Alta Irrigation District – General Notes

General

G1. All construction within the Alta Irrigation District (AID) rights-of-way or easements shall be pursuant to the approved drawings, AID's current requirements, and the standard specifications of any applicable governing agencies.

G2. Construction within the AID rights-of-way or easements is prohibited during the irrigation season, unless AID provides written approval. The typical irrigation season spans from May through August. However, if there is a "wet" period, the season may extend from February to November.

G3. Contractor is responsible for providing a stormwater/uncontrolled runoff bypass during construction, unless AID provides written instructions to the contrary. The bypass plan shall be submitted to AID for approval before construction begins.

G4. If the plans or specifications provide only general descriptions of certain work without complete details, the contractor must follow best practices. All materials used must be of the highest quality, and workmanship must meet industry standards.

G5. AID's standard details may need to be modified based on specific site conditions. Any such modifications must be submitted to AID for written approval before construction starts

G6. Contractor agrees to assume sole and complete responsibility for the job site conditions during construction, including safety of all persons and property. This responsibility is continuous and applies 24 hours a day, seven days a week, not just during working hours.

G7. Contractor will adhere to Cal-OSHA safety regulations throughout construction. Additional safety measures must be taken when working near gas, oil, or electrical lines.

G8. Contractor will comply with California Government Code 4216, as applicable. This includes obtaining a Dig Alert identification number by calling 811 at least two (2) working days before any excavation begins.

G9. AID will not be responsible or liable for unauthorized changes or uses of the plans. Any changes to the plans must be made in writing, approved by AID, and authorized by the plan preparer.

G10. Contractor will schedule and attend a pre-construction conference with AID before beginning any work within AID rights-of-way or easements.

G11. Backfill and subgrades within AID rights-of-way and easements shall be compacted at least 90% of the maximum dry density, per ASTM D1557, unless AID provides other written instructions.

G12. A set of approved plans shall always be kept on the job site at all times during construction. Contractor will maintain a complete, full-size set of record drawings (22-inch x 34-inch) that is updated daily. Accuracy of these drawings must be ensured. Any revisions to the drawing

shall be hand-marked using the following color scheme: red for additions, green for deletions, and blue for comments.

G13. Contractor will exercise due caution in protecting existing facilities, especially pipelines, during construction. Contractor is also responsible for preserving bench marks, reference points and stakes. If these are lost or disturbed unnecessarily, the Contractor will cover all costs for their replacement or correction. Any damage to AID facilities during construction must be repaired or replaced, at the Contractor's expense, in a manner approved by AID.

G14. All disturbed soil and pipe bedding shall be compacted to at least ninety percent (90%) of maximum density. Contractor will be responsible for compaction tests and will provide all test results to AID and its engineer.

G15. The pipeline shall be bedded in sand from three inches (3") below the pipe to twelve inches (12") above the top of pipeline.

G16. Locator tape, labeled "Caution Irrigation Pipeline Buried Below," shall be placed on top of sand bedding or slurry backfill.

G17. The pipeline and appurtenances must be installed according to the details and elevations shown on plans approved by AID.

G18. Construction shall not interfere with the flow or distribution of water as required by AID. All improvements shall be designed and constructed in a manner to always allow flood flows to pass.

G19. Any work within the AID rights-of-way and easements is considered incomplete until AID receives a full set of record drawings in both hard copy and PDF form or another format as directed by AID.

G20. Contractor will contact AID at least two (2) working days before starting construction or requesting inspections. Construction work within AID rights-of-way or easements must proceed continuously once started. AID must be notified of any work stoppages, and two (2) working days' notice is required before work resumes. Additionally, AID must be contacted at least two (2) working days before any construction is scheduled on a holiday or weekend.

G21. All station locations shown on the plans are referenced to the centerline of the proposed structure, unless otherwise stated.

G22. AID must always have unrestricted access to the work site, whether the work is in preparation or in progress.

G23. It is intended that these plans and specifications require all labor and materials necessary and proper for the work contemplated and that the work be completed in accordance with their true intent and purpose. The Contractor will notify AID immediately regarding any discrepancies or ambiguities, which may exist in the plans or specifications. AID's interpretation or correction

thereof shall be conclusive. AID will have authority to reject work not conforming to plans and specifications.

