CITY OF CALDWELL

CALDWELL MUNICIPAL
IRRIGATION DISTRICT

SUPPLEMENTAL SPECIFICATIONS
TO
THE 2015 IDAHO STANDARDS FOR
PUBLIC WORKS CONSTRUCTION (ISPWC)

Fourth Edition – November 2015
FOREWORD

The standard specifications and details contained herein shall apply in their entirety to all City of Caldwell Department of Public Works irrigation construction contracts and permits.

These supplements to the Idaho Standards for Public Works Construction (ISPWC) are intended to accompany the full edition of the ISPWC-2015, and are not a stand-alone document. They are compiled here to guide, inform and assist engineering firms, developers, contractors and all other interested parties of the construction requirements to be used on irrigation public works types of projects for the City of Caldwell.

These specifications and standard details shall periodically be revised, updated and adopted by Caldwell City Council. Each such revision made will be identified by a replacement title page indicating the effective date of the revision.

It shall be the responsibility of each holder or user of this document to incorporate all such revisions into his project contract and/or to verify that he has the latest revisions prior to performing any work covered by these specifications and standard drawings. Information concerning the latest revision may be obtained from the City of Caldwell Engineering Department.

Copies of this document are available at the office of the City of Caldwell Engineering Department, 621 Cleveland Blvd., Caldwell, Idaho, 83605.

Per Idaho Code 54-1218, a licensed professional engineer must prepare the plans and specifications for public works projects as well as supervise or conduct construction observation. It is the sole responsibility of the Registered Professional Engineer who is utilizing the Caldwell Municipal Irrigation District Standard Specifications for irrigation water distribution systems for a specific project to ensure that the standards and drawings are appropriate for the specific use and are used appropriately under all circumstances in order to prepare final specifications, drawings, or plans.

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Caldwell Municipal Irrigation District
SUPPLEMENTAL SPECIFICATIONS

The provisions of the Idaho Standards for Public Works Construction (ISPWC- 2005 Edition), the City of Caldwell Supplemental Specifications to the ISPWC, and the following modifications constitute the Caldwell Municipal Irrigation District Standard Specifications for work performed under the administration of the Caldwell Municipal Irrigation District, referred to as CMID.

1100 PRESSURE IRRIGATION PIPING

1101 SYSTEM DESIGN CAPACITY

Design Flow Rates for pipe sizing shall be approved by CMID based on number of lots and/or parcel size. A hydraulic analysis shall be performed to ensure adequate water supply and pressure to the development. Calculations and data are to be given to CMID by the engineering firm designing the PI system.

The required delivery rate for a system shall be calculated at 9 GPM (one miner’s inch) per development acre or per total acre for all land served by the system. The system shall be designed to provide water 24 hours per day, seven days per week. Acreage used in calculation of the delivery rate shall be approved by CMID.

The pump station shall maintain, under all conditions, a system pressure not greater than 85 PSI and not less than 45 PSI at any point in the system.

1101.1 Existing Irrigation wells
Ground water wells existing in excess of potable water needs within the development, shall be tied into the PI System as a primary or back up source and the water rights deeded or transferred to CMID.

1101.2 Design Requirement:
Boise Project Board of Control irrigation districts, as well as all other irrigation districts with a water right providing less than one continuous miner’s inch per acre shall provide a back-up source of irrigation water. CMID prefers the back-up source be a ground water well, although other options will be considered and evaluated as appropriate.

1. The capacity of the back up source shall, at a minimum, be 7.8 gpm and at least as great as the surface irrigation source so its use does not require a change in operation.
2. The back up source may be either a ground water well or on-site storage.
3. When water storage is provided, either an underground tank or an above ground pond may be used. In the case of an above ground pond fencing
may be required by CMID. The storage facility shall be sized to accommodate the variation in daily water needs for the property.

4. The use of domestic water systems as a back-up source is not allowed if, in the opinion of CMID, a reasonable alternative exists.

5. Ground water well design plans must be approved by CMID and include the following:
   a. Protection of drinking water sources and preservation of the potable water supplies.
   b. Use of approved well development techniques.
   c. Use of a non-corrosive well casing and screen assemblies.
   d. Use of direct mud rotary or reverse mud rotary drilling methods unless otherwise approved by CMID.

### 1102 PRESSURE IRRIGATION MATERIALS

All distribution pipe shall be polyvinyl chloride (PVC) class 200, SDR 21 or better and purple in color. Alternatives may be approved by CMID on a case by case basis. All main line distribution pipes shall be 4” diameter minimum. Distribution pipe size to be determined by CMID. All service pipes shall be Polyethylene, (PE), 1” SDR 7 IPS size diameter minimum, 200 PSI, with brass compression fittings (see SD 902A). Any line serving, or with the potential to serve, more than one (1) lot is considered a main line distribution pipe.

The Owner, Developer or Contractor shall furnish certification by the manufacturer that the pipe and fittings furnished on a project comply with the applicable specifications. As a condition for acceptance by CMID, or dedication to CMID, all pipe material shall be clearly marked with type, class and/or thickness as applicable. Lettering shall be legible and permanent under normal conditions of handling and storage.

### 1103 PIPE INSTALLATION

#### 1103.01 General

This section applies to PVC pipe. All PVC piping shall be assembled and installed in accordance with the pipe manufacturer's recommendations and as shown on the approved drawings.

Pipe joints, pipe bells, spigots and other fittings shall be inspected and wiped clean of all dirt, grease, and foreign matter. For gasketed pipe and fittings, use only lubricant furnished or specified by the pipe manufacturer and apply as specified by the manufacturer. When work is halted, all open ends of the installed pipe shall be sealed to prevent undesirable material from entering the pipe.

Field cut pipe ends shall be beveled to match factory-finished beveled pipe ends.
All trench excavation, backfill and pipe installation shall meet the same standards set forth in ISPWC Division 900 for Pressure Irrigation with the following exceptions:

a. All pipes outside of roadways shall be free draining to pump-outs.
b. Pipe must have a minimum of 30 inches of cover except within road right-of-way where it shall have a minimum 36 inches of cover measured from finish grade. Water mains shall have 48 inches of cover minimum and 60 inches of cover maximum.

