

Arnold Irrigation District Development Handbook



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Introduction

Arnold Irrigation District was first organized as a private company under the name Arnold Irrigation Company on December 27, 1904 by W. Arnold, T.O. Harshman and J.J. Reed and became official on January 9, 1905, when P.I. Dunbar, Secretary of State of the State of Oregon at that time, certified that said Articles of Incorporation had been filed and recorded, that the name assumed by said corporation was Arnold Irrigation Company, the duration perpetual, the business: to acquire, buy, own, sell or improve any real estate or water rights; to construct flumes and canals for irrigation purposes and do a general irrigation business.

In 1936, elections were held to re-organize the Arnold Irrigation Company into the Arnold Irrigation District, a quasi-public entity under the laws of the State of Oregon. The amount of capital stock was \$5,000 and location of its principal office was in the town of Lytle, in Crook County.

Three other small irrigation companies, the Pine Forest Ditch Company, the Bend Company and the North Irrigation Company, all later absorbed by the Arnold Company, took delivery of water via the main canal of the Arnold Irrigation Company. Water was diverted from the Deschutes River a few miles south of Bend and carried through the Arnold canal for the lands to be irrigated south and east of that city. Shares of stock in the company were sold to land owners on a commission basis.

The North Irrigation Company was incorporated December 12, 1908 by John W. White, Edward Brosterhous and Fred A. Hunnel. The Pine Forest Irrigation Company was organized November 2, 1908 and articles of incorporation were signed by W.J. McGillvary, C.D. Rowe and Cora A. Ferguson. No record could be found of when the companies merged and became one under the Arnold Irrigation Company.

The Arnold Irrigation Company filed on the natural flow rights in the Deschutes River on February 1, April 15, and April 25, 1905. Filings of the Arnold Irrigation Company were 23rd and 24th in numerical order on the Deschutes River. Important prior filings were made by the Deschutes Reclamation (Swalley Ditch), the Central Oregon Irrigation Company (Crescent Lake) and by the Cline Falls Company for irrigation and power.

On September 22, 1906, the Arnold Irrigation Company by a majority vote of the stockholders, increased its capital stock from \$5,000 to \$6,000. On October 5, 1912, supplementary articles of incorporation were filed by W.J. McGillvary, Ed Brosterhous, Chas. Sipchen, W.F. McNaught and L.D. Wiest, duly elected, qualified and acting directors of the Arnold Irrigation Company and adopted by 3/4 vote at a meeting of the stockholders held at the company office in Bend. The Capital stock was \$10,000 the number of shares was 100, each having a par value of \$100.00.

Construction of the company's canal was begun on or about April 1, 1905 and continued through 1910. The engineering features on the company's canal consisted of a wood flume about 1 1/2 miles long, 12 feet wide and 3 feet deep, the same being of sufficient size to convey water for 12,000 acres of land. The total cost to that date, including the 2 subsidiary companies, was upwards of \$90,000. Water for irrigation purposes from the Arnold system was first furnished on or about June 1, 1911 and continued thereafter, weather permitting.

The exact acreage or area included in the original organization was not definitely learned. In the 1934-35 Bureau of Reclamation report on Deschutes investigations by C.C. Fisher, the following statement concerning the Arnold Irrigation Company is found: "According to the Deschutes Board Report of 1922 the irrigation area of the project was then 16,500 acres of which rights had been sold to approximately 8,500 acres with 3,000 to 4,000 acres in crops". In the Deschutes River Decree of February 10, 1928 by the Circuit Court of Deschutes County, and modified by the Oregon Supreme Court, the Arnold Irrigation Co. was allotted a diversion right of 150 second-feet from the Deschutes River for the irrigation of 9,232 acres.

In about 1920, water supply for the Arnold during the summer was limited, especially after prior rights were supplied. In 1922, the North Canal Company constructed a log crib dam on the Crane Prairie site to test storage possibilities. The reservoir created thereby was partially filled in 1923 and '24, however leakage through the dam was excessive and in 1930 the Arnold Irrigation Company assisted in the repairs of the dam and in 1932 shared in the water stored. The water stored in the reservoir was obtained through a temporary agreement with the Pacific Power & Light Company, which had prior rights to the non-irrigation season flow at Bend. Leakage through the dam was still excessive and in 1939 the Bureau of Reclamation signed a contract with the Central Oregon Irrigation District agreeing to reconstruct Crane Prairie with a reservoir capacity of 50,000 acres-feet.

The work on Crane Prairie Dam was complete in 1940 and water was stored in the reservoir that year. The Central Oregon Irrigation District in turn entered into an agreement with the Arnold Irrigation District and others, whereby the Arnold Irrigation District was to receive the second 10,500 acre-feet stored in Crane Prairie reservoir plus 1/5 of the storage above 35,000 acre-feet. For this the Arnold Irrigation District agreed to pay 27% of the construction cost.

In 1959 the Arnold directors approved the final payment to the Central Oregon Irrigation District for the 27% share of the construction cost of Crane Prairie Dam in the Amount of \$3,337.16. There was no further work done on the Crane Prairie Reservoir construction and the obligation was declared repaid in full in 1960.

By 1947 the main flume, constructed of untreated lumber, was in imminent danger of complete failure. An emergency program of rehabilitation was authorized by the Interior Department Appropriations Act, 1948. Robert W. Sawyer, owner of The Bend Bulletin, was instrumental in securing this emergency appropriation for the Arnold Irrigation District.

In 1948 the District entered into a repayment contract with the Bureau of Reclamation in the amount of \$210,000, to be paid in 35 annual installments for the construction of the main canal flume and reconstruction of the diversion dam and canal work. The Bureau of Reclamation replaced the old structure with a semicircular steel flume on creosoted timber supports and concrete foundations. The work started in October 1947 and was complete in May 1951. In 1953 a modified repayment contract was executed reducing the obligation by \$8,996 paid by the North Unit Irrigation District, toward the cost of repairs on the Arnold diversion dam, based for the reason that increased flow in the river released from Wickiup caused partial destruction of the rock fill in the dam resulting in decreased efficiency of the diversion structure.

The main Arnold canal, originally 17 miles in length, has been reduced to a present length of 14 miles. In the 14 miles of main canal there were 6 wood flumes varying in length from 250 feet to 876 feet. Some of the names have changed and over time have been converted to siphons, cuts or eliminated altogether. They were/are the Huntington (name changed to the Blakely/Powers, along Powers Rd; no longer in use), Suttong (converted to a

siphon and still in use), Fry(converted to a rock cut; still in use), Slack(name changed to the Ladera/Knott siphon; still in use), Stennick (name changed to the Barrett Siphon; still in use), and Billadeau (name changed to the Dillon Siphon; still in use).

Prior to 1953, approximately 27 miles of laterals served the Arnold Irrigation District of 4,292 acres and there were 10 wood flumes, varying in length from 72 feet to 1,903 feet. They were designated by the following names: Gilliland, O'Donnell, Pilot Butte, Trotter, Roberts, Mills, Northwest Blakely, Southwest Blakely, Conway and Nelson. Some of these flumes were old and need replacing. The cost estimate was \$151,000. The District, rather than going into more debt, decided to proceed with the work, using their own funds. Under the capable supervision of Kenneth Slack, Manager of the District during these years, many of the flumes were replaced with landfills and concrete pipes. In 1959, however, it was necessary to secure a loan from the Bureau of Reclamation to replace the Suttong and a portion of the O'Donnell flume. The sum of \$38,000 was made available to the District for the work on these two flumes. The construction payment to the Bureau was based on a normal and percentage plan, with the base set at \$1.15 per acre.

1.1 Purpose

This manual was developed to guide readers through the design and construction of facilities on or near the District's easements and rights-of-way, and provides guidelines for the proper crossing and piping of District easements and canals. The Policies contained herein apply to the development of irrigated lands or lands containing District facilities or easements. Unless otherwise defined, capitalized terms used in this manual are set forth in the Definitions section (Section 2).

1.2 History of Water Rights and Easements

In the late 1800s, Congress passed a set of laws encouraging the colonization of the arid western United States. Upon showing that it was possible to irrigate the land sufficiently to sustain agricultural enterprises, 13 states entered into sales contracts with the Secretary of the Interior Department of the United States. These land grants were conditional upon irrigation companies building the canals and infrastructure that would deliver the water necessary to cultivate and settle the areas. In 1899 the State of Oregon officially adopted this concept and contracted with irrigation companies to operate under specific rights and responsibilities.

The irrigation companies delivered water to settlers to cultivate their land and thus gain ownership of those acres from the U.S. Government. The irrigation companies were granted the federal rights-of-way necessary to maintain and service the lands with water by and through their irrigation system easements.

The rights-of-way on District main canals and large laterals generally reach 50 feet on each side of the marginal limits of the waterway, or outer edges of the canal berms. In the case of small laterals, the District generally holds 50 feet on each side. However, the right-of-way varies with the amount of water carried in that part of the system and may have been modified according to need over time. The District's rights-of-way are nonexclusive rights for the District to use the encumbered lands to serve District patrons with irrigation water. Private owners may also use the land, so long as such use does not interfere with the District's use of the subject property. In some instances, the District owns the underlying property as well.

The District is the best source of definitive records and dimensions of the District's easements, indexed by parcel. Title reports within the District's boundaries cite to the District's authority, but do not specify the dimensions of the easements. The surest way to define specific District easements is to consult the District directly.

All District easements are reserved for the operations and maintenance of District infrastructure. Any encroachments on District easements, crossings of District ditches or pipelines, or other uses of District roads, ditches, and pipelines require prior written approval from the District. No encroachments, crossings, or other uses will be allowed that in any way interfere with District use.

1.3 General

Following the District Standards and Specifications set forth below shall be required of all parties performing work within District easements or rights-of-way, and shall be incorporated in and made a part of any contract for the design, construction, alteration, or relocation of District-owned and maintained facilities (the Work). These Standards and Specifications shall be updated periodically and, as such, all persons should be sure they are working with the current set of Standards and Specifications. Updated Standards and Specifications will typically be issued annually on January 1.

Minimum general standards shall be as set forth in the current Oregon Department of Transportation – Oregon Standard Specifications for Construction 2008_Volume 2 as modified herein.

The following provisions are minimum construction standards for Work performed by Developers that may affect District facilities:

- Developers must submit plans and specifications for all work within or near District easements and rights-of-way, and for any irrigation or irrigation crossing facilities, to the District for review and approval prior to any construction.
- The Developer shall not commence operations on site until the District has approved the construction plans, all fees have been paid, all associated District agreements have been executed, and a pre-construction meeting has been held.
- The design and construction of all proposed facilities shall be in conformance with District Standards and Specifications.
- Because the District's system may ultimately be converted to pressurized service, all proposed and replacement system pipelines shall be pressure rated. The Oregon Department of Transportation (ODOT) water system provisions and structure provisions (Parts 00400 Drainage and Sewers, 00500 Bridges, and 01100 Water Supply Systems) shall be most generally applied to District system improvements.
- The Developer shall be responsible for any faulty material and workmanship for 1 year from the date of the District's formal acceptance of the Work. The District's acceptance shall be in writing.
- The Developer shall comply with all terms and conditions of applicable governmental rules and regulations pertaining to the Work.
- Workmanship and materials not meeting District Standards and Specifications shall be deemed a violation of the Standards and Specifications and may result in an immediate suspension of the Work. When an authorized representative of the District suspends the Developer's activities, all work shall cease on the subject project until the violation is corrected. Only the specific representative that suspended the Work is authorized to release the project for continuation.

1.4 Intergovernmental Jurisdiction

District improvements often fall within the jurisdiction of several governmental agencies; for example, the City of Bend, Deschutes County, ODOT, and other irrigation districts. When multiple jurisdictions are involved, it is the responsibility of the Developer to coordinate with and gain the appropriate approval from the appropriate governmental agency. It shall be the responsibility of the Developer to verify approval with those agencies prior to commencing work. Failure to verify approval might result in the immediate suspension of all work.

Definitions¹

Acre Foot: The measurement of water volume; the amount of water necessary to cover an acre of land, one foot deep.

Appurtenant: ‘Belonging to.’ Water rights are appurtenant to a specific piece of ground. The District is required to keep records of appurtenant water rights. (See also Dominant Parcel, Benefitted Parcel.)

Burdened Parcel: The land bearing the burden of an easement. (See also Servient Parcel.)

Canal: A waterway or improved river used to supply water for irrigation.

Contiguous: That which touches or connects, including that which only connects or touches a common point; the touching together of two or more tracts of land that lie alongside one another or that touch or connect with one another for any length or distance whatsoever, no matter how finite.

Deschutes River Corridor: All property within 100 feet of the ordinary high water mark of the Deschutes River or as defined by the City of Bend’s Waterway Overlay Zone.

Design Engineer: A Licensed Professional Engineer, typically hired by a developer, with primary responsibility for design of facilities (both irrigation and non-irrigation infrastructure), in or near AID easements or rights-of-way.

Developer: A term used in this handbook in a broad general sense to mean all third parties who propose and/or undertake a project that may affect District facilities, together with all related parties such as their agents, representatives, contractors, etc. Where appropriate, “Developer” also means the successors in interest to the original Developer, such as landowners and homeowner associations.

Development Irrigation Plan (DIP): A written plan submitted to and approved by the District describing the use of District water rights as part of new development. This may be either a plan to move water on or off the land. See Section 8.

Diversion: Man-made structures that are or may be used to deflect or divert water from a river or stream into a conduit or impoundment, or canal.

Dominant Parcel: A parcel of real property that has an easement, or a right of use, in another piece of property. (See also Appurtenant, Benefitted Parcel.)

Duty: (See Rate & Duty.) A measurement increment to determine volume of water properly delivered to a parcel or lot.

Easement: A property interest held by one party to make use of another's real property for a defined purpose.

Headgate: Valve comprised of a plate that slides over a canal, lateral, or sublateral opening to measure water delivery. Headgates may be adjusted and locked.

Lateral: A partial diversion of a canal or pipeline, used to deliver water to outlying areas.

Lot: A unit of land that is created by a subdivision of land.

Lot area: The total surface area (measured in square feet of horizontal area) within the boundary lines of a lot.

Lot coverage: All covered areas of a lot or parcel that prevent absorption of water by irrigation and resulting plant growth.

Lot depth: The horizontal distance between the front and the rear lot or parcel lines. In the case of a corner lot the depth shall be the length of the longest front lot or parcel line.

¹ For additional definitions related to water resources, see the administrative rules for the Oregon Water Resources Department found at OAR Chapter 690, Division 300 (http://arcweb.sos.state.or.us/pages/rules/oars_600/oar_690/690_300.html).

Lot line: Any property line bounding a lot or parcel.

Lot line adjustment: The boundary adjustment between lots or parcels by relocating a common boundary that does not change the number of lots or parcels.

Lot of record: A lot or parcel legally formed and recognized by applicable government jurisdiction.

Maintain: To cause or allow or continue in existence. When the context indicates, the word shall mean to preserve and care for a structure, improvement, condition, or area to such an extent that it remains attractive, safe, legally compliant, and presentable, and carries out the purpose for which it was installed, constructed, or required.

Open space: Any parcel or area of land (whether or not watered) set aside, designed, or reserved for the public or private use specifically for the purpose of providing places for recreation, conservation, or other open space uses.

Ordinary high water mark (OHWM): The elevation of bank-full stage of a stream or river; this term may be explicitly defined on a particular parcel or lot.

Parcel: A unit of land created by a partitioning of land.

Plat: A final map, diagram, drawing re-plat, or other writing containing all descriptions, specifications, locations, dedications, provisions, and information concerning a subdivision or partition of land.

Point of Delivery: The place at which water is delivered or transferred to the individual user or users from the District facility.

Quit Claim: A deed that transfers (conveys) only that interest in the property in which the grantor has title.

Pipeline: A District water conveyance facility—generally located underground or beneath an earthen berm.

Rate and Duty of Water for Irrigation: The maximum flow of water in cubic feet per second or gallons per minute (instantaneous rate) and the total volume of water in acre-feet per acre per year that may be diverted for irrigation; a means of measuring water delivery in accordance with Oregon law.

Right-of-way: Land that is owned by the public or a governmental agency or government franchisee for transportation, utility, and irrigation facilities.

Riparian Area: An area of land where water (annual, intermittent water, or a high water table) and wet soils influence vegetation, wildlife, and microclimate.

Riparian Corridor: An area within and adjacent to a water body or stream that includes water areas, fish and wildlife habitat, wetlands, and riparian vegetation and other resources.

Servient Parcel: The plot of land that bears the burden of an easement granting use for the benefit of another (appurtenant). (See also Burdened Parcel.)

Setback: The minimum allowable horizontal distance from a given point or line of reference, such as a property line, to the nearest vertical wall or other element of a building or structure.

Sublateral: A diversion or portion of the water contained in a lateral.

Summer Irrigation Flows: The flow of water between May 15 and September 14.

Swale: A stormwater facility; a broad, shallow depression used to provide a required volume of onsite storage for stormwater, typically using plants that filter and process contaminants.

Tail water: The water run-off during irrigation from either flows or storage that travels beyond an irrigator's property line onto the land of another or the public.

Tract, private/public: A piece of land in an approved partition or subdivision that is set aside in a separate area from the created lots or parcels for dedication to the public, a homeowners' association, or other entity (for example, commonly for open space, recreation, sensitive lands, private streets, etc.).

Transfer: The act of conveying or turning over possession of water or water rights to another, in the context of a water transfer.

Water-dependent: A use or activity that can be carried out only on, in, or adjacent to water because the use requires access to the water body for water-borne transportation, recreation, energy production, or source of water.

Water-related: Uses that are not directly dependent upon access to a water body or stream, but that provide goods or services directly associated with water-dependent land or waterway use. Except as necessary for water-dependent or water-related uses or facilities, residences, parking lots, spoils and dump sites, roads and highways, restaurants, businesses, factories, and trailer parks are not generally considered dependent on or related to water location needs.

