3.0 Design Criteria for Water Facilities

The following sections are design criteria to be used in the design of proposed domestic water systems. The developer and his engineer shall be responsible to ensure that designs submitted are consistent with IWA's Standards, and generally accepted standards of good engineering practice.

3.1 Standard Requirements

The design and construction of all domestic water system facilities to be operated and maintained by IWA shall be in accordance with the latest editions of IWA Standard Drawings and List of Approved Materials, *California Waterworks Standards* (Title 22, California Code of Regulations, Chapter 16), IWA Standard Specifications, IWA Development Services Procedural Guidelines, as well as requirements from the Riverside County Fire Department.

3.1.1 Hydraulic Analysis

The IWA will determine on a case-by-case basis if a hydraulic analysis will be required for any proposed water infrastructure improvements. The purpose of this analysis will be to demonstrate fire flow, domestic, and irrigation capacity is met and is in concurrence with IWA's infrastructure. The analysis shall be submitted for review by the IWA by completing the ***Fire Flow Evaluation Application (Form A-2)*** completely and accurately. Proper documentation for the hydraulic analysis is to be submitted alongside electronic media files for IWA to review, including WaterGEMS files with the following file extension: ".wtg".

3.2 NPDES Requirements

The contractor is required to adhere to the provisions of the Federal Clean Water Act as regulated by the U.S. Environmental Protection Agency in Code 40, Code of Federal Regulations (CFR) Parts 122, 123, 124, the Porter-Cologne Act (California Water Code), the Waste Discharge Requirements for Municipal Storm Water Discharges (MS-4 Permit) and Chapter 55 of the City of Indio Municipal Code.

3.3 Master Plan

All domestic water system design, including water demands, pressure zones and system elements, shall be in accordance with the IWA Water Master Plan, and all other supplements and revisions thereto.

3.4 Water Plans Drawing Format

3.4.1 Drawings-General

IWA performs water plan checks using the Water Improvement Plan Checklist as a guide. Refer to Appendix E for all required information and call outs necessary for IWA Engineering Department to approve water plans.

All plans submitted to IWA for plan checking and approval of water facilities shall be submitted electronically in PDF format and shall conform to the IWA CAD Standard Template. The plans shall also contain the information detailed in the following subsections. Use the following information as a checklist for plan preparation.

The format for Water Improvement Plans shall be in the same format as shown on the Indio Water Authority "CAD Templates". Electronic copies of the CAD Templates are available by contacting the IWA Engineering Department or visiting the IWA Website, Water Engineering Section.

3.4.2 Sheet Layout

All drawings shall be 24" x 36" in size. Plans should be drawn to a reasonable scale in order to convey information clearly for plan-checking and construction purposes.

A north arrow shall be clearly shown on all sheets of plans. Indicate sheet number and total sheets on the drawings at bottom right corner, e.g. Sheet 1 of 3. Each sheet shall have a Standard Title Block including the following: revision block, signature approval block for the Fire Code Official, block showing firm name, address, phone number and contact person of firm responsible for work, IWA approval block, IWA logo and address block, block showing project title and sheet name, and block showing drawing number, sheet number, date, and project number.

Provide detail sections for special assemblies and complex connections. The detail shall be drawn to an appropriate scale showing pipe size and shall fully identify all the parts in the detail.

The engineer shall note on the drawings all connections to existing IWA facilities.

3.4.3 Title Sheet

The first sheet is the "Title Sheet". The complete list of required information for this sheet is located in the Water Improvement Plan Checklist, refer to Appendix E.

The project title and address shall be centered at the top of the page in large font. The vicinity map shall show the general area of the project location with cross streets clearly labeled. The list of quantities shall show all materials for the entire project and listed as "Furnish and install". The sheet index shall be listed in tabular form.

3.4.4 Notes, Legends, and Abbreviations Sheet

The second sheet is titled "Notes, Legends, and Abbreviations". The complete list of required information for this sheet is located in the Water Improvement Plan Checklist, refer to Appendix E.

General water notes shall be in accordance with the IWA CAD Standard Drawings. Abbreviations and a legend of symbols used on drawings shall be listed in tabular form.

3.4.5 Plan and Profile Sheets

Plan and Profile Sheet(s) shall immediately follow the Notes, Legends, and Abbreviations sheet. See Water Improvement Plan Checklist in Appendix E for list of information that should be included at a minimum.

3.4.5.1 Plan View

Proposed facilities shall be called out in large bold font with type and size of facility. Call-outs shall be used to offset facilities descriptions to improve drawing legibility if necessary. Distance from proposed facilities and roadway centerlines shall be clearly marked on plans.

All connection points, crossings, and appurtenances shall be called out by stationing. Restrained joints shall be clearly marked with stationing.

Easements shall be identified on all plan and profile sheets.

3.4.5.2 Profile View

Profile view(s) shall be included for Water Improvement Plans at the request of the IWA Engineer. Profile view(s) shall show all existing and proposed surfaces and utility crossings over or under proposed facility. Profile view(s) shall line up with plan view stationing directly above plan view(s), whenever possible. Stationing shall be shown along bottom of profile at 100-foot intervals and elevations shall be clearly shown on both ends of profile sheet.

All profile types shall show slope of pipeline, restrained joints, stationing of appurtenances and connection points with reference drawings called out.

