

MCWD Regional Urban Water Augmentation Project



Title 22 Engineering Report

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for the

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1 Introduction

1.1 General

The Marina Coast Water District (MCWD) (State Water Resources Control Board/Division of Drinking Water [SWRCB/DDW] Water System Permit No. 2710017) is a County Water District organized and operating under the County Water District Law, Water Code §30000. The MCWD is located on the coast of Monterey Bay at the northwest end of the Salinas Valley and occupies an area of about 4.5 square miles. The District was formed in 1960 by a vote of the registered voters within the original service area. Under the County Water District Law, MCWD provides potable water, wastewater treatment and collection, and reclaimed water services within the City of Marina. The District is funded only by rates and fees. MCWD has taxing authority, but that authority is not currently being exercised. The District is governed by a five-member Board of Directors who are elected at large from within the District's urban service area. Water and sewer service are provided to several properties within the SOI but outside the service area, as well as to the Ord Community which is outside the current SOI. MCWD's service area is presented in Figure 1.

The District currently provides water, wastewater, and recycled water service to the former Fort Ord (Ord Community) under the Water/Wastewater Facilities Agreement with the Fort Ord Reuse Authority (FORA), under contracts with the U.S. Army. The term of the FORA agreement coincides with the legal existence of FORA. FORA is a public corporation of the State of California established by the FORA Act and will cease to exist in 2020 unless the FORA Act is amended by the California State Legislature.

In 2001, the U.S. Army conveyed ownership of the water and wastewater infrastructure on the former Fort Ord through FORA to MCWD. This includes, but is not limited to, the following: (1) all of Fort Ord's water and sewer infrastructure; (2) 4,871 AFY of the Army's 6,600 AFY of Monterey County Water Resources Agency (MCWRA) groundwater allocation; and (3) 2.22 MGD of the Army's prepaid wastewater treatment capacity under the Army-Monterey One Water (M1W) Agreement. M1W was formerly known as Monterey Regional Water Pollution Control Agency (MRWPCA).

Water supply for MCWD's Central Marina service area and the Ord Community comes from the Salinas Valley Groundwater Basin (SVGB), specifically from wells located generally along Reservation Road in Marina and unincorporated Monterey County. When the U.S. Army conveyed the water and wastewater infrastructure through FORA to MCWD, they also conveyed the right to provide up to 6,600 acre-feet per year (AFY) of water from the SVGB, authorized under an agreement between the U.S. Army and the MCWRA. The U.S. Army retained 1,729 AFY of the 6,600 AFY for its use in the Ord Military Community, and the balance has been sub-allocated by FORA to the various jurisdictions within the Ord Community. The SVGB aquifer only extends into the northern and eastern portions of the Ord Community, so MCWD wells cannot be relocated into the cities of Seaside, Del Rey Oaks, or Monterey or into unincorporated areas overlying the Seaside Groundwater Basin. However, under the agreement with MCWRA, the entirety of the former Fort Ord was annexed into Zones 2/2A of the SVGB and may receive groundwater from the SVGB source.

The MPWMD regulates all groundwater and surface water resources within its boundary, which includes area overlying the Seaside Groundwater Basin and portions of Del Rey Oaks, Monterey, and Seaside that are on the former Fort Ord. However, exemptions apply to the portions of Del Rey Oaks, Monterey and Seaside that are on the former Fort Ord from MPWMD water supply regulation. The U.S. Army had also contracted for 3.30 million gallons per day (MGD) of average dry-weather wastewater treatment capacity at the M1W Regional Treatment Plant (RTP). Of that, 1.08 MGD of treatment capacity was retained for the Ord Military Community, and the remaining 2.22 MGD was conveyed to MCWD.

1.2 Project Overview

The Regional Urban Water Augmentation Project (RUWAP) is a purified recycled water project¹ developed by Marina Coast Water District (MCWD) in cooperation with Monterey One Water (M1W), formerly the Monterey Regional Water Pollution Control Agency (MRWPCA). This project has also been referred to as both the Regional Urban Recycled Water Project and the Recycled Water Project (RWP); therefore, project documentation may refer to this project in one or more of these ways.

The Pure Water Monterey (PWM) Groundwater Replenishment Project (PWM Project) is the source of the purified recycled water (PRW) for RUWAP. The PWM Project will develop new water supply sources in addition to producing advanced treated municipal wastewater, and convey those supplies to the RTP using the existing wastewater collection infrastructure. M1W prepared a Final Title 22 Report for the PWM and has already obtained a permit from the Central Coast Regional Water Quality Control Board (RWQCB) to produce, transmit, and inject PRW into the Seaside Groundwater Basin (Order No. R3-2017-0003). A combined RUWAP-PWM conveyance system was constructed to deliver PRW for landscape irrigation within the City of Marina and City of Seaside on its way to the injection well field located on the eastern boundary of the City.

RUWAP was originally developed to help MCWD meet the overall water needs of its service area, by delivering PRW produced at the M1W Advanced Water Purification Facility (AWPF) to landscape irrigation users in the MCWD service area and former Fort Ord. Because the PWM injection well field is located along the same pipeline alignment as the RUWAP, the projects share a single conveyance system. The project will provide up to 4,300 AFY as shown in Table 1-1.

¹ Originally, RUWAP was a tertiary recycled water project using the Salinas Valley Reclamation Project as its source of recycled water for landscape irrigation supplies and a “Water Augmentation Pumping Plant” to convey the tertiary-treated water through the pipeline to irrigation customers.

Table 1-1: Water Provided by RUWAP and PWM

Total Maximum Volume Delivered	Note
600 AFY (<i>Note 1</i>)	PRW supplied for landscape irrigation by MCWD
3,700 AFY	PRW supplied for indirect potable reuse by M1W
<i>Note 1: A future PWM project component is in the planning stage to meet RUWAP ultimate supply needs of 1,727 AFY (i.e., 1,127 AFY additional irrigation supplies) which will require expansion of the AWPf, a new agreement between M1W and MCWD, a separate future WDR/WRR permit from the RWQCB, and construction of additional laterals to other MCWD recycled water customers.</i>	

This will also fulfill the need to identify a supplemental water supply to meet the demands for redevelopment of the former Fort Ord as described in the Fort Ord Base Reuse Plan (Fort Ord Reuse Authority, 1997). Under a combined project, the connection was made to the AWPf product water pump station, located adjacent to the AWPf. RUWAP facilities include approximately 50,000 feet of 16 to 24-inch diameter transmission main, approximately 30,000 feet of 4 to 12-inch lateral pipelines (in addition to 25,000 linear feet of existing lateral pipelines), one storage tank, and pressure reducing valves and appurtenances.

1.3 Purpose of Report

This report serves as the Engineering Report in accordance with Title 22 of the California Code of Regulations (CCR). This report, prepared for MCWD, has been prepared in accordance with the Department of Public Health's "Guidelines for the Preparation of an Engineering Report for the Production, Distribution, and Use of Recycled Water," dated March 2001 and is intended for submittal to the SWRCB/DDW and the RWQCB as part of the project permitting process. The proposed project described in this report includes the facilities initially required to provide PRW to the RWP customers.

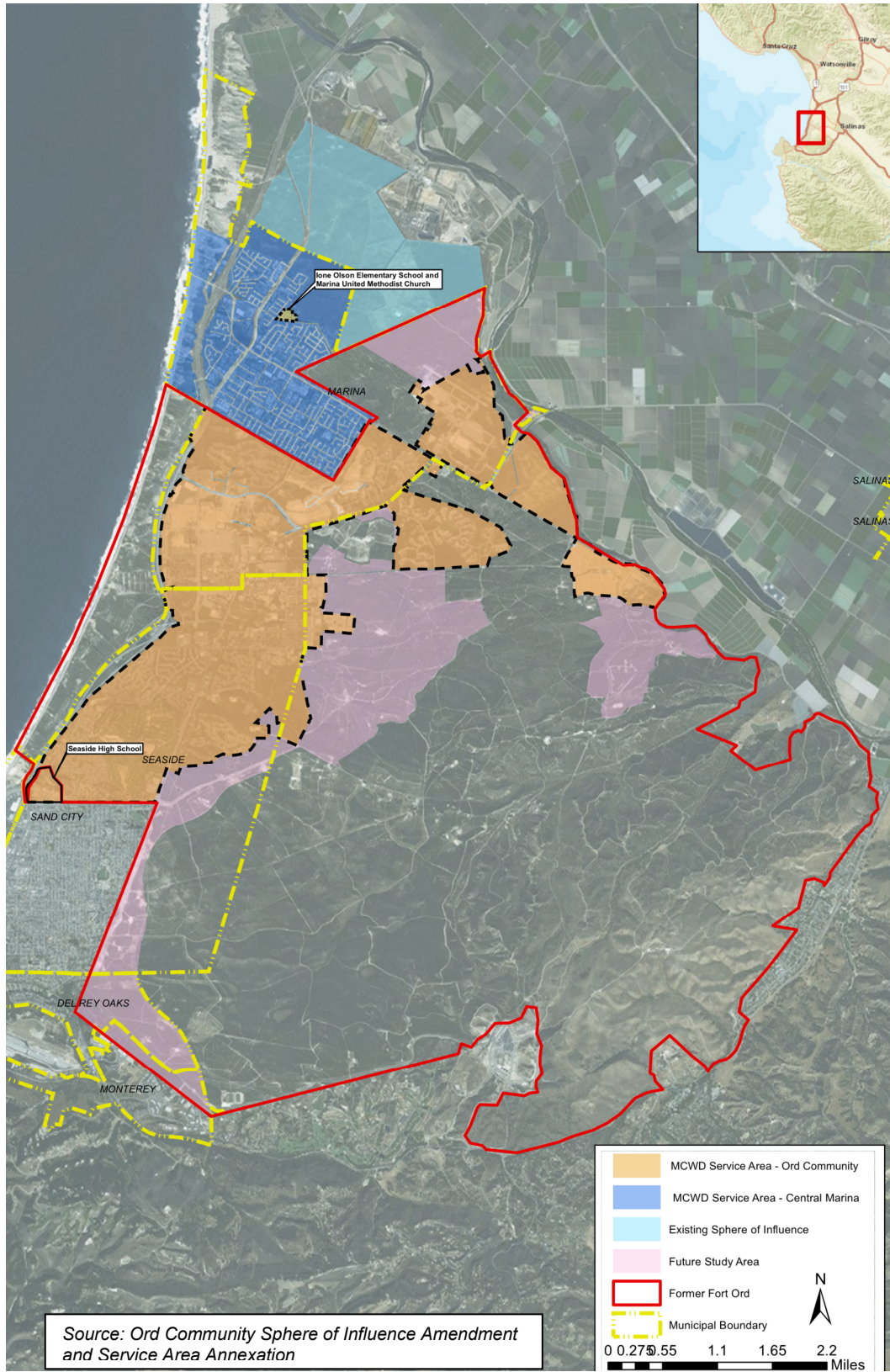
MCWD's role in the PWM Project is solely conveyance and distribution of PRW for nonpotable purposes including irrigation; the same pipeline will convey PRW to injection facilities under construction in the southern portions of the Ord Community. Treatment and groundwater replenishment of PRW and compliance are discussed in M1W's Engineering Report. References are made to and descriptions of their facilities are included herein for reference.

1.4 Report Organization

This report is organized in accordance with DDW guidelines for similar recycled water distribution projects. The following sections are included in this report:

- Section 1 – Introduction
- Section 2 – Recycled Water Production Facilities
- Section 3 – Recycled Water Transmission and Distribution Facilities
- Section 4 – Recycled Water Use Areas

Figure 1-1: MCWD Service Area



2 Recycled Water Production Facilities

M1W is the Producer of PRW and MCWD will be the Distributor of PRW for landscape irrigation within the City of Marina and City of Seaside. The terms recycled water and PRW are being used interchangeably in this document. The MCWD RWP is a transmission and distribution project. This discussion of recycled water production is included for background information only and not meant to be a submittal for the approval of PRW production facilities. This section was largely excerpted from the Engineering Report prepared by Bahman Sheikh, Ph.D., P.E., Water Reuse Consultant in 2006 for the M1W filter loading study and the PWM Engineering Report prepared by Nellor Environmental, Trussell Technologies, and Todd Groundwater in September 2016.

2.1 Background

M1W owns and operates the regional wastewater management system that provides collection, treatment, and disposal for most of the sewer connections in northern Monterey County (approximately 255,000 customers). Effluent disposal to Monterey Bay is regulated by NPDES Permit No. CA0048551 recently issued by the RWQCB as Order No. R3-2018-0017. MCWD collects wastewater from approximately 18,000 customers in the City of Marina and Ord Community, and transports it to the M1W RTP for treatment. MCWD became a member agency of the M1W in 1989, and M1W provides treatment and reclamation of wastewater collected in the MCWD service area.

Approximately 17 million gallons per day (MGD) of wastewater is collected and treated at the M1W RTP. The treatment processes remove solids and organic materials from the wastewater prior filtration and disinfection for agricultural irrigation in the Salinas Valley or discharge to Monterey Bay. M1W is constructing the AWPf adjacent to the RTP to beneficially utilize remaining effluent and reduce discharges to the Bay. A portion of the RTP effluent will receive full advanced treatment pursuant to stringent regulations set forth by the State Water Resources Control Board (SWRCB) and DDW for groundwater replenishment by subsurface application (as defined by Title 22 of the CCR). The PRW produced at the AWPf will also be suitable for unrestricted irrigation (including residential front yards), agricultural crops, golf courses, parks, cemeteries, and playing fields.

The AWPf is currently online. MCWD has an agreement with M1W that entitles it to receive recycled water produced from the wastewater it sends to the RTP.

MCWD and M1W have collaborated for several years on various water and wastewater projects in the Monterey area, and the two agencies have recently completed a joint investigation on the development of the Regional Urban Recycled Water Distribution Project (RURWDP) to provide regional recycled water supply benefits. This project represents the combined efforts of both agencies to work toward the development of a single project that provides regional recycled water supply benefits. The RURWDP feasibility study investigated alternative recycled water distribution systems to meet anticipated increases in demand for PRW. The study identified as much as 5,427 AFY of demand for PRW within the project service area, including City of Marina, Armstrong Ranch, the Ord Community, and the Monterey Peninsula. The PWM Project will produce up to 4,300 AFY of PRW for those areas, including 600 AFY for MCWD

customers and 3,700 AFY for the Monterey Peninsula potable water supply needs (after Seaside Basin injecting and mixing with native water in the groundwater basin).

2.2 Treatment Processes, Reliability Features, Contingency Plans

A full description of M1W's treatment processes, facility alarms, monitoring and reporting program, and contingency plans is presented in M1W's Title 22 Engineering Report.

2.2.1 Notification Plans and Methods

A list of urban customers using PRW, including contact persons, telephone numbers, and email addresses, will be maintained by the MCWD with a notification plan that will be activated in response to any series of events that may include the inadvertent release of inadequately treated PRW to the use areas. Similar lists have been compiled and maintained at the M1W for notification of the RWQCB, the SWRCB, DDW, Monterey County Environmental Health, and other agencies, as appropriate. A proposed Notification Plan is included as *Attachment E.1* to *Appendix E*.

Notification of Treatment Failures - Notification of emergency shutdowns at the AWPf will be done according to the proposed Notification Plan, which is included as *Appendix E*.

Notification to Users – Urban users of the RWP will be notified by telephone promptly upon an outage or production downturn.

Notification of Site Failure - It is the responsibility of the Site Supervisor to immediately notify the MCWD of any failure or cross-connection in the User's recycled or potable water system, whether or not he/she believes a violation has occurred. It is also the responsibility of the User Supervisor to immediately notify the MCWD of any violation he/she believes might imminently occur because of any action the User's personnel might take during the operation of the recycled or potable water systems. If there are any doubts whether a violation has occurred, it is the responsibility of the Site Supervisor to report each occurrence to the MCWD so a decision can be made.

In case of a major earthquake, flood, fire, tornado, structural failure, or other incident that could likely damage the recycled or potable water systems, the Site Supervisor should inspect the domestic and recycled water system for damage as soon as it is safe to do so. If either system appears damaged, both the domestic and recycled water systems should be shut-off at their point of connection. If the Site Supervisor can't inspect the site, and damage is expected, then both water systems should be shut-off at their points of connection. The Site Supervisor should immediately contact the MCWD and implement the procedures documented in *Appendix C - Section E*. Any additional local governing agencies, as listed in *Appendix C - Section H*, should be notified of any violations.

3 Recycled Water Transmission and Distribution Facilities

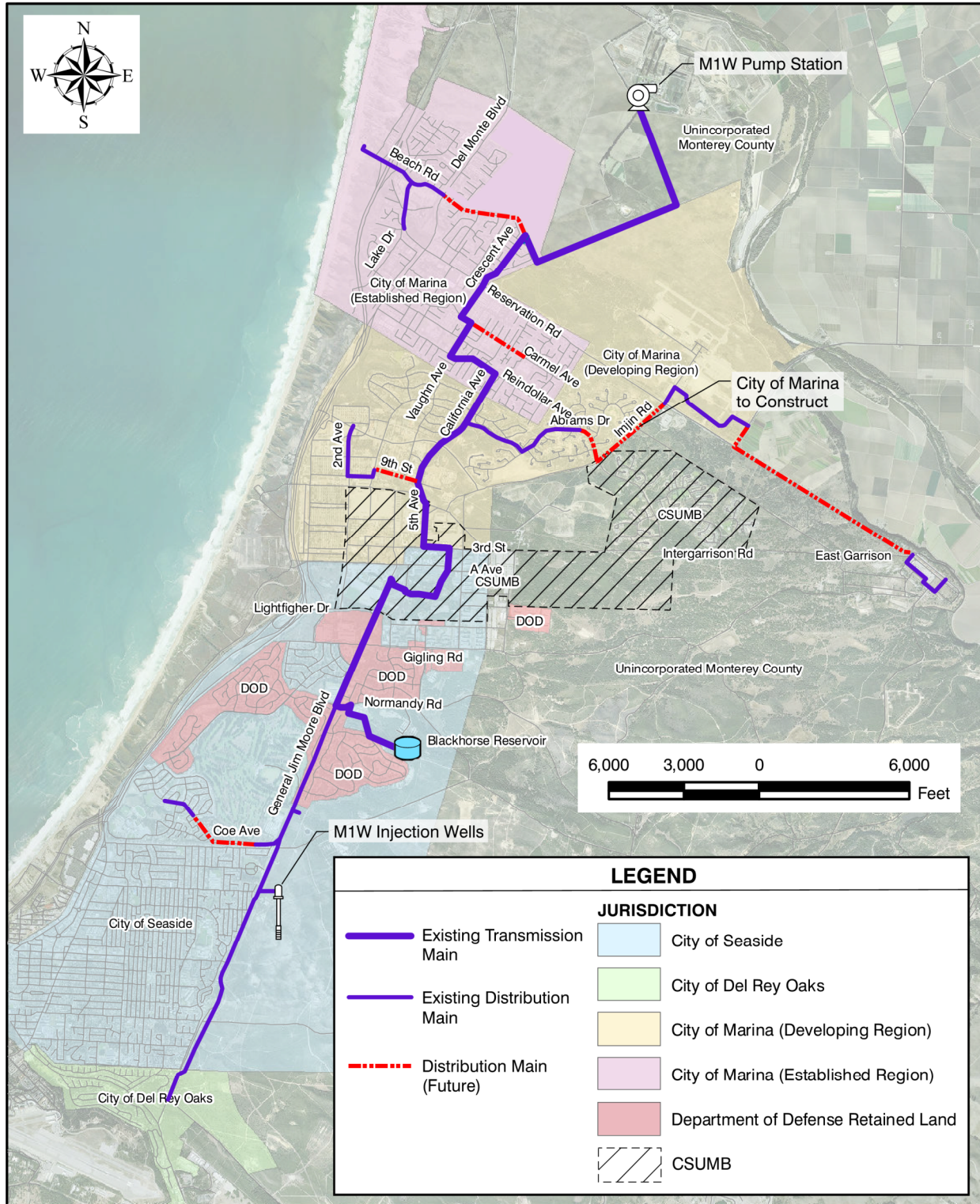
3.1 Introduction

Following advanced treatment at the AWPf, the PRW will be pumped into the RWP system. The RWP system will consist of approximately 50,000 linear feet (9.5 miles) of 16 to 24-inch transmission main and 30,000 linear feet of 4 to 12-inch lateral pipelines (in addition to 25,000 linear feet of existing lateral pipelines). In addition to the pipelines, the distribution system will include a 2.0 MG reservoir. These distribution system components are discussed in further detail below. See Figure 3-1 for a site plan of the distribution system components.

In summary, the major project components are:

- A pipeline system consisting of approximately 50,000 linear feet (9.5 miles) of 16 to 24-inch diameter transmission main and 30,000 linear feet of 4 to 12-inch lateral pipelines (in addition to 25,000 linear feet of existing lateral pipelines), owned and operated by MCWD
- One 2.0 MG operational storage tank (Blackhorse reservoir) located at the site of MCWD's potable water storage tanks supplying zones D and E, owned and operated by MCWD
- Customer lateral turnouts as part of the initial phase, owned and operated by MCWD

Figure 3-1: Map of RWP Components



3.2 Pipelines/Conveyance Systems

3.2.1 Introduction

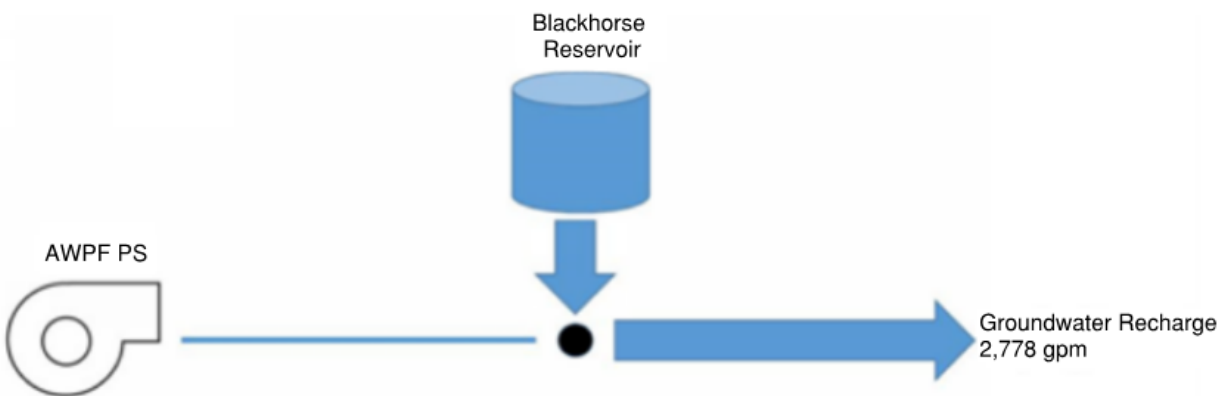
The pipeline conveyance system includes approximately 50,000 feet of 16 to 24-inch diameter transmission main pipeline and 30,000 linear feet of 4 to 12-inch lateral pipelines (in addition to 25,000 linear feet of existing lateral pipelines). Design drawings of the pipeline are included in *Appendix F*.

3.2.2 Pipeline Modeling Scenarios

A series of steady-state hydraulic modeling scenarios were performed. Nodes were inserted into the model at appropriate locations along the pipeline alignment to reflect the anticipated PRW customers. The demand assumptions for the anticipated PRW customers are discussed in Section 4. The series of modeling scenarios are presented in Figures 3-2 through 3-5 and were created to simulate all the potential operational scenarios.

- **Scenario 1:** This scenario will occur for scheduled maintenance or an unanticipated shutdown of the Pump Station during the winter months when there is little to no irrigation demand.
Supply: Blackhorse Reservoir
Demand: Groundwater Recharge

Figure 2-2: RWP Modeling - Scenario 1

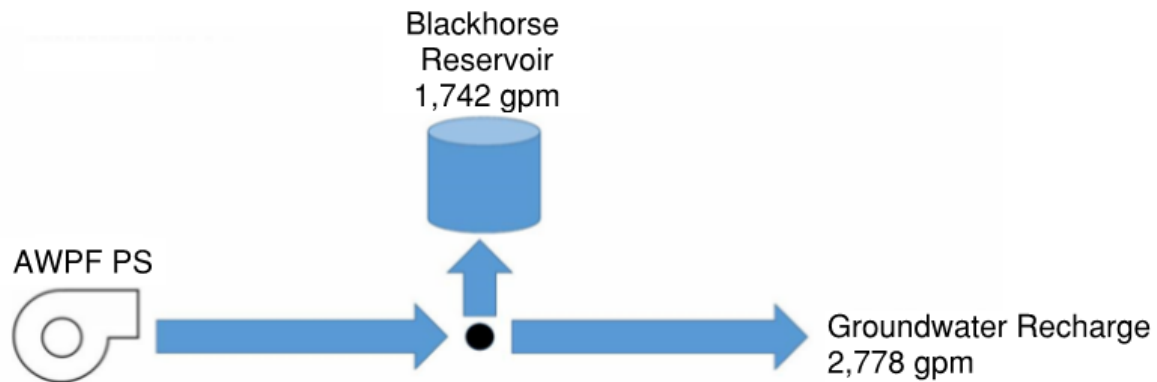


- Scenario 2:** This is expected to be the normal operating scenario at startup and initially during operation as MCWD customers are converted to PRW use. Once MCWD PRW customers are established, this scenario is anticipated to be the normal operating scenario during the non-irrigation season (approximately November to April).

Supply: Pumped from AWPFS PS

Demand: Groundwater Recharge and filling the Blackhorse Reservoir

Figure 3-3: RWP Modeling - Scenario 2

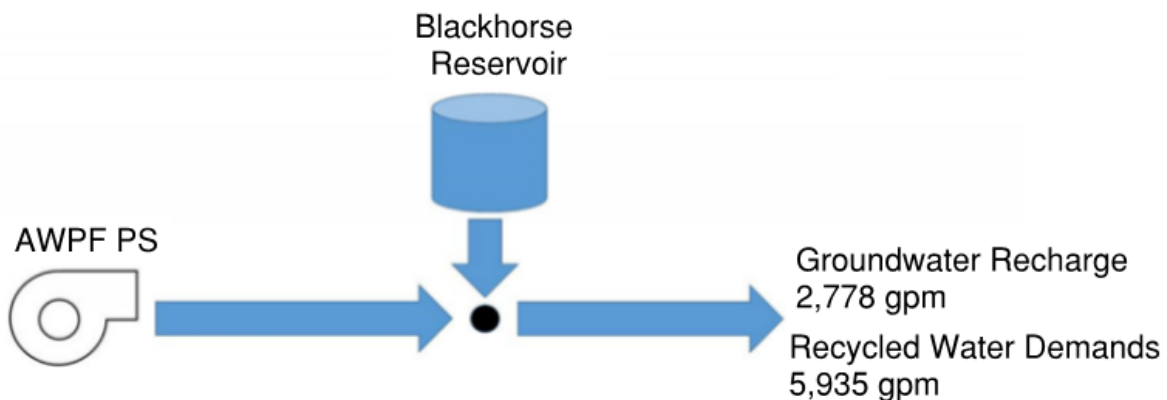


- Scenario 3A:** This scenario is not anticipated to occur until MCWD customers are converted to PRW use. Once MCWD customers are established, this scenario is anticipated to be the normal operating scenario during irrigation season (approximately May to October).

Supply: Pumped from AWPFS PS and Blackhorse Reservoir

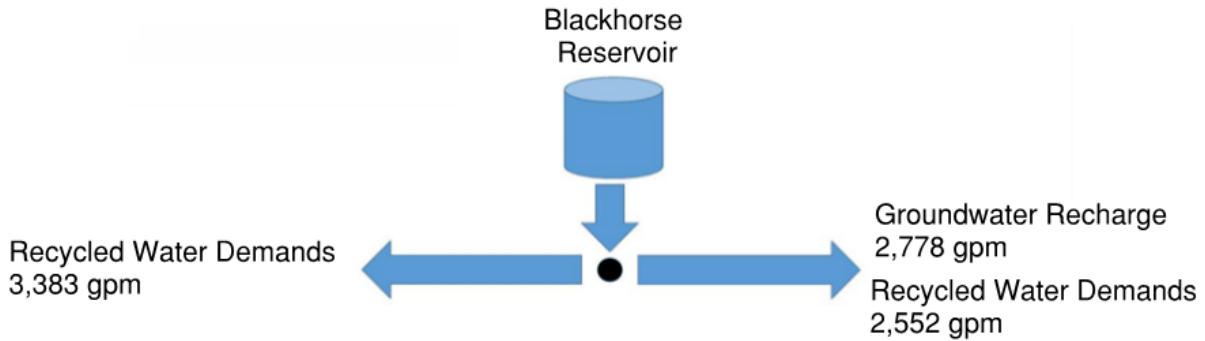
Demand: Groundwater Recharge and irrigation

Figure 3-4: RWP Modeling - Scenario 3A



- Scenario 3B:** This scenario will occur for scheduled maintenance or unanticipated shutdown of the AWP Pump Station during summer months when there is both irrigation demand and groundwater recharge demand.
 Supply: Blackhorse Reservoir
 Demand: Groundwater Recharge and irrigation

Figure 3-5: RWP Modeling - Scenario 3B



3.2.3 Pipeline Design Criteria

Pipeline design criteria for the RWP system are summarized in Table 3.1.

Table 3.1: Pipeline Design Criteria

Design Item	Design Criteria
Transmission Main	
Maximum Allowable Working Pressure	350 psi
Minimum Design Pressure	40 psi
Minimum Pipeline Diameter	16 inch
Distribution Mains	
Maximum Allowable Working Pressure	80 psi
Minimum Design Pressure	40 psi
Minimum Pipeline Diameter	4 inch

Notes: From MCWD Procedures Guidelines and Design Requirements.

3.2.4 Pipeline Materials

Pipeline materials are based on the requirements of MCWD Engineering Procedures and Design Requirements to be consistent with MCWD’s design standards.

The transmission main pipeline material is Cement Mortar Lined Ductile Iron (DIP). Pipe standards for DIP are in accordance with AWWA C151. Joint standards are in accordance with AWWA C111. Fitting standards are in accordance AWWA C110 or C153. The DIP pipeline has a standard zinc based paint coating for corrosion protection.

The distribution main pipeline materials include both DIP and Polyvinyl Chloride (PVC). Pipe, joint and fitting standards for DIP distribution mains is consistent with transmission main. Pipe and joint standards for PVC is in accordance with AWWA C900. The PVC pipeline fittings will be cement mortar lined ductile iron in accordance AWWA C110 or C153.

3.2.5 Pipeline Installation

The pipelines will be installed using open-trench construction wherever possible. Pipelines will generally be designed for 48-inch minimum cover in order to allow vertical separation from existing laterals, connections, etc. MCWD standards for recycled water main require a minimum cover of 48 inches. Special care will be taken during installation to ensure that cross-connections between the potable and recycled water systems do not occur.

All proposed pipelines and appurtenances will be designed and installed in accordance with guidelines and regulations pertaining to the distribution of recycled water in California, including the following:

- Guidelines for the Distribution of Non-potable Water from the California-Nevada Section – AWWA
- Disinfected Tertiary Recycled Water Guidelines: On-Site Facility Retrofitting from California-Nevada Section – AWWA
- California Waterworks Standards from California Code of Regulations - Title 22
- Regulations Relating to Cross-connections from Title 17, Chapter 5, Group 4
- Manual of Cross-connection Control/Procedures and Practices from DDW

The proposed pipeline alignments will be designed to maintain a minimum horizontal separation with potable water lines in accordance with Section 64572 of Title 22, including 4-foot minimum separation with parallel potable water lines and a vertical minimum separation of 1-foot where recycled water lines will cross under potable lines. Where possible, the pipeline has actually been designed to maintain 10 foot horizontal clearance from potable water mains.

3.2.6 Pipeline Identification

All recycled water pipeline facilities will be appropriately identified, following the AWWA California-Nevada Section's Guidelines for Distribution of Nonpotable Water (1992) and in accordance with MCWD Standard Plans and Specifications. All buried pipelines will have warning tape, be purple in color, or be sleeved in a purple encasement, and non-metallic pipelines will have tracer wire. Additionally, pipeline markers will be provided to identify recycled water facilities.

3.2.7 Valves and Appurtenances

All branch/lateral connections and terminations will be provided with an isolation valve, pressure reducing valve, and backflow prevention device. Terminations will be provided with blind flanges suitably restrained and protected from corrosion. Air release valves and air-vacuum combination valves will be furnished at all intermediate high points in the pipelines. Where possible, blowoffs will be located at low points in the system with access to the blowoff points behind sidewalks or in landscaped median areas.

3.3 Blackhorse Reservoir

As part of the RWP, operational storage during the initial RWP will be provided by a 2.0 Million Gallon (MG) covered welded steel reservoir located east of General Jim Moore Boulevard known as the Blackhorse Reservoir.

The Blackhorse Reservoir is designed per American Water Works Association (AWWA) Manual of Practices M42: Steel Water Storage Tanks and constructed per AWWA D100 Welded Carbon Steel Tanks for Water Storage. The Blackhorse Reservoir "floats" on the system, meaning the water level is based on AWPf Pump Station pumping flow rate, injection well demand flow rate, and MCWD customer irrigation demand flow rate. M1W operates and controls flow rates of the AWPf pump station and injection wells. Adjustments in M1W's operation allow the reservoir elevation to increase/decrease, causing flow to go into and out of the reservoir. The operational storage capacity of the tank is 1.8 MG.

Detention time (water age) of AWPf PRW in the Blackhorse Reservoir is based on the % of daily volume turnover in the Reservoir. The expected average detention time is approximately 3 days based on a daily volume turnover of approximately 33%. The expected maximum detention time is approximately 5 days based on a daily volume turnover of approximately 20%.

The reservoir includes a Tideflex mixing system within the reservoir that provides separate inlet/outlet locations within the reservoir and ensures proper mixing of the water during each drain/fill cycle (preventing temperature and water quality stratification). The reservoir includes a sample port to allow water quality to be monitored. Design drawings of the Reservoir are provided in *Appendix F*. The preliminary design for the Tideflex mixing system can be found in *Appendix G*.

3.4 Emergency Water Supply/Potable Water Backup

The Blackhorse Reservoir has an emergency water supply through an air gap from a nearby potable water tank and booster pump. The emergency water supply is included in the design to provide water for construction testing of MCWD's conveyance facilities, because the reservoir was completed prior to construction of the AWPf.

MCWD's potable water is obtained from groundwater wells and disinfected with chlorine. The potable water backup pump has a flow rate of 1,000 gpm and is designed so that it can only be manually operated at the site to prevent unintentional use. To provide additional assurance from unintentional use, a steel flange plate with padlocks will be installed on the Blackhorse Reservoir at the emergency water supply air gap, requiring it to be manually unlocked. The design for the steel flange plate can be found in *Appendix H*.

The emergency water supply source is not planned to be used because there is a sufficient supply of PRW. If at some point in the future MCWD and/or M1W want to use the emergency water supply source, approval will first be obtained from DDW and the Regional Water Board through submittal of revisions to this Engineering Report and an amended WDR/WRR permit and/or MRP.

3.5 Customer On-Site Retrofits

MCWD will be responsible for the PRW system design to the customer turnout meter box (each customer meter will be included in the design) with the exception of developments providing in-tract meters. Backflow prevention devices will be installed at each connection to the RWP transmission main. Where distribution mains (4-inch to 12-inch diameter) connect to the transmission main, a Double Check Valve Backflow Prevention Assembly per AWWA Standard C510: Double Check Valve Backflow Prevention Assembly, will be installed. Where irrigation services (1" diameter minimum) connect directly to the transmission main, a Reduced-Pressure Principle Backflow Prevention Assembly per AWWA C511: Reduced-Pressure Principle Backflow Prevention Assembly, will be installed.

Downstream of the meter, the recycled water customer is responsible for on-site retrofits required to accommodate delivery of PRW. Each recycled water customer must submit design drawings of the recycled water on-site distribution system to MCWD for approval. Design drawings shall include existing potable water, sewer, and storm drain pipelines in the vicinity of the recycled water distribution system at a scale such that adequate separation can be verified. Any new buried pipeline added to existing pipes at a retrofitted site will meet the identification and separation requirements for new systems.

Where possible, the on-site recycled water system shall be operated at a minimum of 10 psi below the on-site potable pressure. MCWD application requirements are provided in *Appendix C and Appendix D*.

If an irrigation system is being installed in preparation for the future recycled water system, all CCR Title 22 recycled water requirements as spelled out in this report will be complied with at that time. All irrigation systems will be installed to prevent runoff and ponding. Overspray of recycled water onto public areas (sidewalks, parking areas, eating areas, etc.) is not permitted. Hose bibs will not be used on the recycled water system.

All recycled water irrigation systems at recycled water customer service connections will have the following:

- A wye strainer (with a 20-mesh or finer screen) installed as close as practicable to the recycled water meter box
- A meter
- A pressure regulating valve installed immediately downstream of the strainer as needed
- A booster pump station, as needed
- An isolation valve to facilitate maintenance
- Signage

The recycled water meter will not be set until the following items are completely satisfactory:

- Cross-connection testing. All testing on customer sites will be done by the customer / owner.
- Identification of recycled water system
- Inspection checklist completed by inspectors

- Adequate documentation is provided certifying that the new and/or existing on-site recycled water facilities meet Title 22 and Title 17 requirements and are in conformance with the approved design

MCWD will not set the water meter until the Compliance Inspection Report has been completed and compliance with the User's Handbook and permit conditions, as described above, has been documented.

Pressure reducing valves (PRVs) may be required at turnouts from the transmission main to the distribution main where pressures either do not meet, or exceed the target delivery pressures of 40 to 100 psi. The ultimate requirements for PRVs will be evaluated and installed by MCWD during installation of the distribution mains.

In accordance with Section 400, MCWD's Regulation Regarding Cross-connection, reduced pressure backflow prevention devices will be required on the potable water service, when a parcel receives both potable and recycled water service.

4 Recycled Water Use Areas

4.1 Introduction

This chapter includes information about the areas where recycled water will be used as part of the initial RWP phase and how each of these areas will comply with applicable recycled water use requirements. A discussion on how recycled water demands were determined is provided, as well as information about distributor and user responsibilities, irrigation use, use area design, nearby domestic water supply facilities, inspection and monitoring, employee training and a listing of all identified use areas.

4.2 Recycled Water Demand Estimation

This section identifies potential recycled water users and outlines the assumptions used to develop annual and peak hour demands.

4.2.1 Recycled Water Demand

Annual average irrigation demands for the project were calculated using crop evapotranspiration (ET) values and estimated acres of irrigated landscaping. Since demands are estimated based on ET calculations, potential over-watering and the associated runoff are not anticipated. The following explanation describes the methodology used:

Crop ET Calculation - Crop ET values were calculated using the methodology described in *A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California (2000)*, developed by the University of California Cooperative Extension (UC Extension) and California Department of Water Resources (DWR). The ET rate for turfgrass using the ET_C formula is:

$$ET_C = K_C \times ET_0$$

Where:

ET_C = Crop ET (in/month)

K_C = Crop Coefficient

ET_0 = Reference ET (in/month)

The ET_0 value is provided by the California Irrigation Management Information System (CIMIS). CIMIS maintains 199 stations at which ET_0 monthly values are recorded. Station # 19 in Castroville is the station used as reference for the RWP. Monthly ET_0 data and precipitation from November 1982 through September 2005 have been recorded at Station #19. Average monthly ET_0 values were used to calculate average monthly ET_C .

Irrigation Requirement Calculation - The irrigation requirement, or Total Water Applied (TWA), is determined based on ET_C , rainfall, infiltration, leaching rate, and irrigation efficiency. Monthly rainfall data were taken from CIMIS Station #19. Infiltration, leaching rate, and irrigation efficiency factors were determined from guidelines published by the UC Extension and DWR, as well as previous experience.

Irrigation requirement is determined from the following equation:

$$TWA = \frac{[ET_C - (P \times Inf)] \times L}{IE \times AE}$$

Where:

TWA = Total Water Applied (in/unit area)

ET_C = Turfgrass ET_C (in/unit area)

P = Precipitation (in)

Inf = Percent Infiltration (%)

L = Leaching Rate Factor (%)

L = 1 + Leaching Rate (%) [per Table 4.2]

IE = Irrigation Efficiency (%)

AE = Application Efficiency (%)

This calculation can result in negative TWA values during the months of high rainfall; however, the TWA is assumed to be zero for these months. Percent Infiltration is the same percentage value as Effective Rainfall in Table 4.2.

Irrigated Acres Calculation - Irrigated acreage was determined based on aerial photography analyzed using ArcGIS™ software and general plans for the cities of Marina, Seaside, Monterey, Del Rey Oaks and the County of Monterey. For some user nodes, mainly proposed projects that have not been constructed at the time this report was written, the exact irrigated acre value was not available. For those instances, average and peak demand estimates were provided by the users.

4.2.2 Peaking Factor Calculation

The ET₀ value is an average of the ET₀ values recorded at Station #19 from November 1982 to September 2005 by CIMIS. Monthly ET₀ and precipitation values, in conjunction with assumptions such as percentage of effective rainfall, irrigation efficiency, and application efficiency, leaching rate and percentage of turf versus ornamentals for each land use encountered in the project area, were used to determine the TWA. Monthly average ET₀ and precipitation values are presented in Table 4.1. The input data used in the determination of TWA are listed in Table 4.2. TWA was calculated for each month, and then summed to obtain the yearly TWA value. Multiplication of the yearly TWA value by the total irrigated acreage yielded the average yearly demand for each user node.

Monthly TWA is used to determine peaking month factors for each land use type. In addition to peaking month factors, a peaking hour factor was determined based on MCWD design requirements. MCWD design requirements assume a maximum irrigation period of 9 hours for every 24 hour period, which corresponds to a peaking hour factor of 2.67. Peak hour factors for the project range between 5.79 and 6.33 depending on land use. Peaking factors are presented in Table 4.3.

Table 4.1: Average ET₀ and Precipitation

Month	ET ₀ (in/unit area)	Average Precipitation (in)
January	1.59	2.95
February	1.99	3.36
March	3.11	2.31
April	4.14	1.08
May	4.79	0.49
June	4.87	0.36
July	4.34	0.25
August	3.90	0.58
September	3.25	0.57
October	2.71	0.69
November	1.79	1.80
December	1.50	2.61
Total	37.99	17.05

Table 4.2: Input Data Used for Peaking Factors Determination

	% Turf - % Ornamental	Resulting Kc ^a	Effective Rainfall (%)	Irrigation Efficiency (%)	Application Efficiency (%)	Leaching Rate (%)	Demand Contingency (%)
Golf Course	100% - 0%	0.8	85	85	85	10	10
Irrigation	40% - 60%	0.56	85	85	70	10	10
Park	100% - 0%	0.8	85	85	80	10	10
Cemetery	100% - 0%	0.56	85	85	70	10	10
Play Field	80% - 20%	0.72	70	75	80	10	10

Notes: Assumes Kc = 0.8 for turf; Assumes Kc = 0.4 for ornamentals.

Table 4.3: Peaking Factors

Land Use	Monthly Peak Factor	Peak Day Factor	Overall Peak Factor
Golf Course	2.21	2.67	5.90
Irrigation	2.37	2.67	6.33
Park	2.21	2.67	5.90
Cemetery	2.37	2.67	6.33
Play Field	2.17	2.67	5.79

4.2.3 Recycled Water User Customers and Demands

The recycled water customers have been identified based on potential customers lists identified in previous reports, particularly the *Regional Urban Recycled Water Distribution Pipeline (RURWDP) Study* prepared by RBF Consulting in July 2003 and the *Monterey Peninsula Reclaimed Water Urban Reuse Feasibility Study Update* prepared by CH2M Hill in September 1996, and most recently in the *2019 Final Draft Recycled Water Master Plan* prepared by Akel Engineering Group, Inc.. Initial customers anticipated to be served as part of the initial phase of the RWP are shown in Figure 4-1 and Table 4.4.

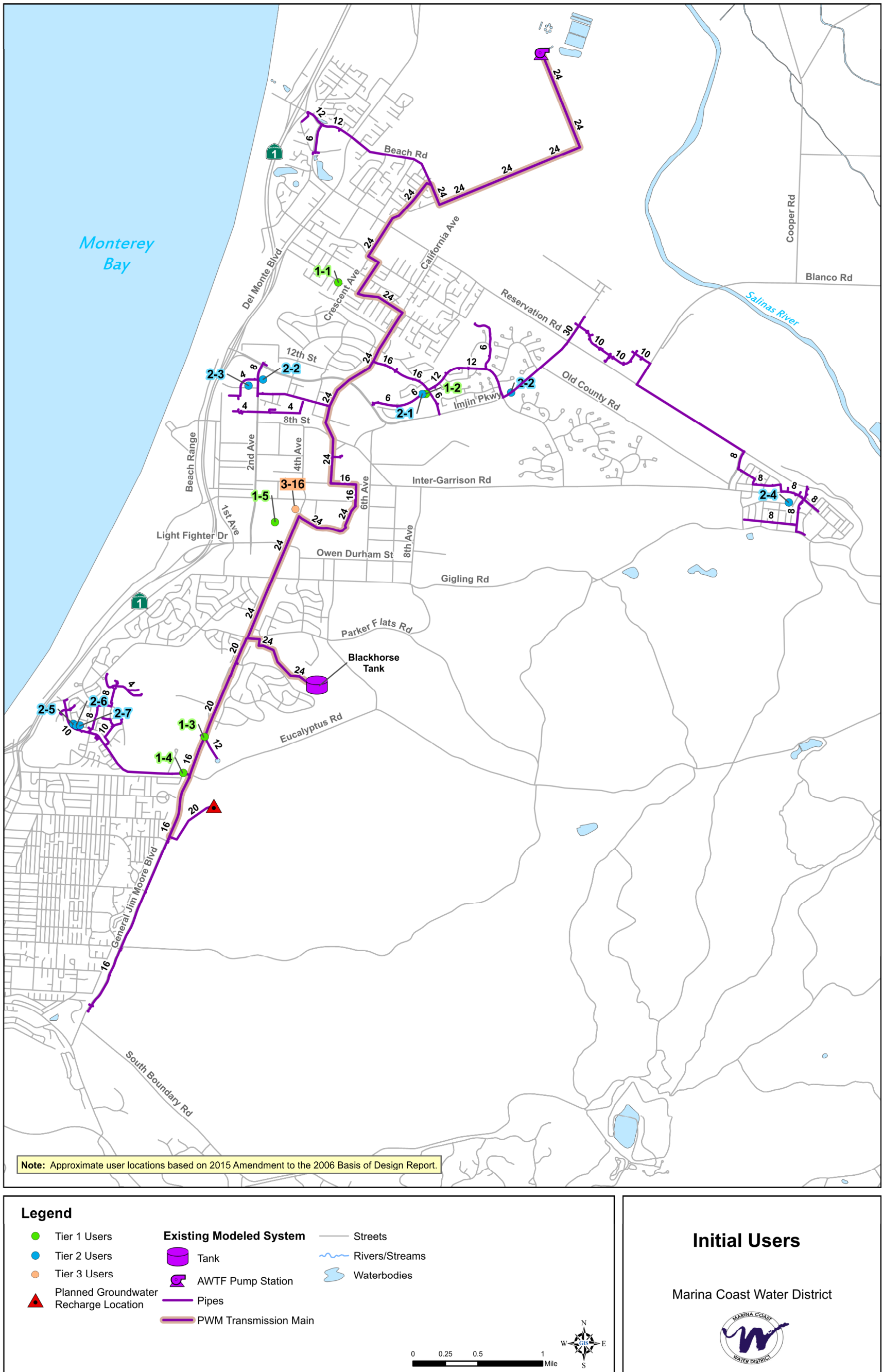
Table 4.4: Initial Recycled Water Users

Location ID	Location	Number of Turnouts	Customer	Use	Annual Demand (AFY) ^{1, 2}
1-1	Marina	2	Los Arboles	Irrigation - Sports Field	25.6
1-2	Marina	1	Marina Heights	Irrigation - Landscape	10.0
1-3	Seaside	1	Bayonet / Blackhorse Golf Course	Irrigation - Golf Course	491.4
1-4	Seaside	1	Fitch School	Irrigation - Sports Field	11.0
1-5	CSUMB	1	Main Campus	Irrigation - Sports Field	69.8
2-1	Marina	1	Sea Haven	Irrigation - Landscape	50.0
2-2	Marina	1	Imjim Parkway	Irrigation - Landscape	12.9
2-3	Marina	1	Dunes on Monterey Bay	Irrigation - Landscape	30.0
2-4	Monterey County	1	East Garrison Housing	Irrigation - Landscape	75.6
2-5	Seaside	1	Hayes School	Irrigation - Sports Field	5.5
2-6	Seaside	2	Seaside Highlands and High School	Irrigation - Landscape and Sports Field	89.7
2-7	Seaside	1	Soper Field	Irrigation - Sports Field	8.3
3-16	CSUMB	4	Main Campus	Irrigation - Landscape	37.8

¹ The projected annual demand exceeds the initial 600 AFY allocation. Initial uses will be capped at 600 AFY to match Phase 1 allocation for MCWD.

² None of the initial users will have dual plumbed irrigation.

Figure 3-1: Initial Recycled Water User Map



Source: 2019 Draft Final Recycled Water Master Plan

Note: User Tiers are estimates of when users are anticipated to come online, with Tier 1 being first.

Average demands for each use area were determined by multiplying TWA by the land area and summing the results for each month to obtain a yearly total value. Peak demands were determined by multiplying the average demands by the respective peaking factors and converting from acre-feet per year to gallons per minute. Overall, 600 AFY of recycled water are anticipated to be supplied to these customers.

The municipal jurisdiction of each water use area is presented in Table 4.4. MCWD will have jurisdiction over water use throughout the RWP distribution system. As recycled water demands are allocated to customers, MCWD will develop use area plans and cross-connection packages for submission to DDW. A copy of this Title 22 Engineering Report will be distributed to each of the municipalities in accordance with the *Title 22 Guidelines for the Preparation of an Engineering Report* (California Department of Health Services, March 2001).

4.2.4 Degree of Potential Access by Employees or the Public

As initial recycled water users are a golf course, medians, and parks, it is assumed that the sites will be accessible to employees and the public. Golf courses, playing fields, and medians may have only limited public access due to fencing, gated, or limited access control; however there is still a potential for public access to these areas.

4.3 Distributor and User Responsibilities

For purposes of this document, it is anticipated that MIW will act as the Producer of recycled water and MCWD will act as the Distributor of recycled water. As the Distributor, MCWD will be responsible for:

- Establishing and enforcing operating rules and regulations for use of recycled water
- Overseeing the implementation of programs for use of recycled water
- Developing a Public Notification Program (signage, labeling, worker training program)
- Conducting the Monitoring and Reporting Program
- Establishing procedures and a record keeping system to ensure all User Supervisor's are properly trained and appropriately implementing the adopted procedures for use of recycled water

District Supervisor - MCWD has identified Derek Cray, O&M Superintendent, as District Supervisor who will oversee all programs and facilities related to the use of recycled water distributed by MCWD. One or more back-up District Supervisors will also be identified to ensure that a contact person is available at all times. The District Supervisor will manage MCWD Field Operators. The District Supervisor and back-up District Supervisor(s) will:

- Be knowledgeable of the entire recycled water distribution system and of all water reuse criteria outlined in the Master Reclamation Permit
- Be responsible for implementing and overseeing programs and conditions under the requirements of permits that will be issued by the Regional Water Quality Control Board, authorizing the distribution of recycled water as applicable to MCWD
- Be the primary contact person for MCWD in all matters relating to recycled water
- Ensure that all User Supervisors are properly trained regarding the use of recycled water
- Be responsible for monitoring and reporting subject to permit requirements

Field Operator - MCWD field operators will monitor the use areas on a regular basis to ensure compliance with requirements of the General Order. They will prepare on-site observation reports for violations that do not endanger health or the environment.

User Supervisor - A User Supervisor will be appointed for each recycled water use area along the distribution system. The User Supervisor will be responsible for ensuring that programs and procedures for the use of recycled water are being complied with at the use site. The User Supervisor will be responsible for:

- Ensuring that all facilities that serve recycled water are maintained and operated in accordance with the requirements of the General Order and the Operations Plan (see Appendix E)
- Operating and controlling the irrigation systems in a manner to prevent human consumption of recycled water, to control and limit runoff, and to prevent contamination of nearby wells, as applicable
- Ensuring that all personnel are educated in practices and procedures for working with recycled water
- Installing and maintaining signs
- Preventing cross-connection between recycled water facilities and domestic facilities
- Notification, preparation, and submission of reports to MCWD when there are system failures that cause unauthorized discharges
- Preparation of reports to the MCWD as required per the Recycled Water User Permit
- Notifying MCWD of any proposed modifications or additions to facilities for approval

User Supervisors will be given a copy of the General Order and the MCWD User's Handbook, Rules of Service and Operations Plan for guidance on the use of recycled water. The User Supervisors will be required to have these available at all times for inspection by Regional Water Quality Control Board staff, MCWD, or State/County Health Officers.

User: A User is any person to whom the MCWD distributes recycled water, including end users to whom recycled water is conveyed through an intermediate party. All Users will sign a User Agreement (see Appendix B) with MCWD to follow the rules and regulations set forth by MCWD. Additional explanation of these rules and regulations can be found in the Rules of Service (see Appendix D). These rules and regulations include the following:

- User agrees to follow the rules and regulations and any future amendments thereto for the use of Recycled Water set forth by MCWD. User also agrees to comply with the requirements of the General Order.
- User allows access to the use site for inspection to all regulatory agencies, producers, and distributors.
- User of recycled water will be responsible for designating a "User Supervisor".
- User shall use recycled water only for those uses that are legally permissible.
- User shall ensure that their operations and maintenance staff and the User Supervisor shall receive appropriate training.

Users will also receive a User Handbook (see Appendix C) which provides the User with additional information including explanation of recycled water, design and construction of the site facilities, emergency procedures, cross-connection protocol, and tips for successful usage. An Operations Plan (see Appendix E) is also provided to the users which describes operation and necessary maintenance.

4.4 Irrigation

Irrigation Methods - Both drip and spray irrigation are used for application of irrigation water within the MCWD service area. The method of irrigation varies based on plant type and season.

Fertilizer Use - PRW contains no nutrient loading. The MCWD District Supervisor will provide training and information to each User Supervisor on modifying fertilizer use when using recycled water for irrigation.

Irrigation Schedules - In accordance with common local irrigation practices and MCWD conservation ordinance limiting hours of irrigation, irrigation is anticipated to occur between the hours of 9 PM and 6 AM. This element will reduce the potential for the general public to be on the sites at times of irrigation with recycled water. Nighttime public access to the various recycled water use areas will generally be prohibited or extremely limited.

4.5 Use Area Design

This section describes how recycled water use sites will be designed and maintained to comply with all applicable recycled water use criteria and regulations.

Site Containment Measures, Drainage and Ponding Minimization Measures - All recycled water use sites will comply with MCWD recycled water use requirements as well as the requirements of Section 60310 of the California Code of Regulations, Title 22 Recycled Water guidelines. Specifically, all recycled water use sites will:

- Preclude irrigation with recycled water within 50 feet of any domestic supply well
- Confine irrigation runoff to the recycled water use areas
- Ensure that no spray, mist, or runoff enters any dwellings, designated outdoor eating areas, or food handling facilities
- Ensure that all drinking water fountains are protected against contact with recycled water spray, mist or runoff

In addition, irrigation will be performed in a manner that minimizes the ponding of recycled water at the sites. When applicable, the design plans for each use area will identify locations of outdoor drinking fountains, designated outdoor eating areas, domestic supply wells, site grading plans that demonstrate confinement of irrigation runoff, and separation distances from active domestic water supply wells.

There are no expected industrial sources capable of inhibiting or interfering with the wastewater treatment process at the M1W RTP. Therefore, no industrial source control programs have been planned for this project.

Signage - All recycled water use sites that are accessible to the public will be posted with signs conforming to the requirements of Section 60310 (g) of the California Code of Regulations Title 22 Recycled Water guidelines, as well as the signage requirements spelled out in *Section 3 - Recycled Water Transmission and Distribution Facilities*. All signs will be in English and Spanish. In order to notify non-readers and those who speak neither English nor Spanish, all signs will also include a graphic indication that water is non-potable. Signs will be posted at all use areas that are accessible to the public and will be clearly visible to the public. Typical project signage is shown in Figure 4-2. Signs will be at least 4-inches high by 8-inches wide.

In addition, all recycled water piping, equipment and appurtenances will be colored purple and have recycled water signage as described in *Section 3*.

Figure 4-2: Example of Sign on Appurtenances and at Access Points to Parcels Served with Recycled Water



4.6 Minimization of Public Contact

The majority of the recycled water use areas will be accessible to the public. Public contact with recycled water used for irrigation will be avoided mainly due to the fact that irrigation occurs during nighttime and public access during the daytime. In addition, specific signage and use area design as described above will ensure that the public contact with recycled water occurs at no time during irrigation hours.

4.7 Cross-connection Control

Distribution System - The current design does not foresee any planned potable water connections to the MCWD recycled water system other than the back-up potable water connection at the Blackhorse Reservoir. As discussed in *Section 4.10*, this connection will conform to the DDW's air-gap separation requirements. A cross-connection control program that

includes specific, routine monitoring and surveillance procedures to detect potential illegal connections and unapproved recycled water use to be established by MCWD is proposed in *Appendix C* and *Appendix D*. Monitoring will be mainly comprised of observation of the pipeline alignment to detect any illegal connections. Comparing customer meter records to the recycled water and MCWD supply meters will also be used to detect flow imbalances, which could be the indication of a leak or an illegal connection. Cross-connection monitoring activities will be summarized in reports prepared by the MCWD.

Recycled Water Use Site - Inspection and testing of site cross-connections will be the responsibility of User Supervisors. User Supervisors will develop cross-connection control programs at use sites for review by MCWD. In general, potable water connections serving each use area must be protected with an approved reduced pressure principle backflow prevention assembly (BPA). MCWD has adopted rules of service in MCWD Water Code 3.28. MCWD will continue a record keeping system to document and track compliance with the annual backflow device testing requirement.

4.8 Customer On-Site Retrofits

Cross-connection control measures for user sites are detailed in the *Appendix C* and *Appendix D*. In addition, an evaluation of on-site retrofits will be conducted by the MCWD as proposed under *Appendix D*.

4.9 Domestic Water Supply Facilities

One DDW concern is that of overspray of irrigation and uncovered domestic wells. Overspray of wells is not permitted under the water reuse criteria. A minimum irrigation setback of 50 feet is required around uncovered wells that serve a domestic purpose.

There are no known potable water supply wells within 50 feet of any of the facilities identified as recycled water users. Figures 4-3 through 4-9 present the boundaries of the recycled water demand locations relative to local potable water supply wells, and the status of these wells.

The status of the well is listed in the legend, as well data was obtained from Department of Water Resources Water Data Library:

- Domestic: production wells used for irrigation or domestic purposes
- Monitoring: wells used solely for monitoring groundwater level and quality
- Municipal: production wells that are used for domestic, irrigation, and public supply purposes
- Unknown: a known or suspected well location with no available data or information

Figure 4-3: Demand Area Map 1



Figure 4-4: Demand Area Map 2



Figure 4-5: Demand Area Map 3

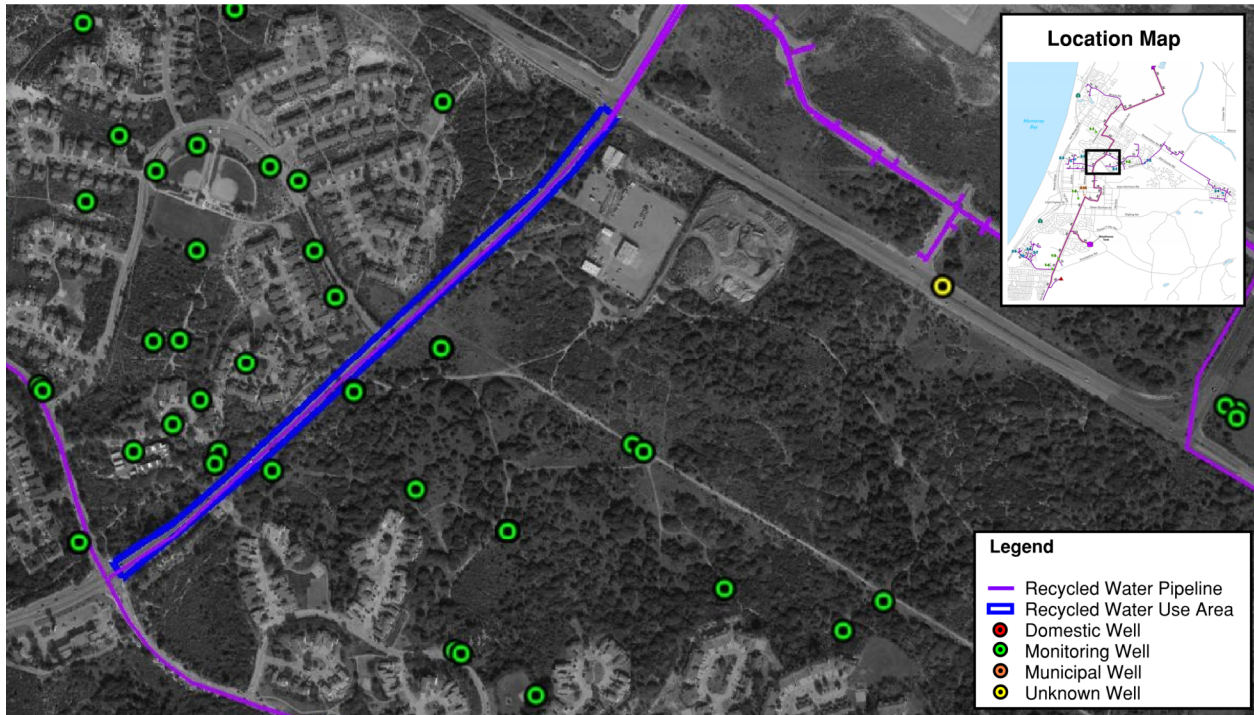


Figure 4-6: Demand Area Map 4

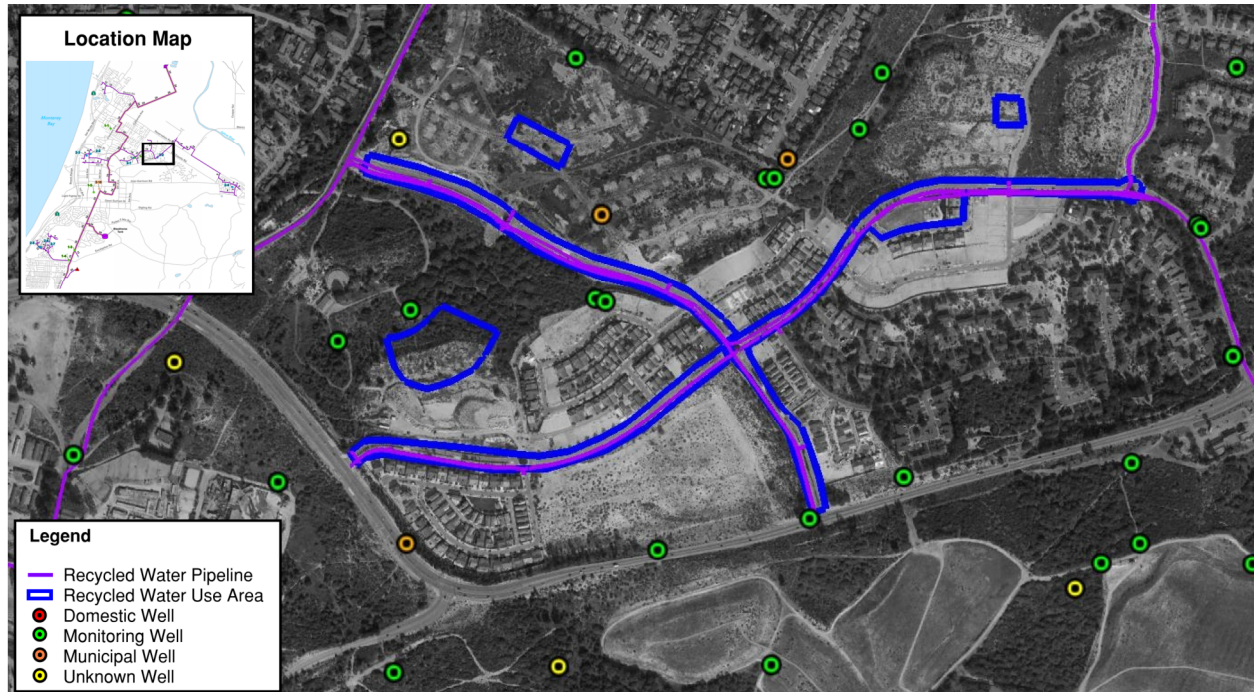


Figure 4-7: Demand Area Map 5

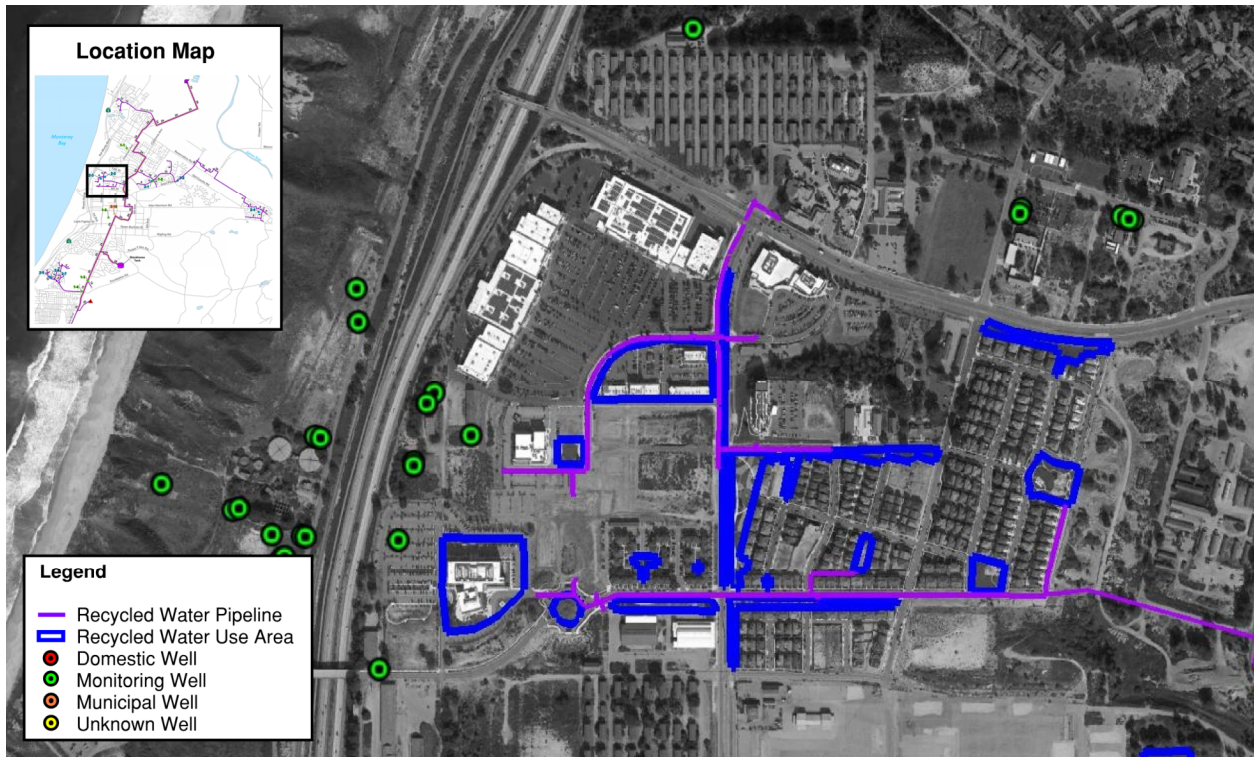


Figure 4-8: Demand Area Map 6

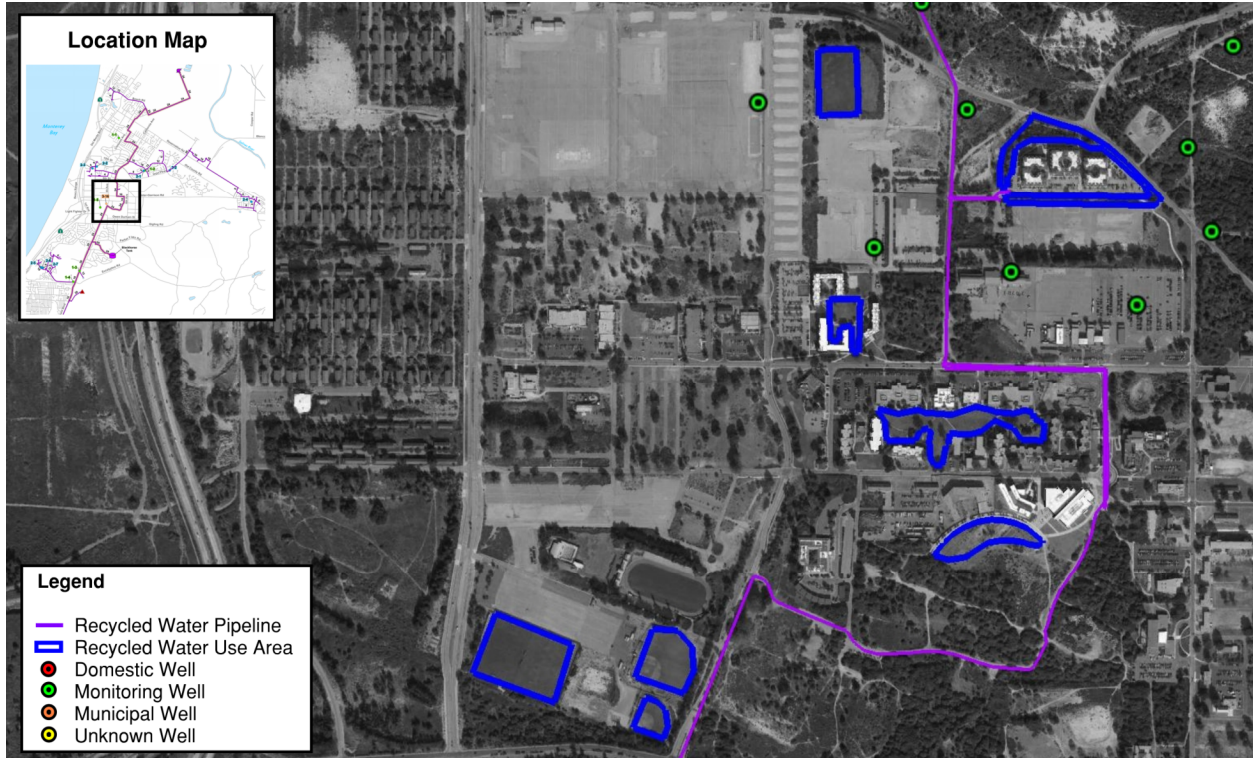
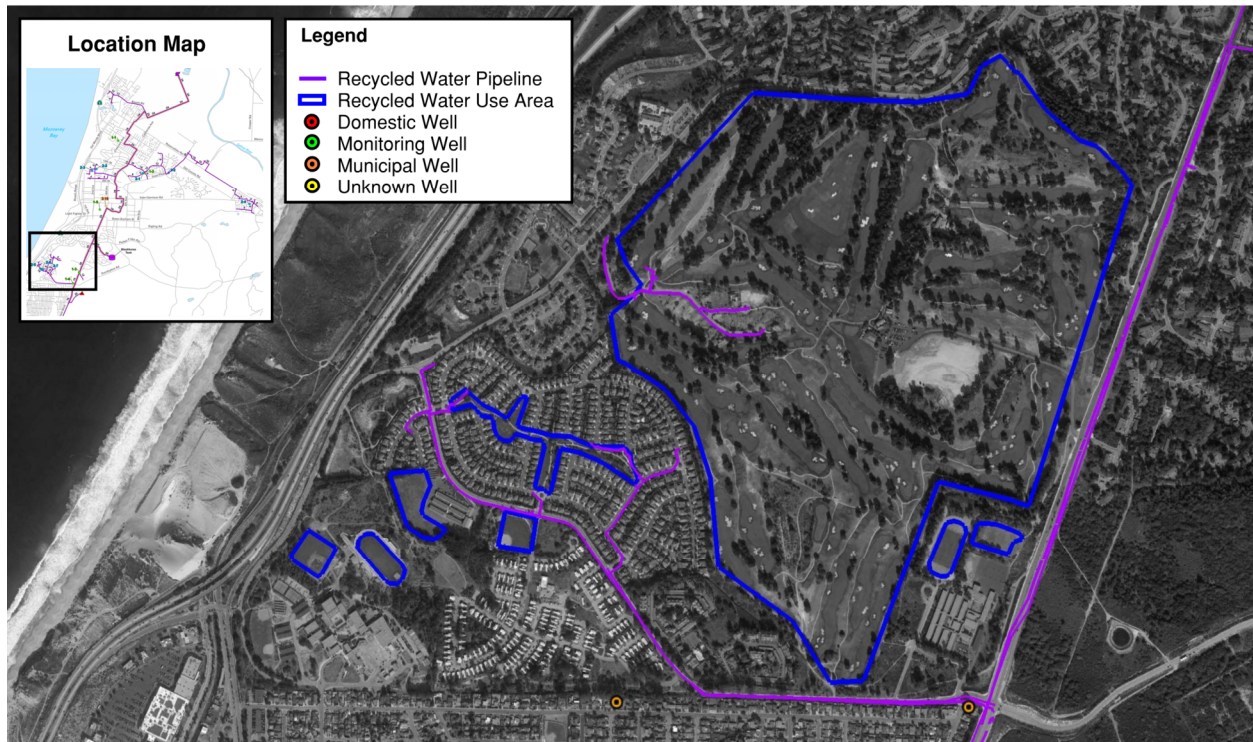


Figure 4-9: Demand Area Map 7



4.10 Impoundments

PRW impoundment will be at the Blackhorse Reservoir, a 2.0 MG aboveground, covered storage tank. Details about reservoir design and construction are provided in *Section 3*. The site of the recycled water reservoir and the adjacent potable water reservoirs will be fenced off to prevent public access. All access gates, tank openings, and manways will be locked to prevent unauthorized access. Apart from maintenance work, no other activities will be allowed on or near the reservoir. The reservoir level will be monitored by an ultrasonic level controller. The Blackhorse Reservoir "floats" on the system, meaning the water level is based on AWPf Pump Station pumping flow rate, injection well demand flow rate, and MCWD customer irrigation demand flow rate. M1W operates and controls flow rates of the AWPf pump station and injection wells. Adjustments in M1W's operation allow the reservoir elevation to increase/decrease, causing flow to go into and out of the reservoir. In the unlikely event that the tank does overflow, the water will be contained by the existing underground storm drain system in place for the potable water reservoirs adjacent to the Blackhorse Reservoir. An air-gap is provided between both the potable and recycled water reservoirs and the storm drain system. The storm drain system ultimately drains to an existing 0.84-acre percolation basin. The percolation basin is used to percolate stormwater runoff from the Blackhorse Reservoir site. Potential overflow from the recycled water storage tank would not affect the groundwater. The percolation basin is sized to capture an overflow rate of 3,042 gpm from MCWD's potable water Zone D-reservoir as well as an infiltration rate of 10 inch per hour. The percolation area will be adequately secured to prevent unauthorized access and marked by appropriate signage. A map of the reservoir site and the percolation basin is attached in *Appendix F*.

Design, construction and operation of the reservoir site shall comply with the requirements identified in the DDW' Guidance Memorandum titled "Potable/Recycled Water Reservoir Separation" dated December 21, 2001.

4.11 Use Area Testing, Inspections, and Monitoring

4.11.1 Construction Inspections and Testing During System Start-up

MCWD and its contractors will be responsible for construction inspections of the MCWD owned system to ensure that new construction meets the criteria for recycled water systems. Construction inspections will be conducted with sufficient frequency to verify compliance with the approved design drawings. Following cross connection control testing by the customer, a final inspection of retrofitted and new facilities will be conducted by MCWD (and its contractors). The final inspection will make certain that the system is in compliance with the requirements of CCR Title 22 and the Statewide General Order Water Reclamation Requirements for Recycled Water Use (General Order, Order WQ 2016-0068-DDW), including requirements for system identification, signage, backflow installations, and site containment. As part of the final inspection process, cross-connection tests will be conducted to verify system separation in accordance with all applicable guidelines. On-site cross-connection tests will be conducted by the customer / owner prior to activating recycled water service to confirm separation of on-site domestic facilities and the recycled water system.

4.11.2 On-going Inspections and Testing

MCWD, as Distributor, will assume the Users' responsibility for preparing reports to the RWQCB regarding use area observations. MCWD field operators will monitor the use areas on an annual basis to ensure compliance with the requirements of the General Order. On-site observation reports will be prepared by MCWD field operators for violations that do not endanger health or the environment. In the event that a non-compliance event is discovered by the User Supervisors, they will immediately contact MCWD. In the event of a non-compliance event that may endanger health or the environment, MCWD will verbally notify the RWQCB and DDW within 24 hours. Upon RWQCB or DDW staff request, a written report will be submitted and will contain a description of the non-compliance event, its cause, and any corrective actions taken. Cross connection control tests will occur every four years, unless the building is dual plumbed, in which case it will occur annually.

MCWD will submit an annual report to the RWQCB presenting:

- Recycled water use data (e.g., total system flow and total requested flow)
- On-site observation reports
- Annual testing of backflow assemblies
- Annual cross-connection inspections, once in 4-year testing
- Modifications to the distribution system
- Non-compliance events

MCWD will carefully monitor locations at use areas where problems are likely to occur. User Supervisors will be educated by MCWD concerning potential problems and measures for preventing them.

4.11.3 Monitoring and Reporting Responsibilities

MCWD will be responsible for monitoring and reporting activities as outlined in the requirements of the General Order. MCWD will regularly monitor use area conditions and will also rely on User Supervisors to notify MCWD of any violations of permit conditions. MCWD will be responsible for annual reporting to the Regional Water Quality Control Board (RWQCB).

4.12 Employee Training

MCWD - MCWD will identify a District Supervisor who will oversee all programs and facilities related to the use of recycled water at MCWD. MCWD will also identify one or more back-up District Supervisors in the event that the primary District Supervisor is unavailable. The District Supervisor and back-up Supervisor(s) will be trained as outlined in *Section 4.3*. In addition, at least one MCWD staff person will be trained to meet the certification requirements set forth by the California Water Code, the AWWA California-Nevada Section's "Guidelines for the On-Site Retrofit of Facilities Using Disinfected Tertiary Recycled Water," and the California-Nevada Section's recommended cross-connection (shutdown) testing procedures.

Use Area Employees - As outlined in *Section 4.3*, each use site will have an appointed User Supervisor who will also be in charge of training other site employees. MCWD will provide training to the User Supervisor on an annual basis.

4.13 Future Recycled Water Users

Current anticipated recycled water use areas are shown in Figure 4-1 and listed in Table 4.4. These use areas account for the current project demand of 600 AFY. However, it is anticipated that the ultimate RWP capacity will be higher than the initial capacity of 600 AFY and up to 1,727 AFY. As mentioned earlier, the project components owned and operated by MCWD are already designed to accommodate this potential future demand. The M1W PRW plant will have to be expanded before the distribution system can provide the ultimate capacity.

In general, it is anticipated that potential future recycled water uses will be for irrigation purposes only (landscaping, play fields, and golf courses).

MCWD will ensure that all future recycled water use sites that are connected to the proposed RWP will comply with all the requirements set forth in this Title 22 Engineering Report, and that the report will be modified to address these new users, as needed.

Future anticipated recycled water use areas as shown in Figure 4-10 and listed in Tables 4.5. Additional potential recycled water users are shown in Figure 4.6.

Table 4.5: Future Anticipated Recycled Water Users

Customer ID	Customer Name	Use Location	Use Type	Delivery Information				
				Estimated Annual Usage ¹ (afy)	Maximum Daily Usage ² (gpd)	Delivery Time ³ (hours)	Estimated Delivery Flow (gpd) (gpm)	
3-1	Crumpton School	Marina	Play Field	12.9	28,849	9	76,930	53
3-2	Marina Vista School	Marina	Play Field	11.0	24,552	9	65,473	45
3-3	Olson School	Marina	Play Field	7.7	17,187	9	45,831	32
3-4	Reservation Road Medians	Marina	Landscape	3.0	6,748	9	17,994	12
3-5	Marina Landing Shopping	Marina	Landscape	4.7	10,543	9	28,115	20
3-6	Tate Park	Marina	Play Field	6.9	15,345	9	40,920	28
3-7	Windy Hill Park	Marina	Play Field	4.7	10,435	9	27,826	19
3-8	Marina Heights Development	Marina - Fort Ord	Landscape	173.4	386,884	9	1,031,692	716
3-9	Preston Park	Marina - Fort Ord	Landscape/Play Field	19.6	43,843	9	116,915	81
3-10	Future High School	Marina - Fort Ord	Play Field	44.0	98,209	9	261,891	182
3-11	Dunes on Monterey Bay	Marina - Fort Ord	Landscape/Play Field	37.2	83,114	9	221,638	154
3-12	Equestrian Center	Marina - Fort Ord	Landscape	10.0	22,318	9	59,513	41
3-13	Future Elementary School	Marina - Fort Ord	Play Field	13.8	30,690	9	81,841	57
3-14	CSUMB East Campus	CSUMB	Play field	52.3	116,623	9	310,996	216
3-15	CSUMB - Main Campus	CSUMB	Play field	151.2	337,542	9	900,113	625
3-16	CSUMB - Other	CSUMB	Landscape	37.8	84,345	9	224,921	156
3-17	UCMBEST	UCMBEST	Landscape	58.6	130,735	9	348,628	242
3-18	Veteran's Cemetery -- PHASE 1	Seaside/Monterey County	Cemetery	42.5	94,889	9	253,036	176
3-19	Parkway/Visitor/Retail Areas	Seaside	Landscape	52.9	118,084	9	314,890	219
3-20	Shea's Gym Athletic Field	Seaside	Landscape/Play Field	8.3	18,414	9	49,105	34
3-21	Stilwell Housing Area	Seaside	Landscape	47.2	105,432	9	281,151	195
3-22	Stilwell School	Seaside	Play Field	5.5	12,276	9	32,736	23
3-23	Marshall School	Seaside	Play Field	5.5	12,276	9	32,736	23
3-24	Chartwell School	Seaside	Play Field	5.5	12,276	9	32,736	23
Subtotal - Tier 3				816.2	1,821,611	9	4,857,629	3,373
Cumulative Recycled Water Demands								
Tier 1 & 2 Subtotal				879.6	1,963,104		5,234,944	3,635
Total - Tier 1, 2, & 3				1,695.9	3,784,715		10,092,573	7,009



3/4/2019

Source: 2019 Draft Final Recycled Water Master Plan

Table 4.5: Future Potential Recycled Water Users

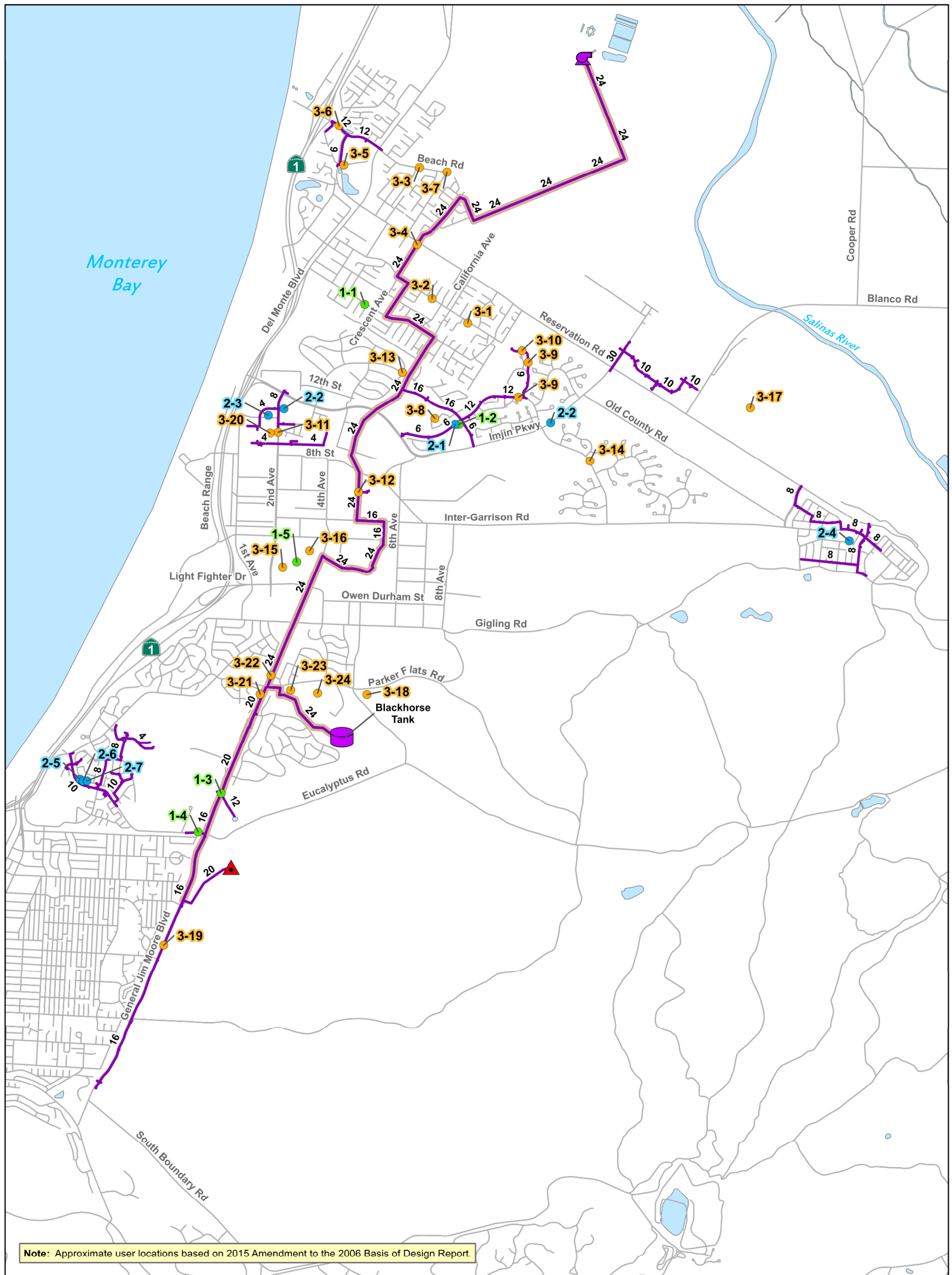
Customer Name	Use Location	Use Type	Estimated Annual Usage ¹ (afy)	Maximum Daily Usage ² (gpd)	Delivery Information		
					Delivery Time ³ (hours)	Estimated Delivery Flow (gpd) (gpm)	
2030 Customers							
Library	Marina	Landscape	1.0	2,232	9	5,951	4
Del Mar School	Marina	Play Field	8.0	17,800	9	47,468	33
Locke Paddon Park	Marina	Landscape	1.0	2,232	9	5,951	4
Vince Di Maggio Park	Marina	Landscape	10.4	23,195	9	61,853	43
Median Landscaping	Marina	Landscape	2.8	6,326	9	16,869	12
Marina Station	Marina	Landscape	39.7	88,563	9	236,167	164
Cypress Knolls	Marina - Fort Ord	Landscape	9.4	21,086	9	56,230	39
Patton School	Marina - Fort Ord	Play Field	11.0	24,552	9	65,473	45
First Tee Golf Course	Seaside	Golf Course	209.2	466,820	9	1,244,854	864
Del Rey Oaks Golf Course	Del Rey Oaks	Golf Course	305.0	680,618	9	1,814,983	1,260
MPC Training Center	Monterey County	Landscape	21.6	48,288	9	128,767	89
Monterey Horse Park	Monterey County	Landscape	75.6	168,691	9	449,842	312
Youth Camp	Monterey County	Play Field	30.3	67,519	9	180,050	125
Subtotal - Tier 4 (2030)			725.0	1,617,922		4,314,459	2,996
2035 Customers							
Marina Golf Course	Marina - Fort Ord	Golf Course	243.8	544,163	9	1,451,102	1,008
UCMBEST	UCMBEST	Landscape	68.8	153,452	9	409,205	284
State Park Wetlands	State Parks	Landscape	4.7	10,543	9	28,115	20
Future Parks	Army	Landscape	37.8	84,345	9	224,921	156
Subtotal - Tier 4 (2035)			355.1	792,504		2,113,343	1,468
Cumulative Recycled Water Demands							
Tier 1, 2, & 3 Subtotal			1,695.9	3,784,715		10,092,573	7,009
Total - Tier 1, 2, 3, & 4			2,775.9	6,195,141		16,520,376	11,472



3/4/2019

Source: 2019 Draft Final Recycled Water Master Plan

Figure 4-10: Future Recycled Water User Map



Note: Approximate user locations based on 2015 Amendment to the 2006 Basis of Design Report.

Legend

- Tier 1 Users
 - Tier 2 Users
 - Tier 3 Users
 - ▲ Planned Groundwater Recharge Location
- Existing Modeled System**
- Tank
 - AWTF Pump Station
 - Pipes
 - PWM Transmission Main
- Streets
 - Rivers/Streams
 - Waterbodies

Update: September 4, 2019 1 Mile

Future Users

Recycled Water Master Plan
Marina Coast Water District



Source: 2019 Draft Final Recycled Water Master Plan

Note: User Tiers are estimates of when users are anticipated to come online, with Tier 1 being first.

MCWD Recycled Water Project



Appendix A Interagency Agreement Version 1

April 1, 2019

Summary of Included Agreements:

- 1. MOW - MCWD Agreement**
- 2. MOW - MCWD Amendment to Agreement**
- 3. MOW - MCWD Conformed Agreement**

1. MOW - MCWD Agreement

**Pure Water Delivery and Supply Project Agreement Between
Monterey Regional Water Pollution Control Agency and
Marina Coast Water District**



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THIS PURE WATER DELIVERY AND SUPPLY PROJECT [hereinafter referred to as “Agreement”] is made this 8th day of April, 2016 (“Effective Date”), by and between Monterey Regional Water Pollution Control Agency (“PCA”) and Marina Coast Water District (“MCWD”), hereinafter “Parties.”

The PCA was formed as a California Joint Powers Agency by a Joint Exercise of Powers Agreement for the Monterey Regional Water Pollution Control Agency, effective June 29, 1979. The MCWD is a County Water District and political subdivision of the State of California, organized under Division 12, sections 30000 and following, of the California Water Code.

WITNESSETH

WHEREAS, the 1997 Fort Ord Base Reuse Plan (BRP) identifies the availability of water as a resource constraint and the BRP estimates that an additional 2,400 AFY of water is needed to augment the existing groundwater supply to achieve the permitted development level as reflected in the BRP (Volume 3, figure PFIP 2-7); and,

WHEREAS, the Fort Ord Reuse Authority (“FORA”) transferred ownership of all of the then existing Fort Ord water and sewer facilities to the Marina Coast Water District (“MCWD”) under the 1998 Water/Wastewater Facilities Agreement; title was transferred in 2001; and,

WHEREAS, under Section 3.2.2 of the 1998 Water/Wastewater Facilities Agreement, FORA has the responsibility to determine, in consultation with MCWD, what additional water and sewer facilities are necessary for MCWD’s Ord Community service area in order to meet the BRP requirements, and that, once FORA determines that additional water supply and/or sewer conveyance capacity is needed, under Section 3.2.1, it is MCWD’s responsibility to plan, design, and construct such additional water and sewer facilities. Section 7.1.2 requires FORA to insure that MCWD recovers all of its costs for the new facilities and their operation; and,

WHEREAS, in 2002, MCWD, in cooperation with FORA, initiated the Regional Urban Water Augmentation Project (RUWAP) to explore water supply alternatives to provide the additional 2,400 AFY of water supply needed under the BRP; and

WHEREAS, as a result of an extensive environmental review, FORA and MCWD agreed to adopt a modified Hybrid Alternative, which would provide 1,427 AFY of recycled water to the Ord Community without the need for seasonal storage, and this in turn resulted in the FORA Board adopting Resolution 07-10 (May 2007), which allocated that 1,427 AFY of RUWAP recycled water to its member agencies having land use jurisdiction; and

WHEREAS, in June 2009, PCA and MCWD entered into a 50-year RUWAP Memorandum of Understanding, in which, subject to certain conditions specified therein, (a) PCA committed 650 AFY of summer recycled water to MCWD for the Ord Community; (b) MCWD affirmed its separate commitment of 300 AFY of summer recycled water to the Ord Community; and (c) PCA and MCWD committed to supply 477 AFY of recycled water during other months to the Ord Community - for a total of 1,427 AFY; and

WHEREAS, MCWD has been and continues to work collaboratively with FORA and with the PCA to carry out MCWD’s obligation to provide the 1,427 AFY of recycled water for the Ord Community; and

WHEREAS, on May 31, 2013, PCA commenced environmental review of its Pure Water Monterey Groundwater Replenishment Project (“Pure Water Monterey Project”). The Pure Water Monterey Project is a water supply project that would serve northern Monterey County by providing: (1) purified recycled water for recharge of a groundwater basin that serves as drinking water supply; and (2) recycled water to augment the existing Castroville Seawater Intrusion Project’s agricultural irrigation supply. The Pure Water Monterey Project includes a pipeline to transport purified recycled water from a new Advanced Water Treatment Plant (“AWT”) at PCA’s Regional Treatment Plant to new Injection Well Facilities overlying the Seaside Groundwater Basin (“Product Water Conveyance Pipeline”). The Environmental Impact Report (“EIR”) for the Pure Water Monterey Project evaluated two alternative alignments for the Product Water Conveyance Pipeline, a Coastal Alignment and an alignment that follows the right-of-way for the existing and future RUWAP pipeline (“RUWAP Alignment”). The Pure Water Monterey Project EIR identified the environmental effects of constructing the Product Water Conveyance Pipeline along the RUWAP Alignment, and operating the Product Water Conveyance Pipeline for the Pure Water Monterey Project; however the EIR recognized that shared use of a single Product Water Conveyance Pipeline for both the Pure Water Monterey Project and to supply recycled water to MCWD for the RUWAP would necessitate further review under the California Environmental Quality Act (“CEQA”). Shared use of a single Product Water Conveyance Pipeline would necessitate expansion of the Advanced Water Treatment Plant in order to purify the recycled water destined for the RUWAP because all water flowing in the shared pipeline must be purified; by contrast if water to serve the RUWAP were conveyed in its own separate pipeline only tertiary treatment would be needed; and

WHEREAS, on September 8, 2015, MWCD and PCA tentatively agreed to work together on the Pure Water Monterey Project; and

WHEREAS, on October 8, 2015, the PCA Board unanimously voted to certify the EIR for the Pure Water Monterey Project and to approve the Pure Water Monterey Project. The PCA Board selected the RUWAP Alignment for the Product Water Conveyance Pipeline.

WHEREAS, on October 9, 2015, the FORA Board unanimously voted to adopt a resolution to endorse the Pure Water Monterey Project as an acceptable option as the recycled component of the RUWAP and, as part of the Pure Water Monterey Project implementation, the FORA Board will review and consider project component costs and scheduling through annual consideration of the FORA CIP and Ord Community Budgets.

NOW, THEREFORE, for and in reliance of the foregoing, the Parties hereby agree as follows:

DEFINITIONS

For the purposes of this Agreement, the following definitions are provided:

- A. The term "Annexation Agreements" refers to the Annexation Agreement between MCWD and PCA dated April 25, 1989, and the Annexation Agreement between MCWD and WRA dated March 26, 1996. The individual Annexation Agreements are referenced herein by their respective dates.
- B. The term “AWT” or “AWT Facilities” or “Advanced Water Treatment Facilities” means the Advanced Water Treatment facilities as shown in Exhibit B at the PCA Regional Treatment Plant

for the Pure Water Monterey Project and includes the AWT-PCA, AWT Phase 1, and the AWT Phase 2. The AWT Facilities includes that segment of new pipeline shown on Exhibit B and located within the existing property lines of the Regional Treatment Plant property.

- C. The term “AWT Capacity Entitlement” shall mean the entitlement to the plant treatment capacity of the AWT which a Party has the right to use under this Agreement.
- D. The term “AWT-PCA” shall mean construction and operation of an advanced water treatment plant sized to produce 3,700 AFY of purified recycled water to deliver to the Seaside Groundwater Basin for the Pure Water Monterey Project as approved by the PCA Board in its Resolution Number 2015-24 on October 8, 2015 as part of the “Pure Water Monterey Project”.
- E. The term “AWT Phase 1” shall mean construction and operation of an expansion to the AWT-PCA to produce an additional 600 AFY of purified recycled water to deliver to the FORA land use jurisdiction members in addition to the 3,700 AFY of purified recycled water from the AWT-PCA to deliver to the Seaside Groundwater Basin, for a total production of purified recycled water of from the AWT Phase 1 of 4,300 AFY.
- F. The term “AWT Phase 2” shall mean construction and operation of an expansion to the AWT-PCA to produce an additional 827 AFY for a total of 1,427 AFY of purified recycled water to deliver to the FORA land use jurisdiction members in addition to the 3,700 AFY of purified recycled water from the AWT-PCA to deliver to the Seaside Groundwater Basin, for a total production of purified recycled water from the AWT Phase 2 of 5,127 AFY.
- G. The term “Drought Reserve” shall refer to storage of up to 1,000 acre-feet of water for potential use during a drought. During wet or normal water years, about 50% of the years, an additional 200 AFY may be conveyed through the Pipeline Facilities and injected in the winter months to develop the Drought Reserve, thereby increasing PCA’s use of the Pipeline Facilities to 3,700 AFY.
- H. The term “Existing Pipeline Facilities” shall be the existing recycled water pipeline (and appurtenances) constructed by MCWD and rights-of-ways, which will become part of the Product Water Conveyance Facilities as shown in Exhibit C.
- I. The term “Injection Well Facilities” shall mean collectively the Injection Well Facilities, turnouts, diversions and lateral pipelines connected to and beyond the Product Water Conveyance Facilities as shown in Exhibit C.
- J. The term “New Pipeline Facilities” shall mean the new recycled water pipeline sections (and appurtenances), booster plant, and rights-of-ways to convey purified recycled water as shown in Exhibit C which will become a part of the Product Water Conveyance Facilities. The beginning and ending points of the “New Pipeline Facilities” are shown in Exhibits A and C, respectively.
- K. The term “Parties” or “Both Parties” shall mean MCWD and PCA and their respective Boards.
- L. The term “Pipeline Facilities Entitlement” shall mean the entitlement to the capacity of the Pipeline Facilities which a Party has the right to use under this Agreement.
- M. The term “Product Water Conveyance Facilities”, “Pipeline Facilities”, and “RUWAP Conveyance Facilities” shall mean collectively the New Pipeline Facilities and the Existing Pipeline Facilities as shown in Exhibits C.

- N. The term “Pure Water Monterey Project” shall mean the full project that the PCA Board approved in its Resolution Number 2015-24 on October 8, 2015 including construction and operation of all source water facilities, Product Water Conveyance Facilities, AWT-PCA and other improvements to the Regional Treatment Plant, and Cal Am Distribution System Improvements described in such resolution and in the EIR for the Pure Water Monterey Project.
- O. The term “Pure Water Delivery and Supply Project Facilities” or “Project Facilities” shall mean collectively the AWT and the Product Water Conveyance Pipeline Facilities, as generally shown in Exhibit A. The term “Project Facilities components” shall refer severally to the AWT Facilities and the Pipeline Facilities. The Pure Water Delivery and Supply Project Facilities, as defined by this Agreement is a subset of certain components of the Pure Water Monterey Project and RUWAP Recycled Water Project including expansion of the AWT to implement this Agreement.
- P. The terms "reclaimed water", "reclaimed wastewater", and "recycled water" shall mean purified recycled water.
- Q. The term “RUWAP Distribution Facilities” shall mean those facilities connected to the Product Water Conveyance Facilities, which will be used to distribute MCWD’s recycled water to MCWD’s customers. The RUWAP Distribution Facilities are not a Project Facilities component.
- R. The term “RUWAP Recycled Project” shall mean the urban recycled water portion of the Regional Urban Water Augmentation Project (RUWAP) approved by the MCWD and FORA Boards. In 2002, MCWD, in cooperation with FORA, initiated the Regional Urban Water Augmentation Project (RUWAP) to explore water supply alternatives to provide an additional 2,400 AFY of water supply needed under the Base Reuse Plan. As a result of an extensive environmental review, FORA and MCWD agreed to adopt a modified Hybrid Alternative, which would provide 1,427 AFY of recycled water to the Ord Community without the need for seasonal storage, and this in turn resulted in the FORA Board adopting Resolution 07-10 (May 2007), which allocated that 1,427 AFY to its member agencies having land use jurisdiction. As a result of the Pure Water Monterey Project, the RUWAP Recycled Project includes MCWD’s Pipeline Facilities Entitlement, the RUWAP Distribution Facilities, and MCWD’s AWT Capacity Entitlement under this Agreement.
- S. The term “Source Water Facilities” shall mean the diversion facilities as approved in the “Pure Water Monterey Project” by the PCA Board in its Resolution Number 2015-24 on October 8, 2015.
- T. The term “summer months” shall mean the months of May, June, July, August, and September.

I. DESIGN, ENVIRONMENTAL, RIGHT-OF-WAY, AND CONSTRUCTION

1.01 California Environmental Quality Act Compliance and Other Conditions

- (a) Conditions Precedent and Drop Dead Dates: Nothing in this Agreement, except Section 1.01 (b), shall be deemed to constitute a binding obligation on either Party unless and until all of the following have occurred first:
- i. New Pipeline Facilities: MCWD must complete any necessary CEQA review for any change in the location of the New Pipeline Facilities as compared to the location of the

- pipeline facilities as shown the EIR for the Pure Water Monterey Project by October 31, 2016. Further, upon completion of any such CEQA review, before this Agreement can take effect, MCWD and PCA must approve the change in location of the New Pipeline Facilities. In conducting the CEQA review, MCWD reserves all of its rights, powers and discretion with regard to any such change in location in pipeline facilities. This includes the authority to adopt mitigation measures and/or an alternative project design, configuration, capacity or location in order to reduce any identified significant environmental impacts; the authority to deny the change in location of pipeline facilities based on any significant environmental impact that cannot be mitigated (in which case this Agreement shall not take effect); and the authority to approve the change in location of pipeline facilities notwithstanding any significant environmental impact that cannot be mitigated, if MCWD determines that these impacts are outweighed by the project's social, economic or other benefits. PCA similarly reserves all of its rights, powers and discretion under CEQA with regard to any decision by PCA on whether and how to approve any change in location in pipeline facilities.
- ii. AWT: PCA must complete any necessary CEQA review for AWT Phase 1 and AWT Phase 2 by October 31, 2016. In conducting the CEQA review, PCA reserves all of its rights, powers and discretion with regard to the expansion of the AWT. This includes the authority to adopt mitigation measures and/or an alternative project design, configuration, capacity or location in order to reduce any identified significant environmental impacts; the authority to deny the expansion of the AWT based on any significant environmental impact that cannot be mitigated (in which case this Agreement shall not take effect); and the authority to approve the expansion of the AWT notwithstanding any significant environmental impact that cannot be mitigated, if PCA determines that these impacts are outweighed by the project's social, economic or other benefits. MCWD similarly reserves all of its rights, powers and discretion under CEQA with regard to any decision by MCWD on whether and how to approve any expansion of the AWT.
 - iii. There must be no CEQA lawsuits challenging any of the Parties' approvals with respect to any change in the location of the New Pipeline Facilities or with respect to the AWT Phase 1 or AWT Phase 2; if any such lawsuits are filed, all such lawsuits must be favorably resolved to the satisfaction of both PCA and MCWD.
 - iv. All necessary regulatory approvals must be obtained for the Pure Water Monterey Project, AWT, and the New Pipeline Facilities including regulatory approvals required for any change in the location of the New Pipeline Facilities as compared to the location evaluated in the EIR for the Pure Water Monterey Project by October 31, 2016.
 - v. Funding must be secured by December 31, 2016 for the Pure Water Monterey Project and the RUWAP Distribution Facilities, including for any change in the location of the New Pipeline Facilities as compared to the location evaluated in the EIR for the Pure Water Monterey Project, for AWT Phase 1, and for the CEQA work for AWT Phase 2; provided, however, that this funding is not required for the completed design and construction of AWT Phase 2 for the provisions of this Agreement to take effect with regard to implementation of Phase 1.
 - vi. All source water must be approved for the Pure Water Monterey Project, except for Lake El Estero and Tembladero Slough by October 31, 2016.
 - vii. All approvals must be obtained from the California Public Utilities Commission for the

water purchase agreement under which Cal Am agrees to buy 3,500 acre-feet of water per year from the Pure Water Monterey Project by October 31, 2016.

(b) Key Dates and Conditions for Future Negotiations.

- i. If the Division of Financial Services of the State Water Resource Control Board fails to approve PCA's SRF loan Initial Funding Agreement by October 31, 2016, then MCWD and PCA agree to negotiate in good faith alternatives for providing recycled water (tertiary or purified) for potential customers.
- ii. If the Division of Financial Services of the State Water Resource Control Board approves PCA's initial funding agreement, then if the Division of Financial Services of the State Water Resource Control Board fails to approve MCWD's State Revolving Fund (SRF) loan Initial Funding Agreement and/or MCWD passes a Board resolution to discontinue work on the project by October 31, 2016, then MCWD shall transfer all work product (e.g. right-of-way, design, survey, environmental, bid documents, etc.) to PCA so PCA can continue progressing with the project. If the Division of Financial Services of the State Water Resource Control Board approves PCA's State Revolving Fund (SRF) Loan Final Funding Agreement but denies MCWD's State Revolving Fund (SRF) Loan Final Funding Agreement and MCWD does not identify alternate financing by December 31, 2016, MCWD shall transfer all work product to PCA for financing and constructing the New Pipeline Facilities.
 - a. PCA will pay MCWD for all project expenditures on any work products transferred (e.g. right-of-way, design, survey, environmental, and bid document development).
 - b. In the event that PCA assumes responsibility for the financing and construction of the product water conveyance facilities, MCWD would continue to maintain ownership of the Product Water Conveyance Facilities per 2.06 of this agreement, and would assume ownership upon satisfactory demonstration of no additional financial impact to PCA for providing the financing to construct the Product Water Conveyance Facilities.
- iii. If the Division of Financial Services awards PCA an interest rate that is lower than the interest rate awarded to MCWD and MCWD does not receive grant or other funds that could be applied to the New Pipeline Facilities that would reduce PCA's share of the New Pipeline Facilities cost by approximately the same amount as the difference in cost from MCWD's higher interest rate, then MCWD and PCA agree to negotiate in good faith alternatives for financing and constructing the New Pipeline Facilities.

1.02 MCWD's Obligations.

MCWD will fulfill the following obligations relating to the New Pipeline Facilities:

- (a) MCWD will be responsible for acquiring all rights-of-way needed for the New Pipeline Facilities.
- (b) MCWD will conduct any necessary CEQA review for the New Pipeline Facilities.
- (c) MCWD will complete the design and contract documents for the construction of the New Pipeline Facilities.
- (d) MCWD will finance, construct, and install the New Pipeline Facilities in substantial conformity

with designs and plans approved by the Parties in writing. MCWD will put the New Pipeline Facilities out to bid and administer the construction contract.

1.03. PCA's Obligations.

PCA will fulfill the following obligations relating to the AWT Facilities:

- (a) PCA will conduct any necessary CEQA review for the AWT including Phase 1 and Phase 2.
- (b) PCA will finance, construct, and install the AWT Phase 1, in substantial conformity with designs and plans approved by the Parties in writing. PCA will put the AWT Phase 1 out to bid, and administer the construction contract(s).
- (c) PCA will complete the design and contract documents for the AWT Phase 1.
- (d) PCA will provide, and MCWD shall have, an AWT Capacity Entitlement of 600 AFY of purified recycled water from the AWT Phase 1 facilities.
- (e) PCA will provide, and MCWD shall have, an AWT Capacity Entitlement of an additional 827 AFY of purified recycled water from the AWT Phase 2 for a total AWT Capacity Entitlement in the AWT facilities of 1,427 AFY.
- (f) Up until MCWD exercises its option for the AWT Phase 2 facilities, MCWD shall have the continuing right to 827 AFY of tertiary water as set forth in the Annexation Agreements and the 2009 RUWAP MOU (1,427 AFY less the 600 AFY of recycled water provided in the AWT Phase 1 facility). It is not intended or implied that this water would be used in the same pipeline as the advanced treated water.

1.04. Change Orders.

- (a) Change orders must be approved in writing.
- (b) Any change order or related set of change orders that increases the Pure Water Delivery and Supply Project Facilities cost by \$100,000 or more shall require the written consent of both parties within 30 days of presentation.
- (c) Any change order or related set of change orders that increases the Pure Water Delivery and Supply Project Facilities cost by less than \$100,000 or that lowers the Pure Water Delivery and Supply Project Facilities cost may be approved by the party designated herein to administer the contract, without the consent of the other party, except that a copy of any proposed or executed change order shall promptly be provided to the other party as soon as it is available. The contract administrator party shall not split up change order work so that approval of the combined change order work by the other party is not required.
- (d) Each party's contract administrator shall be authorized to give consent to change orders for that party. Neither party's consent to a change order will be unreasonably withheld or delayed.
- (e) This Change Orders section shall apply separately to the AWT and Product Water Conveyance Facilities. This section shall no longer apply to a component of the Pure Water Delivery and Supply Project Facilities on the date that the parties agree in writing that that such component has been completed and is ready to be used.

1.05. Project Schedule Cooperation between agencies.

- (a) Subject to the terms and conditions of this Agreement, PCA and MCWD shall work cooperatively and with diligence to obtain all permits, approvals, and financing to construct the Pure Water Delivery and Supply Project Facilities.
- (b) Both parties will develop an implementation schedule. Representatives of the parties will meet on a monthly basis, or more often if necessary, in order to ensure that the Pure Water Delivery and Supply Project Facilities are proceeding according to the schedule and in conformity with this contract and the approved plans and designs. Each party will make every reasonable effort to fulfill its obligations in a timely manner to meet the projects milestones and deadlines.

1.06. Right to inspect.

- (a) Each party shall have the right to inspect the Pure Water Delivery and Supply Project Facilities, while under construction and at any time thereafter during the term of this contract, upon the giving of reasonable advance notice to the party administering the construction contract. Such inspections may take place at any time during the day or night; however, night time inspections will not take place without at least one week's notice, except in case of emergency or by agreement between the parties.
- (b) Each party shall have the sole right to direct the construction work that such party is responsible to implement and the work of each party's own employees. Each party's right to inspect is for the purpose of observation only and not for the purpose of supervision of the work observed.

1.07. Ocean Outfall.

Nothing in this Agreement changes past agreements between the Parties to meet and confer in good faith to evaluate the environmental, technical, managerial, and financial feasibility of a project to use the Regional Treatment Plant outfall to transport and discharge brine byproduct from a future water desalination facility.

**II. PURE WATER DELIVERY AND SUPPLY PROJECT FACILITIES
DESCRIPTION, OWNERSHIP, OPERATIONS, AND MAINTENANCE**

2.01. Location and Description of the Pure Water Delivery and Supply Project Facilities.

The Pure Water Delivery and Supply Project Facilities are shown generally in Exhibit A, attached hereto and made a part hereof and consist of the following sections:

- AWT (Exhibit B)
- New Pipeline Facilities (Exhibit C)
- Existing Pipeline Facilities (Exhibit C)

2.02. AWT Phase 1

The AWT Phase 1 shall be sized to produce a minimum of 600 AFY of purified recycled water with the ability to produce a maximum day demand of 1.37 MGD for MCWD and in addition to produce a minimum of 3,700 AFY of purified recycled water with the ability to produce a maximum day demand of 4.0 MGD for the Pure Water Monterey Project.

2.03. Product Water Conveyance Facilities

- (a) The New and Existing Pipeline Facilities will have a minimum total conveyance capacity of

5,127 AFY.

- (b) PCA is prohibited from providing water to any customer within any MCWD service area through the use of any Pure Water Monterey Project Facility, either directly or through a third party, unless approved and authorized in writing by the MCWD Board of Directors. PCA agrees that it shall not authorize any third party to use any Pure Water Monterey Project Facility to serve water to any customer within any MCWD service area unless approved and authorized in writing by the MCWD Board of Directors.

2.04. Reserved

2.05. Future Expansion of Facilities (AWT Phase 2)

- (a) Subject to Section 1.01 (a) conditions, PCA will provide upon a written request from MCWD an additional AWT Capacity Entitlement for MCWD of up to and including 827 AFY of purified recycled water under AWT Phase 2 for a total AWT Capacity Entitlement of 1,427 AFY. PCA will not unreasonably delay implementing the request.
- (b) PCA will reserve physical space at the plant site and facilities for expanding the AWT should subsection (a) be triggered from time to time in the future.
- (c) Should MCWD request expanding the AWT beyond the AWT Phase 1 while there is sufficient time and funding capacity to include the further expansion in the Clean Water State Revolving Fund loan for the Pure Water Monterey Project, the costs for the AWT Phase 2 will be subject to the cost sharing section of this Agreement.
- (d) Subject to Section 2.05(b) above, PCA may expand the AWT and may construct additional reclamation facilities, at its sole cost and expense and without receiving the consent of MCWD, unless the Product Water Conveyance Facilities are disrupted or delivery of AWT water to MCWD is affected, then consent is required by MCWD in writing. Any increases in capacity and any additional reclamation facilities so constructed shall be used at PCA's discretion.

2.06. Ownership, Operation, and Maintenance of the Pure Water Delivery and Supply Project Facilities

- (a) PCA will own, operate, and maintain the AWT.
- (b) MCWD will own, operate and maintain the Product Water Conveyance Facilities. In addition, MCWD shall own a Pipeline Facilities Capacity Entitlement equal to 27.833% of the capacity of the Product Water Conveyance Facilities with a maximum annual use of 1,427 AFY during the initial term and any extended term of this Agreement. If and when the AWT Phase 2 is commercially operational and as shown on the table accompanying Section 3.02(b), the Parties recognize and agree that, during the summer months, MCWD's use of the Pipeline Facilities' capacity may exceed 27.833% of the instantaneous capacity and that MCWD is hereby authorized to exceed 27.833% during the summer months.
- (c) PCA shall own a Pipeline Facilities Capacity Entitlement equal to 72.167% of the capacity of the Product Water Conveyance Facilities with a maximum annual use of 3,700 AFY during initial term and any extended term of this Agreement. Parties recognize and agree that, during the months of November through February, PCA's use of the Pipeline Facilities' capacity may exceed 72.167% of the instantaneous capacity and that PCA is hereby authorized to exceed 72.167% during those specific months.

- (d) For the term of this Agreement, PCA shall maintain the AWT in good condition and repair and MCWD shall maintain the Product Water Conveyance Facilities in good condition and repair.
- (e) Both parties agree to coordinate operations and to share/integrate SCADA and other operational tools as necessary to facilitate efficient and effective operations of the Pure Water Delivery and Supply Project Facilities.

2.07. Decision-making authority.

In order to provide for the smooth and efficient operation of the Pure Water Delivery and Supply Project Facilities, MCWD and PCA will have the full authority to make and implement decisions with regard to activities and expenditures for the operations, and maintenance of their respective Project Facilities component without prior approval of the other party. All such activities shall be within the scope of services for operations and maintenance. All such expenditures shall be funded with the respective parties operational and maintenance budgets and/or the replacement reserves.

2.08. Outside Contracts.

When either Party deems it more appropriate for an outside contractor to make repairs or perform maintenance, bids may be solicited for contracts to perform this work.

2.09. Permits and approvals.

Each Party shall be responsible for obtaining and complying with all permits and approvals for the Project Facilities component that such Party owns that are necessary to perform its work under this Agreement.

2.10. Safety and loss prevention program.

MCWD and PCA will jointly develop, maintain, and implement a safety and loss prevention program for the Pure Water Delivery and Supply Project Facilities, and will provide appropriate training for its employees working on the facilities. This program will conform to all requirements set forth in CAL OSHA's Process Safety Management Program and US EPA's Risk Management Program, and will be revised and updated as new regulations are promulgated. All costs associated with the program will be included in the annual budget process.

2.11. Access to facilities.

Both MCWD and PCA personnel shall be provided access rights to all Pure Water Delivery and Supply Project Facilities with adequate notice and staff availability/chaperone.

2.12. Pure Water Coordinating Committee.

- (a) Within sixty days of the Effective Date of this Agreement, the parties shall establish and maintain a Pure Water Coordinating Committee which membership shall consist of at least one representative from each Party. A representative from each Party shall be the person who will be or who is responsible for the daily operations of a Pure Water Delivery and Supply Project Facilities component. The committee shall have access to and shall share all pertinent information in order to discuss and make recommendations for sustaining or improving the operations (including water quality), maintenance, and capital replacement efforts of the project.
- (b) Any financial changes approved by the Pure Water Coordinating Committee at a Committee meeting that require a budget modification will be submitted to both Boards of Directors for approval of the necessary budget modifications.

2.13. Unanticipated events/Emergency situations

- (a) Non-emergency circumstances or events may arise which were not anticipated in either the scopes of services or the budgets for the Pure Water Delivery and Supply Project Facilities. In this case, plans for addressing such circumstances or events, including justification and estimated amount of expenditures, will be submitted to the Pure Water Coordinating Committee for its review and recommendations. Before proceeding with those plans, each party must first give its written approval to incur any additional costs associated therewith consistent with the procurement policy of each agency.
- (b) If the event or circumstance constitutes an emergency situation which threatens health and safety, damage to property, or injury to persons, the Party having operational control of the affected Pure Water Delivery and Supply Project Facilities component will act as promptly and as efficiently as possible to mitigate the situation without waiting for approval by the Pure Water Coordinating Committee. The Pure Water Coordinating Committee will be advised as soon as possible thereafter of the mitigating actions taken and of any further action that may be necessary.

III. DELIVERY OF PURIFIED RECYCLED WATER

3.01. Existing Allocations

- (a) Subject to the terms and conditions described in this Agreement, PCA agrees to treat and provide an annual amount of purified recycled water from PCA's and MCWD's entitlements to assure delivery of the agreed water commitments to the RUWAP Recycled Project approved by the FORA Board of Directors and allocated to FORA land use jurisdiction members. Up to 1,762 AFY of source water would be made available from PCA to provide a net 1,427 AFY of purified recycled water taking into account the assumption of a 19% loss resulting from the advanced water treatment processes with the following limitations unless the FORA Board of Directors agrees to an allocation of less than 1,427 AFY of net purified recycled water:
 - i. As stated in the 1996 Annexation Agreement, up to a maximum of 300 AFY of source water will be treated for MCWD's use between the months of April and September.
 - ii. As stated in the 2009 RUWAP MOU, up to a maximum of 650 AFY of source water will be made available from PCA entitlements between the months of May and August for recycled water use.
 - iii. As per the 2009 RUWAP MOU, Section 3.1, the Parties agreed to meet and confer in good faith to evaluate the environmental, technical, managerial, and financial feasibility of a groundwater recovery replenishment project to inject and store recycled water.
 - iv. As stated in Section IV 1(d) of the Amended and Restated Water Recycling Agreement between PCA and Monterey County Water Resources Agency which was approved in November 2015, PCA is allocated 650 AF of water by Water Resources Agency during the months of May through August.
- (b) The parties agree to commit to a process to determine the amount of MCWD's Fort Ord Water Rights. The process shall include MCWD, PCA, FORA, U.S. Army, and MCWRA meeting and discussing the various agreements, obtaining legal opinions as necessary, and drafting documentation to clarify each agency's opinion, agreement, or disagreement and next steps on this issue by January 31, 2017.

3.02 Demand Schedule.

(a) According to Section 3.01 and subject to Section 2.03 of this Agreement, PCA will provide MCWD with purified recycled water according to the following typical nonbinding Schedule for AWT Phase 1 (~600 AFY of product water):

Approximate Demand Schedule (Phase 1):

Month	Demand (AF)			Needed Supply (AF)
	Others	Golf Course	Total	
January	7	16	23	28
February	5	11	16	19
March	8	19	27	33
April	16	40	56	70
May	26	62	88	108
June	26	63	89	110
July	27	65	92	113
August	22	54	76	94
September	20	49	69	85
October	12	29	41	51
November	5	12	17	21
December	2	5	7	9
Total	175	425	600	741

(b) According to Section 3.01 and subject to Section 2.03 of this Agreement, PCA will provide MCWD with purified recycled water according to the following typical nonbinding Schedule for AWT Phase 2 project (ultimate build out of the AWT to the amount approved by the FORA Board of Directors pursuant to Resolution No. 07-10):

Approximate Demand Schedule (Phase 2):

Month	Demand (AF)			Needed Supply (AF)
	Others	Golf Course	Total	
January	38	16	54	66
February	26	11	37	46
March	45	19	64	79
April	94	40	134	166
May	146	62	208	257
June	149	63	212	261
July	153	65	218	269
August	127	54	181	224
September	116	49	165	203
October	68	29	97	120
November	28	12	40	50
December	12	5	17	21
Total	1002	425	1427	1762

3.03 Water Quality.

All water produced and delivered to MCWD shall meet all applicable standards of quality prescribed by the State of California (including, but not limited to, the regulations promulgated by

the State Health Department and set forth in the California Code of Regulations, Title 22), or by separate agreement of the parties, so that the water may be used for the purposes specified herein. The parties clarify their intent with regard to the required water quality and further agree that the AWT Facilities have been designed to produce purified recycled water for the injection and landscape irrigation and other authorized purposes. The Parties agree that the purified recycled water to be used for landscape irrigation and other authorized purposes shall be of the same water quality as the water used for injection.

3.04. Warranties.

PCA warrants that all water committed to MCWD pursuant to this Agreement shall be transferred to MCWD free and clear of all claims by any person or entity, except as otherwise specified.

3.05. Duty to monitor water quality; cessation in deliveries.

PCA will monitor the quality of water produced, in accordance with the Indirect Potable Reuse guidelines per the California Department of Drinking Water Title 22 Article 5.2 of the CCR.

3.06. Regulations to protect water quality.

PCA will, to the extent feasible, enact reasonable and appropriate regulations governing the kinds of wastes and other materials that may be discharged into the sewerage system, in order to protect the quality of water ultimately produced by the AWT.

3.07. Daily Operation.

The AWT will be in operation and will supply water to MCWD on a daily basis except for temporary periods of shut-down authorized by this Agreement or made necessary by circumstances beyond the control of PCA or MCWD.

3.08. Incidental Uses.

PCA may use such amounts of purified recycled water from the Pure Water Delivery and Supply Project Facilities as may be needed for the normal operation and maintenance of PCA's facilities, including, but not limited to, the backwash of injection wells.

3.09. Notice of temporary cessation of water deliveries.

PCA will give immediate notice to MCWD, by telephone and/or electronic communication to MCWD's General Manager, or to the person designated by the General Manager to receive such notices, with a prompt follow-up notice in writing, as soon as PCA becomes aware of the need to cease deliveries. In addition, whenever a cessation of deliveries occurs, PCA shall use every reasonable effort to restore service as soon as possible.

3.10. Interruptions of service.

- (a) No work of construction, remodeling, renovation, replacement, repairs, addition, or expansion authorized under this Agreement and performed on the AWT or Injection Well Facilities shall, either before, during, or after such work, interfere with, interrupt, or reduce the delivery of advanced treated water to MCWD under this Agreement, except that minor interferences, interruptions, or reductions shall be allowed when necessary, unavoidable, or beyond the control of PCA.
- (b) PCA shall schedule its planned maintenance activities on the AWT and the Injection Well Facilities to minimize interruption of distribution of purified recycled water. Unscheduled work to perform repairs or maintenance will be performed in the manner deemed by PCA to have the least impact on the supply of advanced treated water. In case of any interruption of service, PCA shall give notice in the same manner as required by this Agreement.

- (c) MCWD shall schedule its planned capital replacement, maintenance activities, and lateral tie-in's to the Product Water Conveyance Facilities to minimize interruption of distribution of purified recycled water. Unscheduled work to perform repairs or maintenance will be performed in the manner deemed by MCWD to have the least impact on the distribution of purified recycled water. In case of any interruption of service on the Product Water Conveyance Facilities, MCWD shall give notice in the same manner as required by this Agreement.

IV. ESTIMATED COSTS, COST SHARING, FINANCING, AND BUDGETING

4.01. Estimated Costs of the Project

- (a) The PCA submitted an SRF loan package in the amount of \$113,000,000 of which \$41,190,000 is for the Advanced Water Treatment Facilities. It is anticipated that project costs will be below this amount. MCWD submitted an SRF loan package in the amount of \$35,000,000 which includes \$22,600,000 for the RUWAP New Pipeline Facilities. It is also anticipated that project costs will be below this amount.
- (b) The estimated construction costs and proportional share of the New Pipeline Facilities and AWT Phase 1 are presented below. The cost allocations for the Pipeline Facilities are based upon a MCWD maximum use of 1,427 AFY per year and a PCA maximum use of 3,700 AFY. If any maximum use amount is exceeded, then the Parties agree to recalculate the allocations for the Pipeline Facilities, to true up those capital costs back to the date of this Agreement, and to agree on a true up amount and payment schedule. The estimated annual debt service cost share is located in Exhibit E:

ESTIMATED CAPITAL COSTS	Total Amount	PCA Share	MCWD Share
New Pipeline Facilities	\$ 22,600,000	\$ 16,309,742 72.167%	\$ 6,290,258 27.833%
AWT Phase 1	\$ 41,184,636	\$ 35,438,144 86.047%	\$ 5,746,492 13.953%
Existing Pipeline Facilities	\$ 1,389,000	\$ 1,002,400 72.167%	\$ 386,600 27.833%
TOTAL	\$ 65,173,636	\$ 52,185,008 80.071%	\$ 12,988,628 19.929%

- (c) Except for the \$1,389,000 in Section 4.02 (a) (iii) for the Existing Pipeline Facilities, the Parties agree that all dollar amounts in this Agreement, including exhibits, are estimates and that this Agreement shall be amended from time to time to reflect the actual dollar amounts when known.
- (d) Both Parties commit grant funds to the Project Facilities by the ratio of the costs of the Project Facilities to the total costs to each party for Project Facilities, Injection Facilities, RUWAP Distribution Facilities, and Source Water Facilities. Both Parties agrees to apply those grant funds towards the total capital costs of a Project Facilities component, to be allocated to each parties share of capital costs as defined in Section 4.02 (a). The following is an example:

**PRODUCT CONVEYANCE FACILITIES AND RUWAP
DISTRIBUTION FACILITIES**

Total Project Cost	\$35 Million
Transmission Line	\$23 Million
PCA 71%	\$16.33 Million
MCWD 29%	\$ 6.67 Million
Distribution (ALL MCWD)	\$12 Million
Capital Cost Split (Grant Distribution %)	PCA \$16.33 Million (46.7%) MCWD \$18.67 Million (53.3%)
Assume \$17M in Grants	PCA \$7,939,000 MCWD \$9,061,000

AWT, DIVERSION, INJECTION FACILITIES

AWTF	\$40,000,000
PCA 72.17%	\$28,866,783
MCWD 27.83%	\$11,133,216
Diversion	\$947,765 + 5,649,339 ≈ \$6,600,000
PCA 100%	
Injection	\$10,668,000
PCA 100%	
Capital Distribution (Grant Distribution %)	
MCWD -AWTF	\$11,133,216 (19.44%)
PCA AWTf+DIV+IND	\$46,134,783 (80.56%)
TOTAL	\$57,267,999
Assume \$15M in Grants	PCA \$12,084,000 MCWD \$2,916,000

Total Project Costs	\$92,267,999
Total Capital Cost Split	
PCA	\$62,464,783
MCWD	\$29,803,216
Total Assured Grants	\$32,000,000
Grant Amounts	
PCA	\$20,023,000
MCWD	\$11,977,000

4.02. Cost Sharing: Capital and Replacement Costs

(a) Both parties will pay their share of all capital and replacement costs for the Project Facilities based on its percentage share of AWT Capacity Entitlement and/or Pipeline Facilities Capacity Entitlement as follows:

- i. AWT Facilities: % of a party's AWT Capacity Entitlement in AFY to the total AWT Capacity Entitlement in AFY from both parties. For AWT Phase 1, PCA = 86.047% and MCWD = 13.953%. For AWT Phase 2, PCA = 72.167% and MCWD = 27.833%.
- ii. New Pipeline Facilities: PCA = 72.167% and MCWD = 27.833%.