Water Right: The requirement of a water user to have an area of irrigation equivalent to the size of water rights. For example, 1.5 acres of water right = 1.5 acres of area being irrigated.

Weir: An instrument for measuring water as it is delivered through a slot of standard width with varying height, such as a dam placed across a river or canal to raise or divert the water or regulate its flow.

District Easements

3.1 Easements

3.1.1 General Easement Information and Applicable Law

It is unlawful to interfere with District headgates or use water denied by the Watermaster or other authority (ORS Chapter 540.730 through 540.990). This means that it is unlawful to open, close, change, or interfere with any headgate, pressurized irrigation service, or water box without authority, or to conduct water into or through a ditch, pipeline, or other water conveyance system of the person who has been lawfully denied such water rights. No person shall obstruct the use of the works, or prevent “convenient” access thereto. This includes, but is not limited to, fencing, storage sheds, and unapproved gates that do not meet the District standard of electronic gates with automatic openers allowing unlimited District access. The District is, however, willing to work with those who wish to improve lands. The District must maintain its easements, clear and unobstructed, for operations and maintenance of its facilities.

3.1.2 Water Deliveries and/or Facilities

The District has both federally and state-granted easements for its facilities, easement widths differ throughout the District. Federally granted easements within the District are maintained at 50 feet on each side of the facility. Because of the variability in their size, it is best to contact the District directly with regard to easement dimensions for any specific location. District easements or their widths may not be specified on title reports. Title companies usually refer generally to irrigation district easements, policies, and regulations to alert readers of such rights on parcels or lots. Deschutes County no longer diagrams District easements on newer tax maps. This practice created confusion, because easements may or may not appear on title reports that rely on such maps.

New service locations or requests to relocate deliveries from the District’s irrigation delivery system must be officially requested by the landowner or patron. Requests must be made to the District office and shall be accompanied by a property map of appropriate scale and detail to delineate the desired delivery point from the District’s system. The District will evaluate the request based on a variety of factors, including but not limited to available water rights, system delivery capacity, property or easement constraints, canal/ditch bank integrity, safety concerns, or adjoining lateral connection options. The District reserves the right to deny service at any location requested, modify requests, require additional construction measures, or to require an alternate option or service location.

District easements shall clearly be depicted on plans and include a “District Easement” label and an easement statement by the District. It is District policy not to share District easements or other rights-of-way, with the exception of perpendicular crossings approved by the District. Easement widths shall also be shown on construction plans and plats. The full length of the easement shall be depicted where applicable, including over public rights-of-way.

3.1.3 Private Irrigation Deliveries

It is District policy to preserve private irrigation deliveries; that is, delivery of irrigation water conveyed to a point from which water conveyance and distribution for beneficial use is owned and managed by others (not the District). Similar to District easements, many private irrigation delivery easements will not show up on county records or title reports. The District will require delivery easements to be incorporated into construction plans for subdivisions or land divisions and shown on plats with “Irrigation Easement” labels. Delivery through development to neighboring properties shall meet with District approval. (For Developments Wanting to Retain Water Rights see Section 4.1.2.)

3.1.4 Easement Access Control

The District may require a Developer to provide an approved electronic gate to be placed on land adjacent to a District easement or facility, to safely restrict public vehicular access to the District's easement and facilities. These gate(s) will be funded by the Developer and approved prior to the District signing construction plans. The Developer shall provide drawings or information on the types of gates to be installed and the location where they are to be placed. Installation shall be coordinated with the District. The maintenance of the approved gate shall be the responsibility of, or arranged by, the Developer to the satisfaction of the District. This may include homeowner association responsibilities in the form of modified Covenants, Conditions, and Restrictions (CC&Rs).

All gates will be installed by a District-approved contractor or professional. The Developer assumes all costs associated with the agreement recording costs, installation, maintenance, and repairs of the gate. All maintenance and repairs will be the responsibility of the Developer. If a gate malfunctions or is not properly maintained, the District has the right to coordinate repairs at the cost to the Developer. If the gate is of continuing failure, the District has the right to remove the gate and revoke the gate agreement in its entirety after a 10-day notice to the Developer.

All gates will be equipped with District standard solar powered units. Where joint road use exists, gates shall have separate open/close frequencies: one for the District, and one for the Developer, if necessary. For safety reasons, gates must be installed at a minimum distance of 70 feet off public rights-of-way to allow for truck and trailer length. Accommodations for emergency services will be given as necessary. All gates shall be 16-foot heavy duty Powder River type or an approved equivalent (decorative gates will be allowed upon approval of the proposed gate). Gates must be mounted to 6- inch steel casing posts set in concrete.

If the Developer requests that a gate be installed, the request will be reviewed and evaluated on a case- by-case basis. The District must evaluate the effect the request will have on the District. The request must not interfere with the District's needs and cannot interfere with the canal infrastructure or future uses of the system. If a request is approved, a gate agreement will be prepared by the District that includes the terms and conditions, and must be executed in front of a Notary Public by the Developer and a District representative, being the District Manager or Manager-appointed individual. This agreement will be recorded in the Deschutes County records and will be appurtenant to Developer's property. The gate will need to be installed to the aforementioned standards.

3.1.5 Developer Construction Requirements and Documentation

All Developers and Contractors working within District easements shall be required to immediately provide hard copies of all AID easements and AID-issued permits related to the affected parcel, at any time during the work, upon request by District staff. Copies of all easements and permit documentation shall be maintained onsite with the Site Superintendent, or other person designated by the Contractor. The Developer shall confine its construction operations to within the easement limits or street right-of-way limits, or make special arrangements with the affected property owners for the additional area required. Any damage to private property, either inside or outside the limits of the easements provided by the Developer's Design Engineer, shall be the responsibility of the Developer. Before acceptance of the work by the District, the Developer shall be required to furnish the District with written releases from property owners where side agreements or special easements have been made by the Developer or where the Developer's operations, for any reason, have not been kept within the construction right-of-way obtained by the Developer.

All facilities requiring centerline or other legal easement descriptions shall comply with the following:

1. All easements shall be typed on plain white 8-½ x 11 standard paper, one easement per sheet and two copies of each easement, or submit electronic copy acceptable to the District, using Microsoft Word, that contains the easement description.
2. All easements shall be submitted with a map showing where the easement is located in relation to the site plan.

Developing Lands with Water Rights

4.1 Water Rights

4.1.1 Development of Lands with Water Rights

The policy contained herein applies to the development of all irrigated lands within the District, or lands containing District facilities.

1. **Mandatory Water Right Transfers/Exclusion.** Oregon law (ORS 545.101) requires that when a subdivision is platted, if the subdivision has three or more tracts on each acre of land within the subdivision, the subdivision shall be excluded and removed from the District for irrigation at the time the plat is approved by the appropriate governing body.
2. **Exceptions to Mandatory Transfers/Exclusions.** There are two exceptions to the rule for mandatory water right transfers/exclusions. Transfer/exclusion is not required where 1) the District also supplies domestic water approved by the Health Division to the subdivision (this item not applicable to AID), or 2) the District agrees to supply water to the subdivision. It is up to the sole discretion of the District whether or not it will agree to supply water to a subdivision.
3. **Submission of Subdivision or Partition Plat to District.** Oregon law requires that the plat of a proposed subdivision or partition located within the boundaries of the District be submitted to the District and that the District certify whether the water right on the subdivision or partitioned land is to remain on the land, or if it is to be transferred from the land. This District recommends use of a Development Irrigation Plan (DIP) to assist with early planning of such changes. A standard DIP package is supplied in Appendix D. At the latest, upon submission of the plat, a meeting shall be held between the Developer/sub-divider and District to 1) determine whether the water right is to be transferred, and 2) determine the necessary conditions of the transfer. The District's Board of Directors shall be the final authority as to the transferability and the service conditions. There will be a fee for the submission and review of a plat of a subdivision or partition. Please see the "Fee Schedule" for current fees.
4. **District Ownership of Water Rights.** Water rights are held in the name of the District and appurtenant to the lands from which the water right is to be transferred. Any proposed transfer shall be subject to the approval of the District and subject to any conditions the District may deem appropriate and necessary for such a transfer. Conditions are imposed to ensure the continuing sustainability and operation of the District for the benefit of its patrons and in accordance with state and federal laws and agreements.

4.1.2 Developments Wanting to Retain Water Rights

This policy applies to the development of irrigated lands in the District whose owners wish to retain water rights.

1. **Delivery System.** (See Easements above.) If water rights are to be maintained by the development (complete with assignment rights, easements, headgates, designated points of delivery, and measuring devices), a delivery system must be installed for each parcel (or lot) for only the area that will be irrigable. The remaining water rights shall be transferred off the developed land in accordance with law. Each delivery shall be installed or plans approved with installation estimates paid prior to the District signing construction plans. (As per ORS 545.279, the District will require all new deliveries to be measurable and controlled by a headgate.)
2. **Statement of Rights.** If quitclaimed water rights are still appurtenant (not approved for transfer by the Oregon Water Resources Department [OWRD]) at the time of platting, the District will require a water right statement to be placed on the plat that clearly identifies that the water right is appurtenant to the property until the water right transfer is complete. It is the Developer's responsibility to contact the office at time of platting to acquire the water rights statements. If there are intentions to use irrigation on developing lands, there may be a requirement for a DIP, or an Irrigation Contract will need to be completed before plans can be signed. (Please see Section 8.)

3. **Partitions.** If land is being partitioned and there are to be water rights on one or more parcels with independently approved deliveries installed, there shall be a label on the plat for each parcel representing the acreage amount totals and acres to be irrigated indicated. The District may also require recorded private easements of no less than 20 feet in width across parcels located between the place of use and the District facility. District signatures will be given on plans upon completion of plans affecting water rights to these District specifications.

4.2 Adjacent Properties

4.2.1 Water Deliveries

All water delivery structures and measuring devices within District easements are the property of the District and under the direct control of the management and staff. Anyone interfering with, adjusting, or in any way tampering with the distribution system is subject to prosecution under the laws of Oregon and the United States.

Serviceability shall be maintained for all water rights that have their water delivered through a developing area. The District requires easement widths that will allow for delivery systems to be maintained and accessible for maintenance at future dates.

Private deliveries may have recorded, implied, or prescriptive easements that give them the right to be maintained. It is the responsibility of each patron to obtain necessary easements for delivery beyond the District point of delivery and have them recorded at the appropriate county records office.

4.2.2 Tail Water

The Developer on properties adjacent to properties with water rights and possible tail water must take an active role and responsibility to be sure that tail water from developing properties will not generate future problems as a result of the development. Tail water can be the responsibility of both the owner of the tail water and the Developer. It is the District's position to facilitate plans to address tail water concerns and require construction plans to show that tail water will be controlled. The District will sign construction plans that indicate an approved method of control has been incorporated into the design. Signed construction plans by the District in no manner indicate the District is responsible for tail water. The responsibility lies with the developing property owners and adjacent land owner. The District will do its part in controlling tail water by controlling the rate and duty of water delivered to its patrons. The District is not responsible for tail water issues arising from development adjacent to possible tail water.

See Figure 4-1, Design Phase Flow Chart, and Figure 4-2, Construction Phase Flow Chart.

FIGURE 4-1
Design Phase Flow Chart
Arnold Irrigation District Development Handbook

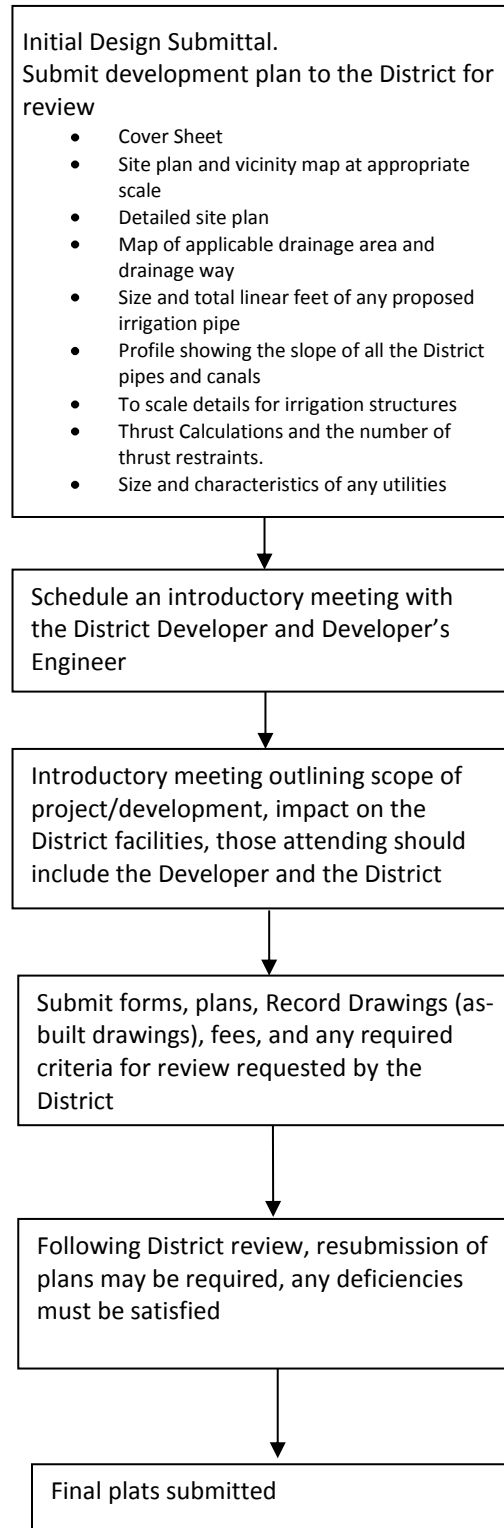
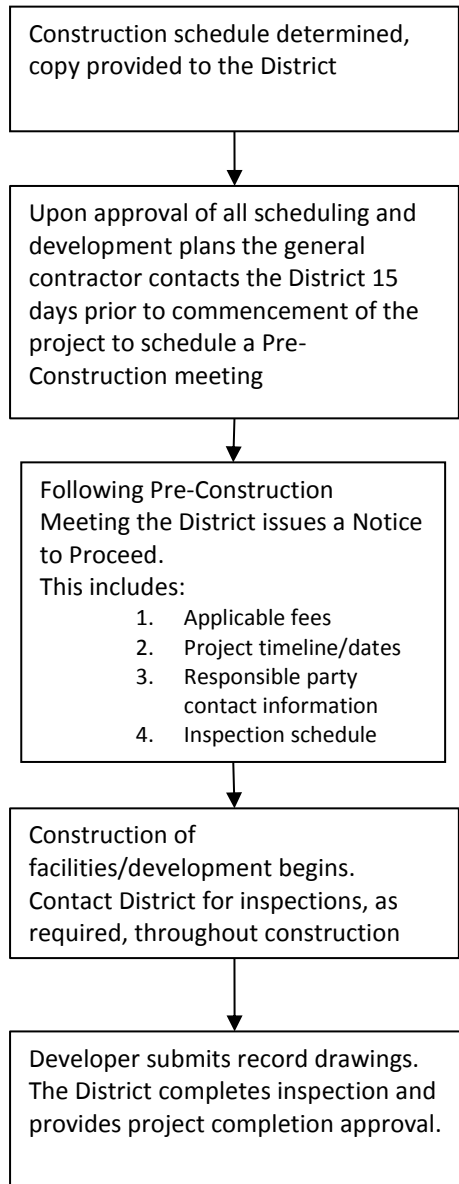


FIGURE 4-2
Construction Phase Flow Chart
Arnold Irrigation District Development Handbook



Development and Construction on or Near District Easements

5.1 Considerations and Timeliness of Project

Irrigation water fills District canals between approximately April 1 and October 30 each year. In addition, the District schedules winter stock runs on a monthly basis, depending on weather. The District engages in planning primarily in its “off season” between November 1 and March 31. This is also District construction season, because the system is empty most of this time.

The irrigation season may begin any time after April 1; therefore, any contract work should be completed prior to April 1. Any work preventing irrigation from commencing on time may result in Developer liability for each day that irrigation water is not allowed to flow through to a given section.

The District’s easements are permanent, perpetual, and exclusive rights to construct, install, maintain and operate an irrigation conveyance system and all related facilities within the subsurface of the easement. In no case shall the easement be less than the toe of fill as determined by the District. No person or entity shall be authorized to construct, erect, plant, or install any surface or subsurface structures or facilities (including but not limited to fences and/or storage sheds and/or trees) within the easement without first obtaining prior written approval from the District.

5.2 Development and Construction Standards

Minimum general standards shall be as set forth in the current Oregon Department of Transportation – Oregon Standard Specifications for Construction 2008 Volume 2 as modified herein.

Other additional standards may also apply, depending on individual site characteristics and needs. The following provisions are minimum construction standards for the District and are intended as a supplement to the ODOT standards.

5.3 Proposed Development Review Process and Timeline

The District may comment on local government notice of land use applications. It is the Developer’s responsibility to contact the notifying local government to receive copies of the District’s response.

1. **Initial Design Submittal:** Construction plans are reviewed by the District (plotted on bond paper). If District concerns are addressed satisfactorily, fees have been paid, all agreements have been executed, and a clean plotted bond paper copy has been provided with a mylar copy, plans will be signed as soon as possible by the District Manager.
2. **Review Period:** The District will provide review of the Initial Design Submittal within 14 calendar days of submittal. Plans shall either be approved as submitted, approved as noted (minor notes requiring incorporation into the Design), or rejected, with resubmittal required. Submittals that are substantially incomplete may be rejected without review. All previously submitted materials and any District comments to facilitate review shall accompany resubmitted plans.

If a contact name and number is provided, the District will contact the specified party to inform them the plans/plat have been signed or inform them of what changes need to be made as soon as reviewed and/or signed. Please do not call to see if the plans/plat has been signed. Plans will be addressed as soon as possible in the order received.

3. **District Records:** Plans and plats shall not be signed unless accompanied by a new, clean, plotted copy on bond paper for District records. The copy must be identical to the copy being signed. The copy is for District records of plans/plats signed.

