
	<b>KENNEWICK IRRIGATION DISTRICT POLICY 4.19 Standard Specifications</b>							
<b>APPROVED:</b>	<b>Effective Date: July 20, 2010</b>				<b>Revision: 0</b>			
 KID Board President	<b>Annual Review performed by:</b>	Initial	Initial	Initial	Initial	Initial	Initial	Initial
<b>Date: July 20, 2010</b>	<b>Review date:</b>							



**POLICY:**

The Kennewick Irrigation District (KID) shall develop Standard Specifications for Construction of Irrigation, Drainage, and Potable Water Facilities.

These Standards shall be prepared under the direction of the KID Engineering Manager.

The District shall maintain a Standard Materials List and Standard Construction Details. These shall be prepared and modified as required by the KID Engineering Manager.

See Procedure of the same subject for details.

	<b>KENNEWICK IRRIGATION DISTRICT PROCEDURE 4.19 Standard Specifications</b>								
	<b>APPROVED:</b>   District Manager		<b>Effective Date: May 1, 2012</b>				<b>Revision: 2</b>		
Date: May 1, 2012		Annual Review performed by:	Initial	Initial	Initial	Initial	Initial	Initial	Initial
		Review date:							

**PROCEDURE:**

STANDARD SPECIFICATIONS - IRRIGATION WATER DISTRIBUTION SYSTEMS

**AUTHORITY:**

On July 20, 2010, the Board of Directors replaced Policy and Procedure #42, Water Distribution, with Policy and Procedure 4.19, Standard Specifications and adopted the Washington State Department of Transportation’s Standard Specifications for Road, Bridge, and Municipal Construction, as amended herein, via Resolution 2010-10, Adoption of Construction Standards for the KID.

As an alternative, a Facility Installation Agreement (Policy & Procedure #18, Facility Installation Agreements) may be filed and the work bonded or otherwise secured under terms acceptable to the KID Board of Directors prior to plat signature. Submittal of record drawings/O&M manuals is required prior to KID representatives signature on the plat.

Preliminary plans and a Distribution System Design Report are to be submitted to the KID Engineer for review. After changes or revisions are made to the plans, if any, a revised set shall be submitted to the KID. Upon KID approval of the final revised plans, construction may proceed. All facilities must be inspected by a KID Inspector prior to back-filling to assure specification compliance.

None of the Standards contained herein are considered to be all-inclusive.

**PURPOSE:**

The purpose of these Standard Specifications is to set a minimum design and construction standard. These Standard Specifications were written with the intent of having an efficient, cost-effective distribution of water without compromising safety, operations, maintenance or environmental concerns. Further, equitability of water distribution has been included.

The KID main irrigation delivery system was designed and constructed in the 1950’s to deliver water to farms. It consists of a series of open ditches and piped gravity laterals. Water is delivered to the head end of the KID canal by the US Bureau of Reclamation at a steady rate on a continuous basis and takes two days to flow from the head end of the canal to the tail end

(Chandler to Hover – 42 miles). Due to the KID system being a uniform “supply system”, water is not meant to be delivered on a “demand” basis.

Additionally, the KID system was designed to only carry a maximum of five (5) gallons of water per minute for each acre of land. Due to this design flow capacity restriction, water must be delivered on a rotating basis within urbanized developments.

**1. KID GENERAL IRRIGATION SYSTEM STANDARDS AND SPECIFICATIONS**

- 1.1 KID Area Water Entitlement: Upon beginning area (plat) development, the owner shall submit a legal description defining the boundary of the area proposed to be developed within the KID. The KID shall calculate irrigable acreage for the area in question and submit the total to the owner. Systems shall then be designed based on Section 1.2-Water Allotment. All parcels within the KID project boundaries shall be connected to the KID system. Assessment charges will be determined based on the most recently approved Tier/Toll Rate Structure.
  - 1.1.1 All single family dwelling units created shall be individually connected to the KID system and be charged the most recent adopted tier/toll rate with a riser that consists of a valve provided that each unit has a unique tax parcel identifying number.
  - 1.1.2 For multi-family dwelling units such as duplexes, multi-plexes, where units are attached to one another, they shall be served by a riser to each building regardless of whether each building has its own tax parcel.
  - 1.1.3 For single-family attached units (town homes or townhouses), Service Risers shall be installed no further than 300 ft. apart, with a service riser to each side of a street right of way or access easement. Each tax parcel shall be charged its appropriate tier/toll charge based on the most recent approved tier/toll rate structure.
  - 1.1.4 For detached condominium units or other developments, which have common ownership of all exposed land or common areas, KID will require one riser per commonly owned unique tax parcel and the entity or individual owning the common area parcel(s) will be charged the most recently approved tier/toll rate structure.
  - 1.1.5 For commercial development or apartments with multiple buildings on one legal parcel, KID will evaluate the best way to serve the acreage and provide the owner with the design, risers required, and annual rate per the most recently approved tier/toll rate structure.
- 1.2 KID Water Allotment: The total water allotment is 3.5 acre-feet per irrigable acre per year. The peak instantaneous water allotment shall be calculated at 5.0 gpm per irrigable acre (0.4456 cfs per 40 acres). The monthly water allotment for the area, as defined by the United States Bureau of Reclamation, varies depending upon the month. Water users shall not deny other water users the use of their water allotment. Each area developed for yard irrigation shall have a Homeowner’s Association or a Water User’s Association with a designated representative to schedule usage to assure each delivery is getting its allotment.

Individual booster pumps shall not be allowed directly connected to KID pressurized Local Improvement District (LID) service lines. Those in violation of the above stated KID Policy shall be subject to restriction and/or shut-off of delivery until in compliance.

### 1.3 KID Rights-of-Way / Easements

- 1.3.1 Securing – Irrigation easements (except the 1890 Federal irrigation operation and maintenance easement) shall be secured and included on all plans, including those needed for operations, maintenance, construction, pipelines, ponds, pump stations, and access. The minimum width of an irrigation easement, not coincidental to another utility easement, is 10 feet. A pipeline easement running adjacent to two lots shall be located entirely on one lot (not split six feet on each lot). The minimum width of an access easement to a facility is 15 feet, with 20 foot radii at the inside of all turns and a 400 foot radius turn-around area at each ending point. Pond easements shall include the pond, vehicle access around the pond (15 feet minimum) and an access easement to it (if necessary).
- 1.3.2 Storage – Except for KID, no stockpiling of materials shall be allowed without a permit. In no case shall hazardous materials, (e.g.: chemicals, herbicides, insecticides), be stored on irrigation easements. Except for KID, no permanent structures shall be permitted within irrigation easements or right-of-ways.
- 1.3.3 Livestock – Livestock shall not be grazed on or allowed long-term access to KID canals or wasteways.
- 1.3.4 Permitting – Permits may be granted for temporary or continuous encroachment in easements at the KID’s Board of Directors’ discretion. All encroachments must be permitted (Policy 4.2, Protection of KID & USBR Rights-of-Way and Easements). Permits are revocable.

### 1.4 KID Legal Conformance

- 1.4.1 Safety – All safety requirements of the USBR, Department of Labor & Industries, WISHA, OSHA, NIOSH as well as WSDOT shall be observed within KID easements or rights-of- way. Work sites shall be adequately secured during non-working times to prevent access to the site.
- 1.4.2 Traffic Control – All permits will be obtained from the appropriate agency when working within public roadways. The Manual for Uniform Traffic Control Devices shall be complied with where applicable.
- 1.4.3 Expiration of Construction Plan Approvals – KID approvals of construction plans shall expire one (1) year from the date of KID



approval of the plans unless construction has started or unless the plans have been incorporated into a written building permit or other written project approval for a project by a City or County. If the KID approval has been incorporated into a permit or other written project approval, KID's construction plan approval shall expire upon the expiration or other termination of the City or County permit or project approval. Plans that have expired may be resubmitted for review and they will be re-reviewed for conformance with KID Policy and Standards in effect at the time of resubmittal. KID reserves the right to modify any construction plan approval at any time to correct errors or omissions.

- 1.4.4 Dust Control – Measures shall be taken to prevent dust from blowing. For projects on irrigable land, water may be taken from the point where water is delivered to (not the canal), which is the KID water user irrigation delivery point. No permanent facilities shall be installed for dust control water. KID access shall not be impeded by any private water diversion facilities that connect to the KID irrigation system.
- 1.4.4 Utility Locates – The on-call number (1-800-424-5555) shall be called at least 48 hours (2 business days) prior to digging. No trenching or digging is allowed in the KID irrigation system easement or right-of-way without a crossing permit being approved by KID.
- 1.4.5 Prevailing Wages – The current prevailing wages shall be paid to all workers for projects involving public monies and these wages are outlined in the KID Specifications for each KID Project to be completed by a Contractor.
- 1.4.6 Bonding – Bond amounts shall be calculated as though the KID is performing the work. The amount will include the cost of public works plus Washington State sales tax plus 10% contract administration fees. If the developer chooses to bond the installation of the irrigation facilities, he/she shall provide the KID one of several types of bonds.
  - 1.4.6.1 A cash bond may be submitted, which will be deposited into a KID account. No interest will be paid on this account. At such time as the work is completed to the satisfaction of the KID Engineer and a request is made by the developer for reimbursement, the KID shall reimburse the developer.
  - 1.4.6.2 An assignment of funds from a financial institution may also be used. At such time as the work is completed to the satisfaction of the KID Engineer and a request is made by the developer for release of assignment, the KID shall issue a letter to the financial institution releasing said funds.
  - 1.4.6.3 A performance bond may be issued from an insurance company to the KID. At such time as the work is completed to the satisfaction of the KID Engineer and a request is made

by the developer for release of bond, the KID shall issue a letter to the insurance company releasing said bond. If the work is not completed to the satisfaction of the KID Engineer within the specified date, the KID shall draw on the bond monies to install the facilities.

- 1.4.6.4 The KID Board may by resolution accept security that creates a lien against the property as an alternative to a bond or assignment if, in the sole discretion of the Board, the Board determines that installation of the system or provision of a bond or assignment is not economically possible and the delay of the subdivision would create an unjust hardship on the landowner.

## 1.5 KID Project Design Requirements

- 1.5.1 Professional Engineer Requirement – The following designs shall require a set of plans stamped by a Professional Engineer licensed in the state of Washington and submitted to the KID prior to KID approval: Any short plat, plat, or subdivision containing in excess of five (5) lots or greater than 25 acres (non-ag); all bridges; all canal and lateral crossings; all modification of slopes bordering canals or irrigation mains (to include areas outside right-of-ways) to a steeper than angle of repose (geo-technical); Introduction of irrigation water upgradient of canals or irrigation mains (geo-technical); all ponds (Ponds with a capacity in excess of 10 acre-feet must receive approval from the Department of Ecology); and all pump and booster stations (non-ag). If a project contains any part listed above, a Professional Engineer licensed in the State of Washington shall stamp the entire set of plans.
- 1.5.2 Point of Delivery – The source of water shall be determined by the KID Engineer, and development shall be tied to point of delivery using the standard specifications typed herein. Final connection from KID facilities to the new distribution system shall be completed by KID crews at the landowner's expense. A licensed contractor may be allowed to make final connection with KID approval. A deposit equal to the estimated cost for making the connection must be paid to the KID before crews will perform the work. The estimate shall be made by the KID's Field Operations Manager.
- 1.5.3 Infrastructure – The KID reserves the right to abandon and/or design and install irrigation infrastructure such as turnouts, checks, gates, pipe, fittings, easements, and pump stations as necessary at KID's expense.
- 1.5.4 Consolidation – The KID promotes consolidation of and adding on to existing Local Improvement Districts (LID's) for greater system

- efficiency. Where practical, the designer/engineer shall coordinate with other developments and the KID to achieve this consolidation.
- 1.5.5 Conservation – The design of irrigation system facilities shall promote measures to conserve water and to limit irrigation wastewater return flows and spills. See Section 4 for additional information.
- 1.5.6 Water Quality – Where irrigation water returns or spills into KID waste-ways, storm drains, canals, or any other KID facility which can carry the water off the property in question, provisions shall be made to assure that the water quality is not degraded in any way (i.e., the return shall be equal to or better water quality than what was delivered to the property). This shall include stormwater drainage from lands sloping toward the canal or lateral.
- 1.5.7 Vandalism – Provisions shall be made to protect all KID irrigation system facilities against vandalism. Such provisions may include lockable fencing or enclosures.
- 1.5.8 Environmental Impacts – Designer/Engineer shall take into consideration any and all environmental impacts, and bring any concerns to the attention of the KID Engineer.
- 1.5.9 Highest Standard – When working in a multi-jurisdictional area, design shall follow the standard of the agency with the highest standard. This is not to include flow rates, pressures or water rights, where KID values shall be used at all times.
- 1.5.10 Protection of KID Facilities – As a condition of approval of any development that involves a KID facility, the KID may require mitigation by the owner/developer such as a KID pipeline replacement, lining or piping of contiguous or adjacent open-channel KID canal, or designing and installing a bridged support for larger, buried KID pipeline structures in accordance with Policy & Procedure 4.3, Developer Risk Mitigation.

## 1.6 KID Construction Projects

- 1.6.1 Record Drawings / O&M Manuals – All KID approved constructed facilities located within KID irrigation easements and right-of-way shall be submitted by the Contractor as-built to the KID. As-Built record drawings shall be neat and legible and shall include dimensions to mapped points, locations of all structures, fittings, material types and sizes, quantities, ratings, and elevations. For irrigation system facilities that are to be operated and maintained by KID, a typewritten operations and maintenance manual shall be included with said as-built drawings. Submittal of record as-built drawings/O&M manuals is required prior to KID representatives signature on the plat.
- 1.6.2 Inspection – The Contractor for the installation of the KID approved irrigation system facilities shall contact the KID

Inspector 48 hours prior to beginning any work. All trenches and structural back-fill areas shall be left open until inspection is completed by KID.

1.6.3 Site Conditions – The Contractor shall keep clutter, debris and refuse to a minimum at the KID Project site, and shall promptly clean the site after completion of the project. In no circumstance shall hazardous wastes be within KID easement and/or right-of-ways without proper containment.

1.6.4 Restoration – The KID Project Site shall be returned to pre-construction or better conditions, including landscaping, curb and gutter, lining, gravel, and asphalt.

## **2. KID CANALS**

2.1 Slope Modification – If cuts or fills are to be completed within KID canal right-of-way or easement, whether the canal is piped or not, a Professional Engineer shall determine if the work will affect the canal or mainline. If the Engineer finds that the project could be detrimental to the canal or mainline, design alternatives will be presented to the KID Engineer. Canal lining or piping shall be required when deemed necessary by the KID Engineer in accordance with Policy & Procedure 4.3, Developer Risk Mitigation.

2.2 Lining - Plastic lining, shotcrete, geo-membrane lining, and concrete panels are approved methods of lining KID canals. Piping Canals also will be considered as a design alternative. See Standard Materials List, Individual Materials Listings, for details. Canals may require re-sizing due to the change in roughness coefficient for the new canal lining material. Side slopes will be modified as appropriate. Existing canal structures shall be incorporated into the canal lining design, or modified as required to fit the new design, as approved by the KID Engineer. Canal invert elevations shall be designed at the original canal design elevations.

2.3 Piping – Pipelines may be installed to replace open KID canals or laterals. Pipeline sizing shall not decrease design maximum flow capacity and/or result in any additional head loss to the KID irrigation system. Appropriate inlet/outlet transitions shall be installed for the new pipeline, and a weed/trash rack may be required. Maintenance structures shall be included as appropriate for the size and type of pipe. The placement of maintenance structures will consider changes in pipe direction and shall be spaced so that pipe maintenance can easily be performed. Existing canal structures shall be incorporated into the new pipeline design and installation and approved by the KID Engineer.

2.4 Culverts – Concrete box culverts may be used for extended crossings or when minimum soil cover is an issue. PVC, ADS, structural plate culverts or CMP may be used for other KID approved crossings. Concrete or CMP inlet and outlet transitions shall be required for each type of culvert and design flow shall be 120% of maximum canal capacity. Inspection ports may be required on long culverts.

Inlet/Outlet transitions, air vents, and culverts shall be sized, designed, and approved by the KID Engineer. Culverts for crossings shall have free gravity flow of water along the entire length and not be “inverted siphons/pipelines.”

- 2.5 Retaining Walls – All retaining walls are to be designed by a Professional Engineer and subject to KID approval. No retaining walls will be allowed to be constructed over KID irrigation facilities, including pipelines.
- 2.6 Additional Turnouts – Additional turnouts to KID water users shall be permitted as per Policy & Procedure 3.2-2, Water Entitlement. The KID water user requesting the turn-out will incur the entire materials and installation costs.
- 2.7 Utility Crossings– Permit applications for utility crossings shall be evaluated on an individual basis. (See Policy 4.2, Protection of KID & USBR Rights-of-Way and Easements)

### **3 KID IRRIGATION SYSTEM DISTRIBUTION DESIGN**

- 3.1 Pump Station – Pump Stations may be required for irrigation systems for divisions of property which cannot achieve a minimum residual pressure of 40 psi at its maximum delivery rate at all lots if there are 10 or more lots. Pump stations may also be required for irrigation systems for divisions of property with less than 10 lots, which cannot meet a minimum residual pressure of 2.5 psi at the irrigation systems maximum delivery rate at all lots. For divisions of property that do not require a pump station and have minimal pressure, individual pumps designed appropriately shall be provided to each lot or all purchasers of the lots shall be notified in writing that they need a private pump (and given a maximum size) to receive adequate irrigation water pressure. See Section 4 for details of pump station design and configuration.
- 3.2 Pump Sizing – Pumps and motors shall be designed to provide 120 percent of the maximum irrigation water delivery rate. The maximum irrigation water delivery rate is 5 gallons per minute per irrigable acre. The pump service factor shall not be used to calculate discharge requirements.
- 3.3 Ponds – Ponds may be required on all new irrigation water distribution systems depending upon the size of the land development. Where the area in question has been previously developed (at full build-out of homes) and there exists no vacant land to build a pond, a pond shall not be required. Usable pond storage shall be a minimum of 24 hours of maximum instantaneous irrigation water allotment. See Section 6 for details of pond design and configuration.
  - 3.3.1 As an alternative to having a pond, the pump station may be designed with an irrigation water tank or box (open to atmosphere) with an active overflow, a pump and included accessories. With this configuration, a manifold setup may be designed such that the irrigation water allotment is



delivered continuously to a set of automatically (programmable) alternating irrigation water deliveries (zones). The acreage/lots irrigation water delivered per alternating delivery set shall be determined by taking the maximum delivery rate (5 gpm per irrigable acre) times the number of acres. This amount will then be divided by the anticipated instantaneous usage of each irrigation water user to determine the number of water users per alternating delivery set. Such irrigation water manifold or devices shall be electronically controlled and shall be accessible only by the water-master (if private) or KID (if an LID). The electronic control device shall be easily programmed, and allow for multiple programs. Piping shall be sized taking maximum irrigation water delivery to each zone into account. Air relief valves shall be included on each pipeline to provide for air relief while filling pipelines with irrigation water. Solenoid valves shall be slow actuating, with the next zone opening for filling prior to the last one closing. Water hammer must be adequately designed for in each irrigation water delivery system.