- iii. Existing Pipeline Facilities: PCA = 72.167% and MCWD = 27.833%. The parties agree that the total value of MCWD's Existing Pipeline Facilities for purposes of this Agreement is \$1,390,000. The parties agree that the annual payment to MCWD shall be equal to this total value amortized over a 30 year period.

4.03. Cost Sharing: Operations and Maintenance Costs

- (a) Both parties will pay their share of all operations and maintenance costs for the Pure Water Delivery and Supply Project Facilities based on actual use of the facilities based on the following:
 - i. AWT Facilities: % of AFY produced vs total from both parties
 - ii. Product Water Conveyance Facilities: % AFY through pipeline vs total from both parties
 - iii. Operations and Maintenance costs include, but are not limited to, the following: Power, chemicals, a Party's own or contracted labor and services, parts, materials, supplies, insurance, engineering, financial, and legal services, and such other cost categories agreed to by the Parties.

4.04. Project Funding: Capital Costs

- (a) PCA applied for a Clean Water SRF loan to pay for the entire capital costs of AWT which shall include all of the design, contract documents, rights-of-way acquisition, and all work to construct the AWT.
- (b) MCWD applied for a Clean Water SRF loan to pay for the entire capital costs of the New Pipeline Facilities which shall include all of the design, contract document, rights-of-way acquisition, and CEQA work necessary, and all work to construct the New Pipeline Facilities.

4.05. Project Funding: Replacement and Renewal Reserves

- (a) Each Agency shall establish a Replacement and Renewal Reserve Fund for the purpose of funding capital outlay projects on the Pure Water Delivery and Supply Project Facilities; assist in meeting any fiscal sustainability plan requirements for the Clean Water State Revolving Fund loans; and maintaining a proportional share of the State Revolving Fund loan's debt reserve requirement.
- (b) Each agency shall allocate sufficient funds in their annual budget to contribute to each Replacement and Renewal Reserve Fund in accordance with the capital cost sharing section of this Agreement. PCA will retain the replacement funds for those facilities in which they own and operate. MCWD will retain the replacement funds for those facilities in which they own and operate. Unless otherwise stated in Clean Water State Revolving Fund agreements, the following depreciation schedule related to operational equipment shall be used as a basis to establish annual funding of replacement reserves:

Equipment Type	Useful Life (Years)
Replacement Electrical	30
Replacement Instrumentation	15
Replacement Pumps & Motors	20
Motorized sluice gates	30
Replacement Wells & Ozonators	20

- (c) Two years prior to the completion of the thirty-year loan cycle, MCWD and PCA will develop a long-term Capital Improvement Plan, which includes establishing an appropriate level of Renewal and Replacement reserves. Any funds that are held in Reserves in excess of the Capital Improvement Plan will be refunded within ninety (90) days of the Plan's establishment.

4.06. Project Funding: Operations and Maintenance Costs

Each party shall place in their annual operating budget sufficient funds to pay for operations and maintenance according to the operations and maintenance cost sharing section of this Agreement.

Each party shall follow the recommended operation and maintenance schedules as suggested by the manufacturers throughout the initial term of this agreement.

4.07. Annual Budget Process.

Each year, in accordance with its normal budgeting schedule, both parties will adopt budgets sufficient to cover the capital, renewal, operation, and maintenance costs of their proportional share of the Pure Water Delivery and Supply Project Facilities.

4.08 Financial Obligations

Both Parties agree to pledge sufficient funds to meet their respective financial obligations under this Agreement by Board action.

V. PAYMENTS AND ACCOUNTING

5.01 Payment Schedule and Procedures.

(a) MCWD will make payments to PCA each year as follows:

- i. Thirty (30) days before the date the PCA's annual payment on the Clean Water State Revolving Fund loan for the Pure Water Monterey Project is due, MCWD will pay an amount equal to MCWD's proportional share of capital costs (debt service) as provided in Exhibit E.
- ii. By March 1 of each year, MCWD shall pay PCA the proportional share of the amortized replacement/renewal costs as identified in Exhibit E.
- iii. On a monthly basis, PCA will bill MCWD for Operation and Maintenance costs on an acre foot rate basis and actual demand.

(a) PCA will make payments to MCWD each year as follows:

- i. Thirty (30) days before the date the MCWD's annual payment on the Clean Water State Revolving Fund loan for the New Pipeline Facilities is due, PCA will pay an amount equal to PCA's proportional share of capital costs (debt service) as provided in Exhibit E.
- ii. By March 1 of each year, PCA shall pay MCWD the proportional share of the amortized replacement/renewal costs of the New Pipeline Facilities as identified in Exhibit E.
- iii. By June 30 of each year, PCA will pay an amount equal to PCA's proportional share of capital costs (debt service) for the construction of the Existing Pipeline Facilities funded by MCWD as provided in Exhibit E.

- iv. By June 30 of each year, PCA will pay MCWD the proportional share of the amortized replacement/renewal costs of the Existing Pipeline Facilities as identified in Exhibit E.
 - v. On a monthly basis, MCWD will bill PCA for the Operation and Maintenance costs for the Product Water Conveyance Facilities on an acre foot rate basis and actual demand.
- (b) At least thirty (30) days before capital or replacement payments are due, a request for payment shall be sent indicating the amount due, the date payment is due, and the nature of the payment.
- (c) Payment requests for operation and maintenance costs will be billed monthly. The resulting payments will be due within thirty days of billing.
- (d) Notwithstanding anything to the contrary contained herein, obligations to make payments shall be prioritized as follows, and the obligations in each category shall be subordinate to the obligations in each prior category, shall be on a parity with all other obligations in such category, and shall be senior to the obligations in each subsequent category:
- i. Operation and maintenance
 - ii. Debt service on obligations incurred to finance the Pure Water Delivery and Supply Project Facilities and payments to any provider of credit enhancement for such obligations
 - iii. Replacement/renewal costs
- (e) All requests for payment shall be promptly reviewed, approved for payment where such requests or portion thereof that are in conformity with this Agreement, and promptly submitted for payment. Disputed payment shall be resolved according to the Dispute Resolution Process in this Agreement.

5.02. Application of loan payments by PCA.

- (a) All payments made by MCWD to PCA for the repayment of the Clean Water SRF loan shall be used for such repayment. Upon termination of any loan agreement, any unused funds retained by PCA shall be returned to MCWD within 60 days from the date of the approved PCA audit for the fiscal year in which the agreement was terminated.
- (b) All payments made by PCA to MCWD for the repayment of the Clean Water SRF loan shall be used for such repayment. Upon termination of any loan agreement, any unused funds retained by MCWD shall be returned to PCA within 60 days from the date of the approved MCWD audit for the fiscal year in which the agreement was terminated.

5.03. Remedies for Delinquent Payments.

- (a) If either party should fail to make any payment required under this Agreement for a period of ninety (90) days or more after the due date, then upon fifteen (15) days' written notice, the party that is owed may act to proportionally reduce the activities for which payment is due; provided that no such reduction shall take effect if Dispute Resolution has been invoked and the full amount of the payment has been paid under protest.
- (b) In addition, if either party should fail to make any payment required under this Agreement for a period of ninety (90) days or more after the due date and Dispute Resolution has not been invoked, the party that is owed shall have the right to seek any appropriate judicial relief, at law

or in equity, for such default. Such relief may include, but need not be limited to, damages and injunctive relief.

5.04 Allocations: Operations and Maintenance Rates

- (a) Operations and Maintenance Rates: Based on electronic timesheets and indirectly through each Agency's Cost Allocation Plan, all costs associated with the new AWT Facilities will be allocated directly to PCA's Pure Water Monterey Fund and all costs associated with the Product Water Conveyance Facilities will be allocated directly to MCWD's RUWAP Conveyance Facilities Fund. Indirect costs and direct costs will be used in the development of PCA's and MCWD's Operation and Maintenance Rates. Each Agency's Operation and Maintenance rate will be subject to review and/or development of a third party consultant of the respective Agency's selection. PCA's Operation and Maintenance component of the rate will be consistent with rates provided to entities who utilize Advanced Treated Water.
- (b) PCA and MCWD retain the right to transition from any cost allocation plan identified in 5.04 of this Agreement to a cost allocation model that is compliant with the Office of Management and Budget (OMB) Circular A-87 – Cost Principles for State, Local, and Indian Tribe Governments or a subsequent revision. Any cost allocation subject to this provision shall be accompanied by a Certificate of Cost Allocation Plan and be in compliance with Title 2 CFR, Part 200. All indirect costs charged to the Pure Water Monterey Fund and the RUWAP Conveyance Facilities Fund will be applied consistently with the results of this plan to ensure equity between costs centers and conformance with OMB standards.

5.05. Accounting system.

Both parties will maintain an accounting system that is in conformity with generally accepted accounting principles (GAAP) and will allow for the segregation and tracking of all Replacement/Renewal reserves associated with the Project Facilities. Indirect costs shall not be applied to Replacement/Renewal Reserve contributions.

5.06. Financial reports.

Both parties will provide an annual report of the proportional share of reserve funds retained for the purpose of renewing the Pure Water Delivery and Supply Project Facilities. This report will be provided by September 30 of each year; and include deposits made to the Repair/Renewal Reserve, proportional interest earned, and the proportional share of any replacement/renewal costs.

5.07. Annual audit.

The accounting for the Pure Water Delivery and Supply Project Facilities will be subject to both parties Annual Audit. The Replacement/Renewal Reserve funds will be classified as Restricted on both parties Comprehensive Annual Financial Statement (CAFR). This Restricted classification will remain in effect through the term of this agreement, unless there are any new Governmental Accounting Standards Board (GASB) pronouncements or auditor comments that require a change in classification. A copy of each parties CAFR will be provided to the other by January following the close of the prior fiscal year.

5.08. Right to inspect and audit records.

Both parties shall have the right to inspect the other's records pertaining to debt service payments associated with the Pure Water Delivery and Supply Project Facilities and contributions for Renewal/Replacement Reserves, upon reasonable advance notice. Both parties shall also have the right to audit the other's records pertaining to the Project Facilities and contributions for Renewal/Replacement Reserves, or to have them audited by an auditor selected by the other party at that party's sole cost and expense. Such audit may be performed at any time during regular business

hours, upon the giving of reasonable advance notice.

5.09. Reimbursement for overcharge or undercharge.

If any there is audit shows that the incorrect application of replacement/renewal reserves, each agency will have 90 days to comply with the audit findings. If an undercharge or an overcharge has occurred in monthly demand billings, each agency will have 90 days to refund or pay the identified difference.

5.10. Claims for Stranded Costs

The parties agree to commit to a process to determine the amount of each parties' claims for stranded costs. The process shall include MCWD and PCA meeting and discussing the documentation to clarify each agency's opinion, agreement, or disagreement and next steps on this issue by March 31, 2017.

VI. INDEMNIFICATION.

6.01. Indemnification.

- (a) PCA shall indemnify, defend, and hold harmless MCWD , its officers, agents, and employees, from and against any and all claims, liabilities, and losses whatsoever against MCWD (including damages to property and injuries to or death of persons, court costs, and reasonable attorneys' fees) occurring or resulting to any and all persons, firms or corporations furnishing or supplying work, services, materials, or supplies in connection with the performance of this Agreement, and from any and all claims, liabilities, and losses occurring or resulting to any person, firm, or corporation for damage, injury, or death arising out of or connected with the PCA's performance or non-performance of its obligations pursuant to this Agreement caused in whole or in part by any negligent act or omission or willful misconduct of PCA, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, except to the extent caused by the negligence or willful misconduct of MCWD.
- (b) MCWD shall indemnify, defend, and hold harmless PCA, its officers, agents, and employees, from and against any and all claims, liabilities, and losses whatsoever against PCA (including damages to property and injuries to or death of persons, court costs, and reasonable attorneys' fees) occurring or resulting to any and all persons, firms or corporations furnishing or supplying work, services, materials, or supplies in connection with the performance of this Agreement, and from any and all claims, liabilities, and losses occurring or resulting to any person, firm, or corporation for damage, injury, or death arising out of or connected with the MCWD's performance or non-performance of its obligations pursuant to this Agreement caused in whole or in part by any negligent act or omission or willful misconduct of MCWD, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, except to the extent caused by the negligence or willful misconduct of PCA.

6.02. Procedure for Indemnification.

- (a) If any legal or administrative proceedings are instituted, or any claim or demand is asserted, by any third party which may give rise to any damage, liability loss or cost or expense with respect to which either party has agreed to indemnify the other party in this contract, then the indemnified party shall give the indemnifying party written notice of the institution of such proceedings, or the assertion of such claim or demand, promptly after the indemnified party first becomes aware thereof. However, any failure by the indemnified party to give such notice on such prompt basis shall not affect any of its rights to indemnification hereunder unless such failure materially and

adversely affects the ability of the indemnifying party to defend such proceeding.

- (b) The indemnifying party shall have the right, at its option and at its own expense, to utilize counsel of its choice in connection with such proceeding, claim or demand, subject to the approval of the indemnified party, which approval shall not be unreasonably withheld or delayed. The indemnifying party shall also have the right to defend against, negotiate with respect to, settle or otherwise deal with such proceeding, claim or demand. However, no settlement of such proceeding, claim or demand shall be made without the prior written consent of the indemnified party, which consent shall not be unreasonably withheld or delayed. The indemnified party may participate in any such proceeding with counsel of its choice at its own expense.
- (c) In the event, or to the extent, the indemnifying party elects not to, or fails to, defend such proceeding, claim or demand and the indemnified party defends against, settles or otherwise deals with any such proceeding, claim or demand, any settlement thereof may be made without the consent of the indemnifying party if it is given written notice of the material terms and conditions of such settlement at least ten days before a binding agreement with respect to such settlement is executed. However, nothing herein is intended to bar either party from submitting any dispute arising from this section to Dispute Resolution.
- (d) Each of the parties agrees to cooperate fully with each other in connection with the defense, negotiation or settlement or any such proceeding, claim or demand.

6.03. Payment of indemnified claims.

The indemnifying party shall forthwith pay all of the sums owing to or on behalf of the indemnified party, upon the happening of any of the following events:

- (a) Upon the rendition of a final judgment or award with respect to any proceeding described in Section 6.02, above, by a court, arbitration board or administrative agency of competent jurisdiction and upon the expiration of the time in which an appeal therefrom may be made; or
- (b) Upon the making of a settlement of such proceeding, claim or demand; or
- (c) Upon the parties' making of a mutually binding agreement with respect to each separate matter indemnified thereunder.

6.04. Contribution in the event of shared liability.

In the event any proceeding, claim or demand described in Section 6.01 is brought, in which allegations of fault are made against both the parties, the extent of indemnification shall be determined in accordance with the agreement of the parties, or, if there is no agreement, then in accordance with the findings of the court as to the relative contribution by each of the parties to the damage suffered by the party seeking indemnity with respect to such proceedings. If the court fails to make any such findings, then the matter shall be submitted to Dispute Resolution.

6.05. Exclusion from O&M costs.

Amounts payable by either party as indemnification shall not be included in the operations and maintenance costs of the Project.

VII. INSURANCE

7.01. General insurance requirements.

Without limiting either parties duty to indemnify, both parties shall maintain in effect throughout the

term of this Agreement a policy or policies of insurance meeting the requirements hereinafter set forth. All such insurance required by this article shall meet the following requirements:

- (a) Each policy shall be with a company authorized by law to transact insurance business in the State of California, and shall be written on an occurrence form unless such insurance is only available at a reasonable cost if written on a claims made form.
- (b) Each policy shall provide that both parties shall be given notice in writing at least thirty days in advance of any change, cancellation or non-renewal thereof.
- (c) Except with respect to workers compensation insurance, each policy shall provide an endorsement naming both parties and its officers, agents and employees as additional insureds, or additional insureds, as applicable, and shall further provide that such insurance is primary to any other insurance maintained by either party.
- (d) Unless otherwise agreed by MCWD and PCA, if a party awards a contract for construction work for the Pure Water Delivery and Supply Project Facilities, that party shall require the general contractor to provide commercial general liability and motor vehicle liability insurance coverage at least equal to the coverages required under this Agreement and shall name both MCWD and PCA as an additional named insureds and shall further provide that such insurance is primary to any issuance maintained by MCWD or PCA.

7.02. Commercial general liability insurance.

- (a) MCWD and PCA shall maintain (and be named insured under) commercial general liability insurance covering all operations under this Agreement, with such coverages as the parties may agree upon from time to time. Each party shall be named as an additional insured on the other party's commercial general liability coverage.
- (b) Each party shall pay the annual cost of such insurance for the term of this Agreement. Such insurance costs shall be treated as an annual operation and maintenance cost for the AWT Facilities and the Product Water Conveyance Facilities. In addition, should this Agreement be terminated by the parties, the obligation to pay for such insurance regarding the Project shall be accordingly reduced.

7.03. Motor vehicle insurance.

Both parties shall maintain insurance covering all motor vehicles (including owned and non-owned) used in providing services under this Agreement, with a combined single limit of not less than \$2,000,000.

7.04. Property insurance.

- (a) PCA shall maintain insurance covering the AWT Facilities against loss or damage due to fire and other perils to the extent that such insurance is reasonably commercially available and within available funds for the Pure Water Monterey Project. MCWD shall maintain insurance covering the Product Water Conveyance Facilities against loss or damage due to fire and other perils to the extent that such insurance is reasonably commercially available and within available funds for the Project.
- (b) Subject to Subsection (a) above, the amount of the insurance shall not be less than the then-current replacement cost of the applicable Pure Water Delivery and Supply Project Facilities, without depreciation. Insurance coverage for the Pure Water Delivery and Supply Project Facilities under this section shall be reviewed and approved by both parties, which shall not

unreasonably withhold or delay its approval. Both parties shall provide each other with a copy of the insurance policy and shall give the other party thirty (30) days' advance notice of any cancellation or proposed change in the insurance required by this section, and any such change shall be subject to review and approval by the other party.

7.05. Workers' compensation insurance.

Each party shall maintain a workers' compensation plan covering all of its employees as required by Labor Code Sec 3700, either (a) through workers' compensation insurance issued by an insurance company, with coverage meeting the statutory limits and with a minimum of \$100,000 per accident for employer's liability, or (b) through a plan of self-insurance certified by the State Director of Industrial Relations, with equivalent coverage. If either party elects to be self-insured, the certificate of insurance otherwise required by this Agreement shall be replaced with a consent to self-insure issued by the State Director of Industrial Relations.

7.06. Certificate of insurance.

Each party shall file certificates of insurance with the other party, showing that it has in effect the insurance required by this contract. Each party shall file a new or amended certificate promptly after any change is made in any insurance policy which would alter the information on the certificate then on file.

7.07. Self-insurance up to and including the first \$1 million of liability.

Each party may elect to be self-insured or to participate in the self-insurance pool for up to and including the first \$1 million of liability under any insurance required to be provided by it under this Agreement, provided the other party first gives its written consent, which will not be unreasonably withheld or delayed. The parties shall enter into a separate written memorandum of understanding specifying the proportionate amount or share of such self-insurance costs to be allowed and allocated as annual operation and maintenance costs for the Pure Water Delivery and Supply Project Facilities.

7.08. Insurance costs.

Except as otherwise specifically provided for in this Agreement, the parties agree to determine as part of the annual budget process what annual insurance costs are to be allowed and allocated as annual operation and maintenance costs for the Pure Water Delivery and Supply Project Facilities.

7.09. Periodic increases in coverage requirements.

Not more frequently than every five (5) years, if in the opinion of an insurance broker or consultant retained jointly by the parties, the amount of any insurance coverage required by this Agreement is not adequate, the party responsible for providing that insurance coverage shall increase the amount of the insurance coverage as required by the insurance broker or consultant.

7.10. Duty to apply insurance proceeds.

If either party recovers any insurance proceeds on account of loss or damage to any Project Facilities component, such proceeds shall be applied to repair or replace the damaged portion of that Project Facilities component, and not otherwise. If either party is self-insured and any loss or damage occurs that would have been covered by insurance otherwise required to be maintained by such party under this Agreement, then such party shall provide the funds that would have been recovered had the party been insured and shall apply the funds to repair or replace the damaged portion of the Project Facilities component.

7.11. Losses Caused by Third Parties.

If any Project Facilities component is damaged or destroyed or any other personal injury, death, property damage or economic loss is incurred relating to any Project Facilities component

(collectively, “damage or loss”) during the term of this Agreement, and excluding the amount of any such damage or loss covered in Section VI, Indemnification, then the responsible third party or parties shall be responsible for paying for any such damage or loss. If the funds or other consideration paid by either party pursuant to Section VI and by the third parties are insufficient to cover the total cost of the damage or loss, then the balance necessary to cover the total cost of the damage or loss shall be paid from the applicable reserve and, then to the extent the funds in the replacement reserve are inadequate, the balance will be allocated between the parties based upon the then Capital Cost allocation for the applicable Project Facilities component.

VIII. TERM OF AGREEMENT

8.01. Term of Agreement.

This Agreement shall become effective on the date hereinabove entered and terminate on December 31, 2055 unless extended in accordance with Section 8.02.

8.02. Automatic extension.

This Agreement shall be automatically renewed for an additional 10-year period (an “extended term”) unless a party is in default under this Agreement or unless one party provides the other party with written notice to terminate this Agreement upon expiration of the initial term or of any extended term. Any such notice must be provided to the other party at least three (3) full years prior to the expiration of any extended term. Unless such notice is provided, the parties agree that there shall not be a limit on the number of extended terms.

8.03. Conditions of agreement during term.

All the terms of this Agreement shall remain in effect during any term, except as otherwise provided in this Agreement or as may be amended in writing which is signed by both parties.

8.04. Rights on Termination.

- (a) Unless otherwise agreed upon in writing by the parties, upon any termination of this Agreement, MCWD shall have the continuing right to tertiary water as set forth in the Annexation Agreements and the 2009 RUWAP MOU. Except as provided in the Annexation Agreements and the 2009 RUWAP MOU, PCA shall provide facilities for treating the water beyond secondary treatment level at its sole cost and expense or through a cooperative agreement with MCWD or any other entity. Upon any termination of this Agreement, MCWD shall have the continuing right to receive the same quantity of tertiary treated water as MCWD was or would have been entitled to receive during any term of this Agreement so long as MCWD provides facilities at its sole cost and expense or through a cooperative agreement with PCA or any other entity for the delivery of such tertiary treated water and purified recycled water.
- (b) MCWD’s and PCA's respective rights to tertiary treated water in accordance with this Agreement shall also survive termination.

IX. DISPUTE RESOLUTION

9.01. Dispute resolution procedure.

If any dispute arises between the parties as to the proper interpretation or application of this Agreement and/or the proper operation of the facilities, the parties shall resolve the dispute in accordance with this Article.

9.02. Duty to meet and confer.

If any dispute under this Agreement arises, the parties shall first meet and confer, in an attempt to resolve the matter between themselves. Each party shall make all reasonable efforts to provide to the other party all the information that the party has in its possession that is relevant to the dispute, so that both parties will have ample information with which to reach a decision.

9.03. Mediation and Binding Arbitration.

- (a) If the dispute is not resolved within sixty (60) days after the first meeting under Section 9.02, then either party may notify the other party that the notifying party elects to submit the dispute to mediation. If the other party agrees to submit the dispute to mediation, then the parties will jointly select a mediator. The terms of mediation shall be set by agreement of the parties and the mediator.
- (b) If the dispute is not resolved by meeting and conferring, and mediation does not occur or is unsuccessful, the parties may agree to submit the matter to binding arbitration. In that event, the parties will jointly select a single arbitrator. If the parties are unable to agree on a single arbitrator, then the parties shall request the Presiding Judge of the Monterey County Superior Court to appoint an arbitrator who has proven experience in the subject matter of the dispute. Any person selected as an arbitrator shall be a qualified professional with expertise in the area that is the subject of the dispute, unless the parties otherwise agree. The cost of the arbitrator shall be shared equally between the parties. Unless otherwise agreed by the parties, the arbitration shall be conducted in accordance with the rules of the American Arbitration Association (“Rules”); provided that the arbitration does not have to be handled through the American Arbitration Association. . The parties agree that they will faithfully observe the Rules and will abide by and perform any award rendered by the arbitrator, and that a judgment of the court having jurisdiction may be entered on the award. Notwithstanding the Rules, discovery will be permitted and the provisions of the California Code of Civil Procedure Section 1283.05 are incorporated herein unless the parties agree otherwise. The parties hereby consent to the jurisdiction of the courts of Monterey County for the confirmation, correction or vacation of any arbitration award. The arbitrator may grant any remedy or relief deemed by the arbitrator just and equitable under the circumstances, whether or not such relief could be awarded in a court of law. The arbitrator will have no power to award punitive damages or other damages not measured by the party’s actual damages against any party. This limitation of the arbitrator’s powers under this Agreement shall not operate as an exclusion of the issue of punitive damages from this Agreement to arbitrate sufficient to vest jurisdiction in a court with respect to that issue. The arbitrator’s award will be deemed final, conclusive and binding to the fullest extent allowed by California law, and may be entered as a final judgment in court.

X. GENERAL PROVISIONS

10.01. Compliance with laws.

Both parties will comply with all permit and licensing requirements applicable to the project, and will operate the project in accordance with all requirements of law and governmental regulations.

10.02. Attorney’s fees.

If either party commences an action against the other party arising out of or in connection with this Agreement, the prevailing party shall be entitled to have and recover from the losing party reasonable attorneys’ fees and costs.

10.03. Amendments.

No amendment or modification shall be made to this Agreement, except in writing, approved by the respective Boards and duly signed by both parties.

10.04. Contract administrators.

- (a) MCWD hereby designates its General Manager as its contract administrator for this Agreement. All matters concerning this Agreement which are within the responsibility of MCWD shall be under the direction of or shall be submitted to the General Manager or such other MCWD employee in the MCWD as the General Manager may appoint. MCWD may, in its sole discretion, change its designation of the contract administrator and shall promptly give written notice to PCA of any such change.
- (b) PCA hereby designates its General Manager as its contract administrator for this Agreement. All matters concerning this Agreement which are within the responsibility of PCA shall be under the direction of or shall be submitted to the General Manager or such other PCA employee in the PCA as the General Manager may appoint. PCA may, in its sole discretion, change its designation of the contract administrator and shall promptly give written notice to MCWD of any such change.

10.05. Assignment.

Any assignment of this Agreement shall be void without the written consent of the non-assigning party, except that PCA shall have the right to assign all of its rights and obligations under this Agreement to a local governmental agency created by PCA for the sole purpose of assuming and performing all rights and obligations of PCA under the Pure Water Monterey Project and except that MCWD shall have the right to assign all of its rights and obligations under this Agreement to a local governmental agency created by MCWD for the sole purpose of assuming and performing all rights and obligations of MCWD under this Agreement; provided that in either case the local governmental agency assignee shall have adequate financial assets to insure its performance of all assigned obligations.

10.06. No Modification of MCWD Contract Entitlement.

Nothing in this Agreement is intended to, nor shall it be interpreted to, expand, limit or otherwise modify MCWD's existing contractual rights, entitlements, and obligations pursuant to either of the Annexation Agreements or the 2009 RUWAP MOU.

10.07. Negotiated Agreement.

This Agreement has been arrived at through negotiation between the parties. Neither party is to be deemed the party which prepared this Agreement within the meaning of Civil Code Sec. 1654.

10.08. Time is of essence.

Time is of the essence of this Agreement.

10.09. Headings.

The article and paragraph headings are for convenience only and shall not be used to limit or interpret the terms of this Agreement.

10.10. Entire Agreement.

This written Agreement, together with all exhibits attached hereto and incorporated by reference, is the complete and exclusive statement of the mutual understanding of the parties, except to the extent that this Agreement expressly refers to or requires the preparation of additional agreements. Any such additional agreement shall be in writing.

10.11. Notices.

All notices and demands required under this Agreement shall be deemed given by one party when delivered personally to the principal office of the other party; when faxed to the other party, to the fax number provided by the receiving party; or five days after the document is placed in the US mail, certified mail and return receipt requested, addressed to the other party as follows:

To PCA:	To MCWD:
General Manager	General Manager
MRWPCA	MCWD
5 Harris Court, Building D	11 Reservation Road
Monterey, CA 93940	Marina, CA 93933
Fax: (831) 372-6178	Fax: (831) 883-5995

10.12. Execution of documents.

(a) The parties will execute all documents necessary to complete their performance under this Agreement.

10.13. Exhibits.

(a) The following exhibits are attached to this Agreement:

Exhibit A: Pure Water Delivery and Supply Facilities

Exhibit B: AWT Facilities

Exhibit C: Product Water Conveyance Facilities

Exhibit D: Reserved

Exhibit E: Summary of Estimated Costs- Phase 1 only

Exhibit F: Financial and Construction Responsibilities of the Project Components

Exhibit G: Important Project Agreement Dates

10.14. Severability.

If any one or more of the terms, provisions, covenants or conditions of this Agreement are to any extent declared invalid, unenforceable, void or voidable for any reason whatsoever by a court of competent jurisdiction, the finding or order or decree of which becomes final, the Parties agree to amend the terms in a reasonable manner to achieve the intention of the Parties without invalidity. If the terms cannot be amended thusly, the invalidity of one or several terms will not affect the validity of the Agreement as a whole, unless the invalid terms are of such essential importance to this Agreement that it can be reasonably assumed that the Parties would not have contracted this Agreement without the invalid terms. In such case, the Party affected may terminate this Agreement by written notice to the other Party without prejudice to the affected Party's rights in law or equity.

10.15. Waiver.

(a) No waiver of any right or obligation of any of the parties shall be effective unless in writing, specifying such waiver, executed by the party against whom such waiver is sought to be

enforced. A waiver by any of the parties of any of its rights under this Agreement on any occasion shall not be a bar to the exercise of the same right on any subsequent occasion or of any other right at any time.

10.16. Written Authorization.

(a) For any action by any party which requires written authorization from the other party, the written authorization shall be signed by authorizing party's General Manager, or the General Manager's written designee.

XII. EXECUTION

In witness whereof, the parties execute this Agreement as follows:

PCA
Dated: 4/8/2016
[Signature]
Board Chair, Board of Directors

MCWD
Dated: 4.7.16
[Signature]
President, Board of Directors

Approved as to form:

Dated: 4/8/2016
[Signature]
Counsel, PCA

Dated: April 7, 2016
[Signature]
Legal Counsel, MCWD

Exhibit A: Pure Water Delivery and Supply Facilities

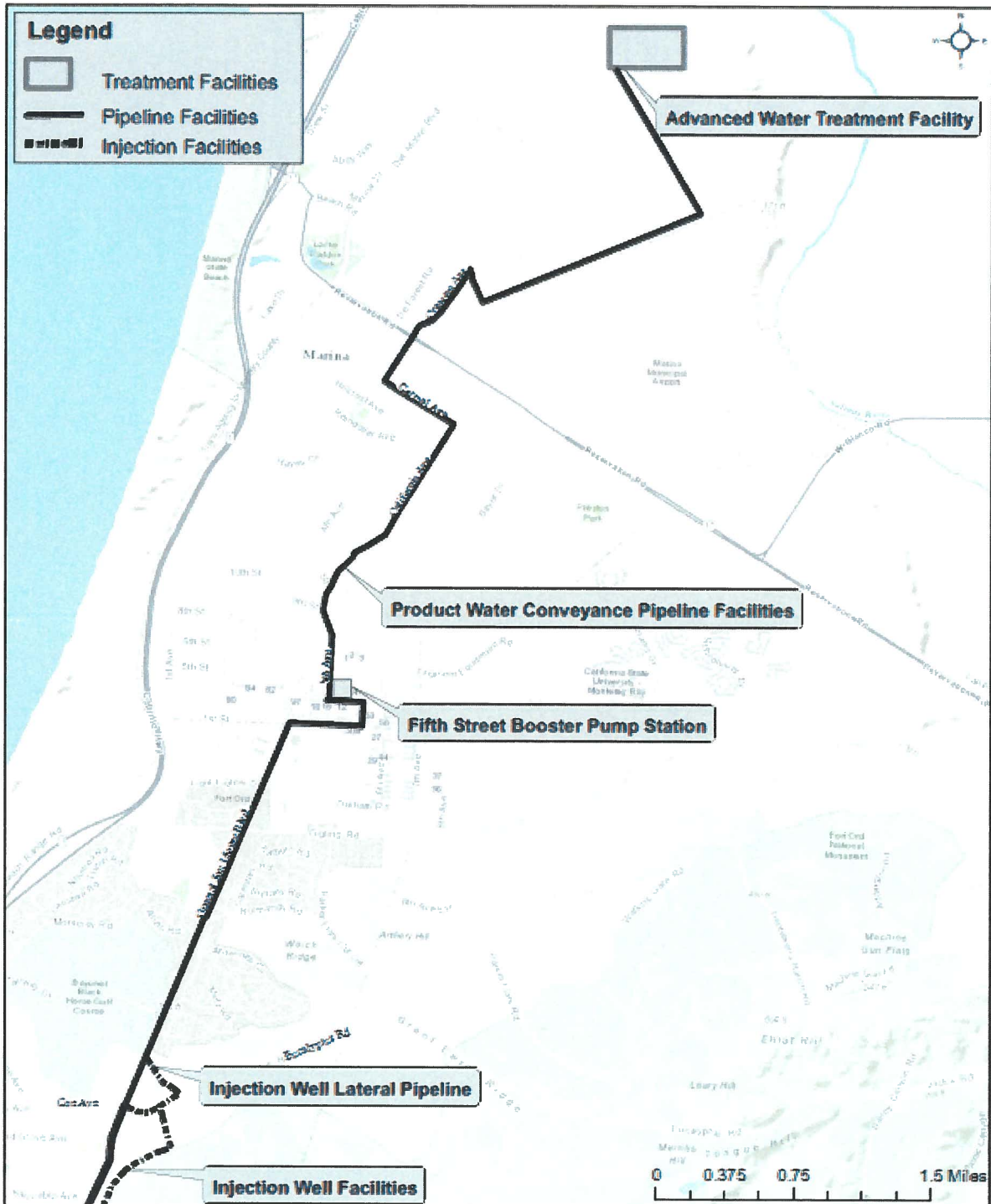
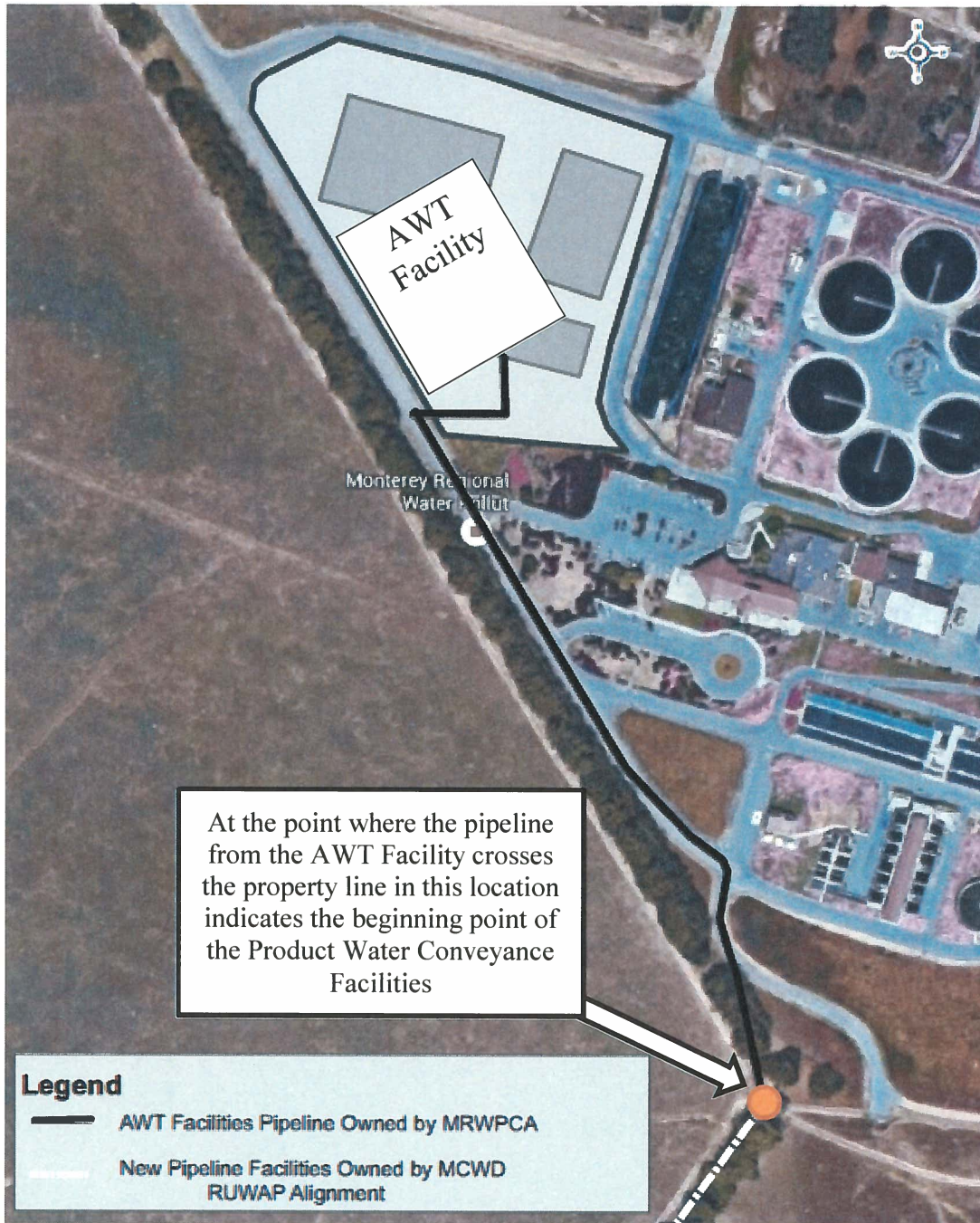


Exhibit B: AWT Facilities



● Beginning of Product Water Conveyance Facilities

Exhibit C (page 1 of 2): Product Water Conveyance Facilities

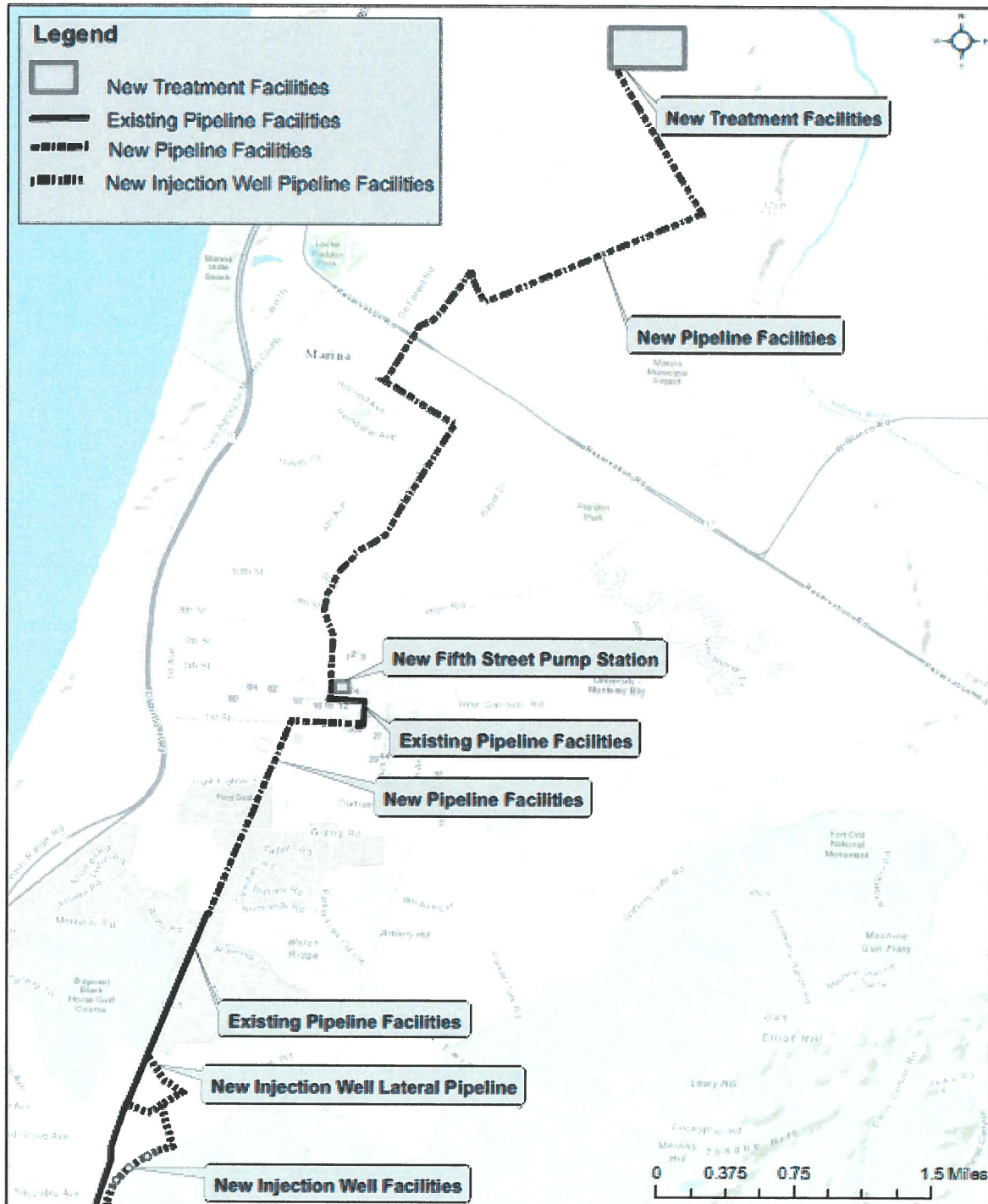


Exhibit C (page 2 of 2): Product Water Conveyance Facilities



● End of Product Water Conveyance Facilities

Exhibit D: Reserved

Exhibit E: Summary of Estimated Costs-Phase 1 Only

(Note: This table does not include potential grant funds or other capital contributions that may be received and applied to the project that would reduce the overall costs for PCA and/or MCWD).

Est. Capital Costs	PCA Share	MCWD Share	PCA Share	MCWD Share	Total Amount
New Pipeline Facilities	72.167%	27.833%	\$ 16,309,742	\$ 6,290,258	\$ 22,600,000
AWT Phase 1	86.047%	13.953%	\$ 35,438,144	\$ 5,746,492	\$ 41,184,636
Existing Pipeline Facilities	72.167%	27.833%	\$ 1,002,400	\$ 386,600	\$ 1,389,000
TOTAL	80.938%	19.062%	\$ 52,750,285	\$ 12,423,351	\$ 65,173,636

Est. Annual Debt Service Costs	PCA Share	MCWD Share	PCA Share	MCWD Share	Annual Amount
New Pipeline Facilities	72.167%	27.833%	\$ 631,972	\$ 243,736	\$ 875,707
AWT Phase 1	86.047%	13.953%	\$ 1,373,161	\$ 222,666	\$ 1,595,827
Existing Pipeline Facilities	72.167%	27.833%	\$ 54,502	\$ 21,020	\$ 75,522
TOTAL	80.863%	19.137%	\$ 2,059,635	\$ 487,421	\$ 2,547,056

Est. Annual OM Costs	PCA Share	MCWD Share	PCA Share	MCWD Share	Annual Amount
New Pipeline Facilities	86.047%	13.953%	\$ 146,054	\$ 23,684	\$ 169,738
AWT Phase 1	86.047%	13.953%	\$ 2,480,409	\$ 402,212	\$ 2,882,621
Existing Pipeline Facilities	86.047%	13.953%	\$ 4,595	\$ 745	\$ 5,340
TOTAL	86.047%	13.953%	\$ 2,631,058	\$ 426,641	\$ 3,057,699

Est. Annual Renewal Costs	PCA Share	MCWD Share	PCA Share	MCWD Share	Annual Amount
New Pipeline Facilities	72.167%	27.833%	\$ 56,110	\$ 21,640	\$ 77,750
AWT Phase 1	86.047%	13.953%	\$ 620,818	\$ 100,669	\$ 721,487
Existing Pipeline Facilities	72.167%	27.833%	\$ 2,005	\$ 773	\$ 2,778
TOTAL	84.653%	15.347%	\$ 678,933	\$ 123,082	\$ 802,015

Est Total Annual Costs		PCA Share	MCWD Share	Annual Amount
New Pipeline Facilities		\$ 834,136	\$ 289,059	\$ 1,123,195
AWT Phase 1		\$ 4,474,388	\$ 725,547	\$ 5,199,935
Existing Pipeline Facilities		\$ 61,102	\$ 22,538	\$ 83,640
TOTAL		\$ 5,369,626	\$ 1,037,145	\$ 6,406,770

Est. Total Demands and Cost/AF	PCA Share	MCWD Share	PCA Share	MCWD Share	Annual Amount
Phase 1 Demand	86.047%	13.953%	3,700	600	4,300
Total Cost/AF			\$ 1,451	\$ 1,729	\$ 1,490

Note: New Pipeline Facilities includes the piping and pump station facilities.

Exhibit F: Financial and Construction Responsibilities of Project Components

Project Item	Who will perform the work and pay the initial invoices		How will costs be reconciled between MCWD and PCA
	MCWD	PCA	
New Pipeline Facilities CEQA	X		PCA to reimburse MCWD based on Capital Cost Share %
New Pipeline Facilities Design	X		PCA to reimburse MCWD based on Capital Cost Share %
New Pipeline Facilities Permits	X		PCA to reimburse MCWD based on Capital Cost Share %
New Pipeline Facilities Capital	X		PCA to reimburse MCWD based on Capital Cost Share %
New Pipeline Facilities O&M	X		PCA to reimburse MCWD based on OM Cost Share %
New Pipeline Facilities Renewal	X		PCA to reimburse MCWD based on Renewal Cost Share %
Existing Pipeline Facilities O&M	X		PCA to reimburse MCWD based on OM Cost Share %
Existing Pipeline Facilities Renewal	X		PCA to reimburse MCWD based on Renewal Cost Share %
RUWAP Distribution Facilities CEQA, Design, Permits, Capital, O&M, and Renewal	X		Not applicable.
AWT-PHASE 1 CEQA		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 1 Design		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 1 Permits		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 1 Capital		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 1 O&M		X	MCWD to reimburse PCA based on OM Cost Share %
AWT-PHASE 1 Renewal		X	MCWD to reimburse PCA based on Renewal Cost Share %
AWT-PHASE 2 CEQA		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 2 Design		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 2 Permits		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 2 Capital		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 2 O&M		X	MCWD to reimburse PCA based on OM Cost Share %
AWT-PHASE 2 Renewal		X	MCWD to reimburse PCA based on Renewal Cost Share %
Injection Facilities CEQA, Design, Permits, Capital, O&M, and Renewal		X	Not applicable.

Exhibit G: Important Project Agreement Dates

Section 1.01 (a)	<u>Milestone</u>	<u>Party</u>	<u>Key Date</u>	<u>Drop Dead Date</u>
i	CEQA Approval-New Pipeline Facilities	MCWD		October 31, 2016
ii	CEQA Approval-AWT Phase 1 and AWT Phase 2	PCA		October 31, 2016
iii	No CEQA Lawsuits	BOTH		N/A
iv	Regulatory Approvals	PCA		October 31, 2016
v	SRF Funding Agreement	BOTH	October 31, 2016 Initial funding agreement	December 31, 2016 Final funding agreement
vi	Source waters approval	PCA		October 31, 2016
vii	CPUC approval	PCA		October 31, 2016

2. MOW - MCWD Amendment to Agreement

FIRST AMENDMENT TO
PURE WATER DELIVERY AND SUPPLY PROJECT AGREEMENT
BETWEEN MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY AND
MARINA COAST WATER DISTRICT

WHEREAS, on April 8, 2016, Marina Coast Water District (MCWD) and Monterey Regional Water Pollution Control Agency entered into the Pure Water Delivery and Supply Project Agreement (Agreement).

The parties agree to amend the Pure Water Delivery and Supply Project Agreement as follows:

1. Everywhere the term “Monterey Regional Water Pollution Control Agency” or “PCA” is used, substitute the term “Monterey One Water” and “M1W,” respectively.
2. Delete Section 1.01 in its entirety. The Parties agree that this Amendment addresses all of the matters previously listed in Section 1.01.
3. Amend Section 1.03(a) as follows:

M1W has already completed the necessary CEQA review for the use of AWT Phase 1 water for irrigation. MCWD intends to use its AWT Phase 1 water for irrigation; however, to the extent that any portion of MCWD’s AWT Phase 1 water is to be used for injection, then any additional CEQA review necessary to address the use of that water for injection will be the responsibility of MCWD as described in Section 1.03(g) below.

Because of the uncertainty resulting from the possibility that a portion of MCWD’s AWT Phase 2 will be used for injection, details regarding Phase 2 implementation of MCWD’s AWT Phase 2 water for injection will require a separate agreement or an amendment to this agreement based upon the existing terms of this agreement.

4. Add as a new Section 1.03(g) to read: M1W agrees that MCWD may use water delivered by this project, subject to the following conditions:
 1. The CEQA work completed and approved by the M1W Board in October, 2017 describes a MCWD project that applies this water for irrigation. Any change to that CEQA work, from irrigation to injection and sale shall be at the sole expense of MCWD and M1W shall not be responsible for any delays that any such change might cause in the timing of delivery of water for injection to MCWD.
 2. If MCWD elects to inject, it will be responsible for permitting at its injection site but M1W agrees to help by providing all of the work product it completed for its injection well project, e.g., engineering report for the drinking water permit, to MCWD for its use.
 3. M1W injection well field and infrastructure will not be used for MCWD injection unless and until there is a future separate agreement between the parties hereto.
 4. Any costs for a change from irrigation to injection, e.g. CEQA, engineering, permitting, test well construction, modeling, etc. shall be the sole responsibility of MCWD. To the extent that M1W agrees to do work to assist MCWD, MCWD agrees

to pay any such invoices to M1W within the time period for payment specified by the service provider.

5. FORA agrees to any such change in use from irrigation to injection and agrees to continue to fund the project as agreed to in 7 (d) (ii) of this amendment.
 6. The portion of the 650 acre feet of summer delivery water that is not used by MCWD for AWT Phase 1 will be available for use by M1W. For AWT Phase 2, the entire amount of the 650 acre feet of summer delivery will be needed and used by MCWD and will no longer be available to M1W.
5. In Section 2.05(a), delete the words “Subject to Section 1.01(a) conditions” and substitute the following words, “Subject to Section 1.03(a)”.
 6. In Section 3.01(b), delete “January 31, 2017” and substitute “December 31, 2018”.
 7. Delete existing Section 4.01 in its entirety and replace with the following:
 - (a) Reserved.
 - (b) The estimated construction costs and proportional share of the New Pipeline Facilities and AWT Phase 1 are presented below (which also includes the Distribution, Diversion, and Injection Facilities to provide a total project cost perspective even though those are not part of the cost sharing). The cost allocations for the Pipeline Facilities are based upon a MCWD maximum use of 1,427 AFY and a M1W maximum use of 3,700 AFY. If any maximum use amount is exceeded, then the Parties agree to recalculate the allocations for the Pipeline Facilities, to true up those capital costs back to the date of this Agreement, and to agree on a true up amount and payment schedule.

Capital Facility	Costs (Millions)		TOTAL
	M1W Share	MCWD Share	
AWT Phase 1	\$ 56.79	\$ 9.21	\$ 66.00
New Pipeline Facilities	\$ 17.52	\$ 10.28	\$ 27.80
Existing Pipeline Facilities	\$ 1.00	\$ 0.39	\$ 1.39
Diversion Facilities	\$ 6.60	\$ -	\$ 6.60
Injection Facilities	\$ 10.67	\$ -	\$ 10.67
Distribution Facilities	\$ -	\$ 11.50	\$ 11.50
TOTAL	\$ 92.58	\$ 31.38	\$ 123.96

- (c) Except for the \$1.39 million in Section 4.01(b) for the Existing Pipeline Facilities, the Parties agree that all dollar amounts in this Agreement, including exhibits, are estimates.

(d) Grants and Capital Contributions from Third Parties.

i. Unless otherwise agreed in writing by the Parties, each Party is only required to apply grant funds and capital contributions from third parties to cover that Party's cost share of the Pure Water Delivery and Supply Project Facilities.

ii. FORA Capital Contribution. FORA and MCWD entered into the Reimbursement Agreement for Advanced Water Treatment Phase 1 and Product Water Conveyance Facilities of the RUWAP Recycled Project dated September 6, 2016 (the FORA-MCWD Reimbursement Agreement"), pursuant to Sections 3.2.2 and 7.1.2 of the 1998 Water/Wastewater Facilities Agreement (the "1998 Agreement"). If the FORA Board of Directors independently determines to provide \$2.3 million to M1W for M1W's share of costs for the Project, then MCWD agrees to not object. M1W agrees to enter into a separate reimbursement agreement with FORA. M1W acknowledges FORA's obligations to MCWD under Section 7.1.2 of the 1998 Agreement. M1W agrees that it shall not be entitled to any additional funds allocated to MCWD by FORA for RUWAP and/or for Water Augmentation under the Base Reuse Plan; however, nothing herein is intended to prevent M1W from seeking additional funds directly from FORA.

8. Add the following new Subsections iv, v, and vi to Section 4.02(a):

iv. The transmission main turnouts, any other expense shown to be exclusively for the MCWD distribution system, and the potable water facility included in MCWD's transmission pipeline construction contract are considered to be a part of the Distribution System for cost sharing purposes (e.g. MCWD pays for 100% of the Distribution System costs).

v. The 2.0 million gallon recycled water reservoir included in MCWD's transmission pipeline construction contract is considered to be 25% for Injection Facilities (M1W) and 75% for Distribution Facilities (MCWD) and therefore the parties will split the cost of the recycled water reservoir along these percentages.

9. Substitute the following for Sections 4.04(b):

(b) MCWD applied for a Clean Water SRF loan to pay for its cost share of the Project Facilities except for its cost share of the AWT Phase 1 treatment plant facilities. MCWD AWT costs for Phase 1 will be included in the SRF loan referenced in Section 4.04(a) (included within M1W's SRF loan).

10. Section 5.01 has two subsections "(a)." The second subsection (a) should be re-lettered subsection (b) and the following subsections (b), (c), (d), and (e) shall be re-lettered (c), (d), (e), and (f), respectively. Subsection 5.01(b)(i) shall be deleted because M1W's SRF loan includes M1W's share of the New Pipeline Facilities.

11. Subsection 5.02(b) shall be deleted because M1W's SRF loan includes M1W's share of the New Pipeline Facilities.

12. In Section 5.10, Claims for Stranded Costs, delete “March 31, 2017” and substitute “December 31, 2018”.

13. Delete the existing Exhibit A and substitute the attached new Exhibit A.

14. Delete the existing Exhibit B and substitute the attached new Exhibit B.

15. Delete the existing Exhibit C (2 pages) and substitute the attached new Exhibit C (2 pages).

16. Delete the existing Exhibit E and substitute the attached Exhibit E.

17. Delete the existing Exhibit G.

18. Except as set forth in this First Amendment, all the provisions of the Agreement shall remain unchanged and in full force and effect.

In witness whereof, the parties execute this First Amendment as follows:

M1W

Dated: 11/29/2017
Rudy Fischer
Board Chair, Board of Directors

MCWD

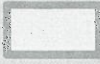

Dated: 12.18.17
[Signature]
President, Board of Directors

Approved as to form:

Dated: John R. Wellington
11/30/17
Counsel, M1W

Dated: 12/18/17
Tracy K. McQuinn
Legal Counsel, MCWD

Legend

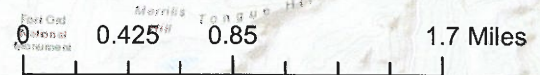
-  Advanced Water Treatment Facility
-  Product Water Conveyance Pipeline Facilities



Advanced Water Treatment Facility

Product Water Conveyance Pipeline Facilities

New Injection Well Facilities



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

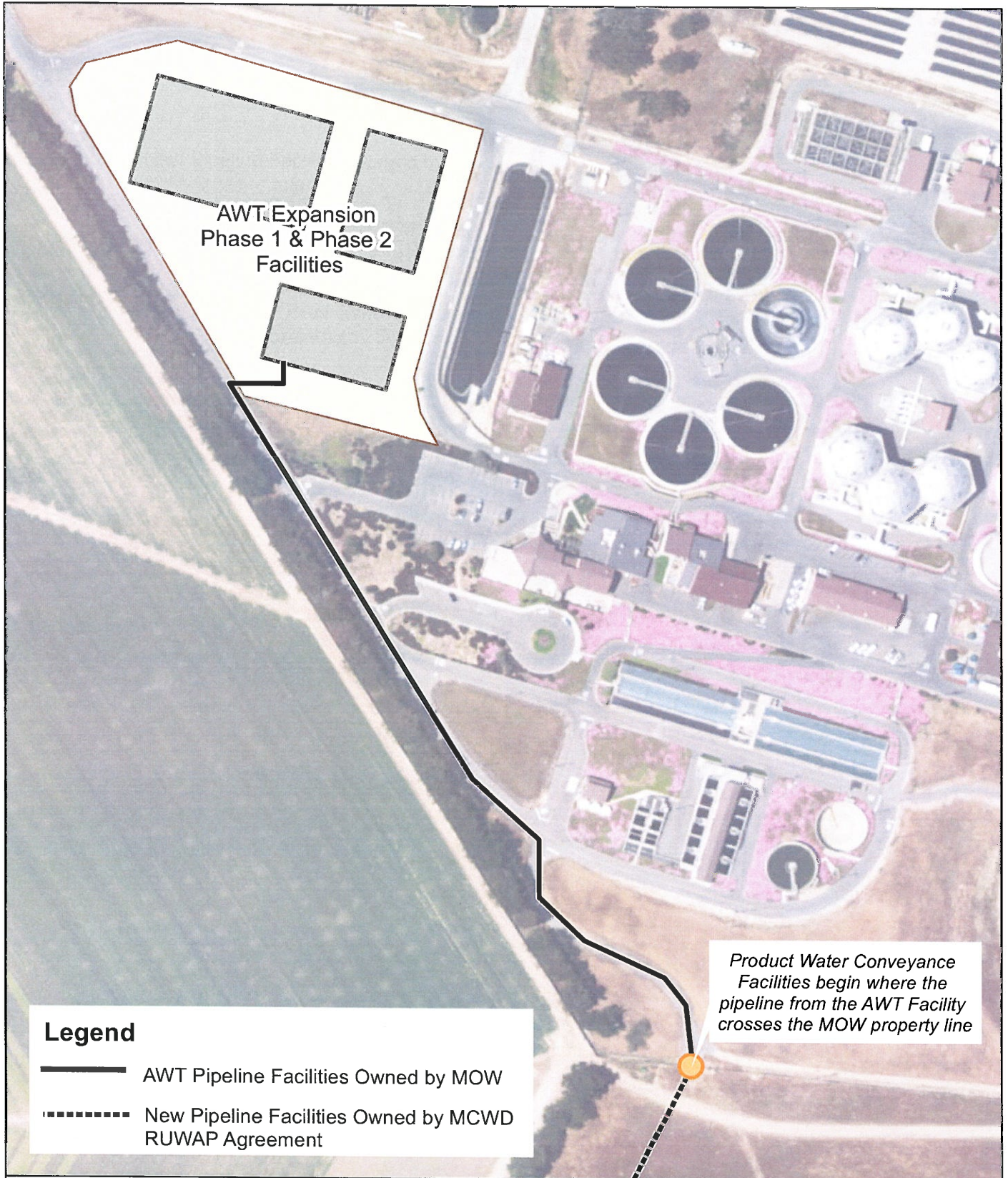


Marina Coast Water District
 11 Reservation Road
 Marina, CA 93933
 mcwd.org

**Exhibit A
 Pure Water Delivery and Supply Facility**

Drawn By:
 J.Hollida

Date:
 10/16/2017



Legend

- AWT Pipeline Facilities Owned by MOW
- - - - - New Pipeline Facilities Owned by MCWD RUWAP Agreement

Product Water Conveyance Facilities begin where the pipeline from the AWT Facility crosses the MOW property line

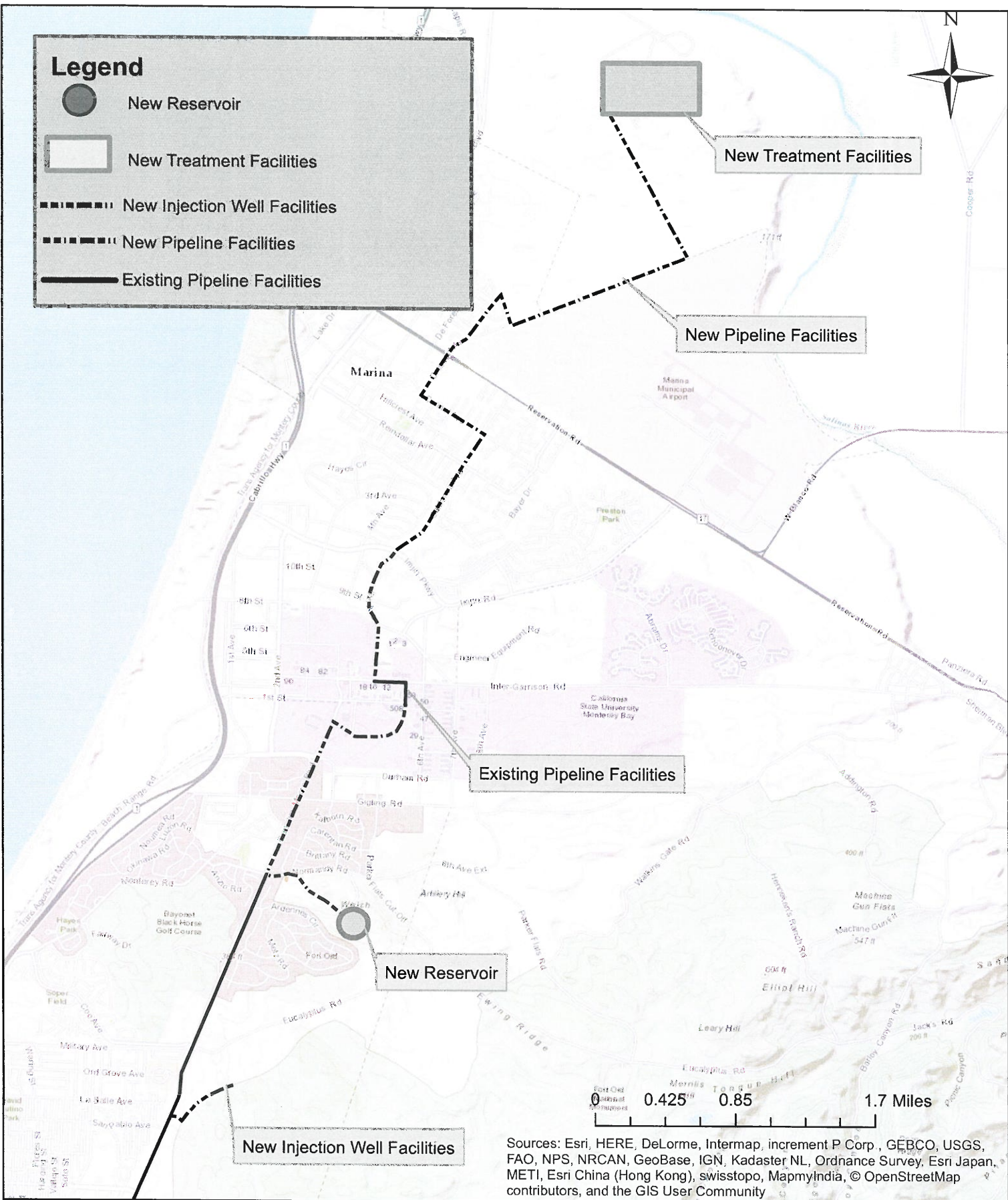


Exhibit B
Advanced Water Treatment Facility
(Pure Water Monterey Project)
Recycled Water Delivery and Supply Project

N

 0 100 200
 Feet
 1 inch = 200 feet

November 2017
 Author: A. Racz




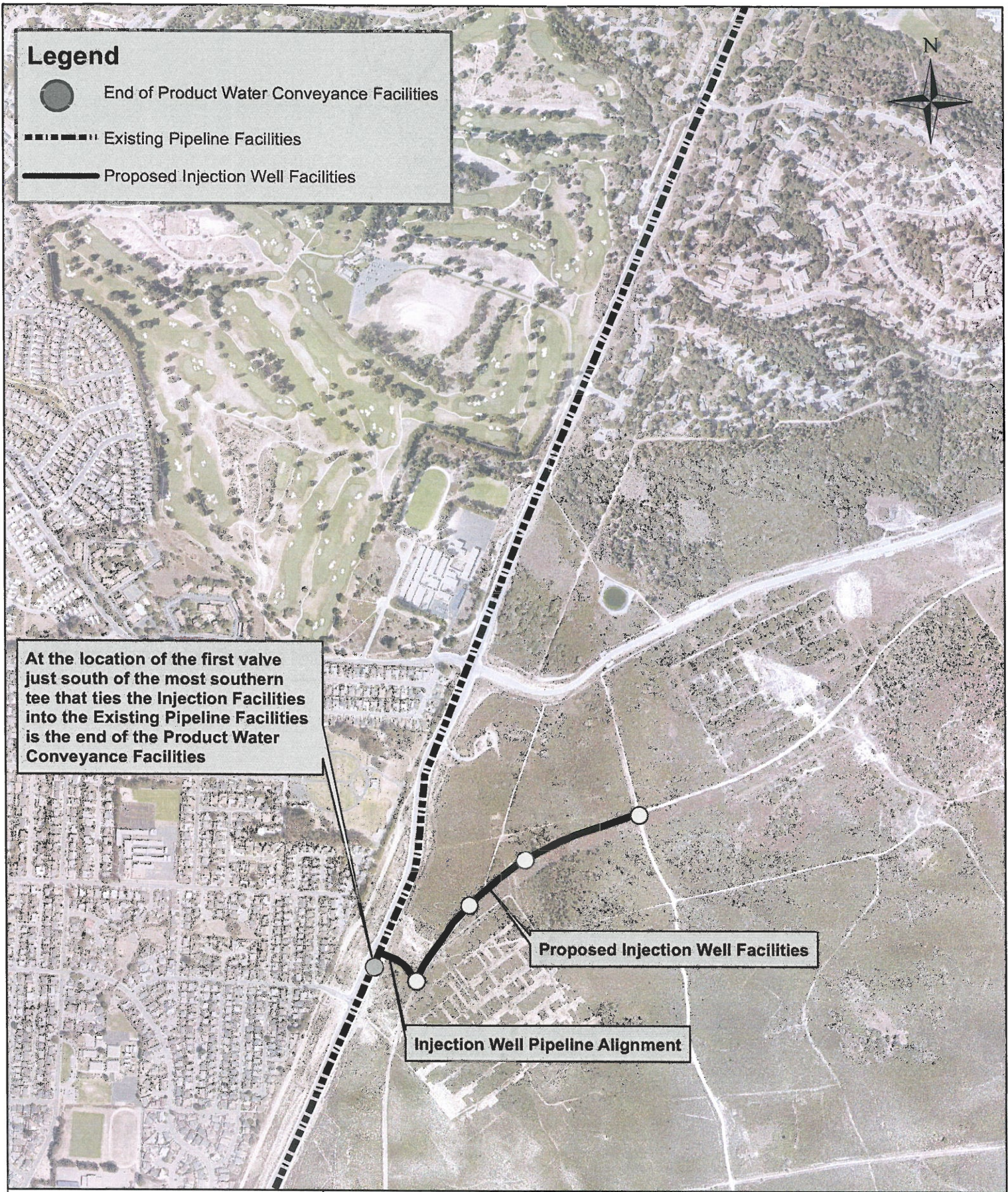

Marina Coast Water District
 11 Reservation Road
 Marina, CA 93933
 mcwd.org

Exhibit C
Product Water Conveyance Facilities

Drawn By:
 J.Hollida

 Date:
 10/16/2017



Legend

- End of Product Water Conveyance Facilities
- Existing Pipeline Facilities
- Proposed Injection Well Facilities

At the location of the first valve just south of the most southern tee that ties the Injection Facilities into the Existing Pipeline Facilities is the end of the Product Water Conveyance Facilities

Proposed Injection Well Facilities

Injection Well Pipeline Alignment



Marina Coast Water District
 11 Reservation Road
 Marina, CA 93933
 mcwd.org

Exhibit C
Product Water Conveyance Facilities

Drawn By:
 J.Hollida

Date:
 10/16/2017

Exhibit E: Summary of Estimated Costs-Phase 1 Only

Note: This table is only cost estimates, and does not include financing reductions from either grant funds or capital contributions.

Est. Capital Costs	PCA Share	MCWD Share	PCA Share	MCWD Share	Total Amount
New Pipeline Facilities	72.167%	27.833%	\$ 16,537,790	\$ 6,378,210	\$ 22,916,000
RUWAP Distribution Facilities	0.000%	100.000%	\$ -	\$ 12,464,000	\$ 12,464,000
Blackhorse Reservoir	25.000%	75.000%	\$ 980,000	\$ 2,940,000	\$ 3,920,000
AWT Phase 1	86.047%	13.953%	\$ 56,790,698	\$ 9,209,302	\$ 66,000,000
Diversion Facilities	100.000%	0.000%	\$ 6,600,000	\$ -	\$ 6,600,000
Existing Pipeline Facilities	72.167%	27.833%	\$ 1,002,400	\$ 386,600	\$ 1,389,000
Injection Well Facilities	100.000%	0.000%	\$ 10,670,000	\$ -	\$ 10,670,000
TOTAL	74.687%	25.313%	\$ 92,580,887	\$ 31,378,113	\$ 123,959,000

Est. Annual Debt Service Costs	PCA Share	MCWD Share	PCA Share	MCWD Share	Annual Amount
New Pipeline Facilities	72.167%	27.833%	\$ (640,808)	\$ (277,015)	\$ (917,823)
RUWAP Distribution Facilities	0.000%	100.000%	\$ -	\$ (541,329)	\$ (541,329)
Blackhorse Reservoir	25.000%	75.000%	\$ (37,973)	\$ (127,688)	\$ (165,662)
AWT Phase 1	86.047%	13.953%	\$ (2,200,532)	\$ (356,843)	\$ (2,557,375)
Diversion Facilities	100.000%	0.000%	\$ (255,738)	\$ -	\$ (255,738)
Existing Pipeline Facilities	72.167%	27.833%	\$ (38,841)	\$ (16,791)	\$ (55,632)
Injection Well Facilities	100.000%	0.000%	\$ (413,442)	\$ -	\$ (413,442)
TOTAL	73.106%	26.894%	\$ (3,587,335)	\$ (1,319,666)	\$ (4,907,001)

Est. Annual OM Costs	PCA Share	MCWD Share	PCA Share	MCWD Share	Annual Amount
New Pipeline Facilities	86.047%	13.953%	\$ (146,054)	\$ (23,684)	\$ (169,738)
RUWAP Distribution Facilities	0.000%	100.000%	\$ -	\$ (75,000)	\$ (75,000)
Blackhorse Reservoir	25.000%	75.000%	\$ (6,250)	\$ (18,750)	\$ (25,000)
AWT Phase 1	86.047%	13.953%	\$ (2,480,395)	\$ (402,000)	\$ (2,882,621)
Diversion Facilities	100.000%	0.000%	\$ -	\$ -	\$ -
Existing Pipeline Facilities	86.047%	13.953%	\$ (4,595)	\$ (745)	\$ (5,340)
Injection Well Facilities	100.000%	0.000%	\$ -	\$ -	\$ -
TOTAL			\$ (2,637,293)	\$ (520,179)	\$ (3,157,699)

Est. Annual Renewal Costs	PCA Share	MCWD Share	PCA Share	MCWD Share	Annual Amount
New Pipeline Facilities	72.167%	27.833%	\$ (165,378)	\$ (63,782)	\$ (229,160)
RUWAP Distribution Facilities	0.000%	100.000%	\$ -	\$ (124,640)	\$ (124,640)
Blackhorse Reservoir	25.000%	75.000%	\$ (9,800)	\$ (29,400)	\$ (39,200)
AWT Phase 1	86.047%	13.953%	\$ (567,907)	\$ (92,093)	\$ (660,000)
Diversion Facilities	100.000%	0.000%	\$ (66,000)	\$ -	\$ (66,000)
Existing Pipeline Facilities	72.167%	27.833%	\$ (10,024)	\$ (3,866)	\$ (13,890)
Injection Well Facilities	100.000%	0.000%	\$ (106,700)	\$ -	\$ (106,700)
TOTAL			\$ (925,809)	\$ (313,781)	\$ (1,239,590)

Est Total Annual Costs			PCA Share	MCWD Share	Annual Amount
New Pipeline Facilities			\$ (952,240)	\$ (364,481)	\$ (1,316,721)
RUWAP Distribution Facilities			\$ -	\$ (740,969)	\$ (740,969)
Blackhorse Reservoir			\$ (54,023)	\$ (175,838)	\$ (229,862)
AWT Phase 1			\$ (5,248,834)	\$ (850,936)	\$ (6,099,996)
Diversion Facilities			\$ (321,738)	\$ -	\$ (321,738)
Existing Pipeline Facilities			\$ (53,460)	\$ (21,402)	\$ (74,862)
Injection Well Facilities			\$ (520,142)	\$ -	\$ (520,142)
TOTAL			\$ (7,150,437)	\$ (2,153,627)	\$ (9,304,290)

Key

Item in cost share agreement
Item not in cost share agreement

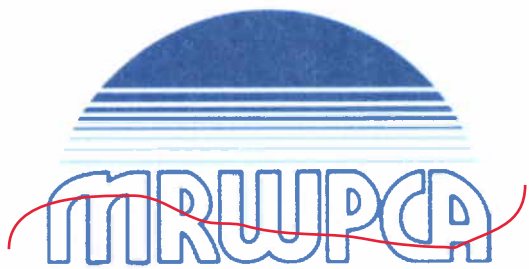
3. MOW - MCWD Conformed Agreement

WHEREAS, on April 8, 2016, Marina Coast Water District (MCWD) and Monterey Regional Water Pollution Control Agency entered into the Pure Water Delivery and Supply Project Agreement (Agreement).

Everywhere the term “Monterey Regional Water Pollution Control Agency” or “PCA” is used, substitute the term “Monterey One Water” and “M1W,” respectively.

Except as set forth in this First Amendment, all the provisions of the Agreement shall remain unchanged and in full force and effect.

Pure Water Delivery and Supply Project Agreement Between
~~Monterey Regional Water Pollution Control Agency and~~
Monterey One Water ^ Marina Coast Water District



M1W



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THIS PURE WATER DELIVERY AND SUPPLY PROJECT [hereinafter referred to as “Agreement”] is made this 8th day of April, 2016 (“Effective Date”), by and between Monterey Regional Water Pollution Control Agency (“PCA”) and Marina Coast Water District (“MCWD”), hereinafter “Parties.”

The PCA was formed as a California Joint Powers Agency by a Joint Exercise of Powers Agreement for the Monterey Regional Water Pollution Control Agency, effective June 29, 1979. The MCWD is a County Water District and political subdivision of the State of California, organized under Division 12, sections 30000 and following, of the California Water Code.

WITNESSETH

WHEREAS, the 1997 Fort Ord Base Reuse Plan (BRP) identifies the availability of water as a resource constraint and the BRP estimates that an additional 2,400 AFY of water is needed to augment the existing groundwater supply to achieve the permitted development level as reflected in the BRP (Volume 3, figure PFIP 2-7); and,

WHEREAS, the Fort Ord Reuse Authority (“FORA”) transferred ownership of all of the then existing Fort Ord water and sewer facilities to the Marina Coast Water District (“MCWD”) under the 1998 Water/Wastewater Facilities Agreement; title was transferred in 2001; and,

WHEREAS, under Section 3.2.2 of the 1998 Water/Wastewater Facilities Agreement, FORA has the responsibility to determine, in consultation with MCWD, what additional water and sewer facilities are necessary for MCWD’s Ord Community service area in order to meet the BRP requirements, and that, once FORA determines that additional water supply and/or sewer conveyance capacity is needed, under Section 3.2.1, it is MCWD’s responsibility to plan, design, and construct such additional water and sewer facilities. Section 7.1.2 requires FORA to insure that MCWD recovers all of its costs for the new facilities and their operation; and,

WHEREAS, in 2002, MCWD, in cooperation with FORA, initiated the Regional Urban Water Augmentation Project (RUWAP) to explore water supply alternatives to provide the additional 2,400 AFY of water supply needed under the BRP; and

WHEREAS, as a result of an extensive environmental review, FORA and MCWD agreed to adopt a modified Hybrid Alternative, which would provide 1,427 AFY of recycled water to the Ord Community without the need for seasonal storage, and this in turn resulted in the FORA Board adopting Resolution 07-10 (May 2007), which allocated that 1,427 AFY of RUWAP recycled water to its member agencies having land use jurisdiction; and

WHEREAS, in June 2009, PCA and MCWD entered into a 50-year RUWAP Memorandum of Understanding, in which, subject to certain conditions specified therein, (a) PCA committed 650 AFY of summer recycled water to MCWD for the Ord Community; (b) MCWD affirmed its separate commitment of 300 AFY of summer recycled water to the Ord Community; and (c) PCA and MCWD committed to supply 477 AFY of recycled water during other months to the Ord Community - for a total of 1,427 AFY; and

WHEREAS, MCWD has been and continues to work collaboratively with FORA and with the PCA to carry out MCWD’s obligation to provide the 1,427 AFY of recycled water for the Ord Community; and

WHEREAS, on May 31, 2013, PCA commenced environmental review of its Pure Water Monterey Groundwater Replenishment Project ("Pure Water Monterey Project"). The Pure Water Monterey Project is a water supply project that would serve northern Monterey County by providing: (1) purified recycled water for recharge of a groundwater basin that serves as drinking water supply; and (2) recycled water to augment the existing Castroville Seawater Intrusion Project's agricultural irrigation supply. The Pure Water Monterey Project includes a pipeline to transport purified recycled water from a new Advanced Water Treatment Plant ("AWT") at PCA's Regional Treatment Plant to new Injection Well Facilities overlying the Seaside Groundwater Basin ("Product Water Conveyance Pipeline"). The Environmental Impact Report ("EIR") for the Pure Water Monterey Project evaluated two alternative alignments for the Product Water Conveyance Pipeline, a Coastal Alignment and an alignment that follows the right-of-way for the existing and future RUWAP pipeline ("RUWAP Alignment"). The Pure Water Monterey Project EIR identified the environmental effects of constructing the Product Water Conveyance Pipeline along the RUWAP Alignment, and operating the Product Water Conveyance Pipeline for the Pure Water Monterey Project; however the EIR recognized that shared use of a single Product Water Conveyance Pipeline for both the Pure Water Monterey Project and to supply recycled water to MCWD for the RUWAP would necessitate further review under the California Environmental Quality Act ("CEQA"). Shared use of a single Product Water Conveyance Pipeline would necessitate expansion of the Advanced Water Treatment Plant in order to purify the recycled water destined for the RUWAP because all water flowing in the shared pipeline must be purified; by contrast if water to serve the RUWAP were conveyed in its own separate pipeline only tertiary treatment would be needed; and

WHEREAS, on September 8, 2015, MWCD and PCA tentatively agreed to work together on the Pure Water Monterey Project; and

WHEREAS, on October 8, 2015, the PCA Board unanimously voted to certify the EIR for the Pure Water Monterey Project and to approve the Pure Water Monterey Project. The PCA Board selected the RUWAP Alignment for the Product Water Conveyance Pipeline.

WHEREAS, on October 9, 2015, the FORA Board unanimously voted to adopt a resolution to endorse the Pure Water Monterey Project as an acceptable option as the recycled component of the RUWAP and, as part of the Pure Water Monterey Project implementation, the FORA Board will review and consider project component costs and scheduling through annual consideration of the FORA CIP and Ord Community Budgets.

NOW, THEREFORE, for and in reliance of the foregoing, the Parties hereby agree as follows:

DEFINITIONS

For the purposes of this Agreement, the following definitions are provided:

- A. The term "Annexation Agreements" refers to the Annexation Agreement between MCWD and PCA dated April 25, 1989, and the Annexation Agreement between MCWD and WRA dated March 26, 1996. The individual Annexation Agreements are referenced herein by their respective dates.
- B. The term "AWT" or "AWT Facilities" or "Advanced Water Treatment Facilities" means the Advanced Water Treatment facilities as shown in Exhibit B at the PCA Regional Treatment Plant

for the Pure Water Monterey Project and includes the AWT-PCA, AWT Phase 1, and the AWT Phase 2. The AWT Facilities includes that segment of new pipeline shown on Exhibit B and located within the existing property lines of the Regional Treatment Plant property.

- C. The term “AWT Capacity Entitlement” shall mean the entitlement to the plant treatment capacity of the AWT which a Party has the right to use under this Agreement.
- D. The term “AWT-PCA” shall mean construction and operation of an advanced water treatment plant sized to produce 3,700 AFY of purified recycled water to deliver to the Seaside Groundwater Basin for the Pure Water Monterey Project as approved by the PCA Board in its Resolution Number 2015-24 on October 8, 2015 as part of the “Pure Water Monterey Project”.
- E. The term “AWT Phase 1” shall mean construction and operation of an expansion to the AWT-PCA to produce an additional 600 AFY of purified recycled water to deliver to the FORA land use jurisdiction members in addition to the 3,700 AFY of purified recycled water from the AWT-PCA to deliver to the Seaside Groundwater Basin, for a total production of purified recycled water of from the AWT Phase 1 of 4,300 AFY.
- F. The term “AWT Phase 2” shall mean construction and operation of an expansion to the AWT-PCA to produce an additional 827 AFY for a total of 1,427 AFY of purified recycled water to deliver to the FORA land use jurisdiction members in addition to the 3,700 AFY of purified recycled water from the AWT-PCA to deliver to the Seaside Groundwater Basin, for a total production of purified recycled water from the AWT Phase 2 of 5,127 AFY.
- G. The term “Drought Reserve” shall refer to storage of up to 1,000 acre-feet of water for potential use during a drought. During wet or normal water years, about 50% of the years, an additional 200 AFY may be conveyed through the Pipeline Facilities and injected in the winter months to develop the Drought Reserve, thereby increasing PCA’s use of the Pipeline Facilities to 3,700 AFY.
- H. The term “Existing Pipeline Facilities” shall be the existing recycled water pipeline (and appurtenances) constructed by MCWD and rights-of-ways, which will become part of the Product Water Conveyance Facilities as shown in Exhibit C.
- I. The term “Injection Well Facilities” shall mean collectively the Injection Well Facilities, turnouts, diversions and lateral pipelines connected to and beyond the Product Water Conveyance Facilities as shown in Exhibit C.
- J. The term “New Pipeline Facilities” shall mean the new recycled water pipeline sections (and appurtenances), booster plant, and rights-of-ways to convey purified recycled water as shown in Exhibit C which will become a part of the Product Water Conveyance Facilities. The beginning and ending points of the “New Pipeline Facilities” are shown in Exhibits A and C, respectively.
- K. The term “Parties” or “Both Parties” shall mean MCWD and PCA and their respective Boards.
- L. The term “Pipeline Facilities Entitlement” shall mean the entitlement to the capacity of the Pipeline Facilities which a Party has the right to use under this Agreement.
- M. The term “Product Water Conveyance Facilities”, “Pipeline Facilities”, and “RUWAP Conveyance Facilities” shall mean collectively the New Pipeline Facilities and the Existing Pipeline Facilities as shown in Exhibits C.

- N. The term “Pure Water Monterey Project” shall mean the full project that the PCA Board approved in its Resolution Number 2015-24 on October 8, 2015 including construction and operation of all source water facilities, Product Water Conveyance Facilities, AWT-PCA and other improvements to the Regional Treatment Plant, and Cal Am Distribution System Improvements described in such resolution and in the EIR for the Pure Water Monterey Project.
- O. The term “Pure Water Delivery and Supply Project Facilities” or “Project Facilities” shall mean collectively the AWT and the Product Water Conveyance Pipeline Facilities, as generally shown in Exhibit A. The term “Project Facilities components” shall refer severally to the AWT Facilities and the Pipeline Facilities. The Pure Water Delivery and Supply Project Facilities, as defined by this Agreement is a subset of certain components of the Pure Water Monterey Project and RUWAP Recycled Water Project including expansion of the AWT to implement this Agreement.
- P. The terms "reclaimed water", "reclaimed wastewater", and "recycled water" shall mean purified recycled water.
- Q. The term “RUWAP Distribution Facilities” shall mean those facilities connected to the Product Water Conveyance Facilities, which will be used to distribute MCWD’s recycled water to MCWD’s customers. The RUWAP Distribution Facilities are not a Project Facilities component.
- R. The term “RUWAP Recycled Project” shall mean the urban recycled water portion of the Regional Urban Water Augmentation Project (RUWAP) approved by the MCWD and FORA Boards. In 2002, MCWD, in cooperation with FORA, initiated the Regional Urban Water Augmentation Project (RUWAP) to explore water supply alternatives to provide an additional 2,400 AFY of water supply needed under the Base Reuse Plan. As a result of an extensive environmental review, FORA and MCWD agreed to adopt a modified Hybrid Alternative, which would provide 1,427 AFY of recycled water to the Ord Community without the need for seasonal storage, and this in turn resulted in the FORA Board adopting Resolution 07-10 (May 2007), which allocated that 1,427 AFY to its member agencies having land use jurisdiction. As a result of the Pure Water Monterey Project, the RUWAP Recycled Project includes MCWD’s Pipeline Facilities Entitlement, the RUWAP Distribution Facilities, and MCWD’s AWT Capacity Entitlement under this Agreement.
- S. The term “Source Water Facilities” shall mean the diversion facilities as approved in the “Pure Water Monterey Project” by the PCA Board in its Resolution Number 2015-24 on October 8, 2015.
- T. The term “summer months” shall mean the months of May, June, July, August, and September.

I. DESIGN, ENVIRONMENTAL, RIGHT-OF-WAY, AND CONSTRUCTION

~~1.01 California Environmental Quality Act Compliance and Other Conditions~~

- (a) Conditions Precedent and Drop Dead Dates: Nothing in this Agreement, except Section 1.01 (b), shall be deemed to constitute a binding obligation on either Party unless and until all of the following have occurred first:
 - i. ~~New Pipeline Facilities: MCWD must complete any necessary CEQA review for any change in the location of the New Pipeline Facilities as compared to the location of the~~

~~pipeline facilities as shown the EIR for the Pure Water Monterey Project by October 31, 2016. Further, upon completion of any such CEQA review, before this Agreement can take effect, MCWD and PCA must approve the change in location of the New Pipeline Facilities. In conducting the CEQA review, MCWD reserves all of its rights, powers and discretion with regard to any such change in location in pipeline facilities. This includes the authority to adopt mitigation measures and/or an alternative project design, configuration, capacity or location in order to reduce any identified significant environmental impacts; the authority to deny the change in location of pipeline facilities based on any significant environmental impact that cannot be mitigated (in which case this Agreement shall not take effect); and the authority to approve the change in location of pipeline facilities notwithstanding any significant environmental impact that cannot be mitigated, if MCWD determines that these impacts are outweighed by the project's social, economic or other benefits. PCA similarly reserves all of its rights, powers and discretion under CEQA with regard to any decision by PCA on whether and how to approve any change in location in pipeline facilities.~~

- ii. AWT: PCA must complete any necessary CEQA review for AWT Phase 1 and AWT Phase 2 by October 31, 2016. In conducting the CEQA review, PCA reserves all of its rights, powers and discretion with regard to the expansion of the AWT. This includes the authority to adopt mitigation measures and/or an alternative project design, configuration, capacity or location in order to reduce any identified significant environmental impacts; the authority to deny the expansion of the AWT based on any significant environmental impact that cannot be mitigated (in which case this Agreement shall not take effect); and the authority to approve the expansion of the AWT notwithstanding any significant environmental impact that cannot be mitigated, if PCA determines that these impacts are outweighed by the project's social, economic or other benefits. MCWD similarly reserves all of its rights, powers and discretion under CEQA with regard to any decision by MCWD on whether and how to approve any expansion of the AWT.
- iii. There must be no CEQA lawsuits challenging any of the Parties' approvals with respect to any change in the location of the New Pipeline Facilities or with respect to the AWT Phase 1 or AWT Phase 2; if any such lawsuits are filed, all such lawsuits must be favorably resolved to the satisfaction of both PCA and MCWD.
- iv. All necessary regulatory approvals must be obtained for the Pure Water Monterey Project, AWT, and the New Pipeline Facilities including regulatory approvals required for any change in the location of the New Pipeline Facilities as compared to the location evaluated in the EIR for the Pure Water Monterey Project by October 31, 2016.
- v. Funding must be secured by December 31, 2016 for the Pure Water Monterey Project and the RUWAP Distribution Facilities, including for any change in the location of the New Pipeline Facilities as compared to the location evaluated in the EIR for the Pure Water Monterey Project, for AWT Phase 1, and for the CEQA work for AWT Phase 2; provided, however, that this funding is not required for the completed design and construction of AWT Phase 2 for the provisions of this Agreement to take effect with regard to implementation of Phase 1.
- vi. All source water must be approved for the Pure Water Monterey Project, except for Lake El Estero and Tembladero Slough by October 31, 2016.
- vii. ~~All approvals must be obtained from the California Public Utilities Commission for the~~

~~water purchase agreement under which Cal Am agrees to buy 3,500 acre-feet of water per year from the Pure Water Monterey Project by October 31, 2016.~~

(b) Key Dates and Conditions for Future Negotiations.

- i. If the Division of Financial Services of the State Water Resource Control Board fails to approve PCA's SRF loan Initial Funding Agreement by October 31, 2016, then MCWD and PCA agree to negotiate in good faith alternatives for providing recycled water (tertiary or purified) for potential customers.
- ii. If the Division of Financial Services of the State Water Resource Control Board approves PCA's initial funding agreement, then if the Division of Financial Services of the State Water Resource Control Board fails to approve MCWD's State Revolving Fund (SRF) loan Initial Funding Agreement and/or MCWD passes a Board resolution to discontinue work on the project by October 31, 2016, then MCWD shall transfer all work product (e.g. right-of-way, design, survey, environmental, bid documents, etc.) to PCA so PCA can continue progressing with the project. If the Division of Financial Services of the State Water Resource Control Board approves PCA's State Revolving Fund (SRF) Loan Final Funding Agreement but denies MCWD's State Revolving Fund (SRF) Loan Final Funding Agreement and MCWD does not identify alternate financing by December 31, 2016, MCWD shall transfer all work product to PCA for financing and constructing the New Pipeline Facilities.
 - a. PCA will pay MCWD for all project expenditures on any work products transferred (e.g. right-of-way, design, survey, environmental, and bid document development).
 - b. In the event that PCA assumes responsibility for the financing and construction of the product water conveyance facilities, MCWD would continue to maintain ownership of the Product Water Conveyance Facilities per 2.06 of this agreement, and would assume ownership upon satisfactory demonstration of no additional financial impact to PCA for providing the financing to construct the Product Water Conveyance Facilities.
- iii. If the Division of Financial Services awards PCA an interest rate that is lower than the interest rate awarded to MCWD and MCWD does not receive grant or other funds that could be applied to the New Pipeline Facilities that would reduce PCA's share of the New Pipeline Facilities cost by approximately the same amount as the difference in cost from MCWD's higher interest rate, then MCWD and PCA agree to negotiate in good faith ~~alternatives for financing and constructing the New Pipeline Facilities.~~

1.02 MCWD's Obligations.

MCWD will fulfill the following obligations relating to the New Pipeline Facilities:

- (a) MCWD will be responsible for acquiring all rights-of-way needed for the New Pipeline Facilities.
- (b) MCWD will conduct any necessary CEQA review for the New Pipeline Facilities.
- (c) MCWD will complete the design and contract documents for the construction of the New Pipeline Facilities.
- (d) MCWD will finance, construct, and install the New Pipeline Facilities in substantial conformity

3. Amend Section 1.03(a) as follows: MIW will conduct any necessary CEQA review for the AWT including Phase 1 and Phase 2 and will obtain all necessary regulatory approvals to allow the use of recycled water under this Agreement for injection and recovery for municipal and industrial purposes and for irrigation purposes before December 31, 2018. In conducting the CEQA review, MIW reserves all of its rights, powers and discretion with regard to the expansion of the AWT. This includes the authority to adopt mitigation measures and/or an alternative project design, configuration,

capacity or location in order to reduce any identified significant environmental impacts; the authority to deny the expansion of the AWT based on any significant environmental impact that cannot be mitigated (in which case this Agreement shall not take effect); and the authority to approve the expansion of the AWT notwithstanding any significant environmental impact that cannot be mitigated, if MIW determines that these impacts are outweighed by the project's social, economic or other benefits. MCWD similarly reserves all of its rights, powers and discretion under CEQA with regard to any decision by MCWD on whether and how to approve any expansion of the AWT.

with designs and plans approved by the Parties in writing. MCWD will put the New Pipeline Facilities out to bid and administer the construction contract.

1.03. PCA's Obligations.

PCA will fulfill the following obligations relating to the AWT Facilities:

- ~~(a) PCA will conduct any necessary CEQA review for the AWT including Phase 1 and Phase 2.~~
- (b) PCA will finance, construct, and install the AWT Phase 1, in substantial conformity with designs and plans approved by the Parties in writing. PCA will put the AWT Phase 1 out to bid, and administer the construction contract(s).
- (c) PCA will complete the design and contract documents for the AWT Phase 1.
- (d) PCA will provide, and MCWD shall have, an AWT Capacity Entitlement of 600 AFY of purified recycled water from the AWT Phase 1 facilities.
- (e) PCA will provide, and MCWD shall have, an AWT Capacity Entitlement of an additional 827 AFY of purified recycled water from the AWT Phase 2 for a total AWT Capacity Entitlement in the AWT facilities of 1,427 AFY.
- (f) Up until MCWD exercises its option for the AWT Phase 2 facilities, MCWD shall have the continuing right to 827 AFY of tertiary water as set forth in the Annexation Agreements and the 2009 RUWAP MOU (1,427 AFY less the 600 AFY of recycled water provided in the AWT Phase 1 facility). It is not intended or implied that this water would be used in the same pipeline as the advanced treated water.

1.04. Change Orders.

- (a) Change orders must be approved in writing.
- (b) Any change order or related set of change orders that increases the Pure Water Delivery and Supply Project Facilities cost by \$100,000 or more shall require the written consent of both parties within 30 days of presentation.
- (c) Any change order or related set of change orders that increases the Pure Water Delivery and Supply Project Facilities cost by less than \$100,000 or that lowers the Pure Water Delivery and Supply Project Facilities cost may be approved by the party designated herein to administer the contract, without the consent of the other party, except that a copy of any proposed or executed change order shall promptly be provided to the other party as soon as it is available. The contract administrator party shall not split up change order work so that approval of the combined change order work by the other party is not required.
- (d) Each party's contract administrator shall be authorized to give consent to change orders for that party. Neither party's consent to a change order will be unreasonably withheld or delayed.
- (e) This Change Orders section shall apply separately to the AWT and Product Water Conveyance Facilities. This section shall no longer apply to a component of the Pure Water Delivery and Supply Project Facilities on the date that the parties agree in writing that that such component has been completed and is ready to be used.

Add as a new Section 1.03(g) to read: "(g) MIW agrees to not object to MCWD selling for use on the Monterey Peninsula such amount of the 600 AFY Phase 1 entitlement not needed to meet demand as determined by MCWD within MCWD's Ord Community and such amount of the 827 AFY Phase 2 entitlement not needed to meet demand as determined by MCWD within MCWD's Ord Community."

1.05. Project Schedule Cooperation between agencies.

- (a) Subject to the terms and conditions of this Agreement, PCA and MCWD shall work cooperatively and with diligence to obtain all permits, approvals, and financing to construct the Pure Water Delivery and Supply Project Facilities.
- (b) Both parties will develop an implementation schedule. Representatives of the parties will meet on a monthly basis, or more often if necessary, in order to ensure that the Pure Water Delivery and Supply Project Facilities are proceeding according to the schedule and in conformity with this contract and the approved plans and designs. Each party will make every reasonable effort to fulfill its obligations in a timely manner to meet the projects milestones and deadlines.

1.06. Right to inspect.

- (a) Each party shall have the right to inspect the Pure Water Delivery and Supply Project Facilities, while under construction and at any time thereafter during the term of this contract, upon the giving of reasonable advance notice to the party administering the construction contract. Such inspections may take place at any time during the day or night; however, night time inspections will not take place without at least one week's notice, except in case of emergency or by agreement between the parties.
- (b) Each party shall have the sole right to direct the construction work that such party is responsible to implement and the work of each party's own employees. Each party's right to inspect is for the purpose of observation only and not for the purpose of supervision of the work observed.

1.07. Ocean Outfall.

Nothing in this Agreement changes past agreements between the Parties to meet and confer in good faith to evaluate the environmental, technical, managerial, and financial feasibility of a project to use the Regional Treatment Plant outfall to transport and discharge brine byproduct from a future water desalination facility.

**II. PURE WATER DELIVERY AND SUPPLY PROJECT FACILITIES
DESCRIPTION, OWNERSHIP, OPERATIONS, AND MAINTENANCE**

2.01. Location and Description of the Pure Water Delivery and Supply Project Facilities.

The Pure Water Delivery and Supply Project Facilities are shown generally in Exhibit A, attached hereto and made a part hereof and consist of the following sections:

- AWT (Exhibit B)
- New Pipeline Facilities (Exhibit C)
- Existing Pipeline Facilities (Exhibit C)

2.02. AWT Phase I

The AWT Phase I shall be sized to produce a minimum of 600 AFY of purified recycled water with the ability to produce a maximum day demand of 1.37 MGD for MCWD and in addition to produce a minimum of 3,700 AFY of purified recycled water with the ability to produce a maximum day demand of 4.0 MGD for the Pure Water Monterey Project.

2.03. Product Water Conveyance Facilities

- (a) The New and Existing Pipeline Facilities will have a minimum total conveyance capacity of

5,127 AFY.

- (b) PCA is prohibited from providing water to any customer within any MCWD service area through the use of any Pure Water Monterey Project Facility, either directly or through a third party, unless approved and authorized in writing by the MCWD Board of Directors. PCA agrees that it shall not authorize any third party to use any Pure Water Monterey Project Facility to serve water to any customer within any MCWD service area unless approved and authorized in writing by the MCWD Board of Directors.

2.04. Reserved

In Section 2.05(a), delete the words "Subject to Section 1.01(a) conditions" and substitute the following words, "Subject to Section 1.03(a) conditions".

2.05. Future Expansion of Facilities (AWT Phase 2)

- (a) ~~Subject to Section 1.01 (a) conditions.~~ PCA will provide upon a written request from MCWD an additional AWT Capacity Entitlement for MCWD of up to and including 827 AFY of purified recycled water under AWT Phase 2 for a total AWT Capacity Entitlement of 1,427 AFY. PCA will not unreasonably delay implementing the request.
- (b) PCA will reserve physical space at the plant site and facilities for expanding the AWT should subsection (a) be triggered from time to time in the future.
- (c) Should MCWD request expanding the AWT beyond the AWT Phase 1 while there is sufficient time and funding capacity to include the further expansion in the Clean Water State Revolving Fund loan for the Pure Water Monterey Project, the costs for the AWT Phase 2 will be subject to the cost sharing section of this Agreement.
- (d) Subject to Section 2.05(b) above, PCA may expand the AWT and may construct additional reclamation facilities, at its sole cost and expense and without receiving the consent of MCWD, unless the Product Water Conveyance Facilities are disrupted or delivery of AWT water to MCWD is affected, then consent is required by MCWD in writing. Any increases in capacity and any additional reclamation facilities so constructed shall be used at PCA's discretion.

2.06. Ownership, Operation, and Maintenance of the Pure Water Delivery and Supply Project Facilities

- (a) PCA will own, operate, and maintain the AWT.
- (b) MCWD will own, operate and maintain the Product Water Conveyance Facilities. In addition, MCWD shall own a Pipeline Facilities Capacity Entitlement equal to 27.833% of the capacity of the Product Water Conveyance Facilities with a maximum annual use of 1,427 AFY during the initial term and any extended term of this Agreement. If and when the AWT Phase 2 is commercially operational and as shown on the table accompanying Section 3.02(b), the Parties recognize and agree that, during the summer months, MCWD's use of the Pipeline Facilities' capacity may exceed 27.833% of the instantaneous capacity and that MCWD is hereby authorized to exceed 27.833% during the summer months.
- (c) PCA shall own a Pipeline Facilities Capacity Entitlement equal to 72.167% of the capacity of the Product Water Conveyance Facilities with a maximum annual use of 3,700 AFY during initial term and any extended term of this Agreement. Parties recognize and agree that, during the months of November through February, PCA's use of the Pipeline Facilities' capacity may exceed 72.167% of the instantaneous capacity and that PCA is hereby authorized to exceed 72.167% during those specific months.

- (d) For the term of this Agreement, PCA shall maintain the AWT in good condition and repair and MCWD shall maintain the Product Water Conveyance Facilities in good condition and repair.
- (e) Both parties agree to coordinate operations and to share/integrate SCADA and other operational tools as necessary to facilitate efficient and effective operations of the Pure Water Delivery and Supply Project Facilities.

2.07. Decision-making authority.

In order to provide for the smooth and efficient operation of the Pure Water Delivery and Supply Project Facilities, MCWD and PCA will have the full authority to make and implement decisions with regard to activities and expenditures for the operations, and maintenance of their respective Project Facilities component without prior approval of the other party. All such activities shall be within the scope of services for operations and maintenance. All such expenditures shall be funded with the respective parties operational and maintenance budgets and/or the replacement reserves.

2.08. Outside Contracts.

When either Party deems it more appropriate for an outside contractor to make repairs or perform maintenance, bids may be solicited for contracts to perform this work.

2.09. Permits and approvals.

Each Party shall be responsible for obtaining and complying with all permits and approvals for the Project Facilities component that such Party owns that are necessary to perform its work under this Agreement.

2.10. Safety and loss prevention program.

MCWD and PCA will jointly develop, maintain, and implement a safety and loss prevention program for the Pure Water Delivery and Supply Project Facilities, and will provide appropriate training for its employees working on the facilities. This program will conform to all requirements set forth in CAL OSHA's Process Safety Management Program and US EPA's Risk Management Program, and will be revised and updated as new regulations are promulgated. All costs associated with the program will be included in the annual budget process.

2.11. Access to facilities.

Both MCWD and PCA personnel shall be provided access rights to all Pure Water Delivery and Supply Project Facilities with adequate notice and staff availability/chaperone.

2.12. Pure Water Coordinating Committee.

- (a) Within sixty days of the Effective Date of this Agreement, the parties shall establish and maintain a Pure Water Coordinating Committee which membership shall consist of at least one representative from each Party. A representative from each Party shall be the person who will be or who is responsible for the daily operations of a Pure Water Delivery and Supply Project Facilities component. The committee shall have access to and shall share all pertinent information in order to discuss and make recommendations for sustaining or improving the operations (including water quality), maintenance, and capital replacement efforts of the project.
- (b) Any financial changes approved by the Pure Water Coordinating Committee at a Committee meeting that require a budget modification will be submitted to both Boards of Directors for approval of the necessary budget modifications.

2.13. Unanticipated events/Emergency situations

- (a) Non-emergency circumstances or events may arise which were not anticipated in either the scopes of services or the budgets for the Pure Water Delivery and Supply Project Facilities. In this case, plans for addressing such circumstances or events, including justification and estimated amount of expenditures, will be submitted to the Pure Water Coordinating Committee for its review and recommendations. Before proceeding with those plans, each party must first give its written approval to incur any additional costs associated therewith consistent with the procurement policy of each agency.
- (b) If the event or circumstance constitutes an emergency situation which threatens health and safety, damage to property, or injury to persons, the Party having operational control of the affected Pure Water Delivery and Supply Project Facilities component will act as promptly and as efficiently as possible to mitigate the situation without waiting for approval by the Pure Water Coordinating Committee. The Pure Water Coordinating Committee will be advised as soon as possible thereafter of the mitigating actions taken and of any further action that may be necessary.

III. DELIVERY OF PURIFIED RECYCLED WATER

3.01. Existing Allocations

- (a) Subject to the terms and conditions described in this Agreement, PCA agrees to treat and provide an annual amount of purified recycled water from PCA's and MCWD's entitlements to assure delivery of the agreed water commitments to the RUWAP Recycled Project approved by the FORA Board of Directors and allocated to FORA land use jurisdiction members. Up to 1,762 AFY of source water would be made available from PCA to provide a net 1,427 AFY of purified recycled water taking into account the assumption of a 19% loss resulting from the advanced water treatment processes with the following limitations unless the FORA Board of Directors agrees to an allocation of less than 1,427 AFY of net purified recycled water:
 - i. As stated in the 1996 Annexation Agreement, up to a maximum of 300 AFY of source water will be treated for MCWD's use between the months of April and September.
 - ii. As stated in the 2009 RUWAP MOU, up to a maximum of 650 AFY of source water will be made available from PCA entitlements between the months of May and August for recycled water use.
 - iii. As per the 2009 RUWAP MOU, Section 3.1, the Parties agreed to meet and confer in good faith to evaluate the environmental, technical, managerial, and financial feasibility of a groundwater recovery replenishment project to inject and store recycled water.
 - iv. As stated in Section IV 1(d) of the Amended and Restated Water Recycling Agreement between PCA and Monterey County Water Resources Agency which was approved in November 2015, PCA is allocated 650 AF of water by Water Resources Agency during the months of May through August.
- (b) The parties agree to commit to a process to determine the amount of MCWD's Fort Ord Water Rights. The process shall include MCWD, PCA, FORA, U.S. Army, and MCWRA meeting and discussing the various agreements, obtaining legal opinions as necessary, and drafting documentation to clarify each agency's opinion, agreement, or disagreement and next steps on this issue by ~~January 31, 2017~~.

In Section 3.01(b), delete "January 31, 2017" and substitute "December 31, 2018".

3.02 Demand Schedule.

(a) According to Section 3.01 and subject to Section 2.03 of this Agreement, PCA will provide MCWD with purified recycled water according to the following typical nonbinding Schedule for AWT Phase 1 (~600 AFY of product water):

Approximate Demand Schedule (Phase 1):

Month	Demand (AF)			Needed Supply (AF)
	Others	Golf Course	Total	
January	7	16	23	28
February	5	11	16	19
March	8	19	27	33
April	16	40	56	70
May	26	62	88	108
June	26	63	89	110
July	27	65	92	113
August	22	54	76	94
September	20	49	69	85
October	12	29	41	51
November	5	12	17	21
December	2	5	7	9
Total	175	425	600	741

(b) According to Section 3.01 and subject to Section 2.03 of this Agreement, PCA will provide MCWD with purified recycled water according to the following typical nonbinding Schedule for AWT Phase 2 project (ultimate build out of the AWT to the amount approved by the FORA Board of Directors pursuant to Resolution No. 07-10):

Approximate Demand Schedule (Phase 2):

Month	Demand (AF)			Needed Supply (AF)
	Others	Golf Course	Total	
January	38	16	54	66
February	26	11	37	46
March	45	19	64	79
April	94	40	134	166
May	146	62	208	257
June	149	63	212	261
July	153	65	218	269
August	127	54	181	224
September	116	49	165	203
October	68	29	97	120
November	28	12	40	50
December	12	5	17	21
Total	1002	425	1427	1762

3.03 Water Quality.

All water produced and delivered to MCWD shall meet all applicable standards of quality prescribed by the State of California (including, but not limited to, the regulations promulgated by

the State Health Department and set forth in the California Code of Regulations, Title 22), or by separate agreement of the parties, so that the water may be used for the purposes specified herein. The parties clarify their intent with regard to the required water quality and further agree that the AWT Facilities have been designed to produce purified recycled water for the injection and landscape irrigation and other authorized purposes. The Parties agree that the purified recycled water to be used for landscape irrigation and other authorized purposes shall be of the same water quality as the water used for injection.

3.04. Warranties.

PCA warrants that all water committed to MCWD pursuant to this Agreement shall be transferred to MCWD free and clear of all claims by any person or entity, except as otherwise specified.

3.05. Duty to monitor water quality: cessation in deliveries.

PCA will monitor the quality of water produced, in accordance with the Indirect Potable Reuse guidelines per the California Department of Drinking Water Title 22 Article 5.2 of the CCR.

3.06. Regulations to protect water quality.

PCA will, to the extent feasible, enact reasonable and appropriate regulations governing the kinds of wastes and other materials that may be discharged into the sewerage system, in order to protect the quality of water ultimately produced by the AWT.

3.07. Daily Operation.

The AWT will be in operation and will supply water to MCWD on a daily basis except for temporary periods of shut-down authorized by this Agreement or made necessary by circumstances beyond the control of PCA or MCWD.

3.08. Incidental Uses.

PCA may use such amounts of purified recycled water from the Pure Water Delivery and Supply Project Facilities as may be needed for the normal operation and maintenance of PCA's facilities, including, but not limited to, the backwash of injection wells.

3.09. Notice of temporary cessation of water deliveries.

PCA will give immediate notice to MCWD, by telephone and/or electronic communication to MCWD's General Manager, or to the person designated by the General Manager to receive such notices, with a prompt follow-up notice in writing, as soon as PCA becomes aware of the need to cease deliveries. In addition, whenever a cessation of deliveries occurs, PCA shall use every reasonable effort to restore service as soon as possible.

3.10. Interruptions of service.

- (a) No work of construction, remodeling, renovation, replacement, repairs, addition, or expansion authorized under this Agreement and performed on the AWT or Injection Well Facilities shall, either before, during, or after such work, interfere with, interrupt, or reduce the delivery of advanced treated water to MCWD under this Agreement, except that minor interferences, interruptions, or reductions shall be allowed when necessary, unavoidable, or beyond the control of PCA.
- (b) PCA shall schedule its planned maintenance activities on the AWT and the Injection Well Facilities to minimize interruption of distribution of purified recycled water. Unscheduled work to perform repairs or maintenance will be performed in the manner deemed by PCA to have the least impact on the supply of advanced treated water. In case of any interruption of service, PCA shall give notice in the same manner as required by this Agreement.

(c) MCWD shall schedule its planned capital replacement, maintenance activities, and lateral tie-in's to the Product Water Conveyance Facilities to minimize interruption of distribution of purified recycled water. Unscheduled work to perform repairs or maintenance will be performed in the manner deemed by MCWD to have the least impact on the distribution of purified recycled water. In case of any interruption of service on the Product Water Conveyance Facilities, MCWD shall give notice in the same manner as required by this Agreement.

IV. ESTIMATED COSTS, COST SHARING, FINANCING, AND BUDGETING

4.01. Estimated Costs of the Project

Delete existing Section 4.01 in its entirety and replace with the following:

(a) Reserved.

(b) The estimated construction costs and proportional share of the New Pipeline Facilities and AWT Phase 1 are presented below (which also includes the Distribution, Diversion, and Injection Facilities to provide a total project cost perspective even though those are not part of the cost sharing). The cost allocations for the Pipeline Facilities are based upon a MCWD maximum use of 1,427 AFY per year and a M1W maximum use of 3,700 AFY. If any maximum use amount is exceeded, then the Parties agree to recalculate the allocations for the Pipeline Facilities, to true up those capital costs back to the date of this Agreement, and to agree on a true up amount and payment schedule.

	Costs (Millions)		
Capital Facility	M1W Share	MCWD Share	TOTAL
AWT Phase 1	\$ 56.79	\$ 9.21	\$ 66.00
New Pipeline Facilities	\$ 17.52	\$ 10.28	\$ 27.80
Existing Pipeline Facilities	\$ 1.00	\$ 0.39	\$ 1.39
Diversion Facilities	\$ 6.60	\$ -	\$ 6.60
Injection Facilities	\$ 10.67	\$ -	\$ 10.67
Distribution Facilities	\$ -	\$ 11.50	\$ 11.50
TOTAL	\$ 92.58	\$ 31.38	\$ 123.96

(c) Except for the \$1.39 million in Section 4.01(b) for the Existing Pipeline Facilities, the Parties agree that all dollar amounts in this Agreement, including exhibits, are estimates.

(d) Grants and Capital Contributions from Third Parties.

i. Unless otherwise agreed in writing by the Parties, each Party is only required to apply grant funds and capital contributions from third parties to cover that Party's cost share of the Pure Water Delivery and Supply Project Facilities.

ii. FORA Capital Contribution. FORA and MCWD entered into the Reimbursement Agreement for Advanced Water Treatment Phase 1 and Product Water Conveyance Facilities of the RUWAP Recycled Project dated September 6, 2016 (the FORA-MCWD Reimbursement Agreement"), pursuant to Sections 3.2.2 and 7.1.2 of the 1998 Water/Wastewater Facilities Agreement (the "1998 Agreement). If the FORA Board of Directors independently determines to provide \$2.3 million to M1W for M1W's share of costs for the Project, then MCWD agrees to not object so long as M1W enters into a separate reimbursement agreement for the \$2.3 million on the same terms and conditions as to the timing and disbursement of funds under the FORA-MCWD Reimbursement Agreement.

M1W acknowledges FORA's obligations to MCWD under Section 7.1.2 of the 1998 Agreement. M1W agrees that it shall not be entitled to any additional funds allocated to MCWD by FORA for RUWAP and/or for Water Augmentation under the Base Reuse Plan; however, nothing herein is intended to prevent M1W from seeking additional funds directly from FORA.

Add the following new Subsections iv, v, and vi to Section 4.02(a):

iv. The transmission main turnouts and the portable water facility included in MCWD's transmission pipeline construction contract are considered to be a part of the Distribution System for cost sharing purposes (e.g. MCWD pays for 100% of the Distribution System costs).

v. The 2.0 million gallon recycled water reservoir included in MCWD's transmission pipeline construction contract is considered to be 25% for Injection Facilities and 75% for Distribution Facilities and therefore the parties will split the cost of the recycled water reservoir along these percentages.

vi. The chlorination of the transmission pipeline is solely needed for the injection facilities and therefore those costs that are included within MCWD's transmission pipeline construction contract for the chlorination of the transmission pipeline will be 100% paid for by MIW.

AWT, DIVERSION, INJECTION FACILITIES

AWTF		\$40,000,000
	PCA 72.17%	\$28,866,783
	MCWD 27.83%	\$11,133,216
Diversion		\$947,765 + 5,649,339 ≈ \$6,600,000
	PCA 100%	
Injection		\$10,668,000
	PCA 100%	
Capital Distribution (Grant Distribution %)		
MCWD	-AWTF	\$11,133,216 (19.44%)
PCA	AWTF+DIV+IND	\$46,134,783 (80.56%)
	TOTAL	\$57,267,999
Assume \$15M in Grants		PCA \$12,084,000 MCWD \$2,916,000
Total Project Costs		
		\$92,267,999
Total Capital Cost Split		
	PCA	\$62,464,783
	MCWD	\$29,803,216
Total Assured Grants		
		\$32,000,000
Grant Amounts		
	PCA	\$20,023,000
	MCWD	\$11,977,000

4.02. Cost Sharing: Capital and Replacement Costs

(a) Both parties will pay their share of all capital and replacement costs for the Project Facilities based on its percentage share of AWT Capacity Entitlement and/or Pipeline Facilities Capacity Entitlement as follows:

- i. AWT Facilities: % of a party's AWT Capacity Entitlement in AFY to the total AWT Capacity Entitlement in AFY from both parties. For AWT Phase 1, PCA = 86.047% and MCWD = 13.953%. For AWT Phase 2, PCA = 72.167% and MCWD = 27.833%.
- ii. New Pipeline Facilities: PCA = 72.167% and MCWD = 27.833%.

- iii. Existing Pipeline Facilities: PCA = 72.167% and MCWD = 27.833%. The parties agree that the total value of MCWD's Existing Pipeline Facilities for purposes of this Agreement is \$1,390,000. The parties agree that the annual payment to MCWD shall be equal to this total value amortized over a 30 year period.

4.03. Cost Sharing: Operations and Maintenance Costs

- (a) Both parties will pay their share of all operations and maintenance costs for the Pure Water Delivery and Supply Project Facilities based on actual use of the facilities based on the following:
 - i. AWT Facilities: % of AFY produced vs total from both parties
 - ii. Product Water Conveyance Facilities: % AFY through pipeline vs total from both parties
 - iii. Operations and Maintenance costs include, but are not limited to, the following: Power, chemicals, a Party's own or contracted labor and services, parts, materials, supplies, insurance, engineering, financial, and legal services, and such other cost categories agreed to by the Parties.

4.04. Project Funding: Capital Costs

- (a) PCA applied for a Clean Water SRF loan to pay for the entire capital costs of AWT which shall include all of the design, contract documents, rights-of-way acquisition, and all work to construct the AWT.

Substitute the following for Sections 4.04(b):
 (b) MCWD applied for a Clean Water SRF loan to pay for its cost share of the Project Facilities except for its cost share of the AWT Phase 1 treatment plant facilities, which will be included in the Section 4.04(a) SRF loan.

4.05. Project Funding: Replacement and Renewal Reserves

- (a) Each Agency shall establish a Replacement and Renewal Reserve Fund for the purpose of funding capital outlay projects on the Pure Water Delivery and Supply Project Facilities; assist in meeting any fiscal sustainability plan requirements for the Clean Water State Revolving Fund loans; and maintaining a proportional share of the State Revolving Fund loan's debt reserve requirement.
- (b) Each agency shall allocate sufficient funds in their annual budget to contribute to each Replacement and Renewal Reserve Fund in accordance with the capital cost sharing section of this Agreement. PCA will retain the replacement funds for those facilities in which they own and operate. MCWD will retain the replacement funds for those facilities in which they own and operate. Unless otherwise stated in Clean Water State Revolving Fund agreements, the following depreciation schedule related to operational equipment shall be used as a basis to establish annual funding of replacement reserves:

Equipment Type	Useful Life (Years)
Replacement Electrical	30
Replacement Instrumentation	15
Replacement Pumps & Motors	20
Motorized sluice gates	30
Replacement Wells & Ozonators	20

- (c) Two years prior to the completion of the thirty-year loan cycle, MCWD and PCA will develop a long-term Capital Improvement Plan, which includes establishing an appropriate level of Renewal and Replacement reserves. Any funds that are held in Reserves in excess of the Capital Improvement Plan will be refunded within ninety (90) days of the Plan's establishment.

4.06. Project Funding: Operations and Maintenance Costs

Each party shall place in their annual operating budget sufficient funds to pay for operations and maintenance according to the operations and maintenance cost sharing section of this Agreement.

Each party shall follow the recommended operation and maintenance schedules as suggested by the manufacturers throughout the initial term of this agreement.

4.07. Annual Budget Process.

Each year, in accordance with its normal budgeting schedule, both parties will adopt budgets sufficient to cover the capital, renewal, operation, and maintenance costs of their proportional share of the Pure Water Delivery and Supply Project Facilities.

4.08 Financial Obligations

Both Parties agree to pledge sufficient funds to meet their respective financial obligations under this Agreement by Board action.

V. PAYMENTS AND ACCOUNTING

5.01 Payment Schedule and Procedures.

(a) MCWD will make payments to PCA each year as follows:

- i. Thirty (30) days before the date the PCA's annual payment on the Clean Water State Revolving Fund loan for the Pure Water Monterey Project is due, MCWD will pay an amount equal to MCWD's proportional share of capital costs (debt service) as provided in Exhibit E.
- ii. By March 1 of each year, MCWD shall pay PCA the proportional share of the amortized replacement/renewal costs as identified in Exhibit E.
- iii. On a monthly basis, PCA will bill MCWD for Operation and Maintenance costs on an acre foot rate basis and actual demand.

(b) ~~(a)~~ PCA will make payments to MCWD each year as follows:

- ~~i. Thirty (30) days before the date the MCWD's annual payment on the Clean Water State Revolving Fund loan for the New Pipeline Facilities is due, PCA will pay an amount equal to PCA's proportional share of capital costs (debt service) as provided in Exhibit E.~~
- ii. By March 1 of each year, PCA shall pay MCWD the proportional share of the amortized replacement/renewal costs of the New Pipeline Facilities as identified in Exhibit E.
- iii. By June 30 of each year, PCA will pay an amount equal to PCA's proportional share of capital costs (debt service) for the construction of the Existing Pipeline Facilities funded by MCWD as provided in Exhibit E.

Section 5.01 has two subsections "(a)." The second subsection (a) should be re-lettered subsection (b) and the following subsections (b), (c), (d), and (e) shall be re-lettered (c), (d), (e), and (f), respectively. Subsection 5.01(b)(i) shall be deleted because M1W's SRF loan includes M1W's share of the New Pipeline Facilities.

- iv. By June 30 of each year, PCA will pay MCWD the proportional share of the amortized replacement/renewal costs of the Existing Pipeline Facilities as identified in Exhibit E.
- v. On a monthly basis, MCWD will bill PCA for the Operation and Maintenance costs for the Product Water Conveyance Facilities on an acre foot rate basis and actual demand.

(c) ~~(b)~~ At least thirty (30) days before capital or replacement payments are due, a request for payment shall be sent indicating the amount due, the date payment is due, and the nature of the payment.

(d) ~~(c)~~ Payment requests for operation and maintenance costs will be billed monthly. The resulting payments will be due within thirty days of billing.

(e) ~~(d)~~ Notwithstanding anything to the contrary contained herein, obligations to make payments shall be prioritized as follows, and the obligations in each category shall be subordinate to the obligations in each prior category, shall be on a parity with all other obligations in such category, and shall be senior to the obligations in each subsequent category:

- i. Operation and maintenance
- ii. Debt service on obligations incurred to finance the Pure Water Delivery and Supply Project Facilities and payments to any provider of credit enhancement for such obligations
- iii. Replacement/renewal costs

(f) ~~(e)~~ All requests for payment shall be promptly reviewed, approved for payment where such requests or portion thereof that are in conformity with this Agreement, and promptly submitted for payment. Disputed payment shall be resolved according to the Dispute Resolution Process in this Agreement.

5.02. Application of loan payments by PCA.

(a) All payments made by MCWD to PCA for the repayment of the Clean Water SRF loan shall be used for such repayment. Upon termination of any loan agreement, any unused funds retained by PCA shall be returned to MCWD within 60 days from the date of the approved PCA audit for the fiscal year in which the agreement was terminated.

~~(b) All payments made by PCA to MCWD for the repayment of the Clean Water SRF loan shall be used for such repayment. Upon termination of any loan agreement, any unused funds retained by MCWD shall be returned to PCA within 60 days from the date of the approved MCWD audit for the fiscal year in which the agreement was terminated.~~

Subsection 5.02(b) shall be deleted because MIW's SRF loan includes MIW's share of the New Pipeline Facilities.

5.03. Remedies for Delinquent Payments.

(a) If either party should fail to make any payment required under this Agreement for a period of ninety (90) days or more after the due date, then upon fifteen (15) days' written notice, the party that is owed may act to proportionally reduce the activities for which payment is due; provided that no such reduction shall take effect if Dispute Resolution has been invoked and the full amount of the payment has been paid under protest.

(b) In addition, if either party should fail to make any payment required under this Agreement for a period of ninety (90) days or more after the due date and Dispute Resolution has not been invoked, the party that is owed shall have the right to seek any appropriate judicial relief, at law

or in equity, for such default. Such relief may include, but need not be limited to, damages and injunctive relief.

5.04 Allocations: Operations and Maintenance Rates

- (a) Operations and Maintenance Rates: Based on electronic timesheets and indirectly through each Agency's Cost Allocation Plan, all costs associated with the new AWT Facilities will be allocated directly to PCA's Pure Water Monterey Fund and all costs associated with the Product Water Conveyance Facilities will be allocated directly to MCWD's RUWAP Conveyance Facilities Fund. Indirect costs and direct costs will be used in the development of PCA's and MCWD's Operation and Maintenance Rates. Each Agency's Operation and Maintenance rate will be subject to review and/or development of a third party consultant of the respective Agency's selection. PCA's Operation and Maintenance component of the rate will be consistent with rates provided to entities who utilize Advanced Treated Water.
- (b) PCA and MCWD retain the right to transition from any cost allocation plan identified in 5.04 of this Agreement to a cost allocation model that is compliant with the Office of Management and Budget (OMB) Circular A-87 – Cost Principles for State, Local, and Indian Tribe Governments or a subsequent revision. Any cost allocation subject to this provision shall be accompanied by a Certificate of Cost Allocation Plan and be in compliance with Title 2 CFR, Part 200. All indirect costs charged to the Pure Water Monterey Fund and the RUWAP Conveyance Facilities Fund will be applied consistently with the results of this plan to ensure equity between costs centers and conformance with OMB standards.

5.05. Accounting system.

Both parties will maintain an accounting system that is in conformity with generally accepted accounting principles (GAAP) and will allow for the segregation and tracking of all Replacement/Renewal reserves associated with the Project Facilities. Indirect costs shall not be applied to Replacement/Renewal Reserve contributions.

5.06. Financial reports.

Both parties will provide an annual report of the proportional share of reserve funds retained for the purpose of renewing the Pure Water Delivery and Supply Project Facilities. This report will be provided by September 30 of each year; and include deposits made to the Repair/Renewal Reserve, proportional interest earned, and the proportional share of any replacement/renewal costs.

5.07. Annual audit.

The accounting for the Pure Water Delivery and Supply Project Facilities will be subject to both parties Annual Audit. The Replacement/Renewal Reserve funds will be classified as Restricted on both parties Comprehensive Annual Financial Statement (CAFR). This Restricted classification will remain in effect through the term of this agreement, unless there are any new Governmental Accounting Standards Board (GASB) pronouncements or auditor comments that require a change in classification. A copy of each parties CAFR will be provided to the other by January following the close of the prior fiscal year.

5.08. Right to inspect and audit records.

Both parties shall have the right to inspect the other's records pertaining to debt service payments associated with the Pure Water Delivery and Supply Project Facilities and contributions for Renewal/Replacement Reserves, upon reasonable advance notice. Both parties shall also have the right to audit the other's records pertaining to the Project Facilities and contributions for Renewal/Replacement Reserves, or to have them audited by an auditor selected by the other party at that party's sole cost and expense. Such audit may be performed at any time during regular business

hours, upon the giving of reasonable advance notice.