1103.02 Locator wire

Locator wire shall be installed with the mains as follows:

a. Wire shall be extended to the surface within all valve boxes, pump-outs, air and vacuum valves, and service valve boxes.
b. The maximum distance between surface connections shall be 500 feet. In cases where this distance would otherwise be exceeded, the wire shall be brought to the surface using a dummy valve box.
c. Wire shall be 12-gauge for direct bury. All connections shall be with Dri-Splice wire connectors or approved equal.
d. Wire shall be fastened to the top of the pipe at a maximum interval of 10 feet.

1103.03 Finder tape

Finder tape shall be installed with all irrigation mains as follows:

a. Tape shall be 2-inch wide purple colored plastic tape, with the words **CAUTION - DANGER UNSAFE WATER** or **CAUTION - NON-POTABLE WATER** with 1-1/2-inch letters along the length of the tape.
b. Tape shall be placed between 12-inches below the surface and 18-inches above the top of the pipe.

1103.04 Joint Restraint

Thrust blocks shall be placed at locations described in ISPWC Section 400 shown in SD-403. Installation shall be as described in ISPWC Divisions 400 and 700. Thrust blocks shall be placed such that accessibility to the pipe and fittings is not impaired, unless otherwise specifically shown on the plans or called for by CMID. Place 6 mil polyethylene sheets between thrust block and fittings.

Mechanical Restraints shall be as per the City of Caldwell Supplemental Specification for the ISPWC Section 401 WATER PIPE AND FITTINGS, PART 2.9

1103.05 Open Pipe Ends

Where the system is installed in phases or will not immediately be connected to the CMID delivery point, the open end(s) of the system shall be plugged,
capped, and staked with a 2” x 4” marker prior to backfill. The marker shall extend 24” inches above finish grade and be painted purple. Phase line gate valves shall be installed at the end of each stub and at all phase lines. (Caldwell Standard Drawing SD 911-Standard Marker)

1103.06 Pipe Installation--OUTSIDE Street Rights-of-Way

All work outside street rights-of-way shall meet both these specifications and the current ISPWC specifications.

1103.06.01 Excavation

Pre-existing utilities encountered in the pipe zone shall be crossed below. Water utility crossings shall cross below existing CMID facilities. A minimum of 12 inches of clearance (18 inches for water lines) between crossing utilities shall be maintained.

B: Outside the right of way
Topsoil shall be stockpiled and used for the top layer during backfill and surface restoration.

1103.06.02 Pipe Base and Pipe Zone Bedding Material

The pipe base shall consist of consolidated and undisturbed native material or replacement material placed and compacted sufficiently to preclude future settlement.

Above the pipe base, pipe bedding material shall be used in the zone from 4 inches below the bottom of the pipe (including pipe bell holes) to 6 inches above the pipe for the full width of the trench. Bedding materials may be excavated native material containing no organic matter, and without rock or other materials larger than 1/2 inch. Where the volume or quality of native excavated materials is inadequate, type III bedding per ISPWC division 300, section 305 shall be used for pipe bedding in both the upper and lower pipe zone. All services shall be bedded in sand if native material is not suitable. Compaction of pipe zone and trench backfill material shall begin when there is sufficient cover to protect the pipe from damage.

1103.06.03 Trench Backfill Above Pipe Zone

Suitable native material may be used. Trench backfill above that required to protect the pipe shall be placed in lifts not exceeding 12 inches and compacted sufficiently to preclude settlement. Mechanical compaction shall be used to compact backfill.

B: Outside the right of way
Topsoil shall be replaced as the top backfill layer outside of right of way. Topsoil shall then be placed, compacted and graded.

1103.07 **Pipe Installation--INSIDE Street Rights-of-Way**

All work inside street rights-of-way shall meet both the specifications of the governing agency and the ISPWC specifications. If specifications differ or conflict, the more stringent specification shall govern.

1103.07.01 **Pipe Base and Pipe Zone Bedding Materials**

Pipe bedding zone shall include the full width of the trench from 4 inches below the bottom of the pipe to 6 inches above the top of the pipe. Pipe bedding zone shall be backfilled with suitable native material (free of humus, organic matter, suitable native frozen material, aggregate larger than $\frac{1}{2}''$, debris, etc.) or type III bedding per ISPWC division 300, section 305.

Bedding shall be placed in lifts, not to exceed 6 inches, except for the initial lift, which shall be 4 inches. Pipe bedding material shall be placed and compacted. Compaction of the upper pipe zone and trench backfill material shall begin when there is sufficient cover to protect the pipe from damage. Pipe base and zone materials shall be compacted to 95% of maximum density as outlined in ISPWC Section 202, Subsection 3.8C.

Where the pipe is located within the street right-of-way but outside areas to be overlaid with asphalt, Type III bedding in accordance with Division 300, Section 305, Part 2 of the ISPWC within the pipe zone shall be utilized.

1103.07.02 **Foundation Stabilization**

If unsuitable soil material is encountered in the floor of the trench, the floor shall be over-excavated until suitable material is encountered and backfilled with 3 inch minus or less granular material up to the pipe bedding zone. Trench floor soil shall be inspected by CMID inspector. Backfill shall be compacted to 95% of maximum density as outlined in ISPWC Section 202, Subsection 3.8C.

1103.07.03 **Backfill Above Pipe Zone**

All pipe in right-of-way shall be backfilled with suitable native material, type III bedding as per ISPWC Division 300, section 305, or 3/4 inch minus crushed aggregate from the pipe zone to the lowest section of the future/proposed road section. Backfill shall be placed in lifts suitable to the equipment used for compaction and compacted to 95% of maximum density as outlined in ISPWC Section 202, Subsection 3.8C. Compaction shall be done using mechanical compactors.

1103.08 **Lot Service Requirements**
Lot services shall be placed in front yards on opposite property lines from domestic water services and shall meet the requirements of CMID Standard Drawings No. SD-902. Maintenance of the service downstream of the curb stop is the responsibility of the property owner. CMID will maintain the system from the service curb stop valve to the main. Service stubs shall be marked with an eight foot 2”x4” driven 5 feet into the ground (see CMID SD 901). The top 24 inches of the 2”x4” shall be painted purple.

An “I” shall be stamped into the concrete at the back of the sidewalk in line with each pressure irrigation service riser. All street side corp stop valves shall have a 5¼ cast iron valve box with extension sleeve and lid that reads “IRR” or “IRRIGATION” per SD-902A.

Backyard services shall have a 4” PVC valve box and lid per SD-901, with a durable tag carrying the warning “NON-POTABLE WATER” or equivalent.

