

BLACK CANYON IRRIGATION DISTRICT GRAVITY IRRIGATION STANDARD DETAILS

ADOPTED JULY 12TH, 2023

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CONTACT INFORMATION

BUSINESS OFFICE	BLACK CANYON IRRIGATION DISTRICT 474 ELGIN STREET NOTUS, ID 83656 PHONE: (208) 459-4141	CALL 48 HOURS BEFORE YOU DIG ONE CALL 1-800-342-1585
		REPORT ALL SPILLS DEPT. OF ENVIRONMENTAL QUALITY: 1-800-632-8000

ABBREVIATIONS

ACCHD	ASSOCIATION OF CANYON COUNTY HIGHWAY DISTRICTS	FW	FUSION WELD GALVANIZED	OD	OUTSIDE DIAMETER
CB	CATCH BASIN	GI	GRAVITY IRRIGATION	PE	PLAIN END
CD	CONTROL DENSITY FILL (FLOWABLE CONCRETE FILL)	HDPE	HIGH-DENSITY POLYETHYLENE	PI	PRESSURE IRRIGATION PLASTIC IRRIGATION PIPE
CL	CONCRETE CENTERLINE	HMA	HOT MIXED ASPHALT	PROP	PROPOSED
CTS	COPPER TUBE SIZE	ID	INSIDE DIAMETER	PSI	POUNDS PER SQUARE INCH
DI	DUCTILE IRON DIAMETER	IE	INVERT ELEVATION	PVC	POLYVINYL CHLORIDE
DWG	DRAWING	ISPCW	IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION	RCP	REINFORCED CONCRETE PIPE
EG	EXISTING GROUND	ITD	IDAHO TRANSPORTATION DEPARTMENT	RS	RESILIENT SEAT SPECIFICATIONS
ELEV	ELEVATION	LF	LINEAR FEET	SST	STAINLESS STEEL
EX	EXISTING	MH	MANHOLE	STD	STANDARD
FL	FLANGED	MP	MALE IRON PIPE	STL	STEEL
FL	FINISHED GRADE	MJ	MECHANICAL JOINT FITTING	SW	SOLVENT WELD
		NO	NUMBER	TEMP	TEMPORARY
		OC	ON CENTER	TYP	TYPICAL

ADMINISTRATION

- DELIVERY RATES:
 - FIRST UNIT: IRRIGATION WATER DELIVERY RATE IS 1 MINER'S INCH OF WATER (1/50 = 0.02 CFS) PER IRRIGABLE ACRE.
 - SECOND UNIT: IRRIGATION WATER DELIVERY RATE IS 0.75 MINER'S INCH OF WATER PER IRRIGABLE ACRE (0.75/50 = 0.015 CFS)
 - THE TOTAL YEARLY QUANTITY (Qa) OF WATER DELIVERED FOR THE SECOND UNIT IS SCHEDULED TO BE 5 ACRE FEET (IF WATER QUANTITIES ALLOW - BASED ON SEASONAL FLOWS).
- AN ELECTRONIC AS-BUILT RECORD MUST BE SUBMITTED TO THE DISTRICT BEFORE IRRIGATION SERVICE WILL BE PROVIDED.
- INTERRUPTION OF AGRICULTURAL IRRIGATION WATER SERVICE TO LANDS DOWNSTREAM OF THE SUBJECT PROPERTY WILL NOT BE PERMITTED.
- ANY PROPOSED DEVELOPMENT THAT HAS BCID INFRASTRUCTURE IN THE PARCEL OR ADJACENT TO THE PARCEL THAT REQUIRES A LAND-USE ACTION AT THE CITY OR COUNTY LEVEL (INCLUDING ZONING CHANGES, SUBDIVISIONS, LAND DIVISIONS OF GREATER THAN 2 PARCELS, ETC) WILL REQUIRE FENCING OF ANY PIPES, OPEN DITCHES, CANALS, AND DRAINS OPERATED BY BCID. PER BCID RESOLUTION 2023-01.
- ANY DEVELOPMENT THAT HAS BCID INFRASTRUCTURE ON THE PARCEL OR ADJACENT TO THE PARCEL THAT REQUIRES A LAND-USE ACTION AT THE CITY OR COUNTY LEVEL (INCLUDING ZONING CHANGES, SUBDIVISIONS, LAND DIVISIONS OF GREATER THAN 2 PARCELS, ETC) WILL REQUIRE PIPING (TILING) OF OPEN CANALS AND LATERALS OPERATED BY THE BCID. PER BCID RESOLUTION 2023-02.
- NO WORK IS PERMITTED DURING IRRIGATION SEASON WITHOUT EXPRESSED WRITTEN AND DISTRICT'S APPROVAL. IRRIGATION OFF SEASON IS TYPICALLY NOVEMBER 1ST THROUGH MARCH 1ST.
- NOVEMBER 1ST IS THE CUTOFF FOR APPROVED PLANS TO BE CONSTRUCTED.

DESIGN

- SEE SUMMARY TABLES BELOW FOR PIPE LOCATIONS AND MATERIAL TO BE USED. OTHER PIPES MAY BE ALLOWED WITH DISTRICT APPROVAL.

NON-TRAVELED WAYS (NO WHEEL LOADING)	
PIP	100 PSI SDR 41; GASKETED BELL AND SPIGOT
PVC	CLASS 125 SDR 32.5
HDPE	IPS SDR 17; PE 4710; BUTT FUSION
RCP	CLASS III MINIMUM - GASKETED (ASTM C-76 / ASTM C-4430)

TRAVELED WAYS- ANY WHEEL LOADING (H=25 MIN)	
PVC	AWWA C-900 OR C-905; DR 18 / PR 235; GASKETED BELL AND SPIGOT
HDPE	IPS SDR 17; PE 4710; BUTT FUSION
RCP	CLASS IV MINIMUM; GASKETED

WITH BCID APPROVAL:	
	POLY-COATED ALUMINIZED TYPE 2 CORRUGATED STEEL; 2-2/3" X 1/2" CORRUGATIONS; 10 GAUGE MIN

DESIGN CONT

- GRAVITY FLOW PIPE SHALL BE LABELED WITH MANUFACTURER INFORMATION AND DATE OF MANUFACTURE. PVC SDR-35 OR POLY-COATED ALUMINIZED STEEL TYPE 2 CORRUGATED STEEL PIPE (10 GAUGE MINIMUM WALL THICKNESS) MAY BE PERMITTED BY THE DISTRICT IN DRAIN CROSSING LOCATIONS AS DETERMINED BY THE DISTRICT.
- ALL CONCRETE PIPES SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C76 REINFORCED CONCRETE PIPE AND TESTED IN ACCORDANCE WITH ASTM C497. JOINTS SHALL BE IN ACCORDANCE WITH ASTM C 443, RUBBER GASKETED JOINTS. INSTALLED PIPE JOINTS SHALL MEET THE MAXIMUM ALLOWABLE JOINT GAP REQUIREMENTS PER THE PIPE MANUFACTURER. ONLY AIR-TESTED CONCRETE PIPE IS ALLOWED TO BE INSTALLED IN BCID FACILITIES, UNLESS ALLOWED BY THE DISTRICT.
- ALL PVC PIPES SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM D2241. JOINTS SHALL BE BELL AND SPIGOT END WITH ASTM F477 ELASTOMERIC GASKETS.
- WHEN A SMALLER GRAVITY PIPE JOINS A LARGER ONE, THE INVERT OF THE LARGER PIPE SHOULD BE LOWERED SUFFICIENTLY TO MAINTAIN THE SAME ENERGY GRADIENT. PIPING SHALL BE LAID WITH UNIFORM SLOPE AND ALIGNMENT BETWEEN STRUCTURES. PIPE LENGTHS ARE REQUIRED TO BE MAXIMIZED TO REDUCE THE NUMBER OF JOINTS. EIGHT (8) FOOT LENGTHS OR TWELVE (12) FOOT LENGTHS SHALL BE UTILIZED WHERE POSSIBLE. INSTALLATION OF LOCATING WIRE ATTACHED TO THE TOP OF THE PIPE MAY BE REQUIRED AS DETERMINED BY THE DISTRICT.
- CONCRETE STRUCTURES SHALL BE CAST IN PLACE, UNLESS DIRECTED OTHERWISE. BCID MAY PROVIDE SOME STRUCTURES, IF AVAILABLE, UPON REQUEST.
- A MINIMUM 12-FOOT WIDE GRAVEL ROAD SHALL BE CONSTRUCTED FOR BCID ACCESS TO THEIR FACILITIES. ACCESS ROAD SHALL BE 3/4" MINUS ROAD MIX 8 INCHES DEEP. PER BCID RESOLUTION 2023-03.
- SEALING PIPE PENETRATIONS: USE HYDROTITE O-RING, C.J. SS, OR DSS PROFILE BONDED TO PIPE WITH RUBBER ADHESIVE; CENTER O-RING ON THE WALL, MINIMUM 2" FROM THE FACE OF CONCRETE TO HYDROTITE. USE NON-SHRINK GROUT TO FILL IN THE PENETRATION AROUND THE PIPE.
- MINIMUM PIPE DESIGN PARAMETERS LISTED BELOW. IF THE MINIMUM VELOCITY CAN NOT BE ACHIEVED DUE TO THE EXISTING SHALLOW CANAL SLOPES, THE EXISTING CANAL MAY BE FENCED IN LIEU OF PIPE INSTALLATION. DISTRICT APPROVAL IS REQUIRED.
 - ASSUME PIPE 75% FULL
 - MINIMUM VELOCITY IS 2.5 FEET PER SECOND
 - MAXIMUM VELOCITY IS 5 FEET PER SECOND (MAY EXCEED WITH DISTRICT'S APPROVAL)
 - MINIMUM PIPE DIAMETER IS 12 INCHES
 - USE "n" VALUE FOR MANNING'S FORMULA OF 0.013

CONSTRUCTION

- CONSTRUCTION OF IMPROVEMENTS SHALL BE IN ACCORDANCE WITH THE BLACK CANYON IRRIGATION DISTRICT, THE MOST CURRENT VERSION OF THE IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION (ISPCW), AND HIGHWAY STANDARDS AND DEVELOPMENT PROCEDURES FOR THE ASSOCIATION OF CANYON COUNTY HIGHWAY DISTRICTS (ACCHD).
- A PRECONSTRUCTION CONFERENCE IS REQUIRED PRIOR TO CONSTRUCTION AND 48 HOURS ADVANCE NOTIFICATION OF THE LOCAL MUNICIPALITY, BCID AND ALL AFFECTED UTILITY COMPANIES IS REQUIRED PRIOR TO THE ACTUAL START OF WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE PROVISIONS OF THE RIGHT-OF-WAY / STREET CONSTRUCTION PERMIT AS ISSUED BY THE LOCAL TRANSPORTATION AGENCY, LOCAL CITY JURISDICTION, AND/OR IDAHO TRANSPORTATION DEPARTMENT FRANCHISE FOR THIS PROJECT.

CONSTRUCTION CONT

- HIGHWAY CROSSINGS SHALL ADHERE TO OWNER'S STANDARDS.
- LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE ESTIMATED UNLESS STATED OTHERWISE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY, LOCATE AND PROTECT ALL UTILITIES WITHIN THE PROJECT AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING OR REPAIRING ANY UTILITIES DAMAGED DURING CONSTRUCTION. SHOW ENCOUNTERED UTILITIES ON THE AS-BUILTS.
- LOCATION AND EXTENT OF UTILITIES WITHIN THE PROJECT LIMITS ARE UNKNOWN. CONTRACTOR SHALL CONTACT PROPERTY OWNERS ADJACENT TO THE PROJECT FOR LOCATING PRIVATE IRRIGATION SYSTEMS. CONTRACTOR IS RESPONSIBLE FOR LOCATING IRRIGATION MAINS AND REPLACING OR REPAIRING PIPELINES DAMAGED DURING CONSTRUCTION. SHOW THESE PIPELINES ON THE AS-BUILTS.
- CONTRACTOR SHALL POTHOLE A SUFFICIENT DISTANCE AHEAD OF PIPELAYING TO VERIFY DEPTH OF EXISTING UTILITIES AND CROSSING UTILITIES TO ANTICIPATE ANY NECESSARY CHANGES IN FITTINGS OR ALIGNMENT.
- CONTRACTOR SHALL ONLY DISPOSE OF WASTE MATERIAL AT APPROVED SITES.
- TRENCH SECTION AND ALL EXCAVATED AREAS SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH ISPCW DIVISION 200 SECTION 202 CLASS A COMPACTION. SOIL BACKFILL MATERIAL SHALL MEET THE REQUIREMENTS OF ISPCW DIVISION 200 SECTION 203 - SOIL MATERIALS SUBSOIL TYPES S3 OR S4. COMPACTION TESTING IS REQUIRED DURING BACKFILLING OPERATIONS AT THE DISCRETION OF THE DISTRICT. IF TRENCH BACKFILL DOES NOT MEET COMPACTION REQUIREMENTS, CONTRACTOR SHALL EXCAVATE, RECOMPACT AND RETEST MATERIAL AT CONTRACTOR'S EXPENSE.
- IF CONSTRUCTION IS IN TRAFFIC, AT THE END OF EACH WORKING DAY, A TEMPORARY PATCH OVER THE TRENCH CUTS SHALL BE PLACED SO THAT TRAFFIC IS NOT AFFECTED IN ANY WAY. MATERIAL FOR THESE TEMPORARY PATCHES SHALL BE CRUSHED SURFACING BASE COURSE OR COLD MIX.
- ALL TRENCHING AND SHORING TO BE DONE IN ACCORDANCE WITH OSHA STANDARDS.
- ALL PIPES THAT WILL BE OWNED AND OPERATED BY THE DISTRICT SHALL BE PRESSURE TESTED PER ISPCW. IN PRESENCE OF THE ENGINEER AND IN ACCORDANCE WITH ISPCW DIVISION 500 SECTION 501 PART 3.4. CONTRACTOR IS RESPONSIBLE FOR PRESSURE TESTING ALL NEW OR MODIFIED PORTIONS OF DISTRICT INFRASTRUCTURE. FINAL PRESSURE TESTING SHALL BE CONDUCTED AFTER ALL UTILITY INSTALLATION AND BEFORE ANY PAVEMENT PLACEMENT. FINAL ACCEPTANCE AND WARRANTY PERIOD WILL NOT BEGIN PRIOR TO A PASSING PRESSURE TEST.
- THREE YEAR MINIMUM WORKMANSHIP PRODUCT WARRANTY IS REQUIRED.

