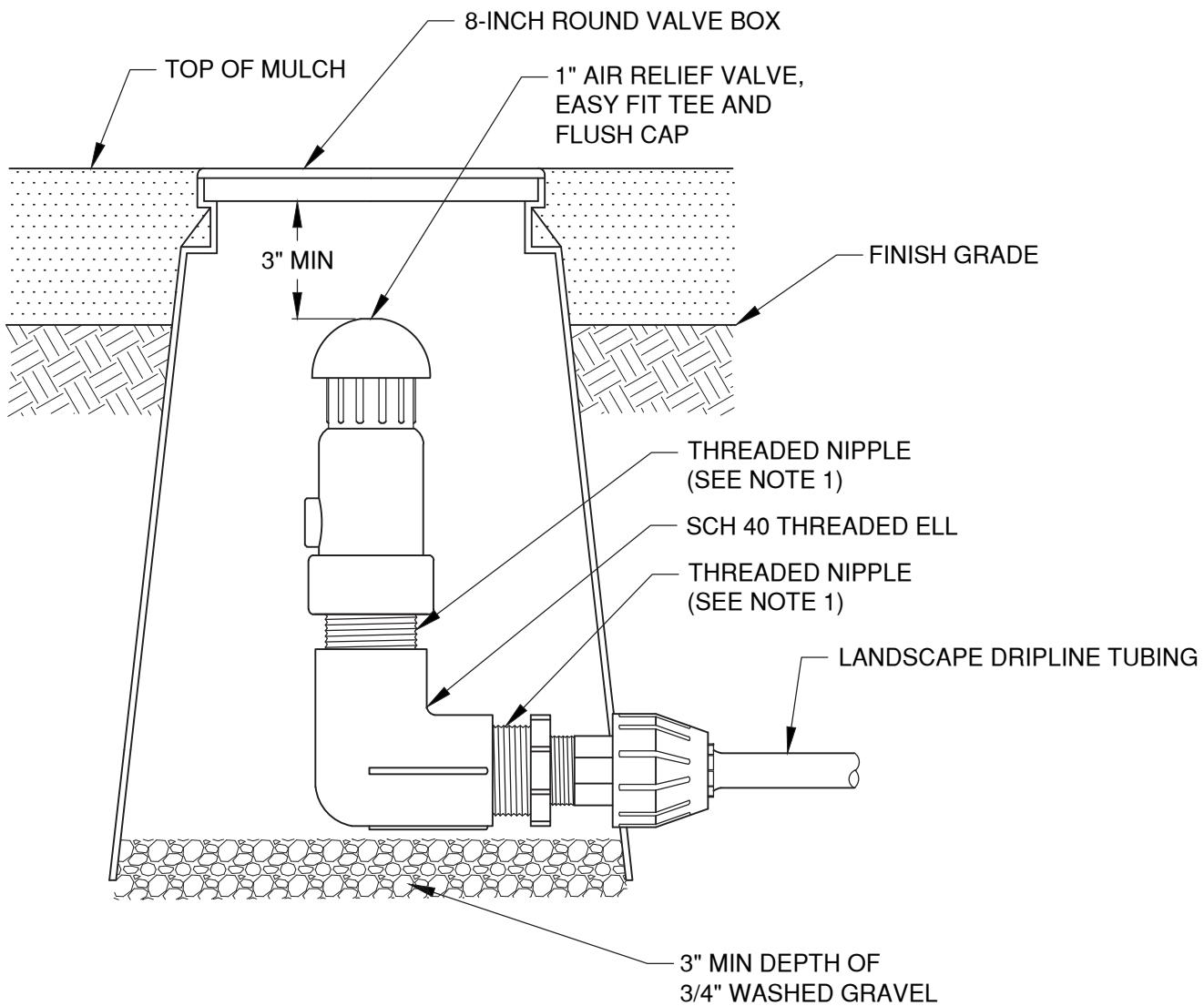




DRIP INDICATOR

NOT TO SCALE

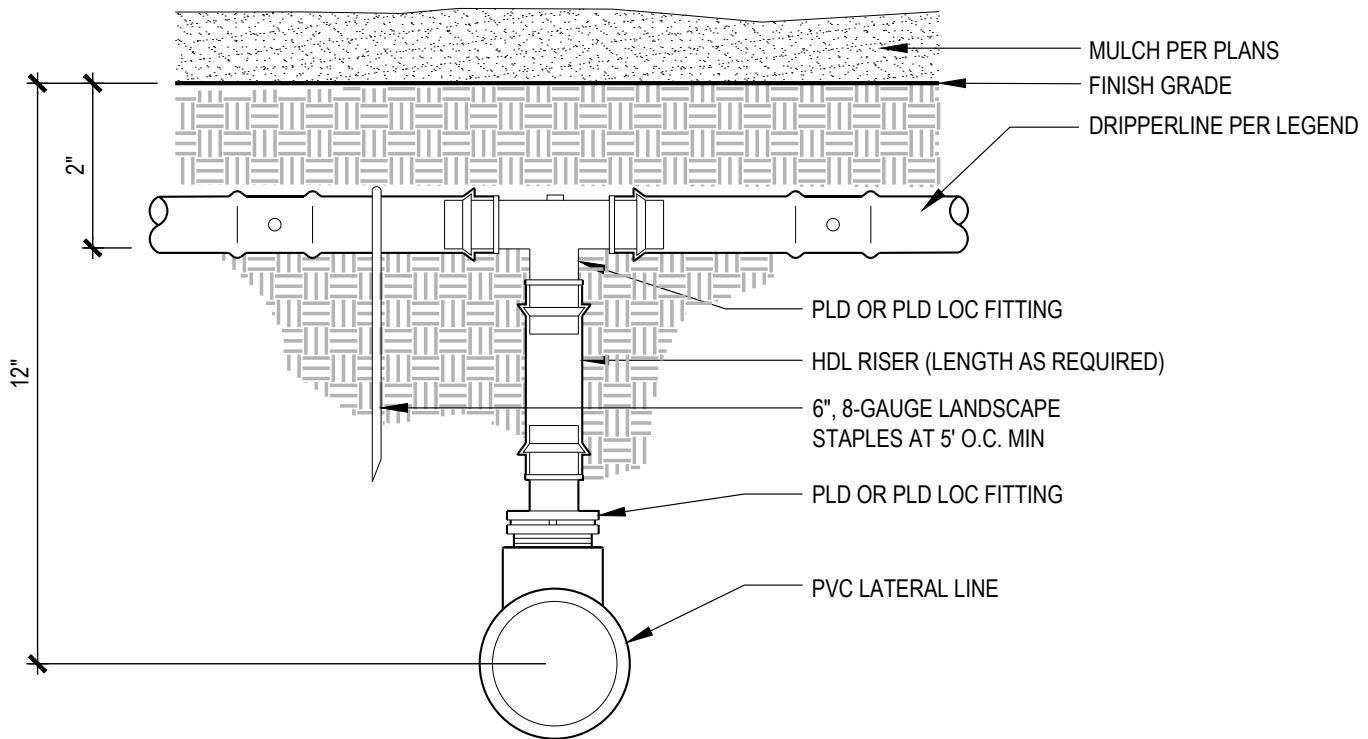
DETAIL COURTESY OF SZABO LANDSCAPE
ARCHITECTURE, ALL RIGHTS RESERVED



NOTES:

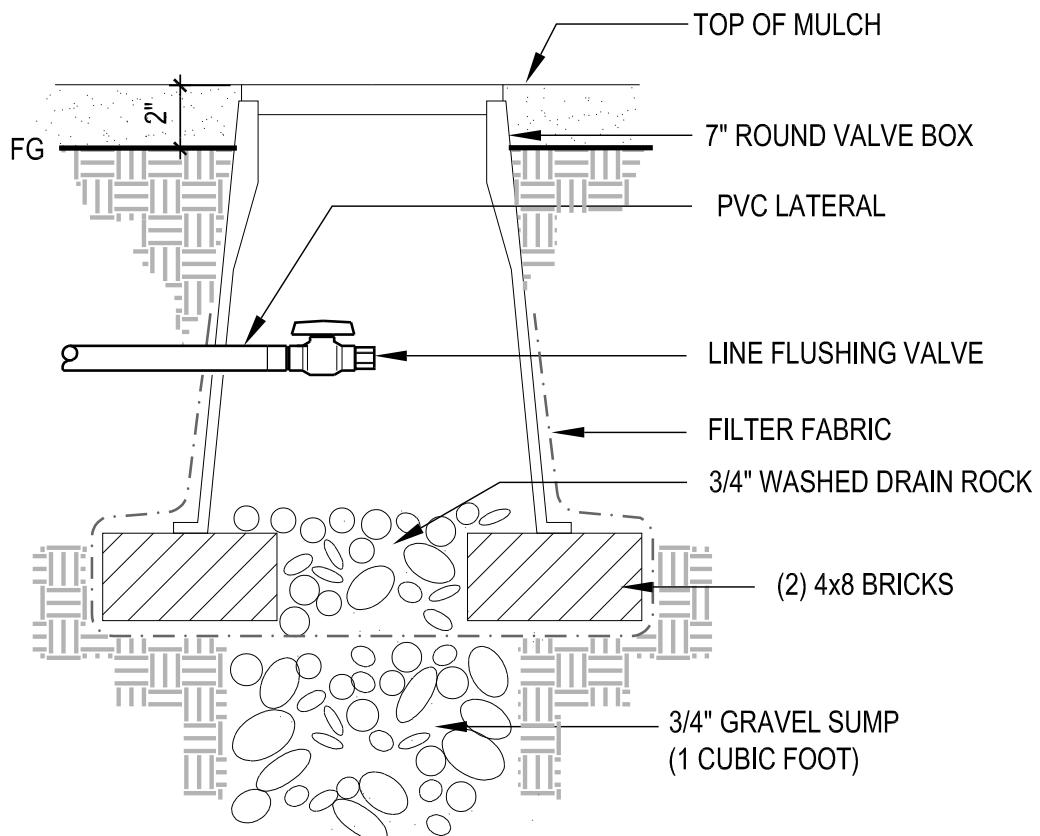
1. PROVIDE ALL THREADED CONNECTIONS WITH A NON-HARDENING, JOINT COMPOUND, COMPATIBLE WITH MANUFACTURERS RECOMMENDATIONS

DRAWN	LJC	 CITY OF BEND	CITY OF BEND STANDARD DRAWING 710 NW WALL ST., BEND, OREGON 97701 AIR RELIEF VALVE IN KIT - AR VALVE KIT	SCALE	NTS
DIV	LNDSCP			DATE	12/1/17
REV	DATE			APPR	
				STD DWG	L-13