1103.09 System Flushing

The completed system shall be flushed of all dirt and foreign material. Flushing shall be done in a manner to insure that all main, branch lines and flow routes produce flushing velocities of not less than 2.5 feet per second, (refer to ISPWC, Section 400, Table 1). A site for Discharge of flush water is not acceptable unless it has been determined that drainage is adequate at that site. All air shall be vented from any high points prior to placing the system into operation.

1103.10 Steel Casing

All PI Irrigation lines crossing an existing irrigation canal shall be placed in a steel casing having, at a minimum, 3/8 inch wall thickness. Casing shall be placed at least three feet below the bottom of any canal and extend a minimum of 5 feet past top of bank on both sides. Crossing plans must be reviewed and approved by irrigation district controlling such facilities.

1103.11 Canal and Drain Crossings

All street crossings shall be marked on each side of road with purple fiber glass stakes warning that pressure irrigation is present.

1104 ISOLATION VALVES

1104.01 Valve Size
Valve size, unless otherwise noted on the drawings, shall be equal in diameter to that of the pipe on which it is installed. All valves shall be non-rising stem gate valves with “O” ring seals and double disc gate. The operator shall be a two (2) inch raised square cast iron nut. The working pressure shall be 150 psi or greater. All valves shall have flanged or mechanical joint connections and must meet or exceed current AWWA Standards.

1104.02 Installation

Isolation valves shall be installed where shown on approved plans. Isolation valves shall be installed on all dead-end laterals serving more than four (4) parcels or lots, at all tees and crosses and street crossings and at other locations identified by CMID. At a minimum, valves shall be placed at every street crossing. At street crossings, isolation valves shall be located generally 1 foot behind sidewalks (see SD-905-A). No valves shall be located within sidewalks, curbs, or gutters without specific approval by CMID.

1105 VALVE BOXES

Valve boxes shall be installed on all buried valves. Valve boxes shall also be installed to provide for locator wire access at a maximum distance of 500 feet center-to-center when no surface wire access is otherwise available. Valve boxes shall be installed flush with final grade. Valve boxes shall be cast iron, two-piece slip type standard design with a base corresponding to the total size of the valve. The valve box shall be protected with coal tar or other approved coatings, applied by the manufacturer. Valve box lids shall read “IRRIGATION” or “IRR”. (Example: Tyler 6855)

Valve boxes shall be marked with a 8 foot 2"x4" driven 5 foot into the ground. The top 24 inches of the 2"x4" shall be painted purple.

1105.01 Concrete Valve Box Collars

All valve boxes shall have concrete collars. Collars shall be installed flush with finish ground surface, per CMID Standard Drawing SD 905-B. Concrete for valve box collars shall conform to ISPWC, CL-3000, and shall have a minimum 28-day compressive strength of 3,000 PSI. Collars shall be per SD-905A when attached to the back of sidewalks, per SD-905B when in roadways, and concrete collar shall not be poured monolithic with a concrete sidewalk.

1106 FLANGES

1106.01 Steel Flanges
Steel companion flanges shall be *AWWA Class D* steel ring flanges. Use threaded or slip on, socket weld type as required.

1107  **IRRIGATION PUMP-OUTS**

Irrigation pump-outs are to be constructed and installed in conformance with the CMID Standard Drawing SD-903. Irrigation pump-outs shall be constructed and installed at all low points that are not free draining and on all dead end lines. Pump out lids shall read “IRRIGATION”, “IRR”, or have no labeling.

1108  **AIR AND VACUUM VALVES**

One (1) air and vacuum valve is required at the pump station (see SD 909B). Air and vacuum valve to be ARI D021-PL-2. Additional valves are required at all high points of the irrigation distribution piping and on all dead end lines. Valves shall be in accordance with ANSI/AWWA C 512. Irrigation air and vacuum valves are to be constructed and installed in conformance with CMID Standard Drawing SD-904. Air and vacuum valve to be Waterman CR.101 or CRP-8.

1109  **HYDROSTATIC TESTING**

Installed PVC pressure pipe shall be tested and accepted in accordance with ISPWC Division 900 Section Part 3.6, Pressure Testing. Pressure gages shall be capable of measurement in 1psi increments. Pressure testing shall be at 150 psi for two hours. Final hydrostatic or pressure testing will be conducted by the contractor only after all adjacent and crossing utility installations by others are completed. CMID or Engineering Inspector shall witness all testing and shall be notified at least 48 hours in advance. Final acceptance shall be by the city.

1200  **PUMP STATIONS**

1201  **PUMP HOUSES**

**VFD Enclosure:** Hoffman white N3R VFD enclosure with cooling fans and filters. Installed on north or east side of building

A pump house is required for all pressure irrigation pump stations. Building and Electrical permits are required. The pumps and controls shall be housed within a pump house building. Plans and specifications shall be submitted to CMID for approval. (Refer to CMID SD-906). Different style pump houses may be used with prior approval by CMID. The building shall be of adequate size to allow for operations, maintenance and repair on equipment within the building. The building shall be equipped with a roof hatch, a 42’x6’8” door
centered on wet well hatch or equivalent to allow future removal and installation of the pumps and a second side man door of 3’0”x6’8”. The building shall be adequately ventilated for proper operation of the pump controls. Special consideration shall be made for heat generated by variable frequency drives. Control Panel boxes to be Hoffman Weatherflow enclosure, white with thermostat controlled fans. The building shall be equipped with adequate lighting and outlets. The building shall be locking and be keyed to a CMID master key. The building, if constructed on site, shall include a floor drain with concrete sloped to drain, and fire extinguishers. The ground around the pump house shall be landscaped or finished with four inches thickness of pea gravel laid over a layer of fabric to prevent weed growth. Building to be on a common lot when possible. Common lot sprinkler control can not be mounted inside CMID Pump House, however on the outside of the building will be allowed. Refer to 1408 on service access/for VAC truck.

1202  
PUMPS AND VARIABLE FREQUENCY DRIVES

Main pumps shall be water lubricated close-coupled vertical turbine pumps. Pumps shall be manufactured by Cornell, Crown, Goulds, or Verti-Line. Submersible Pumps will be allowed only at the sole discretion of CMID in certain limited circumstances and locations. Jockey pump to be vertical turbine. All pumps in stations shall be controlled by their own variable frequency drive (ABB 550) set to operate the system at constant pressure. All vertical turbine pumps shall use semi-open pump bowls.