IRRIGATION SYSTEM STANDARD DETAIL

COVER

BLACK CANYON IRRIGATION DISTRICT

FILE: BCI0-D-COV.DWG REVISED: 07/12/2023 DWG NO. GIR01

IRRIGATION SYSTEM STANDARD DETAIL

IRRIGATION GENERAL NOTES

BLACK CANYON IRRIGATION DISTRICT

PAGE 1 OF 3

FILE: BCI0-D-COTE1.DWG REVISED: 07/12/2023 DWG NO. GIR02

IRRIGATION SYSTEM STANDARD DETAIL

IRRIGATION GENERAL NOTES

BLACK CANYON IRRIGATION DISTRICT

PAGE 2 OF 3

FILE: BCI0-D-COTE2.DWG REVISED: 07/12/2023 DWG NO. GIR03

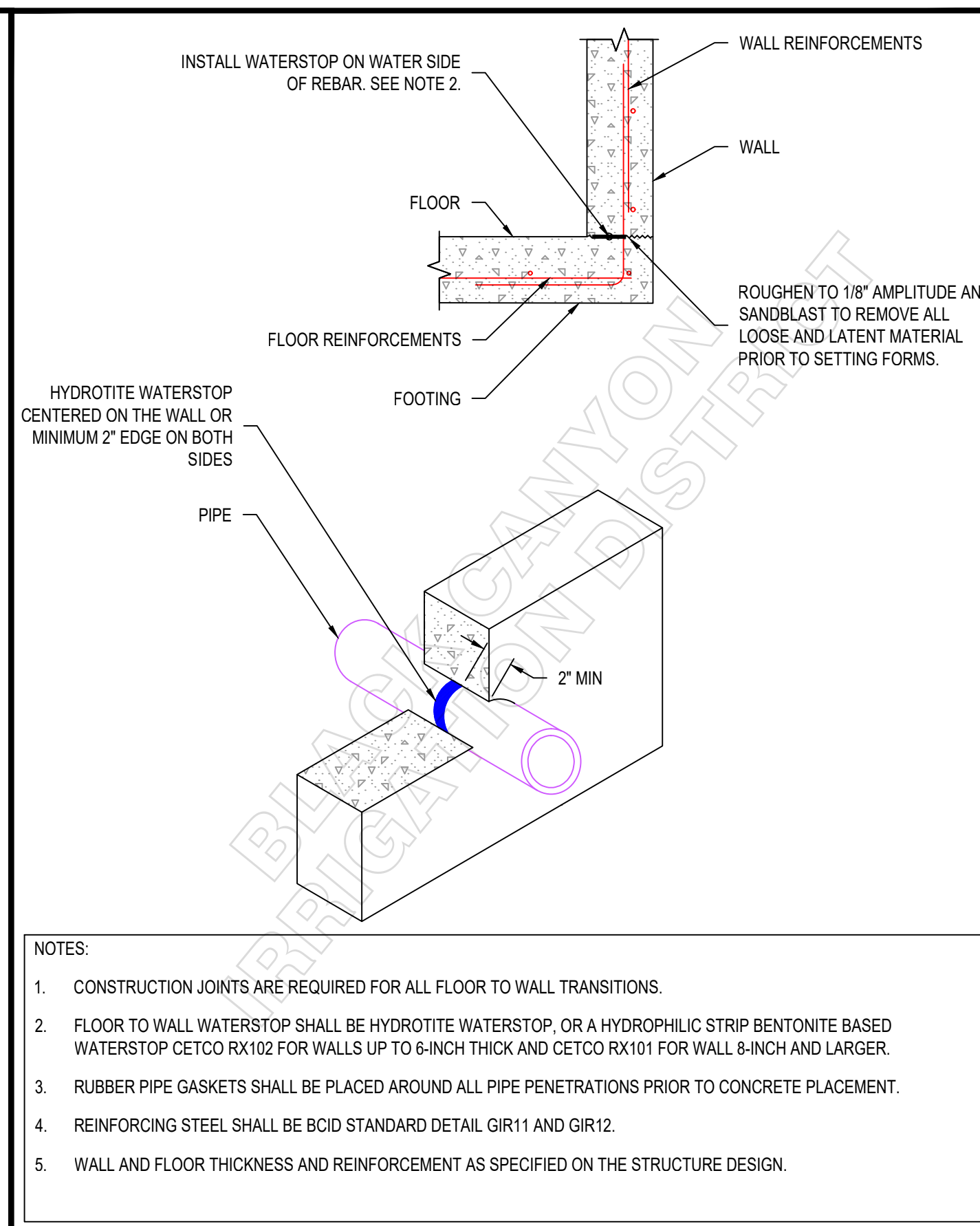
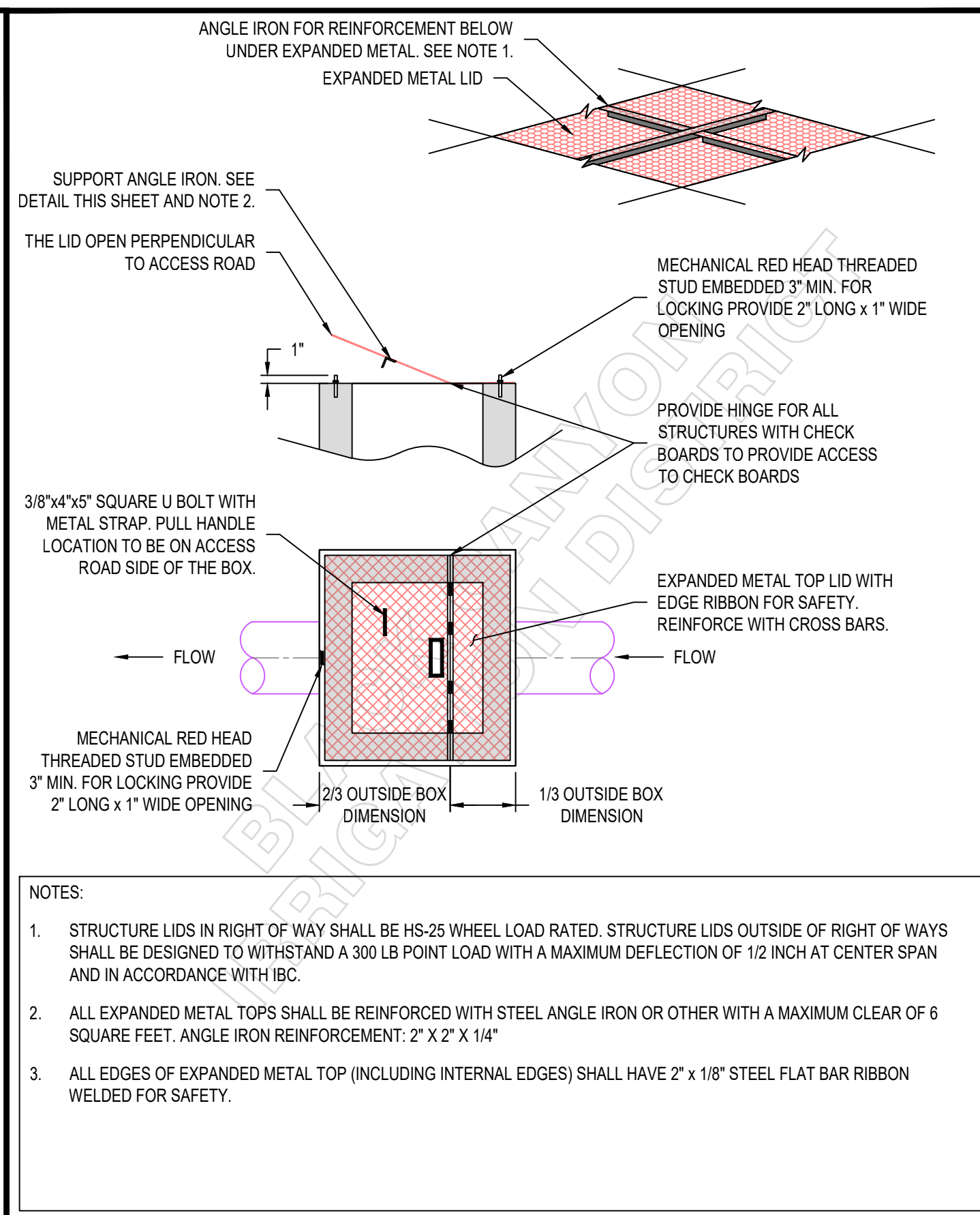
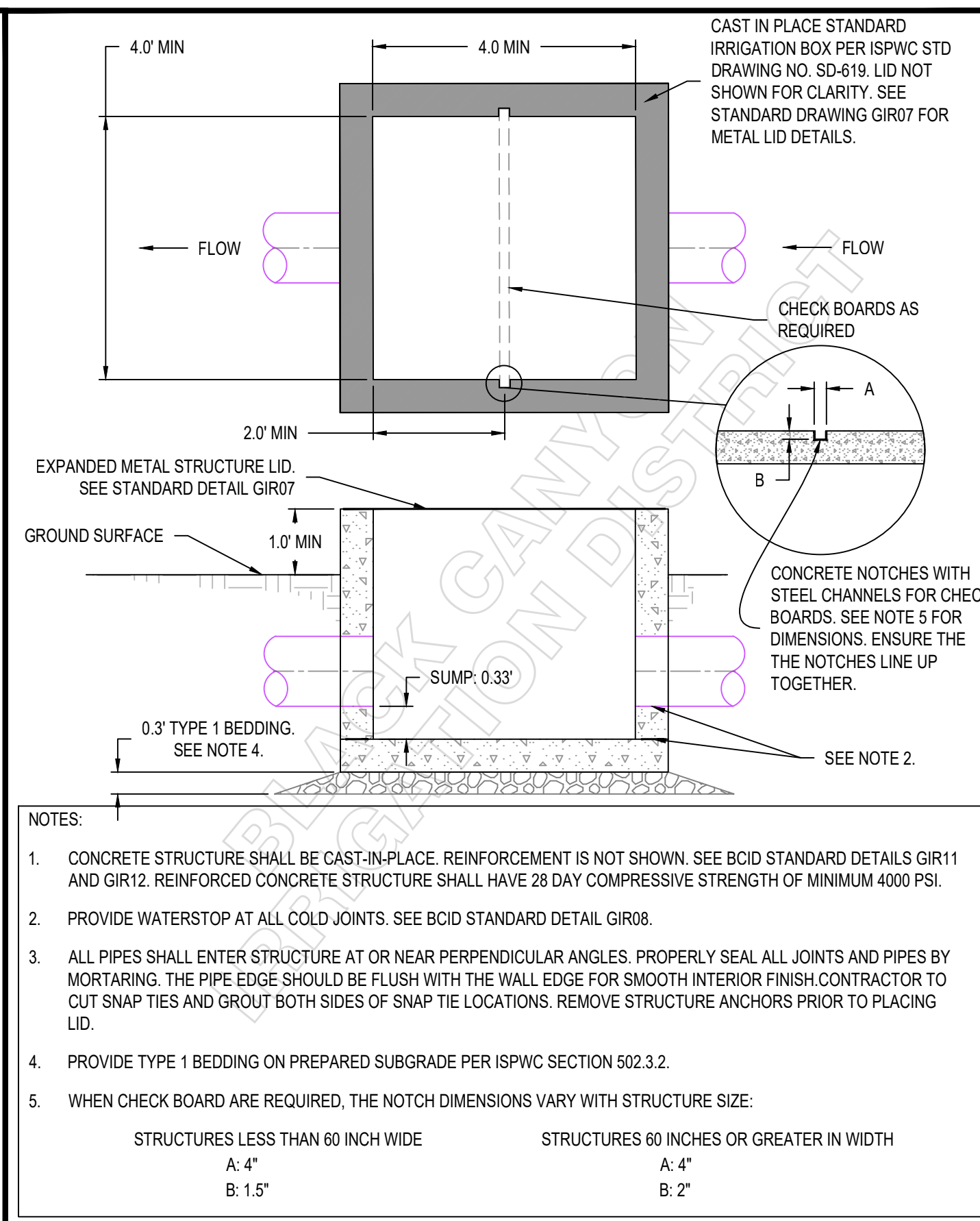
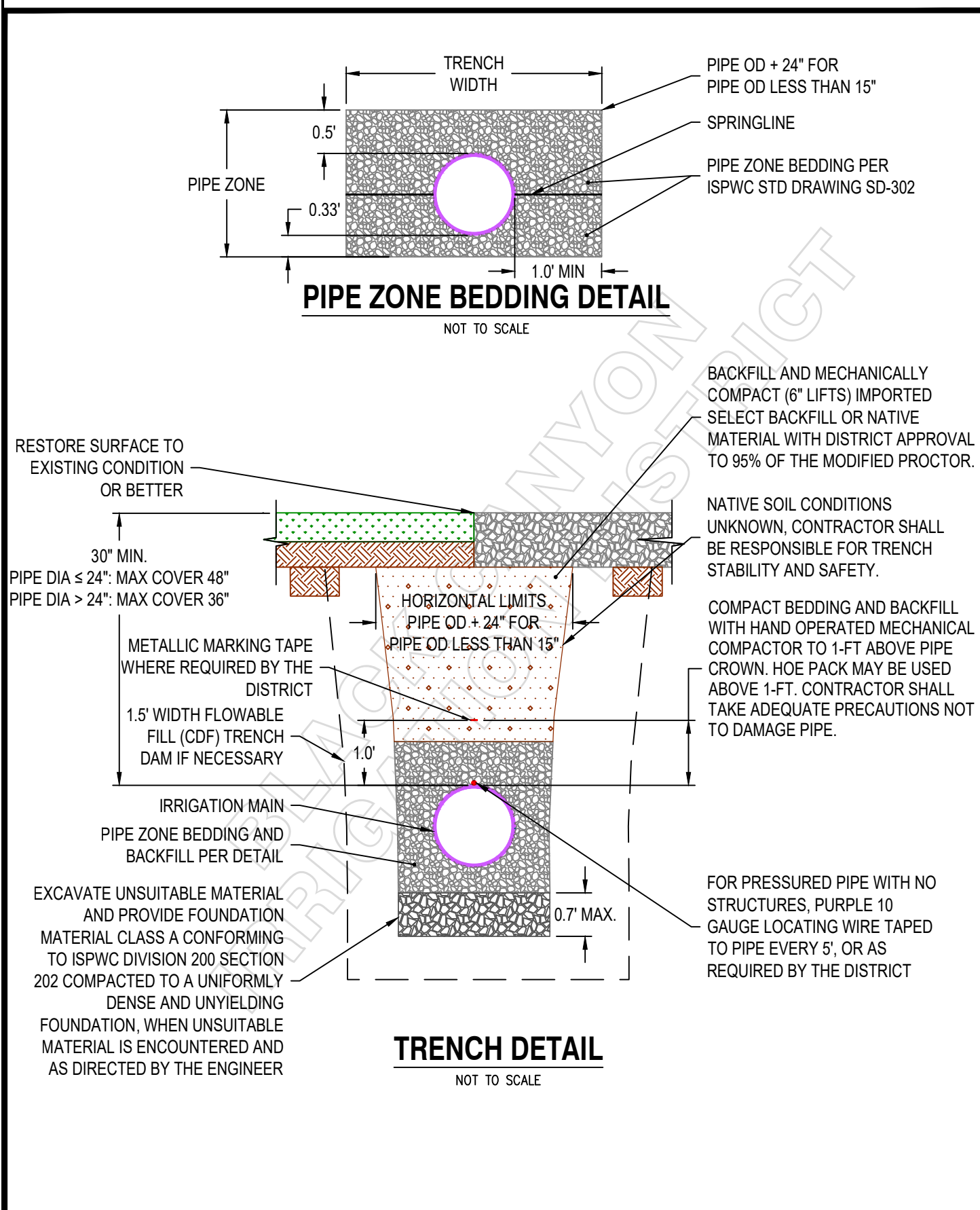
IRRIGATION SYSTEM STANDARD DETAIL