- 3.4 Variable Frequency Drive – VFD’s may be required, to maintain constant pressure and flow, on pump stations with a pump rated at 7.5 horsepower or greater. See Section 9.3 for VFD specifications.
- 3.5 Piping (pressurized or gravity) – Pipe materials shall be in accordance with Section 5.1.4 - Materials. Pipelines shall be sized, designed, and configured such that all pipelines within a single pressure zone of the system shall have a maximum difference in pressure of 15 psi. Pressure regulation/flow control stations or valve control zones, etc., may be required to achieve such results. Multiple pressure zones are not required if the maximum pressure differential can be achieved in a single zone. Air relief valves shall be included on each pipeline to provide for air relief while filling pipelines with irrigation water and at all highpoints in the pipeline system. Irrigation system modeling shall be completed such that each irrigation delivery is designed and installed depending upon acreage served and shall include all components of the system. Irrigation water velocities shall not exceed the pipe material manufacturers maximum allowable flow velocity and pipe friction loss shall not exceed ½ -foot/100 feet. Scheduling of irrigation water delivery to subdivision lots shall be modeled as appropriate to the type of irrigation system proposed. Irrigation water delivery to subdivision lots shall be modeled with the following demands. For land developments for irrigation systems that will be and/or are owned, operated, and maintained by KID, the individual lot irrigation system designed for each land development shall operate at 40 psi, 12 gpm maximum irrigation water flow, and must consider the irrigation water scheduling appropriate for the entire irrigation water delivery system. In addition, individual lots will be required to filter the KID irrigation water delivered to the irrigation water system to the extent needed for the type of subdivision lot irrigation system installed.

Subdivision Lot Irrigation System Modeling Criteria:

Maximum      Maximum



<u>Lot Size Range</u>	<u>Flow Demand</u>	<u>Irrigation Duration</u>
Up to 7000 sq. ft.	8 gpm	3 hrs./day
7,000 to 11,000 sq. ft.	10 gpm	3 hrs./day
11,000 to 15,000 sq. ft.	12 gpm	3 hrs./day
15,000 to ½ Acre	15 gpm	3 hrs./day
½ Acre to ¾ Acre	20 gpm	3 hrs./day
¾ Acre to 1 Acre	15 gpm	6 hrs./day
1 Acre to 2 Acres	25 gpm	6 hrs./day
2 Acres to 3 Acres	25 gpm	12 hrs./day
3 Acres to 4 Acres	30 gpm	12 hrs./day
4 Acres to 5 Acres	40 gpm	12 hrs./day

Irrigation systems for subdivision lots with acreage greater than 5 acres shall be designed on a continuous irrigation water use basis, i.e., five (5) gpm per irrigable acre, 24 hours a day.

An Irrigation Water Distribution System Design Report will be provided to the KID Engineer for review. The report will include total acres and irrigable acres the irrigation water system serves, total water allotment, pump curve(s), motor size, hydraulic modeling, high points in the system, pressure zone data, noise analysis, and any other information needed to document the design and performance of the irrigation water system.

#### 4. KID IRRIGATION SYSTEM PUMP STATIONS

4.1 Configuration – For KID irrigation systems, all piping and other components of the pump station shall be installed and placed above ground unless otherwise authorized by the KID Engineer. The recommended sequential order of the pump station components is:

- 1- suction line
- 2- gate valve (if needed for priming)
- 3- pump
- 4- recirculation line with pressure relief valve and/or gate valve (non-VFD system only)
- 5- ¾" gate valve and ¾" hose bib adapter
- 6- filter assembly
- 7- flow meter
- 8- flow control or flow limiting device (Not required on system with VFD)
- 9- pressure gauge
- 10- gate valve or vacuum breaker as appropriate
- 11- discharge line

4.2 Pump

- 4.2.1 NPSH – Where possible, a flooded suction shall be designed into the pump station for the irrigation water delivery system. Where a flooded suction cannot be incorporated into the pump station design, an acceptable method of pump priming shall be provided. The installation of a centrifugal pump in a vault is not allowed.
- 4.2.2 Anchoring – The motor/pump shall be anchored per NEC. The anchoring shall be installed so that the motor/impeller can be easily removed from the pump housing (volute).
- 4.3 Recirculation Lines – Recirculation lines shall include a pressure relief valve. Sizing of the recirculation line shall be adequate to prevent the pump from cavitating or over-pressurization of the distribution pipeline in the event all water deliveries on the irrigation system turn off simultaneously. Recirculation lines shall not return irrigation water flow to a point at which pump inlet flow lines may be effected.
- 4.4 Pipe
  - 4.4.1 Anchoring – Pipe stands and bracing shall be installed where appropriate and where required by the pump station design.
- 4.5 Electrical – Pump station operation shall consist of one push button – start/restart, and one off/manual/auto toggle switch. See Section 9 for electrical requirements.
- 4.6 Concrete Pad
  - 4.6.1 Sizing – Concrete Pump pads shall be a minimum of six (6) inches thick and have at least three (3) feet of clearance around and spacing between all components of the pump station. The Concrete Pump Pad shall have a minimum reinforcement requirement of #4 steel rebar at 12-inch on center with a minimum cover of 3-inches at each end.
  - 4.6.2 Vaults – Vaults for pumps will not be accepted.
  - 4.6.3 Man-Crane – A base for a man-crane shall be cast in place to the concrete pump pad for easy pump removal.
- 4.7 Vehicle Access – Access to the pump station shall be adequate for a small boom truck. Enough area and space to lift the pump and turn around a boom truck shall be available (see section 1.3.1). Curb cuts shall be installed for access.
- 4.8 Cover and HVAC – An acceptable cover over the pump may be required. If VFD's or any other sensitive electrical equipment is installed, a pump house with an HVAC system or an outdoor rated NEMA 3R panel with an air conditioning unit is required. A fluid/air heat exchanger is not acceptable.

- 4.9 Pump House – A pump house shall be sectioned into two parts, one section housing the pump/valving and the other section housing the electrical components. The Pump House shall have a steel door with a minimum width of 36-inches (keyed to match Kennewick Irrigation KID pattern). All pump houses shall have an acceptable floor drain installed that is connected to a storm drain or an approved dry-well.
- 4.10 Security – Adequate lighting shall be included in all pump stations. If the pump station is not housed, a photosensitive security light shall be properly installed on a pole. If the pump station is housed, a photosensitive light shall be mounted to the building. If a pump house is not constructed, a six- (6) foot high chain link fence with a 3-strand barbed wire top shall be constructed around the pump station. A four- (4) foot wide lockable chain link man-gate shall be installed for easy pump removal. Privacy slats shall be installed in fence fabric. Fencing shall be strong enough to withstand 70 mph winds with privacy slats installed.
- 4.11 Noise – Adequate noise buffering shall be included in the design to stay within state and local laws to provide for full subdivision or property build-out.

## **5 KID PIPELINES**

### **5.1 Pipelines**

- 5.1.1 Gravity Delivery Pipelines – If the outlet of a pipeline is a pond, box, or pump station, the pipeline must be designed such that downstream operations do not interfere with measuring devices upstream.
- 5.1.2 Looping – Pipeline system looping shall be incorporated in the pipeline system design wherever possible.
- 5.1.3 Placement – All KID irrigation water delivery pipelines shall be installed within KID/USBR irrigation easements or rights-of-ways. The pipeline shall be installed such that the manufacturer's lettering is facing upward for easy identification. Piping shall be haunched prior to inspection. Piping shall be installed with a minimum of thirty (30) inches of fill above the top of the pipe. When work is halted, all open ends of the installed pipe shall be sealed to prevent undesirable material from entering the pipe. Pipelines shall never be placed directly on a property line.
- 5.1.4 Trenching – Asphalt shall be saw cut to provide clean, solid vertical joints. Pavement cuts shall be at a minimum of twelve (12) inches away from each side of the trench. Sidewalk panels shall be removed in full sections. Curb and gutter shall be saw cut where required for removal.
- 5.1.5 Identification Tape – Identification tape shall be installed twelve (12) inches below finished grade over all pipes located within public street rights-of-way.
- 5.1.6 The insulation on the wire shall be purple in color. Tracer wire shall be secured to all underground irrigation pipelines with duct tape at ten (10) foot intervals. The tracer wire shall be continuous throughout the pipeline project. The tracer wire shall be accessible at all risers and valves. A tracer wire box shall be

installed over the tracer wire if the distance between valve boxes or risers is greater than three-hundred (300) feet. When connecting a new pipeline irrigation delivery system to an existing pipeline irrigation system that has existing tracer wire, the new tracer wire shall be connected to the existing tracer wire to allow continuity between both systems. When the existing pipeline irrigation system does not have a tracer wire and a valve box, riser or other above ground irrigation facility is located within ten (10) feet of the new connection, the new tracer wire shall be dug back to the above ground irrigation facility and installed in accordance with the tracer wire details. A continuity test shall be performed by the KID Inspector on all new tracer wire installations to ensure continuity.

## 5.2 Fittings

### 5.2.1 Pressure Regulating Valves

- 5.2.1.1 Pressure Reducing Valves – PRVs shall have a working pressure of 150 psi or greater. PRVs shall be located at points, which will prevent excessive pressures from building up downstream (Example: Cla-Val 90-01 or approved equivalent).
- 5.2.1.2 Pressure Sustaining Valves – PSVs shall have a working pressure of 150 psi or greater. PSVs shall be located at points, which will maintain sufficient pressure for upstream water users when downstream water user demand is at the maximum (Example: Cla-Val 50-01 or approved equivalent).
- 5.2.1.3 Altitude Valves – Altitude valves shall have a working pressure of 150 psi or greater. Altitude valves shall be located at points that require a set pressure to maintain adequate operating pressure within the irrigation pipeline system (Example: Cla-Val 210-01 or approved equivalent).
- 5.2.1.4 Pressure Relief Valves – Pressure relief valves shall have a working pressure of 150 psi or greater. Pressure relief valves shall have an easy to operate set screw.
- 5.2.1.5 Pressure Regulating Valve Boxes – All buried Pressure Regulating Valves shall be housed in a concrete box with 12-inch minimum clearance on all sides to allow assembly/disassembly easily with standard tools. However, if located in a street or roadway, the concrete box shall be H-20 rated.
- 5.2.1.6 Above Ground Mounting – In remote areas or as specified by the KID Engineer, Pressure Regulating Valves may be installed above ground. Fencing shall be installed around the valve with 3-feet of clearance on all sides.
- 5.2.1.7 Included Components – All pressure regulating devices shall include isolation valves upstream and downstream of the device, air relief valves, 3/4-inch gate valve drain, and pressure gauges upstream and downstream of the device. All pressure regulating CLA-VAL valves shall include B, Y and X 101 options.

- 5.2.2 Air Relief/Vacuum Breaker Valves – Air relief/vacuum breaker valves shall be placed at all high points in the pipeline system.
- 5.2.3 Pressure Gauge – Liquid filled pressure gauges shall be installed upstream and downstream of all pressure regulating/flow control valves. All gauges shall have a petcock valve for removal or replacement. All gauges shall be plainly visible from a standing position.
- 5.2.4 Flow Meters – Flow meters are required for all pipeline irrigation deliveries of 50 gpm or greater that do not have a flow measurement device designated solely for each subdivision. All flow meters shall be installed according to the manufacturer’s recommendations.
- 5.2.5 Flow Control Valves – Flow control devices are required for all KID water users receiving a KID water allotment. Flow control valves on pump stations that serve a subdivision that will be developed in multiple phases shall be adjustable. Flow control valves may be required to be mounted above ground similar to pressure regulating valves and use the same required components (Example: Cla-Val 40-01 or approved equivalent).
- 5.2.6 Boxes – Valve boxes shall be required on all buried valves and will provide 12 inches of minimum clearance and spacing on all sides. If located within a paved surface or an area which is or has the potential for vehicular traffic, a concrete box with metal lid designed for traffic bearing (H-20) shall be specified (Example: Fog-Tite or approved equivalent).
- 5.2.7 Anchors/Thrust Blocking – Thrust blocks are required at tees, bends and dead ends on all pipe and fittings, except tees leading to single service risers. Concrete thrust blocks are to be placed against undisturbed earth. If undisturbed earth is not nearby, deadman’s or other types of engineered thrust blocks may be used. Alternatively if undisturbed earth is not nearby, soil adjacent to proposed thrust block may be compacted to 95% of maximum density in accordance with ASTM D 698 by means of mechanical compaction. Thrust blocks shall set undisturbed for a minimum of 24 hours following installation prior to activation of the system. In the event that the minimum set time cannot be met, restraining type couplers shall be used (Example: EBAA, Romac, Ford).
- 5.2.8 Flexible Couplers – Flexible coupling center rings shall be constructed of ductile iron or carbon steel having a minimum yield strength of 30,000 psi. End rings shall be constructed of ductile or malleable iron. Steel couplers shall be epoxy coated. Ductile iron couplers shall have the manufacturer’s standard coating. High strength, low allow steel trackhead bolts and heavy hex nuts shall be used.
- 5.2.9 Caps – Where a pipeline irrigation system is installed in sections or will not immediately be connected to the KID irrigation water delivery point, the open end(s) of the pipeline system shall be capped and marked prior to backfilling. Caps shall have thrust block installed according to Section 5.2.7
- 5.2.10 Gravity System Drains – Drains shall be installed at the low point of pipeline irrigation system for annually draining the pipeline at the end of the irrigation season.
- 5.2.11 Sizing - All isolation valves and fittings shall be equal to the size of the pipeline that the valves and fittings are installed, unless otherwise authorized by the KID.



5.2.12 Other Fittings – Miscellaneous fittings, such as concrete to PVC pipeline adapters, shall be reviewed and approved by the KID on a site specific basis.

### 5.3 Testing

5.3.1 Flow Test – A flow test shall be performed on the new irrigation water pipeline system by the contractor in the presence of the KID Inspector. The test will measure the flow and pressure at a point on each reach of the pipeline system and will verify the ability to deliver water to the most remote part of each reach under average operating conditions. The requirements for the test shall be determined by the KID Engineer and will take into account the maximum build out of the development and average operating demands on the system.

## 6 KID PONDS

- 6.1 Lining – All ponds shall be lined.
- 6.2 Source/Inlet – Pipelines shall be installed from the KID point of irrigation water delivery to the pond with back-fowl prevention devices installed. Irrigation water velocity into the pond shall be three- (3) feet-per-second or less. Six- (6) inch minus riprap shall be placed at outlet of piping. Where the irrigation water velocities exceed 3 feet-per-second, a perforated manhole or other approved KID energy dissipation structure shall be installed.
- 6.3 Overflow – An overflow with a trash rack shall be installed at the proper elevation to prevent the irrigation storage water in the pond from overtopping and/or rising above the maximum operating pond water surface elevation. The overflow outlet pipe shall be installed and sized with adequate capacity to prevent overtopping of the pond. The terminus of the pipe shall be located in an area that will not result in any damage to adjacent property.
- 6.4 Pond Embankments – Pond embankments shall be designed to resist force applied from vehicle weight as well as impounded water. Pond embankments shall be comprised of earthen materials that can be compacted sufficiently to prevent erosion and piping of embankment materials due to maximum precipitation events, and pond storage water seepage, percolation, and uplift pressures.
- 6.5 Pump Suction – The pump suction inlet screen shall have 1/8” – 3/16” openings with velocities through the openings under three- (3) feet-per-second.
- 6.6 Water Surface Elevation Gauge – A vertical measuring gauge shall be installed in all ponds to show the water surface elevation. The gauge shall be mounted to the footing at the end of the intake or other KID approved location. One-tenth foot increments shall be painted onto gauge with highly contrasting color from the gauge itself. Water surface elevation marks and numbers shall be easily legible from the pump station and delivery point if located nearby. The zero water surface elevation mark shall begin at the bottom or invert elevation of the pond.
- 6.7 Fencing – Chain-link fencing shall be required around the perimeter of all ponds. Fencing shall be installed with a clearance of 15 feet beyond the outside edge or toe of the pond embankment. Fencing shall be a minimum of six (6) foot high and have a lockable vehicle access gate at least twelve (12) feet wide. The fence shall also have a four (4) foot wide lockable man-gate located near the pump



station. Fencing shall be strong enough to withstand 70 mph winds with privacy slats installed.

- 6.8 O & M Access – A 15 foot access road for boom trucks and equipment shall be installed around the entire outside pond embankment perimeter. At all locations where access requires crossing curbed roadways fifteen (15) foot wide minimum curb cuts shall be installed. All area designated for maintenance vehicle access shall have 3 inches deep of ¾-inch minus gravel placed and compacted over the entire pond access area.
- 6.9 Vegetation Control – All areas within the fenced pond area but not in the pond prism or on the gravel access area shall be covered with 3 inches of 2½-inch minus fractured basalt.

## **7. KID BRIDGES**

- 7.1 All KID bridge plans, drawings, and specifications shall be designed and stamped by a Professional Engineer, licensed in the State of Washington.
- 7.2 Load Rating – Bridges shall be designed for a Washington State DOT minimum loading of H-20.
- 7.3 Materials – Bridges shall be of steel and concrete construction. Timber stringers, footings, decking, or railing shall not be acceptable. All materials and work shall be in accordance with the requirements of the State of Washington, Department of Transportation, and Standard Specifications for Road and Bridge Construction, latest edition. Design for pre-stressed deck units shall be in accordance with AASHTO Specifications for Highway Bridges, latest edition. Bridges shall have curb, sidewalk, guardrails and fences on both sides. Guardrails shall meet WSDOT Standard Specifications.
- 7.4 Bridge Type – Bridges shall be clear span with no supports within the canal cross section. Bridge abutments shall be protected from erosion and shall not restrict flow in the canal. A minimum of two (2) feet of clearance is required between the low point of the bridge span and the maximum design water surface elevation or high water mark, whichever is higher.
- 7.5 Canal Lining – KID canals shall be concrete lined from a minimum of 15 feet from the upstream edge of the bridge to a point of a minimum of 15 feet from the downstream edge of the bridge.