DRIP LINE INSTALLATION

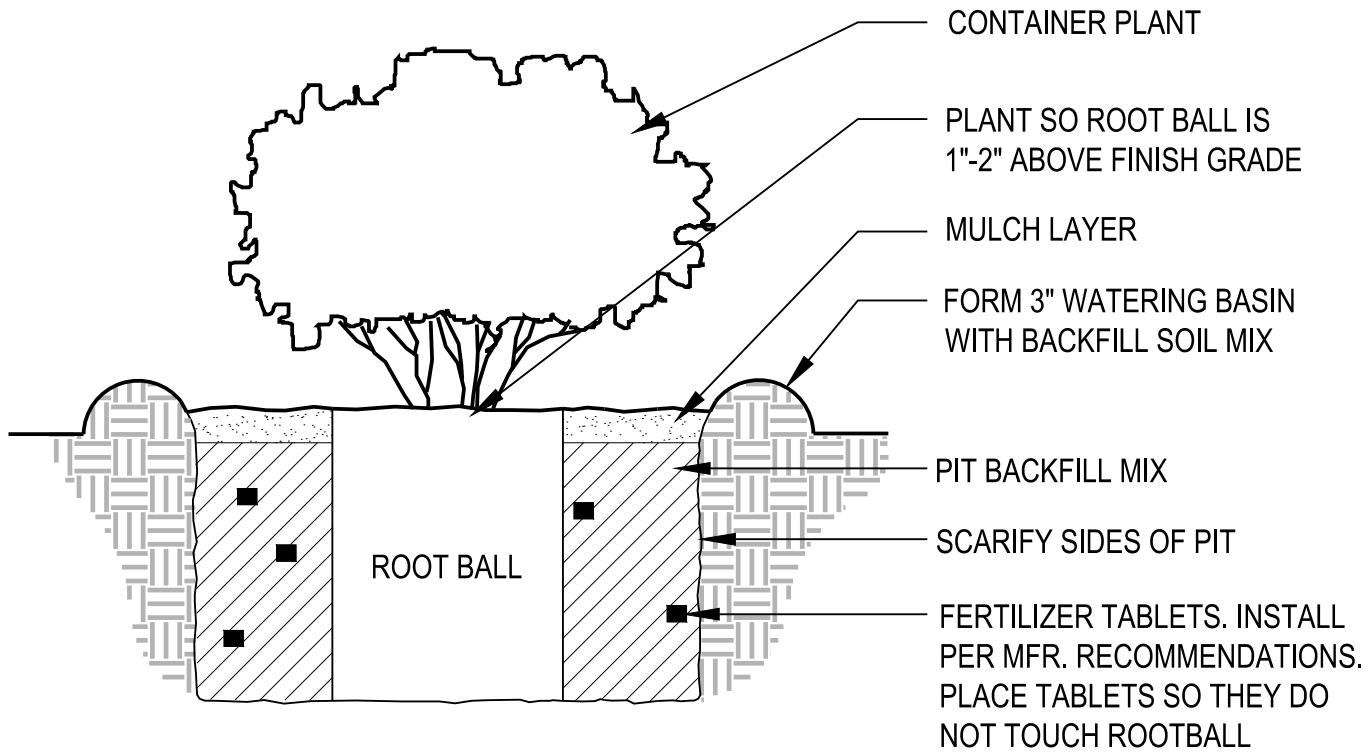
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LINE FLUSHING VALVE