3.4.6 Detail Sheet(s)

Detail sheet(s) shall follow Plan and Profile sheet(s). See Water Improvement Plan Checklist in Appendix E for a complete list of information required on Detail sheet(s).

All details shall be accurately scaled when feasible and appropriately cross-referenced to other drawing(s) on the plans. When applicable, IWA Standard Drawings shall be included on Detail sheet(s) or referenced appropriately and accurately, the latest edition of the IWA Standard Drawings is located on the IWA website.

3.4.7 Required Easements

If an easement to IWA is required for construction and/or maintenance of water facilities, the minimum easement width shall be twenty feet (20') for domestic water facilities. Deep water lines (deeper than 48-inches of cover) will require wider easements with a

minimum width of 25 feet or twice the facility depth rounded upward to the nearest five feet (5'), whichever is greater. Easements shall be contained in single lots and shall not straddle lot lines.

One (1) copy of the easement legal descriptions with accompanying sketch or plot and a survey closure report shall be prepared by the developer's State of California licensed surveyor, and submitted with the ***Easement Legal Description Review Application (Form B-3)*** accompanied by required fees to IWA for review. Refer to Appendix C for application. After review of the submittals mentioned above, IWA Engineering will provide an electronic template in word document of the Grant of Easement title report that is to be included with the easement legal descriptions and survey closure report. Once satisfactory review by IWA has been completed, the developer's project manager shall submit two (2) hard copies of the signed, dated, and notarized Grant of Easement title report, easement legal descriptions, and survey closure report, to be signed and dated by IWA.

Easements for facilities that will be transferred to IWA may be shown on the tract or parcel map with the correct certificates for IWA acceptance. The legal description for the easements shall be in a form acceptable to IWA and must be accompanied by a current title report to be checked by the IWA's Engineering Section for accuracy. Dedicated easements must also be shown on the construction plans and the index map, without exception. Improvement plans for IWA facilities will not be approved until all required easements have been dedicated to IWA along with any necessary re-conveyances or subordination agreements.

In multi-family residential complexes or business parks, the developer may dedicate a "blanket easement" over all internal paved areas to IWA as long as it covers the minimum area IWA needs to access the facilities. The appropriate note shall be included on the tract map and the plans. Easements twenty feet (20') wide and extending a radius of five feet (5') beyond all fire hydrants, water meter locations will be required unless waived by IWA.

Additional utility easements parallel to public streets may be required depending on street right-of-way width and sidewalk locations, and shall be determined by IWA's Engineering Section.

3.4.8 Digital Submission Requirements

All design engineers preparing water improvement plans shall submit drawings in both DWG (drawing) and PDF formats after the design drawings have been approved and signed by the appropriate agencies.

The data will be layered as a minimum into the following features:

A. Existing water lines and appurtenances
B. Proposed water lines and appurtenances
C. Other existing utilities
D. Easement lines, right of way lines, and boundary data (boundary and lot lines)
E. Street centerlines and street names
F. Construction notes and labels (call-outs)

The coordinate system of data shall be the California State Plane Coordinate System (NAD 83).
Digital files shall be submitted through email or on a CD to the IWA Engineering Section.

3.5 Water Improvement Plans- General Criteria

A. Water Improvement Plans shall be submitted to IWA in digital format, see Section 3.4 for requirements
B. Substantiating engineering calculations for demands and pressures shall be provided, if requested by IWA Engineering Department.
C. Water Improvement Plans shall be prepared in accordance with IWA standards, see Section 3 for requirements. The following additional requirements shall be met:

a. The contractor shall obtain all City and/or County permits prior to the start of construction.
b. Water mains shall be staked for line and grade and shall be installed subsequent to the installation of the curbs and gutters but prior to surfacing and paving of the streets.
c. No valve shall be located within a gutter or other concrete drainage device.
d. No facility is to be backfilled until inspected by the IWA Inspector.
e. Shut down of existing water lines to facilitate connection to existing facilities shall be requested with the ***Water Main Shut Down Application (Form D-2)*** and through IWA Customer Service at (760) 391-4038. The shutdown shall be coordinated with the IWA Inspector and conducted exclusively by IWA crews. No connections to the IWA existing water system shall be made until the new facilities have been successfully tested and disinfected. All connections to the IWA water system shall be made in the presence of the IWA Inspector.
f. Water services shall be installed behind the curb prior to paving of the street. The services shall be extended to their final location by the developer at a time prior to pressure testing of the water system. Each service will be installed per IWA Standard Drawing No. 700A, 700B, 700C, or 700D.
g. Backflow devices shall be installed for all commercial, industrial, dedicated irrigation and residential services where non-potable water may also be available.
h. Meter boxes shall be installed directly behind the curb whether sidewalk is directly behind the curb or not. Meter boxes installed behind rolled curb shall have traffic

lids. No meter boxes shall be permitted within driveways. Refer to IWA Standard Drawing No. 700A, 700B, 700C, and 700D for details.

i. The developer/contractor shall raise all valve boxes to the finished pavement grade upon completion of the pavement. If the surface course of pavement is not completed within a reasonable amount of time after the base course of pavement is completed, the developer/contractor shall raise the valve boxes to the finished grade of the base course so that IWA may operate the valves. The developer shall then raise all valve boxes to final finished grade of the pavement upon completion of the surface course of pavement. All valves and appurtenances must be accessible to IWA staff at all times.
j. Hot tap on existing water main shall be, at maximum, 2/3 the size of the existing water main, except with prior approval of IWA. Hot tap is not allowed on existing asbestos cement pipe (ACP).
k. Plan/project number designated on drawings to be assigned by IWA.
l. Exact fire hydrant locations to be approved by the Fire Department.