## **8. KID PROJECT MATERIALS SPECIFICATIONS**

- 8.1 Shotcrete
  - 8.1.1 Material – Fiber-reinforced shotcrete may be used for all applications.
  - 8.1.2 Thickness – Unless otherwise stated, shotcrete shall be a minimum of two (2) inches thick in all designated application areas, but may taper off from there.
- 8.2 Canal Liner

- 8.2.1 Surface Preparation. – The canal shall be cleaned and shaped to the original design capacity and dimensions prior to canal liner installation. The Canal liner may be bedded with clean fill material to a minimum depth of twelve (12) inches above and six (6) inches below liner per manufacturer’s recommendation.
- 8.2.2 Installation – Edges of the canal liner are to be keyed into the canal embankment and anchored to any adjacent structures per manufacturer’s specifications. An 8-ounce geo-textile fabric shall be installed under the canal lining material for the entire cross section of the canal. The leading and trailing ends of the canal liner shall also be keyed in as per manufacturers’ requirements. A minimum of twelve (12 inches of three (3) inch minus fractured pit-run shall be placed above the upper geo-textile layer over the canal liner on the bottom of the canal as a gravel ballast for protection of the canal liner and to prevent the canal liner material from floating. Pit-run shall be shaped and lightly compacted, being careful not to project the rock into the liner.

8.3 Controlled Density Fill (CDF)

Controlled Density Fill shall comply with WSDOT Standard Specification 2-09.3(1)E Backfilling. Class F Fly Ash shall not be used.

## 9 KID ELECTRICAL POWER REQUIREMENTS

### 9.1 Power

Power Source – Power from the local power utility shall be secured in accordance with the electrical code requirements. The Developer shall be responsible to upgrade the private electrical power system if it is not capable of meeting the requirements of the system.

- 9.1.2 3-Phase – 3-Phase power shall be used where available. Three phase protectors shall be included on all pump stations not having a VFD.
- 9.1.3 Voltage – 460 Volt services shall be supplied to the electrical panel unless otherwise approved by KID Engineer.
- 9.1.4 Service Panel – All electrical panels mounted outside shall be NEMA 3R service entrance rated and shall be mounted on Unistrut channels supported by 2-inch diameter galvanized steel fence posts. Panels mounted inside a structure may be NEMA 1 service rated.
- 9.1.5 Transformer – All services with a 460 volt supply shall include a dry-type, step-down transformer for 120 volt components.

9.2 Prevailing Code – All 120-volt or greater electrical work shall be in accordance with the National Electric Code (NEC), latest version and the State of Washington Labor and Industries Electrical Code.

### 9.3 Variable Frequency Drive

- 9.3.1 Rating – VFD’s shall be of the Constant Torque Rating.

- 9.3.2 Display – The VFD shall have a digital operator keypad with a display that is easily legible. The VFD shall use the English language for all aspects of reading and programming.
- 9.3.3 Operation – VFD's shall have the following operational capabilities.
- A. Pressure Set Point – A pressure set point shall be set by KID. The pump drive shall adjust speed (rpm) to reach the desired pressure as measured by the pressure transducer.
  - B. Soft Charge – A soft charge function must be included in the VFD. Upon restart of the pump, the pump shall ramp up slowly to a KID specified speed until a time or minimum pressure is met (as set by KID for the water user), at which point the VFD achieves the programmed set-point.
  - C. Suction Control – Where a VFD is installed for a booster pump, suction control shall be included in the controls. There will be a separate set point for suction control. When the VFD detects the upstream pressure has dropped below the set point, the pump shall ramp down. If the required upstream pressure cannot be achieved by ramping down, the pump will shut off.
  - D. Float Switch Control – When pumping from a pond or a wet-well, high and low float switch controls are required.
  - E. Low Pressure Shutoff Control – When the low-pressure shutoff switch is tripped on the pump discharge, the VFD shall shut off the pump and only restart manually.
  - F. High Motor Temperature Shutoff Control – When the high motor temperature shutoff switch is tripped, the VFD shall shut off the pump and only restart manually.
  - G. Fault Log – The VFD shall keep a fault log that is user accessible. The VFD fault log shall record and keep in order of occurrence a minimum of the last 9 faults.
- 9.3.4 Speed Detection – The VFD shall be able to start with a spinning pump motor. The VFD shall be able to detect the motor speed and direction, and begin operating without tripping.
- 9.3.5 Pump Sequencing – Pump sequencing shall be controlled by frequency or RPM and not by pressure.
- 9.3.6 Environmental – The VFD shall be able to operate in an environment that is –50 to 104 degrees Fahrenheit, 0-95% humidity, and up to 3, 300 feet above sea level. The VFD shall be housed such that the immediate environment does not go beyond these ranges.
- 9.3.7 Harmonic Filter – A one-line diagram shall be provided to the VFD provider and an analysis shall be returned for the power company. The power company shall specify their minimum harmonic filtration. (Reference IEEE 519).
- 9.3.8 Line Reactors – 5% line reactors shall be installed as a minimum protection for all VFD's.

- 9.3.9 Ventilation – Ventilation shall be provided as per VFD manufacturer recommendations. Replacement of components and labor due to inadequate ventilation or cooling shall be included under the warranty.
- 9.3.10 Lead Length – Lead lengths shall be minimized. In circumstances where lead length is 100-200 feet long, load reactors shall be placed between the motor and the VFD (located near the VFD). In circumstances where the lead length is greater than 200 feet long, a reflected wave trap shall be included.
- 9.3.11 Sleep Mode – The controls for the VFD shall include a “sleep mode”.
- 9.3.12 Communication – Include either a modbus RS485 or modbus TCP/IP communication capability.
- 9.3.13 Warranty – A one-year warranty to the KID that covers parts and service shall be included with the VFD. VFD provider shall be able to respond to emergency service calls, repair work, and training within 2 working days.
- 9.3.14 Training and Documentation – VFD’s shall come with all documentation regarding operation and maintenance of equipment used as well as 4 hours of training for the operators of said equipment. Free phone support should be provided for a minimum of 6 months after installation of VFD.

#### 9.4 Miscellaneous Electrical Components

- 9.4.1 Interior Lighting – All interior lighting shall be a florescent bulb type (4 foot long) from a 110 volt source. An on/off switch shall be placed near the entrance to the room being lit.
- 9.4.2 Exterior Lighting – All pump stations shall include an exterior light. If a pump house is present, a single receptacle may be mounted near the doorway with a compact florescent bulb. The light shall be a photosensitive receptacle. If there is not a pump house, a photosensitive light shall be mounted on a pole twelve feet above the ground. All lighting shall be powered with 110V.
- 9.4.3 Pressure Transducer – Pressure transducers shall be a 4-20 mA output type and calibrated 0-160 psi. Pressure transducer is to be electrically isolated. Conductor shall be supplied and installed back to VFD or other panel requiring data input. Conductor shall be housed in conduit as specified in Section 9.4.4 (Example Sensodyne ST2300G, Sensym, Noshock).
- 9.4.4 Conduit – Conduit shall be rigid galvanized steel meeting ANSI 80.1 Specifications. Final electrical conduit connection to a pump shall be made with liquid-tight flexible metal conduit. Install double locknuts and insulating bushings at all conduit connections to boxes and cabinets.
- 9.4.5 Duplex Receptacle – All pump stations shall include a duplex receptacle, grounded, 125V with weatherproof metal plate. (Hubbell 5262 or equivalent)

## 10 KID PROJECT RIGHT-OF-WAY AND EASEMENT ENCROACHMENTS

All crossings and encroachments on KID right-of-way and easements shall be done in accordance with the KID Policy 4.2, Protection of KID & USBR Rights-of-Way and Easements, and the following:

- 10.1 All crossings and encroachments upon KID and US Bureau of Reclamation property require a permit from the KID in accordance with Policy 4.2, Protection of KID & USBR Rights-of-Way and Easements. The crossings and encroachments shall also meet the requirements of Procedure #6 – Ensuring Standards of Private Facilities Crossing KID Property.
- 10.2 No utilities are allowed to be placed parallel within a KID/Bureau right-of-way and/or easement.
- 10.3 The facilities of the Permittee shall be constructed, operated and maintained by the Permittee in a manner that:
- 10.3.1 Creates no additional cost or burden on the United States or the KID or their assigns;
  - 10.3.2 Causes no interference with or stoppage of the flow of KID irrigation water in any waterway;
  - 10.3.3 Does not otherwise interfere with the normal operation of the KID's or United States' irrigation facilities (wherever located);
  - 10.3.4 Does not interfere with the operation and maintenance of the KID or the Yakima Project irrigation system facilities; and
  - 10.3.5 Does not interfere with the use of adjacent rights-of-way, easements, or lands.
- All construction, rehabilitation, betterment, and maintenance work within the right-of-way and/or easement held for said irrigation facilities shall be undertaken only at the time, according to plans, and in the manner satisfactory to the KID. The Permittee shall be solely and fully responsible for the plans, specifications, drawings, quality of the work, and liable for any defects therein, notwithstanding any inspection and/or approval by the KID.
- 10.4 There shall be reserved to the United States and the KID, and to their successors and assigns, the right to use all or any portion of the property, and to construct, operate and maintain structures and facilities of any kind on the subject property, all without any payment or liability to Permittee, including, but not limited to, canals, wasteways, laterals, pipelines, ditches, roadways, telephone lines, natural gas lines, electrical transmission lines, telecommunication facilities, lines, and structures, substations, switchyards, power plants, and any appurtenant structures and facilities for irrigation water, domestic water, and electrical power . In the event that the United States or the KID, or its successors and assigns, digs or performs other work on the property, neither the KID nor the United States shall be responsible or liable for the destruction of Permittee's property or improvements, or for failure to restore the property or improvements, and Permittee shall be solely responsible for restoring the property and all costs associated therewith, including but not limited to restoration of grade, pavement, and landscaping.
- 10.5 Crossings by Irrigation or Domestic Water Systems, Drainage, Sewer Pipes, Private Pipes or Public Utility Installations:  
In addition to all of the other provisions of the Permit, the following conditions shall apply to crossings by irrigation or domestic water systems, drainage, sewer pipes, private pipes or public utility installations:



- 10.5.1 In the construction of the Permittee's facilities and/or structures, the following specifications and conditions must be complied with:
    - 10.5.1.1 Pipelines shall be installed at least three (3) feet below the bottom or invert of the laterals and canals and two (2) feet below pipelines.
    - 10.5.1.2 All laterals and canals shall be restored to the condition at equal to or better than before the crossing was installed.
    - 10.5.1.3 The pipeline size, type, inside diameter, strength, pressure, velocity, flow capacity, joints, installation, and the operating conditions (average and maximum) shall be as specified by the KID Engineer for the specific crossing.
    - 10.5.1.4 Backfill/Cutoff Wall: Controlled Density Fill, other backfill materials, and cutoff walls shall be installed and tested according to KID Engineering Standards and Specifications.
  - 10.5.2 Drainage inlets and/or outlets shall be installed in accordance with specifications approved by the KID and the United States Bureau of Reclamation.
  - 10.5.3 All crossings shall comply with the provisions of the typical sections set forth on the attached Exhibits A and B of Crossing of Irrigation Facilities, Contract No. 7-07-10-L0056, unless otherwise approved in writing by the United States Bureau of Reclamation and the KID.
  - 10.5.4 The Secretary/Manager of the KID may, at his sole discretion, require the crossing to be designed and stamped by a licensed Professional Engineer.
- 10.6 Crossings by Roadways, Bridges, Culverts, Cattle Guards, Fences:  
In addition to all of the other provisions of the Crossing Permit, the following conditions shall apply to crossings by roadways, bridges, culverts, cattle guards, and fences:
- 10.6.1 For the construction of the aforesaid structure or structures, the following specifications and standards must be complied with:
    - 10.6.1.1 For culvert crossings, the pipeline size, type, inside diameter, strength, joints, installation, pressure, velocity, and flow capacity shall be installed as specified by the KID Engineer for the specific crossing.
    - 10.6.1.2 For roadway, bridge, cattle guard, and fence crossings, the crossing design, specifications, standards, and installation shall be approved by KID, and according to the KID Engineering Standards and Specifications.
    - 10.6.1.3 Backfill/Cutoff Wall: Controlled Density Fill, other backfill materials, and cutoff walls shall be installed and tested according to KID Standards and Specifications.
    - 10.6.1.4 When an open lateral or canal is replaced with a pipeline under a roadway, the irrigation water pipeline shall be installed with the inlet and outlet inverts set at the existing lateral or canal watercourse elevations and with a minimum of 24 inches of backfill over the top of the pipe to the final grade and elevation established for the ground surface. After all head losses are factored in, the flow capacity of the new irrigation water pipeline



under the roadway shall be equal to or greater than the flow capacity of the lateral or canal replaced.

10.6.1.5 For the inlet and outlet of the culvert crossing, the backfill shall be rip-rapped with rock that is placed to prevent erosion of the culvert inlet and outlet backfill.

10.6.2 All crossings shall comply with the provisions of the typical sections set forth on attached Exhibit C of Crossing of Irrigation Facilities, Contract No. 7-07-10-L0056.

10.6.3 The Secretary/Manager of the KID may, at his sole discretion, require the crossing to be designed and stamped by a licensed Professional Engineer.

10.7 Crossings by Electric and Telephone Lines or Other Lines or Cables:

In addition to all of the other provisions of the Crossing Permit, the following conditions shall apply to crossings by electric and telephone lines or other lines or cables:

10.7.1 All material, workmanship and installation for the crossing shall be in conformity with existing State, local and Federal regulations and codes.

10.7.2 The cost of de-energizing any electric, telephone, or other line when required for maintenance or for any work to be performed by the KID, shall be at the Permittee's expense and according to the national standard equipment clearance procedures.

10.7.3 Overhead crossings must meet the specifications hereinafter set forth in attached Exhibit D of Crossing of Irrigation Facilities, Contract No. 7-07-10-L0056. Clearances noted for overhead crossings are minimum requirements for all conditions of temperature (120° F Max.) and loading. Therefore, each overhead crossing will be reviewed independently. Any additional clearances required for construction operations shall be provided by the Permittee.

10.7.4 All crossing installations shall be completed only after notice to the KID Secretary/Manager or Engineer to allow KID personnel to inspect the crossing installation work.

10.7.5 Underground electrical, telephone, and other cables shall be placed in conduits or casings to ensure that future maintenance and operation of the cables shall not interfere with the KID's operation and maintenance of irrigation facilities. As required, the Permittee shall maintain, repair, and/or replace the underground cable at their expense.

10.7.6 All buried lines or cables crossing underground irrigation pipelines shall have a minimum of a 24-inch clearance from the pipeline. All crossings under open canals, laterals, drains, and waste-ways shall have a minimum clearance of 36 inches. The length of all conduits and casings to be constructed under pipelines, canals, drains, waste-ways, and laterals must be approved by the KID Secretary/Manager or his authorized representative for each consent issued to the Permittee.

10.7.7 The Secretary/Manager of the KID may, at his sole discretion, require the crossing to be designed, approved, and stamped by a licensed Professional Engineer.

10.7.8 Backfill/Cutoff Wall: Controlled Density Fill, other backfill materials, and cutoff walls shall be installed and tested according to KID Engineering Standards and Specifications.

## **11 INDEMNIFICATION**

The KID, Board of Directors, Officers, Agents and Employees shall not be liable for, and shall be held harmless from and indemnified for all damages, injuries, and claims arising from or related to any design and engineering specifications and standards herein or approval given hereunder. This hold harmless and indemnification provision applies to claims of negligence and any other theory of liability.

Above statement to be included on all Construction Plans submitted to the KID.

**KENNEWICK IRRIGATION DISTRICT**  
**INCORPORATION OF WASHINGTON DEPARTMENT OF TRANSPORTATION**  
**2006 STANDARD SPECIFICATIONS AND**  
**AMENDMENTS TO THE STANDARD SPECIFICATIONS**

**July 2010**

The Washington State Department of Transportation 2006 Standard Specifications for Road, Bridge, and Municipal Construction M41-10, including the APWA Supplement, (hereinafter referred to as “Standard Specifications”) are hereby incorporated into and made a part of this contract as though fully set forth herein, except as amended and/or supplemented by the “Special Provisions and/or any addendum to this contract to the extent such are inconsistent therewith. Copies of the Standard Specifications are available for review and inspection at the office of the Engineer. Copies of the Standard Specifications may be purchased from:

Washington State Department of Transportation (WSDOT)  
Engineering Publications  
Post Office Box 47408  
Olympia, WA. 98504-7408

**AMENDMENTS:**

Introduction:

The following Amendments to the Standard Specifications are made a part of this contract and supersede the Standard Specifications and APWA Supplement only to the extent they are inconsistent.

The Amendments to the Standard Specifications may include references which do not apply to this particular project. These amendments apply only to the Kennewick Irrigation District (KID) Projects that are presently under or will be transferred to KID ownership, operations, and maintenance.

**Modifications, Additions, and Clarifications to Division 1 of the General Requirements of the Standard Specifications and APWA Supplement:**

**1-01            KID PROJECT DEFINITIONS AND TERMS**

**Add:**

**KID**

The KID shall mean the Kennewick Irrigation District.

**Add:**

**City**

The City shall mean the governing municipality in which the work is being performed.

**Contracting Agency**

**Add:**

Contracting agency shall mean the Kennewick Irrigation District.

**Department, Department of Transportation**

**Add:**

Definition shall also mean the KID where applicable.

**Add:**

**Drawings**

Drawings shall be interchangeable with Plans.

**Engineer**

**Add:**

The KID Engineer, acting directly or through his authorized representative.

**Add:**

**Import or Import Material**

Materials that are imported from offsite and from approved sources.

**1-02 KID PROJECT BID PROCEDURES AND CONDITIONS**

**1-02.2 Plans and Specifications**

**Delete section in its entirety:**

**Add:**

Copies of plans and specifications (Contract Documents) will be on file in the office of the Engineer, and may be obtained at the District office at the cost as set forth in the Information for Bidders. After award of the contract, five (5) sets of plans and specifications will be issued without charge. Additional copies of the plans and specifications shall be provided at a cost of \$75.00 each.