5.4 Performance Bond and Warranty

Per ORS 279C.320 (3), if the contract is for an irrigation system improvement, execute and deliver to the District a good and sufficient bond, to be approved by the District, in a sum equal to the related contract price for the faithful performance of the contract. In lieu of a surety bond, the District may permit the successful bidder to submit a cashier's check or certified check in an amount equal to 120 percent of the contract price.

Upon acceptance of the construction, the facilities shall be presented to the District for acceptance of the improvements for ownership and maintenance. Once accepted by the District, a minimum 1- year warranty agreement on materials and workmanship shall be initiated between the District and the Developer.

The warranty shall include a bond or other approved security in a minimum value of 12 percent of the original improvement construction costs.

The performance bond may be reduced to the warranty amount after final acceptance.

5.5 Plan Submittal

The Developer shall be responsible for preparing engineered drawings for the Work affecting the District. A Professional Engineer licensed in the State of Oregon shall prepare engineered drawings. Drawings shall be prepared on 22-inch x 34-inch sheets following the standard of care for engineered designs in Oregon. Whenever possible, the plans shall show all improvements contemplated for the entire area under development, with enough of the surrounding improvements indicated to adequately show how the proposed improvement will affect the surrounding facilities.

The plan is to be submitted by the Developer or Developer's engineer to the District for approval. The plan shall be signed by a Registered Professional Engineer and certified by that person to be complete to the best of their abilities. Plans shall be complete in accordance with the design submittal checklist below. Plans that are incomplete shall not be reviewed. A copy of any construction requirements or development conditions levied by any public agency that are relevant to District facilities shall be attached to plans submitted for review. Without the above submittal, the District will be unable to review the plans.

At least one reproducible mylar and clean copy shall be submitted to the District for final approval. An electronic copy of the pertinent drawings shall also be submitted in PDF and AutoCAD format on CD. Once approved, two copies of the plans and application for agreements with appropriate legal documentation for property and easements, estimates for performance and warranty bonding, and type of bonding shall be submitted by the Developer to the District for preparation of an agreement. If construction has not been initiated within 18 months of the approval date, the approval shall be declared void and the plans must be resubmitted to the District for review. Each approved set of plans shall be considered a complete construction project.

Final approval of the plans by the District and executed agreements with the District are required before construction may begin. A pre-construction conference shall be held on all projects as determined by the District. All Agreements shall be obtained and all applicable and appropriate permits/fees shall be paid as a condition of the issuance of the Notice to Proceed prior to authorization by the District to commence construction.

No changes or revisions to the approved plans shall be considered effective without the following:

1. The assigned District Inspector may verify and approve the change. The inspector shall note the change on his field drawings, or
2. For significant changes as determined by the District, a plotted bond copy, a mylar sheet, and an electronic file as requested, of the revised sheet noting the revision shall be submitted to the District for approval. The revision shall be noted in a revision box. Revision approval is required prior to construction.

5.5.1 Submittal Checklist

At a minimum, the following shall be included, as applicable:

- Cover sheet

- Site plan and vicinity map at appropriate scale
- Detailed site plan
- Map of applicable drainage area and drainage way
- Size and total linear feet of any proposed irrigation pipe
- Profile showing the slope of all District pipes and canals
- Scale details for irrigation structures
- Thrust calculations and clear delineation of location and type of thrust restraint
- Size and characteristics of any utilities crossing the District facility
- Developer/Owner's name as shown on the County Assessor's tax roll, with current mailing address, telephone number, and email address.

5.5.2 Introduction Meeting

The Developer's team must meet with the District in order for all parties to understand and agree upon District requirements and timelines. During this initial meeting, the scope of the project and the impact on District facilities will be discussed. This meeting should occur as early as possible in the planning and design process to avoid future problems and costs to all parties.

5.5.3 Engineering Design Review

The Developer's engineer must provide an analysis of the impact the development or construction will have on the District's facilities. Once these impacts are defined, it is likely that a design for new facilities or the replacement of current facilities will be necessary. The District will review such plans.

5.5.4 Construction of Facilities and Notice to Proceed

Authorization to start construction shall only be granted by a written Notice to Proceed. The Developer's general contractor (or other appropriate entity) shall contact the District at least 15 business days prior to commencement of construction to verify project details and obtain a written Notice to Proceed from the District.

5.5.4.1 Requirements for a Notice to Proceed:

1. Applicable fees (See Fee Schedule)
2. Execution of required bonds, if any
3. Execution of easements, crossing license, and construction agreements, as applicable
4. Project start date
5. Project completion date
6. Project responsible party and information
7. 24-hour contact information
8. Inspection schedule
9. Other requirements as needed for site-specific items

5.5.5 Project Completion

Once the project is done and a final inspection from the District is complete, the Developer's general contractor or other appropriate entity shall provide to the District an electronic copy of the project Record Drawings (as-built drawings).

This project acceptance will follow the District's acceptance of construction and will require the completion of the following items (as applicable) with the District:

1. Bill of Sale as applicable
2. Total construction cost
3. Easements
4. Rights-of-way

5. Recorded Plat or Partition
6. Warranty for workmanship
7. Verification Performance Tests (if required)
8. Lien Release

5.6 Plats

Final Plats shall be submitted to the District for final approval and signature. A full-sized copy shall be submitted to the District with the applicable mylar. When the plan has been produced electronically, the plat shall also be submitted to the District in PDF and AutoCAD format on CD.

The Developer shall show on the subdivision plat all existing easements, rights-of-way and facilities, and any roads or crossings, new or existing, that touch, concern, or cross the District's facilities or existing easements. In every case, prior to any construction involving District facilities the Developer must have District signoff. The Developer shall further develop the subject property in such a manner so as not to adversely affect any of the District's facilities.

In addition to State of Oregon requirements, the final plat shall contain the following language as indicated:

1. **For Irrigation Easements** – “This easement is granted to Arnold Irrigation District and shall be a permanent, perpetual, and exclusive right to construct, install, maintain, and operate an irrigation line and all related facilities on the surface and within the subsurface of the easement. No person or entity shall be authorized to construct, erect, or install any structures or facilities on the surface or within this easement without first obtaining written approval from Arnold Irrigation District.”
2. **For Irrigation Access Easements** – “This easement is granted to Arnold Irrigation District and shall be a permanent, perpetual, and exclusive right for use, construction, installation, and maintenance for District vehicular or pedestrian access.”
3. **Easements and Structures** – “All Monumentation must be placed outside District right-of-way; pins placed inside the right-of-way are not the responsibility of the District to replace.”

All existing irrigation facilities shall be depicted on mapping as a condition of the District's signature indicating approval of plats.

5.7 Agreements

All agreements shall be signed and paid for prior to the District's signing of construction plans and allowing construction of the associated facility. The District prepares these agreements. It is the responsibility of the Developer/Owner, or his/her agent, to submit all necessary information and to be sure all agreements have been completed prior to plan submittal and start of construction

5.8 Pre-Construction Meeting

A pre-construction meeting shall be held following construction drawing approval and prior to Notice to Proceed for construction. Before the meeting can be held, agreements must be signed and payment received by the District. The District must have plan copies and acceptable electronic files of the construction plans. Items to be discussed/supplied are:

1. Contractor's work schedule
2. Inspector assignment
3. Traffic Control/Public Notification
4. Subcontractors and suppliers
5. Materials furnished (type, brand, etc.) trench backfill-sieve/proctor
6. Public safety requirements

7. Any work requiring inspection outside normal work hours shall require prior coordination and advance additional payment of \$45.00/hour

No inspections shall be performed until a pre-construction meeting has been held with the District. At this time, an inspector shall be assigned to the project and all communications, changes, and field decisions shall be coordinated through this inspector. Changes made without inspector approval are violations of District requirements. If the inspector is unaware of the change or field decision, then no change or field decision has occurred and the plans as approved are binding.

5.9 Public Notification

Any construction activity that impedes or interrupts any existing public service shall require that the public be notified of that interruption at least 48 hours prior to such impediment or interruption. Each notification shall be the responsibility of the contractor performing the work and shall be coordinated with the District to ensure adequate notification. Failure to adequately notify the public may result in an immediate suspension of the contractor's activities.

5.10 Utilities

The construction drawings shall show the location of all existing and proposed utilities. The Developer is responsible for coordinating this work with any other agencies or individuals that may in any way be involved with the construction.

The Developer shall notify, at least 48 hours in advance, the Oregon Utility Notification Center (800-332- 2344), and all utility offices including the District that are affected by the construction operation. Under no circumstances shall the Contractor expose any utility without first requesting permission and being granted such permission from the affected agency. It shall be the Developer's responsibility, once permission has been granted, to locate if necessary and expose all of the existing underground utilities in advance of the trenching operation.

It shall be the Developer's responsibility to protect from damage all power and telephone poles. If interfering power poles, telephone poles, guy wires, or anchors are encountered, the Developer shall notify the Owner at least 48 hours in advance of construction operations to permit the necessary arrangements with the affected utility company for protection or relocation of the interfering structure. The Developer shall be solely and directly responsible to the Owner and operators of such utilities/properties for any damage, injury, expense, loss or inconvenience, delay, suits, actions, or claims of any kind brought because of injuries or damage that may result from the carrying out the Work.

If domestic water or other utility services are interrupted as a result of accidental breakage, or as a result of being exposed or unsupported, the Developer shall promptly notify the proper authority. The Developer shall cooperate with the said authority in restoring service as promptly as possible, and shall bear all costs of repair. In no case shall interruption of any water or utility service be allowed to exist outside working hours unless prior approval is received.

When crossing easements, sanitary sewer lines shall be aligned under existing irrigation pipes, and shall provide a minimum of 18 inches of vertical clearance unless otherwise authorized by the District.

Electrical and communication conduits shall be encased in low-strength concrete dyed red. Powdered red dye sprinkled liberally on the surface of wet concrete is acceptable in lieu of dye mixed with concrete.

Direct-bury cable shall not be allowed in District easements. Conduits and sleeves shall be required to convey all electrical cable and wire.

Neither the District nor its officers or agents shall be responsible to the Developer for damages as a result of the location of the underground utilities other than that shown on the plans, or for the existence of underground utilities not shown on the plans.

If the Developer encounters any utility service lines that interfere with trenching, the Developer may, by obtaining prior approval of the utility owner and governing authority, cut the service, dig through, and cause the service to be restored with similar and equal materials at the Developer's expense.

During the progress of construction, it is expected that minor relocations of the Work may be necessary. Such relocations shall be made only by direction or approval of the District.

5.11 Insurance

The District requires appropriate insurance amounts, provisions, and proof of same, prior to commencing the Work, sufficient to protect the District, the public, and unrelated private property owners from direct and consequential liability related to the Work. The District will not be held liable for issues resulting from or in connection with activities connected with the Work.

Prior to commencing Work, the Developer agrees to obtain and maintain, until completion and acceptance of the Work, at its own expense, Comprehensive General Liability insurance, including but not limited to Broad Form Property Damage, Personal Injury, Completed Operations, Contractual and XCU Coverage; Automobile Liability Insurance, including Owned Automobiles and Automobiles Under Long-Term Lease, Hired Automobiles, and Non-Owned Automobiles; and Worker's Compensation and Employer's Liability Insurance for protection of the Contractor's employees as required by Oregon statute.

Coverage limits and scope shall be no less than minimum coverage requirements specified in this paragraph or applicable statutory limits, whichever is greater. The following minimum coverage limits apply: \$1,000,000 each occurrence and \$2,000,000 aggregate for Comprehensive General Liability and Automobile Liability insurance; \$1,000,000 each occurrence for Employer's Liability insurance.

If Developer's Work includes removing, hauling, storing, disposing, or in any way handling hazardous materials not covered, excluded, partially excluded from Developer's other insurance policies, or if Developer's other insurance policies do not provide the coverage limits expressed in this paragraph, the Developer shall obtain, at its expense, and keep in effect during the term of the Work, Pollution Liability Insurance covering liability for bodily injury, property damage, and environmental damage resulting from pollution and related cleanup costs arising out of the Work (including any transportation of such hazardous materials). The combined single limit per occurrence shall not be less than \$1,000,000. The annual aggregate limit shall not be less than \$2,000,000. In addition to Pollution Liability Insurance, if Developer's Work includes asbestos abatement, removal, or work related to asbestos abatement or removal, the Developer shall obtain at its expense, and keep in effect during the term of the Work, insurance coverage covering liability for bodily injury, property damage, and environmental damage resulting from asbestos arising out of the Work. The limits for any such asbestos coverage shall be in amounts not less than those specified above for Pollution Liability Insurance and shall be independent from any other limits.

All policies except Developer's Worker's Compensation Insurance Policy will name the District as additional insured, will contain a waiver of subrogation rights against District, and the Developer will provide at least 30 days notice to the District of cancellation or reduction of coverage.

The Developer will, prior to the commencement of any Work, submit to the District certification that all required insurance has been effected.

5.12 Workmanship

Responsible and qualified contractors shall perform the Work and shall be appropriately licensed. No work shall be performed by individuals not appropriately licensed and in good standing with the appropriate licensing agency. Should the District's Inspector deem any worker to be unqualified, the Developer's contractor shall immediately replace said worker.

The Developer shall notify the public and local service organizations, for example, emergency services, school bus routes, mail routes, or truck routes, in advance of any construction activity that may impede their daily activities and functions.

At points where the Developer's operations could cause damage that might result in considerable expense, loss, and inconvenience when adjacent to or near railway, telegraph, telephone, television, power, oil, gas, water irrigation systems, or other private or municipal systems, the Developer's working operations shall be suspended until all arrangements necessary for the protection thereof have been made by the Developer.

To protect persons from injury and to avoid property damage, adequate barricades, construction signs, warning lights, and guards, as required, shall be placed and maintained during the progress of the Work and until the area is safe for use.

Rules and regulations of the local state and federal authorities regarding safety provisions shall be observed. The Developer shall be solely responsible for accidents caused by inadequate or insufficient safety provisions.

All bituminous and concrete pavements shall be cut with a saw or other approved device prior to asphalt patching or concrete replacement such that the patching material abuts a smooth, uniform, vertical face at least twice the depth of the maximum particle size in the patching medium. Uneven pavement edges shall be trimmed smooth before patching the pavement.

The width of the pavement cut for trenching shall be at least 12 inches wider on either side than the finished width of the trench at the ground surface. Pavement removed during excavation shall be kept separate from native backfill material and removed from the site. Pavement shall not be used for excavation backfill material.

Where existing paved roadways are cut, trench backfill shall be as defined in the District Standards and Specifications or Deschutes County, at minimum, and as specified herein where more conservative. The pavement section shall be replaced equal to or better than existing, except that in no case shall it be less than the current standard for that classification of street. Base material must meet current District or Deschutes County Specifications, as applicable.

Obstructions to the construction such as tree roots, stumps, abandoned pilings, concrete structures, logs, rubbish, and debris of all types shall be removed from the right-of-way. The District may make changes in alignment to avoid major obstructions.

The Developer shall remove, replace and/or repair any damage done during the Work to fences, buildings, billboards, irrigation lines, roadways, cultivated fields, drainage crossings, and any other properties. The Developer shall replace these structures in a condition as good or better than their original condition.

5.13 Inspections

Inspections are the visual observation of construction methods and results. They are made to permit the District's Inspector to render his or her professional opinion as to whether the Developer is performing the work in a manner in accordance with the plans. Observations shall not be relied upon by any party as acceptance of the Work, nor shall they relieve any party from fulfillment of customary and contractual responsibilities and obligations.

Authorized representatives of the District shall be appointed as inspectors for any or all phases of the work related to the District to be sure that the installation shall conform to District Standards. Any work performed without a required inspection shall be subject to removal at the Inspector's discretion. Inspections shall generally include, but not be limited to, observation of all pipe, location and marking of utilities, construction staking, trench, blocking, no rock point projections, bedding, backfill, pipe alignment is true, fittings tight, and inspection of forms and rebar before pouring concrete.

Inspections shall be conducted on an appointment basis, from 8:00 a.m. to 3:00 p.m. Monday through Friday, excluding legal holidays. For any inspections outside of these hours, the Developer may make a formal request to the District at the time of the pre-construction meeting. Approval will be based on the impacts to public safety and welfare and the availability of personnel. Additionally, the District may perform unannounced site visits at any time. Any work performed without a required inspection shall be subject to removal at the Inspector's discretion.

The Developer shall be responsible to notify the District office at least 48 hours in advance of required inspections. The District shall not be responsible to conduct inspections without sufficient notice, nor shall the District be responsible for any cost incurred because of insufficient notification times.

5.14 Testing

Prior to testing any irrigation facilities, all other underground utilities shall be complete and in place. The Developer shall be responsible for obtaining all utility plans from the utility companies and submitting them to the District before commencing testing operations. The intent of this provision is to make sure that no District facility has been disturbed by the facilities or operations of utility companies. Pressure testing with air shall not be acceptable because it poses a potential safety risk.

Hydrostatic pressure testing shall be completed according to the testing procedure referenced in District construction standards. (See ODOT or this Development Handbook, as applicable.) Testing shall be performed per requirements of the applicable specification for all irrigation pipe installations to achieve a minimum of 100 pounds per square inch (psi) working pressure service capability unless waived in writing by the District. Duration and allowable pressure or water loss (if any) shall be per the applicable specifications.

The District's standard requirement is to test all irrigation conveyance pipes to a hydrostatic pressure of 1.5 times the working pressure at the lowest point in the system or 100 psi minimum, and such testing requirements, including provision and disposal of test water, shall be shown on the drawings and project specifications.

The District shall furnish inspection staff to witness a single pressure test. If a test fails to meet specified requirements, the District will assess a \$250 penalty to the Developer for remobilization of inspection staff (plus applicable labor and expense charges that are part of a construction agreement).

5.15 Construction Staking/Surveying

This section defines the responsibilities for construction surveying. All survey work shall be conducted by or under the supervision of a Registered Professional Land Surveyor or Professional Engineer, licensed in the State of Oregon. The Developer shall be responsible for providing all construction staking as required to complete the Work.