1203  
FILTERS

Filters shall be installed on all pump stations. Preferred filters are Amiad Filtration Systems (SAF series Models) filters, or CMID approved equal. Installation shall be done in accordance with manufacturers’ requirements. All filters shall have ability to be back flushed. Back flush piping may be discharged into the source canal or ditch downstream of inlet structure, or may discharge into overflow piping. All control panels shall have settings for manual and automatic flushing. Filter to be sized to flow 30% more than pump station water right.

1204  
INTAKE SCREENS

Intake screens to be Clemons self-cleaning suction screen with sealed bearing. See SD 908 for typical installation and SD-909-A for plumbing installation.
FLOW METER

One (1) water flow meter (reading in Gallons per Minute, GPM) is required as part of the pump station. The meter shall be installed in accordance with manufacturer’s requirements including straight run pipe distances upstream and downstream of the flow meter. Meters shall meet the requirements of AWWA. Siemens Sitrans mag flow meter or approved equal.

CHECK VALVE

One (1) check valve is required for each pump installed in the pump station. Valve placement is to be downstream of the pump and upstream of the manifold. Check valves shall be rated for 150 psi. Check valves shall be Waterman Split Disk Check Valve Model PC-150 or approved equal.

PUMP STATION GRAVITY OVERFLOW

Gravity overflow piping is required on all pump stations. The overflow must be designed to waste the full amount of the pump station delivery supply. The overflow must be positioned a minimum of 0.5 feet lower than the weir crest, and divert the water to an acceptable drain, pond or waste way. 20 lineal feet of corrugated aluminized pipe or ductile iron pipe shall be installed on all day lighted pipe end sections. The pipe shall meet the requirements of ISPWC Section 1300 Gravity Flow Irrigation.

O&M MANUAL

Three (3) copies of the operation and maintenance manual for the pump station shall be supplied to CMID before acceptance of the pump station.

IDAHO POWER REQUIREMENT

All PI Pump Stations must meet Idaho Powers Standard IEEE 519 LFD Harmonics. A letter from Idaho Power stating this requirement has been met must be received prior to requesting annexation or must accompany the request for annexation.

Motors

All motors are to be GE or US motors

GRAVITY FLOW IRRIGATION
1301 GENERAL

Piping for gravity flow irrigation system must be kept separate from piping for the pressurized irrigation system within a subdivision. Any construction to gravity flow systems shall be approved by the irrigation district controlling such facilities. CMID does not assume ownership or responsibility for maintenance or repairs of gravity irrigation lines or systems. Gravity flow irrigation systems are generally NOT approved, by CMID.

1302 CONSTRUCTION DEADLINES

Construction deadlines may need approval by the Irrigation District controlling such facilities.

1400 ADDITIONAL REQUIREMENTS

1401 GENERAL

If construction is not complete prior to development completion or final subdivision plat, the Developer agrees to furnish CMID with security either as a cash deposit or a one-year irrevocable letter of credit, with a one-year automatic renewal clause prior to any acceptance or approval of the system. The amount of the Security shall be 110% of the estimated cost to CMID to provide the irrigation improvements (as determined by CMID) not yet completed. The security shall ensure the performance of the Developer’s obligation(s) as designated on the approved plans. A letter of credit will only be accepted from a financial institution authorized to do business in the State of Idaho and with an office in the Treasure Valley.

When it is necessary or desired to connect into an existing CMID system the contractor must make a deposit equal to 110%, plus an additional 25% for liquidated damages, of the estimated cost for CMID to make the connection and any associated upgrades to CMID. The deposit must be paid prior to any connection of the new system to existing CMID facilities and is provided to ensure that proposed modifications are completed in a timely fashion and without inconvenience to existing users. The Developer shall provide a written schedule to be approved by CMID. Failure to meet the approved schedule shall result in forfeiture of the total deposit.

1402 CONTRACTOR LICENSING

All contractors working on or installing irrigation facilities shall be Idaho licensed Public Works Contractors. Contractors shall be licensed to perform the type of construction involved for pressure and gravity irrigation systems.
1403 PLAN SUBMITTAL AND REVIEW

Any and all proposed modifications, changes, removal or addition to any structure equipment, piping, component, facility, canal, ditch, lateral, or any other conveyance owned, operated, or maintained by the CMID shall be designed by an engineer licensed in the State of Idaho. Plans and specifications shall be submitted to CMID for review by the City Engineering Department.

Review and approval by CMID does not constitute an engineering review of project plans, specifications, or calculations. The sole purpose of the review is to ensure general conformance with CMID policies, standards and requirements. The submitting design engineer is solely responsible for the design including all project plans, specifications, calculations and to ensure that said design meets the requirements of CMID and the City of Caldwell. All submittals shall be stamped and signed by a Professional Engineer registered in the State of Idaho. All subdivision projects shall include any applicable preliminary plat and a complete set of infrastructure plans.

1404 DELIVERY POINT

Pump station delivery point(s) must be approved by the Irrigation District controlling such facilities, and CMID. CMID will not share privately owned ditches with other users.

Weirs when required will need to be approved by the irrigation district controlling such facilities and CMID. Drawing of weir system must be submitted to the irrigation district controlling such facilities. Weir boxes will be separate from clear water screen boxes. Weir requirements are determined by the irrigation controlling the facilities.

Inlet structure head gates design must be approved by the Irrigation District controlling the facilities.

1405 CONSTRUCTION OBSERVATION

The Contractor installing the facilities shall notify the CMID observer two (2) working days prior to beginning any work. All trenches shall be left open for observation until approved for back filling. Compaction testing shall be in accordance with ISPWC Division 500 Section 501 Part 3.4. Testing is required for all piping that is to be maintained by CMID or is planned to be put under private parking lots or private access roads. CMID’s engineer is required to
observe all compaction testing, pressure testing, structures and trenches and a minimum of 48-hours advance notice to CMID’s inspector is required.

1406 FINAL ACCEPTANCE

1406.01 Punch List Requests

Prior to final acceptance of any CMID facilities by CMID, the owner shall request, in writing, a walkthrough with the CMID superintendent or representative. Upon completion of said walkthrough, CMID will forward a copy of a punch list documenting outstanding items to the owner. Upon owner completion of punch list items, the owner shall request, in writing, a final walkthrough with the CMID superintendent or Engineering Inspector.