3.6 Pressure Zones

The IWA distribution consists of a main pressure zone and two small boosted zones serving developments along the northeast edge of the service area. The vast majority of IWA customers are supplied water from the main zone, also known as the Low Zone. IWA reserves the right to change said pressure zone on Water Improvement Plans before approving the final design drawings.

3.7 Dedicated Well Sites

For housing tract developments, the number of well sites that must be dedicated to IWA is based on the acreage of the development. One (1) dedicated well site per 80 acres of the development is required.

Dedicated well sites shall be a minimum of 180 feet by 150 feet. IWA reserves the right to require larger sites for special cases at the discretion of IWA.

The developer is required to design and construct well site improvements as follows:

A. Grading
B. Seven and half (7’-6”) foot block walls, which includes iron rod picket on top of the block wall to match the height of the access gate to the site, walls shall completely encompass entire perimeter (except the gates) of the dedicated site per IWA Standard Drawing Nos. 717A & 717B
C. Driveway with approved vehicle gate and foot traffic gate per IWA Standard Drawing No. 717A
D. 18” water main stub-out to adjacent street
E. Three-phase electric unless otherwise approved by IWA

F. Blow-off structure and piping to approved discharge basin or storm drainage system per IWA Standard Drawing No. 710
G. A Concrete apron shall be placed on inlet blow off (IWA Standard Drawing No. 710)
H. All discharge pipes shall be pipe material as required by City of Indio Public Works Department

3.7.1 Well Site Location

Dedicated well sites require a minimum horizontal separation from other structures. A proposed well site must be 1,000 feet from an existing well site, 150 feet from a seepage pit, cesspool, leach line or tank, 50 feet from a sewer main or lateral, and 100 feet from a sewer manhole or lift station.

3.7.2 Fee(s) in Lieu of Well Site(s)

Developers may be eligible to pay fee(s) in lieu of providing dedicated well site(s) for housing tract developments subject to the following conditions:

i. Fee(s) in Lieu of Well Site(s) are subject to the approval of the IWA Governing Board.
ii. A fee will be paid to the IWA for each dedicated well site based on previously described criteria that one (1) well site dedication is required per 80 acres of the housing tract development.
iii. If more than one (1) well site is required to be dedicated, fee(s) in lieu of dedicated well site(s) for a portion of the dedicated sites may be allowed, subject to the approval of the IWA Governing Board. However, the Developer is required to furnish dedicated well sites for the remainder of well sites subject to the well site location, design and construction conditions standards described herein Section 3.7
iv. Fee(s) in Lieu of Well Site(s) is based on the estimated fair-market value of the land within the subdivision plus the estimated cost to improve the well site(s). The fair-market value and estimated cost to improve the well site are further defined as follows:

    a. Fair-Market Value:
        i. The Fair-Market Value means the raw value of the land in the parcel subdivided or a parcel in close proximity to the proposed subdivision.
        ii. The parcel(s) selected shall be suitable for use as a well site(s) including location criteria described herein Section 3.7.
        iii. The minimum amount of land (parcel size) shall be 180 feet x 150 feet per well site.
        iv. The Fair-Market Value shall be determined by an independent California Certified General Real Property Appraiser currently licensed in California. Appraiser fees shall be paid entirely by the Developer.

b. Estimated Cost to Improve the Well Site:
   i. The estimated costs shall include all items listed in Section 6.6 (items A through F) plus design and permitting costs for a site area of 180 feet x 150 feet.
   ii. The total cost shall be based on the design and permitting costs plus the estimated construction costs (at the time subdivision approval is granted and improvements are initiated) for furnishing all labor, materials, equipment and incidentals to perform the work, including overhead and profit.
   iii. The estimated costs shall be prepared by the developer's licensed engineer and subject to final approval by the IWA.
   iv. Payment of Fees in Lieu of Well Site(s) shall be reimbursed to the IWA after the development plans have been approved and the final design plans have been signed. Terms of payment for the fees shall be further described in the Water Agreement.

3.8 Reservoir Storage

In general, additional reservoir storage is required for tract developments that are subject to a Water Supply Assessment with 1,200 units or more. Additional storage requirements are based on the maximum day demand (MDD), maximum month demand, and fire flow. The minimum volume of required water storage within a pressure zone is the sum of operational or daily storage, fire flow storage, and emergency storage components. Refer to the most recent version of the IWA Water Master Plan for more detailed requirements.

The location of the reservoir storage will be at the sole discretion of IWA. The location of a reservoir is dictated by the hydraulic grade line (HGL) of the pressure zone when the reservoir is empty (base elevation). IWA requires a minimum static pressure of 40 psi and a maximum static pressure of 100 psi at all points within the development; additionally, IWA requires a minimum static pressure of 20 psi at all points within the IWA service area at the required fire flow for the fire hydrant locations throughout the development.