IRRIGATION GENERAL NOTES

BLACK CANYON IRRIGATION DISTRICT

PAGE 3 OF 3

FILE: BCI0-D-COTE3.DWG REVISED: 07/12/2023 DWG NO. GIR04



IRRIGATION SYSTEM STANDARD DETAIL

IRRIGATION TRENCH DETAIL

BLACK CANYON IRRIGATION DISTRICT

FILE: BCI0-D-TRENCH.DWG REVISED: 07/12/2023 DWG NO. GIR05

IRRIGATION SYSTEM STANDARD DETAIL

TYPICAL IRRIGATION STRUCTURE DETAIL

BLACK CANYON IRRIGATION DISTRICT

FILE: BCI0-D-CHECKSTR.DWG REVISED: 07/12/2023 DWG NO. GIR06

IRRIGATION SYSTEM STANDARD DETAIL

TYPICAL EXPANDED METAL LID DETAIL

BLACK CANYON IRRIGATION DISTRICT

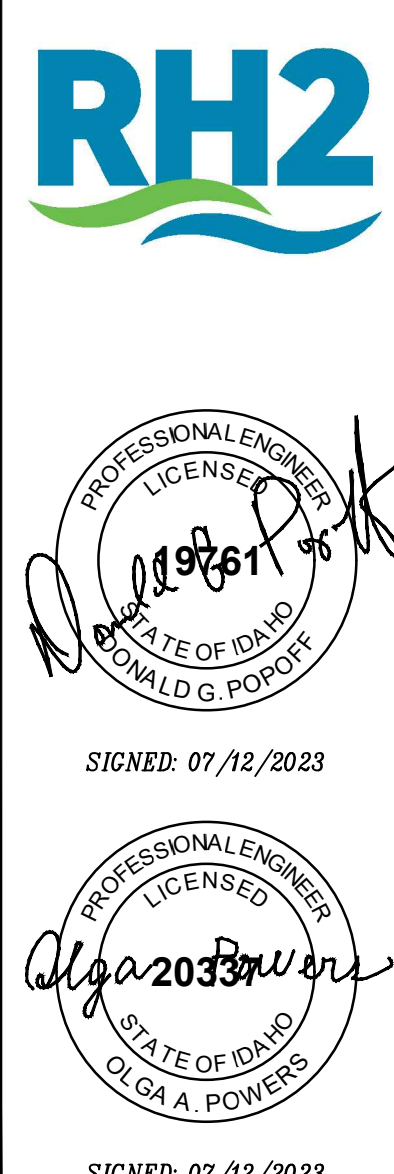
FILE: BCI0-D-METALLID.DWG REVISED: 07/12/2023 DWG NO. GIR07

IRRIGATION SYSTEM STANDARD DETAIL

WATERSTOP

BLACK CANYON IRRIGATION DISTRICT

FILE: BCI0-D-WATERSTOP.DWG REVISED: 07/12/2023 DWG NO. GIR08



BLACK CANYON IRRIGATION DISTRICT

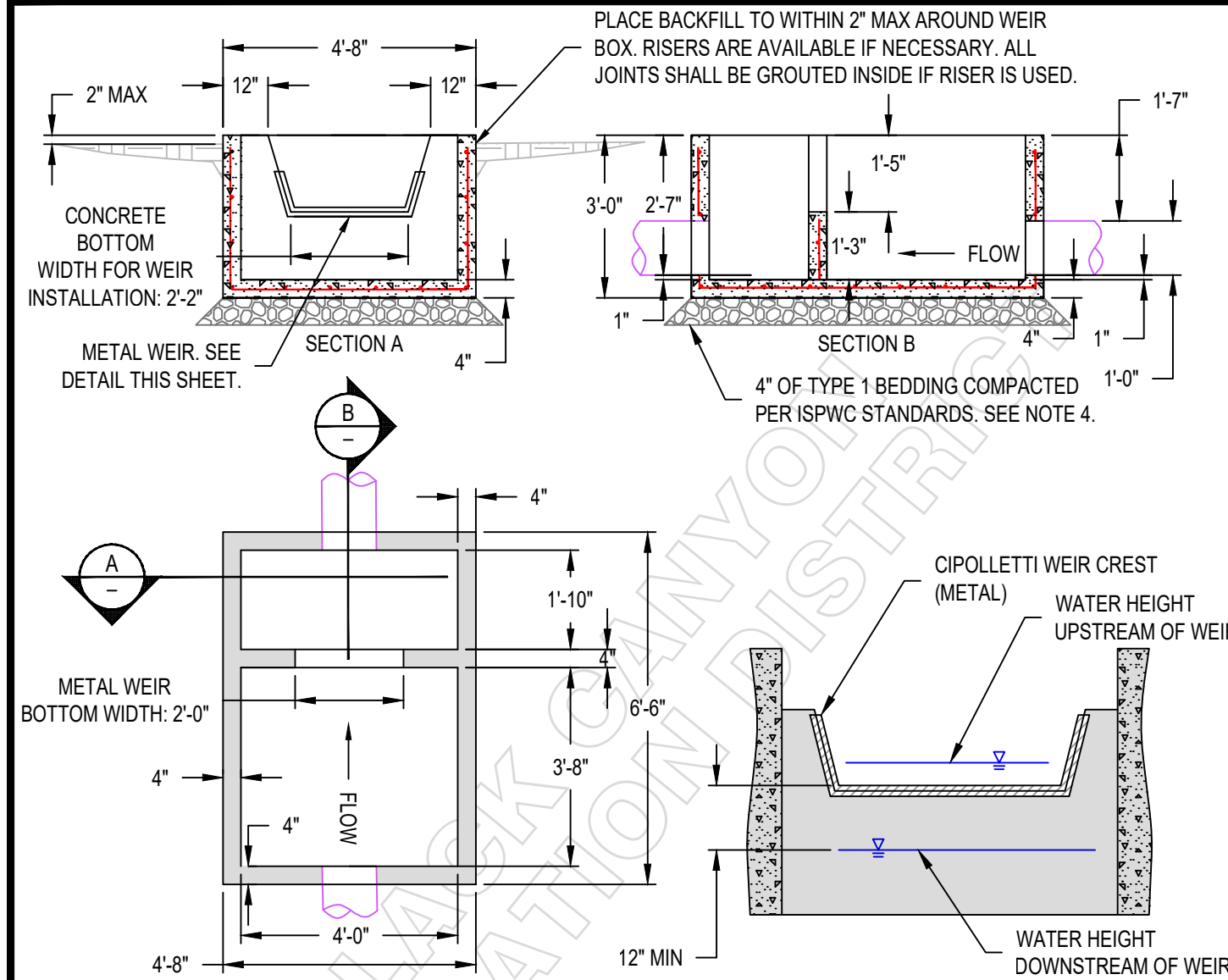
IRRIGATION STANDARD DETAILS

NO.	DATE	DESCRIPTION	BY	REVIEW

SCALE: SHOWN

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

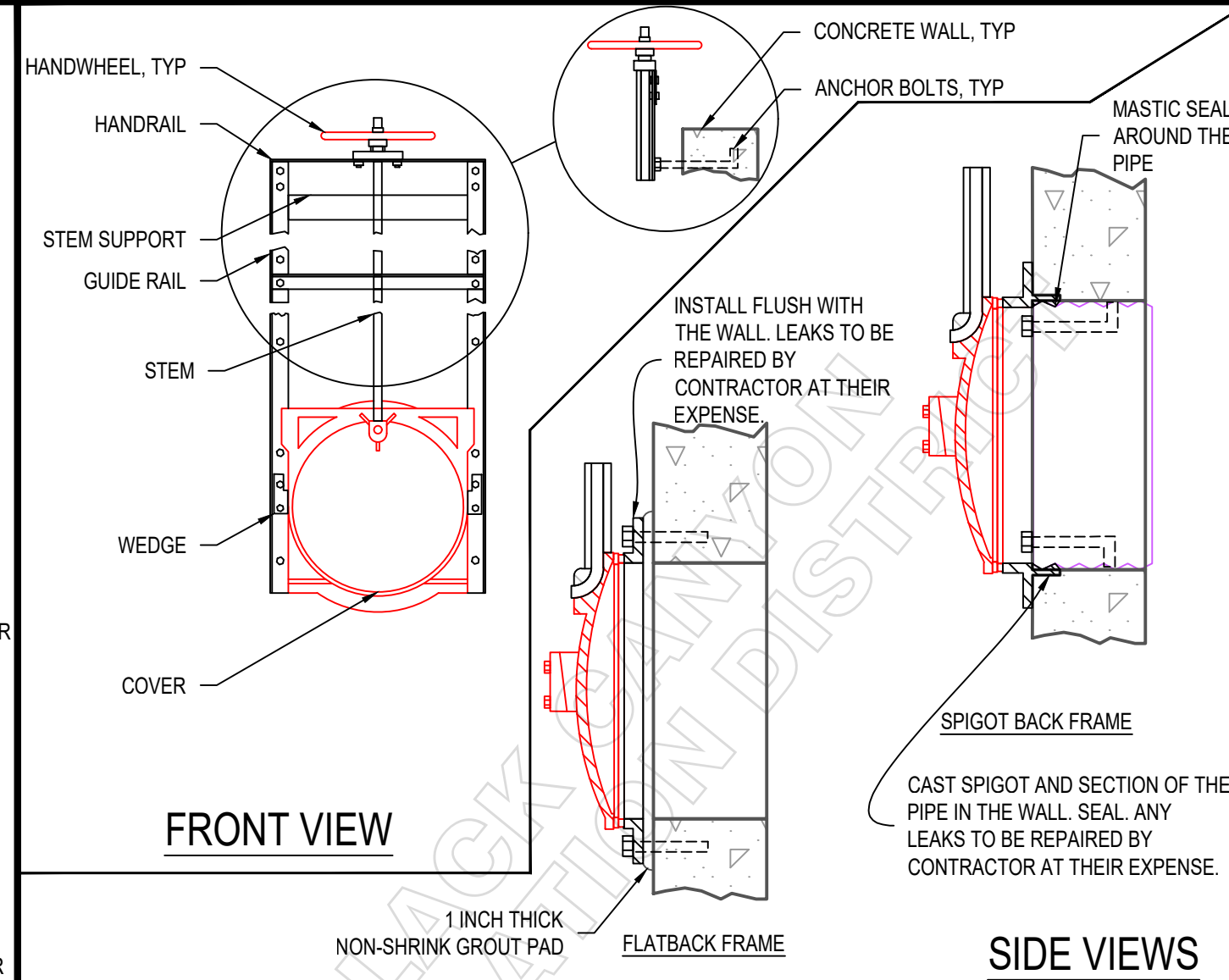
DWG NO.: D01 SHEET NO.: 1 OF 4



NOTES:

- YAKIMA BOX STRUCTURES CAN BE BUILT BY THE IRRIGATION DISTRICT UPON REQUEST. CONCRETE STRUCTURE SHALL BE CAST-IN-PLACE. REINFORCEMENT IS NOT SHOWN. SEE BCID STANDARD DETAILS GIR11 AND GIR12. REINFORCED CONCRETE STRUCTURE SHALL HAVE 28 DAY COMPRESSIVE STRENGTH OF MINIMUM 4000 PSI.
- PROVIDE WATERSTOP AT ALL COLD JOINTS. SEE BCID STANDARD DETAIL GIR08.
- ALL PIPES SHALL ENTER STRUCTURE AT OR NEAR PERPENDICULAR ANGLES. PROPERLY SEAL ALL JOINTS AND PIPES BY MORTARING. THE PIPE EDGE SHOULD BE FLUSH WITH THE WALL EDGE FOR SMOOTH INTERIOR FINISH. CONTRACTOR TO CUT SNAP TIES AND GROUT BOTH SIDES OF SNAP TIE LOCATIONS. REMOVE STRUCTURE ANCHORS PRIOR TO PLACING LID.
- PROVIDE TYPE 1 BEDDING ON PREPARED SUBGRADE PER ISPWIC SECTION 502.3.2. WEIR SHALL BE PLACED LEVEL.
- INSTALL AN EXPANDED METAL COVER ON TOP OF STRUCTURE PER BCID STANDARD DRAWING GIR07.
- STRUCTURE LID SHALL HAVE AN ACCESS HOLE OVER THE CIPOLLETTI WEIR FOR DISTRICT'S ACCESS TO INSERT STAFF GAUGE FOR LEVEL READINGS.
- WEIR BOX ELEVATION TO BE SET EVEN WITH GATE FROM UPSTREAM STRUCTURE.
- ADDITIONAL SIZE YAKIMA BOXES MAY BE REQUIRED DUE TO FLOW RATES. MOST COMMON SHOWN HERE.

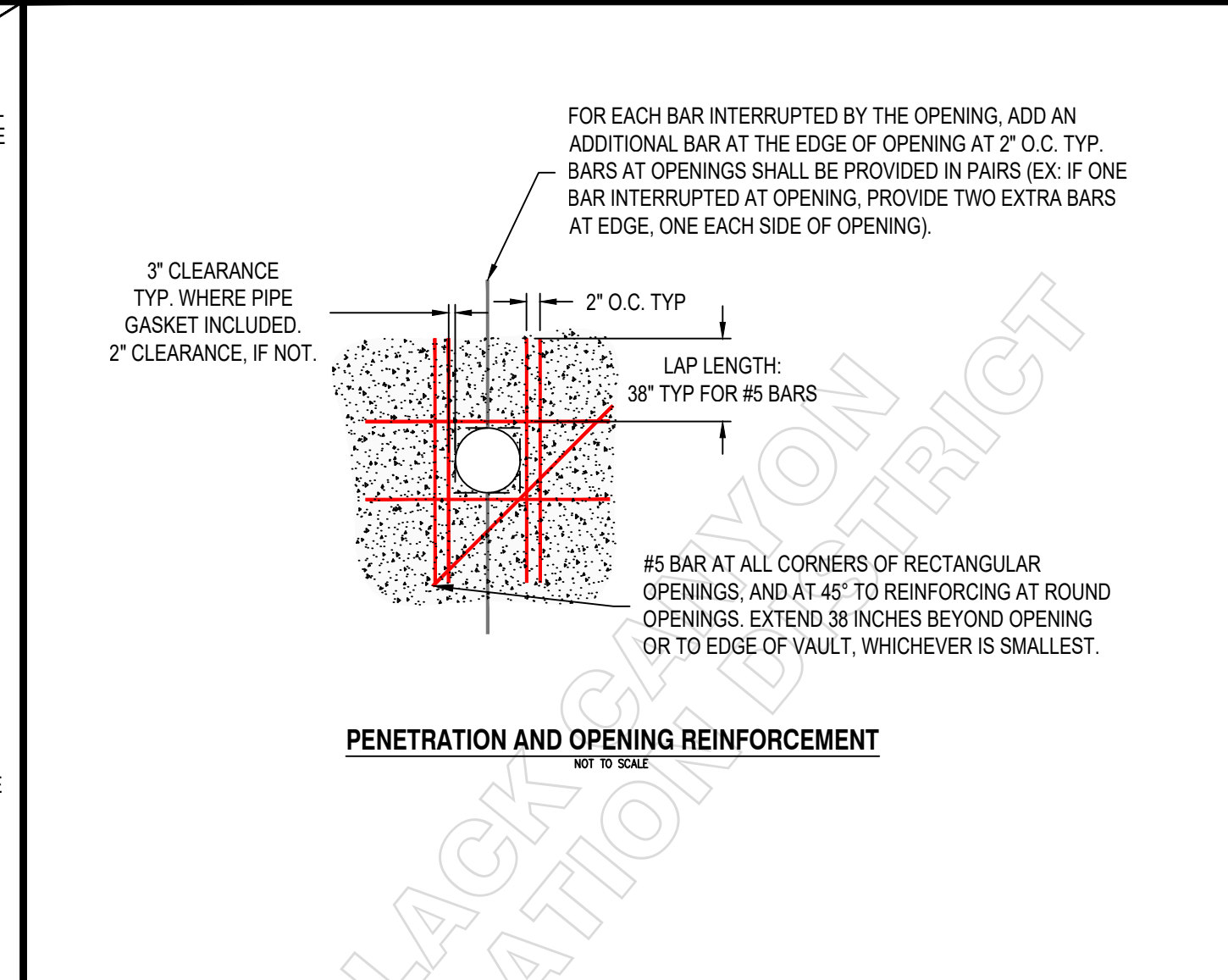
IRRIGATION SYSTEM STANDARD DETAIL
YAKIMA BOX STRUCTURE DETAIL
FLOW RATES: 0.1 TO 2 CFS
 FILE: BCD-D-YAKBOX.DWG REVISED: 07/12/2023 DWG NO. GIR09