G24. The Contractor will not leave any AID pipeline incomplete for more than two (2) weeks while the pipeline is "in use. If needed, and as determined by AID, the Contractor will provide a temporary diversion ditch to allow for irrigation water delivery or stormwater removal.

G25. ASTM C361 dual rubber gasketed reinforced concrete pipe (RGRCP), with appropriate wall thickness (Class 3 minimum) for the pressure and traffic loads, is required for AID concrete pipelines. Class 5 pipe is required for all road crossings. Contractor will submit factory test data to AID, verifying that pipe joints exhibit no leakage at hydrostatic pressures up to twenty-five feet (25'). Field tests shall be performed in the presence of AID or its authorized representative.

G26. Any bends and elbows shown on the approved plans are precast unless otherwise specified and must meet the relevant ASTM standards.

G27. Prior to backfilling, all irrigation pipelines installed for AID's use must be inspected and approved by AID's field inspector.

G28. See the table below for a listing of polyvinyl chloride (PVC) pipes approved for use within AID rights-of-way and easements.

Nominal Pipe Diameter (in)	Schedule 40[1]	SDR 26 (PS 115 psi)[2]	C900 Pressure Class 165 (DR 25)[3]
6	X	X	X
8	X	X	X
10	N/A	X	X
12	N/A	X	X
14	N/A	N/A	X
15	N/A	X	N/A
16	N/A	N/A	X
18	N/A	X	X
21	N/A	X	N/A
24	N/A	X	X
27	N/A	X	N/A

Notes:
1. Schedule 40 pipe shall conform to ASTM D1785 while fittings shall conform to ASTM D2466.
2. Gravity sewer pipe with a Pipe Stiffness of 115 psi, complying with ASTM D1784, D3034, D3212, & D3219.
3. Water pipe with a Pipe Stiffness of 129 psi, complying with ASTM D1784, D3139, & F477.
4. All pipes shall be manufactured from virgin rigid PVC vinyl compounds with a cell class of 12454 conforming to ASTM D1784.

Alta Irrigation District – General Notes

G29. Minimum cover over all pipelines shall be forty-two inches (42") unless otherwise directed by AID.

G30. Contractor will verify all dimensions on-site before starting work or fabrication. If conditions do not match the plans, the Contractor will notify AID immediately.

G31. Do not scale drawings. Always use the written dimensions, which take precedence over scaled measurements. The Contractor is responsible for verifying all on-site dimensions.

G32. All work shall be performed using material and methods pursuant to applicable sections of the current International Building Code (IBC), California Building Code (CBC), ACI 318, local codes and ordinances. Contractor will report any discrepancies to AID immediately.

G33. Any changes to the approved plans made without notifying AID in advance will release the District from any responsibility for liability, damage, or additional work resulting from those changes.

G34. Building permits, if required, must be obtained before starting construction.

G35. All material shall be new. No salvaged or previously used materials may be used unless explicitly approved in writing by AID's engineer.

G36. All excess material, debris, or both shall be removed upon completion of the installation.

G37. Contractor shall be responsible for any water that may flow in the irrigation facility or of construction area during installation.

G38. Contractor shall provide AID with locks and keys for all lockable facilities. Prior to ordering locks and keys, the Contractor will coordinate with AID on the specific requirements for these items.

<u>Encroachments</u>

EN1. All encroachments, including landscaping, within AID's easement shall be approved by AID.

EN2. Encroachment agreements are required for any existing or proposed encroachment within the current or requested AID easement.

EN3. AID may require that its easements, rights-of-way, and fee title property be fenced to AID standards. The need for fencing will be evaluated on a case-by-case basis, with the developer/landowner responsible for the cost of fencing.

EN4. Access gates and fencing that crosses AID right-of-way that do not impact AID operations and maintenance may be permitted under an encroachment agreement, subject to AID approval.

EN5. Any AID facilities located within a public road right-of-way must be relocated to a dedicated easement solely for AID's use, at the developer's cost.

EN6. Standard roadway widths shall be a minimum of fifteen feet (15') with greater widths required for larger ditches.

EN7. If an existing AID facility is not centered on the property boundary between two (2) properties, AID may require an easement width based on the distance from the centerline of the facility.