3.9 Booster Pump Stations

A booster pump station shall be required if a development cannot achieve a minimum of 40 psi static pressure or at the boundary of two (2) pressure zones in which case to pump water from the low pressure zone to the high pressure zone. The booster pump station shall also provide an emergency backup source of water in cases of unexpected booster station outages.

Construction of the booster pump stations shall only move forward once the IWA Engineering Department has approved and signed off on the final design drawings. The IWA Inspector shall

have access to the construction site at all times to verify the project is proceeding per plan. Refer to Section 5 for inspection requirements.

3.9.1 Booster Pump Station Design Criteria

It is the responsibility of the developer's design engineer to submit an appropriate booster station design for approval by the IWA Engineering Department based on location, service area, pressure zone, flow rate and pressure requirements, and operation.

All piping within the pumping station shall be sized for total water demand based on total built-out capacity for the water service area.

3.10 Pressure Regulating Stations

A pressure regulating station is required if a project is located at the boundary line between two different pressure zones. The pressure regulating station will serve as a backup source of water in case of high demands because of an emergency.

Pressure regulating stations will be site specific. The pressure regulating station design shall be coordinated with the IWA Engineering Department and terms included in the Water Agreement.

3.11 Design System Pressures

The following criteria shall be met for all domestic water systems unless otherwise approved or specified by IWA:

A. Minimum residual pressure at any point in the system shall be 20 psi at maximum day plus design fire flow demands.
B. IWA supplies water at pressures ranging between 40 psi (minimum) to 100 psi (maximum). The owner is solely responsible for regulating the pressure on the customer side of the water meter, (i.e., either decreasing or increasing the pressure to the customer's required level).

3.12 Pipeline Requirements

Water mains shall be installed per the provisions previously described in the Development Services Procedural Guidelines and the "AWWA9 Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances," AWWA C600-05, shall serve as a reference.

No connections to the IWA existing water system shall be made without proper notice, payment of applicable fees, and the presence of an IWA Inspector.

3.12.1 Main Line Sizes

Water mains 12 inches and below shall be Class 350; water mains above 12 inches must be Class 250.

Transmission Mains- The size of a transmission main shall be a minimum of 12 inches in diameter. Transmission mains shall be sized based on a maximum head loss of 3 feet or less per 1,000 linear feet of pipe, and in no case shall the design head loss exceed 5 feet per 1,000 linear feet of pipe unless specifically approved by the IWA Engineer. All water mains shall have a profile shown on the improvement plans.

Distribution Mains- The minimum size distribution main shall be 8 inches in diameter. For distribution mains, the maximum allowable design velocity shall be 7 feet per second. New distribution mains will not be allowed to connect to existing transmission mains.

No 10-inch or 14-inch diameter mains will be allowed without specific approval of the IWA Engineering Section. Unless otherwise specified herein or approved by the IWA Engineering Section, all water mains shall be looped.

Dead-end Mains- On dead-end streets, the minimum size main shall be 8 inches to at least the last fire hydrant. Looping of the water mains will be required on dead-end streets unless the developer provides a hydraulic analysis indicating water quality issues will not arise as a result of a lack of flow; however, the water main shall extend beyond the last fire hydrant and terminate with a blow-off (in-lieu of irrigation meter) conforming to IWA Standard Drawing No. 707 or 708 with a minimum 4-inch diameter line. If the water main is looped to an adjacent street, the water main shall be a minimum of 8 inches in diameter, extending through an easement, and valves at each end of the easement within the street pavement. The easement width shall be in accordance with Section 3.4.7, Required Easements of this manual.

3.12.2 Design Flows

Residential design flows shall be based on a demand of 456 gallons per day (gpd) per unit. Commercial/Industrial design flows shall be calculated based on the developers estimated water demands for the proposed development. The calculation for design flows is used for determine instantaneous water supply and not related to water budgets for the tiered rate structure.

3.12.3 Depth of Cover

Minimum cover (from finished grade) for all water mains shall be 42 inches. Any cover more than 42-inches shall be approved by IWA Engineering.

3.12.4 Standard Location

Domestic water mains shall be located within public right-of-way or easements dedicated to IWA and shall be designed per City of Indio Standard Drawing No. 147. On Private Streets, there must be a separate lettered lot with a minimum width of 20 feet that conforms to Section 3.4.7 of the Guidelines.

For water mains in shopping centers and commercial complexes, all pipelines shall be located in driving aisles. No pipelines or appurtenances shall be located under parking spaces, islands or landscape/common area.

3.12.5 Horizontal Separation Requirements

There shall be a minimum of 10 feet horizontal separation between water or non-potable water, sewer lines, septic tanks, and stormwater pipeline. There are special construction methods that may be used where this separation cannot be achieved and they are shown in IWA Standard Drawing Nos. 711A, 711B, and 712. Separation other than the Health Department minimums must be approved by IWA.

3.12.6 Vertical Separation Requirements

Water, sewer, and non-potable water lines are typically located vertically from the street surface down in order of decreasing quality. Water will be the shallowest and sewer mains will be the deepest. IWA Standard Drawing Nos. 711A, 711B, and 712 show the clearance requirements for parallel and perpendicular construction of water and sewer. Concrete encasement may be required if the clearances cannot be achieved. The design engineer shall provide details for review and approval regarding encasement installations. The length of encasement shall be sufficient to extend a minimum of ten (10) feet on either side of the crossing to provide the required horizontal separation.