NOTES:

- DRAWING IS NOT TO SCALE.
- CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE MINIMUM 4,000 PSI. ADD ADDITIONAL REINFORCEMENT AT GATE OPENINGS.
- ALL PIPES SHALL ENTER STRUCTURES AND HEADWALL AT OR NEAR PERPENDICULAR ANGLES.
- GATE FRAMES SHALL BE SECURELY BOLTED TO CONCRETE STRUCTURE WITH STAINLESS STEEL BOLTS. TOP ANCHORS SHALL BE INSTALLED WITHIN 8 TO 12 INCHES BELOW OF CONCRETE WALL. BOLTS TO ATTACHED GATES SHALL BE CAST IN PLACE OR SHALL NOT BE INSTALLED VIA DRILLING, AND REDHEAD OR EXPANDABLE BOLTS OR LAGS UNTIL THE RECOMMENDED CURE PERIOD FOR THE CONCRETE MIX DESIGN.
- CANAL GATES SHALL BE WATERMAN C-10, XCAD CANAL GATES OR PRE-APPROVED EQUAL WITH GALVANIZED FRAME. SLIDE GATES ARE NOT ACCEPTABLE. INSTALL GATES PER MANUFACTURER'S SPECIFICATIONS. CANAL GATE WHEEL HEIGHT SHALL BE A MINIMUM OF 2-7/8 INCHES ABOVE STRUCTURE AND A MAXIMUM 6 INCHES ABOVE STRUCTURE.
- PROPERLY SEAL ALL JOINTS AND PIPES BY MORTARING. THE PIPE EDGE SHOULD BE FLUSH WITH THE WALL EDGE FOR SMOOTH INTERIOR FINISH. USE SOFT BRISTLE BRUSH TO BLEND MORTAR AND CONCRETE TOGETHER.

IRRIGATION SYSTEM STANDARD DETAIL
CANAL GATE DETAIL
 FILE: BCD-D-GATE.DWG REVISED: 07/12/2023 DWG NO. GIR10



FOR EACH BAR INTERRUPTED BY THE OPENING, ADD AN ADDITIONAL BAR AT THE EDGE OF OPENING AT 2' O.C. TYP. BARS AT OPENINGS SHALL BE PROVIDED IN PAIRS (EX: IF ONE BAR INTERRUPTED AT OPENING, PROVIDE TWO EXTRA BARS AT EDGE, ONE EACH SIDE OF OPENING).

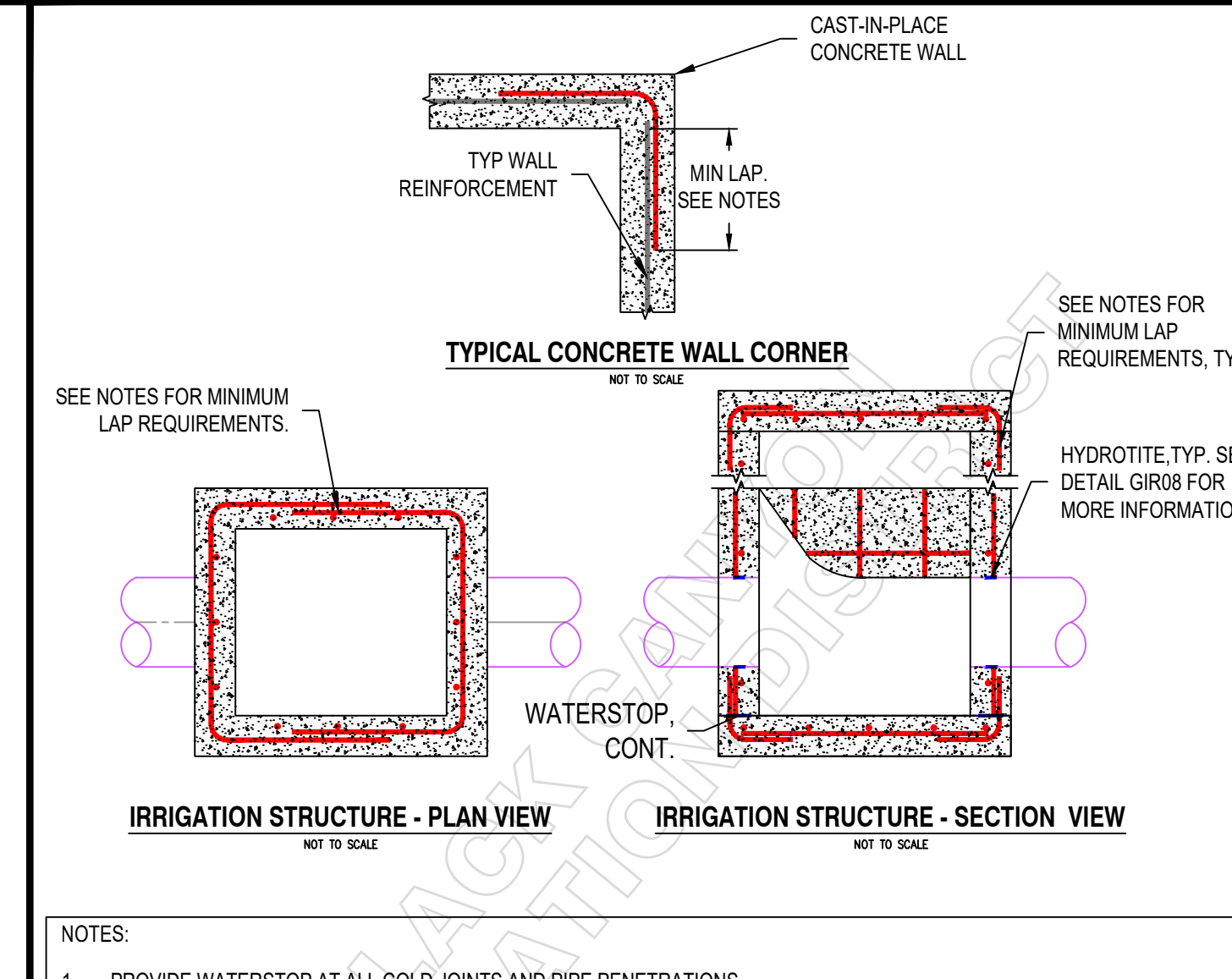
3" CLEARANCE TYP. WHERE PIPE GASKET INCLUDED. 2" CLEARANCE, IF NOT.

2" O.C. TYP.

LAP LENGTH: 38" TYP FOR #5 BARS

#5 BAR AT ALL CORNERS OF RECTANGULAR OPENINGS, AND AT 45° TO REINFORCING AT ROUND OPENINGS. EXTEND 38 INCHES BEYOND OPENING OR TO EDGE OF VAULT, WHICHEVER IS SMALLEST.

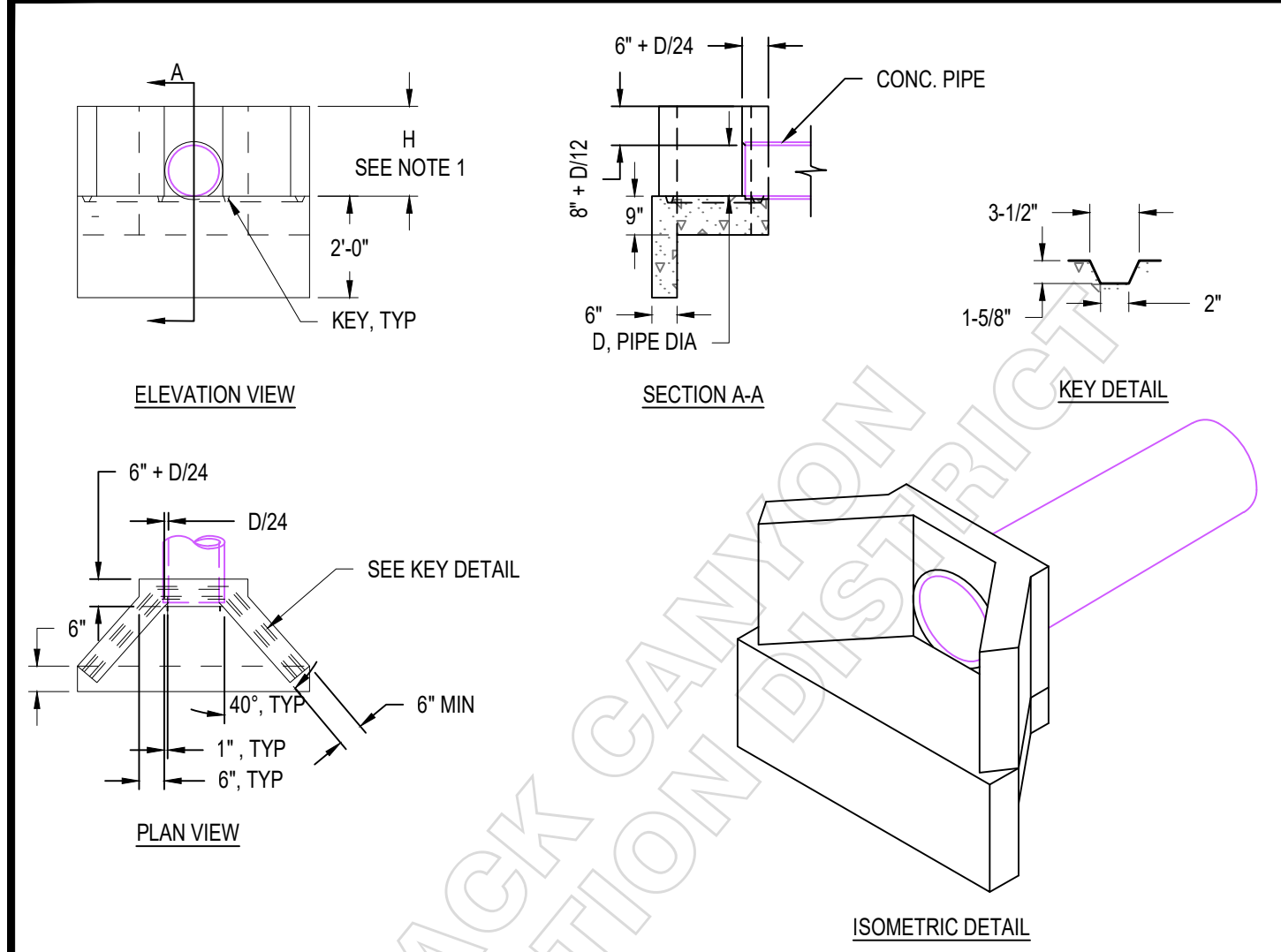
IRRIGATION SYSTEM STANDARD DETAIL
REINFORCEMENT AT OPENINGS
 FILE: BCD-D-RST-OPNG.DWG REVISED: 07/12/2023 DWG NO. GIR11



NOTES:

- PROVIDE WATERSTOP AT ALL COLD JOINTS AND PIPE PENETRATIONS.
- WALL REINFORCEMENT IS #5 BARS AT 12 INCHES O.C. EACH WAY CENTERED IN EACH SLAB.
- SEE BCID DETAIL GIR11 FOR PIPE OPENING REINFORCEMENTS.
- MINIMUM LAP FOR #5 BAR IS 38 INCHES.
- THE SIZE AND SPACING OF TYPICAL CORNER REINFORCING SHALL MATCH THE SIZE AND SPACING OF HORIZONTAL WALL REINFORCING UNLESS OTHERWISE CALLED OUT.
- WHERE PERPENDICULAR WALLS HAVE DIFFERENT HORIZONTAL WALL REINFORCING, PROVIDE CORNER BARS TO MATCH THE HORIZONTAL WALL REINFORCING WITH THE GREATEST AREA OF STEEL.
- ADDITIONAL REINFORCEMENT DESIGN IS REQUIRED WHEN:
 - WALL SPANS GREATER THAN 6 FEET
 - BASE SLAB IS GREATER THAN 7 FEET BELOW GRADE
 - WATER PRESSURE IS GREATER THAN 7 FEET OR 437 PSF
 - SINGLE VERTICAL LOAD NEAR THE VAULT IS GREATER THAN 4,000 LB.