5.09. Reimbursement for overcharge or undercharge.

If any there is audit shows that the incorrect application of replacement/renewal reserves, each agency will have 90 days to comply with the audit findings. If an undercharge or an overcharge has occurred in monthly demand billings, each agency will have 90 days to refund or pay the identified difference.

In Section 5.10, Claims for Stranded Costs, delete "March 31, 2017" and substitute "December 31, 2018".

5.10. Claims for Stranded Costs

The parties agree to commit to a process to determine the amount of each parties' claims for stranded costs. The process shall include MCWD and PCA meeting and discussing the documentation to clarify each agency's opinion, agreement, or disagreement and next steps on this issue by ~~March 31, 2017.~~

VI. INDEMNIFICATION.

6.01. Indemnification.

- (a) PCA shall indemnify, defend, and hold harmless MCWD , its officers, agents, and employees, from and against any and all claims, liabilities, and losses whatsoever against MCWD (including damages to property and injuries to or death of persons, court costs, and reasonable attorneys' fees) occurring or resulting to any and all persons, firms or corporations furnishing or supplying work, services, materials, or supplies in connection with the performance of this Agreement, and from any and all claims, liabilities, and losses occurring or resulting to any person, firm, or corporation for damage, injury, or death arising out of or connected with the PCA's performance or non-performance of its obligations pursuant to this Agreement caused in whole or in part by any negligent act or omission or willful misconduct of PCA, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, except to the extent caused by the negligence or willful misconduct of MCWD.
- (b) MCWD shall indemnify, defend, and hold harmless PCA, its officers, agents, and employees, from and against any and all claims, liabilities, and losses whatsoever against PCA (including damages to property and injuries to or death of persons, court costs, and reasonable attorneys' fees) occurring or resulting to any and all persons, firms or corporations furnishing or supplying work, services, materials, or supplies in connection with the performance of this Agreement, and from any and all claims, liabilities, and losses occurring or resulting to any person, firm, or corporation for damage, injury, or death arising out of or connected with the MCWD's performance or non-performance of its obligations pursuant to this Agreement caused in whole or in part by any negligent act or omission or willful misconduct of MCWD, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, except to the extent caused by the negligence or willful misconduct of PCA.

6.02. Procedure for Indemnification.

- (a) If any legal or administrative proceedings are instituted, or any claim or demand is asserted, by any third party which may give rise to any damage, liability loss or cost or expense with respect to which either party has agreed to indemnify the other party in this contract, then the indemnified party shall give the indemnifying party written notice of the institution of such proceedings, or the assertion of such claim or demand, promptly after the indemnified party first becomes aware thereof. However, any failure by the indemnified party to give such notice on such prompt basis shall not affect any of its rights to indemnification hereunder unless such failure materially and

adversely affects the ability of the indemnifying party to defend such proceeding.

- (b) The indemnifying party shall have the right, at its option and at its own expense, to utilize counsel of its choice in connection with such proceeding, claim or demand, subject to the approval of the indemnified party, which approval shall not be unreasonably withheld or delayed. The indemnifying party shall also have the right to defend against, negotiate with respect to, settle or otherwise deal with such proceeding, claim or demand. However, no settlement of such proceeding, claim or demand shall be made without the prior written consent of the indemnified party, which consent shall not be unreasonably withheld or delayed. The indemnified party may participate in any such proceeding with counsel of its choice at its own expense.
- (c) In the event, or to the extent, the indemnifying party elects not to, or fails to, defend such proceeding, claim or demand and the indemnified party defends against, settles or otherwise deals with any such proceeding, claim or demand, any settlement thereof may be made without the consent of the indemnifying party if it is given written notice of the material terms and conditions of such settlement at least ten days before a binding agreement with respect to such settlement is executed. However, nothing herein is intended to bar either party from submitting any dispute arising from this section to Dispute Resolution.
- (d) Each of the parties agrees to cooperate fully with each other in connection with the defense, negotiation or settlement or any such proceeding, claim or demand.

6.03. Payment of indemnified claims.

The indemnifying party shall forthwith pay all of the sums owing to or on behalf of the indemnified party, upon the happening of any of the following events:

- (a) Upon the rendition of a final judgment or award with respect to any proceeding described in Section 6.02, above, by a court, arbitration board or administrative agency of competent jurisdiction and upon the expiration of the time in which an appeal therefrom may be made; or
- (b) Upon the making of a settlement of such proceeding, claim or demand; or
- (c) Upon the parties' making of a mutually binding agreement with respect to each separate matter indemnified thereunder.

6.04. Contribution in the event of shared liability.

In the event any proceeding, claim or demand described in Section 6.01 is brought, in which allegations of fault are made against both the parties, the extent of indemnification shall be determined in accordance with the agreement of the parties, or, if there is no agreement, then in accordance with the findings of the court as to the relative contribution by each of the parties to the damage suffered by the party seeking indemnity with respect to such proceedings. If the court fails to make any such findings, then the matter shall be submitted to Dispute Resolution.

6.05. Exclusion from O&M costs.

Amounts payable by either party as indemnification shall not be included in the operations and maintenance costs of the Project.

VII. INSURANCE

7.01. General insurance requirements.

Without limiting either parties duty to indemnify, both parties shall maintain in effect throughout the

term of this Agreement a policy or policies of insurance meeting the requirements hereinafter set forth. All such insurance required by this article shall meet the following requirements:

- (a) Each policy shall be with a company authorized by law to transact insurance business in the State of California, and shall be written on an occurrence form unless such insurance is only available at a reasonable cost if written on a claims made form.
- (b) Each policy shall provide that both parties shall be given notice in writing at least thirty days in advance of any change, cancellation or non-renewal thereof.
- (c) Except with respect to workers compensation insurance, each policy shall provide an endorsement naming both parties and its officers, agents and employees as additional insureds, or additional insureds, as applicable, and shall further provide that such insurance is primary to any other insurance maintained by either party.
- (d) Unless otherwise agreed by MCWD and PCA, if a party awards a contract for construction work for the Pure Water Delivery and Supply Project Facilities, that party shall require the general contractor to provide commercial general liability and motor vehicle liability insurance coverage at least equal to the coverages required under this Agreement and shall name both MCWD and PCA as an additional named insureds and shall further provide that such insurance is primary to any issuance maintained by MCWD or PCA.

7.02. Commercial general liability insurance.

- (a) MCWD and PCA shall maintain (and be named insured under) commercial general liability insurance covering all operations under this Agreement, with such coverages as the parties may agree upon from time to time. Each party shall be named as an additional insured on the other party's commercial general liability coverage.
- (b) Each party shall pay the annual cost of such insurance for the term of this Agreement. Such insurance costs shall be treated as an annual operation and maintenance cost for the AWT Facilities and the Product Water Conveyance Facilities. In addition, should this Agreement be terminated by the parties, the obligation to pay for such insurance regarding the Project shall be accordingly reduced.

7.03. Motor vehicle insurance.

Both parties shall maintain insurance covering all motor vehicles (including owned and non-owned) used in providing services under this Agreement, with a combined single limit of not less than \$2,000,000.

7.04. Property insurance.

- (a) PCA shall maintain insurance covering the AWT Facilities against loss or damage due to fire and other perils to the extent that such insurance is reasonably commercially available and within available funds for the Pure Water Monterey Project. MCWD shall maintain insurance covering the Product Water Conveyance Facilities against loss or damage due to fire and other perils to the extent that such insurance is reasonably commercially available and within available funds for the Project.
- (b) Subject to Subsection (a) above, the amount of the insurance shall not be less than the then-current replacement cost of the applicable Pure Water Delivery and Supply Project Facilities, without depreciation. Insurance coverage for the Pure Water Delivery and Supply Project Facilities under this section shall be reviewed and approved by both parties, which shall not

unreasonably withhold or delay its approval. Both parties shall provide each other with a copy of the insurance policy and shall give the other party thirty (30) days' advance notice of any cancellation or proposed change in the insurance required by this section, and any such change shall be subject to review and approval by the other party.

7.05. Workers' compensation insurance.

Each party shall maintain a workers' compensation plan covering all of its employees as required by Labor Code Sec 3700, either (a) through workers' compensation insurance issued by an insurance company, with coverage meeting the statutory limits and with a minimum of \$100,000 per accident for employer's liability, or (b) through a plan of self-insurance certified by the State Director of Industrial Relations, with equivalent coverage. If either party elects to be self-insured, the certificate of insurance otherwise required by this Agreement shall be replaced with a consent to self-insure issued by the State Director of Industrial Relations.

7.06. Certificate of insurance.

Each party shall file certificates of insurance with the other party, showing that it has in effect the insurance required by this contract. Each party shall file a new or amended certificate promptly after any change is made in any insurance policy which would alter the information on the certificate then on file.

7.07. Self-insurance up to and including the first \$1 million of liability.

Each party may elect to be self-insured or to participate in the self-insurance pool for up to and including the first \$1 million of liability under any insurance required to be provided by it under this Agreement, provided the other party first gives its written consent, which will not be unreasonably withheld or delayed. The parties shall enter into a separate written memorandum of understanding specifying the proportionate amount or share of such self-insurance costs to be allowed and allocated as annual operation and maintenance costs for the Pure Water Delivery and Supply Project Facilities.

7.08. Insurance costs.

Except as otherwise specifically provided for in this Agreement, the parties agree to determine as part of the annual budget process what annual insurance costs are to be allowed and allocated as annual operation and maintenance costs for the Pure Water Delivery and Supply Project Facilities.

7.09. Periodic increases in coverage requirements.

Not more frequently than every five (5) years, if in the opinion of an insurance broker or consultant retained jointly by the parties, the amount of any insurance coverage required by this Agreement is not adequate, the party responsible for providing that insurance coverage shall increase the amount of the insurance coverage as required by the insurance broker or consultant.

7.10. Duty to apply insurance proceeds.

If either party recovers any insurance proceeds on account of loss or damage to any Project Facilities component, such proceeds shall be applied to repair or replace the damaged portion of that Project Facilities component, and not otherwise. If either party is self-insured and any loss or damage occurs that would have been covered by insurance otherwise required to be maintained by such party under this Agreement, then such party shall provide the funds that would have been recovered had the party been insured and shall apply the funds to repair or replace the damaged portion of the Project Facilities component.

7.11. Losses Caused by Third Parties.

If any Project Facilities component is damaged or destroyed or any other personal injury, death, property damage or economic loss is incurred relating to any Project Facilities component

(collectively, "damage or loss") during the term of this Agreement, and excluding the amount of any such damage or loss covered in Section VI, Indemnification, then the responsible third party or parties shall be responsible for paying for any such damage or loss. If the funds or other consideration paid by either party pursuant to Section VI and by the third parties are insufficient to cover the total cost of the damage or loss, then the balance necessary to cover the total cost of the damage or loss shall be paid from the applicable reserve and, then to the extent the funds in the replacement reserve are inadequate, the balance will be allocated between the parties based upon the then Capital Cost allocation for the applicable Project Facilities component.

VIII. TERM OF AGREEMENT

8.01. Term of Agreement.

This Agreement shall become effective on the date hereinabove entered and terminate on December 31, 2055 unless extended in accordance with Section 8.02.

8.02. Automatic extension.

This Agreement shall be automatically renewed for an additional 10-year period (an "extended term") unless a party is in default under this Agreement or unless one party provides the other party with written notice to terminate this Agreement upon expiration of the initial term or of any extended term. Any such notice must be provided to the other party at least three (3) full years prior to the expiration of any extended term. Unless such notice is provided, the parties agree that there shall not be a limit on the number of extended terms.

8.03. Conditions of agreement during term.

All the terms of this Agreement shall remain in effect during any term, except as otherwise provided in this Agreement or as may be amended in writing which is signed by both parties.

8.04. Rights on Termination.

(a) Unless otherwise agreed upon in writing by the parties, upon any termination of this Agreement, MCWD shall have the continuing right to tertiary water as set forth in the Annexation Agreements and the 2009 RUWAP MOU. Except as provided in the Annexation Agreements and the 2009 RUWAP MOU, PCA shall provide facilities for treating the water beyond secondary treatment level at its sole cost and expense or through a cooperative agreement with MCWD or any other entity. Upon any termination of this Agreement, MCWD shall have the continuing right to receive the same quantity of tertiary treated water as MCWD was or would have been entitled to receive during any term of this Agreement so long as MCWD provides facilities at its sole cost and expense or through a cooperative agreement with PCA or any other entity for the delivery of such tertiary treated water and purified recycled water.

(b) MCWD's and PCA's respective rights to tertiary treated water in accordance with this Agreement shall also survive termination.

IX. DISPUTE RESOLUTION

9.01. Dispute resolution procedure.

If any dispute arises between the parties as to the proper interpretation or application of this Agreement and/or the proper operation of the facilities, the parties shall resolve the dispute in accordance with this Article.

9.02. Duty to meet and confer.

If any dispute under this Agreement arises, the parties shall first meet and confer, in an attempt to resolve the matter between themselves. Each party shall make all reasonable efforts to provide to the other party all the information that the party has in its possession that is relevant to the dispute, so that both parties will have ample information with which to reach a decision.

9.03. Mediation and Binding Arbitration.

(a) If the dispute is not resolved within sixty (60) days after the first meeting under Section 9.02, then either party may notify the other party that the notifying party elects to submit the dispute to mediation. If the other party agrees to submit the dispute to mediation, then the parties will jointly select a mediator. The terms of mediation shall be set by agreement of the parties and the mediator.

(b) If the dispute is not resolved by meeting and conferring, and mediation does not occur or is unsuccessful, the parties may agree to submit the matter to binding arbitration. In that event, the parties will jointly select a single arbitrator. If the parties are unable to agree on a single arbitrator, then the parties shall request the Presiding Judge of the Monterey County Superior Court to appoint an arbitrator who has proven experience in the subject matter of the dispute. Any person selected as an arbitrator shall be a qualified professional with expertise in the area that is the subject of the dispute, unless the parties otherwise agree. The cost of the arbitrator shall be shared equally between the parties. Unless otherwise agreed by the parties, the arbitration shall be conducted in accordance with the rules of the American Arbitration Association ("Rules"); provided that the arbitration does not have to be handled through the American Arbitration Association. The parties agree that they will faithfully observe the Rules and will abide by and perform any award rendered by the arbitrator, and that a judgment of the court having jurisdiction may be entered on the award. Notwithstanding the Rules, discovery will be permitted and the provisions of the California Code of Civil Procedure Section 1283.05 are incorporated herein unless the parties agree otherwise. The parties hereby consent to the jurisdiction of the courts of Monterey County for the confirmation, correction or vacation of any arbitration award. The arbitrator may grant any remedy or relief deemed by the arbitrator just and equitable under the circumstances, whether or not such relief could be awarded in a court of law. The arbitrator will have no power to award punitive damages or other damages not measured by the party's actual damages against any party. This limitation of the arbitrator's powers under this Agreement shall not operate as an exclusion of the issue of punitive damages from this Agreement to arbitrate sufficient to vest jurisdiction in a court with respect to that issue. The arbitrator's award will be deemed final, conclusive and binding to the fullest extent allowed by California law, and may be entered as a final judgment in court.

X. GENERAL PROVISIONS

10.01. Compliance with laws.

Both parties will comply with all permit and licensing requirements applicable to the project, and will operate the project in accordance with all requirements of law and governmental regulations.

10.02. Attorney's fees.

If either party commences an action against the other party arising out of or in connection with this Agreement, the prevailing party shall be entitled to have and recover from the losing party reasonable attorneys' fees and costs.

10.03. Amendments.

No amendment or modification shall be made to this Agreement, except in writing, approved by the respective Boards and duly signed by both parties.

10.04. Contract administrators.

(a) MCWD hereby designates its General Manager as its contract administrator for this Agreement. All matters concerning this Agreement which are within the responsibility of MCWD shall be under the direction of or shall be submitted to the General Manager or such other MCWD employee in the MCWD as the General Manager may appoint. MCWD may, in its sole discretion, change its designation of the contract administrator and shall promptly give written notice to PCA of any such change.

(b) PCA hereby designates its General Manager as its contract administrator for this Agreement. All matters concerning this Agreement which are within the responsibility of PCA shall be under the direction of or shall be submitted to the General Manager or such other PCA employee in the PCA as the General Manager may appoint. PCA may, in its sole discretion, change its designation of the contract administrator and shall promptly give written notice to MCWD of any such change.

10.05. Assignment.

Any assignment of this Agreement shall be void without the written consent of the non-assigning party, except that PCA shall have the right to assign all of its rights and obligations under this Agreement to a local governmental agency created by PCA for the sole purpose of assuming and performing all rights and obligations of PCA under the Pure Water Monterey Project and except that MCWD shall have the right to assign all of its rights and obligations under this Agreement to a local governmental agency created by MCWD for the sole purpose of assuming and performing all rights and obligations of MCWD under this Agreement; provided that in either case the local governmental agency assignee shall have adequate financial assets to insure its performance of all assigned obligations.

10.06. No Modification of MCWD Contract Entitlement.

Nothing in this Agreement is intended to, nor shall it be interpreted to, expand, limit or otherwise modify MCWD's existing contractual rights, entitlements, and obligations pursuant to either of the Annexation Agreements or the 2009 RUWAP MOU.

10.07. Negotiated Agreement.

This Agreement has been arrived at through negotiation between the parties. Neither party is to be deemed the party which prepared this Agreement within the meaning of Civil Code Sec. 1654.

10.08. Time is of essence.

Time is of the essence of this Agreement.

10.09. Headings.

The article and paragraph headings are for convenience only and shall not be used to limit or interpret the terms of this Agreement.

10.10. Entire Agreement.

This written Agreement, together with all exhibits attached hereto and incorporated by reference, is the complete and exclusive statement of the mutual understanding of the parties, except to the extent that this Agreement expressly refers to or requires the preparation of additional agreements. Any such additional agreement shall be in writing.

10.11. Notices.

All notices and demands required under this Agreement shall be deemed given by one party when delivered personally to the principal office of the other party; when faxed to the other party, to the fax number provided by the receiving party; or five days after the document is placed in the US mail, certified mail and return receipt requested, addressed to the other party as follows:

To PCA:

General Manager
MRWPCA
5 Harris Court, Building D
Monterey, CA 93940
Fax: (831) 372-6178

To MCWD:

General Manager
MCWD
11 Reservation Road
Marina, CA 93933
Fax: (831) 883-5995

10.12. Execution of documents.

(a) The parties will execute all documents necessary to complete their performance under this Agreement.

10.13. Exhibits.

(a) The following exhibits are attached to this Agreement:

Exhibit A: Pure Water Delivery and Supply Facilities

Exhibit B: AWT Facilities

Exhibit C: Product Water Conveyance Facilities

Exhibit D: Reserved

Exhibit E: Summary of Estimated Costs- Phase 1 only

Exhibit F: Financial and Construction Responsibilities of the Project Components

Exhibit G: Important Project Agreement Dates

10.14. Severability.

If any one or more of the terms, provisions, covenants or conditions of this Agreement are to any extent declared invalid, unenforceable, void or voidable for any reason whatsoever by a court of competent jurisdiction, the finding or order or decree of which becomes final, the Parties agree to amend the terms in a reasonable manner to achieve the intention of the Parties without invalidity. If the terms cannot be amended thusly, the invalidity of one or several terms will not affect the validity of the Agreement as a whole, unless the invalid terms are of such essential importance to this Agreement that it can be reasonably assumed that the Parties would not have contracted this Agreement without the invalid terms. In such case, the Party affected may terminate this Agreement by written notice to the other Party without prejudice to the affected Party's rights in law or equity.

10.15. Waiver.

(a) No waiver of any right or obligation of any of the parties shall be effective unless in writing, specifying such waiver, executed by the party against whom such waiver is sought to be

enforced. A waiver by any of the parties of any of its rights under this Agreement on any occasion shall not be a bar to the exercise of the same right on any subsequent occasion or of any other right at any time.

10.16. Written Authorization.

(a) For any action by any party which requires written authorization from the other party, the written authorization shall be signed by authorizing party's General Manager, or the General Manager's written designee.

XII. EXECUTION

In witness whereof, the parties execute this Agreement as follows:

PCA
Dated: 4/8/2016
[Signature]
Board Chair, Board of Directors

MCWD
Dated: 4.7.16
[Signature]
President, Board of Directors

Approved as to form:

Dated: 4/8/2016
[Signature]
Counsel, PCA

Dated: April 7, 2016
[Signature]
Legal Counsel, MCWD

Exhibit A: Pure Water Delivery and Supply Facilities



Delete the existing Exhibit A and substitute the attached new Exhibit A.

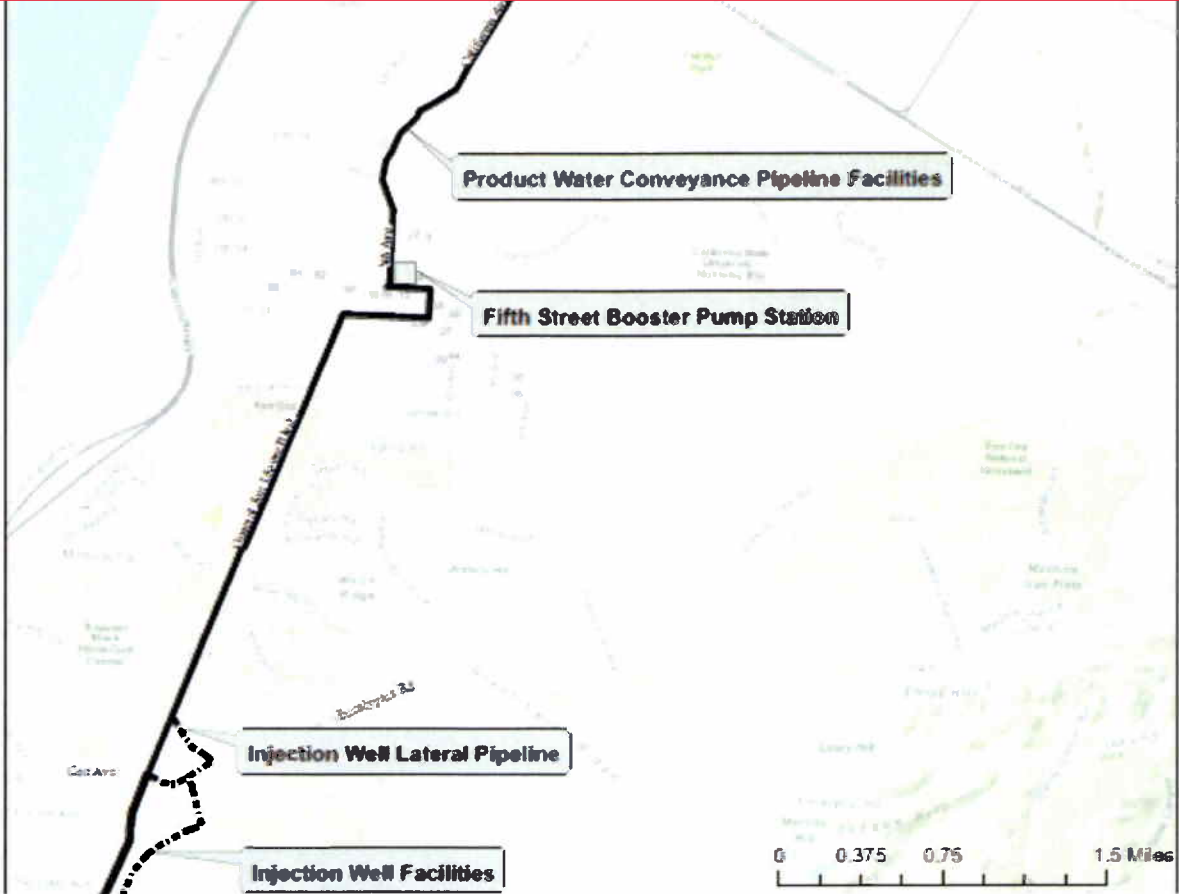
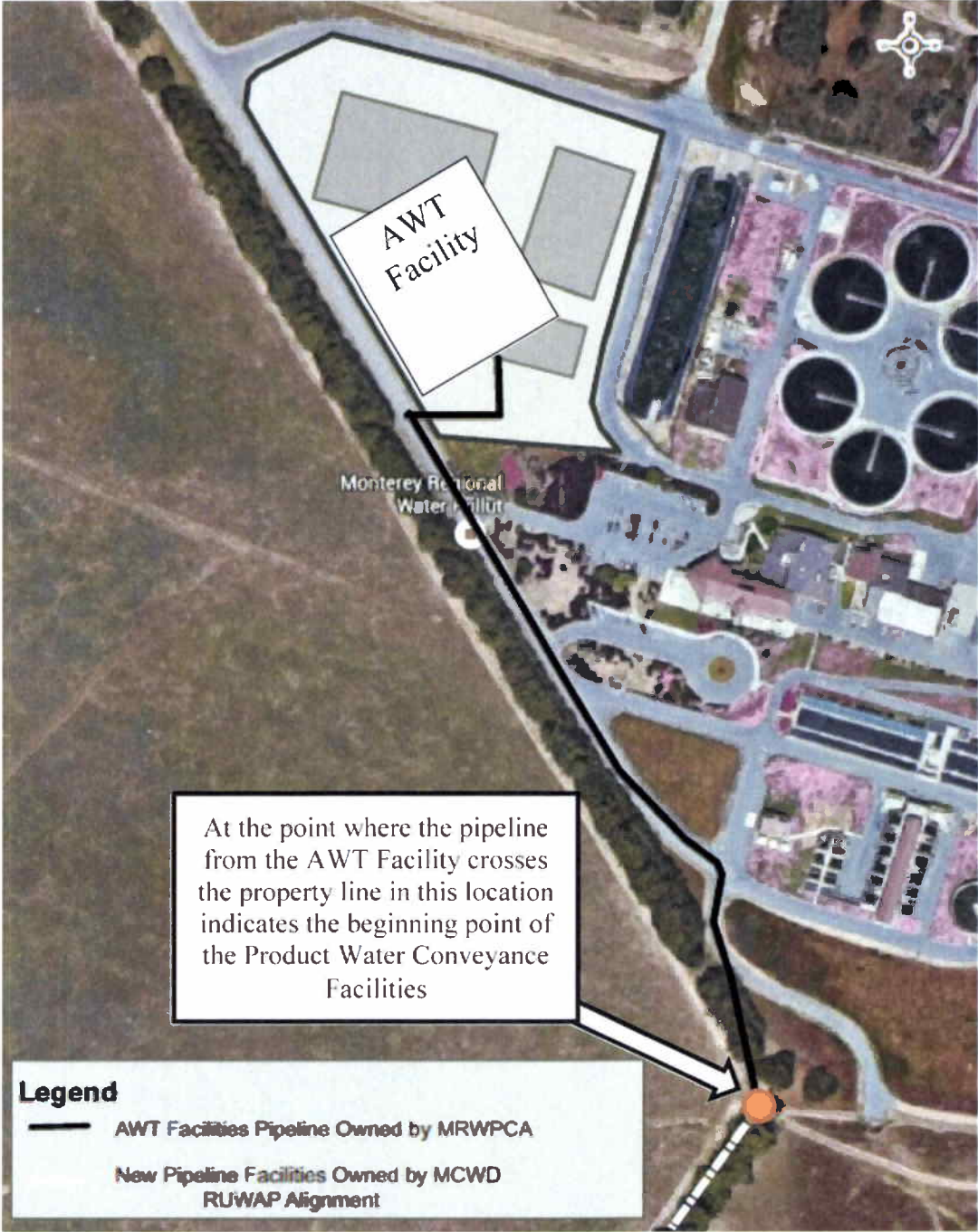
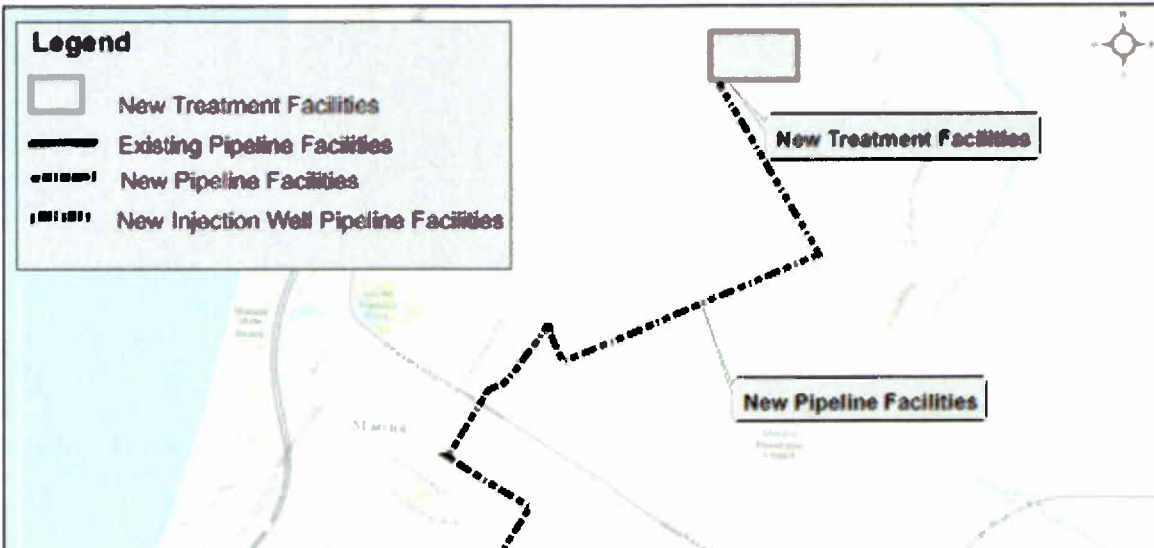


Exhibit B: AWT Facilities



● Beginning of Product Water Conveyance Facilities

Exhibit C (page 1 of 2): Product Water Conveyance Facilities



Delete the existing Exhibit C (2 pages) and substitute the attached new Exhibit C (2 pages).

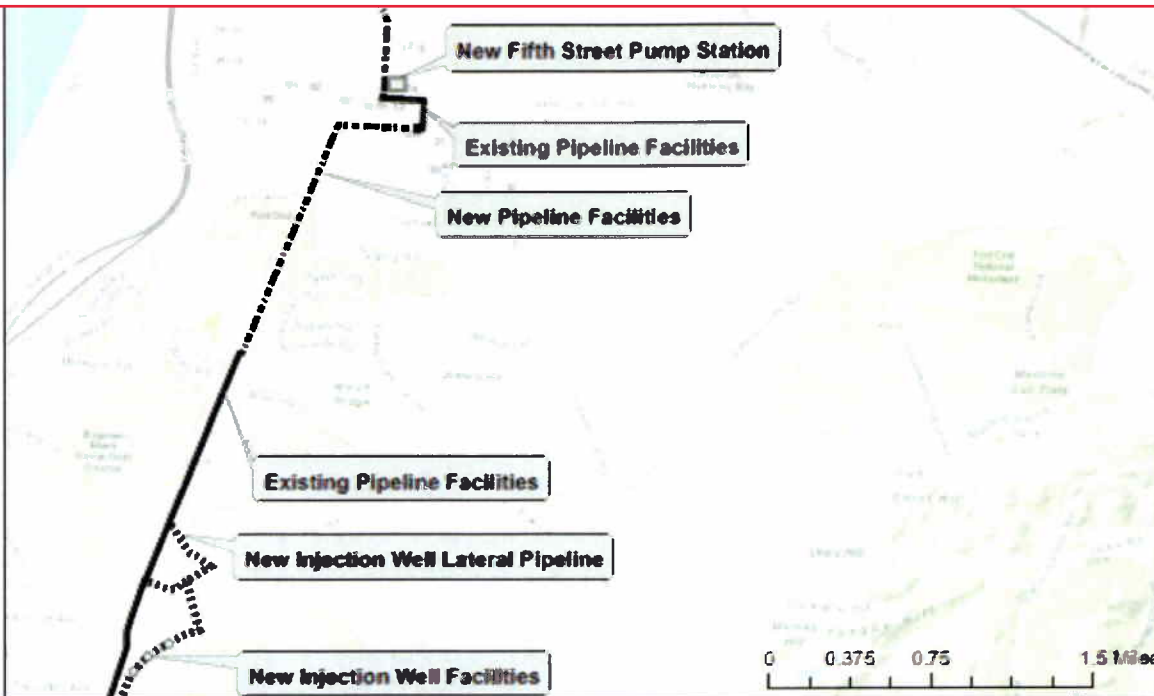
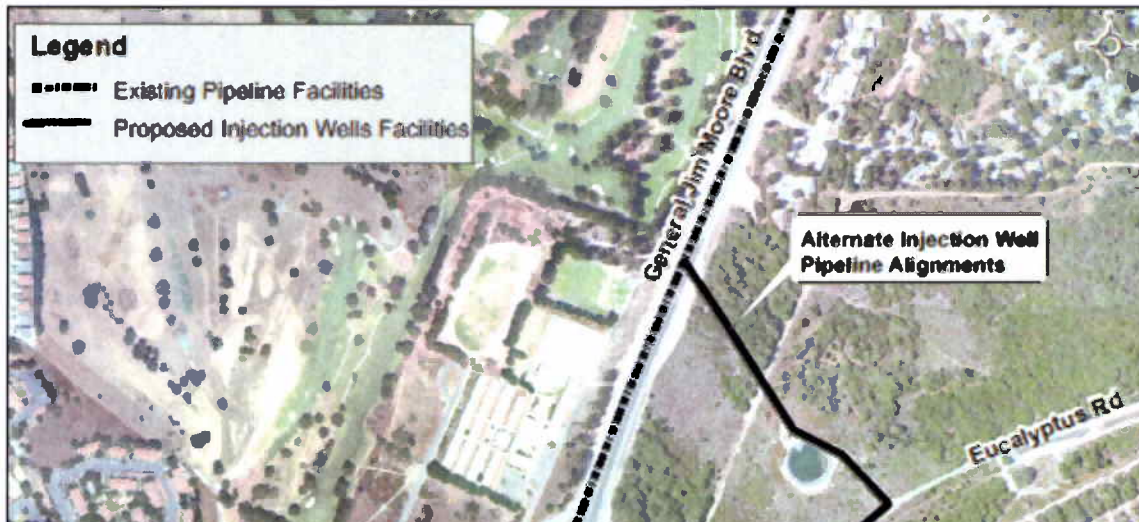
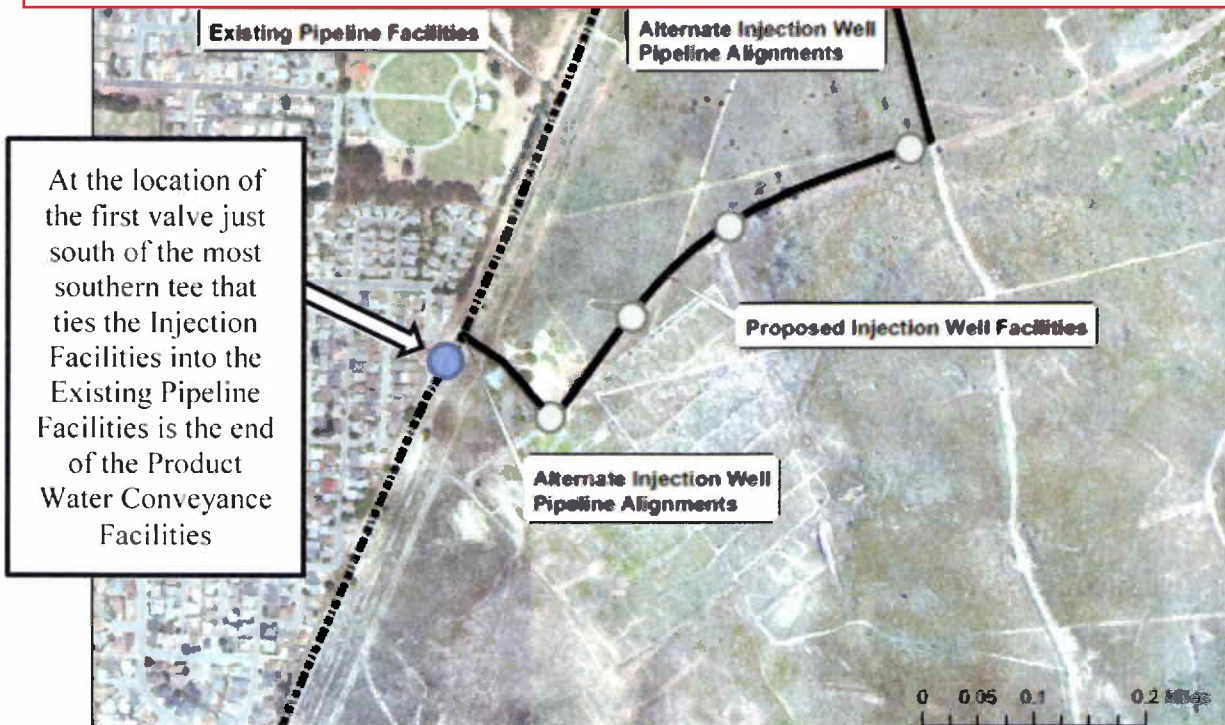


Exhibit C (page 2 of 2): Product Water Conveyance Facilities



Delete the existing Exhibit C (2 pages) and substitute the attached new Exhibit C (2 pages).



● End of Product Water Conveyance Facilities

Exhibit D: Reserved

Exhibit E: Summary of Estimated Costs-Phase 1 Only

Delete the existing Exhibit E and substitute the attached Exhibit E.

Est. Capital Costs	PCA Share	MCWD Share	PCA Share	MCWD Share	Total Amount
New Pipeline Facilities	72.167%	27.833%	\$ 16,309,742	\$ 6,290,258	\$ 22,600,000
AWT Phase 1	86.047%	13.953%	\$ 35,438,144	\$ 5,746,492	\$ 41,184,636
Existing Pipeline Facilities	72.167%	27.833%	\$ 1,002,400	\$ 386,600	\$ 1,389,000
TOTAL	80.938%	19.062%	\$ 52,750,285	\$ 12,423,351	\$ 65,173,636

Est. Annual Debt Service Costs	PCA Share	MCWD Share	PCA Share	MCWD Share	Annual Amount
New Pipeline Facilities	72.167%	27.833%	\$ 631,972	\$ 243,736	\$ 875,707
AWT Phase 1	86.047%	13.953%	\$ 1,373,161	\$ 222,666	\$ 1,595,827
Existing Pipeline Facilities	72.167%	27.833%	\$ 54,502	\$ 21,020	\$ 75,522
TOTAL	80.863%	19.137%	\$ 2,059,635	\$ 487,421	\$ 2,547,056

Est. Annual OM Costs	PCA Share	MCWD Share	PCA Share	MCWD Share	Annual Amount
New Pipeline Facilities	86.047%	13.953%	\$ 146,054	\$ 23,684	\$ 169,738
AWT Phase 1	86.047%	13.953%	\$ 2,480,409	\$ 402,212	\$ 2,882,621
Existing Pipeline Facilities	86.047%	13.953%	\$ 4,595	\$ 745	\$ 5,340
TOTAL	86.047%	13.953%	\$ 2,631,058	\$ 426,641	\$ 3,057,699

Est. Annual Renewal Costs	PCA Share	MCWD Share	PCA Share	MCWD Share	Annual Amount
New Pipeline Facilities	72.167%	27.833%	\$ 56,110	\$ 21,640	\$ 77,750
AWT Phase 1	86.047%	13.953%	\$ 620,818	\$ 100,669	\$ 721,487
Existing Pipeline Facilities	72.167%	27.833%	\$ 2,005	\$ 773	\$ 2,778
TOTAL	84.653%	15.347%	\$ 678,933	\$ 123,082	\$ 802,015

Est Total Annual Costs		PCA Share	MCWD Share	Annual Amount
New Pipeline Facilities		\$ 834,136	\$ 289,059	\$ 1,123,195
AWT Phase 1		\$ 4,474,388	\$ 725,547	\$ 5,199,935
Existing Pipeline Facilities		\$ 61,102	\$ 22,538	\$ 83,640
TOTAL		\$ 5,369,626	\$ 1,037,145	\$ 6,406,770

Est. Total Demands and Cost/AF	PCA Share	MCWD Share	PCA Share	MCWD Share	Annual Amount
Phase 1 Demand	86.047%	13.953%	3,700	600	4,300
Total Cost/AF			\$ 1,451	\$ 1,729	\$ 1,490

Note: New Pipeline Facilities includes the piping and pump station facilities.

Exhibit F: Financial and Construction Responsibilities of Project Components

Project Item	Who will perform the work and pay the initial invoices		How will costs be reconciled between MCWD and PCA
	MCWD	PCA	
New Pipeline Facilities CEQA	X		PCA to reimburse MCWD based on Capital Cost Share %
New Pipeline Facilities Design	X		PCA to reimburse MCWD based on Capital Cost Share %
New Pipeline Facilities Permits	X		PCA to reimburse MCWD based on Capital Cost Share %
New Pipeline Facilities Capital	X		PCA to reimburse MCWD based on Capital Cost Share %
New Pipeline Facilities O&M	X		PCA to reimburse MCWD based on OM Cost Share %
New Pipeline Facilities Renewal	X		PCA to reimburse MCWD based on Renewal Cost Share %
Existing Pipeline Facilities O&M	X		PCA to reimburse MCWD based on OM Cost Share %
Existing Pipeline Facilities Renewal	X		PCA to reimburse MCWD based on Renewal Cost Share %
RUWAP Distribution Facilities CEQA, Design, Permits, Capital, O&M, and Renewal	X		Not applicable.
AWT-PHASE 1 CEQA		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 1 Design		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 1 Permits		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 1 Capital		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 1 O&M		X	MCWD to reimburse PCA based on OM Cost Share %
AWT-PHASE 1 Renewal		X	MCWD to reimburse PCA based on Renewal Cost Share %
AWT-PHASE 2 CEQA		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 2 Design		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 2 Permits		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 2 Capital		X	MCWD to reimburse PCA based on Capital Cost Share %
AWT-PHASE 2 O&M		X	MCWD to reimburse PCA based on OM Cost Share %
AWT-PHASE 2 Renewal		X	MCWD to reimburse PCA based on Renewal Cost Share %
Injection Facilities CEQA, Design, Permits, Capital, O&M, and Renewal		X	Not applicable.

Exhibit G: Important Project Agreement Dates

Section 1.01 (a)	Milestone	Party	Key Date	Drop Dead Date
i	CEQA Approval-New Pipeline Facilities	MCWD		October 31, 2016
ii	CEQA Approval-AWT Phase 1 and AWT Phase 2	PCA		October 31, 2016

Delete the existing Exhibit G.

			agreement	agreement
vi	Source waters approval	PCA		October 31, 2016
vii	CPUC approval	PCA		October 31, 2016

MCWD Recycled Water Project



Appendix B User Agreement Version 1

April 1, 2019

SITE:**LOCATION:**

This agreement for the purchase and use of recycled water is entered into by the Marina Coast Water District (MCWD) and the User _____ on the date signed below.

For the purpose of this agreement, the following definitions shall apply to the following terms:

“Authorized Recycled Water Use Site” is a site authorized for use of recycled water under the General Waste Discharge Requirements for Landscape Irrigation Uses of Municipal Recycled Water, Water Quality Order No. 2009-0006-DWQ, adopted July 7, 2009. The uses of recycled water and the site location must comply with permit conditions; also referred to as “Authorized Site.”

“Recycled Water” is water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur, and is therefore considered a valuable resource.

“Producer” is the Monterey One Water (MOW). The MCWD has an agreement with the Producer to purchase recycled water to resell to its customers.

“User Supervisor” is the person designated by the User to provide liaison with the MCWD and other agencies as required. This person is responsible for carrying out any requirements of the MCWD and other regulating agencies, is responsible for the operation and maintenance of the reclaimed water system, and must prevent violations of the laws, rules, and regulations governing the use of recycled water.

“User” is any person to whom the MCWD distributes recycled water, including end users to whom recycled water is conveyed through an intermediate party.

“General Waste Discharge Requirements for Landscape Irrigation Uses of Municipal Recycled Water, Water Quality Order No. 2009-0006-DWQ” are issued by the California Regional Water Quality Control Board, Central Coast Region, to the MCWD, concerning the discharge of recycled water into the environment associated with irrigation uses.

“Water Recycling Criteria” are the criteria established by the State Division of Drinking Water generally dealing with the levels of constituents of recycled water, and the means for assurance of reliability under the design concept, which will result in safe recycled water from the standpoint of public health. The criteria are established pursuant to Water Code Section 13521 and are contained in the California Code of Regulations, Title 22, Division 4, Chapter 3; also referred to as the “Uniform Statewide Reclamation Criteria.”

Preamble

The use of recycled water is governed by several agencies. The MOW is the producer of recycled water, and MCWD is the recycled water distributor. The MCWD operates the Regional Urban Water Augmentation Project (RUWAP) under the General Waste Discharge Requirements for Landscape Irrigation Uses. The California Regional Water Quality Control Board, Central Coast Region, issues the General Waste Discharge Requirements for Landscape Irrigation Uses. The State Division of Drinking Water has responsibility for protecting public health and has delegated certain responsibilities to the Monterey County Health Department. The Monterey County Health Department oversees cross connection control and other aspects of the use of recycled water. The MCWD has contracted with the MOW to purchase recycled water for distribution to Users.

Agreement

User agrees to purchase recycled water from the MCWD for a suitable use on the Authorized Recycled Use Site controlled by the User.

User agrees to follow the rules and regulations and any future amendments thereto for the use of Recycled Water set forth by the MCWD. User also agrees to comply with the requirements of the General Waste Discharge Requirements for Landscape Irrigation Uses issued by the California Regional Water Quality Control Board, Central Coast Regional. User also agrees to keep a copy of each of the documents described in this paragraph on the use site.

User agrees to allow access to the use site for inspection to all regulatory agencies, producers, and distributors involved with the project. These agencies include MCWD; MOW; Monterey County Health Department, State Division of Drinking Water; and California Regional Water Quality Control Board, Central Coast Region.

User agrees to designate a “User Supervisor” who is responsible for the recycled water system under the User’s control.

User shall use recycled water only for those uses that are legally permissible as expressed in State law or regulation, permits issued by the California Regional Water Quality Control Board, Central Coast Region, or any regulation or ordinance of suppliers of recycled water to the MCWD.

User shall ensure that their operations and maintenance staff and the User Supervisor shall receive appropriate training to assure proper operation of recycling facilities, worker protection, and compliance with applicable laws and regulations.

Engineering Report

MCWD operates under the General Waste Discharge Requirements for Landscape Irrigation Uses for recycled water use in the cities of Marina, Seaside, Monterey and unincorporated Monterey County, for which an engineering report has been prepared. Any site that is proposed to be plumbed or retrofitted for recycled water that lies within the designated area covered by the General Waste Discharge Requirements for Landscape Irrigation Uses must prepare an engineering report in conformance with the requirements of the Water Recycling Criteria and with the assistance of the MCWD.

Monitoring

The User is responsible for keeping records of the amount of water used, water application rates, fertilizer application rates, and all repairs and modifications to the onsite potable and non-potable networks. User may use the quantities from bills by the MCWD for quantity records.

Price for recycled water:

The rate for recycled water shall be set from time to time by the MCWD.

Term of the agreement:

The term of this agreement shall be for 25 years and shall renew automatically for 5 year increments thereafter.

Termination of the agreement:

This agreement may be terminated by either party on a 90-day notice.

Release of Liability:

There may be instances when the delivery of reclaimed water is suspended by the MCWD or by MOW. The User releases the MCWD, the MOW, and any other supplier of well water or other supplemental water, from any liability for damages caused by an interruption or suspension of the recycled water supply.

Hold Harmless:

The end user agrees to indemnify and hold harmless the MCWD and the MOW from any claims, suits, liability, loss costs demands, damages, causes of action, attorney fees and other expenses that arise out of the user's use of recycled water provided by the MCWD that meets the quality standards contained in the Waste Discharge requirements.

The undersigned individuals or entities have knowledge of and consent to the requirements, rules, and responsibilities regarding the use of recycled water distributed by the MCWD, set forth in (1) the *User's Handbook*, (2) the *Rules of Service*, and (3) the *Operations Plan* developed by the MCWD. Signature of the User Agreement implies consent to guidelines set forth in these documents.

Recycled Water User

Property Owner: _____

Address: _____

Phone: _____

User Supervisor: _____

Address: _____

Phone: _____

PROPERTY OWNER

Name (Print): _____

Signature: _____

Date: _____

USER SUPERVISOR

Name (Print): _____

Signature: _____

Date: _____

The parties listed below have approved the User Agreement for the above Recycled Water User and agree to grant permission for the normal operation of the Recycled Water User's system.

Marina Coast Water District

Name: _____

Phone: _____

Signature: _____

Date: _____

MCWD Recycled Water Project



Appendix C User's Handbook Version 1

April 1, 2019

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INTRODUCTION

PURPOSE

The purpose of this Handbook is to provide the recycled water “User” and “User Supervisor” a resource for the day-to-day operation and control of the recycled water system, in order to protect the health and welfare of the personnel involved with its use as well as the general public, and to protect the quality of local water resources. Recycled water is an important resource for the State of California, and its use for non-potable applications is, in many cases, mandated by State law. This Handbook provides necessary information to meet existing regulations for the operation of the User’s recycled water system. Although MCWD's customers will be using recycled water for urban irrigation and is subject to the use area requirements, the MCWD customers should be aware the recycled water, while non-potable, will become a potable water source once injected into the groundwater aquifer.

Every effort has been made to ensure that this Handbook is in compliance with, and not intended to supersede, existing codes, laws, statutes and regulations of the State of California, Regulatory Agencies and local governing bodies, concerning the currently approved use of recycled water. This Handbook is also not intended to supersede the American Water Works Association California-Nevada Section’s Guidelines for Distribution of Non-potable Water or Guidelines for the On-site Retrofit of Facilities Using Disinfected Tertiary Recycled Water.

Since legal and regulatory requirements can change without the express approval or knowledge of the Marina Coast Water District (MCWD), the MCWD assumes no liability for errors in this Handbook. It’s the responsibility of the User to check with the MCWD before initiating any operational or physical changes to the site’s system.

This Handbook is organized in the following manner.

- ***User’s Summary*** provides a brief commentary on major topics reviewed in this Handbook.
- ***Section A- General Provisions*** covers the basic administrative requirements including authorities, responsibilities and liabilities.
- ***Section B- Design and Construction*** covers the considerations needed when an on-site recycled water system is first installed or modified.
- ***Section C- Operation and Maintenance*** covers the basic conditions for service contained in the State of California’s “Water Recycling Criteria”.
- ***Section D- Marking and Equipment*** gives the basic requirements for marking the water system and signing the use area.
- ***Section E- Cross-connection Controls*** outline the requirements for protecting the potable water system and keeping it separate from the recycled water system.
- ***Section F- Pressure Testing Protocol*** outlines procedures for testing the recycled water system.
- ***Section G- Recycled Water Application Guidelines*** provides a summary of steps to obtain recycled water.
- ***Section H- Local Governing Agencies*** provides the names, addresses and phone numbers of agencies responsible for the regulatory administration of water recycling activities.
- ***Section I- Tips for Successful Usage***
- ***Section J- Definitions*** are included for terms used within the Handbook.

WHAT IS RECYCLED WATER?

“Recycled water,” as used in this Handbook and defined in Title 22, Chapter 3 of the California Code of Regulations, refers to tertiary-treated water produced from the three-stage treatment of municipal wastewater (see box, next page). Although secondary-treated effluent may also be reused, its applications are limited and subject to much greater restrictions, and it will not be addressed in this Handbook. The facilities that produce recycled water are known as Water Recycling Plants that are owned and operated by “Recycled Water Producers.” The recycled water produced by these plants is delivered to users through distribution systems owned and operated by “Recycled Water Agencies.” Recycled Water Producers and Agencies can be the same entity.

Recycled water is virtually colorless and odorless, and is allowable for full-body human contact but not for direct human consumption. The sensible use of recycled water affords an excellent choice for essentially all non-potable applications. Properly managed, recycled water is safe to use.

WHAT ARE “DUAL SOURCE” SITES?

“Dual source” sites are reuse sites where both potable (domestic) water and recycled water are present. Dual sources might be necessary on sites where water is normally available for public use. For example, a cemetery may use recycled water for irrigation, but would need a separate potable system with hose bibs to allow visitors to fill flower urns. “Dual plumbed sites” is a separate term which refers specifically to either buildings that have both recycled and potable water serving interior fixtures, or individual residences that use recycled water for outside irrigation, and is dealt with later under *Section E*. The public must not be allowed access to the recycled water system. Water quality needs at the use site might also call for two water sources. For example, golf courses may elect to use a potable water supply to irrigate the greens and use recycled water on the fairways. (Note: The potable water used for this purpose is referred to as “non-potable irrigation water” after it has passed through the irrigation system backflow preventer. These water lines are to be used only for irrigation and must not be connected to restrooms, drinking fountains, food service areas, etc.).

On sites with dual sources, the potable supply must be protected with an approved backflow prevention device. Cross-connections between the recycled water system and the potable water system are strictly prohibited.

BENEFITS OF RECYCLED WATER

Recycled water is a consistent, readily available source of water that can be used for irrigation as a alternative to potable water. The amount of recycled water available is generally not affected by drought, meaning customers don't risk losing expensive landscaping due to water shortages and potential

THE RECYCLED WATER TREATMENT PROCESS

- ◆ **Primary Treatment** removes 70 to 85 percent of the organic and inorganic suspended solids that either settle out or float to the top.
- ◆ **Secondary Treatment** mixes the remaining suspended and dissolved waste solids with microorganisms and air. The micro-organisms convert the waste solids to biomass that settles out.
- ◆ **Tertiary Treatment** filters out most of the remaining suspended solids through a granular media (for example, sand or anthracite coal) or a membrane, with the final product water being disinfected with chlorine or ultraviolet light to kill off bacteria, virus and other microorganisms.
- ◆ **Advanced Treatment** removes fine particulates, dissolved salts, pathogens, pesticides, residual organics, trace organics, and recalcitrant compounds to provide ultrapure effluent.

mandatory rationing. Advanced-treated recycled water can be used for virtually all non-potable applications (see box, next page).

Recycled water may also contain an appreciable nutrient content, such as nitrogen, potassium, calcium, magnesium, sulfur and other macro and micronutrients that may provide some level of fertilization during the irrigation process. However, the full advanced treated recycled water most likely will not contain the same level of nutrients that disinfected tertiary recycled water may have. A full recycled water quality analysis can be obtained from the MCWD.

USES FOR TITLE 22 TERTIARY-TREATED WATER

Urban Landscape – Parks and playgrounds, schoolyards, unrestricted access golf courses, residential landscaping, freeway and roadway landscaping, cemeteries, ornamental nurseries, and sod farms.

Agriculture – food crops for human consumption, orchards, vineyards, fodder, fiber and seed crops, non-fruit bearing trees, pasture for milking animals, water supply for livestock.

Impoundments – Restricted and unrestricted (full-body contact) recreational impoundments, decorative lakes and fountains, fish hatcheries.

Industrial – Industrial processes (e.g., paper manufacturing, carpet and textile dyeing, boiler feed), cooling towers and air conditioning, non-residential toilet, urinal and floor drains, structural and non-structural fire fighting, commercial laundries, commercial car washes, concrete mixing, construction (dust control, soil compaction, backfill consolidation around pipelines, including potable), street and sidewalk cleaning, flushing sanitary sewers, snow making.

Irrigating with recycled water is making use of a valuable resource that would otherwise be discarded.

ARE THERE DISADVANTAGES TO USING RECYCLED WATER?

Recycled water must be used responsibly within established guidelines, regulations and permit requirements. Because of its origins and the level of treatment provided, recycled water is not suitable for direct human consumption. Unlike potable water, recycled water can only be used for approved uses, at approved locations, under the provisions of established regulations, agreements or permits. At the time of this writing, there have been no known cases of illness in the State of California due to the proper use of recycled water (according to the State Division of Drinking Water, DDW).

In very rare occasions, there may be temporary interruptions of recycled water deliveries, as there are in any utility. Such instances are generally short in duration.

NEED FOR REGULATIONS

Regulations make the use of recycled water possible. Regulations ensure a consistent, reliable

water quality while being fully protective of the public health. California Code of Regulations Titles 22 and 17 are the two sets of State DDW regulations that accomplish this. Title 22 establishes the requirements for recycled water treatment, quality and allowable use. Title 17 establishes the requirements for backflow protection of the potable water supply. Copies of these regulations may be obtained from the MCWD or online at DDW's website

(http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Lawbook.shtml)

RECYCLED WATER USER'S HANDBOOK SUMMARY

Recycled water is a safe and effective resource for non-potable use. Properly managed recycled water has a very limited health risk, if any. To help in the proper management of recycled water, the State of California, the local city or county Health Department and the MCWD have developed rules and regulations for the safe use of recycled water. These rules and regulations are in place to ensure that the User, the User Supervisor and employees, and the public are protected from any health risk (real or potential) that may be associated with the use of recycled water.

- Because recycled water is not suited for direct human consumption, every effort must be made to prevent the user's recycled water system from being cross-connected with the potable (drinking) water system.
- Plans must be carefully inspected to ensure against cross-connections and that proper equipment is to be installed.
- The recycled water system must be operated under the authority of the User's Agreement and Permit that outlines any special considerations or requirements for the particular use site.
- The User must designate a "User Supervisor" who is responsible for managing the on-site water system. The User Supervisor ensures the system is operated within the established guidelines and is properly maintained.
- In cooperation with the User, the MCWD and/or Monterey County Health Department will make regular inspections of the site.
- The User must instruct all persons using recycled water of its proper use and precautions.
- All piping and points of connection must be labeled with "*RECYCLED WATER – DO NOT DRINK*" and the universal "Do Not Drink" symbol and colored purple, if possible.
- All recycled water use areas accessible to the public must be posted with signs visible to the public and must include the statement "*RECYCLED WATER – DO NOT DRINK*".
- An initial cross-connection test must be conducted to determine if there are any unknown connections between existing irrigation and potable piping prior to construction of retrofit work.
- Prior to connection with the recycled water distribution system, a final cross-connection test must be performed to verify that construction or retrofit work was performed correctly.
- In the event of a cross-connection incident, the User must contact the MCWD so that the procedures described in *Section E* are implemented.

SECTION A: GENERAL PROVISIONS

REGULATORY AUTHORITY

Rules and regulations for the end use of recycled water are established and/or enforced by the California Regional Water Quality Control Board (Regional Board), the State DDW and the Monterey County Health Department. These rules and regulations are contained in a permit from the Regional Board, Central Coast Region, issued to the MCWD. All facilities using recycled water must be designed and operated to meet the standards of the local governing codes, rules and regulations.

Various regulations for recycled water use are outlined in the MCWD Code, Title 4 – Recycled Water at http://www.mcwd.org/code_4_recycled_water.html.

From time to time there may be amendments to existing regulations. These amendments may be made without the knowledge or consent of the User or the MCWD. These amendments will be enforced upon their effective date. The MCWD will make every effort to make sure the User is made aware of these changes when they occur.

SYSTEM RESPONSIBILITY

Recycled water facilities are separated into two categories: off-site and on-site.

The MCWD is responsible for off-site recycled facilities which typically consist of facilities that are, or will be owned, operated, and maintained by the MCWD such as transmission or distribution mains in the public right-of-way. Typically, off-site facilities are located upstream of the water meter and include the meter.

The User is responsible for on-site recycled water facilities, which typically consist of facilities that will be owned, operated and maintained by the customer, and are located downstream of the water meter. There are two types of on-site recycled water facilities: non-residential on-site recycled water facilities and residential dual-plumbed homes. Residential indoor water use of recycled water is prohibited. Outdoor landscape irrigation at individual residences with recycled water is considered to be dual plumbed use, however is not permitted for this project. If MCWD intends to allow recycled water for outdoor landscape irrigation at individual residences in the future, the required reporting will be submitted for approval.

The User is responsible for ensuring that the recycled water use on-site complies with all the rules and regulations regarding such use. Specifically, the User is responsible for the following:

- Ensuring that all operations personnel are informed and familiarized with the use of recycled water.
- Providing operations personnel with maintenance instructions, controller charts, and record drawings to ensure proper operation in accordance with the design of on-site facilities and the Water Code.
- Notifying MCWD of any and all updates or proposed changes, modifications, or additions to on-site facilities. In accordance with the above, changes must be submitted to MCWD for plan review and approval prior to construction.
- Maintaining the recycled water facilities in accordance with the Water Code and MCWD's requirements and standards.
- Operating and controlling the system in such a way that prevents direct human consumption of recycled water and controls and limits incidental runoff or overspray.

- Ensuring compliance with any and all applicable Federal, State, and local statutes, ordinances, regulations, contracts, the Water Code, and all requirements prescribed by the MCWD General Manager and Board.
- Obtaining all permits and payment of all fees required for the establishment, operation and maintenance of the User's recycled water system.
- Reporting all violations and emergencies to the required local governing agencies. A listing of these agencies is provided in *Section H*.

USER AGREEMENT AND PERMITS

A potential User must complete all of the MCWD's requirements (for example, permit application) prior to the issuance of a User Agreement. (Note: "User Agreement" is the term used to describe any agreement, contract, permit, ordinance, memorandum of understanding or other such document used by the MCWD to present the terms and conditions for the use of recycled water to a User.) The MCWD reserves the right to alter, on a case-by-case basis, the User Agreement.

In a residential dual plumbed subdivision, all homes are required to use recycled water for irrigation. Deed restrictions are detailed in the documents "Declaration of Restrictions Regarding the Use of Recycled Water for Irrigation and "Homebuyer Notification, The Use of Recycled Water for Irrigation" (*Section K- Sample Forms & Site Specific Details*).

RATE AND FEE SCHEDULE

All rates and fees concerning recycled water service will be established and fixed by the MCWD.

PROTECTION OF PUBLIC HEALTH

The MCWD reserves the right to take any action necessary with respect to the operation of the User's on-site recycled water system in order to safeguard the public health.

AUTHORIZED USES

The use of recycled water is limited to those uses approved by the Regional Board or the State DDW. Any other use of recycled water is prohibited without the prior approval, on a case-by-case basis, of the MCWD, Monterey County Health Department, and the appropriate regulatory agencies.

APPROVED USE AREAS

Recycled water may only be used in areas approved by the MCWD, following the User's completion of the application procedure, approval of the final Compliance Inspection Report, and User compliance with all of the requirements of the applicable regulatory agencies.

A User may only use recycled water at previously-approved locations in a manner consistent with the User Agreement. A User may never supply recycled water to another owner's adjoining property or to the property of the same User across a street or alley without the prior written approval of the MCWD. The User may not give or sell recycled water to another party. Should the property become sub-divided, the service will be considered as belonging to the parcel it is located within. If such a subdivision occurs, or property ownership is transferred, the MCWD must be notified.

Recycled water lines are not permitted to cross lot lines. All recycled water delivered to any site must pass through a recycled water meter.

LIABILITY

The User is responsible for the operation and maintenance of the recycled water system downstream of the MCWD's point of connection with the User.

The MCWD shall not be liable for any water damage or other damage caused by the User due to defective or broken plumbing or faulty service, nor shall the MCWD be liable for damage caused by the User's facilities. This includes changes in the recycled water quality that may occur from sitting in ornamental lakes, storage tanks, pipelines, etc.

WATER SUPPLY CONTINGENCY

If at any time during construction or operation of the recycled water system, real or potential hazards are found, the MCWD has the right and the responsibility to immediately suspend, with or without notice, recycled water service in the interest of protecting the public health. The MCWD may supply water to the affected area either temporarily or permanently from the potable water system with appropriate backflow protection.

SECTION B: DESIGN & CONSTRUCTION

DESIGN APPROVAL

Before the construction of any new or major modifications of an existing recycled water system, an On-Site Recycled Water User Plan must be submitted for approval by the MCWD (*See Appendix D – Rules of Service*).

Once the On-Site Recycled Water User Plan has been prepared, it will be submitted to the State Division of Drinking Water and Regional Water Quality Control Board for review. Approval will be contingent upon evidence that all applicable design requirements, rules and regulations for a recycled water system are satisfied.

Design of on-site recycled water facilities shall conform to the following:

- The recycled water system shall be separate and independent of any potable water system. Cross-connections between potable water facilities and recycled water facilities are prohibited.
- Hose bibs on recycled water facilities are prohibited. Quick couplers are prohibited for residential dual plumbed homes. Where potable and recycled water are used on-site, potable water hose bibs must be attached to the building.
- Drinking fountains must be protected from the spray of recycled water in a manner approved by the On-Site Recycled Water User Plan, prior to installation.
- Patios, swimming pools, and spas, etc. shall be protected from the spray of recycled water.
- Overspray and run-off shall be limited or prevented.
- Potable and recycled water lines must maintain proper separation at all times.
- Recycled water must not be used for any other purpose other than the approved uses as set forth in the On-Site Recycled Water User Plan.
- The system must be designed to irrigate the on-site area within the allowable time periods as set forth in the On-Site Recycled Water User Plan.

CONSTRUCTION

The MCWD shall be notified by phone at least 48 hours prior to commencing work on the recycled water system (inspection contact phone number is (831) 384-6131). A preconstruction meeting shall be held at least 24 hours before starting construction. The MCWD shall also be notified by phone each workday thereafter until completion of the project.

Connections to the existing recycled water facilities must be done by a licensed contractor in accordance with MCWD tie-in procedures.

The appropriate regulatory agencies and the MCWD shall have the opportunity to make periodic inspections of the User's site during the construction phase, if applicable, to ensure materials are appropriate and they are installed according to the approved plans and specifications. The User shall be responsible for providing access to and cooperation with the MCWD's inspector to perform all testing and inspections.

RECYCLED WATER DELIVERY SYSTEM OPERATION

The MCWD reserves the right to control and schedule the use of recycled water, if control and scheduling are necessary to maintain acceptable working conditions within that agency's recycled water distribution system. The MCWD will administer these and other service conditions.

If the available service pressure is higher than the User can accept, the User shall be responsible for providing a pressure-reducing valve downstream of the service meter. If available pressure is lower than what the User needs, the User shall be responsible for providing booster pumping downstream of the meter. Any pumping of recycled water requires the prior written approval of the MCWD. Where possible, the on-site recycled water system shall be operated at a minimum of 10 psi below the on-site potable pressure.

Backflow prevention devices will not be required on the recycled water service connected to a recycled water main. However, in accordance with Section 400, MCWD's Regulation Regarding Cross-connection, reduced pressure backflow prevention devices will be required on the potable water service, when a parcel receives potable and recycled water service. No connection between the recycled waterline and the potable waterline is allowed.

BACKUP WATER SOURCE

If potable water is to be used as a backup source to the recycled water system, it must be done only through an air-gap separation between the two systems and with the prior approval of the State DDW, the local city/county health department, and MCWD.

FIRE PROTECTION SYSTEMS

Recycled water shall not be used for fire protection systems.

PROTECTION OF GROUNDWATER

Recycled water shall not be used for irrigation or impounded within 50 feet of any well used for domestic supply.

CONVERSION FROM POTABLE TO RECYCLED WATER SYSTEM

In general, all irrigation facilities converting from a potable to a recycled water supply must conform to the MCWD's construction specifications and the On-Site Recycled Water User Plan. The MCWD will notify the required state agencies of the intent to convert and solicit their involvement throughout the process. The facilities to be converted must be investigated in detail, including review of any record drawings, preparation of the required On-Site Recycled Water User Plans, potholing of existing facilities, and determinations by the MCWD of measures necessary to bring the system into full compliance with these standard specifications. The applicant, owner, or customer (User) will pay all costs to convert the water system.

CONVERSION FROM RECYCLED WATER TO POTABLE WATER SYSTEM

If due to any system failure, use violations, or other reasons as determined by the MCWD, it becomes necessary to convert from a recycled water supply to a potable water supply, it will be the responsibility of the owner, applicant, or customer (User) to pay all costs for such conversion. After notifying state and county health departments of the intent of the conversion, the recycled water service shall be removed and

plugged at the MCWD main or abandoned in a manner approved by the MCWD and State agencies. The on-site non-residential facilities must be modified, as required by the MCWD and State agencies, for use as a potable water system. The onsite system will then be disinfected in accordance with MCWD procedures.

SERVICE STARTUP

Before activation of the recycled water service, the User will be required to hire a CA/NV AWWA certified Cross Connection Control Specialist perform compliance inspections, cross-connection tests and coverage tests. The User will be required to submit documentation of all inspections and testing to MCWD. The Cross Connection Control Specialist must be on the MCWD approved tester list.

Initial Cross-connection Test- For the Initial Cross-connection Test, the User shall notify in writing the state and city/county health departments of the initial test date with intent that both agencies will attend. Recycled water will be used for the irrigation piping system in the initial cross-connection test. A Cross-connection Shut-Down Test Form must be completed (See *Appendix D- Section 12.3*). The procedures for the initial cross-connection test are listed in *Section E*.

Coverage Test- The User is responsible for controlling overspray and runoff of new systems. To ensure the limitation of overspray and runoff is in accordance with the On-Site Recycled Water User Plan, an inspection of the completed on-site non-residential system by the MCWD is required. When the sprinkler system is completed and the planting installed, the User shall contact the MCWD at (831) 384-6131 and arrange for a coverage test walk-through. The User must be in attendance and have persons capable of making system adjustments. If modifications to the system are required, other than minor adjustments, the User will be notified in writing of the changes required. To avoid termination of service, the modifications must be made in a timely manner. All modifications to the system are the responsibility of the User, and the User shall pay all costs associated with such modifications.

The User shall contact MCWD Engineering Department office two (2) days prior to the irrigation system coverage test (same phone number as above) and arrange a walk-through of the system.

MCWD Acceptance- Upon completion of construction, final inspection by the MCWD, submission of record drawings, approval of the On-Site Recycled Water User Plan, cross-connection test, signing of a recycled water agreement, training, completion of the initial cross-connection test, and payment of any outstanding fees, the project shall be accepted by the MCWD. The Compliance Inspection Report Form will be completed (See *Appendix D- Section 12.3*). At that time, service connection to the recycled water line may be made. The facilities shall be owned, operated and maintained by the User.

SECTION C: OPERATION & MAINTENANCE

GENERAL

Recycled water service will be provided by the MCWD only to those Users who have a current User Agreement for such service. This recycled water service can be revoked any time at the discretion of the MCWD.

Recycled water service must be made available only in accordance with all applicable Federal, state, and local statutes, ordinances, regulations and contracts, and other requirements including the California Water Code, the California Code of Regulations Titles 17 and 22, and requirements and regulations imposed by the Regional Water Quality Control Board, the State DDW, the local city or county Health Department, and/or the recycled water producer. The User must comply with the conditions of any User Agreement issued by the MCWD.

The MCWD may not deliver recycled water to Users that do not or will not comply with use site requirements.

CONDITIONS OF SERVICE

The User must comply with the following conditions.

Discharge Conditions- Discharge of recycled water, including overflow, bypass, and/or overspray to adjacent drainage ways or properties is prohibited. Any failure in the User's system that causes an unauthorized discharge of recycled water must be reported to the MCWD.

Runoff Conditions - The irrigation systems must be designed, constructed and operated to minimize to the fullest extent possible incidental runoff outside the approved use area. Insignificant amounts of runoff at peripheries of spray-irrigated areas shall not be considered a violation provided that the runoff is minimal and the User is utilizing good irrigation practices.

Ponding Conditions- Use of recycled water shall be accomplished at a time and in a manner that minimizes ponding and ensures the full percolation of applied water within a 48-hour period. The irrigation systems must be designed, constructed and operated to minimize to the fullest extent practical ponding within or outside of the approved use area. This does not apply to approved impoundments such as golf course water bodies or decorative lakes.

Windblown Spray Conditions- The irrigation systems must be designed, constructed and operated to minimize to the fullest extent practical windblown spray from leaving the approved use area. All sprayheads shall be adjusted to eliminate overspray onto adjacent hardscapes. Drinking water fountains shall be protected from direct or windblown spray.

Recycled Water Use for Dust Mitigation and Soil Compaction- Use of recycled water for dust mitigation and soil compaction is prohibited.

Unapproved Uses- Use of recycled water for any purposes other than those explicitly described in the MCWD's water recycling permit is strictly prohibited.

Use in Unapproved Areas- The delivery and use of recycled water for any reason, including approved uses, in areas other than those explicitly approved in the current effective user permit and without the prior approval of the appropriate regulatory agencies, is strictly prohibited.

Cross-Connections- Cross-connections, as defined by the California Code of Regulations, resulting from the use of recycled water or from the physical presence of a recycled water service, whether by design, construction practice, or system operation, **are strictly prohibited.**

If any cross-connection is discovered, the User shall proceed with the following:

- Inform the User and contact MCWD staff.
- Instruct the User not to drink the tap water at the use site.
- Turn off the recycled water to the property at the meter.
- Expedite the testing of water quality at the use site as well as in the supply system in the street.
- Investigate the source of the cross-connection and eliminate it.
- If disinfection of the potable water supply is necessary, it should be expedited with the cooperation of the User.
- MCWD and DDW will determine when it is safe for the User to resume the safe use of the recycled and potable water.

Cross-connection testing will be conducted every four (4) years on the on-site recycled water system and annually if the interior of dual plumbed. Testing will be conducted by a CA/NV AWWA certified Cross Connection Control Specialist hired by the User. The Cross Connection Control Specialist must be on the MCWD approved tester list. The state and county Health Departments will be notified of the annual test date and the subsequent outcome of the test(s). The cross-connection test shall be 60 minutes and may be longer if site situations pose complications. At the User's request, MCWD will consider approving a shorter test for residential locations.

DESIGNATION OF USER SUPERVISOR

It is the User's responsibility to provide surveillance and supervision of its on-site recycled water system in a way that assures compliance at all times with current regulations and the recycled water permit requirements.

The User shall designate, with notification going to the MCWD, a "User Supervisor" to be the contact person with the MCWD. For single-family residences which have a recycled water service connection, the owner shall be considered to be the User Supervisor unless otherwise indicated on the application for the service connection request. In the event that someone other than the owner is designated as the User Supervisor and this person is no longer associated with the property, the owner shall again be considered the User Supervisor until written notification is made to the MCWD.

The following are requirements of the User Supervisor position:

- Received training or be able to demonstrate knowledge of the application and maintenance of a recycled water system.
- Be aware of and familiar with this Handbook.
- Be available to the MCWD at all times and have the authority to carry out any requirements of the MCWD.
- Be responsible for the installation, operation and maintenance of the recycled and potable water systems, and for the prevention of potential hazards.
- Ensure that notification signs at the use site are properly installed and maintained, and that all recycled and potable water facilities are properly labeled, tagged or otherwise identified.

- Be knowledgeable of the provisions contained in Titles 17 and 22 of the California Code of Regulations relating to the safe use of recycled water and maintain accurate records.
- Ensure that all employees of the use site involved with the use of recycled water are instructed in the safe and responsible use and handling of the recycled water.
- Immediately inform the MCWD of any failures, violations and emergencies that occur involving the recycled or potable water systems.
- Be familiar with the basic concepts of backflow and cross-connection prevention, system testing, and related emergency procedures, and participate in any cross-connection tests.

The MCWD must be notified immediately of any change in personnel for the User Supervisor position. The MCWD will require the User Supervisor to perform and document periodic inspections of the User's system and report all violations to the appropriate Regulatory Agency according to applicable procedures established by law, code, permit or practice.

ON-SITE USER SUPERVISOR DO'S AND DON'TS

Do's

- Install and maintain signs at all points of entry (pedestrian and vehicular)
- Install and maintain labels and tags on recycled and potable water systems
- Operate irrigation system between 9PM – 6AM
- Use quick couplers instead of hose bibs. Only quick couplers that differ from those used on the potable water system can be used on the recycled water piping system.
- Contact the Marina Coast Water District (MCWD) if any water system (potable or recycled) modifications are anticipated
- Immediately contact the MCWD if any of the following has occurred:
 - A recycled water line break, spill, or off-site discharge of recycled water
 - A violation of water recycling requirements
 - A cross-connection between the recycled and potable water systems
- Educate/train site workers on safe use and restrictions of recycled water
- Keep records and as-built drawings up-to-date and accessible
- Assist and cooperate during periodic visual inspections
- Assist and cooperate during periodic cross-connection testing
- Maintain a record of all potable and non-potable plumbing repairs and modifications

Don'ts

- Don't drink recycled water
- Don't use recycled water to wash hands or any other part of body
- Don't remove recycled water identification signs, tags or labels
- Don't cross-connect two dissimilar water systems (recycled and potable)
- Don't allow recycled water to contact drinking fountains or eating areas
- Don't allow recycled water to pond or puddle
- Don't allow recycled water to run off the site property by over-spray or over-watering
- Don't use recycled water on an unapproved site

- Don't put hose bibs on recycled water systems (unless public access is restricted). Hose bibs, if used in areas where public access is restricted, should be properly tagged as not suitable for drinking and should be clearly marked as a recycled water appurtenance.
- Don't use the same equipment on both recycled water and domestic water systems (for example, quick couplers, tools, etc.)
- Don't modify any water system without prior approval of the MCWD and the County Health Department

PERSONNEL TRAINING

Personnel involved in producing, transporting, or using recycled water shall have undergone adequate training in recycled water use, as provided by the MCWD or the User Supervisor. Supervisory personnel and the User Supervisor should be held accountable to ensure that employees are not using recycled water carelessly or improperly. It is the responsibility of the User to train all operations personnel so they are familiar with the use of recycled water. Any training program should include, but not be limited to, the following:

- Operations personnel must be aware that recycled water, although highly treated, is non-potable. **Recycled water may never be used for direct human consumption.**
- Operations personnel must understand that working with recycled water is safe if common sense is used and appropriate regulations are followed.
- Operations personnel must understand that conditions such as ponding and runoff are not allowed.
- Good personal hygiene must be followed (for example, washing hands after working with recycled water).
- Operations personnel must understand that there is never to be a direct connection between the recycled water system and the potable water system.

PERIODS OF OPERATION

Operation of the User's on-site recycled water system must adhere to the following requirements:

- Irrigation may only occur during periods of least use of the approved area by the general public. The irrigation system must be operated between the hours of 9 PM and 6 AM unless otherwise directed by the MCWD.
- Even though advanced-treated recycled water is approved for full-body contact by the State DDW, irrigation of public areas during other times may be performed if the irrigation system is operated manually and is supervised to avoid inadvertently exposing any members of the general public. This provision must be strictly followed.
- Consideration should be given to allow a reasonable dry-out time before the area is to be used by the public.
- The total time required to irrigate the design area must not exceed 9 hours in any 24-hour period.



Inadvertent public contact with recycled water irrigation spray must always be avoided

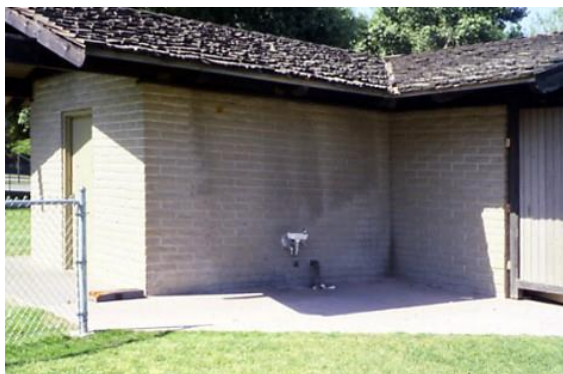
- Recycled water must not be applied at a rate greater than the infiltration rate of the soil. Where varying soil types are present, the design and operation of the recycled water facilities must be compatible with the lowest infiltration rate of the soil present.
- When the application rate exceeds the infiltration rate of the soil, automatic systems must be utilized and programmed to prevent or minimize ponding and runoff of recycled water. The sprinkler must not be allowed to operate for a time longer than the landscape's requirement. If runoff occurs before the landscape's water requirement is met, the automatic controls must be reprogrammed with additional watering cycles of shorter duration to meet the requirements.
- Recycled water shall not be used during periods of extended rainfall and/or runoff.

HOSE BIBS

Use or installation of hose bibs is prohibited on the recycled water system.

DRINKING FOUNTAINS

Drinking fountains located within the approved use area must be protected from contact with recycled water by direct application through irrigation or other approved use. The potable water line supplying the drinking fountain must have a warning tape and maintain proper separation from recycled water lines. Drinking fountains must be protected from the direct spray of recycled water either by proper placement within the design area or the use of a covered drinking fountain approved for this purpose.



The pattern on the walls indicates that this drinking fountain is being sprayed by the irrigation water. If recycled water is to be used, then the spray pattern must be altered or the drinking fountain shielded.

EQUIPMENT CLEANING

Any device, hose, pipe, meter, valve, tank, pump, truck, etc. which has been used with recycled water may not be used to convey potable water nor attached to the potable water system unless it is cleaned and disinfected per AWWA C651: Disinfection of Water Mains.

MODIFICATIONS

The User must not make any modifications to its on-site recycled water system (or potable system, if it's in close proximity to the recycled system) without prior approval of the MCWD. This includes modifications to the approved plans or to the operational system. Detailed plans of any modifications should be submitted to the MCWD and the modifications inspected by the MCWD before being placed in operation.

Routine maintenance of the irrigation system, such as pipeline repairs, sprinkler replacement and other similar activities that don't result in a substantial change in either the recycled or potable water systems or operating procedures do not need prior approval by the MCWD.

Emergency modifications or repairs that must be made by the User to its system in order to prevent contamination, damage or a public health hazard are covered in this section under *Emergency Procedures*.

MAINTENANCE

The User must implement a preventive maintenance program that will ensure that the recycled water system always remains in compliance. A preventive maintenance program should include but not be limited to the following:

- Regular inspections should be conducted by the User of the entire recycled water system including sprinkler heads, spray patterns, piping and valves, pumps, storage facilities, lakes, controllers, signage, etc. Immediately correct any problems.
- All notification signs, labels and/or tags should be checked for their proper placement and readability. Replace damaged or unreadable signs, labels or tags.
- Special attention should be given to spray patterns to eliminate ponding, runoff and windblown spray conditions.
- Establish and maintain an accurate records-keeping system of all inspections, modifications and repairs.
- Broken sprinkler heads, faulty spray patterns, leaking pipes or valves, etc. must be repaired when the malfunction becomes apparent.
- A maintenance program for backflow prevention assemblies that includes at least annual testing by a CA/NV AWWA certified Cross Connection Control Specialist must be carried out. The Cross Connection Control Specialist must be on the MCWD approved tester list. Records of annual tests, repairs and overhauls must be kept by the user with copies forwarded to the MCWD and the County Health Department.

PERIODIC SITE INSPECTIONS

Periodic site inspections of the User's recycled water irrigation system are mandated by the Water Code (Title 4 Section 4.28.040).

These inspections are the responsibility of the entity regulated under the SWRCB General Waste Discharge Requirements for Landscape Irrigation Uses of Municipal Recycled Water, Water Quality Order No. 2009-0006-DWQ (General Waste Discharge Requirements for Landscape Irrigation Uses) issued by the Regional Board (i.e. the MCWD). Upon completion of the inspection, a *Compliance Inspection Report Form* (See *Appendix D- Section 12.3*) should be filed by the MCWD.

The MCWD will determine the frequency of these inspections, based on local conditions. The MCWD also reserves the right to make unannounced inspections of the use site's facilities, although at reasonable times.

Should a cross-connection be discovered during the inspection, cross-connection procedures described in *Section E* should be implemented immediately.

PROTECTION OF POTABLE WATER SYSTEMS

On "dual source" sites where both potable water and recycled water exist, the potable supply must be protected against accidental cross-connections. In lieu of an air-gap, reduced-pressure principal backflow

prevention (RP) devices are generally approved by the State DDW and the MCWD. This must be done according to the approved site-specific drawings.

Backflow prevention devices must be approved by the MCWD and the appropriate regulatory agencies before installation. If an RP is installed, it must be tested annually. The device testing must be done by a backflow prevention device tester certified by CA/NV AWWA. Test reports must be provided to the MCWD. Records must be maintained for at least three (3) years by both the User and the MCWD.

VIOLATIONS

The MCWD reserves the right to decide if a violation of the conditions under which the User Agreement was issued has occurred. Violations may include non-compliance of any of the following prohibitions: overspraying; ponding; irrigation during rainy weather; irrigation during restricted time of day; irrigation at non-allowed site; unapproved construction; or a broken irrigation facility.

Any willful or accidental act of noncompliance with any existing Federal, state or local ordinance, code, law or statute regulating the use of recycled water constitutes a violation.

NOTIFICATION

It is the responsibility of the User Supervisor to immediately notify the MCWD of any failure or cross-connection in the User's recycled or potable water system, whether or not he/she believes a violation has occurred. It is also the responsibility of the User Supervisor to immediately notify the MCWD of any violation he/she believes might imminently occur because of any action the User's personnel might take during the operation of the recycled or potable water systems.

If there are any doubts whether a violation has occurred, it is the responsibility of the User Supervisor to report each occurrence to the MCWD so a decision can be made. Any additional local governing agencies, as listed in *Section H*, should be notified of any violations.

Violations should be reported to the MCWD by filing the applicable Notice of Violation Form (see *Appendix D- Section 12.3*).

CORRECTIVE ACTION

If the MCWD's investigation reveals that a violation has occurred on the reuse site, the MCWD must immediately notify the User of the violation and what corrective actions must be taken. It is the responsibility of the User to immediately initiate corrective action to eliminate the violation. If the MCWD believes the violation constitutes a hazard to the public health, the MCWD must immediately stop recycled water service to the User. It will be at the discretion of the MCWD to decide if a violation has been adequately corrected.

EMERGENCY PROCEDURES

In case of a major earthquake, the User Supervisor should immediately inspect the potable and recycled water systems for damage. If either system appears damaged, both water systems should be shut-off at their points of connection. The User Supervisor should immediately contact the MCWD for further instructions.

Emergency Modifications- Emergency modifications or repairs to the recycled water system can be made by the User without the prior approval of the MCWD to prevent contamination, damage or a public

health hazard. However, the User must notify the MCWD of the emergency modifications as soon as possible and file a written report.

Unauthorized Discharge- It's the responsibility of the User to report to the MCWD all system failures that result in an unauthorized discharge of more than 50,000 gallons of advanced treated recycled water (or 1,000 gallons for any lesser quality recycled water). An immediate oral report followed by a written report is required.

Contamination of Drinking Water- In case of contamination of the potable water system due to a cross-connection on the User's premises, the MCWD and the County Health Department must be immediately notified by the User.

The MCWD may impose a startup fee upon resumption of service to the User whose service has been terminated, depending on the provisions of the User Agreement.

ENFORCEMENT

The MCWD shall enforce all existing regulations concerning the use of recycled water and/or recycled water systems. Regulations concerning the use of any recycled water or recycled water system shall be applied with equal force and effect to any person, persons, or firm, public or private. **There will be no deviations from these regulations** except upon written authorization of the MCWD, acting within applicable regulations. An appeal procedure may be provided for in the User Agreement or in the MCWD's Rules of Service; the action of the MCWD will be final.

CAUSES FOR TERMINATION OF SERVICE

The MCWD reserves the right to revoke a User's Agreement if any or all of the service conditions are not satisfied at all times. Service to a User may be terminated any time if:

- The MCWD's distribution system is not capable of supplying recycled water
- The quality of the recycled water does not comply with the requirements of the regulatory agencies
- The User's operation does not conform to all applicable regulations, permit requirements and/or the terms of the User's agreement.
- There is nonpayment of service fees and charges by the User.

SECTION D: MARKING AND EQUIPMENT

GENERAL

All materials, apparatus, piping, valves, controllers, sprinkler heads, pumps etc. for new recycled water irrigation systems must be approved for use in a pressurized recycled water system and installed according to approved plans. The recycled water system must conform to the AWWA California-Nevada Section's Guidelines for the On-site Retrofit of Facilities Using Disinfected Tertiary Recycled Water. Deviations will not be allowed without prior approval. System installation must conform to the Uniform Plumbing Code and all other local codes, rules and regulations.

The approved use area must be clearly marked. All areas where recycled water is used shall be posted with signs. Each sign shall state "RECYCLED WATER – DO NOT DRINK" and "AGUA IMPURA – NO TOMAR" and display the international "Do Not Drink" symbol.

BELOW-GRADE PIPING



Recycled water pipeline installation with continuous purple warning tape

All new piping must be installed according to the approved plans and marked as required. Installation must be in accordance with the latest edition of International Association of Plumbing and Mechanical Officials (IAPMO) Standard IS-8. Fittings, primers and solvents must be IAPMO listed. All new recycled and potable water lines (pressure or non-pressure), new and existing valve boxes and appurtenances must be identified to clearly distinguish between recycled water and potable water systems.

Identification of Recycled Water Lines- Recycled water piping shall be purple PVC and identified as recycled water pipes by continuous marking on both sides. The markings shall include the following: "WARNING RECYCLED WATER – DO NOT DRINK", nominal pipe size, pressure rating, and ASTM designations.

Purple warning tape shall be placed over the pipe in the trench of all pipes carrying recycled water. Warning tape shall be plastic, minimum 3-inches wide, imprinted with minimum 1-inch black letters reading "CAUTION BURIED RECYCLED WATER LINE BELOW".

All pressure main line piping from the recycled water system shall be installed to maintain 10 feet minimum horizontal separation from all potable water piping. Where recycled and potable water pressure main line piping cross, the recycled water piping shall be installed below the potable water piping in a Class 200 purple-colored PVC sleeve which extends a minimum of 5 feet on either side of the potable water piping. A minimum vertical clearance of 6 inches must be provided. Conventional (white) PVC pipe may be used for sleeve material if it is wrapped with purple warning tape, which reads "CAUTION: RECYCLED WATER – DO NOT DRINK".

Identification of Potable Water Lines- New buried potable lines must be identified by continuous lettering on 3-inch minimum width blue tape with 1-inch white lettering bearing the continuous wording "POTABLE WATER" permanently affixed at 10-foot intervals atop all horizontal piping, laterals and

mains. Identification tape must extend to all valve boxes, vaults and exposed piping. Blue warning tape shall be placed over the pipe in the trench of all pipes carrying potable water.

Identification tape is not necessary for extruded blue-colored PVC with continuous wording "*POTABLE WATER*" printed in contrasting lettering on opposite sides of the pipe.

Identification of Non-Potable Water Lines- All non-potable irrigation/industrial water lines (pressure/non-pressure) must be identified by continuous lettering on 3-inch minimum width yellow tape with 1-inch contrasting lettering bearing the continuous wording "*NON-POTABLE WATER - DO NOT DRINK*" permanently affixed at 10 foot intervals atop all horizontal piping, laterals and mains. Identification tape must extend to all valve boxes and/or vaults, exposed piping, hydrants and quick couplers.

Identification of Existing Below-Grade Water Lines- Existing below-grade piping, whether recycled, potable or non-potable, need not be marked unless the piping becomes exposed, such as during installation of new pipe or maintenance of existing pipe. The exposed section should be appropriately marked (as recycled, potable or non-potable) to the extent feasible.

ABOVE-GRADE PIPING

All above-grade recycled water pipelines must be appropriately labeled and color-coded purple to differentiate recycled water pipelines from potable and non-potable water pipelines. If purple pipe is not used, recycled water pipelines may be wrapped with purple warning tape having the words "*CAUTION - RECYCLED WATER*" visible in contrasting black letters.

Flexible conduits or hoses must be clearly marked "*CAUTION - RECYCLED WATER*" with each adapter or fitting painted purple. Above-grade potable water pipelines must be labeled and color-coded blue to differentiate potable water pipelines from recycled and non-potable water pipelines.

Potable water pipelines may be wrapped with blue identification tape having the words "*POTABLE WATER*" visible in contrasting white letters.

Above-grade non-potable water pipelines must be appropriately labeled and color-coded yellow to differentiate non-potable water lines from recycled water and potable water lines. Non-potable water lines may be wrapped with yellow identification tape having the words "*NON-POTABLE WATER - DO NOT DRINK*" visible in contrasting letters.

Exposed valve boxes, vaults, quick coupling valves, outlets and related appurtenances must be color-coded, labeled or tagged, to differentiate recycled water from potable water (that is, "*CAUTION – RECYCLED WATER - DO NOT DRINK*" in black or white contrasting lettering on a purple background, or "*POTABLE WATER*" in white lettering on a blue background or "*NON-POTABLE WATER - DO NOT DRINK*" in contrasting lettering on a yellow background).

Tags must be identified with the appropriate wording on both sides. Tags identifying recycled water must have both the appropriate wording and the "Do Not Drink" symbol.

VALVES

Quick Coupling Valves- Quick couplers are permitted for non-residential sites only. Quick-couplers must conform to the following requirements:

- Quick-couplers should be constructed of brass with a purple snap-on cover and should have a ¾-inch or 1-inch inlet. All recycled water quick-couplers should be installed below grade in a purple round box designed for recycled water use.
- The box cover should have a warning with the following information: “*RECYCLED WATER – DO NOT DRINK*” in English and Spanish and should be permanently stamped or molded into the cover. Also, the warning must have the international “Do Not Drink” symbol. Locking covers may be required where accessible by the public.
- Quick coupling valves intended for recycled water use are not to be used on potable water systems.



Quick coupler and valve box

Gate/Manual Control/Electrical Control/Pressure Reducing Valves- All gate valves, manual control valves, electrical control valves and pressure reducing valves for on-site non-residential recycled water systems should be installed below grade in a purple valve box. Electrical and manual control valve boxes should have a warning label permanently molded into or affixed onto the lid with rivets, bolts, etc.

Remote Control Valves- New and existing remote control valves should be installed in a marked valve box with crushed rock in the base and an identification tag on the operator. For each valve system, remote control valves should be adjusted so the most remote sprinkler heads operate at the pressure recommended by the manufacturer giving a uniform distribution of water.

Valve Boxes- Valves, both above and below grade, should be housed in an approved lockable purple valve box. A sign reading “*CAUTION: RECYCLED WATER – DO NOT DRINK*” shall be installed, as approved by the MCWD. Other means of restricting public access may be required by the MCWD.

SPRINKLER HEADS

Sprinklers should be easily recognized as being used in a recycled water system. All sprinklers should be purple in color or have purple snap-on caps for easy identification. New sprinkler heads must be of the size, type, pressure, radius of throw and discharge as indicated on the approved plans. All new sprinkler heads, either permanent or temporary, should be of the approved type for use with recycled water and create the minimum amount of mist. Drainage through sprinkler heads is prohibited, and an anti-drain valve must be installed in the sprinkler riser as needed. Anchors on sprinkler risers should be provided as needed and maintained. Sprinkler heads must be kept in good repair at all times.

SYSTEM CONTROL DEVICES

New system controllers must be automatic with multiple start/stop times for any 24-hour period and installed according to the approved plans and local codes. Two color-coded diagrams must be prepared for the station and system for each controller. Each diagram should be sealed in plastic with one copy

placed in the controller box and the other given to the City. All controllers must be marked with the words “*RECYCLED WATER*” in black 1-inch high letters on a purple background.

STORAGE TANKS & IMPOUNDMENTS

All storage tanks, either stationary or portable, must be structurally sound and free from leaks. Each tank must be conspicuously marked with signs with the words “*RECYCLED WATER - DO NOT DRINK*” in black letters 2-inches high on a purple background. The “Do Not Drink” symbol should be present on all recycled water storage tanks. Impoundments (lakes) that receive recycled water are classified as “unrestricted” (swimming and body contact allowed), “restricted” (no swimming or body contact, but non-contact activities such as fishing and boating allowed) or “ornamental” (no recreational activities allowed). All of these impoundments must have the recycled water valves and outlets marked or tagged with the words “*RECYCLED WATER - DO NOT DRINK.*” At restricted and ornamental impoundments, adequate measures must be taken to prevent body contact. All recycled water impoundments must be kept separate from potable water wells and reservoirs. If any storage tank or impoundment receives both recycled and potable water, the potable water supply must be properly air-gapped to avoid a cross-connection.

OTHER DEVICES

All air/vacuum relief valves, valves, pressure reducing valves, pumps, pump control valves, etc., must be tagged or labeled indicating whether it is on the recycled water, non-potable water or potable water system. Recycled water tags must be weatherproof purple plastic, 3-inches by 4-inches with the words “*WARNING RECYCLED WATER – DO NOT DRINK*”. Imprinting shall be permanent and black in color. Use tags manufactured by T. Christy Enterprises or approved equal.

Potable water tags or labels must have a blue background with “*POTABLE WATER*” in white lettering.

Non-potable water tags or labels must have a yellow background with “*NON-POTABLE*” in black lettering.

Recycled water valves, couplers, and all other facilities must be secured in a manner that permits operation only by authorized personnel.

VEHICLE IDENTIFICATION

Any vehicle used to transport recycled water must be clearly marked with labels or signs that contain the words “*RECYCLED WATER - DO NOT DRINK*” in black 2-inch high letters on a purple background and include the “Do Not Drink” symbol. One label or sign should be placed on the tank closest to the driver’s door, with a second label or sign being placed on the rear surface of the tank at the outlet. All labels and signs must be placed where they can easily be seen by the personnel using the vehicle.



Any vehicle used for the transportation or storage of recycled water must not be reused for the transportation or storage of potable water, unless it has been flushed, disinfected and tested.

POSTING APPROVED USE AREA

Posting the use of recycled water is required at all entrances to the User's facility, and placed where they can be easily seen. The signs must indicate that "*RECYCLED WATER*" is in use. In addition, all signs must include the "Do Not Drink" symbol and use the words "Do Not Drink," in both English and Spanish (or other locally used language). Additional signing may be required by the regulatory agency on a case-by-case basis.

SECTION E: CROSS-CONNECTION CONTROL**INITIAL CROSS-CONNECTION TEST FOR FINAL APPROVAL**

If the on-site system is installed prior to plan approval and/or inspection, all or any portion of the system must be exposed and corrected as directed by the MCWD in accordance with these standard specifications. Failure to comply will result in termination of service. The State and County Health Departments will be notified of the initial test date with intent that both agencies will attend. For the initial cross-connection test, recycled water will be used for the irrigation piping system. A Cross-Connection Shut-Down Test Form shall be completed (See *Appendix D- Section 12.3*). The procedures for the initial cross-connection test shall be as follows:

- Verify that the recycled water system is under pressure and operating normally. This is done by manually operating each valve and quick coupler attached to the recycled water system.
- Shut down the recycled water system at the meter service connection.
- Verify that the recycled water system does not have any pressure. This is done by opening a valve downstream of the recycled water connection to relieve pressure, allowing one hour of time to pass, closing the valve, then manually operating each valve and any quick couplers attached to the recycled water system.
- Verify that the potable water system to the lot is under pressure and operating normally. This step is done while the recycled water system is shut-off at the meter. The test is accomplished by manually operating all fixtures being supplied by the potable meter, both interior and exterior of the home or buildings.
- Shut down the potable water system at the backflow. Open the recycled system at the meter connection.
- Verify that the recycled water to the lot is under pressure and operating normally.
- Verify that the potable system does not have any pressure. This is accomplished by opening a valve downstream of the potable water backflow to relieve pressure, closing the valve, then manually operating all fixtures on the interior and exterior of the building being supplied by the potable water meter.
- Open the potable water system at the backflow. The test is now complete.
- Perform shutdown test on potable and recycled water systems at least once every four years and at change of occupant (rental or sale). Test shall be performed as outlined in the Cross-Connection Shutdown Test Form.

REGULAR CROSS-CONNECTION TEST FOR INDIVIDUAL RESIDENTIAL LOTS

Testing for cross-connections will be conducted every four years at the on-site recycled water system using a CA Waterworks approved method such as pressure, dye or other test methods. The State and County Health Departments will be notified of the test dates and the subsequent outcome of the test(s). The cross-connection test shall in no case be less than 60 minutes and may be longer if site situations pose complications. The procedures for the annual cross-connection test shall be as follows:

- Verify the recycled water system is under pressure and operating normally. This is done by manually operating a valve or quick coupler attached to the recycled water system.
- Leave the valve or quick coupler open while shutting down the recycled water meter at the service connection. The recycled water system will be drained and remain inactive for 60 minutes.
- At the end of the 60 minute shut down period, verify that the pressure in the recycled water system has completely dissipated through the open valve or quick coupler. A cross-connection is detected if the pressure has not completely dissipated, and the valve at the service connection is not leaking.
- Open the recycled water service connection if a cross-connection was not detected.
- The potable water shall remain pressured at all times during the annual recycled water shut down.

PROCEDURE IF CROSS-CONNECTION IS DISCOVERED

On suspicion of existence of a cross-connection, the MCWD will repeat the shutdown test. If the results confirm a cross-connection, proceed as follows:

- Inform the User and send notification to DDW.
- Instruct the User to not drink the tap water at the use site.
- Turn-off the recycled water to the property at the meter.
- Expedite the testing of the water quality at the use site as well as in the supply system in the street.
- Investigate the source of the cross-connection and eliminate it.

If disinfection of the potable water supply is necessary, it should be expedited with the cooperation of the User.

- MCWD and the DDW will determine when it is safe for the User to resume the safe use of the recycled and potable water.

DUAL PLUMBED USE

If MCWD decides to allow dual plumbed use in the future, MCWD will submit the required reporting for approval prior to allowing dual plumbed use. Prior to the initial operation of the dual-plumbed recycled water system, MCWD will ensure that the dual plumbed system within each facility and use area is inspected for possible cross connections with the potable water system.

SECTION F: PRESSURE-TESTING PROTOCOL

The following are general guidelines for the pressure testing procedure and may be modified with the approval of the State and County Health Departments.

- Potable water must be used during the initial testing of the on-site recycled water system.
- The potable water connection must be protected by an approved reduced pressure principle backflow device prior to conducting the pressure test.
- The pressure testing must be conducted before the onsite recycled water piping is physically connected to the recycled water supply for the first time.
- The temporary connection to the potable water supply for the pressure test must be physically removed before a physical connection may be made to the recycled water supply.
- The recycled water system should be completely drained and remain deactivated for an adequate period of time based on site-specific characteristics.
- At the end of the shutdown period, all of the recycled water outlets should be tested throughout the entire site for cross-connections by checking each outlet for flow.

SECTION G: RECYCLED WATER APPLICATION GUIDELINES**SUMMARY OF STEPS TO OBTAIN RECYCLED WATER¹**

1. Potential User contacts the MCWD for recycled water service, and the MCWD responds in a timely manner.
2. Potential User must have irrigation plans stamped by a registered landscape architect or a registered civil engineer.
3. Potential User submits an On-site Recycled Water User Plan (see *See Appendix D- Rules of Service; Section 2*) and pays the application fee. The User agreement is explained and signed at this time.
4. The potential User shall apply to the MCWD for a recycled water meter. A construction meter for potable water and an appropriate backflow prevention device may be required for temporary water and system testing before being served by recycled water.
5. The MCWD notifies the State and County Health Departments of the submitted application.
6. Potential User submits two sets of plans each to the MCWD and to the State and County Health Departments for plan check, and pays the applicable plan check fees.
7. The MCWD, State DDW, and the County Health Department complete the plan check and return the plans to the potential User for corrections.
8. After all corrections are made, the potential User resubmits the marked plans along with a final set of plans. If no more corrections are to be made, the MCWD, State DDW, and County Health Department will approve the original plans. Four (4) sets of prints of the signed plans should be submitted to these agencies.
9. A pre-construction meeting (preliminary inspection) is held before construction with the MCWD's representative, the potential User and the contractor. This meeting is to cover the plan's general notes, specific job requirements and cover any questions. Following this meeting, an initial cross-connection test is to be conducted on existing systems with the MCWD and the State and/or local city/county health departments.
10. The potential User may begin construction, according to the approved plans, contingent upon any other required permits or approvals being obtained. Approvals for deviations in the approved plans are to be sought as they occur. All work during construction must be inspected by the MCWD and/or the County Health Department **before** backfilling any buried piping. If any recycled or potable water piping is installed before plan check approval and/or inspection, all or any portion of the piping system may be required to be exposed and corrected as necessary.
11. After construction is completed, the MCWD and the State and County Health Departments must be notified for the final inspection and cross-connection test utilizing potable water supplied through an approved backflow prevention device on dual source sites. The recycled water meter

¹ Note that the following sequence of events is general in nature and is for illustration only. Please refer to *Appendix D- Rules of Service* and contact the MCWD for the appropriate process.

is installed, potable water severed and conversion made to recycled water. During this walk-through, flow adjustments are made, tagging is inspected, and coverage is checked. A thorough cross-connection test is conducted at this time to verify that construction was performed correctly. The MCWD and/or the County Health Department will generate a punch list of corrections to be made if necessary. Additional guidelines and applicable forms to be filed with the MCWD are included in *Appendix D*.

12. A follow-up walk through will be called for after all corrections from the first walk-through are completed if required. This walk-through will consist of an inspection to verify that all corrections are complete and that color-coded plans for each controller are accurate and placed at each controller cabinet. Upon the successful completion of the inspection and cross-connection tests, the User will be granted permission for the normal operation of the system. At this time the MCWD's operator will discuss with the User and the User Supervisor conditions for operation, inspections, etc.

SECTION H: LOCAL GOVERNING AGENCIES

REGIONAL WATER QUALITY CONTROL BOARD, CENTRAL COAST REGION

895 Aerovista Place – Suite 101
San Luis Obispo, CA 93410
(805) 549 3147

MONTEREY COUNTY HEALTH DEPARTMENT

1270 Natividad Road
Salinas, CA 93906
(831) 755 4500
(831) 647 7650

CALIFORNIA STATE DIVISION OF DRINKING WATER

Drinking Water Program District Office
District 05 - Monterey
1 Lower Ragsdale Dr.
Bldg. 1, Suite 120
Monterey, CA 93940
(831) 655 6939

MARINA COAST WATER DISTRICT

11 Reservation Road
Marina, CA 93933
(831) 384 6131

SECTION I: TIPS FOR SUCCESSFUL USAGE

The recycled water that is delivered for beneficial reuse has been treated at a recycled water facility, resulting in a quality that meets strict Division of Drinking Water standards for safety. It is virtually impossible to distinguish the recycled water, as described in this Handbook, from potable water supplies. However, there are general chemical differences that may require Users to make changes in their landscaping practices.

Advanced treated recycled water contains little to no nutrients or salts. As a result, the use of fertilizers may need to be adjusted when using advanced treated recycled water.

SECTION J: DEFINITIONS

Whenever the following terms, or pronouns used in their place, occur in this Handbook the intent and meaning shall be interpreted as follows:

Advanced Treated Water - Advanced Treatment removes fine particulates, dissolved salts, pathogens, pesticides, residual organics, trace organics, and recalcitrant compounds to provide ultrapure effluent.

Air-Gap Separation - A physical break between a supply pipe and a receiving tank. The air-gap shall be at least double the diameter of the supply pipe, measured vertically above the flood rim of the tank, and in no case shall be less than one inch. The design shall be to the satisfaction of the MCWD.

Applicant - An Owner or authorized representative of a potential use site who applies for recycled water service under terms of the appropriate regulations. An approved Applicant becomes a User.

Approved Use - An application of recycled water in a manner, and for a purpose, designed in a user agreement issued by the MCWD and in compliance with all applicable regulatory requirements.

Approved Use Area - A designated site, with defined boundaries, identified on the Recycled Water Use Permit for the purpose of receiving and using recycled water for an approved use and acknowledged by all applicable regulatory agencies.

Automatic System - An electronic, electrical, or mechanical system which includes automatic controllers, valves, and associated equipment required for the programming of effective water application time and rates when using recycled water.

Backflow Prevention - See Reduced Pressure Backflow Prevention Device and Double Check Valve.

Construction Use - An approved use of recycled water for approved construction activities such as soil compaction and dust control during grading.

Cross-Connection - Any physical connection between any part of a water system used or intended to supply water for drinking purposes and any source or system containing water or a substance that is not or cannot be approved as safe, wholesome and potable for human consumption.

Double Check Valve - An assembly of at least two independently acting approved check valves including tightly closing shut-off valves on each side of the check valve assembly and suitable leak-detector drains plus connections available for testing the water tightness of each check valve.

Harmful Substances - Matter, chemicals, and substances that may cause significant harm to any water treatment or reclamation facility or user(s), or which may prevent any use of recycled water authorized by regulation or law.

Indirect Potable Re-use - Indirect Potable Reuse (IPR) is the blending of advanced treated, recycled, or reclaimed water into a natural water source (groundwater basin or reservoir) that could be used for drinking (potable) water after further treatment

Infiltration Rate - The rate at which the soil will accept water as applied during irrigation, expressed in inches per hour.

Inspector - Any person authorized by the MCWD or the local health agencies to perform inspections on or off the User' site before, during, and after construction, as well as during operation.

Irrigation Period - The time during which a specific area receives recycled water by direct irrigation application (i.e. length of duty cycle), no matter how often the specific area is irrigated.

Irrigation Use - An approved use of recycled water for irrigation as defined for recycled water under Title 22, Chapter 3 of the California Code of Regulations.

Landscape Impoundment - An open body of recycled water on a use site that is utilized for aesthetic enjoyment or which otherwise serves a function not intended to include public contact.

Monterey County Health Department - Local health protection agency for the MCWD.

Non-potable Water - Water that has not been treated for human consumption in conformance with the latest edition of the United States Environmental Protection Agency's Drinking Water Standards, the California Safe Drinking Water Act, or any other applicable standards. This also refers to irrigation or industrial process water derived from a potable water system through an approved backflow prevention device that may be subject to contamination (e.g., through back-siphoning).

Off-site - Designates or relates to recycled water facilities up to and including the water meter that are owned and operated by the MCWD.

On-site - Designates or relates to facilities owned and operated by the recycled water User.

Operational Plan - A document describing the application rates, time of use, sequencing of irrigation, industrial use, or other relevant operational features of a recycled water distribution system.

Operations Personnel - Any employee of a User, whether permanent or temporary, or any contracted worker whose regular or assigned work involves the supervision, operation or maintenance of equipment on any portion of on-site facilities using recycled water.

Operator - Any person, persons or firm, who by entering into an agreement with a User, are responsible for operating on-site facilities.

Owner - Any holder of legal title, contract purchaser, or lessee under a lease with an unexpired term of more than one (1) year for a property for which recycled water service has been requested or established.

Point of Connection (POC) - The point of connection between the on-site facilities and the MCWD's recycled water distribution system, generally at the meter.

Ponding - A collection of recycled water that does not drain and creates an artificial pond, not designated as an artificial lake, such that a hazard or potential hazard to public health may occur.

Potable Water - Water that is authorized for human consumption according to the latest edition of the state Safe Drinking Water Act or other applicable standards.

Public - Any person or persons at large who may come in contact with facilities and/or areas where recycled water is approved for use.

Rate and Fee Schedule - The schedule of all rates, charges, fees and assessments to be made concerning the use of recycled water served by the MCWD as approved or as amended by the MCWD.

Recreational Impoundment - An open body of recycled water located on a use site that may be used for unrestricted body contact recreation (e.g., swimming, wading) or restricted non-body contact recreation (e.g., boating, fishing).

Recycled Water - Non-potable water that is treated in compliance with the California Code of Regulations, Title 22, Chapter 3, and used for approved purposes other than drinking water.

Recycled Water Project - The piping and appurtenances that convey the recycled water to the customers.

Recycled Water Use Permit - A permit issued by the MCWD authorizing the use of Recycled Water at a specific property site for a specific purpose.

Reduced Pressure (RP) Backflow Prevention Device - A backflow preventer incorporating not less than two check valves, an automatically operated differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.

Regulatory Agencies - Those public agencies legally constituted to protect the public health and water quality, such as the California Division of Drinking Water, the California Regional Water Quality Control Board and the Monterey County Health Department.

Retrofit - The conversion of existing irrigation or other water use facilities for the use of recycled water.

Runoff - When recycled water is intentionally or unintentionally allowed to drain outside the approved recycled water irrigation area.

Separation - The horizontal and vertical distance between a recycled water pipeline and a parallel or crossing potable water pipeline, sewer pipeline, or a sludge force main. The separation shall be a specified distance between the pipelines in question.

Service Area - The geographical area within the Cities of Marina, Seaside, and Unincorporated Monterey County.

Service - The furnishing of recycled water to a User through a metered connection to the on-site facilities.

Tertiary Treatment - Tertiary treatment filters out most of the remaining suspended solids through a granular media (for example, sand or anthracite coal) or a membrane, with the final product water being disinfected with chlorine or ultraviolet light to kill off bacteria, virus and other microorganisms.

User Supervisor - A qualified person designated by the User to provide liaison with the MCWD. This person should be available to the MCWD at all times, should have the knowledge and authority to carry out any requirements of the MCWD, and should be responsible for the installation, operation and maintenance of the reclaimed and potable water systems, and prevention of potential hazards.

Unauthorized Discharge - Any release or spill of recycled water that violates the rules and regulations of the MCWD or all applicable Federal, State or local statutes, regulations, ordinances, contracts or other requirements.

User - Any person, persons or organization (including, but not limited to, any private company or corporation, public utility, municipality or other public body or institution) issued a recycled water permit by the MCWD. The User and Owner may be the same.

User Agreement - An agreement issued by the MCWD to a recycled water service applicant after satisfactory completion of the service application procedures. This Agreement forms a service agreement between the User and the MCWD that legally binds the User to all conditions stated in the Agreement and all applicable regulatory agency requirements.

Violation - Non-compliance with any condition of the User Agreement, water recycling requirements issued by the Regional Water Quality Control Board and/or Title 22, Chapter 3 of the California Code of Regulations by any person, action or occurrence, whether willfully or by accident.

Windblown Spray - Dispersed airborne particles of recycled water resulting from the discharge of recycled water and capable of being transmitted through the air to locations other than those for which the direct application of recycled water was intended.

Wastewater Discharge - A combination of water and water-carried wastes deposited, released, or flowing into a sewer system from any commercial, industrial, agricultural, or residential source.

MCWD Recycled Water Project



Appendix D Rules of Service Version 1

April 1, 2019

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ATTACHMENT

- ATTACHMENT D.1 –DESIGN CRITERIA FOR RECYCLED WATER FACILITIES
- ATTACHMENT D.2 –STANDARD FORMS AND SITE SPECIFIC DETAILS

1 Recycled Water Policy

For protection of public health, recycled water provided shall comply with Federal, State, and local regulations and guidelines, including:

- Health and Safety Code (Division 104; Part 12)
- Water Code (Division 7; Chapters 2, 6, 7, and 22)
- Title 22, California Code of Regulations (Division 4; Chapters 1, 2, and 3)
- Title 17, California Code of Regulations (Division 1; Chapter 5)

2 Recycled Water Service Requirements and Applications

2.1 Application for Recycled Water Service

To apply for a new or major modifications of an existing recycled water system, the User shall prepare and submit to the MCWD an On-site Recycled Water User Plan. The On-Site Recycled Water User Plan shall include the following:

GENERAL INFORMATION

1. Project Name.
2. Map of use areas and narrative description.
3. Assessor's parcel numbers.
4. Property owner's name, title, address, and phone number.
5. User Supervisor's name, title, address and phone number

SITE CHARACTERISTICS

1. Type of property.
2. Acres to be irrigated.
3. Topography of the site (slope of the land).
4. Soil types and their capacities to accept water, minimum infiltration rate, etc.
5. Source of current (non-recycled) irrigation water. Method of disconnection from current system and backflow prevention.

IRRIGATION DEMAND

1. Calculations of estimated irrigation demand by month.
2. Estimated annual demand.
3. Maximum day demand.
4. Irrigation time of day.
5. Irrigation application rate.

DESIGN AND CONSTRUCTION

1. Schematic diagram of recycled water distribution system.
2. Detailed maps of on-site piping location, size, and type of pipe, valves, sprinkler heads, and points of use.
3. Name, title, address, and phone number of the person who will maintain accurate up-to-date maps, plans, and operation information for the on-site non-residential recycled water system.
4. Describe evapotranspiration (ET)-based timer operation.
5. Identify points of possible interconnection with the water system and describe air gap separations.
6. Describe types of sprinkler heads or outlets to be used with recycled water. Set back distances between the recycled water sprinklers and adjacent roads, walks, houses, businesses, food service areas, drinking fountains, swimming pools, and wells.
7. Describe any outlets other than sprinklers, such as quick disconnects.
8. List flushing blow-off valves or air/vacuum relief valves; describe how unauthorized discharges will be prevented from these points.
9. If the use of recycled water onsite could adversely impact the quality of the water in the distribution system a backflow device is required at the POC

OPERATION OF THE RECYCLED WATER SYSTEM

1. List name, title, address, and phone number of the person responsible for the daily operation.
2. Describe control water system that monitors the ET-based watering schedule time of day, duration of cycles, and seasonal changes.
3. List control measures to prevent over-spray and mosquito breeding.
4. Describe requirements that will be instituted to curtail operation during rainy or windy weather.
5. Describe contingency plan for maintaining irrigation if recycled water is not available.
6. Identify points of public access to the irrigated areas.

SIGNAGE

1. Describe the appearance, color, size, and language of the signs.
2. Describe location and number of signs (include map if appropriate).

EMPLOYEE TRAINING

1. Describe personnel training.
2. Provide copies of any printed material used in training or informational purposes.
3. Provide copies of records showing types and frequency of employee training.

OVERSIGHT PROVISIONS

1. List MCWD contact persons.
2. Include recycled water use agreement.
3. Describe cross-connection inspection.

2.2 Design Standards

In addition to the MCWD design requirements included as *Attachment D.1*, the following design requirements shall apply to any design for on-site recycled water systems.

1. The user shall not include hose bibs in the recycled water system. Quick couplers that are different from that used on the potable water system may be used.
2. All recycled water piping and appurtenances in new installations and appurtenances in retrofit installations shall be colored purple or distinctively wrapped with purple tape in accordance with Health and Safety Code section 116815.
3. If the recycled water system lateral pipelines are located along the property lines of homeowners, the User shall provide a buffer zone or other necessary measures between the recycled water lines and the homeowner's property lines to prevent any illegal connection to the recycled water lines.

2.3 Best Management Practices

The User shall design and operate the system using Best Management Practices so that:

1. The application of recycled water is applied at agronomic rates so irrigation does not promote downward migration of salts (including nitrates), which could unreasonably affect present and anticipated beneficial uses of groundwater, or result in water quality less than that prescribed in water quality control plans or policies.
2. Adequate erosion control is present such that soil is not released into stormwater runoff and surface waters.

3. Fertilizer application does not unreasonably affect present and anticipated beneficial uses of water, or result in water quality less than that prescribed in water quality control plans.
4. The User shall design and operate the system using Best Management Practices with the objectives of preventing recycled water spray, mist, or surface flow from leaving the site and/or reaching or visibly wetting:
 - a. Any perennial surface waters located adjacent to the Site.
 - b. Areas where the public has access (e.g. dwellings, designated outdoor eating areas, or food handling facilities.).
 - c. Drinking fountains unless specifically protected with a shielding device.
5. The Best Management Practices shall include, but not be limited to:
 - a. Use of buffer zones.
 - b. Discontinuation of application of recycled water during precipitation events that are of sufficient magnitude to generate surface flow within the site.
 - c. Use of devices that protect drinking water fountains against contact with recycled water spray, mist, or surface flow.
 - d. Prevention of direct human consumption of recycled water or use of recycled water for processing of food or drink intended for human consumption.
 - e. Irrigation during periods of minimal human use of the irrigated area and timing of irrigation to allow an adequate dry-out time before the irrigated area will be used by the public.
 - f. Posting conspicuous signs (in a size no less than 4 inches high by 8 inches wide) that include the following wording “RECYCLED WATER – DO NOT DRINK” where recycled water could potentially be accessed for human consumption. Each sign shall display an international symbol similar to that shown in Figure 60310-A of California Code of Regulations, Title 22, Section 60310, Subdivision (g). The sign(s) shall be of a size easily readable by the public. The prescribed wording should also be translated into Spanish and other appropriate languages and included in the required signs.
 - g. The User shall ensure that the treatment, storage, distribution, or reuse of recycled water shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
 - h. The User shall ensure that any storage facility containing recycled water for reuse applications shall be managed in a manner to control odor or nuisance conditions. Should such problems develop, a management plan shall be devised and implemented to monitor, correct, and control future occurrences.
 - i. The User shall ensure that vehicles used for distributing reclaimed water for soil compaction and dust control or other uses shall be provided with adequate tank and plumbing systems to ensure that leaks and ruptures will not occur in the course of normal use. Control valves shall be provided such that reclaimed water can be applied in a controlled fashion on the approved use area and completely retained during transit to all other areas. Spray heads or nozzles shall be provided and configured in such a way that the reclaimed water is uniformly applied and runoff, ponding, or windblown spray conditions prevented. Each tank shall be equipped with an approved air-gap separation between the filler tube and the tank to prevent back-siphonage. The water truck shall be clearly labeled RECYCLED WATER – DO NOT DRINK.

2.4 Project Drawings

Upon determination by the MCWD that the property will be served by recycled water, the User is responsible for preparation of improvement plans showing proposed onsite facilities. These drawings must be approved by the MCWD and signed by the appropriate regulatory agencies in conformance with Title 22, Article 4, Sections 60313-60316, prior to commencing construction of facilities.

2.5 Initial Cross-Connection Test

The User must conduct an initial cross-connection test to determine if there are any unknown connections between existing irrigation and public piping prior to construction of retrofit work. Refer to *Appendix C - Section E* for more details on cross-connection testing.

2.6 Construction and Inspection of Facilities

The installation or retrofit of all on-site facilities shall be the User's obligation. Except for the recycled water services installed on existing recycled water mains, all recycled water facilities required for service shall be installed by the User or his contractor, in accordance with the MCWD and Monterey County Health Department approved design standards and the local city or county approved improvement plans. All plan checking and inspection costs shall be subject to MCWD design requirements. Installation or retrofit of all on-site and MCWD recycled water facilities shall be inspected by the MCWD and appropriate regulatory agencies.

Prior to connection with the recycled water distribution system, the User must perform a cross-connection test for final approval in cooperation with the MCWD to verify that no cross-connections exist. The User must notify in writing the State and County Health Departments of the initial test date with the intent that both agencies will attend.

Prior to any recycled water service being provided, all facilities shall be inspected and tested by the MCWD and appropriate regulatory agencies to determine that the facilities meet all applicable requirements. All inspection costs shall be subject to MCWD fee schedule requirements.

2.7 Temporary Use of Potable Water

Upon the MCWD's approval, potable water may be used in place of recycled water on a temporary basis. Before the applicant will receive temporary potable water in place of recycled water, a Recycled Water Use Permit must be obtained for new on-site distribution facilities.

2.8 Service Requirements

The MCWD reserves the right to control and schedule the use of recycled water when it is necessary to maintain acceptable working conditions in the distribution system.

3 Discontinuance/Interruption of Service

3.1 Discontinuance of Service

The MCWD Rules of Service are for the protection of the public health, safety, and welfare. Failure by a User to follow the rules and regulations may result in the discontinuance of recycled water service.

Discontinuance of service may be for: non-payment of any MCWD bill; violation of the Use Permit issued to the property which could cause or create a public nuisance (See *Section 4.1 - Prohibited Conditions and Uses*); change in property ownership or tenant; or not having a certified Recycled Water User Supervisor designated. Discontinuance of recycled water service for non-payment will be handled according to the procedures in place.

In order to reinstate service to the property, the violations would need to be remedied to the satisfaction of the MCWD. If the MCWD determines that it is not in their best interest to reactivate a service, the service will be discontinued until it is warranted to be reactivated. If real or potential hazards are evidenced during operation of facilities designed to use recycled water, the MCWD has the authority to immediately discontinue recycled water service. In the event that recycled water service is discontinued, the MCWD will notify the User within twenty four (24) hours of discontinuance either by door hanger, phone, or in writing, and may supply water to the affected facilities either temporarily or permanently from the potable water system.

The MCWD is not obligated to provide an alternative water source should discontinuance of recycled water service be due to failure to comply with these Rules of Service.

3.2 Interruption of Service

The MCWD may need to interrupt the recycled water flow in order to protect recycled water facilities or make repairs. This would be a temporary interruption and service would be reactivated at the earliest possible time.

3.3 Discontinuance Due to Supply

If the MCWD is unable to obtain recycled water or otherwise provide recycled water service, it will be at the discretion of the MCWD to discontinue service. The MCWD will attempt to provide other sources of water, if appropriate.

4 Violation of Use Permit

4.1 Prohibited Conditions and Uses

Prohibited conditions and uses of Recycled Water include, but are not limited to, the following:

- Runoff and Erosion - Recycled water draining off or away from the designated use area shall be kept to a minimum.
- Ponding - Recycled water shall not be allowed to gather or pond. The water application rate shall be adjusted to prevent ponding and to ensure that all applied water has infiltrated within 48 hours of application.
- Windblown Spray - Watering shall be adjusted by the spray and timing so that any spray mist or run off onto an undesignated use area will be kept to a minimum.
- Cross-connections – Cross-Connections shall not be allowed for any reasons between the recycled water system and the potable water system.
- Unprotected Drinking Fountains - All drinking fountains shall be protected from any type of contamination from recycled water.
- Unprotected Public Facilities - All contact with eating surfaces or playground recreational equipment for the general public, by recycled water even if located within the designated use area, shall be kept to a minimum.
- Hose Bibs - Hose bibs shall not be connected to the recycled water system.
- Fire Hydrants - Fire hydrants shall not be connected to the recycled water system.
- Period of Operation - Time periods for watering shall be within the hours mutually agreed to between the User and the MCWD, and consistent with distribution system supply and demand. The MCWD reserves the right to schedule water use periods. The operation of the irrigation system shall be during periods of minimal public exposure.
- Reuse of Equipment - Any equipment, such as tanks, temporary piping or valves, and portable pumps that have been used with recycled water, shall be cleaned and disinfected before removal from the approved use area. The disinfection process shall be done in the presence of, and approved by, a MCWD Inspector and Monterey County Health Inspector.
- Disposal in Unapproved Areas - Disposal of recycled water for any purposes, including uses in areas other than those explicitly approved in the current effective Recycled Water Use Permit issued by the MCWD and without the prior knowledge and approval of the appropriate agencies is strictly prohibited.
- No irrigation with recycled water shall take place within 50 feet of any domestic water supply well unless all of the following conditions have been met:
 - A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.
 - The well contains an annular seal that extends from the surface into the aquitard.
 - The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.
 - The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
 - The owner of the well approves of the elimination of the buffer zone requirement.
- No irrigation shall take place within 50 feet of any reservoir or stream currently used as a source of domestic water.

- No impoundment of recycled water shall occur within 100 feet of any domestic water supply well.
- Storage facilities owned and/or operated by recycled water users shall be protected against erosion, washout, overland runoff, flooding, and other impacts resulting from 100-year frequency, twenty four (24)-hour duration storms.
- Storage facilities owned and/or operated by recycled water users shall be protected against 100-year frequency peak stream flows as defined by the local flood control agency.
- The public water supply shall not be used as a backup or supplemental source of water for a recycled water system unless the connection between the two systems is protected by an air gap separation that complies with the requirements of the California Code of Regulations, Title 17, Section 7602, Subdivision (a) and California Code of Regulations, Title 17, Section 7603, Subdivision (a), and that such connection has been approved by the State Department of Health Services and/or its delegated local agency.
- Use of reclaimed water for any purposes other than those explicitly approved in the current effective Recycled Water Use Permit is strictly prohibited.
- The User shall not discharge recycled water from treatment facilities, irrigation holding tanks, storage ponds, or other containment, other than for permitted reuse under the SWRCB General Waste Discharge Requirements for Landscape Irrigation Uses of Municipal Recycled Water, Water Quality Order No. 2009-0006-DWQ (General Waste Discharge Requirements for Landscape Irrigation Uses), a contingency plan, or for an approved discharge to a municipal sewage treatment system.

4.2 Failure to Take Corrective Action

Failure to take corrective action for any violations of applicable laws and regulations will result in enforcement actions taken by the MCWD.