**1-02.6 Preparation of the Bid Proposal**

**Add:**

4. The Bidder shall list ALL Subcontractors who will perform work on the Subcontract Disclosure Form.

**1-02.8 (1) Non-Collusion Declaration**

**Add:**

The Non-Collusion Affidavit (Certificate) included in the Contract Document shall be completed and submitted with the Contractor's Proposal.

**1-02.15 Pre Award Information**

**Add:**

7. A copy of the Contractor's State of Washington Contractor's Registration.

**1-03**                    **AWARD AND EXECUTION OF CONTRACT FOR KID PROJECTS**

**1-03.3**                **Execution of Contract**

**Revise:**

Delete 20 calendar days and replace it with 10 calendar days.

**Add:**

The Notice to Proceed shall specify the first day when work is scheduled to begin by KID and will be charged against the completion date.

**1-03.4**                **Contract Bond**

**Add:**

5. Be accompanied by a power of attorney for the Surety's officer empowered to sign the bond; and

6. Be signed by an officer of the Contractor empowered to sign official statements (sole proprietor or partner). If the Contractor is a corporation, the bond must be signed by the President or Vice-President, unless accompanied by written proof of the authority of the individual signing the bond to bind the corporation (i.e., corporate resolution, power of attorney or a letter assigning the individual such authority by the president or vice-president of the corporation).

**1-04**                    **SCOPE OF WORK FOR KID PROJECTS**

**1-04.2**                **Coordination of Contract Documents, Plans, Special Provisions, Specifications, and Addenda**

**Revise: Second paragraph**

Any inconsistency in the parts of the Contract Documents shall be resolved in the following order of precedence (e.g., 1 presiding over 2, 2 over 3, 3 over 4, and so forth):

1. Addenda,
2. Proposal Form,
3. Special Provisions, including APWA General Special Provisions, are included,
4. Contract Plans,
5. The KID Amendments to the Standard Specifications,
6. KID Standards and/or Standard Plans
7. WSDOT/APWA Standard Specifications for Road, Bridge and Municipal Construction, and
8. WSDOT/APWA Standard Plans for Road, Bridge, and Municipal Construction.

**1-05**                    **CONTROL OF WORK FOR KID PROJECTS**

**1-05.3**                **Plans and Working Drawings**

**Add:**

The Contractor shall prepare complete and accurate working drawings when specified in the Special Provisions.

#### 1-05.4

#### **Conformity With and Deviation From Plans and Stakes**

##### **Add:**

Unless otherwise stated in the Special Provisions or on the Plans, the Contractor shall provide a licensed land surveyor registered in the State of Washington to provide survey control, staking, alignment, and grades as shown on the Plans.

The Engineer will provide the location of the survey control and benchmarks used for the design. The Contractor shall provide all construction staking.

The Contractor's licensed surveyor shall provide reference points for all of the existing survey control points within the KID Project boundary. Any survey control points disturbed by the work shall be replaced by the Contractor's licensed land surveyor prior to final acceptance of the project.

The Contractor and/or his surveyor shall work closely with the Engineer to establish grades, alignments, and resolving any discrepancies. The Contractor shall field station the KID Project as shown on the Plans. All sub-grades and top courses for street and road projects shall be staked at a maximum of 50-foot stations. All surveying and construction staking shall be considered incidental to the Contractor's Proposal. The District reserves the right, after the Contractor has field established final grades, to require the Contractor to have the grades verified by the Contractor's licensed surveyor, or to have the grades checked by the District's surveyor. If the grades are found to be incorrect, the Contractor shall pay all costs associated with the surveying and correction of the grades.

If the grades are found to be correct, and the District has required the Contractor to use the Contractor's surveyor for verification, the District will pay the Contractor's direct cost for the surveyor, plus fifteen (15) percent for overhead and profit. Time lost due to the verification of grades that are found to be correct shall be added to the Completion Date.

#### 1-05.6

#### **Inspections of Work and Materials**

##### **Add:**

The Engineer and/or his representative will not be on the KID Project job site continuously, and will rely on the Contractor to follow the contract plans and specifications, schedule, and request KID inspections at the appropriate times as required herein and perform testing as required in Section 1-06.2. The Engineer will make an effort to provide KID inspections on short notice, however, in general, inspections shall be provided as outlined below. The KID Project schedule prepared by the Contractor and approved by the Engineer shall be used as a guide for the Contractor to schedule KID inspections. The Contractor shall notify KID in writing 2 working days before the KID inspection is required and prior to testing. In no case shall there be more than 3 working days notice given by the Contractor for KID inspections and testing. The request shall state the date and approximate time the KID inspection or test is requested. If the Contractor is



not prepared or ready for said KID inspection or test when the Engineer arrives on site, the Contractor shall pay all costs incurred by the KID for the inspection or test that must be rescheduled.

At the beginning of the KID Project, or each construction activity, the Contractor shall meet with the Engineer in the field and establish the work product which meets the specifications for irrigation structure rehabilitation and installation, survey staking and control, pavement cuts, trenches, pipe bedding, patches, curb and gutter alignment, grade and finish, sidewalk finish, pavement finish, and any other activities determined by the Engineer to be important to the KID Project. A minimum of 100 lineal feet of pipeline or canal work and/or 10% of the project completed will be used to establish acceptable work progress and results. Work shall not proceed and/or continue until a work product consistent with the requirements of the Contract Documents is established. The intent of this requirement is establish construction progress and the anticipated completed work product that is acceptable to the District and in compliance with the Contract Documents. KID inspections and testing, as required in Section 1-06.2, are mandatory for District acceptance of backfilling any utility trenches; installation of irrigation structures and canal lining; placing base course and top course for streets; paving; placing sidewalks, curbs and gutters; and installation of irrigation and/or other water line. The Engineer shall be present for all testing of utilities.

Scheduling of all KID inspections and testing, and delays in progress of the work as a result of inspections and testing, shall be considered incidental to the project and shall not extend the Completion Date for the Contractor.

#### 1-05.11

##### **Final Inspection**

##### **Add:**

##### **Substantial Completion:**

Substantial completion is the stage in the progress of the Work when the Work, or designated portion thereof, is sufficiently complete in accordance with the Contract Documents so the Owner can occupy and/or utilize the Work for the intended use of the KID Project.

The Contracting Agency retains the right to use any portion of the work prior to Substantial Completion.

Utility castings shall be raised to final grade and final patching shall be completed prior to Substantial Completion.

When the Contractor considers the KID Project work Substantially Complete, the Contractor shall notify the Engineer in writing and request the Engineer establish the Substantial Completion Date. The Contractor's request shall list the specific items of work to be completed in order to reach Substantial Completion and Final Project Completion. Upon receipt of the Contractor's request, the Engineer will

schedule an inspection of the work confirming that that the work is Substantially Complete. The Engineer may also establish the Substantial Completion Date unilaterally.

After the KID inspection for Substantial Completion is completed, the Engineer will notify the Contractor in writing concurring with or denying Substantial Completion. Upon receipt, the Contractor shall provide the Engineer with a revised schedule, and pursue without unauthorized delay the work necessary to reach Final Project and/or Substantial Completion.

The process outlined above shall be repeated until the Engineer concurs with the Contractor's assertion that Substantial Completion and/or Final Project Completion has been attained. The Engineer will then establish a Substantial Completion Date.

**Final Inspection and Final Project Completion Date:**

When the Contractor considers the work Final Project Complete and ready for final KID inspection, the Contractor shall request, by written notice, the Engineer to schedule a final KID inspection. The Engineer will set a date for final inspection. The Engineer and the Contractor will then make a final inspection and the Engineer will notify the Contractor in writing of all deficiencies and other work requiring completion. The Contractor shall immediately take such corrective measures as are necessary to remedy all KID Project deficiencies. All work shall be pursued vigorously by the Contractor, diligently, and without interruption until Final Project Completion. The KID Final Inspection and correction process will be repeated until the all work has been completed in accordance with the Contract Documents. One KID Final Inspection and one follow up Final Inspection will be undertaken at no cost to the Contractor. The Contractor shall pay all costs incurred by the District for subsequent KID inspections.

If action to correct the listed deficiencies is not initiated by the Contractor within 7 days after receipt of the written notice listing the deficiencies, the Engineer may, upon written notice to the Contractor, take whatever steps are necessary to correct those deficiencies pursuant to WSDOT Section 1-05.7. The Contractor will not be allowed an extension of the Final Completion Date because of any delays attributable to the exercise of the Engineer's right hereunder.

Upon completion of all work and correction of all deficiencies by the Contractor, the Engineer will notify the Contractor, in writing, of the date upon which the work achieved Final Project Completion. That date shall constitute the Final Project Completion Date of the contract, but shall not imply acceptance of the work by KID or that all obligations of the Contractor under the contract have been fulfilled.

**Operational Testing:**

It is the intent of the Contracting Agency to have on the Final Project Completion Date a complete and operable project. Because of this, operational testing must be completed prior to the work being accepted as Final Project Complete. During and following the test period, the Contractor shall correct any deficiencies in workmanship, materials, or equipment, or that are not operating in accordance with the Contract Documents. Equipment, materials, electrical controls, meters, or other devices and equipment to be tested during this period shall be tested under the observation of the Engineer, so the Engineer may determine that the system operates properly and in accordance with the Contract Documents. The Final Project Completion Date will not be established until testing is completed and any deficiencies have been corrected to the satisfaction of the Engineer.

All costs associated with operational testing and any subsequent modifications necessary to provide a fully operational system shall be considered incidental to the project.

Operational and test periods, when called out in the Contract Documents, shall not affect a manufacturer's guaranties or warranties furnished under the terms of the contract.

**1-05.12**

**Final Acceptance**

**Add:**

The KID shall issue a statement of Final Acceptance at full project completion. Work performed by KID personnel, when a contractor fails to meet the requirements of Section 1-05.11, for which reimbursement to the KID has not been made, will be withheld from the Retainage or other payments due to Contractor. A 60-day appeal period will begin the day following final acceptance. The retainage shall be released after the appeal period and in accordance with Washington State R.C.W.'s. (See 1-09.9(1) Retainage)

**Add:**

**1-05.16 Water and Power**

The Contractor shall make arrangements necessary to provide water and power required to construct the KID Project. All costs associated with providing water and power will be the responsibility of the contractor unless otherwise provided in the Special Provisions.

**Add:**

**1-05.17 Oral Agreements or Representations Not Binding**

No oral agreement with or representation of any officer, agent, or employee of the Contracting Agency, either before or after execution of the contract, shall affect or modify any of the terms or obligations in the Contract Documents. Such oral agreement or conversation shall in no way be binding upon the Contracting

Agency, unless subsequently put in writing and signed by the Contracting Agency.

**1-06                    CONTROL OF MATERIALS FOR KID PROJECTS**

**1-06.2(1)            Samples and Tests for Acceptance**

**Add:**

The District reserves the right to have field-testing of materials and compaction for KID Projects. The Contractor shall pay all testing costs except for KID-constructed projects as stipulated below. The testing requirements as outlined in the Local Agency Guidelines shall apply.

For KID Projects, the Contractor shall provide KID with mix designs on asphalt concrete pavement and concrete for approval. Approved mixed designs by WSDOT may be approved. Certification of materials meeting the specifications and tests shall be provided for all materials to be installed prior to delivery.

The Contractor shall schedule the KID Project testing required in the specifications and the minimum tests listed below to be performed by the KID or its testing company. The Contractor shall provide the equipment and labor to provide test sites and/or pits (holes) at the locations and depths selected by the Engineer. If a test fails, additional tests will be performed at the Contractor's expense, to establish the cause of failure. After any rejected work is redone, the testing procedure shall be implemented again. If a test fails again, additional tests will be performed to identify the area of failure at the Contractor's expense. The testing and rework will be done at the cost of the Contractor until the Engineer accepts the work. All costs to the Contractor associated with testing, including delays and scheduling, shall be incidental to the bid price(s) of the items being tested.

Concrete Placement:	Two (2) slump and four (4) cylinders per ten (10) cubic yards.
Asphalt:	One (1) sample per twenty (20) tons.
Asphalt compaction:	Two (2) plus one (1) per 600 sq. ft. or per two (2) tons whichever is greater.
Base rock compaction:	Two (2) plus one (1) per 300 sq. ft. or one (1) per two (2) tons whichever is greater.
Embankment compaction:	Two (2) plus one (1) per one (100) cubic yard (allow 48 hours for proctor test).
Trench compaction:	Two (2) plus one (1) per fifty (50) feet (allow 48 hours for proctor test).

The following compaction requirements of the test method shown shall be met:

Asphalt - 98% maximum field compaction or 91% AASHTO T230-68 (Rice)

Base rock - 98% ASTM D 698 or 98% WSDOT test Method 606

Subgrade – 98% ASTM D 698 or 98% WSDOT test Method 606

Trench pipe zone - 95% ASTM D 698 or 95% WSDOT test Method 606

Class D trench backfill - 98% ASTM D 698 or 98% WSDOT test Method 606

Class C trench backfill - 98% ASTM D 698

Soil embankment - 98% ASTM D 698

Granular embankment - 95% WSDOT test Method 606

**1-06.2(2) Statistical Evaluations of Materials for Acceptance**

**Delete in entirety:**

Except Paragraph C

**1-07 KID LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC**

**1-07.1 Laws to be Observed**

**Add:**

The Contractor shall observe all ordinances, codes, and permit requirements of the KID and the City.

In cases of conflict between Responsible Agency's safety regulations, the most stringent regulation shall apply.

The Washington State Department of Labor and Industries shall be the sole administrative agency responsible for the administration of the provisions of the Washington Industrial Safety and Health Act of 1973 (WISHA).

The Contractor shall maintain at the KID Project site office, or other well known place at the KID Project site, all articles necessary for providing first aid to the injured. The Contractor shall establish, publish, and make known to all employees, procedures for ensuring immediate transfer to a hospital, or doctor's care, persons, including employees, who may have been injured on the project site. Employees should not be permitted to work on the KID Project site before the Contractor has established and made known procedures for transfer of injured persons to a hospital or a doctor's care.

The Contractor shall have sole responsibility for the safety, efficiency, and adequacy of the Contractor's plant, equipment, materials, tools, appliances, methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The Contractor shall be solely and completely responsible for the conditions of the KID Project site, including safety for all persons and property in the performance of the work. This requirement shall apply continuously, and not be limited to normal working hours. The required or implied duty of the Engineer to conduct construction review of the Contractor's performance does not and shall not be interpreted to include review and adequacy of the Contractor's safety measures in, on, or near the KID Project site.

1-07.9

**Wages**

**Add:**

All required fees established in WAC 296-127-045 shall be considered incidental to the project and be paid by the Contractor.

1-07.17

**Utilities and Similar Facilities:**

**Add:**

For KID Projects, the Contractor shall use the one call (1-800-424-5555) for field locates in accordance with RCW 19.122 prior to excavation. The Contractor shall assume all responsibility for damages to underground facilities. Any anomalies shall be recorded and the Engineer notified.

Only KID personnel shall operate Kennewick Irrigation District Distribution System Facilities .

The Contractor shall give the KID a minimum of two (2) work days notice of required KID irrigation distribution system shut down, loading, testing, flushing, taps, and street cuts or closures. Additional notice may be required for all work requests that will put a large number of residents out of service.

The Engineer shall verify that all required fittings necessary for connection are secured and on the KID job site prior to scheduling work. The Contractor shall be billed at normal KID rates for work canceled after scheduling, unless circumstances beyond the Contractor's control (as determined by the Engineer), have caused the Contractor to cancel the work.

1-07.18

**Public Liability and Property Insurance:**

**Add:**

The KID shall be named as coinsured on the Contractor's Commercial General Liability Insurance Policy for KID Projects. The insurance policy and certificate of insurance shall indemnify and hold harmless all officers and employees of the KID for any claims arising from the project. No termination or changes in coverage or language shall be allowed without KID approval. The Contractor shall provide a copy of the policy upon request to the KID within 10 days of the



request. Insurance shall be occurrence based unless a claims made based policy is specifically authorized in writing by the Contracting Agency.

The insurance provided must be with an insurance company with a rating of A-: VII or higher in the A.M. Best's Key Rating Guide, which is licensed to do business in the state of Washington (or issued as a surplus line by a Washington Surplus lines broker). The Contracting Agency reserves the right to approve the security of the insurance provided, the company, terms and coverage, and the Certificate of Insurance.

If a claims made policy is approved by the KID, the policy shall state that coverage is claims made, and state the retroactive date of coverage. As a minimum, the retroactive date shall be prior to or coincident with the effective date of this contract. Claims made form coverage shall be maintained by the Contractor for a minimum of three years following the expiration or earlier termination of this contract, and the Contractor shall annually provide the Contracting Agency with proof of renewal. If renewal of the claims made form of coverage becomes unavailable, or economically prohibitive, the Contractor shall purchase an extended reporting period ("tail") or execute another form of guarantee acceptable to the Contracting Agency to assure financial responsibility for liability for services performed.

The policies of insurance shall contain a "cross liability" endorsement substantially as follows:

The inclusion of more than one insured under this policy shall not affect the rights of any insured as respects to any claim, suit, or judgment made or brought by or for any other insured or by or for any employee of any other insured. This policy shall protect each insured in the same manner as though a separate policy had been issued to each, except that nothing herein shall operate to increase the company's liability beyond the amount or amounts for which the company would have been liable had only one insured been named.

The policies of insurance for general, automobile, and pollution policies shall be specifically endorsed to name the Contracting Agency and its officers, elected officials, employees, agents and volunteers, and any other entity specifically required by the Contract Provisions, as additional insured(s).

In addition, Contractor's insurance shall be primary as respects to the Contracting Agency, and any other insurance maintained by the Contracting Agency shall be excess and not a contributing insurance with the Contractor's insurance.

The Contracting Agency shall be given at least 45 days prior written notice of any cancellation, reduction in coverage, or other material change in any insurance policy.

Insurance shall provide coverage to the Contractor, all subcontractors, and the Contracting Agency. The coverage shall protect against claims for personal injuries, including accidental death, as well as claims for property damages which may arise from any act or omission of the Contractor or the subcontractor, or by anyone directly or indirectly employed by either of them.

Contractor hereby assumes all risk of damage to its property, or injury to its officers, directors, agents, contractors, or invitees, in or about the Property from any cause, and hereby waives all claims against the Contracting Agency. The Contractor further waives, with respect to the Contracting Agency only, its immunity under RCW Title 51, Industrial Insurance.