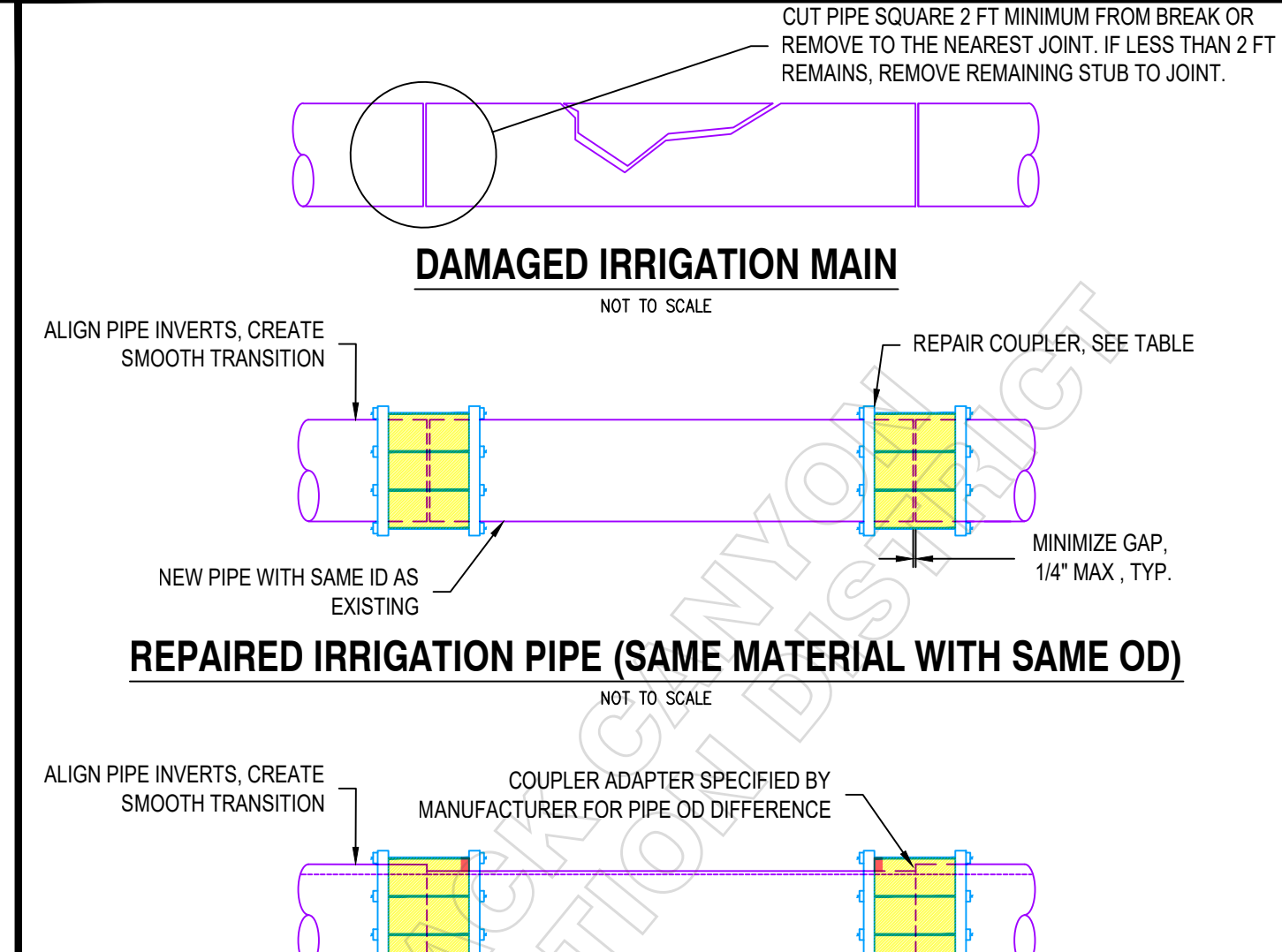
IRRIGATION SYSTEM STANDARD DETAIL
WALL AND WALL CORNER REINFORCEMENT
 FILE: BCD-D-RST-WALL.DWG REVISED: 07/12/2023 DWG NO. GIR12



NOTES:

- DETAILS ARE NOT TO SCALE. REFER TO ITD STANDARD DRAWING 609-2 FOR DIMENSIONS, REINFORCEMENT, AND INLET GRATE DETAILS.
- CONCRETE STRUCTURE SHALL BE CAST-IN-PLACE. REINFORCEMENT IS NOT SHOWN. REINFORCED CONCRETE STRUCTURE SHALL HAVE 28 DAY COMPRESSIVE STRENGTH OF MINIMUM 4000 PSI.
- PROVIDE WATERSTOP AT ALL COLD JOINTS. SEE BCID STANDARD DETAIL GIR08.
- ALL PIPES SHALL ENTER STRUCTURE AT OR NEAR PERPENDICULAR ANGLES. PROPERLY SEAL ALL JOINTS AND PIPES BY MORTARING. THE PIPE EDGE SHOULD BE FLUSH WITH THE WALL EDGE FOR SMOOTH INTERIOR FINISH.
- STRUCTURE TO BE DESIGNED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF IDAHO FOR PIPES LARGER THAN 42 INCHES.
- CONSTRUCT 3/4" MIN CHAMFER ON ALL EXPOSED VERTICAL EDGES.
- SEE BCID STANDARD DRAWINGS GIR02 THROUGH GIR03 FOR PIPE MATERIAL REQUIREMENTS AND SIZING. MINIMUM PIPE DIAMETER IS 12 INCHES.
- WING WALLS SHALL EXTEND 1 FOOT MINIMUM INTO THE CANAL BANK AT THE HIGH WATER ELEVATION.
- INSTALL HEADWALL OUTSIDE OF CLEAR ZONE, WHEN POSSIBLE. OTHERWISE, GUARDRAIL IS REQUIRED.
- STRUCTURE EXCAVATION AND COMPACTION SHALL BE PER ISPWIC DIVISION 200.

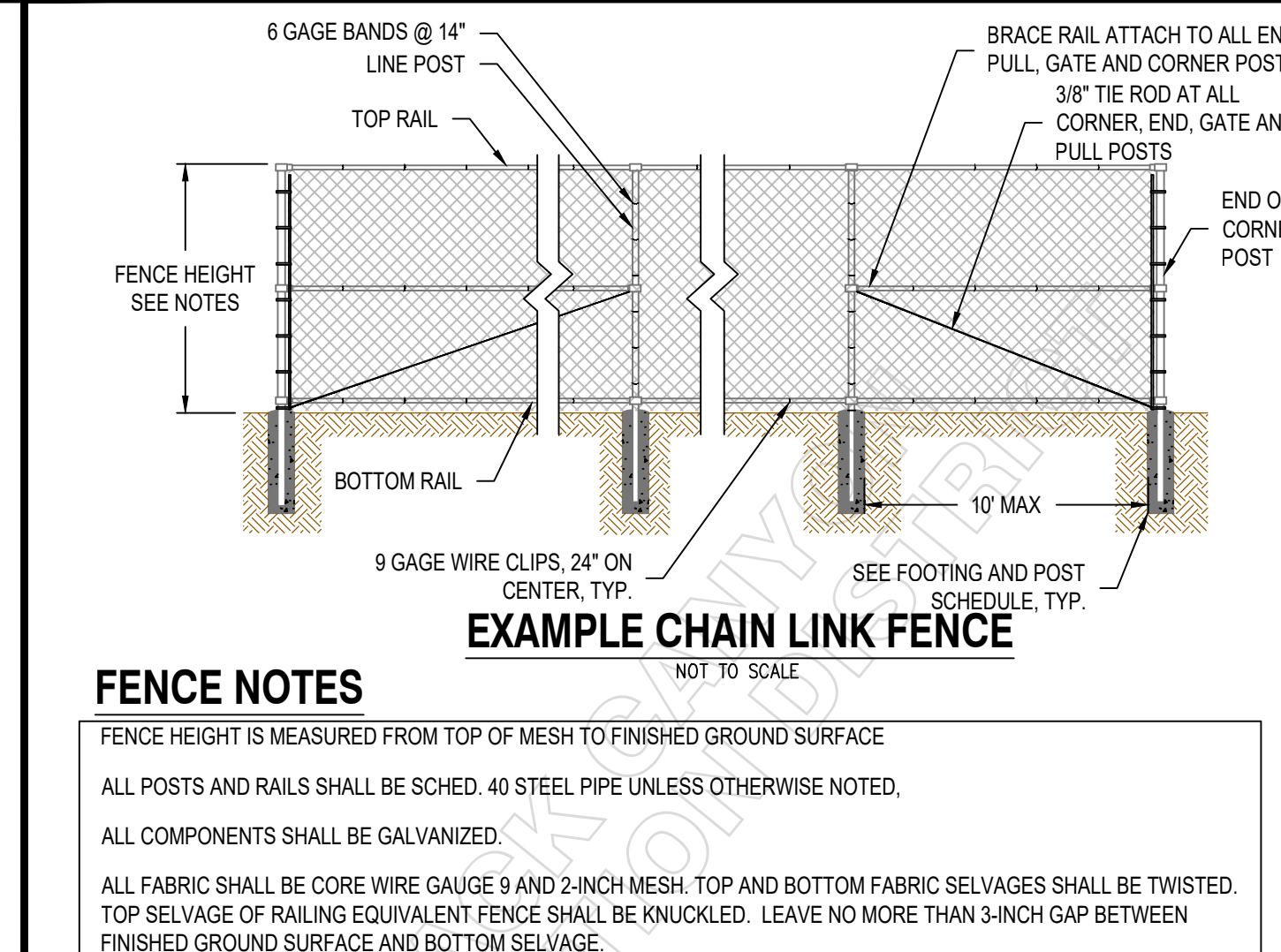
IRRIGATION SYSTEM STANDARD DETAIL
CULVERT HEADWALL DETAIL FOR SINGLE PIPE
 FILE: BCD-D-HEADWALL.DWG REVISED: 07/12/2023 DWG NO. GIR13



NOTES:

- COUPLER SHALL HAVE WATER TIGHT SEAL.
- COUPLING BETWEEN DIFFERENT PIPE MATERIALS OR OUTSIDE DIAMETERS SHALL BE MADE WITH CORRECTLY SIZED GASKETS FOR CORRECT APPLICATION.
- ALL SLEEVES SHALL BE EPOXY COATED.
- IN THE CASE OF THE DAMAGED PIPE, BCID SHALL BE IMMEDIATELY NOTIFIED. BCID SHALL INSPECT AND VERIFY REPAIR PRIOR TO BACKFILL.
- IF CONDITIONS ARE DIFFERENT THAN SHOWN ABOVE, CONTACT BCID.

IRRIGATION SYSTEM STANDARD DETAIL
IRRIGATION PIPE REPAIR
 FILE: BCD-D-REPAIR.DWG REVISED: 07/12/2023 DWG NO. GIR14



FENCE NOTES

FENCE HEIGHT IS MEASURED FROM TOP OF MESH TO FINISHED GROUND SURFACE

ALL POSTS AND RAILS SHALL BE SCHED. 40 STEEL PIPE UNLESS OTHERWISE NOTED.

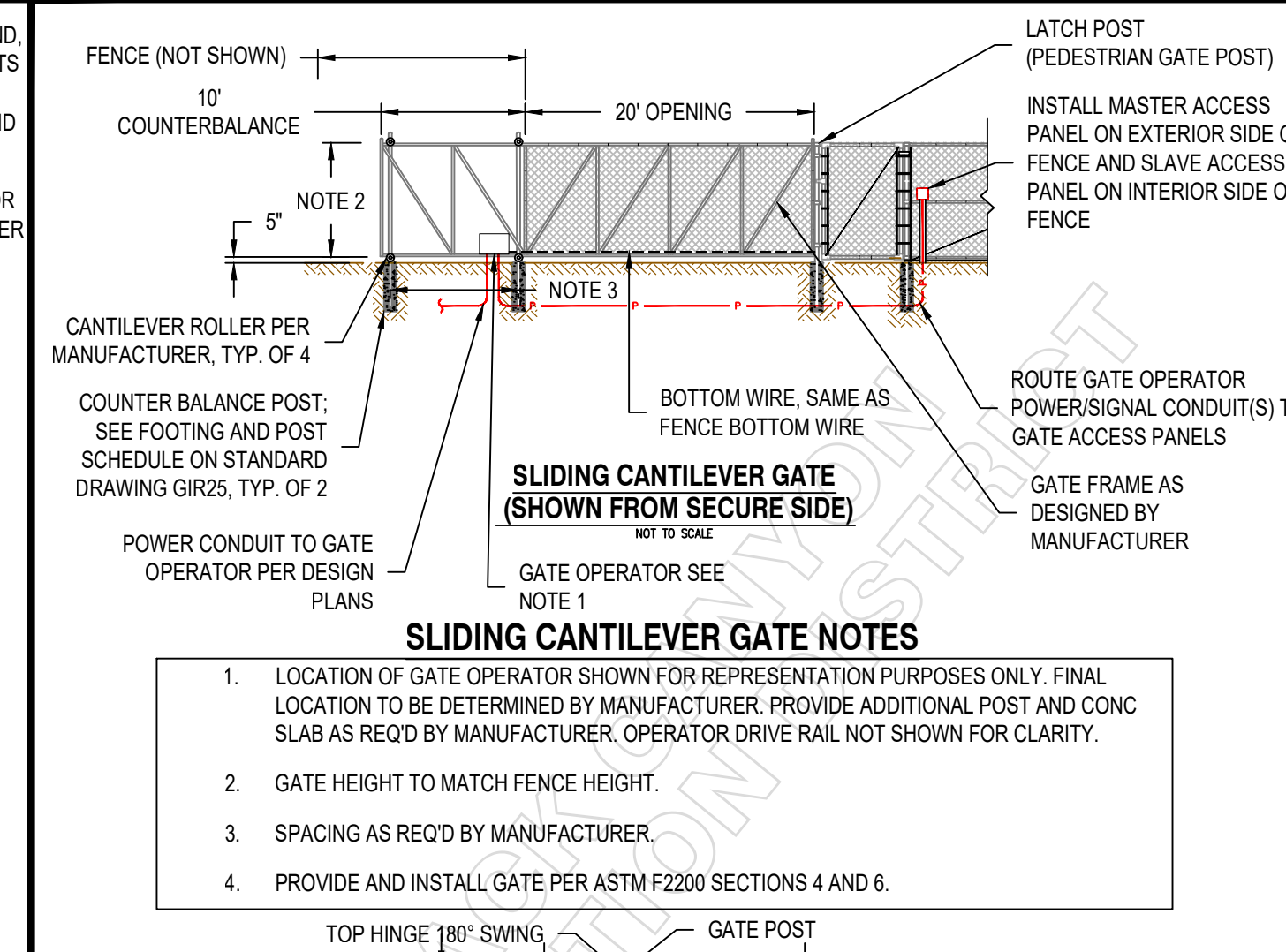
ALL COMPONENTS SHALL BE GALVANIZED.

ALL FABRIC SHALL BE CORE WIRE GAUGE 9 AND 2-INCH MESH. TOP AND BOTTOM FABRIC SELVAGES SHALL BE TWISTED. TOP SELVAGE OF RAILING EQUIVALENT FENCE SHALL BE KNUCKLED. LEAVE NO MORE THAN 3-INCH GAP BETWEEN FINISHED GROUND SURFACE AND BOTTOM SELVAGE.

UNLESS OTHERWISE NOTED ATTACH CHAINLINK TO RAILS AND HORIZONTAL BRACES USING 13 GAUGE WIRE @ 2' O.C. AND 9 GAUGE WIRE TO LINE POSTS AT 15' O.C.

ADJUST FENCE POST LOCATIONS TO AVOID CONFLICT WITH UTILITIES OR OTHER STRUCTURES. MINIMUM 2' CLEARANCE.

IRRIGATION SYSTEM STANDARD DETAIL
EXAMPLE CHAIN LINK FENCE AND GATE DETAILS 1 OF 2
 FILE: BCD-D-FENCE1.DWG REVISED: 07/12/2023 DWG NO. GIR15



SLIDING CANTILEVER GATE NOTES

- LOCATION OF GATE OPERATOR SHOWN FOR REPRESENTATION PURPOSES ONLY. FINAL LOCATION TO BE DETERMINED BY MANUFACTURER. PROVIDE ADDITIONAL POST AND CONC SLAB AS REQ'D BY MANUFACTURER. OPERATOR DRIVE RAIL NOT SHOWN FOR CLARITY.
- GATE HEIGHT TO MATCH FENCE HEIGHT.
- SPACING AS REQ'D BY MANUFACTURER.
- PROVIDE AND INSTALL GATE PER ASTM F2200 SECTIONS 4 AND 6.