5 Operation and Maintenance Requirements for On-Site and Construction Water Facilities

5.1 Approved Construction Specifications and Drawings

All recycled water facilities onsite and offsite shall be installed per the requirements of the most current MCWD construction specifications and drawings. These documents may be acquired at the MCWD. Two sets of the site irrigation plans must be submitted to the MCWD, the DDW and the Monterey County Health Department for review and signature. These irrigation plans must include all required notes and a signature block provided by the MCWD. For a list of applicable references, refer to *Section 12 - Recycled Water Reference Documents*.

5.2 Recycled Water “User Supervisor”

The MCWD shall be kept informed of the identity of the person responsible for the water piping systems on all premises covered by these regulations. At each premise, a “User Supervisor” shall be designated. This User Supervisor shall be responsible for the installation and use of pipelines and equipment and for the prevention of cross-connections. The customer must have a designated User Supervisor at all times. If there is a non-resident owner, a local User Supervisor shall be appointed. For single-family residences which have a recycled water service connection, the owner shall be considered to be the “User Supervisor” unless otherwise indicated on the application for the service connection request. In the event that someone other than the owner is designated as the “User Supervisor” and this person is no longer associated with the property, the owner shall again be considered the “User Supervisor” until written notification is made to the MCWD. If the Recycled Water User Supervisor position becomes vacant, the customer shall have thirty (30) days to notify the MCWD and Monterey County Health Department of the name of the new Recycled Water User Supervisor. Not having a properly certified Recycled Water User Supervisor shall be a sufficient reason for the MCWD to terminate service until such a person has been designated. The training that will be provided shall be attested to by the MCWD or the Monterey County Health Department by issuing a certificate of completion for the Recycled Water User Supervisor Training Course.

The operation, surveillance, maintenance, prevention of potential hazards, preservation in as-built form of on-site recycled water systems, and construction water facilities on the site shall be under the management of the Recycled Water User Supervisor designated by the User and approved by the MCWD. The Recycled Water Supervisor for a commercial, industrial, multiple residential, or school facility must work on the site using the recycled water. Public facilities such as parks will be handled on a case-by-case basis. The Recycled Water User Supervisor shall be available by telephone for emergency contact at a number listed with the MCWD.

The User Supervisor shall immediately initiate corrective action to eliminate violation of any applicable law or regulation, or requirements of the MCWD and the Monterey County Health Department.

5.3 Personnel Training

The User Supervisor shall be trained and certified in the operation of recycling facilities, worker protection, and compliance with laws, regulations, permits, these rules and regulations, and the Requirements for Recycled Water Users established by the MCWD.

It shall be the responsibility of the Recycled Water User Supervisor to ensure that all on-site operations personnel, responsible for daily operation and maintenance, are trained in and familiar with the use of recycled water, and are familiar with the pertinent information contained in these rules and regulations and those applicable portions of Title 22, Division 4, Chapter 3, of the California Code of Regulations; this information shall be supplied by the MCWD upon request of the Recycled Water User Supervisor.

5.4 On-Site Information

The User Supervisor shall be responsible for maintaining and furnishing on-site operations personnel, system operating instructions, maintenance instructions, controller charts, and record drawings to ensure proper operation in accordance with the irrigation system design and these regulations. At least one complete set of this information shall be kept on site or in the nearest field office or maintenance building established by the User Supervisor, who retains the responsibility of properly distributing this information to all appropriate operations personnel.

5.5 On-site Inspection

User shall allow an authorized representative of any of the following agencies the right to enter and inspect the use site upon presentation of proper credentials: MCWD, Monterey County Health Department, Central Coast Regional Water Quality Control Board, and State Division of Drinking Water.

Onsite inspection shall consist of:

- Inspecting the User Supervisor's system maintenance records and a visual inspection of the facility for possible cross-connections with the potable water systems at least once a year
- A physical cross-connection test, between the potable and recycled water systems shall be performed at least once every four years
- Backflow Prevention Devices shall be tested annually as required by MCWD
- Inspect facility for conditions listed in *Section 4.1 - Prohibited Conditions and Uses*, as well as any other conditions that exist which are not compatible with recycled water use

The inspections and testing shall be performed by a cross-connection control specialist who meets certification requirements of the American Water Works Association. Copies of the inspection reports shall be forwarded to the MCWD. The Customer, the User Supervisor, and any operations personnel are obligated to cooperate with those making the inspection and to assist in the performance of operational tests as requested.

The MCWD reserves the right to periodically inspect the on-site systems and their operations for conformance to these rules and the Recycled Water Use Permit. The Recycled Water User Supervisor shall provide the MCWD with access, including appropriate keys to all irrigation controllers. In addition, the site may be inspected by authorized representatives of the MCWD; the California Regional Water Quality Control Board, the Central Coast Region; and/or the Monterey County Health Department, upon presentation of proper credentials, to verify whether the user is complying with the MCWD's Rules of Service.

5.6 Operations Manual

The recycled water customer may be required to prepare an Operations Manual specifying times and areas of use for on-site recycled water use, if required as a condition of service. The Operations Manual must be approved by the MCWD prior to issuance of the Recycled Water Use Permit.

5.7 Operation and Maintenance

The User shall maintain in good working order and operate, as efficiently as possible, any facility or control system installed by the User to achieve compliance with these rules and any other applicable laws, regulations, or permits.

Any backflow prevention device installed by the User to protect the public water system shall be inspected and maintained in accordance with California Code of Regulations, Title 17, Section 7605.

Except as allowed under California Code of Regulations, Title 17, Section 7604, the User shall make no physical connection nor allow a connection to exist between any recycled water system and the potable water system.

It is the responsibility of the Recycled Water User Supervisor to provide surveillance of the on-site facilities in a manner that assures compliance with these rules and the Recycled Water Use Permit. A preventive maintenance program designed to ensure the continued operation of all system elements within the requirements of these rules shall be signed by the current User Supervisor and open to inspection by the MCWD. The customer is responsible for all costs associated with proper operations and maintenance of the on-site facilities.

5.8 Construction Water Usage

Recycled Water for construction will be permitted by the MCWD only at those property sites where recycled water use can be monitored and controlled, and capable of meeting "Construction Water Usage" and the "Prohibited Conditions and Uses" called for in this section of the Rules of Service.

Recycled water used for the purpose of soil compaction and dust control shall not be stored or applied in a manner which causes runoff, ponding or windblown spray. If such conditions occur, the method of application shall be altered to correct them and prevent any and all further violations of use. Control valves on the water distribution vehicles and other controlling devices shall be properly employed to prevent the application of recycled water outside the approved use area onto surfaces including but not limited to street pavements, sidewalks, and drainage courses.

5.9 Use by a Third-Party

If someone other than the User (User's Agent) is responsible for the transportation or application of recycled water (e.g., a truck hauler), then the User shall inform them of these requirements in a written permit or other suitable manner. Each User must maintain a file documenting the use of recycled water by third parties.

5.10 Irrigation Application Rates

Recycled water shall be applied at a rate that does not exceed the infiltration rate of the soil. When the application rate exceeds the infiltration rate of the soil, automatic system control devices shall be utilized and programmed to prevent the ponding and/or runoff of irrigation water. If runoff or ponding occurs before the landscape's water requirements are met, the automatic controls shall be reprogrammed with additional watering cycles to meet the requirements and prevent runoff.

5.11 Confinement of Irrigation

The on-site irrigation system shall be operated to prevent discharge onto areas which are not approved for use. Over-spray resulting from attempts to reach remote portions of the approved use area shall not be allowed. This situation shall be rectified by appropriate corrections to the system layout.

5.12 Period of Operation

To the extent practicable, the operation of the irrigation system shall be during periods of minimal human use of the approved use area. Such periods of operation shall remain within any general period of recycled water irrigation operation specified by the MCWD and the Monterey County Health Department. The Standard recycled water use period shall be 9 PM to 6 AM. Uses outside of this specified time shall be monitored by the site User Supervisor.

5.13 Signage

Signage will be provided by the MCWD. The customer shall maintain necessary signs in legible condition at locations designated on the MCWD approved improvement plans in accordance with the MCWD design standards. All above ground recycled water facilities will be painted purple, marked or tagged appropriately, and maintained in good condition. All signage shall be in English and Spanish in accordance with DDW and Monterey County Health Department regulations.

5.14 Liability

The MCWD assumes no responsibility for the maintenance and operation of all on-site customer-maintained recycled water systems. The Customer assumes all liability and responsibility to the end that the MCWD shall be held blameless at all times for any claim resulting from matters involving quantities, time or occasion of delivery, or any other phase of the maintenance, operation, and service of the on-site customer-maintained facilities.

5.15 Change of User Management or Facilities

Written notification of any changes in ownership, management, materials, User Supervisor, or proposed change in the character of use of the recycled water shall be provided to the MCWD in a timely manner. Any physical changes to the system must be reviewed and approved by the MCWD and other regulatory agencies before being implemented.

6 Agency Contact List

Upon being notified or determining that one of the following events has occurred, the User Supervisor shall provide immediate verbal notification followed by written notification within 10 business days to the MCWD, the Monterey County Health Department, the Central Coast Regional Water Quality Control Board, and the State Division of Drinking Water if any of the following events occur:

1. There is a complaint (or other source of information) concerning recycled water use that may involve illness;
2. An unauthorized discharge of more than 50,000 gallons of tertiary treated recycled water (or 1,000 gallons for any lesser quality recycled water); or
3. Contamination of the potable water system due to a cross-connection.

In the event of an emergency or any contamination of a potable water system due to a cross-connection with the recycled water system, the User Supervisor shall immediately invoke *Appendix C- User's Handbook; Section E*.

Contact information for the agencies to be notified is given below:

REGIONAL WATER QUALITY CONTROL BOARD, CENTRAL COAST REGION

895 Aerovista Place – Suite 101
San Luis Obispo, CA 93410
(805) 549 3147

MONTEREY COUNTY HEALTH DEPARTMENT

1270 Natividad Road
Salinas, CA 93906
(831) 755 4500
(831) 647 7650

STATE WATER RESOURCES CONTROL BOARD, DIVISION OF DRINKING WATER

Drinking Water Program District Office
District 05 - Monterey
1 Lower Ragsdale Dr.
Bldg. 1, Suite 120
Monterey, CA 93940
(831) 655 6939

MARINA COAST WATER DISTRICT

11 Reservation Road
Marina, CA 93933
(831) 384 6131

7 Reporting Requirements

7.1 Irrigation Rates

To demonstrate whether irrigation is at agronomic rates, the User shall provide MCWD with a tabular comparison of the volume of water required for plant growth in the landscape area to the volume of recycled water and supplemental water applied to the area.

7.2 Fertilizer Application Rates

To demonstrate whether fertilizer application is at agronomic rates, the User shall provide MCWD a tabular comparison of the amount of fertilizer needed for plant growth in the landscape area to the amount applied to the area. The User Supervisor shall develop a nutrient balance analysis based on the methodology approved by the WateReuse Association. The nutrient balance analysis shall consist of the following steps: (1) Determining the nutrient requirements of grass or any other crops to be irrigated; (2) Determining the recycled water nutrient content; and (3) Determining the residual crop nutrient needs. The user Supervisor shall only apply fertilizer if the recycled water nutrient content is less than the crop nutrient requirements. If nutrient levels of the recycled water are not sufficient, the User Supervisor shall apply as much fertilizer as determined by the methodology described above.

7.3 Spills

The User shall report any spills of recycled water to the MCWD, providing information as to when and where the spill occurred and the volume of the spill.

8 Record Keeping

The User Supervisor shall keep and maintain the following records documents at the use site and shall make them available to operating personnel at all times:

- Permit for use of recycled water.
- Plans, specifications, and as-built drawings of the recycled water system
- These *Rules of Service*
- A copy of the *Recycled Water User's Handbook*
- *Recycled Water Operations Manual* for the use site, as applicable
- Name and contact information for the User Supervisor(s)
- Evidence of certification for the User Supervisor(s)
- Evidence of training for all workers on site who may operate or maintain the recycled water system
- User Supervisor must maintain records and pictures of all modifications and repairs to the potable and non-potable piping systems

The following documents or information must be maintained and made available to inspectors on demand:

- Amount of recycled water used per month (from water bills)
- A calculation of the agronomic recycled water rate for irrigation
- A calculation of the recycled water nutrient contents, nutrient requirements, and the resulting residual nutrient needs at a given site
- Amount of nutrients in fertilizer (as nitrogen and phosphorus) applied to supplement the nutrients in the recycled water
- Copies of reports filed with any regulator
- Copies of any citations or notices issued by any regulator

9 Recycled Water Fees and Charges

9.1 Installation and Capacity Fees

The installation and capacity fees charged for recycled water shall be established by the MCWD Board and updated periodically.

9.2 Commodity Charges

The water charges for recycled water are set at the MCWD's discretion.

9.3 Billing Period System Charges

The billing period system charges for all permanent meter installations shall be in effect whether or not water is used.

9.4 Construction Meter Deposits and Charges

Each applicant for a construction meter shall pay a deposit, determined on the basis of the meter size requested, to cover costs of meter installation and removal, and final billing charges.

10 Incorporation of DDW Requirements by Reference

Any DDW Requirements or Permit Conditions not covered in these rules are hereby incorporated by reference.

11 Incorporation of Monterey County Health Department Requirements by Reference

Any Monterey County Health Department Requirements or Permit Conditions not covered in these rules are hereby incorporated by reference.

12 Recycled Water Reference Documents

12.1 Engineering Standards

Attachment D.1 - Design Criteria for Recycled Water Facilities to this document sets forth the standards and conditions for design and construction in the MCWD service area. All improvement plans submitted to the MCWD must conform to these guidelines.

12.2 Standard Specifications

All construction must conform to the guidelines set forth in the MCWD's *Design Criteria for Recycled Water Facilities* and the *Greenbook* Standard Specifications for Public Works Construction, recent edition. In the case of a conflict, the MCWD's guidelines will govern. Applicable standard specifications from the *Greenbook* include, but are not limited to:

Section 09910 - Field Painting and Coating

Section 15000 - General Piping Requirements

Section 15056 - Ductile-Iron Pipe and Fittings

Section 15057 - Copper Tubing, Brass and Bronze Pipe Fittings

Section 15061 - Cement Mortar Lined and Coated Steel Pipe and Specials

12.3 Standard Forms and Site Specific Details

Standard forms associated with the use of recycled water at a given site are listed below:

1. Application for a Permit to Use Recycled Water
2. Permit to Use Recycled Water (Example)
3. Plan Review Checklist
4. Contact Information Form
5. Evaluation of Retrofit Needs Form
6. Site Specific Retrofit Requirements Form
7. Field Verification of Recycled Water Service Plan
8. Front Yard Design Review & Inspection Form
9. Back Yard Design Review & Inspection Form
10. Declaration of Restrictions for the Use of Recycled Water for Irrigation
11. Homebuyer Notification Regarding the Use of Recycled Water for Front Yard Irrigation
12. Cross-Connection Shutdown Test Form
13. Compliance Inspection Report Form
14. Non-Residential Site Final Inspection Form
15. Notice of Violation Form

PROCEDURES GUIDELINES AND DESIGN REQUIREMENTS



Revised: May 2010

Marina Coast Water District

11 Reservation Road

Marina, CA 92933

(831) 384-6131

FOREWORD

The Marina Coast Water District adopted the *Procedures Guidelines and Design Requirements* and the *Standard Plans and Specifications for Construction of Domestic Water, Sewer and Recycled Water Facilities* on September 24, 2003. This revision is consistent with Board Action which anticipated periodic updates and modifications. The purpose of these documents is to ensure that construction of all facilities to be operated and maintained by the District is standardized wherever possible. These documents replace the previous versions dated November 2007.

These documents may contain minor errors, discrepancies or omissions. The District reserves the right to make changes to these documents at any time. If users of these documents identify recommended changes, we ask you to please notify the Marina Coast Water District in writing at the following address:

Marina Coast Water District
Deputy General Manager / District Engineer
11 Reservation Road
Marina, CA 93933

REVISIONS

The *Procedures Guidelines and Design Requirements* and the *Standard Plans and Specifications for Construction of Domestic Water, Sewer and Recycled Water Facilities* will be reviewed and may be revised periodically, as needed. Each revision will bear the date of the revision and that date shall be considered the latest edition as referred to the herein and in all subsequent advertisements, permits, and Contract Documents.

MCWD will no longer provide hardcopies or CDs of these standards. They will remain posted at the MCWD Website: www.mcwd.org.

SECTION 600

DESIGN CRITERIA
RECYCLED WATER FACILITIES

600.1 GENERAL

All potential uses of recycled water, including, but not limited to, uses for irrigation systems, agricultural irrigation systems, systems used for industrial process or construction purposes, or recreational impoundment systems, or flushing toilets and urinals in non-residential buildings shall be reviewed by the District. If recycled water is to be used, (Refer to the MCWD Code, Title 4.28.080) the facilities shall be constructed in accordance with the procedures and requirements set forth below.

This section is generally divided into seven sub-sections. The sections are:

- Section 600.1 General
- Section 600.2 Off-Site Recycled Water Facilities Design and Construction Standards
- Section 600.3 Recycled Water for Construction Grading or Other Temporary Use
- Section 600.4 General Requirements for On-Site Recycled Water Facilities
- Section 600.5 Design Requirements for On-Site Recycled Water Facilities
- Section 600.6 Inspection Requirements for On-Site Recycled Water Facilities
- Section 600.7 Interior Use of Recycled Water in Non-Residential Buildings

The Marina Coast Water District (MCWD) recycled water program is regulated by the California Department of Health Services and the Monterey County Health Agency and permitted by the RWQCB. As set forth in the District's "Water Code for Water, Sewer, and Recycled Water Service," the District shall determine whether a given service will be furnished with recycled water or potable water. The determination shall be in accordance with the standards of treatment and water quality requirements set forth in Title 22, Chapter 4 of the California Administrative Code, with the intent of the District to work in conjunction with the health agencies to protect the public health, and with the availability and/or feasibility of making available recycled water facilities. All on-site facilities using recycled water will have an annual cross connection test and annual backflow prevention certification unless otherwise approved by the state and county health agencies based on a case by case basis. Details of specific cross connection tests can be found in subsequent sections. All inspections and any cross connection found are reportable to both state and county health agencies.

600.1.1 Recycled Water Site Categories

Recycled water facilities are separated into two categories.

Off-site recycled water facilities typically consist of those recycled water facilities, which are, or will be, owned, operated, and maintained by the District such as transmission or distribution mains in public rights of way. Typically these are facilities on the upstream side of the water meter and include the meter.

On-site recycled water facilities typically consist of facilities, which will be owner, operated, and maintained by the customer, and is downstream of the water meter. The District typically constructs, operates, and maintains recycled water facilities, upstream of the water meter, which are 4" and larger. There are two types of on-site recycled water facilities; non-residential on-site recycled water facilities and residential dual plumbed homes.

600.1.2 Recycled Water System Monitoring

Authorized representatives of MCWD shall monitor and inspect the entire recycled water system including both On-site and off-site facilities. MCWD shall conduct monitoring programs, maintain a record as deemed necessary, and provide reports as requested by regulatory agencies. The Manager or authorized representatives of MCWD, in carrying out these functions, shall have the right to enter the customer's premises during reasonable hours for the purpose of inspecting On-site recycled water facilities and areas of recycled water use and to ensure compliance with the Water Code. This shall include the provision that runoff shall be controlled and limited and the provision that cross-connections between potable water facilities and recycled water facilities do not exist.

For single-family residences receiving recycled water, the permit holder shall be responsible for providing access and cooperation to MCWD's representative so that MCWD's representative can perform an annual cross-connection inspection. This inspection shall include pressure testing of the recycled water system to verify that no cross-connections have been made. The permit holder will be responsible for correcting any work which violates MCWD regulations at their expense including any costs associated with repairing and testing the backflow device. In addition, if the permit holder changes, an AWWA certified cross-connection specialist from the Water Quality Dept. of MCWD will perform a cross-connection survey to verify that no cross-connections exist.

600.2 OFF-SITE RECYCLED WATER FACILITIES DESIGN AND CONSTRUCTION STANDARDS

600.2.1 Minimum Size

The typical minimum size distribution main shall be a 4-inch looped line. Smaller diameter mains may be individually approved by the District Engineer on dead-end mains or the possibility of future tie-ins with other mains. These mains shall be sized so that sufficient water is regularly drawn to prevent stagnation. Only 1-inch and 2-inch copper or polyethylene and 4-inch, Class 150 PVC are approved for service lines.

Developer facilities will be those recycled water mains of any diameter found interior to the developer's project, refer to MCWD In-Tract Policy.

Developer facilities designed by the developer shall be approved by the District and transferred to the District upon satisfactory completion of final inspection. Capital facilities will be designed and constructed by the District in most cases. The facilities found on the private parcels downstream of the meter shall remain in the ownership of the developer.

600.2.2 Approved Pipe Materials

C-900 PVC pipe Class 150 shall be used for recycled water mains up to 12-inch in diameter. The pipe shall be purple in color and shall be marked in accordance with District standards to warn anyone who sees it that there is recycled water in the pipe. A purple polyethylene sleeve may be provided in lieu of a purple pipe. DIP may be used if properly sleeved and marked with purple marking tape.

600.2.3 Minimum cover requirements

The top of all recycled water distribution mains shall be a minimum of 48 inches below the finished street grade unless indicated otherwise on job plans or directed otherwise by the District Inspector because of unusual field conditions.

600.2.4 Separation between Water, Sewer, and Recycled Water Lines

See Section 400 and District Standard Plan W-17.

600.2.5 Standard location

Recycled water pipes shall typically be located either four (4) feet, or eight (8) feet from the curb face on the opposite side of the street from the potable water mains.

600.2.6 Standard Off-Site Recycled Water Notes

The following notes must appear on all plans for construction of off-site recycled water facilities and be identified as "Recycled Water Notes". In addition the Standard Water Notes shown in Section 400 of these Guidelines must appear on the plan as well.

1. Recycled water systems shall be constructed in accordance with the requirements of the Districts potable water system design requirements.
2. Recycled water pipe shall be purple PVC C-900 pipe, Class 150, marked as required by District standards to identify it as recycled water. DIP may be used with the approval of the District, marked with purple sleeve and marking tape.
3. All 1-inch and 2-inch copper or polyethylene services shall be wrapped continuously with purple marking tape or sleeve from end to end.

600.3 RECYCLED WATER FOR CONSTRUCTION GRADING OR OTHER TEMPORARY WATER USE.

The following are MCWD procedures and guidelines for the specific use of recycled water for construction grading, dust control, compaction and temporary reservoirs.

Recycled water is to be used only for the above mentioned uses and may not be used for any other purpose than stated above. There are no exceptions. If there is a need for water other than the above approved uses, i.e.: water to construction trailers, hand washes, hose bibs, and temporary sprinklers etc., one must obtain an approved potable connection from MCWD.

1. All construction connections shall be tagged with warning tags, as follows:

**"Warning - Recycled Water, Do Not Drink"
"Aviso - Agua Impura, No Tomar"**

Use tags as manufactured by T. Christy Enterprises or approved equal. Tags shall be affixed to stationary tanks, water trucks, and all service points or any other inlet or outlet using recycled water.

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2. Water trucks, water tanks, or any other receptacle, including but not limited to pipe or hose used for storage or conveyance of recycled water, shall be dedicated solely to that use. Any use other than recycled water must be approved through MCWD and the cognizant health agencies.
3. No fittings, hose or pipe, or any other appurtenance using recycled water shall connect to a potable water source.
4. All PVC pipe extending from the point of connection shall be purple, and read:

“Warning - Recycled Water, Do Not Drink”

The PVC piping shall conform to all material specifications as set forth by MCWD.

5. Any water truck, water tank, or other storage receptacle to be converted from recycled water to potable water shall be thoroughly cleaned and disinfected to the satisfaction of MCWD and the jurisdictional health agencies.
6. Contact MCWD prior to connection at (831) 384-6131 and arrange for an inspection to ensure compliance with District standards.

Failure to comply with any or all of the above requirements places your construction site in violation of District Water Code, and will result in termination of service until the appropriate corrective steps have been taken.

600.4 GENERAL REQUIREMENTS FOR ON-SITE RECYCLED WATER FACILITIES

Plan check procedures shall follow the guidelines outlined in Section 100.5, Application Processing.

600.4.1 Scope

Design and construction standards for sites using recycled water are provided for non-residential and residential dual plumbed home sites.

- Non-residential on-site recycled water facilities include, but are not limited to: irrigation systems, systems used for industrial processes, construction purposes, and toilet and urinal flushing in non-residential buildings. Users shall comply with these standards, the On-Site Recycled Water User Plan, and to any conditions, standards, and requirements set forth by the District in addition to these standard specifications.
- Residential dual plumbed homes using recycled water for irrigation systems shall comply with these standards set forth herein, the Engineer’s Report, and to any conditions, standards, and requirements set forth by the District in addition to these standard specifications. Residential indoor water use of Recycled Water is prohibited.

600.4.2 Interpretation

The District Engineer shall decide all questions of interpretation of “good engineering practice,” guided by the various standards and manuals.

600.4.3 Applicable Codes and Policies

Ordinances, requirements, and applicable standards of governmental agencies having jurisdiction within the District's service area shall be observed in the design and construction of on-site recycled water systems. Such requirements include but are not limited to current revisions of the following:

- The Uniform Plumbing Code.
- Marina Coast Water District Water Code, as applicable.
- State of California, Department of Health Services, Title 22.
- Regional Water Quality Control Board Regulations.

600.4.4 Marina Coast Water District Jurisdiction

The District is responsible for the approval of plans and inspection of all on-site recycled water systems within the District's service area. Where repairs or replacement of a service line on the upstream side of the meter is required, it shall be the responsibility of the District, unless it is a system upgrade, in which case the owner or customer will be billed for the work. Conversely, the cost of repairs or replacement of the on-site facilities shall be the responsibility of the property owner.

600.4.5 Developer's Engineer/Landscape Architect Responsibility

These standards establish uniform policies and procedures for the design and construction of on-site recycled water facilities. They are not intended to be a substitute for knowledge, judgment, or experience. The contained procedures shall be reviewed by the engineer/landscape architect and shall be applied as necessary to the project. Proposed deviations to these standards shall be submitted in writing in conjunction with the plan review submittal. The plans shall be revised or supplemented at any time it is determined that the District's requirements have not been met.

Before design, the developer should obtain the following from the District:

1. Approval to use recycled water for the proposed system, as stated in the previous section.
2. Verification of locations and size of proposed points of connection (meter facilities).
3. Design pressures for the proposed facilities.

600.4.6 Reference Specifications

References to standards such as the Standard Drawings of the District, AWWA, ASTM, UBC, UPC, and UFC shall refer to the latest edition or revision of such standards unless otherwise specified.

600.4.7 Guidelines For Irrigation with Recycled Water

The following guidelines have been established by the Marina Coast Water District in conjunction with the Monterey County Health Department and the Central Coast Regional Water Quality Control Board. They are intended to provide the basic parameters for the use of recycled water in irrigation. To operate your system in compliance with these guidelines you must:

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1. Irrigate between the hours of 9:00 p.m. and 6:00 a.m. only. Watering outside this time frame must be done manually with qualified supervisory personnel on-site. No system shall at any time be left unattended during use outside the normal schedule.
2. Irrigate in a manner that will minimize runoff pooling and ponding. The application rate shall not exceed the infiltration rate of the soil. Timers must be adjusted so as to be compatible with the lowest soil infiltration rate present. This procedure may be facilitated by the efficient scheduling of the automatic control clocks, (i.e., employing the repeat function to break up the total irrigation time into cycles that will promote maximum soil absorption).
3. Adjust spray heads to eliminate overspray onto areas not under the control of the customer. For example, pool decks, private patios, streets and sidewalks.
4. Monitor and maintain the system to minimize equipment and material failure. Broken sprinkler heads, leaks, unreliable valves, etc., should be repaired as soon as they become apparent.
5. Educate all maintenance personnel, on a continuous basis, of the presence of recycled water, and the fact that it is not approved for drinking purposes. Given the high turnover rate of employees in the landscape industry, it is important that this information be disseminated on an almost daily basis. It is you, the landscape contractor, who is responsible for educating each and every one of your employees.
6. Obtain prior approval for all proposed changes and modifications to any on-site facilities. Such changes must be submitted to, and approved by, the Engineering office and designed in accordance with District standards.

Failure to comply with any or all of the above guidelines puts your system in violation of the District's Water Code, and will result in termination of service until the appropriate corrective steps have been taken.

600.4.8 Prohibitions and Limitations

Design of on-site recycled water facilities shall conform to the following:

- The recycled water system shall be separate and independent of any potable water system. Cross connections between potable water facilities and recycled water facilities are prohibited.
- Hose bibs on recycled water facilities are prohibited. Quick couplers are prohibited for residential dual plumbed homes. Where potable and recycled water is used on-site, potable water hose bibs must be attached to the building.
- Drinking fountains shall be protected from the spray of recycled water in a manner approved by the On-Site Recycled Water User Plan, prior to installation.
- Patios, swimming pools, and spas, etc. shall be protected from the spray of recycled water.
- Overspray and run-off shall be limited or prevented.

- Potable and recycled water lines must maintain proper separation at all times.
- Recycled water shall not be used for any purpose other than the approved uses as set forth in the On-Site Recycled Water User Plan.
- The system shall be designed to irrigate the on-site area within the allowable time periods as set forth in the On-Site Recycled Water User Plan.

600.4.9 Backflow Prevention and Cross Connection

Backflow prevention devices will not be required on the recycled water service connected to a recycled water main. However, in accordance with Section 400, District's Regulation Regarding Cross Connection, reduced pressure backflow prevention devices will be required on the potable water service, when a parcel receives potable and recycled water service. No connection between the recycled waterline and the potable waterline is allowed.

600.4.10 Conversion from Potable to Recycled Water System

In general, all irrigation facilities converting from a potable to a recycled water supply shall conform to the District's construction specifications and the On-Site Recycled Water User Plan. Further, all retrofit of potable water facilities for recycled water use must follow the "Guidelines for the On-Site Retrofit of Facilities Using Disinfected Tertiary Recycled Water (1997)" published by AWWA California-Nevada Section. The District will notify the required state agencies of the intent to convert and solicit their involvement through out the process. The facilities to be converted shall be investigated in detail including review of any record drawings, preparation of the required On-Site Recycled Water User Plans, potholing of existing facilities, and determinations by the District of measures necessary to bring the system into full compliance with these standard specifications. The applicant, owner, or customer shall pay all costs to convert the system.

600.4.11 Conversion from Recycled to Potable Water System

If due to any system failure, use violations, or other reasons as determined by the District, it becomes necessary to convert from a recycled water supply to a potable water supply, it shall be the responsibility of the owner, applicant, or customer to pay all costs for such conversion. After notifying state and county health agencies of the intent of the conversion, the recycled water service shall be removed and plugged at the District main or abandoned in a manner approved by the District and State Agencies. The on-site non-residential facilities shall be modified, as required by the District and State Agencies, for use as a potable water system. The onsite system will then be disinfected in accordance with the following procedures.

1. Disinfect the water line following AWWA Standard C651 and District Standard Specification 15041. The final test results must be acceptable to MCWD before recharging the system.
2. Install approved backflow devices on any and all meter connections.
3. Remove the special recycled water quick couplers and their replacement with approved quick coupler valves for potable water systems.
4. Notify all personnel involved.
5. Remove all warning labels.

Installation of all potable water lines and payment of all connection fees due, as provided for in the

Summary of Fees and Charges, Appendix 11.

600.4.12 Recycled Water Facilities with Temporary Potable Water Service

As set forth in the MCWD Water Code, where recycled water is not immediately available for use when the design area is ready for construction, and if the District has determined that recycled water will be supplied in the future, the on-site facilities shall be designated to use recycled water. The on-site system shall be designed and constructed to the District's construction specifications as set forth herein. Provisions shall be made as directed by the District and these specifications to allow for connection to the recycled water facilities when they become available. In the interim, potable water will be supplied to the recycled water facilities through a temporary potable water connection. Until recycled water is available, potable water rates will be charged as set forth in the District's published rate schedule..

A backflow prevention device acceptable to the local Health Department and the District will be required on all non-potable systems served from a potable water main. If a recycled water distribution system is constructed as part of a subdivision development, the backflow prevention device may be installed at the point where the recycled main is connected to the potable system, instead of installing devices at every irrigation meter.

Reduced pressure backflow prevention devices are required on all potable water services to sites served with recycled water. The backflow prevention device shall be downstream of the meter and a part of the on-site facilities. If recycled water is not available at the time of construction and potable water is used for irrigation as described above, backflow prevention devices will not be required on the potable services, but sites must be plumbed to allow the addition of these devices at the time recycled water becomes available.

600.4.13 On-Site Recycled Water User Plan Preparation

Upon receipt of a request for recycled water service and irrigation or building plans, an On-Site Recycled Water User Plan will be prepared. The On-Site Recycled Water User Plan (URP) may be prepared by a Registered Engineer of the Owner's choice or by the District staff, at the Owner's expense. The District has available a sample copy of a URP which may be used in preparation.

600.4.13.1 Owner Responsibilities

The applicant, owner, or customer shall have the following responsibilities in relation to operation of On-Site facilities:

1. To make sure that all operations personnel are informed and familiarized with the use of recycled water.
2. To furnish their operations personnel with maintenance instructions, controller charts, and record drawings to ensure proper operation in accordance with the On-site facilities design and these Water Code.
3. To notify MCWD of any and all updates or proposed changes, modifications, or additions to the On-site facilities, which changes shall require approval by MCWD and shall be designed and constructed according to these requirements and standards and in the Water Code. In accordance with the above, changes must be submitted to MCWD for plan review and approval prior to construction. The construction shall be inspected by MCWD, and revised record drawings shall

be approved by MCWD. MCWD may, if it deems such to be in the best interest of MCWD, waive or modify any of the foregoing.

4. The recycled water facilities must be maintained in accordance with the Water Code including MCWD's requirements and standards.
5. The operation and control of the on-site system shall prevent direct human consumption of recycled water and control and limit runoff. The applicant, owner, or customer shall be responsible for any and all subsequent uses of the recycled water. Operation and control measures to be utilized in this regard shall include, where appropriate, but not be limited to the following:
 - A. On-site recycled water facilities shall be operated to prevent or minimize discharge onto areas not under control of the customer. If sprinklers are used adjacent to sidewalks, roadways, and property lines, they shall be adjusted to confine the discharge from the sprinklers to the design area.
 - B. The operation of the On-site recycled water facilities shall be during the periods of minimal use of the service area. Consideration shall be given to allow a maximum dry-out time before the design area will be used.
 - C. Recycled water shall be applied at a rate that does not exceed the infiltration rate of the soil. Where varying soil types are present, the design and operation of the recycled water facilities shall be compatible with the lowest infiltration rate of the soil present.
 - D. When the application rate exceeds the infiltration rate of the soil, automatic systems shall be utilized and programmed to prevent or minimize the ponding and runoff of recycled water. The sprinkler shall not be allowed to operate for a time longer than the landscape's water requirement. If runoff occurs before the landscape's water requirement is met, the automatic controls shall be reprogrammed with additional watering cycles of shorter duration to meet the requirements. This method of operation is intended to control and limit runoff.
 - E. Report shall be made to MCWD of any and all failures in applicant, owner, or customer's system that cause an unauthorized discharge of recycled water.
6. Project shall comply with any and all applicable Federal, State, and local statutes, ordinances, regulations, contracts, the Water Code, and all requirements prescribed by the District Manager and the Board. In the event of violation, all charges and penalties shall be applied and collected by MCWD.

600.4.13.2 Data Required for On-Site Recycled Water User Plan

Specific information is required to be incorporated in the On-Site Recycled Water User Plan. A list of the required information and an example of the URP can be found in Appendix 19.

General guidelines for the On-Site Recycled Water User Plan should conform to the following:

1. The on-site recycled water irrigation facilities shall be designed to meet the peak moisture demand of all plant materials used within the design area. Comply with the irrigation design requirements of Section 700.

2. On-site recycled water facilities shall be designed to prevent discharge onto areas not under control of the customer. Part circle sprinklers shall be used adjacent to roadways and property lines to confine the discharge from sprinklers to the design area.
3. On-site recycled water irrigation facilities shall water only between the hours of 9 p.m. and 6 a.m., or as directed by the District Engineer. Consideration shall be given to allow a maximum dry out time before the design area will be used by the public.
4. The total time required to irrigate the design area shall not exceed 9 hours in any 24-hour period. Irrigation systems shall be designed to operate within this time requirement.

Recycled water shall be applied at a rate that does not exceed the infiltration rate of the soil or the ET requirements of the plantings. Where varying soil types are present, the design of the recycled water facilities shall be compatible with the lowest infiltration rate present. Copies of the developer's soils test reports shall be made available to the District upon request. The MCWD water conservation requirements shall apply.

600.4.13.3 User Supervisor

MCWD shall be kept informed of the identity of the person responsible for the water piping systems on all premises covered by these regulations. At each premise a "User Supervisor" shall be designated. This User Supervisor shall be responsible for the installation and use of pipelines and equipment and for the prevention of cross-connections.

In the event of contamination or pollution of the potable water system due to a cross-connection on the premises, the local health officer and District shall be promptly notified by the person responsible for the water system so that appropriate corrective measures may be taken.

1. User Supervisor Training Program - If there is a non-resident owner, a local User Supervisor shall be appointed. For single-family residences which have a recycled water service connection, the owner shall be considered to be the "User Supervisor" unless otherwise indicated on the application for the service connection request. In the event that someone other than the owner is designated as the "User Supervisor" and this person is no longer associated with the property, the owner shall again be considered the "User Supervisor" until written notification is made to MCWD.
2. Water Service Termination - When MCWD determines that water uses or conditions encountered by MCWD represent a clear and immediate hazard to MCWD's water supply that cannot be immediately abated, MCWD shall institute the procedure for discontinuing water use.

Conditions or water uses that create a basis for water service termination shall include, but are not limited to, the following.

- A. Refusal to install a required backflow prevention device.
- B. Refusal to test a backflow prevention device.
- C. Refusal to repair a faulty backflow prevention device.

- D. Refusal to replace a faulty backflow prevention device.
- E. Refusal to install a RPBP on the potable service when recycled water is provided on site.
- F. Direct or indirect connection between the potable water system and a sewer or recycled water system.
- G. Unprotected direct or indirect connection between the potable water system and a system or equipment containing contaminants.
- H. Unprotected direct or indirect connection between the potable water system and an on-site auxiliary water system.
- I. A situation which presents an immediate health hazard to the potable water system, as determined by the health agency or MCWD.
- J. At single-family residences where copper piping is not installed for the water service or purple PVC pipe not meeting District Procedural Guidelines and General Design Requirements is not installed for the recycled water service.

MCWD will terminate service to a customer's premise after written notices have been sent specifying the corrective action needed and the time period in which it must be completed. If no action is taken within the allowed time period, water service may be terminated in accordance with the District Water Code.

MCWD will make reasonable effort to advise the water user of intent to terminate water service. Then, MCWD will terminate the water service and lock the service valve in the closed position. Water service will not be reinstated until correction of all violations has been approved by MCWD. Failure to correct the violations may result in permanent termination of water service in accordance with District Water Code.

600.4.13.4 On-Site Recycled Water User Plan Acceptance

Once the On-Site Recycled Water User Plan has been prepared, it will be submitted to the State of California, Department of Health Services and Regional Water Quality Control Board for review. Once comments have been received from each agency and incorporated into the document, an agreement has been signed by the user, proper signage has been installed, and training in the use of recycled water has been provided, recycled water service can be delivered to the site.

600.4.14 Agreements

Before recycled water can be supplied to a site, a Standard Agreement for Use of Recycled Water must be signed and recorded. The Agreement sets forth the requirements for service and includes guidelines for the use of recycled water.

In a residential dual plumbed subdivision, all homes are required to use recycled water for irrigation. Deed restrictions are detailed in the documents "Declaration of Restrictions Regarding The Use of Recycled Water for Irrigation" (See Appendix 20) and "Homebuyer Notification, The Use of Recycled

Water for Irrigation” (See Appendix 21).

600.5 DESIGN REQUIREMENTS FOR ON-SITE RECYCLED WATER FACILITIES

The Marina Coast Water District provides the highest quality unrestricted use recycled water for public irrigation as well as residential irrigation. This section provides detailed steps for design review, construction inspection, compliance inspections, and tests for non-residential and residential dual plumbed irrigation systems.

600.5.1 Data Required on Plans

Specific information is required to be included in the plan set as described below.

1. General On-Site Recycled Water Notes - On-site recycled water notes are to be shown on all on-site recycled water system construction plans. The notes shall be as shown in Appendix 22.
2. Water service, meter and piping details, as required for potable systems in Section 400.
3. Irrigation details, as required in Section 700.

600.5.2 Drinking Fountains

Exterior drinking fountains must be shown and called out on the recycled water system plans. For schools, parks and sports fields, if no exterior drinking fountains are present in the design area, it must be specifically stated on the plans that none exist. The potable water line supplying the drinking fountain must have a warning tape and maintain proper separation from recycled water lines. Drinking fountains must be protected from the direct spray of recycled water either by proper placement within the design area or the use of a covered drinking fountain approved for this purpose.

600.5.3 On-Site Materials and Installation Requirements

600.5.3.1 Pipe Selection

All buried on-site piping in the recycled water system shall be purple PVC pipe with stenciling identifying it as recycled water in accordance with the AWWA Guidelines for the Distribution of Nonpotable Water. Stenciling shall include; CAUTION RECYCLED WATER - DO NOT DRINK; nominal pipe size; PVC-1120; pressure rating in pounds per square inch at 73 degrees; and ASTM designations such as 1785, 2241, 2672, or 3139. Stenciling shall be placed continuous on two sides of the pipe. All on-site recycled water piping shall be installed in accordance with the Uniform Plumbing Code and all other local governing codes, rules, and regulations.

For Non-Residential Sites use:

- PVC constant pressure main line piping, 2 inches and larger, shall be rubber-ring joint, PVC Class 160, or solvent weld joint, PVC Class 315.
- PVC constant pressure main line piping, 1-1/2 inches and smaller, shall be solvent weld joint, PVC Schedule 40.

For Residential Dual Plumbed Homes use:

- Irrigation Mainline: Schedule 40 PVC solvent weld purple pipe with bell ends.

- Irrigation Lateral Lines: Class 150 PVC solvent weld purple pipe with bell ends.
- Irrigation Sleeving: Schedule 40 PVC purple pipe.
- All potable water lines in landscapes shall be copper lines. Examples of potable water uses are a pool, fountain, or other uses not designated as acceptable for recycled water.

600.5.3.2 Pipe and Fittings

PVC plastic pipe fittings shall conform to the following:

- PVC plastic pipe fittings shall be installed below grade.
- All PVC plastic pipe fittings shall be rigid PVC virgin Type I, minimum Schedule 40, with working pressure no higher than that of the pipe. Sockets shall be tapered to conform to the outside diameter of the pipe, as recommended by the pipe manufacturer. All Schedule 40 fittings shall conform to ASTM D 2466. Schedule 80 fittings shall conform to ASTM D 2464 and D 2467.
- PVC fittings shall be Schedule 40 solvent weld and factory manufactured, or Schedule 40 with rubber-ring joint.

600.5.3.3 Depth of Piping

For on-site non-residential recycled water piping, the minimum depth from finished grade to top of pipe (minimum cover) shall be eighteen (18) inches. When crossing potable water mains, the recycled pipe shall be under the potable pipe.

600.5.3.4 Separation Requirements

See Section 400 and District Standard Plans W-20.

600.5.3.5 Warning Tape

1. General - Warning tapes shall be installed longitudinally above and centered on all pressurized mains (between the meter and the building or the irrigation control valve). The warning tape shall be installed continuous for the entire length of the pipe. All risers between the main line and control valves shall be installed with warning tape.
2. Recycled Water - Warning tape shall be purple plastic with black printing having the words "CAUTION: RECYCLED WATER LINE BURIED BELOW." See District Standard Specification 15151.
3. Potable Water - Warning tape shall be blue plastic with black printing having the words "CAUTION: DOMESTIC WATER LINE BURIED BELOW." See District Standard Specification 15151.

600.5.3.6 Sprinklers

Sprinklers shall be easily recognized as being used in a recycled water system. All sprinklers shall be purple in color or have purple snap-on caps for easy identification.

600.5.3.7 Quick-Couplers (Permitted for Non-Residential Sites Only)

Recycled Water - Quick-couplers may be used in recycled water systems and shall conform to the following:

- A. Quick-couplers shall be constructed of brass with a purple snap-on cover and shall have a ¾ or 1-inch inlet. All recycled water quick-couplers shall be installed below grade in a purple round box designed for recycled water use.
- B. The box cover shall have a warning with the following information: “RECYCLED WATER – DO NOT DRINK” in English and Spanish and shall be permanently stamped or molded into the cover. Also, the warning must have the international “Do Not Drink” symbol such as a glass of water with a slash through it. Locking covers may be required where accessible by the public.

Potable Water -

- A. Quick-coupling valves used in potable water systems shall have a cover made of brass, metal, or yellow rubber or vinyl.
- B. Quick-coupling valves intended for recycled water use are not to be used on potable water systems.

600.5.3.8 Warning Labels

Warning labels shall be installed on designated facilities, such as controller panels, water trucks, and temporary construction connections where designated by the District. The labels will notify the public that the system contains recycled water that is unsafe to drink. Warning labels shall be constructed of a purple weatherproof material with the warning permanently stamped or molded into the label, per District standard Specification 15151. The warning shall read: “RECYCLED WATER – DO NOT DRINK” in English and Spanish and include the international “Do Not Drink” symbol, such as a glass of water with a slash through it.

Irrigation controllers shall be labeled “ATTENTION – CONTROLLER UNIT FOR RECYCLED WATER” in English and Spanish. Attach inside controller cabinet door.

600.5.3.9 Valve Boxes

Valves, both above and below grade, shall be housed in an approved lockable purple valve box. A sign reading "CAUTION: RECYCLED WATER – DO NOT DRINK" in both English and Spanish shall be installed, as approved by the District. Other means of restricting public access may be required by the District.

All gate valves, manual control valves, electrical control valves, and pressure reducing valves for on-site non-residential recycled water systems shall be installed below grade in a purple valve box. Electrical and manual control valve boxes shall have a warning label permanently molded into or affixed onto the lid with rivets, bolts, etc.

600.5.3.10 Warning Tags

Tags shall be weatherproof plastic, 3" by 4", purple in color, with the words "WARNING - RECYCLED WATER - DO NOT DRINK" in English and Spanish, per District Standard Specification 15151.

All recycled water sprinkler control valves, pressure regulators, quick couplers, and isolation valves shall be tagged with purple warning tags.

One tag shall be attached to each appurtenance in one of the following manners:

1. Attach to valve stem directly with plastic tie wrap, or
2. Attach to solenoid wire directly with plastic tie wrap, or
3. Attach to the body of the relative appurtenance with a plastic tie wrap.

600.5.3.11 Signage

All areas where recycled water is used, shall be posted with conspicuous signs in a size no less than 8-inches high by 12-inches wide, that include the following wording: "RECYCLED WATER - DO NOT DRINK " in English and Spanish. Each sign shall also display the international "DO NOT DRINK" symbol, such as a glass of water with a slash through it.

600.5.4 Control of Runoff and Application Areas

On-site recycled water facilities shall be designed to prevent discharge or runoff onto areas not under control of the user.

The design of the on-site non-residential recycled water facilities shall provide for use during the periods of minimal access by the public. This time of day is as set forth in the On-Site Recycled Water User Plan. Consideration shall be given to allow a maximum dry out time before the design area will be used by the public.

Recycled water shall be applied at a rate that does not exceed the infiltration rate of the soil. Where varying soil types are present, the design of the recycled water facilities shall be compatible with the lowest infiltration rate present. Copies of the developer's soils test report shall be submitted with the plan set for District review.

Spray heads shall be adjusted to eliminate overspray onto areas not under the control of the customer, i.e. pool decks, private patios, streets, and sidewalks.

600.5.5 Recycled Water System Design Guidelines for Front Yards – General Requirements

1. Recycled water service and domestic potable water service for each residential lot will be provided by the subdivision developer. The recycled water service is typically provided at the opposite lot end from the potable service.
2. Recycled water shall not be used for any other purpose except for irrigation. Recycled water lines shall not enter the house. Recycled water is prohibited for backyard irrigation.
3. The piping system for the recycled water irrigation system will be constructed and maintained to be easily differentiated from the potable water piping system. The recycled water system piping will be purple plastic pipe. See Recycled Water Irrigation System materials list for more information.

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4. Drip irrigation systems are required for shrub plantings and some groundcover plantings. The use of drip systems within the dripline of the canopy of existing oak trees is required. This type of irrigation system tends to be more water efficient and water conserving than other systems due to the slow delivery rate of water (low volume) via plastic tubing directly to the rootball of the plant material. Environmental factors such as evaporation and wind tend to have the least effect on this type of irrigation system. Physical maintenance of this type of system is usually higher. Additionally, drip irrigation systems contribute minimally to soil erosion problems on sloped planting areas.
5. It is recommended to install purple irrigation PVC sleeves beneath driveways, walkways or other paved areas. Install the necessary number of sleeves, properly sized, to accommodate the irrigation system mainline, lateral lines, and controller wiring.
6. Sprinkler heads and spray patterns shall be contained within the home lot property line and shall not overlap or overspray into the adjacent property. Adjust sprinkler heads and spray patterns to eliminate overspray onto adjacent hardscapes, patios, decks, pools, fences, etc.
7. Space and install sprinklers and turf rotors no more than 80% of the manufacturer's recommended radius listing for that particular head. Ensure head to head coverage of the spray pattern with no dry spots.
8. The maximum flow for each valve system shall not exceed 15 gallons per minute, nor shall operating flows exceed 15 gallons per minute at any one time.
9. For drip irrigation systems, install an in-line pressure-reducing valve down stream of the remote control valve. The pressure-reducing valve shall be placed below grade in a plastic valve box and adjusted to the proper operating pressure for the drip system.
10. For drip irrigation systems, install an in-line Wye filter down stream of the remote control valve and upstream of the pressure reducing valve. The filter shall be placed below grade in a plastic valve box. Install drip tubing a minimum of four inches below grade.
11. No backflow device is required on recycled water service.
12. A pressure reducing valve will be required by the District downstream of the recycled water meter below grade in a rectangular box of sufficient size to easily allow repair or replacement. Pressure reducing valve shall be pre-set at 40 psi.
13. Hose bibs and quick coupling valves are PROHIBITED on the recycled water systems serving residential front yards.
14. No white PVC piping will be allowed for recycled water irrigation system mainlines and laterals.
15. Overhead irrigation systems for turf will only be operated between the hours of 9:00 p.m. and 6:00 a.m. Drip irrigation systems will be allowed to be operated at anytime.
16. Monitor and maintain the system to minimize equipment and material failure. Broken sprinkler heads, leaks, unreliable valves, etc., should be repaired as soon as they become apparent.

17. Recycled water is not potable water and therefore not suitable for human consumption.
18. Recycled water is highly treated domestic wastewater and its clarity to the human eye is indistinguishable from domestic water. The standards imposed for treatment of recycled water quality are established by various governmental regulatory agencies, including the State of California Department of Health Services, California Code of Regulations, Title 22, and these standards may change from time to time.
19. Irrigate in a manner that will minimize runoff, pooling, and ponding. The application rate shall not exceed the infiltration rate of the soil. Timers will be adjusted so as to be compatible with the lowest soil infiltration rate present. This procedure may be facilitated by the efficient scheduling of the automatic control clocks (i.e., employing the repeat function to break up the total irrigation time into cycles that will promote maximum soil absorption). When using any type of irrigation system, care will be exercised by controlling the delivery rate of water so as not to overcome the soil's water absorption rate. Overwhelming the soil absorption rate may cause water run-off and soil erosion. Proper programming of the automatic irrigation controller, knowing the plant material's water needs, familiarity with the soil's water absorption characteristics and slope aspects are necessary for responsible water resource management and good irrigation practice.
20. All remote control valves shall be set below grade in an appropriate box. Anti-siphon control valves will NOT be allowed.
21. Educate all maintenance personnel, family members, and guests, on a continuous basis, of the presence of recycled water and that it is not approved for drinking purposes.

600.5.6 Potable Water System Design Guidelines – General Requirements

1. The potable water service and the recycled water service for each residential dual plumbed home will be provided by the homebuilder's underground contractor. See Section 400 for information regarding the District's regulations regarding cross connections.
2. The potable water system will be protected by an appropriate backflow prevention device at the potable water meter. An approved backflow prevention (BP) device is required on each residential potable water supply line, where a separate recycled water system will be used to irrigate the landscape. Assemblies will be installed downstream of, but immediately next to, the potable water meter and the pressure-reducing valve.
3. The BP device will be installed above grade and have a minimum clearance of twelve inches between the bottom of the assembly and the finished grade of the surrounding landscape or splash pad. Do not disturb the BP device or modify the grade around the assembly when landscaping the front yard. BP device that do not meet MCWD standards will be corrected at the owner's expense. Neither the owner nor their contractor may remove or modify the water meter or the BP device.
4. Warning tape shall be used on all constant pressure main line piping carrying potable water from the meter to the house. The tape shall start at the meter or pressure regulator, be visible in the valve box, and continue to where the pipe enters the house.
5. The water used within the residence and outside in the yard(s) through hose bibs will be potable

water. All hose bibs shall be connected to the house.

6. Fill lines for pools and/or water features of any kind are prohibited on the recycled water system. These uses shall be connected to the potable water system. Copper pipe will be used for all potable lines. The location of the copper lines shall be indicated on the plans. The District requires the inspection of the installation prior to the covering of the pipe.
7. All pressure main line piping from the recycled water system shall be installed to maintain 10 feet minimum horizontal separation from all potable water piping. Where recycled and potable water pressure main line piping cross, the recycled water piping shall be installed below the potable water piping in a Class 200 purple-colored PVC sleeve which extends a minimum of 5 feet on either side of the potable water piping. Provide a minimum vertical clearance of 12 inches

600.6 INSPECTION REQUIREMENTS FOR ON-SITE RECYCLED WATER FACILITIES

600.6.1 General

The District will inspect the construction of on-site non-residential facilities and shall be notified two working days in advance of construction by the applicant, owner, or customer. The District Office shall be called at (831) 384-6131. In no case shall irrigation lines be backfilled before inspection by the District. If the residential dual plumbed on-site irrigation system is installed prior to plan approval and/or inspection, all or any portion of the system must be exposed and corrected as directed by the District in accordance with these standard specifications. Failure to comply will result in termination of service as provided for in the District Water Code.

Subsequent to plan approval, field conditions may dictate modifications to the on-site system either in material or in intended use. If directed by the District Inspector the owner, applicant, or customer shall perform all changes or modify the on-site system to bring the system or use into full compliance with these construction specifications and with the MCWD Water Code. If for any reason the system cannot be corrected or modified to the satisfaction of the District Inspector, the system will be subject to conversion to a potable water supply, as set forth herein.

At the start of construction of each house, MCWD inspectors will verify the following:

- A. A backflow prevention device has been installed prior to any potable water use.
- B. Water used during construction and for pipe testing is potable water and not recycled water.
- C. Curb markings for potable and recycled water services are correct.

600.6.2 Documentation

Forms. All forms completed with regards to review and inspection will be kept on file at the MCWD offices for review by the Regional Water Quality Control Board or the Department of Health Services.

Landscape Record Drawings. MCWD will keep on file a copy of all landscape record drawings for both the front and back yards. The production houses front yard drawings, prepared by the homebuilder will be typical drawings that apply to many houses in the subdivision. Back yard drawings are prepared individually by homeowners or a landscape architect and therefore are individual to each house.

Inspections. MCWD staff will refer to previously completed forms as necessary when performing compliance inspections, cross connection tests, and inspections.

600.6.3 Testing of Backflow Prevention Devices

Backflow prevention assemblies require annual testing in accordance with the MCWD Water Code. See section 400.

600.6.4 Initial Cross Connection Test for Final Approval

If the on-site system is installed prior to plan approval and/or inspection, all or any portion of the system must be exposed and corrected as directed by the District in accordance with these standard specifications. Failure to comply will result in termination of service as provided for in Section 600.14 herein.

Notify in writing the state and county health agencies of the initial test date with intent that both agencies will attend. For the initial cross-connection test, recycled water will be used for the irrigation piping system. A cross connection shut down test form shall be completed (see Appendix 23). The procedures for the initial cross-connection test shall be as follows:

- Verify that the recycled water system is under pressure and operating normally. This is done by manually operating each valve and quick coupler attached to the recycled water system.
- Shut down the recycled water system at the meter service connection.
- Verify that the recycled water system does not have any pressure. This is done by opening a valve downstream of the recycled water connection to relieve pressure, allowing one hour of time to pass, closing the valve, then manually operating each valve and any quick couplers attached to the recycled water system.
- Verify that the potable water system to the lot is under pressure and operating normally. This step is done while the recycled water system is shut off at the meter. The test is accomplished by manually operating all fixtures being supplied by the potable meter, both interior and exterior of the home or buildings.
- Shut down the potable water system at the backflow. Open the recycled system at the meter connection.
- Verify that the recycled water to the lot is under pressure and operating normally.
- Verify that the potable system does not have any pressure. This is accomplished by opening a valve downstream of the potable water backflow to relieve pressure, closing the valve, then manually operating all fixtures on the interior and exterior of the house or building being supplied by the potable water meter.
- Open the potable water system at the backflow. The test is now complete.

- Perform shutdown test on potable and recycled water systems at least once every four years and at change of occupant (rental or sale). Test shall be performed as outlined in Cross Connection Shutdown Test form.

600.6.5 Cross Connection Actions

On suspicion of existence of a cross connection, repeat the shutdown test. If the results confirm a cross connection, then proceed with the following:

- Inform the homeowner and contact MCWD Staff.
- Instruct the homeowner not to drink the tap water in the house.
- Turn off the recycled water to the property at the meter.
- Expedite the testing of the water quality in the house as well as in the supply system in the street.
- Investigate the source of the cross connection and eliminate it.
- If disinfection of the house potable water supply is necessary, it should be expedited with the cooperation of the homeowner.
- MCWD and DHS will determine when it is safe for the homeowner to resume the safe use of the recycled and potable water.

600.6.6 Annual Cross Connection Test for Individual Residential Lots

Annual testing for cross connections will be conducted on the on-site recycled water system by MCWD staff. The state and county health agencies will be notified of the annual test date and again the subsequent outcome of the test(s). The annual cross connection test shall in no case be less than 60 minutes and may be longer if site situations pose complications. The procedures for the annual cross-connection test shall be as follows

1. Verify the recycled water system is under pressure and operating normally. This is done by manually operating a valve or quick coupler attached to the recycled water system.
2. Leaving the valve or quick coupler open and running while shutting down the recycled water meter at the service connection. The recycled water system will be drained and remain inactive for 60 minutes.
3. At the end of the 60 minute shut down period, verify that the pressure in the recycled water system has completely dissipated through the open valve or quick coupler. A cross-connection is detected if the pressure has not completely dissipated, and the valve at the service connection is not leaking.
4. Open the recycled water service connection if a cross-connection was not detected.
5. The potable water shall remain pressured at all times during the annual recycled water shut down.

600.6.7 Coverage Test

The owner, applicant, or customer is responsible for controlling overspray and runoff of new systems. To ensure the limitation of overspray and runoff is in accordance with the On-Site Recycled Water User Plan, an inspection of the completed on-site non-residential system by the District is required. When the sprinkler system is completed and the planting installed, the owner or owner's representative shall contact

the District at (831) 384-6131 and arrange for a coverage test walk through. The owner or owner's representative must be in attendance and have persons capable of making system adjustments. If modifications to the system are required, other than minor adjustments, the owner will be notified in writing of the changes required. To avoid termination of service, the modifications must be made in a timely manner. All modifications to the system are the responsibility of the owner, applicant, or customer and said owner, applicant, or customer shall pay all costs associated with such modifications.

600.6.8 Compliance Inspection and Testing

- A. Testing and inspection of water systems in dual plumbed homes receiving recycled water will be in accordance with these procedures and the on-site Recycle Water User Plan. Random inspections may also occur. Complete Compliance Inspection Form (See Appendix 24)
- B. Initially, before activation of recycled water service, and annually thereafter, MCWD will inspect both the exterior potable and full yard recycled water irrigation systems on the site. MCWD will perform a cross connection shutdown test initially, and thereafter, once every four years, and at changes of ownership. However, cross-connection tests may be performed by MCWD where, when, and if needed.
- C. Backflow prevention assemblies shall be tested annually by the owner, with a copy of the results provided to the District.
- D. For single-family residences receiving recycled water, the owner shall be responsible for providing access and cooperation to the District representative, to perform an annual cross-connection inspection or other system inspections that the District requires. This inspection shall include a visual check of the entire system to verify that no cross-connections have been made. The owner will be responsible for correcting any work, at their sole expense, which violates the District regulations. Complete Front Yard Design Review and Inspection Form (See Appendix 25) and the Back Yard Design Review and Inspection form (See Appendix 26).
- E. No Recycled Water to Back Yard Irrigation. If a back yard irrigation system is installed, verify that it is connected to the potable water system through a backflow prevention device.
- F. Homeowner Information. Provide the homeowner with literature regarding the design and construction and use guidelines of recycled water irrigation systems. (See Appendix 21)
- G. Notice of Violation will be issued if the recycled water system does not comply with MCWD procedures. (See Appendix 27)
- H. Inspect front and back yard annually for proper irrigation system and absence of cross connection.

600.6.9 District Acceptance

Upon completion of construction, final inspection by the District, submission of record drawings, approval of the On-Site Recycled Water User Plan, cross connection test, signing of a recycled water agreement, training, completion of the initial cross-connection test, and payment of any outstanding monies, the project shall be accepted by the District. The on-site Recycle Water Final Inspection Form will be completed. (See Appendix 27) At that time, service connection to the recycled water line may be made. The facilities shall be owned, operated, and maintained by the Owner.

600.6.10 Record Drawings

Record drawings shall be prepared and submitted to the District in accordance with the requirements of Section 300.

600.6.11 Failure to Comply

Failure to comply with any or all of the standards herein is a violation of the District Code and will result in termination of service until the appropriate corrective steps have been taken. Non-compliance with these standards may result in fines and other remedies available to the District.

600.7 INTERIOR USE OF RECYCLED WATER IN NON-RESIDENTIAL BUILDINGS

This comprehensive section, Interior Use of Recycled Water in Non-Residential Buildings, is written to address the planning, design, construction, operation and maintenance procedures, and responsibilities relative to non-residential buildings equipped with dual-plumbed water systems (potable water and recycled water). The recycled water portion of these dual systems provides water for toilet and urinal flushing, and floor drain trap priming. All other water demands in these buildings will be served from the potable water system.

This section is written in five parts to cover the five phases of development for a dual-plumbed non-residential building. These phases are planning, design, construction, start-up, and ongoing operations/monitoring. This five parts address the following:

1. The responsibilities and procedures of the Marina Coast Water District (MCWD).
2. The involvement of the state and county health agencies and the cognizant building authority.
3. The responsibilities and procedures to be followed by building owners, developers, contractors, and building maintenance personnel.
4. MCWD Water Code for the use of recycled water.

It is the intent of this section to ensure the safe and effective use of recycled water, and thereby conserve potable water resources.

600.7.1 Planning Phase

The planning of dual-plumbed non-residential buildings is a combined effort of MCWD, the cognizant building department, state and county health agency representatives, local building developers, and engineers. The processing of a proposed non-residential building follows the steps listed below.

1. Conceptual Design Phase - During this phase of the project, the developer engages the services of their staff or outside consultant to determine the feasibility of constructing a building in the MCWD service area. An assessment of the available water, and sewer service is made, along with the establishment of the requirements for service. In addition, the associated costs of obtaining building department approval, permits, and development credits are determined.

2. Under the current District Water Code, recycled water must be used for non-potable demands in non-residential sites if it is available, or in the determination of MCWD will be available in the near future. Exterior non-potable demands include construction dust control, watering for soil compaction and irrigation. Interior non-potable demands are toilet and urinal flushing, and priming floor drain traps. Interior use of recycled water for non-potable demands must be approved by the local building department as well as the District.
3. Preliminary Design/EIR Phase - In conjunction with the preparation of preliminary design drawings for the project, the developer must secure development permits. This may involve a Conditional Use Permit (CUP) from the local regulatory agency, or an Environmental Impact Report (EIR) for the project. During the CUP or EIR process, a Notice of Preparation (NOP) is prepared and distributed to all affected agencies, including MCWD. Upon the determination that the proposed building is in an area currently being served recycled water, scheduled for conversion to recycled water, or master planned for recycled water, MCWD will respond back to the NOP that for the project to be supplied with an adequate water and sewer system, the building must be dual-plumbed. This response is then incorporated into the EIR or CUP as a condition of approval or required mitigation measure.
4. Design Phase - All recycled water dual distribution systems are designed in accordance with the Uniform Plumbing Code, the District Design Guidelines and the local building official's guidelines for non-potable water.

600.7.2 Design Phase

1. Recycled Water Use Specified - Recycled water supplied by MCWD, which complies with water quality requirements of the California Code of Regulations, Title 22, section 60307(a), may be used to supply toilets, urinals, and to prime floor drain sewer traps. Use is limited in these types of fixtures or facilities in non-residential buildings. Residential buildings are explicitly excluded from the list of approved uses. In all other uses and occupancies, potable water supply is required.
2. Determination to Use Recycled Water - Approval for the above uses in lieu of Uniform Plumbing Code requirements shall be considered and determined by MCWD (as set forth in MCWD's "Water Code for Water, Sewer, and Recycled Water Service") and the cognizant building authority (e.g., the City of Marina Administrative Authority) on a case-by-case basis. Ultimate use approval is reserved for the State Department of Health Services (DOHS) and the Monterey County Health Care Agency (MCHCA).
3. Design Criteria: Off-Site Recycled Water Facilities - Design of all off-site recycled water facilities shall be as set forth herein except as modified for specific on-site projects requiring approved engineers reports (See Appendix 22 for Design notes).
4. Off-Site Plan Check and Approval - Off-site recycled water facility design plans shall be reviewed and approved in accordance with the procedures outlined in MCWD's "Procedural Guidelines for the Construction of Water, Sewer, and Recycled Water Facilities," as last revised.
5. Design Criteria: On-Site Recycled Water Facilities - Design of all on-site recycled water facilities shall conform to the Uniform Plumbing Code as adopted by the responsible building authority and the following prohibitions and limitations:

- The recycled water system shall be separate and independent of any potable water system.
 - Cross-connections between any potable water system and the on-site recycled water system are strictly forbidden.
6. On-Site Plan Check and Approval - The on-site recycled water facility construction plans shall be reviewed and approved in accordance with the procedures outlined in the Procedural Guidelines and General Design Requirements.
 7. Service Agreement with MCWD - During MCWD's review of water utility plans for any development, the developer shall enter into a standard water service agreement with MCWD as set forth in MCWD's "Standard Agreement for the Construction of Water, Sewer, and Recycled Water Facilities," latest edition.

600.7.3 Construction Phase

1. Pre-Construction Conference - Before plumbing construction begins, the developer's contractor shall arrange a pre-construction conference at which will be present the developer's contractor's job superintendent, the plumbing contractor, and MCWD's On-Site Water Systems inspector. The purpose of this meeting will be to explain MCWD's inspection process, review MCWD's construction specifications, and discuss the construction schedule and any known circumstances that might affect job installation.
2. Inspection - The on-site recycled water and potable water systems shall be subject to inspection by MCWD and shall be left open and uncovered until approved by MCWD's On-Site Water Systems inspector, who should be contacted at MCWD's offices.
3. If any part of an on-site water system is to be installed and concealed within walls, ceilings, floors, or below grade prior to plan check approval and/or inspection, that part must be exposed for inspection approval by MCWD before closure. If any portion is completed without MCWD's inspection and approval, that portion not inspected will be re-exposed at the sole cost of the developer.
4. MCWD on-site inspection approval be secured subsequent to final approval of the water systems by the responsible building authority, and issuing of a final use approval.
5. Record Log - MCWD's Water Systems inspector will maintain a record log of all inspections for the building project. The record log will become a permanent part of MCWD's file for that project. The record log will consist of:
 - A. Photographs - Photographs will be taken of the completed recycled water facilities on each floor of the building to document proper installation. Each photo will include a sign, which clearly indicates the name of the project, the number of the floor, and the date of the inspection. The developed photographs will be placed in clear plastic sleeves and kept in MCWD's project file.
 - B. Inspection Reports - A written record of each inspection will be kept on a special, triplicate, carbonless-transfer inspection report form prepared by MCWD. All original copies will become a part of MCWD's project file. Copies of all inspection reports will be provided to

the contractor's job superintendent, the various health agencies, and the responsible building authority, as requested.

6. Construction Specifications - Construction specifications for all on-site building recycled water systems shall be as set forth in Section 600.17, Appendix Section C, entitled, "Information Required on Plans."

600.7.4 Start-Up Phase

1. Initial Water Service - The on-site building recycled water system shall initially be filled, pressure tested, and operated with potable water.
2. Cross-Connection Testing - The following testing sequence will be followed for buildings that will have the internal recycled water systems connected to MCWD's recycled water supply before the building is occupied, and under certain subsequent circumstances.

Before the building can be occupied, and before the responsible building authority will issue final use approval, the recycled water system must pass a thorough a cross-connection test. This same testing procedure will be used during the building's subsequent operation and maintenance under circumstances discussed in Part 5, Section A. The cross-connection test will be conducted under the supervision of an AWWA-certified Cross-Connection Control Program Specialist from the Water Systems Management Section of MCWD. The test will be performed in the presence of representatives of DOHS and MCHCA, representatives of the responsible building authority, and representatives of the building owner. MCWD will coordinate the scheduling of the test. Procedures for the cross-connection test shall be as set forth below:

- A. The recycled water to the building will be shut off at the recycled water meter. The recycled water riser will be drained, and the recycled water system will remain de-activated for a period of 24 hours.
- B. At the end of the 24-hour shutdown period, test all recycled and potable water fixtures, floor-by-floor, for cross-connection by operating each fixture and checking for flow or no flow in all restrooms, and where there are recycled and potable water supplied fixtures.
- C. If there is no flow detected in any of the fixtures (indicating no cross connection), reactivate the recycled water riser.
- D. The potable water to the building will be shut off at the back-flow device. The potable water riser will be drained, and the potable water system will remain de-activated for a period of 24 hours.
- E. At the end of the 24-hour shutdown period, test all potable and recycled water fixtures, floor-by-floor, for cross connection by operating each fixture and checking for flow or no flow in all restrooms, and where there are potable and recycled water supplied fixtures.
- F. If there is no flow detected in any of the fixtures (indicating no cross connection), reactivate the potable water riser.

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- G. For new installations only, disconnect the recycled water riser from the potable water pipeline, remove the reduced-pressure principle backflow prevention assembly (RPPA) at the potable water connection, and connect the recycled water riser to MCWD's recycled water supply.

MCWD will provide written verification of successful test results to the state and county health agencies and the cognizant building authority.

- 3. Response to Confirmed Cross Connection - In the event that a cross connection is discovered, the following procedure will be immediately activated:
 - A. Shut down the recycled water supply to the building at the meter and drain the recycled water riser.
 - B. Shut down potable water to the building at the meter.
 - C. Notify both the state and county health agencies, followed by a written notice within 24 hours. This notice will include an explanation of the nature of the cross connection, the date and time discovered, and the steps that were taken to mitigate the cross connection.
 - D. Uncover and disconnect the cross connection.
 - E. Shock the potable water system with 50 ppm of chlorine for 24 hours.
 - F. Flush the potable system after 24 hours and perform standard bacteriological testing. If test results are acceptable, recharge the potable water system in accordance with MCWD standards.
 - G. Re-test the building following the procedures listed in Section B above.
 - H. Obtain final approval from the state and county health agencies and the building authority and put the recycled water supply back into service.
- 4. Final Approval and Activation of Recycled Water Service - When all requirements listed below have been met, the on-site building recycled water system will then be filled and placed into operation with recycled water under the supervision of representatives of MCWD's Water Systems Section.
 - A. Both the potable and recycled on-site systems must have received plan approval, and must have been constructed and passed inspection as set forth in the provisions of this section.
 - B. Both the potable and recycled on-site systems must have passed the initial cross-connection test.
 - C. Final approval to use recycled water must be received from DOHS or MCHCA.
 - D. After health agency approvals, all signs must be posted in restrooms, equipment rooms, and plumber's closets, and all recycled water control valves and appurtenances must be sealed

and/or tagged as set forth in this section. Signs, seals, and tags shall be installed under the supervision of MCWD.

- E. Before recycled water is put into service, the MCWD inspector shall meet with the developer's/owner's designated user supervisor for building maintenance to discuss operating procedures and responsibilities.

600.7.5 Operation and Maintenance

- 1. Inspection and Testing Frequencies - Ongoing operation and maintenance of non-residential buildings with interior use of recycled water includes both cross-connection control inspection and testing. Inspections will occur annually, with procedures as described below. Testing will occur as often as annually, but no less often than once every four years upon approval by state and local health agencies, with procedures as described below.

Determination of cross-connection control testing frequency will be based on a combination of factors: particular facility construction and recycled water use features, established facility inspection and testing performance history, cooperation by on-site staff and/or representatives, and ongoing evaluation by MCWD staff in concert with state health agency representatives. The initial testing frequency will not be less than annual. Subsequent lower or higher frequencies will be based on the above-noted factors and mutually declared and documented by MCWD staff and health agency representatives at the close of the previous testing event.

Water system de-activation duration during testing will depend generally on testing frequency. For annual testing frequencies, a 1-hour water system de-activation will generally be adequate. For testing frequencies of greater than one year, a 24-hour water system de-activation will generally be adequate. Alternative water system de-activation duration will be used only by mutual consent of MCWD staff and health agency representatives.

- 2. Cross-Connection Testing - All buildings with interior recycled water systems will undergo a cross-connection test in accordance with the determinations of Section A above. Prior to commencing the cross-connection test, a dual system inspection will be conducted by MCWD's Cross-Connection Control inspector and the cognizant building authority in the presence of representatives of the state health agencies and representatives of the building owner, as follows:
 - A. Check meter location of the recycled water and potable water systems; verify that no modifications have been made, or cross connections are visible.
 - B. Check the potable water RPBP.
 - C. Check all pumps and equipment, equipment room signs, and exposed piping in the equipment room.
 - D. Check all recycled water control valves to make sure that seals are still in place and intact.
 - E. Check all valve control door signs to verify that none has been removed.
 - F. Check all restroom entrance signs to make sure they are in place and visible.

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- G. Check all plumbers' closets and verify that all signs are in place.

For those circumstances requiring cross-connection testing with a 24-hour system de-activation, the procedures of Section 600 will be followed. For those circumstances requiring a 1-hour de-activation, the following procedures will be used:

The following testing sequence will be followed for buildings that will have the internal recycled water systems connected to MCWD's recycled water supply after the building is occupied, and under certain subsequent circumstances.

After the building can be occupied, but before the internal recycled water system can be connected to MCWD's recycled water supply, the recycled water system must pass a thorough a cross-connection test. Buildings that have been previously approved for internal recycled water use, and have been tested for cross connections will also use this sequence, under circumstances discussed in Section A above. All testing will be conducted under the supervision of an AWWA-certified Cross-Connection Control Program Specialist from the Water Quality Department's Cross-Connection Control Group of MCWD. The test will be performed in the presence of representatives of DOHS and MCWD, representatives of the responsible building authority, and representatives of the building owner. MCWD will coordinate the scheduling of the test. Procedures for the cross-connection test shall be as set forth below:

- A. The recycled water to the building will be shut off at the recycled water meter. The recycled water riser will be drained, and the recycled water system will remain de-activated for a period of 1 hour.
- B. At the end of the 1-hour shutdown period, test all recycled and potable water fixtures, floor-by-floor, for cross connection by operating each fixture and checking for flow or no flow in all restrooms, and where there are recycled and potable water supplied fixtures.
- C. If there is no flow detected in any of the fixtures (indicating no cross connection), reactivate the recycled water riser.
- D. The potable water to the building will be shut off at the back-flow device. The potable water riser will be drained, and the potable water system will remain de-activated for a period of 1 hour.
- E. At the end of the 1-hour shutdown period, test all potable and recycled water fixtures, floor-by-floor, for cross connection by operating each fixture and checking for flow or no flow in all restrooms, and where there are potable and recycled water supplied fixtures.
- F. If there is no flow detected in any of the fixtures (indicating no cross connection), reactivate the potable water riser.
- G. For new installations only, disconnect the recycled water riser from the potable water pipeline, remove the reduced pressure principle backflow prevention assembly (RPPA) at the potable water connection, and connect the recycled water riser to MCWD's recycled water supply.

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MCWD will provide written verification of successful test results to the state and county health agencies and the building authority. This verification will be accompanied by the declaration, mutually agreed among MCWD and the health agencies, of subsequent testing frequency for the subject site.

3. Emergency Response to Confirmed Cross Connection - In the event that a cross connection is discovered, the procedures detailed in section 600.14.4, START-UP PHASE, Section B, will be immediately followed.
4. Cross-Connection Inspection - In addition to the detailed cross-connection control testing described herein, MCWD's Cross-Connection Control Specialists will perform annual inspection of all buildings with dual-plumbed systems. This will consist of at a minimum, visual inspection of pump rooms, all bathrooms, signs, tags, etc. Other elements of the annual inspection may consist of, but are not necessarily limited to, the following specific items:
 - A. Run random water sample tests (laboratory samples) on recycled water and potable water.
 - B. Check walls for visible repairs that might indicate that plumbing changes may have occurred.
 - C. Check plumber's closets to see if valve seals have been broken.
 - D. Check with the user supervisor to ask whether any routine operations or maintenance work has been performed on plumbing systems.

MCWD personnel will keep a record of all inspections, which will become a part of MCWD's project file for each related building. As a general guideline, MCWD will randomly select and inspect 10 percent of the water related facilities within a building and will consider the results.

5. User Supervisor Responsibilities - Each building provided with recycled water for the flushing of toilets, urinals, and floor drain trap priming shall have a user supervisor designated by the owner/developer to maintain strict control over interior recycled water usage. MCWD will provide the name of this person to the responsible building authority and to the state and county health agencies. The user supervisor is responsible for the following:
 - A. Maintaining strict control over the building's water systems.
 - B. Controlling cross connections.
 - C. Immediately informing MCWD's Engineering Department at (831) 384-6131 of any water system failures or emergency shut downs.
 - D. Informing MCWD's Engineering Department in advance of scheduled shut-downs for system maintenance.
 - E. Informing and providing MCWD's Engineering Department with plans for proposed changes to the plumbing systems.

MARINA COAST WATER DISTRICT

6. Non-Compliance - Failure to comply with the published "MCWD Water Code," and with the provisions of SECTION 600.17, shall constitute the basis for terminating recycled water service to the building for all approved uses. The specific procedures and conditions for the termination of recycled water service are contained in the service agreement, and in the "MCWD Water Code."
7. MCWD Records - MCWD will maintain a database and written records of all dual-plumbed non-residential buildings in the MCWD service area in order to document, track, and schedule all tests. Reports will be provided to the state and county health agencies and the responsible building authority for all dual-plumbed facilities in the MCWD service area.

END OF SECTION

MCWD Recycled Water Project



Attachment D.2 Standard Forms and Site Specific Details

RECYCLED WATER DEMAND ESTIMATES		FIRE SUPPRESSION	
Name or Description of Site:		Peak Design Flow	GPM
Estimated Annual Use	<input type="checkbox"/> CCF <input type="checkbox"/> Gallons	Service Line Size in inches	
Peak Use in Gallons/Minute (GPM)			
Hours of Use			
Days of Use			
<input type="checkbox"/> Dry Season Only <input type="checkbox"/> Year-round			
ATTACHMENTS <input type="checkbox"/> Site Drawing (all projects) <input type="checkbox"/> Impoundment O&M Plan (if serving a reservoir or pond) <input type="checkbox"/> Other:			
IS RECYCLED WATER TO BE PIPED OR USED WITHIN AN OCCUPIED BUILDING? <input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, a Building Permit is required, and Engineering Report must be submitted.)			
RECYCLED WATER USER SUPERVISOR		APPLICANT	
I have read and understand the <i>Guidelines for Recycled Water Users</i> . I will operate the recycled water system in compliance with all conditions of the Permit to Use Recycled Water.		I designate the named person as the Recycled Water User Supervisor in accordance with the <i>Guidelines for Recycled Water Users</i> . I am a principal owner of this site or a duly authorized representative and certify that the information contained in this application is true and correct to the best of my knowledge.	
Print Name _____		Print Name _____	
Signature _____		Signature _____	
Date _____		Date _____	

Note 1: Recycled Water User Supervisor: It is the responsibility of the User to provide surveillance and supervision of the recycled water system in a way that assures compliance at all times with the Guidelines. To accomplish this, the User shall designate, with the approval of the District, Recycled Water User Supervisor (User Supervisor) to provide liaison with the District. This person may represent the owner, tenant, or property manager as appropriate; however, he/she must be responsible for the recycled water system at the site and available at all times, with authority to carry out any requirements of the Guidelines.

Refer to the Section 2 of the Recycled Water Program Manual, "*Guidelines for Recycled Water Users*" for more comprehensive description of the responsibilities of the recycled water supervisor.

Copies: _____ Field Inspector
 _____ File (Original)

INDEM

MCWD RECYCLED WATER PROGRAM PERMIT TO USE RECYCLED WATER

PERMIT NO:

ISSUED TO:

FOR USE AT:

EFFECTIVE DATE:

EXPIRATION DATE:

The above named applicant is hereby authorized to use recycled water subject to compliance with: a) the Marina Coast Water District's Guidelines for Recycled Water users; b) applicable state regulations related to the use of recycled water; c) operation in accordance with the current *Application for a Permit to Use Recycled Water*; and, d) the attached additional terms and conditions.

The applicant shall report any changes (permanent or temporary) to the premises or operation that significantly change the volume or uses of recycled water, or any change in ownership of the facility.

This permit may be revoked prior to the expiration date if found to have been obtained through submittal of false information or if there is unapproved deviation from the terms and conditions under which it has been granted. This permit is issued solely to the facility named above for the operation and ownership in effect at the time of the application and is not transferable.

For the Marina Coast Water District
Recycled Water Program
Phone (831) 384-6131

Marina Coast Water District
Recycled Water Program
Telephone: (831) 384-6131

**PERMIT TO USE RECYCLED WATER
ADDITIONAL TERMS AND CONDITIONS**

Permit No:

Issued to:

Effective Date:

Monitoring Requirements:

- Recycled Water Customer Self-Monitoring Frequency _____
 - Self-monitoring form attached
- District Monitoring Frequency _____

Training of Customer's Recycled Water Supervisor:

- Received overview of Water Reuse Program.
- Received training from representative of Water Reuse Program.

Initial Permit Conditions:

On-going Permit Conditions:

MARINA COAST WATER DISTRICT
11 Reservation Road
Marina, CA 93933
(831) 384-6131



PLAN REVIEW CHECKLIST

APPLICANT: Please complete the applicable checklist(s) below. A complete review package, as stated below, must be submitted before the review time begins. After review is complete and MCWD issues its approval, submit to the City a copy of the plans and a copy of MCWD receipt for plan check deposit.

APPLICANT: _____

ADDRESS: _____ APN: _____

DESCRIPTION: _____ PROJECT NO: _____

PLAN CHECKER ASSIGNED: _____

APPLICANT: Submit applicable checklists with plans for review. Initial in the “App. Init.” column to indicate those items which are complete. Enter N/A for those items you believe are not applicable.

REVIEWER: The satisfied items, where applicable, are indicated by checkmarks. Items not applicable, or not required, are indicated by “N/A” or “N/R”. Unmarked items denote existing deficiencies which must yet be satisfied.

Check as applicable:

- Part A: Administrative Requirements
- Part B: Format Requirements
- Part C: Requirements for Domestic (Potable) Water Facilities
- Part D: Requirements for Recycled Water facilities
- Part E: Requirements for Sewer Facilities
- Part F: Requirements for Subdivision (Tract/Parcel) Maps
- Part G: Requirements for Landscaping and Irrigation
- Part H: Water Conserving Appliances and Fixtures
- Part I: Requirements for Hot Water Recirculation Systems

PART D: REQUIREMENTS FOR RECYCLED WATER FACILITIES

Reviewer Name:	
Results ____	<input type="checkbox"/> Approved <input type="checkbox"/> Approved with Exceptions <input type="checkbox"/> Not Approved. Revise and Resubmit

No.	Item	App. Init.	Rev. Init.	Reviewer Comments
D-01	Is the preparer aware that public recycled water mains are approved in the subdivision master plan?			
D-02	Is it stated whether the recycled water system within the project is “public” (MCWD owned and maintained) or “private” (property owner owned and maintained)? The jurisdictional boundary must be clearly delineated.			
D-03	If the recycled water system is “private”, is it depicted as showing one or more master meters for the entire site, located in a public right-of-way or in an MCWD easement at the property entrance?			
D-04	Recycled water for fire hydrants is prohibited. Are fire hydrants shown connected only to the potable water system (instead of to the recycled water system)?			
D-05	Recycled water service laterals do not require reduced pressure principle (RPPD) backflow devices. Are recycled water service laterals called out w/o RPPD’s?			
D-06	Is preparer of plans aware that watering of landscape areas requires the use of recycled water (where such facilities exist)? Plans must be shown to reflect landscape areas being served by recycled water, where recycled water is available.			
D-07	Are high-rise buildings (those 55-feet and taller) using recycled water for toilet flushing, where recycled water is available?			
D-08	Are crossing invert elevations given when a recycled waterline crosses another pipeline?			
D-09	Are section views of all recycled water mains (which cross sewer mains) shown in the profile view of the sewer main?			
D-10	Do recycled water mains and water service laterals conform to MCWD Standards (with respect to the following)?			
a.)	Correct size (Mains: 4”; Service Laterals: 1”, 2”, 4”).			

No.	Item	App. Init.	Rev. Init.	Reviewer Comments
b.)	Correct material (DIP Class 250, or PVC Class C-900 for mains and 4" laterals; Copper or Polyethylene for 1" and 2" laterals).			
c.)	Acceptable radius of curvature of pipeline layout (for main lines, allowable curvature dependent upon pipe size and material; service laterals must be straight).			
d.)	Minimum depth of cover (Public Facilities: 53" for 4", 60" for 6" and larger; Private Facilities: governed by local building codes or by Uniform Plumbing Code).			
e.)	Horizontal clearance with other utilities (minimum 10 feet from storm drain, domestic water, and hydrocarbon; otherwise protective casing or higher grade pipe material required).			
f.)	Vertical clearance with other utilities (minimum 1 foot without joints, with recycled waterlines below domestic waterlines).			
g.)	Distance off curb face (4 feet or 8 feet for recycled waterlines, where possible, but never at 6 feet to avoid mistaking with potable).			
D-11	Are street station numbers shown for all appurtenances coming off of main line (e.g., for blowoffs, service laterals, valves, etc.) where applicable?			
D-12	Are easements for recycled water facilities properly sized? Recycled waterline easements to MCWD must be a minimum of 20 feet wide, and must provide at least 10 feet of clearance around all above-ground facilities. Actual easement width shall be twice the average pipe depth, rounded upward to the nearest 10 feet.			
D-13	A minimum of 2 adjacent meters are required for manifolding recycled water meters. Otherwise each meter must come off the main line with individual service laterals. Do the manifolds depicted on the plans each have a minimum of 2 meters?			
D-14	Recycled water service laterals cannot be run across an adjacent property line. Is this requirement met?			

No.	Item	App. Init.	Rev. Init.	Reviewer Comments
D-15	Water service laterals cannot come off of other water service laterals. Is this requirement met?			
D-16	Are air vacuum release valves installed at all water main high points for 8-inch pipe and larger?			
D-17	Are all existing MCWD recycled water facilities completely and correctly depicted?			
D-18	Are all existing and proposed points of connection to existing recycled water facilities properly depicted?			
D-19	Are all proposed recycled water facilities in conformance with the appropriate MCWD Subdivision Master Plan?			
D-20	Are MCWD's conditions of approval on the subdivision map and "will-serve" letter satisfied?			
D-21	Hose bibs on recycled water facilities are forbidden. Is this requirement complied with?			
D-22	Potable and recycled water facilities are not to be installed in the same trench, and DDW approval is required if horizontal separation is less than 10 feet. Is this requirement complied with?			
D-23	Cross-connections between potable water facilities and non-potable water facilities (including sewer) are forbidden. Is this requirement complied with?			
D-24	Are irrigation/landscape points of connection (P.O.C.'s) clearly identified and called out on the civil street improvement drawings?			
D-25	Additional requirements satisfied (as follows)?			
a)				
b)				
c)				
d)				

LOCAL CONTACTS

SITE:

LOCATION:

SUPERVISOR:

PHONE:

MCWD CONTACTS

WATER OPERATIONS:

PHONE:

SUPERVISOR:

PHONE:

RECYCLED WATER INSPECTOR:

PHONE:

DISTRICT ENGINEER:

PHONE:

MARINA COAST WATER DISTRICT RECYCLED WATER PROGRAM

INSTRUCTIONS for completing SITE-SPECIFIC RETROFIT REQUIREMENTS FORM

PURPOSE

The District inspector uses the *Evaluation of Retrofit Needs* Form for guidance and documentation of the inspector's field evaluation of a prospective recycled water use site. The inspector then identifies those changes or improvements that need to be made at a Customer's site on the *Site-Specific Retrofit Requirements* Form, which is given to the user. These instructions connect the two forms and by explaining what needs to be done on *Site-Specific Retrofit Requirements* when a shaded box on the *Evaluation of Retrofit Needs* form is checked.

These two forms, plus the permit application, are used for existing sites which are converting (retrofitting) to recycled water. The forms are designed primarily for irrigation sites, but can be applied to other retrofit situations. For new construction, the *Use Area Service Plan Checklist* and corresponding *Field Verification of Recycled Water Use Area Service Plan* forms will generally be used instead, along with the permit application.

The two forms (*Evaluation of Retrofit Needs* and *Site-Specific Retrofit Requirements*) are divided into parts which are paralleled in each form. A check in a shaded box on the *Evaluation of Retrofit Needs* indicates that something Customer's site needs to be modified before receiving recycled water. The specific action is called out on the *Site-Specific Retrofit Requirements* form.

**If this is checked on
*Evaluation of Retrofit Needs***

**Do this on
*Site-Specific Retrofit Requirements***

Part A. Separation of Recycled Water and Potable Water Systems

#3 No	Check boxes #1 and/or #2. If necessary, describe deficiencies in #4 (notes).
Notes: If there is any concern about potential cross-connections at the site	Check box #3, discuss in #4, add Preliminary Cross-Control Procedure" as Attachment

Part B. Irrigation Equipment

#2 Yes	Check #1, list repairs noted, be specific
#4 No	Check #2
#6 Yes	Check #3
#7 Yes	Under Part E Signage: Check #2
Notes	#4 List anything else which has to do with bringing the irrigation system into good working condition.

Part C. Runoff and Overspray

#1 Yes	Check #1 and fill in location
#2 Yes	Check #2 and fill in location
#3 Yes, for each subpart	Check #3 and the subpart box, fill in location
#4 Yes	Check #4 and fill in location
#5 Yes	Check #5 and fill in location
#6 Yes	Check #6 and fill in location
Notes	#7, add any other changes to keep runoff and overspray in the use area.

Part D. Backflow Prevention

#1 Yes	Check #1
#2 Yes	Check #2
#4a, #4b, if either is checked under <i>potable service</i>	Check #6, add "replace with RP"
#4b, #4c, #4d, if checked under the <i>irrigation system</i>	Unless there will be chemical injection to the RW system, or some other potential hazard, these devices are not required on the RW service. Check #3

If this is checked on <i>Evaluation of Retrofit Needs</i>	Do this on <i>Site-Specific Retrofit Requirements</i>
---	---

Part E. Signage

#1 Yes	Check #1, and first box. List use areas accessible to the public
#2, any markings	Under #1, indicate where and how many signs for the specific locations
#3, each language check	#3, mark same languages
#4, each language check	#4, mark same languages

Part F. Recycled Water Storage Impoundments

#1 Yes	Check #1
--------	----------

Part G. Wells

#2a Yes	Check #1
#2b Yes	Check #2
#3a Yes	Check #3 and discuss site specific backflow prevention requirements with District's Water Section
#4a Yes	Check #3 and discuss site specific backflow prevention requirements with District's Water Section

Part H. Non-Irrigation Recycled Water Use

#1 Yes	Check #1, and add report outline as attachment
#2 Yes	Check #2, and add report outline as attachment

Attachments

Check appropriate boxes

**MARINA COAST WATER DISTRICT RECYCLED WATER PROGRAM
EVALUATION OF RETROFIT NEEDS
(To be completed by District)**

Site Name _____

Site Address _____

Date of Site Visit _____

Form Completed by _____

Accompanying Site Representative _____

Site Plan Attached? _____

Yes

No, why: _____

Instructions to Field Inspector: The checking of any shaded box indicates that action is required and will need to be described in the form entitled "Site Specific Retrofit Requirements."

A. SEPARATION OF RECYCLED AND POTABLE WATER SYSTEMS

- | | | |
|---|-------------------------------------|---------------------------|
| 1. Does the irrigation system have its own (separate) service from the main? | <input type="radio"/> No | <input type="radio"/> Yes |
| 2. If yes, does irrigation system have multiple points of connection to the main? | <input type="radio"/> No | <input type="radio"/> Yes |
| 3. Does the Customer have adequate as-built drawings of the irrigation system? | <input checked="" type="radio"/> No | <input type="radio"/> Yes |
| 4. Is any portion of the irrigation system not designated for retrofit? | <input type="radio"/> No | <input type="radio"/> Yes |

If yes, locate on site plan and describe: _____

Notes regarding potential cross-connections, adequacy of information on piping systems, and any special considerations, such as multiple connection points:

B. IRRIGATION EQUIPMENT

- What material is the irrigation system piping?
 PVC, schedule: _____ other: _____
- Does the irrigation equipment appear to be in disrepair and poor condition? No Yes
- Approximate age of system? ___ years
- Is irrigation system automatically controlled? No Yes
 If yes, make and model of controller: _____
 If no, how then? _____
- Are there hose bibs on the site? No Yes
- Are any hose bibs on the irrigation system? No Yes
- After conversion, will there be hose bibs on the potable water system? No Yes

Notes: Special Repair Requirements: _____

C. RUNOFF AND OVERSPRAY

Turn on irrigation system and observe runoff patterns. Record locations of runoff on site map.

Identify Location

1. Does runoff go beyond RW use area? No Yes _____
2. Is runoff excessive? No Yes _____
 Due to:
 ___ Slopes, berms, raised areas ___ Heavily compacted ___ Bare ground
3. Does spray, mist or runoff enter a:
 dwelling No Yes _____
 designated outdoor eating area No Yes _____
 playgrounds No Yes _____
 pools No Yes _____
 food handling facility/cooking areas No Yes _____
 adjacent property No Yes _____
4. Does spray, mist or runoff come in contact with drinking fountains? No Yes
5. Are there areas of overspray? No Yes
 ___ Narrow parking and planting strips
 ___ Oddly shaped areas
 ___ Other: _____
6. Does the site appear to have poor drainage? No Yes
 Indicated by:
 ___ Standing water ___ Flooding ___ Soggy areas ___ Other: _____
 Where?

Notes: _____

D. BACKFLOW PREVENTION

1. After conversion to AW, will the site continue to receive potable water?
(i.e., is there a domestic demand in addition to irrigation?) No Yes
2. Is the Customer planning to use potable water as a backup to the RW supply? No Yes
3. Does the site have backflow prevention devices? No Yes
4. Does the site have any of the following backflow prevention devices on the:
- | Show location and number on the site plan. | <u>potable service</u> | <u>irrigation</u> |
|---|------------------------|-----------------------|
| 4a. pressure vacuum breaker | <input type="radio"/> | <input type="radio"/> |
| 4b. double check valve assembly (DC) | <input type="radio"/> | <input type="radio"/> |
| 4c. reduced pressure principal backflow prevention (RP) | <input type="radio"/> | <input type="radio"/> |
| 4d. air gap separation (AG) | <input type="radio"/> | <input type="radio"/> |

Notes: _____

—

—

—

E. SIGNAGE

1. Are any of the RW use areas accessible to the public (i.e., non-employees)? No Yes

If yes, show on site map.

2. Recommend possible location for signs or other forms of RW identification, note on site map.

Typical locations:

___ area where public can enter RW use area.

___ quick couplers (former hose bibs)

___ meters ___ valves & valve boxes ___ auto. controls (tags, stickers, embossed covers)

Total number of signs ___

3. What is the primary language of the landscape workers/gardeners?

English Spanish Mandarin Cantonese

other: specify: _____

4. For the facility's maintenance workers (plumbers, mechanics), what is the primary language?

English Spanish Mandarin Cantonese

other: specify: _____

Notes: _____

F. RECYCLED WATER STORAGE IMPOUNDMENTS

1. Does the Customer propose to store recycled water on site No Yes

If no, skip to Section G

If yes, locate impoundment on map and answer the rest of the questions.

2. What is the impoundment(s) used for? (mark all that apply)

to store irrigation water, non-body contact

decorative water feature, non-body contact

decorative fountain, non-body contact

non-body-contact recreation (boating, fishing)

body-contact recreation

other _____

3. What does impoundment consist of?

unlined earthen pond steel tank

pond lined with _____ other: _____

4. Is impoundment covered? No Yes, with: _____

5. Impoundment dimensions: ___ feet deep surface: ___ feet by ___ feet

6. Capacity of impoundment: ___ gallons

7. Does the impoundment have any mixing equipment? No Yes

**MARINA COAST WATER DISTRICT RECYCLED WATER PROGRAM
SITE-SPECIFIC RETROFIT REQUIREMENTS**

Site Name and Address:	Account No:	FINAL APPROVAL BY DISTRICT Site approved to use RW: ___ yes Date: Inspectors: Signature:
Prepared By:		
Title:	Phone:	
Date of "Evaluation of Retrofit Needs" site visit:	Date Site-Specific Retrofit Requirements delivered:	

The State of California regulates the uses of recycled water. The Marina Coast Water District surveyed your site. This document lists what changes, if any, need to be made before the site can be permitted for use of recycled water. The District may provide assistance in making the corrections. You are encouraged to contact the Water Reuse Program to discuss such assistance.

A. SEPARATION OF RECYCLED WATER AND POTABLE WATER SYSTEMS

1. Drawings which show the current piping system must be prepared. These drawings must show points of connection to potable system. As-built drawings preferred, if available.

2. Plans which show where and how the recycled water system will be separated from the potable water system need to be prepared.

3. Arrange a preliminary cross-connection test and notify the District by calling (831)384-6131.

4.
Other: _____

B. IRRIGATION EQUIPMENT

1. The following irrigation equipment requires repair:

2. The irrigation system needs to be converted from manual to an automatic control. (The controller should be capable of limiting irrigation to the nighttime hours.)

3. Review the need for each hose bib. All unnecessary hose bibs need to be removed and capped. Remaining hose bibs on recycled water system must be replaced with District-approved quick couplers.

4.
Other: _____

C. RUNOFF AND OVERSPRAY CORRECTIONS

1. Corrections (such as the installation of berms) need to be made to keep runoff in use area in the following location:

2. Adjust or replace sprinklers heads to prevent spray from hitting non-landscaped ground in the following location:

3. Adjust sprinkler or irrigation system to prevent spray, mist or runoff from entering the following specific locations:
 dwelling:

designated outdoor eating area:

food handling facility:

adjacent property:

4. Drinking fountains in the following locations need to be covered or replaced with District approved protected fountains:

5. Sprinklers need to be modified in the following locations to reduce overspray:
 narrow parking planting strip:

oddly shaped area:

6. Drainage needs to be improved in the following areas to minimize standing water, flooding:

7.

Other: _____

D. BACKFLOW PREVENTION

1. A Reduced Pressure Principal Backflow Prevention device (RP) needs to be on the water service, per MCWD standard details.

2. An air gap separation between the potable water system and the recycled water system needs be installed or created.

3. Remove all backflow prevention from the irrigation system.

4. A reduced Pressure Principal Backflow Prevention Device needs to be installed on the well discharge line.

5. An air gap separation between the well discharge and the recycled water system needs to be installed or created

6.

Other: _____

E. SIGNAGE

1. Customer-provided recycled water use signs need to be installed at the following locations (Customer shall provide the signs):

Use areas accessible to the public:

On all recycled water:

meters, number: _____ valve boxes, number: _____
valves, number: _____ automatic controls, number: _____
quick coupler, number: _____ other: _____

2. Hose bibs on the potable system should be identified as "potable".

3. Words on external equipment signs shall be in English and Spanish or Other _____

4. Words on internal equipment signs shall be in English and Spanish or Other _____

F. RECYCLED WATER STORAGE IMPROVEMENTS

1. A detail description of the on-site recycled water storage impoundment needs to be prepared. See Section 4 of DDW Guidelines for the Preparation of an Engineering Report for the Production, Distribution, and Use of Recycled Water.

2.

Other: _____

G. WELLS

1. Recycled water cannot be used within 50 feet of a domestic well. You have the option of choosing one of the following actions. Notify the Water Reuse Program of which action you intend to take.

- A. Modify the irrigation system so only potable water is used for Irrigation within 50 feet of the well, or
- B. Change landscaping so there is no irrigation within 50 feet of the well, or
- C. Properly abandon the well per applicable regulations, or
- D. Prove that all of the following five conditions are met:
 - a. A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.
 - b. The well contains an annular seal that extends from the surface into the aquitard.
 - c. The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.
 - d. The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
 - e. The owner of the well approves of the elimination of the buffer zone requirement.

2. A recycled water impoundment must be beyond 100 feet of a domestic well. You have the following options:

- A. Abandon impoundment. or
- B. Move impoundment beyond 100 ft from a domestic well, or
- C. Properly abandon the well per applicable regulations.

3. The following type of backflow prevention device needs to be added to the well discharge line:

H. FOR SITES PROPOSING TO USE RECYCLED WATER FOR USES OTHER THAN IRRIGATION

1. Non-irrigation outdoor uses. A report that describes in detail the proposed non-irrigation outdoor uses of recycled water must be prepared. See Section 4 of DDW "Guidelines for the Preparation of an Engineering Report for the Production, Distribution, and Use of Recycled Water".

2. Indoor uses of recycled water. If use of recycled water within a building is proposed, a report, as outlined in the attached "Requirement for Engineering Reports for Dual Plumbed Systems", must be prepared.

I. OTHER REQUIREMENTS

Describe: _____

MARINA COAST WATER DISTRICT RECYCLED WATER PROGRAM
FIELD VERIFICATION OF RECYCLED WATER SERVICE PLAN
(To be completed by District)

SITE WHERE USE IS PROPOSED	REVIEW STATUS
Name or Description of Site:	Data of Site Inspection:
Location or Address:	Inspected By: <input type="checkbox"/> Approved <input type="checkbox"/> Not Approved (see Section D)

Contact Person Name and Telephone: _____

THIS IS New Construction Existing Facility Converting to Recycled water Use
 THE SITE AND PIPING PLANS ARE Separate Combined Number of Sheets _____

A. FIELD VERIFICATION OF SITE PLAN

ARE THE FOLLOWING ACCURATELY SHOWN ON THE "AS-BUILT" SITE PLAN?

Yes	No	N/A	<u>General</u>		Yes	No	N/A	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All Buildings on the Site		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Adjacent Streets
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The Boundaries of the Intended Use Area		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Locations of All Major Improvements on the Site
<u>Public Facilities Supplied with Recycled Water or Potable Water Source</u>					PLANS INDICATE NONE <input type="checkbox"/>			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Drinking Fountains		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Swimming and Wading Pools
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Restrooms		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Decorative Fountains
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Outdoor Eating Areas		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Showers
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Snack Bars		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____
<u>Water Features Within 100 feet of Site Plan (may be off property)</u>								
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Wells		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reservoirs
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lakes		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Storage Tanks
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ponds		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____

B. FIELD VERIFICATION OF PIPING PLANS

ARE THE FOLLOWING ACCURATELY SHOWN ON THE "AS-BUILT" PLANS?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Potable Water Service Connection(s)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fire Service Connection(s)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Recycled Water Service Connection(s)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The complete recycled water system(s)					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The potable system in the vicinity of the recycled water connection					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All sources of recycled water and potable water					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The location and type of all existing and new backflow prevention devices					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The location and type of all existing and new water meters					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The location of outdoor hose bibs, quick couplers and other points of ready access to recycled or potable water systems					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The location of irrigation controllers, valves, and fixtures (sprinklers, etc.)					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other relevant items: _____					

C. VERIFICATION OF COMPLIANCE REQUIREMENTS

BACKFLOW PREVENTION DEVICES

Note: All premises served by both potable water and recycled water shall have an air gap or reduced pressure principle backflow prevention device (RP) on the potable water supply.

Yes No N/A

- Are the potable water and recycled water systems completely separated, with no cross connections?
- Are the proper backflow prevention devices installed in the proper locations for protection of the public potable water distribution system, per MCWD standard details? (Reduced pressure principal backflow prevention devices should be located as shown in MCWD standard details and at least 12 inches above grade).
- If a backflow device on the recycled water system was required, was it properly installed?
- If additional backflow devices were required to protect the on-site potable water system, were the devices properly installed?

Comments: _____

WELLS

- Are irrigated use areas separated by at least 50 feet from any domestic water supply well or water supply reservoir?
- If there are wells located on-site or near the use site, are the wells separated from all recycled water irrigation use areas by at least 50 feet and from all recycled water impoundments by at least 100 feet?

Comments: _____

CONSTRUCTION DETAILS

- Was purple pipe or wrap used for recycled water piping?
- Are the appropriate types and locations of signs and other identification devices in place?
- Are there any hose bibs shown on the recycled water system? (Hose bibs are not permitted on the recycled system)
- If quick connects are used on the recycled system, are they of a different type than on the potable system?

Comments: _____

D. FIELD VERIFICATION - SUMMARY

- "As-built" Plans are representative of recycled water use area
- Site meets compliance requirements for use of recycled water

If "no" is checked on either of the above two lines, the as-built plans or on-site systems must be corrected as follows before recycled water service can be initiated (return copy of form to customer):

If yes - is checked for both of the above, and the site is otherwise cleared for use of recycled water, inspector shall complete the following:

- Site approved for recycled water service upon successful completion of cross connection test.

Inspector Signature: _____ Date: _____

COPIES: _____ File (Original)
_____ Applicant

**MARINA COAST WATER DISTRICT
FRONT YARD DESIGN REVIEW & INSPECTION**

Homebuilder Name: _____ Lot Number: _____

Homeowner Name: _____

Address: _____

Design Review

	<u>Date Completed</u>	<u>Initial</u>
1. Landscape design prepared by (circle one): Homeowner Landscape Architect Other	_____	_____
2. Layout and clearances conform to Recycled Water Standards.	_____	_____
3. Materials list for irrigation conforms to recycled Water Standards	_____	_____
4. The design plans comply with all other applicable requirements.	_____	_____

Comments: _____

Inspection

Inspection to occur at completion of construction prior to backfilling of the irrigation system.

	<u>Date Completed</u>	<u>Initial</u>
1. Meter locations consistent with curb markings.	_____	_____
2. Construction performed by (circle one): Homeowner Contractor Owner	_____	_____
3. Potable line taped.	_____	_____
4. Backflow prevention device tested by AWWA certified tester.	_____	_____
5. Irrigation pipe layout and clearances conform to design drawings and standards.	_____	_____
6. Depth of pipes and separation requirements meet design standards.	_____	_____
7. The irrigation system does not extend to the backyard.	_____	_____
8. The constructed irrigation system complies with all the applicable requirements and is completed.	_____	_____

Comments: _____

RECORDING REQUESTED BY
AND WHEN RECORDED RETURN TO:

Declaration of Restrictions Regarding The Use of Recycled Water for Landscape Irrigation

The Property subject to this Declaration, described as _____
_____ shall be subject to the following restrictions:

1. Recycled water shall be provided to the _____ Property Owner, herein referred to as the "Permittee" by the MCWD. Pursuant to its authority under their permit for the use of recycled water from the Regional Water Quality Control Board; MCWD identifies the Permittee as the agent authorized to operate and maintain the recycled water distribution system and to control the use and application of all recycled water throughout the subdivision consistent with the MCWD, state and local requirements.
2. Your home is provided with potable water and non-potable recycled water. Potable water is provided for interior water use, backyard irrigation and other like uses. Non-potable recycled water is provided solely for the irrigation of your front yard and its pipelines shall be maintained and operated by the Permittee and not the Property Owner. No new irrigation system or modifications to existing systems may be made without the prior approval of the MCWD and the Permittee.
3. Recycled water shall not be used for backyard irrigation, indoor use, swimming pools or for any use other than for front yard irrigation. Each property shall be provided with a designated potable water supply connection for back yard irrigation. The Property Owner is required to connect back yard irrigation systems to the designated potable water supply connection. The Property Owner shall receive approval from the Permittee prior to connection.
4. Use of potable water for landscape irrigation is prohibited, where recycled water is available.
5. Cross-connections between potable and recycled water lines are prohibited.
6. From time to time public health inspections may be made to your front yard and back yard irrigation systems to assure the safe use of recycled water and protection of the potable water system. For these reasons, MCWD, the Permittee or its authorized agents is/are authorized to enter upon subject property (both front and backyards) for the purpose of inspecting the recycled water systems and ensuring compliance with applicable rules and regulations. In the event of a cross-connection or other violation, MCWD, the Permittee and/or its authorized agents may immediately disconnect the recycled water supply and take any other action reasonably necessary to remedy the violation, at the property owner's expense.
7. The Permittee shall provide MCWD, on a timely basis, once a year, evidence that the backflow prevention device connected to the potable water meter has been inspected by a CA / NV AWWA certified Backflow Prevention Assembly General Tester and is in good operating condition.
8. The Permittee and the Property Owners shall inform family members, visitors, renters and other occupants regarding proper use of recycled water.
9. Failure to adhere to these restrictions may result in penalties assessed in accordance with MCWD regulations as adopted from time to time.

Date: _____ Developer _____

HOMEBUYER NOTIFICATION
The Use of Recycled Water for Landscape Irrigation

The home you are buying utilizes recycled water for front yard irrigation. This has proven to be a safe, efficient and water saving program. However, to ensure that the system operates correctly it is important that you adhere to certain regulations, which are recorded against your new home and property. Your signature below will confirm your understanding of the following:

1. Recycled water shall be provided to the _____ Homeowners Association, herein referred to as the "Permittee" by the MCWD. Pursuant to its authority under their permit for the use of recycled water from the Regional Water Quality Control Board; MCWD identifies the Permittee as the agent authorized to operate and maintain the recycled water distribution system and to control the use and application of all recycled water throughout the subdivision consistent with the MCWD, state and local requirements.
2. Your home is provided with potable water and non-potable recycled water. Potable water is provided for interior water use, backyard irrigation and other like uses. Non-potable recycled water is provided solely for the irrigation of your front yard and its pipelines shall be maintained and operated by the Permittee and not the homeowner. No new irrigation system or modifications to existing systems may be made without the prior approval of the MCWD and the Permittee.
3. Recycled water shall not be used for backyard irrigation, indoor use, swimming pools or for any use other than for front yard irrigation. Each home shall be provided with a designated potable water supply connection for back yard irrigation. The homeowner is required to connect back yard irrigation systems to the designated potable water supply connection. The homeowner shall receive approval from the Permittee prior to connection.
4. Use of potable water for landscape irrigation is prohibited, where recycled water is available.
5. Cross-connections between potable and recycled water lines are prohibited.
6. From time to time public health inspections may be made to your front yard and back yard irrigation systems to assure the safe use of recycled water and protection of the potable water system. For these reasons, MCWD, the Permittee or its authorized agents is/are authorized to enter upon subject property (both front and backyards) for the purpose of inspecting the recycled water systems and ensuring compliance with applicable rules and regulations. In the event of a cross-connection or other violation, MCWD, the Permittee and/or its authorized agents may immediately disconnect the recycled water supply and take any other action reasonably necessary to remedy the violation, at the property owner's expense.
7. The Permittee shall provide MCWD, on a timely basis, once a year, evidence that the backflow prevention device connected to the potable water meter has been tested by a CA / NV AWWA certified Backflow Prevention Assembly General Tester and is in good operating condition.
8. The Permittee and the Property Owners shall inform family members, visitors, renters and other occupants regarding proper use of recycled water.
9. Failure to adhere to these restrictions may result in penalties assessed in accordance with MCWD regulations as adopted from time to time.

Your signature below verifies that you have read and understand these regulations and agree to be bound by them.

Date: _____ Buyer: _____

CROSS-CONNECTION TEST NOTIFICATION FORM

Test Date: _____ Test Time: _____

Site Name: _____

Site Address: _____

City: _____

Contact Person: _____ Phone: _____

Agencies Notified: Central Valley Regional Water Resources Control Board, Division of Drinking Water

CROSS-CONNECTION NOTIFICATION RSVP FORM

Site Address: _____

Test Date: _____

Agency/Company: _____

Representatives Attending: _____

(Please return to requesting party within 10 days of scheduled test)

**MARINA COAST WATER
CROSS CONNECTION SHUTDOWN TEST**

Homeowner Name: _____

Address: _____

Date: _____

Date of last cross connection test: _____

Circle one: Initial Occupancy* Change of Occupant 4 year test

* If initial occupancy - test potable water in home to assure absence of recycled water.

1. Check if resident is at home and advise that test is occurring.

2. Connect pressure gage to potable water hose bib in front yard.

Read and record pressure _____

3. Turn off recycled water system at recycled water meter.

Read and record pressure _____

4. Turn on all irrigation valves. Observe whether water is available

**5. If there is no variation in pressure and no water in the irrigation system,
 then there is no cross connection.**

6. Cross connection (circle one) : Yes (1) No

7. Confirm curb markings are consistent with potable and recycled water meters locations.

Comments: _____

Signed: _____

Name: _____

1 If a cross connection exists, keep recycled water turned off and proceed with notification to owner and MCWD staff.

**MARINA COAST WATER DISTRICT
COMPLIANCE INSPECTION REPORT**

Homeowner Name: _____ Lot No: _____

Address: _____

Date of Last Inspection: _____ Today's Date: _____

Type of Inspection (circle one):

Annual Change of Occupancy Unscheduled

1. Is there evidence of ponding of recycled water, leaks, breaks, or mosquitoes breeding within the irrigation area due to ponded water?

No

Yes _____

2. Are warning tags, stickers, and above ground markings properly posted to inform the homeowner that irrigation water is recycled water and is not suitable for drinking?

No

Yes _____

3. Is there a spa, swimming pool, fountain, or other water feature?

No

Yes _____

4. Is there evidence of unapproved modifications from the record drawings?

No

Yes _____

If Yes 1- Check that approved materials have been used.

2- Perform cross connection test.

3- Determine what follow-up actions are needed

Comments: _____

Signed: _____

Name: _____

**NON-RESIDENTIAL SITE
FINAL INSPECTION**

Contractor Name:	
Project Name:	
Address:	

	F. Final Inspection	Date Completed		Initial
1	Record Drawings received and filed			
2	Emergency information completed: Name, Address, Phone numbers,			
3	Standard agreement signed and recorded			
4	Landscape maintenance company information provided: Name, Address Phone			
5	Recycled water use training provided to landscaper			
6	Final Walk-through completed: Purple boxes, warning labels, purple caps on sprinklers, check over-spray and runoff			
7	Photos and inspection reports sent to file			
8	On-Site Recycled Water User Plan approved			
9	Recycled water distribution system tested			
10	Potable water backflow and distribution system tested			
11	Recycled meter installed			

Comments: Items 3,5,8,9,10,11 will be addressed prior to recycled water becoming available.

**NOTICE OF VIOLATION FORM
RECYCLED WATER USE**

TO: _____

DATE: _____ **TIME:** _____

WEATHER: _____ **NOTICE NO:** _____

SITE: _____

This is to inform you that recycled water use at the described site does not comply with the On-Site Recycled Water User Plan as checked below:

- Cross-connections between potable and recycled
- Overspraying
- Ponding
- Irrigation during rainy weather
- Irrigation during restricted time of day
- Irrigation at non-allowed site
- Unapproved construction
- Broken irrigation facility _____
- Requirements of Notice No _____ on _____ have been met.

Specific Requirements Are: _____

By: _____

Phone Number: _____

MCWD Recycled Water Project



Appendix E Operations Plan Version 1

April 1, 2019

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ATTACHMENTS

- Attachment E.1- Notification Plan
- Attachment E.2 - Crisis Management Plan

List of Abbreviations

APHA	American Public Health Association
AWWA	American Water Works Association
CMU	Concrete Masonry Unit
DDW	California Division of Drinking Water
FAPS	Fifth Avenue Pump Station
gpm	gallons per minute
MCC	Motor Control Center
MCWD	Marina Coast Water District
MG	Million Gallons
MOW	Monterey One Water
NPDES	National Pollutant Discharge Elimination System
PRV	Pressure Reducing Valve
psi	Pounds per square inch
RUWAP	Regional Urban Water Augmentation Project
RWP	Recycled Water Project
RWQCB	Regional Water Quality Control Board – Central Coast Region
SCADA	Supervisory Control And Data Acquisition
TIC	Tentatively Identified Compounds
VFD	Variable Frequency Drive
WAPP	Water Augmentation Pumping Plant
WDR	Waste Discharge Requirement
WEF	Water Environment Federation

Chapter 1 Introduction

The Marina Coast Water District (MCWD) and other communities in the area depend upon a limited groundwater supply from the Salinas Valley Groundwater Basin. Due to long-term trends of groundwater overdraft in the basin and resulting seawater intrusion along the coast, the Regional Urban Water Augmentation Project (RUWAP) was proposed. The recycled water (referred to as the Recycled Water Project (RWP)) component of the RUWAP, undertaken by the MCWD consists of construction of a recycled water distribution system to provide recycled water from the existing Monterey One Water (MOW) Advanced Water Treatment Facility (AWTF) to urban users within the Cities of Marina, Seaside, and the Unincorporated County of Monterey. As local communities grow and new developments are built, it is envisioned that the recycled water system will be expanded to service additional irrigation customers.

1.1 Purpose

The purpose of the RWP is to maximize the use of recycled water for irrigation throughout the Marina Coast region. This will move the community closer to a self-sustaining water supply.

1.2 Organization

The MCWD is governed by a five-member Board of Directors elected by the voters to serve four-year terms. The District is managed by a General Manager, and District staff consisting of a District Engineer, Executive Assistant / Clerk to the Board, Director of Administrative Services, Management Services Administrator, Customer Service Supervisor, and Operations & Maintenance Superintendent. District staff will also interface with staff from MOW and other regulatory organizations as described below.

1.3 Contractual Relationships

The Marina Coast Water District (MCWD) has entered into a long-term agreement with the Monterey One Water (MOW) for the supply of recycled water. The agreement between the MCWD and the MOW sets forth the provisions binding both agencies; such agreement is provided in *Appendix A- Inter-Agency Agreement*.

Chapter 2 Recycled Water Project Facilities

The major facilities included in the initial phase of the system are:

- A pipeline system consisting of approximately 50,000 linear feet (9.5 miles) of 16 to 24-inch diameter transmission main and 30,000 linear feet of 4 to 12-inch lateral pipelines (in addition to 25,000 linear feet of existing lateral pipelines), owned and operated by MCWD.
- One 2.0 MG operational storage tank (Blackhorse reservoir) located at the site of MCWD's potable water storage tanks supplying zones D and E, owned and operated by MCWD.
- Customer lateral turnouts as part of the initial phase, owned and operated by MCWD.

Chapter 3 Legal and Regulatory Requirements

3.1 Regulations

The following state laws govern the use of recycled water in California:

- Health and Safety Code (Division 104; Part 12)
- Water Code (Division 7; Chapters 2, 6, 7, and 22)
- Title 22, California Code of Regulations (Division 4; Chapters 1, 2, and 3)
- Title 17, California Code of Regulations (Division 1; Chapter 5)

A few examples of requirements established in these laws are that distribution systems for recycled water shall be completely separate from drinking water distribution systems; all new recycled water pipes, pumps, and other equipment shall be painted purple for easy identification and labeled “Recycled Water - Do Not Drink;” and advisory signs (in multiple languages, if necessary) shall be displayed to inform the public of timing and location of recycled water usage. The State Division of Drinking Water (DDW) is the agency mandated with establishing recycled water quality standards for the state. The DDW has developed one of the most comprehensive and strict set of standards in the world. These standards are developed in coordination with a team of trained experts in the fields of engineering, health, and disease control from various public and private organizations.

3.2 Agency Contact Information

CALIFORNIA STATE DIVISION OF DRINKING WATER
Drinking Water Program District Office; District 05 - Monterey
1 Lower Ragsdale Dr.
Bldg. 1, Suite 120
Monterey, CA 93940
(831) 655-6939

REGIONAL WATER QUALITY CONTROL BOARD, CENTRAL COAST REGION
895 Aerovista Place – Suite 101
San Luis Obispo, CA 93410
(805) 549-3147

MONTEREY COUNTY HEALTH DEPARTMENT
1270 Natividad Road
Salinas, CA 93906
(831) 755-4500

MARINA COAST WATER DISTRICT
11 Reservation Road
Marina, CA 93933
(831) 384-6131

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY
5 Harris Court, Bldg D
Monterey, CA 93940
(831) 372-3367 or (831) 422-1001

3.3 Waste Discharge Permit Requirements

The MOW owns and operates the regional wastewater management system that provides collection, treatment, and disposal for most of the sewer connections in northern Monterey (NPDES Permit No. R3-2002-0083, Waste Discharge Requirement Permit No. 94-82).

The MCWD collects wastewater from approximately 34,000 customers in the City of Marina and Ord Community, and transports it to the MOW Regional Treatment Plant for treatment. MCWD became a member agency of the MOW in 1989, and MOW now provides treatment and reclamation of wastewater collected in the MCWD service area.

Distribution of recycled water to urban customers by the MCWD is regulated by the General Waste Discharge Requirements for Landscape Irrigation Uses of Municipal Recycled Water, Water Quality Order No. 2016-0068-DDW (Water Reclamation Requirements For Recycled Water Use) issued by the Central Coast Regional Water Quality Control Board (RWQCB) that allows MCWD to distribute the recycled water and oversee multiple users.

A copy of the permits regulating the MOW and MCWD operations of the recycled water system needs to be kept in a location accessible by all recycled water system supervisors, known as User Supervisors.

Chapter 4 Source of Water and Water Quality

The recycled water in the system is treated municipal (sewage) that is processed to Title 22 disinfected tertiary standards at the MOW's AWTF.

As described in the Title 22 Report, quarterly water quality reports are submitted to the RWQCB by MOW. Priority pollutants are monitored in the influent, secondary effluent, tertiary effluent, and sludge produced at the AWTF. Main categories of monitored pollutants include:

- Volatile organic compounds
- Volatile organic tentatively identified compounds (TICs)
- Semi-volatile organic compounds
- Semi-volatile organic tentatively identified compounds (TICs)
- Organochlorine pesticides
- PCBs
- Organophosphorus pesticides
- Metals
- Phenols (total)
- Cyanide (total)
- Semi-volatile fuel identification
- Oil and grease

In addition, a semi-annual monitoring of 118 NPDES effluent toxic constituents is conducted and reported on a 6-month median or 30-day average basis, as required.

The California Division of Drinking Water Monterey Office and the Regional Water Quality Control Board must be notified of any cross connection between the recycled water system and the potable water system either offsite (upstream of the customer's meter) or onsite (downstream of a customer's meter). In accordance with Section 400, MCWD's Regulation Regarding Cross-connection, reduced pressure backflow prevention devices will be required on the potable water service, when a parcel receives both potable and recycled water service.

Dual plumbed sites, locations where both potable water and recycled water are present, are currently prohibited by MCWD. If MCWD decides to allow dual plumbed use in the future, MCWD will submit the required reporting for approval prior to allowing dual plumbed use.

Chapter 5 Customer Relations

While recycled water replaces the use of potable water for irrigation and some industrial or construction purposes, the rules and regulations and the public perception of the source and quality of the water create apprehension and many customers hesitate to use it. However, once customers become familiar with the use and requirements for monitoring the use of recycled water, the process becomes second nature. The contacts and relations with the customers over the first few months are critical in facilitating the transition from potable water to recycled water. Customer relations consist of the following activities:

- Assisting customers with the preliminary application for recycled water service
- Performing preliminary site investigation regarding the suitability of the property to use recycled water and the proximity to a recycled water pipeline
- Receiving the formal application from the customer
- Coordinating the review process of the application and design
- Coordinating the cross-connection control tests with the customer, the MCWD and the State Division of Drinking Water and the Monterey County Health Department
- Ensuring that the user agreement has been executed
- Making or coordinating the final connection of service
- Answering questions for customers
- Assisting customers with the reporting requirements of MCWD, specifically the fertilizer application rate and the agronomic water application rate
- Making periodic and random site inspections and informing customer of necessary corrections
- Ensuring that each customer is responsible for installing, maintaining, and testing a backflow prevention device on all potable water connections at sites where recycled water is used
- Providing notification of violation of any of the terms of agreement with the customer, rules and regulations or other regulatory requirements; providing written notice as required; and turning-off recycled water supply when the violation would cause a threat to health or personal property.

Chapter 6 Recycled Water Project Operations

It is critical that the Recycled Water Project (RWP) delivers an adequate supply of recycled water to its customers, and that the quality of recycled water does not deteriorate appreciably through the distribution system. Operations of the project components described in Chapter 2 are described below.

6.1 Pipeline/Conveyance System

The pipeline conveyance system includes a total of approximately 80,000 linear feet (approximately 15.2 miles) of pipelines. This includes approximately 50,000 linear feet (9.5 miles) of 16 to 24-inch diameter transmission main and 30,000 linear feet (5.7 miles) of 4-inch to 12-inch diameter laterals (in addition to 25,000 linear feet of existing lateral pipelines), owner and operated by MCWD. Pipeline lengths by size are shown in Table 6-1.

Table 6-1: Summary of RWP Pipeline Length and Size

Pipelines	Pipeline Length (Miles)
16 to 24-inch diameter transmission main	9.5
4-inch to 12-inch diameter laterals	5.7
Total Linear Feet (of new pipeline)	15.2

6.2 Appurtenances

Pressure reducing valves (PRVs) will be required at turnouts where the system pressure exceeds 100 psi. Other appurtenances include isolation valves, combination air release valves, and blowoffs.

6.3 Water Augmentation Pumping Plant (WAPP)

The WAPP, located at the AWTF, is the pump station being constructed to ensure adequate delivery of recycled water flows to RWP customers. The WAPP will consist of vertical turbine pumps. The WAPP layout includes space for four vertical pumps operating on variable frequency drive (VFD) units. However, only three pumps will be installed as part of the initial phase of the RWP, including one large duty pump to fill the Blackhorse reservoir at night, one large standby pump, and a jockey pump to supply low demands during the day. A third large pump may be added at a later stage when recycled water demand increases. Only the three pumps needed for the initial phase of the RWP will be installed; however, the pump station is designed to accommodate potential expansion of the RWP.

The WAPP site will include all three pumps, a 30-inch buried suction header, above-ground discharge piping including 12-inch pump discharges and a 20-inch discharge header and necessary valving. The pumping plant will be fed by gravity from a 30-inch pipeline tapping into an existing 72-inch recycled water pipeline from the AWTF. A magnetic flow meter will be provided to monitor flow to the RWP. The WAPP will be operated as to maintain a minimum water level at the Blackhorse Reservoir.