Cast-In-Place Concrete

C1. Unless directed otherwise by AID, concrete shall have a minimum 28-day compressive strength of 4,000 psi. Cement shall be ASTM Type II Portland Cement and be free of lumps and partially set masses. It must be proportioned to include no less than six (6) sacks of cement per cubic yard of concrete and have a maximum water-cement ratio of 0.45. Water must be free from acid, alkali, oils, and organic matter. Aggregate must be clean, hard, and strong and durable, and free from dirt and other substances deleterious to concrete. The fine and coarse aggregates must be well graded and approved by AID. The maximum aggregate size must not exceed ¾-inch and must comply with ASTM C33.

C2. Concrete consistency must allow it to be placed without segregation. The slump shall not exceed four inches (4"). Forms shall be properly braced and/or tied together to maintain position and shape and be sufficiently tight to prevent concrete leakage.

C3. All vertical concrete surfaces shall be poured against forms in all cases. Concrete shall not be dropped from a height greater than four feet (4') unless suitable equipment is used to prevent segregation. Concrete shall be vibrated horizontal lifts of eighteen inches (18"). Concrete shall not be moved horizontally over five feet (5') with a vibrator. Concrete consolidation shall be done using internal mechanical vibrators or other methods pre-approved by AID.

C4. All cast-in-place concrete structures shall be fully formed inside and out. Concrete shall be vibrated sufficiently to ensure smooth, void-free surfaces on walls and floors without any honeycombing.

C5. Follow the hot and cold weather guidelines for concrete placement as specified in NRCS Construction Specification 901.

C6. All slabs shall be sloped to allow drainage of runoff water to prevent ponding.

C7. All concrete walkways shall have a broom finish.

C8. Concrete shall be prevented from premature drying for a curing period of at least seven (7) days after placement. Exposed surfaces shall be kept continuously moist during this period. If water curing is not used, the concrete shall be sprayed with a curing compound pre-approved by AID. All surfaces shall be kept moist until the compound is applied.

C9. Construction joints shall be placed as shown on the plans or as pre-approved by AID. The surface under the wall must be roughened while still wet to minimum depth of 1/8 inch. Clean and remove all Entire surface under wall to be roughened while wet, to 1/8-inch minimum amplitude/depth. Joints shall be thoroughly cleaned, and all laitance removed before each

new pour is made. Each joint shall be wetted immediately before the placement of new concrete. See AID details for new construction joints and connection to existing structure.

C10. Chamfer all exposed edges of concrete structures with a one inch (1") or three-quarter inch (3/4") bevel, extending six inches (6") below finished grade, unless otherwise specified.

C11. All structure subgrades, forms, and steel reinforcement shall be inspected and approved by AID prior to concrete placement or backfill. Backfill shall not occur until seven (7) days after concrete placement.

Reinforcing Steel – General

RS1. All rebar shall be grade 60.

RS2. All steel reinforcement shall comply with ACI-318. Splices and hooks shall be staggered and lapped in accordance with ACI-318.

RS3. Reinforcement in slabs shall be located at the slab center unless otherwise specified.

RS4. All reinforcing bars shall be free of excessive rust, mud, oil, and grease.

Reinforcing Steel – All Openings

RS5. Install additional horizontal and vertical reinforcement above, below, and on each side of openings. The additional reinforcement area shall be equal to the steel area cut by the opening and shall be evenly divided on each side of the opening. All cut bars shall be cut two inches (2") away from the opening.

RS6. Place additional bars within two (2) wall thickness of the opening (increase bar size as required). Maintain a minimum clearance of two inches (2") between bars. If the opening is within one (1) wall thickness of an intersecting (perpendicular) slab or wall, the additional reinforcement near the intersection may be omitted.

RS7. For openings less than twelve inches (12") in diameter or width, no additional horizontal and vertical reinforcement is needed. However, install additional diagonal bars or hoops around circular openings as specified in Note RS11, below.

RS8. For minimum lap lengths, refer to AID Steel Reinforcement detail. Rebar shall be extended into adjacent walls or slabs as needed to meet lap length requirements. Refer to AID details for hook requirements.

RS9. Reinforcement shall be placed in the center of walls and slabs unless specified otherwise.

Reinforcing Steel – Circular Openings Only

RS10. Install additional horizontal and vertical reinforcement as specified in Note RS5, above.