IRRIGATION SYSTEM STANDARD DETAIL
EXAMPLE CHAIN LINK FENCE AND GATE DETAILS 2 OF 2
 FILE: BCD-D-FENCE2.DWG REVISED: 07/12/2023 DWG NO. GIR16

RH2

PROFESSIONAL ENGINEER LICENSED STATE OF IDAHO DONALD G. POPPIT

SIGNED: 07/12/2023

PROFESSIONAL ENGINEER LICENSED STATE OF IDAHO OLGA A. POWERS

SIGNED: 07/12/2023

BLACK CANYON IRRIGATION DISTRICT

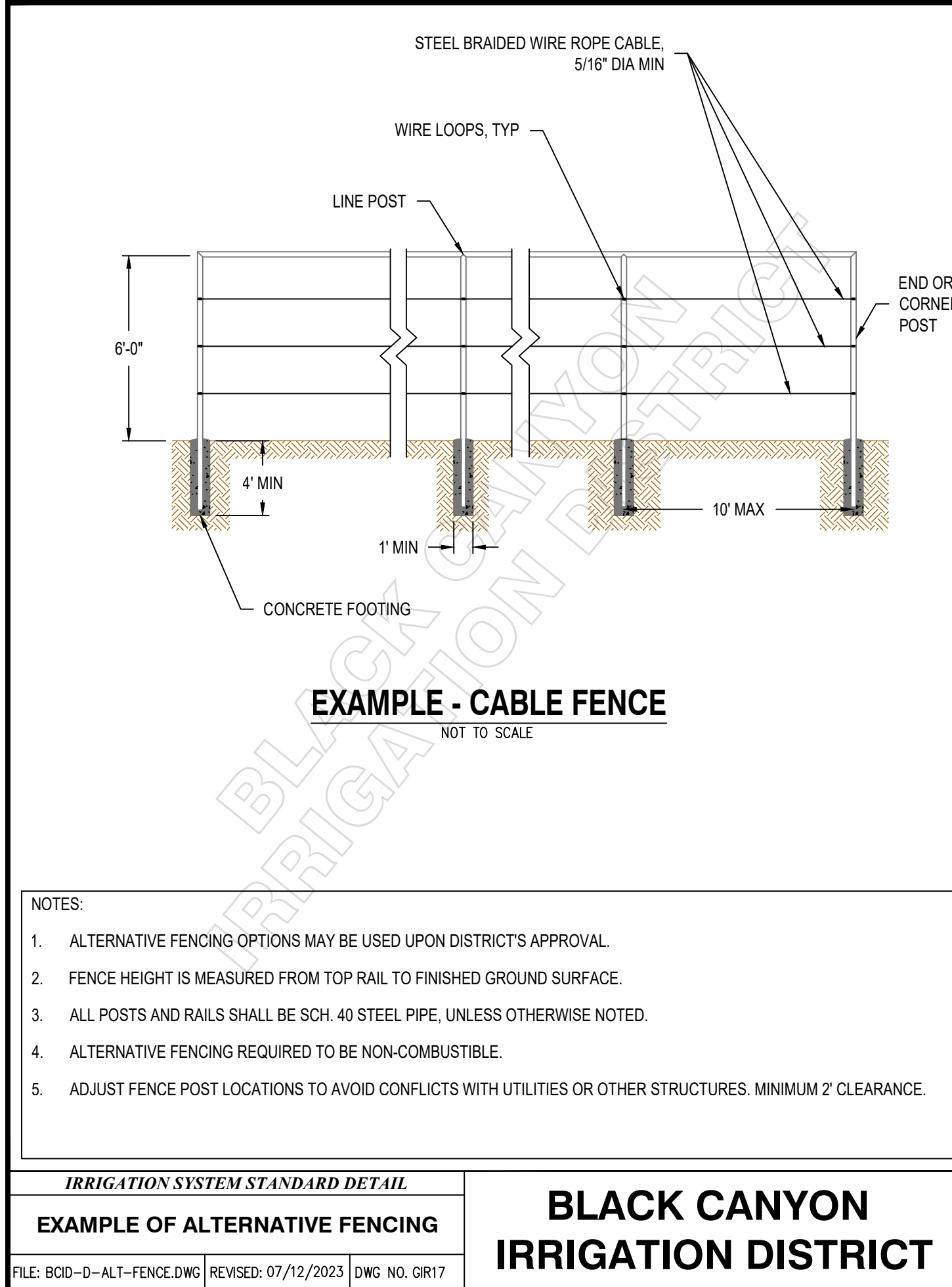
IRRIGATION STANDARD DETAILS

NO.	DATE	BY	REVISION

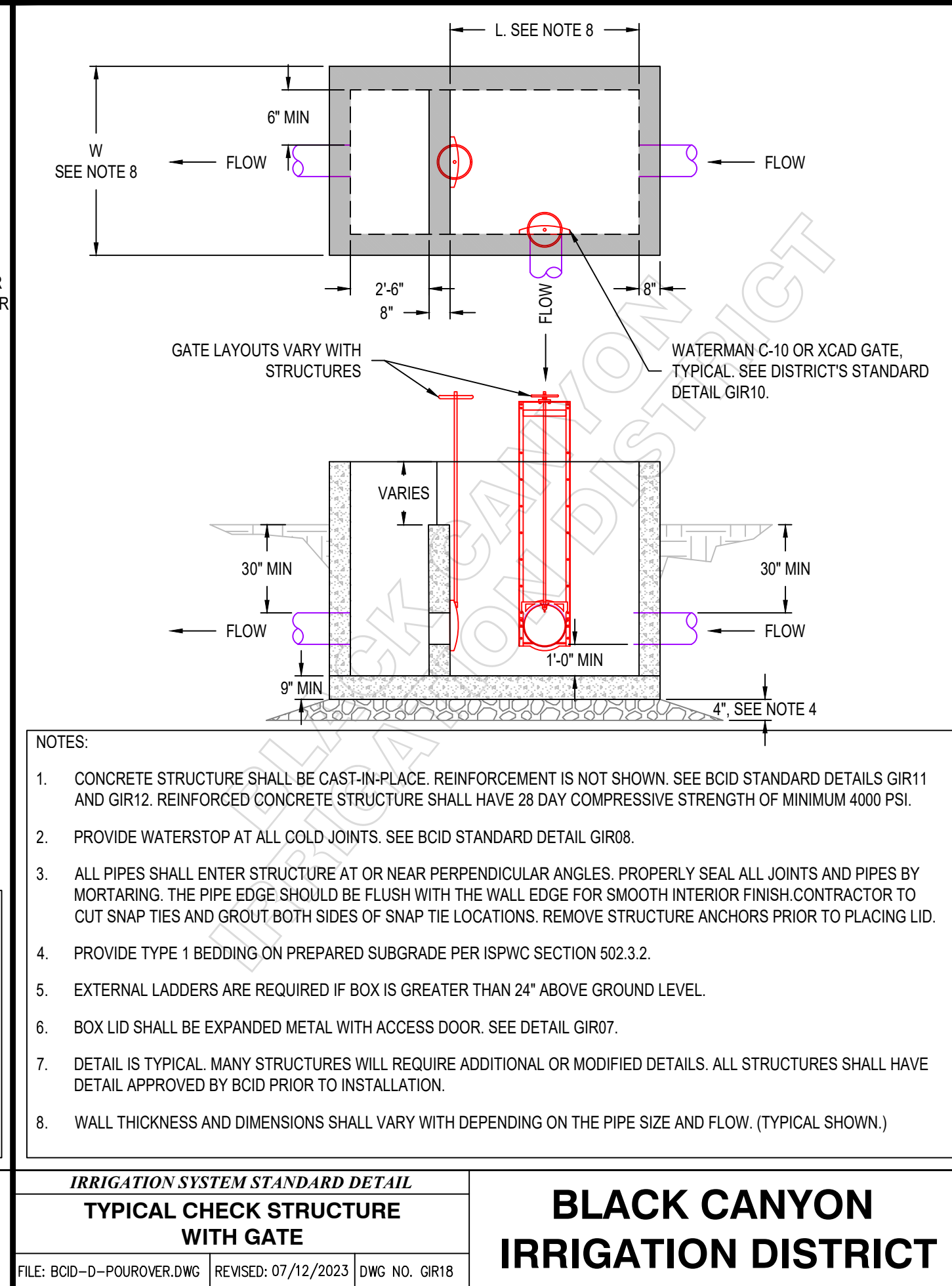
SCALE: SHOWN

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

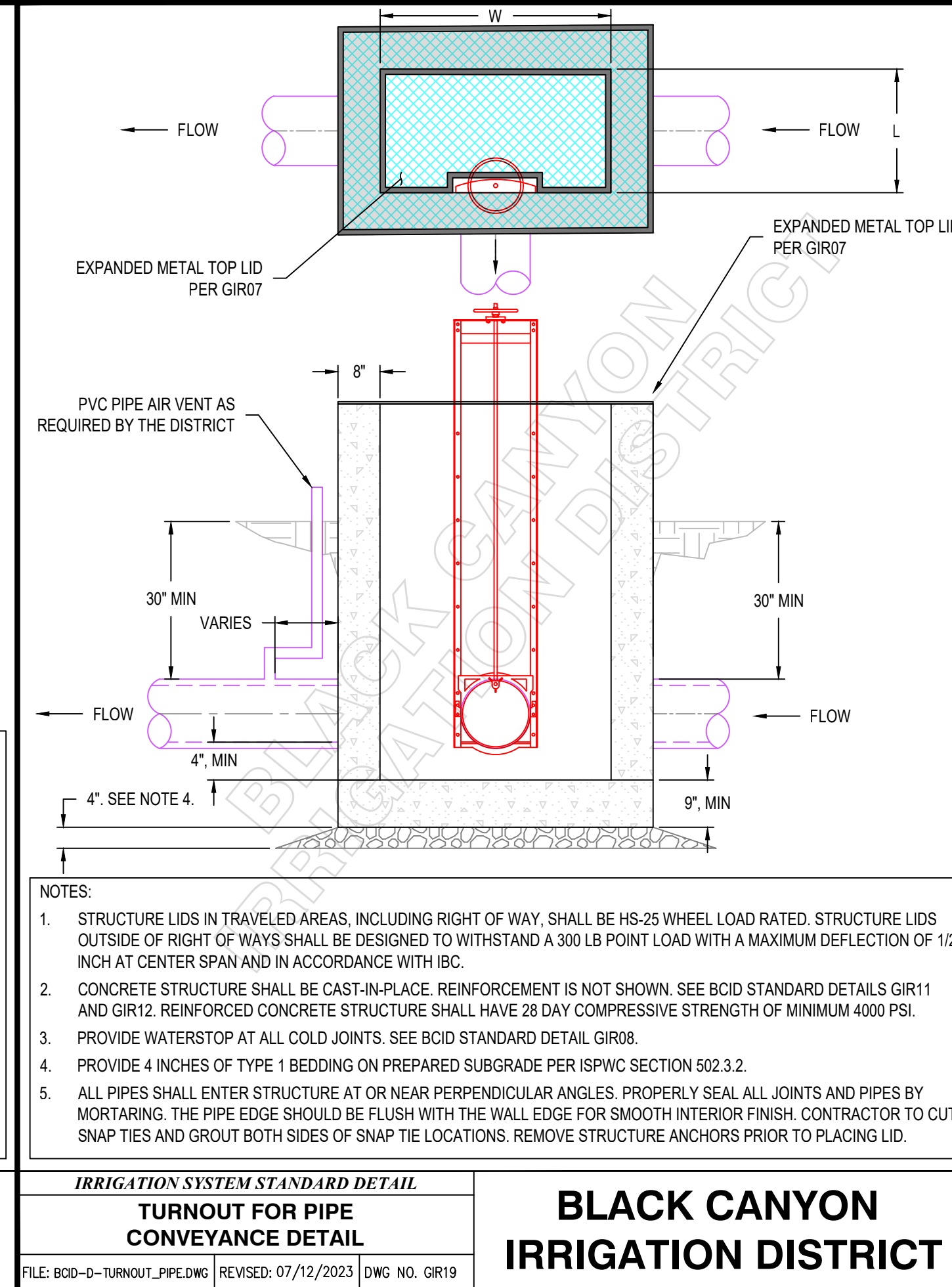
DWG NO.: D02 SHEET NO.: 2



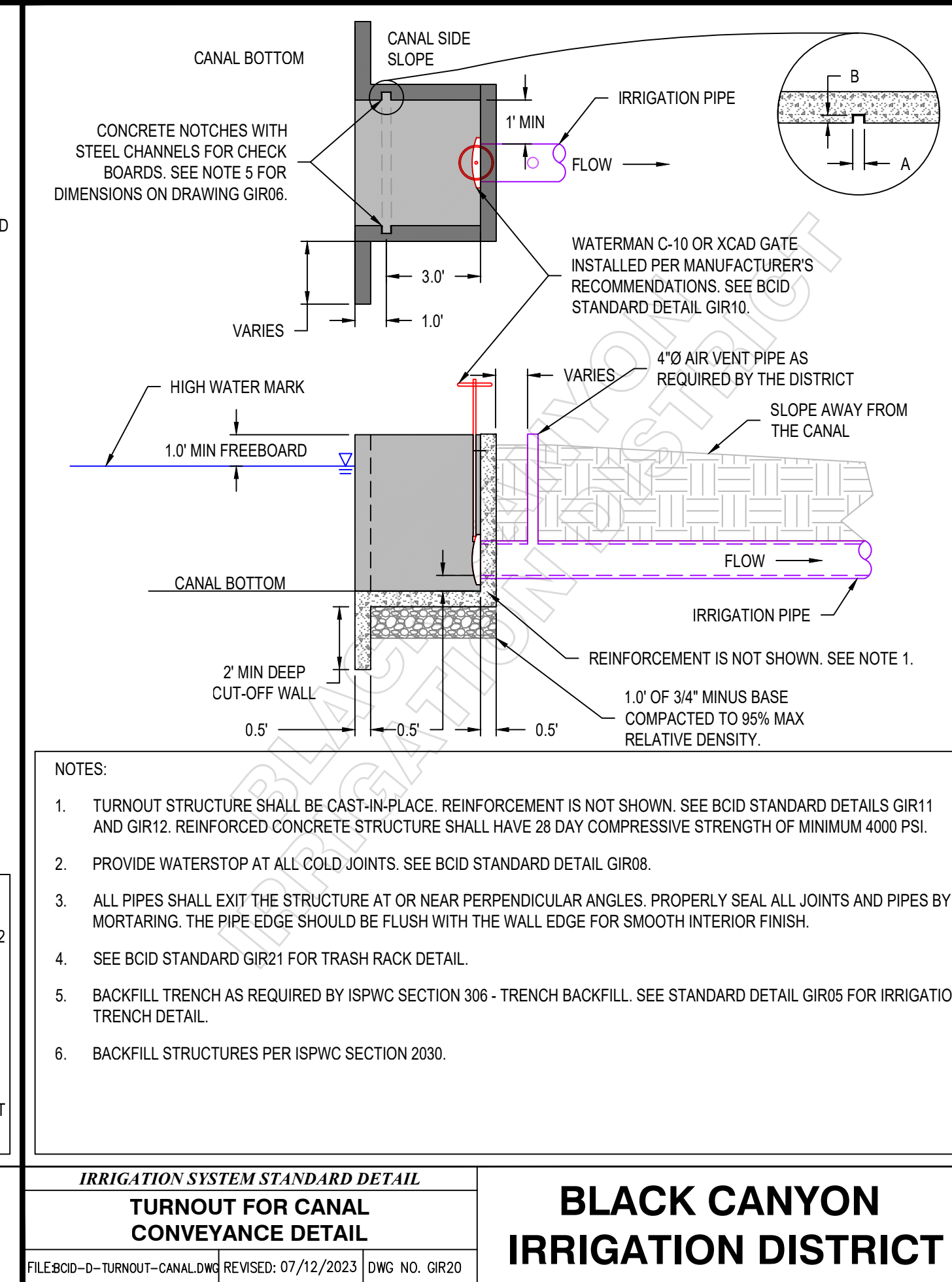
IRRIGATION SYSTEM STANDARD DETAIL
EXAMPLE OF ALTERNATIVE FENCING
FILE: B01D-D-ALT-FENCE.DWG REVISED: 07/12/2023 DWG NO. GIR17