The guard stakes should contain the following information:

1. Engineer's station (on back)
2. Offset from line (underlined)
3. Offset from control point (circled)
4. Cut or fill to grade
5. Distance right or left from centerline on curb stakes (on back)
6. Irrigation lines shall be staked to top of pipe by means of an offset line at the appropriate intervals

All structures shall be staked to the line and grade as shown on the plans or as directed by the engineer.

Property Pins/Monumentation shall not be placed on the property line when such line is defined by an open canal or pipe. All pins shall be placed at an offset outside the easement so as not to damage the pipe and cause operational and maintenance issues for the District. Any pins placed within the easement area shall not be the District's responsibility to replace when removed as a result of operation and maintenance of the facility.

5.16 Stormwater Swales

The District will require that a full Geotechnical Site Characterization be completed for stormwater swales located within the vicinity of a District facility. This report will determine probability of seepage from the canal into a stormwater swale and water seepage from a swale into a District facility. The District will assume no responsibility for non-functioning swales resulting from water infiltration from District facilities.

5.17 Blasting

No blasting within District rights-of-way or easements will be allowed without prior written approval by the District. Where rock must be removed within District rights-of-way or easements, hydraulic hammering and relief drilling (air-percussion-drilled holes drilled in advance of hydraulic hammering) may be used subject to District review and prior written acceptance. The Developer's Contractor shall conform to all federal, state, and local laws related to the storage, handling, placement and firing of all explosives. The Developer's Contractor shall prepare and the District will review a written blasting plan, conduct a pre-blast survey of adjacent structures, and provide equipment and materials required to carry out the Work. The Developer shall furnish all additional insurance coverage as required by the District, or any agency, in addition to the basic coverage required by these specifications.

5.18 Shoring and Sheeting

It shall be the sole responsibility of the Developer to use whatever means necessary to maintain safe working conditions and protect adjacent property and structure from damage resulting from excavation. Developer shall conform to all federal, state, and local regulations governing shoring, sheeting, and excavations.

5.19 Dust Control

Dust control shall be performed in accordance with all applicable city, county, state or federal regulations and at any hour of the day and on any day of the week that the District may determine necessary for proper performance or protection of the Work and for adequate alleviation of dust nuisance. The Developer is responsible for the cost of dust control. If the Developer is unable or unwilling, the District shall provide dust control services and charge back the cost of those services to the Developer at a locally competitive rate plus a 20 percent inconvenience fee.

5.20 Location of Excavated Materials

During excavation the Developer shall locate excavated material so as not to block any public rights-of-way or traveled roadways, public or private, and unless otherwise approved by the District, roadways shall be kept open to two-way traffic. The Developer shall store or waste excavated materials only in designated areas unless otherwise approved by the District. Utmost care shall be taken to prevent spillage or damage to property adjacent to the project location.

5.21 Cleanup

The Developer must perform a final irrigation system cleaning prior to tendering the Work for the District's acceptance, including flushing and cleaning all parts of the system, both pressure and gravity; removing all accumulated construction debris, rocks, gravel, sand, silt, and other foreign material from the irrigation system affected by the Work; and, if necessary, use mechanical rodding or bucketing equipment.

Upon the District's final inspection, if any foreign matter is still present in the system, the Developer must re-flush and clean the sections and portions of the lines as required.

5.22 Record Drawings

The Developer shall prepare all necessary Record Drawings (as-built drawings). Throughout the development process, the designated inspector shall rely on these representations to make sure that development conforms to the approved plan. Any approved delimitations need to be noted by the Developer. Any changes that appear on the Record Drawings should be immediately brought to the attention of the Inspector for review. A final set of Record Drawings and the revised electronic copy shall be prepared by the Developer and supplied to the District. Record Drawings not reflecting all changes will be returned to the Developer for revision and resubmission to the District. Submission and acceptance of Record Drawings shall be required prior to District signature indicating approval of any plats in which a District facility has been altered.

SECTION 6

Piping of District Irrigation Conveyance Facilities

Piping, materials, and procedures for irrigation facilities shall conform to these Specifications of the District, ODOT, and American Water Works Association (AWWA) standards. Irrigation facilities shall be installed in new easements granted in favor of the District, or inside pre-existing easements or rights-of-way held by the District.

6.1 Irrigation Conveyance Piping

Piping may be required within some developments when modifying existing lots to create more density. Piping may additionally be required when restricting accessibility to maintenance and operations of an existing District facility. With piping, the District may consider reducing the existing easement width if less space is needed to maintain the revised facility. Requirements for piping shall be determined by the District.

In consideration of the annual irrigation season, piping of a District facility will not be allowed to commence after March 15. All plans must be approved and construction started before this date. Completion shall be by March 31.

Liquidated damages for failure to restore District conveyance facilities to service by March 31 shall be as documented in an applicable construction agreement.

Piping shall be designed to cross city or county rights-of-way at a perpendicular angle.

Piping easements and agreements are required when piping a facility. Plans will not be signed until the package is complete, including (as applicable) the necessary Piping Agreement, Joint Road Use Agreement, Irrigation Contract, and Easement and Encroachment Agreement.

6.2 Piping Requirements

A list of general piping specifications is included with this document and is included as an exhibit (Appendix B, Irrigation Facilities Construction Specifications) to the required piping easement/agreement to be signed by the Developer prior to the District approving construction plans.

6.2.1 Minimum Size Pipe

Developer and Developer's professional engineer (currently-licensed in State of Oregon) shall submit a basis of design for the pipe inside diameter required to allow for irrigation needs, and shall submit associated calculations used in determining pipe size. The District will review pipe size as a part of overall plan review and the District shall have final approval of the pipe size. The minimum diameter size for pipes shall be 8 inches. Unless otherwise specified in writing by the District, all pipes, fittings, valves and appurtenances shall be pressure-rated for a proposed working pressure of 100 psi, minimum. Pipes shall be sized based on a District-approved hydraulic model or hydraulic calculations performed by the Developer, but must be performed by a Professional Engineer. The District will provide maximum and minimum flow rates to the Developer for use in such calculations. In general, no upstream head increase will be allowed to be caused by the installation of a proposed facility.

6.2.2 Bends and Joint Deflection

Joint deflection shall be called out in the number of degrees per joint and radius of curvature when several joints in succession are to be deflected. In general, no bends in excess of 22½° will be allowed. Pressure-rated cleanouts will be required upstream of bends. Bends and other fittings shall be suitably constrained to withstand thrust. When applicable, joint deflection shall be called out in the number of degrees per joint and radius of curvature when several joints in succession are to be deflected. Deflection and pipe bending shall be limited to a maximum of 75 percent of the manufacturer's maximum allowance.

6.2.3 Detection Tape/Toning Wire

Toning wire shall be placed on top of the pipe in a size no smaller than 10 gauge, and shall run the course of the pipe. Two-inch (2") detection tape shall be installed on all non-metallic main line, non-metallic service line, angled or meandering service lines, and mains and services. The detection tape shall conform to the specifications of the ODOT standards. Two courses of detection tape may be required: one on top of the pipe zone material, and the second at 12 inches below subgrade or ground level depending on pipe depth. Location wire shall be fastened by plastic adhesive tape to the top center of the pipe. The adhesive tape shall be bounded around both the pipe and wire at no more than 34-foot intervals. The wire shall be continuous for the entire length of the pipe, without gaps or breaks. The wire shall terminate above ground in a valve riser housing.

6.2.4 All-Weather Access

Where irrigation facilities requiring maintenance access lie outside paved rights-of-way, a paved access path or road sufficient for service equipment to operate without blocking the traveled way shall be constructed if needed. Where irrigation facilities lie away from paved rights-of-way, an all-weather access road may be required by the District at the cost of the Developer. Should such access road be required, it shall be a minimum of 14 feet in width and shall be surfaced with a minimum of 4 inches of compacted cinders or aggregate base to allow vehicular access for repairs and maintenance. The road shall be shaped to promote drainage and shall not cause the pooling of stormwater. Support facilities such as, but not limited to, drainage structures, vehicular turnaround, or a pad lockable gate may also be required. Drainage of such surfaces may not be graded toward District facilities if open.

6.2.5 Valves

Valves in irrigation mains may be required at the discretion of the District. The Developer shall coordinate with the District regarding any main line valving requirements and shall add such valving at the Developer's cost. The specifications for such valving shall be as indicated in these Specifications. In general, pinch-type valves shall be used for all main line and pressurized service locations. For large mainline pipe sections (that is, greater than 24 inches), butterfly valves may be specified by the District. Where valves are located outside of paved areas, valve boxes shall be set in a concrete collar at the ground surface. In addition, utility I.D. posts may be required.

6.2.6 Measurement Devices

Every delivery shall be measurable and controllable to the satisfaction of the District. For pressurized irrigation deliveries, an irrigation water service shall be installed on the irrigation main and a pinch valve and McCrometer brand meter shall be installed to deliver water to the service. For gravity deliveries, pressurized water shall be suitably de-energized and a concrete box and square notch weir shall be installed per District standards. The Developer/Owner or its representative shall be responsible for initially sizing the services to plans and submitting to the District for approval.

6.2.7 General Piping Notes

1. Plans and profiles are required for each piping job.
2. Electronic drawings of proposed pipe centerlines shall be provided to the mapping department of the District office.
3. Every delivery shall be measurable and controllable.
4. There is a minimum requirement of 18 inches of fill cover for any piping job. Fill shall be level with the ground. Exceptions may be allowed in some circumstances if the District is provided an engineer drawing proposal.
5. Construction plans for piping facilities shall include details of cleanouts and all piping structures.
6. Facilities to be piped across existing or future intersections or streets shall cross as close to 90 degrees as possible, subject to District review.
7. Construction depicting inlet structures shall include a trash rack with a minimum slope of 2:1 and no horizontal rails. Wing walls of inlet structures shall angle into the bank at a 45 degree angle and extend no less

than 24 inches into the canal wall, with bentonite or dirt/clay mix packed around the edges with an overlay of riprap. (See Appendix A, Typical Drawings, for inlet examples.)

6.3 Piping Agreement and Easement Requirements

The District requires that the Developer obtain all easements necessary for the location or relocation of a pipeline and related facilities. The underlying property owner is the “Grantor” of a new or modified easement to the District. The pipeline easement shall be recorded against the servient land in county land records at the Developer’s expense. The piping easement shall be prepared by the District with information and exhibits provided by the Developer as follows (see Appendix C for examples):

1. Centerline description of new pipe easement centered over pipe (labeled as Exhibit A of Easement and Encroachment Agreement).
2. All full legal names of property owners holding an interest where pipe shall be located as evidenced by a recent title report. (**Note:** If there is more than one owner of the property, all interest-holding owners shall provide a notarized signature after the agreement has been completed by the District. If the property is owned by a corporation, LLC, association, etc., proof of authority for signing member(s) shall be provided to the District.)
3. Plan and profile of pipe, including but not limited to elevations, cover, inlet and outlet structures, cleanouts, details, etc. (labeled as Exhibit B of Easement and Encroachment Agreement).
4. The piping easement shall be signed and notarized by the property owner(s) prior to the District signing construction plans.
5. All conflicting uses in the subject area of the piping shall be resolved by the Developer prior to presentation to the District.

It is the Developer’s sole responsibility to collect all required information needed for completion of piping easements and for providing that information to the District for review.

See Section 9, Fee Schedule, of this document for Piping Easement/Agreement fees and Appendix C, District Document Examples, for all necessary information.

6.4 Easement Reductions

General easement widths may be reduced when piping to District specifications and full easement width is no longer needed for maintenance/repair/use by the District. The decision on allowable reduction in easement, if any, shall remain the sole decision of the District, and compensation from the Developer to the District for reduction in easement width may be required.

Generally acceptable easement widths when piped to District specifications (based on average summer irrigation season flow rate cubic feet per second [cfs]):

Facilities with	<5 cfs	= 20-foot easement
Facilities with	5 – 24.9 cfs	= 20-foot plus 10-foot on one accessible side
Facilities with	25 cfs and greater	= 40-foot easement
Main Canal		= 50-foot easement

6.5 Piping Design Standards and Design Provisions

The following requirements apply to piping projects:

1. Submission of an engineered design, including plan and profile views. Design must provide piping details or partial plans to clearly depict all fittings and connections, and show coordination with adjacent utilities at a scale and level of detail to the District's satisfaction. Pipe shall meet a minimum 100 psi working pressure requirement. All pipe shall be minimum high-density polyethylene (HDPE) standard dimension ration (SDR) 17 or AWWA C-900/AWWA C-509 or equivalent. Design pipe per *AWWA M-55 – PE Pipe, Design and Installation*, First Edition (AWWA, 2006)
2. All pipeline easements must be granted to the District, without any reservation, in perpetuity.
3. Cleanouts are required at every bend 22.5° and greater and at a minimum spacing of 250 feet on center. Diameter of riser shall be same nominal and inside diameter as main line pipe unless otherwise approved by the District.
4. Provide controlled low-strength material ([CLSM] per ODOT 00442) cutoff walls a minimum 24 inches along pipe axis, and full width of trench, from bottom of trench within 12 inches of ground surface at inlet and outlet structures to provide impervious layer to reduce migration of water along piping.
5. Provide minimum 18 inches of vertical separation between District pipes and any other utility.
6. Trench section shall have a minimum of 4 inches of bedding and select material shall continue to a minimum of 12 inches over pipe. Select material shall be ¾-inch minus gravel material and a sample shall be provided for approval.
7. 10 gage toning wire shall be installed along the entire reach of this piping project for location purposes.
8. 12-inch-wide metallic detection tape marked "CAUTION: BURIED IRRIGATION LINE BELOW" will be placed no lower than 18 inches below grade. A second course of detection tape is required to be located 12 inches over top of pipe where pipe depths exceed 4 feet to top of pipe.
9. Developer shall provide the District with a Record Drawing showing the as-built centerline survey (by a licensed surveyor) of the pipe installation prior to completing the backfill process. The District will also require a hard copy map and electronic drawing.
10. Documentation verifying ownership of parcel where piping is to take place is required prior to piping.
11. A piping fee as indicated on the Fee Schedule, plus recording costs, is required prior to signing to cover review and drafting of the piping agreement. Inspection of installation shall be the responsibility of the Developer. Crossing fees shall be paid prior to signing.
12. It is the responsibility of the Developer to obtain the proper licenses and make sure all associated fees are paid prior to the start of excavation.
13. All work is scheduled with the District so as not to interfere with the monthly stock water runs, and completed prior to April 1.
14. There shall be no encroachments to District rights-of-way or easements without a permit from the District.
15. Any crossings of District rights-of-way or easements shall be by permit only and shall be recorded at the District's office for instructions and associated fees.
16. No structures, fences, trees or shrubs, concrete, or asphalt shall be permitted within the new pipeline easement. Existing structures or improvements are subject to removal or destruction if they might impede District maintenance/repair responsibilities. If structures or improvements are installed, it will be with the understanding that if any damage occurs during maintenance to or replacement of the pipe, the District will not be held liable.

Crossing Guidelines

7.1 Crossing Licenses

Crossing licenses are required for all non-District construction inside of District rights-of-way or easements that touch or concern District facilities. Applications shall be submitted and approved prior to the District signing construction plans.

Crossing of District canals and pipelines entails risk to the District, patrons, and the public. Risk of crossing rests with the Developer. Professional engineering is required and shall include site investigation, design, and course of construction observation, to be sure that crossings are appropriately installed. Site particulars shall govern further engineering and/or design work necessitated by location specifics.

1. The District requires that a site investigation by a professional engineer with geotechnical experience is completed before a license is issued.
2. The District shall issue written approval, approval with conditions, or denial of proposed crossing designs. Incomplete applications may be denied if not properly amended.
3. The District may prohibit crossings at its sole discretion. If an approval is granted, a license will be issued by the District. No work is to begin until the District has issued a license and the appropriate fees have been paid in full.
4. The District will require a crossing fee and a review fee for every crossing. It is also required that pre-construction meetings take place to review and apply District guidelines to the specific site.

Inspections: Once the information is received and the District has the opportunity to visit the site, the District shall issue written comments. Once approved for construction, the Developer shall contact the District prior to completion of crossing construction and request final inspection. Notification for inspection shall be made 48 hours in advance of inspection. Inspection shall be made prior to backfill of underground crossings.

Hold Harmless: Crossing applicants shall execute an agreement holding the District harmless from any claims or damages arising out of the installation of the described crossing located above, over, or under the District facility.

7.2 Crossing Design and Construction Standards for Main Canal, Lateral Canals, and All Pipe Crossings

Main Canals and Laterals shall be as defined by District.

The District requires that every canal or pipeline crossing shall be designed by a Professional Engineer with geotechnical experience. Crossing of a District facility entails significant risk to the District, patrons, and the public. Risk of crossing rests with the Developer. Professionals involved in the crossing design shall be responsible for site investigation, design, and course of construction observation to make sure that the civil and geotechnical works are appropriately installed to prevent canal breach, obstruction, or other canal compromises, and maximize public safety. These guidelines provide only a starting point and site particulars shall govern further engineering and/or design work necessitated by location specifics.

It is the responsibility of the Developer to contact and arrange for the appropriate Professional Engineer. However, such professionals must have appropriate engineering licenses and sufficient experience in similar work. All associated submittals shall be stamped by the responsible professional(s).

All canal crossing construction projects need to be completed during the winter season. For more information on stock runs and applicable dates, please call the District office.