Upon request, the Contractor shall forward to the Contracting Agency the original policy, or endorsement obtained, to a Contractor's policy currently in force.

The Contractor shall not begin work under the contract until the required insurance has been obtained and approved by the Contracting Agency.

Failure on the part of the Contractor to maintain the insurance as required shall constitute a material breach of contract upon which the Contracting Agency may, after giving five working days notice to the Contractor to correct the breach, immediately terminate the contract or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the Contracting Agency on demand, or at the sole discretion of the Contracting Agency, offset against funds due the Contractor from the Contracting Agency.

All costs for insurance shall be incidental to and included in the unit contract prices of the contract and no additional payment will be made.

#### Coverages and Limits

The insurance shall provide the minimum coverages and limits set forth below. Providing coverage in these stated minimum limits shall not be construed to relieve the Contractor from liability in excess of such limits. All deductibles must be disclosed and are subject to approval by the Contracting Agency. The cost of any claim payments falling within the deductible shall be the responsibility of the Contractor.

1. A policy of Commercial General Liability Insurance, written on an insurance industry standard occurrence form: (CG 00 01) or equivalent, including all the usual coverage known as:
  - Per project aggregate endorsement (CG 25 03)
  - Premises/Operations Liability
  - Products/Completed Operations – for a period of one year following final acceptance of the work.
  - Personal/Advertising Injury

Contractual Liability  
Independent Contractors Liability  
Stop Gap or Employers Contingent Liability  
Explosion, Collapse, or Underground (XCU), (as applicable)\*  
Liquor Liability/Host Liquor Liability (as applicable)\*  
Fire Damage Legal  
Blasting (as applicable)\*

\* These coverage are only required when the Contractor's work under this agreement includes exposures to which these specified coverage respond.

If the contract requires working over water, the following additional coverages are required, if so stated in the Contract Provisions:

- a. Watercraft, owned and non-owned
- b. U.S. Harborworkers'/Longshoremen and Jones Act

If any structures are involved in the contract, the Contractor shall provide property insurance under an "All Risk Builder's Risk" form in an amount equal to the value of the structure. The structure shall have All Risk Builders Risk Insurance inclusive of earthquake and flood subject to customary industry deductibles.

Other additional coverages that may be required will be listed in the Contract Provisions.

Such policy(ies) must provide the following minimum limits:

Bodily Injury and Property Damage

\$2,000,000 General Aggregate  
\$1,000,000 Products & Completed Operations Aggregate  
\$2,000,000 Personal & Advertising Injury  
\$2,000,000 Each Occurrence  
\$ 50,000 Fire Damage

Stop Gap Employers Liability

\$1,000,000 Each Accident  
\$1,000,000 Disease - Policy Limit  
\$1,000,000 Disease - Each Employee

2. Commercial Automobile Liability: as specified by Insurance Services Office, form number CA 0001, Symbol 1 (any auto), with an MCS 90 endorsement and a CA 9948 endorsement attached if "pollutants" as defined in exclusion 11 of the commercial auto policy are to be transported. Such policy(ies) must provide the following minimum limit:

Bodily Injury and Property Damage  
\$1,000,000 combined single limit

3. Excess or Umbrella Liability  
\$1 million per occurrence and aggregate
4. A Pollution Liability policy, required if so stated in the Contract Provisions, providing coverage for claims involving remediation, disposal, or other handling of pollutants arising out of: (1) Contractor's operations related to this project; (2) transportation of hazardous materials to or from any site related to this project, including, but not limited to, the project site and any other site, including those owned by the Contractor or for which the Contractor is responsible; and (3) remediation, abatement, repair, maintenance or other work with lead-based paint or materials containing asbestos.

Such Pollution Liability policy shall provide the following minimum coverage for Bodily Injury and Property Damage:  
\$1,000,000 per occurrence

5. Professional Liability: Required if design services are a part of the work, to cover damages resulting from professional errors and omissions. Such policy must provide the following minimum coverage:  
\$1,000,000 per claim and annual aggregate.
6. A policy of Worker's Compensation, as required by the Industrial Insurance Laws of the State of Washington. As respects to Workers' Compensation insurance in the state of Washington, Contractor shall secure its liability for industrial injury to its employees in accordance with the provisions of RCW Title 51. If Contractor is qualified as self-insured in accordance with RCW 51.14, Contractor shall so certify by letter signed by a corporate officer indicating that it is a qualified self insured, and setting forth the limits of any policy of excess insurance covering its employees.

#### **Subcontractors**

Contractor shall include all subcontractors as insureds under its policies or shall furnish separate evidence of insurance as stated above for each subcontractor. All coverage for subcontractors shall be subject to all the requirements stated herein and applicable to their profession.

#### **Evidence of Insurance**

When the Contractor delivers the executed contract for the work to the Contracting Agency it shall be accompanied by a Certificate(s) of Insurance and endorsements for each policy of insurance meeting the requirements set forth above. The certificate must conform to the following requirements:

1. An ACORD certificate Form 25-S, showing the insuring company, policy effective dates, limits of liability and the Schedule of Forms and Endorsements.
2. A copy of the endorsement naming Contracting Agency and any other entities required by the Contract Provisions as Additional Insured(s), and stating that

coverage is primary and noncontributory, showing the policy number, and signed by an authorized representative of the insurance company on Form CG2010 (ISO) or equivalent.

3. The certificate(s) shall not contain the following or similar wording regarding cancellation notification to the Contracting Agency: "Failure to mail such notice shall impose no obligation or liability of any kind upon the company."

#### Self-Insurance

Should Contractor be self-insured for any liability coverage, a letter from the Corporate Risk Manager, or appropriate Finance Officer, is acceptable— stipulating if actuarially funded and fund limits; plus any excess declaration pages to meet the contract requirements. Further, this letter shall advise how Contractor would protect and defend the Contracting Agency as an Additional Insured in their Self-Insured layer, and include claims-handling directions in the event of a claim.

### **1-07.23 PUBLIC CONVENIENCE and SAFETY FOR KID PROJECTS**

#### **1-07.23(1) Construction Under Traffic:**

**Add:**

The Contractor shall maintain and keep open sidewalks and paths within the project limit.

#### **1-07.23 (2) Construction and Maintenance of Detours:**

**Add:**

4. Sidewalks and Paths

### **1-07.24 RIGHTS-OF-WAY**

**Delete Section in entirety:**

**Add:**

For known and documented street right-of-way lines, limits of easements, and limits of construction permits are indicated in the KID Project Plans. The Contractor's construction activities shall be confined within these limits, unless arrangements for use of private property are made and documented by the Contractor.

Generally, the Contracting Agency will have obtained the necessary documentation, prior to bid opening, for all rights-of-way and easements, both permanent and temporary, necessary for completing the KID Project work. Exceptions to this are noted in the Special Provisions or will be brought to the Contractor's attention by a duly issued Addendum.

Whenever any of the KID Project work is accomplished on or through property other than public right-of-way, the Contractor shall meet and fulfill all covenants and stipulations of any right-of-way and/or easement agreement obtained by the Contracting Agency from the owner of the private property. Copies of the right-

of-way and/or easement agreements may be included in the Special Provisions or made available to the Contractor as soon as practical after the agreements have been obtained by the Engineer.

Whenever easements or rights-of-way have not been acquired prior to advertising the KID Project, these areas are so noted in the KID Project Plans. The Contractor shall not proceed with any portion of the work in areas where right-of-way, easements, and/or rights-of-entry have not been acquired until the Engineer certifies to the Contractor that the right-of-way and/or easement are available or that the right-of-entry has been received. If the Contractor is delayed due to acts of omission on the part of the Contracting Agency in obtaining easements, rights-of-entry or right-of-way, the Contractor will be entitled to an extension of time. The Contractor agrees that such delay shall not be a breach of contract.

Each property owner affected by the KID Project shall be given 48 hours notice prior to entry by the Contractor. This includes entry onto easements, rights-of-way, and private property where private improvements must be adjusted.

For KID Projects, the Contractor shall be responsible for providing, without expense or liability to the Contracting Agency, any additional land and access thereto that the Contractor may desire for temporary construction facilities, storage of materials, or other purposes of the Contractor. However, before using any private property, whether adjoining the work or not, the Contractor shall provide the Engineer written permission from the private property owner for the Contractor to use the property with dates for the proposed use.

Additionally, upon vacating the premises the Contractor will provide a written release from the property owner of each property used for the Contractor's purposes during this KID Project Contract. The release shall be signed by the private property owner, or proper agent acting for the owner, of the private property, stating that the restoration of the property has been satisfactorily accomplished. The release shall also include the parcel number, address, and date of signature. Written releases must be provided to the Engineer before the Completion Date of the KID Project will be established.

1-08

## **PROSECUTION AND PROGRESS**

**Add:**

### **1-08.0 Preliminary Matters**

#### **1-08.0(1) Preconstruction Conference**

Prior to the Contractor beginning the KID Project work, a preconstruction conference will be held between the Contractor, the Engineer and such other interested parties as may be invited. The purpose of the preconstruction conference will be:

1. To review the initial progress schedule;



2. To establish a working understanding among the various parties associated or affected by the work;
3. To identify and review procedures for progress payment, notifications, approvals, submittals, etc.;
4. To establish normal working hours for the work;
5. To review safety standards and traffic control; and
6. To discuss such other related items to the work.

The Contractor shall prepare and submit at the preconstruction meeting the following:

1. A breakdown of all lump sum items;
2. A preliminary schedule of working drawing submittals; and
3. A list of material sources for approval if applicable.
4. A job specific safety plan, listing the authorized person for each discipline.

**1-08.0(2) Normal Work Hours**

Except in the case of emergency or unless otherwise approved by the Contracting Agency, the normal straight time working hours for the KID Project Contract shall be any consecutive 8-hour period between 7:00 a.m. and 6:00 p.m. of a working day with a maximum 1-hour lunch break and a 5-day work week. The normal straight time 8-hour working period for the contract shall be established at the preconstruction conference prior to the Contractor commencing the KID Project work.

**1-08.0(3) Additional Work Hours**

The Contractor shall request in writing to the Engineer to work at times other those specified in Section 1-08.0(2). Requests for changes in working hours shall be submitted to the Engineer no later than noon on the working day prior to the day for which the Contractor is requesting permission to work.

Permission to work between the hours of 10:00 p.m. and 7:00 a.m. during weekdays and between the hours of 10:00 p.m. and 9:00 a.m. on weekends or holidays will be subject to City Ordinance restrictions for noise control requirements. Approval to continue work during additional work hours may be revoked at any time the Contractor exceeds the City's noise control regulations or complaints are received from the public or adjoining property owners regarding the noise from the Contractor's operations. The Contractor shall have no claim for damages or delays should such permission be revoked.

Permission to work during additional work hours may be given subject to certain conditions set forth by the Engineer. These conditions may include but are not limited to: requiring the Engineer or such assistants as the Engineer may deem necessary to be present during the work. Assistants may include, but are not limited to, inspectors, survey crews, personnel from the Contracting Agency's material testing lab, field personnel, and other Contracting Agency employees, when in the opinion of the Engineer, such work necessitates their presence.

**1-08.0(4) Reimbursement for Overtime Work of Contracting Agency Employees**

Where the Contractor elects to work during additional work hours such work shall be considered as overtime work. On all such overtime work an inspector will be present, and a survey crew may be required at the discretion of the Engineer. In such case, the Contracting Agency may deduct from amounts due or to become due to the Contractor for the costs in excess of the straight-time costs for employees of the Contracting Agency required to work overtime hours.

The Contractor by these specifications does hereby authorize the Engineer to deduct such costs from payments to the Contractor.

**1-08.4 Prosecution of Work:**

**Add:**

The contractor shall begin work within 10 calendar days from the date of execution of the Contract, unless otherwise approved in writing by the Engineer. The Contracting Agency will issue the Notice to Proceed within 10 days which will include the date of the first working day of the contract. Voluntary shutdown or slowing of operations by the Contractor shall not relieve the Contractor of the responsibility to complete the work within the time specified in the Contract.

**1-08.7 Maintenance During Suspension**

**Add:**

4. Sidewalks and paths for public use.

**1-08.9 Liquidated Damages**

**Delete in entirety:**

**Add:**

Liquidated damages shall be specified in the Information For Bidders.

**1-09 KID PROJECT MEASUREMENT AND PAYMENT**

**1-09.1 Measurement of Quantities**

**Add:**

Truck tickets shall be delivered to the Engineer or his representative within 1 business day of delivery of material to the KID Project job site. Truck tickets not delivered within the specified time shall constitute grounds for rejection by the Engineer. In resolving discrepancies or conflicts regarding crushed rock or asphalt tickets, the Engineer shall use 1.90 tons per compacted cubic yards of crushed rock and 2.05 tons per compacted cubic yards for asphalt concrete. The Contractor, with the Engineer's approval and prior to delivery of materials, may establish a project conversion factor approved by the Engineer using a minimum of ten (10) tons of material.

Any materials, equipment, or work that is required to complete the KID Project as shown on the drawings, in the specifications, applicable building codes, and not specifically listed in the Proposal, shall be considered incidental to the project and bid items, except for adequate safety systems in accordance with RCW 49.17 for trenches exceeding four (4) feet in depth.

**1-09.6**      **Force Account**

**Add:**

Owner has estimated and included in the Proposal, dollar amounts for all items to be paid per force account, only to provide a common proposal for Bidders. All such dollar amounts are to become a part of Contractor's total bid. However, Owner does not warrant expressly, or by implication, that the actual amount of work will correspond with those estimates. Payment will be made on the basis of the amount of work actually authorized by Engineer.

**1-09.8**      **Payment for Material:**

**Add:**

The Engineer shall decide if any payment for materials on hand will be paid. Payments for materials shall not exceed 90 percent of the actual invoice costs.

**1-9.9**      **Payments**

**Delete:**

The third paragraph.

**Add:**

Progress payments for completed KID Project work and material on hand will be based upon progress estimates prepared by the Engineer. A progress estimate cutoff date will be established at the preconstruction meeting.

The initial progress estimate will be made not later than 30 days after the Contractor commences the work, and successive progress estimates will be made every month thereafter until the Final Completion Date. Progress estimates made during progress of the work are tentative, and made only for the purpose of determining progress payment. The progress estimates are subject to change at any time prior to the calculation of the Final Payment.

The value of the progress estimate will be the sum of the following:

1. Unit Price Items in the Bid Form — the approximate quantity of acceptable units of work completed multiplied by the unit price.
2. Lump Sum Items in the Bid Form — the estimated percentage complete multiplied by the Bid Forms amount for each Lump Sum Item, or per the schedule of values for that item.
3. Materials on Hand — 90 percent of invoiced cost of material delivered to Job site or other storage area approved by the Engineer
4. Change Orders — entitlement for approved extra cost or completed extra work as determined by the Engineer.

Progress payments will be made in accordance with the progress estimate less:

1. Retainage per Section 1-09.9(1);
2. The amount of Progress Payments previously made; and
3. Funds withheld by the Contracting Agency for disbursement in accordance with the Contract Documents.

Progress payments for work performed shall not be evidence of acceptable performance or an admission by the Contracting Agency that any work has been satisfactorily completed.

Payments will be made by warrants, issued by the Contracting Agency's fiscal officer, against the appropriate fund source for the project. Payments received on account of work performed by a subcontractor are subject to the provisions of RCW 39.04.250.

If mutually agreed upon, the Contractor may submit a request for payment on forms approved by the Engineer monthly for payment. The Engineer shall, upon receipt of progress payment request, review for accuracy. The Engineer shall correct any inaccurate entries and return progress payment request to the Contractor for concurrence and re-submittal. Once the progress payment request is mutually agreed upon, by the Engineer and Contractor, the KID may prepare the Progress Payment. The Contractor and the Engineer shall sign the progress payment in order for the payment to be valid. The KID will make payment within thirty calendar days from the date of the valid progress payment. The cut off period for work covered in a progress period will be within the last ten days of the month, at the latest by the 25th.

**1-09.11(3) Time Limitations and Jurisdictions is modified by substituting:**  
"Washington State Superior Court of Benton County" for "Superior Court of Thurston County."

**1-09.13(2) Nonbinding Alternative Disputes Resolution (ADR)**  
**Delete Section in entirety:**

**1-09.13(3) Claims \$250,000 or Less**  
**Delete Section in entirety:**

**1-09.13(3)A Administration of Arbitration**  
**Delete Section in entirety:**

**1-09.13(3)B Procedures to Pursue Arbitration**  
**Delete Section in entirety:**

**1-09.13(4) Claims in Excess of \$250,000**  
**Delete Section in entirety:**

**1-10**            **TEMPORARY Traffic Control**

**1-10.1**        **General**

**Revise: First Paragraph**

The Contractor shall provide flaggers, signs, and other traffic control devices not otherwise specified as being furnished by the Contracting Agency. The Contractor shall erect and maintain all construction signs, warning signs, detour signs, and other traffic control devices necessary to warn and protect the public from injury or damage as a result of the Contractor's operations. No work shall be done on or adjacent to any traveled way until all necessary signs and traffic control devices are in place.

**KENNEWICK IRRIGATION DISTRICT**  
**AMENDMENT TO THE STANDARD SPECIFICATIONS**

**July 2010**

Modifications to Divisions 2 through 9

The technical specifications shall be modified, clarified, or superseded as described below.

**5-04            HOT MIX ASPHALT**

**5-04.3(4)      Rollers**

**Add:**

Pneumatic tire rollers shall not be used unless specified in the Special Provisions.

**5-04.3(5) A   Preparation of Existing Surfaces**

**Add:**

Overlays and Utility Patches:

Prior to paving over utility trenches, the edges of the asphalt paving over the trench shall be saw-cut parallel to the center of the street leaving long straight edges. The Engineer may waive all or a portion of the saw cutting requirement if the original street cut is straight and not damaged. Edges of asphalt shall be tack coated prior to any patching. The asphalt paving patch area shall be weed free.

**5-04.3(5) D   Soil Residual Herbicide**

**Add:**

Soil residual herbicide shall be required on areas where hot mix asphalt is applied for the first time. Documentation of application must be supplied to the KID Project inspector.

**5-04.3(7) A   Mix Design**

**Add:**

The mix design shall meet the requirements of the City where the work is being conducted.