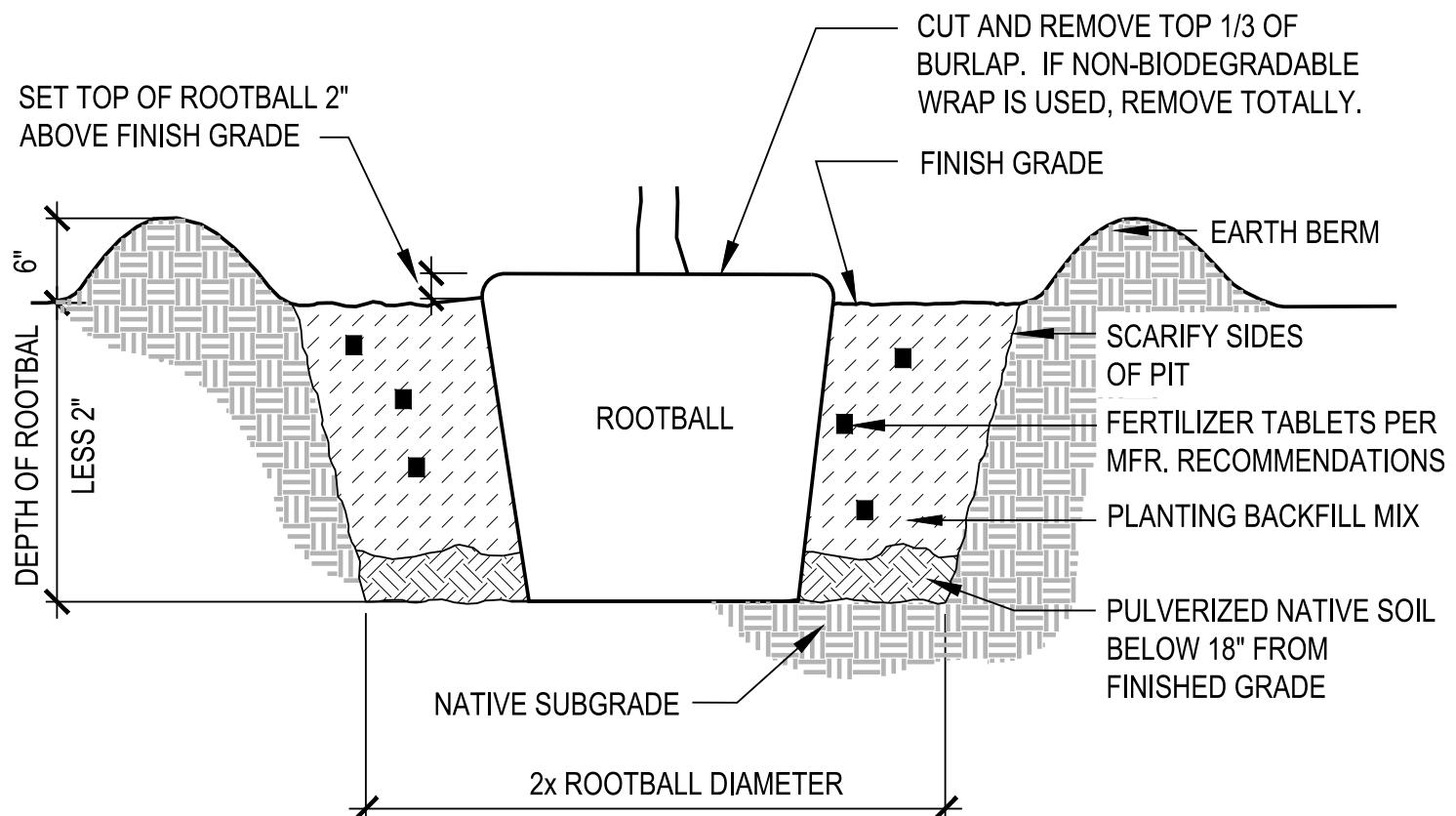
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TYPICAL SHRUB PLANTING