7.2.1 Before Beginning Canal or Pipe Crossing

1. A site investigation report must be submitted to the District. The site investigation report shall describe all pertinent site features and shall include, but not be limited to, the following:
 - a. A site plan that illustrates the surrounding topography and physical features, including geology, exploration points, and the location of crossing.
 - b. A profile of the crossing through the canal or pipe with emphasis on the critical hydraulic sections in the area of the proposed construction.
 - c. Photographs of the site from several angles (that is, in canal if possible, from each side of canal showing berms, etc.)
 - d. Canal crossing geotechnical testing if appropriate, including seismic refraction or electro-resistivity tomography.
 - e. Specific recommendations on types of materials proposed for the reconstruction of the canal.
 - f. An analysis of both critical and exit gradients and elevation of safety factors if piping is to be included in design.
 - g. Requirements of the geotechnical construction observation program and related documentation.
2. Preliminary design is to be submitted to the District for review. Each design should be site-specific according to the findings in the site investigation.
3. Designs shall include:
 - a. Construction guidelines in anticipation of the observed and/or suspected soil, rock, and residual water seepage conditions
 - b. Details and extent of the proposed seepage cutoff walls and blankets, along with requirements concerning preparation for contacts between new and native materials
4. Designs should consider the following:
 - a. Benefit of including seepage control measures
 - b. Replacement soils composed of internally stable materials with low erosion potential and low permeability
 - c. Contacts with existing soils or rock carefully prepared, limiting disturbance to the existing embankment and potential for preferential seepage paths
5. A crossing license is required for any underground, surface, or overhead crossing of a District facility. The District shall be contacted to acquire a crossing license. Crossing of the sub-lateral canals shall follow all previous guidelines as well as the ones specified below, unless specifically excluded in writing.

Written request to cross with the following information shall be required to proceed with the crossing:

- a. Applicant Name, Address, and Phone Number
 - b. Crossing Address
 - c. Township, Range, Section, Quarter/Quarter, Tax lot number
 - d. Type of crossing desired, with details of crossing construction to show compliance with District specifications if different than District typical requirements for trench or culvert crossings.
6. Fees shall be paid in advance of work. Fees are listed under Section 9, Fee Schedule, of this document.

7.2.2 During Construction of Canal or Pipe Crossing

1. During the course of the installation work, full-time inspection will be required by the responsible professional and/or his assigned inspector (over which he/she is responsible).
2. All material installations shall be tested by a geotechnical professional licensed to perform such work, and shall be certified to the District by said professional.
3. Critical construction should be aided by qualified quality control personnel verifying that the conditions encountered are in agreement with those anticipated and that the work is performed in accordance with specifications.
4. Compaction should be based on the Modified rather than the Standard Proctor.

7.2.3 Conclusion of Canal or Pipe Crossing

1. At the conclusion of the work, the responsible professionals shall provide a written and stamped report to the District showing that the installation was made satisfactorily and in accordance with the design.
2. The report shall include, at minimum:
 - An original site investigation
 - A work plan
 - A cross-section of canal or pipe
 - A plan view and other appropriate details
 - A series of construction photos from before construction to the conclusion of construction adequately demonstrating that appropriate equipment, materials, and methods were followed
 - Certification of material testing and compliance with compaction requirements and necessary related representations specific to the project
 - A written narrative stating that the crossing went in substantially as the plans show and provide Record Drawings (as-built drawings) to show alterations, or a detailed description of changed conditions encountered and alternative changes made with prior written District approval

The District will perform a final inspection within 2 days of notice of final completion and provide written approval for crossing within 7 days following final inspection.

The completed structure should be monitored continuously the first time that it is tested and routinely thereafter by the Developer, commensurate with the Developer's assumption of risk for the crossing.

7.3 Sub-Lateral Canal and Pipe Crossing Guidelines

Sub-laterals shall be as defined by the District.

- Trench crossings shall be constructed as per District Typical (A). Typical (A) is located in Appendix A.
- Culvert road crossings of open ditches shall be constructed as per District Typical (B). Typical (B) is located in Appendix A.
- Crossings shall be perpendicular to District facilities, wherever feasible.
- Crossing of piped facilities that are deemed substandard may need to be brought to current District standards in order for the crossing to proceed.
- Underground crossings of piped irrigation lines shall go under the District facility with a minimum of 18 inches separation and perpendicular to the facility.
- All subsurface crossings of an open ditch will require the installation of a Carsonite-type flexible marker to be placed on the ditch bank to identify the location of the identified underground crossing.

- Crossings for such developments include but are not limited to streets, water lines, sewer lines, utilities, and streets.
- Multiple crossings within subdivisions may require additional information and/or variance on crossing steps.
- All work shall not be in conflict with any winter water runs or interrupt water users' delivery of irrigation water.
- Crossing construction during irrigation season shall only be allowed after District approval, and only in emergency circumstances as determined by the District.
- Crossing license fees may be shared by utilities if within the same trench. It will be the utility companies' responsibility to communicate with the District. If crossings are in separate trenches, a separate crossing license will be required.
- Plans and Profiles may be required for crossing to enable the District to ensure acceptable crossing elevations and approved construction.

7.4 Boring Under Canal

If boring is proposed as an alternative for an open cut canal crossing, items 1-12 of Article [Before Beginning Canal Crossing] shall be followed as applicable. In particular, the responsible professional shall evaluate and prepare and submit to the District for review a boring plan and design with emphasis on sealing the bore and bore pits. The design should emphasize leaving the canal in a watertight condition as good or better than prior to the boring and should prevent migration of water into the disturbed areas. Bore depth shall be approved by the District and shall be a minimum of 2 feet below the bottom of future piping installation in the canal. Boring is not a precise construction method, a safety factor for bore depth should be included in the submitted plan. All boring is subject to approval or denial by the District. All liability for such construction shall be assumed by the Developer, including consequential damages.

7.5 Overhead Crossings

Overhead crossings shall have a minimum of 18 feet of clearance from ground surface. Poles and related objects shall be placed outside of District rights-of-way or easements.

7.6 Piped Crossings

Piped crossings of District facilities shall be designed to accommodate the maximum flow of the District's facilities and to comply with the District's comprehensive system plans. Materials and methods for installation of such crossings shall comply with these Specifications. Suitable reinforced concrete inlet and outlet structures shall also be designed and installed. All such designs are subject to District approval and modification prior to construction.

7.7 Utility Crossings

Any and all utility crossings are subject to the review and approval of the District in addition to all provisions and requirements indicated herein. Utility crossings of District canal facilities shall comply with Appendix A, Typical Drawings, unless otherwise directed by the District. This detail shall be incorporated into the construction documents for the proposed work. For utility crossings of District pipe facilities, specific designs shall be submitted for District review. Where such crossings are perpendicular, generally an 18-inch minimum clearance will be required and an approved flowable backfill (ODOT CLSM) may also be required. Red dye shall be applied to all CLSM that is encasing electrical or communication conduits.

7.8 Bridge Crossings

Written District permission must be obtained for any proposed bridge crossing over a District facility. Any crossing installed without written District permission will be removed immediately at the Owner's expense. The proposed crossing must address a number of issues before the District will consider issuing a crossing license or allowing construction to proceed. The issues include but are not limited to the following:

- No structure may permanently alter or be placed in the canal unless it improves canal operations and/or safety.
- No alteration to the canal may change the behavior of the water flow from current conditions unless it improves canal operations and/or safety.
- Excavating within the District's easement must be minimized and returned to present or better structural conditions. This includes, but is not limited to, exploratory excavation, bore holes, trenches, etc.
- No blasting may occur within the vicinity of the canal (within 100 feet)
- No impediment of the ditch road will be allowed, nor restriction to District personnel access.
- These crossings shall not impede the District's ability to pipe in the future.
- A crossing shall provide a minimum of 24 inches of freeboard from the high water mark across the canal. If the District is intending to pipe, then the structure must allow for 36 inches of freeboard from the top of the pipe.
- Any activity or access to the canal associated with either preliminary or tertiary evaluations will require notice and written permission from the District.
- There must be no ongoing adverse operational or financial effect to the District resulting from such project.
- To the extent that an impact to the canal banks and down slope of the canal banks is being considered, a thorough geotechnical evaluation will be required upstream and downstream of the proposed crossing to identify all issues affecting the canal, including but not limited to the hydraulic conductivity of the soil, the depth to solid rock, the current path of seepage water, and a determination made that no alteration of those paths will occur.

Any and all bridged crossings of District facilities are subject to permit by the District. In general, such crossings shall be subject to design by a Professional Engineer at the cost of the Developer. Generally, piping sections of open canals for the purposes of crossing are preferred by the District over bridging. If a bridge alternative is approved by the District, the bridge shall be designed by a structural engineer licensed in the State of Oregon and shall provide enough clearance for the installation of future District piping facilities and for the passage of District maintenance equipment as necessary. The bridge shall also be designed to span the entire District facility and beyond its margins to the satisfaction of the District. The bridge shall be designed with suitable geotechnically engineered abutments and deck load to satisfy ODOT H-20 type loads.

Irrigation Contracts to be Recorded

8.1 Contracts in General

The District requires an “Irrigation Contract” to be completed prior to signing construction plans and/or plats. Irrigation contracts shall apply when land is divided, developed, or redeveloped. Such actions may affect the function or legal requirements relating to District facilities. (Please note that “Lot” and “Parcel” are synonymous for purposes of this document.)

8.2 Irrigation Contract (Development Adjacent to Open Canal or Pipeline)

The District requires an Irrigation Contract to be executed and recorded prior to signing construction plans or plats. It is required any time there is development adjacent to an open canal that is not to be piped to District specifications, as well as when piped facilities are affected. It will provide notice of restricted use within the District right-of-way or easement, clarify liability, and acknowledge possible changes in delivery methods the District may require for the facility. The District will require exhibits to be provided for the contract: Exhibit A – Subject property legal description, and Exhibit “B” – Tentative subdivision plat or site plan, with District easements and facilities clearly labeled.

8.3 Development Irrigation Plan (DIP)

Planned developments (two tax lots or more) requesting District water rights for surface or groundwater deliveries are required to obtain District DIP approval prior to final execution of plans. An evaluation process is necessary to establish effective water management and planning for the Planned Development and the District. The DIP should be considered as a guide to planning water requirements for the Planned Development. It should be noted that the information requested by the District will likely be necessary in order to proceed with water transfer applications to the OWRD, and/or with any local governmental land use proceedings. The District will require a fully executed DIP application be submitted to the District for review. All requested documentation must be included with the application. The review process may take 45 days, at which time the District Manager will prepare a written decision with findings. An Irrigation Contract will be prepared by the District encompassing the DIP decision and recorded in appropriate county records. Developments using water rights should be discussed early. Contact the District offices to schedule a pre-application meeting with District staff.

Fee Schedule

9.1 Arnold Irrigation District Fee Schedule Adopted By Board of Directors

The Board of Directors of Arnold Irrigation District has established this fee schedule for the purpose of advising District patrons and the general public of charges for typical transactions involving the District. It is the District's policy that it remain financially whole with regard to any such transaction. All fees are one time fees unless otherwise noted and will be collected before the District review process begins. Unless specified in writing, all fees are non-refundable.

The District charges fees for such items as transfers, instream leases, changes made to the canal and road system, pumping of water from District canals for industrial use, crossings, etc. Anytime a patron contemplates any of these situations, they should contact our office for proper procedures and breakdown of fees. **Please see our website at www.arnoldirrigationdistrict.com or call the district office at 541-382-7664 for current rates.**

COMPLIANCE NOTICE: Any person proposing to take any action that impacts or has potential to impact District facilities or operations is required to obtain advance District approval for such action and to pay any applicable fees or district expenses. Failure to obtain the District's approval and/or pay the applicable fees and expenses may result in fines, penalties, project cancellation and civil liability.

9.1.1 Delivery Installation

New Delivery

Head Gate/Weir Inspection

Head Gate

Weir and Weir Box

Piping Turnout with Meter

Other

Relocating Point of Delivery

Pumping permit from river
(new pump application review by District)

9.1.2 Reviews

Regardless of location, reviews are required if any District facility is or will be affected. After a submitted review has been completed and approved by the District, any changes, modifications, or deviations of the applicant's plan requires the PRIOR written authorization of the District and may be subject to additional review fees. Failure to obtain written authorization may result in fines, penalties, project cancellation, and civil liability.

9.1.3 Crossings of and Encroachments into Easements and Rights-of-Way

Crossing and Encroachment Fees are to be determined by the AID Manager based on all applicable factors, including the width and length of the crossing or encroachment, the anticipated impact to District facilities and/or operations, and the duration of the impact.

Applies to:

- Main Canal/Pipeline Crossing Pipe Laterals/Ditch Crossing Roadway Crossing
- Bridge and Pipe Arch Structure
- Utility Crossing, including water, storm and sanitary sewer, electricity, natural gas, telephone, and cable television.
- Culvert
- Easement Abandonment
- Cattle Guard
- Buried Crossing
- Crossing Open Channels (canals and drains) Aerial Crossing
- Permanent Easement encroachment
- Permanent Right-of-Way encroachment
- Miscellaneous encroachments such as landscaping, fencing, gates, or other activities that impact District facilities or easements

9.1.4 Piping Agreement

Piping Agreement Fees are to be determined by the AID Manager based on all applicable factors, including the pipe diameter, depth, the anticipated impact to District facilities and/or operations, and the duration of the impact.

Applies to:

- Replacement of existing piped irrigation conveyance facilities with pressure-rated pipe materials
- Conversion of existing open channel conveyance facilities to pressure-rated pipe conveyance (canal or ditch conversions to pipe)
- District does not intend to allow re-alignment or re-routing of open channel facilities with new open-channel facilities (culvert, open ditch, canal)

9.1.5 Irrigation Contract

Irrigation Contract Fees are to be determined by the AID Manager based on all applicable factors, including configuration of modified irrigation facilities, and the anticipated impact to District facilities and/or operations, and the duration of the impact.

9.1.6 Joint Road Use Agreement

Joint Road Use Agreement Fees are to be determined by the AID Manager based on all applicable factors, including regular access requirements, and the anticipated impact to District facilities and/or operations.

9.1.7 Field Inspections/ Inspections

Fees apply to each inspection required by the District. Required inspections will be listed on the approved signed review. **IMPORTANT** - after inspections have been approved and completed, any changes, modifications, or deviations to the inspected site without prior written approval from the District Manager may result in penalties, fines, and civil liability.

Pre-authorization to Proceed inspection

/during construction inspection /project completion inspection

Re-Inspection

9.1.8 Administrative

Transfer Water Right

(for processing, publishing, and filing the transfer with the Oregon Water Resources Department - non-refundable whether transfer approved or denied)

Recording Fees for Construction and Easement Agreements

Instream Water Leasing

Lien Search Fee

District Water Right Transfer Fee

Maps of Water rights to patrons

Others

GIS mapping

Property Ownership transfer fee

Lost water right due to non-use

Advise realtor/title company of water rights on property

Exit Policy

9.1.9 Fines and Penalties

The AID may impose additional sanctions and penalties for unlawful acts committed against AID policies and facilities up to and including referral to the Deschutes County District Attorney for prosecution.

Tampering with District Property
(i.e., valves, canals, water diversions)

Easement Encroachment

Theft of services

Theft of property

Dishonored checks

Returned checks

Miscellaneous unauthorized encroachments Includes items such as landscaping, fencing, gates, private equipment on District easements or right-of-way, or other activities that impact the AID facilities or its easements, which do not have authorization in the form of an agreement with the District. After warning to remove the obstruction and if warning is ignored additional fees may be assessed by the District should further action be necessary.

Applicable Statutes (Quick Reference)

Oregon Revised Statutes (ORS) Title 45:

Water Resources: Irrigation, Drainage, Flood Control, Reclamation

Chapter:

- 536. Water Resources Administration
- 537. Appropriation of Water Generally
- 538. Withdrawal of Waters From Appropriation; Special Municipal/County Rights
- 539. Determination of Water Rights Initiated Before February 24, 1909;
- 540. Distribution of Water; Watermasters; Change in Use, Transfer or Forfeiture of Water Rights
- 541. Watershed Enhancement and Protection; Water Development Projects; Miscellaneous Provisions on Water Rights; Stewardship Agreements
- 542. Water Resource Surveys and Projects; Compacts
- 543. Hydroelectric Projects
- 543A. Reauthorizing and Decommissioning Hydroelectric Projects
- 545. Irrigation Districts
- 547. Drainage Districts
- 548. Provisions Applicable Both to Drainage Districts and to Irrigation Districts
- 549. Drainage and Flood Control Generally
- 551. Diking Districts
- 552. Water Improvement Districts
- 553. Water Control Districts
- 554. Corporations for Irrigation, Drainage, Water Supply or Flood Control
- 555. Reclamation Projects
- 558. Weather Modification

Oregon Administrative Rules (OAR) Chapter 690

Appendix A

Typical Drawings

Typical drawings are examples only. Crossings and Structures need to be site-specifically designed and will need to be approved by the District.

TYPICALS ARE NOT TO SCALE

Appendix B
Irrigation Facilities Construction

TRENCH EXCAVATION, BEDDING, AND BACKFILL

1.1 DESCRIPTION

Minimum general standards for irrigation facilities shall be set forth in the 2008 Oregon Department of Transportation Oregon Standard Specifications for Construction Volume 2. The following special provisions are minimum construction standards for the Arnold Irrigation District and are intended as a supplement to the above standards.

Pumice and cinders are not acceptable trench foundation, pipe bedding, pipe zone or trench backfill material. Any backfill material less than 90.0 pounds per cubic foot (pcf) shall only be approved by the District prior to the Pre-Construction meeting. Such approval may require additional testing and compaction requirements and be project specific. No material less than 80.0 pcf based on AASHTO T-99 (standard proctor) will be approved.

2.1 MATERIALS

2.1.1 TRENCH FOUNDATION

The trench foundation shall be undisturbed material. Where ground water or other unstable conditions exist and the native material cannot support the pipe, additional excavation may be required. The trench shall be stabilized with pipe bedding material.

2.1.2 PIPE BEDDING

Pipe bedding material for irrigation pipes and structures shall be as shown on the plans or as directed by the Engineer. Pipe bedding shall meet the requirements for Class B material. Samples of the proposed material, along with technical information such as gradation, Proctor Test results, certifications, etc., shall be submitted to the Engineer for approval prior to construction.