1406.02 Dedication Requests

Upon completion of the final walkthrough with CMID, CMID shall notify the owner regarding the status of the punch list. If all punch list items are completed to CMID’s satisfaction, the owner shall request, in writing, that CMID accept said system. Upon acceptance by CMID, the CMID shall give written notification to the owner. The date of said written acceptance shall become the effective commencement date of all warranty periods. The warranty period is two years.

1407 PAVEMENT REMOVAL AND RESTORATION

1407.01 Removal of Pavement

Neatly cut all bituminous and concrete pavement, regardless of the thickness, prior to excavation of the trenches, with an approved pavement saw. Pavement cuts shall be made a minimum of 12 inches away from any disturbed sub base.

1407.02 Restoration of Pavement

1407.02.1 Asphaltic Concrete

Asphaltic concrete used in conjunction with the project shall be furnished and placed in accordance with ISPWC Division 800.

1407.02.1 Pavement Construction Repair / Restoration

The pavement shall be cut to provide clean, solid, vertical joints. Whenever possible, cut lines shall be parallel to or at right angles to the street centerline.
Immediately before applying the tack coat, the surface to be treated shall be swept clean of all loose material, dirt, excess dust or other objectionable material. No application will be permitted when the surface is appreciably damp or when weather conditions are unsuitable. Following preparation of the base course and abutting edges, the contractor shall apply CSS-1 emulsified asphalt (tack coat) to all joined surfaces. Asphalitic concrete shall be placed to a minimum compacted depth of 2 inches, or be placed in accordance with governing agency requirements whichever is most stringent. Contractor shall provide a smooth, even surface conforming to adjacent surfaces.

1408 EASEMENT REQUIREMENTS

An easement providing 10 feet of clearance on all sides of pump station slabs shall be granted to CMID for pump station maintenance. An area of 10 feet around pump station slabs shall be asphalitic concrete. Common lots for pump stations shall be landscaped. Access easement to the pump station shall be provided by the developer. This access shall be 15 feet wide and shall be improved with 2 inch thick asphalitic concrete. Paved roads must allow access to pump station wet well door, and weir and clemons boxes for vac-sump truck services. All PI mains shall be within a ten (10) foot easement along side and rear lot lines. These easements are not to be subdivided by a property line.

1409 DISCHARGE

Plans for direct discharge, blow off or run-off into federally owned canals or drains may require the approval by the Bureau of Reclamation or by the irrigation district controlling such facilities. Similarly, direct discharge, blow off or run off into canals or drains owned by an irrigation or drainage district may require approval by the district. CMID does not assume any responsibility for such approval. The developer is to submit copy of the approval to CMID.

1410 RECORD DRAWINGS

One (1) set of record drawings detailing the entire irrigation system including but not limited to pump stations, piping, irrigation service risers, valves, pump-outs, air and vacuum valves, and gravity irrigation structure inverts, shall be prepared and provided by the Engineer of Record to CMID. Record drawings shall be submitted in digital form using DWG drawing file format and shall be spatially referenced to the Idaho State Plane Coordinate System-West Zone, North American Datum (NAD) 83. Vertical control shall be referenced to North
American Vertical Datum (NAVD) 88. The unit of measurement shall be US survey feet.
Upon completion of pump station construction or upgrade, the design engineer shall provide three (3) operation and maintenance manuals to CMID. The operation and maintenance manuals shall include pump curves, equipment lists and instructions for periodic and annual maintenance.

1411 FINAL GUARANTEE

The owner or developer shall guarantee all work for a period of two years from the date CMID’s Dedication Resolution is issued.

If within the said guarantee period, repairs or changes are required in connection with any guaranteed work, which in the opinion of CMID, is rendered necessary as the result of the use of material, equipment, or workmanship, which is inferior, defective, or not in accordance with the specifications, the Owner or developer shall promptly, upon receipt of verbal or written notice from CMID and without expense to CMID:

1. Place in satisfactory condition all such guaranteed work and correct all defects therein.

2. Make good all damage to the building, structure, site, equipment or contents thereof, which in the opinion of CMID is a result of the material, equipment or workmanship which is inferior, defective, or not in accordance with the terms or the contract.

3. Make good any work, material, equipment or the contents of the building, structure, or site disturbed in fulfilling any such guarantee.

If the Owner or developer, after such notice fails within 10 days to proceed to comply with the terms of this guarantee, CMID may have the defects corrected and the Owner or developer shall be liable for all costs and expenses incurred; provided, however, that in case of emergency where, in the opinion of CMID, delay would cause serious loss or damage, repairs may be made without notice being given to the Owner or developer and the Owner or developer shall pay the cost thereof.

1412 INDIVIDUAL LOT SYSTEM DESIGN

Sprinkler system on individual lots one (1) acre or less shall be designed at a maximum of 9 GPM or less per sprinkler set. Property owners or their contractors shall verify system pressure at each location for the purpose of verifying water demand relative to system design. Service size will be 1” only. CMID recommends systems be designed for 9 GPM at 50 psi.
LARGE LOT SYSTEM DESIGN

For individual parcels one (1) acre and larger, the maximum design flow rate shall be 9 GPM per development acre. Property owners, or their contractors, shall verify system pressure at each location for the purpose of verifying water demand relative to system design. Development acreage shall be subject to approval by CMID. Services larger than 1” must be approved by CMID.

UTILIZATION OF EXISTING PI PUMP STATIONS

Developers, or their Engineering Firms, desiring to utilize existing PI pump stations serving subdivisions that are not at full build-out must have a written agreement with the developer of the original PI pump station. A copy of that agreement along with construction plans and pressure and flow calculations must be reviewed and approved by CMID.

When a property owner or developer desires to connect to a pump station constructed by another, and the pump station has adequate capacity, CMID may require, for purposes of equity, any of the following:

a. The later connection to pay a council approved connection fee as a capital buy-in to the pre-existing costs.
b. The later connection to enter into a cost-sharing agreement with the original constructor.
c. The later connection to pay its designated portion of a late-comer agreement as approved by Council.

When a property owner or developer desires to connect to a pump station constructed by another, and the pump station does not have adequate capacity, CMID may require the later connection to upgrade the station as well as any of the above. Plans, schedules and any other relevant issues to an upgrade must be approved by CMID and security provided as outlined in Section 1401.