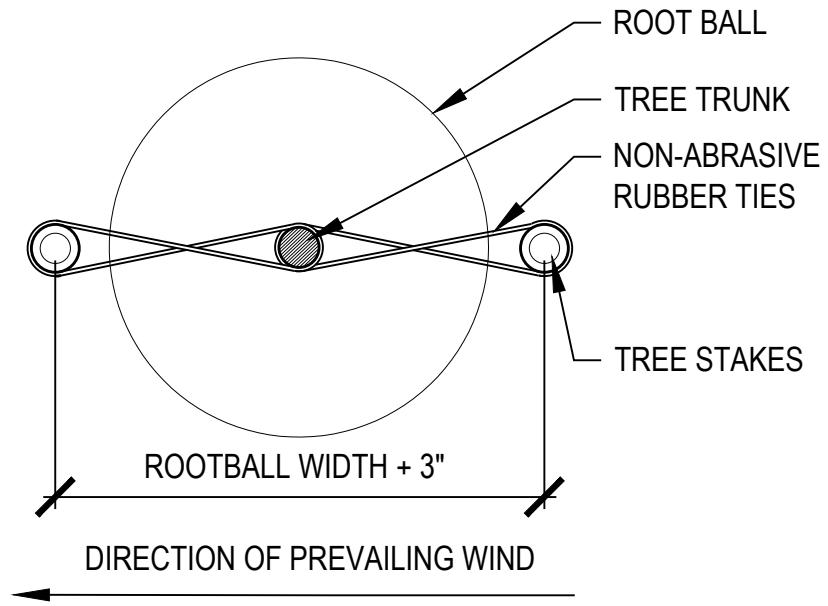
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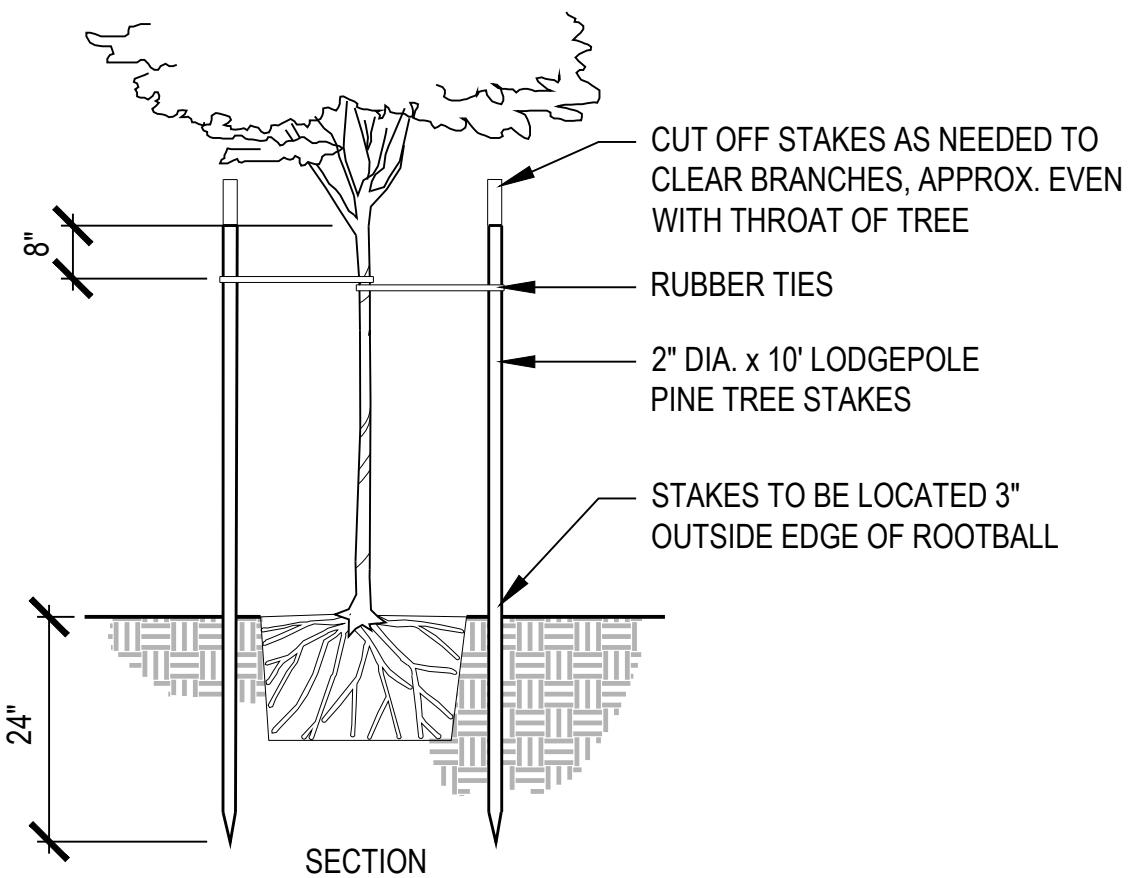
TYPICAL TREE PLANTING

NOT TO SCALE

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PLAN



TYPICAL TREE STAKING

NOT TO SCALE

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