2.1.3 PIPE ZONE

Pipe zone material for irrigation pipes and structures shall be as shown on the plans or as directed by the Engineer. Pipe zone shall typically surround pipe from bottom of trench to 12 inches above top of pipe, minimum. Unless otherwise specified, pipe zone material shall conform to the requirements for pipe bedding. For traveled crossings and in higher load areas, an ODOT Class B type Sand Cement Slurry pipe zone backfill may be required. Samples of the proposed material shall be submitted to the Engineer for approval prior to construction.

2.1.4 TRENCH BACKFILL

Material used for normal backfilling shall be earth, gravel, rock or combinations thereof, free of humus, organic matter, vegetable matter, frozen material, clods, sticks, and debris. The backfill material shall predominate in the finer sizes and, in place, shall present no isolated points or areas of larger stones, which would cause fracture or denting of the utility or structure or subject it to undue stress.

Trench backfill shall consist of the following material:

2.1.4.1 Class A Backfill

Class A backfill shall be native or common material which is acceptable to the Engineer. The intent of this specification is that material excavated on the site be used for backfill after being screened on a 3-inch screen.

Class A backfill shall meet the following:

1. No rock has a dimension of greater than 3 inches.
2. Material larger than 1½-inch minimum dimension shall not exceed 10% of the backfill.

2.1.4.2 Class B Backfill

Class B backfill shall be ¾-inch-0 aggregate base material conforming to Oregon Department of Transportation (ODOT) specifications.

2.1.4.3 Class C Backfill

Class C backfill shall be clean sand with no particle size larger than ¾-inch and no more than 10% by weight of material passing a 200 sieve or well graded ¾-inch-0 granular material with no more than 10% by weight passing a 200 sieve which shall include commercial base rock and pit run or screened native, granular, well graded material acceptable to the Engineer.

2.1.4.4 Cement Treated Base (CTB)

Cement Treated Base shall conform to the requirements of the Oregon Department of Transportation. It shall contain 4.5% to 5.5% cement by weight (1 to 2 sacks of cement per ton).

2.1.4.5 Concrete Backfill

Concrete backfill shall conform to commercial grade Concrete Section 00440 ASTM C-94. Alternate 3. Proportion cement (minimum 5-sack mix) to obtain a 28-day compressive strength of 2500 psi.

2.1.4.6 Sand Cement Slurry (SCS)

Sand Cement Slurry shall conform to the requirements of the Oregon Department of Transportation specification for Class B bedding. Sand Cement Slurry shall consist of at least ¾ sack of Portland cement per cubic yard of sand plus water, with a 7-inch slump, plus or minus 1-1/2 inches.

3.1 CONSTRUCTION

3.1.1 TRENCH EXCAVATION

3.1.1.1 General

The Contractor shall secure and comply with applicable State, County, or District Street cutting permits. The Contractor shall comply with all District, County, State and Federal Highway Construction Safety and Health Standards. Prior to installing an irrigation facility in an unimproved street, the street shall be brought to subgrade to make sure that adequate bury, depth of cover, and utility separation is acquired.

3.1.1.2 Trench Width and Depth

The trench depth and width at the bottom shall be below the profile showing finish elevations as indicated by the approved plans. The top of the ditch shall be 6 inches wider and meet all safety standards unless otherwise agreed upon by the District Engineer, or his representative.

In general, the trench shall be configured to provide a minimum of 36 inches of cover and 12-inch minimum width on each side of the pipe to allow for pipe zone material installation.

3.1.2 PIPE BEDDING (ODOT 00405.45 Pipe Bedding)

The trench shall be excavated to a minimum depth of 7 inches below the pipe to provide minimum bedding. Over excavation shall be backfilled and compacted with pipe zone material to a grade of 4 inches to 7 inches below the pipe bell or pipe flange backing ring, as specified below. The pipe bedding shall be uniform, at grade, and compacted prior to placing pipe.

3.1.3 PIPE ZONE

Pipe zone material shall be Class B material. The specified bedding material above, around, and below pipe shall be carefully and thoroughly tamped in layers not exceeding 6-inches so that the fill is fully compacted to 95.0% of AASHTO T 99 74 Method C.

3.1.4 TRENCH BACKFILL (ODOT 00405.46 Backfilling and ODOT 00405.14 Trench Backfill)

Trench backfill of facilities in existing paved streets or concrete areas shall be as per the approved design.

Trench backfill in all other areas shall be in accordance with Section 401.2.04 and shall be carefully and thoroughly tamped in layers so that fill is fully compacted to 95.0% of AASHTO T-99-74 Method C.

3.1.5 COMPACTION TESTING

Trench backfill shall be tested at one passing test for each 6 feet of fill and 50 LF of trench (e.g., 12-feet to 15-foot depth class shall require 3 tests per 50 LF) or as directed by the District. Passing test shall meet the requirements for trench compaction in that segment of trench backfill. All sampling and testing, including material certifying tests, shall be performed by an independent testing laboratory. Sampling locations shall be determined by the Arnold Irrigation District. All results, including failing tests, shall be submitted to the Arnold Irrigation District prior to any subgrade inspection. For Class A material that is not field density testable per AASHTO T-99, Contractor shall demonstrate adequate compaction by a compactive-effort based testing, witnessed by District Engineer, and substantiated by a minimum of three field density tests including correction for over-sized material.

4.1 IRRIGATION PIPE AND FITTINGS

4.1.1 DESCRIPTION

4.1.1.1 GENERAL

This section covers the work necessary for furnishing and installing irrigation pipe and fittings normally used for irrigation systems.

4.1.1.2 CERTIFICATION

The Contractor shall furnish material certifications.

4.1.1.3 CORROSION PROTECTION

The method of corrosion protection shall be as specified when required. Buried hardware shall be coated with wax tape and primer per AWWA C217, 2-inch-wide strips. (Manufacturer: Trenton, or approved equal.)

4.1.2 MATERIALS

Where more than one type of material is specified, the type required shall be designated on the plans. Material used on pump station, meter vault or control valve applications shall be approved by the District on a case-by-case basis. All appurtenances shall be of same manufacture. All material shall be manufactured or produced in the United States of America.

All irrigation District piping and appurtenant systems installed shall be pressure rated to withstand 100 PSI working pressure. SDR 17 HDPE fusion welded pipe shall be the sole alternative for system piping. Specifications for HDPE shall be as follows.

4.1.2.1 HIGH-DENSITY POLYETHYLENE PIPE (HDPE) FUSION WELDED PIPE

DESCRIPTION: The work in this section consists of providing High Density Polyethylene (HDPE) pipe and fittings.

QUALITY ASSURANCE: References, American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), Federal Specifications (FS), International Standards Organization (ISO), and manufacturer's printed recommendations.

SUBMITTALS: Material list naming each product to be used identified by manufacturer and type number.

PRODUCT HANDLING: Handle pipe and fittings to insure delivery in a sound undamaged condition.

JOB CONDITIONS: Do not lay pipe when trenches or weather conditions are not suitable for such work.

MATERIALS (ODOT 00445.10 Materials/General)

PIPE: HDPE 02410.65 Pipe shall be manufactured from a PE 3408 resin listed with the Plastic Pipe Institute (PPI) as TR-4. The resin material will meet the specifications of ASTM D3350-99 with a cell classification of PE:345464C. Pipe shall have a manufacturing standard of ASTM F714. Pipe shall be DR 17 (100psi WPR) unless otherwise specified on the plans. The pipe shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material.

FITTINGS: Butt Fusion Fittings - Fittings shall be PE3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-99. Butt Fusion Fittings shall have a manufacturing standard of ASTM D3261. Molded & fabricated fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans. Fabricated fittings are to be manufactured using a Data Logger. Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the quality control records.

Electrofusion Fittings - Fittings shall be PE3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-99. Electrofusion Fittings shall have a manufacturing standard of ASTM F-1055. Fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans.

Flanged and Mechanical Joint Adapters - Flanged and Mechanical Joint Adapters shall be PE 3408 HDPE, Cell Classification of 345464C as determined by ASTM D-3350. Flanged and Mechanical Joint Adapters shall have a manufacturing standard of ASTM D-3261. Fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans.

EXECUTION GENERAL:

Pipe and Fittings: Size as indicated on the plans. Install as shown in accordance with manufacturer's recommendations.

HAULING, UNLOADING and DISTRIBUTING PIPE: During loading, transportation and unloading, every precaution shall be taken to prevent injury to the pipe. No pipe shall be dropped from cars or trucks, or allowed to roll down slides without proper retaining ropes. During transportation each pipe shall rest on suitable pads, strips, skids or blocks securely wedged or tied in place. Any pipe damaged shall be replaced.

FUSION: Sections of polyethylene pipe should be joined into continuous lengths on the jobsite above ground. The joining method shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. The butt fusion equipment used in the joining procedures should be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, temperature requirements of 400 degrees Fahrenheit, alignment, and an interfacial fusion pressure of 75 PSI. The butt fusion joining will produce a joint weld strength equal to or greater than the tensile strength of the pipe itself. All field welds shall be made with fusion equipment equipped with a Data Logger. Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the Quality Control records.

Sidewall fusions for connections to outlet piping shall be performed in accordance with HDPE pipe and fitting manufacturer's specifications. The heating irons used for sidewall fusion shall have an inside diameter equal to the outside diameter of the HDPE pipe being fused. The size of the heating iron shall be ¼ inch larger than the size of the outlet branch being fused.

Mechanical joining will be used where the butt fusion method cannot be used. Mechanical joining will be accomplished by either using a HDPE flange adapter with a Ductile Iron back-up ring or HDPE Mechanical Joint adapter with a Ductile Iron back-up ring.

Socket fusion, hot gas fusion, threading, solvents, and epoxies will not be used to join HDPE pipe.

INSPECTION: Inspect the pipe for defects before installation and fusion. Defective, damaged or unsound pipe will be rejected.

TESTING: Hydrostatic testing shall be in accordance with the testing sections of these specifications and as more stringently required by the manufacturer. Destructive testing of fusion-welded joints shall not be allowed as a substitute for hydrostatic test.

4.1.2.2 CONCRETE FOR THRUST BLOCKING.

Concrete for thrust blocking and hydrant support shall conform to Commercial Grade Concrete per Section 00440, and achieve a minimum 28-day compressive strength of 2500 pounds per square inch or approved equal. "Sacrete" type products are not allowed.

5.1 CONSTRUCTION ODOT 00445.40 Construction/General

5.1.1 HANDLING AND STORAGE

5.1.1.1 Scope

Prior to testing any irrigation facilities, all other underground utilities shall be complete and in place. The owner shall be responsible for obtaining all utility plans from the utility companies and submitting them to the District prior to commencing testing operations. The intent of this provision is to insure that no District facility has been disturbed by the operations of utility companies.

The testing of irrigation lines for conformance with the requirements for the Arnold Irrigation District shall be the responsibility of the Contractor. This testing includes flushing, and pressure testing. The Owner shall run all tests according to approved procedures. The District Representative shall monitor and observe all testing procedures.

5.1.1.2 Certification

The Contractor or his employee shall be approved by the Arnold Irrigation District. This person shall be present at and shall supervise all phases of these procedures.

Prior to conducting tests, the Contractor shall also demonstrate his experience with such testing to the satisfaction of the District.

5.1.1.3 Procedures

Testing procedures shall be conducted during normal District working hours, 7:30 AM to 3 PM, Monday through Friday. Pressure testing shall be scheduled so completion shall be within these normal working hours. Pressure tests shall not be performed when the temperature is or is expected to be less than 33 degrees F between the hours of 10 AM and 5 PM.

The Contractor shall be responsible for providing their own testing and flushing water.

5.1.1.4 Flushing

The Contractor shall be responsible for all flushing activity, including but not limited to flushing air from service and main lines and as directed by the District's representative. Irrigation system flushing procedures shall meet Department of Environmental Quality disposal and discharge methods and requirements.

The Contractor shall thoroughly flush all lines. Flushing velocity shall not be less than 2 fps.

5.1.1.5 Pressure Testing

Prior to pressure testing, any and all air shall be flushed from system. The District Representative shall witness all valves being checked to be open, and all service stops and hydrants securely closed.

Pressure testing should be done from the high end of the main unless otherwise directed by the Arnold Irrigation District. The test pressure shall be 1.5 times the working pressure at the lowest point in an individual test reach, and not less than the rated pressure capacity of the pipe, for a period of not less than one hour unless otherwise specified by the manufacturer.

5.1.1.6 Cleanup

Upon completion of the testing and acceptance of the tests by the Arnold Irrigation District, the Contractor shall clean the area as directed by the District.

5.1.2 HOT TAPS

When appropriate and/or shown on the plans, branches and large services may be tied to existing Arnold Irrigation District facilities by utilizing a tapping sleeve and tapping valve. The performance of this procedure shall be performed only by a District approved contractor and said approval shall be obtained from the District Engineer, or his authorized representative, 48 hours in advance of performing the hot tap. No pipe shall be exposed without a District representative on site.

All hot taps shall be air tested prior to start of tap.

Hot taps shall be scheduled only during the hours of 7:30 am to 3:30 pm, Monday through Friday. No hot taps on Arnold Irrigation District facilities shall be conducted in cold weather until the air temperature is 35 degrees F and rising.

5.1.3 THRUST BLOCKING

5.1.3.1 Thrust Blocking Materials

The materials used for concrete shall conform to the requirements of the Standard Specifications. The proportions and mix design shall be such that the concrete shall develop a minimum strength of 3,000 PSI at 28 days.

5.1.3.2 Anchorage

a. Limiting Pipe Diameter and Degree of Bend

On all pipe lines 6 inches in diameter or larger, all tees, plugs, caps, bends greater than 11.25 degree, and other locations where unbalanced force exist, shall be securely anchored by suitable thrust blocking as shown on the Plans or hereinafter specified.

b. Thrust Blocking

Reaction or thrust blocking shall be placed as shown on the Plans and shall consist of concrete. Blocking shall be placed between the undisturbed ground and the fitting to be anchored. The quantity of concrete and the area of bearing on the pipe shall be as shown on the Plans or directed by the Inspector. The blocking shall be placed so it shall not obstruct repairs to the joint, unless specifically shown otherwise on the Plans. The pipe and fitting joints shall be wrapped with plastic sheeting before pouring.

c. Metal Harness

Metal harness of tie rods or clamps of adequate strength to prevent movement may be used instead of concrete blocking as directed by the Inspector. Steel rods or clamps shall be galvanized or otherwise rustproof treated as shown on the Plans or directed by the Inspector.

Thrust Blocking Details.

d. Existing Thrust Blocks

No existing thrust blocks shall be removed by Contractor unless a Arnold Irrigation District representative is on site for inspection and coordination.

5.1.3.3 DEADMAN TABLE

Deadman requirement:

<u>THRUST (lbs)</u>						
<u>Pipe</u>	<u>Plug</u>	<u>90 DEG.</u>	<u>45 DEG.</u>	<u>22-1/2 DEG.</u>	<u>11-1/4 DEG.</u>	
6	13,460	19,037	10,303	5,252	2,638	
8	23,159	32,749	17,723	9,036	4,540	
10	34,837	49,266	26,662	13,594	6,829	
12	49,266	69,671	37,706	19,224	9,659	
14	66,186	93,604	50,659	25,826	12,974	
16	85,604	121,061	65,516	33,401	16,780	

<u>CONCRETE (yds)</u>						
<u>Pipe</u>	<u>Plug</u>	<u>90 DEG.</u>	<u>45 DEG.</u>	<u>22-1/2 DEG.</u>	<u>11-1/4 DEG.</u>	
6	3.3	4.7	2.5	1.3	0.7	
8	5.7	8.1	4.4	2.2	1.1	
10	8.6	12.2	6.6	3.4	1.7	
12	12.2	17.2	9.3	4.7	2.4	
14	16.3	23.1	12.5	6.4	3.2	
16	21.1	29.9	16.2	8.2	4.1	

Pipes in excess of 16" in diameter shall require special thrust design consideration.

6.1 VALVES AND METERS

6.1.1 DESCRIPTION

6.1.1.1 GENERAL

This section covers the work necessary for furnishing and installing valves and meters.

6.1.2 MATERIALS

6.1.2.1 PINCH VALVES

Isolation valves for individual services and mainlines up to 12-inches in diameter shall be pinch type valves. Pinch valves shall be pressure rated to 100 PSI minimum working pressure, shall be properly supported as per manufacturer's recommendations, and shall be installed in a valve box suitable for the location with access lid and room around the valve to maintain it (i.e., 12-inch minimum on all sides). Valves shall be Red Valve series 75 or 70 as approved by District.

6.1.2.2 BUTTERFLY VALVES

Valves for main line exceeding 12-inches in diameter shall be butterfly type and shall meet the strength and performance characteristics of AWWA C 504 latest revision, Class 150 B mechanical joint, 2-inch square operating nut. To reduce the number of different valves in the system, M&H 4500, American Flow Control, Mueller and Pratt Groundhog are to be used exclusively.

Above ground or in vault butterfly valves shall be equipped with hand wheels.

6.1.2.3 VALVE BOXES

The appropriate size and access type Utility Vault, Jensen Vault or Tyler Vault shall be used for valve access.

For buried butterfly valves, only, valve boxes shall be a two piece Tyler Series 6855 cast iron grade adjustable box. The valve box shall have 5-inch inside diameter with a slip top section without a dirt flange on the bottom as shown in the Standard Drawings.

The Tyler Series 6855 extension piece or an approved alternate of Ductile Iron Valve Box Top #931, as manufactured by Olympic Foundry, Inc., shall be of the proper length for depth of cover. The word "IRRIGATION" shall be cast into the top of the lid.

6.1.2.4 OTHER VALVES

Shall be designed for the specific application and submitted for District approval.

6.1.2.5 METERS

Meters for services shall be propeller type McCrometer meters installed in a meter box providing suitable access for maintenance. Meters for other applications shall be designed for the specific application and submitted for District approval.

6.1.2.6 METER BOXES

Meter boxes shall be included in the design drawings. Meter box types shall be approved by the Irrigation Division.

7.1 CONSTRUCTION

7.1.1 VALVES (ODOT 01120.17 Valves)

7.1.1.1 General

Before installation, valves shall be carefully cleaned of all foreign material and inspected in open closed position. Valves shall be installed in accordance with the applicable portions of these Specifications and as per the manufacturer recommendations. Unless otherwise indicated, valves shall be mounted with the stem vertical.