ANNEXATION DEADLINE

All annexations into CMID are required to be approved prior to Jan. 1st of each year to be included in that year’s annual assessment role. This deadline is necessary to allow CMID to meet its annual statutory irrigation assessment obligations. If this deadline is not met, it is the Developers responsibility to pay the full annual irrigation assessment, prior to delivery of irrigation water. This fee is calculated by CMID and is based on Council approved irrigation fees and assessments for that year. Note: Irrigation water will not be provided
off existing PI stations to a new subdivision or phase of a subdivision until fees are paid and annexation has taken place.

1500 **PRIVATE SPRINKLER SYSTEMS**

1501 **FILTERS**

A 1¼ “filter with 30 mesh is recommended i.e. banjo filter. Mesh size varies with type of sprinkler heads used within the system refer to D-1501.

1502 **LAYOUT**

Refer to D-1502.
STANDARD DRAWINGS

Standard Drawings approved by CMID are included herein and referenced by Standard Drawing number:

SD-901  Back of Lot Pressure Irrigation Service
SD-902  Pressure Irrigation Riser Location
SD-902-A Front of Lot Type Pressure Irrigation Service
SD-903  Pressure Irrigation Pump-Out
SD-904  Pressure Irrigation Air and Vacuum Valve
SD-905  Irrigation Box Typical Lid Detail
SD-905-A Pressure Irrigation Concrete Collar Detail
SD-905-B Pressure Irrigation Valve Box and Lid Concrete Collar Detail
SD-906  Pressure Irrigation Pump Station Enclosure
SD-908  Pressure Irrigation Screen Box
SD-908-A Pressure Irrigation Weir Box
SD-909  Pressure Irrigation Pump Station Notes
SD-909-A Pressure Irrigation Pump Station – Elevation
SD-909-B  Pressure Irrigation Pump Station Plan

SD-910  Pressure Irrigation Supply Well

SD-911  Pressure irrigation Standard Marker

Informational Attachments

D-1501  Polypropylene “T” Line Strainers and Specs.

D-1502  Typical Pressure Irrigation Layout
**STANDARDS FOR MAINS & SERVICES**

1. **Main Line Pipe:** PVC, 200 PSI, SDR 21, conforming to ASTM D224.

2. **Joints:** Rubber gasketed for all pipe.

3. **Fittings:** Cast iron, ductile iron, PVC, brass or stainless steel, and shall have a minimum 200 PSI pressure rating. All fittings on 4" and larger mains shall be ductile or cast iron with flanged or mechanical joints.

4. **Flow Meters:** Required on all Pump Stations, shall be Siemens Sitrans mag flow meter.

5. **Valves 4" or Larger:** Only resilient seated valves are approved (AWWA C509-87) and shall be Waterous, Clow, Kennedy or Tyler DRS-250 with 2" square operating nuts with either flanged or mechanical joints.

6. **Valve Boxes:** 5-1/4" cast iron, extension sleeve type of such length to reach finish grade at least 6" less than full extension. Covers shall be cast iron. All valve boxes shall have a concrete collar as required by the governing jurisdiction. All lids shall read “IRRIGATION”, “IRR”, or have no labeling.

7. **Tapping Saddles:** Romac 101B or 202B 2" tapping saddles shall be utilized on all service taps on Main Line Pipe larger than 4 inches in diameter or approved equal.

8. **Service Pipe:** All service pipe to be 1" diameter minimum, 200 psi poly. SDR 7 IPS size.

9. **Ball Valve Curb Stops:** Ford B11-444 for 1" services. Ford B11-444 for 1-1/2" services. Ford B11-777 for 2" services. Also acceptable: Mueller B-20283 for 2" and 1-1/2" services, and Mueller B-20283 for 1" services without locking wing nuts.

10. **Service Valve Boxes:** 5 ¼ cast iron extension sleeve, lid to read irrigation.

11. **Drain Valves:** Ford B11-777, Mueller B-20283 or approved equal, 2 inch only, brass. See drawing SD903 and SD904.
12. **Pumps:** All Pressure Irrigation Pump Stations shall use Close Coupled Vertical Turbine Pumps with semi open bowl. Flooded Suction Centrifugal Pumps mounted on pre-fabricated pump station skid platforms are also acceptable. To control and maintain constant discharge pressure, Variable Frequency Drive Motor Controllers are required on all pump stations with ABB550 controllers on all pumps.

13. **Filters:** Filters shall be Amiad SAF series or CMID approved equal.

14. **Clear Water Screen:** To be Clemons self-cleaning suction screen with sealed bearing. Epoxy coated and utilizes a heavy 10 18 or 30 mesh stainless steel screen, all pipe fittings from station to screen must be brass with polyethylene feed line.
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NOTE: IRRIGATION SERVICES REQUIREING GREATER THAN 1" MUST BE SPECIFICALLY DESIGNED FOR THE APPLICATION AND APPROVED BY THE CITY ENGINEER
NOTES

1. ALL BRASS PIPE AND FITTINGS.

2. IRRIGATION PUMP-OUT CAN ONLY BE LOCATED AT BACK OF SIDEWALK AND/OR IN DETENTION PONDS. ANY OTHER LOCATION MUST BE APPROVED BY CIOO.

3. USE RAVEN EXTENSIONS RADIUS 24” X 12” TO FINISH GRADE.

4. BOX TO BE LOCATED 18” FROM CENTER OF BOX TO BACK OF SIDEWALK.
NOTES
1. ALL BRASS PIPE AND FITTINGS UNLESS OTHERWISE SPECIFIED

ELEVATION VIEW

3' MIN. COVER
BE MAX. DEPTH

4" DIA. MIN. PVC VALVE BOX
ASTM 3034, IPS MIN. 100 PSI PVC

NOTCH VALVE BOX TO COVER VALVE
2" BALL VALVE CURB STOP
SEE STANDARDS FOR MANS AND SERVICES
MIN. 12" SQUARE CONCRETE, BLOCK

THREADED 2" DIA X 2" LONG BRASS NIPPLE
2" IPS TAPPING SADDLE

IRRIGATION MAIN OR LATERAL

WARNING: 2" X 4" PER SD-911

WATER METER BOX COVER LABLED "IRRIGATION"
OR "SHIP", OR NOTHING. LSD TO BE 18" O.AA MIN.
FLUSH WITH FINAL GRADE

AIR AND VACUUM VALVE WATERMAIN CR-101
OR CRP-8.