RS11. Install either diagonal bars or hoops as follows:

a) Diagonal Bars: Install four (4) diagonal bars per mat of steel. Diagonal bar size shall match the largest bar size in the wall or slab. Diagonal bars may be bent and lapped with adjacent bars near intersecting slabs, walls, or other obstructions.

b) Hoops: Install one (1) hoop per mat of steel. Hoop size shall be one bar size greater than the largest bar size in the wall or slab.

Concrete Lining

CL1. All waterstops shall have a minimum cover of three inches (3") on all sides.

CL2. Backfill and subgrades shall be compacted to a minimum relative density of ninety percent (90%) per ASTM D1557. Manual compaction shall be performed a minimum of twelve inches (12") over the top of pipe or as directed by AID.

CL3. Control joint depth shall be a minimum of ¼ of the lining thickness and ¼ inch wide as shown in the Control Joint Detail. These joints shall be located every ten feet (10') in the transverse and longitudinal directions and approximately twelve inches (12") above the bottom radius on both sides (see Details).

CL4. Transitions

a) Concrete Lined Canals: Sawcut the existing lining at a location approved by and directed by AID. Underlap existing lining a minimum of six inches (6") under the sawcut edge (both sides and bottom) as shown Details. Any damage to the existing concrete lining will require repair or replacement as directed by AID.

b) Earthen Canals: New lining side slopes shall match existing canal side slopes unless otherwise directed by AID. Side slopes shall be no steeper than 1 ½ : 1 (horizontal:vertical) unless pre-approved by AID. Side slopes shall be feathered back to match the existing canal banks for a distance of ten linear feet (10') upstream and downstream of the concrete lining transition, or as directed by AID. Rip rap or concrete slope protection shall be installed as directed by AID.

CL5. Concrete transitions are sections of concrete lining located on either side of a concrete structure. These sections typically extend five to twenty feet (5 to 20') beyond the structure and shall have a minimum thickness of six inches (6"). Use the same concrete mix design as concrete lining. The concrete lining, which is thinner than the transitions, begins at the end of the transition area.

CL6. Concrete lining shall be poured in place, at minimum four inches (4") thick. Cement shall be Type II Portland Cement. Lining concrete shall have a minimum 28-day compressive strength of 3,000 psi and a maximum slump of three inches (3"). The maximum water-cement ratio is 0.45. Concrete shall be prevented from drying for a curing period of at least seven (7) days after placement. Exposed surfaces shall be kept continuously moist for the entire period, or an approved curing compound shall be applied after finishing at a rate of one gallon (1 gal) per

one hundred fifty square feet (150 ft^2). Reinforcement shall be fibermesh "MD" at two pounds per cubic yard (2 lb/cy) of concrete. Welded wire fabric is not permitted.

CL7. All cold joint interfaces between concrete surfaces shall be filled with backer rod and Sikaflex 1A elastomeric sealant or pre-approved equivalent. Concrete shall cure for at least seventy-two hours (72 hrs) before applying sealant. Clean out joint gap prior to sealant placement and apply product according to manufacturer's requirements. Sealant shall completely fill the joint. If approved by AID, seal the joint by using a bristly brush to blend new concrete into the existing lining instead of using an elastomeric sealant.

CL8. Shotcrete lining may be installed as an alternative to concrete lining. Design mix shall be pre-approved by AID.

CL9. Connections between structures and lining may require rebar dowels as directed by AID.

Mortar Mix

MM1. AID standard mortar mix must be thoroughly dry-mixed before adding water.

MM2. Use a soft bristle brush to bond the mortar with existing concrete.

MM3. All mortared joints and repairs exposed to sunlight must be wrapped in plastic to prevent cracking.

MM4. Curing time shall be a minimum of forty-eight hours (48 hrs).

MM5. AID's standard mortar mix consists of:

a) One 94-lb bag of Portland cement

b) Seven full shovels of sand

c) Two full shovels of fireclay

MM6. AID approved standard drying mortar mix shall be consistent with AID's standard mix. Approved manufacturer mortar mixes shall have a drying time of no less than forty-eight hours (48 hrs).

MM7. Follow manufacturer's requirements for surface preparation.

MM8. When using AID approved products for standard and quick drying mortar mixes, follow all manufacturer's instructions for creating a smooth, sealed bond.