Continuous steel casing of either a water main or a sewer main will also be allowed in accordance with IWA standards. The length of casing shall be governed by the same criteria as the length of encasement above.

3.12.6.1 Crossing Separation Requirements

When Water mains cross sewer or storm drain, separation shall be per IWA Standard drawing No 711B. Existing ACP pipe that crosses a sewer or storm drain shall be replaced with Ductile Iron Pipe and no joints shall be place in crossing area.

3.12.7 Looped System Requirements

Each project or development shall have at least two (2) connections to waterlines in different streets to form a looped water system. Non-looped systems will not be permitted unless specific written authorization in writing is granted by the IWA General Manager or his/her designee.

3.13 Pipe Material and Appurtenances

A. All public water mains shall be ductile iron pipe. A list of manufacturers can be found in the IWA List of Approved Materials. See Appendix H.
B. Ductile iron pipe, buried fittings, and buried valves shall be wrapped in a minimum of 12Mil thick polyethylene sheeting.
C. Thrust blocks and anchor blocks shall conform to IWA Standard Drawings Nos. 709A and 709B.

D. Restrained joints shall be used in all cases except for connections to existing AC pipe and valve installations. Restrained joint design shall be the responsibility of the design engineer. The required restrained length shall be determined by the design engineer and approved by the IWA Engineer based on the latest data specified by the "Ductile Iron Pipe Research Association (DIPRA)".

Refer to IWA Technical Specifications for additional requirements.

3.14 Fire Flow Requirements

Fire flow requirements will be determined by the Fire Department. Any plan submitted for second plan check must have been reviewed by the Fire Department. On a case-to-case basis, IWA Engineering may require Fire Department review concurrently with IWA's first plan check to ensure adequate fire flow can be obtained by pipe configuration being proposed.

IWA has a hydraulic model of the existing domestic water system. The fire flow requirements must be verified by the hydraulic model by coordinating with the IWA Engineering Department. In order to request for a fire flow evaluation or review of a hydraulic analysis, please complete the ***Fire Flow Evaluation Application (Form A-2)*** completely and accurately. See Appendix C for application.

3.14.1 Above Ground Double Check Detector Assembly (DCDA)

A fire service must have a Double Check Detector Assembly (DCDA) with bypass meter as shown on IWA Standard Drawing No. 703. The register for bypass meter shall be radio read. These assemblies can be installed in such a manner as to be screened from view, but must be accessible to IWA personnel at all times. There must be 5 feet of clearance on all sides of the DCDA. In addition, a 10-foot wide easement must be dedicated to IWA from the public right-of way to the DCDA. A DCDA shall not be installed in an underground vault and shall have an isolation valve at the water main connection.

3.15 Fire Hydrants

Fire hydrants shall be installed in accordance with IWA's Standard Drawing Nos. 704A and 704B and the following requirements:

3.15.1 Types of Fire Hydrants

All fire hydrant assemblies shall be wet barrel, of the types and configuration specified in the IWA's Standard Drawing Nos. 704A and 704B and "List of Approved Materials", both documents can be found, in Appendix G and H, respectively. As directed by the Fire Department, super-enhanced fire hydrants, having (2) 2-1/2" and (2) 4" connections, are required for large industrial warehouses or high-rises over 76-feet.

3.15.2 Location of Fire Hydrants

Locations of fire hydrants in public rights-of-way shall be to the satisfaction of IWA and the Fire Department and shall be accessible at all times. Locations of fire hydrants in private water shall be to the satisfaction of the Fire Department. Fire hydrant standards shall conform to the following criteria:

A. On distribution mains rather than transmission mains unless otherwise specified or approved by IWA.
B. On the side of the main nearer to the street right-of-way line, subject to approval by IWA.
C. At the street intersection rather than in the cul-de-sac for cul-de-sacs less than 200 feet in length.
D. Three (3) feet from the beginning of the curb return (BCR) at intersections.
E. On the prolongation of a lot line, but a minimum of three (3) feet from the edge of any driveway, street light, underground utility vaults or other similar obstructions.
F. A minimum horizontal clearance of 24 inch from the face of curb, with the 4" pumper outlet perpendicular to the curb face.
G. A minimum horizontal and vertical clearance of 36 inch around operating nuts and protective caps, with the hydrant flange mounted at least 4 inch above finished grade.
H. Any hydrant located behind the sidewalk shall be set in a 3' x 3'x 6” concrete pad.
I. Any hydrant shall be in locations that minimize damage from traffic.

3.15.3 Spacing of Fire Hydrants

The required spacing of fire hydrants in public rights-of-way shall be subject to the approval of the Fire Department. Spacing in private water systems shall be subject to the approval of the Fire Department. The following guidelines for maximum spacing of hydrants are presented for normal installations:

A. Single Family Residential areas: 500 feet, but not more than 120,000 square feet per hydrant.
B. Commercial and industrial areas: 350 feet, but not more than 90,000 square feet per hydrant. Private on-site hydrants may be included as part of the approved system in order to meet area requirements, provided they meet the requirements of the Fire Department and the California Fire Code.

All on-site fire hydrants and fire protection supply mains for commercial/industrial developments shall be private and shall be owned, operated and maintained by the property owner.