18" WATER METER BOX

2" WASHED ROCK SUMP MIN. 1 CUBIC YARDS

WRAP BOTTOM AND SIDES WITH FILTER FABRIC

PRESSURE IRRIGATION
AIR AND VACUUM VALVE

SD-904

DATE: 10/20/2015
SCALE: AS SHOWN

STANDARD DRAWING NO.
3/8" DIA. EPOXY ANCHOR BOLT 4" LONG WITH 3" MIN. EMBEDMENT 4 PLACES

STAINLESS STEEL HINGES (YIP.)

5/8" EXPANDED METAL TOP REINFORCE WITH CROSS BARS TO MEET IRRIGATION DISTRICT STANDARD SECTION 1308

EPOXY EYEBOLT EMBEDDED 3" MIN. FOR LOCKING PROVIDE 2" LONG X 1" WIDE OPENING
LEGEND
1. 1 1/4" LID (IF LOCKING REQUIRED, TYLER NO. 8855).
   VALVE BOX LID TO BE LABELED "IRRIGATION" OR "IRR".
2. 24" DIA. X 8" CONCRETE COLLAR
3. NO. 12 ANG. COPPER WIRE FINDER
4. VALVE
5. CAST IRON VALVE RISER
6. FINISHED GRADE

NOTE
1. ALL PRODUCTS SHALL BE AS INDICATED OR APPROVED EQUAL.
2. VALVE BOX TO BE CENTERED OVER VALVE.
3. ALL VALVE BOXES SHALL HAVE CONCRETE COLLARS.
NOTES:
1. VFD ENCLOSURE: HOFFMAN WHITE RNR VFD ENCLOSURE WITH COOLING FAN AND FILTERS INSTALLED ON NORTH OR EAST SIDE OF BUILDING.
2. DOOR IS TO HAVE DEAD BOLT, KEYED TO CMCD ACCESS.
3. CAGE WALLS TO HAVE 3" MIN. CLEARANCE TO ALL INSIDE WALLS.
4. CONCRETE FLOOR TO EXTEND A MIN. 1.5' BEYOND OUTSIDE EDGE OF ENCLOSURE. EXPANSION JOINT MATERIAL REQUIRED AROUND ALL CASINGS AND PIPING THROUGH FLOOR.
5. ALL SURFACES TO BE PRIMED AND PAINTED. COLOR TO BE APPROVED BY CMCD.
6. BUILDING DRAWINGS SHALL BE APPROVED BY CMCD.
7. THIS ENCLOSURE IS PROVIDED FOR ILLUSTRATION PURPOSES ONLY. OTHER ENCLOSURE DESIGNS MAY BE SUBMITTED, CONSIDERED BY CMCD, AND APPROVED AS APPROPRIATE.
8. ASPHALT NOT REQUIRED WHEN PI ENCLOSURE IS LOCATED ON A LANDSCAPED COMMON LOT WITHIN SUBDIVISION.
9. LIGHTS AND ELECTRICAL OUTLET REQUIRED.
10. ALL ELECTRICAL CONDUITS TO BE OVERHEAD TO AVOID TRIPPING HAZARDS.
NOTES
1. THIS intake structure is provided for illustration purposes. Other designs may be submitted, considered by
CWD, and approved as appropriate.
2. PIPING SIZE TO VARY DEPENDING ON IRRIGATION SYSTEM
   REQUIREMENTS WITH CWD APPROVAL.

ELEVATION VIEW

PROFILE VIEW

PRESSURE IRRIGATION
SCREEN BOX

DATE: 9/15/2015
SCALE: AS SHOWN

STANDARD DRAWING NO.
SD-908
CIPOLLETI WEIR

PLAN VIEW

REINFORCED EXPANDED METAL CRATE COVER FRAMED WITH ANGLE IRON WITH LOCKABLE ACCESS (ON HINGES) BOTH SIDES

PROFILE VIEW

12" MINIMUM AGGREGATE COMPACTED TO SIDE ASTM D-698

CIPOLLETI WEIR

STAFF GAUGE MARKED IN 1/100 FT INCREMENTS

FROM MELT

#4 REBAR @ 12" O.C. EACH WAY

TO DIMENSION BOX

TO DIMENSION BOX

#4 REBAR @ 12" O.C. EACH WAY LAP CORNER STEEL 240

2.0'

4.00'

50' TYP.
PUMP STATION NOTES

1. ALL CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE 2005 ADDITION OF IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION (ISPWC); THE IRRIGATION DISTRICT CONTROLLING THE FACILITIES; CITY OF CALDWELL; AND ANY OTHER PLUMBING OR ELECTRICAL CODES THAT MAY BE APPLICABLE.

2. THE PUMP STATION WILL BE OWNED, OPERATED & MAINTAINED BY THE CITY OF CALDWELL UPON FINAL APPROVAL.

3. THE PUMP CONTROL PANEL SHALL BE INSTALLED IN A WF75LP HOFFMAN ENCLOSURE, COMPONENTS SHALL INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING FEATURES:
   - LOW/HIGH VOLTAGE PROTECTION
   - MAINLINE FAILURE WITH MANUAL RESET
   - PHASE FAILURE AND PHASE REVERSAL PROTECTION
   - MOTOR RATED CIRCUIT PROTECTION
   - LINE SIDE POWER MONITORING
   - LOW WATER/PRESSURE EMERGENCY SHUTDOWN
   - DISCONNECT SWITCH THE COMPLETED ELECTRICAL SYSTEM SHALL BE A COMPLETE AND OPERATIONAL COMPONENT OF THE PLUMBING SYSTEM. THE ELECTRICAL SYSTEM SHALL ALSO INCLUDE A 110 V, 30 AMP CONVENIENCE OUTLET AND NECESSARY TRANSFORMER, AND AN OVERHEAD LIGHT WITH SWITCH LOCATED BY DOOR.

4. THIS PUMP STATION WILL BE SIZED TO ALLOW FOR FUTURE EXPANSION TO THE SYSTEM IF NEEDED. THE INITIAL PUMP STATION SUPPLIED SHALL BE FOR WATER ALLOTMENT FOR THE DEVELOPMENT (THIS INCLUDES 40 GPM FOR CLEARWATER SCREEN) AND OPERATE WITH A VFD (VARIABLE FREQUENCY DRIVE). A SMALLER TURBINE PUMP SHALL BE SIZED TO PROVIDE FLOWS BELOW THE OPERATING RANGE OF THE VFD PUMP. ALL PUMPS TO BE ON THEIR OWN VFD DRIVE. THE VFD SHALL BE AN ABB ACS550, OR APPROVED EQUAL, AS PER CALDWELL STANDARDS. THE POWER SOURCE SHALL BE THREE-PHASE 277/480 VOLT. ALL PUMPS TO BE CONTROLLED BY THEIR OWN VFD DRIVE.