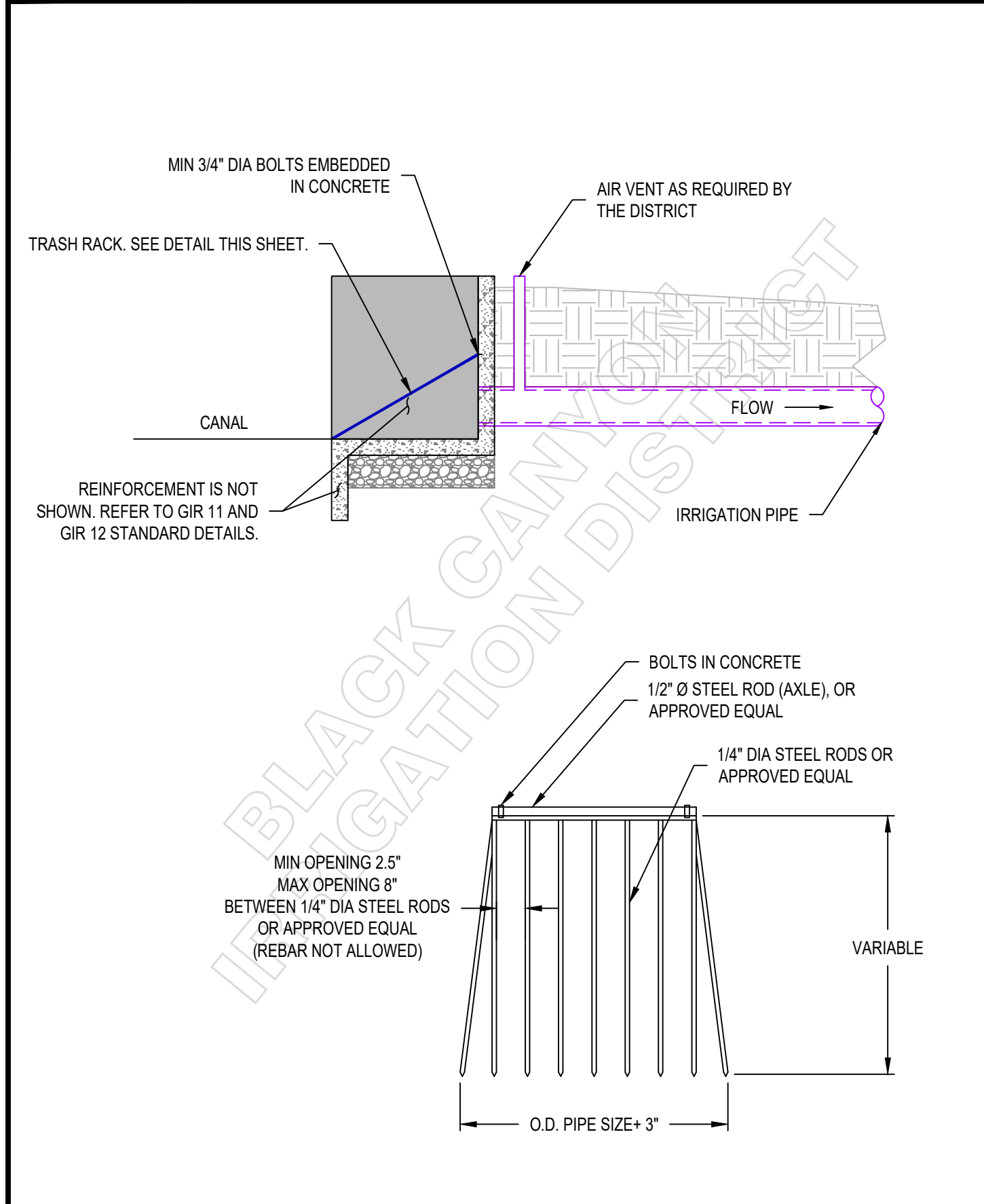
IRRIGATION SYSTEM STANDARD DETAIL
TYPICAL CHECK STRUCTURE WITH GATE
FILE: B01D-D-POUROVER.DWG REVISED: 07/12/2023 DWG NO. GIR18



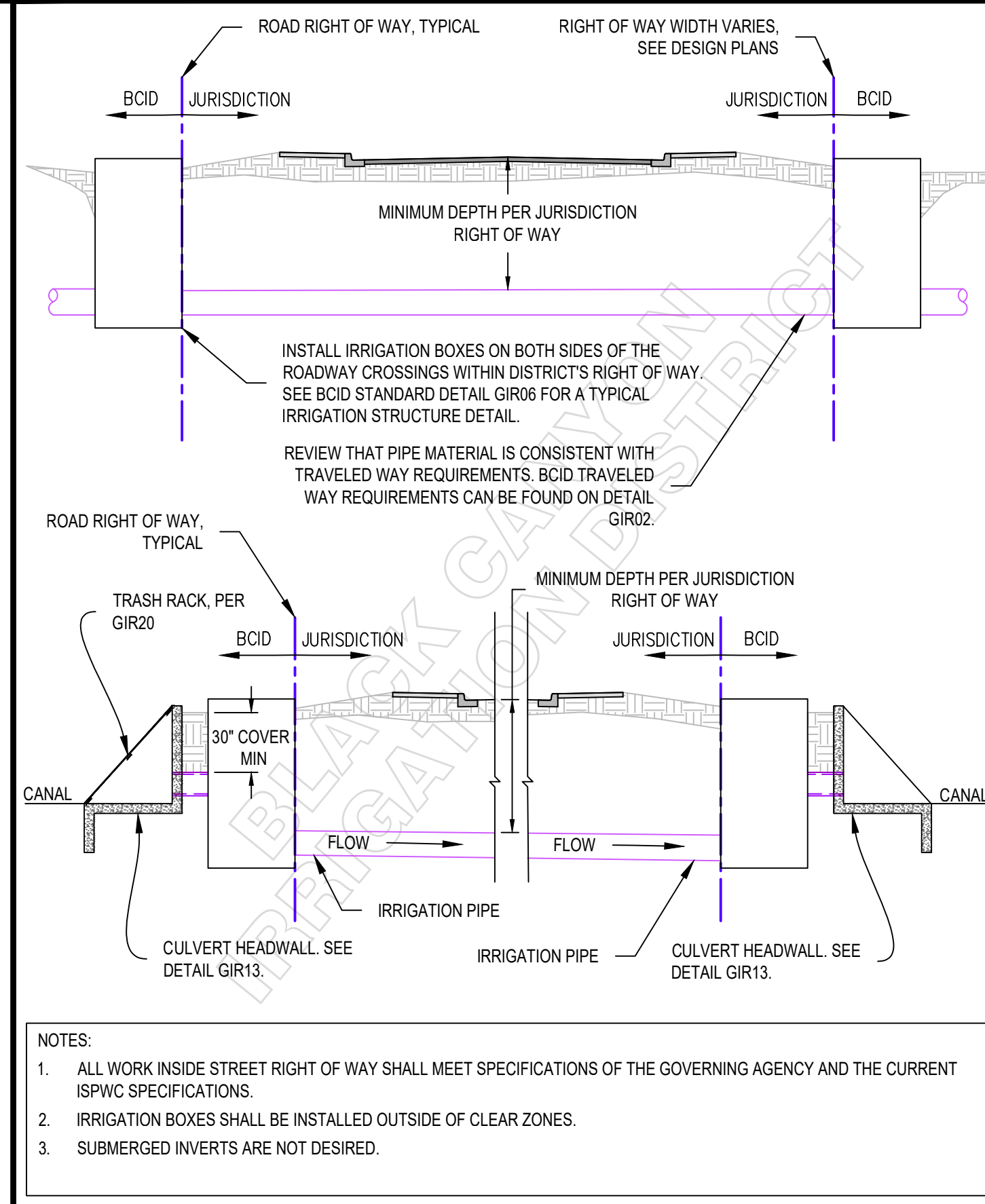
IRRIGATION SYSTEM STANDARD DETAIL
TURNOUT FOR PIPE CONVEYANCE DETAIL
FILE: B01D-D-TURNOUT_PIPE.DWG REVISED: 07/12/2023 DWG NO. GIR19



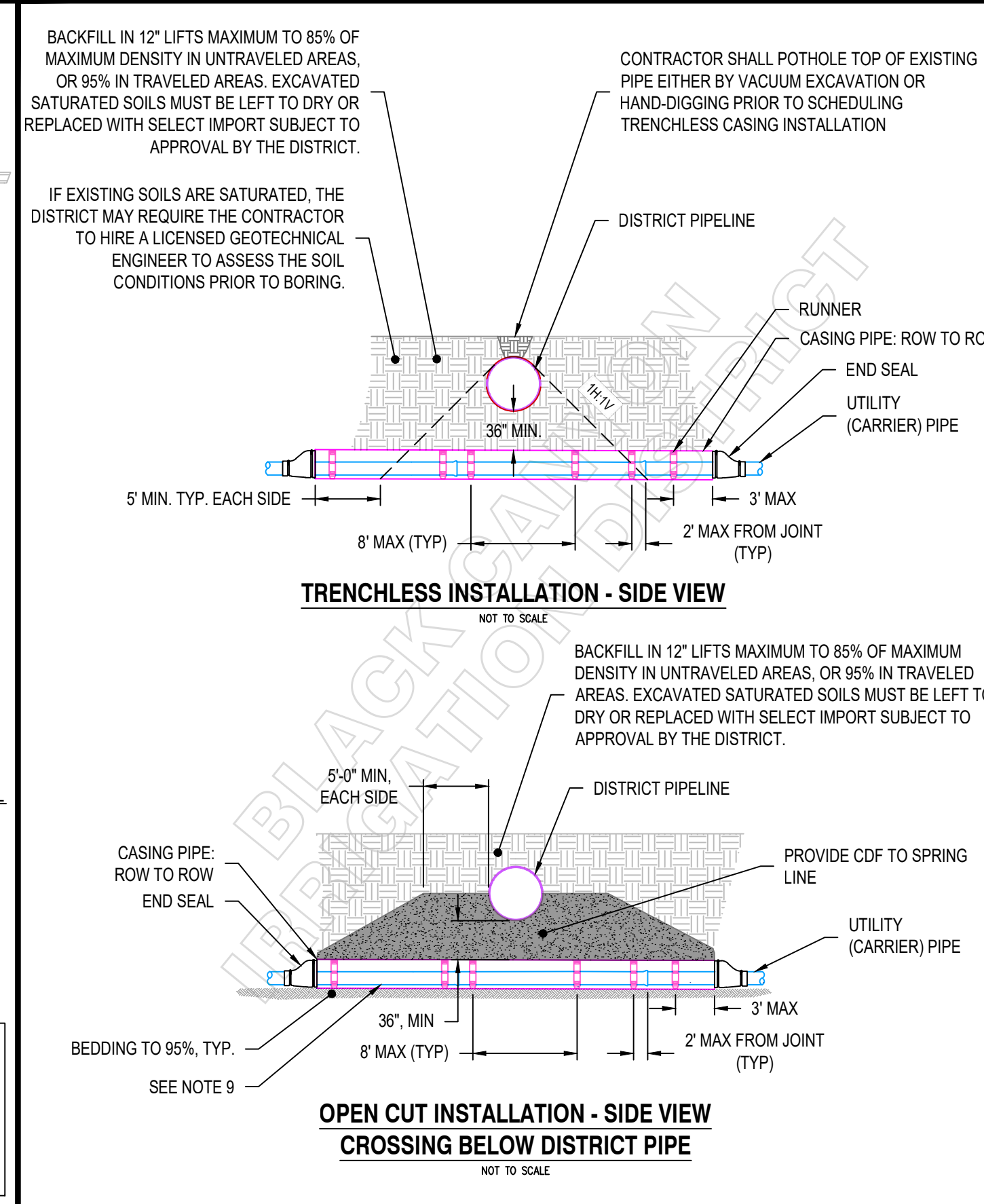
IRRIGATION SYSTEM STANDARD DETAIL
TURNOUT FOR CANAL CONVEYANCE DETAIL
FILE: B01D-D-TURNOUT-CANAL.DWG REVISED: 07/12/2023 DWG NO. GIR20



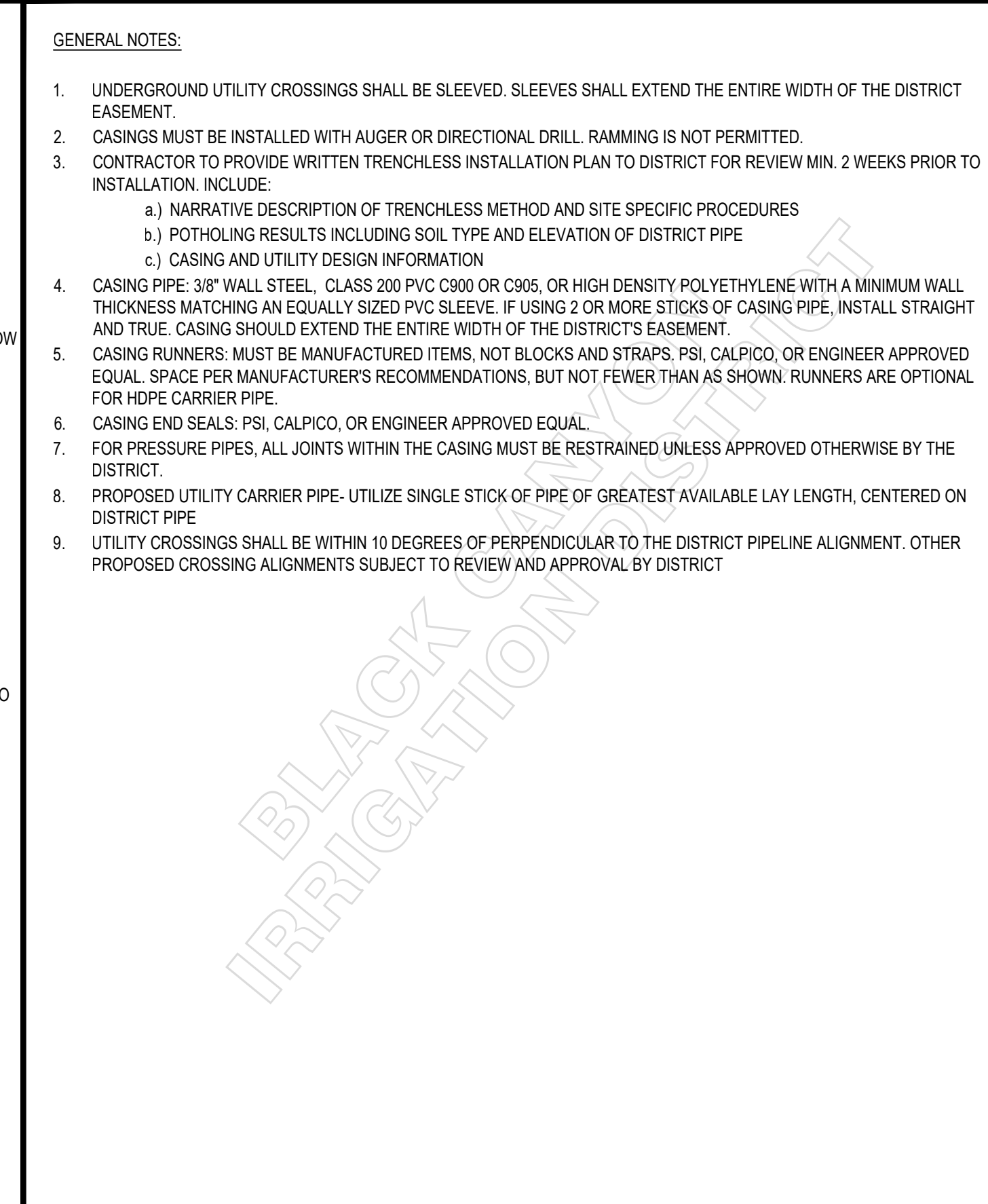
IRRIGATION SYSTEM STANDARD DETAIL
TRASH RACK / GRATE DETAIL
FILE: B01D-D-GRATE.DWG REVISED: 07/12/2023 DWG NO. GIR21