6.4 2.0 MG Blackhorse Reservoir

As part of the RWP, operational storage during the initial RWP will be provided by a 2.0 Million Gallon (MG) covered welded steel reservoir located east of General Jim Moore Boulevard known as the Blackhorse Reservoir.

The Blackhorse Reservoir is designed per American Water Works Association (AWWA) Manual of Practices M42: Steel Water Storage Tanks and constructed per AWWA D100 Welded Carbon Steel

Tanks for Water Storage. The Blackhorse Reservoir "floats" on the system, meaning the water level based on AWTF Pump Station pumping flow rate, injection well demand flow rate, and MCWD customer irrigation demand flow rate. MOW operates and controls flow rates of the AWTF pump station and injection wells. Adjustments in MOW's operation allow the reservoir elevation to increase/decrease, causing flow to go into and out of the reservoir. The operational storage of the tank is 1.8 MG. The reservoir includes a Tideflex mixing system that includes separate inlet/outlet locations within the reservoir and ensures proper mixing of the water during each drain/fill cycle (preventing temperature and water quality stratification).

6.5 Connection to the Potable Water System

In the event that not enough recycled water is available to supply irrigation demand, or that a shutdown of a part of the RWP system prevents recycled water from reaching its customers, a potable backup pipeline with an air gap will be provided. The backup will be at the Blackhorse Reservoir from an existing buried potable water pipeline. A pump will convey potable water to the top of the reservoir. Backflow prevention will be achieved by maintaining an air gap between the pipeline and the reservoir roof.

6.6 Emergency Response

Emergency response efforts should be coordinated as proposed in *Attachment E.1 (Notification Plan)*. Emergency response would also be coordinated with the procedures outlined in the existing *Operator and Crisis Team Member Supplement* to the *Crisis Management Plan* in place for the Monterey Regional Water Recycling Projects and attached for reference as *Attachment E.2*. The MCWD supervisor and operators are knowledgeable and informed about the systems and appurtenances and their operations. This knowledge is essential to address any emergency response efforts. It is the responsibility of the supervisor and operators to assist with the leadership of any emergency response effort and to assist in a senior role with any recovery effort necessitated during an emergency. A separate copy of the Notification Plan should be kept in a visible binder in a location where any operator of the RWP can access it.

Chapter 7 Recycled Water Project Maintenance

7.1 General

Personal safety and the public safety are of the highest priority. The system shall be maintained to protect the quality of water in the system, to minimize replacement costs of equipment, minimize the potential for leaks, breaks, overflows, or other situations that could affect the health and safety of the water recycling staff, the customers, and the public. Records of all maintenance shall be kept. The information should include the date, location, problem being corrected if any, work accomplished, person responsible for the work, other notes.

NOTE: A LOCK-OUT TAG OUT MUST BE DONE FOR ANY WORK TO BE PERFORMED ON ANY MECHANICAL EQUIPMENT WITH ROTATING OR MOVING PARTS OR ANY ENERGIZED EQUIPMENT. IF MULTIPLE WORKERS WOULD BE ENDANGERED BY UNAUTHORIZED OPERATION OF THE EQUIPMENT, EACH RESPONSIBLE PERSON MUST USE A PERSONAL

LOCK ON THE LOCK OUT. LOCKS MAY ONLY BE REMOVED BY THE PERSON RESPONSIBLE FOR THAT LOCK.

7.2 Piping System Maintenance

Recycled water pipes are designed for a lifetime measured in decades. Very little maintenance of the pipe itself will be necessary.

7.3 Flushing

Regular flushing of system piping is not anticipated except at a dead end with a blow offs.

Flushing at dead ends is important to ensure that sediment has not collected and the pipe is in operational condition at all times. In addition, flushing can reveal information about the condition of the water system itself. Flushing is recommended on 12-inch and smaller pipelines on an annual basis. Flushing of pipes larger than 12 inches should be undertaken when water quality deteriorates because of sediment or other accumulations in the pipe.

When a water system is flushed, the velocity has to be high enough (at least 2.5 feet per second) to sweep out any material accumulated in the system. If the necessary velocity cannot be obtained, the system valves should be partially closed to induce the velocities needed, if possible.

7.4 Valve Maintenance

Each system valve shall be operated at least once per year. MCWD has a computerized maintenance management system (CMMS) to track valve maintenance.

7.5 Air-Vacuum Release Valve Maintenance

Air-Vacuum release valves on the system need to be inspected for integrity and proper operation at least once annually. They should be repaired or replaced as necessary.

7.6 Reservoir Maintenance

The exterior of the reservoir should be inspected annually. The interior of the reservoir should be inspected every 5 years for integrity of the coating system. Any coating failure must be assessed and corrected as soon as possible. The reservoir will probably need to be recoated inside and out every 15 to 20 years. Any coating failure must be assessed and corrected as soon as possible. All exposed connections to the reservoir should be inspected annually, with corrective actions taken as necessary.

7.7 Pump Stations Maintenance

Pumps and motors should be maintained according to the manufacturer's recommendations. All valves and control system elements should be inspected weekly.

7.8 Control System Maintenance

The control system should be calibrated and maintained according to the manufacturer's recommendations.

MCWD Recycled Water Project



Attachment E.1 MCWD Recycled Water Project Notification Plan Version 1

MCWD's Notification Plan for the Recycled Water Project (RWP)

The following Notification Plan applies only to the Recycled Water Project (RWP) of the Marina Coast Water District (MCWD).

System Description

The major facilities in the first phase of the system include:

- A pipeline system consisting of approximately 50,000 linear feet (9.5 miles) of 16 to 24-inch diameter transmission main and 30,000 linear feet of 4 to 10-inch lateral pipelines (in addition to 25,000 linear feet of existing lateral pipelines), owned and operated by MCWD
- One 2.0 MG operational storage tank (Blackhorse reservoir) located at the site of MCWD's potable water storage tanks supplying zones D and E, owned and operated by MCWD
- Customer lateral turnouts as part of the initial phase, owned and operated by MCWD

Roles and Responsibilities

The primary focus of the Notification Plan is to protect the health of the MCWD’s staff and the public, to minimize the destruction of public and private property, and to restore the recycled water service as expeditiously as possible. Table E-1 summarizes the roles and responsibilities of various parties that may play a role in an emergency situation.

Table E-1: Notification Plan, Roles and Responsibilities

Person or Agency	Role	Contact Information
MCWD Field Operator	First Responder Contact User Supervisor to report on recycled water use event Contact District Operations and Engineering Supervisors to report the status of the system Assess damage Facilitate operations in the field Take water samples and transport to laboratory Startup of facilities during the recovery process	<i>To be filled out</i>
MCWD User Supervisor	Oversee all programs and facilities related to the use of recycled water distributed by MCWD Contact MCWD GM or Engineering/Operations Sections as appropriate to coordinate repair/recovery Contact other Agencies during recycled water use event Gather needed data for regulatory reporting Prepare regulatory report as appropriate	<i>To be filled out</i>
MCWD General Manager	Provide resources to manage and correct the condition. Contact City/County manager’s office for all major emergencies that require resources. Call in mutual aid Communicate with City/County Public Information Officers	<i>To be filled out</i>
MCWD Engineering and Operations Sections	Contact and coordinate with MCWD GM Assess damage Analysis of failures Return recycled water system to operability as feasible Call in as-needed or specialty contractor to repair damage Design support for mitigation or recovery	<i>To be filled out</i>
City/County Public Information Office(s)	Informs local communities on major issues	<i>To be filled out</i>
City/County Manager(s)	MCWD’s point of contact with individual cities/County for all major emergencies	<i>To be filled out</i>

Person or Agency	Role	Contact Information
Police Departments	Provide initial traffic control when streets are effected by an emergency Assist with securing areas affected by the emergency. Investigate break-ins and other breaches of security.	<i>To be filled out</i>
Fire Departments	May be first responder Assist with securing the area affected by the emergency	<i>To be filled out</i>
Monterey One Water	Control recycled water introduced into the distribution system as required. Provide testing services for water quality as required.	<i>To be filled out</i>
Hazardous Materials Response Team	Responsible for controlling and clean up of any hazardous material.	<i>To be filled out</i>
State Division of Drinking Water		<i>To be filled out</i>
Monterey County Health Department	Provides direction for public notification of contamination. Inspects reconstruction to ensure there are no cross connections.	<i>To be filled out</i>
Central Coast Regional Water Quality Control Board	Responsible to enforce any permit violations.	<i>To be filled out</i>
State Department of Emergency Services	May be able to assist in providing resources for managing or mitigating a disaster.	<i>To be filled out</i>
Recycled Water User Site Supervisor(s)	Bayonet/Blackhorse Gold Course CSUMB- Patton Parkway- California Avenue Median-	<i>To be filled out</i>
Federal Emergency Management Agency (FEMA)	Providing funding to aid in recovery.	<i>To be filled out</i>

Typical Emergency Events

The following table describes typical emergency event, what immediate action is needed, and the persons to notify.

Table E-2: Emergency Events

Item	Immediate Action	People to Notify
Broken water main	Notify Water Supplier, Isolate site by turning valves	User Site Supervisor MCWD County Health RWQCB
Poor water quality	Turn off pump system	User Site Supervisor MCWD County Health State Health RWQCB
Inadequate supply of recycled water	Contact water supplier, Check for closed valves	User Site Supervisor MCWD
Breaks on laterals	Excavate to corp. stop and close	User Site Supervisor MCWD Street Department
Overflow or overspray from customer site	Notify customer, Turn off customer service	User Site Supervisor MCWD
Low Water Pressure	Take pressure readings to verify extent of problem, Troubleshoot as necessary.	User Site Supervisor
Pump failure	Turn off power to pump, If a standby pump is available, activate it	User Site Supervisor
Control system failure	Place equipment switches in HAND and operate as required	User Site Supervisor
Tank overflow	Turn off supply to the tank	County Health State Health RWQCB
Chemical spill	Evacuate the area	User Site Supervisor HazMat
Security breach	Contact law enforcement	Law Enforcement User Site Supervisor
Cross Connection	Conduct Cross Connection Shutdown Test, Contact MCWD immediately, Turn off the recycled water to the property at the meter, Instruct the homeowner not to drink the tap water in the house, Investigate the source of the cross connection and eliminate it	User Site Supervisor MCWD

Communication Procedure

Table E-3 summarizes the communication procedure during an emergency situation.

Table E-3: Communication Procedure

Class	Extent of Emergency	Examples, Symptoms	Communication Priority
1	Regional Catastrophe Large Earthquake, Flood, Fire	Heavy damage to infrastructure. Recycled water supply is interrupted.	Field Operator reports status to the User Supervisor Note: Because recycled water is not an essential service it will have a relatively low priority compared to other services.
2	Local Catastrophe Moderate Earthquake, Flood, Windstorm	Damage to some infrastructure. Recycled water supply is interrupted.	<ol style="list-style-type: none"> 1. Field Operator reports status to the MCWD District Supervisor 2. District Supervisor reports status to the MCWD General Manager 3. MCWD General Manager reports status to City/County Managers and other city officials as required.
3	Site Specific Catastrophe Interruption of recycled water supply and potential risk to the public	Main break, tank failure, poor water quality, chemical spill in a public area.	<ol style="list-style-type: none"> 1. Field Operator contacts law enforcement. 2. Field Operator reports status to the MCWD District Supervisor. 3. District Supervisor reports status to the MCWD General Manager. 4. District Supervisor reports the incident to the County Department of Health and the Regional Water Quality Control Board. 5. MCWD General Manager reports status to City/County Managers and other city officials as required. 6. District Supervisor contacts Public Information Office.
4	Site Specific Catastrophe Interruption of recycled water supply and NO danger to the public	Main leak, pump station failure, treatment plant failure.	<ol style="list-style-type: none"> 1. Field Operator reports status to the MCWD District Supervisor 2. MCWD User Supervisor reports status to the MCWD General Manager. 3. MCWD General Manager reports status to City/County Managers and other city officials as required. 4. MCWD GM contacts Public Information Office.

5	Minor Catastrophe that does not immediately interrupt the recycled water supply	Service leak, single pump failure, chemical spill on city property.	<ol style="list-style-type: none"> 1. Field Operator reports status to the District Supervisor 2. District Supervisor reports status to the MCWD General Manager. 3. MCWD General Manager reports status to City/County Managers and other city officials as required. 4. In case of chemical spill, Field Operator contacts Fire Departments (HazMat) for assistance.
6	Break-in, vandalism	Burglary, vandalism, property damage, mysterious objects.	<ol style="list-style-type: none"> 1. Field Operator contacts law enforcement 2. Field Operator contacts District Supervisor 3. Supervisor contacts MCWD General Manager and additional contacts as necessary or directed.

Personnel Safety

In an emergency, all city personnel are to remove themselves from immediate and immanent danger. MCWD’s staff is to provide warning and advice to property owners and the general public in the vicinity of an emergency to help protect them or their property from danger.

Property Protection

The most common threat to property is the sudden and sustained release of significant quantities of water, such as from a main break, a tank overflow, or a tank failure. In such cases, it is essential to route the flow of water into a sanitary sewer, or if not possible, into a street with curb and gutter to the storm drainage system to minimize additional damage to private and public property.

Water Sampling and Monitoring

Recycled water sampling may be required during or after an emergency event. Specific direction on the number of samples and the constituents to be tested would be provided by regulatory authorities or MCWD.

Other Resources

The following is a list of references and Internet links that may be useful to you in updating and revising this Notification Plan.

Department of Homeland Security (DHS): DHS is the overall lead agency for homeland security issues. DHS will become involved in incident response if needed. General information about DHS is available at <http://www.dhs.gov/dhspublic>. DHS administers the National Incident Management System (NIMS), which provides a nationwide template to enable Federal, State, local, and tribal governments and private-sector and nongovernmental organizations to work together to prepare for, prevent, respond to, and recover from domestic incidents, including terrorism. Information on the NIMS can be found at <http://www.dhs.gov/interweb/assetlibrary/NIMS-90-web.pdf>.

Environmental Protection Agency (EPA): EPA has numerous resources available in addition to this guidance. The following are key sources:

Water Infrastructure Security information, guidance, and training information can be found at <http://www.epa.gov/safewater/security/index.html>.

More information on Local Emergency Planning Committees (LEPCs) can be found at <http://www.epa.gov/ceppo/lepclist.htm>

The Center for Disease Control and Prevention (CDC): The CDC develops resources to assist hospital staff, clinics, and physicians in diagnosing diseases related to terrorism, reporting incidences of disease, and controlling the spread of infection. Information on emergency preparedness and response can be found at <http://www.bt.cdc.gov>. □To assist in the development of a Public Health Response Plan, the CDC published a planning document entitled *The Public Health Response to Biological and Chemical Terrorism: Interim Planning Guidance for State Public Health Officials (July 2001)*, which can be found at <http://www.bt.cdc.gov/Documents/Planning/PlanningGuidance.pdf>. *Interim Recommended Notification Procedures for Local and State Public Health Department Leaders in the Event of a Bioterrorist Incident* can be found at <http://www.bt.cdc.gov/EmContact/Protocols.asp>.

Federal Emergency Management Agency (FEMA): On March 1, 2003, FEMA became part of the U.S. Department of Homeland Security. FEMA's mission is to reduce loss of life and property and protect our nation's critical infrastructure from all types of hazards through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response and recovery. General information can be found at <http://www.fema.gov>. In addition, several online training courses relevant to emergency management are available on-line from FEMA at <http://training.fema.gov/EMIWeb/IS/crslist.asp>.

The American Water Works Association (AWWA): EPA training developed through partnership with AWWA covers security issues including assessing vulnerabilities, emergency response plans and risk communication. AWWA information can be accessed at their website, <http://www.awwa.org>. Specific AWWA resources can be found at <http://www.awwa.org/communications/offer/secureresources.cfm>.

The Association of State Drinking Water Administrators (ASDWA): ASDWA has information on water security planning, training, and links to State programs and other information sources. Go to the security link at <http://www.asdwa.org>.

MCWD Recycled Water Project



Attachment E.2

OPERATOR AND CRISIS TEAM MEMBER SUPPLEMENT TO MONTEREY COUNTY WATER RECYCLING PROJECTS CRISIS MANAGEMENT PLAN

**Plan for
Water Quality & Operations Committee of the
Monterey County Water Recycling Projects**

Approved February 21, 2008

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a. Crisis Team Functions

(Refer to Team Composition Chart 5c)

ROLE	NAME/TITLE/ ENTITY		
	CRISIS LEVEL 2 CONCERN	CRISIS LEVEL 3 SEVERE	CRISIS LEVEL 4 CRITICAL
Communication Leader	Performed by Crisis Team Leader	Keith Israel General Manager MRWPCA John Tiernan Director of Administrative Services MRWPCA	Communication Counsel— Outside Consultant such as Edelman Worldwide, (415) 222-9944, Ketchum Public Relations, 415-984-6100, Hunter Public Relations, 212,679-6600, or other
Communication Leader (Optional)	N/A	Ryan Shaw Partner Communication Planners Karen Harris Communications Specialist MRWPCA	Ryan Shaw Partner Communication Planners
Crisis Team Coordinator	SVRP Involvement Pathogen Involvement Or Major Expenses Assistant General Manager MRWPCA	Assistant General Manager MRWPCA	Assistant General Manager MRWPCA
Crisis Team Coordinator Alternate	SVRP Involvement Pathogen Involvement Or Major Expenses John Tiernan Director of Administrative Services MRWPCA	John Tiernan Director of Administrative Services MRWPCA	John Tiernan Director of Administrative Services MRWPCA
Crisis Team Leader	Core James Dix	Keith Israel	Communication Counsel

ROLE	NAME/TITLE/ ENTITY		
	CRISIS LEVEL 2 CONCERN	CRISIS LEVEL 3 SEVERE	CRISIS LEVEL 4 CRITICAL
	Wastewater Treatment Plant Operations Manager MRWPCA	General Manager MRWPCA	
Crisis Team Leader Alternate	<p style="text-align: center;">Core</p> <p>If SVRP: Jason Sinkler or Richard Gilliam SVRP Supervising Operators MRWPCA</p> <p>If CSIP: Mark Malanka Maintenance Manager MRWPCA</p> <p>OR</p> <p>William Franks CSIP Lead Operator MRWPCA</p>	<p>Assistant General Manager MRWPCA</p> <p>Curtis Weeks General Manager MCWRA</p> <p>James Dix Wastewater Treatment Plant Operations Manager MRWPCA</p>	<p>Keith Israel General Manager MRWPCA</p> <p>Curtis Weeks General Manager MCWRA</p>
Crisis Team Leader Optional	N/A	N/A	Robert Wellington Attorney at Law Wellington Law Offices
CSIP Liaison	<p>CSIP Involvement</p> <p>Mark Malanka Field Maintenance Supervisor MRWPCA</p>	<p>Mark Malanka Field Maintenance Supervisor MRWPCA</p>	<p>Mark Malanka Field Maintenance Supervisor MRWPCA</p>
CSIP Liaison Alternate	<p>CSIP Involvement</p> <p>Jim Slater Water Resources Engineer MCWRA</p> <p>OR</p> <p>William Franks</p>	<p>Jim Slater Water Resources Engineer MCWRA</p>	<p>Jim Slater Water Resources Engineer MCWRA</p>

ROLE	NAME/TITLE/ ENTITY		
	CRISIS LEVEL 2 CONCERN	CRISIS LEVEL 3 SEVERE	CRISIS LEVEL 4 CRITICAL
	CSIP Lead Operator MRWPCA		
Expert: Agriculture	N/A	Ag Commissioner OR Mo Co Farm Bureau	Ag Commissioner OR Mo Co Farm Bureau
Expert: Laboratory	N/A	Patrice Parsons Lab Supervisor MRWPCA	Richard Danielson, BioVir Laboratory,
Expert: Public Health/Me dical	N/A	Consultant	Consultant
Expert: Water Reuse	N/A	Bahman Sheikh	Bahman Sheikh
Finance Liaison	Major Expenses Brent Buche Assistant General Manager Chief—Operations and Maintenance MCWRA	Brent Buche Assistant General Manager Chief—Operations and Maintenance MCWRA	Brent Buche Assistant General Manager Chief—Operations and Maintenance MCWRA
Grower Liaison	Core Dale Huss WQ & Ops, Chair VP Artichokes SeaMist & OceanMist Farms	Dale Huss WQ & Ops, Chair VP Artichokes SeaMist & OceanMist Farms	Dale Huss WQ & Ops, Chair VP Artichokes SeaMist & OceanMist Farms
Grower Liaison	Core Doug Scattini WQ & Ops, Vice Chair Ranch Manager Luis Scattini & Sons	Doug Scattini WQ & Ops, Vice Chair Ranch Manager Luis Scattini & Sons	Doug Scattini WQ & Ops, Vice Chair Ranch Manager Luis Scattini & Sons
Health Dept Leader	Core Allen Stroh Division Chief,	Allen Stroh Division Chief, Environmental	Allen Stroh Division Chief,

ROLE	NAME/TITLE/ ENTITY		
	CRISIS LEVEL 2 CONCERN	CRISIS LEVEL 3 SEVERE	CRISIS LEVEL 4 CRITICAL
	Environmental Health Monterey County Health Department	Health Monterey County Health Department	Environmental Health Monterey County Health Department
Health Dept Leader Alternate	SVRP Involvement Cheryl Sandoval Supervising Environmental Health-Specialist Monterey County Health Department	Cheryl Sandoval Supervising Environmental Health-Specialist Monterey County Health Department	Cheryl Sandoval Supervising Environmental Health-Specialist Monterey County Health Department
Health Dept Leader Alternate	SVRP Involvement Richard LeWarne Assistant Director, Drinking Water Protection Services Monterey County Health Department	Richard LeWarne Assistant Director, Drinking Water Protection Services Monterey County Health Department	Richard LeWarne Assistant Director, Drinking Water Protection Services Monterey County Health Department
Insurance Rep.	Jim Slater, MCWRA (Marsh) &/or Tom Buell (CSRMA)	Jim Slater, MCWRA (Marsh) &/or Tom Buell (CSRMA)	Marsh Representative &/or CSRMA Representative
Lab & Safety Liaison	Pathogen Involvement Greg Antosz Environmental & Safety Manager MRWPCA	Greg Antosz Environmental & Safety Manager MRWPCA	Greg Antosz Environmental & Safety Manager MRWPCA
Legal Counsel	Optional: Robert Wellington Attorney at Law Wellington Law Offices	Robert Wellington Attorney at Law Wellington Law Offices	Robert Wellington Attorney at Law Wellington Law Offices
Logistics Leader (Optional)	N/A	John Tiernan Director of Administrative Services MRWPCA	John Tiernan Dir. Of Admin. Services MRWPCA

ROLE	NAME/TITLE/ ENTITY		
	CRISIS LEVEL 2 CONCERN	CRISIS LEVEL 3 SEVERE	CRISIS LEVEL 4 CRITICAL
Members-at-Large	Pathogen & CSIP Involvement (1 Optional) Bob Holden Water Recycling Projects Coordinator MRWPCA Tom Kouretas Associate Engineer MRWPCA	Bob Holden Water Recycling Projects Coordinator MRWPCA Tom Kouretas Associate Engineer MRWPCA	Bob Holden Water Recycling Projects Coordinator MRWPCA Tom Kouretas Associate Engineer MRWPCA
Spokesperson	When needed James Dix (Team Leader) Wastewater Treatment Plant Operations Manager MRWPCA	Keith Israel General Manager MRWPCA <u>Optional:</u> Dale Huss WQ & Ops, Chair VP Artichokes SeaMist & OceanMist Farms Joe Pezzini VP Operations Ocean Mist Farms Communication Counsel	Communication Counsel <u>Optional:</u> Dale Huss WQ & Ops, Chair VP Artichokes SeaMist & OceanMist Farms
Spokesperson Alternate	N/A	Allen Stroh Division Chief, Environmental Health Monterey County Health Department	Allen Stroh Division Chief, Environmental Health Monterey County Health Department
SVRP Liaison	SVRP Involvement Jason Sinkler SVRP Supervising Operator MRWPCA	James Dix Wastewater Treatment Plant Operations Manager MRWPCA	James Dix Wastewater Treatment Plant Operations Manager MRWPCA
SVRP Liaison Alternate	SVRP Involvement Richard Gilliam SVRP Supervising Operator	Jason Sinkler SVRP Supervising Operator MRWPCA	Jason Sinkler SVRP Supervising Operator MRWPCA

ROLE	NAME/TITLE/ ENTITY		
	CRISIS LEVEL 2 CONCERN	CRISIS LEVEL 3 SEVERE	CRISIS LEVEL 4 CRITICAL
	MRWPCA		
Web Site Maintainer	Tom Kouretas Associate Engineer	Dean Collins Communication Planners	Dean Collins Communication Planners Or Communications Counsel

If the named person and the alternate are not available then another of those listed can be utilized. Roles and Responsibilities are listed in Chapter 5a.

b. Crisis Team Roster

Title	Team Role(s) (refer to Chapter 5a for Roles & Responsibilities)			
	Level 1 Anticipated Handled by SOP No Team Req'd	Level 2 Concern Internal Crisis	Level 3 Severe Can use available resources	Level 4 Critical Need additional resources
Keith Israel General Manager (GM) MRWPCA Tel fax cell	Receive information from person coordinating response (WWTP Ops Mgr).	Receive information from person coordinating response	Crisis Team Leader Spokesperson Communication Leader	Crisis Team Leader Alternate <ul style="list-style-type: none"> • Hires consultants and contacts experts as needed • Creates Management structure for crisis • Receives updates from Communication Counsel & Team Coordinator • Updates regulators and Board of Directors
Curtis Weeks General Manager MCWRA Tel fax cell	Receive information from person coordinating response (WWTP Ops Mgr).	Receive information from person coordinating response.	Crisis Team Leader Alternate	Crisis Team Leader Alternate
Asst. Gen Mgr (AGM) MRWPCA Tel fax	Receive information from person coordinating response (WWTP Ops Mgr)	SVRP Involvement or Major Expenses Crisis Team Coordinator Alternate	Crisis Team Leader Alternate Crisis Team Coordinator	Crisis Team Coordinator
John Tiernan Director of Admin Services MRWPCA Tel fax cell	N/A	(Pathogen &/or SVRP Involvement) Team Coordinator	Communication Leader Crisis Team Coordinator Alternate Logistics Leader	Crisis Team Coordinator Alternate Logistics Leader (Optional)

Title	Team Role(s) (refer to Chapter 5a for Roles & Responsibilities)			
	Level 1 Anticipated Handled by SOP No Team Req'd	Level 2 Concern Internal Crisis	Level 3 Severe Can use available resources	Level 4 Critical Need additional resources
			(Optional)	
Greg Antosz Env'l Safety Svcs Mgr MRWPCA Tel fax cell	N/A	(Pathogen Involvement) Lab & Safety Liaison	Lab & Safety Liaison	Lab & Safety Liaison
James Dix WWTP Ops Mgr MRWPCA Tel fax cell	<ul style="list-style-type: none"> Coordinates response with Maintenance Manager and/or SVRP Supervisor Updates GM's & AGM 	Core Crisis Team Leader Communication Leader/Spokesperson	Crisis Team Leader Alternate SVRP Liaison	SVRP Liaison
Dale Huss WQ & Ops Chair VP Artichokes SeaMist & OceanMist Farms Tel fax cell	N/A	Core Grower Liaison	Grower Liaison Spokesperson (Optional)	Grower Liaison Spokesperson (Optional)
Allen Stroh Division Chief, Environmental Health Monterey County Health Dept Tel Fax Cell	N/A	Core Health Dept. Leader	Health Dept. Leader Spokesperson Alternate	Health Dept. Leader Spokesperson Alternate
Cheryl Sandoval Supervising Env'l Health Specialist Monterey County Health Dept Tel	N/A	(SVRP Involvement) Health Dept. Leader Alternate	Health Dept. Leader Alternate	Health Dept. Leader Alternate

Title	Team Role(s) (refer to Chapter 5a for Roles & Responsibilities)			
	Level 1 Anticipated Handled by SOP No Team Req'd	Level 2 Concern Internal Crisis	Level 3 Severe Can use available resources	Level 4 Critical Need additional resources
fax cell				
Richard LeWarne Assist. Dir., Drinking Water Protection Services Monterey County Health Dept Tel fax cell	N/A	(SVRP Involvement) Health Dept. Leader Alternate	Health Dept. Leader Alternate	Health Dept. Leader Alternate
Doug Scattini WQ & Ops, Vice Chair Ranch Manager Luis Scattini & Sons	N/A	Core Grower Liaison	Grower Liaison	Grower Liaison
Jason Sinkler SVRP Supervising Operator MRWPCA Tel fax cell	Coordinates with WWTP Ops Mgr on response	Core SVRP Involvement Crisis Team Leader Alternate SVRP Liaison	SVRP Liaison Alternate	SVRP Liaison Alternate
Mark Malanka Maintenance Manager MRWPCA Tel fax cell	Coordinates with WWTP Ops Mgr on response	Core (CSIP Involvement) Crisis Team Leader Alternate CSIP Liaison	CSIP Liaison	CSIP Liaison
Jim Slater Water Resources Engineer	N/A	(CSIP Involvement)	CSIP Liaison Alternate	CSIP Liaison Alternate

Title	Team Role(s) (refer to Chapter 5a for Roles & Responsibilities)			
	Level 1 Anticipated Handled by SOP No Team Req'd	Level 2 Concern Internal Crisis	Level 3 Severe Can use available resources	Level 4 Critical Need additional resources
MCWRA Tel fax cell		CSIP Liaison Alternate		
Robert Wellington Legal Counsel MRWPCA Tel fax cell	N/A	Legal Counsel (Optional)	Legal Counsel	Legal Counsel Crisis Team Leader (Optional)
Joe Pezzini VP Operations Ocean Mist Farms Tel Cell	N/A	Spokesperson (Optional)	Spokesperson (Optional)	Spokesperson (Optional)
Edelman Worldwide, (415) 222-9944, Ketchum Public Relations, 415-984-6100, Hunter Public Relations, 212,679- 6600, or other	N/A	N/A	Communication Counsel (optional)	Crisis Team Leader Spokesperson Communication Leader
Brent Buche Assistant General Manager Chief—Operations and Maintenance MCWRA Tel fax cell	N/A	(Major Expenses) Finance Liaison (Pathogens &/or CSIP Involvement - Optional)	Finance Liaison	Finance Liaison
Robert Holden Water Recycling Projects Coordinator MRWPCA Tel fax cell	N/A	(Pathogens &/or CSIP Involvement - Optional) Members-at- Large	Members-at- Large	Members-at- Large

Title	Team Role(s) (refer to Chapter 5a for Roles & Responsibilities)			
	Level 1 Anticipated Handled by SOP No Team Req'd	Level 2 Concern Internal Crisis	Level 3 Severe Can use available resources	Level 4 Critical Need additional resources
Tom Kouretas Associate Engineer MRWPCA Tel fax cell				
Insurance Representative MCWRA &/or MRWPCA	Jim Slater, MCWRA (Marsh) or Tom Buell MRWPCA (CSRMA)	Jim Slater, MCWRA (Marsh) or Tom Buell MRWPCA (CSRMA)	Marsh or CSRMA Insurance Rep. (Optional)	CSRMA Crisis Team Leader (Optional)
Bahman Sheikh Tel fax cell	N/A	N/A	Expert – Water Reuse Provide expert opinion	Expert – Water Reuse Provide expert opinion
Public Health/Medical Consultant	N/A	N/A	Expert – Public Health/Medical	Expert – Public Health/Medical
Silvia Burnett or Patrice Friedmann Parsons MRWPCA Tel fax	N/A	N/A	Expert - Laboratory	Expert – Laboratory Alternative
Richard E. Danielson Laboratory Director BioVir Laboratories, Inc. Tel Fax			Expert – Laboratory Alternative Expert Microbiology	Expert – Laboratory Expert Microbiology
Eric Lauritzen Monterey County Ag Commissioner Tel fax cell OR	N/A	N/A	Expert – Agriculture Provide expert opinion	Expert – Agriculture Provide expert opinion

Title	Team Role(s) (refer to Chapter 5a for Roles & Responsibilities)			
	Level 1 Anticipated Handled by SOP No Team Req'd	Level 2 Concern Internal Crisis	Level 3 Severe Can use available resources	Level 4 Critical Need additional resources
Bob Perkins Mo Co Farm Bureau Tel fax:				
Dean Collins Partner Communication Planners Tel fax cell	N/A	Web Site Creator, if needed	Web Site Creator and Maintainer)	Web Site Creator and Maintainer (Optional)
Ryan Shaw Partner Communication Planners Tel fax cell	N/A	N/A	Communications Leader (Optional)	Communications Leader (Optional)
Karen Harris Communications Specialist MRWPCA Tel fax cell	N/A	N/A	Communications Leader (Optional)	N/A
Richard Gilliam SVRP Supervising Operator MRWPCA Tel fax cell	N/A	Core (SVRP Involvement) Crisis Team Leader Alternative SVRP Liaison Alternate	N/A	N/A

Title	Team Role(s) (refer to Chapter 5a for Roles & Responsibilities)			
	Level 1 Anticipated Handled by SOP No Team Req'd	Level 2 Concern Internal Crisis	Level 3 Severe Can use available resources	Level 4 Critical Need additional resources
William Franks CSIP Lead Operator MRWPCA Tel fax cell	N/A	Core (CSIP Involvement) Crisis Team Leader Alternative CSIP Liaison Alternate	N/A	N/A

10. Standard Operating Procedures (SOPs) for Level 1 Crises

a. Algae in Storage Pond

(Currently, there are no permit requirements related to algae. The Water Quality & Ops Committee does not want “objectionable” amounts of algae that would clog drip tape or cause an aesthetic problem.)

If algae is increasing but is still at an acceptable level.

- Increase the total chlorine residual in the Chlorine Contact Basins or add sodium hypochlorite to the Storage Pond. The Storage Pond chlorine residual should not be raised above 8 mg/L.
- Flush the pond by repeated raising and lowering the level (between elevation (EL) 120 and 124). This is accomplished by reducing the SVRP production and number of supplemental wells running (lowers pond) then increasing the SVRP production and the number of supplemental wells running (raises pond level). The water is used by the CSIP system. At the low pond level (EL 120), the sun “burns off” algae attached to the pond liner.

If the algae concentration is unacceptable or if the DSOs have received complaints about filters clogging from the recycled water:

- Close the Storage Pond exit gate
- Inform DSOs
- Turn off the SVRP or place the SVRP into recirculation mode
- Call **Crisis Team**. Inform them of the algae problem and the corrective actions that will be employed and that the SVRP will be temporarily out of service.
- Drain the pond to EL 112 using the following technique:
 - Drain as much water as possible back to the Reclamation Pump Station and the ocean outfall. This water must be dechlorinated to prevent chlorinated water from entering the ocean.
 - Close the chlorine contact **outlet** gate. Install pump(s) between the Storage Pond drainpipe and the Bypass Pipe to the Headworks (do not backwash while pumping to prevent backup into the Filter Building). Pump the water to the Headworks for retreatment.
- Operators obtain MSDS sheets and proper protective gear and then use the vacuum truck to dump liquid hypochlorite around the Storage Pond perimeter to burn off algae and bottom growth.
- Turn on the SVRP and recirculate until Title 22 is met for all water in the chlorine contact basins.
- Open the chlorine contact basin **effluent** gate and refill the pond to EL 122
- Open the Storage Pond **exit** gate and inform DSOs. Monitor chlorine residual and wells until total chlorine residual is between 5 and 8 mg/L.

This whole process could take up to 7 days so it is imperative to prevent the algae getting out of control in the first place.

b. CSIP Mainline Leak

The DSOs become aware of leaks mostly from customer calls but also from observations while carrying out normal operational duties. Call **Water Resources Engineer, Grower Liaisons** if a leak has been detected. If there is a question as to which line is leaking, a grower's irrigation line, or a CSIP pipe, the DSO will have the grower pressurize their irrigation system. If there is still a question, MRWPCA staff will dig up the line, if the leak is on the CSIP system, MRWPCA staff will call the **Crisis Team**, repair the leak, and charge the cost to the Project. If it is a grower's leak, MRWPCA will turn over the repair to the grower or arrange with MCWRA to bill the grower and recover the costs of the repair. In any case, all possible effort will be made to repair the leak while minimizing lost irrigation time.

Leak Repair/ System Isolation

1. Determine the extent of the leak and how fast it needs to be repaired.
2. Identify what isolation valves have to be closed. The CSIP System has 27 isolation valves, which are located through out the system. These valves give the DSOs the ability to isolate portions of the distribution system and in some cases still have the ability to supply recycled or well water to turnouts on the effected lines. However, this is only the case in about 1/3 of the system. In other portions of the system, water cannot be supplied if a line segment is taken out of service. In those cases, it will be necessary for growers to use their standby wells. In the event that there are no standby or supplemental wells, it may be necessary to set up temporary aboveground pipe systems while repairs are being made. Each DSO carries a list/location map of all the isolation valves and these valves are operated once a year to ensure they are in good working order.
3. Identify growers that will be effected by any shut down of the system and notify them.
4. Once leak is dug up and properly shored, determine cause of leak and parts needed for repair.
5. Determine parts availability and estimated down time for system.
6. Notify growers of estimated down time.
7. Determine if growers can wait or if standby wells or pump around system can be used.
8. Keep communications with growers open so they are informed of repair progress.
9. Complete repairs and place system back in service.

Spare parts availability: MRWPCA and MCWRA maintain a limited amount of spare parts for emergency repairs. This stock is being augmented. However, most parts can be purchased and delivered overnight so a large inventory is not needed at this time. MRWPCA staff identified a number of repair couplings that can be used for various different applications both in MRWPCA's collection system and in CSIP. These parts are on hand. If they are needed by CSIP, they will be charged to the project.

c. Chlorine Residual

Chlorine Contact Basin (Permit requirement is a minimum of 5 mg/L)

If the total chlorine residual is between 5 and 6 mg/L, it represents a Level 1 crisis.

- Manually close the Chlorine Contact Basin exit gate. Investigate and correct the problem. Explain why the alarms at 9, 8, 7, and 6 mg/L did not work. Explain why the Chlorine Contact Basin **outlet** gate did not automatically close at 6.5 mg/L after a 20-second delay. If the gate fails to close, then shut down the SVRP by using the START UP/SHUTDOWN screen.
- Do not reopen the Chlorine Contact Basin exit gate until approved by the **WWTP Ops Mgr, Assistant General Manager**, or, if not available, a **Supervising WWTP Operator**.
- Let **Water Resources Engineer Health Dept. Leader** and **Grower Liaisons** know what happened and what was done to correct it.

If the total chlorine residual is <5 at the Chlorine Contact Basin effluent launder and the Chlorine Contact Basin exit gate is closed, recirculate recycled water until the water has a minimum total chlorine residual >8 mg/L and then reopen the gate. This still is a **Level 1** crisis.

If the total chlorine residual is <5 at the Chlorine Contact Basin effluent launder and the Chlorine Contact Basin exit gate is open (non-complying water has entered the Storage Pond), this becomes a Level 2 crisis.

- Close the Storage Pond and Chlorine Contact Basin exit gates. Recirculate recycled water until the issue is resolved (and residual returns to the 8 to 12 mg/L range).
- If the total chlorine residual is >5 mg/L for each sample taken at three depths each at five different locations then the 450 CT has been met. Inform the **Water Resources Engineer, Health Representative**, and **Grower Liaisons** what has been done. This reverts to a **Level 1** crisis.
- If one total chlorine residual sample from the Storage Pond has a value <5 mg/L then add sodium hypochlorite to the Storage Pond until all values measured are above 5 mg/L for over three hours. Alternatively, the chlorine residual from the contact basins can be increased to 15 mg/L. Also, collect samples at three turnouts in use that day and measure the chlorine residual. Inform the **Water Resources Engineer, Health Representative**, and **Grower Liaisons** what has been done. This remains a **Level 2** crisis. A written report shall be provided to the **Crisis Team** on how the safeguards did not work and with suggestions for improvement. An oral report shall be made to the **Water Quality & Operations Committee**.

Storage Pond (Currently, there are no permit requirements related to chlorine residual in the Storage Pond. The **Water Quality & Operations Committee** set 8.0 mg/L as the maximum total chlorine residual that can be applied to crops at their meeting August 15, 2002.) If the total chlorine residual is < 4 mg/L at the Storage Pond sampler, after the lab or DSO confirms the analyzer calibration, then increase the Chlorine Contact Basin total chlorine residual. If the overall Storage Pond residual cannot be raised quickly enough from the new water, then, in addition, decrease the pond height or add sodium hypochlorite to the pond until it is >4 mg/L and <8 mg/L.

If the total chlorine residual is >8 mg/L at the Storage Pond sampler, confirm that the sampler is properly calibrated. If so, then turn on supplemental wells (sites #19, #20, and #21 should be

turned on manually) so that the diluted water total chlorine residual is <8 mg/L (be sure not to allow flow back into the pond). When using wells to dilute high chlorine residual, the output of the wells must be monitored closely to prevent well water from flowing back into the storage pond.

CSIP System (Currently, there are no permit requirements related to chlorine residual in the Storage Pond or CSIP. The **Water Quality & Operations Committee** has set 8.0 mg/L as the maximum total chlorine residual that can be applied to crops.)

- If any CSIP location (other than from Monitoring Station A1) has a total chlorine residual >8 mg/L, then turn on supplemental wells near that location (sites #19, #20, and #21 should be turned on manually) so that the water to the turnouts is <8 mg/L. This is considered a **Level 1** crisis. Investigate and write a report on how the safeguards did not work and make suggestions for improvement. Provide the report to the **Crisis Management Committee** and mention at the next **Water Quality and Operations Committee** meeting.

d. Coliform

Title 22 Requirements

The median number of total coliform organisms in reclaimed water shall not exceed 2.2 per 100 milliliters, as determined from the bacteriological results of the last seven days which analyses have been completed, and the number of total coliform organisms shall not exceed 23 per 100 milliliters in any sample more than once every 30 days. Title 22 allows for a high MPN greater than 23 and less than 240 once every 30 days. These requirements apply at the end of the Chlorine Contact Basins. There are no total coliform requirements at the Storage Pond, monitoring stations, turnouts, or supplemental wells. There are no fecal coliform requirements anywhere within the SVRP/CSIP system.

Leafy Green Metrics

The *Commodity Specific Food Safety Guidelines for the Production and Harvest of Lettuce and Leafy Greens* dated October 16, 2007, has the following requirements for Pre-Harvest water Use. The geometric mean of the last five samples is ≤ 126 MPN generic E. coli/100mL **and** each sample shall be ≤ 235 MPN generic E. coli/100mL. If these criteria are not met, the water should not be used until after a Sanitary Survey is performed and five days of repeat sampling. If any of the five new samples has a value > 235 MPN generic E. coli/100mL, repeat the Sanitary Survey and repeat sampling. If any crop is irrigated with the off-spec water, then the crop tissue should be tested for Salmonella and E. coli O157:H7. If either test is positive, the crop should not be used for human consumption.

Bacterial Monitoring (Overview)

Total and fecal coliform and generic E. coli are analyzed daily at the effluent end of the chlorine contact basins and at the effluent end of the Storage Pond. The water in the supplemental wells is sampled monthly and is analyzed for total coliform and generic E. coli. Monitoring Station A1 is sampled daily and analyzed for total and fecal coliform and generic E. coli. Random monitoring stations and turnouts are sampled weekly and analyzed for total and fecal coliform and generic E. coli. The analyses can take up to 48 hours for the presumptive (LTB), then up to 48 hours for the confirmed (BGB, Total Coliform). The fecal coliform and generic E. coli analyses are performed at the same time as the confirmed for another 24 to 48 hours. The presumptive test is just an early indication and does not mean that coliform is present. Benign soil bacteria and other organisms can cause a presumptive that does not represent coliform bacterial. The Laboratory Technician or DSO who reads the coliform test will notify the Operation Department whenever there is a positive total coliform, fecal coliform, or generic E. coli count.

Environmental Health collects samples for total or fecal coliform every other week (while the SVRP is operating) at the Storage Pond as part of their *Clostridium perfringens* testing. Environmental Health will immediately notify the Operation Department whenever either of their tests is positive. The follow-up on samples taken by Environmental Health is to resample until the results are "Non Detect".

The Storage Pond has a chlorine residual of between 5 and 8 mg/L, which will provide additional chlorine contact time for disinfection. It holds about 1.4 million gallons of "static" water below the outlet pipe invert (EL 111.25). There is generally about 11.8 million gallons of "active" or "live" water to elevation 122. This equates to about 12.9 hours of storage at the current maximum production of about 22 MGD. Thus, except at the lowest demand times, coliform

analyses that exceeds the above limitations are already in the distribution system before they are confirmed. Sources of coliform include birds, animals, dust, low chlorine residual, etc.

Preventative Maintenance Procedures to Reduce Coliform "Hits"

- Calibrate chlorine residual analyzers—daily
- Sterilize coliform sample piping—weekly
- Lower the Storage Pond water elevation to 120-feet for 4 hours (to burn off algae and inspect for birds and animals)—weekly (usually Saturday)
- Pump water to the gutter south of the Storage Pond (to provide drinking water for wild animal to keep them from entering the pond)—whenever there is water in the pond.
- Superdose chlorine contact basins with gaseous chlorine—weekly
- Dump 500 gallons of hypochlorite (12%) into inlet of each chlorine contact basin to kill settled algae—monthly
- Superdose filters with gaseous chlorine—monthly
- Sample Chlorine Contact Basins for settled algae ("walking the dog") in each basin—monthly
- Removed sand (haven for bacteria) from bottom of Storage Pond completed in February 2008.
- Clean Storage Pond (empty, wash down, and remove debris)—annually
- Inspect and repair: fishing line across Storage Pond, netting around catwalk, Coagulation/flocculation basins, channels, filters, chlorine contact basins, and Storage Pond—during off season and whenever needed.
- The Chlorine Contact Basin chlorine residual daily average is to be maintained in the 9.5 to 10.5 mg/L range (except during superdosing).
- The Storage Pond chlorine residual daily average is to be maintained in the 5 to 8 mg/L range with a goal of >6 mg/L.

Notification Procedures

Chlorine Contact Basins

If an algae layer is noticed in the bottom of the final chamber of either basin

- Add 500 gallons of hypochlorite (12%) at the inlet of each basin one time.

If a total coliform presumptive is >23 MPN four or more times in one week

- Notify the **Assistant General Manager**, **WWTP Operations Manager**, the **Supervising WWTP Operators**, the **Maintenance Manager**, and the **DSOs**.
- Add 500 gallons of hypochlorite (12%) at the inlet of each basin one time.
- **Notify Water Resource Engineer**, **Environmental Health**, and the **Grower Liaisons** and tell them the presumptive values and what has been done.

If total coliform, fecal coliform, or generic E. coli confirms <23 MPN:

- Notify the **WWTP Operations Manager**, the **Supervising Wastewater Operators**, the **Maintenance Manager**, and the **DSOs**.
- Watchful waiting.

If total coliform, fecal coliform, or generic E. coli confirms >23 MPN/100mL but E. coli < 126 MPN/100mL and total coliform < 240 MPN/100mL:

- Notify the **Assistant General Manager**, **WWTP Operations Manager**, the **Supervising WWTP Operators**, the **Maintenance Manager**, and the **DSOs**.
- Drain, clean, refill the affected basin while superdosing, and resample for coliform.
- Notify the **Water Resource Engineer** and **Environmental Health**, and the **Grower Liaisons**. Notify the **Regional Board** only if it is the second value over 23 MPN/100mL

within 30 days. Tell those notified of the actual coliform or E. coli count and about any supplemental sampling performed. If the downstream samples (Storage Pond and CSIP samples) were observed as <23 MPN/100 mL, then assure regulators that the additional CT (provide them approximate actual value in mg-min/L) in the Storage Pond provided the needed disinfection to meet Title 22 requirements. Also, report the results of a visual inspection for sources of contamination. Note: one value of total coliform >23 MPN/100mL is allowable within 30 days.

If total coliform \geq 240 MPN/100mL or generic E. coli \geq 126 MPN/100mL:

- Notify the **Assistant General Manager**, **WWTP Operations Manager**, the **Supervising WWTP Operators**, the **Maintenance Manager**, and the **DSOs**.
- Drain, clean, refill the affected basin while superdosing, and resample for coliform.
- Notify the **Water Resource Engineer** and **Environmental Health**, and the **Grower Liaisons**. Notify the **Regional Board**. Tell those notified of the actual coliform or E. coli count and about any supplemental sampling performed. Convene the Crisis Management Team and determine if this is a Level 2 or a Level 3 Crisis. Determine the next steps.

Storage Pond

If total coliform, fecal coliform, or generic E. coli confirms >23 MPN

- Search Storage Pond for dead animals. If a dead animal (remove if found) or excessive algae is found, spread 250 gallons of hypochlorite along the edge of the Storage Pond in that location.
- Notify the **Assistant General Manager**, **WWTP Operations Manager**, the **Supervising WWTP Operators**, the **Maintenance Manager**, and the **DSOs**.
- Notify **Water Resources Engineer**, **Environmental Health** and **Grower Liaisons** and tell them the total coliform value and what has been done.

If total coliform is \geq 240 MPN/100mL or generic E. coli \geq 126 MPN/100mL once or four or more times in one week total coliform > 10 MPN/100mL

- Notify the **Assistant General Manager**, **Chief Operator**, the **Supervising WWTP Operators**, the **Maintenance Manager**, and the **DSOs**.
- Notify **Water Resources Engineer**, **Environmental Health**, the **Grower Liaisons**, and the **Crisis Management Committee**. Tell them the values and what is being done.
- Close the Storage Pond exit gate and either drain the pond or add hypochlorite until the chlorine residual is > 8 mg/L. Hold the water in the pond until all samples (take at least three per day) are non-detect. Then open the Storage Pond exit gate and use wells to dilute water if necessary. If the Storage Pond is drained, add at least 1250 gallons of hypochlorite while superdosing. Resample the water and open the Storage Pond exit gate as soon as there is a non-detect value.

Monitoring Stations or Turnouts

If total or fecal coliform >23 MPN/100mL but generic E. coli \leq 126 MPN/100mL

- Raise pond residual to 8 mg/L or higher through increased chlorination to the Chlorine Contact Basins or by introduction of sodium hypochlorite.
- Sample daily at three locations: where the total coliform was observed, upstream, and downstream of the location until all values are <2 MPN.
- Notify the **Assistant General Manager**, **WWTP Operations Manager**, the **Supervising WWTP Operators**, the **Maintenance Manager**, and the **DSOs**.

- Notify **Water Resources Engineer**, **Environmental Health** and **Grower Liaisons**. Tell them the confirmed coliform value and the intended plan.

Supplemental Wells

If total or fecal coliform >2

- Notify the **WWTP Operations Manager**, the **Supervising WWTP Operators**, the **Maintenance Manager**, and the **DSOs**.
- Retest Supplemental Well. If total or fecal coliform <2 then watchful waiting. Nothing else is required. If the retest total or fecal coliform is still >2 then:
- Notify the **Assistant General Manager**, **WWTP Operations Manager**, the **Supervising WWTP Operators**, the **Maintenance Manager**, and the **DSOs**.
- Notify **Water Resources Engineer**, **Environmental Health** and the **Grower Liaisons**. Tell them the confirmed coliform values and the intended plan and keep them informed about actions and results.
- Isolate the well and disinfect it with hypochlorite.
- Resample the well. If total or fecal coliform found, redisinfect. If no total or fecal coliform found, open the valves to the CSIP system and resample.
- Sample daily at the well where the total coliform was observed and two downstream locations until all values are <2. Redisinfect if necessary.

Document Storage

The Regional Water Quality Control Board requires that all documents pertaining to compliance with their permits shall be maintained for three years. Monterey County Environmental Health requires all documents related to bacteria in drinking water be stored for five years.

Monterey County Water Recycling Projects shall

- Keep all lab sheets and paper copies at least five years.
- Keep all electronic copies of data at least ten years.

e. Filter Loading Rate

If the filter loading rate alarm sounds and the filters automatically turn off:

- Make sure that the Filter Loading Evaluation for Water Reuse (FLEWR) testing is not being performed which allows (with various requirements) filter loading rates up to 7.749 gpm/ft²-min and that the alarm setting was correct.
- Look to see if only one or if multiple filters went off line.
- If only one filter went off line, determine and correct the problem. Then reset the filter and resume flow.
- If more than one filter went off line, place SVRP into recirculation for one and one-half times the theoretical residence time of the Chlorine Contact Basins, then allow flow to the Storage Pond.

f. High Turbidity

Secondary Effluent turbidity is measured at Coag/Floc Chamber. The daily maximum secondary turbidity is 225 NTU per NPDES WDR 97-83 and WRR 94-82.

If secondary turbidity is >10 NTU then begin feeding chemical (ACH, PAC, or other) at the Biofloculation Basins to try to help reduce turbidity.

If the secondary turbidity is >15 NTU, place SVRP into recirculation mode (unless desperate/emergency):

- Consider adding polymer, ACH, ferric, or PAC to primary or secondary system to lower turbidity.
- When turbidity < 12 NTU re-start SVRP.

Recycled Water turbidity is measured in the Filter Building on the combined filter effluent. The Water Reclamation Requirements No. 94-82, allows a combined turbidity maximum daily mean of up to 2.0 NTU. The maximum allowed instantaneous combined turbidity is 5.0 NTU. A high-level alarm sounds when the combined turbidity rises to 2.0 NTU. When the turbidity of an individual filter reaches 4.0 NTU, the filter is automatically shut down. If the combined turbidity reaches 4.0 NTU, all the filters automatically shut down.

If the instantaneous combined turbidity exceeds 2.0 NTU or the individual filter exceeds 4.0 NTU and the safeguards work, then there is no crisis.

If the instantaneous combined turbidity exceeds 2.0 NTU or the individual filter exceeds 4.0 NTU and the safeguards do not work, then there is a **Level 1** crisis, as long as the problem is investigated and corrected so that no violation occurs. In this case, explain what happened at the next **Water Quality & Operations Meeting**.

If the instantaneous combined turbidity exceeds 5 NTU, then close the Chlorine Contact Basin **exit** gate. Recirculate until the combined turbidity has been <2 NTU for twice the nominal residence time of the Chlorine Contact Basins. Open the gate and resume treating water. This would be a **Level 2** crisis. Provide the **Crisis Management Committee** with a written report on why the safeguards did not work and what is being changed. Explain what happened at the next **Water Quality & Operations Meeting**.

If a permit violation occurs, it becomes a **Level 3** crisis, contact the **Regional Board** and the **Crisis Management Committee**, and inform them what happened. Investigate and write a report on how the safeguards did not work and make suggestions for improvement. Provide the report to the **Regional Board** and **Crisis Management Committee** and convene the **Crisis Team** to discuss. Provide an oral report at the next **Water Quality & Operations Committee** meeting.

g. pH

Normally, secondary effluent pH varies between 7.2 and 7.6 and tertiary effluent is about 0.2 pH units lower. The Water Reclamation Requirements (WDR Order No. 94-82, requirement B4) requires pH to be between 6.5 and 8.4 pH units at all times. The Regional Board is allowing us have pHs as low as 6.0 in a pilot program. Ocean discharge (NPDES Order No. 97-83, Table A) allows pHs between 6.0 and 9.0. Currently, pH is measured through daily grab samples at the secondary effluent sampler and at the chlorine contact basin weirs. A pH meter will be placed at the TF station. It is recommended that it be connected and that the SCADA alarm at pH 6.5 and 8.0. Alternately, a new pH meter is located at the Headworks and is connected to the SCADA system with alarms. A pH meter is installed at the Coag/Floc Basin next to the turbidity meter and displays on the SVRP SCADA system. Currently, it has two alarms 6.5 and 8.0 pH units. It is recommended that the high alarm be lowered to 7.8 and the high high alarm be lowered to 8.0 and that a low pH alarm be initiated at 6.5 pH units.

If the Trickling Filter or Headworks pH is less than 6.5 or greater than 8.0 then it is a likely that a spill or dumping event has occurred.

- Turn off SVRP
- Call **Crisis Management Committee**. Ask **Environmental Health** to help in investigation.
- **Source Control** with help from **Field Maintenance** to initiate investigation of pump stations, manhole and commercial and industrial users.
- If source City is found, call **City Public Works Director** to mobilize City forces to find source.
- **Lab** to initiate investigation of secondary system. Measure dissolved oxygen throughout RTP, look at color, look microscopically at Biofloculation organisms, check settling, run respirometer tests on the water.
- If water is not toxic then restart SVRP (requires direction from **WWTP Ops Manager**, **Assistant General Manager**, or, if these staff members are not available, a Supervising WWTP Operator.
- If water appears to be toxic, contact **Environmental Health's HazMat Response Team** through 911. Contact **Crisis Management Committee** and **Regional Board**.
- Add acid or base, as appropriate, if available.
- Write a thorough report after all investigations complete. Provide the report to the **Regional Board** and the **Crisis Management Committee**.

If pH is less than 6.5 or greater than 8.0:

- Turn off SVRP
- Call **Crisis Management Committee**. Ask **Environmental Health** to help in investigation. Contact **Environmental Health's HazMat Response Team** through 911. Tell **Regional Board** that permit violation is possible.
- **Source Control** with help from **Field Maintenance** to initiate investigation of pump stations and commercial and industrial users.
- **Lab** to initiate investigation of secondary system. Measure dissolved oxygen throughout RTP, look at color, look microscopically at Biofloculation organisms, run respirometer tests on the water, and check settling.
- Write a thorough report after all investigations complete. Provide the report to the **Regional Board**, and the **Crisis Management Committee**.

If pH is 9.0 turn off Trickling Filter Pump Station but otherwise follow the pH 8.2 to 9.0 plan but do not restart SVRP until approved by the **WWTP Operations Manager**, **Assistant General Manager**, or, in their absence, a Supervising **WWTP Operator**. Capture the water in Secondary Clarifiers, if available and re-treat later.

h. Power Outages

(There are no permit requirements related to SVRP or CSIP power outages. The RTP is to maintain power and function with up to 100-year events)

Normal SVRP and CSIP Power “Bumps” or “Normal” Outages

- Follow normal procedures for resetting equipment and restarting the SVRP.

Rolling Blackout—SVRP (Block 1 includes Molera and Lapis Booster Stations)

- June-August: Maintain the storage pond at EL 122 or above.
- When Stage 2 for Block 1, increase the Storage Pond to EL 125.
- When Stage 3 for Block 1, increase monitoring of:
 - SCADA
 - Pond Level
 - Supplemental Wells. Utilize wells to maintain the desired pond level.
 - Review water orders and compare with usage.
- Follow SOP if water demand exceeds supply.
- Restart SVRP as soon as possible after the outage.

Rolling Blackout—CSIP (Block 2 includes all supplemental wells, all monitoring stations and Espinosa Booster Station)

- June-August: Maintain the storage pond at EL 122 or above.
- When Stage 2 for Block 2, increase the Storage Pond to EL 125. **DSOs** to call all growers. Confirm water orders and ask about water delivery flexibility.
- When Stage 3 for Block 2, **DSO Supervisor**, and **DSOs** to call all growers and increase monitoring of:
 - SCADA
 - Pond Level
 - Review water orders and compare with usage.
- Follow SOP if water demand exceeds supply.
- Restart CSIP system as soon as possible after the outage.

Major Blackout (like Loma Prieta event—3 days)

- Assess RTP and SVRP and initiate repairs as needed.
- Rent as many generators as possible.
- First priority is to get SVRP powered up.
- Second priority is to get the largest good wells running continuously (filling pond at night).
- Repair and test equipment with a generator including vibration testing so that when power is restored as many supplemental well and other equipment will be functional as possible.
- Follow SOP if water demand exceeds supply.

i. Unusual Occurrence

If anything unusual occurs (such as discoloration) in the Secondary Plant then shut down the Recycled Pump Station until directed to restart it.

If the unusual occurrence is not discovered until it is at the Coag/Floc, Filters or Chlorine Contact Basins then shut the **entrance** gate into the Storage Pond. Place the SVRP into recirculation until directed by **WWTP Ops Manager**, **Assistant General Manager**, or, in their absence, a **Shift Supervisor** to reopen it.

In either case, it is a Level 1 event; contact the **Water Resources Engineer**, **Grower Liaisons** and **Health Representative**, and tell them what occurred and what is being done.

If the unusual occurrence is not discovered until the water has entered the Storage Pond, then shut the Storage Pond **exit** gate, contact the **DSOs**, and turn off the SVRP.

In this case, it is a Level 2 event; contact the **Crisis Management Committee**, and tell them what occurred and what is being done. If terrorism or sabotage is suspected or if a permit violation is likely, then it is a Level 3 event, contact the **Crisis Management Committee**, **Regional Board**, and **SWRCB**.

j. Water Demand Exceeds Supply

- Turn on all supplemental wells including emergency wells. Contact **DSOs** and **DSO Supervisor**, and **WWTP Ops Manager**. Check water order to see how long the condition is likely to continue. This is a **Level 1** crisis.
- If the problem persists, it becomes a **Level 2** crisis. Call the **Water Resources Engineer**, **Grower Liaisons**, **Health Leader**, and **each grower with a reservoir**. Explain the situation. Ask reservoir owners to adjust their fill time to a low demand time. **DSOs** will be available to confirm that the water fills the reservoir and that the turnout is turned off or to manually fill the reservoirs if needed.
- If the problem continues, it becomes a **Level 3** crisis. Call the **General Managers**, the **Crisis Team**, and each grower. Ask the growers to use their own wells if they have them. Mobilize generators, if necessary, to power grower's private wells. If the growers do not have their own well, ask them to voluntarily reduce water demand.
- If there is no longer water available, it becomes a **Level 4** crisis. Call the **County Supervisors** and the **Board members of MRWPCA** and **MCWRA** and explain to them the situation and what is being done about it. The following priorities will be followed.
 - 1) Grower submitted water order but does not have a viable standby well.
 - i) Transplants or Seedlings
 - ii) Celery or Lettuce
 - iii) Other row crops
 - iv) Artichokes
 - 2) Grower submitted water order and has viable standby well.
 - i) Transplants or Seedlings
 - ii) Celery or Lettuce
 - iii) Other row crops
 - iv) Artichokes
 - 3) Grower did not submit a water order.
 - i) Transplants or Seedlings
 - ii) Celery or Lettuce
 - iii) Other row crops
 - iv) Artichokes

If anyone takes water without permission, then the turnout shall be turned off and locked out until water supply exceeds demand or until directed by staff of the MCWRA or by the Water Quality & Operations Committee.

For **Level 1** or **Level 2** events, tell the **Water Quality & Operations Committee** about the situation at the next meeting. For **Level 3** or **Level 4** events, provide a written report which is sent to all the **growers** and the various **Board members** and discussed at the next **Water Quality & Operations Committee** meeting.

11. BLANK CHECKLISTS AND FORMS

a. Immediate Response

1. Contact Crisis Team Leader (CTL)
Team Leader _____ notified _____ (time/date)
Alternate _____ notified _____ (time/date)
2. Determine severity of the crisis. Level _____
3. Mobilize the team (see Roles and Responsibilities Chapter 5a-e) via conference call
Team Coordinator _____ notified _____ (time/date)
Alternate _____ notified _____ (time/date)
Communications Leader _____ notified _____ (time/date)
Alternate _____ notified _____ (time/date)
Health Dept Leader _____ notified _____ (time/date)
Alternate _____ notified _____ (time/date)
Alternate _____ notified _____ (time/date)
Grower Liaison _____ notified _____ (time/date)
Grower Liaison _____ notified _____ (time/date)
WQ&Ops Member _____ notified _____ (time/date)
Alternate _____ notified _____ (time/date)
CSIP Liaison _____ notified _____ (time/date)
Alternate _____ notified _____ (time/date)
SVRP Liaison _____ notified _____ (time/date)
Alternate _____ notified _____ (time/date)
Member at Large _____ notified _____ (time/date)
Member at Large _____ notified _____ (time/date)
Member at Large _____ notified _____ (time/date)
Lab & Safety Liaison _____ notified _____ (time/date)
Alternate _____ notified _____ (time/date)
Finance Liaison _____ notified _____ (time/date)
Alternate _____ notified _____ (time/date)
Logistics Leader _____ notified _____ (time/date)
Legal Counsel _____ notified _____ (time/date)
Insurance Rep _____ notified _____ (time/date)
Communication Consultant _____ notified _____ (time/date)
Water Reuse Expert _____ notified _____ (time/date)
Agriculture Expert _____ notified _____ (time/date)
Public Health /Medical Expert _____ notified _____ (time/date)
4. Gain control of the telephones by distributing standby script, telephone call logs.

Customer Service Supervisor notified _____ (time/date)
RTP Administrative Support Specialist II notified _____ (time/date)
Executive Assistant to the GM/Board notified _____ (time/date)
Control Room notified _____ (time/date)
Source Control Supervisor notified _____ (time/date)
Community Relations Specialist notified _____ (time/date)

- 5. Assess the situation with Crisis Team (CT).

- 6. Prepare the communications strategy and tools (see Chapter 4).

- 7. Communicate with key audiences, as appropriate.

- 8. Update Crisis Response Plan.

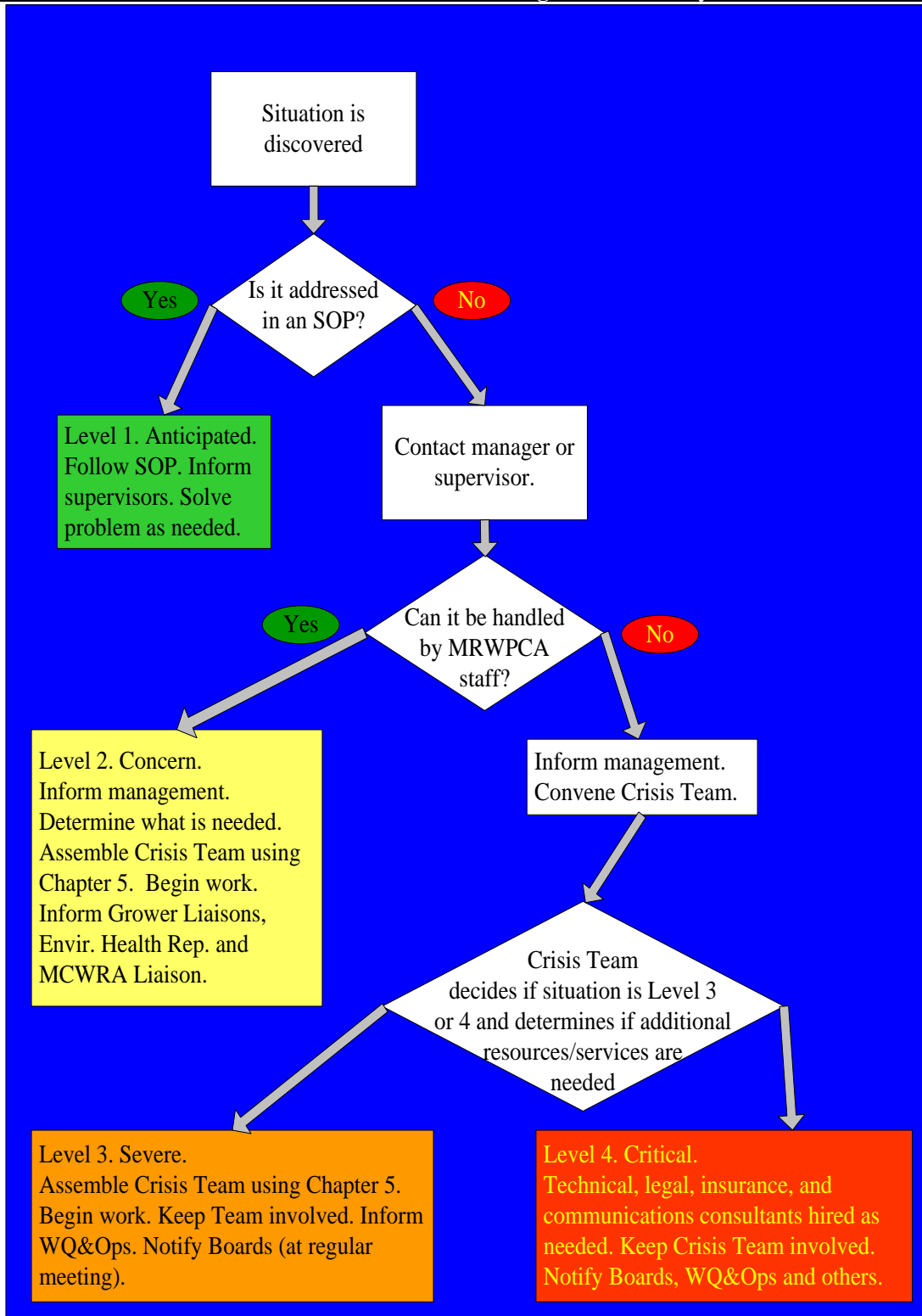
b. Crisis Communications Team Roster

ROLE	NAME / TITLE / COMPANY / EMAIL	NUMBERS
Grower Liaison		Tel home fax cell
Grower Liaison		Tel home fax cell
Team Leader		Tel home fax cell
Team Leader Alternate		Tel home fax cell
Health Dept Leader		Tel home fax cell
Health Dept Leader Alternate(s)		Tel home fax cell
Team Coordinator		Tel home fax cell
Team Coordinator Alternate		Tel home fax cell
CSIP Liaison		Tel home fax cell

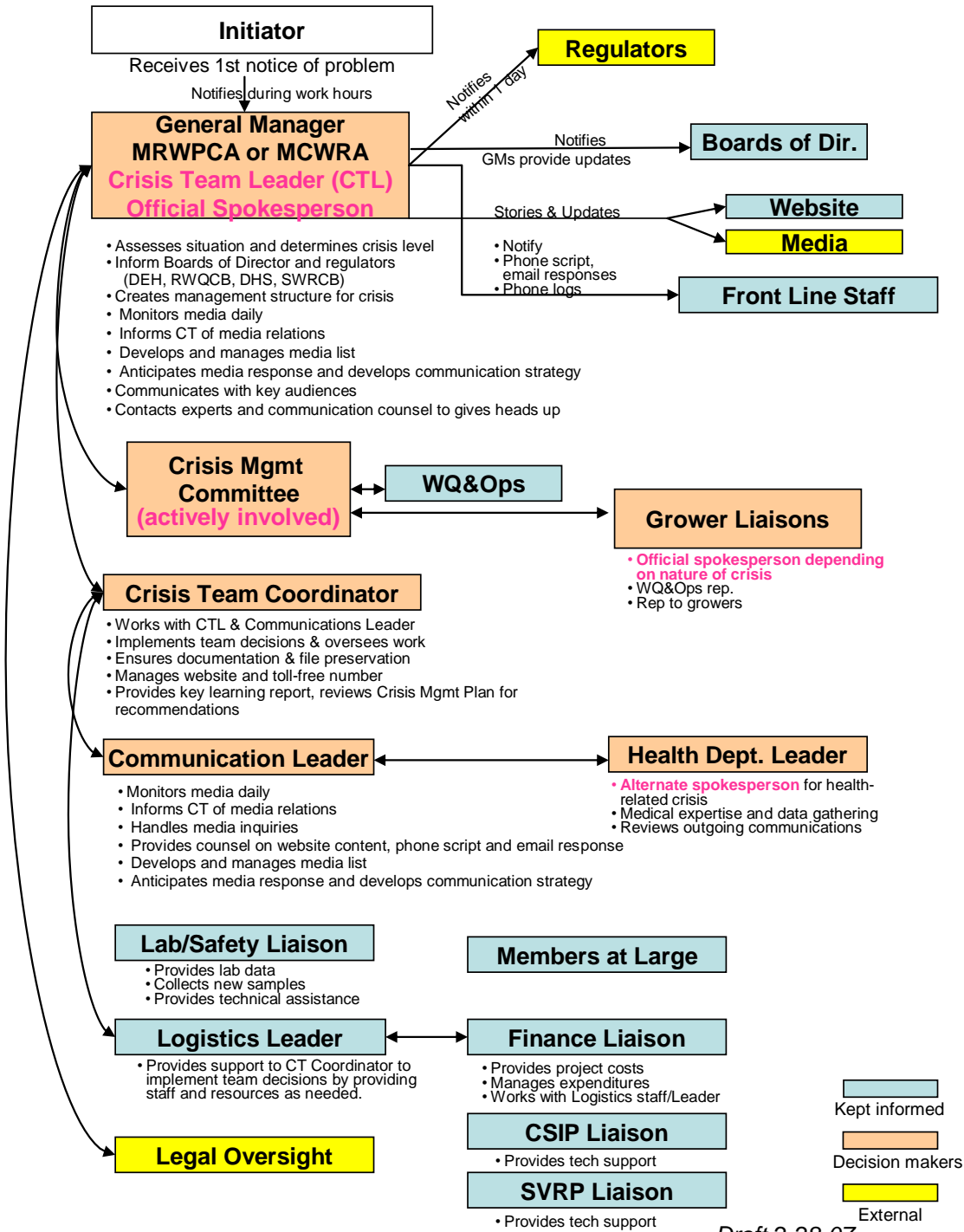
ROLE	NAME / TITLE / COMPANY / EMAIL	NUMBERS
CSIP Liaison Alternate		Tel home fax cell
SVRP Liaison		Tel home fax cell
SVRP Liaison Alternate		Tel home fax cell
Lab & Safety Liaison		Tel home fax cell
Finance Liaison		Tel home fax cell
Member-at-large		Tel home fax cell
Member-at-large		Tel home fax cell
Member-at-large		Tel home fax cell
Insurance Rep.		Tel home fax cell
Legal Counsel		Tel home

ROLE	NAME / TITLE / COMPANY / EMAIL	NUMBERS
		fax cell
Logistics Liaison		Tel home fax cell
Communication Leader		Tel home fax cell
Expert		Tel home fax cell
Expert		Tel home fax cell
Expert		Tel home fax cell

c. Flow Chart for Determining Crisis Severity

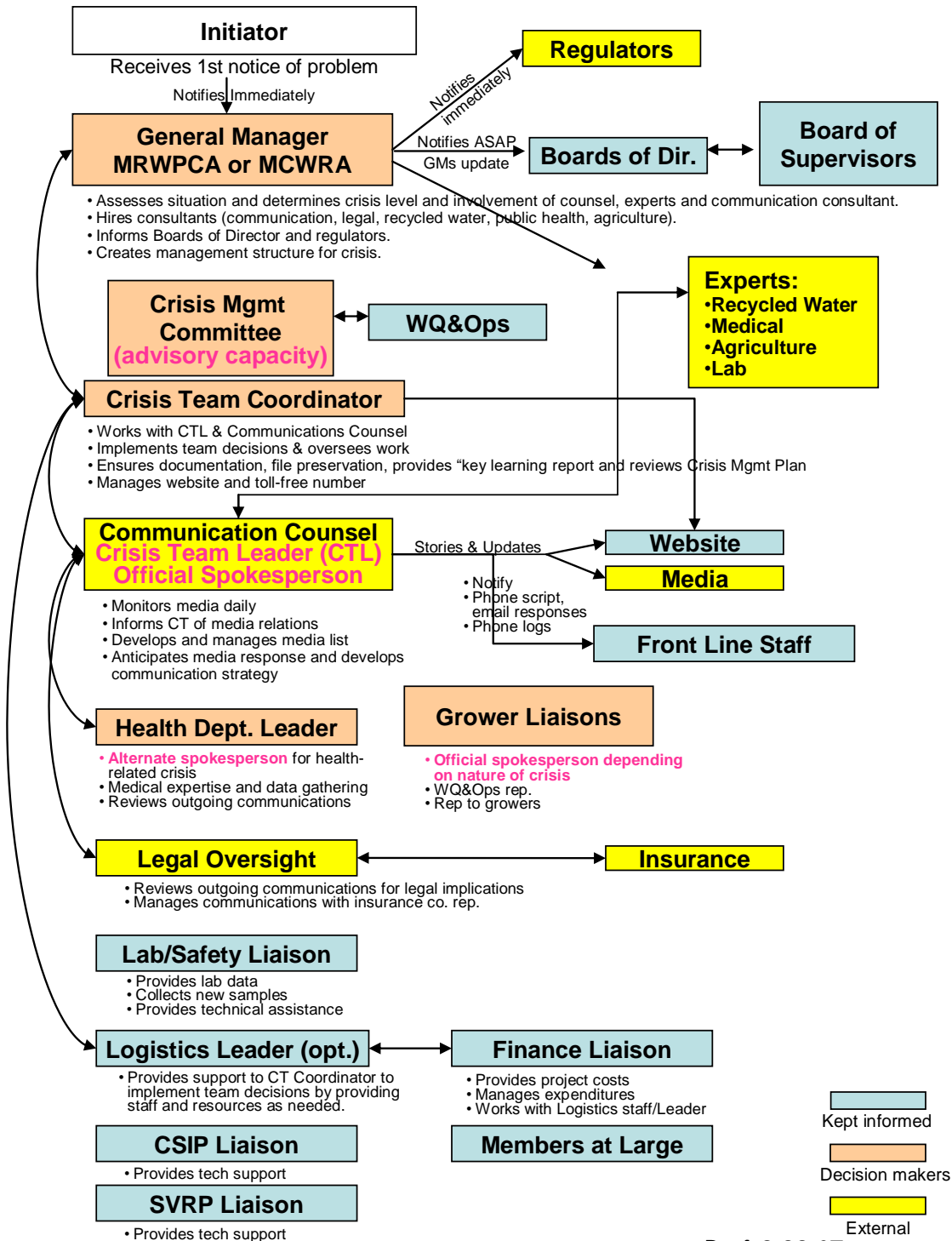


d. Level 3 Crisis Organizational Chart



Draft 2-28-07

e. Level 4 Crisis Organizational Chart



Draft 2-28-07

f. Media Inquiry Form

Incident Title _____

Date _____

Time _____

Reporter name _____

Publication/Station _____

Reporter phone _____ Reporter email _____

Reporter fax _____

Who took call? _____

Deadline _____ Story to appear _____

Initial Questions _____

Who responded _____

When response provided _____

Response (include list of any documents sent) _____

g. Media Monitoring Form

Incident Title _____

Refer to media list and any press releases as necessary.

Publication _____ Date _____

Reporter _____

Headline _____

Byline _____

Tone (positive, neutral, negative) _____

Length _____

Photo _____

Follow up required _____

Notes _____

h. Communications Strategy Worksheet

Incident Title _____
Date _____

How widespread is the knowledge of this situation? _____

Who are the primary and secondary audiences?

Primary: _____

Secondary: _____

How are the involved audiences likely to react/reacting? _____

What is the extent of Projects' (MRWPCA's & MCWRA's) involvement?

Who else is involved? _____

Adversaries: _____

Supporters: _____

Has (or can) the **Projects** or anyone from the **Projects** been (or be) publicly implicated?

What obvious factors are unknown or missing? _____

i. Crisis Incident Summary Sheet

Incident Title: _____ Date Updated: _____

Situation: _____

If illness, number of people affected: _____ died _____ seriously ill _____ sickened

Impacted area/persons: _____

Incident date/time (if specific or first occurrence): _____

Incident notification date/time/person notifying: _____

Crisis Team Leader: _____ Spokesperson: _____

Cause of incident: _____

If cause unknown, list investigations being conducted? * Indicate lead agency

Investigating Agency	What is being investigated?	Date of Expected Results	Results/Date

Actions taken to control crisis (include dates): _____

j. Phone Log Form

Phone Conversation Log

Date: _____ Time: _____
Person Calling: _____ Phone No: _____
Company/Affiliation: _____ Fax: _____
Title: _____ Email: _____
Subject: _____

Key Conversation Points:

Name Date
Response required? Yes No
Person(s) referred to for response: _____
Copies provided to: _____

MCWD Recycled Water Project



Appendix F 100% Design Submittal



MARINA COAST WATER DISTRICT

REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE AND BLACKHORSE RESERVOIR

CIP # RW-0156
VOLUME 2 OF 2

MAY 2017

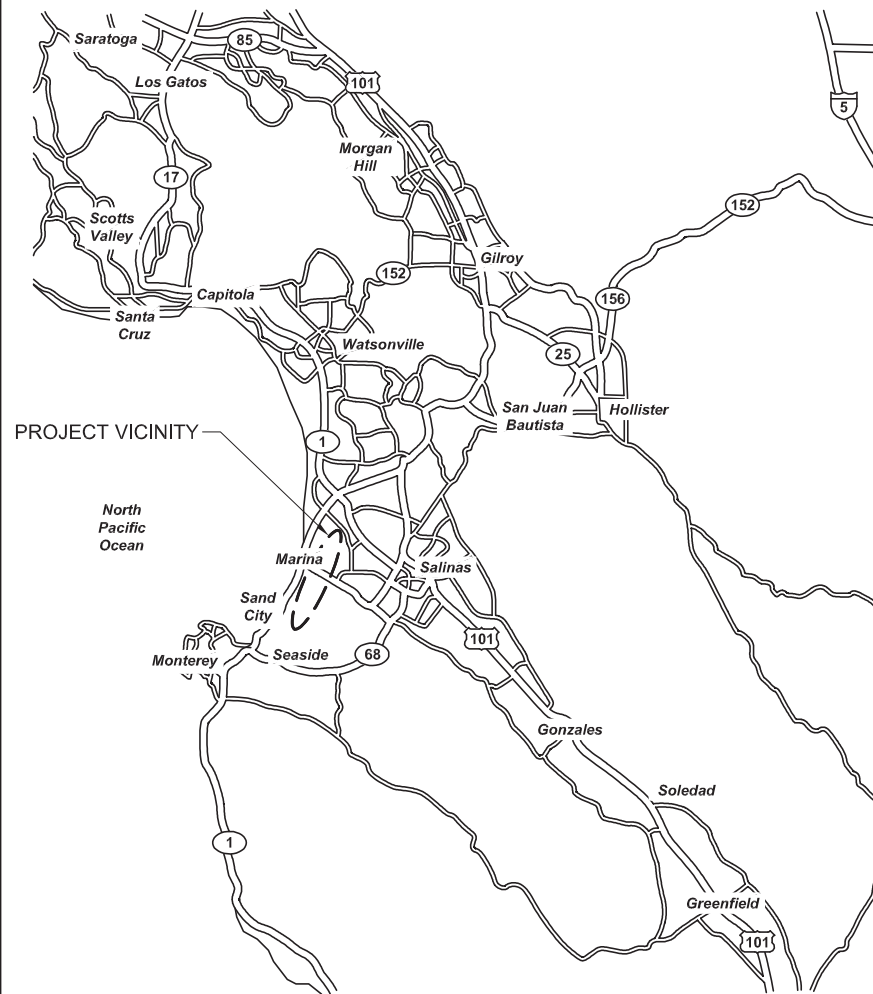
SHEET INDEX

RECYCLED WATER PIPELINE

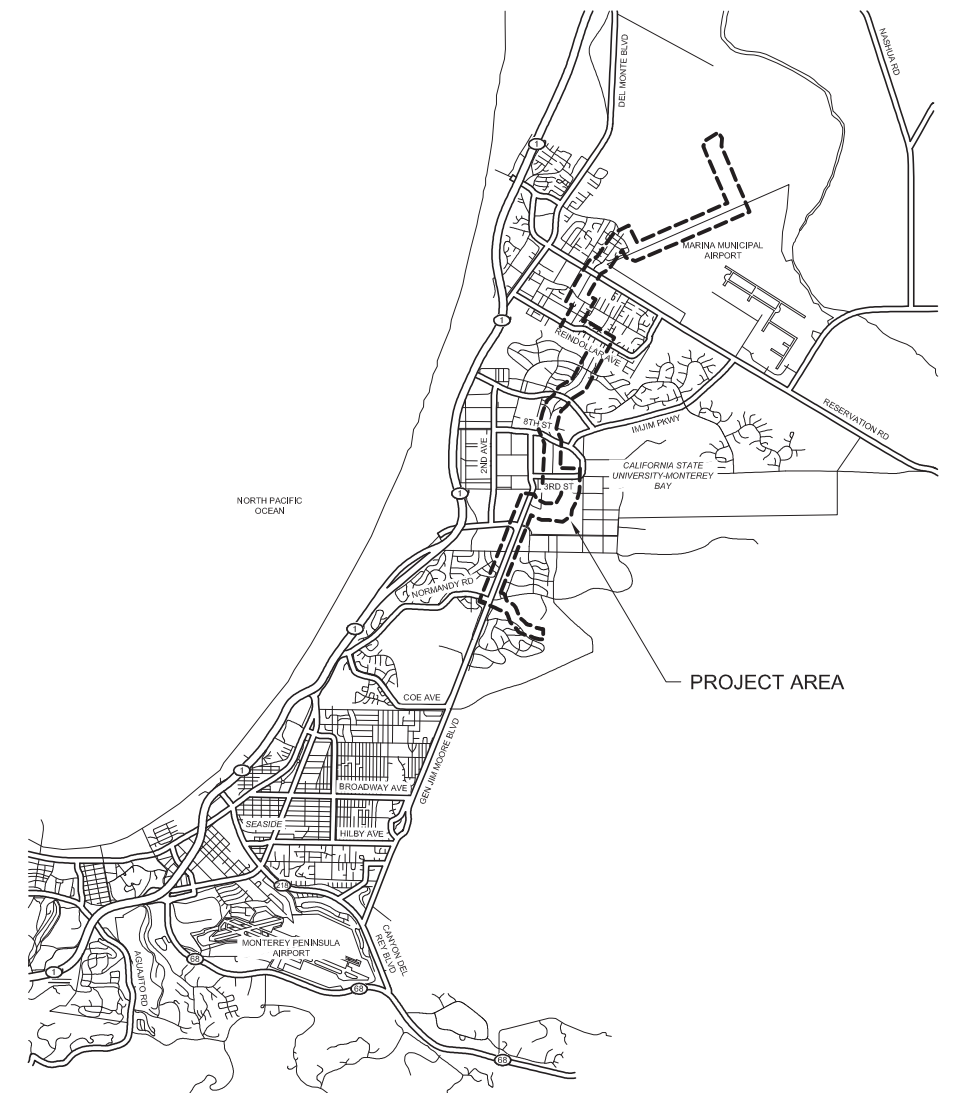
1	G-01	COVER SHEET
2	G-02	GENERAL NOTES - 1
3	G-03	GENERAL NOTES - 2
4	CG-01	INDEX MAP
5	CG-02	SURVEY CONTROL POINTS
6	CR-01	PAVING PLAN - 1
7	CR-02	PAVING PLAN - 2
8	CR-03	PAVING PLAN - 3
9	C-01	PLAN AND PROFILE - STA. 9+95.85 TO STA. 19+00
10	C-02	PLAN AND PROFILE - STA. 19+00 TO STA. 29+00
11	C-03	PLAN AND PROFILE - STA. 29+00 TO STA. 39+00
12	C-04	PLAN AND PROFILE - STA. 39+00 TO STA. 49+00
13	C-05	PLAN AND PROFILE - STA. 49+00 TO STA. 59+00
14	C-06	PLAN AND PROFILE - STA. 59+00 TO STA. 69+00
15	C-07	PLAN AND PROFILE - STA. 69+00 TO STA. 79+00
16	C-08	PLAN AND PROFILE - STA. 79+00 TO STA. 89+00
17	C-09	PLAN AND PROFILE - STA. 89+00 TO STA. 99+00
18	C-10	PLAN AND PROFILE - STA. 99+00 TO STA. 109+00
19	C-11	PLAN AND PROFILE - STA. 109+00 TO STA. 119+00
20	C-12	PLAN AND PROFILE - STA. 119+00 TO STA. 129+00
21	C-13	PLAN AND PROFILE - STA. 129+00 TO STA. 139+00
22	C-14	PLAN AND PROFILE - STA. 139+00 TO STA. 149+00
23	C-15	PLAN AND PROFILE - STA. 149+00 TO STA. 159+00
24	C-16	PLAN AND PROFILE - STA. 159+00 TO STA. 169+00
25	C-17	PLAN AND PROFILE - STA. 169+00 TO STA. 179+00
26	C-18	PLAN AND PROFILE - STA. 179+00 TO STA. 189+00
27	C-19	PLAN AND PROFILE - STA. 189+00 TO STA. 199+00
28	C-20	PLAN AND PROFILE - STA. 199+00 TO STA. 209+00
29	C-21	PLAN AND PROFILE - STA. 209+00 TO STA. 219+00
30	C-22	PLAN AND PROFILE - STA. 219+00 TO STA. 229+00
31	C-23	PLAN AND PROFILE - STA. 229+00 TO STA. 239+00
32	C-24	PLAN AND PROFILE - STA. 239+00 TO STA. 249+00
33	C-25	PLAN AND PROFILE - STA. 249+00 TO STA. 259+00
34	C-26	PLAN AND PROFILE - STA. 259+00 TO STA. 269+00
35	C-27	PLAN AND PROFILE - STA. 269+00 TO STA. 279+00
36	C-28	PLAN AND PROFILE - STA. 279+00 TO STA. 289+00
37	C-29	PLAN AND PROFILE - STA. 289+00 TO STA. 299+00
38	C-30	PLAN AND PROFILE - STA. 299+00 TO STA. 309+00
39	C-31	PLAN AND PROFILE - STA. 309+00 TO STA. 319+00
40	C-32	PLAN AND PROFILE - STA. 319+00 TO STA. 329+00
41	C-33	PLAN AND PROFILE - STA. 329+00 TO STA. 339+00
42	C-34	PLAN AND PROFILE - STA. 339+00 TO STA. 349+00
43	C-35	PLAN AND PROFILE - STA. 349+00 TO STA. 359+00
44	C-36	PLAN AND PROFILE - STA. 359+00 TO STA. 369+00
45	C-37	PLAN AND PROFILE - STA. 369+00 TO STA. 379+00
46	C-38	PLAN AND PROFILE - STA. 379+00 TO STA. 389+00
47	C-39	PLAN AND PROFILE - STA. 389+00 TO STA. 389+56.2
48	C-40	PLAN AND PROFILE - WATER LINE 'A' STA. A10+00 TO STA. A19+00
49	C-41	PLAN AND PROFILE - WATER LINE 'A' STA. A19+00 TO STA. A28+00
50	C-42	PLAN AND PROFILE - WATER LINE 'A' STA. A28+00 TO STA. A37+00
51	C-43	PLAN AND PROFILE - WATER LINE 'A' STA. A37+00 TO STA. A47+00
52	C-44	PLAN AND PROFILE - WATER LINE 'A' STA. A47+00 TO A48+39.73
53	C-45	PIPELINE - DETAILS, BAYONET & BLACKHORSE GOLF COURSE CONNECTION
53A	TP-01	PIPELINE TYPICAL DETAILS

BLACKHORSE RECYCLED WATER RESERVOIR

54	G-02	GENERAL NOTES AND SURVEY CONTROL POINTS
55	D-01	EXISTING SITE PLAN AND DEMOLITION PLAN
56	TC-01	CIVIL TYPICAL DETAILS - I
57	TE-01	ELECTRICAL TYPICAL DETAILS - I
58	TE-02	ELECTRICAL TYPICAL DETAILS - II
59	TE-03	ELECTRICAL TYPICAL DETAILS - III
60	TN-01	INSTRUMENTATION TYPICAL DETAILS - I
61	C-01	FINISHED SITE PLAN AND YARD PIPING
62	C-02	PAVING AND GRADING PLAN AND HORIZONTAL CONTROL CIVIL DETAILS
63	C-03	CIVIL DETAILS
64	C-04	PUMP STATION - PLAN & SECTION
65	SG-01	BLACKHORSE RESERVOIR - STRUCTURAL NOTES
66	SG-02	BLACKHORSE RESERVOIR - STRUCTURAL TYPICAL DETAILS
66A	SG-03	BLACKHORSE RESERVOIR - STRUCTURAL TYPICAL DETAILS
67	S-01	RESERVOIR - PLANS
68	S-02	RESERVOIR - SECTIONS AND DETAIL
69	S-03	RESERVOIR - PLAN, SECTIONS AND DETAILS
70	M-01	RESERVOIR PLAN AND DETAILS
71	M-02	RESERVOIR DETAILS
72	M-03	OVERFLOW AND DRAIN PLAN AND SECTIONS
73	E-01	LEGEND
74	E-02	ABBREVIATIONS
75	E-03	SCHEMATIC SYMBOLS
76	E-04	ELECTRICAL SITE PLAN
77	E-05	MCC-01 ELEVATION
78	E-06	MCC-01 ONE-LINE DIAGRAM
79	E-07	SCHEMATICS
80	E-08	PARTIAL PLANS
81	E-09	SCHEDULES
82	N-01	SYMBOLS & ABBREVIATIONS - I
83	N-02	SYMBOLS & ABBREVIATIONS - II
84	N-03	SYMBOLS & ABBREVIATIONS - III
85	N-04	SYMBOLS & ABBREVIATIONS - IV
86	N-05	RESERVOIR AND PUMP - P&ID
87	CP-01	RESERVOIR PLANS
88	CP-02	RESERVOIR SECTION, SCHEMATIC & DETAILS
89	CP-03	TANK INTERIOR SCHEMATIC AND DETAILS
90	CP-04	TANK INTERIOR SCHEMATIC AND DETAILS
91	CP-05	TANK INTERIOR DETAILS
92	CP-06	TANK BOTTOM EXTERIOR DETAILS
93	CP-07	TANK EXTERIOR DETAILS



VICINITY MAP



LOCATION MAP

APPROVED:

MICHAEL WEGLEY
DISTRICT ENGINEER

SUBMITTED:

Anne E. Prudhel
ANNE PRUDHEL, P.E.
CAROLLO ENGINEERS
R.C.E. 66426

BID SET			
REV	DATE	BY	DESCRIPTION

Call before you Dig
Avoid cutting underground utility lines. It's costly.



OR
1-800-227-2600



2700 YGNACIO VALLEY ROAD, SUITE 300
WALNUT CREEK, CA. 94548
925-932-1710

Digitally signed by Anne Prudhel
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:03:41 -0700



GENERAL NOTES

1. REFER TO VOLUME 3 OF 3 - TYPICAL DETAIL BOOK FOR ALL DETAILS DENOTED BY  , ALL MCWD STANDARD DETAILS, AND ABBREVIATIONS.

STANDARD RECYCLED WATER NOTES

- CONTRACTOR SHALL POTHOLE AND VERIFY VERTICAL AND HORIZONTAL LOCATIONS OF EXISTING UTILITIES AT LEAST 7 DAYS IN ADVANCE OF CONSTRUCTION OPERATIONS TO ALLOW FOR MINOR GRADE ADJUSTMENTS WITHOUT DELAYING INSTALLATION.
- THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS, SURVEY OF VISIBLE ABOVE GROUND SURFACE FEATURES AT THE TIME OF SURVEY, AND LIMITED POTHOLES AS SHOWN ON THE PLANS. THIS DOES NOT GUARANTEE THE ACCURACY, COMPLETENESS, LOCATION, OR THE EXISTENCE OR NON-EXISTENCE OF ANY UTILITY PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THE CONTRACTOR IS REQUIRED TO TAKE ALL DUE PRECAUTIONARY MEANS NECESSARY TO PROTECT THOSE UTILITY LINES NOT SHOWN ON THESE PLANS.
- WATER, SEWER, AND GAS SERVICE LATERALS ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL SERVICE LATERALS.
- ALL SERVICE LATERALS DAMAGED OR BROKEN DURING CONSTRUCTION SHALL BE REPLACED IN KIND. SEWER AND WATER LATERAL REPAIRS SHALL CONFORM TO MCWD STD. DETAILS S-6, W-1 and W-2 RESPECTIVELY UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
- AN ENCROACHMENT PERMIT FROM THE APPLICABLE JURISDICTIONAL AGENCY IS REQUIRED PRIOR TO ANY WORK WITHIN PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL ADHERE TO ALL REQUIREMENTS OF ALL ENCROACHMENT PERMITS ISSUED.
- ALL WORK WITHIN PRIVATE EASEMENTS SHALL BE PERFORMED IN ACCORDANCE WITH ALL CONDITIONS PROVIDED IN THE EASEMENT, RIGHT-OF-ENTRY, OR TEMPORARY PERMIT DOCUMENTS AS DESCRIBED IN SECTION 01140.
- UNDER THE DIRECTION OF A SURVEYOR LICENSED IN THE STATE OF CALIFORNIA, THE CONTRACTOR SHALL RESET ALL MONUMENTATION DISTURBED OR REMOVED DURING CONSTRUCTION ACTIVITIES PER C040/TYP.
- WHERE THE RECYCLED WATERLINE CROSSES EXISTING UTILITIES, THE RECYCLED WATERLINE SHALL BE INSTALLED A MINIMUM OF 12" VERTICALLY FROM THE EXISTING UTILITY. THE RECYCLED WATERLINE MUST CROSS BELOW EXISTING WATERLINES AND ABOVE EXISTING SANITARY SEWER LINES - SEE MCWD TYP DET W-16 FOR ADDITIONAL REQUIREMENTS.
- CARVs ARE REQUIRED AT ALL HIGH POINTS IN PIPELINES. BLOW-OFFS ARE REQUIRED AT ALL LOW POINTS IN PIPELINES.

BASIS OF BEARINGS

BEARINGS SHOWN HEREON ARE GRID BEARINGS PER THE CALIFORNIA COORDINATE SYSTEM, NAD 83, ZONE 4 (EPOCH 2002.00), AS DETERMINED BY GPS OBSERVATIONS AND THE NATIONAL GEODETIC SURVEY'S (NGS) ONLINE POSITIONING USER SERVICE (OPUS). ALL DISTANCES ARE GRID DISTANCES. AERIAL TOPOGRAPHY FLOWN AUGUST-SEPTEMBER 2006.

BENCHMARK:
ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). A PUBLISHED NAVD 88 ELEVATION OF 145.94 FEET FOR THE NGS BENCHMARK "L 813 RESET" (PID GU2130) WAS HELD AS THE PRIMARY VERTICAL BENCHMARK FOR THE PROJECT.

TURNOUT SCHEDULE

STATION	LOCATION	CONNECTION TYPE	CONNECTION DIAMETER
119+89.00	ARMSTRONG RANCH NEAR CRESCENT AVE	TEE	6
120+69.49	ARMSTRONG RANCH AND CRESCENT AVE	CROSS	24
120+69.49	ARMSTRONG RANCH AND CRESCENT AVE	CROSS	24
146+54.66	CRESCENT AVE AND RESERVATION ROAD	TEE	8
167+61.87	CARMEL AVE AND VAUGHN AVE	CROSS	24
174+88.57	VAUGHN AVE AND HILLCREST AVE	TEE	12
212+26.35	CALIFORNIA AVE AND PATTON PARKWAY	TEE	6
225+18.56	CALIFORNIA AVE AND FUTURE 3RD AVE	CROSS	16
225+42	CALIFORNIA AVE AND 3RD AVE	TEE	6
239+79.91	CALIFORNIA AVE AND IMJIM PKWY	TEE	8
256+47.09	5TH AVE AND 9TH STREET	TEE	12
256+85.00	5TH AVE AND 9TH STREET	TEE	6
270+13.46	5TH AVE IN CSUMB	TEE	6
271+74.16	5TH AVE IN CSUMB	TEE	6
273+07.70	5TH AVE IN CSUMB	TEE	6
277+64.35	5TH AVE IN CSUMB	TEE	6
279+21.33	5TH AVE AND 3RD STREET	TEE	24
279+33.31	5TH AVE AND 3RD STREET	TEE	24
283+36.51	5TH AVE AND 3RD STREET	TEE	6
309+20.16	CSUMB PROPERTY	TEE	6
326+67.76	ENGINEER ROAD AND ENGINEERING LANE	TEE	6
334+88.81	ENGINEER ROAD AND GENERAL JIM MOORE BLVD	TEE	6
343+60.31	GENERAL JIM MOORE BLVD AND LIGHTFIGHTER DRIVE	TEE	6
346+58.70	GENERAL JIM MOORE BLVD AND LIGHTFIGHTER DRIVE	TEE	6
346+63.12	GENERAL JIM MOORE BLVD AND LIGHTFIGHTER DRIVE	TEE	6
347+56.05	GENERAL JIM MOORE BLVD AND LIGHTFIGHTER DRIVE	CROSS	12
382+33.25	GENERAL JIM MOORE BLVD AND GIGLING ROAD	CROSS	16
389+03.84	GENERAL JIM MOORE BLVD AND NORMANDY ROAD	CROSS	24

**POTHOLING SCHEDULE
(POTHOLING PERFORMED IN 2007)**

POTHOLE #	LOCATION	AC THICKNESS	CONCRETE	TYPE	SIZE	MATERIAL	DEPTH	COMMENTS
1	3239 CRESCENT AVE	3"		GAS	1/2"	PLASTIC	40-1/2"	12' SE OF FACE OF DRIVEWAY AT 3239 CRESCENT AVE
				ELEC	2"	PLASTIC	41"	
				TV	1"	PLASTIC	40-1/2"	
2	CRESCENT AVE & QUEBRADA DEL MAR RD	4"		WATER	12"	PLASTIC	42"	EXCAVATED 12' SE FROM FACE OF CURB ALIGNMENT
				TV	2"	PLASTIC	37-1/2"	
3	CRESCENT AVE & QUEBRADA DEL MAR RD	3"		CONDUIT	2"	PLASTIC	37-1/2"	EXCAVATED 12' SE FROM FACE OF CURB ALIGNMENT
				GAS	2"	PLASTIC	35"	
				WATER	12"	PLASTIC	43"	
4	CRESCENT AVE & COSTA DEL MAR RD	3"		GAS	2"	PLASTIC	44"	56' NW OF STOP LINE AT COSTA DEL MAR RD
				ELEC	1"	PLASTIC	45"	
5	CRESCENT AVE & COSTA DEL MAR RD	3"		GAS	2"	PLASTIC	44"	19' SE OF STOP LINE AT COSTA DEL MAR RD
				ELEC	1"	PLASTIC	45"	
6	CRESCENT AVE & SIERENA DEL MAR RD	4"		GAS	2"	PLASTIC	32"	EXCAVATED 12' SE FROM FACE OF CURB ALIGNMENT
				WATER	12"	PLASTIC	96"	
6-A	CRESCENT AVE & SIERENA DEL MAR RD	4"		WATER	12"	PLASTIC	96"	66' NW OF STOP LINE AT SIERENA DEL MAR RD
7	CRESCENT AVE	4"		GAS	4"	PLASTIC	42"	6' SE FROM FACE OF CURB ON CRESCENT AVE
				GAS	2"	PLASTIC	42"	
8	3183 CRESCENT AVE & TALLMON ST	3"		GAS	2"	STEEL	37-1/2"	22' SE FROM FACE OF CURB AT 3183 CRESCENT AVE
				GAS	6"	STEEL	32"	
13	CRESCENT AVE & SHULER CIRCLE	3"		GAS	2"	STEEL	32"	58' NW OF FACE OF CURB AT 3170 CRESCENT AVE
				GAS	2"	STEEL	32"	
14	CRESCENT AVE & SHULER CIRCLE	3"		GAS	2"	STEEL	33"	EXCAVATED TO A DEPTH OF 10' AND NO WATER LINE FOUND. 41' NW OF FACE OF CURB AT 3170 CRESCENT AVE
				GAS	4"	PLASTIC	44-1/2"	
15	CRESCENT AVE & RESERVATION RD	5"	5"	GAS	4"	PLASTIC	44-1/2"	8' SW OF STOP LINE AT CRESCENT AVE
				DRY				
15-A	CRESCENT AVE & RESERVATION RD	5"		DRY				EXCAVATED TO A DEPTH OF 13'-2". 13' SW OF STOP LINE AT CRESCENT AVE
16	CRESCENT AVE & RESERVATION RD	5"		TELE	3"	PLASTIC	35"	30-1/2' SW OF STOP LINE AT CRESCENT AVE
				GAS	6"	STEEL	32"	
17	CRESCENT AVE & RESERVATION RD	5"		GAS	6"	STEEL	32"	37' NE OF FACE OF ISLAND ON CRESCENT AVE
				DRY				
18	CRESCENT AVE & RESERVATION RD	5"		DRY				CLEARED BY PG&E NO ELECTRIC UNDERGROUND. ELECTRIC OVERHEAD
				DRY				
19	CRESCENT AVE	3"		GAS	2"	STEEL	71"	137" NW FROM FACE OF CURB AT LIGHT POLE ON CRESCENT AVE
				GAS	3/4"	STEEL	66"	
21	CRESCENT AVE	3"		GAS	2"	STEEL	66"	12' NW FROM FACE OF CURB AT LIGHT POLE ON CRESCENT AVE
				DRY				
21-A	CRESCENT AVE	3"		GAS	2"	STEEL	52"	DRY HOLE AT AN EXCAVATION DEPTH OF 8'. 30" NORTHWEST FROM FACE OF CURB ON CRESCENT. CALLED PG&E ABOUT UTILITY NOT LOCATED. THEY WILL SEND SOMEONE TO LOCATE.
				DRY				
22	CRESCENT AVE & CARMEL AVE	5"		TELE CONDUIT		PLASTIC	62"	RE-MARKED BY PG&E AND FOUND 2" GAS. 41" NW FROM FACE OF CURB ON CRESCENT AVE
				WATER				
23	CRESCENT AVE & CARMEL AVE	5"		GAS	2"	STEEL	48"	12' NW FROM CENTER OF TELEPHONE MAN HOLE ON CARMEL AVE AT CRESCENT AVE
				GAS	2"	STEEL	47"	
24	CRESCENT AVE & CARMEL AVE	5"		GAS	2"	STEEL	47"	135" NE FROM CENTER OF TELEPHONE MAN HOLE ON CARMEL AVE AT CRESCENT AVE
				GAS	2"	STEEL	49"	
25	335 CARMEL AVE & VAUGHN AVE	5"		GAS	2"	STEEL	49"	13' SW OF FACE OF CURB AT 335 CARMEL AVE
				GAS	2"	STEEL	49"	
26	335 CARMEL AVE & VAUGHN AVE	5"		3-4" CONDUITS	3-4"	PLASTIC	41 - 1/2"	36' SW FROM EDGE OF CURB AT 335 CARMEL AVE
				WATER	8"	TRANSITE	39"	
27	335 CARMEL AVE & VAUGHN AVE	4"		WATER	8"	TRANSITE	39"	44' SW OF EDGE OF DRIVEWAY AT 335 CARMEL AVE
				GAS	2"	STEEL	41"	
28	VAUGHN AVE & EVERETT AVE	3"		GAS	2"	STEEL	41"	13' SE OF FACE OF CURB AT 3069 VAUGHN AVE
				GAS	2"	STEEL	30"	
29	VAUGHN AVE & HILLCREST AVE	3"		GAS	2"	STEEL	30"	27' SW OF STOP LINE AT VAUGHN AVE
				WATER	8"	TRANSITE	32 1/2"	
30	VAUGHN AVE & HILLCREST AVE	4"		WATER	8"	TRANSITE	32 1/2"	18' SW FROM MAN HOLE ON VAUGHN AVE
				GAS	2"	STEEL	35"	
31	334 REINDOLLAR AVE & VAUGHN AVE	3"		GAS	2"	STEEL	35"	35' NE FROM EDGE OF DRIVEWAY AT 334 REINDOLLAR AVE
				WATER	6"	TRANSITE	40"	
32	336 REINDOLLAR AVE & VAUGHN AVE	3"		WATER	6"	TRANSITE	40"	29' NE FROM FACE OF CURB AT 336 REINDOLLAR AVE
				GAS	2"	STEEL	35"	
33	338 REINDOLLAR AVE	3"		GAS	2"	STEEL	35"	43' SW FROM FACE OF CURB AT 338 REINDOLLAR AVE
				GAS	3/4"	STEEL	35"	

POTHOLES ARE DENOTED ON PLAN WITH 

Last Checked by: 4-28-17 01:15pm Bhwes

BID SET				DESIGNED AP	DISCIPLINE ENGINEER	PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 10:40:24-0700Z	PROJECT MANAGER 			Marina Coast Water District	REGIONAL URBAN WATER AUGMENTATION PROJECT		VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10
				DRAWN LGD							DRAWING NO. G-02			
				CHECKED							SHEET NO. 2 OF 93			
REV	DATE	BY	DESCRIPTION	DATE MAY 2017	CIVIL GENERAL NOTES - 1									

POTHOLING SCHEDULE (CONT.)
(POTHOLING PERFORMED IN 2007)

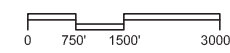
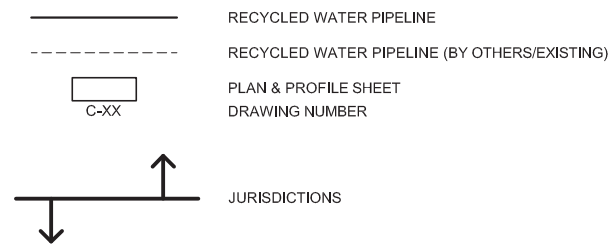
POT HOLE #	LOCATION	AC THICKNESS	CONCRETE	TYPE	SIZE	MATERIAL	DEPTH	COMMENTS
				GAS	3/4"	STEEL	35"	
34	342 REINDOLLAR AVE	3"		GAS	2"	STEEL	42"	31' SW FROM FACE OF CURB AT 342 REINDOLLAR AVE
35	REINDOLLAR AVE	3"		GAS	2"	STEEL	48"	22' SOUTH FROM FENCE LINE ON REINDOLLAR AVE
36	361 REINDOLLAR AVE & BERNEY DRIVE	2"		2-2" GAS	2-2"	STEEL TEE	39-1/2"	GAS TEE, 14' SOUTH FROM FENCE LINE AT 361 REINDOLLAR AVE. GAS LINES CROSS
37	REINDOLLAR AVE & BERNEY DR	5"		WATER	8"	TRANSITE	36 1/2"	23' WEST OF CENTER OF STOP LINE ON REINDOLLAR AVE & BERNEY INTERSECTION
38	366 REINDOLLAR AVE	3"		WATER	8"	AC TRANSITE	38"	34' SOUTH OF FACE OF CURB AT 366 REINDOLLAR AVE
39	373 REINDOLLAR AVE & KENNEDY CT	3"		GAS	2"	STEEL	39"	166" SW FROM FACE OF CURB AT UTILITY POLE. #71 REINDOLLAR AVE
40	383 REINDOLLAR AVE & KING DR	3"		GAS	2"	STEEL	33"	7' SW OF EDGE OF PAVEMENT AT 383 REINDOLLAR AVE
41	REINDOLLAR AVE & REDWOOD DR	4"		WATER	8"	TRANSITE	37"	26' NE FROM FACE OF CURB ON REINDOLLAR AVE
42	401 REINDOLLAR AVE & INDEPENDENCE AVE	3"		GAS	2"	STEEL	33 - 1/2"	28' SW FROM FACE OF CURB AT 401 REINDOLLAR AVE
43	REINDOLLAR AVE & CALIFORNIA AVE	3"		CONDUIT	8"	PLASTIC	45-1/2"	1' NW FROM STOP LINE ON REINDOLLAR AVE
44	REINDOLLAR AVE & CALIFORNIA AVE	3"		GAS	6"	PLASTIC	39"	1' NW FROM STOP LINE ON REINDOLLAR AVE
46	CALIFORNIA AVE	4"		WATER	8"	PLASTIC	50"	12' SE FROM FACE OF CURB ON CALIFORNIA AVE
51	CALIFORNIA AVE & 3RD ST	3"		GAS	4"	PLASTIC	38"	54" NE FROM STOP LINE ON CALIFORNIA AVE
52	CALIFORNIA AVE & 3RD ST	3"		CONDUIT	2"	PLASTIC	36 1/2"	4' NE FROM FACE OF CURB ON 3RD ST
58	CALIFORNIA AVE	4"		GAS	4"	STEEL	116 1/2"	80 1/2" SE FROM FACE OF CURB ON CALIFORNIA AVE
64	CALIFORNIA AVE	3"		WATER	12"	TRANSITE	35 1/2"	101" SE FROM EDGE OF ASPHALT ON CALIFORNIA AVE
67	5TH AVE	4"		WATER	8"	TRANSITE	48"	16' EAST FROM EDGE OF ASPHALT ON 5TH AVE
68	5TH AVE	4"		GAS	2"	PLASTIC	29"	16' EAST FROM EDGE OF ASPHALT ON 5TH AVE
69	5TH AVE	5"		GAS	1"	PLASTIC	31 1/2"	14' EAST FROM EDGE OF ASPHALT ON 5TH AVE
70	5TH AVE & 9TH ST	5"		WATER	8"	TRANSITE	43"	37' EAST OF WATER VALVE ON 9TH ST
72	5TH AVE & 9TH ST	5"		WATER	10"	TRANSITE	37"	10' WEST FROM EDGE OF PAVEMENT ON 5TH AVE
73	5TH AVE	4"		GAS	10"	STEEL	48"	10' WEST OF EDGE OF ASPHALT ON 5TH AVE
76	5TH AVE	2"	8"	WATER	8"	TRANSITE	49"	52' EAST FROM CENTER OF WATER VALVE ON 5TH AVE
75	5TH AVE	5"		WATER	8"	PLASTIC	87 1/2"	116" WEST FROM FACE OF CURB ON 5TH AVE
77	5TH AVE		2"	WATER	8"	TRANSITE	26 1/2"	UTILITY LOCATED ELECTRONICALLY AND EXCAVATED. 30" EAST FROM EDGE OF ASPHALT.
78	5TH AVE			WATER	8"	TRANSITE	23 1/2"	30" EAST FROM EDGE OF ASPHALT
79	3RD ST & 5TH AVE	5"		F/O		SLURRY CONC	TOP: 36" BOT: 48"	EXCAVATED TO TOP OF SLURRY CONCRETE ENCASUREMENT. 23' SOUTH FROM EDGE OF ASPHALT
80	INTER-GARRISON (3RD ST)	4"		WATER	8"	STEEL	32 1/2"	EXCAVATED 10" SOUTH OF WATER VALVE AND WATER UTILITY DOES NOT CROSS PROPOSED ALIGNMENT AT INTER-GARRISON @ 5TH AVE
81	INTER-GARRISON (3RD ST)	4"		WATER	8"	STEEL	30"	8" STEEL PIPE LOCATED 29' SOUTH FROM FACE OF CURB ON INTER-GARRISON (3RD ST)
83	INTER-GARRISON (3RD ST)			GAS	8"	STEEL	33"	77" SOUTH FROM CENTER OF STORM DRAIN ON INTER-GARRISON
84	3RD ST	5"		WATER	8"	TRANSITE	48 1/2"	8' NORTH FROM EDGE OF ASPHALT
84-A	3RD ST	4"		F/O		SLURRY CONC	TOP: 22 1/2" BOT: 33"	EXCAVATED TO TOP OF SLURRY CONCRETE ENCASUREMENT. 22' SOUTH FROM FACE OF CURB ON 3RD ST. NO WATER FOUND AT THIS LOCATION
87	INTER-GARRISON & 5TH AVE	3"		UNKNOWN	6"	STEEL	38"	UNKNOWN TEE UTILITY. EXCAVATED TO A DEPTH OF 38" AND UNKNOWN STEEL UTILITIES LOCATED GOING EAST TO WEST AND SOUTH. UTILITY DOES NOT CROSS PROPOSED ALIGNMENT. 17' WEST FROM WATER VALVE ON INTER-GARRISON & 5TH AVE
				UNKNOWN	8"	STEEL	38"	
88	3RD ST & 5TH AVE	4"		WATER	8"	STEEL	36"	28' SOUTH FROM FACE OF CURB AT 3RD ST AND 5TH AVE
90-A	5TH AVE			WATER (BELL)		STEEL	35 1/2"	DOES NOT CROSS PROPOSED ALIGNMENT. 5' FROM BACK FO CURB. 8" FROM CENTER OF WATER VALVE
91-A	5TH AVE & DIVERTY	2"		TELE DUCT.		SLURRY	TOP: 36" BOT: 48"	25' WEST FROM FACE ON 5TH AVE
91-B	5TH AVE	2"	10"	WATER	12"	TRANSITE	46 1/2"	1' SOUTH OF WATER VALVE ON 5TH AVE & DIVERTY. DOES NOT CROSS PROPOSED ALIGNMENT
92	5TH AVE & DIVERTY	2"		F/O CONDUIT	4"	PLASTIC	TOP: 49 1/2" BOT: 61"	EXCAVATED TO A DEPTH OF 61" AND LOCATED MULTIPLE 4" CONDUITS STARTING AT A DEPTH OF 49 1/2"
93	5TH AVE	3"		WATER ELBOW		8" WATER	32"	EXCAVATED TO LOCATE WATER UTILITY CROSSING. DOES NOT CROSS PROPOSED ALIGNMENT
93-A	5TH AVE	3"		WATER	10"	PLASTIC	38"	CORNER OF 5TH AVE & DIVERTY. 2' FROM EDGE OF CURB
93-C	5TH AVE	3"		WATER	10"	PLASTIC	32"	6" FROM BACK OF CURB ON 5TH AVE & DIVERTY
94	5TH AVE & A ST			WATER	2"	PLASTIC	55"	UNKNOWN CONCRETE ENCASUREMENT LOCATED AT A DEPTH OF 54 1/2". WEST OF 2" EXCAVATED WATER UTILITY. 14'-6" SOUTH OF BACK CURB
95	5TH AVE & A ST			UNKNOWN		STEEL	45 1/2"	UNKNOWN STEEL ENCASUREMENT LOCATED AT A DEPTH OF 45 1/2". 4' EAST OF WATER VALVE
				WATER	8"	TRANSITE	43"	WATER UTILITY LOCATED AT A DEPTH OF 43". 4' EAST OF WATER VALVE
97	ENGINEER RD	2"		GAS	2"	STEEL	31 1/2"	29' SOUTH FROM FACE OF CURB ON ENGINEER RD. 2" GAS POSSIBLY ABANDONED
99	GEN JIM MOORE BLVD & ENGINEER RD	4"		ELEC	4"	PLASTIC	33"	7' SW FROM FACE OF CURB ON ENGINEER RD
101	GEN JIM MOORE BLVD & LIGHT FIGHTER	6"		ELEC		CONC SLURRY ENCASUREMENT	45"	10' SE FROM FACE OF ISLAND
104	GEN JIM MOORE BLVD AT FIRESTATION	10"		GAS	2"	STEEL	38"	39' SE FROM FACE OF ISLAND
107	GEN JIM MOORE BLVD	10"		2-2" ELEC		STEEL	25"	LOCATED 2-2" STEEL UTILITIES, POSSIBLY ELECTRIC-NOT CONFIRMED. MARKED BY PG&E IN RED, POSSIBLY GAS. 15' SE FROM FACE OF ISLAND
109	GEN JIM MOORE BLVD & GIGLING	10"		GAS	12"	STEEL	15"	175" SE FROM FACE OF ISLAND ON GENERAL JIM MOORE BLVD
110	GEN JIM MOORE BLVD	6"		WATER	10"	TRANSITE	37 1/2"	24' SE FROM FACE OF ISLAND
112	GEN JIM MOORE BLVD	4"		TELE		CONC SLURRY ENCASUREMENT	33"	10' SE FROM FACE OF CURB
115	GEN JIM MOORE BLVD AT BLDG 4251	6"		TELE		CONC SLURRY ENCASUREMENT	36"	117" SE FROM FACE OF ISLAND
116	GEN JIM MOORE BLVD AT BLDG 4250	2"		GAS	4"	STEEL	29"	EXCAVATED THROUGH 6" OF BASE ROCK. 112" NE OF EDGE OF FOG STRIP DIVIDER
120	GEN JIM MOORE BLVD	3"		WATER	6"	TRANSITE	36"	
				GAS	6"	PLASTIC	12 1/2"	
121	GEN JIM MOORE BLVD	2"		4" GAS & 6" GAS TEE		STEEL	TOP: 49 1/2" BOT: 61"	EXCAVATED ON SHOULDER TO LOCATE TEE, 26' EAST FROM FACE OF ISLAND CURB ON GENERAL JIM MOORE BLVD
121-A	GEN JIM MOORE BLVD	4"		GAS	4"	STEEL	57"	1' NORTH FROM FOG SHOULDER LANE STRIP ON GENERAL JIM MOORE BLVD
122	GEN JIM MOORE BLVD			GAS	2"	PLASTIC	36"	15" EAST FROM BACK OF CURB ON GENERAL JIM MOORE BLVD. GAS LINE CROSSES WEST
123	GEN JIM MOORE BLVD			WATER	8"	TRANSITE	26"	2' EAST FROM EDGE OF ASPHALT ON GENERAL JIM MOORE BLVD
125	GEN JIM MOORE BLVD & NORMANDY RD	5"		TELE		CONC ENCASUREMENT	TOP: 30" BOT: 38"	20' EAST FROM FACE OF CENTER ISLAND ON GENERAL JIM MOORE BLVD
126-A	GEN JIM MOORE BLVD & NORMANDY RD	5"		WATER	8"	TRANSITE	34"	EXCAVATED 6" IN FRONT OF WATER VALVE
127	GEN JIM MOORE BLVD & NORMANDY RD	5"		GAS	2"	STEEL	26"	12' WEST FROM FACE OF CURB ON GENERAL JIM MOORE BLVD

POTHOLES ARE DENOTED ON PLAN WITH (X)

Last Created by: BHawes 4-28-17 02:03pm BHawes

<p>BID SET</p>				<p>DESIGNED AP</p>	<p>DISCIPLINE ENGINEER</p>	<p>PROJECT ENGINEER</p> <p>Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:54:25-0700</p>	<p>PROJECT MANAGER</p> 		 <p>Marina Coast Water District</p>	<p>REGIONAL URBAN WATER AUGMENTATION PROJECT</p>	<p>VERIFY SCALES</p> <p>BAR IS ONE INCH ON ORIGINAL DRAWING</p> <p>0 1"</p> <p>IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY</p>	<p>JOB NO. 7568A.10</p>
				<p>DRAWN LGD</p>						<p>DRAWING NO. G-03</p>		
				<p>CHECKED</p>						<p>SHEET NO. 3 OF 93</p>		
				<p>DATE MAY 2017</p>								
REV	DATE	BY	DESCRIPTION									

LEGEND



Last Created by: BHawes 4-28-17 02:05pm BHawes

BID SET			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 10:46:42-07'00'



Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
CIVIL
INDEX MAP

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
DRAWING NO. CG-01
SHEET NO. 4 OF 93

GENERAL NOTES

1. PLACE 2" AC OVERLAY IN ACCORDANCE WITH CITY OF MARINA STANDARD SPECIFICATIONS AND PLANS.
2. CONFORM GRIND AT THE BEGINNING AND END OF EACH STREET SECTION TO PROVIDE A SMOOTH TRANSITION TO EXISTING STREET. CONFORM GRIND SHALL BE 1 1/2" BY 15' WIDE (MIN).
3. WEDGE GRIND 1 1/4" BY 6" (MIN) WHERE THE OVERLAY WILL ABUT ANY PERMANENT STRUCTURE SUCH AS CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, CATCH BASINS, ISLANDS, ETC. MANHOLES AND VALVES SHALL BE RAISED TO GRADE.
4. ANY DAMAGE TO CONCRETE SUCH AS CURB, GUTTER OR SIDEWALK SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF MARINA STANDARDS.
5. ALL CITY MONUMENTS SHALL BE RAISED TO GRADE BY A LAND SURVEYOR LICENSED IN THE STATE OF CALIFORNIA.

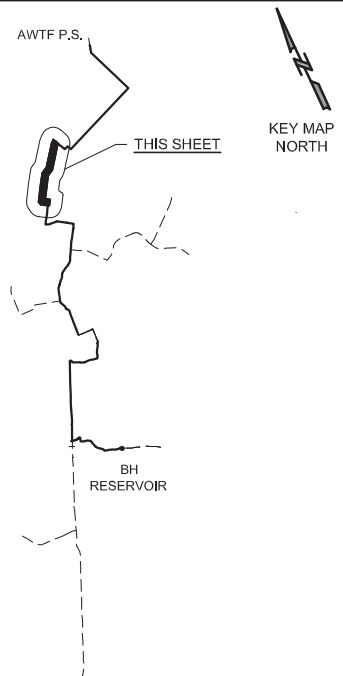
GENERAL NOTES (CONT'D)

6. PRIOR TO REMOVING ANY STRIPING, CONTRACTOR SHALL RECORD ALL EXISTING STRIPING LOCATIONS, DEVELOP A PAVEMENT STRIPING AND MARKINGS PLAN TO MATCH EXISTING STRIPING, SUBMIT THE PLAN TO AND OBTAIN APPROVAL FROM THE CITY OF MARINA. CONTRACTOR SHALL REMOVE ALL EXISTING STRIPING AND PAVEMENT MARKERS PRIOR TO INSTALLING OVERLAY. PROVIDE TEMPORARY DELINEATION AS NECESSARY TO CONVEY TRAFFIC IN A SAFE MANNER. REPLACE ALL EXISTING TRAFFIC STRIPES, PAVEMENT MARKERS AND BLUE HYDRANT MARKERS IN KIND AFTER OVERLAY IS COMPLETE.