**5-04.3 (8) A 5 Test Results**

**Add:**

HMA testing shall be pre-arranged and oil content results reported within 2 (two) hours of sampling. Initial reports may be by phone, subsequent written documents shall be submitted to the KID prior to the next day's paving shift.

**5-04.3(9)      Spreading and Finishing**

**Add:**



The finish shall be uniform in appearance and free of bumps or dips for the entire length of a project for the full width of the street or road. The texture shall be uniform.

**5-04.3(12) Joints**

**Add:**

All joints shall be hand raked prior to rolling leaving a straight joint. The final joint shall be straight, level with the abutting edge, free of a coarse material at the surface, and neat in appearance. The contractor shall optimize panel widths for the express purpose of minimizing longitudinal pavement joints.

**5-04.3(16) Weather Limitations**

**Add:**

Any paving after October 15 and before March 1 must meet the following temperature criteria;

Wind (mph)	Ambient °F	Surface °F	Precipitation
0-5	45 Min.	40	Not Measurable
5-10	50 Min.	40	Not Measurable
10-15	55 Min.	40	Not Measurable
15+	No Paving	No Paving	Not Measurable

Notes:

1. If the weather criteria are met, the paving contractor shall complete the entire panel or lane with no transverse joints.
2. If precipitation changes after starting, conditions shall be monitored and approved or rejected by the Engineer.

This specification does not include narrow utility crossings during this time period (2 feet or less)

The weather guide shall be the “National Weather Service” zone forecast for the Lower Columbia Basin, Washington at [www.nws.noaa.gov/](http://www.nws.noaa.gov/)

**5-04.5(1) Quality Assurance Price Adjustments**

**Delete Section in entirety:**

6-02            **KID PROJECT CONCRETE STRUCTURES**

6-02.3(1)      **Classification of Structural Concrete**

**Add:**

Class 3000 concrete, minimum 5 1/2 sack (94 pound sacks) mix, shall be used for all concrete work, including sidewalks, curb and gutter, retaining walls, thrust blocks, and small structures. See Section 6-02.3(2) B Commercial Concrete.

6-02.3 (6) A   **Weather and Temperature Limits to Protect Concrete**

**Add:**

Any concrete placed in air temperatures below 35 °F shall have a Cold Weather Protection Plan submitted and approved by the Engineer prior to placement. Concrete shall not be placed on subgrade where soil surface temperatures are below 35 °F.

6-02.3(11)     **Curing Concrete**

**Add:**

All concrete shall receive a clear, non-white curing compound and it shall be brushed or sprayed on all exposed concrete surfaces one hour after the finishing. Protection against damage, including weather, is still required.

If the threat of rain or blowing sand is present, surfaces shall be covered with 6-mil. poly sheeting. If the threat of freezing is present, the work shall be covered with thermal curing blankets for a period of seven (7) days.

6-02.3(14)     **Finishing Concrete Surfaces**

**Add:**

The finished improvements shall be true to grade, straight with smooth transitions or curves. Grades checked with a ten (10) foot straight edge shall not deviate more than one-eighth (1/8) inch, and alignment shall not vary more than one-fourth (1/4) inch.

The finish shall be a light broom finish, or as noted in the KID Standard Plans, or as approved by the Engineer in Section 1-05.6 Inspections. A non-uniform finish, an overworked finish, a finish where a cement layer has formed, discolored, is spalling, or a finish damaged by the weather, will not be accepted.

Crew sizes shall have adequate numbers to provide quality control.

7-01            **KID PROJECT DRAINS**

7-01.1         **Materials**

**Add:**

Materials shall meet the requirements of the Kennewick Irrigation District Qualified Materials List and Standard Details.

- 7-04            **KID PROJECT STORM SEWERS**  
**Add:**  
Storm Sewers shall be in accordance with the standards of the municipality whose Urban Growth Area contains the project area.
- 7-05            **KID PROJECT MANHOLES, INLETS, CATCH BASINS, AND DRYWELLS**
- 7-05.2        **Materials**  
**Add:**  
Materials shall meet the requirements of the KID Qualified Materials List and Standard Details.
- 7-05.4        **Measurement**  
**Delete:**  
Paragraph four.  
**Add:**  
Structure excavation Class B , including haul, shall be included as part of the applicable unit or lump sum bid item.
- 7-08            **KID PROJECT GENERAL PIPE INSTALLATION REQUIREMENTS**
- 7-08.2        **Materials**  
**Add:**  
Materials shall meet the requirements of the KID Qualified Materials List and Standard Details.
- Import material for pipe zone bedding and pipe base for all pipeline installations shall be 3/8-inch pea gravel, 5/8-inch minus crushed rock, or clean granule sand from an approved pit. The use of native material for bedding and pipe zone material requires approval by the Engineer.
- 7-08.3(3)     **Backfilling**  
**Revise: Paragraph 3**  
Pipe zone backfill shall be placed in loose layers and compacted to 98 percent maximum density. Backfill shall be brought up simultaneously on each side of the pipe to the top of the pipe zone. The pipe shall then be covered to the top of the pipe zone and the materials compacted in a manner to avoid damaging or disturbing the completed pipe.
- 7-09            **KID PROJECT WATER MAINS**  
**Add:**  
Water mains shall be in accordance with the standards of the municipality whose Urban Growth Area contains the project area.
- 7-12.         **KID PROJECT VALVES FOR WATER MAINS**

**Add:**

Valves for water mains shall be in accordance with the standards of the municipality whose Urban Growth Area contains the project area.

7-14

**KID PROJECT HYDRANTS**

**Add:**

Hydrants shall be in accordance with the standards of the municipality whose Urban Growth Area contains the project area.

7-15

**KID PROJECT SERVICE CONNECTIONS**

**Add:**

Service connections shall be in accordance with the standards of the municipality whose Urban Growth Area contains the project area.

**Add:**

7-20

**KID PROJECT IRRIGATION WATER MAINS**

This section incorporates section 7-09 **Water Mains** by reference except as amended herein.

7-20.1

**Description**

**Revise:**

This work consists of constructing irrigation water mains 16-inches in diameter and smaller in accordance with the Plans, these Standard Specifications, the Special Provisions and the Standard Plans, at the location shown on the Plans.

7-20.2

**Materials**

**Add:**

Materials shall meet the requirements of the KID Qualified Materials List and Standard Details.

7-20.3 (7)

**Trench Excavation**

**Add:**

The length of trench excavation in advance of pipe laying shall be kept to a minimum. Excavations shall be either closed up at the end of the day or protected per Section 1-07.23 (1);

**Saw Cut/Removal of Existing Pavement**

The Contractor shall neatly saw cut all areas of existing pavement within the trench excavation area, then remove and haul all waste materials from the project, and dispose of all waste materials at an approved site provided by the contractor. Should any undermining occur on adjacent pavement, the contractor shall neatly cut the pavement 6 inches beyond the undermined area.

Measurement and Payment shall be for Sawcut/Remove and haul pavement, per lump sum, and shall be for full compensation for all labor equipment, materials

and incidentals necessary to complete the sawcut/removal and hauling of the existing pavement.

7-20.3(9)

**Bedding the Pipe**

**Revise:**

Gravel Backfill for pipe zone bedding shall be select granular material free from wood waste, organic material, and other extraneous or objectionable materials and shall be 5/8-inch minus crushed rock or clean granule sand from an approved pit. Gravel backfill for pipe zone bedding shall be compacted to 98 percent of maximum density. The use of native material for bedding and pipe zone material requires approval by the Engineer.

7-20.3(11)

**Compaction of Backfill**

**Revise: Paragraph 1**

95 percent of maximum density to 98 percent of maximum density.

**Revise: Paragraph 2**

At locations where paved streets, roadway shoulders, driveways, or sidewalks will be constructed or re-constructed over the trench, the backfill material shall be spread in lifts and be compacted. In such cases, the backfill shall be placed in successive lifts not exceeding 6-inches in loose thickness, and each lift shall be compacted to 98 percent density.

7-20.3 (19) A **Connections to Existing Mains**

**Add:**

Contractors shall not be allowed to connect to existing KID irrigation water systems until all pressure testing has been completed and approved and the KID Engineer has authorized the connection.

7-20.3(20)

**Detectable Marking Tape**

**Add:**

Detectable marking tape and a purple 12 gage Tracer wire are to be installed for locating the pipe. The tracer wire shall be routed up into valves boxes with adequate length provided for connection to pipeline location equipment. Wire splices shall use approved connectors per the approved materials list.

7-20.3(21)

**Concrete Thrust Blocking**

**Add:**

Thrust blocks shall be formed and placed in conformance with the KID Construction Standards for the appropriate pipe and fitting size. Six (6) mil poly sheeting shall be placed between the thrust block and fittings to inhibit bonding.

7-20.3(23)

**Hydrostatic Pressure Test**

**Delete in entirety:**

**Add:**

Hydrostatic Pressure Tests shall be between valves and made after all corporation stops and angle meter stops are installed. Test pressures shall be a minimum of

150 psi or one and one half times the operating pressure, whichever is greater, applied for two hours. All pressure gages shall be certified. Pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test shall be furnished and operated by the Contractor. No pressure loss is allowed to qualify as an acceptable test.

**7-20.3(24) Flushing Irrigation Water Mains**

**Delete Section in entirety:**

**7-20.3(24)A Flushing**

**Delete Section in entirety:**

**Add:**

All pipelines shall be flushed to remove any solids or material that may have been lodged in the pipe. If a blow-off is not installed at the end of a main, then a tap shall be provided large enough to develop a flow velocity of at least 2.5 feet-per-second in the irrigation water main.

Taps required by the Contractor for temporary or permanent release of air or flushing purposes shall be provided by the Contractor as part of the construction of irrigation water mains.

The Contractor shall be responsible for disposal of water flushed from the mains for protection of aquatic life in the receiving water before disposal into any natural drainage channel. The Contractor shall be responsible for disposing of water to the satisfaction of the Contracting Agency and the City.

**7-20.3(24)B through 7-20.3(24)O**

**Delete in entirety:**

**7-20.5 Payment**

**Add:**

Payment also shall include thrust blocks, marking tape, locator wire, couplings, and restrained joints. Special connections or connection to existing pipelines shall be considered incidental unless a separate bid item is in the KID Project proposal. Separate bid items shall include all materials, equipment, and labor to make the connections.

**Add:**

**7-21**

**KID PROJECT VALVES FOR IRRIGATION WATER MAINS**

This section incorporates section 7-12 **Valves for Water Mains** by reference except as amended herein.

**7-21.2 Materials**

**Add:**

Materials shall meet the requirements of the KID Qualified Materials List and Standard Details.



**7-21.4**      **Construction Requirements**

**Add:**

Valves shall not be installed in and/or below Sidewalks, Handicap Ramps, Driveway Approaches or any other exposed concrete surface, unless approved by Engineer.

**Add:**

**7-22**      **KID PROJECT IRRIGATION SERVICE CONNECTIONS**

This section incorporates section 7-15 **Service Connections** by reference except as amended herein.

**7-22.2**      **Materials**

**Add:**

Materials shall meet the requirements of the KID Qualified Materials List and Standard Details

**7-22.3**      **Construction Requirements**

**Add:**

No joints are allowed between the corporation stop and the AMS. Polyethylene services shall be properly spaced and bedded. All tails shall extend beyond the Utility Easement line. Meter boxes shall not be installed in concrete without prior approval of the Engineer.

**8-04**      **KID PROJECT CURBS, GUTTERS, AND SPILLWAYS**

**Add:**

Curbs, gutters, and spillways shall be installed in accordance with the standards of the municipality whose Urban Growth Area contains the project area.

**8-21**      **KID PROJECT PERMANENT SIGNING**

**Add:**

Permanent signing shall be installed in accordance with the standards of the municipality whose Urban Growth Area contains the project area.

**8-22**      **KID PROJECT PAVEMENT MARKING**

**Add:**

Pavement marking shall be installed in accordance with the standards of the municipality whose Urban Growth Area contains the project area.

**STANDARD MATERIALS LIST**

<b>Material</b>	<b>Description</b>	<b>Pre-Approved Manufacturer</b>
PIPE	DUCTILE IRON ANSI THICKNESS CLASS 50 OR C900/DR 18 (150 PSI) PVC. PVC PIPE SHALL BE PURPLE IN COLOR.	
FITTINGS	CEMENT LINED, MECHANICAL JOINT, FLANGED, OR MECHANICAL JOINT X FLANGE, DUCTILE IRON, RUBBER GASKET FOLLOWER GLANDS AND BOLTS AWWA C-110 APPROPRIATE GASKET TRANSITION COUPLERS OR C-153 AND C-111; SLEEVES AS NEEDED. NO PVC FITTINGS ALLOWED	
NUTS, BOLTS, STUDS	CARBON STEEL, ASTM A 307, GRADE B	
RESTRAINED JOINTS	APPROVED BY THE DISTRICT PRIOR TO INSTALLATION	
JOINT LUBRICANT	NONTOXIC LUBRICANT (WATER-SOLUBLE)	
TRACING WIRE	12 GAUGE COPPER UF INSULATION, COLORED PURPLE FOR IRRIGATION	
TRACING WIRE CONNECTORS	SPLICE AND EFFECTIVELY MOISTURE SEAL ALL SPLICES	3M DBY SPLICE KIT
DETECTABLE MARKING TAPE	(2) INCHES WIDE PLASTIC COATED ALUMINUM AND SHALL BE CLEARLY MARKED, "CAUTION IRRIGATION LINE BURIED BELOW" CONTINUOUSLY ALONG THE LENGTH OF THE TAPE WITH MINIMUM 1/2-INCH LETTERS. THE TAPE SHALL BE PURPLE IN COLOR.	
GATE VALVES SMALLER THAN 10"	RESILIENT WEDGE WITH CAST IRON BODY (AWWA C509), NON-RISING STEM, DIRECTION OF OPENING-COUNTERCLOCKWISE	CLOW (F-6100 SERIES) KENNEDY (1500 SERIES) M&H VALVE (STYLE 4067) MUELLER (A-2300 SERIES)
BUTTERFLY VALVES 10" OR LARGER	RUBBER SEATED (AWWA C504 CLASS 150B)	PRATT (GROUNDHOG) KENNEDY (ADAP-TORQ) MUELLER (LINESEAL III) CLOW/M&H (450 4500 1450 SERIES)
TAPPING SLEEVES	STAINLESS STEEL TAPPING SLEEVE WITH STAINLESS STEEL FLANGE	FORD ROMAC SMITH-BLAIR
TAPPING GATE VALVE 12" OR LESS	RESILIENT WEDGE WITH CAST IRON BODY (AWWA C509), DIRECTION OF OPENING-COUNTERCLOCKWISE	MUELLER (T-2360 SERIES) CLOW (F-6114)
VALVE BOXES	TWO PIECE COAL TAR PAINTED VALVE BOX COVER SHALL BE STAMPED "IRRIGATION" OR "IRR")	MEDFORD (931) TYLER
AIR RELIEF VALVES	AIR-RELEASE FOR WATER WORKS SERVICE	APCO (140 SERIES) INTERIOR APCO (150 SERIES) EXTERIOR

BLOW-OFF	FLUSH MODEL HYDRANT WITH 3" MECHANICAL JOINT, 1 1/2" PENTAGON OPERATING NUT, DIRECTION OF OPENING-COUNTERCLOCK WISE	M&H FLUSH MODEL STYLE 333 MUELLER 2 1/8" FLUSH TYPE HYDRANT ECLIPSE 85 (3" BODY)
4" AND LARGER REPAIR COUPLINGS	COUPLING CENTER RING SHALL BE CONSTRUCTED OF DUCTILE IRON.	ROMAC (501)
PUMP-VERTICAL TURBINE	MAXIMUM RPM 1800	FLOWSERVE
PUMP-CLOSE COUPLED END SUCTION	MAXIMUM RPM 1800	CORNELL
PUMP MECHANICAL SEAL	TUNGSTEN-CARBIDE	
MOTOR	MOTORS SHALL BE INVERTER RATED AND SHALL BE OPEN DRIP PROOF	
PRESSURE GAUGES	LIQUID FILLED PRESSURE GAGES WITH RANGE OF 0-160 PSI	ASHCROFT
FLEXIBLE LINING	60 MIL TEXTURIZED HDPE and 45 MIL EPDM (FIRESTONE PAND-GARD)	
FILTERS	AUTOMATIC FLUSHING FILTERS SCREEN SIZE SHALL BE 500 MICRON	AMIAD
1 1/4" AND 1 1/2" POLYETHELENE TUBING	AWWA C901-96 PE 3408 (CTS) DR 9 (200 PSI) POLYETHELENE TUBING SHALL BE PURPLE SKINNED OR HAVE A PURPLE STRIPE	
2" POLYETHELENE TUBING	AWWA C901-96 PE 3408 (IPS) IDR7 (200 PSI) POLYETHELENE TUBING SHALL BE PURPLE SKINNED OR HAVE A PURPLE STRIPE	
1 1/4" AND 1 1/2" ANGLE BALL SERVICE VALVE		FORD (BA13-444WR)
2" ANGLE BALL SERVICE VALVE		FORD (BA11-777WR)
SERVICE SADDLES (ANY SIZE)	PAINTED SADDLE WITH STAINLESS STEEL STRAPS WITH IRON PIPE THREADED OUTLET	ROMAC (MODEL 202S) MUELLER (MODEL DS2S)
CORP. STOPS USED WITH SERVICE SADDLES		FORD FB1100
IRRIGATION SERVICE FITTINGS	COMPRESSION/PACK JOINT	FORD C-44
METER BOXES	17" X 30" X 18"	MID STATES PLASTIC BCF SERIES
METER BOX LIDS	POLYMER COMPOSITE STAMPED "K.I.D DO NOT DRINK"	MID STATES PLASTIC BCF SERIES
GEOTEXTILE FABRIC	NON-WOVEN FIBER PORE SIZE 0-13MM MAXIMUM WATER PERMEABILITY .05 CM/SEC MINIMUM GRAB STRENGTH (ASTM D 1682) 100 LBS MINIMUM FABRIC TOUGHNESS 10,000 LBS	