3.16 Water Services and Meters

In general, a single service connection to each individual building is required. This includes apartment buildings within an apartment complex, condominiums, commercial/industrial

buildings (each building within a commercial/industrial complex), and detached and attached houses. A single service connection shall be required for separate suites within a commercial/industrial building. Mobile home parks and recreation motor vehicle parks may be master metered with prior approval by IWA.

The type of service will be assigned to each meter at the time of the application. The type of service is based upon the intended usage of the meter.

For any construction project, fire hydrant meter duration shall be limited to six (6) months. If the duration exceeds the limit, a permanent service shall be installed.
For water service connections, the meter shall be one size smaller; the meter shall never be larger than the service line.

3.16.1 Water Service

Water services shall be installed in accordance with IWA's Standard Drawings and the following requirements:

A. All service lines shall be in accordance with IWA Standard Drawing Nos. 700A, 700B, 700C, or 700D.
B. All commercial, irrigation, and industrial water services shall be submitted to IWA for review and approval. Plans shall be submitted in accordance with IWA Standard Drawings.
C. All water meters shall be located in an area or location which is easily accessible to IWA at all times.
D. Service connections shall be installed perpendicular to the water main unless otherwise approved by IWA.
E. No water services shall be installed in driveways.
F. Install a curb and gutter prior to any water mains or lateral service lines.
G. If area is paved, all water service lines with a long side lead shall be installed by a mechanical method approved by IWA rather than trenching. Trenching is allowed for placing water service lines with short side leads except boring is required under existing curbs and gutters, cross gutters and sidewalks unless otherwise approved by IWA.
H. After the new service, including water meter and box, is installed, the contractor will abandon the old service at the water main by removing the corporation stop, placing a brass plug on a new brass saddle, and cutting and removing a section of the old service line.
I. Approved materials and manufacturers for various service materials and connections are listed in the List of Approved Materials, see Appendix H.
J. The minimum domestic service size shall be 1 inch and made of Type K soft copper tubing. Commercial and industrial service sizes typically available are 2 inch, 4 inch and 6 inch. Other sizes will be approved on a case-by-case basis by IWA.

K. For service line extensions, silver solder or compression couplings shall be used on a case-by-case basis at the sole discretion of IWA.

3.16.2 Water Meters

Every service connection shall be metered. Water meters shall be sized using the instantaneous flow as calculated using the ***Water Meter Clearance Application (Form B-2)***. See Appendix C for application. All water meters shall be purchased from IWA, subsequent to payment of all applicable fees and posting of all required bonds, and must be installed by the developer. All water meters shall be protected by a polymer meter box in accordance with Standard Drawing Nos. 700A, 700B, 700C or 700D, and the "List of Approved Materials" in Appendix H. The meter box shall be set behind sidewalk if the public right-of-way permits, or flush with the top of the curb in parkway if no sidewalk exists.

In those cases where the service must be uninterruptible such as hospitals, hotels, nursing facilities, and industrial developments, the developer will be required to provide a dual meter installation connecting to a different water main where possible.

Table 1. Water Meter Sizing Standards

Size	Maximum Demand (gpm) Per AWWA
1" disc	50
2" disc	160

Compound water meters will be required where the usage pattern indicates significant variations between high and low demands as determined by the IWA Engineering Section.

Table 2. Compound Meter Sizing Standards

Size	Flow Range (gpm) Per AWWA
2" Compound	2-160
3" Compound	4-320
4" Compound	6-500
6" Compound	10-1,000
6 x 8 Compound	16-1,600

3.16.3 Meter Downsize

IWA Customers can request to a meter downsize. To downsize the meter, a ***Water Meter Clearance Application (Form B-2)*** and a ***Meter Downsize Request Application (Form D-3)*** need to be submitted to IWAEngineering@indio.org. Refer to Appendix C for applications. Fees associated with the ***Water Meter Clearance Application (Form B-2)*** need to be paid at the time of submittal. Once both applications are reviewed by IWA Engineering and the customer is informed of eligibility to downsize the meter, fees associated with the ***Meter Downsize Request Application (Form D-3)*** shall be billed and paid in (2) installments through customer's monthly water utility bill. After the meter is downsized, it is the responsibility of the customer to upsize the meter should it be required for additional or inadequate demand.

3.17 Water Valves

Valves shall be installed per IWA Standard Drawings and American Water Works Association (AWWA) Standards. Refer to IWA Standard Drawing No. 713A through 713F and 718A for installation details.

3.17.1 Type of Valves

All main line water valves, less than 12-inches, shall be resilient wedge gate valves. Gate valves shall conform to the "AWWA Standard for Reduced Wall, Resilient-Seated Gate Valves for Water Supply Service" ANSI/AWWA C509. Valve ends shall be flanged as shown on the Standard Drawings. Flanges shall be 150-1b., AWWA/ANSI C110/A21.10 or ANSI B16.1. Approved valve manufacturers are specified in the IWA "List of Approved Materials".