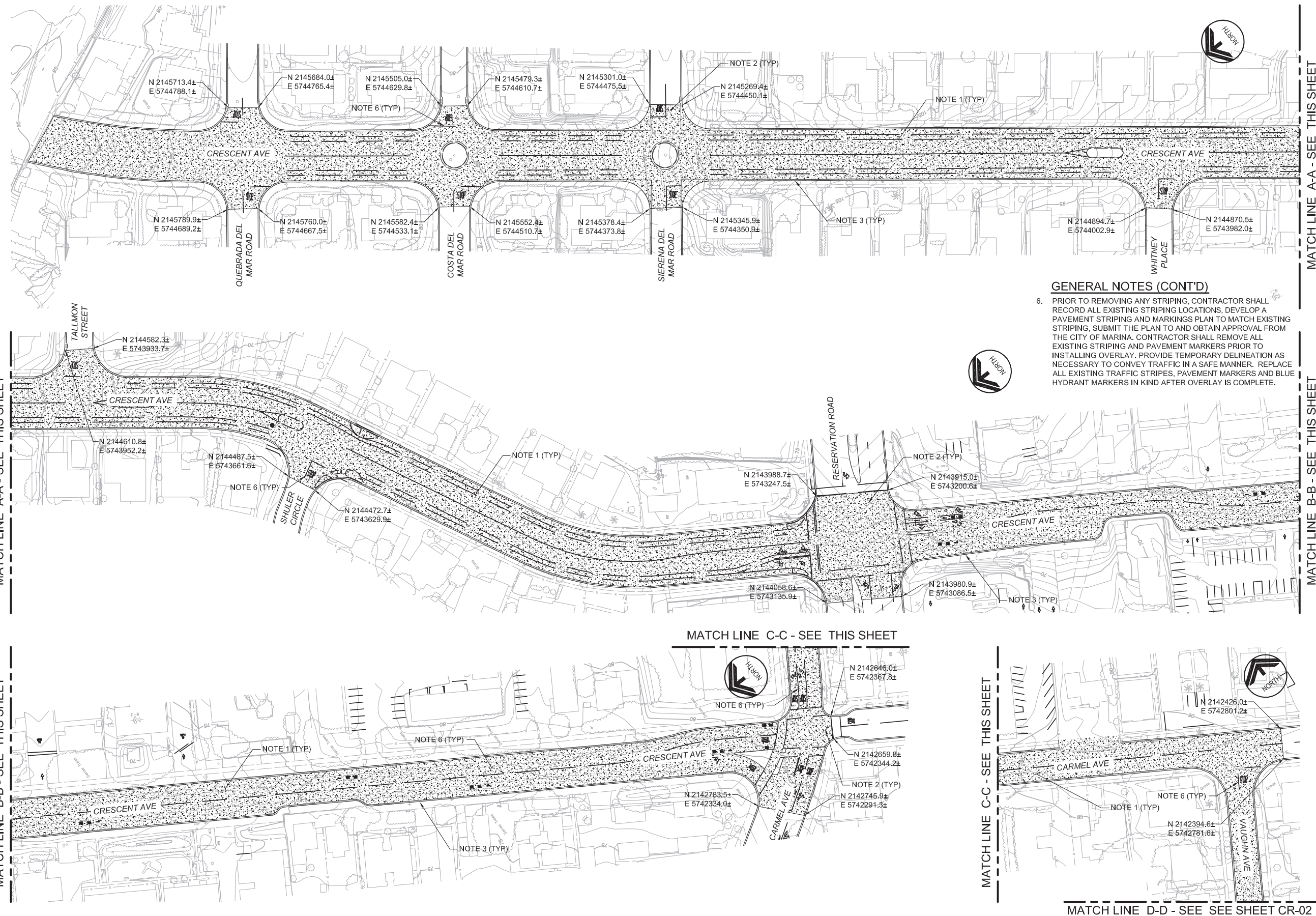
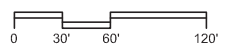
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call before you Dig
 1-800-227-2600

UNDERGROUND SERVICE (USA)

KEY MAP



SCALE



BID SET			
DESIGNED	AP	DISCIPLINE ENGINEER	DATE MAY 2017
DRAWN	LGD		
CHECKED			
REV	DATE	BY	DESCRIPTION

PROJECT ENGINEER
 Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:08:32-0700

PROJECT MANAGER

 PROJECT MANAGER

carollo
 Engineers...Working Wonders With Water™

MARINA COAST WATER DISTRICT
 Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
 RECYCLED WATER PIPELINE
 CIVIL
 PAVING PLAN - 1

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING	JOB NO. 7568A.10
0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. CR-01
	SHEET NO. 6 OF 93

Last Created by: 4-28-17 01:24pm BHawes

MATCH LINE E-E - SEE THIS SHEET

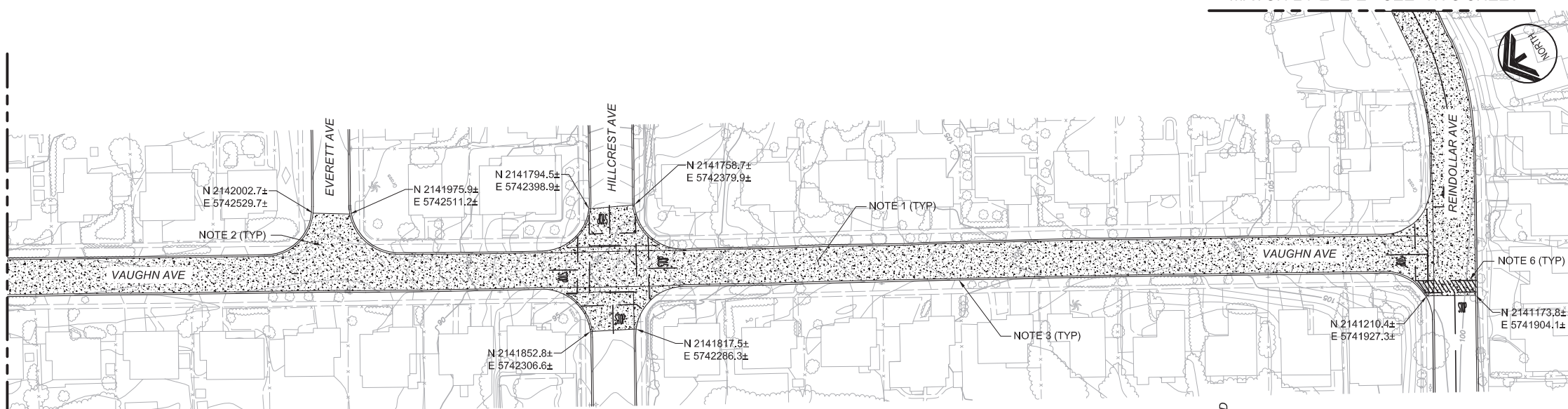
GENERAL NOTES (CONT'D)

6. PRIOR TO REMOVING ANY STRIPING, CONTRACTOR SHALL RECORD ALL EXISTING STRIPING LOCATIONS, MARKINGS, DEVELOP A PAVEMENT STRIPING AND MARKINGS PLAN TO MATCH EXISTING STRIPING, SUBMIT THE PLAN TO AND OBTAIN APPROVAL FROM THE CITY OF MARINA. CONTRACTOR SHALL REMOVE ALL EXISTING STRIPING AND PAVEMENT MARKERS PRIOR TO INSTALLING OVERLAY. PROVIDE TEMPORARY DELINEATION AS NECESSARY TO CONVEY TRAFFIC IN A SAFE MANNER. REPLACE ALL EXISTING TRAFFIC STRIPES, PAVEMENT MARKERS AND BLUE HYDRANT MARKERS IN KIND AFTER OVERLAY IS COMPLETE.

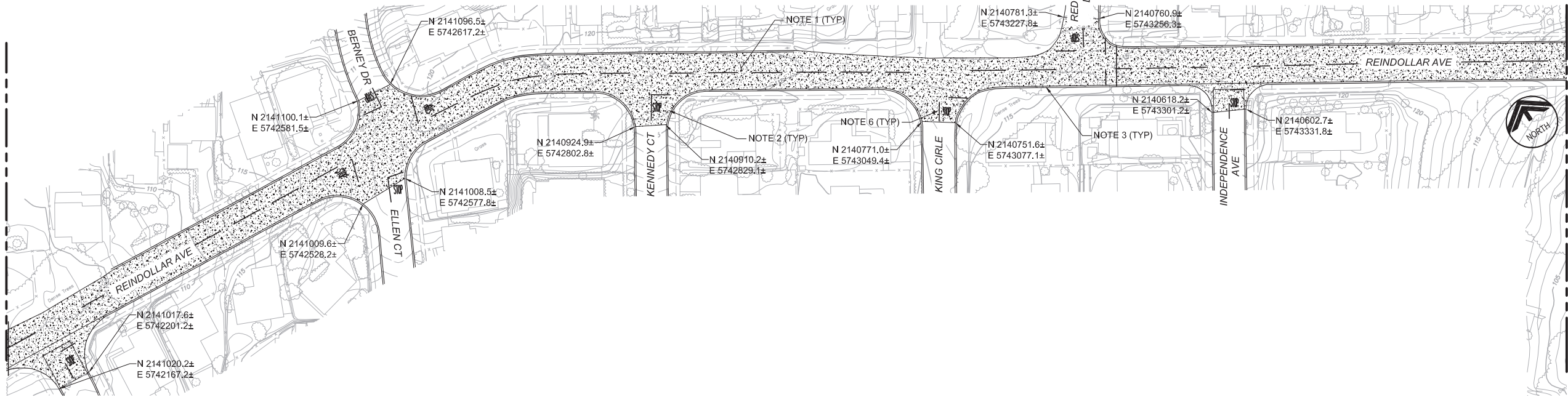
GENERAL NOTES

1. PLACE 2" AC OVERLAY IN ACCORDANCE WITH CITY OF MARINA STANDARD SPECIFICATIONS AND PLANS.
2. CONFORM GRIND AT THE BEGINNING AND END OF EACH STREET SECTION TO PROVIDE A SMOOTH TRANSITION TO EXISTING STREET. CONFORM GRIND SHALL BE 1 1/2" BY 15' WIDE (MIN).
3. WEDGE GRIND 1 1/4" BY 6" (MIN) WHERE THE OVERLAY WILL ABUT ANY PERMANENT STRUCTURE SUCH AS CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, CATCH BASINS, ISLANDS, ETC. MANHOLES AND VALVES SHALL BE RAISED TO GRADE.
4. ANY DAMAGE TO CONCRETE SUCH AS CURB, GUTTER OR SIDEWALK SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF MARINA STANDARDS.
5. ALL CITY MONUMENTS SHALL BE RAISED TO GRADE BY A LAND SURVEYOR LICENSED IN THE STATE OF CALIFORNIA.

MATCH LINE D-D - SEE SHEET CR-01

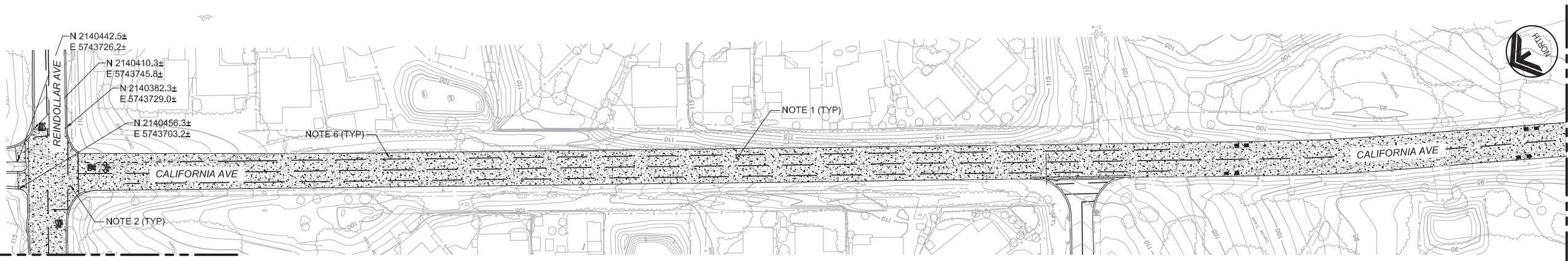


MATCH LINE E-E - SEE THIS SHEET



MATCH LINE F-F - SEE THIS SHEET

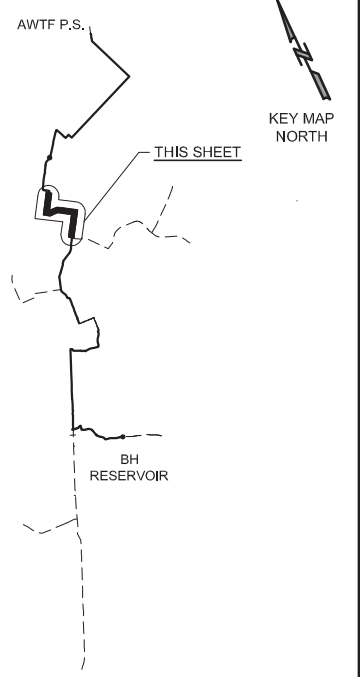
MATCH LINE F-F - SEE THIS SHEET



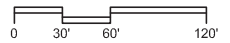
MATCH LINE G-G - SEE SHEET CR-03

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call before you Dig
 1-800-227-2600
UNDERGROUND SERVICE (USA)

KEY MAP



SCALE



BID SET			
DESIGNED	AP		
DRAWN	LGD		
CHECKED			
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

PROJECT ENGINEER
 Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:08:23-0700

DISCIPLINE ENGINEER



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Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
 RECYCLED WATER PIPELINE
 CIVIL
 PAVING PLAN - 2

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. CR-02
 SHEET NO. 7 OF 93

GENERAL NOTES

1. PLACE 2" AC OVERLAY IN ACCORDANCE WITH CITY OF MARINA STANDARD SPECIFICATIONS AND PLANS.
2. CONFORM GRIND AT THE BEGINNING AND END OF EACH STREET SECTION TO PROVIDE A SMOOTH TRANSITION TO EXISTING STREET. CONFORM GRIND SHALL BE 1 1/2" BY 15' WIDE (MIN).
3. WEDGE GRIND 1 1/4" BY 6" (MIN) WHERE THE OVERLAY WILL ABUT ANY PERMANENT STRUCTURE SUCH AS CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, CATCH BASINS, ISLANDS, ETC. MANHOLES AND VALVES SHALL BE RAISED TO GRADE.
4. ANY DAMAGE TO CONCRETE SUCH AS CURB, GUTTER OR SIDEWALK SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF MARINA STANDARDS.
5. ALL CITY MONUMENTS SHALL BE RAISED TO GRADE BY A LAND SURVEYOR LICENSED IN THE STATE OF CALIFORNIA.

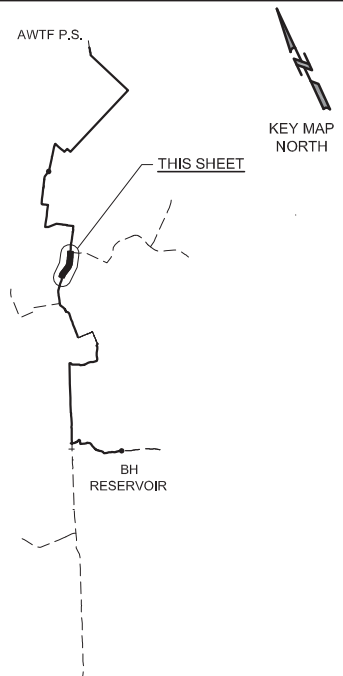
GENERAL NOTES (CONT'D)

6. PRIOR TO REMOVING ANY STRIPING, CONTRACTOR SHALL RECORD ALL EXISTING STRIPING LOCATIONS, DEVELOP A PAVEMENT STRIPING AND MARKINGS PLAN TO MATCH EXISTING STRIPING, SUBMIT THE PLAN TO AND OBTAIN APPROVAL FROM THE CITY OF MARINA. CONTRACTOR SHALL REMOVE ALL EXISTING STRIPING AND PAVEMENT MARKERS PRIOR TO INSTALLING OVERLAY. PROVIDE TEMPORARY DELINEATION AS NECESSARY TO CONVEY TRAFFIC IN A SAFE MANNER. REPLACE ALL EXISTING TRAFFIC STRIPES, PAVEMENT MARKERS AND BLUE HYDRANT MARKERS IN KIND AFTER OVERLAY IS COMPLETE.

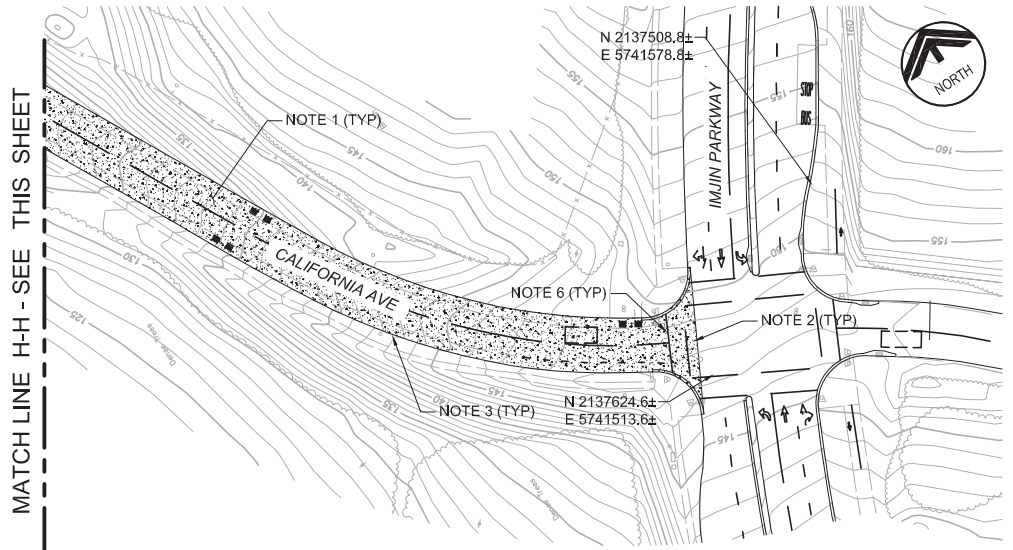
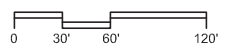
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call before you Dig
 1-800-227-2800

UNDERGROUND SERVICE (USA)

KEY MAP



SCALE



Last Opened by: 4/28/17 01:44pm BHawes

REV	DATE	BY	DESCRIPTION

DESIGNED AP	DISCIPLINE ENGINEER
DRAWN LGD	
CHECKED	
DATE MAY 2017	

PROJECT ENGINEER
 Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:08:14-07'00'



Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT	VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10
RECYCLED WATER PIPELINE		DRAWING NO. CR-03
CIVIL PAVING PLAN - 3		SHEET NO. 8 OF 93

GENERAL NOTES

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. THE DISTRICT HAS SECURED A 45' TEMPORARY CONSTRUCTION EASEMENT AS SHOWN ON THE PLANS. THE CONTRACTOR MAY, AT HIS OWN DISCRETION, NEGOTIATE WITH THE PROPERTY OWNER FOR TEMPORARY CONSTRUCTION EASEMENT WIDTH BEYOND THE 45 FEET SHOWN.
3. ROAD SHALL CONSIST OF 6-INCHES OF CRUSHED AGGREGATE COMPACTED TO 95%.

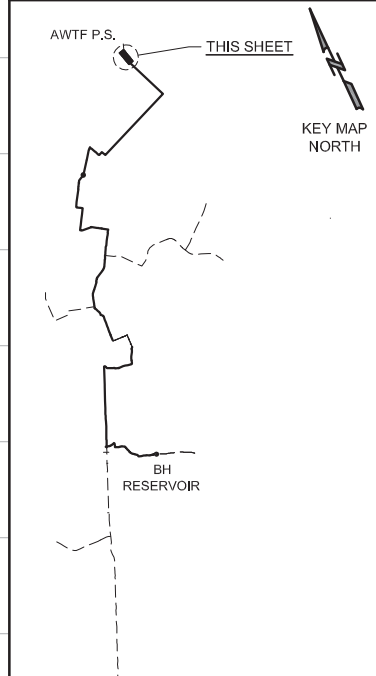
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

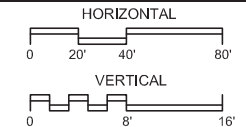
1-800-227-2600

UNDERGROUND SERVICE (USA)

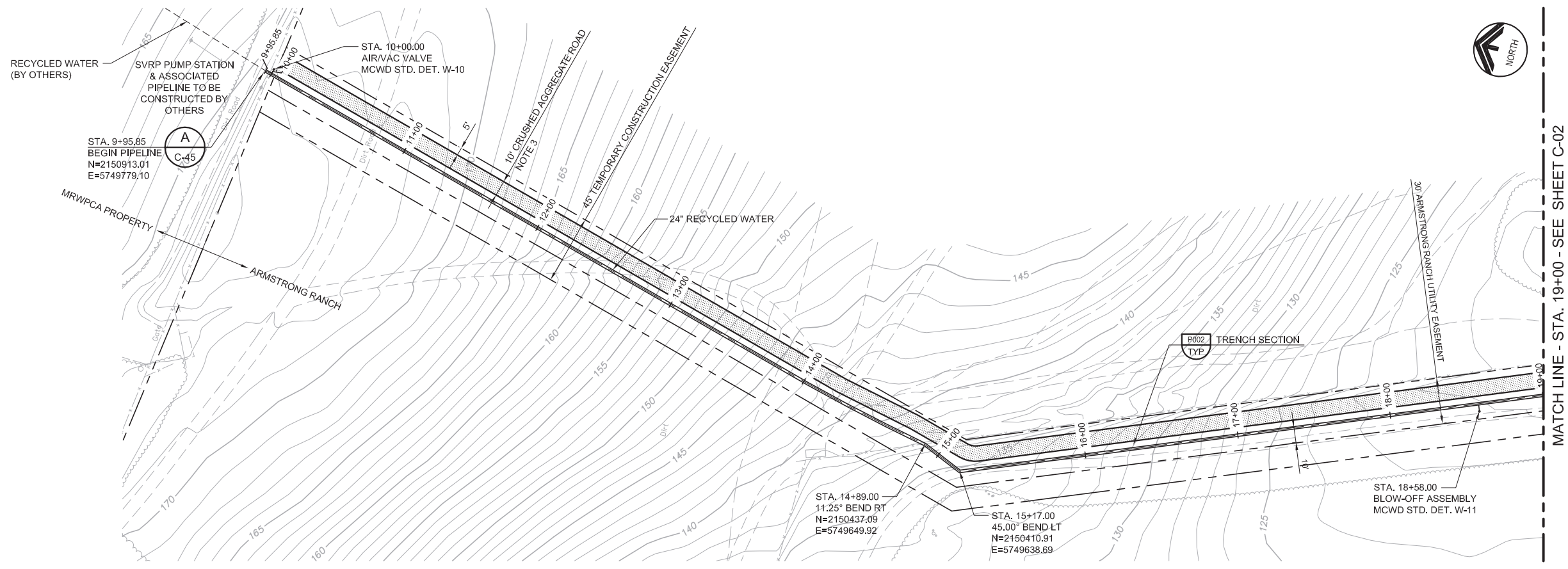
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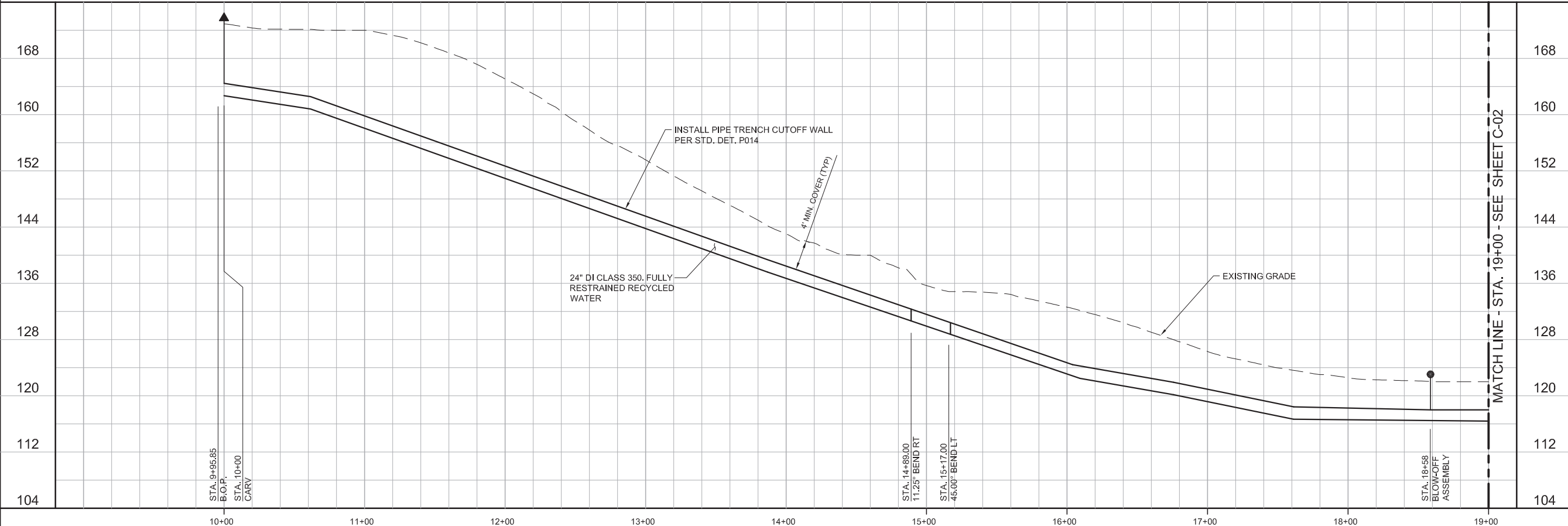
SCALE



VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" 16'	JOB NO. 7568A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. C-01
	SHEET NO. 9 OF 93



MATCH LINE - STA. 19+00 - SEE SHEET C-02



MATCH LINE - STA. 19+00 - SEE SHEET C-02

BID SET			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

PROJECT ENGINEER: Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:08:03-07'00'

PROJECT MANAGER: JONATHAN P. MARSHALL
 No. 73265
 CIVIL
 STATE OF CALIFORNIA



REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

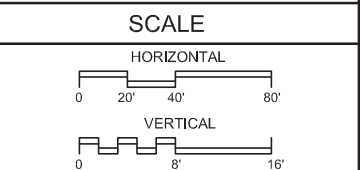
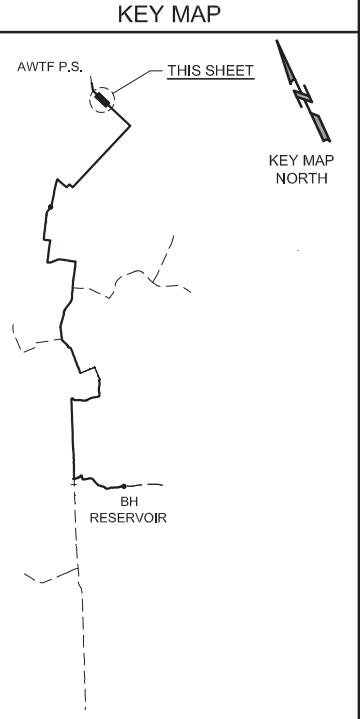
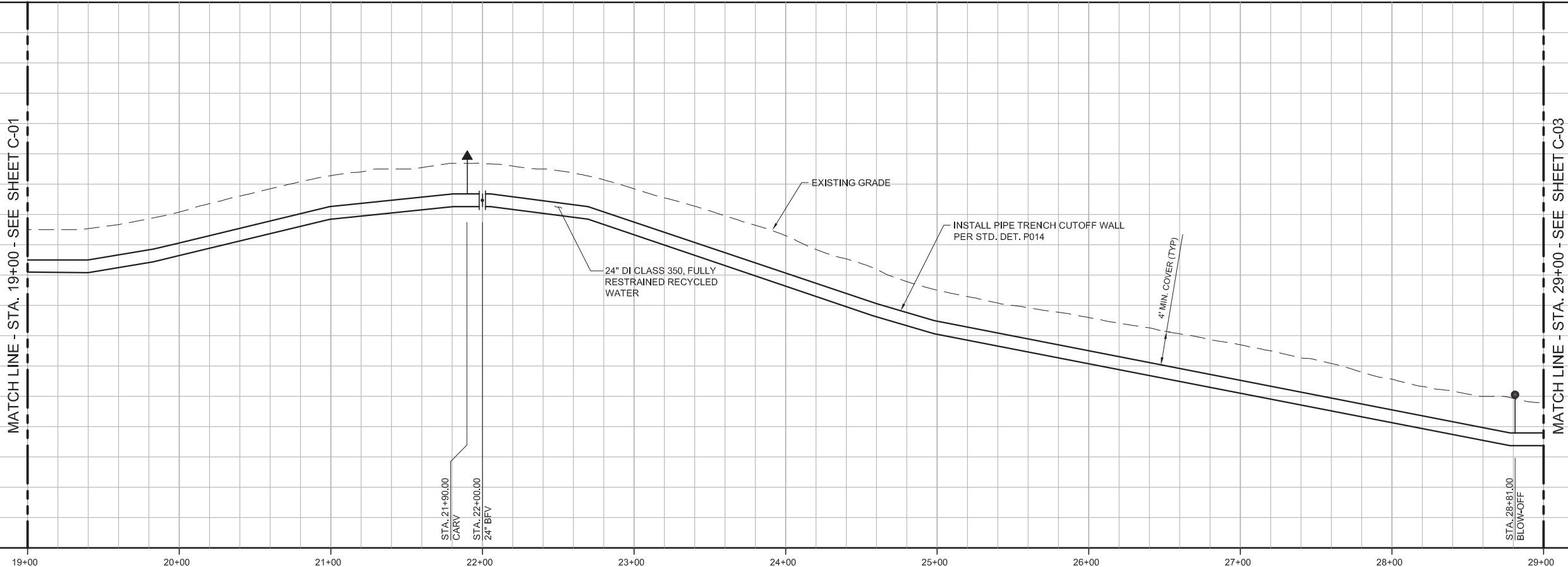
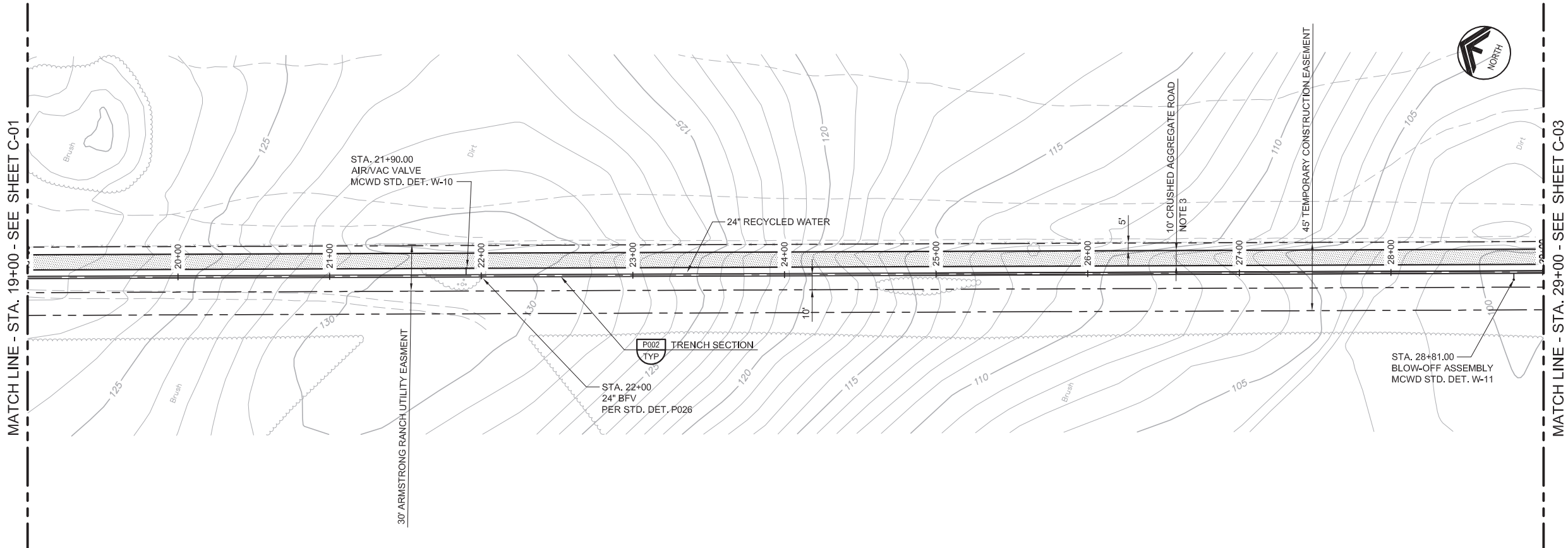
PLAN AND PROFILE

STA. 9+95.85 TO STA. 19+00

Last Opened by: 4-29-17 08:57am BHawes

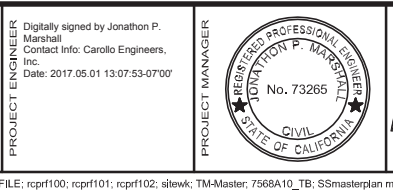
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3. ROAD SHALL CONSIST OF 6-INCHES OF CRUSHED AGGREGATE COMPACTED TO 95%.



BID SET			
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DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

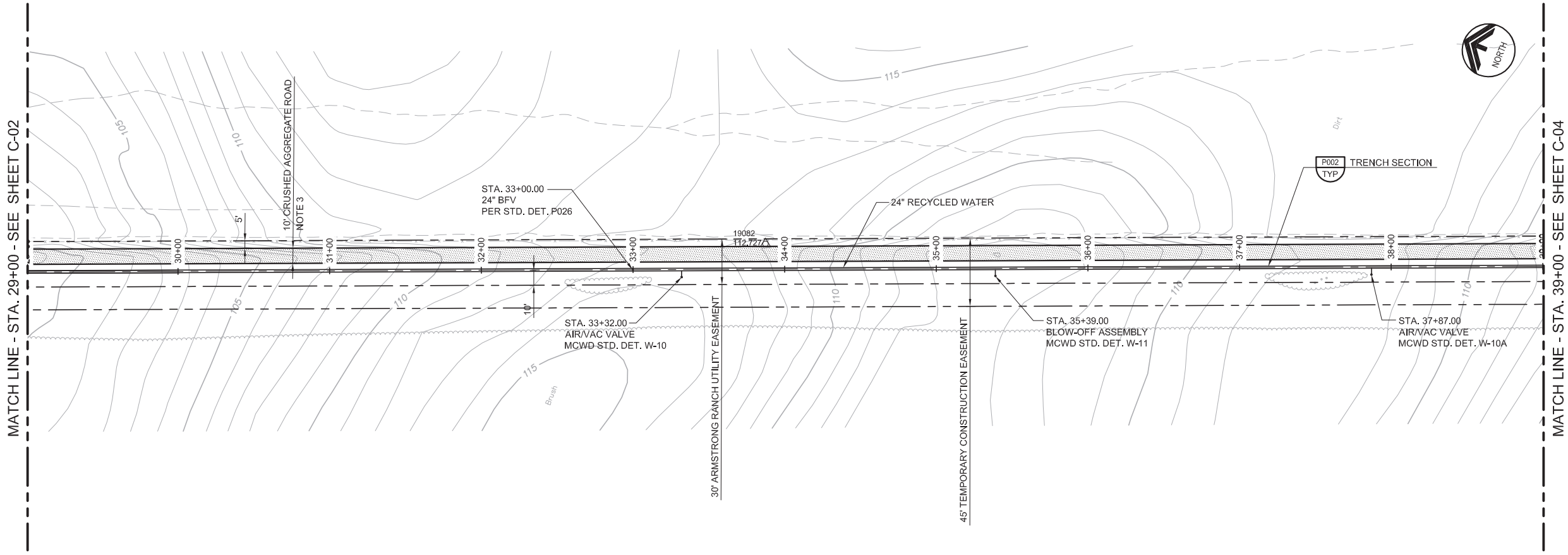
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 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:07:53-0700



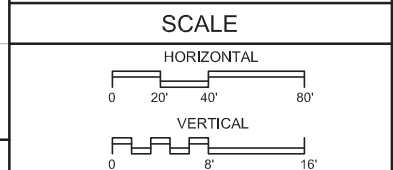
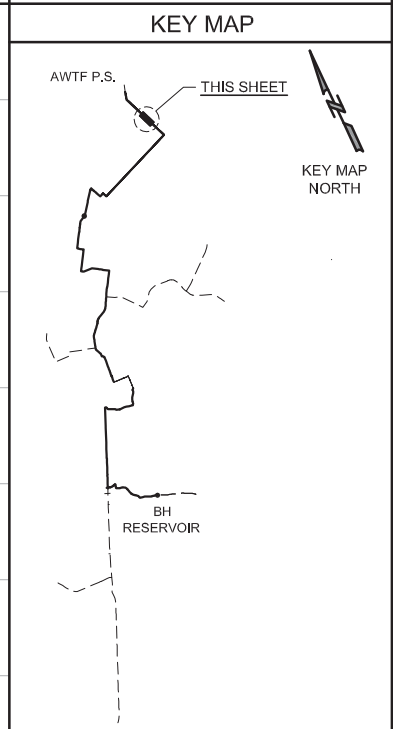
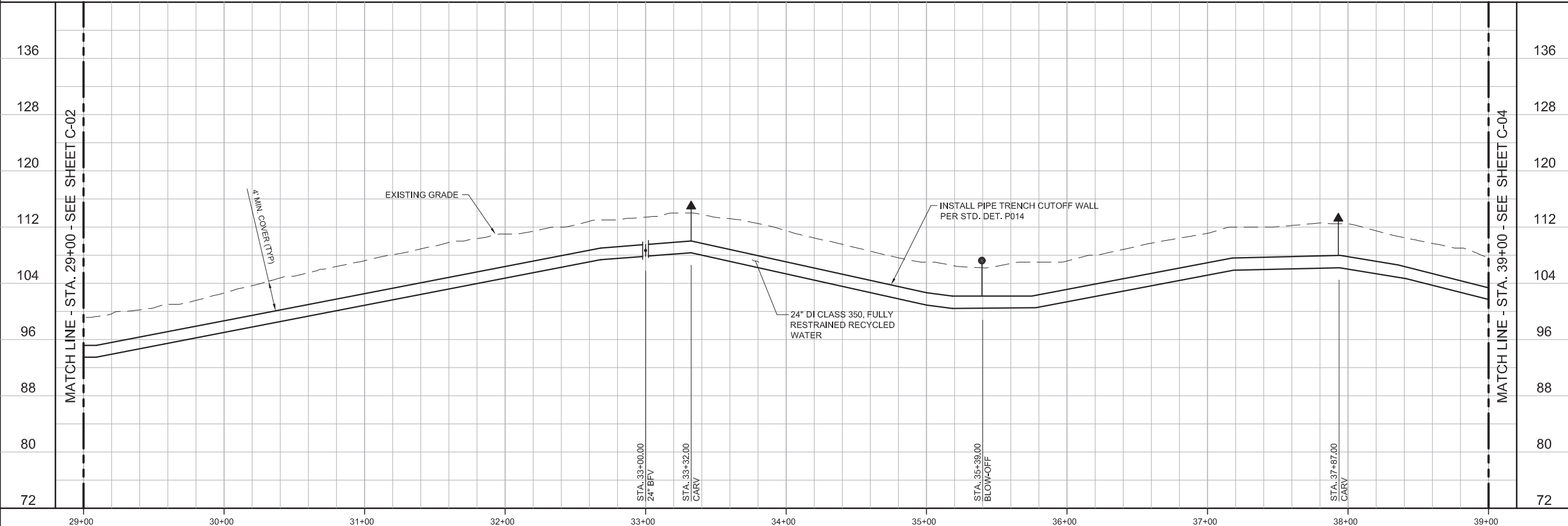
REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
 CIVIL
PLAN AND PROFILE
STA. 19+00 TO STA. 29+00

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" 16'
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. C-02
 SHEET NO. 10 OF 93



- ### GENERAL NOTES
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REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
	DRAWN
	BH
	CHECKED
	AP
DATE	MAY 2017

PROJECT ENGINEER

Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:07:45-07'00'



REGIONAL URBAN WATER AUGMENTATION PROJECT

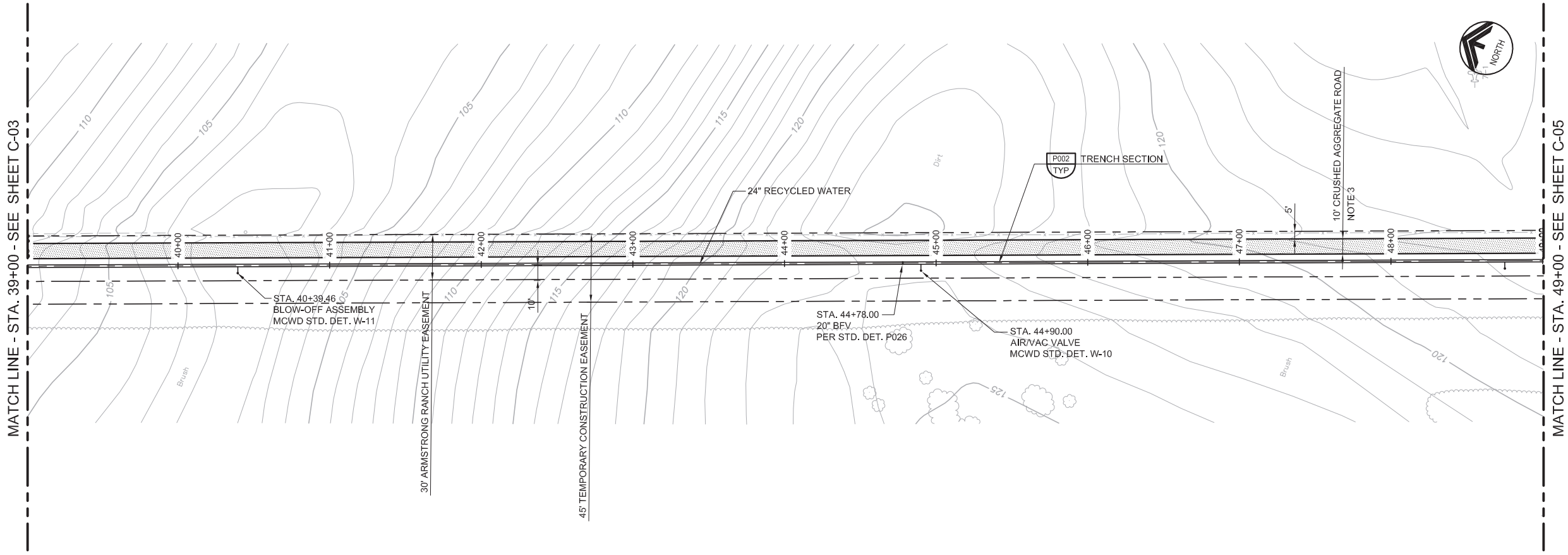
RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE

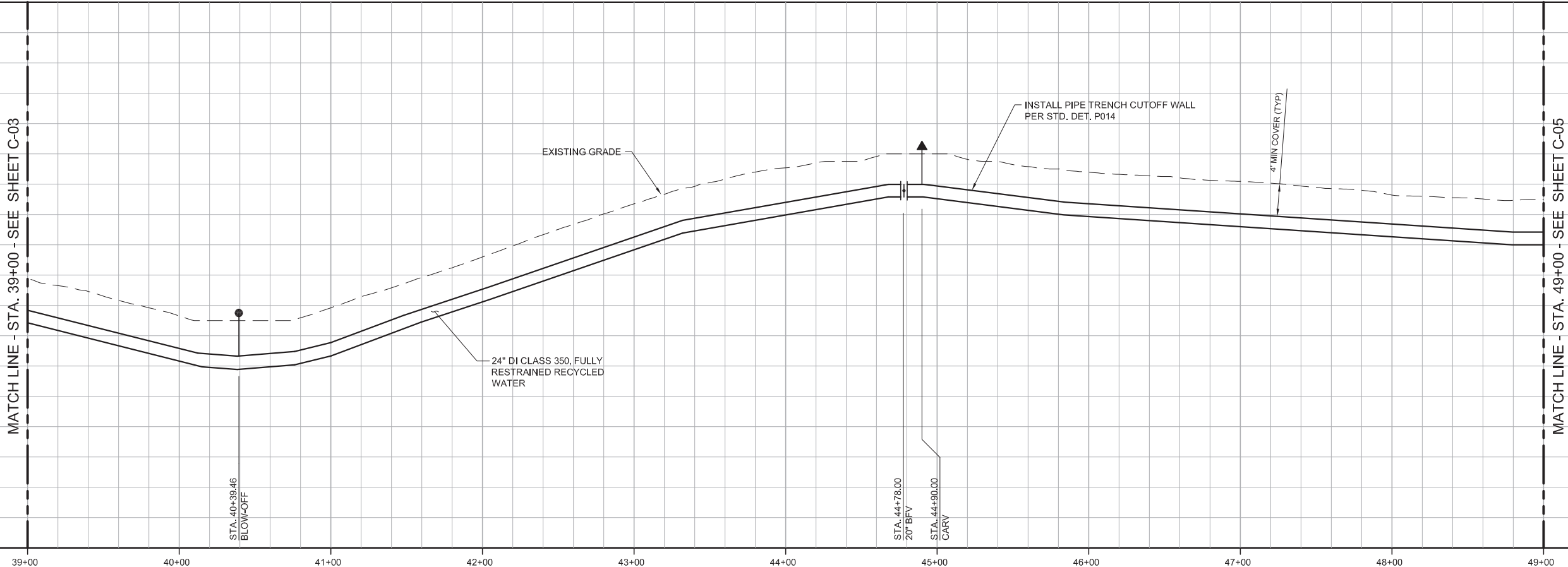
STA. 29+00 TO STA. 39+00

VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	7568A.10
0 1" 16'	DRAWING NO.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	C-03
	SHEET NO.
	11 OF 93

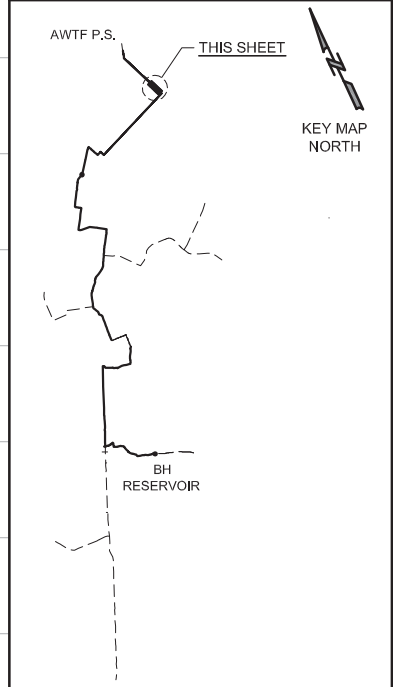


GENERAL NOTES

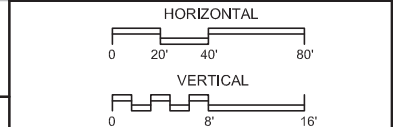
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KEY MAP

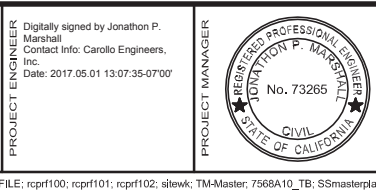


SCALE



BID SET			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:07:35-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
 CIVIL
PLAN AND PROFILE
 STA. 39+00 TO STA. 49+00

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" 16'
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. C-04
 SHEET NO. 12 OF 93



GENERAL NOTES

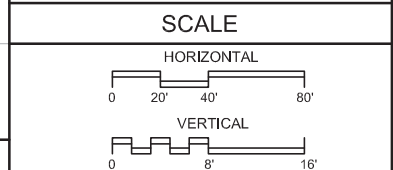
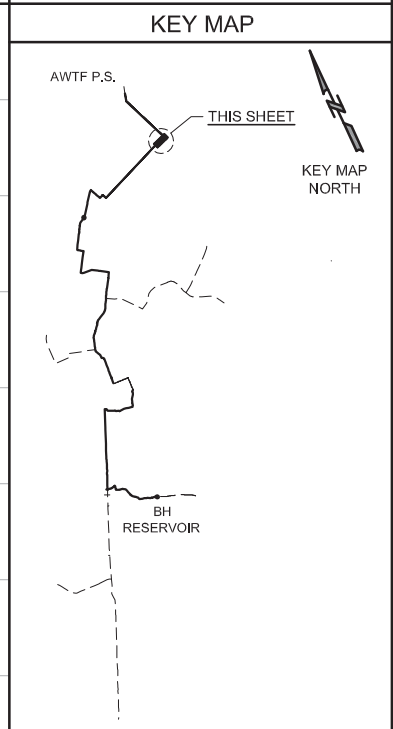
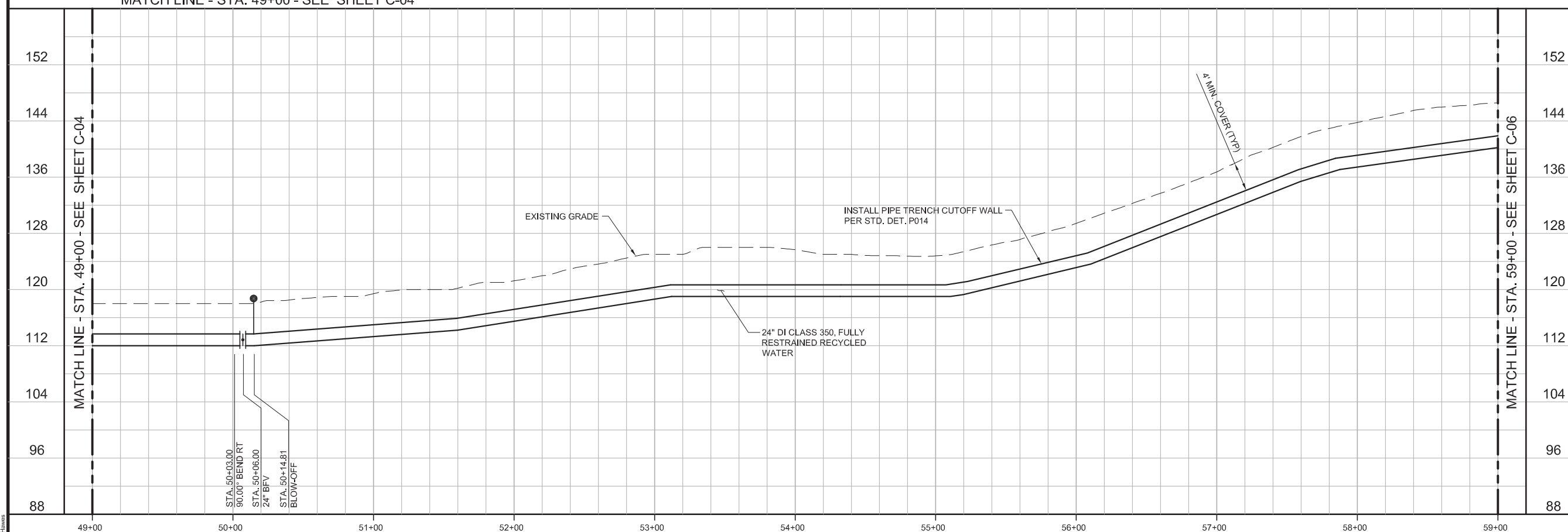
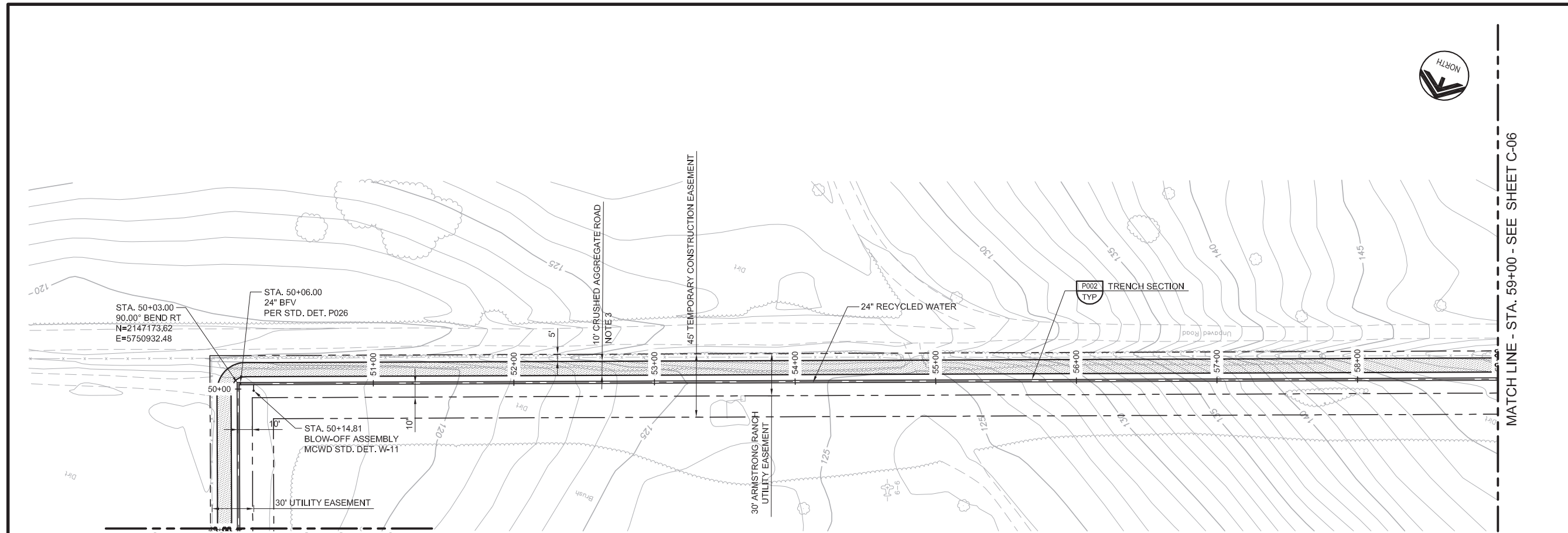
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AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

1-800-227-2800

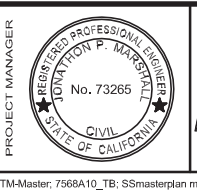
UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

Project Engineer: Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:07:26-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE

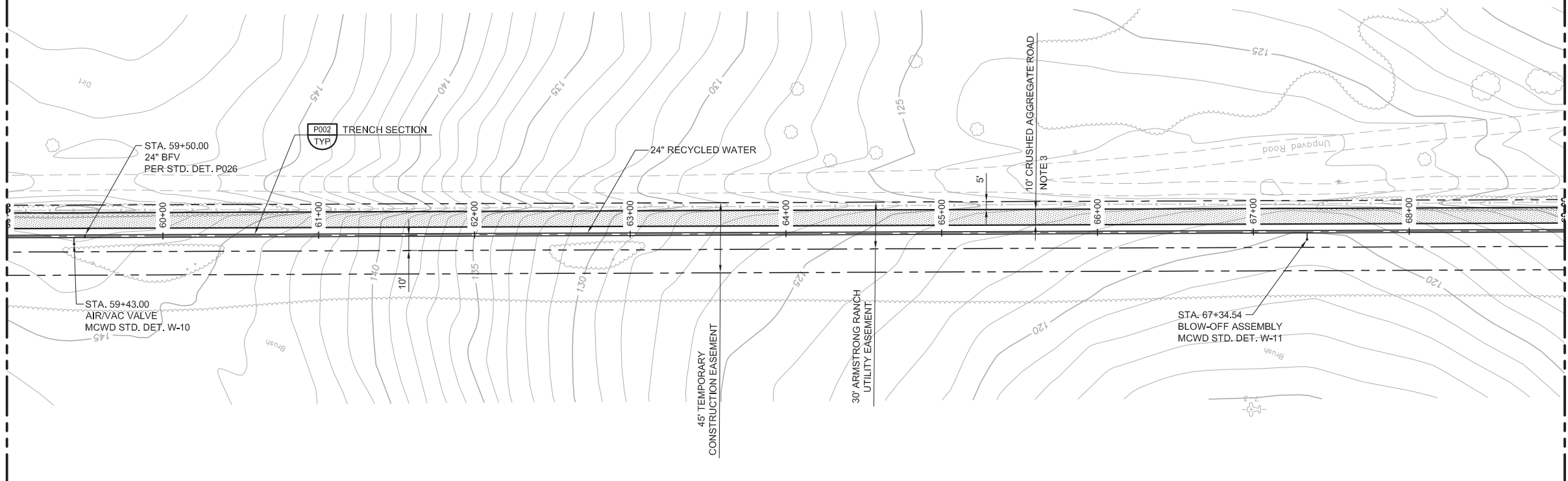
STA. 49+00 TO STA. 59+00

VERIFY SCALES	JOB NO. 7568A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. C-05
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. 13 OF 93



MATCH LINE - STA. 59+00 - SEE SHEET C-05

MATCH LINE - STA. 69+00 - SEE SHEET C-07



GENERAL NOTES

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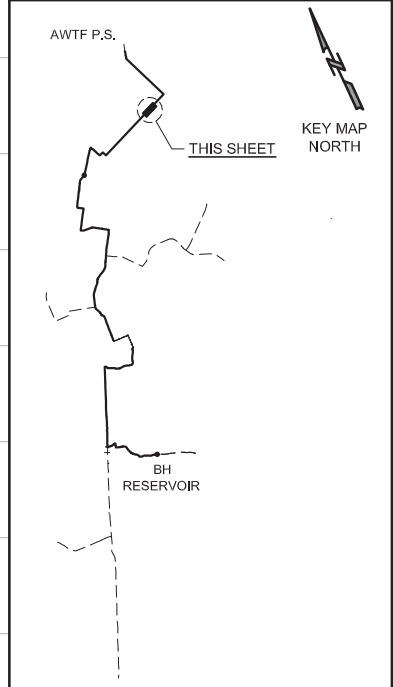
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

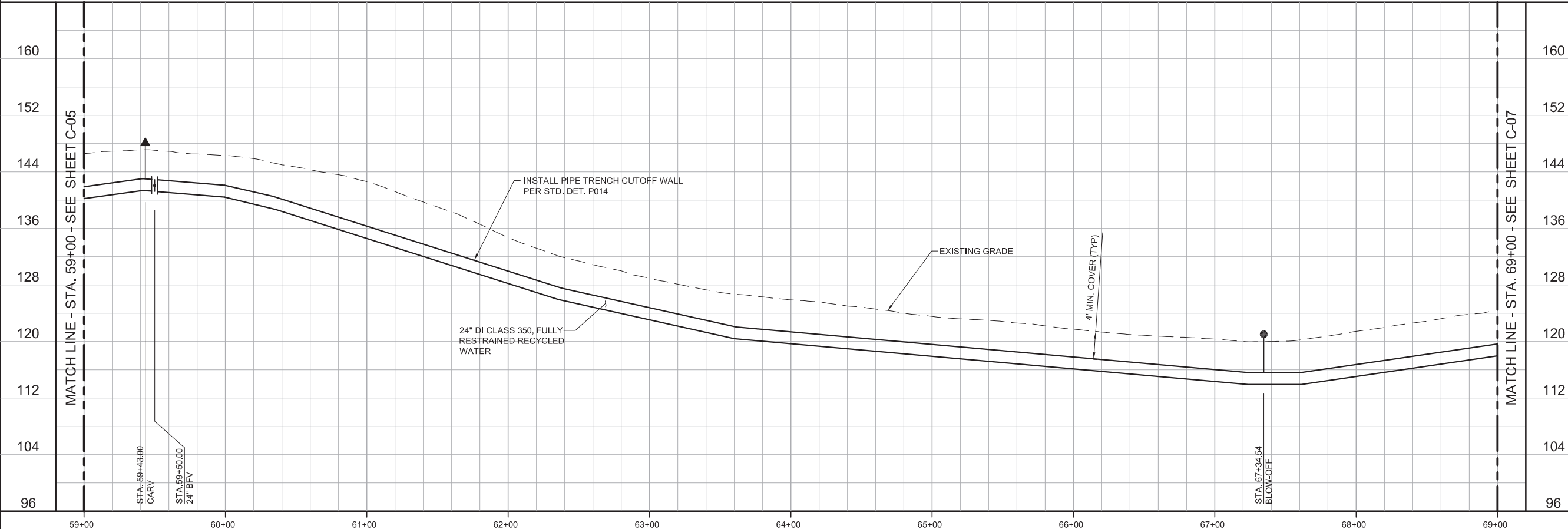
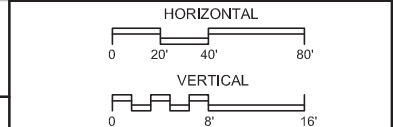
1-800-227-2800

UNDERGROUND SERVICE (USA)

KEY MAP



SCALE



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER
 Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:07:19-07'00'

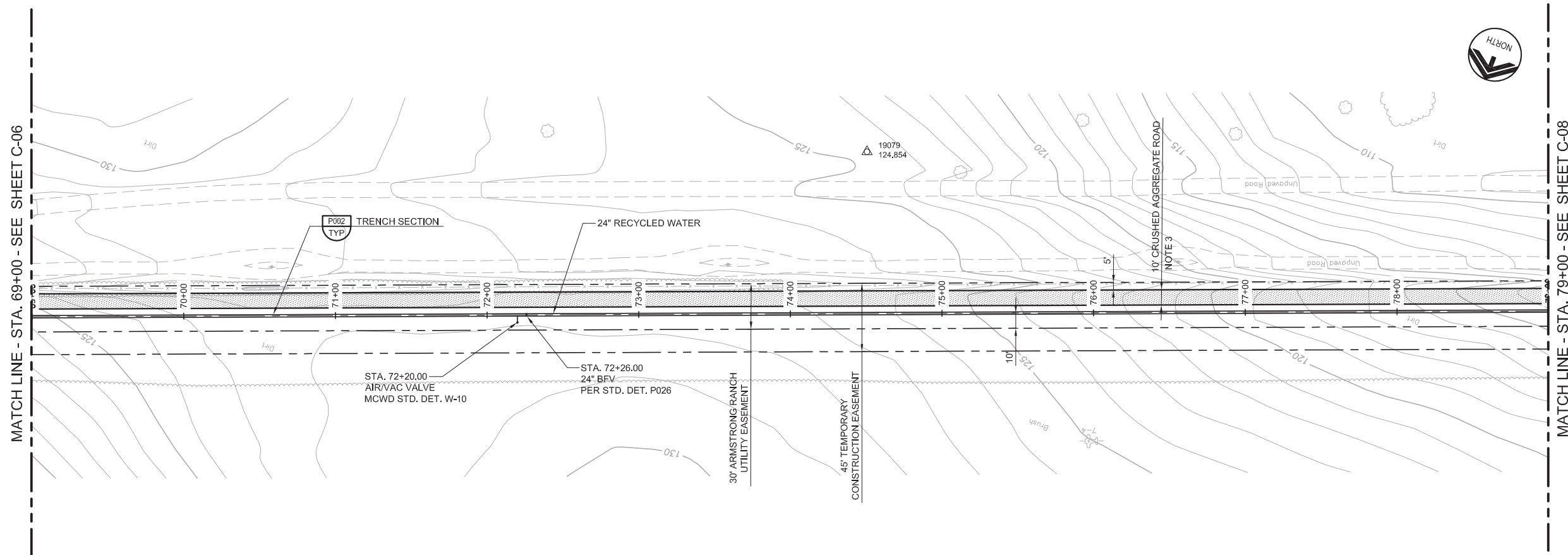


REGIONAL URBAN WATER AUGMENTATION PROJECT
 RECYCLED WATER PIPELINE
 CIVIL
 PLAN AND PROFILE
 STA. 59+00 TO STA. 69+00

VERIFY SCALES	JOB NO. 7568A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. C-06
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. 14 OF 93

GENERAL NOTES

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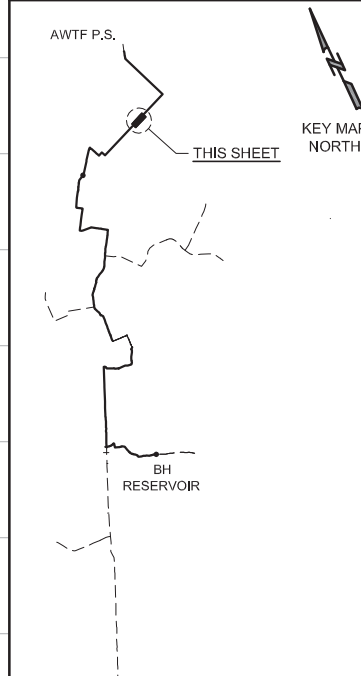
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

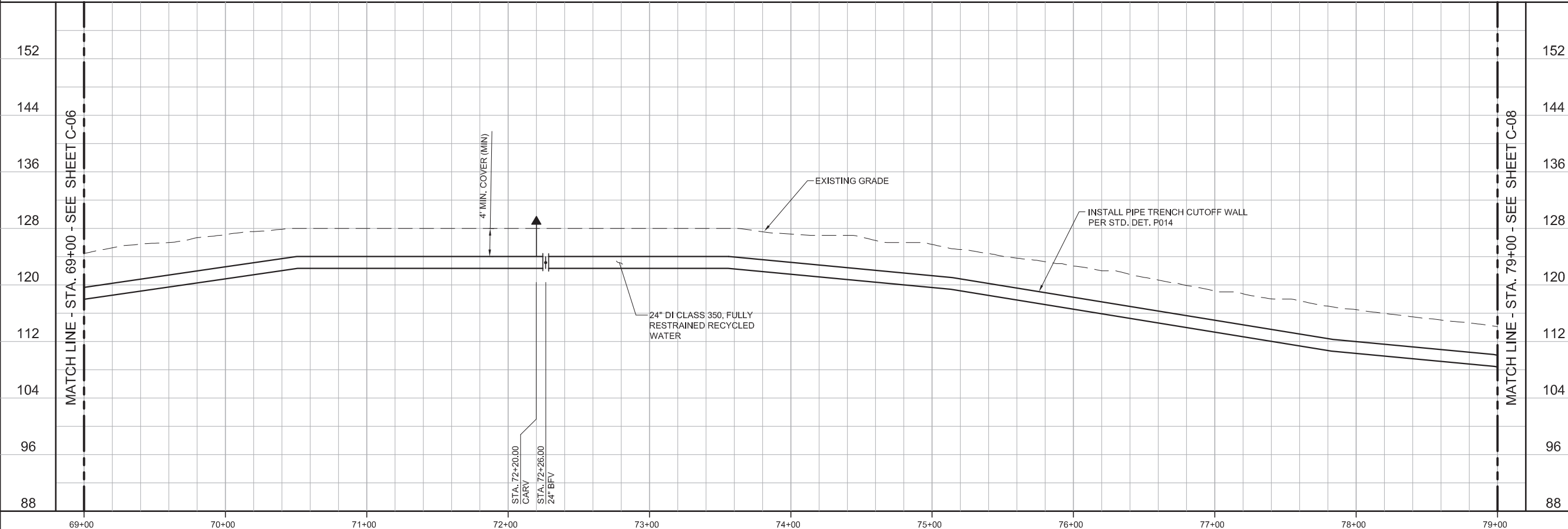
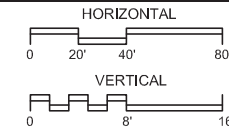
1-800-227-2800

UNDERGROUND SERVICE (USA)

KEY MAP



SCALE



REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER	DESIGNED	JPM
	DRAWN	BH
	CHECKED	AP
	DATE	MAY 2017

Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:07:11-07'00'

PROJECT ENGINEER

PROJECT MANAGER

REGISTERED PROFESSIONAL ENGINEER
 JONATHAN P. MARSHALL
 No. 73265
 CIVIL
 STATE OF CALIFORNIA



REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE

STA. 69+00 TO STA. 79+00

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10

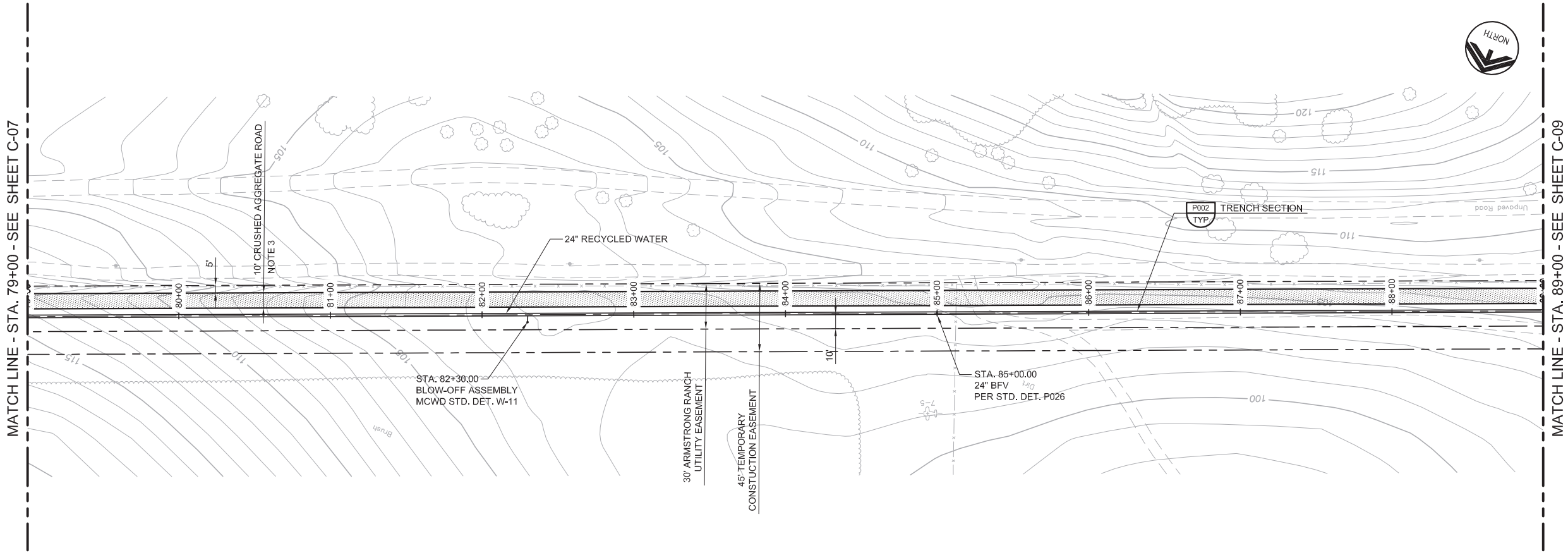
DRAWING NO. C-07

SHEET NO. 15 OF 93

Last Opened by: BHawes 4-26-17 10:10am BHawes

MATCH LINE - STA. 79+00 - SEE SHEET C-07

MATCH LINE - STA. 89+00 - SEE SHEET C-09



GENERAL NOTES

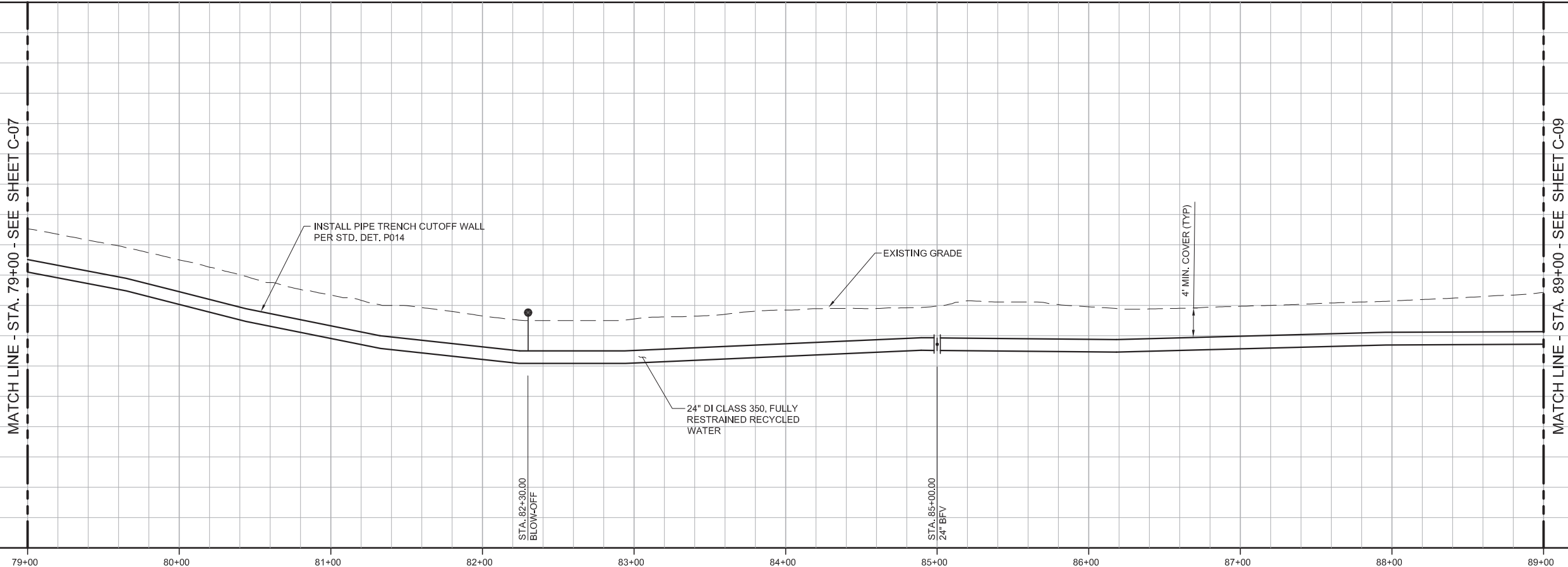
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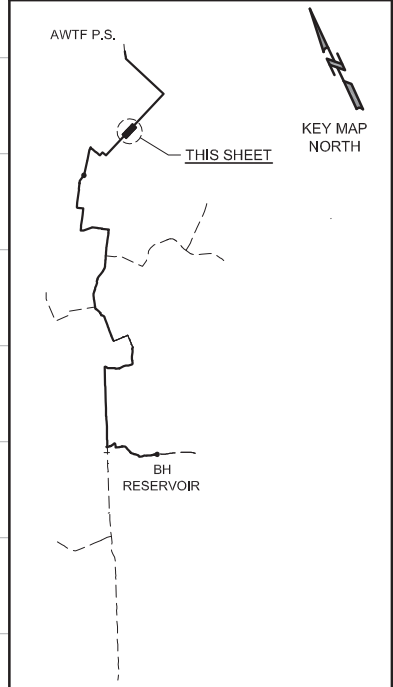
Call before you Dig

1-800-227-2600

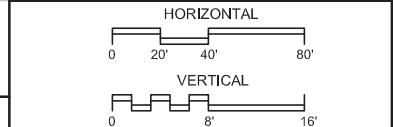
UNDERGROUND SERVICE (USA)



KEY MAP



SCALE



Last Opened by: 4-26-17 10:21am BHWaves

REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER	DESIGNED	JPM
	DRAWN	BH
	CHECKED	AP
	DATE	MAY 2017

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 13:07:01-0700



Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

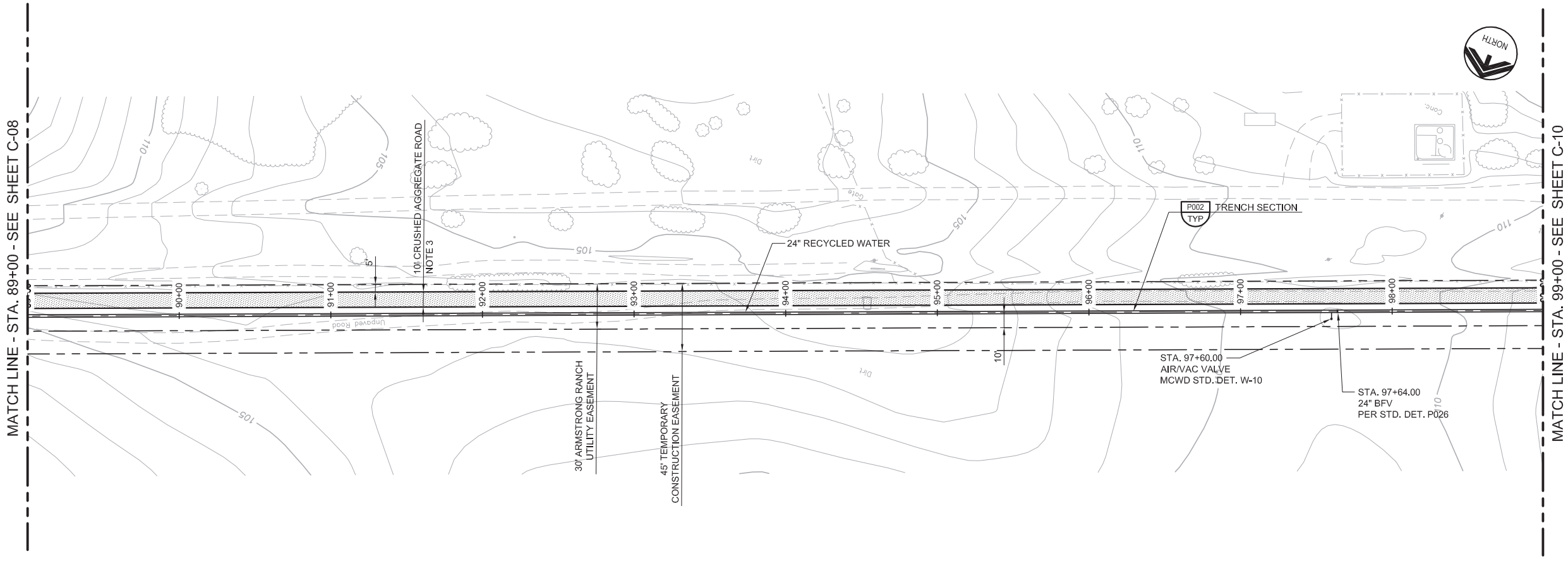
PLAN AND PROFILE

STA. 79+00 TO STA. 89+00

VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	7568A.10
0 1" 16'	DRAWING NO.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	C-08
	SHEET NO.
	16 OF 93

MATCH LINE - STA. 89+00 - SEE SHEET C-08

MATCH LINE - STA. 99+00 - SEE SHEET C-10



GENERAL NOTES

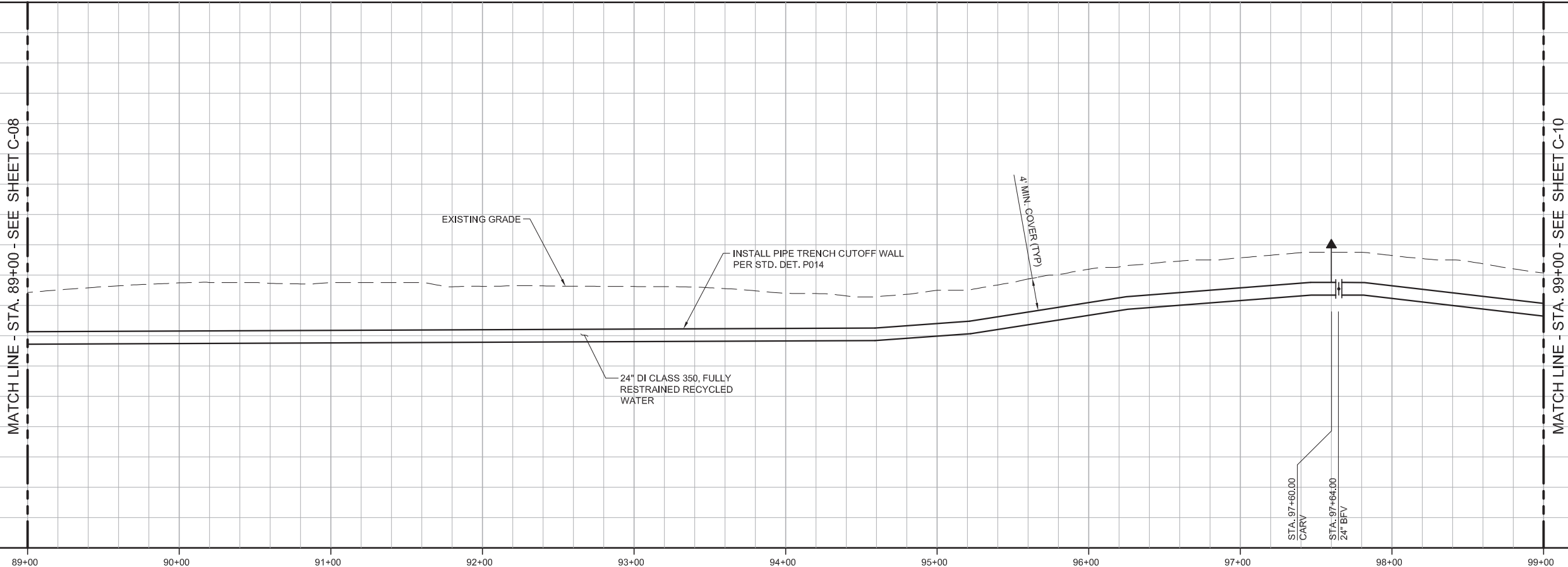
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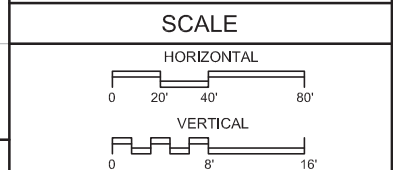
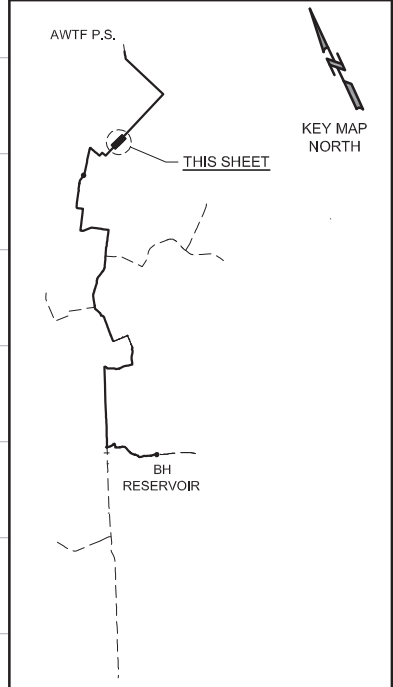
Call before you Dig

1-800-227-2600

UNDERGROUND SERVICE (USA)



KEY MAP



Last Opened by: bhawes 4-26-17 10:24am BHawes

REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
	DRAWN
	BH
	CHECKED
	AP
DATE	MAY 2017

PROJECT ENGINEER

Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:06:52-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

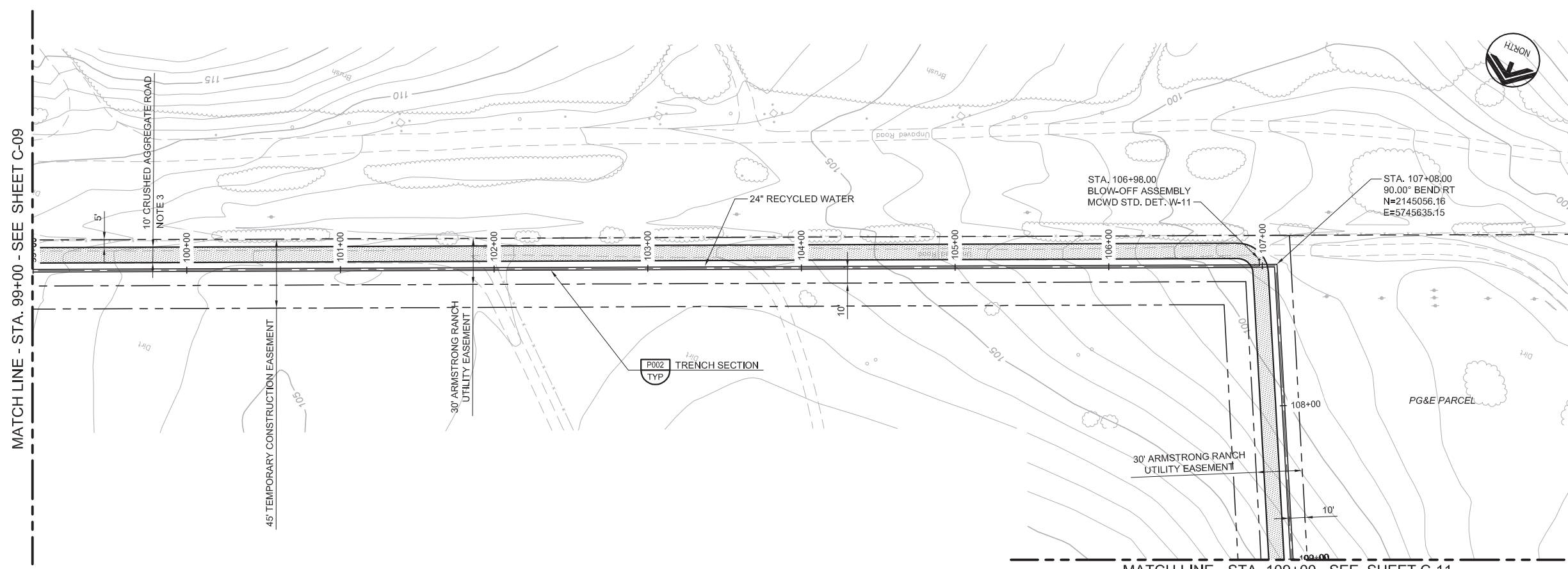
PLAN AND PROFILE

STA. 89+00 TO STA. 99+00

VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	7568A.10
0 1"	DRAWING NO.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	C-09
	SHEET NO.
	17 OF 93

GENERAL NOTES

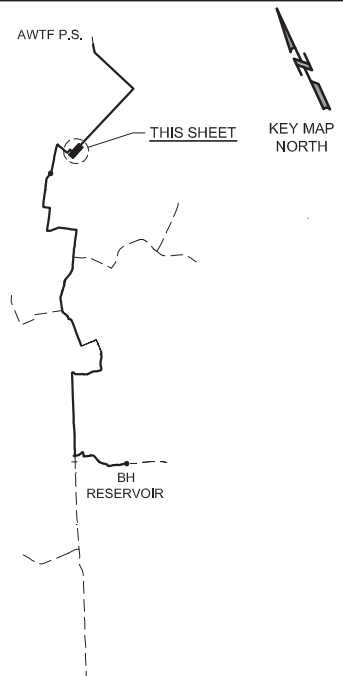
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. THE DISTRICT HAS SECURED A 45' TEMPORARY CONSTRUCTION EASEMENT AS SHOWN ON THE PLANS. THE CONTRACTOR MAY, AT HIS OWN DISCRETION, NEGOTIATE WITH THE PROPERTY OWNER FOR TEMPORARY CONSTRUCTION EASEMENT WIDTH BEYOND THE 45 FEET SHOWN.
3. ROAD SHALL CONSIST OF 6-INCHES OF CRUSHED AGGREGATE COMPACTED TO 95%.



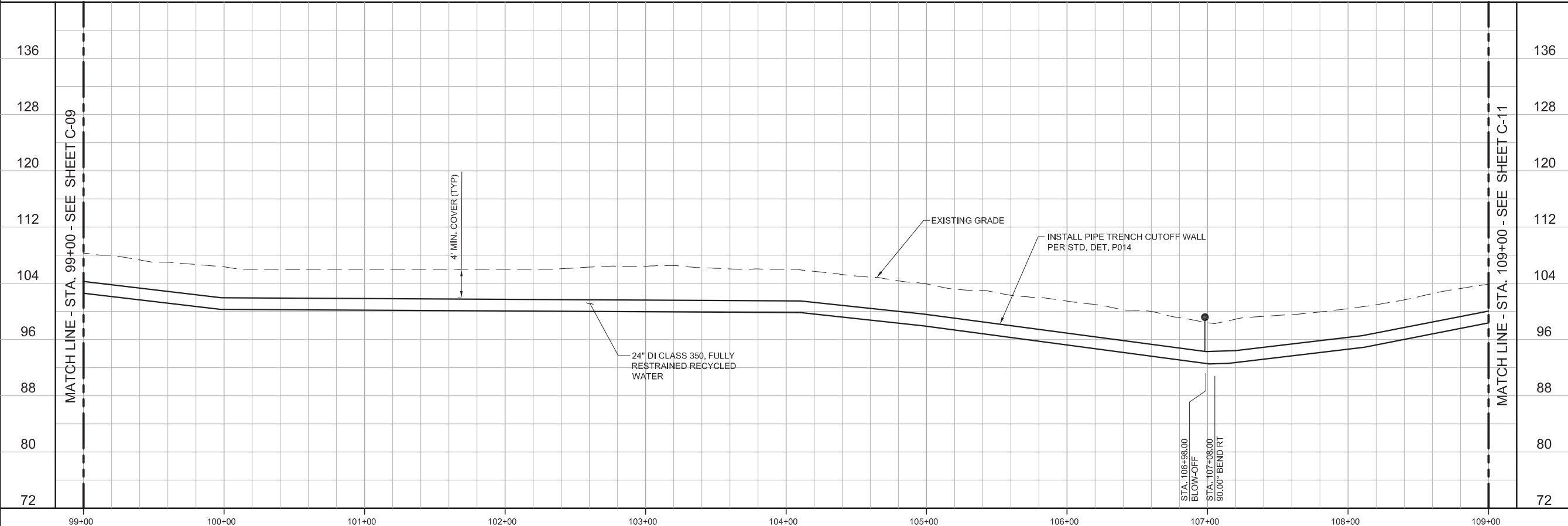
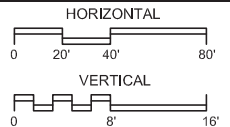
MATCH LINE - STA. 99+00 - SEE SHEET C-09

MATCH LINE - STA. 109+00 - SEE SHEET C-11

KEY MAP

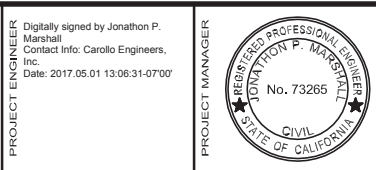


SCALE



BID SET			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

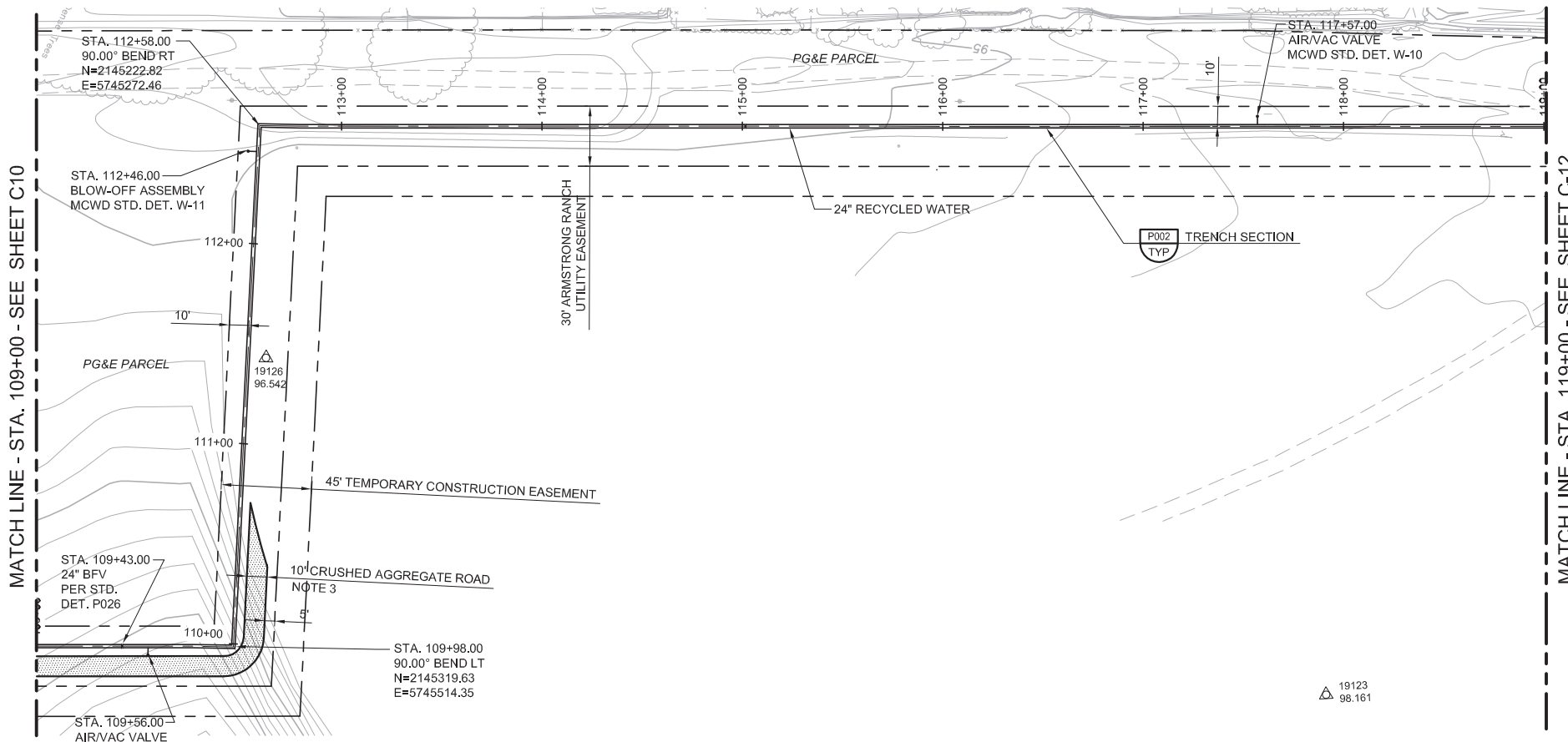
PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 13:06:31-0700Z



REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
CIVIL
PLAN AND PROFILE
STA. 99+00 TO STA. 109+00

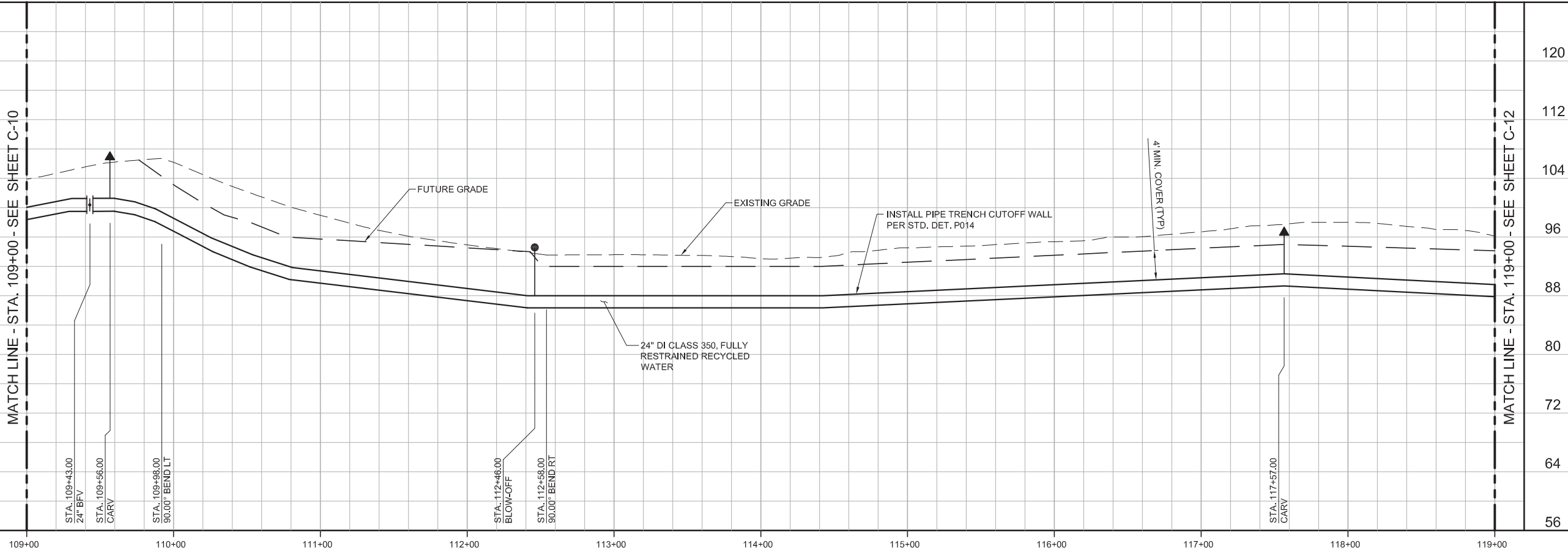
VERIFY SCALES
JOB NO. 7568A.10
DRAWING NO. C-10
SHEET NO. 18 OF 93

Last Opened by: BHawes 4-26-17 11:37am C:\pw_working\projectwise\bhawes\dms09326\7568A10_C-10 XREFS: C-PIPE; X-SITE; x-topo; X-AERIAL; X-TOPO-UTILS; C-PROFILE; rcpf100; rcpf101; rcpf102; silewk; TM-Master; 7568A10_TB; SSmasterplan mcwd01; mcwd02; mcwd03;

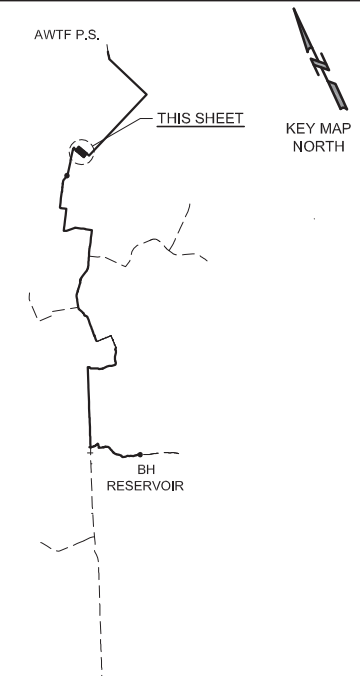


GENERAL NOTES

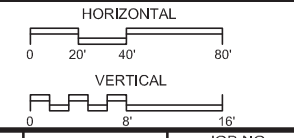
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. THE DISTRICT HAS SECURED A 45' TEMPORARY CONSTRUCTION EASEMENT AS SHOWN ON THE PLANS. THE CONTRACTOR MAY, AT HIS OWN DISCRETION, NEGOTIATE WITH THE PROPERTY OWNER FOR TEMPORARY CONSTRUCTION EASEMENT WIDTH BEYOND THE 45 FEET SHOWN.
3. ROAD SHALL CONSIST OF 6-INCHES OF CRUSHED AGGREGATE COMPACTED TO 95%.



KEY MAP



SCALE



REV	DATE	BY	DESCRIPTION

BID SET	
DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

Project Engineer: Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 10:46:54-0700

Project Manager: JONATHAN P. MARSHALL
 No. 73265
 CIVIL
 STATE OF CALIFORNIA



REGIONAL URBAN WATER AUGMENTATION PROJECT

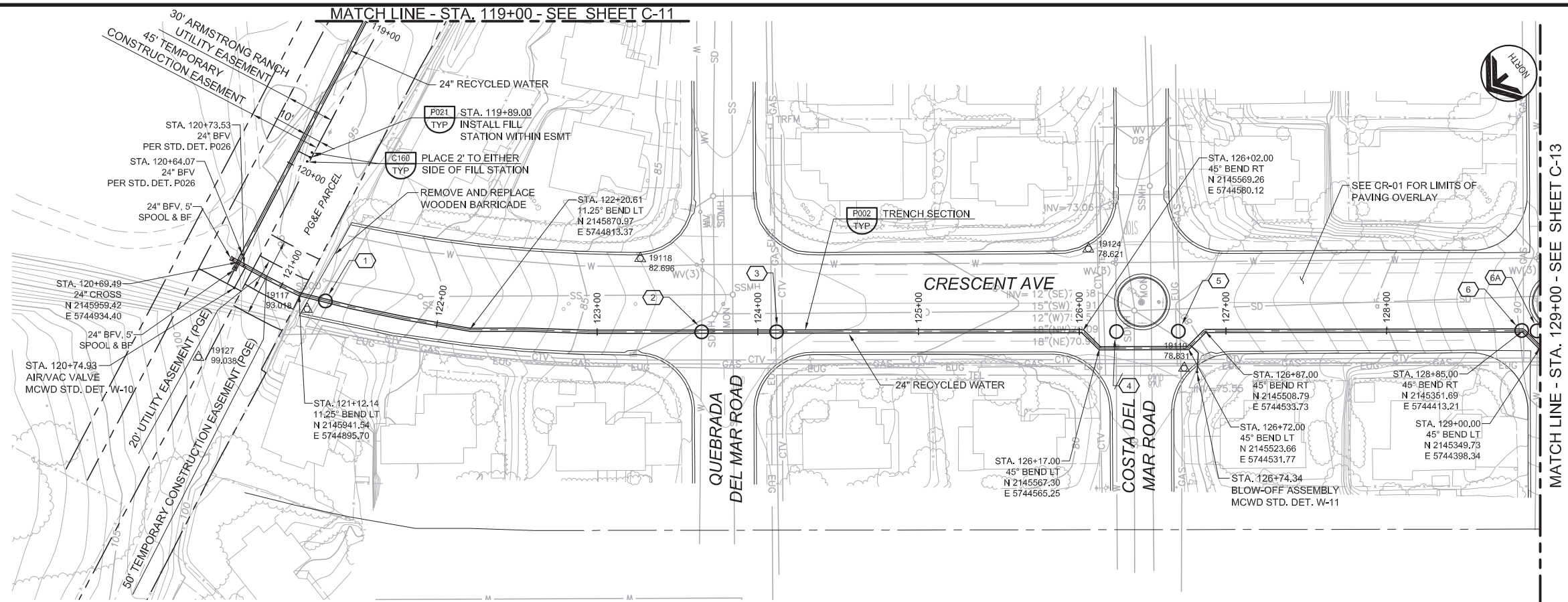
RECYCLED WATER PIPELINE

CIVIL
PLAN AND PROFILE
 STA. 109+00 TO STA. 119+00

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" 16'

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. C-11
 SHEET NO. 19 OF 93



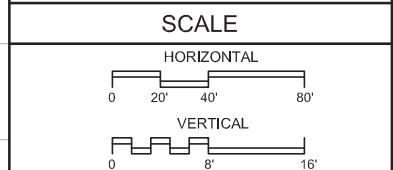
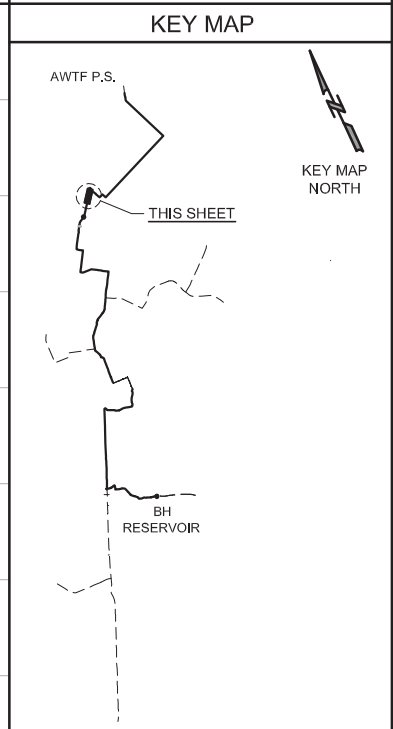
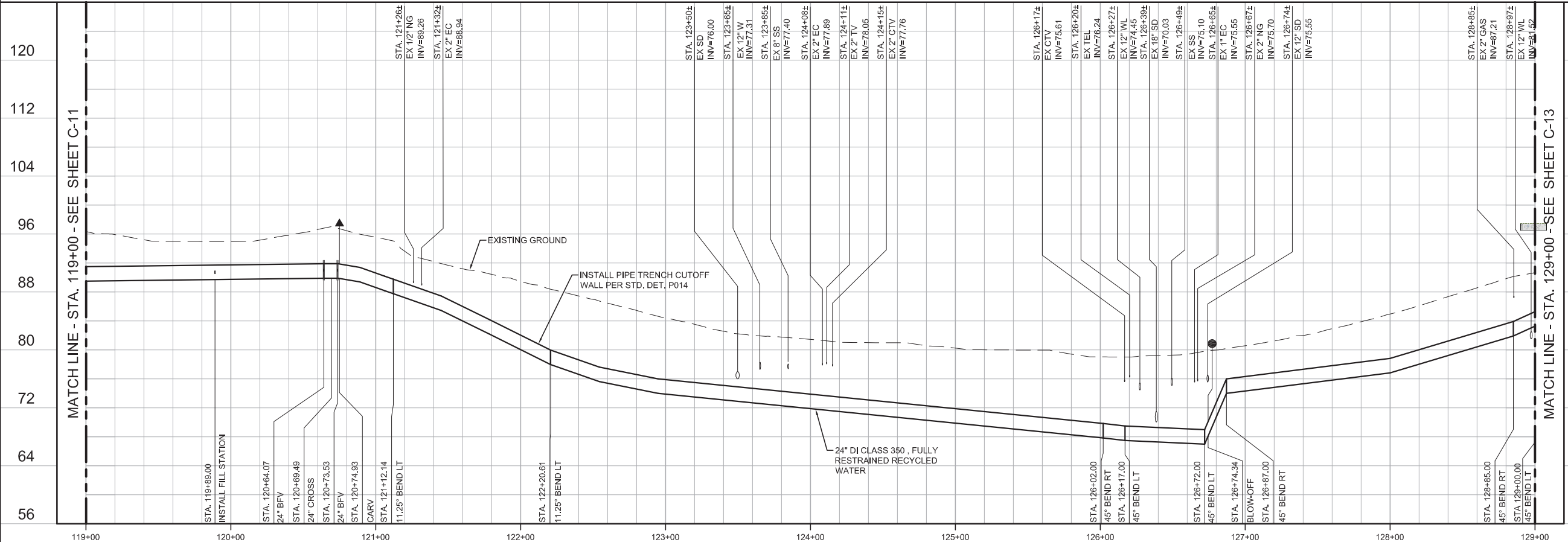
- ### GENERAL NOTES
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 - ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

1-800-227-2800

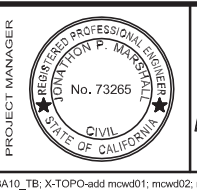
UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:06:15-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE

STA. 119+00 TO STA. 129+00

VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	7568A.10
0 1"	DRAWING NO.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	C-12
	SHEET NO.
	20 OF 93

GENERAL NOTES

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
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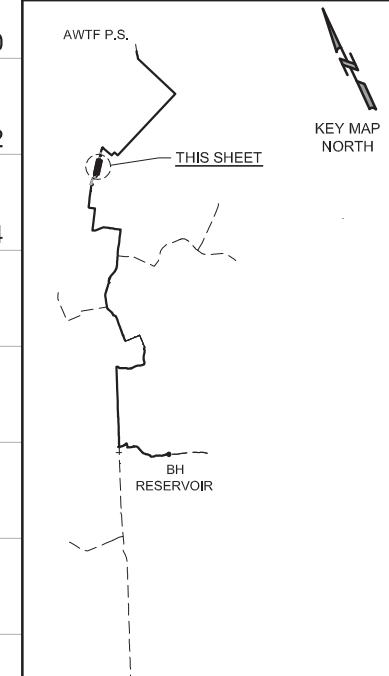
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

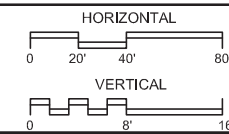
1-800-227-2600

UNDERGROUND SERVICE (USA)

KEY MAP



SCALE



VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

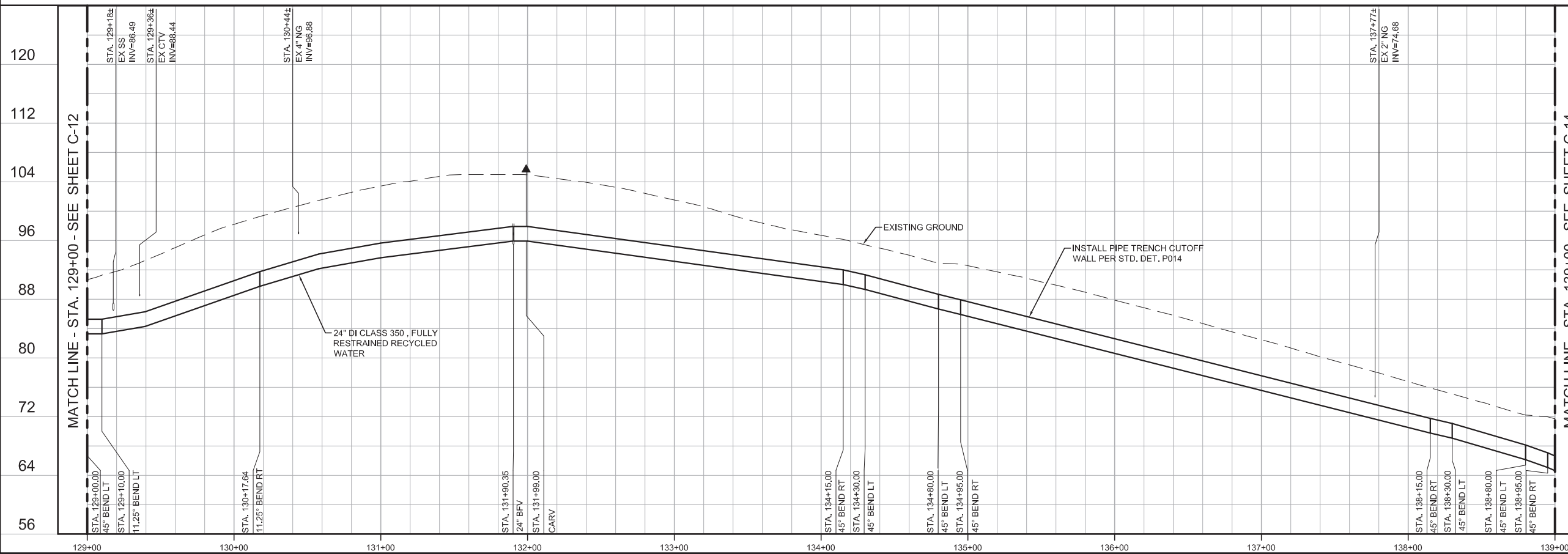
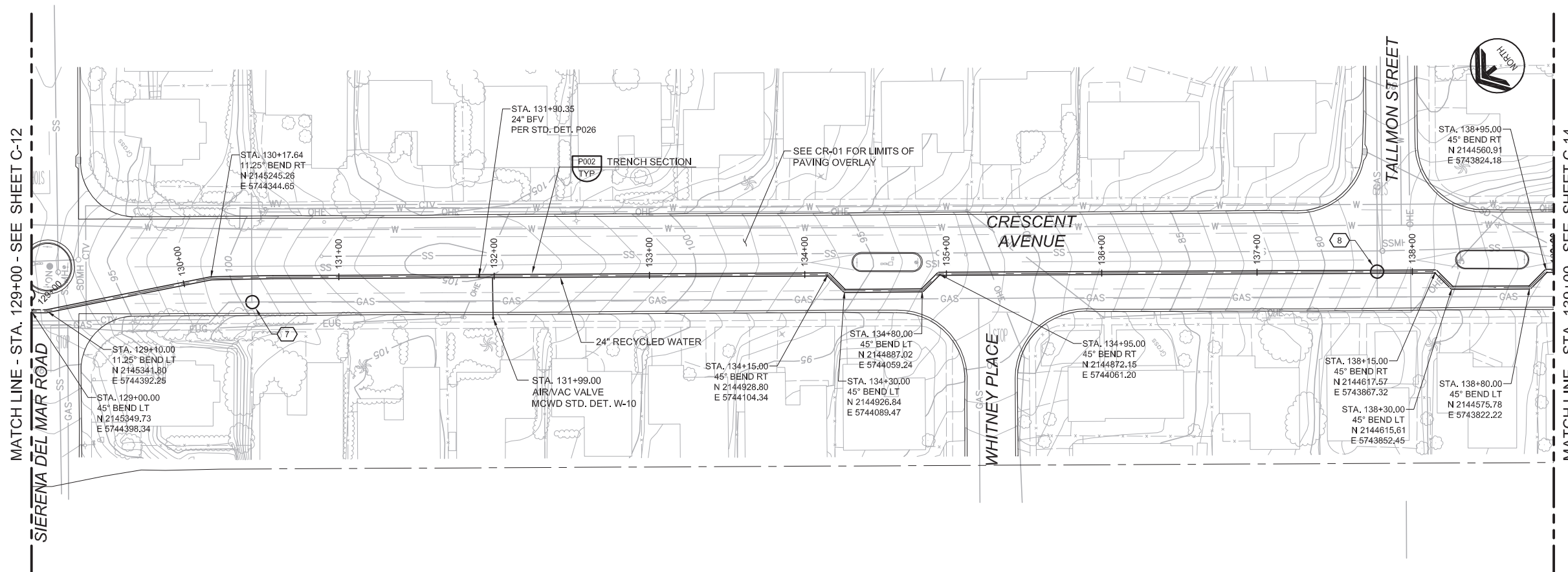
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
7568A.10

DRAWING NO.
C-13

SHEET NO.
21 OF 93



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER

Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 13:06:07-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE

STA. 129+00 TO STA. 139+00

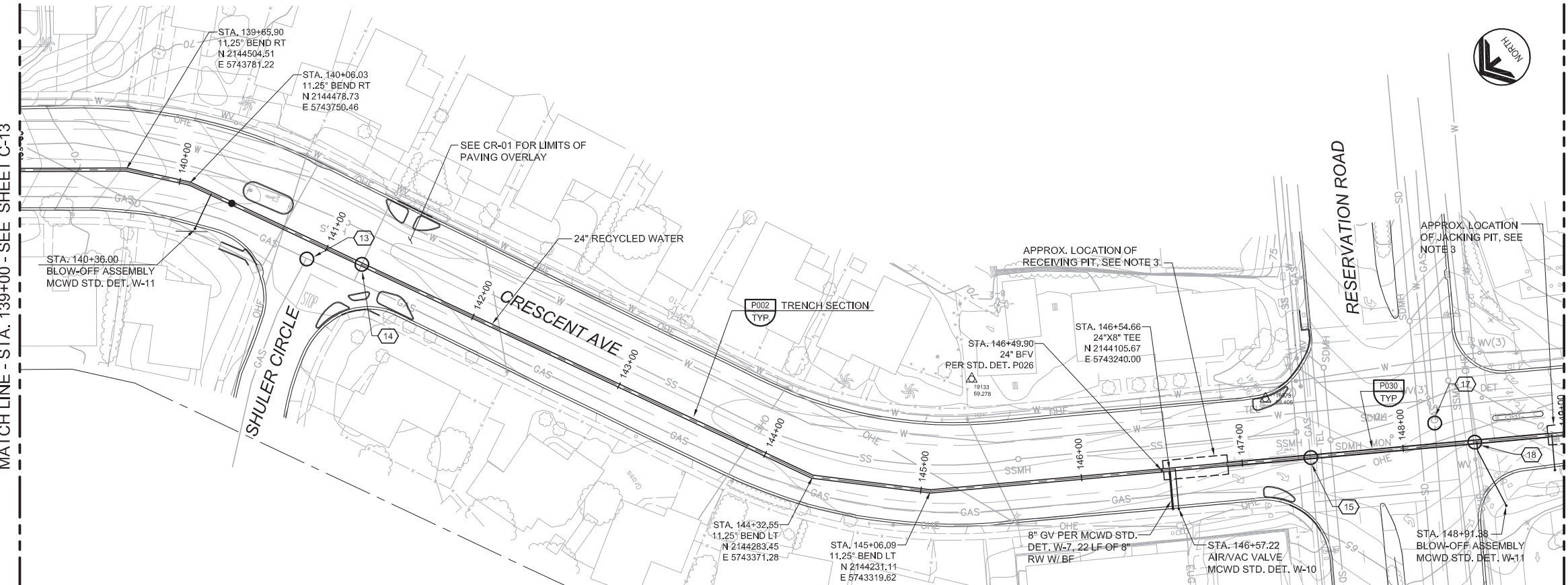
Plot Created by: 4/29/17 11:24am Bhhawes

GENERAL NOTES

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
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3. EXACT LOCATIONS AND DIMENSIONS OF JACKING PITS TO BE DETERMINED BY CONTRACTOR AND SUBMITTED TO ENGINEER FOR REVIEW.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call before you Dig
 1-800-227-2600

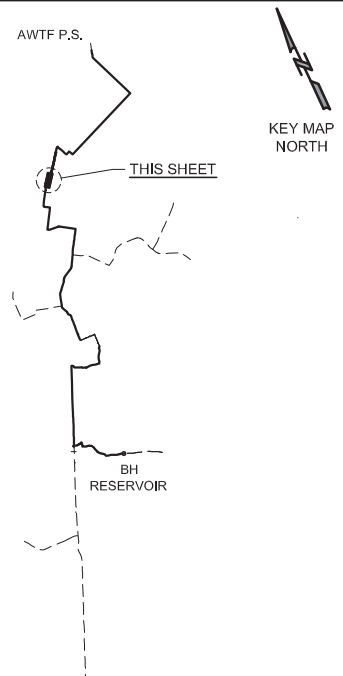
UNDERGROUND SERVICE (USA)



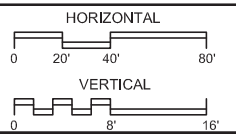
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MATCH LINE - STA. 149+00 - SEE SHEET C-15

KEY MAP

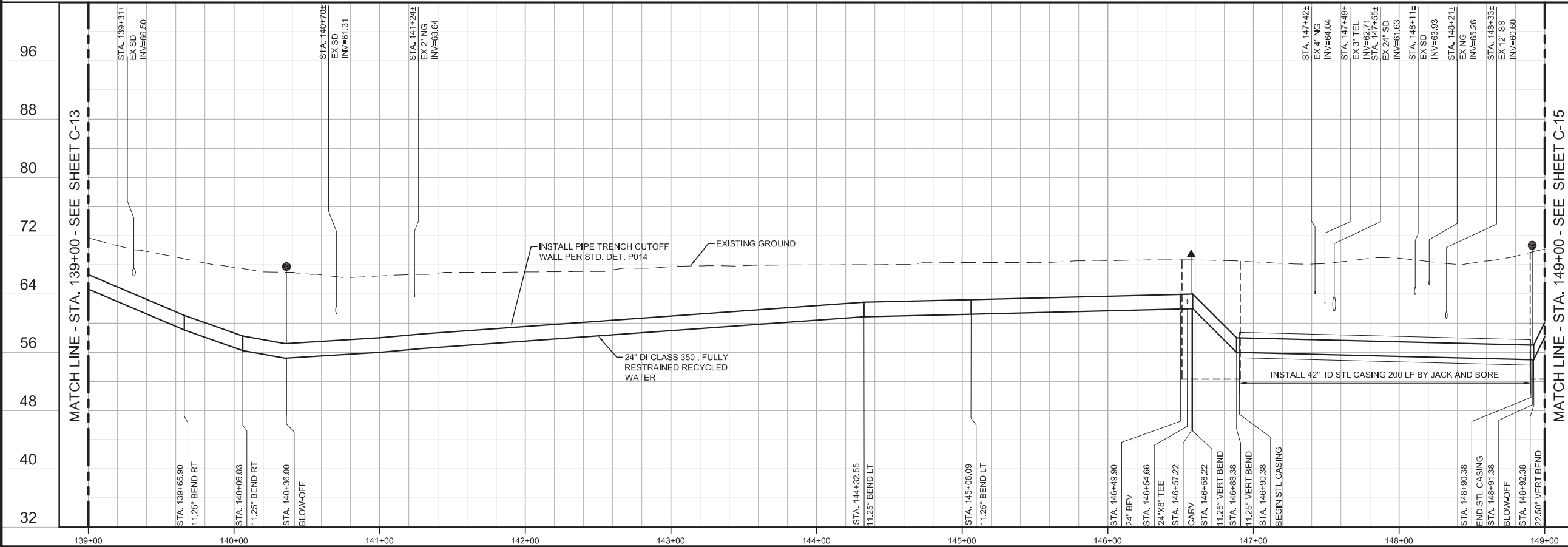


SCALE



VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" 16'
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. C-14
 SHEET NO. 22 OF 93



MATCH LINE - STA. 139+00 - SEE SHEET C-13

MATCH LINE - STA. 149+00 - SEE SHEET C-15

REV	DATE	BY	DESCRIPTION

BID SET

DESIGNED JPM
 DRAWN BH
 CHECKED AP
 DATE MAY 2017

DISCIPLINE ENGINEER

PROJECT ENGINEER

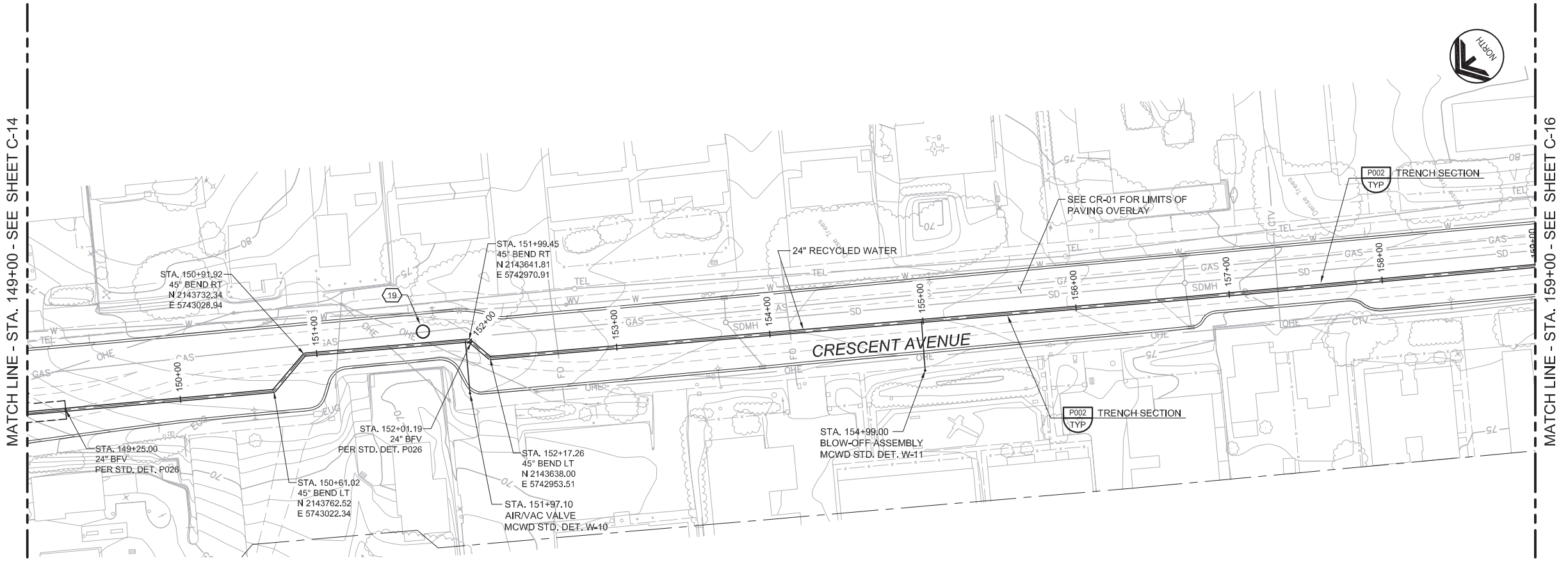
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 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:05:59-0700'

PROJECT MANAGER



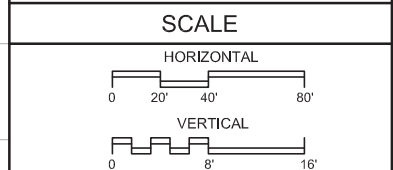
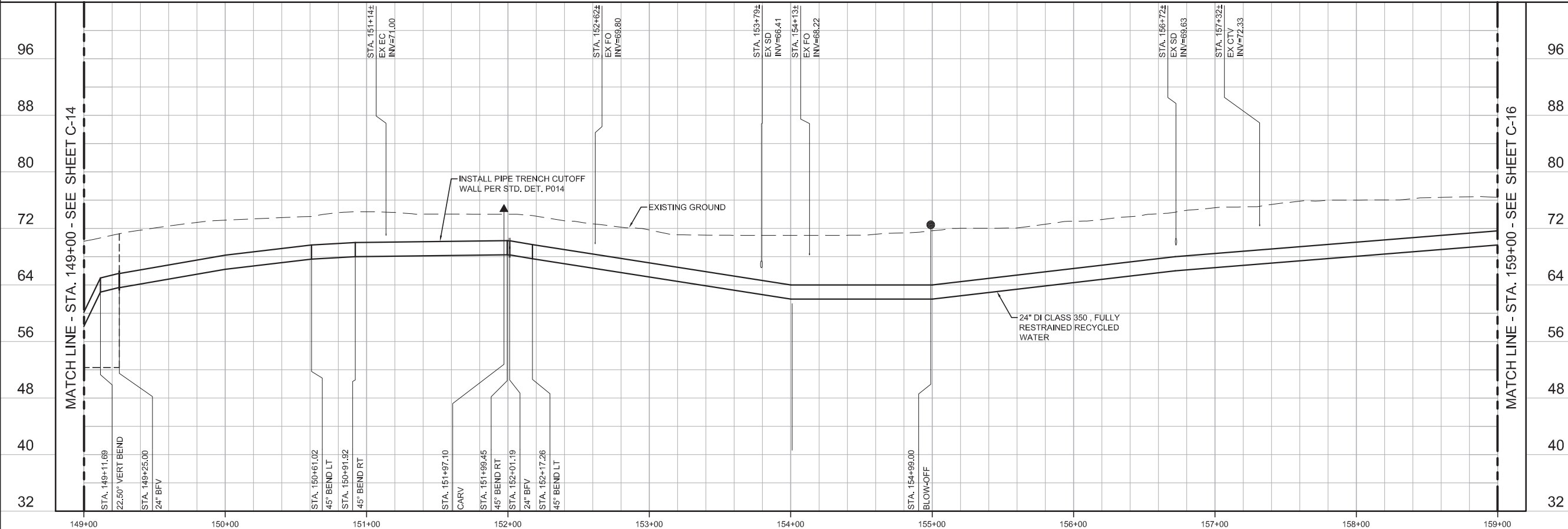
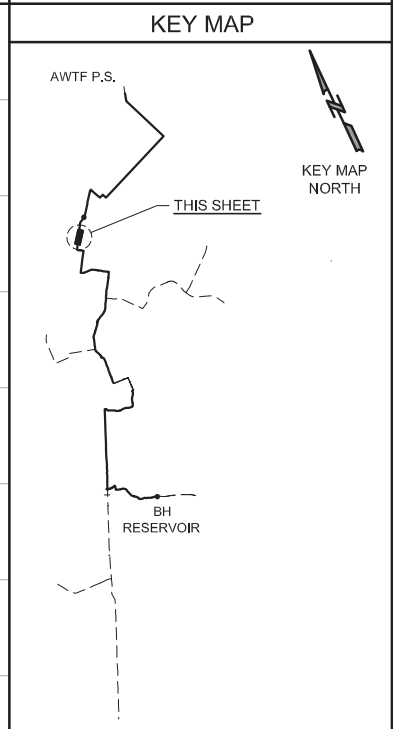
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
 CIVIL
PLAN AND PROFILE
STA. 139+00 TO STA. 149+00



- GENERAL NOTES**
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AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call before you Dig
 1-800-227-2800
UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

Project Engineer: Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:05:48-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