## **STANDARD DETAILS**

Service Line Trench Detail

Main Line Trench Detail

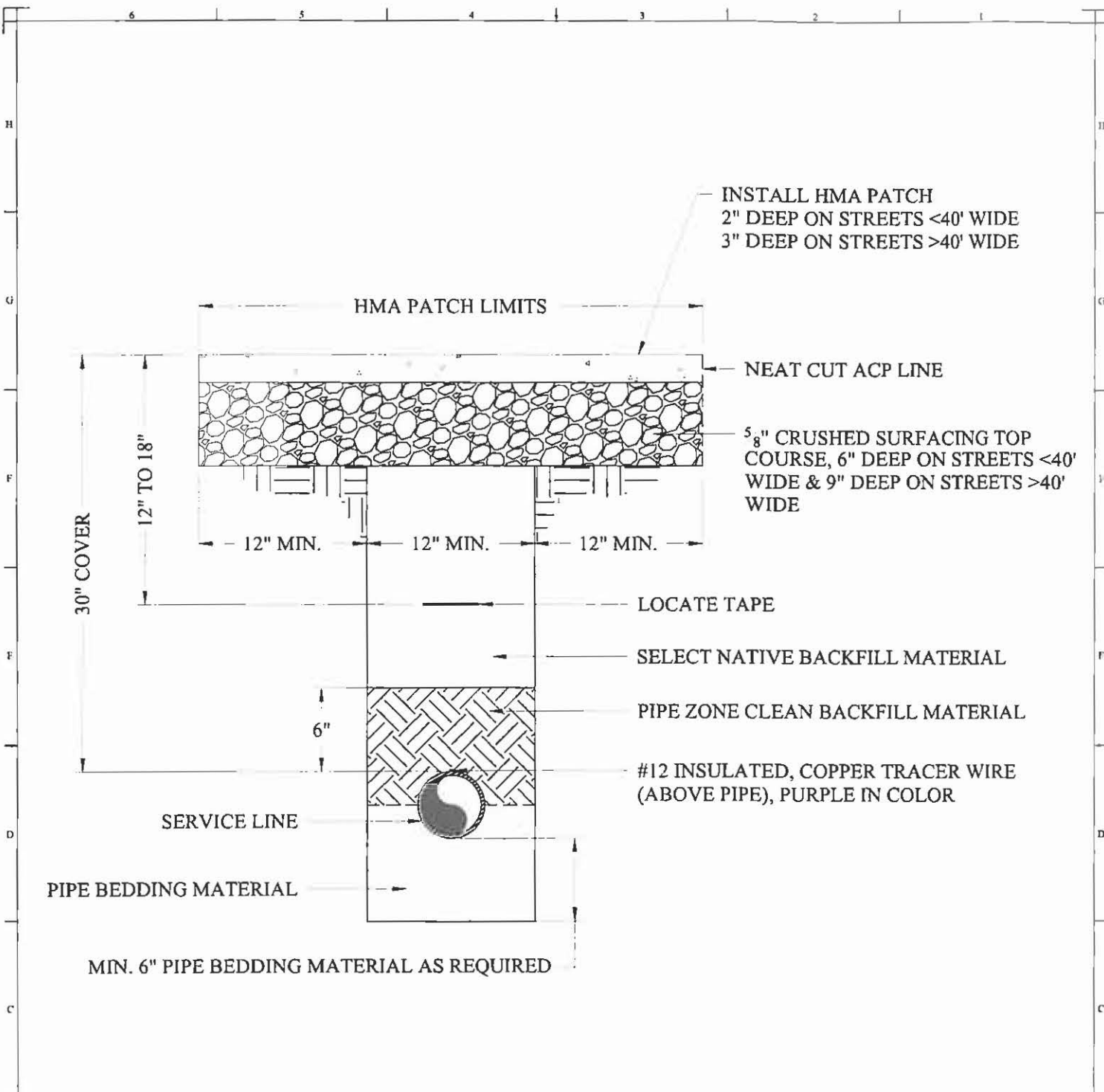
Blow-Off Assembly

1-1/4" Irrigation Service – Type B Riser

2" Irrigation Riser – Type B Riser

System Drain into Manhole

45-Mil EPDM Canal Lining Detail



INSTALL HMA PATCH  
 2" DEEP ON STREETS <40' WIDE  
 3" DEEP ON STREETS >40' WIDE

HMA PATCH LIMITS

NEAT CUT ACP LINE

5/8" CRUSHED SURFACING TOP COURSE, 6" DEEP ON STREETS <40' WIDE & 9" DEEP ON STREETS >40' WIDE

30" COVER

12" TO 18"

12" MIN.

12" MIN.

12" MIN.

LOCATE TAPE

SELECT NATIVE BACKFILL MATERIAL

PIPE ZONE CLEAN BACKFILL MATERIAL

#12 INSULATED, COPPER TRACER WIRE (ABOVE PIPE), PURPLE IN COLOR

6"


SERVICE LINE

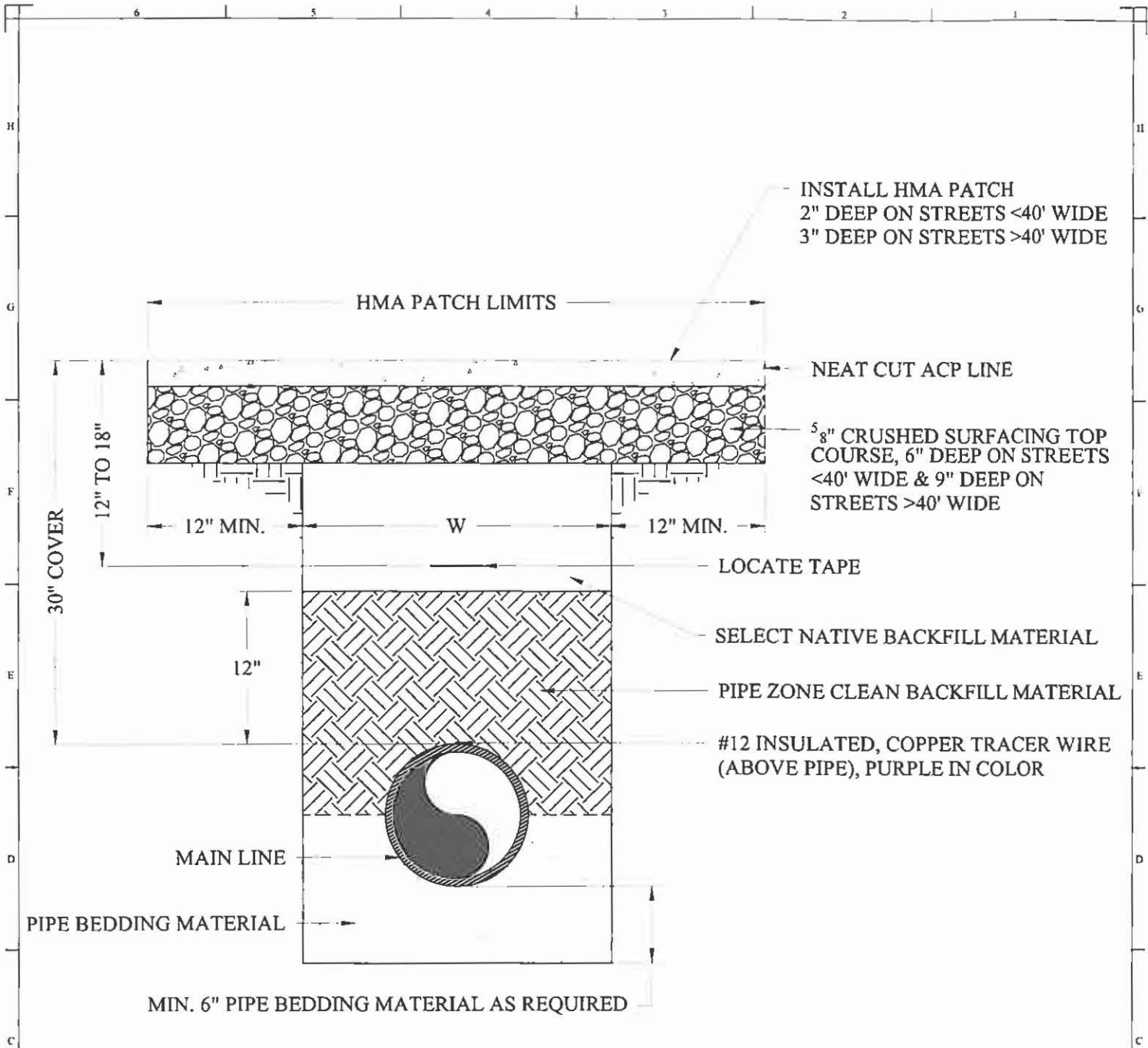
PIPE BEDDING MATERIAL

MIN. 6" PIPE BEDDING MATERIAL AS REQUIRED

# SERVICE LINE TRENCH DETAIL

NOT TO SCALE

PROJECT KID-070-DT1.9	SHEET 1 OF 1	KENNEWICK IRRIGATION DISTRICT		DWG DATE 8/28/07 DWG SCALE NTS DESIGN BY CDS DRAWN BY CHECKED BY	DATE	APPROVED BY	 KENNEWICK IRRIGATION DISTRICT 12 W. KENNEWICK AVE. KENNEWICK, WASHINGTON 98336 (509) 586-9111 WWW.KID.ORG	DRAWING REVISIONS	
		<b>TRENCH DETAIL</b>						REV 0 9/28/07	
<b>SERVICE LINE</b>									



INSTALL HMA PATCH  
 2" DEEP ON STREETS <40' WIDE  
 3" DEEP ON STREETS >40' WIDE

NEAT CUT ACP LINE

5/8" CRUSHED SURFACING TOP COURSE, 6" DEEP ON STREETS <40' WIDE & 9" DEEP ON STREETS >40' WIDE

LOCATE TAPE

SELECT NATIVE BACKFILL MATERIAL

PIPE ZONE CLEAN BACKFILL MATERIAL

#12 INSULATED, COPPER TRACER WIRE (ABOVE PIPE), PURPLE IN COLOR

MAIN LINE

PIPE BEDDING MATERIAL


MIN. 6" PIPE BEDDING MATERIAL AS REQUIRED

**NOTE:**

TRENCH WIDTH "W" SHALL BE 40 INCHES MAX. FOR 15 INCH DIA. AND SMALLER PIPES AND 1-1/2 TIMES THE INSIDE DIAMETER PLUS 18 INCHES MAX. FOR 18 INCH DIA. AND LARGER PIPES.

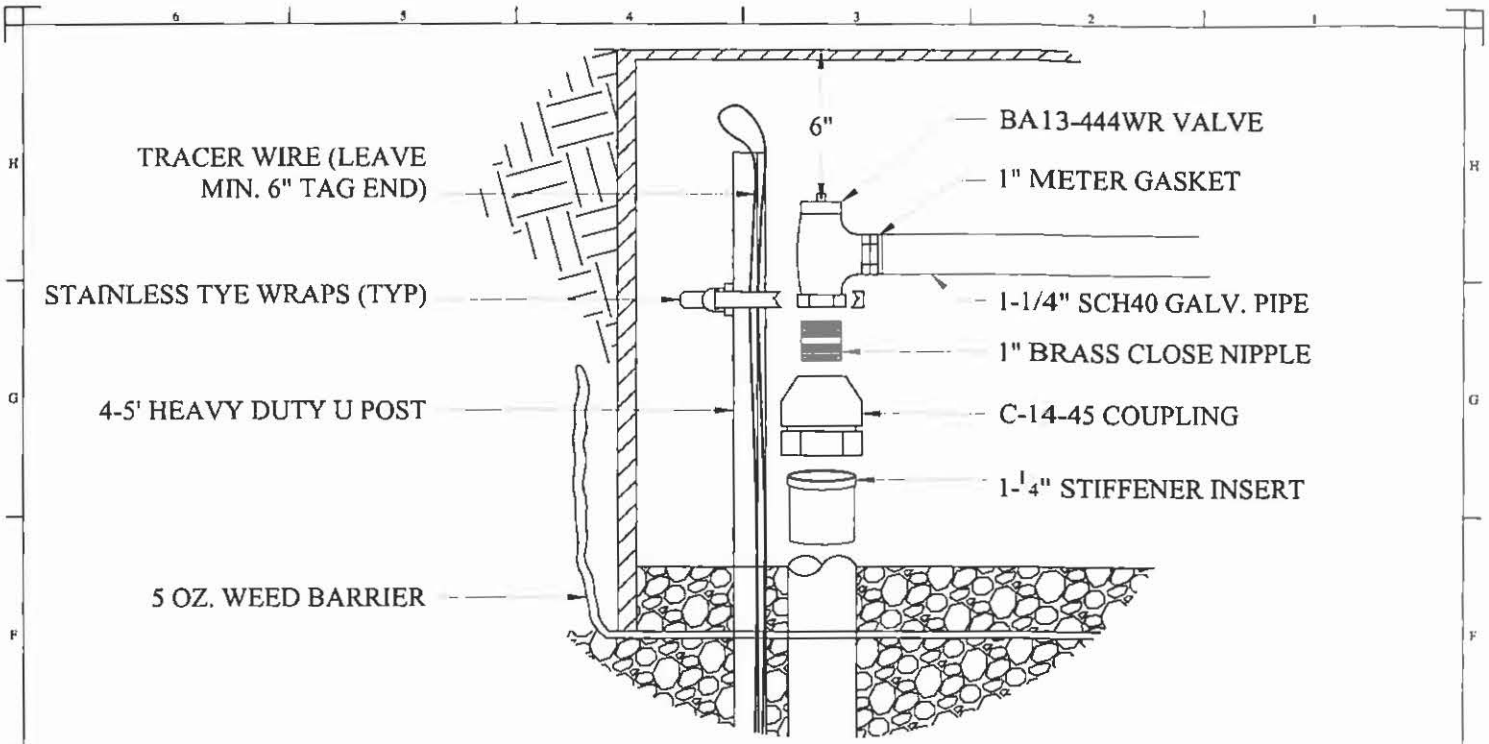
# MAIN LINE TRENCH DETAIL

NOT TO SCALE

PROJECT KID-070-0115	SHEET 1 OF 1	KENNEWICK IRRIGATION DISTRICT		DWG DATE 8/29/07	DWG SCALE NTS	DESIGN BY CBS	DRAWN BY	CHECKED BY	DATE	APPROVED BY	 KENNEWICK IRRIGATION DISTRICT 12 W. KENNEWICK AVE. KENNEWICK, WASHINGTON 99336 (509) 586-9111 WWW.KID.ORG	DRAWING REVISIONS	
		<b>TRENCH DETAIL</b>										REV 0	8/29/07
		<b>MAIN LINE</b>											