Valves 12 inches and larger shall be butterfly type in accordance with IWA Standard Drawing Nos. 713D, 713E, and 713F, and shall conform to Class 150B of the AWWA Standard C504 unless working pressure is greater than 150 psi in which case, the butterfly valve shall conform to Class 250B of the AWWA Standard 504. Valve bodies shall be ductile iron, Flange x Flange, end without nut unless specified by IWA. Butterfly Valves shall be Epoxy Interior/Exterior, with Rubber on the Body. Approved valve manufacturers are specified in the IWA "List of Approved Materials"

3.17.2 Location of Valves

There shall be at least three (3) valves at the 3-way intersection of any water mains; at least four (4) valves at the 4-way intersection of any water mains. Valves on distribution mains shall be spaced a maximum of 1,000 feet apart so that no more than three fire hydrants would be taken out of service at any one time. Unless specifically approved by IWA, the maximum allowable spacing for intermediate valves on transmission mains is 1,200 feet.

In no event shall any valve be installed within a gutter or other concrete drainage device.

Valve stem top exceeding 48 inches of cover from finish grade shall be provided with an approved valve stem extension.

All fire hydrant laterals shall have an isolation valve. The isolation valves at all intersections as described herein shall be flanged to the main line tee or cross unless otherwise approved by IWA.

The final determination of the locations of all valves shall be subject to the approval of IWA.

3.18 Blow-offs and Combination Air and Vacuum Relief Valves

Blow-offs (flush-outs) shall be installed at any point along the main where either the flow velocity or the slope of the main could cause sediment to settle. Blow-offs shall normally be installed at all low points in transmission mains and the ends of dead-end streets or cul-de-sacs (unless a fire hydrant is available for flushing). Blow-offs shall be installed at any other location specified by IWA to assure the capability of complete flushing of a main. Sizing for blow-off assemblies is as follows:

Table 3. Blow-Off Assembly Sizing Standard

Size of Pipelines (inches)	Size of Blow-Off Assembly (inches)
6	4
8	4
12	4
18	6
24	IWA to determine

Combination air and vacuum relief valves shall be installed at all high points in water mains and at siphon-type crossings where air is isolated. Sizing for combination air and vacuum relief valves is as follows:

Table 4. Combination Air and Vacuum Relief Valve Sizing Assembly

Size of Pipelines (inches)	Size of Air Vac Assembly (inches)
6	1
8	1
12	2
18	2
24	2

3.19 Cross-Connection Regulations

All potable water services shall be subject to the following provisions:

Cross connections of any type that permit a backflow condition from any source or system other than that of IWA's potable water mains to the potable water system are prohibited. A connection constituting a potential or actual backflow hazard will not be permitted without a backflow device or air gap, which complies with Title 17 of the California Code of Regulations, is installed. Such an installation shall at all times be subject to inspection and regulation by IWA for the purpose of avoiding possibility of backflow into the public water system. IWA has cross-connection control specialists who are available at (760) 625-1831 for consultation on any question regarding cross-connections.

3.20 Backflow Regulations

IWA will not provide water service to any premises unless the public water supply is protected as required by State, County, and IWA regulations.

Backflow prevention devices shall be approved by IWA and shall be installed and maintained by, and at the expense of, the customer. IWA shall test the device at least once per year. A copy of the annual test results will be available to the customer. If the device fails the test, the customer will be notified with test results and shall repair or replace the device at the expense of the customer. Records of such repairs and replacements shall be kept by the customer and copies forwarded to IWA cross-connection specialists.

Water service to any premises will be discontinued by IWA, ten (10) days after formal (written) notice, if a backflow prevention device is not installed, tested, and maintained; if any defect is found in an installed backflow prevention device; if it is found that the backflow prevention device has been removed or bypassed. IWA reserves the right to terminate service immediately if the public water supply is at risk of a potential cross-connection. Service will be restored only when such conditions or defects are corrected to the satisfaction of IWA.

References for guidelines as to when, why, and what types of backflow and cross-connection control devices are approved may be found in:

A. Regulations Relating to Cross-Connections, California Administrative Code - Title 17 - Public Health
B. Manual of Cross-Connection Control, published by Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California, University Park, Los Angeles, California 90007

3.20.1 Approved Devices

Refer to the "List of Approved Materials" for acceptable manufacturers.

3.20.2 Industrial/Commercial/Irrigation System Connections

All industrial, commercial, or irrigation systems shall be connected to the IWA water system using a reduced pressure (RP) assembly device and must be installed immediately downstream of the water meter. The device must be installed in accordance with IWA Standard Drawing Nos. 702A or 702B, whichever applies. The assembly must be installed above.

3.20.3 Private Fire Systems

Each private fire protection system shall be connected to the IWA water system through a Double Check Detector Assembly (DCDA) device in conformance with National Fire Protection Association (NFPA) standards. Backflow devices shall be installed per Standard Drawing No. 703. A 5/8" Neptune radio read bypass meter shall be installed on the DCDA. A fire line lateral service from the street main shall be utilized for fire protection use only and shall serve only a single property. Typically, a fire line is a connection for on-site private hydrants or an interior fire sprinkler system for a building. The IWA's review and approval interest is limited only to that portion to be constructed in the right of way or water easement

3.20.4 Backflow Device Required Locations

Besides special situations that shall be approved by IWA, backflow devices are required for the following locations:

A. All domestic water irrigation services
B. All commercial domestic water services
C. All industrial domestic water services
D. All private domestic systems or fire line systems
E. All properties with private wells

3.21 Abandonment of Existing Service Connections

The developer/contractor shall be responsible to request for a water main shut down prior to abandonment of any service. Please refer to Appendix C for the ***Water Main Shut Down Application (Form D-2 and D-3)***. The developer/contractor is responsible to schedule an inspection to request for an abandonment of existing service connections. Please refer to Appendix C for the ***Water Inspection Request – Service Line Inspection Fee (Form C-1)***. The inspection can be scheduled by contacting the IWA inspections line at (760) 391 – 4044.