Canal Gate

CG1. Canal gate to be Fresno Valves and Castings series 6400 Model 20-10C slide gate with a galvanized frame and a non-protruding stem, flatback mount only.

CG2. All pipes entering the headwall shall do so at or near perpendicular angles to the headwall.

CG3. All cold joints require a six-inch (6") center bulb water stop embedded in the center of the wall at cold joint locations per manufacturer's recommendation. See AID standard details.

CG4. Gate frame shall be securely bolted to concrete structure with stainless steel bolts. Top anchors shall be installed within eight to twelve inches (8" to 12") below the top of wall. If existing bolted locations on the gate frame do not meet this requirement, use the predrilled holes on the gate frame. Field drilling of gate frame is not permitted.

CG5. Properly seal all headwall joints and pipes by mortaring. Use a soft bristle brush to blend the mortar with the concrete. Refer to AID's standard detail.

Turnout Appurtenances

TA1. All turnouts shall be equipped with a DuraMag flanged magnetic flow with a remote display mounted in a NEMA rated enclosure, conforming to AID's requirements, on the north side of the turnout, unless AID provides written approval to the contrary.

TA2. Eccentric reducers, if required, shall be installed on either side of the minimum required straight pipe runs connected to the upstream and downstream sides of the flow meter. Concentric reducers are not permitted.

TA3. Flow meters shall be placed in concrete vaults with traffic rated lids capable of withstanding H-20 loading conditions. Vault lids shall be spring assisted with a hinge system capable of securely locking out each vault leaf when fully open. Vault lid shall include oversized, recessed padlock hasp to securely lock the lid.

TA4. All turnouts shall be equipped with a three-inch (3") diameter T-vent conforming to AID's standard details. Vents shall be secured to the turnout pipeline with an epoxy coated or stainless-steel multi-strap tapping sleeve. Acceptable outlets on the tapping sleeve are ductile iron or stainless-steel flanges.

TA5. AID will determine the sizes of the flow meters and vaults. Placement of these items will be determined in the field by AID.

TA6. Below are minimum acceptable dimensions for cast-in-place turnouts with an overall height less than seven feet (7'). Letters in the top row of the table below are references to dimensions on AID standard turnout details.

Alta Irrigation District – General Notes

Standard Dimensions for Cast-in-Place Turnouts in Alta ID

Nominal Diameter (in)	(A) Overall Width (in)	(B) Min. Inside Wall to Inside Wall Width (in)	(C) & (F) Min. Wall Thickness (in)	(D) Inside Wall to Gate Frame (in)	(E) Min. Floor Thickness (in)
12	56	40	8	12	8
15	60	44	8	12	8
18	64	48	8	12	8
21	66	50	8	12	8
24	70	54	8	12	8
≥ 36	By Design				

Notes:

1. Minimum rebar size and spacing is #4 at 12 inches on-center, both ways.
2. All rebar shall be Grade 60.
3. Values in table are limited to turnouts with an overall height not greater than seven feet (7'). Turnouts with an overall height greater than seven feet (7') shall be designed by a registered professional engineer in good standing with the State of California.
4. All turnouts with a slide gate diameter greater than or equal to thirty-six inches (36"), regardless of height, shall be designed by a registered professional engineer in good standing with the State of California.
5. Precast turnout acceptable variances include the following: minimum wall thickness, 6"; minimum floor thickness, 6"; and inside wall to gate frame, 8"

Miscellaneous Metals

ML1. All bar grating on structures shall be McNichols GW-175 1¾" x 3/16" galvanized steel bars spaced at 1 3/16" centers with cross bars at 4" centers. The maximum span shall be six feet (6'). Add support beam(s) as required to avoid exceeding the maximum span. Grating shall be banded on all sides, including notched areas.

ML2. Support angle and grating shall be manufacturer-notched for slide gate frames; field notching is not permitted. Provide a minimum clearance of two inches (2") between the gate frame and banded edges.

ML3. Bolt the frame and grating to the structure with half inch (½") diameter x six inch (6") galvanized anchors and clips at each corner.

ML4. Provide removable (bolted down) grating section on upstream side of the control structure (maximum 2' width).

ML5. The portion of the grating at a control structure shall be located over board slots and equipped with hinged panel(s) that open one hundred eighty degrees (180°). The leading edge of each hinged panel, opposite of the hinges, must be fully supported when closed.