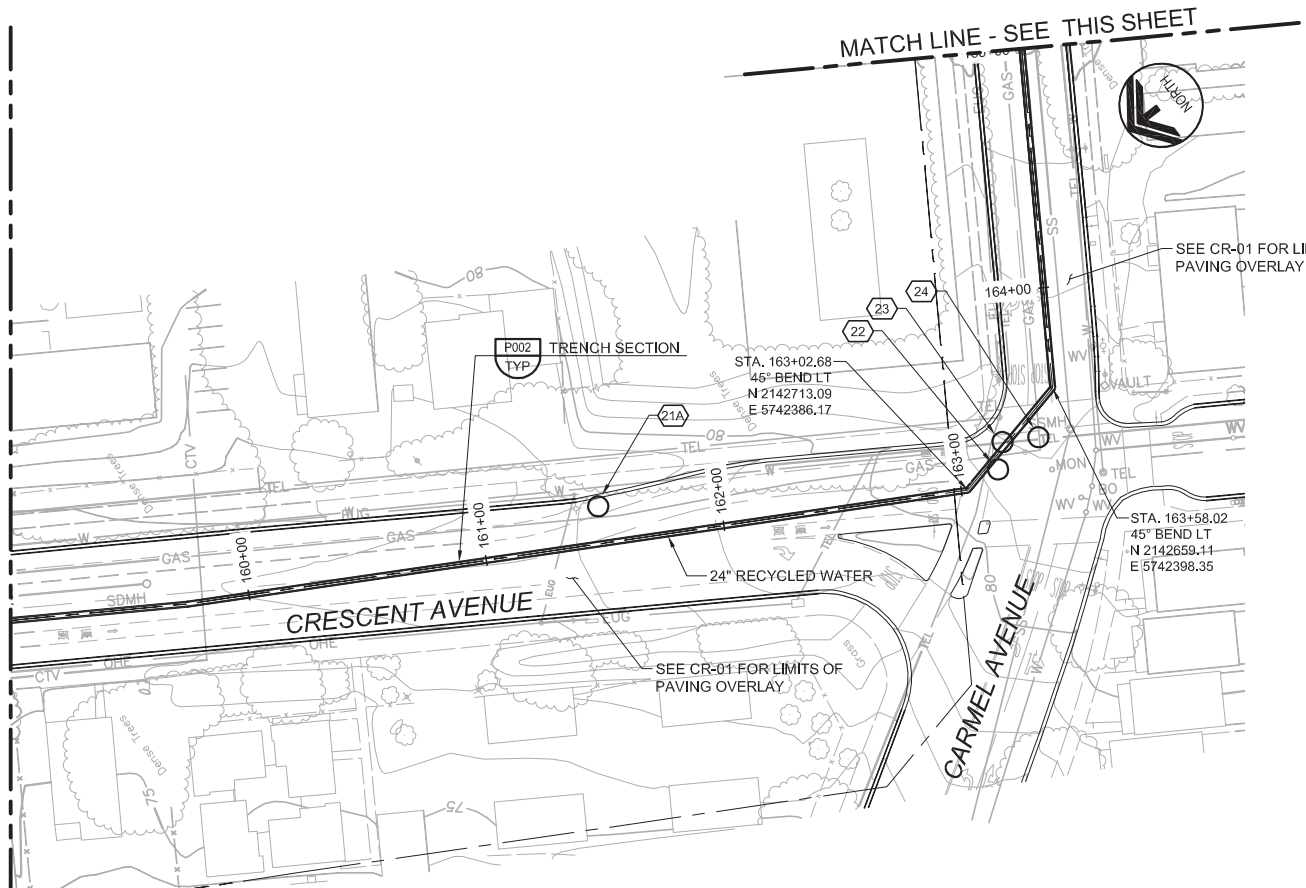
CIVIL

PLAN AND PROFILE

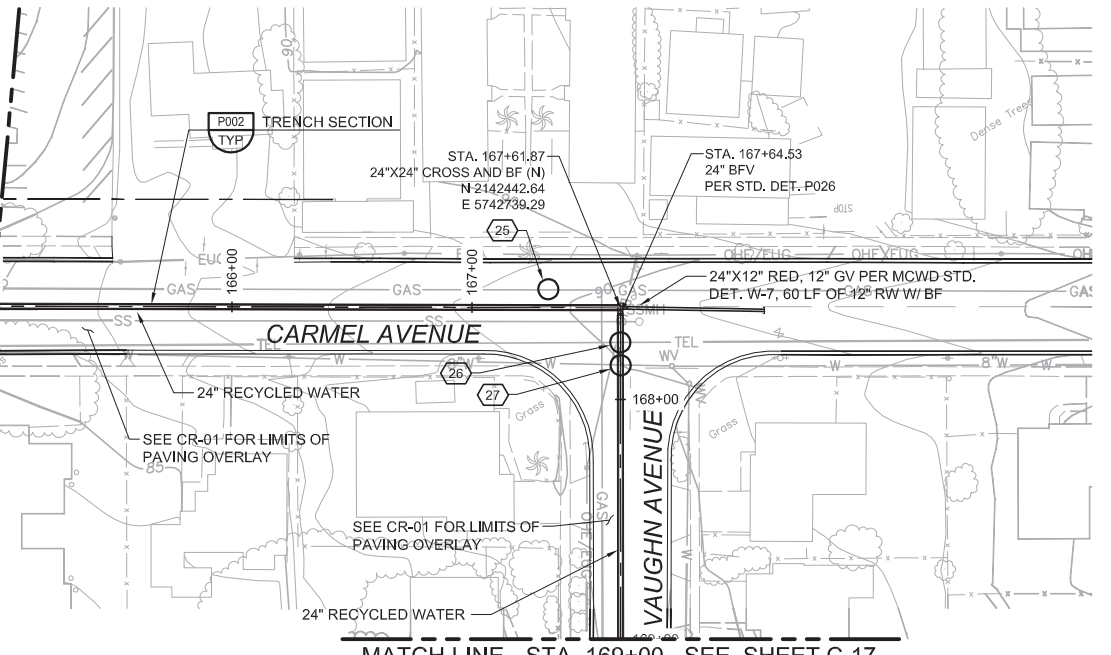
STA. 149+00 TO STA. 159+00

VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	7568A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO.
	C-15
	SHEET NO.
	23 OF 93

MATCH LINE - STA. 159+00 - SEE SHEET C-15



MATCH LINE - SEE THIS SHEET



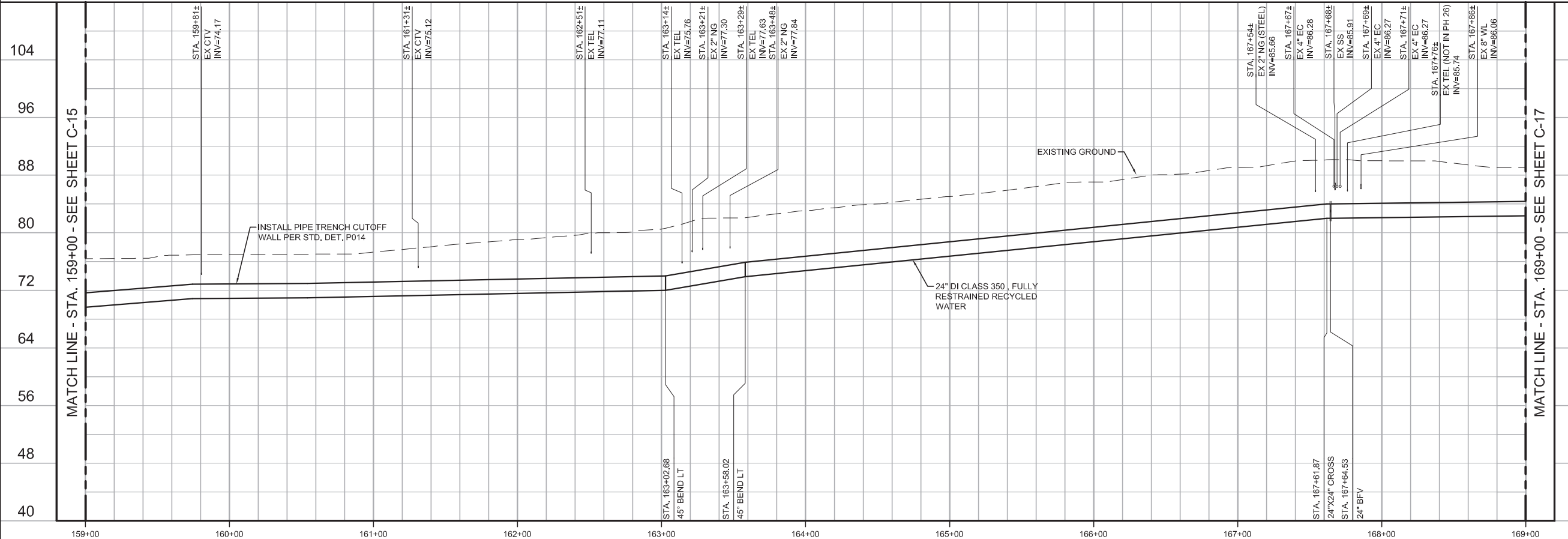
MATCH LINE - STA. 169+00 - SEE SHEET C-17

GENERAL NOTES

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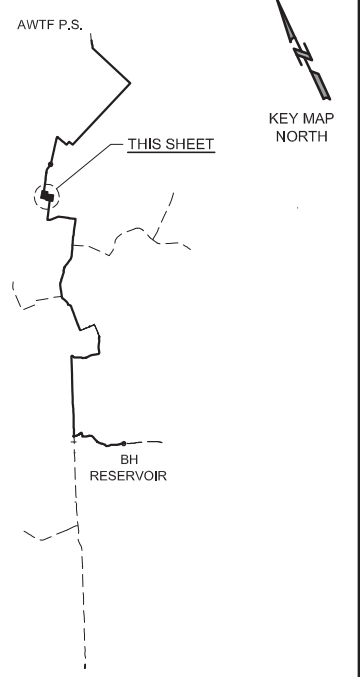
Call before you Dig
1-800-227-2600

UNDERGROUND SERVICE (USA)

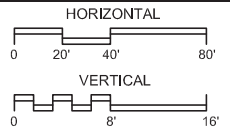


MATCH LINE - STA. 169+00 - SEE SHEET C-17

KEY MAP



SCALE



REV	DATE	BY	DESCRIPTION

BID SET

DESIGNED JPM
DRAWN BH
CHECKED AP
DATE MAY 2017

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 13:05:39-0700



Marina Coast Water District

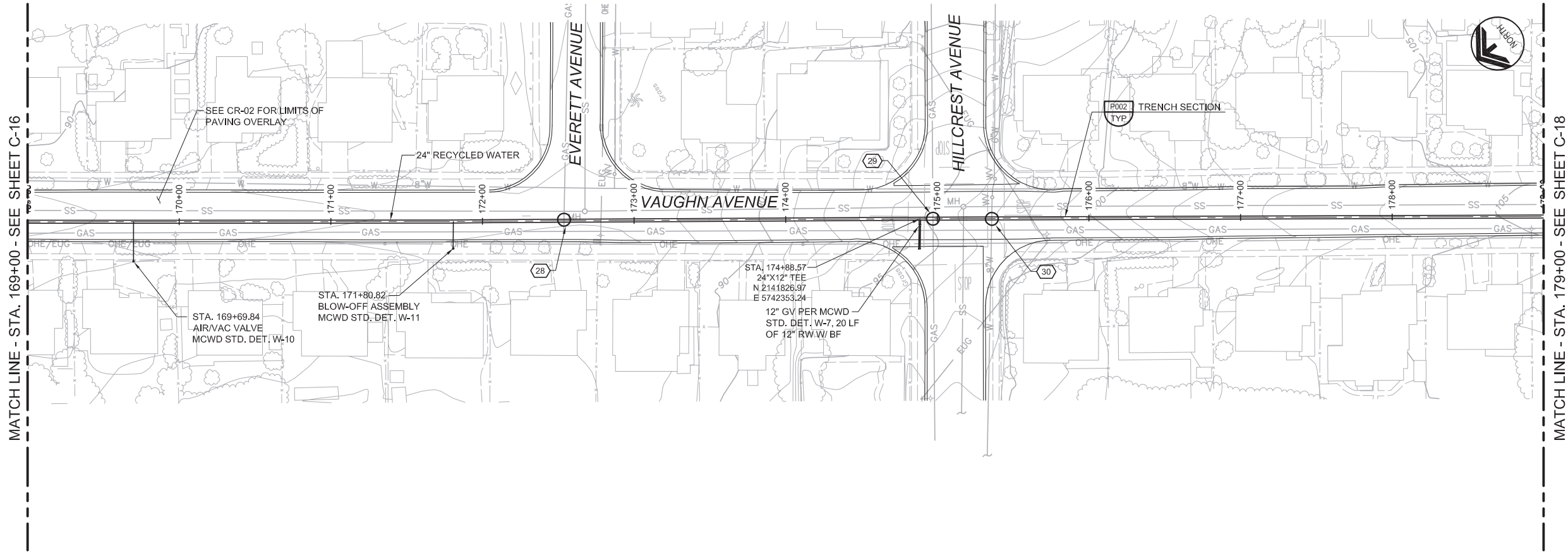
REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
CIVIL
PLAN AND PROFILE
STA. 159+00 TO STA. 169+00

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
DRAWING NO. C-16
SHEET NO. 24 OF 93

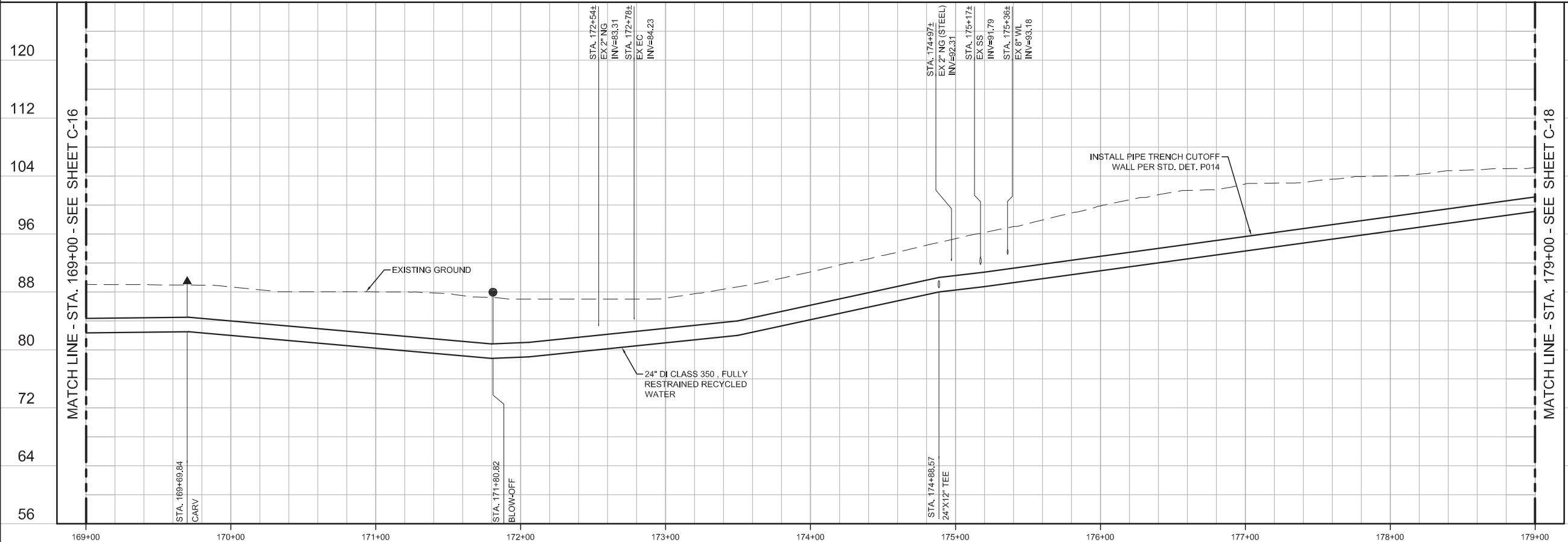
GENERAL NOTES

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MATCH LINE - STA. 169+00 - SEE SHEET C-16

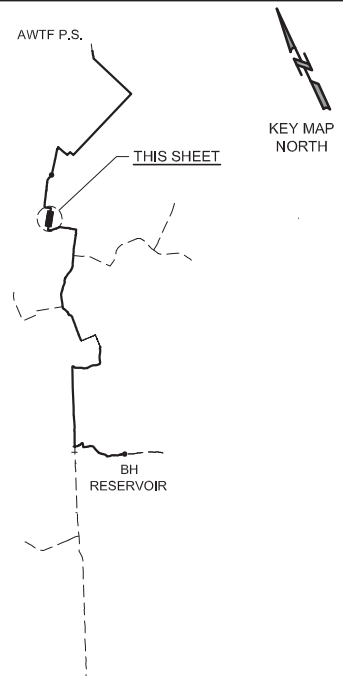
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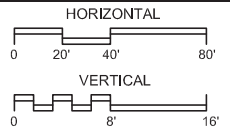
MATCH LINE - STA. 169+00 - SEE SHEET C-16

MATCH LINE - STA. 179+00 - SEE SHEET C-18

KEY MAP

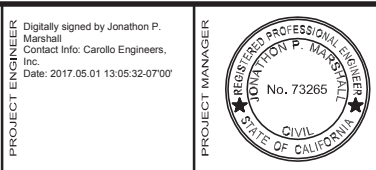


SCALE



BID SET			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

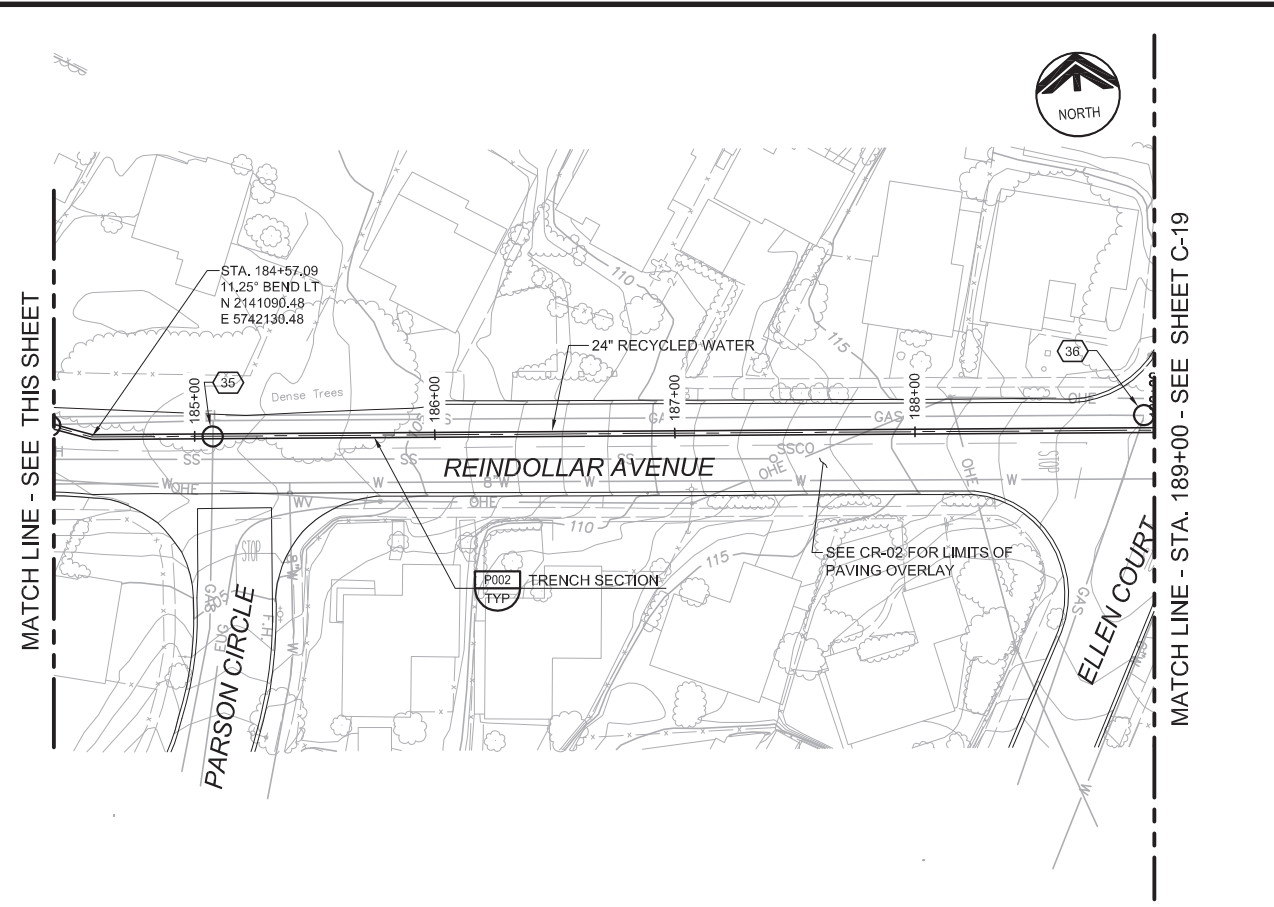
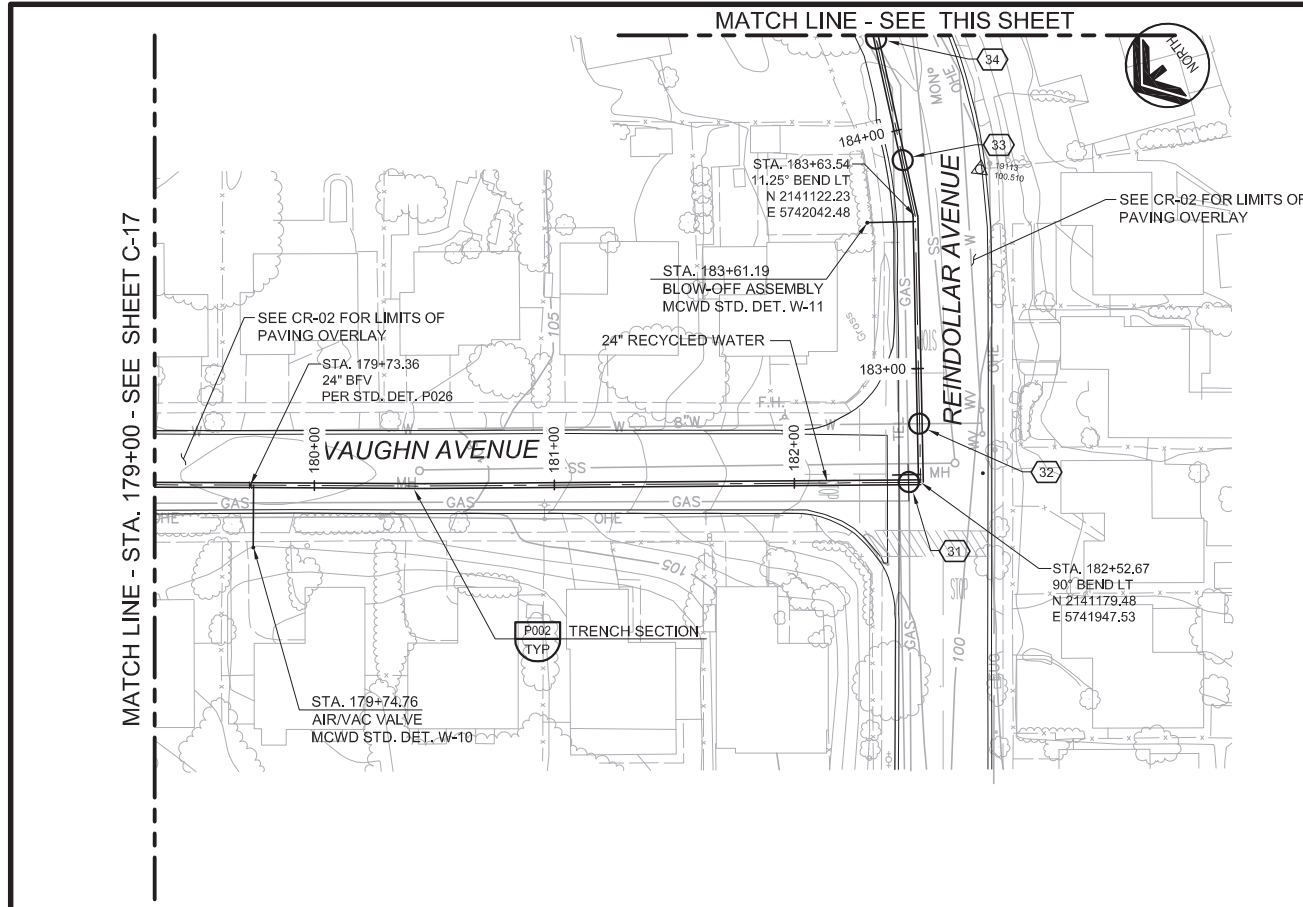
PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 13:05:32-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
CIVIL
PLAN AND PROFILE
STA. 169+00 TO STA. 179+00

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1" 16'
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

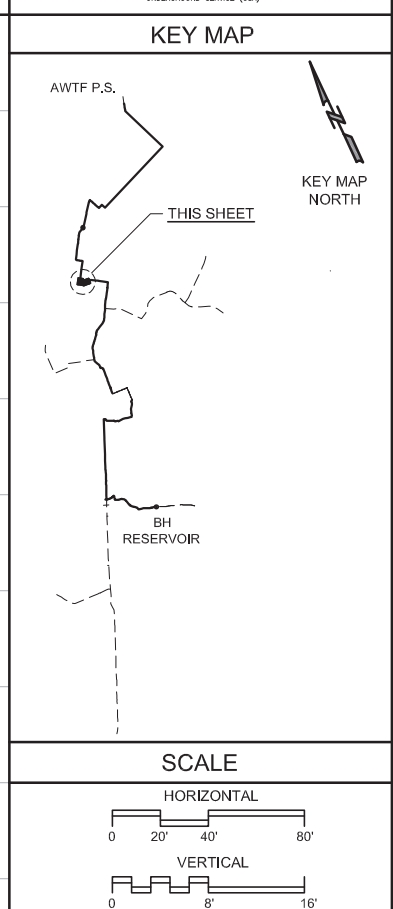
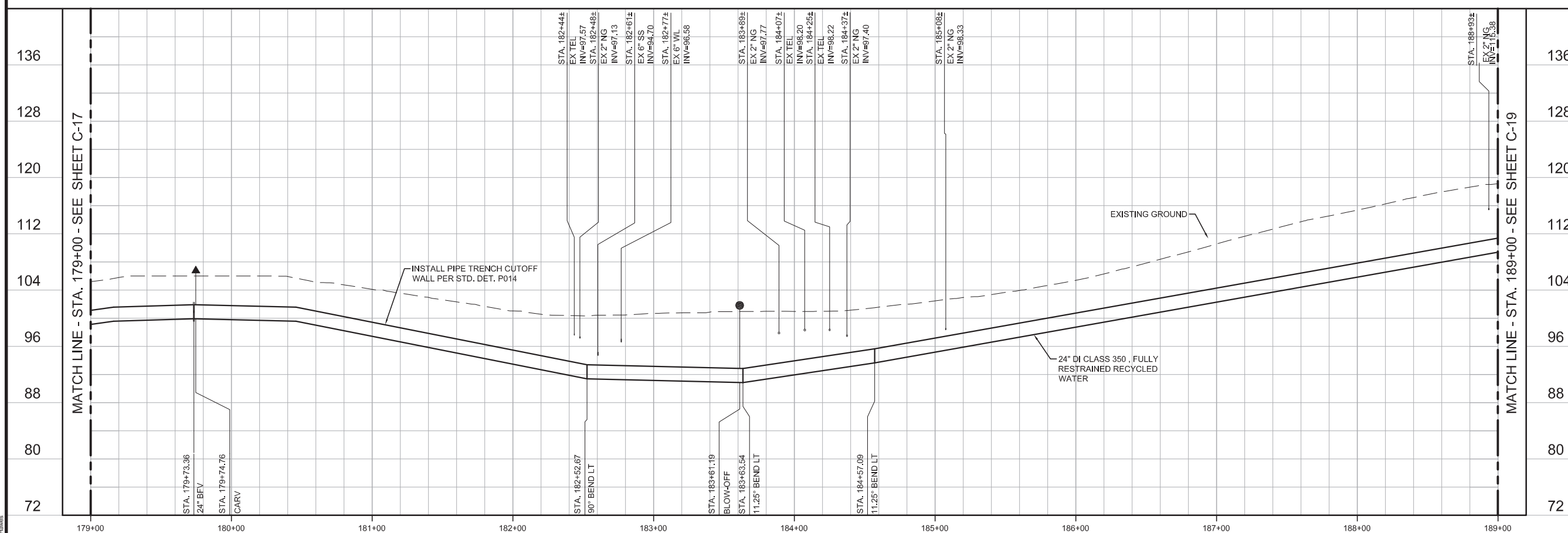
JOB NO. 7568A.10
DRAWING NO. C-17
SHEET NO. 25 OF 93



GENERAL NOTES

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AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call before you Dig
 1-800-227-2600
UNDERGROUND SERVICE (USA)



BID SET			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DESIGNED
JPM

DRAWN
BH

CHECKED
AP

DATE
MAY 2017

PROJECT ENGINEER

Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 13:05:24-0700Z

PROJECT MANAGER

REGISTERED PROFESSIONAL ENGINEER
JONATHAN P. MARSHALL
No. 73265
CIVIL
STATE OF CALIFORNIA



REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL
PLAN AND PROFILE
STA. 179+00 TO STA. 189+00

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1" 16'

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
7568A.10

DRAWING NO.
C-18

SHEET NO.
26 OF 93

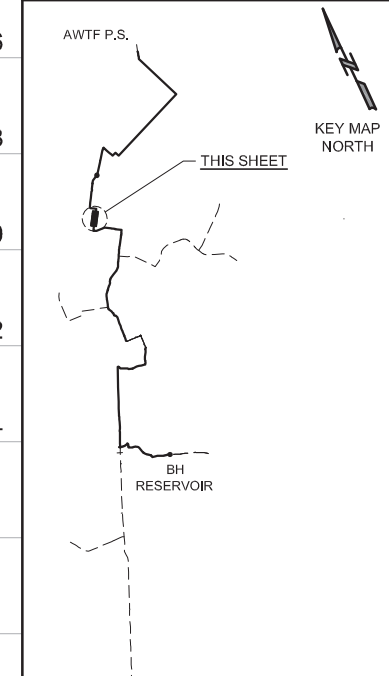
GENERAL NOTES

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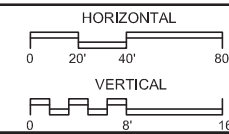
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call before you Dig
 1-800-227-2600

UNDERGROUND SERVICE (USA)

KEY MAP



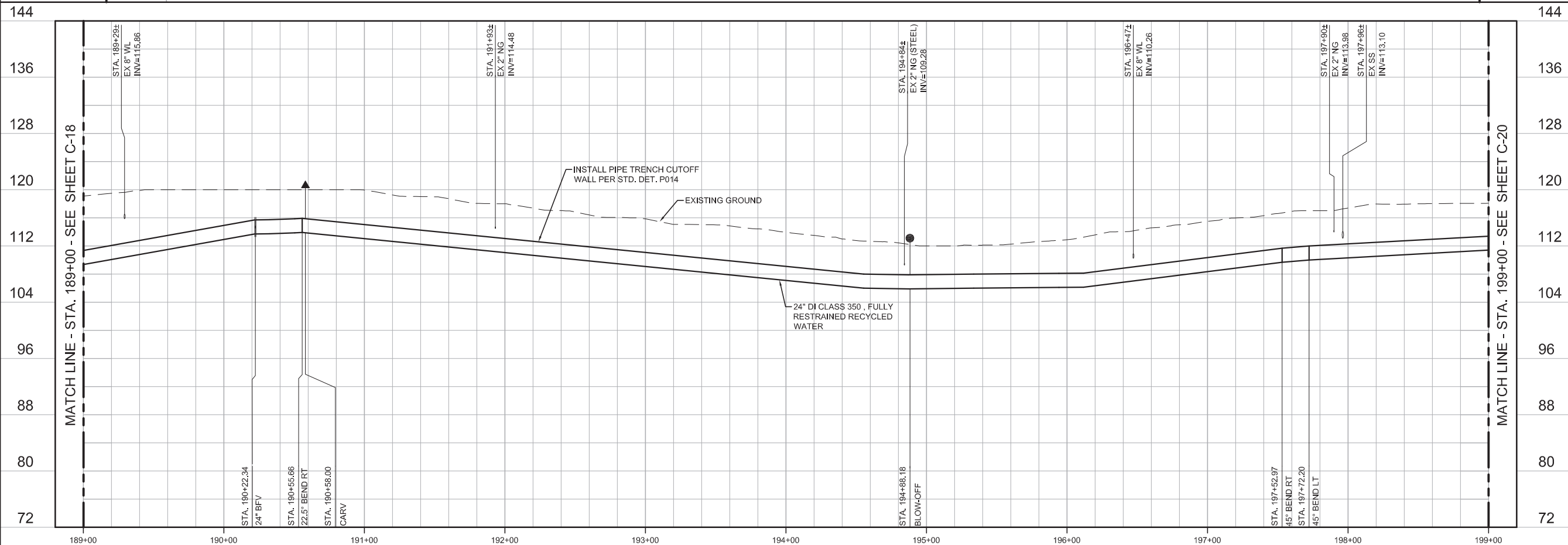
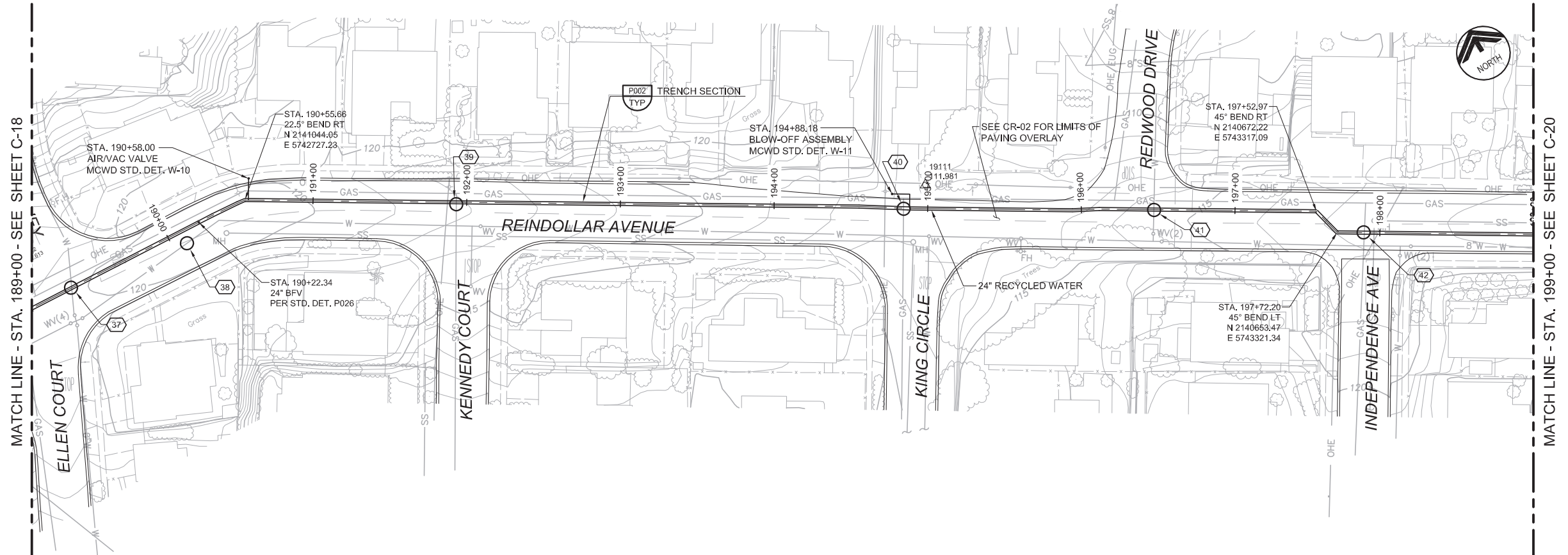
SCALE



VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" 16'
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. C-19
 SHEET NO. 27 OF 93



BID SET			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

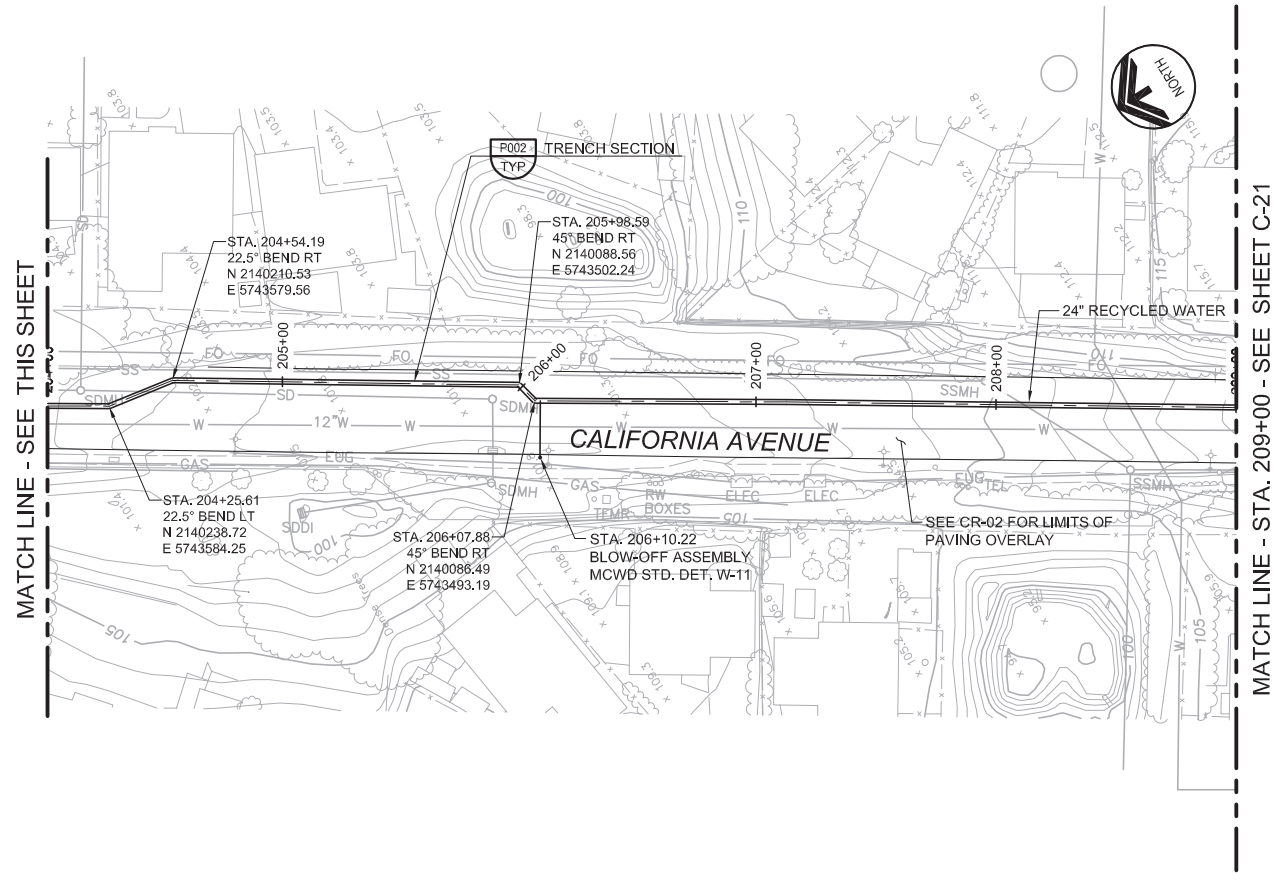
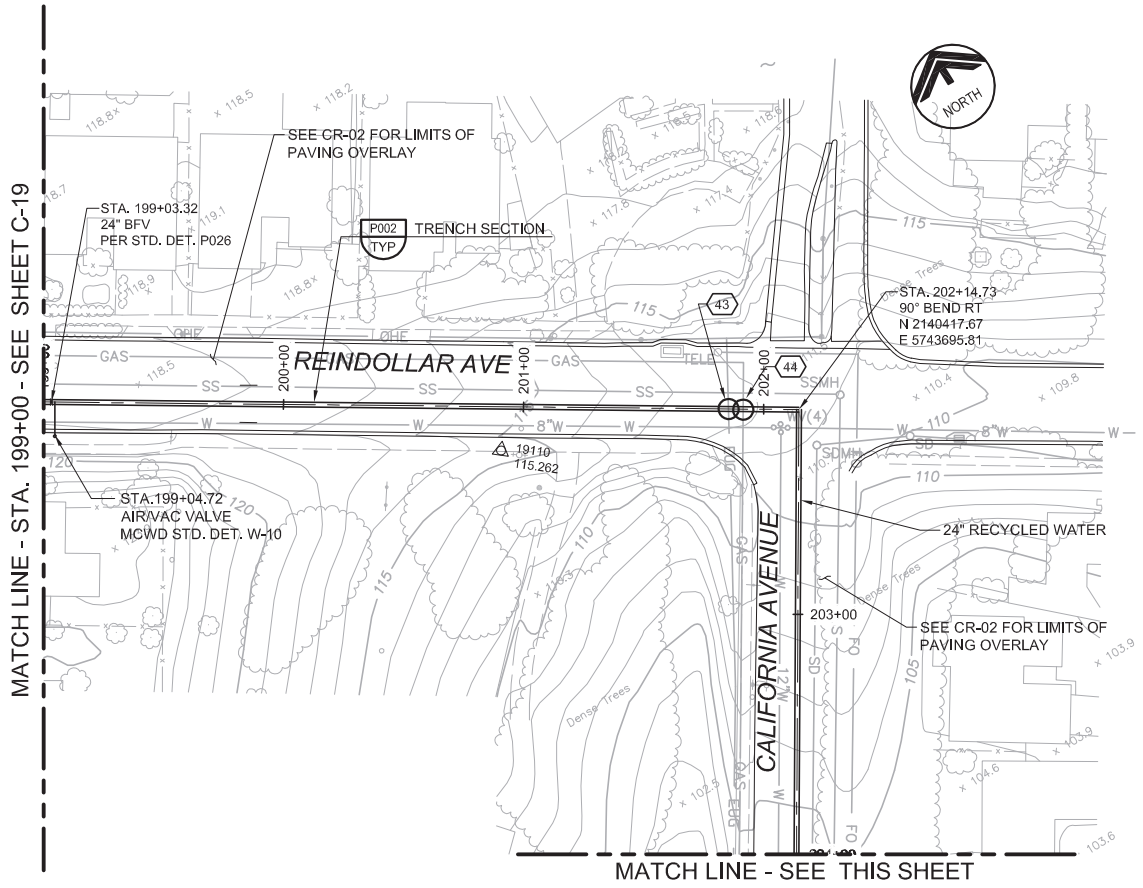
DISCIPLINE ENGINEER

PROJECT ENGINEER
 Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:05:16-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
 CIVIL
PLAN AND PROFILE
 STA. 189+00 TO STA. 199+00

Last Opened by: 428-17 12:24pm BHWes



GENERAL NOTES

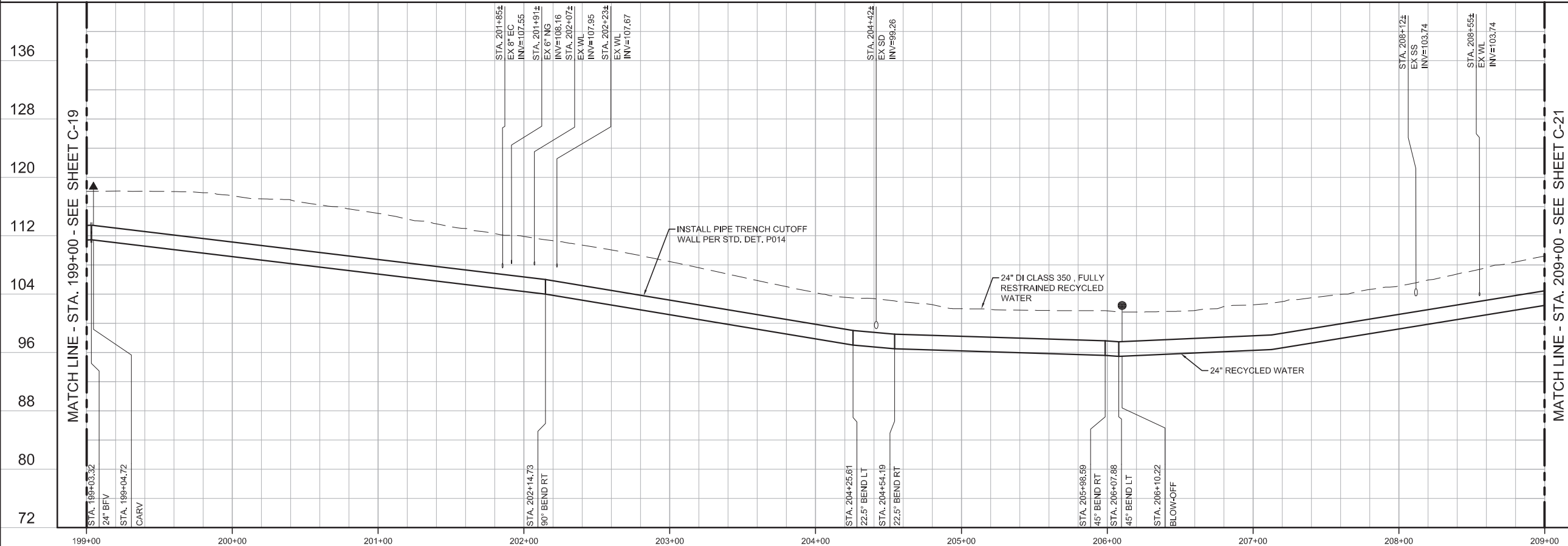
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

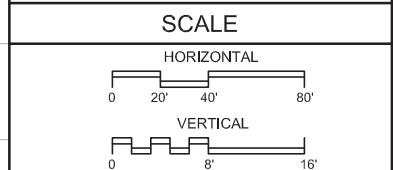
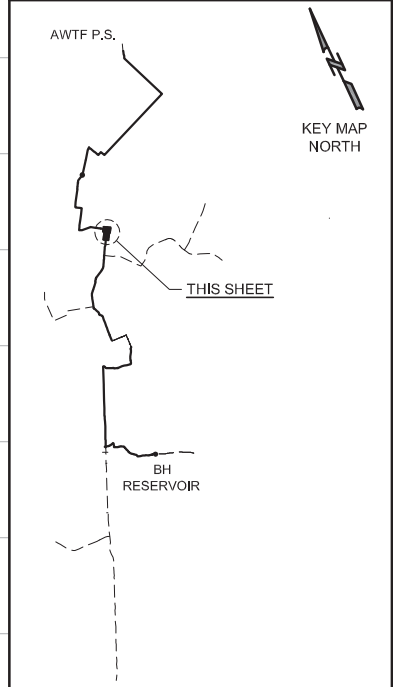
Call before you Dig

1-800-227-2600

UNDERGROUND SERVICE (USA)



KEY MAP



BID SET			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER

PROJECT ENGINEER

PROJECT MANAGER

Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 13:05:08-0700

Carollo
Engineers...Working Wonders With Water™

Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE

STA. 199+00 TO STA. 209+00

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

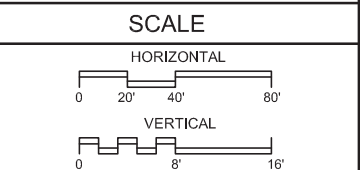
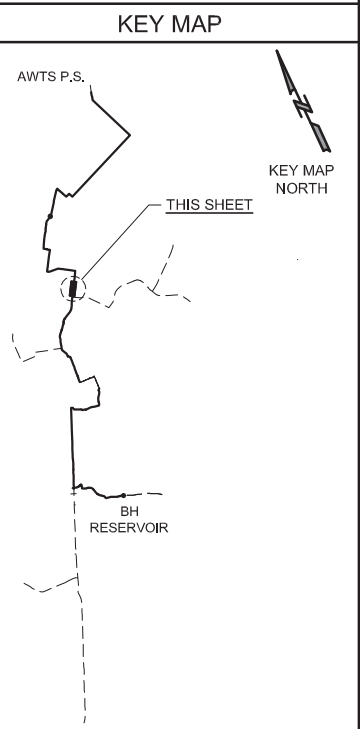
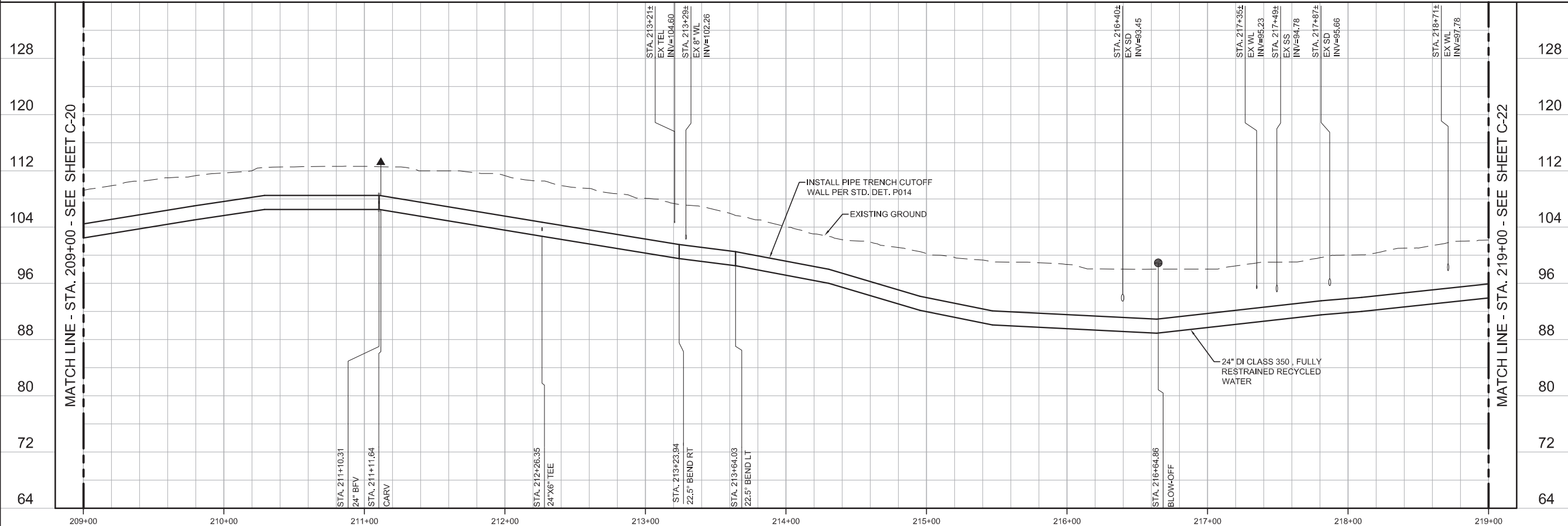
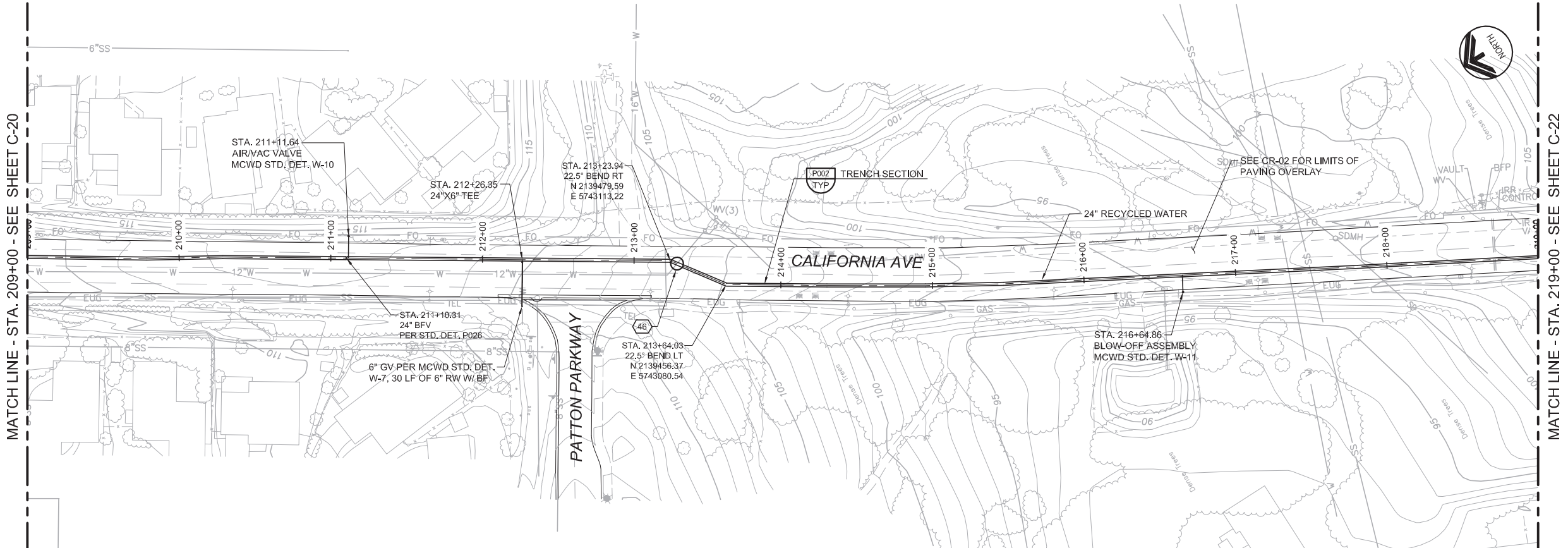
JOB NO. 7568A.10

DRAWING NO. C-20

SHEET NO. 28 OF 93

GENERAL NOTES

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. LOCATION OF EX 2" W SHOWN IS APPROX. CONTRACTOR SHALL FIELD VERIFY LOCATION AND SIZE PRIOR TO START OF CONSTRUCTION.
3. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.



BID SET			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

Project Engineer: Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:04:59-0700

PROJECT MANAGER

 PROJECT MANAGER
 JONATHAN P. MARSHALL
 No. 73265
 CIVIL
 STATE OF CALIFORNIA

carollo
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MARINA COAST WATER DISTRICT
 Marina Coast Water District

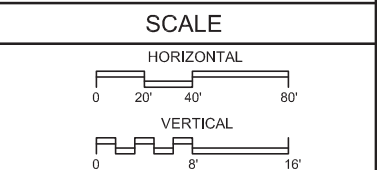
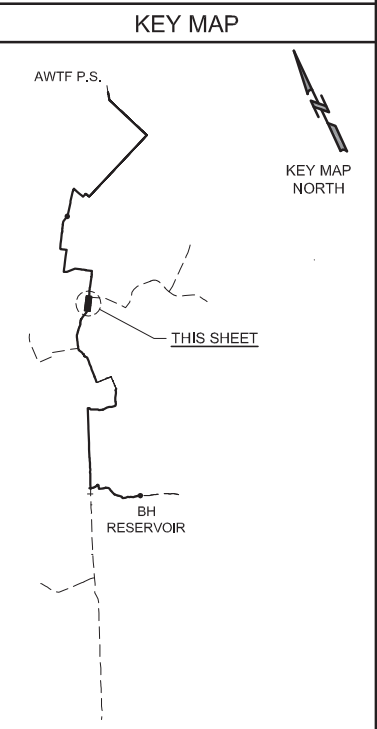
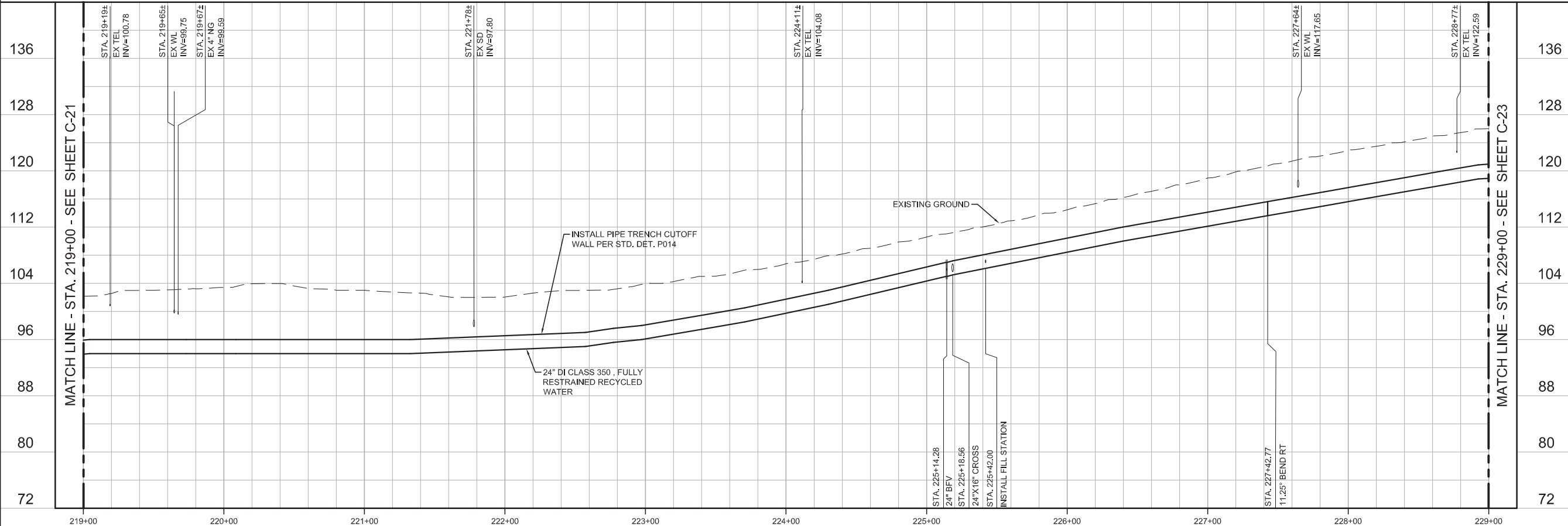
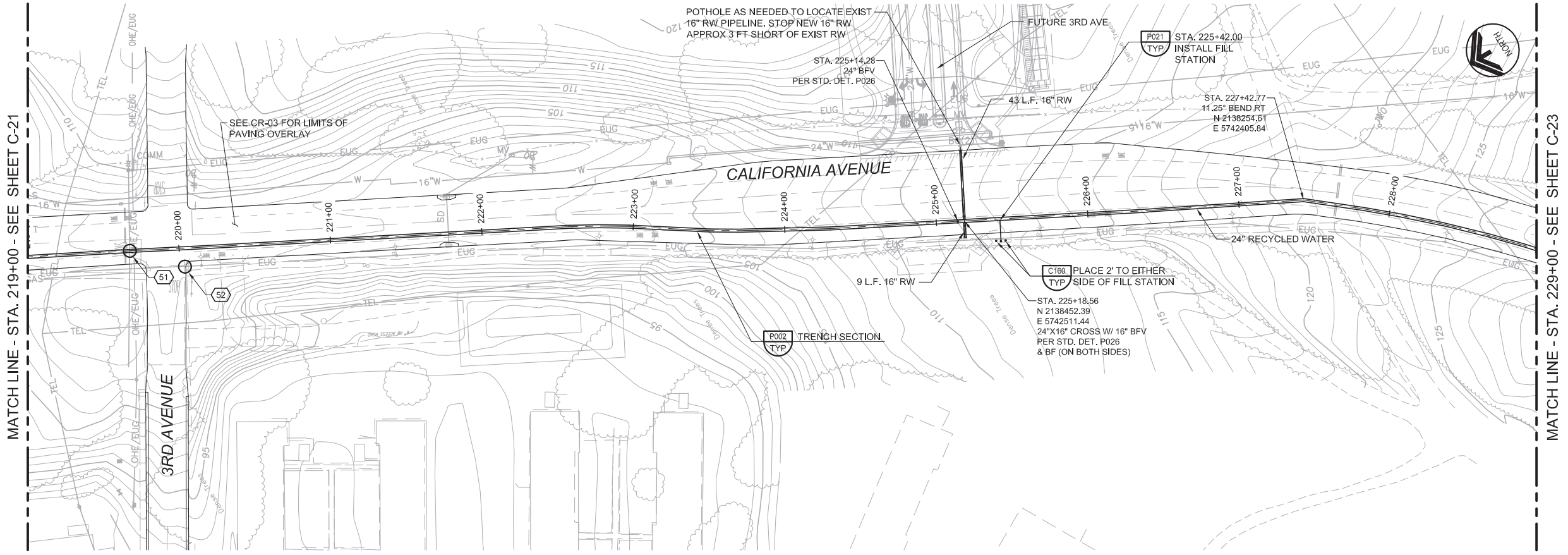
REGIONAL URBAN WATER AUGMENTATION PROJECT
 RECYCLED WATER PIPELINE
 CIVIL
 PLAN AND PROFILE
 STA. 209+00 TO STA. 219+00

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" 1"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. C-21
 SHEET NO. 29 OF 93

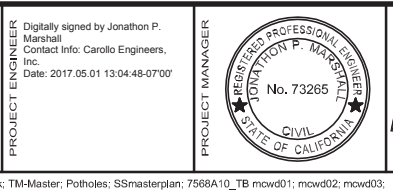
GENERAL NOTES

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.



BID SET			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
DISCIPLINE ENGINEER			

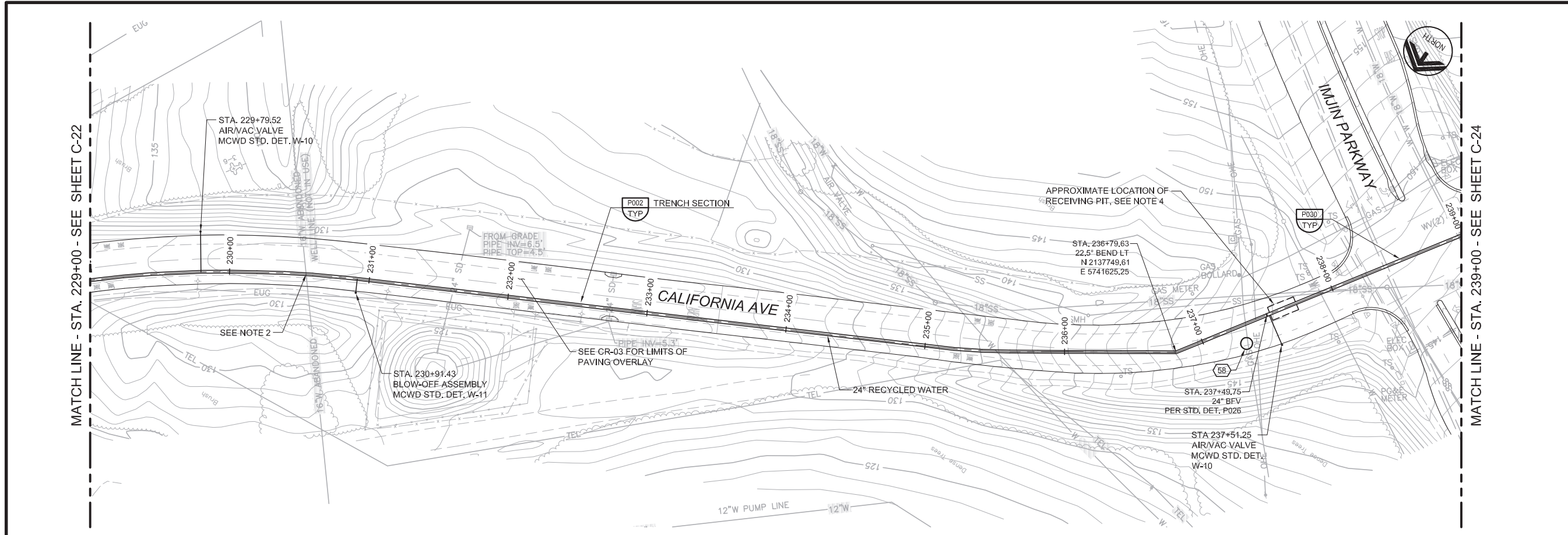
Project Engineer: Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:04:48-0700Z



REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
 CIVIL
PLAN AND PROFILE
 STA. 219+00 TO STA. 229+00

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" 16"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. C-22
 SHEET NO. 30 OF 93



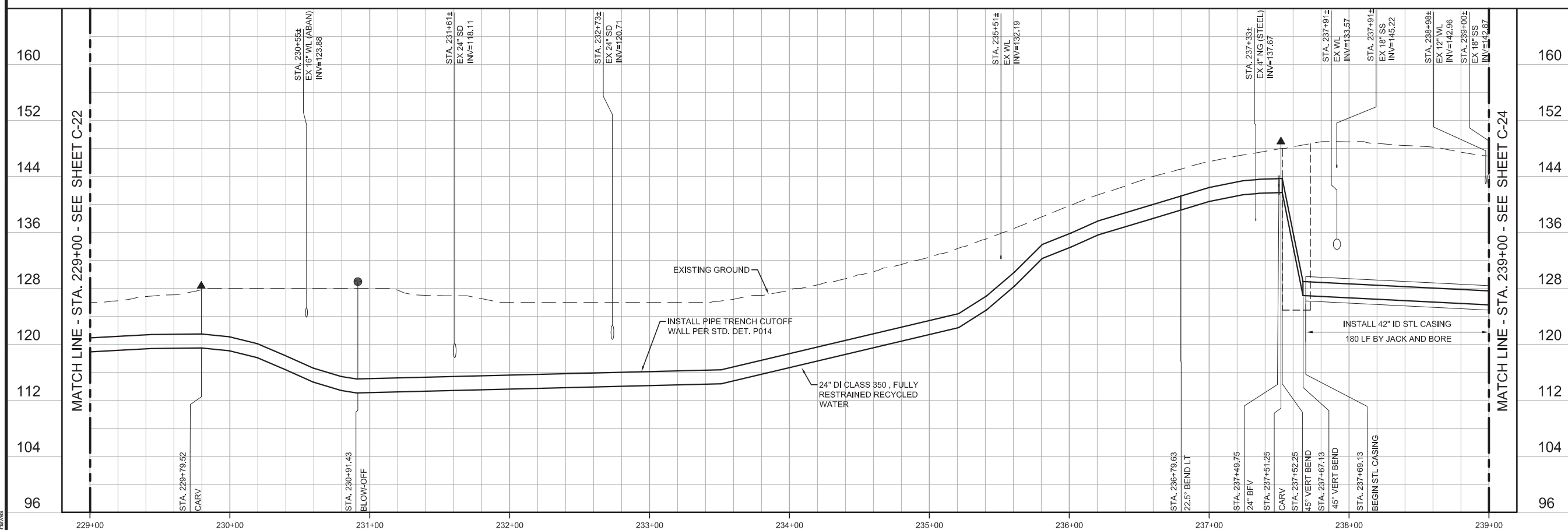
- ### GENERAL NOTES
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
 2. CONTRACTOR MAY CUT THROUGH ABANDONED LINE AND CAP IF IN CONFLICT WITH NEW RW LINE.
 3. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.
 4. EXACT LOCATIONS AND DIMENSIONS OF JACKING AND RECEIVING PITS TO BE DETERMINED BY CONTRACTOR AND SUBMITTED TO ENGINEER FOR REVIEW.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

1-800-227-2600

UNDERGROUND SERVICE (USA)



KEY MAP

AWTF P.S.

THIS SHEET

BH RESERVOIR

KEY MAP NORTH

SCALE

HORIZONTAL: 0 20' 40' 80'

VERTICAL: 0 8' 16'

BID SET			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
DISCIPLINE ENGINEER			
REV	DATE	BY	DESCRIPTION

Project Engineer: Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:04:40-0700Z

PROJECT MANAGER

JONATHAN P. MARSHALL
 No. 73265
 CIVIL
 STATE OF CALIFORNIA

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MARINA COAST WATER DISTRICT

Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE

STA. 229+00 TO STA. 239+00

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

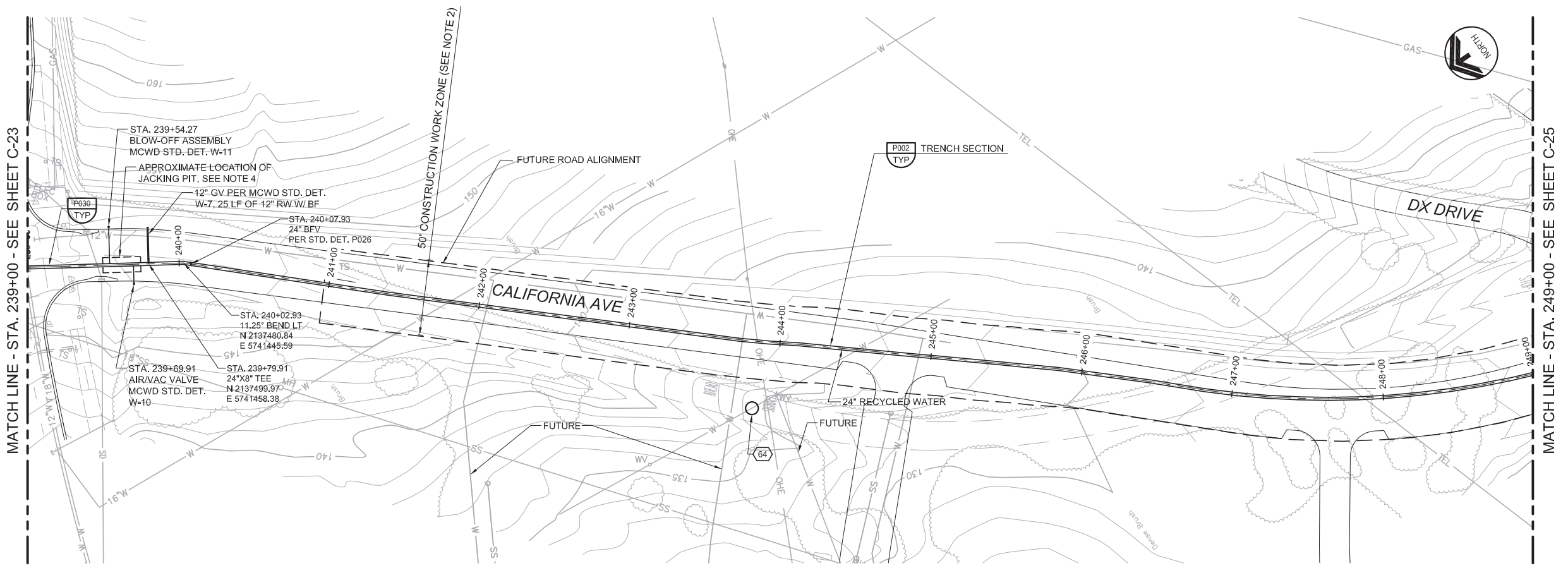
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10

DRAWING NO. C-23

SHEET NO. 31 OF 93



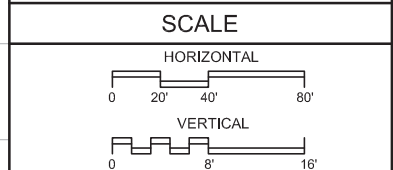
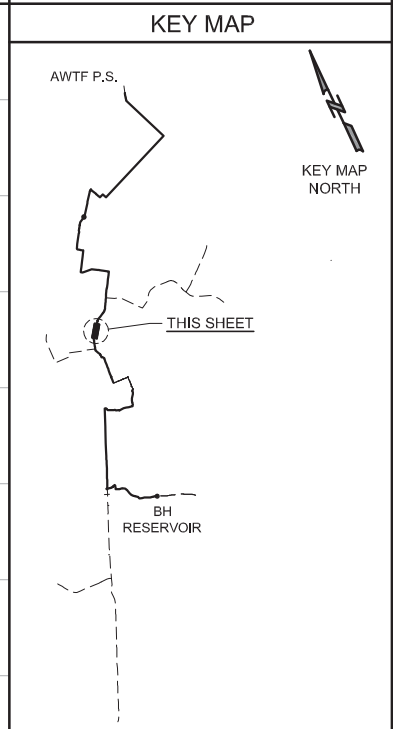
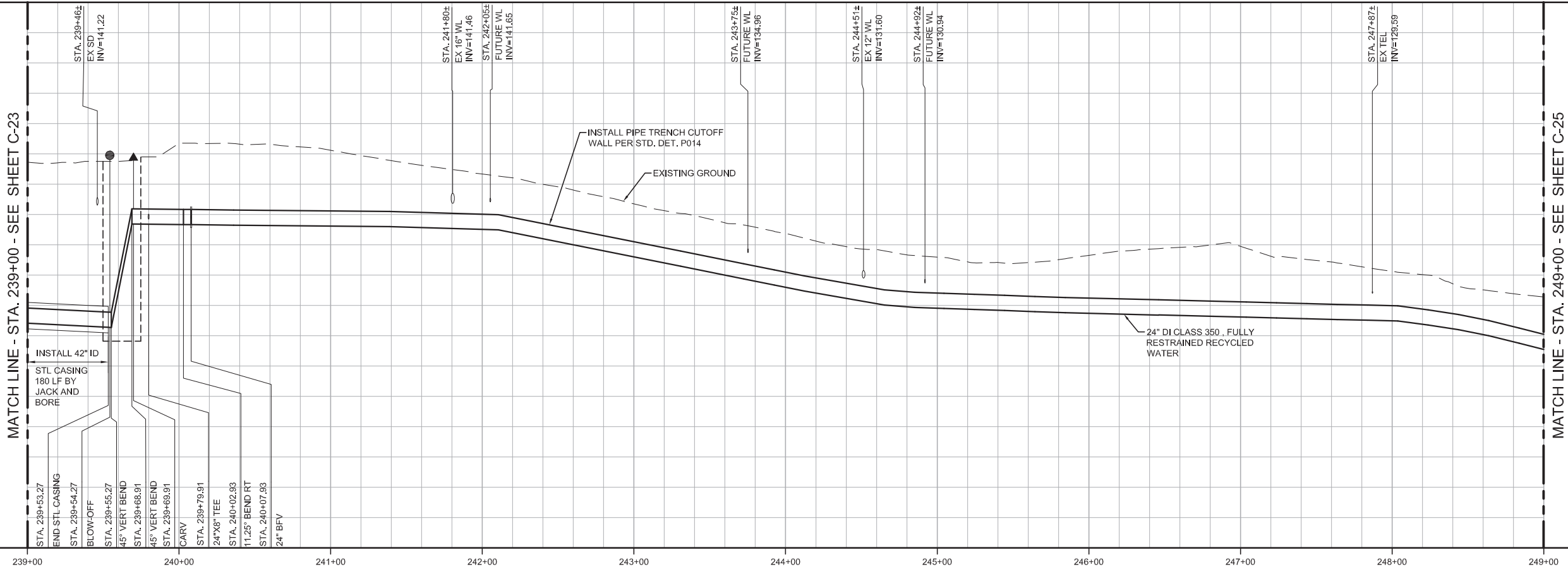
- ### GENERAL NOTES
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
 2. PIPELINE INSTALLATION IN OFF-ROAD AREAS BETWEEN STA 241+13.18 AND 249+74.78 SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MARINA ENCROACHMENT PERMIT CONDITIONS. THE CONTRACTOR IS RESTRICTED TO A 50-FOOT WORK ZONE CENTERED ON THE PIPELINE.
 3. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.
 4. EXACT LOCATIONS AND DIMENSIONS OF JACKING AND RECEIVING PITS TO BE DETERMINED BY CONTRACTOR AND SUBMITTED TO ENGINEER FOR REVIEW.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

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UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER	DESIGNED	JPM
	DRAWN	BH
	CHECKED	AP
	DATE	MAY 2017

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 13:04:31-0700

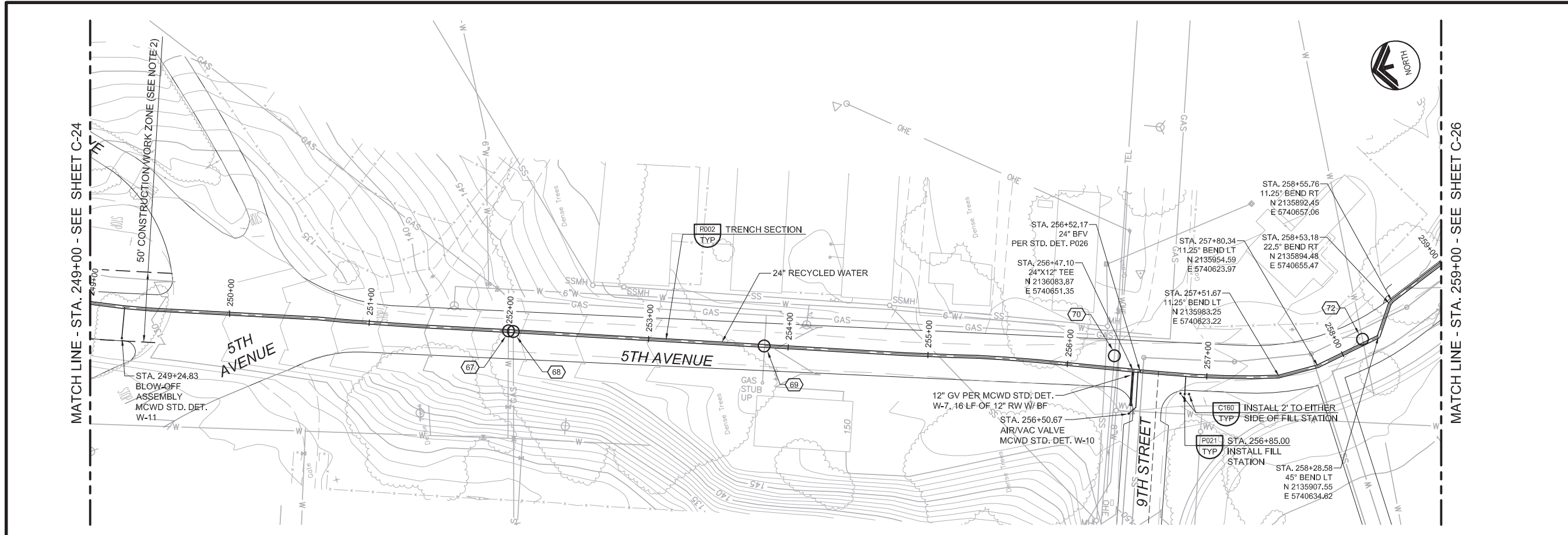
PROJECT MANAGER
JONATHAN P. MARSHALL
No. 73265
CIVIL
STATE OF CALIFORNIA

carollo
Engineers...Working Wonders With Water™

MARINA COAST
Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
CIVIL
PLAN AND PROFILE
STA. 239+00 TO STA. 249+00

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. C-24 SHEET NO. 32 OF 93
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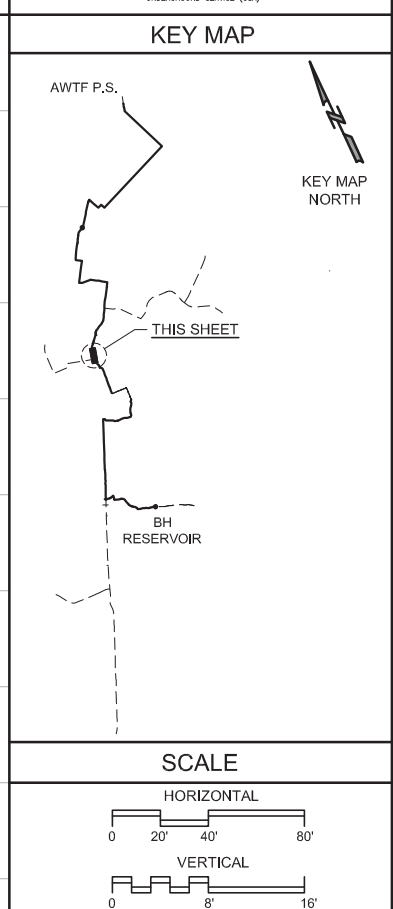
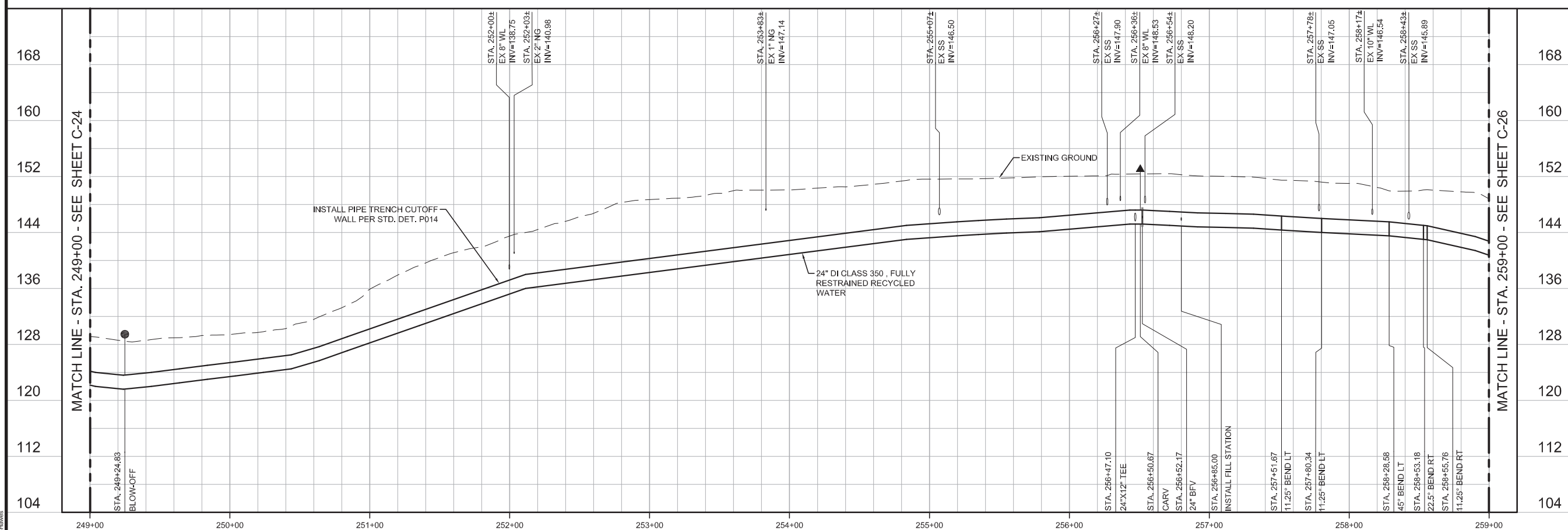


- ### GENERAL NOTES
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- AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

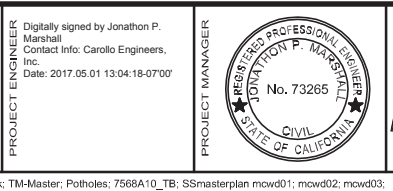
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UNDERGROUND SERVICE (USA)



BID SET			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:04:18-0700

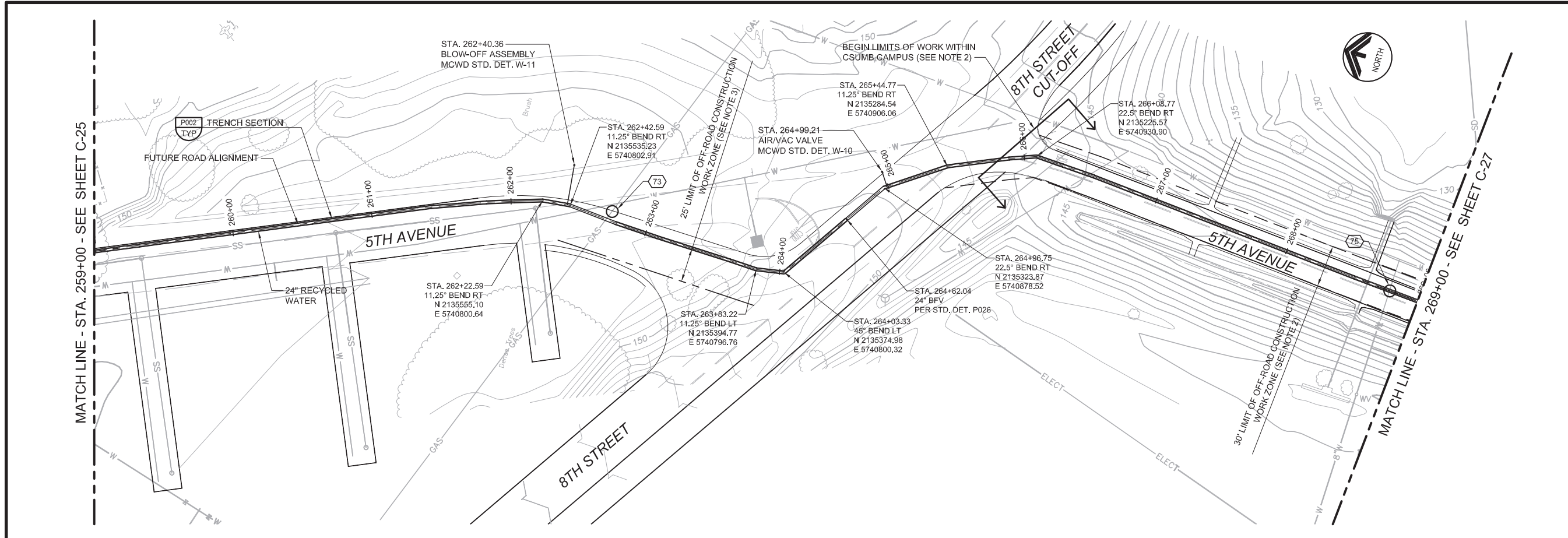


REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL
PLAN AND PROFILE
 STA. 249+00 TO STA. 259+00

VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	7568A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO.
	C-25
	SHEET NO.
	33 OF 93



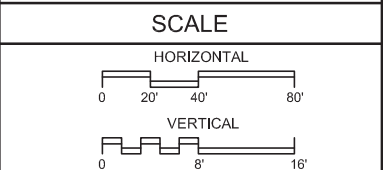
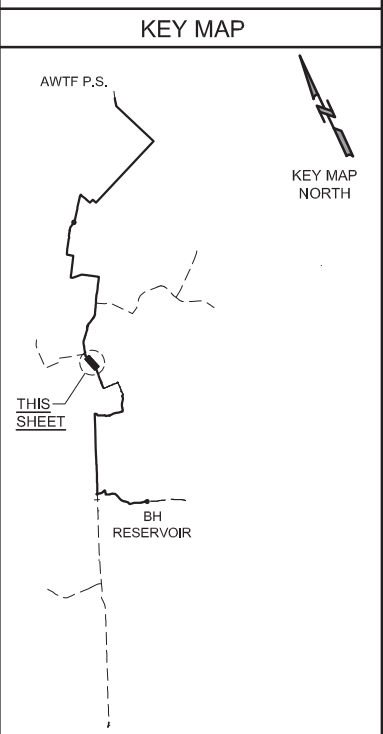
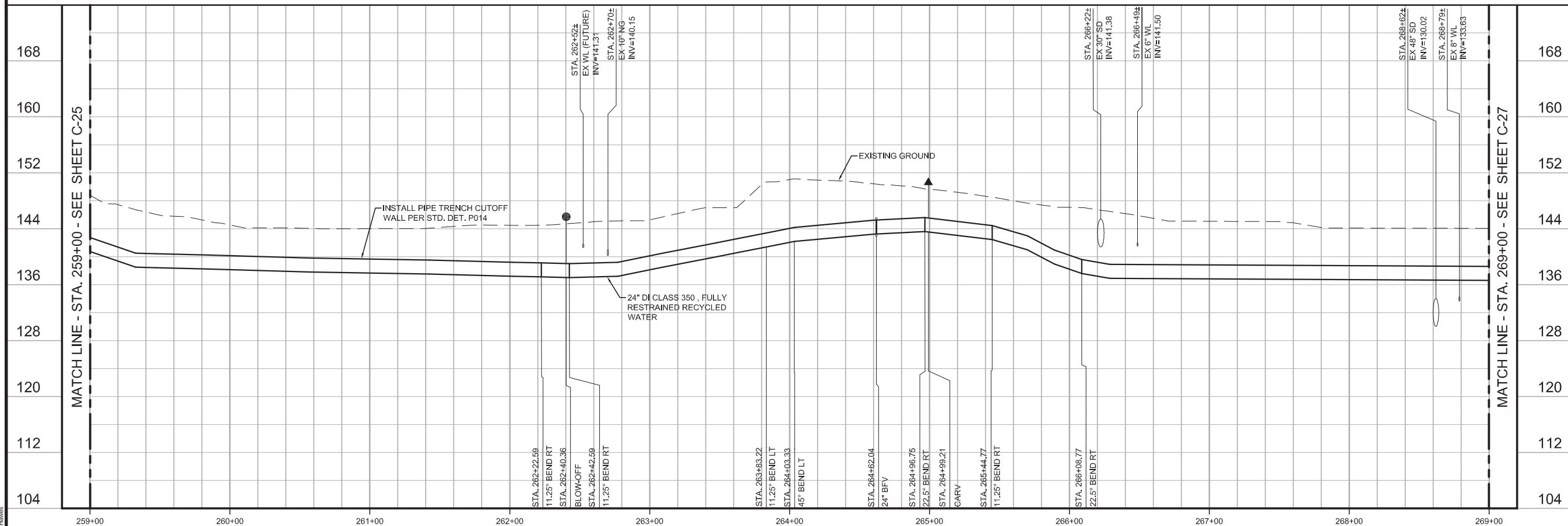
- ### GENERAL NOTES
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 - CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSUMB TEMPORARY CONSTRUCTION PERMIT FROM STA. 265+80± TO STA. 283+85±. ALLOWABLE CONSTRUCTION WORK ZONE IS FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT UNLESS OTHERWISE AUTHORIZED IN WRITING.
 - PIPELINE INSTALLATION IN OFF-ROAD AREA BETWEEN STA. 263+07± AND 264+52± SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MARINA ENCROACHMENT PERMIT CONDITIONS. THE CONSTRUCTION WORK ZONE IS CONSTRAINED TO THE ROAD RIGHT-OF-WAY AND THE OFF-ROAD LIMIT SHOWN ON THE PLANS.
 - ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

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UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

BID SET	
DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER
 Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:04:09-0700

PROJECT MANAGER

carollo
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Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
 RECYCLED WATER PIPELINE
 CIVIL
 PLAN AND PROFILE
 STA. 259+00 TO STA. 269+00

VERIFY SCALES
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 0 1"
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JOB NO. 7568A.10
 DRAWING NO. C-26
 SHEET NO. 34 OF 93

GENERAL NOTES

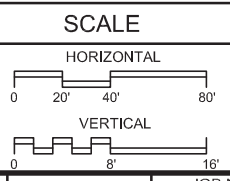
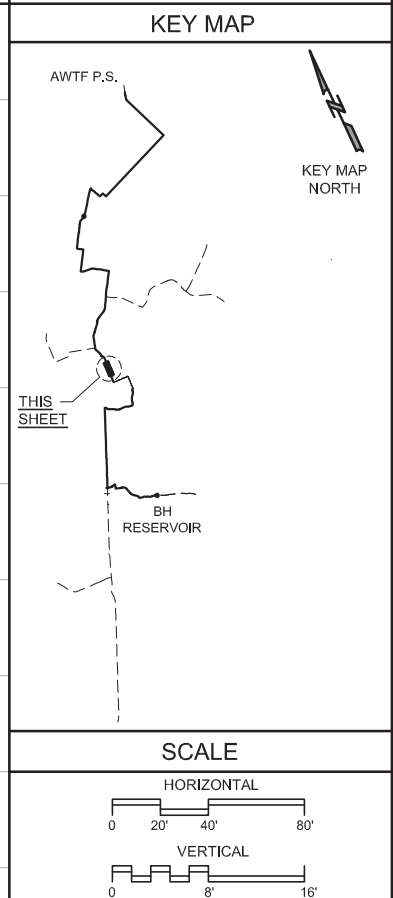
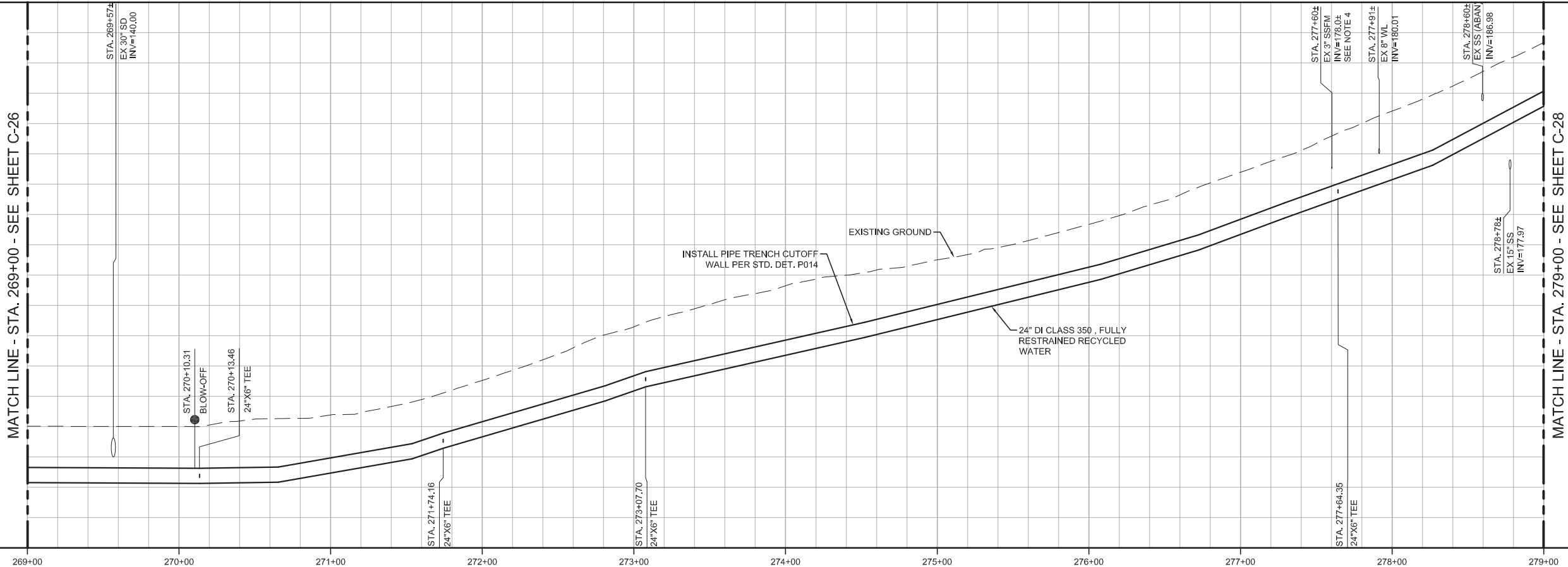
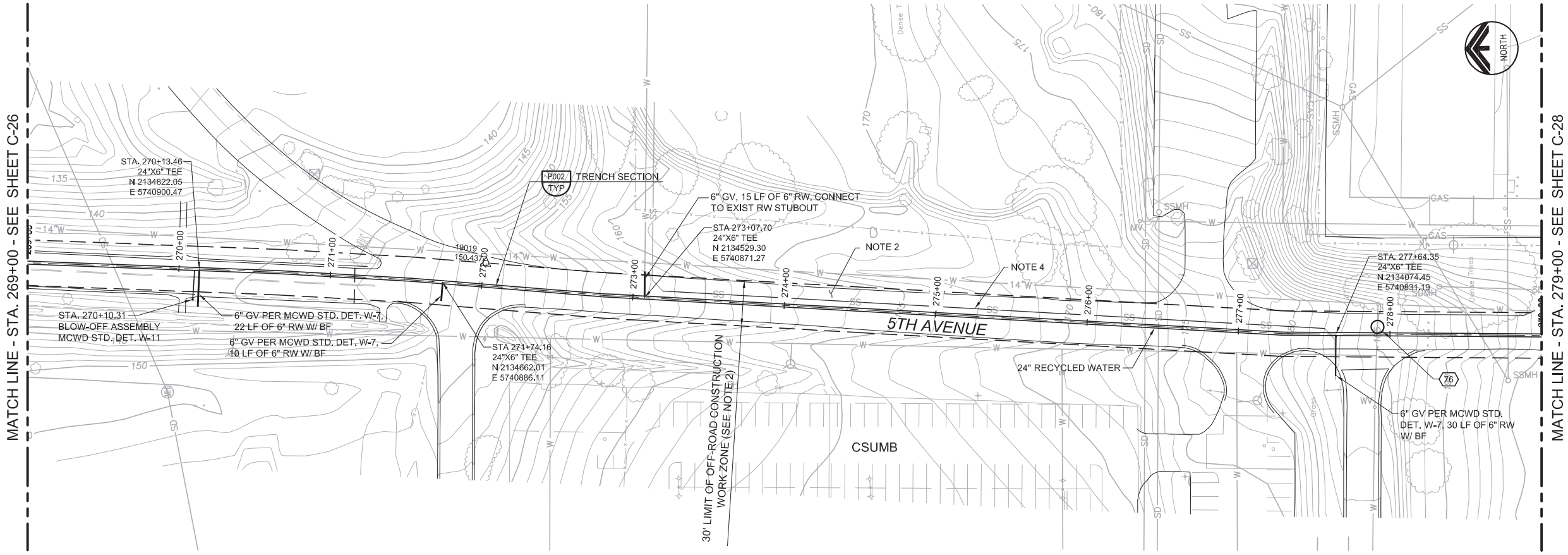
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
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3. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.
4. 3" SSFM LOCATION AND DEPTH UNKNOWN, CONTRACTOR TO POT HOLE AND CONFIRM.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

1-800-227-2600

UNDERGROUND SERVICE (USA)



BID SET			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 13:04:00-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

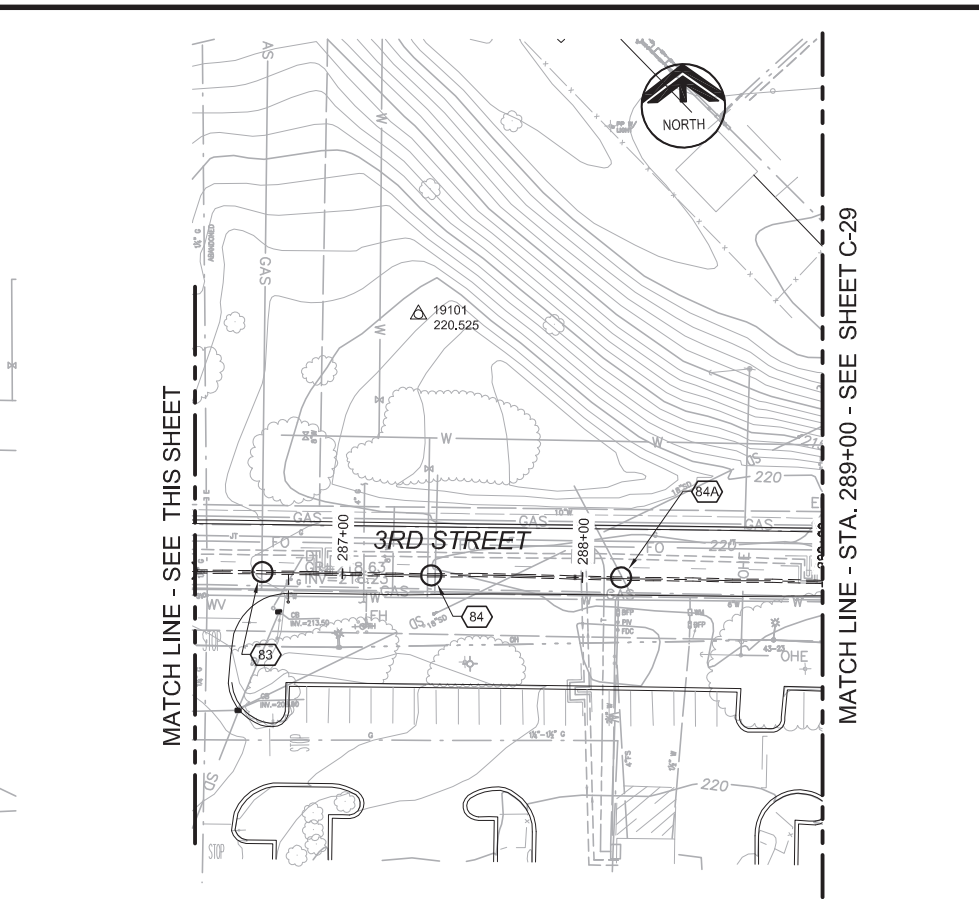
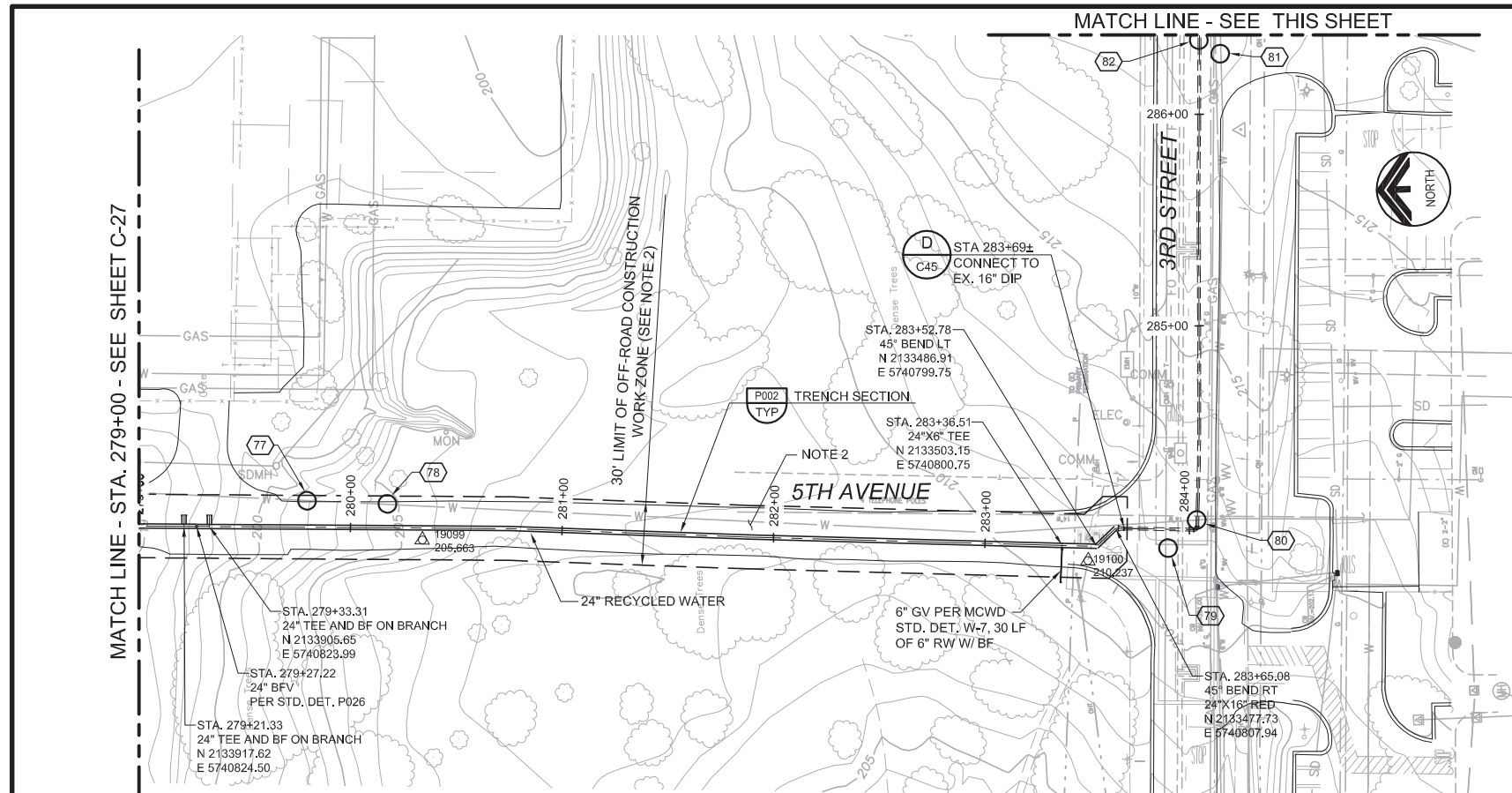
CIVIL

PLAN AND PROFILE

STA. 269+00 TO STA. 279+00

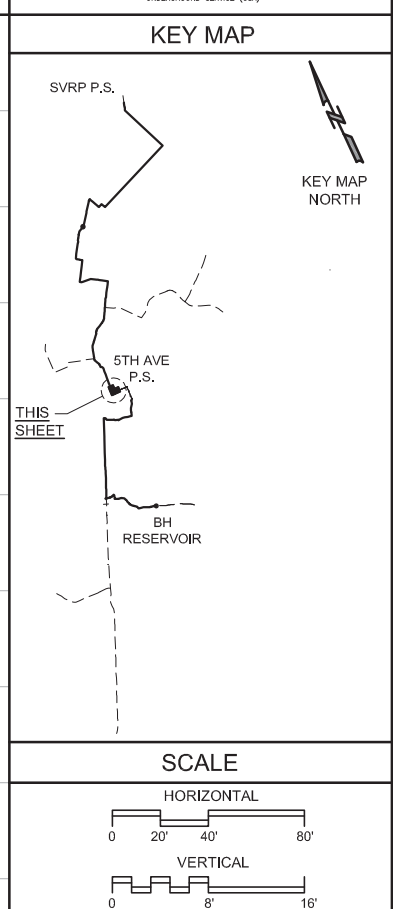
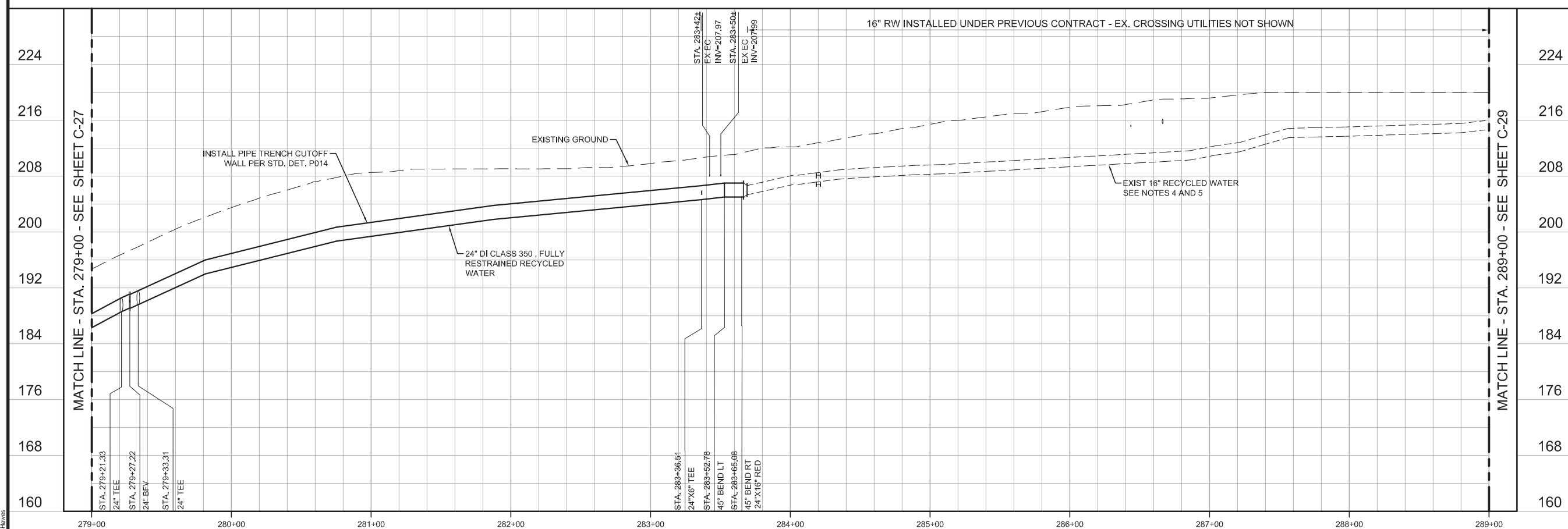
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1" 16'
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
DRAWING NO. C-27
SHEET NO. 35 OF 93



- ### GENERAL NOTES
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
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 - CONTRACTOR SHALL PRESSURE TEST THE EXISTING RECYCLED WATER MAIN.
 - TOPOGRAPHY SHOWN ABOVE EXISTING 16" RW MAIN MAY NOT MATCH EXISTING CONDITIONS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS IMPACTING CONSTRUCTION.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call before you Dig
 1-800-227-2600
UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

BID SET	
DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

Project Engineer: Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:03:51-0700

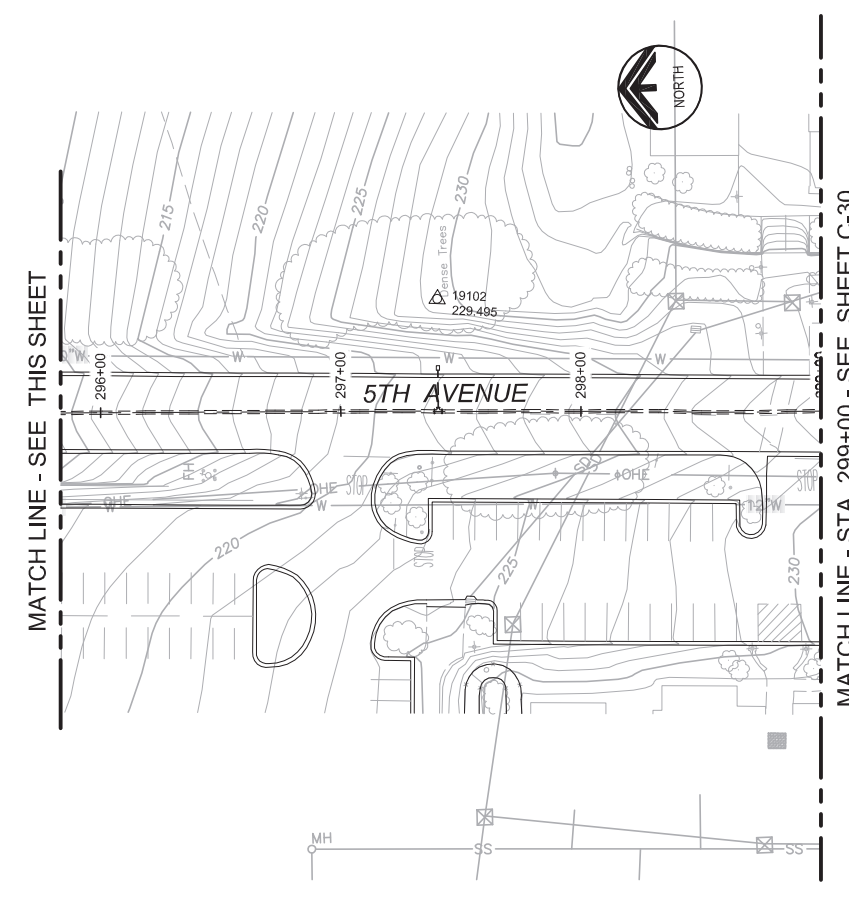
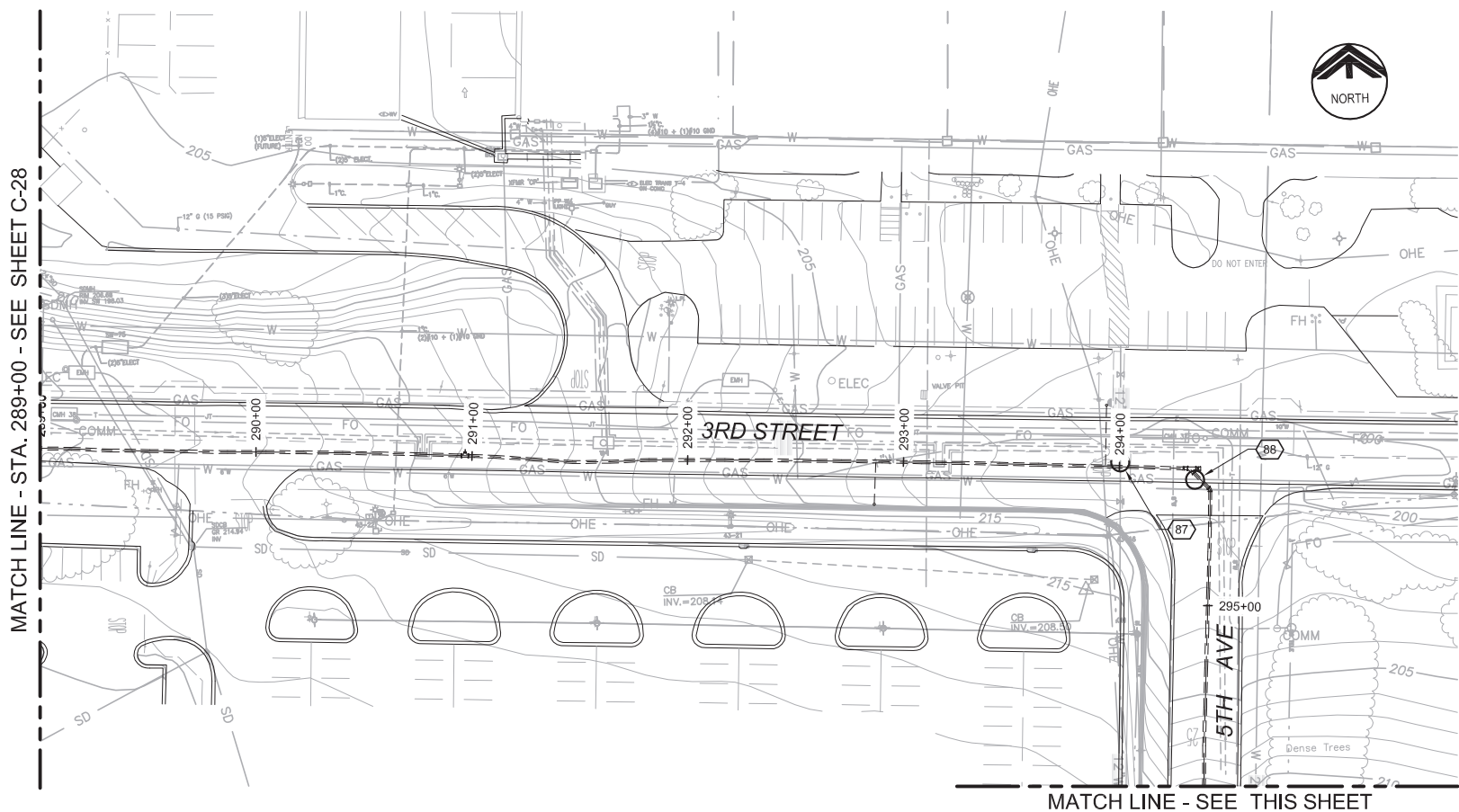
Project Manager: JONATHAN P. MARSHALL
 No. 73265
 CIVIL
 STATE OF CALIFORNIA



REGIONAL URBAN WATER AUGMENTATION PROJECT
 RECYCLED WATER PIPELINE
 CIVIL
 PLAN AND PROFILE
 STA. 279+00 TO STA. 289+00

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" 16'
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. C-28
 SHEET NO. 36 OF 93



GENERAL NOTES

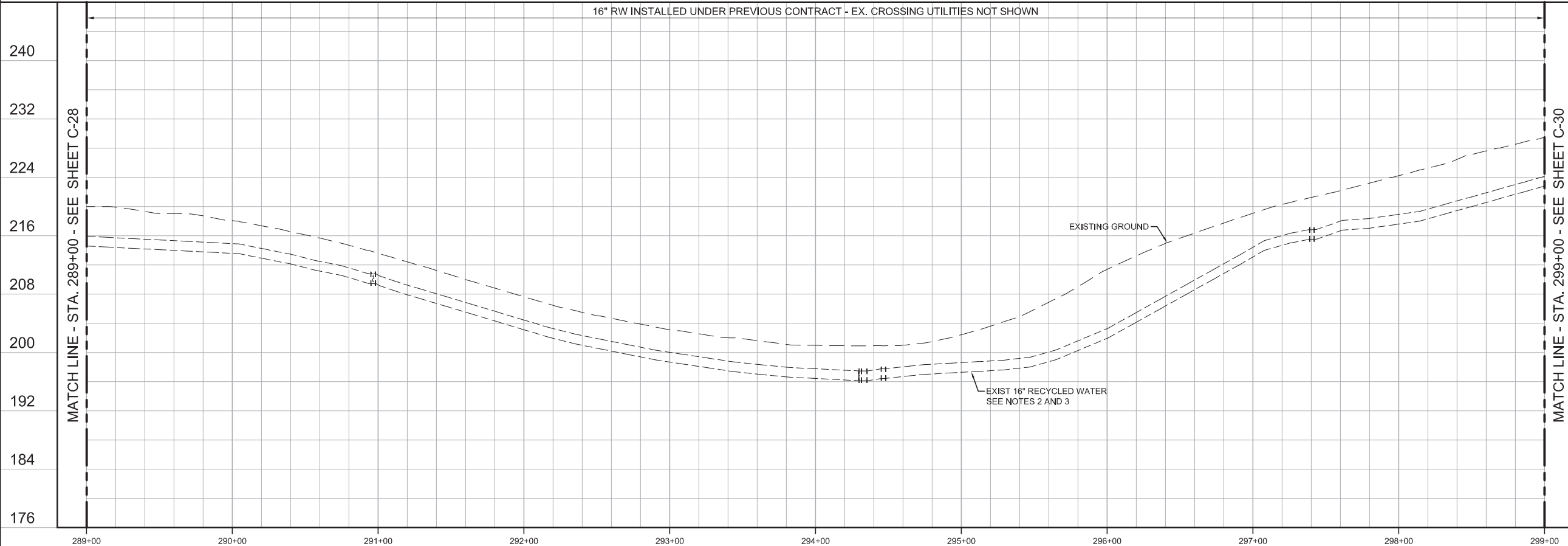
1. ANY CONSTRUCTION ACTIVITIES WHICH IMPACT PARKWAYS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE TO ADJACENT PROPERTY OWNERS. ANY AREAS IMPACTED SHALL BE PHOTOGRAPHED PRIOR TO CONSTRUCTION, AND RESTORED TO THEIR PRE-CONSTRUCTION CONDITION PRIOR TO CONTRACTOR DEMOBILIZATION.
2. CONTRACTOR SHALL PRESSURE TEST ITS EXISTING RECYCLED WATER MAIN.
3. TOPOGRAPHY SHOWN ABOVE EXISTING 16" RW MAIN MAY NOT MATCH EXISTING CONDITIONS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS IMPACTING CONSTRUCTION.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

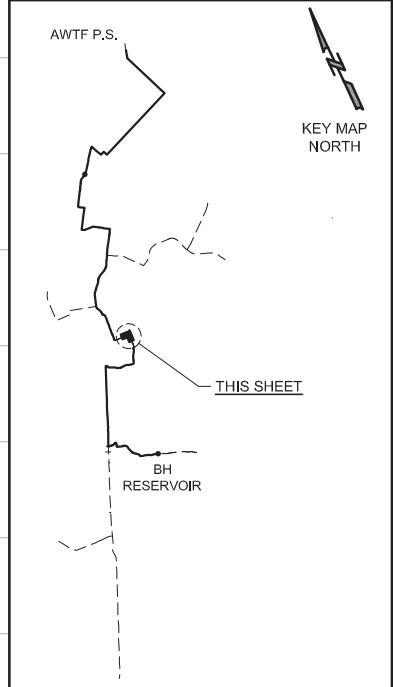
Call before you Dig

1-800-227-2600

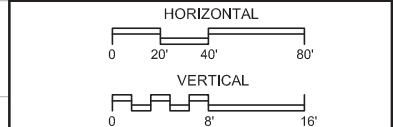
UNDERGROUND SERVICE (USA)



KEY MAP



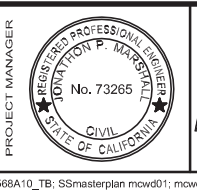
SCALE



REV	DATE	BY	DESCRIPTION

BID SET	DESIGNED JPM	DISCIPLINE ENGINEER
	DRAWN BH	
	CHECKED AP	
	DATE MAY 2017	

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 13:03:39-0700'



REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE

STA. 289+00 TO STA. 299+00

VERIFY SCALES

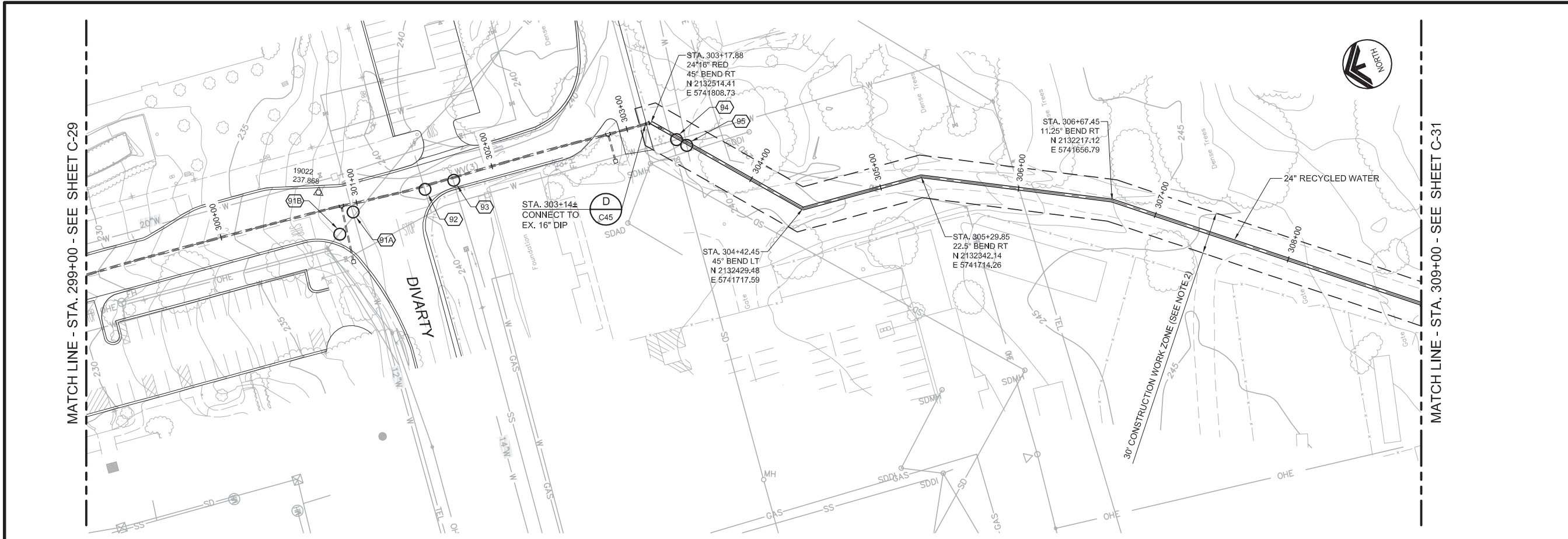
BAR IS ONE INCH ON ORIGINAL DRAWING

0 1" 16'

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
DRAWING NO. C-29
SHEET NO. 37 OF 93

Last Opened by: BHawes 4-28-17 12:48pm BHawes



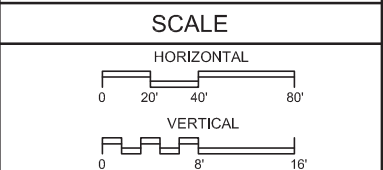
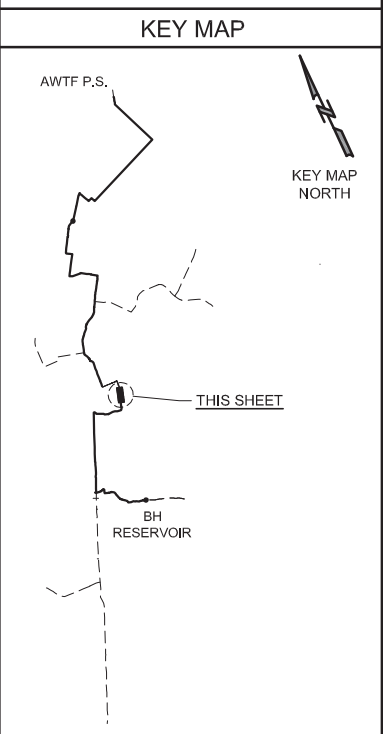
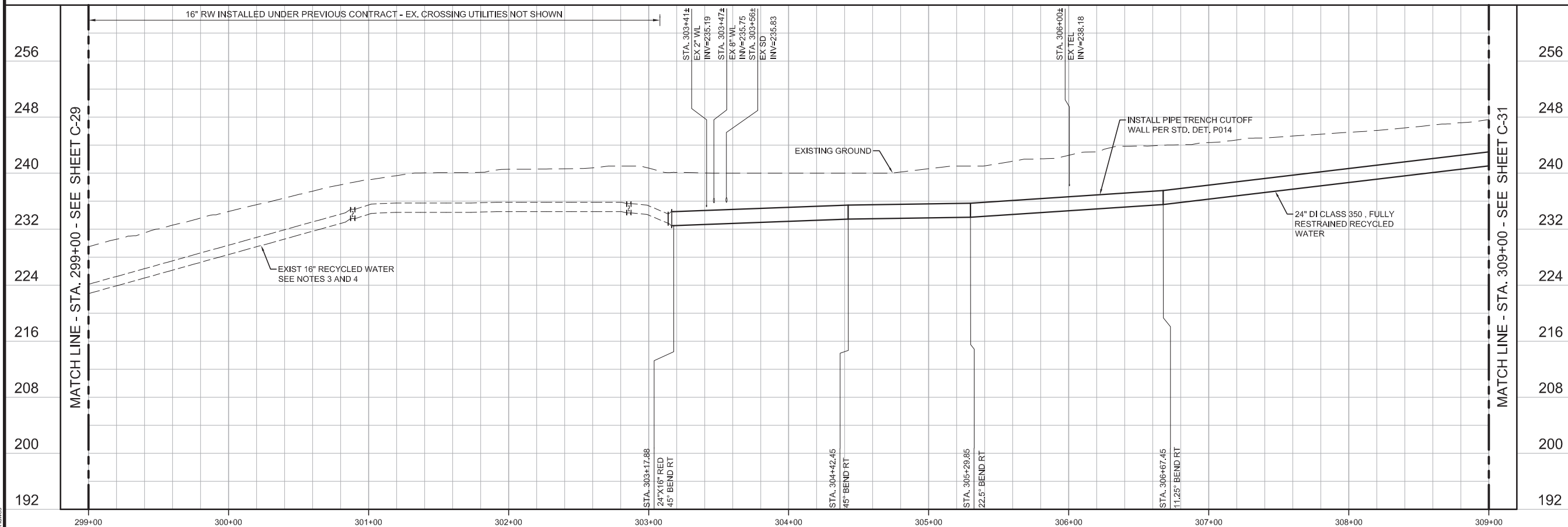
- ### GENERAL NOTES
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
 - CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSUMB TEMPORARY CONSTRUCTION PERMIT FROM STA. 303+14± TO STA. 347+31±.
 - CONTRACTOR SHALL PRESSURE TEST THE EXISTING RECYCLED WATER MAIN.
 - TOPOGRAPHY SHOWN ABOVE EXISTING 16" RW MAY NOT MATCH EXISTING CONDITIONS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS IMPACTING CONSTRUCTION.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

1-800-227-2600

UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

BID SET	DESIGNED JPM	DISCIPLINE ENGINEER
	DRAWN BH	
	CHECKED AP	
	DATE MAY 2017	

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 13:03:30-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
CIVIL
PLAN AND PROFILE
STA. 299+00 TO STA. 309+00

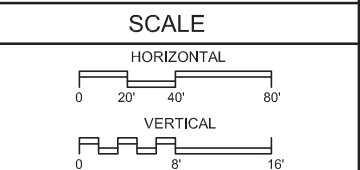
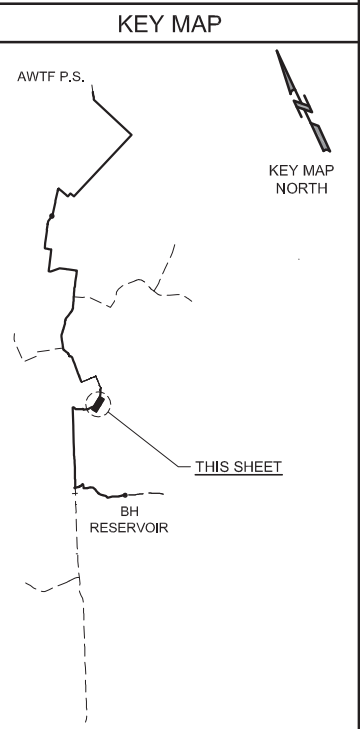
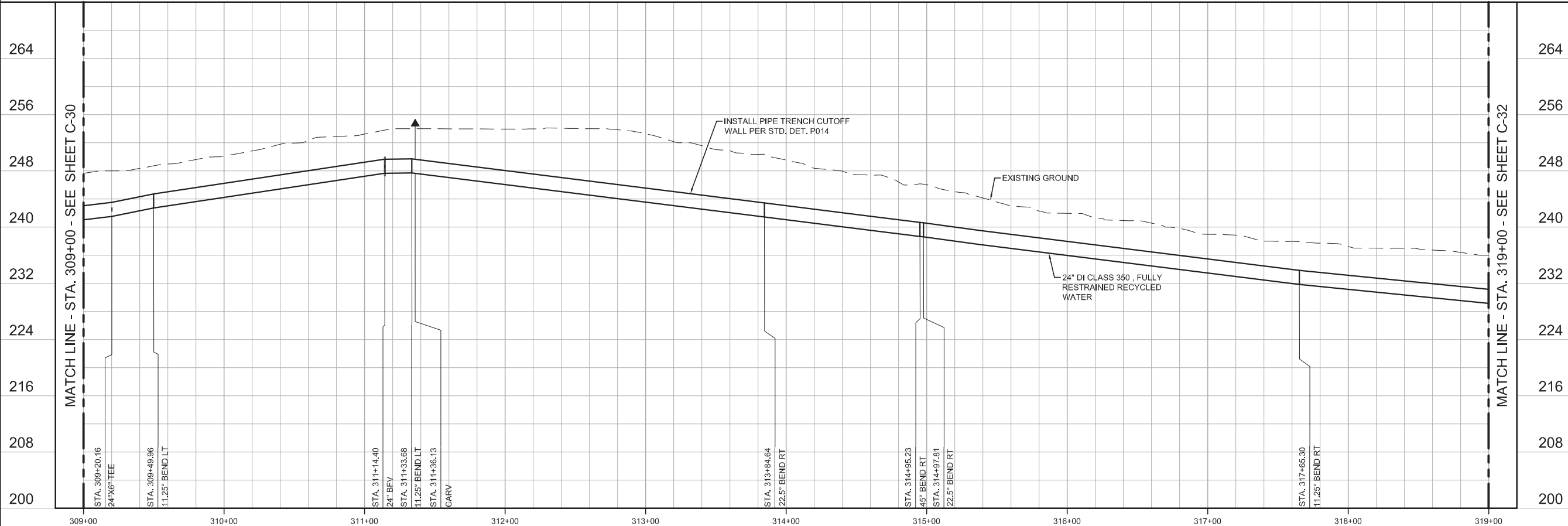
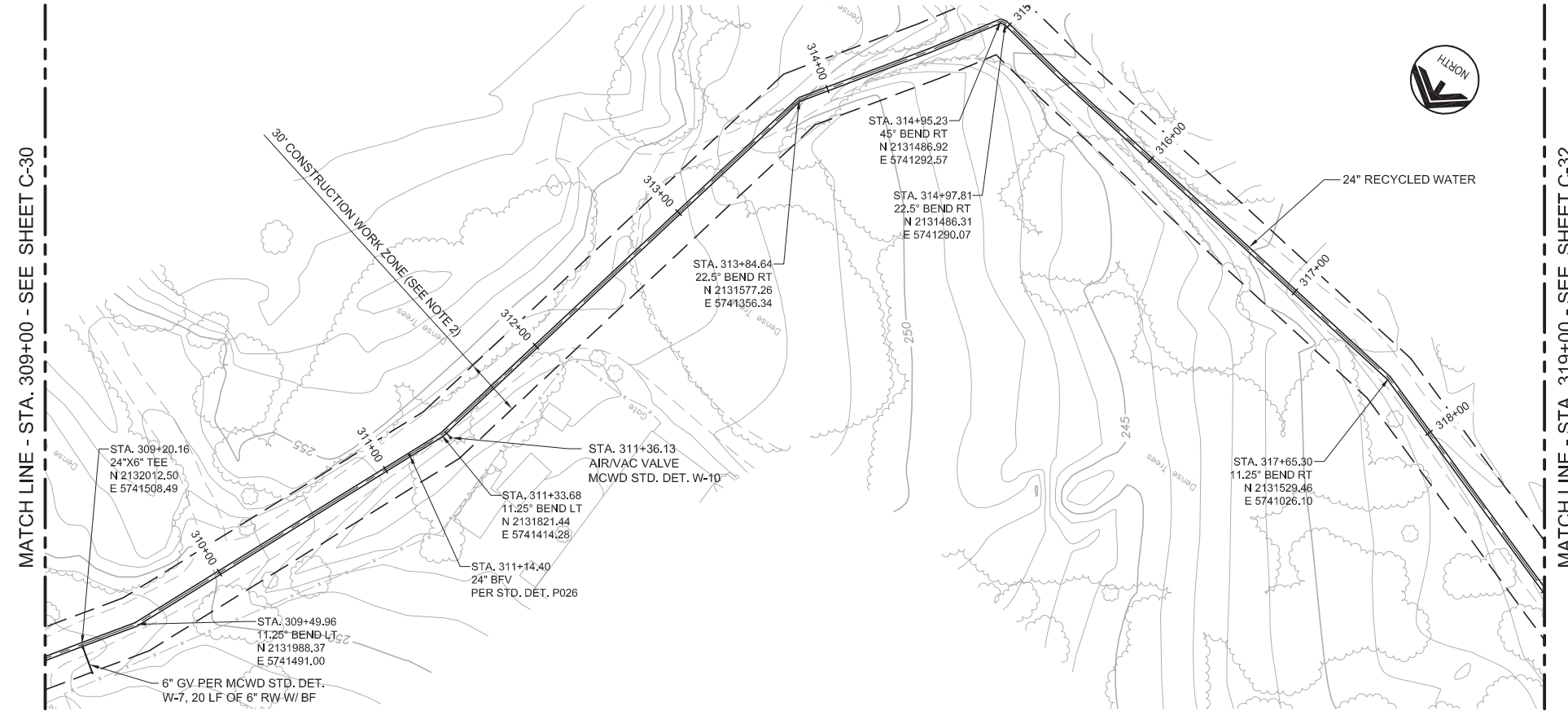
VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" 16'	JOB NO. 7568A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. C-30
	SHEET NO. 38 OF 93

GENERAL NOTES

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSUMB TEMPORARY CONSTRUCTION PERMIT FROM STA. 303+14± TO STA. 347+31±.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call before you Dig
 1-800-227-2600

UNDERGROUND SERVICE (USA)



BID SET			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER
 PROJECT ENGINEER
 PROJECT MANAGER

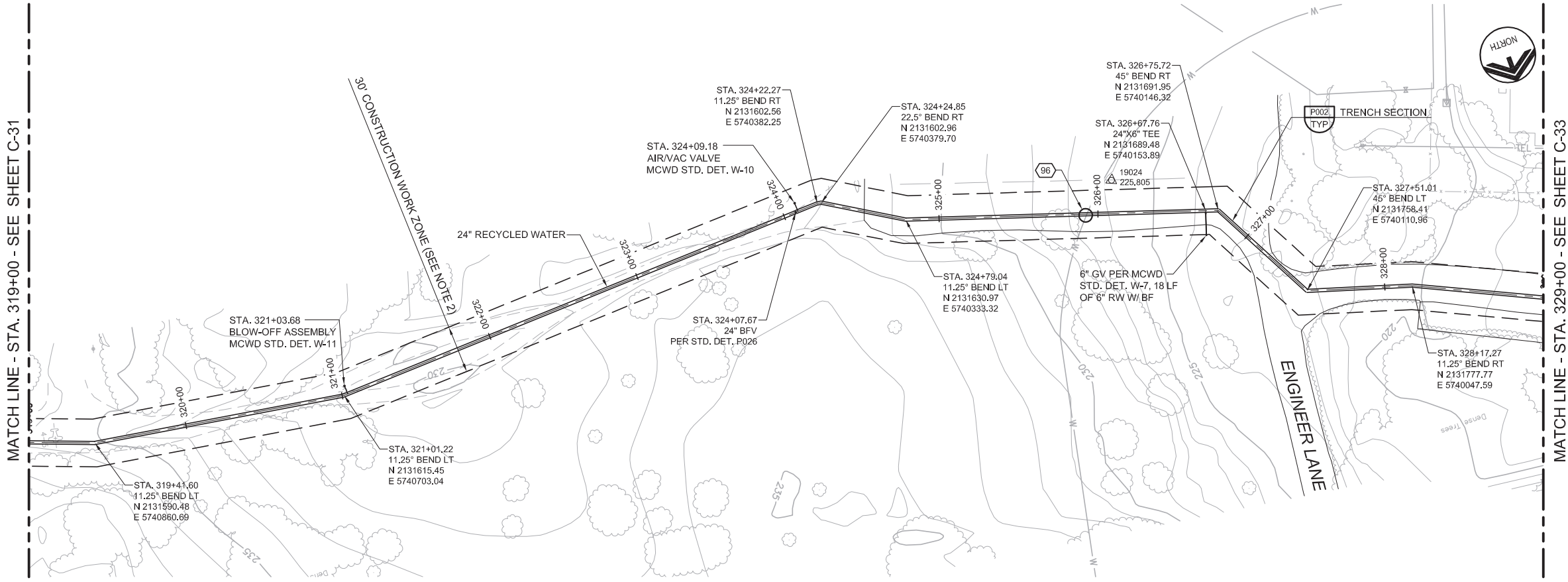
Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:03:21-0700



Marina Coast Water District
 REGIONAL URBAN WATER AUGMENTATION PROJECT
 RECYCLED WATER PIPELINE
 CIVIL
 PLAN AND PROFILE
 STA. 309+00 TO STA. 319+00

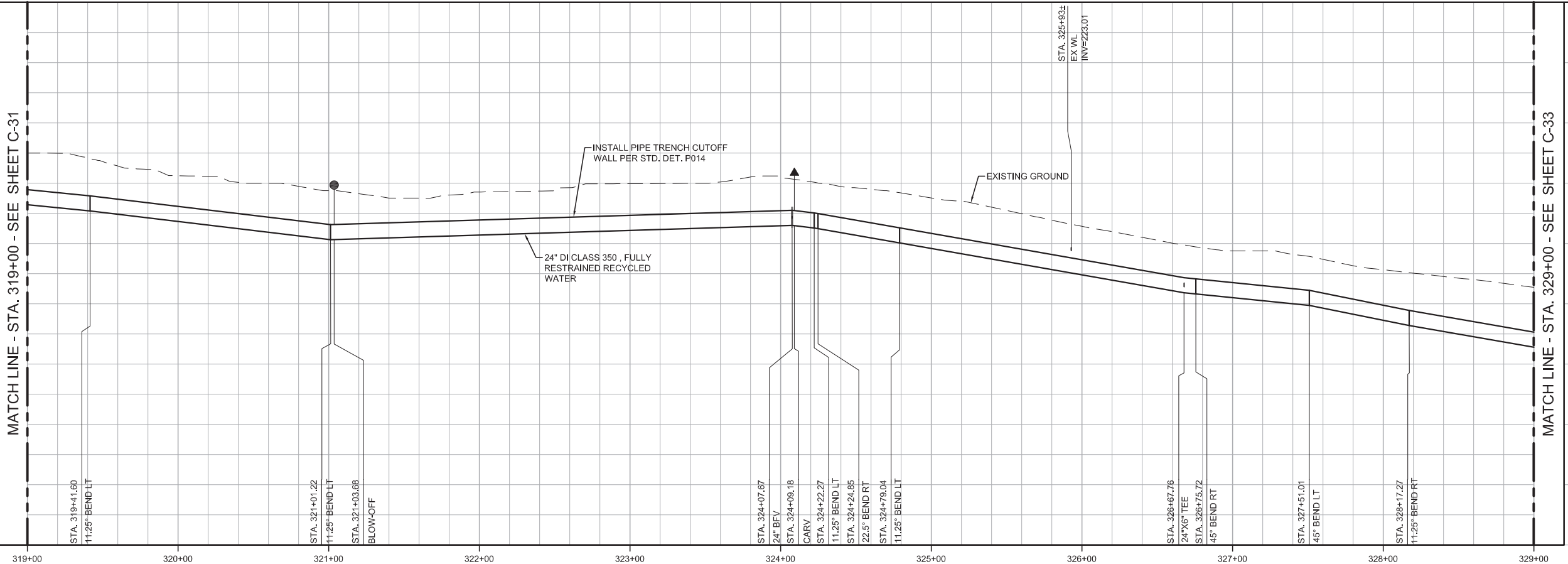
VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" 16'
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. C-31
 SHEET NO. 39 OF 93

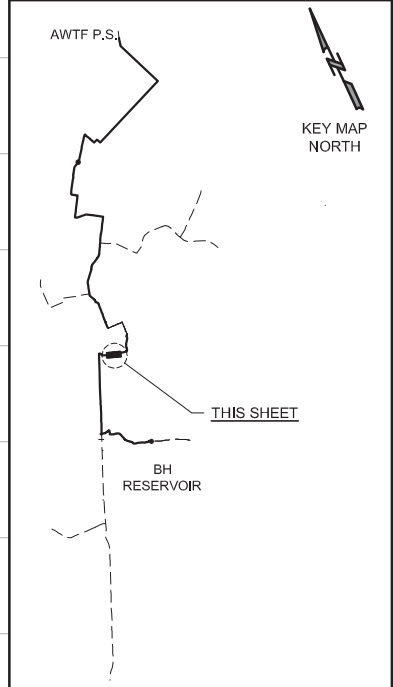


GENERAL NOTES

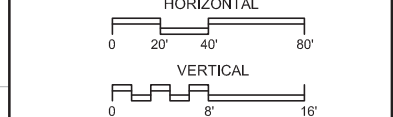
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSMUB TEMPORARY CONSTRUCTION PERMIT FROM STA. 303+14± TO STA. 347+31±.