7.1.1.2 Valve Boxes

A valve box shall be provided for every valve. The valve box shall not transmit shock or stress to the valve. The box cover shall be flush with the surface of the finished surface or pavement or such level as may be directed by the District.

7.1.2 GEOTEXTILE

When required to protect the drain rock from contamination, geotextile shall be placed against, and to 24-inches beyond gravel or soil at the limits of the excavation for drain rock, to prevent fines from migrating into the drain rock. This geotextile shall be a commercial fabric designated for this application and shall be approved by the District prior to its incorporation in the work.

Appendix C
District Document Examples

Documents are examples only. Any changes to the wording will need to be approved by The District.

Exhibits Needed for Documents

Piping Agreement

- Exhibit A – Legal description of pipe, centerline and easements (8.5x11) w/ Professional Engineer (PE) or Professional Licensed Surveyor (PLS) stamp. (By Developer)
- Exhibit A (Cont.) – 8.5x11 Depiction of Piping Project w/ Easements (8.5x11) w/ PE or PLS stamp. (By Developer)
- Exhibit B – Piping Specification. (By District)
- Exhibit C – District release map. Drawing depicting area of easement to be quick claimed to applicant. (By Developer.) NOTE: not all piping agreements will need to include Exhibit C.
- Current property title report or equivalent ownership verification. (By Developer)

Irrigation Contract

- Exhibit A: Property/Parcel legal description (8.5x11) w/ PE or PLS stamp. (By Developer)
- Exhibit B – Tentative subdivision w/ PE or PLS stamp. (By Developer)
- Current property title report or equivalent ownership verification. (By Developer)

Easement Encroachment Agreement

- Exhibit A – Legal Description of Owner’s Property crossing (8.5x11) w/ PE or PLS stamp. (By Developer)
- Exhibit B (Cont.) – Easement Area Depiction of crossing w/ depth and details (8.5x11). (By Developer)
- Exhibit C – Improvement Plans
- Exhibit D - Selected AID Policies

Arnold IRRIGATION DISTRICT POLICY ON UNDERGROUND UTILITY CROSSINGS

Crossing Specification. (By District)

- Current property title report or equivalent ownership verification. (By Developer)

Joint Road Use Agreement

- Exhibit A – Legal Description of pipe, centerline and easements (8.5x11) w/ PE or PLS stamp (By Developer)
- Current property title report or equivalent ownership verification. (By Developer)

Required Information for All Agreements

For completion of any agreement, the District must be provided with the Developer’s legally identifying information, including their signing name, their title if applicable, registered company name if applicable, and authority to sign if an entity. If ownership is by two people, then both need to sign. If it is owned by an entity, then the name and title of the entity representative needs to be given. If a Developer is proposing a project on land not owned by the Developer, the Developer must also provide the above information for all affected landowners.

GENERAL CONSTRUCTION AGREEMENT FOR CANAL REPLACEMENT

THIS AGREEMENT dated this ____th day of _____, 20__, between ARNOLD IRRIGATION DISTRICT, hereinafter referred to as "Arnold," located at 19604 Buck Canyon Rd., Bend, OR, 97702, telephone: (541) 382-7664, fax: (541) 382-0833 and _____, hereinafter referred to as "Developer". The development covered by this Agreement is known as _____.

WHEREAS, the Developer wishes to replace the open portion of the _____ lateral, existing delivery structures providing water delivery to Arnold Irrigation District water users, with buried pipelines constructed and realigned through the property, _____, (legal description);

FURTHER, the Developer must provide a recorded easement for the placement of these pipelines through the Developer's property to protect access to the irrigation system;

WHEREAS, Arnold agrees to allow Developer to make a change based on approved agreements, Developer shall submit an engineered drawing of the alignment and provide the engineering specifications as Exhibit B to this Agreement. Construction of the pipelines shall be to Arnold's pipeline specifications as provided to the Developer.

NOW, THEREFORE, in consideration of the covenants and conditions set forth herein, **THE PARTIES AGREE AS FOLLOWS:**

Arnold approves the installation requested by the Developer and affirmed by the exhibit.

The Developer agrees to notify Arnold at such time as construction shall commence. At such time as the lateral relocations have been completed, but the pipes has not yet been buried, Arnold hereby reserves the right to inspect the pipelines installation and require Developer to make such changes as it shall deem necessary to ensure that the construction has been in accordance with the attached plans and specifications. After completion of all work, Arnold is to be notified to review final project completion and to assure that the interconnection between the installation and Arnold's existing infrastructure will adequately provide for water delivery.

Developer agrees not to install or build any permanent structures on, over, and across the pipelines without the express written consent of Arnold.

Developer agrees not to interfere with the ability of Arnold to deliver irrigation water as a result of the construction described above. Developer shall provide a deposit of \$ _____ per lateral to cover repair costs and associated damages which may result from the construction described above. Any deposit amounts not used will be refunded to the Developer within 60 days of the end of the current irrigation season. The amount of this deposit is not intended to limit the District's remedies in the event repair costs or associated damages exceed the amount of the deposit.

Developer acknowledges that Arnold's normal irrigation season is from April 1st to and through October 31st. Further, that Arnold makes winter runs during the remainder of the year that last approximately 7 days and occur approximately every three to six weeks, weather permitting.

In the event any suit or action is brought to collect any of said costs or to enforce any provision of this Agreement, the losing party agrees to pay such sum as the trial court may adjudge reasonable as attorney's fees to be allowed the prevailing party in such suit or action and in the event of any appeal in such suit or action, the losing party agrees to pay such further sum as the appellate court shall adjudge reasonable as the prevailing party's attorney's fees.

Developer acknowledges that the subdivision review fee of \$ _____ will be paid to Arnold Irrigation District for review of specifications, inspections and staff assistance. Depending on the type of project proposed, additional District fees may be applicable.

This instrument shall bind and inure to the benefit of, as the circumstances may be, not only the immediate parties hereto but their respective executors, administrators, successors in interest and assigns as well.

It is understood that either party hereto may be more than one individual or a corporation; therefore, the parties hereto agree that if the context and the circumstances so require, the singular as used herein shall mean and include the plural, the masculine pronoun shall mean and include the feminine and the neuter and that generally all grammatical changes shall be assumed, made or implied so that the provisions of this Agreement shall apply equally to individuals and to corporations.

FOR ARNOLD:

FOR DEVELOPER:

SHAWN GERDES, Manager
Arnold Irrigation District

STATE OF OREGON, County of Deschutes) ss:

Personally appeared SHAWN GERDES, Manager, this ____ day of _____, 20____, and acknowledged the foregoing instrument to be his voluntary act and deed.

NOTARY PUBLIC FOR OREGON

STATE OF OREGON, County of Deschutes) ss:

Personally appeared _____, Developer, this ____ day of _____, 20____, and acknowledged the foregoing instrument to be his/her voluntary act and deed.

NOTARY PUBLIC FOR OREGON

After recording, return to:
Juanita DeJarnett
Arnold Irrigation District
19604 Buck Canyon Rd.
Bend, OR 97702

EASEMENT

THIS AGREEMENT is made this _____ day of _____, 20__ between _____ (GRANTOR), hereinafter referred to as "Owner" and ARNOLD IRRIGATION DISTRICT, a quasi-municipality of the State of Oregon, (GRANTEE), hereinafter referred to as "Arnold," located at 19604 Buck Canyon Rd., Bend, OR, 97702, 541-382-7664.

WHEREAS, Owner has an irrigation canal or lateral on, over, and across land owned by Owner and described herein as **Exhibit "A"** to this Agreement, for the delivery of irrigation water rights; and

WHEREAS, Owner desires to make improvements on the land as described in "Exhibit A" and conveys an easement or right-of-way to Arnold for operation and maintenance of relevant infrastructure; and

WHEREAS, Arnold has agreed to allow Owner to make such changes according to the engineering documentation submitted to Arnold.

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained herein, the parties hereby agree as follows:

I. GRANT OF EASEMENT:

Arnold hereby gives permission to Owner to alter the _____ Lateral to replace it with a buried pipeline in accordance with plans and specifications approved by Arnold. Owner hereby grants to Arnold an easement for the water delivery pipeline on the portion of the property described in the attached **Exhibit "B"**, with the plans and specifications shown on **Exhibit "B-1"**.

II. CONDITIONS OF EASEMENT:

1. The Owner agrees to notify Arnold at such time as construction shall commence. At such time as the canal relocation has been completed, Arnold hereby reserves the right to require Owner to make such changes as it shall deem necessary to ensure that the construction has been in accordance with the attached plans and specifications and provides for adequate water delivery.

2. Owner agrees not to install or build any permanent structures on, over, and across the irrigation pipeline or Arnold easement as located without the express written consent of the Arnold.

3. Owner agrees to indemnify and hold Arnold harmless of any and all claims or damages arising out of the construction necessary or operation of the pipeline after completion.

4. Owner agrees not to interfere with the ability of Arnold to deliver irrigation water as a result of the construction described above.

5. Owner agrees that any construction of infrastructure in Arnold canals or laterals shall be executed by contractors that are bonded, licensed, insured, certified and meet professional standards of the specific work for which they are hired.

6. Owner Agrees that in the event Arnold infrastructure, including but not limited to

headgates, flumes, measuring stations, radio transmission devices, weirs, diversion boxes, or culverts need to be removed, moved, or replaced will be at the Owner's expense and to Arnold specifications and approval.

7. Owner agrees that in the event of pipeline or culvert installations, all backfill must be engineered and inspected by professional engineers with as-built information provided after completion.

8. Owner hereby acknowledges that any and all maintenance and repair of the underground irrigation delivery pipeline shall be the responsibility of Owner. In the event Grantee is made aware of any problems or concerns with the operation of the underground irrigation pipeline, it shall notify Owner immediately and Owner shall commence repairs as soon as possible, recognizing the urgency of commencing such repairs due to the irrigation season and the purpose for the irrigation water delivery.

9. Owner acknowledges that Arnold's normal irrigation season is from April 1st to and through October 31st. Further, that Arnold makes short winter runs during the remainder of the year. It is Owner's responsibility to obtain stock run schedules and understand that these dates may change unexpectedly. If construction occurs during deliver of water, then the Owner agrees to compensate all Arnold customers affected by interference and any costs incurred by Arnold staff and services.

10. This Agreement shall run with the land as described on Exhibit "A" to this Agreement.

11. In the event any suit or action is brought to collect any of said costs or to enforce any provision of this Agreement, the losing party agrees to pay such sum as the trial court may adjudge reasonable as attorney's fees to be allowed the prevailing party in such suit or action and in the event of any appeal in such suit or action, the losing party agrees to pay such further sum as the appellate court shall adjudge reasonable as the prevailing party's attorney's fees.

12. This instrument shall bind and inure to the benefit of, as the circumstances may be, not only the immediate parties hereto but their respective executors, administrators, successors in interest and assigns as well.

13. It is understand that either party hereto may be more than one individual or a corporation; therefore, the parties hereto agree that if the context and the circumstances so require, the singular as used herein shall mean and include the plural, the masculine pronoun shall mean and include the feminine and the neuter and that generally all grammatical changes shall be assumed, made or implied so that the provisions of this Agreement shall apply equally to individuals and to corporations.

14. All Arnold fees must be paid in full before construction begins.

15. If this Easement is for a bridge or culvert, the addendum "Free Standing Bridge or Culvert Installation" must be attached.

16. An administrative fee of \$_____ is payable for preparation of these agreements, recording and other costs.

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, AND SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES AS DEFINED IN ORS 30.930 AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, AND SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009.

GRANTOR:

GRANTEE:

ARNOLD IRRIGATION DISTRICT:

By: _____

By: _____

It: _____

SHAWN GERDES, Manager

STATE OF OREGON, County of Deschutes) ss:

Personally appeared SHAWN GERDES, who stated that he is the Manager of Arnold Irrigation District and that he is authorized to execute the foregoing instrument on behalf of the District. Before me this ____ day of _____, 20 ____.

Notary Public for Oregon
My Comm. Expires: _____

STATE OF _____, County of _____) ss:

Personally appeared _____, who stated that ____ is the _____ of _____ and that ____ is authorized to execute the foregoing instrument on behalf of the corporation. Before me this ____ day of _____, 20 ____.

Notary Public for Oregon
My Comm. Expires; _____

AFTER RECORDING RETURN TO:

Arnold Irrigation District
19604 Buck Canyon Rd
Bend, OR 97702

This space is reserved for recorder's use.

EASEMENT ENCROACHMENT AGREEMENT

THIS AGREEMENT dated this _____ day of _____, 20__ between Arnold Irrigation District hereinafter referred to as ("AID"), located at 19604 Buck Canyon Rd. Bend, Oregon 97702, Telephone (541) 382-7664, Fax: (541) 382-0833 and _____ hereinafter referred to as ("Owner").

RECITALS

A. Owner is the owner of real property located in Deschutes County, and legally described on the attached and incorporated **Exhibit A** (the "Property");

B. The Property is encumbered by an easement [**or other type of encumbrance**] (the "Easement") in favor of AID for [**insert scope of easement interest such as for the installation, operation, maintenance and repair (collectively "Operations") of an irrigation canal, lateral or other infrastructure (the "Facilities")**] on over and across the area depicted on the attached and incorporated **Exhibit B** (the "Easement Area");

C. Owner desires to construct or install improvements [**provide further detail of the improvements**] (collectively, the "Improvements") within the Easement Area pursuant to the plans and specifications set forth on the attached and incorporated **Exhibit C** (the "Plans"); and

D. AID has agreed to allow Owner to construct or install the Improvements as set forth in the Plans, pursuant to the terms and conditions set forth in this Easement Encroachment Agreement (the "Agreement").

AGREEMENT

In consideration of the covenants and conditions set forth in this document, the parties agree as follows:

1. Permission to Construct Improvements. AID hereby gives permission to Owner to construct and install the Improvements within the Easement Area, in accordance with the Plans set forth in Exhibit C and the terms and conditions of this Agreement. Any deviation from the Plans must first be approved by the AID manager in writing.

2. Easement Remains in Full Force and Effect. The parties acknowledge and agree that, except where expressly modified by this Agreement, the terms of the Easement remain in full force and effect.

3. Notice of Construction; Inspection. Owner shall notify AID no less than one week prior to the commencement of construction of the Improvements. At such time as the work is ready for inspection [**insert any benchmark before which inspection must take place such as "prior to any backfill"**], Owner shall contact AID to arrange a time for AID to conduct an inspection. AID reserves the right to require Owner to make such changes as it deems necessary to ensure that the construction or installation has occurred in accordance with the Plans, and to ensure that the construction or installation does not impair AID's Facilities or Operations.

4. Owner Responsible for Improvements. Owner agrees that all construction and maintenance of any Improvements or other work, facilities, or structures contemplated by this Agreement shall remain the responsibility of Owner.

5. Impediments Prohibited. Other than as expressly provided for in this Agreement, Owner agrees not to install or build any structures or impediments on, over or across the Easement.

6. AID Activity in Easement Area. The parties agree that:

6.1 In the event that AID requires access to that portion of the Easement Area, on which the Improvements encroach, for any activity related to the lawful use of the Easement, AID may at Owner's sole cost and expense, remove, alter, or otherwise destroy any or all of the Improvements. If in AID's sole judgment, there is an alternate access location or alternate method available to AID to carry out AID's activity, Owner may elect to fully reimburse AID for the use of the alternative location or method in lieu of removing, altering, or destroying the encroaching Improvements.

6.2 AID agrees that it will attempt to cooperate with Owner to minimize impacts to the Improvements, but AID is not required to do so.

6.3 AID further agrees that it will provide reasonable advance notice to Owner before undertaking any work that impacts the Improvements, but AID is not required to obtain Owner's permission before commencing any work under this section.

6.4 Advance notice is not required in the event of an emergency (as determined by AID in its sole discretion).

7. AID Access to Easement. If Owner wishes to construct any fencing on the Property (outside the Easement Area) that would prevent AID from accessing the Easement Area from either direction, Owner shall provide AID with a key or entry code to any gates. Any such fencing within the Easement Area is an Improvement subject to the terms of this Agreement, including but not limited to the pre-approval requirements.

8. Waiver of Claims for Damage to Improvements. Owner agrees to waive any claims against AID, its officers, directors, employees, representatives, agents, successors and assigns ("AID Parties"), and hold the AID Parties harmless in perpetuity for any and all claims or damages arising out of damage to the Improvements as a result of AID's Operations within the Easement Area.

9. Indemnity. Owner agrees to defend, indemnify and hold harmless AID, its officers, directors, employees, representatives, agents, successors and assigns (collectively, "Indemnified Parties") from and against all claims, demands, causes of actions and suits of any kind or nature, liabilities, damages, losses, costs or expenses (including, without limitation, attorney fees and costs incurred in defending the same) for personal injury, death or damage to property related to the presence of the Improvements or other unauthorized structures or encroachments within the Easement Area or related to the use of the Easement Area by Owner and Owner's invitees, employees, representatives, and agents, except to the extent that such Liability is caused by the Indemnified Parties' own negligence or wrongful acts.

10. No Interference with AID Operations.

10.1. Owner agrees not to interfere with AID's Operations, including its ability to deliver water through the Facilities.

10.2. Owner acknowledges that AID's normal irrigation season is from April 1st to and through October 31st. Further, that AID makes short winter deliveries during other times of the year. It is Owner's responsibility to obtain winter delivery schedules and understand that these dates may change unexpectedly.

10.3. In the event Owner interferes with AID's Operations, Owner agrees to compensate AID for all direct and indirect costs resulting from that interference.

11. AID Policies. Owner acknowledges and agrees to abide by all AID policies, rules and regulations now in effect and as may be amended in the future. In the event the Improvements involve a utility crossing under a canal, Owner agrees to comply with AID's "Underground Utility Canal Crossing" policy. If the Improvements include a bridge or culvert, the Owner agrees to comply with AID's "Free Standing Bridge or Culvert Installation" policy. Those policies are attached as **Exhibit D**.