IRRIGATION SYSTEM STANDARD DETAIL
ROADWAY CROSSING DETAIL
FILE: B01D-D-ROAD_XING.DWG REVISED: 07/12/2023 DWG NO. GIR22



IRRIGATION SYSTEM STANDARD DETAIL
IRRIGATION PIPE CROSSING 1 OF 2
FILE: B01D-D-PIPE_XING1.DWG REVISED: 07/12/2023 DWG NO. GIR23



IRRIGATION SYSTEM STANDARD DETAIL
IRRIGATION PIPE CROSSING 2 OF 2
FILE: B01D-D-PIPE_XING2.DWG REVISED: 07/12/2023 DWG NO. GIR24

RH2

PROFESSIONAL ENGINEER
LICENSED
STATE OF IDAHO
DONALD G. POPOFF
19861
SIGNED: 07/12/2023

PROFESSIONAL ENGINEER
LICENSED
STATE OF IDAHO
OLGA A. POWERS
20351
SIGNED: 07/12/2023

BLACK CANYON IRRIGATION DISTRICT

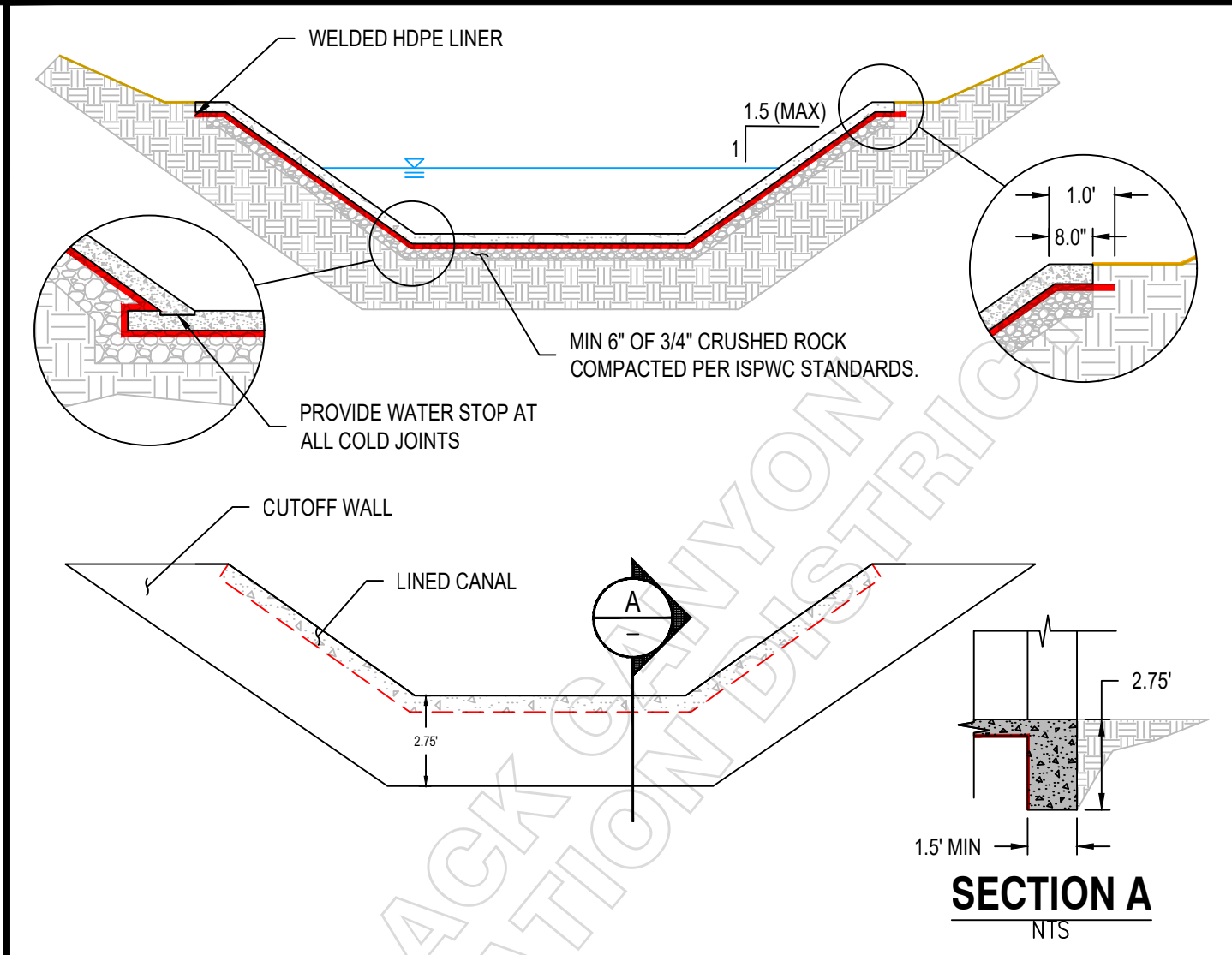
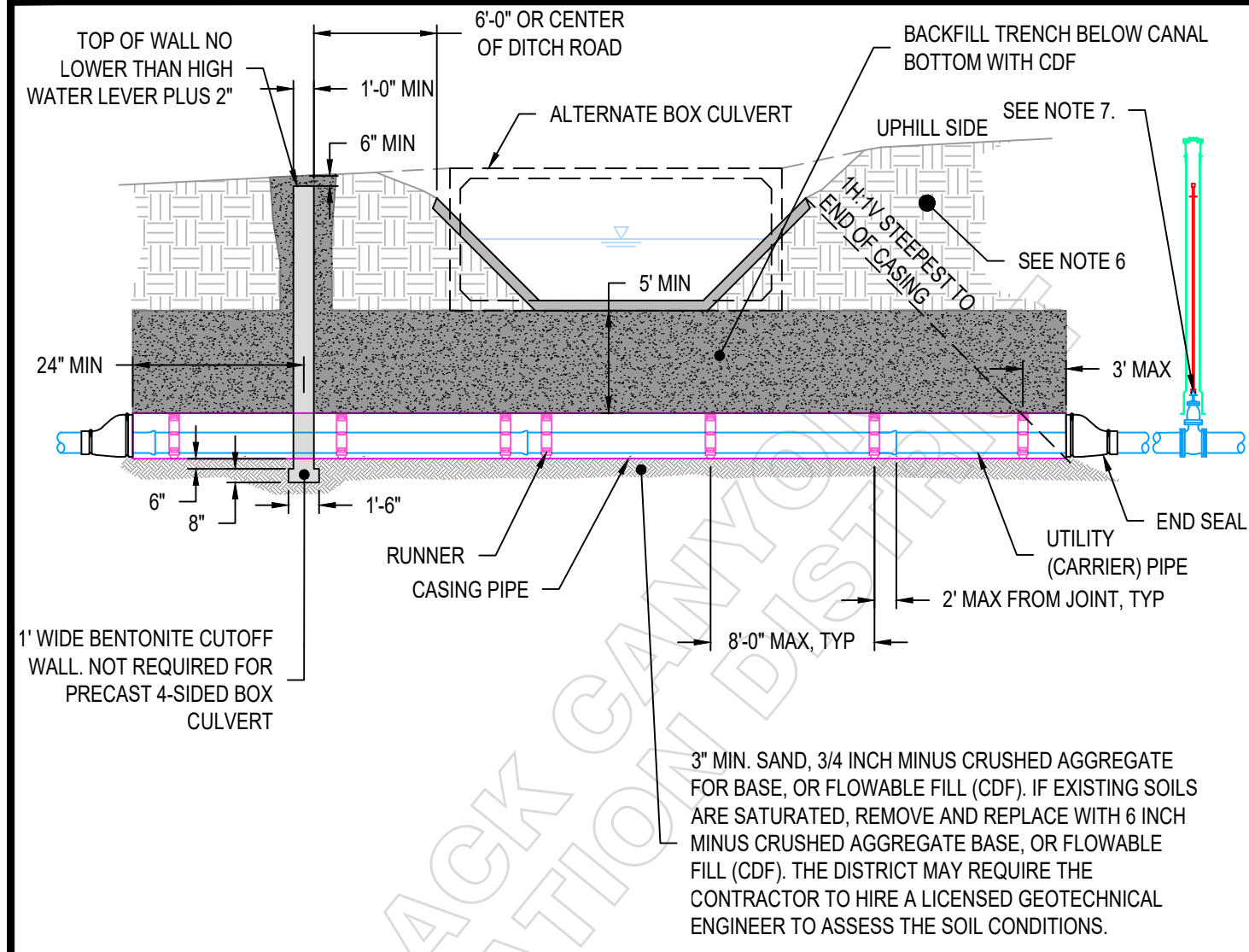
IRRIGATION STANDARD DETAILS

NO.	DATE	DESCRIPTION	BY	REVIEW

SCALE: SHOWN

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: D03 SHEET NO.: 3 OF 4



- NOTES:
- BACKFILL AND SUBGRADE SHALL BE COMPACTED TO MINIMUM 95% RELATIVE DENSITY.
 - REINFORCEMENT IS NOT SHOWN FOR CLARITY.
 - CONCRETE LINING SHALL BE POURED IN PLACE, AT MINIMUM 4 INCHES THICK. CEMENT SHALL BE TYPE II PORTLAND CEMENT. CEMENT SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
 - SHOTCRETE LINING MAY BE INSTALLED AS AN ALTERNATIVE TO CONCRETE LINING. DESIGN MIX SHALL BE PRE-APPROVED BY THE DISTRICT ENGINEER.
 - STRUCTURE TO LINING CONNECTIONS MAY REQUIRE REBAR DOWELS AS DIRECTED BY THE DISTRICT ENGINEER.
 - AQUALASTIC®, AQUASEAL™, OR AN APPROVED EQUAL SHALL BE APPLIED TO ALL EXPANSION JOINTS TO A MINIMUM 1 FOOT ABOVE HIGH WATER ELEVATION. AREA TO BE SEALED SHALL BE PREPPED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS PRIOR TO APPLYING COATING.
 - POLYPROPYLENE COATED MANHOLE STEPS SHALL BE INSTALLED IN THE CONCRETE LINER TO CREATE EXIT AREAS. EXIT AREAS SHALL BE A MAXIMUM 400 FEET APART. MANHOLE STEPS SHALL BE FIRMLY EMBEDDED AND SHALL WITHSTAND ASTM C-497 PULLOUT TESTING. STEPS SHALL BE ALIGNED VERTICALLY AND SPACED 12 INCHES VERTICALLY ON CENTER. MANHOLE STEPS SHALL BE PLACED NO GREATER THAN 16 INCHES FROM BOTTOM OF LINER AND NO GREATER THAN 24 INCHES FROM TOP OF LINER.

- CASING PIPE: 3/8" WALL STEEL, CLASS 200 PVC C900 OR C905, OR HIGH DENSITY POLYETHYLENE WITH A MINIMUM WALL THICKNESS MATCHING AN EQUALLY SIZED PVC SLEEVE. IF USING 2 OR MORE STICKS OF CASING PIPE, INSTALL STRAIGHT AND TRUE. CASING SHOULD EXTEND THE ENTIRE WIDTH OF THE DISTRICT'S EASEMENT.
- CASING RUNNERS: MUST BE MANUFACTURED ITEMS, NOT BLOCKS AND STRAPS. PSI, CALPICO, OR ENGINEER APPROVED EQUAL. SPACE PER MANUFACTURER'S RECOMMENDATIONS, BUT NOT FEWER THAN AS SHOWN.
- CASING END SEALS: PSI, CALPICO, OR ENGINEER APPROVED EQUAL.
- FOR PRESSURE PIPES, ALL JOINTS WITHIN THE CASING MUST BE RESTRAINED UNLESS APPROVED OTHERWISE BY THE DISTRICT.
- TRENCHLESS CASING INSTALLATION UNDER A BOX CULVERT MAY BE ALLOWED AT THE DISTRICT'S DISCRETION. IF ALLOWED, CASING MUST BE INSTALLED WITH AUGER OR DIRECTIONAL DRILL. RAMMING IS NOT PERMITTED.
- BACKFILL IN 12" LIFTS MAXIMUM TO 85% OF MAXIMUM DENSITY IN UNTRAVELED AREAS, OR 95% IN TRAVELED AREAS. EXCAVATED SATURATED SOILS MUST BE LEFT TO DRY OR REPLACED WITH SELECT IMPORT SUBJECT TO APPROVAL BY THE DISTRICT.
- FOR PRESSURE PIPES, INSTALL ISOLATION VALVE NO FARTHER THAN 100 FT FROM UPHILL SIDE OF CANAL.
- FIBERGLASS REINFORCED COMPOSITE UTILITY MARKING POSTS SHALL BE PLACED IN LINE WITH ALL OPEN CHANNEL UNDERGROUND UTILITY CROSSINGS OF SUPPLY FACILITY AT THE OUTSIDE EDGE OF THE FACILITY EASEMENT. MARKING POSTS SHALL BE LABELED "CAUTION BURIED [UTILITY]".

IRRIGATION SYSTEM STANDARD DETAIL

IRRIGATION CANAL CROSSING

FILE:8CID-D-CANAL_XING.DWG REVISED: 07/12/2023 DWG NO. GR25

BLACK CANYON IRRIGATION DISTRICT

IRRIGATION SYSTEM STANDARD DETAIL

CONCRETE LINED CANAL

FILE:BCID-D-CONC-LINED.DWG REVISED: DWG NO. GR26

BLACK CANYON IRRIGATION DISTRICT

RH2

PROFESSIONAL ENGINEER
LICENSED
STATE OF IDAHO
DONALD G. POPOFF

SIGNED: 07/12/2023

PROFESSIONAL ENGINEER
LICENSED
STATE OF IDAHO
OLGA A. POWERS

SIGNED: 07/12/2023

BLACK CANYON IRRIGATION DISTRICT

IRRIGATION STANDARD DETAILS

NO.	DATE	DESCRIPTION	BY	REVIEW
REVISIONS				

SCALE: SHOWN

0' 1' 2'

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: **D04** SHEET NO.: **4** / **4**