5. PUMP CONTRACTOR SHALL PROVIDE THE CITY OF CALDWELL AND ENGINEER AN OPERATION AND MAINTENANCE MANUAL FOR THE PUMPS, CONTROL PANEL, AND ALL PUMP STATION APPURTENANCES. THE OPERATION AND MAINTENANCE MANUAL SHALL INCLUDE SERIAL NUMBERS OF ALL PUMP STATION COMPONENTS.

6. PUMP CONTRACTOR SHALL START UP, SHUT DOWN, AND WARRANTY PUMP STATION THROUGH THE FIRST FULL IRRIGATION SEASON. START UP AND SHUT DOWN PROCEDURES SHALL ALSO BE INCLUDED AND THE OPERATIONS AND MAINTENANCE MANUAL.

7. PUMP CONTRACTOR TO PROVIDE SHOP DRAWINGS OF PUMP CONFIGURATION AND PLUMBING TO BE USED IN RECORD DRAWINGS.

8. CONTRACTOR TO PROVIDE AN ENCLOSURE OVER PUMP STATION HARDWARE AND CONTROLS. ENCLOSURE TYPE AND MATERIALS TO BE APPROVED BY CITY OF CALDWELL.

9. CONTRACTOR TO VERIFY ALL ELEVATIONS PRIOR TO CONSTRUCTION.

10. PI PUMP STATION MUST MEET IDAHO POWER STANDARDS IEEE 519 UFO HARMONICS
KEY NOTES
1. 5/8" SKID (CONCRETE POWDER COATED).
2. DISCHARGE PIPE.
3. GAP OPERATED BUTTERFLY VALVE.
4. AUTOMATIC FILTER (MAND-6015 OR APPROVED EQUAL).
5. MAIN PUMP DISCHARGE (2) MANIFOLD.
6. MAIN PUMP DISCHARGE (2) GEAR, BFV.
7. MAIN PUMP DISCHARGE (2) SPOKES.
8. MAIN PUMP DISCHARGE (2) SILENT CHECK VALVE.
9. 60" I.D. WET WELL (VERIFY DEPTH).
10. (2) VERTICAL TURBINE PUMPS EACH WITH VFD CONTROL AND 550HP.
11. PIPE SUPPORT.
12. OIL FILLED PRESSURE GAUGE w/ 4" FACE AND 0-150 PSI RANG.
13. AIR-VACUUM VALVE (AR MODEL 2071-FL-2).
14. SIEMENS STRAINS M5A FLOW METER OR APPROVED EQUAL.
15. INSTALL 3/4" NPT BOLT.
16. 1 1/2" TO 2" POLY WATER SUPPLY LINE TO CLEARWATER TO HAVE 1 1/2" AWARI SUPER FILTER, WITH 300 MESH MECHANICAL SCREEN AND BALL VALVE UPSTREAM OF FILTER. ON BOTTOM OF BOWL ASSEMBLY, (FLUSH OUTLET) TO HAVE A 7" IV TOLDOID VALVE PLUMBED TO ANIAD SAF FLUSH LINE, VALVE TO BE WIRING TO PUMP.
17. 3 4" HOLE ($500) ON CLEARWATER TO BE BROAD AND HAVE 3-WAY FITTINGS. (EBSM) IN LINE FOR FILTER REMOVAL.

NOTES
1. ALL PUMP STATION PIPING SIZES MAY VERY DEPENDING ON IRRIGATION DISTRIBUTION SYSTEM REUSEMENTS WITH CMD.
2. APPROVAL. PUMP SUPPLIER SHALL VERIFY WET WELL DEPTH IS ADEQUATE FOR PUMP OPERATION.
3. IRRIGATION PUMP-OUT (SD 903) MAY BE EXEMPT, DEPENDING ON ELEVATION, BY CMD.
4. TWO AUTOMATIC FILTERS MAY BE REQUIRED AT THE SOLE DISCRETION OF CMD BASED ON SUBMISSION SIZE AND DITCH WATER QUALITY.
5. ALL ELECTRICAL CONDUIT TO BE OVERHEAD TO AVOID TRIPPING HAZARD.
LITHOLOGY
RECONSTRUCTED FROM ONSITE TEST WELL
DRILL CUTTINGS AND BOREHOLE GEOPHYSICS

PROPOSED WELL CONSTRUCTION

0
CLAY
SAND AND GRAVEL

24" MUD ROTARY DRILLED HOLE

50
INTERBEDS AND CLAY
MEDIUM SAND

100
5/8" BENTONITE CHIP SEAL

150
STEEL TIGHT WRAP SCREEN (ROAD PIPE AND MUD TO CLAY)

200
8" STAINLESS STEEL WIRE-WRAP WELD SCREEN (JOHNSON PIPE SIZE, 1/2" BORE, HIGH Q) (~ 0.030"-INCH SLOT)

250
GRANULE FILTER SAND

300
CLAY

CENTRALIZING STAKES FOR PVC CASING AND SCREEN

TD = 255 FT.

37 FT
30-INCH AUGER
5/8" BENTONITE CHIP SEAL

24-INCH DIAMETER STEEL CASING (0.375-INCH WALL)
HIGH SOLIDS BENTONITE GROUT SEAL (20% SOLIDS BY WEIGHT)

17.4 INCH DIAMETER PVC CASING (1.0-INCH WALL)

160 FT

SRL
Polypropylene “T” Line Strainers

FEATURES
- Heavy-duty glass reinforced polypropylene.
- Clean-out plug.
- 304 stainless steel reinforced screens.
- EPDM gaskets standard. FKM (Viton type) available.
- 150 PSI at 70°F.

2" POLY RIBBED SCREEN COLOR CHART

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3/4" AND 1" POLY “T” STRAINERS

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1 1/4" AND 1 1/2" POLY “T” STRAINERS

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STANDARD MESHES AND DATA  (For General Use Only)

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<td>.0037</td>
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