12. Attorney's Fees. If any dispute arises concerning the interpretation or enforcement of this Agreement the prevailing party in any such dispute is entitled to recover all of its attorney's fees, paralegal fees, costs, disbursements and other expenses from the non-prevailing party, including without limitation those arising before and at any arbitration, trial, bankruptcy, or other proceeding and in any appeal.

13. Agreement Runs with the Land; Successors and Assigns. This Agreement shall run with the land and shall bind and inure to the benefit of the Parties and their respective executors,

administrators, successors-in-interest and assigns. As used in this Section, "successors-in-interest" shall refer to the successors to all or substantially all of a party's assets and to their successors by merger or consolidation.

14. Joint and Several Liability. It is understood that either party hereto may be more than one individual or a corporation; therefore, the parties hereto agree that if the context and the circumstances so require, the singular as used herein shall mean and include the plural, the masculine pronoun shall mean and include the feminine and the neuter and that generally all grammatical changes shall be assumed, made or implied so that the provisions of this Agreement shall apply equally to individuals and to corporations. If any party consists of more than one person or entity, the liability of each such person or entity signing this Agreement shall be joint and several.

15. Fees. All AID fees must be paid in full before construction or installation of the Improvements begin.

16. Amendment. The terms and conditions of this Agreement shall not be waived, altered, modified, supplemented, or amended in any manner whatsoever without prior written approval of the parties hereto, as evidenced by execution of a written recorded instrument.

17. Choice of Law; Venue. This Agreement shall be governed by and construed in accordance with the laws of the State of Oregon as interpreted by the Oregon courts. The exclusive venue for any litigation arising under this Agreement shall be in the Circuit Court for Deschutes County, Oregon unless the parties agree otherwise. However, the parties may attempt to resolve any dispute arising under this Agreement by any mutually agreeable means of dispute resolution.

18. Counterparts. This Agreement may be executed in counterparts, each of which, when taken together, shall constitute fully executed originals. Facsimile or e-mail signatures shall operate as original signatures with respect to this Agreement.

19. Notice. All notices or other communications required or permitted by this Agreement, shall be in writing and shall be deemed given when personally delivered, or in lieu of personal service, three (3) days after deposit in the United States mail, first class, postage prepaid, certified, or the next business day if sent by reputable overnight courier, provided receipt is obtained and charges prepaid by the delivering party. Any notice shall be addressed as follows:

AID: Arnold Irrigation District
19604 Buck Canyon Rd
Bend, OR 97702

OWNER: _____

These addresses may be changed from time to time by either party by providing written notice to the other in the manner set forth above.

20. Recording. This Agreement may be recorded at any time by any party in the real property records of Deschutes County.

21. Construction. The terms of this Agreement shall not be construed in favor of or against either party based on authorship, but shall be construed as if both parties prepared this Agreement.

22. Captions; Headings. Section headings are for ease of reference only and should not be used in constructing or interpreting this Agreement.

23. Severability. In the event that any phrase, clause, sentence, paragraph, section, article or other portion of this Agreement shall become illegal, null or void or against public policy, for any reason, or shall be held by any court of competent jurisdiction to be illegal, null or void or against public policy, the remaining portions of this Agreement shall not be affected thereby and shall remain in force and effect to the fullest extent permissible by law.

24. Legal Counsel. Owner acknowledges that this is a legal document and that Owner has been advised to obtain the advice of legal counsel in connection with its review and execution of this Agreement. Owner covenants that it will not deny the enforceability of this Agreement on the basis that Owner elects not to obtain legal counsel to review and approve this Agreement.

25. Waiver. No waiver by either party of a breach of any of the terms, covenants or conditions of this Agreement by the other party shall be construed or held to be a waiver of any succeeding or preceding breach of the same or any other term, covenant or condition herein contained.

26. Authority. Each individual signing on behalf of a party to this Agreement states that he or she is the duly authorized representative of the signing party and that his or her signature on this Agreement has been duly authorized by, and creates the binding and enforceable obligation of, the party on whose behalf the representative is signing.

AID

OWNER

By: _____
Shawn Gerdes, Manager

By: _____
Name: _____
Its: _____

STATE OF OREGON)
) ss.
County of Deschutes)

This instrument was acknowledged before me on _____, 2012 by
Shawn Gerdes as Manager of Arnold Irrigation District.

NOTARY PUBLIC FOR OREGON
My Commission Expires: _____

STATE OF _____)
County of _____) ss.

This instrument was acknowledged before me on _____, 2012 by _____
_____ as _____, of _____.

NOTARY PUBLIC FOR _____
My Commission Expires: _____

Exhibit A
Legal Description of Owner's Property

Exhibit B
Easement Area

Exhibit C
Improvement Plans

Exhibit D
Selected AID Policies

**ARNOLD IRRIGATION DISTRICT POLICY ON
UNDERGROUND UTILITY CROSSINGS**

No work shall be conducted within the Irrigation District's easement until written permission has been obtained. This includes work of any kind, underground or above. To receive written permission, project plans must be submitted with detailed descriptions of easement crossing methods, and all applicable Irrigation District fees must be paid.

Any drilling operation must remain outside of Irrigation District's easement. This includes drill staging pits, and all associated actions and wastes. A detailed description of any work to be done within the easement must be submitted. This includes transporting of materials and/or equipment through the easement.

Drilling path must remain a minimum of three (3) feet away from the Irrigation District's facilities. The three (3) foot buffer is to be measured from the nearest part of the drilling to the nearest part of any of the District's facilities. District facilities may include, but are not limited to; structures, pipes, and canal surfaces. All drilling must be thoroughly backfilled with Bentonite Clay, eliminating voids. Placement of Bentonite must be done to the District's satisfaction.

Damage caused to District facilities shall be repaired or replaced in such a way that the facility is left in as good or better condition. The cost associated with the damages shall be paid for by Contractor. In addition to the cost of damaged facilities, liquidated damages may be assessed due to distribution disruption caused by the damages. Any damages caused by District water that has been released on fault of the contractor must be paid by the contractor.

**ARNOLD IRRIGATION DISTRICT POLICY ON
FREE STANDING BRIDGE OR CULVERT INSTALLATION**

In the case of culvert or bridge installation, the Owner will immediately remedy any leakage around the exterior of a culvert or bridge. This includes any type of channelization or erosion that would not have existed before culvert or bridge was installed. Bridge must be free standing (no supports in ditch).

In the case of culvert or bridge installation, the Owner shall install wingwalls at the beginning and end of the culvert or bridge section. The wingwalls shall conform to the Irrigation District's specifications unless otherwise agreed upon with the Irrigation District's Manager.

Owner assumes permanent responsibility for the maintenance of any inlet structure and culvert or bridge integrity for the life of the culvert or bridge. This includes maintaining the quality and quantity of riprap, concrete, or other material necessary for the protection of the surrounding banks and culvert or bridge integrity. In the event that the culvert or bridge fails in any way to adequately carry the full flow amount of water, the culvert or bridge will be replaced by Owner at the direction of the Irrigation District.

Owner agrees that the construction shall remain the responsibility of the Owner, except for periodic inspection and minor adjustments, which the Irrigation District may agree to perform. Any major repairs or replacement necessary in the construction shall remain the full responsibility of Owner. Owner further agrees to pay any and all cost associated with the construction.

6. First Party hereby agrees use of this license for drive access by First Party, invitees, servants, independent contractors or family members of First Party. License subject to revocation upon land use application to divide real property owned by First Party described on exhibit A of this document.

DATED this _____ day of _____, 20____.

GRANTEE:

GRANTOR:

Arnold Irrigation District

ABC Investments, LLC

By: _____
Manager

By: _____
JANE DOE, Member

STATE OF OREGON)
)ss.
County of Deschutes)

Personally appeared before me this _____ day of _____, 20____, the above named
_____ who is the _____
of Arnold Irrigation District and acknowledge the foregoing instrument to be their voluntary act and deed on
behalf of Arnold Irrigation District.

Notary Public for Oregon
)ss.
County of Deschutes)

STATE OF OREGON)

The foregoing instrument was acknowledged before me this _____ day of _____, 20____, by
_____.

Notary Public for Oregon

AFTER RECORDING RETURN TO
Arnold Irrigation District
19604 Buck Canyon Rd.
Bend, Oregon 97701

IRRIGATION CONTRACT

(Development Adjacent to Open Canal)

PARTIES: Arnold Irrigation District ("District")
a municipal corporation of the State of Oregon,

ABC Investments, LLC "First Party"

RECITALS:

- A. First Party owns real property described on Exhibit "A," attached hereto and by this reference made a part hereof. The land owned by First Party is currently used for development speculation and is undeveloped at the time of execution of this document.
- B. District is an Oregon municipal corporation formed and operating pursuant to ORS Chapter 545. District owns and operates the Main Canal and their lateral systems ("Canal"), which conveys water from the Deschutes River for irrigation of land located within and without the boundaries of the District, for the delivery and use of water.
- C. District has maintained the Canal and the head gates and other improvements located on or adjacent to such Canal located within a portion of the Exhibit A real property. District also has an easement of right-of-way for the operation, maintenance and repair of the Canal on, over and across parts of the Exhibit A real property.
- D. **The District does not currently deliver water to Exhibit A** real property.
- E. First Party has filed a request with appropriate local governmental authorities for permission to divide the real property as shown in Exhibit B. First Party plans to call this development abc. Upon completion, this development will increase the use on the subject property and adjacent to the Canal. First Party recognizes and accepts the hazards associated with the open Canal in close proximity to increased use.
- F. The parties desire to acknowledge the existing easement for, and the purposes of District, concerning the safe delivery of irrigation water and guaranteed service to District patrons in the District. This agreement shall service after the development is approved and shall be recorded in the Deschutes county land records prior to sale of any portion of real property described in Exhibit B, under the terms and conditions described herein, to provide notice of restricted use, clarify liability, and acknowledge possible changes in delivery methods.

AGREEMENT:

NOW, THEREFORE, the parties hereby acknowledge the following:

1. The Recitals set forth above are incorporated into this Agreement as if included herein.
2. First Party hereby acknowledges that District has existing easement rights under State and Federal law, including, but not limited to authority under the federal Carey Act, the Desert Lands Act, the Reclamation Act, and the Oregon Revised Statute Chapter 545.
3. This Irrigation Contract shall run with the land and bind the owners of the real property described on Exhibit A, attached hereto and incorporated by reference, and shall bind the parties' heirs, successors and assigns in perpetuity, and said Irrigation Contract shall be recorded in the land records of Deschutes County, Oregon, serving as notice to successors and third parties as well.
4. This acknowledges that First Party, its heirs, successors, and assigns, recognize and accept the hazards associated with the open Canal adjacent to the subject property. First Party, its heirs, successors, and assigns hereby indemnifies District, its agents, successors, or assigns, for any claim, suit or action made against District to recover for harm or injury which may occur to persons, personal property or real property in the future on or involving the easement property, adjacent properties, or both, depicted in Exhibit B adjacent to the Canal.
5. Further, the parties acknowledge that the servient parcels, property adjacent to the Canal in Exhibit B, are subject to a right-of-way easement benefiting District for the purpose of operating and maintaining the irrigation system and the Canal located thereon, and will be accessible at all times for ingress and egress over the servient parcel to operate, maintain, construct, erect or install any surface or subsurface structures or facilities necessary to fulfill the purposes of the District in accordance with state and federal law, within the servient parcel. A depiction of the servient parcels are included in Exhibit B, incorporated herein by reference, and include a drawing of the easement area.
6. The parties also acknowledge that District has the right to pipe this Canal or make other changes to effect the efficient operation of the District, and First Party, its heirs, successors, and assigns, acknowledge that District may enclose the Canal and that First Party, its heirs, successors, and assigns hereby waive any right to remonstrate such improvement, now or in the future. It is acknowledged by the parties that the Canal may provide some aesthetic benefit to adjacent owners, but that this benefit is incidental to District's purposes as stated in ORS Chapter 545 and as established by the Oregon Legislature and Oregon Administrative Rules from time to time, and that the purposes of District will govern disposition of the Canal in the future.

DATED this _____ day of _____, 20____

GRANTEE:

GRANTOR:

Arnold Irrigation District

ABC Investments, LLC

By: _____
Manager

By: _____
JANE DOE, Member

STATE OF OREGON)
)ss.
County of Deschutes)

The foregoing instrument was acknowledged before me on this _____ day of September, 20____, by _____, Manager of the Arnold Irrigation District.

Notary Public for Oregon
STATE OF OREGON)
)ss.
County of Deschutes)

The foregoing instrument was acknowledged before me this _____ day of September, 20____, by John Doe, Member, ABC DEVELOPMENT, L.L.C.

Notary Public for Oregon

Appendix D

Developer Irrigation Plan

Preapplication Information & Data Request

The list of items below is representative of the evaluation process necessary to establish effective water management and planning for the Development and the District. This Request should be considered as a guide to planning water requirements for the Development. Consider each item and its potential implications to the planning and operations of the Development, and then complete the Request as much as possible. It should be noted that the information requested by the District will likely be necessary in order to proceed with water transfer applications to the Oregon Water Resource Department (OWRD), and or with any Land Use proceedings. Contact the District offices upon completion to schedule the Preapplication Meeting with District Staff.

1. Where is the Development, and is it within District boundaries? Provide legal description as it appears on the deed and tax assessor's map.
2. How much water (in acres) is needed for the Development? Note if need is for surface water from an irrigation ditch or ground water from a well. If for ground water, then provide in equivalent surface water acres or mitigation credits. If the development is to be in phases, denote water requirement per phase. Indicate whether there are water rights either owned, or appurtenant, to the Development and who owns the water.
3. What types of water uses are being considered? (quasi-municipal, irrigation, industrial, commercial, pond) If in phases, denote water quantity requirement by use per phase. Be sure to note domestic water in documenting uses.
4. When is the water needed for use? If in phases, denote planned timing of phases. (month & year)
5. How is the water needed for the development going to be acquired? In whose name the acquired water right will be held? In addition, what party will be responsible for payment of the District's assessment?
6. Have you contacted the Deschutes River Conservancy regarding the potential of using temporary mitigation credits through the Deschutes Water Bank for the Development?
7. What party will be responsible for ensuring beneficial use and managing the water delivery system(s)?
8. Briefly describe how the water for all uses is to be delivered. Descriptions should include wells or District points of delivery, sprinkler system layouts to all lots, necessary easements, rotations of water use, etc....
9. Has there been any evaluation of present water courses and tail water management? If so, describe below:
10. Other issues or considerations of note with development, including any special points of interest such as designated wetlands or natural hazards.

Application Guidelines

The following information shall be shown on the Development Irrigation Plan Application or provided in the accompanying materials as much as possible. Plan may be considered incomplete unless all such applicable information is provided either in an attachment, exhibit or in narrative.

A. General information required:

1. Proposed name of land division or development, if applicable.
2. Names, addresses and phone numbers of the property owner of record, authorized agents or representatives, engineer or surveyor, and any assumed business names filed or to be filed with the Corporation Commission by the applicant.

Attachments required:

1. Certified copy of the recorded instrument under which the applicant claims an ownership interest, or copy of a land sales contract which binds the applicant in the event of approval.
2. A Title Report and/or a Subdivision Guarantee prepared within the previous ninety (90) days by a qualified title company.
3. A copy of a groundwater application submitted to the Oregon Water Resources Department (OWRD) which indicates that the applicant has applied for the intended use of water as applicable. This shall include zone of impact information. Final approval of OWRD shall be required prior to District approval of transfer. Copy must demonstrate receipt by OWRD.
4. Map of the division (conceptual development plan), including date of preparation, true north, scale, and gross area of the proposed division. Map shall clearly show proximity to existing District boundaries and facilities (contact District offices 541.548.6047 for assistance)
 - i. Location, names, and widths of existing improved and “unimproved District canals,” laterals, and related facilities.
 - ii. Location of any existing features such a section lines, section corners, city and special district boundary lines, and survey monuments.
 - iii. Location of existing/planned structures, roads, streets, rights of way, railroads, and any specific points of interest such as rock outcroppings, designated wetlands, wooded areas, and natural hazards.
 - iv. Layout of intended land uses for development, including residential, commercial, open space, lodging or recreation.
 - v. Location and direction of water courses, and the location of areas subject to flooding and high water tables, including tail water to or from surrounding properties.
 - vi. Phasing – show phase lines and dates of proposed development on the tentative plan.
 - vii. Location, approximate area, and dimensions of each lot or parcel, and proposed lot or parcel numbers
 - viii. Location, width, and use or purpose of any existing/planned easement or right-of-way for utilities, bikeways, and access corridors within and adjacent to the proposed land use division in relationship to the District easements and facilities.

- ix. Existing/planned dry wells, sanitary and storm sewer lines, water mains, septic facilities, culverts, and other underground and overhead utilities on the proposed land division and adjacent public rows.

B. Information/Map concerning proposed Water Management Plan:

1. Planned water facilities to serve the planned area, including facility sizes, general location or routes and how the facilities will tie into adjacent areas and facilities.
2. Location, names, width, typical improvements, cross sections, bridges, culverts, approximate grades of all proposed streets, roads, and right-of-way and the relationship to all existing and projected streets.
3. Location, width, and purpose of all proposed water transmittals and relationship to all existing water uses within 500 feet, including surface and groundwater uses.
4. Location, approximate area, and dimensions of any water use proposed and plans for improvements or development thereof, including required measuring devices.
5. Proposed use, location, approximate area, and dimensions of any point of diversion, pump, storage, or well intended for use within a land division.
6. Source, method, and preliminary plans for domestic and other water supplies, sewage disposal, storm water disposal and other drainage facility plans, and all utilities relating to water use, including rotations needed and seasonal need differences.
7. Description and location of any proposed common area and community facility, such as quasi-municipal uses.
8. Proposed deed restrictions including access restrictions or protective covenants if such are proposed to be utilized.