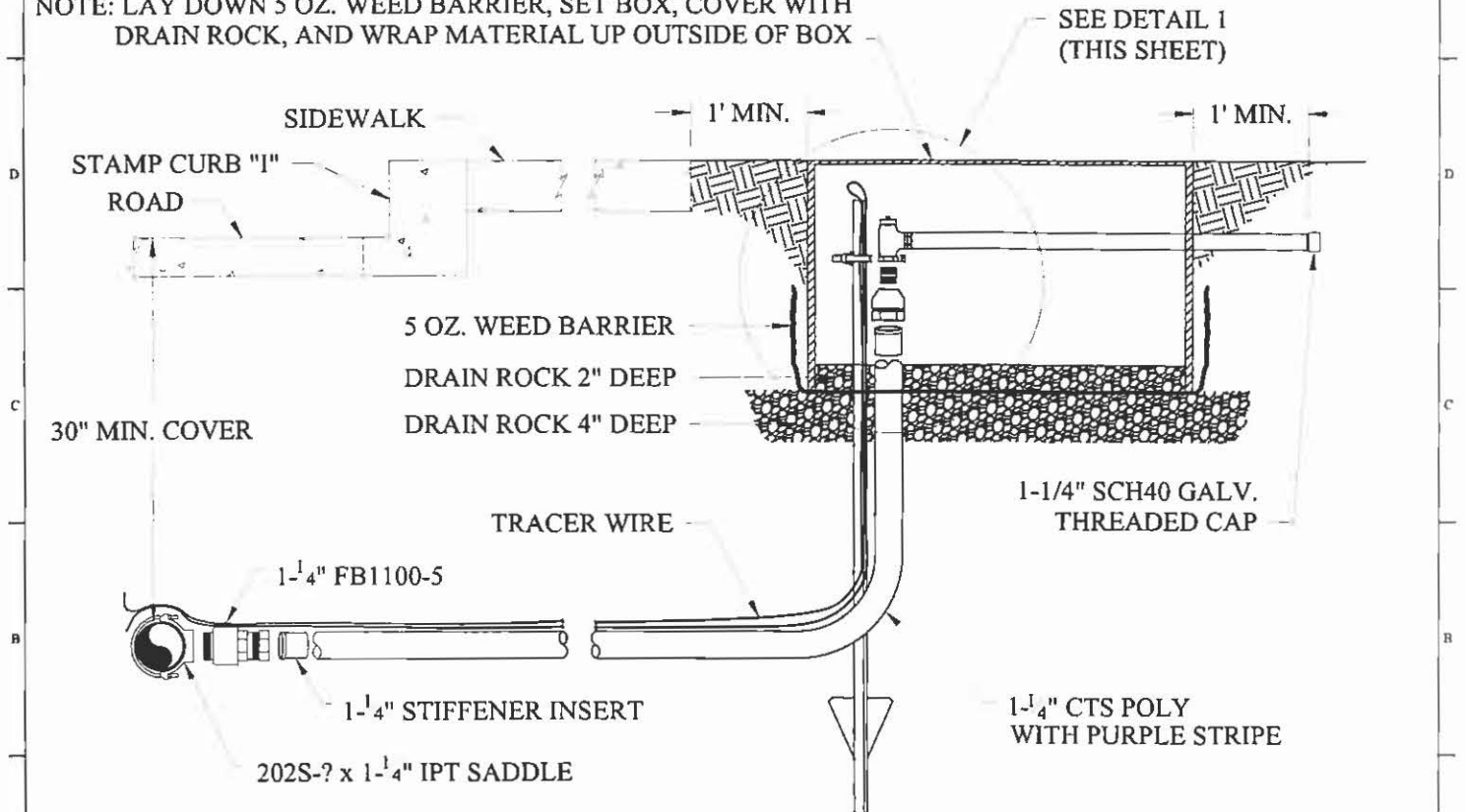




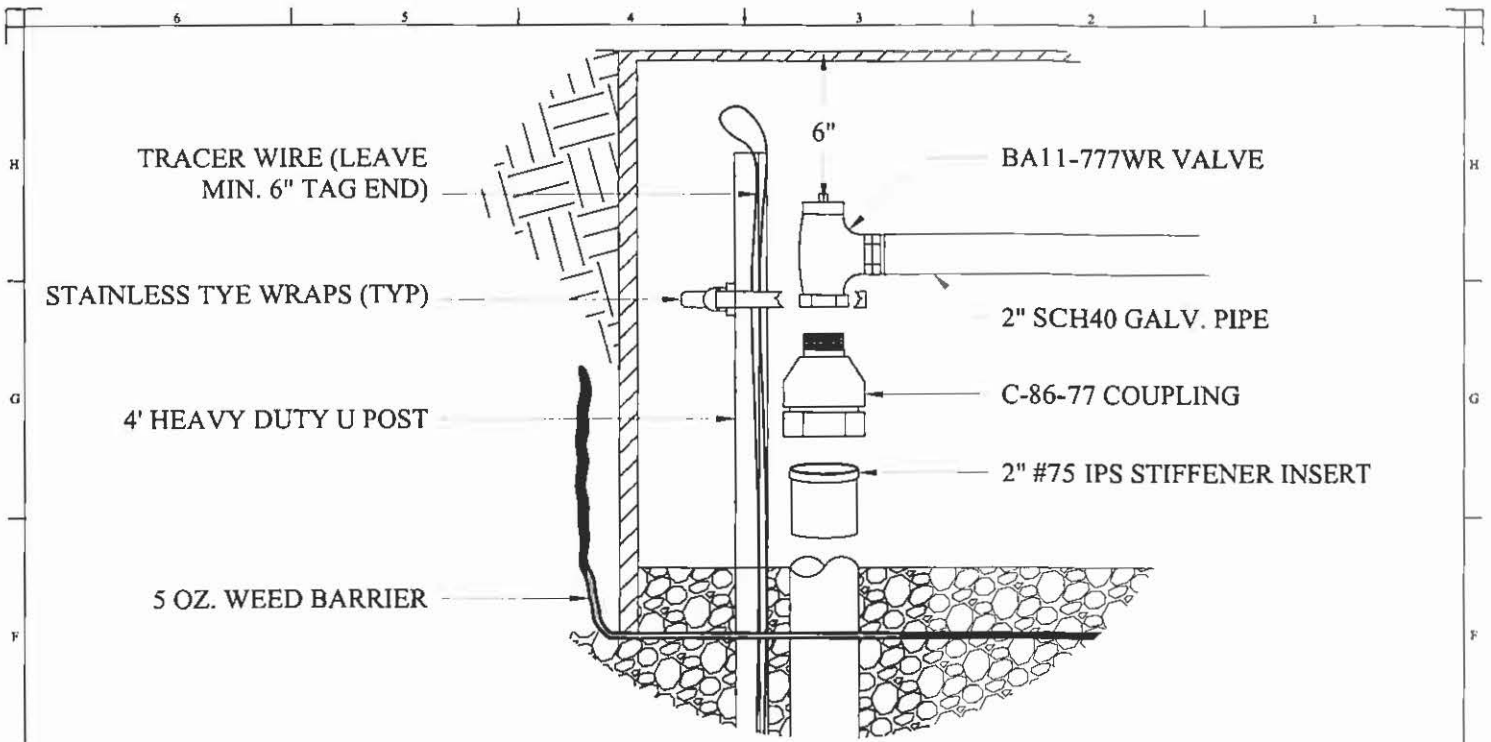


**DETAIL 1**

MS BCF 1730-18XL VALVE BOX & POLYMER COMPOSITE LID, PURPLE IN COLOR AND STAMPED "KID - DO NOT DRINK"  
 NOTE: LAY DOWN 5 OZ. WEED BARRIER, SET BOX, COVER WITH DRAIN ROCK, AND WRAP MATERIAL UP OUTSIDE OF BOX



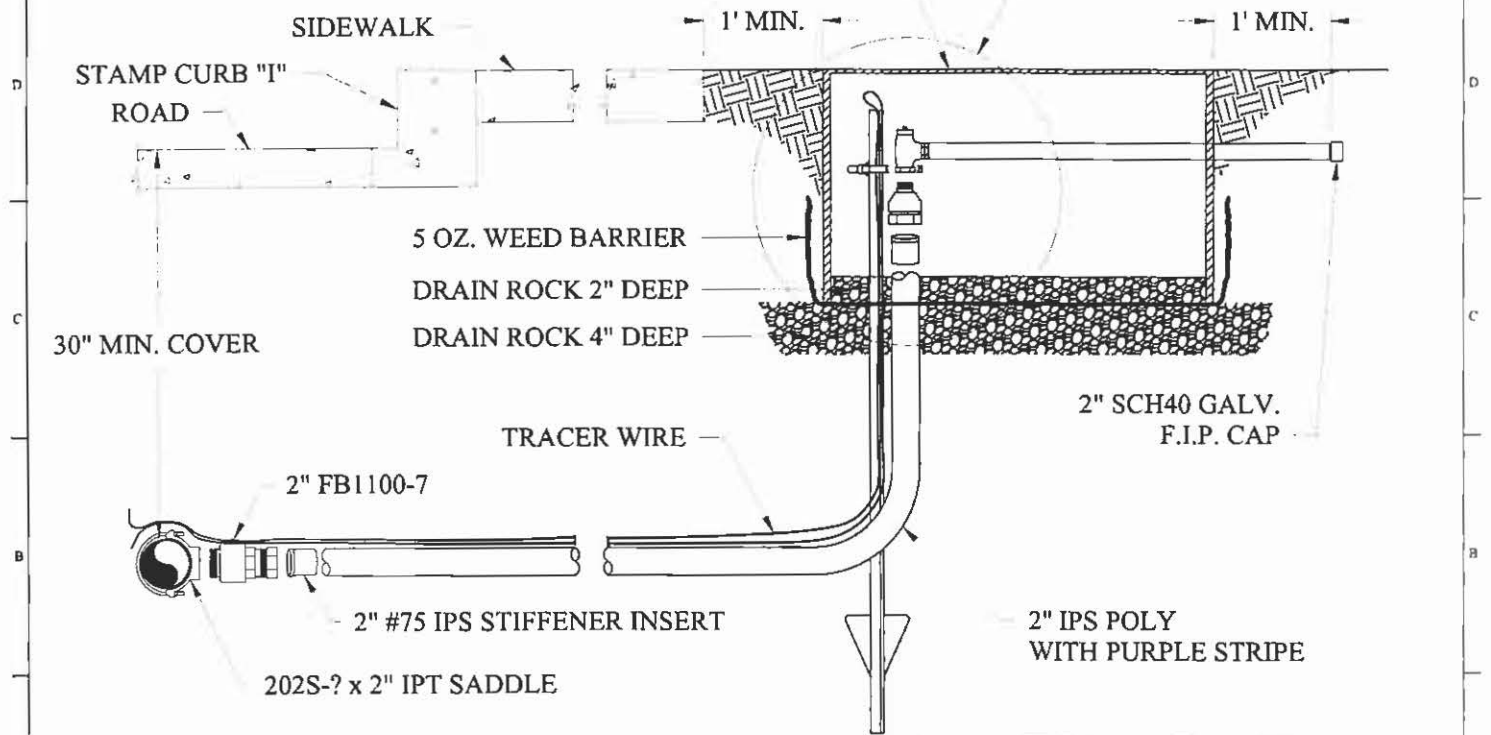
PROJECT: IRRIGATION DISTRICT	SHEET: 1 of 1	KENNEWICK IRRIGATION DISTRICT <b>1-1/4" IRR. SERVICE</b> TYPE B RISER	DATE: 1/22/2010	APPROVED BY:		KENNEWICK IRRIGATION DISTRICT 12 W. KENNEWICK AVE. KENNEWICK, WASHINGTON 99336 (509) 586-9111 WWW.KID.ORG	DRAWING REVISIONS
			DESIGN BY: NTS				DATE:
DESIGNED BY: CDS	DATE:						
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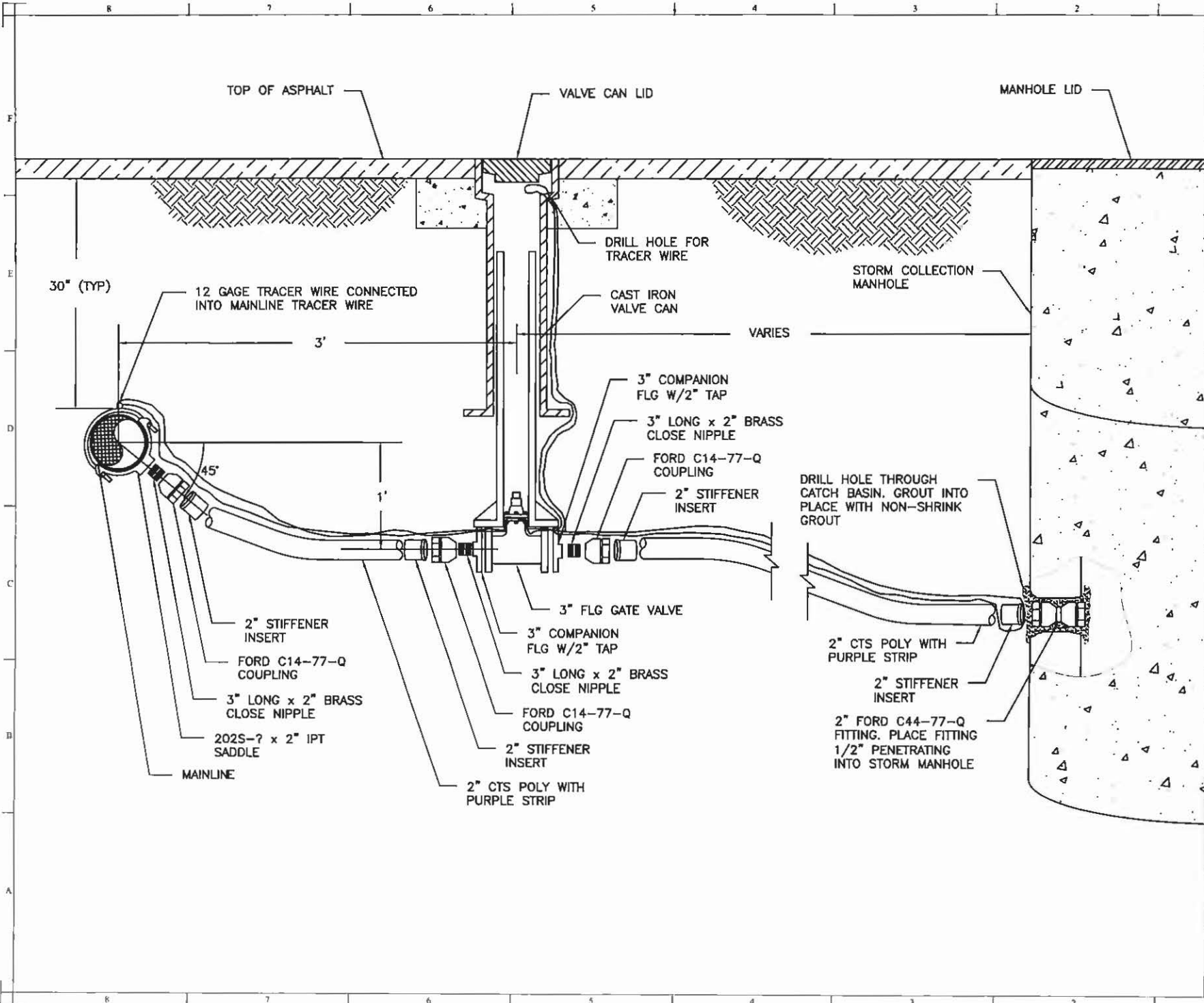
DETAIL 1

MS BCF 1730-18XL VALVE BOX & POLYMER COMPOSITE LID,  
 PURPLE IN COLOR AND STAMPED "KID - DO NOT DRINK"  
 NOTE: LAY DOWN 5 OZ. WEED BARRIER, SET BOX, COVER WITH  
 DRAIN ROCK, AND WRAP MATERIAL UP OUTSIDE OF BOX

SEE DETAIL 1  
 (THIS SHEET)



PROJECT NO: 10-10-10-10	SHEET 1 of 1	KENNEWICK IRRIGATION DISTRICT <b>2" IRR. SERVICE</b> TYPE B RISER	DATE	APPROVED BY	 KENNEWICK IRRIGATION DISTRICT 12 W. KENNEWICK AVE. KENNEWICK, WASHINGTON 99336 (509) 586-9111 WWW.KID.ORG	DRAWING REVISIONS
			DWG DATE 1/12/2010 DWG SCALE N.T.S. DESIGN BY CDS DRAWN BY CHECKED BY	DATE APPROVED BY		
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DRAWING REVISIONS

KENNEWICK IRRIGATION DISTRICT  
 12 W. KENNEWICK AVE.  
 KENNEWICK, WASHINGTON 98336  
 (509) 586-9111  
 WWW.KID.ORG



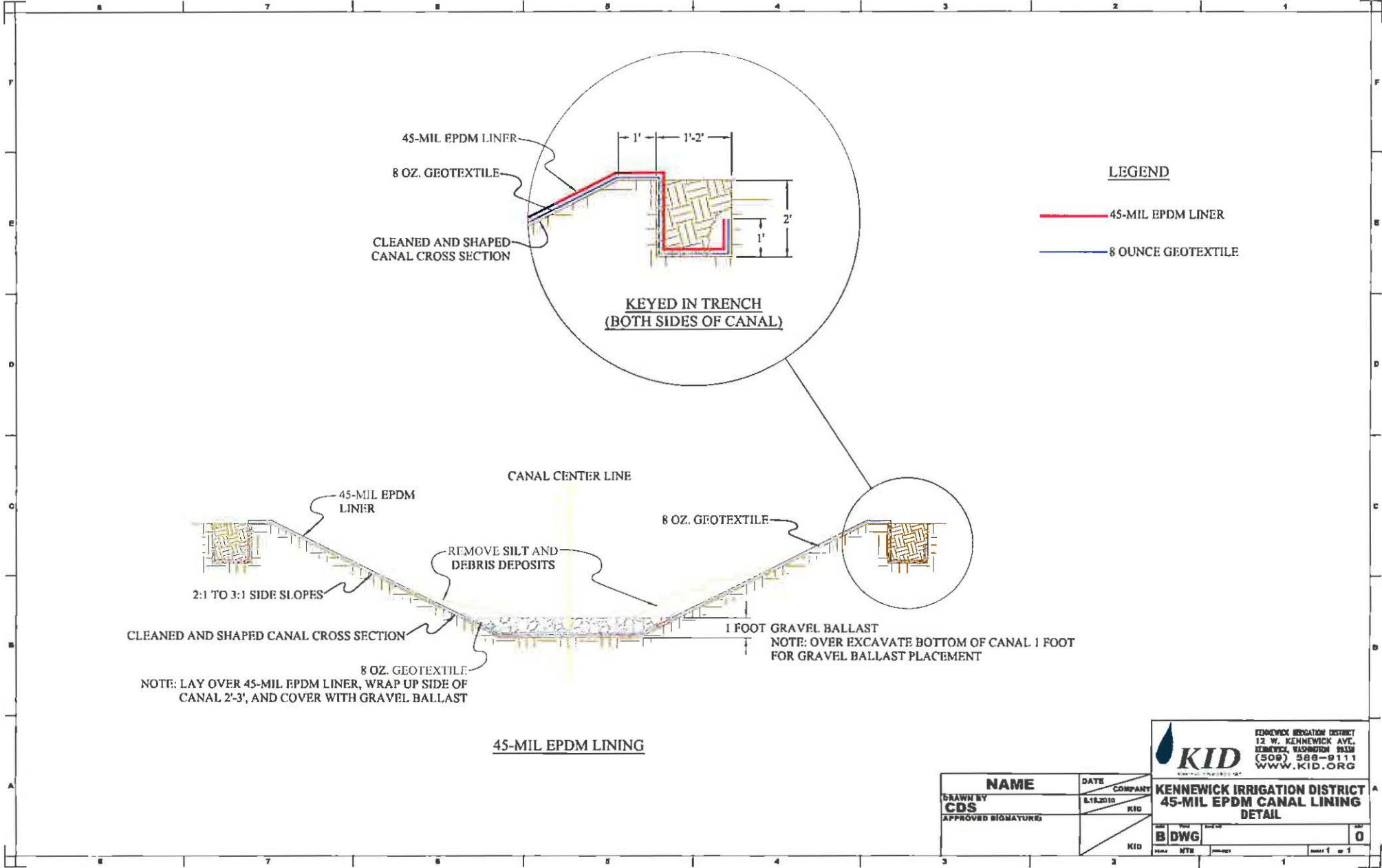
APPROVED BY \_\_\_\_\_  
 DATE \_\_\_\_\_

DWG DATE 08/16/2010  
 DWG SCALE NTS  
 DESIGN BY BLW  
 DRAWN BY BLW  
 CHECKED BY REE

**KENNEWICK IRRIGATION DISTRICT**  
**SYSTEM DRAIN**  
**INTO MANHOLE**

SHEET 1 OF 1

PROJECT KID-STD-DTLS



**LEGEND**

- 45-MIL EPDM LINER
- 8 OUNCE GEOTEXTILE

CANAL CENTER LINE

45-MIL EPDM LINER

2:1 TO 3:1 SIDE SLOPES

CLEANED AND SHAPED CANAL CROSS SECTION

REMOVE SILT AND DEBRIS DEPOSITS

8 OZ. GEOTEXTILE

1 FOOT GRAVEL BALLAST  
NOTE: OVER EXCAVATE BOTTOM OF CANAL 1 FOOT FOR GRAVEL BALLAST PLACEMENT

NOTE: LAY OVER 45-MIL EPDM LINER, WRAP UP SIDE OF CANAL 2'-3', AND COVER WITH GRAVEL BALLAST

45-MIL EPDM LINING

<b>NAME</b>	<b>DATE</b>	<b>COMPANY</b>
DRAWN BY <b>CDS</b>	8.18.2010	KID
APPROVED SIGNATURE		KID

**KID**  
KENNEWICK IRRIGATION DISTRICT  
12 W. KENNEWICK AVE.  
BENNETT, WASHINGTON 98501  
(509) 588-9111  
WWW.KID.ORG

**KENNEWICK IRRIGATION DISTRICT  
45-MIL EPDM CANAL LINING  
DETAIL**

DATE	ISSUE	NO.
8.18.2010		0
BY	CHKD	APP'D
B		
DATE	ISSUE	NO.
8.18.2010		0