3.21.1 Abandonment of Service Connections 2" or Smaller

Remove existing saddle; install a new saddle with brass plug for abandonment. In the event that there is no saddle in place, the contractor shall remove the corporation stop and install a new saddle all under the supervision of an IWA Inspector. Next, abandon service in place at water main, cut service 2 feet below angle stop, and remove existing meter box. All abandonments shall be shown and called out on the plans.

3.21.2 Abandonment of Service Connections 3" or Larger

Abandon service in place at water main. Pull the existing valve and blind flange the existing tee. If existing tee is not flanged, the contractor shall remove the tee and install a new section of ductile iron pipe with quantum couplings at both ends to match the existing water main and then bulkhead the ends of the service line. Any existing concrete vaults shall be removed by removing the entire vault and backfilling with select backfill. All demolition work shall be shown and called out on the plans.

3.21.3 Below Grade Fire Service Connections

The developer/contractor shall abandon and remove the existing single swing check valve and vault. Fire services with an existing DCDA shall remove the DCDA. Next, abandon service in place at water main and pull the existing valve and blind flange the existing tee. If existing tee is not flanged, the contractor shall remove the tee and install a new section of DIP with quantum couplings at both ends to match the existing water main. Next, bulkhead the ends of the service.

3.22 Well Drilling/Abandonment Permit

This section outlines the requirements for the destruction of small diameter private residential and irrigation supply wells and the construction of new small diameter wells in the Indio Water Authority (IWA) service area. Well destruction is required if a well remains idle for more than one year, cannot be properly maintained or repaired for useful service, has inadequate sealing against surface and subsurface contaminant sources, or the site is to be regraded or developed with structures. A small diameter well is defined as an inside diameter of the casing measuring 10-inches or less.

To obtain a Well Drilling or a Well Abandonment Permit from IWA, a complete **Well Drilling and Well Abandonment Permit Application (Form C-4**) must be submitted to IWA. Please refer to Appendix C. A plot plan for new wells, description of method of construction or reconstruction shall be submitted with the application to IWAEngineering@indio.org. For detailed information regarding water well standards, please visit the following website: http://www.water.ca.gov/groundwater/wells/california_well_standards/well_standards_content.cfm.
IWA will provide a Well Drilling or Well Abandonment Permit within ten (10) business days from the date when pertinent fees and forms have been submitted.

3.22.1 Well Drilling Application

The following information will be required to obtain a well drilling/construction permit:

1. Complete Well Drilling Application request
2. Plot Plan for location of new well(s)
3. Description of method of Construction or reconstruction
4. Well profile (diagram, page 2 of 2, Form C-4)

3.22.2 Well Abandonment Application

Prior to destruction of the well, the original well records should be obtained and reviewed to determine pertinent information regarding the actual well construction. The following information will be required to obtain a well destruction permit and insure that the well is destroyed properly: original date of construction, drilling method (direct rotary, reverse rotary, cable-tool), filter pack or naturally developed, casing type and diameter, bore diameter, filter pack interval, screen type and interval, and seal depth and material (drillers clay, concrete, sand-cement slurry).

1. A well destruction permit shall be obtained from the IWA prior to the start of work and a copy shall be maintained at the project site. The permit requires that a California State Licensed Well Contractor (C-57 License) perform the work and complete the well destruction reports.
2. The California Water Well Driller's Report form shall be fully completed in the format required by the IWA and the State of California Department of Water Resources for water well destruction.
3. The well Owner shall use a California State Licensed Well Contractor (C-57 License) for all work related to destruction of the well.
4. IWA (Water Engineering Office) requires 48-hours of notice prior to the placement of the seal material.
5. Initial inspection will require IWA Inspector to G.P.S. each well for exact location for recording in IWA Atlas (must be included on application).

3.23 Advanced Metering Infrastructure / Automatic Meter Reading

IWA has been developing and expanding the automatic meter reading system (AMI) for existing customers. As new developments are completed and new customers are added to the IWA service area, the need to add and expand the AMI system becomes necessary.

New developments may be subject to and may be required to add to the AMI infrastructure. The requirements will vary by development type, size of development, location of project within the IWA service area. The AMI specific requirements will be defined by IWA staff. The typical requirement will include (but not limited to) the installation of an AMI pole and its associated appurtenances. The pole location, height and electrical service source (solar power or electrical meter) is to be reviewed and approved by IWA staff.

Installation of AMI infrastructure, if required by IWA, shall provide the following:

A. AMI Pole (per IWA Standard drawings 730, 731, and 732)
    a. Height of pole(s) shall be based on:
        i. the location within development,
        ii. the location within IWA service area, and
        iii. the number of water services to be served.
B. Wired AMI infrastructure shall include the installation of the electrical meter pedestal, conduit, service connections, and associated fees as required by utility company. Once

AMI pole and AMI system is progressed for service, IWA will maintain and operate AMI system.