KEY MAP



SCALE



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER
 Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:02:59-0700

PROJECT MANAGER

carollo
 Engineers...Working Wonders With Water™

Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
 RECYCLED WATER PIPELINE
 CIVIL
 PLAN AND PROFILE
 STA. 319+00 TO STA. 329+00

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" 16'
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. C-32
 SHEET NO. 40 OF 93

GENERAL NOTES

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSMUB TEMPORARY CONSTRUCTION PERMIT FROM STA. 303+14± TO STA. 347+31±.
3. ALLOWABLE CONSTRUCTION WORK ZONE FOR GENERAL JIM MOORE BLVD IS EDGE OF PAVEMENT TO CENTERLINE OF ROAD EXCEPT WHERE APPURTENANCES ARE REQUIRED OUTSIDE THESE LIMITS OR OTHERWISE AUTHORIZED BY THE ENGINEER.

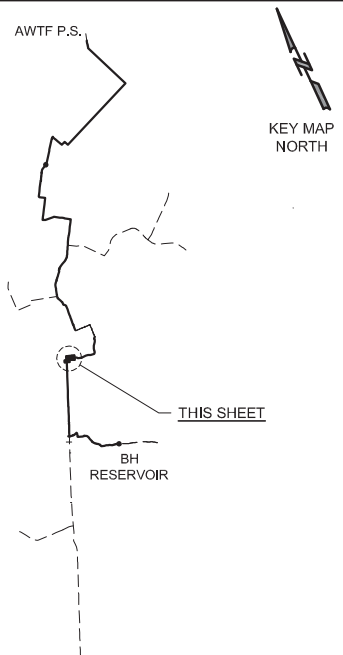
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

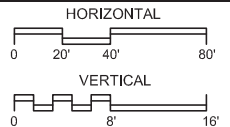
1-800-227-2800

UNDERGROUND SERVICE (USA)

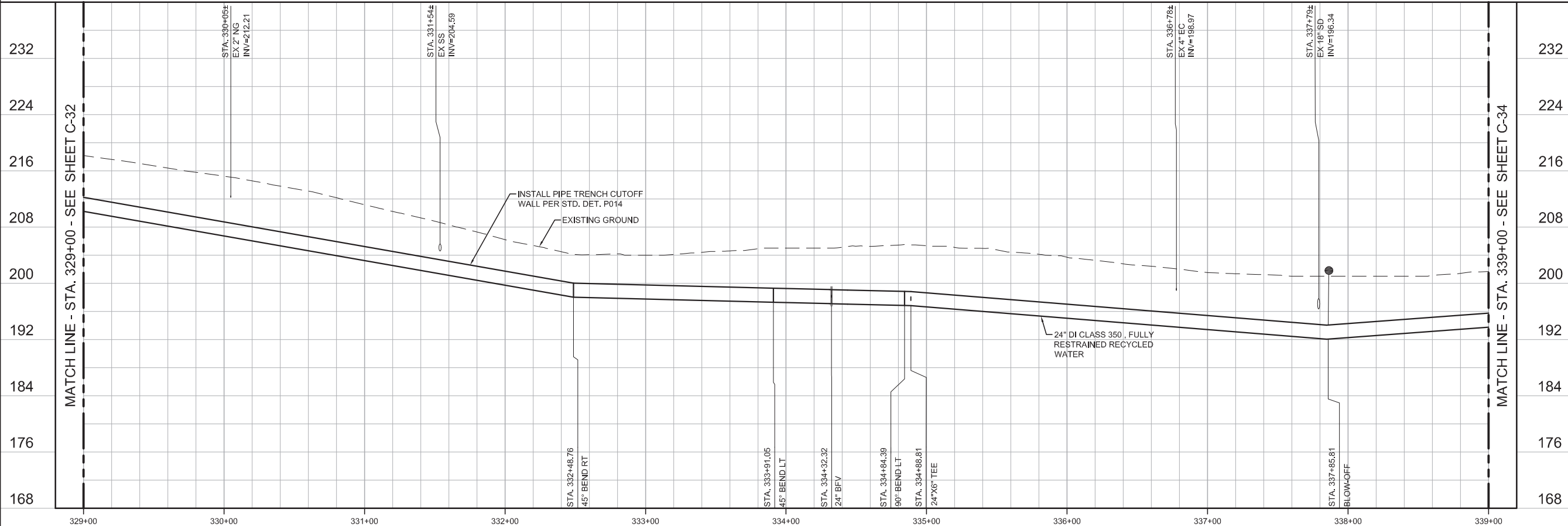
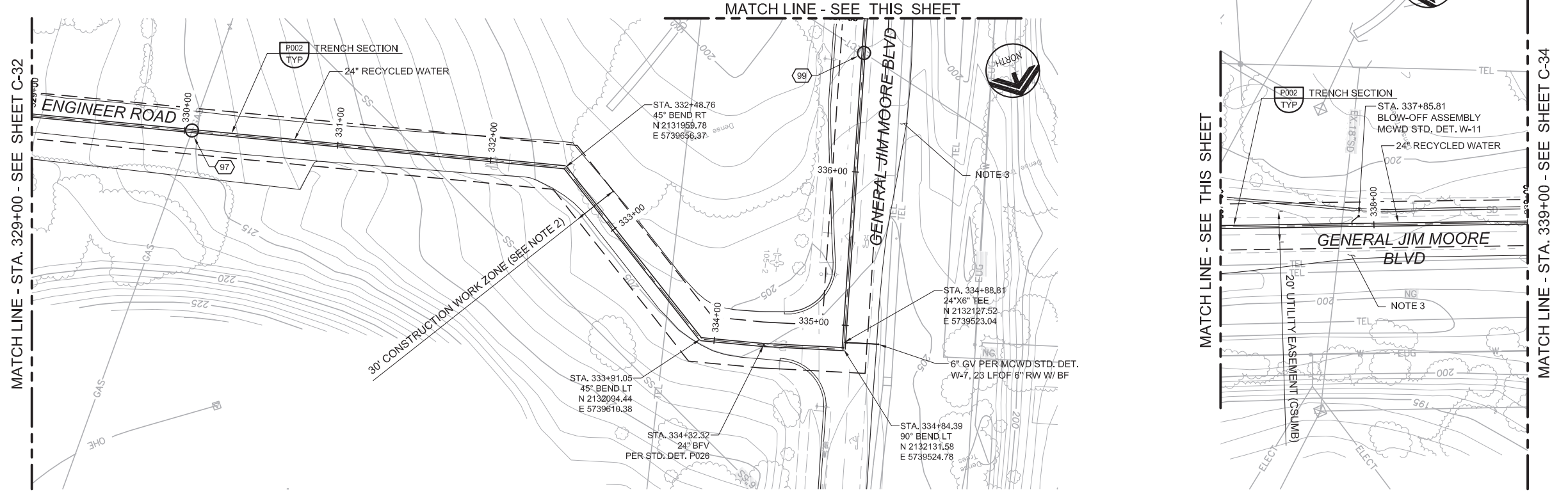
KEY MAP



SCALE



VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. C-33 SHEET NO. 41 OF 93
---	---



BID SET			
DESIGNED	JPM		
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER

PROJECT ENGINEER

Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 13:02:51-0700'

PROJECT MANAGER

JONATHAN P. MARSHALL
No. 73265
CIVIL
STATE OF CALIFORNIA

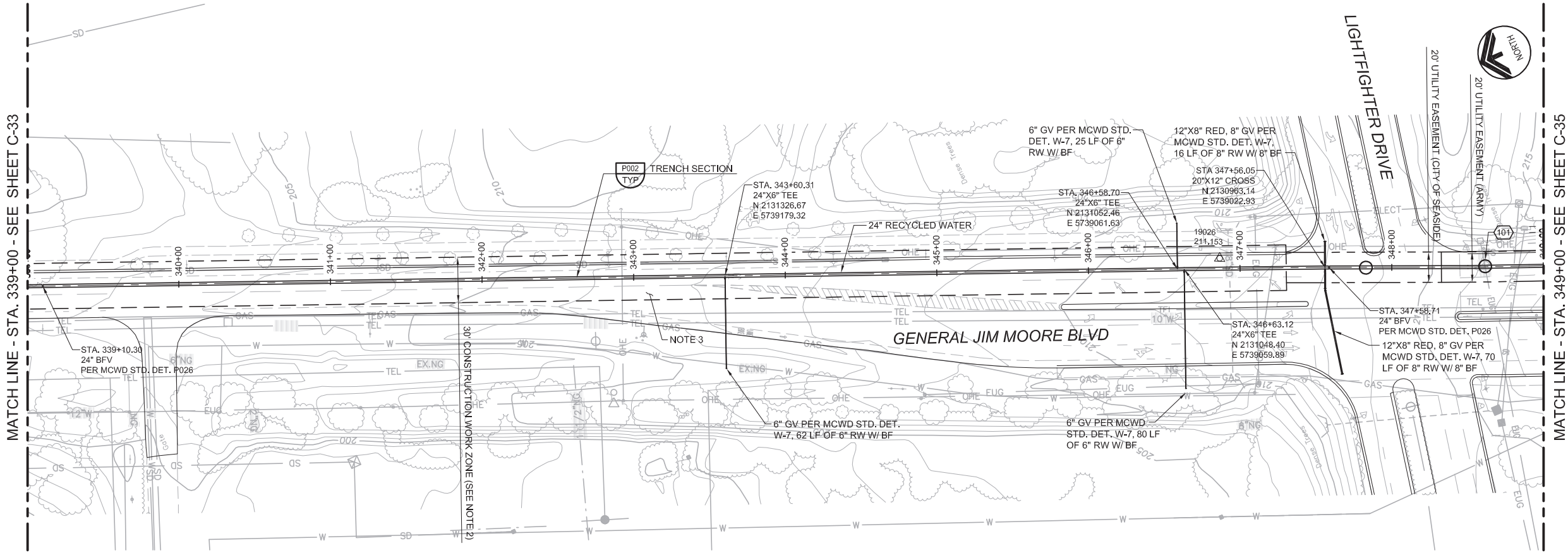
carollo
Engineers...Working Wonders With Water™

MARINA COAST WATER DISTRICT

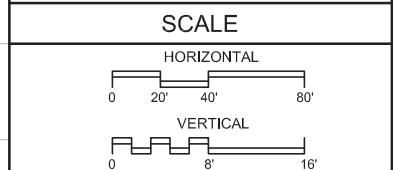
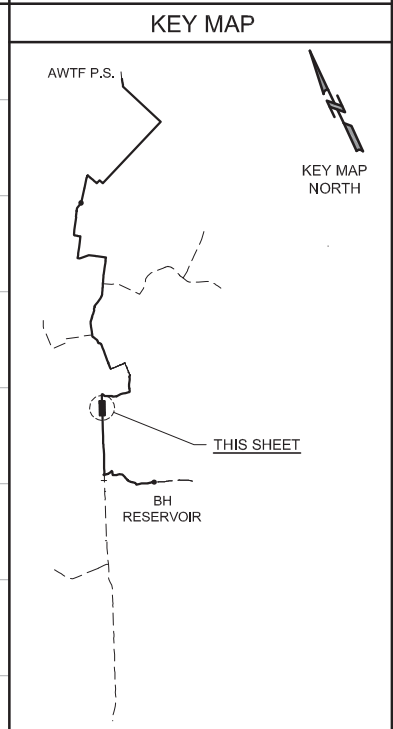
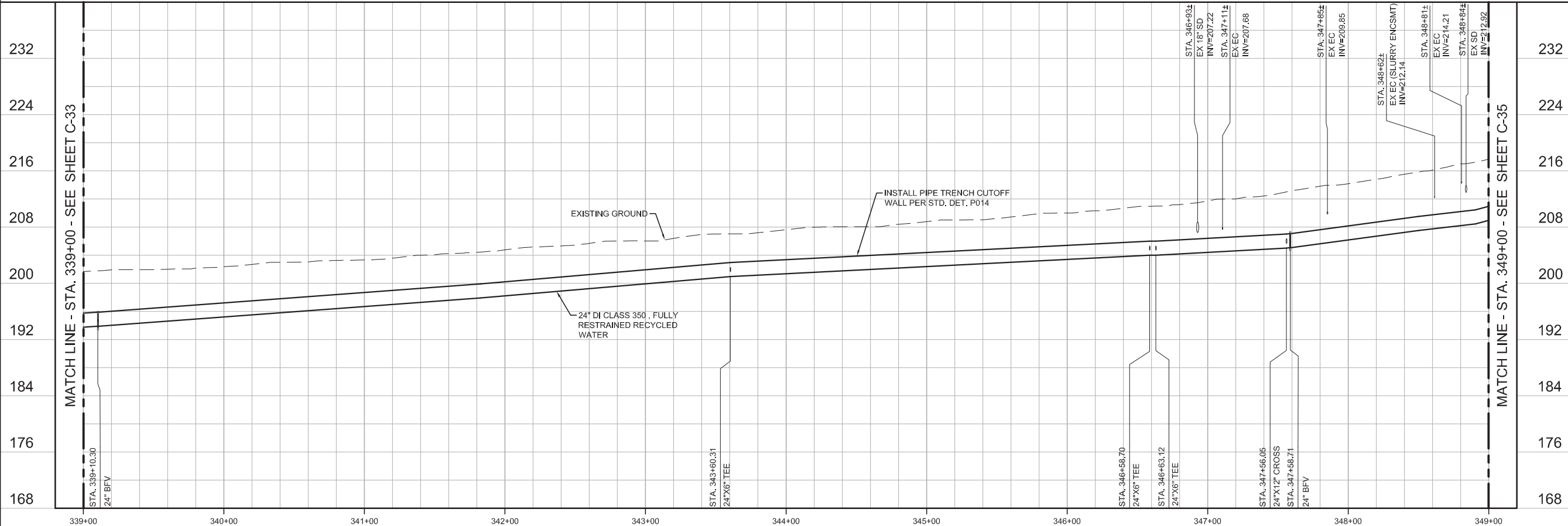
REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL
PLAN AND PROFILE
STA. 329+00 TO 339+00



- ### GENERAL NOTES
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
 - CONSTRUCTION SHALL BE IN ACCORDANCE WITH CSMUB TEMPORARY CONSTRUCTION PERMIT FROM STA. 303+14± TO STA. 347+31±.
 - ALLOWABLE CONSTRUCTION WORK ZONE FOR GENERAL JIM MOORE BLVD IS EDGE OF PAVEMENT TO CENTERLINE OF ROAD EXCEPT WHERE APPURTENANCES ARE REQUIRED OUTSIDE THESE LIMITS OR OTHERWISE AUTHORIZED BY THE ENGINEER.
 - TEMPORARY CONSTRUCTION EASEMENT LOCATED FROM STA. 347+30± TO STA. 389+56± SHALL BE FROM EDGE OF PAVEMENT TO MEDIAN IN NORTHBOUND LANES.



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
	DRAWN
	BH
	CHECKED
	AP
DATE	MAY 2017

PROJECT ENGINEER
 Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:02:40-0700Z

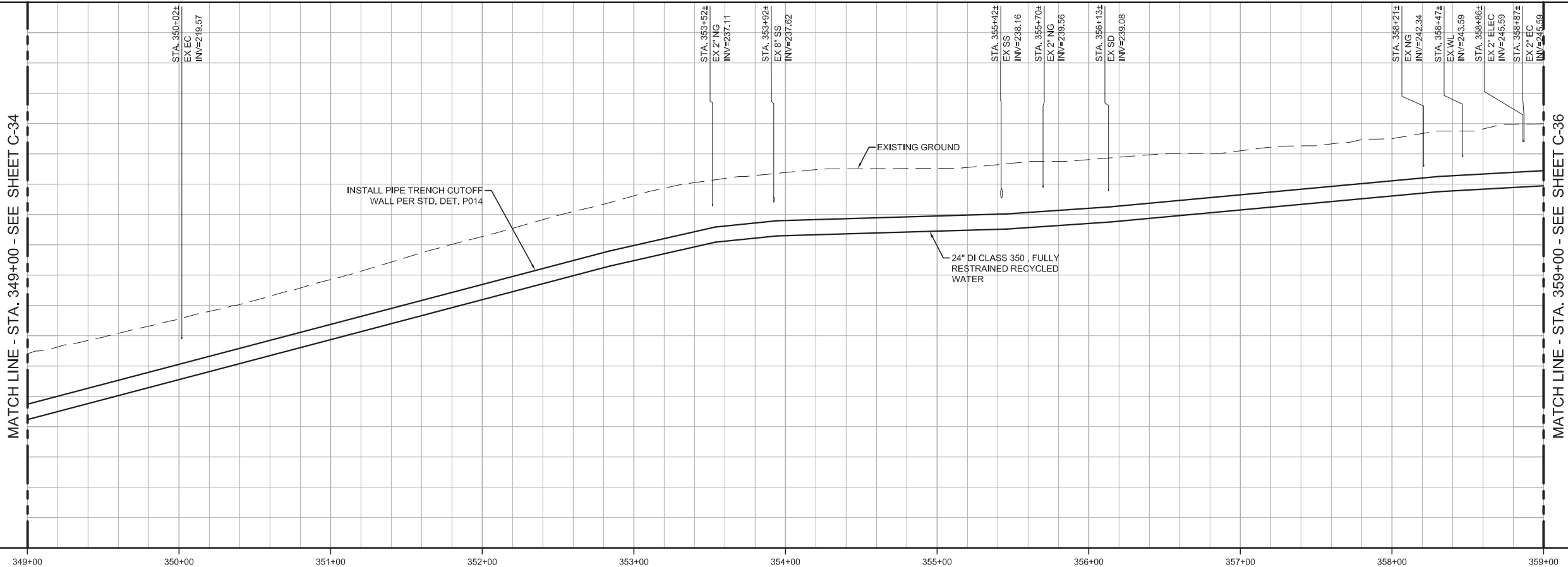
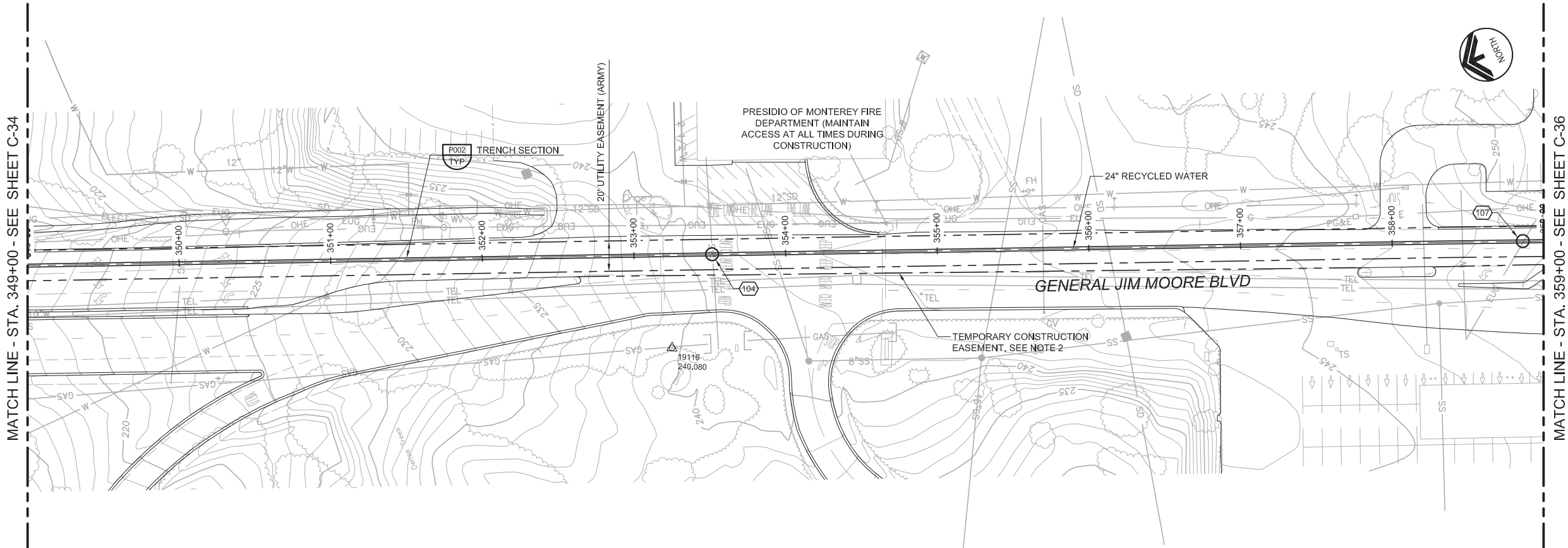


REGIONAL URBAN WATER AUGMENTATION PROJECT
 RECYCLED WATER PIPELINE
 CIVIL
 PLAN AND PROFILE
 STA. 339+00 TO STA. 349+00

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 7568A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. C-34
	SHEET NO. 42 OF 93

GENERAL NOTES

- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
- FROM STA. 347+30± TO STA. 389+56± TEMPORARY CONSTRUCTION EASEMENT SHALL BE FROM EDGE OF PAVEMENT TO MEDIAN IN NORTHBOUND LANES.



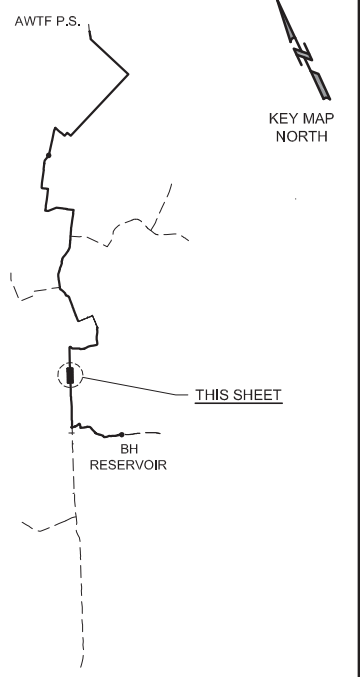
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

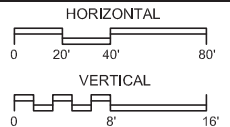
1-800-227-2600

UNDERGROUND SERVICE (USA)

KEY MAP



SCALE



REV	DATE	BY	DESCRIPTION

BID SET	DESIGNED JPM
	DRAWN BH
	CHECKED AP
	DATE MAY 2017

Project Engineer: Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:02:30-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT

RECYCLED WATER PIPELINE

CIVIL

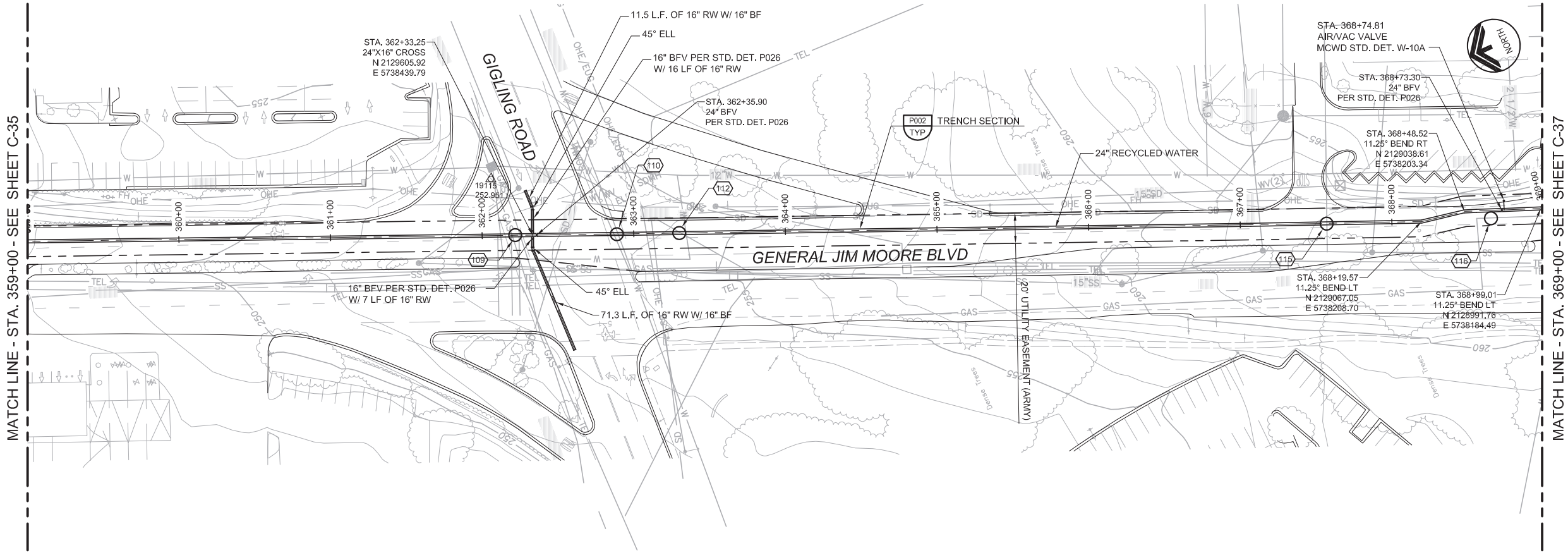
PLAN AND PROFILE

STA. 349+00 TO STA. 359+00

VERIFY SCALES	JOB NO. 7568A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. C-35
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. 43 OF 93

GENERAL NOTES

- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
- FROM STA. 347+30± TO STA. 389+56± TEMPORARY CONSTRUCTION EASEMENT SHALL BE FROM EDGE OF PAVEMENT TO MEDIAN IN NORTHBOUND LANES.



MATCH LINE - STA. 359+00 - SEE SHEET C-35

MATCH LINE - STA. 369+00 - SEE SHEET C-37

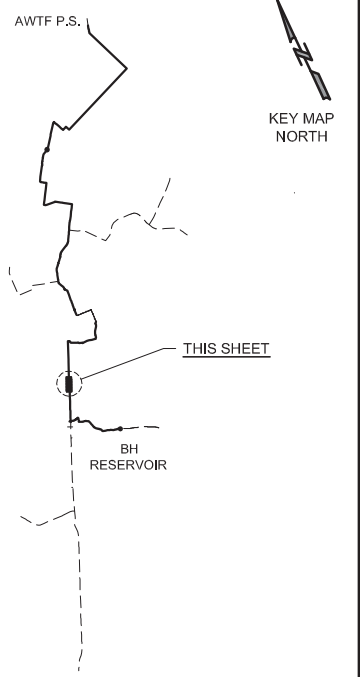
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

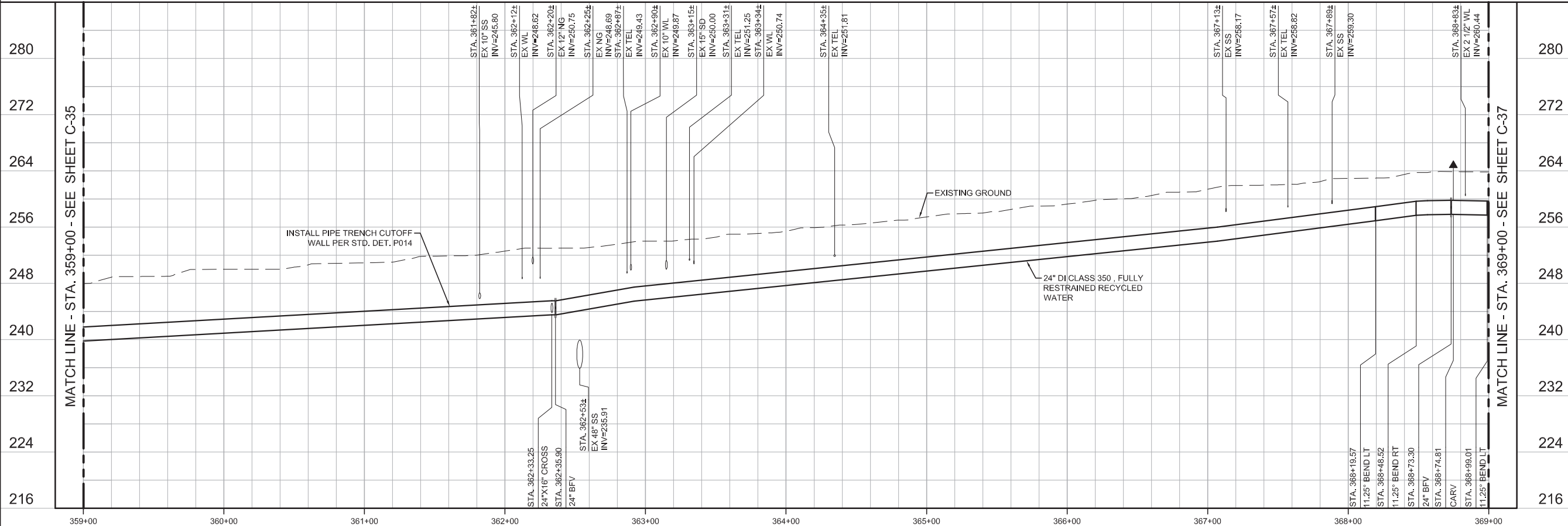
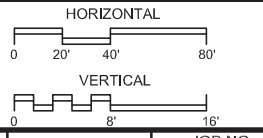
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UNDERGROUND SERVICE (USA)

KEY MAP



SCALE



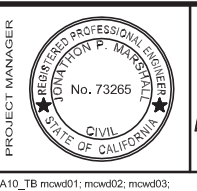
MATCH LINE - STA. 359+00 - SEE SHEET C-35

MATCH LINE - STA. 369+00 - SEE SHEET C-37

REV	DATE	BY	DESCRIPTION

DISCIPLINE ENGINEER	DESIGNED	JPM
	DRAWN	BH
	CHECKED	AP
	DATE	MAY 2017
	BID SET	

Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:02:20-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT

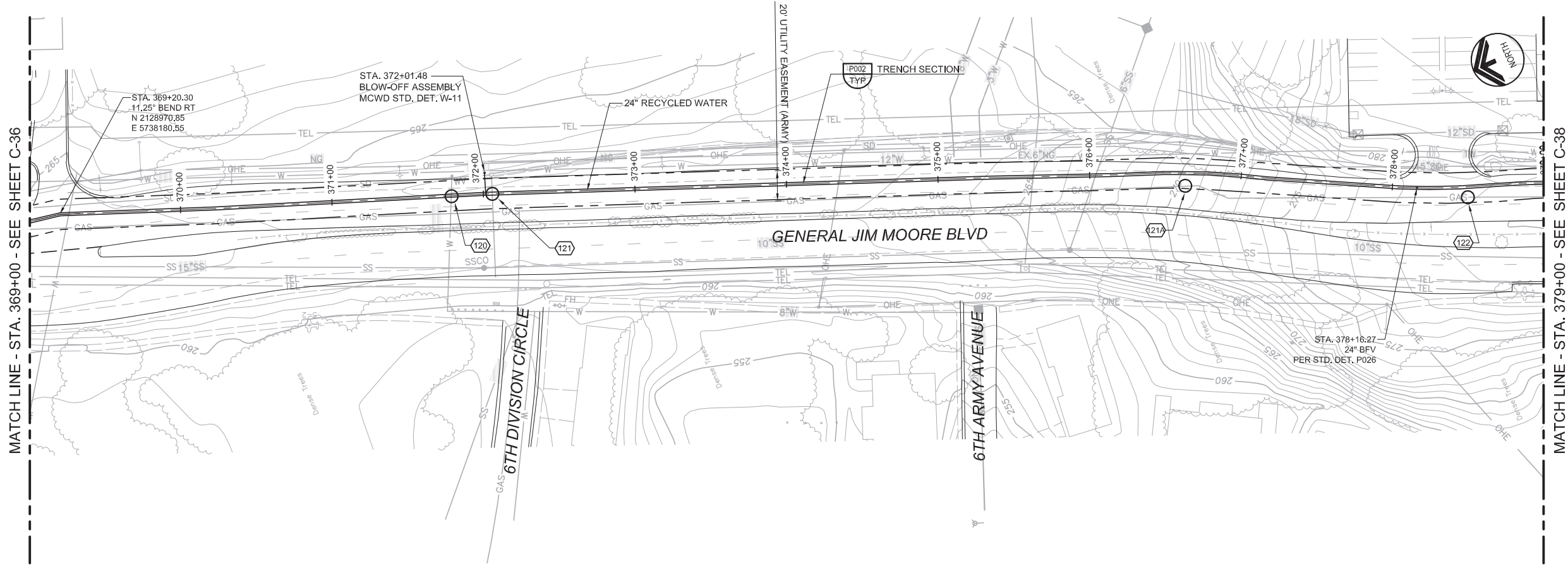
RECYCLED WATER PIPELINE

CIVIL

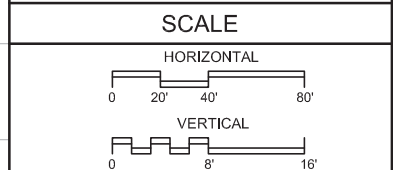
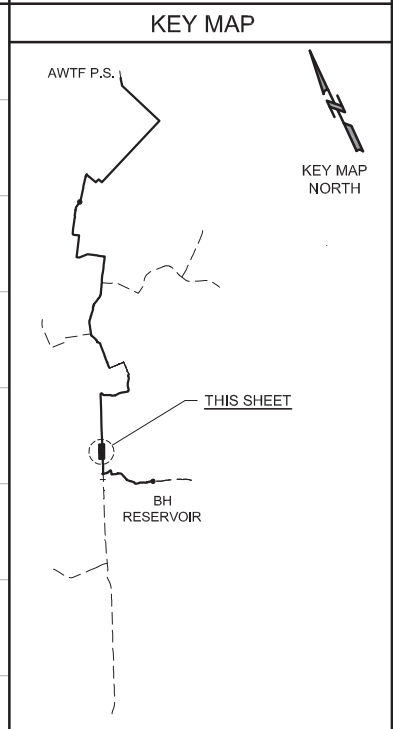
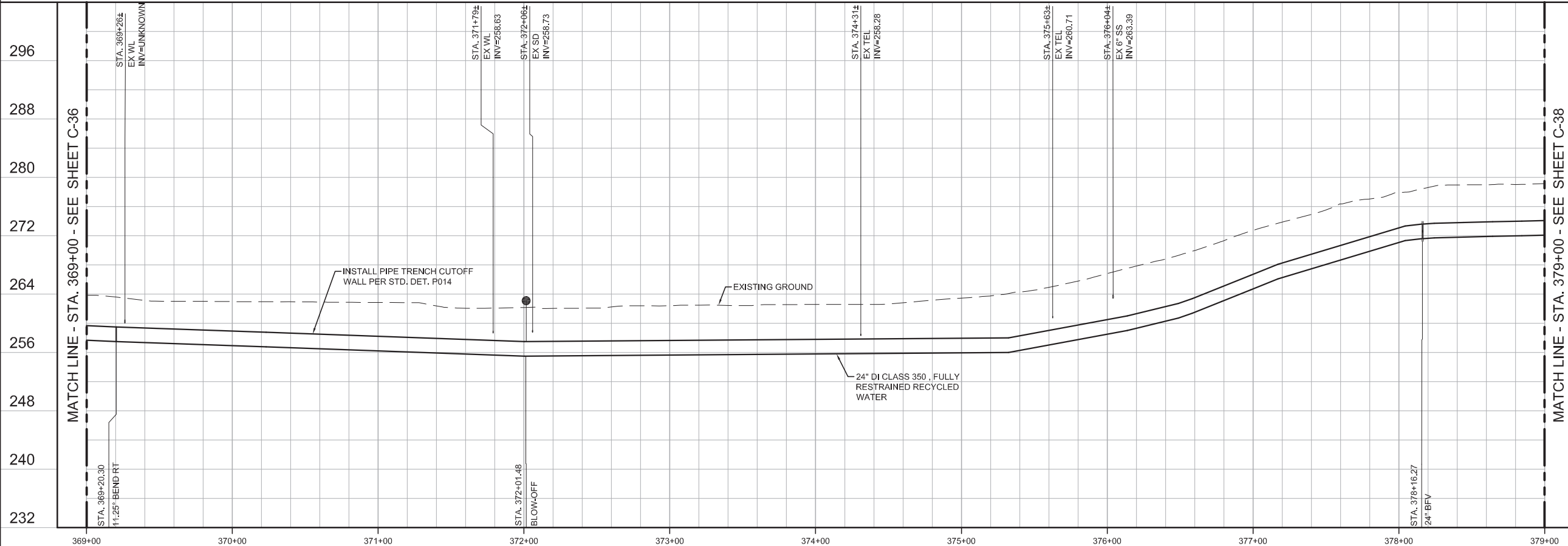
PLAN AND PROFILE

STA. 359+00 TO STA. 369+00

VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	7568A.10
0 1" 16'	DRAWING NO.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	C-36
	SHEET NO.
	44 OF 93



- GENERAL NOTES**
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
 - FROM STA. 347+30± TO STA. 389+56± TEMPORARY CONSTRUCTION EASEMENT SHALL BE FROM EDGE OF PAVEMENT TO MEDIAN IN NORTHBOUND LANES.



REV	DATE	BY	DESCRIPTION

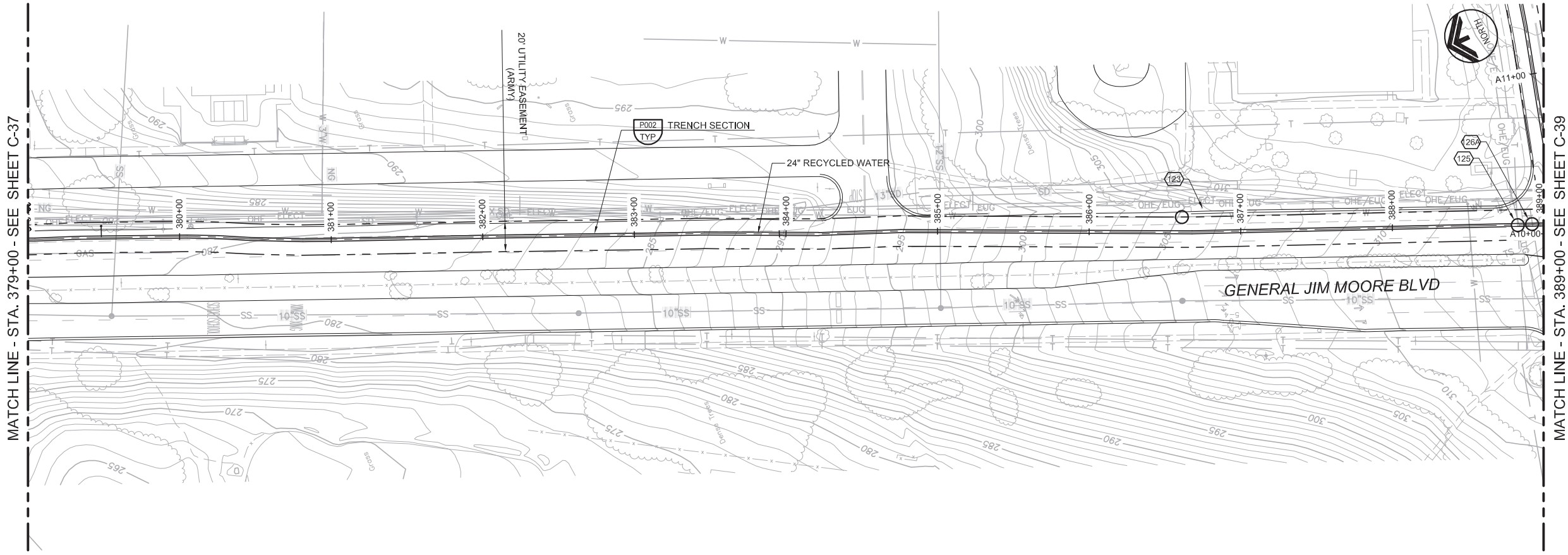
BID SET	DESIGNED JPM
	DRAWN BH
	CHECKED AP
	DATE MAY 2017

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 12:57:13-0700



REGIONAL URBAN WATER AUGMENTATION PROJECT
 RECYCLED WATER PIPELINE
 CIVIL
 PLAN AND PROFILE
 STA. 369+00 TO STA. 379+00

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" 16'	JOB NO. 7568A.10
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. C-37
	SHEET NO. 45 OF 93



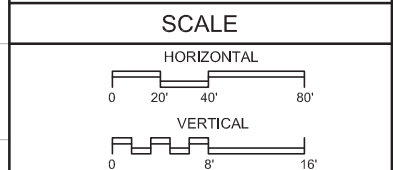
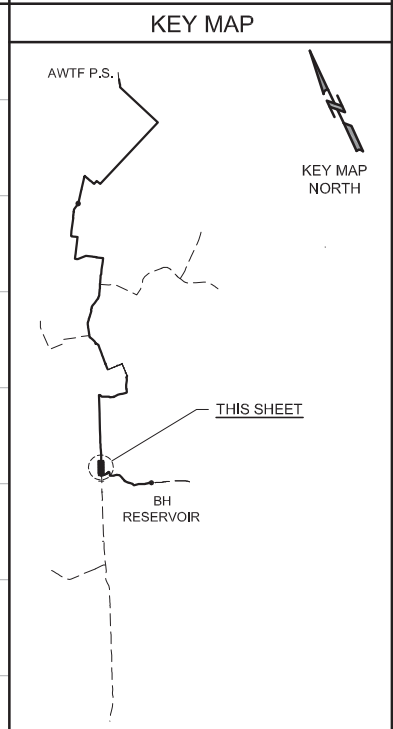
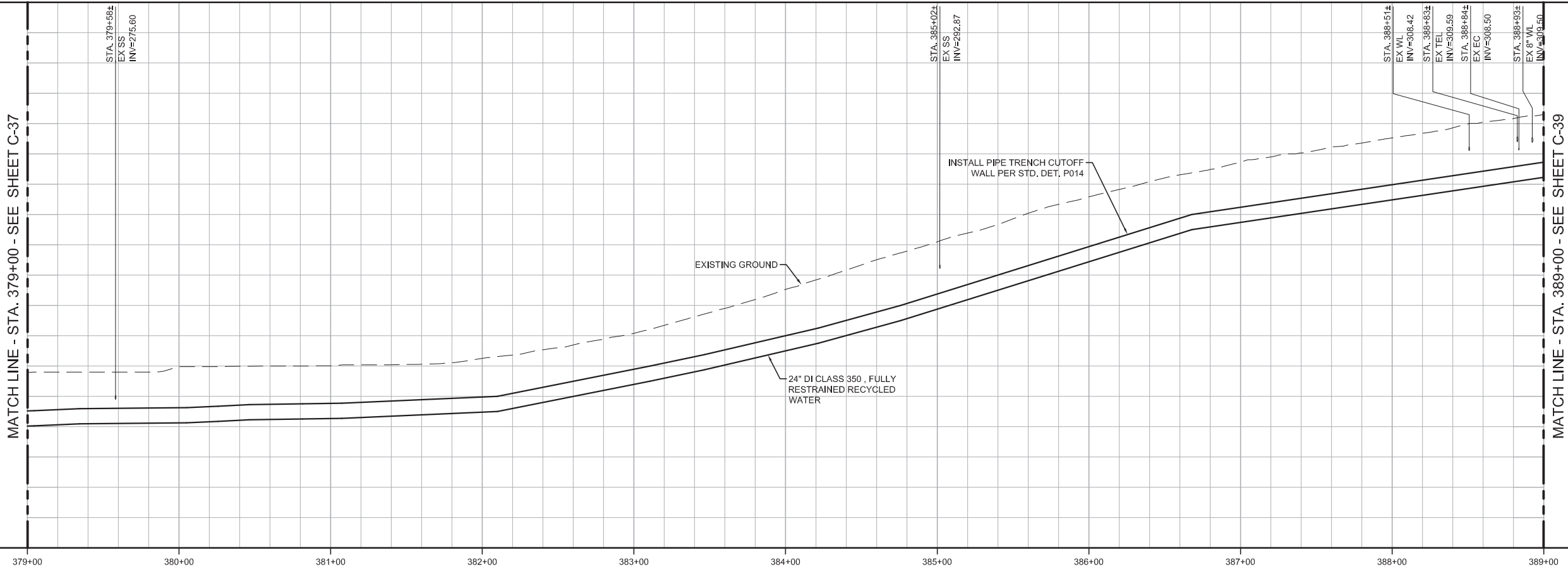
- GENERAL NOTES**
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
 - FROM STA. 347+30± TO STA. 389+56± TEMPORARY CONSTRUCTION EASEMENT SHALL BE FROM EDGE OF PAVEMENT TO MEDIAN IN NORTHBOUND LANES.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

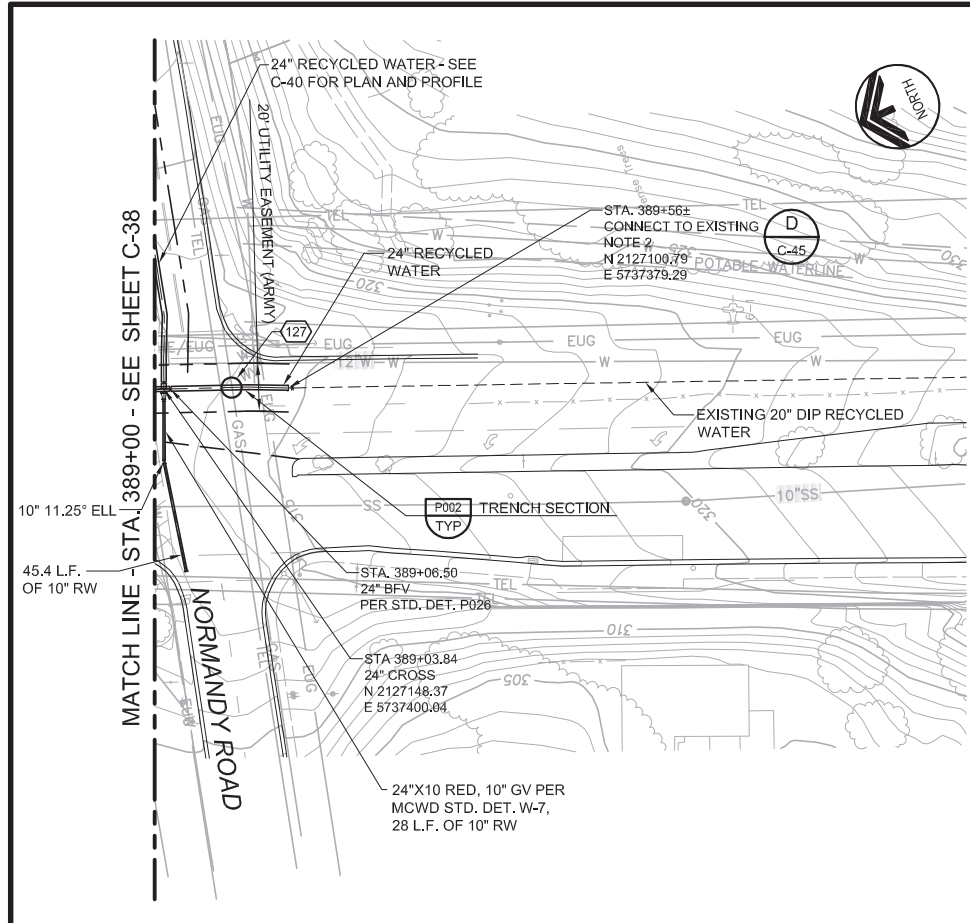
1-800-227-2800

UNDERGROUND SERVICE (USA)



BID SET				DESIGNED JPM	DISCIPLINE ENGINEER	PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 12:57:03-0700Z	PROJECT MANAGER JONATHAN P. MARSHALL No. 73265 CIVIL STATE OF CALIFORNIA	 carollo Engineers...Working Wonders With Water™	 Marina Coast Water District	REGIONAL URBAN WATER AUGMENTATION PROJECT		VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10
				DRAWN BH						DRAWING NO. C-38			
				CHECKED AP						SHEET NO. 46 OF 93			
				DATE MAY 2017									
REV	DATE	BY	DESCRIPTION										

Last Opened by: 428-17 01:08pm BHawes

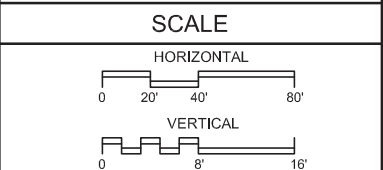
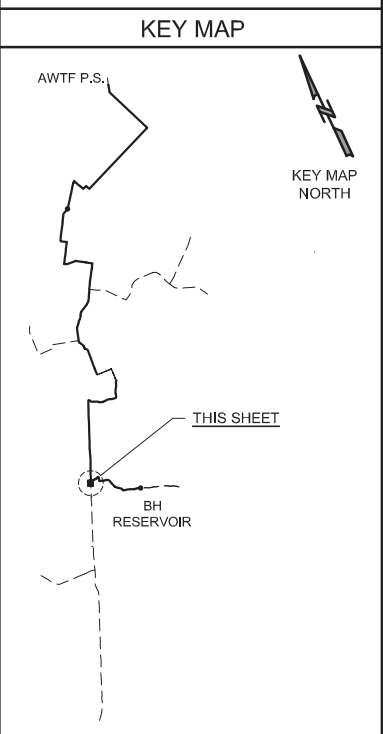
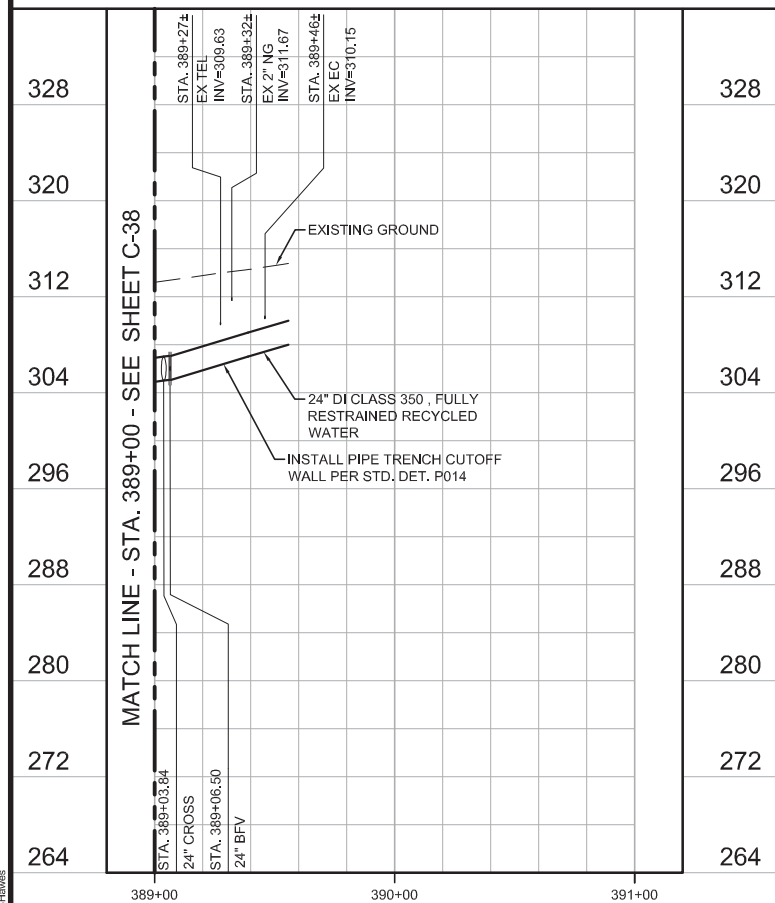


- ### GENERAL NOTES
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
 2. CONTRACTOR SHALL FIELD VERIFY SIZE AND LOCATION OF EXISTING RW TERMINATION PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER IF THERE ARE DISCREPANCIES.
 3. FROM STA. 347+30± TO STA. 389+56± TEMPORARY CONSTRUCTION EASEMENT SHALL BE FROM EDGE OF PAVEMENT TO MEDIAN IN NORTHBOUND LANES.

AVOID CUTTING UNDERGROUND UTILITIES LINES. IT'S COSTLY.

Call before you Dig
1-800-227-2600

UNDERGROUND SERVICE (USA)



REV	DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 12:56:47-07'00'



REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
CIVIL
PLAN AND PROFILE
STA. 389+00 TO STA. 389+56±

VERIFY SCALES	JOB NO. 7568A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. C-39
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. 47 OF 93

GENERAL NOTES

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.
2. ALLOWABLE CONSTRUCTION WORK AREA ON NORMANDY RD SHALL BE FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT.

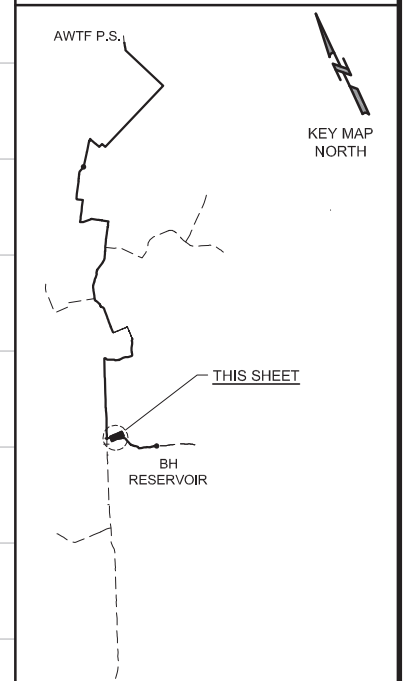
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

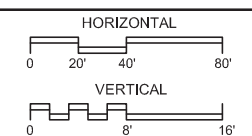
1-800-227-2800

UNDERGROUND SERVICE (USA)

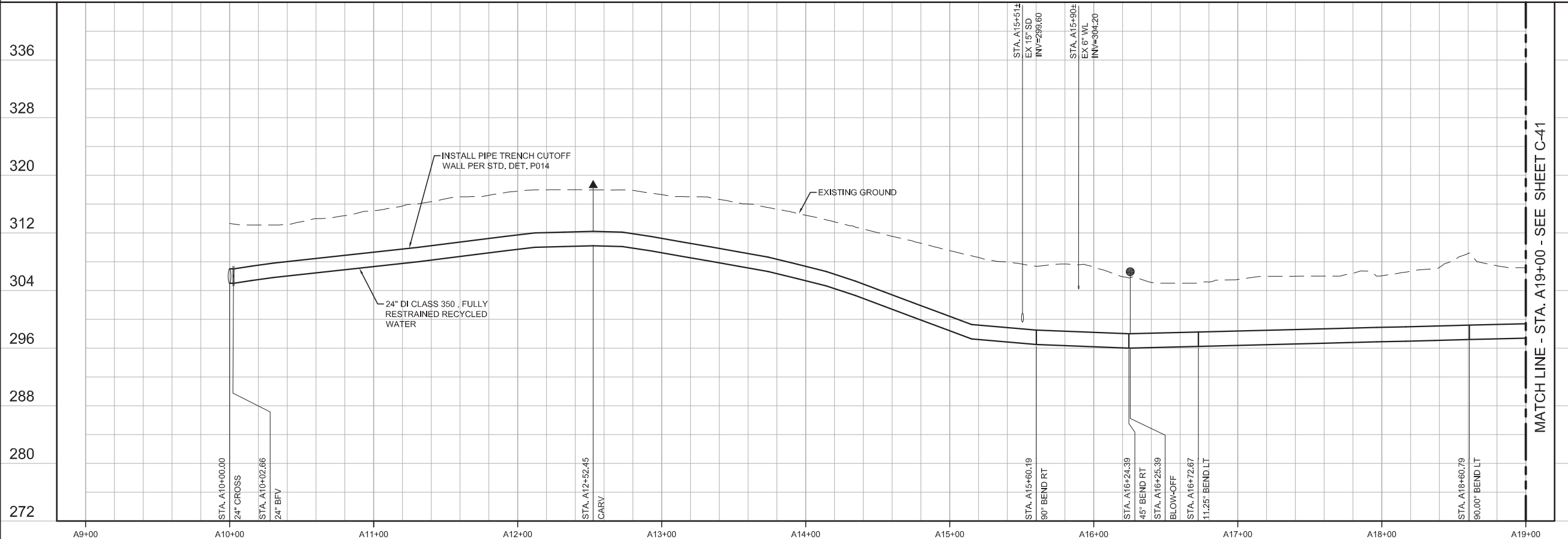
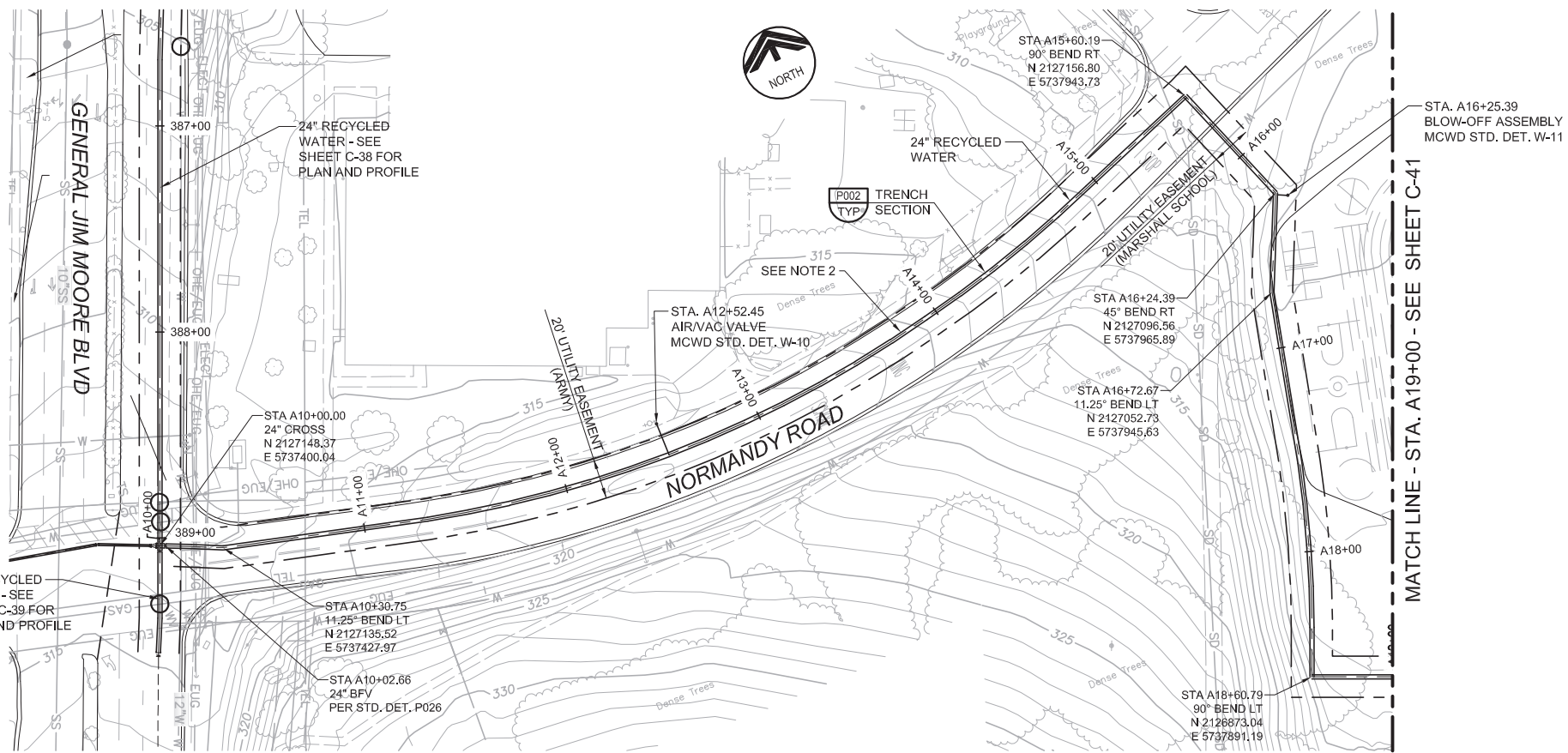
KEY MAP



SCALE



VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. C-40 SHEET NO. 48 OF 93
---	--



BID SET			
DESIGNED	JPM	DISCIPLINE ENGINEER	
DRAWN	BH		
CHECKED	AP		
DATE	MAY 2017		
REV	DATE	BY	DESCRIPTION

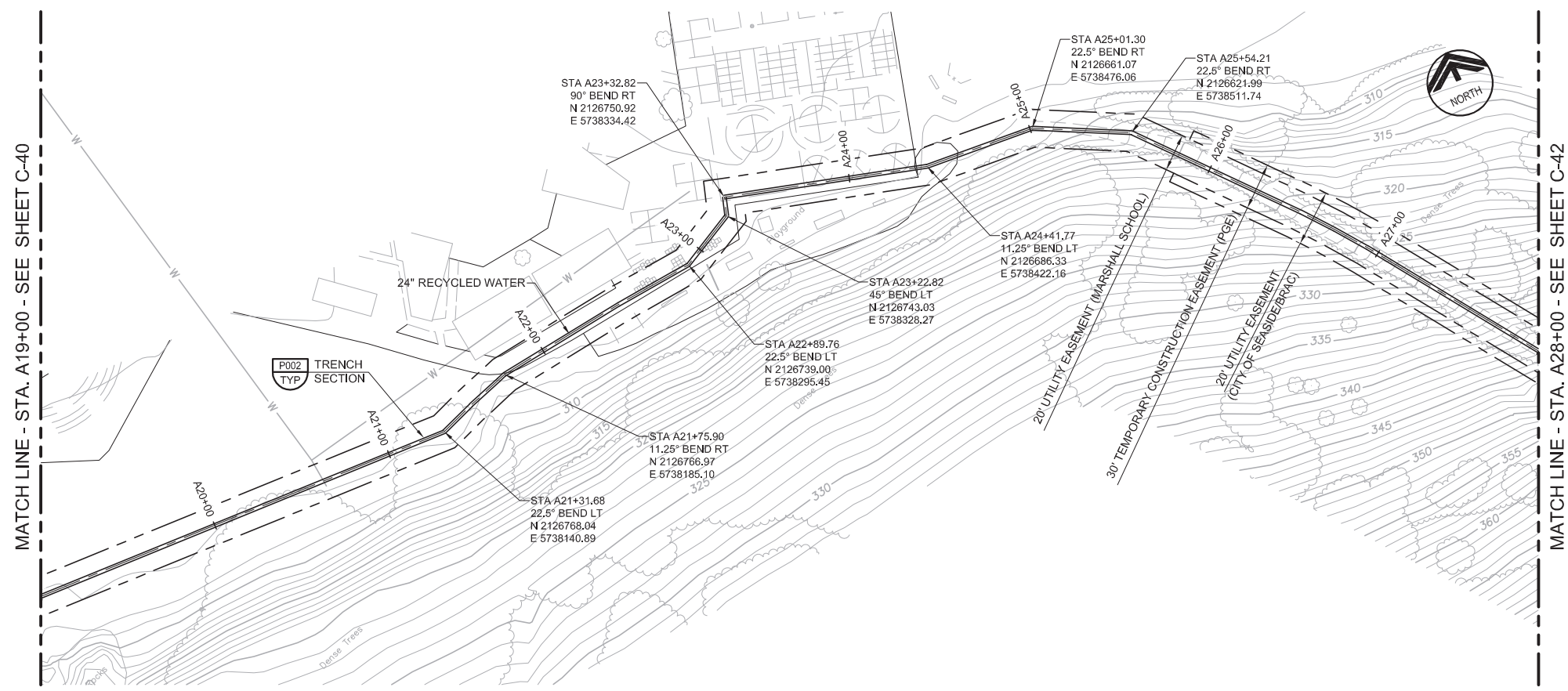
PROJECT ENGINEER	Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 12:56:12-0700
PROJECT MANAGER	JONATHAN P. MARSHALL No. 73265 CIVIL STATE OF CALIFORNIA

carollo
Engineers...Working Wonders With Water™

Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
CIVIL
PLAN AND PROFILE
WATER LINE "A" - STA. A10+00 TO STA. A19+00

Last Opened by: BHawes 4-28-17 10:18am BHawes



GENERAL NOTES

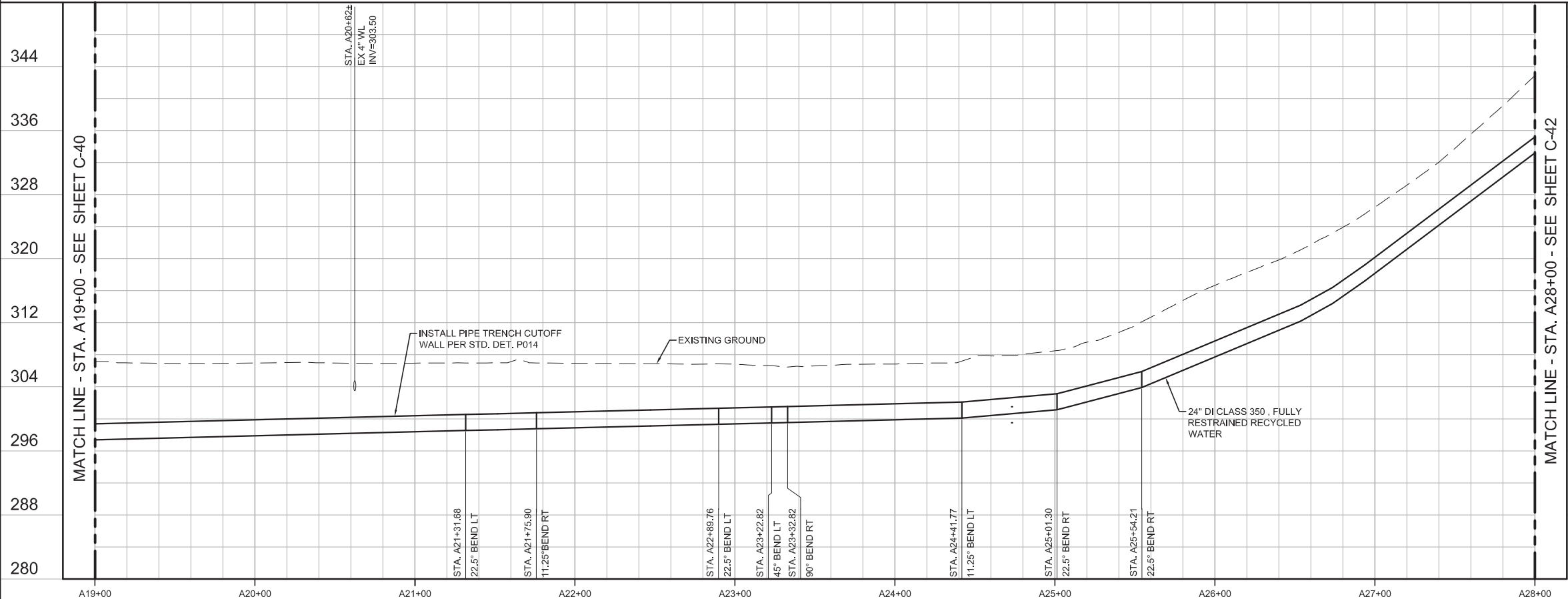
1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

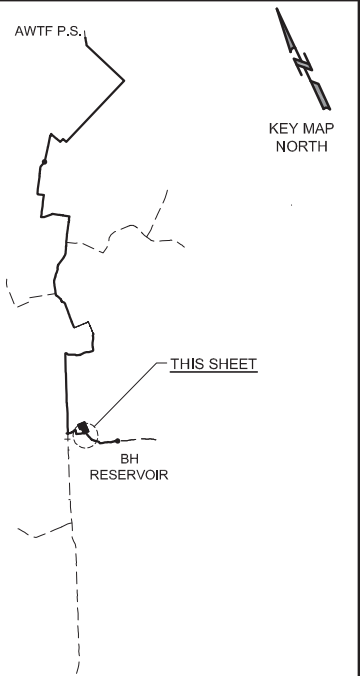
Call before you Dig

1-800-227-2800

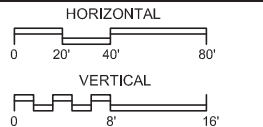
UNDERGROUND SERVICE (USA)



KEY MAP



SCALE



REV	DATE	BY	DESCRIPTION

BID SET	DESIGNED JPM	DISCIPLINE ENGINEER
	DRAWN BH	
	CHECKED AP	
	DATE MAY 2017	

Project Engineer: Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 12:55:42-0700'

Project Manager: Jonathon P. Marshall
 No. 73265
 CIVIL
 STATE OF CALIFORNIA



REGIONAL URBAN WATER AUGMENTATION PROJECT

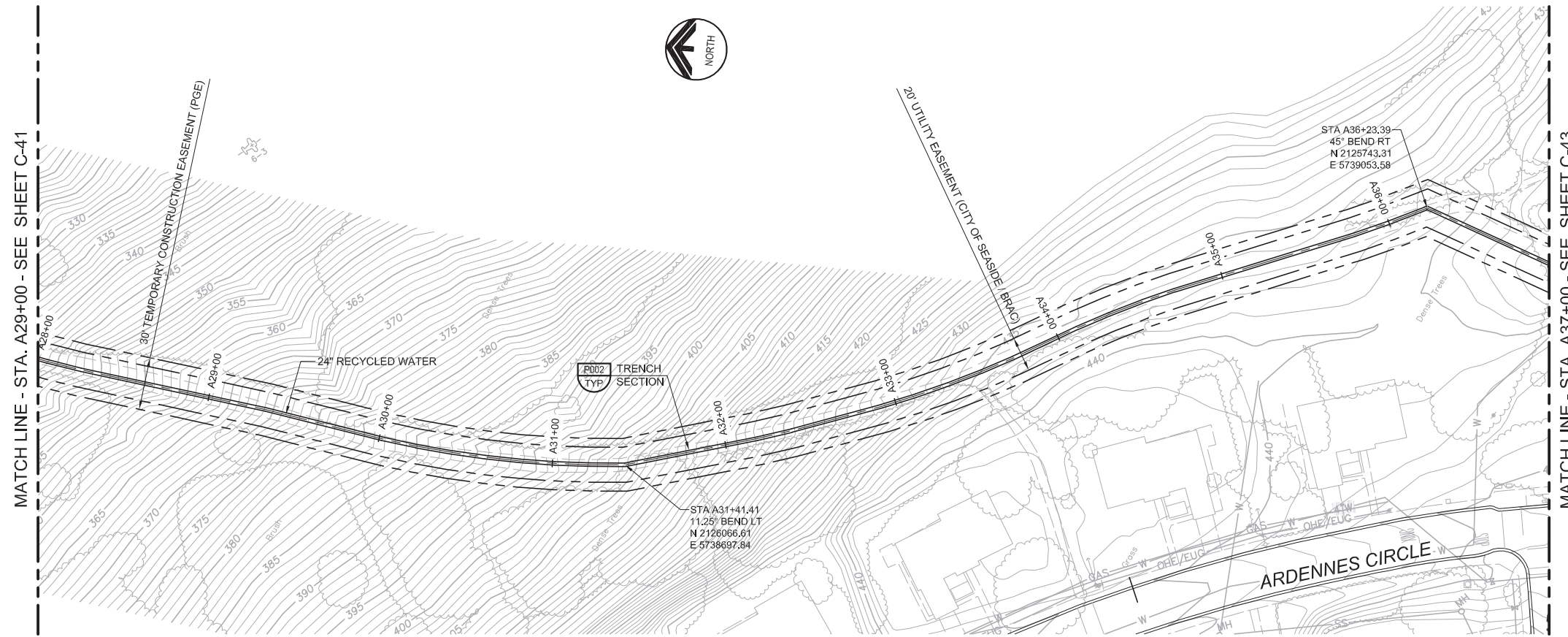
RECYCLED WATER PIPELINE

CIVIL

PLAN AND PROFILE

WATER LINE "A" - STA. A19+00 TO STA. A28+00

VERIFY SCALES	JOB NO. 7568A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. C-41
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. 49 OF 93



GENERAL NOTES

1. CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.

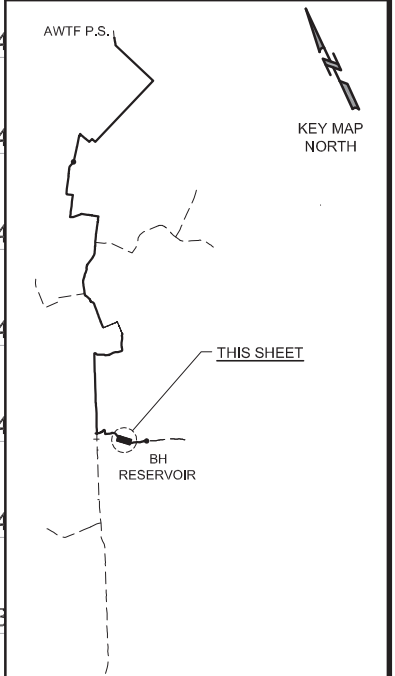
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

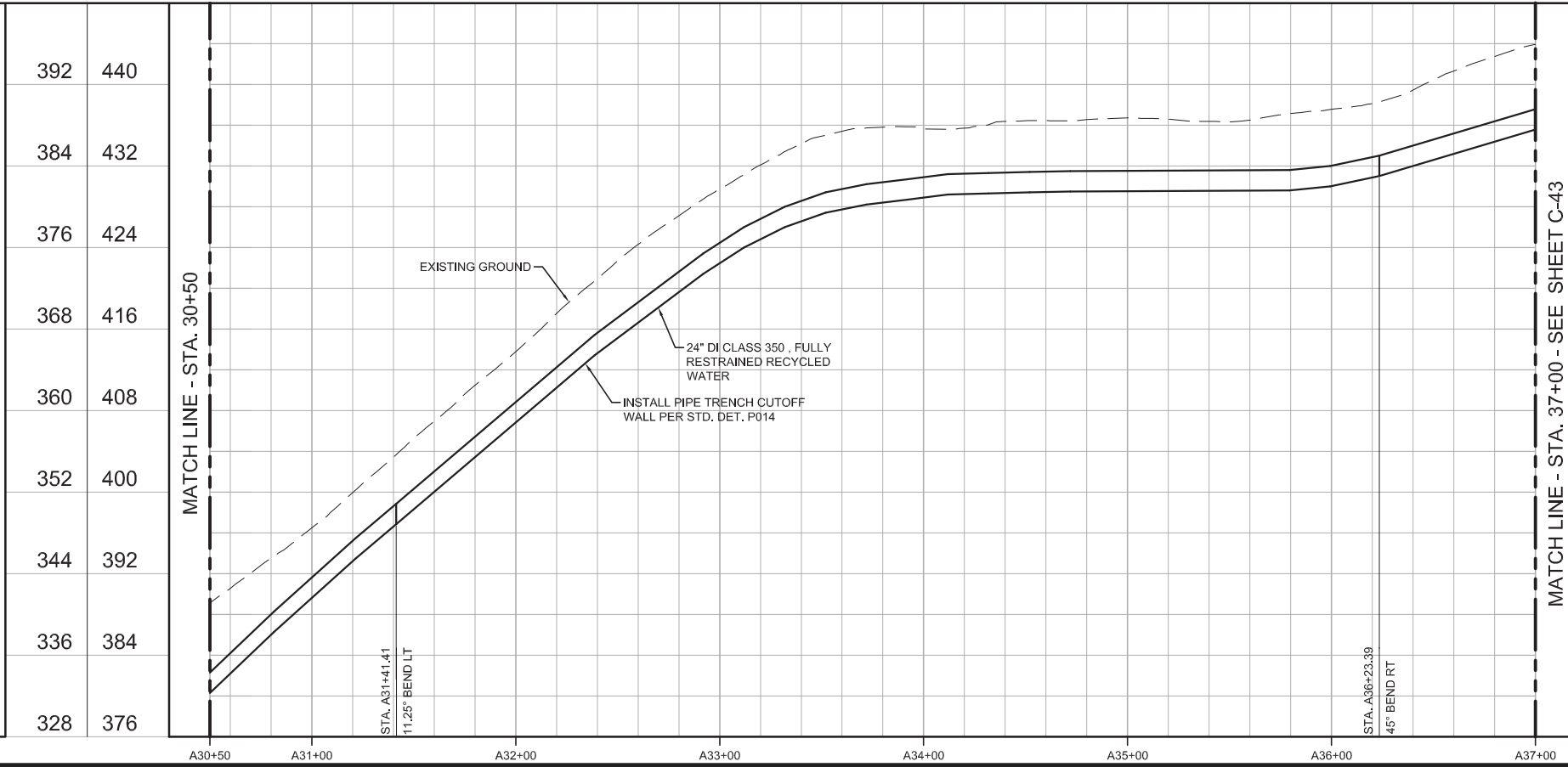
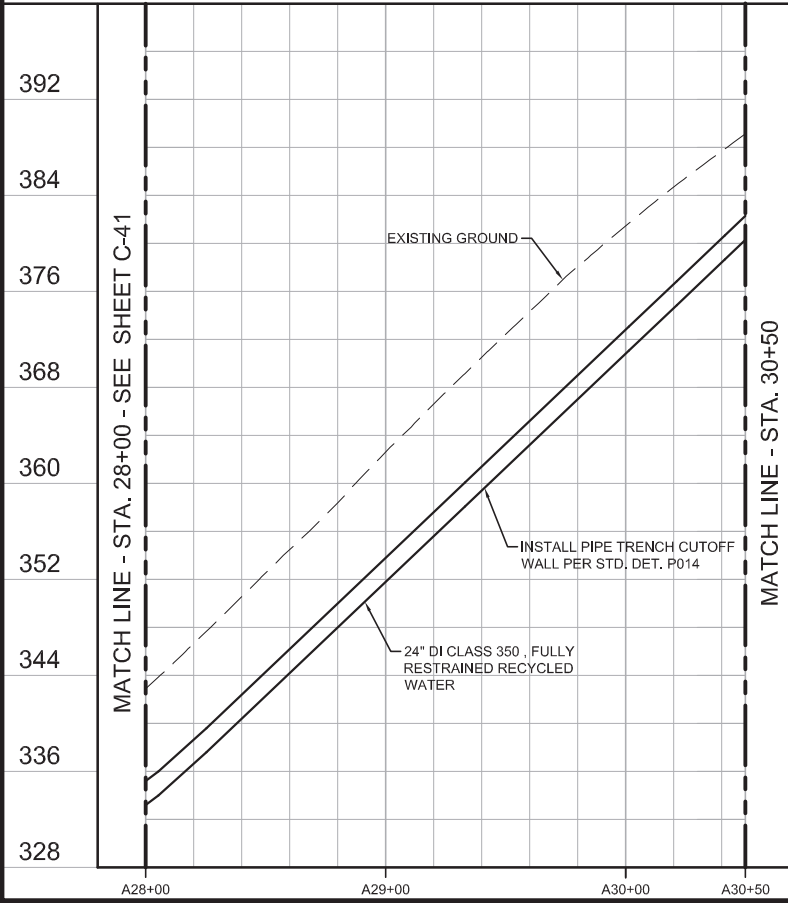
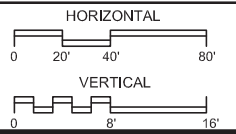
1-800-227-2600

UNDERGROUND SERVICE (USA)

KEY MAP



SCALE



REV	DATE	BY	DESCRIPTION

DESIGNED JPM	DISCIPLINE ENGINEER	
		DRAWN BH
		CHECKED AP
		DATE MAY 2017

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 12:55:09-0700Z



REGIONAL URBAN WATER AUGMENTATION PROJECT
 RECYCLED WATER PIPELINE
 CIVIL
 PLAN AND PROFILE
 WATER LINE "A" - STA. A28+00 TO STA. A37+00

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. C-42 SHEET NO. 50 OF 93
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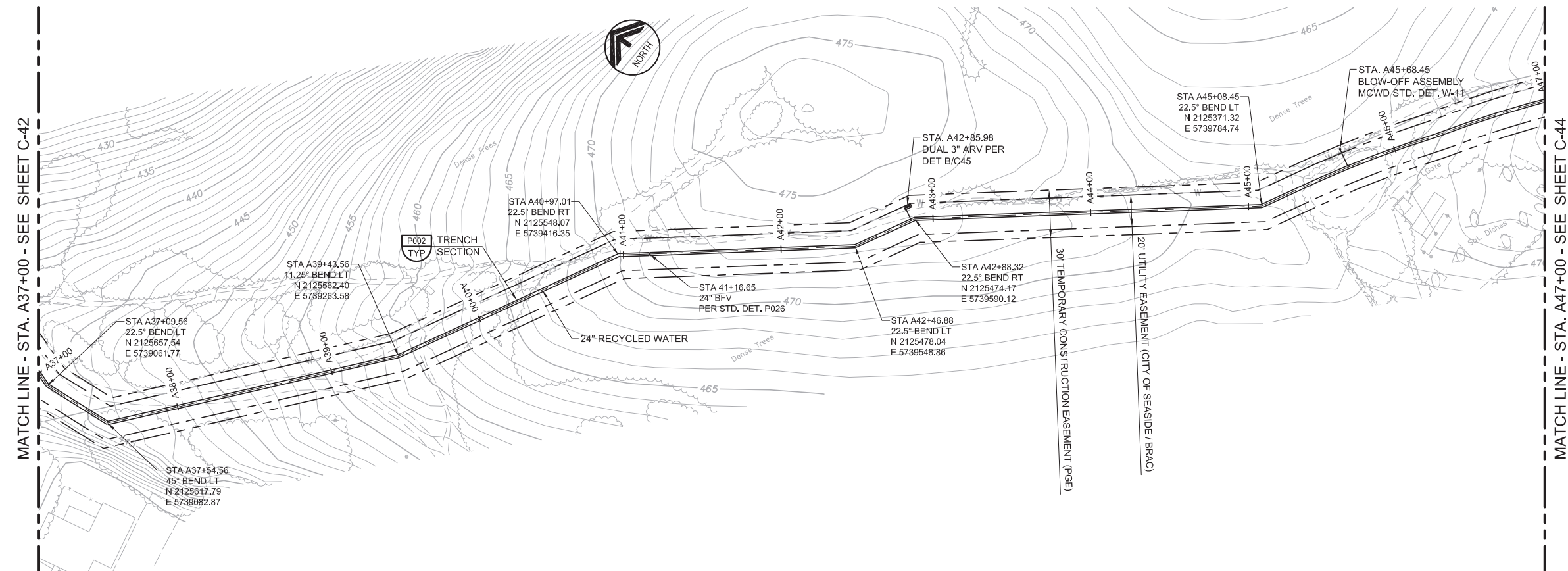
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GENERAL NOTES

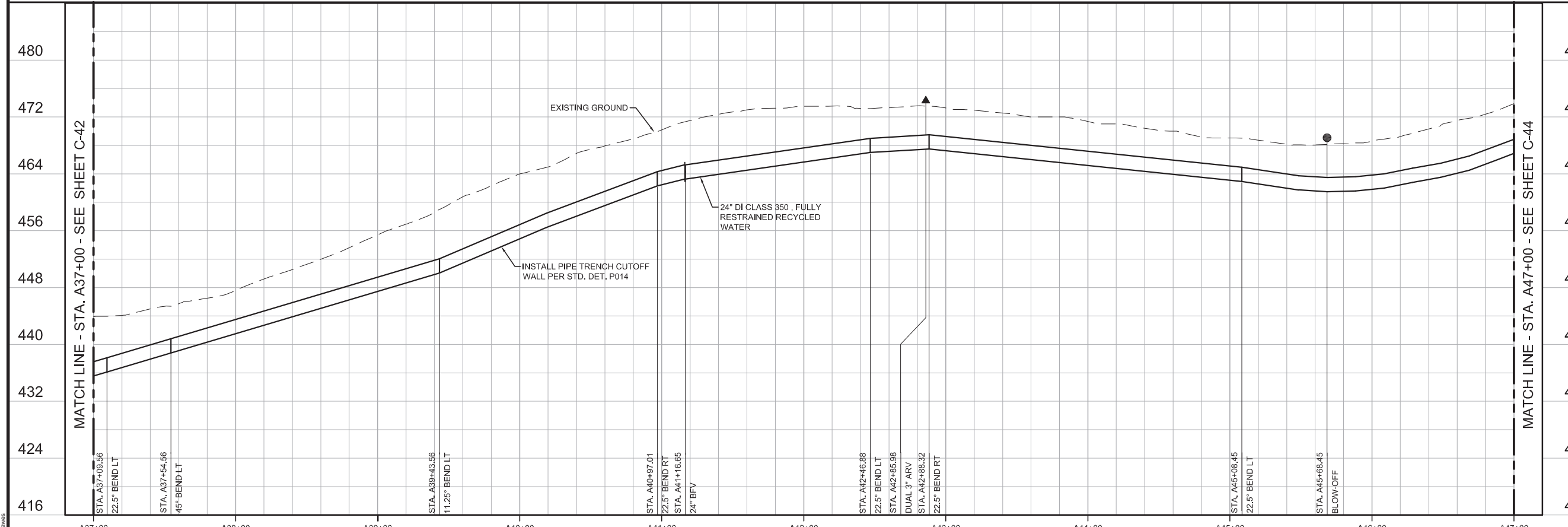
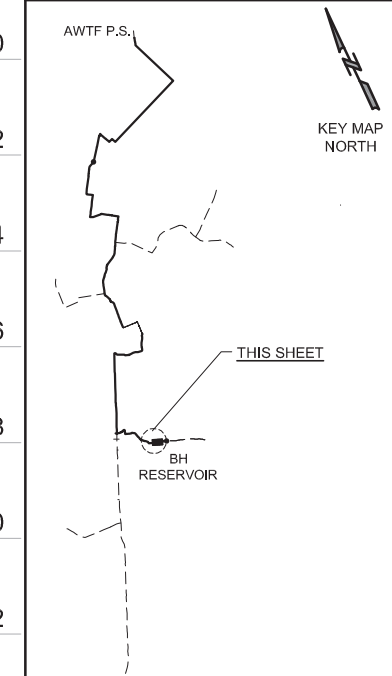
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call before you Dig
 1-800-227-2600

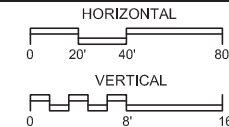
UNDERGROUND SERVICE (USA)



KEY MAP



SCALE



REV				DATE	BY	DESCRIPTION

DESIGNED	JPM
DRAWN	BH
CHECKED	AP
DATE	MAY 2017

PROJECT ENGINEER
 Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 12:54:50-0700

PROJECT MANAGER

carollo
 Engineers...Working Wonders With Water™

Marina Coast Water District

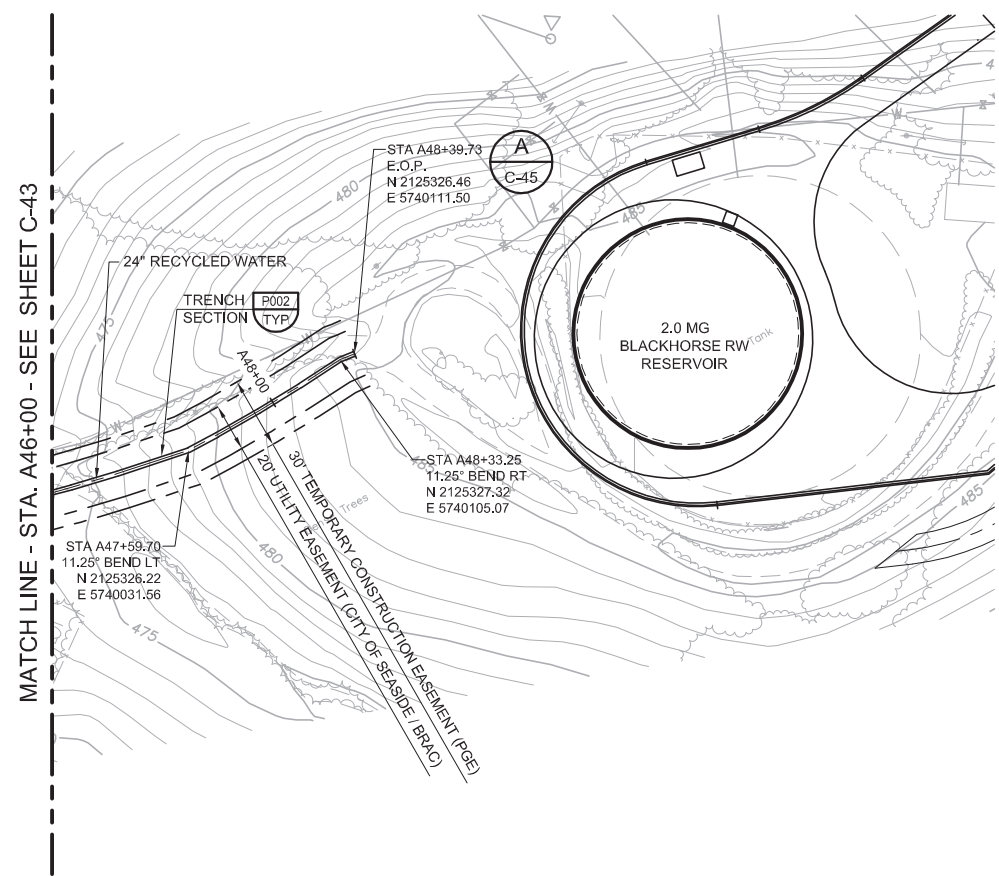
REGIONAL URBAN WATER AUGMENTATION PROJECT
 RECYCLED WATER PIPELINE
 CIVIL
 PLAN AND PROFILE
 WATER LINE "A" - STA. A37+00 TO STA. A47+00

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING

 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. C-43
 SHEET NO. 51 OF 93

Last Created by: BHawes 4-28-17 01:22pm BHawes



GENERAL NOTES

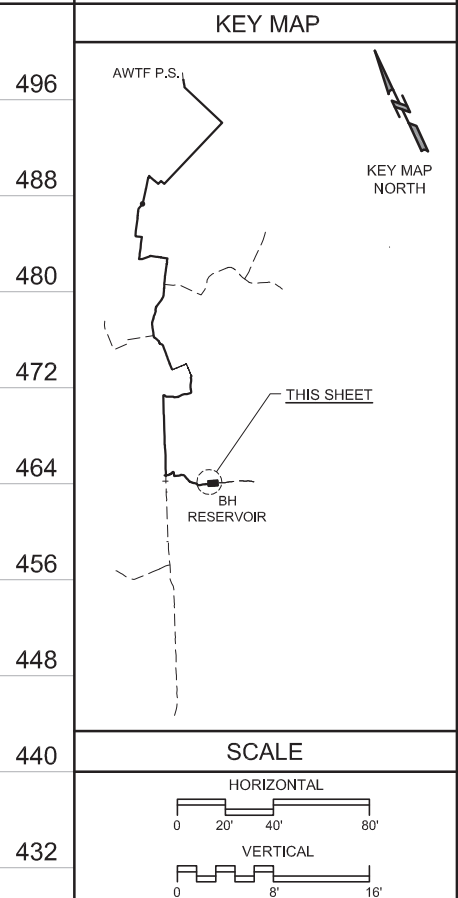
- CONSTRUCT PIPELINE WITH A MINIMUM 4' OF COVER UNLESS SHOWN OTHERWISE IN THE PROFILE TO AVOID EXISTING UTILITIES OR ACCOMMODATE FUTURE GRADES.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig

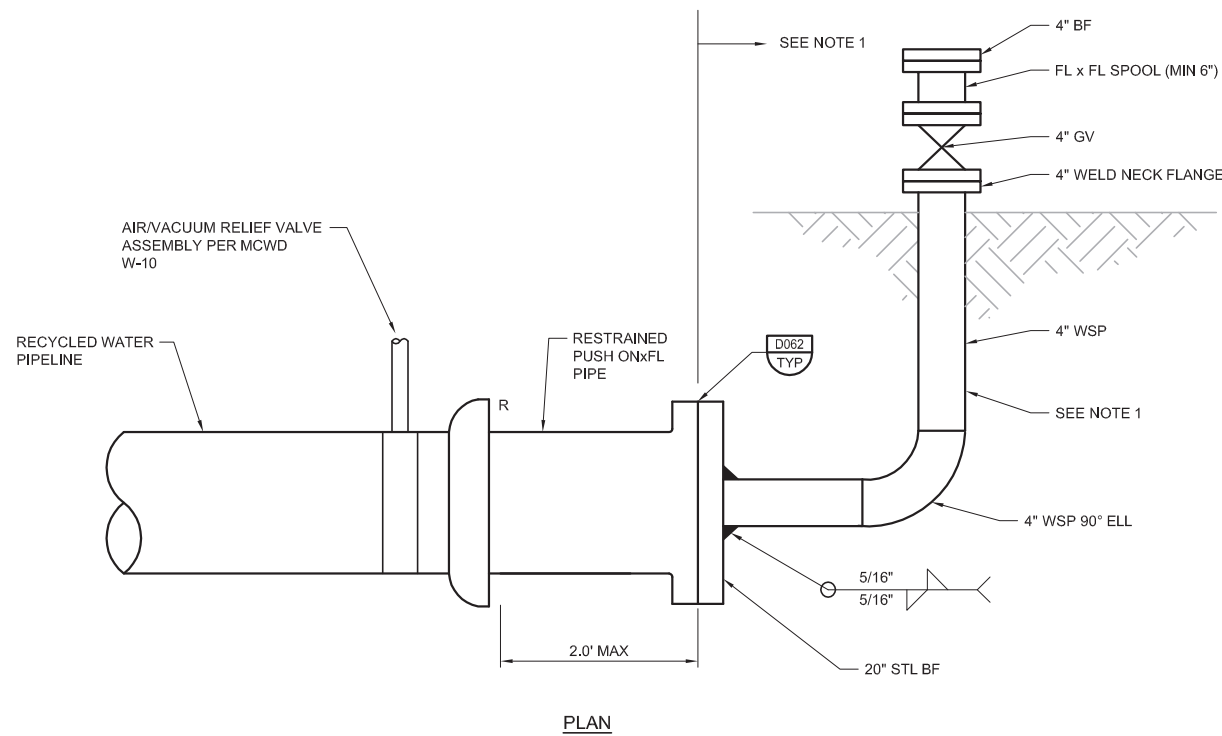
1-800-227-2600

UNDERGROUND SERVICE (USA)



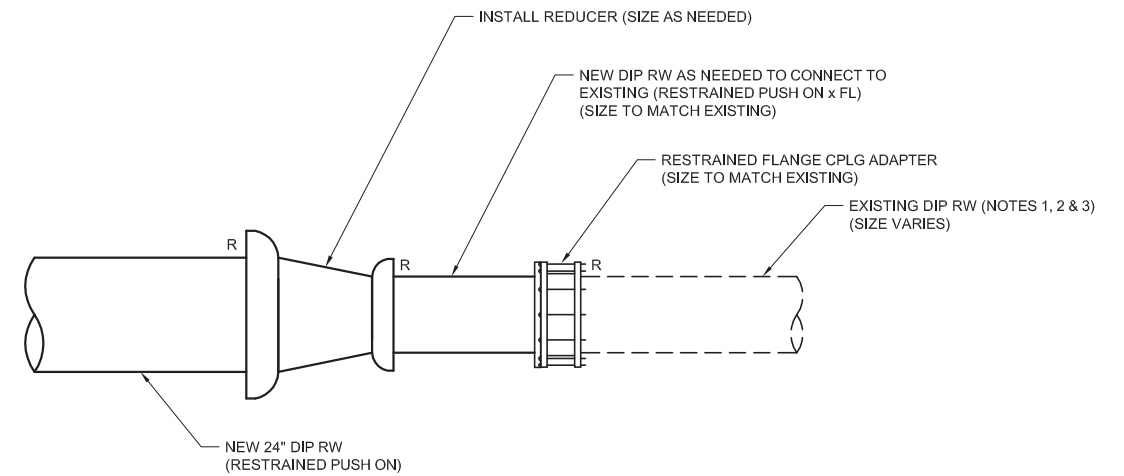
<p>BID SET</p>				<p>DESIGNED AP / AS</p>	<p>PROJECT ENGINEER</p> <p>Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 12:54:06-0700</p>	<p>PROJECT MANAGER</p> <p>REGISTERED PROFESSIONAL ENGINEER JONATHAN P. MARSHALL No. 73265 CIVIL STATE OF CALIFORNIA</p>	<p>carollo Engineers...Working Wonders With Water™</p>	<p>Marina Coast Water District</p>	<p>REGIONAL URBAN WATER AUGMENTATION PROJECT</p> <p>RECYCLED WATER PIPELINE</p> <p>CIVIL</p> <p>PLAN AND PROFILE</p> <p>WATER LINE "A" - STA. A47+00 TO STA. A48+39.73</p>	<p>VERIFY SCALES</p> <p>BAR IS ONE INCH ON ORIGINAL DRAWING</p> <p>0 1" 16'</p> <p>IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY</p>	<p>JOB NO. 7568A.10</p> <p>DRAWING NO. C-44</p> <p>SHEET NO. 52 OF 93</p>
REV	DATE	BY	DESCRIPTION	<p>DRAWN LGD</p>						<p>DATE MAY 2017</p>	<p>DISCIPLINE ENGINEER</p>

Last Created by: BHawes 4-29-17 04:26pm



NOTES:

1. WHEN NO LONGER NEEDED FOR FILLING OR TESTING REMOVE ALL STEEL PIPING INCLUDING STEEL BF AND REPLACE WITH DI BF. INSTALL ABOVE GROUND PIPE MARKER TO MARK END OF PIPELINE. CONNECTION TO FUTURE PIPE WILL BE MADE BY OTHERS.

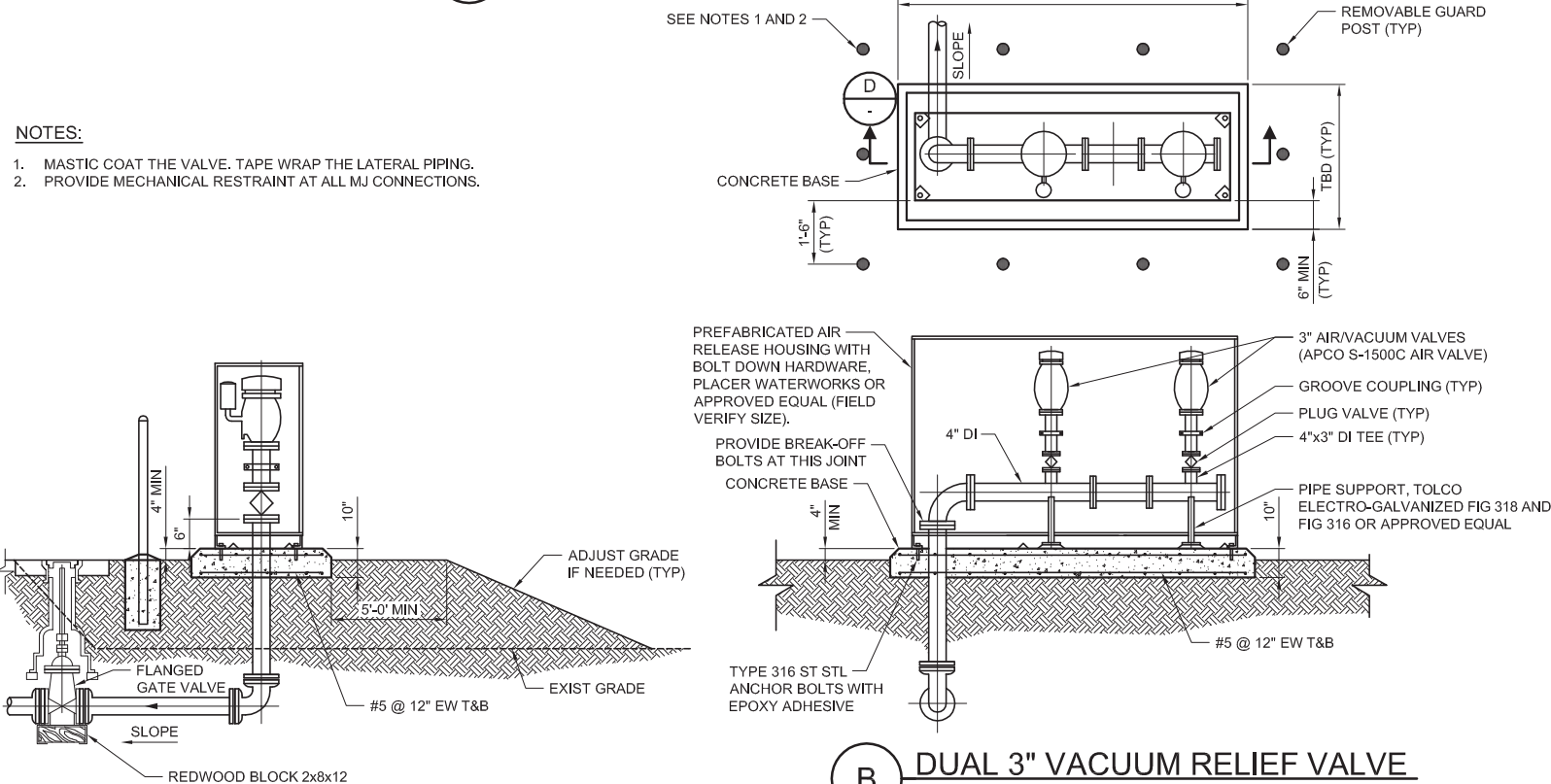


NOTES:

1. CONTRACTOR SHALL FIELD VERIFY CONDITIONS AT END OF EXISTING PIPE AT LEAST SEVEN DAYS IN ADVANCE OF CONSTRUCTION AND NOTIFY ENGINEER IF CONDITIONS ARE SIGNIFICANTLY DIFFERENT.
2. DRAIN EXISTING PIPELINE OF ALL WATER PRIOR TO MAKING CONNECTION.
3. REMOVE EXISTING CAP THRUST BLOCK AND TEMPORARY ARV AT THE END OF EXISTING RW MAIN PRIOR TO MAKING CONNECTION.

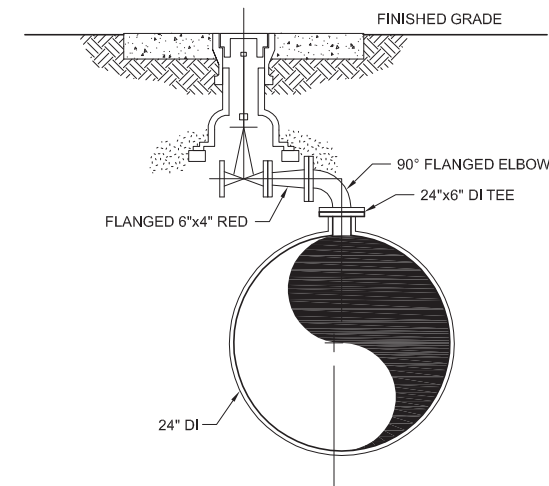
D FINISHED WATER PIPELINE CONNECTION
SCALE: N.T.S.

A TEMPORARY BLOW OFF DETAIL
SCALE: N.T.S.



NOTES:

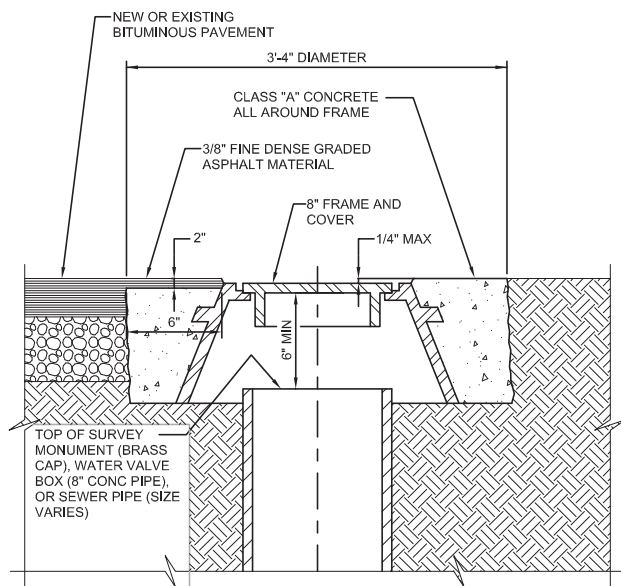
1. MASTIC COAT THE VALVE. TAPE WRAP THE LATERAL PIPING.
2. PROVIDE MECHANICAL RESTRAINT AT ALL MJ CONNECTIONS.



B DUAL 3" VACUUM RELIEF VALVE
SCALE: NTS

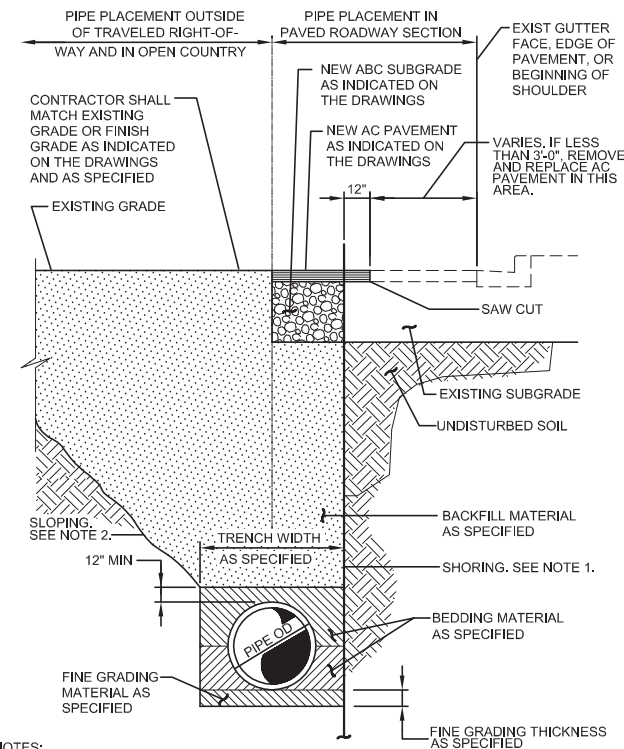
BID SET				DESIGNED AP	DISCIPLINE ENGINEER	PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 12:53:55-07007	PROJECT MANAGER JONATHAN P. MARSHALL No. 73265 CIVIL STATE OF CALIFORNIA	 carollo Engineers...Working Wonders With Water™	 Marina Coast Water District	REGIONAL URBAN WATER AUGMENTATION PROJECT		VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10		
				DRAWN LGD						DRAWING NO. C-45					
				CHECKED KVA / GWS											SHEET NO. 53 OF 93
				DATE MAY 2017											
REV	DATE	BY	DESCRIPTION												

Last Created by: 4-30-17 04:29pm BHawes



C040 GRADE ADJUSTMENT FOR WATER VALVE, SURVEY MONUMENT, OR SEWER CLEANOUT FRAME

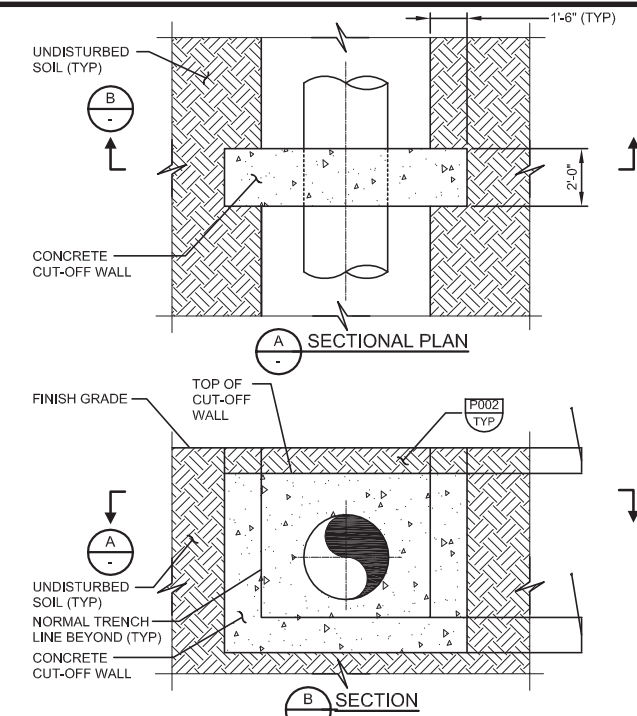
08/01/05



- NOTES:**
- SEE SPECIFICATIONS FOR SHORING REQUIREMENTS.
 - SEE SPECIFICATIONS FOR SLOPING REQUIREMENTS.

P002 PIPE INSTALLATION AND PAVEMENT REPLACEMENT

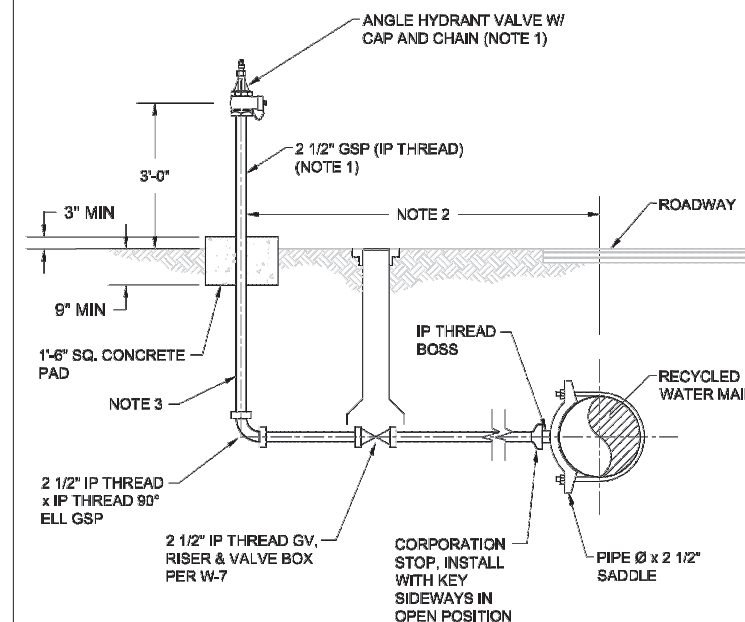
09/06/13



- NOTES:**
- BRACE CUT-OFF WALL UNTIL BACKFILL IS PLACED.
 - KEEP BACKFILL DEPTH EQUAL ON BOTH SIDES OF CUT-OFF WALL AS TRENCH IS BACKFILLED.
 - DO NOT LOCATE PIPE JOINTS IN CUT-OFF WALL.
 - CLEAN PIPE WALL WITHIN CUTOFF WALL FOR GOOD BOND.

P014 PIPE TRENCH CONCRETE CUT-OFF WALL

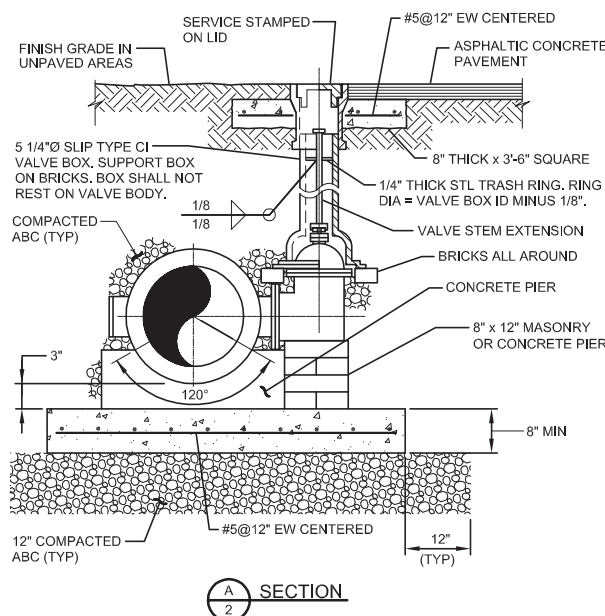
03/24/15



- NOTES:**
- ALL ABOVE GROUND PIPING SIGNS AND VALVES SHALL BE TNEMEC N69-14SF PAINTED SAFETY PURPLE (PANTONE #512).
 - DISTANCE VARIES, SEE PLANS FOR INSTALLATION LOCATIONS AND DISTANCES FROM MAIN.
 - TAPE WRAP ALL BELOW GRADE GSP.

P021 FILL STATION

NTS

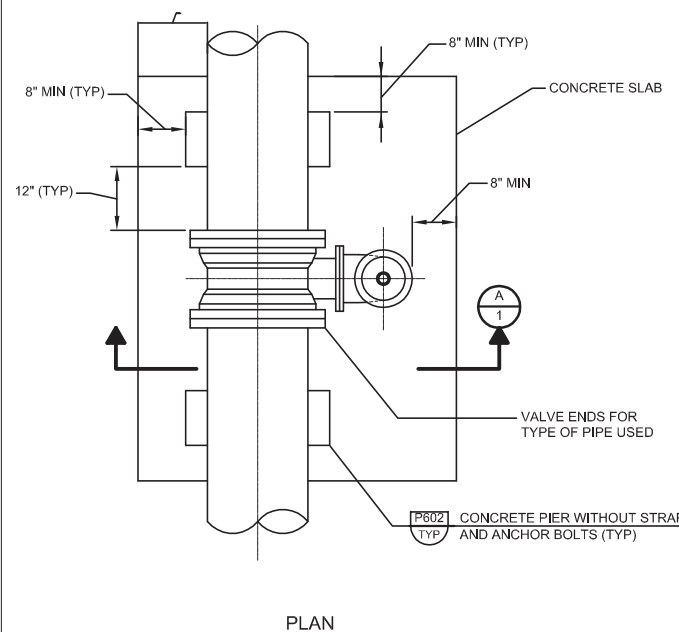


- NOTES:**
- ALL BURIED VALVES SHALL BE PROVIDED WITH EXTENSION STEM OPERATOR WITH 2" SQUARE AWWA NUT WITHIN 36" OF VALVE BOX COVER. INDICATE ON NUT DIRECTION OF ROTATION TO OPEN VALVE.
 - COAT BURIED PIPE AND VALVE BOX PER SPECIFICATIONS.
 - CLEAN VALVE BOX OF ALL DEBRIS AND SOIL.

P026 BURIED BUTTERFLY VALVE

SHEET 1 OF 2

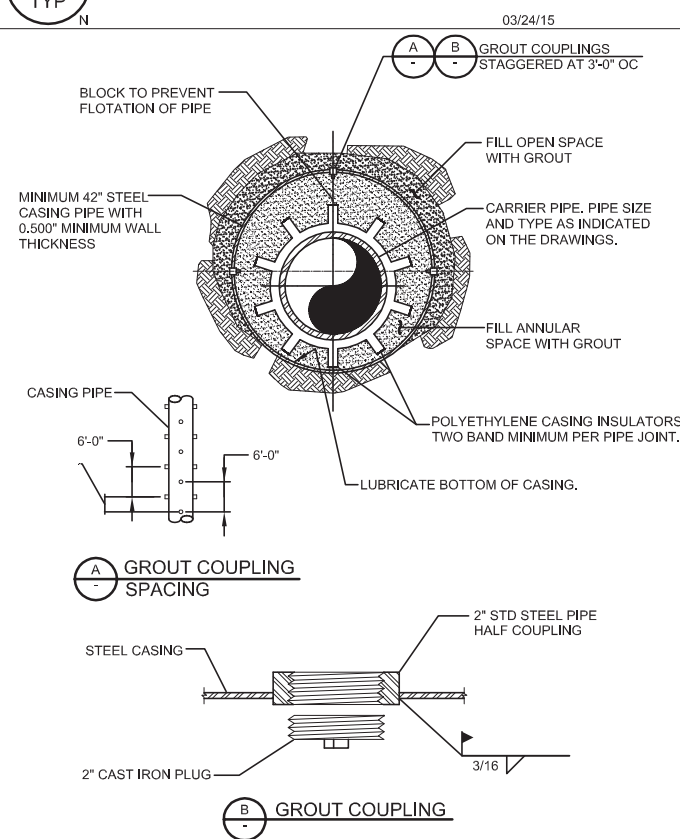
11/30/08



P026 BURIED BUTTERFLY VALVE

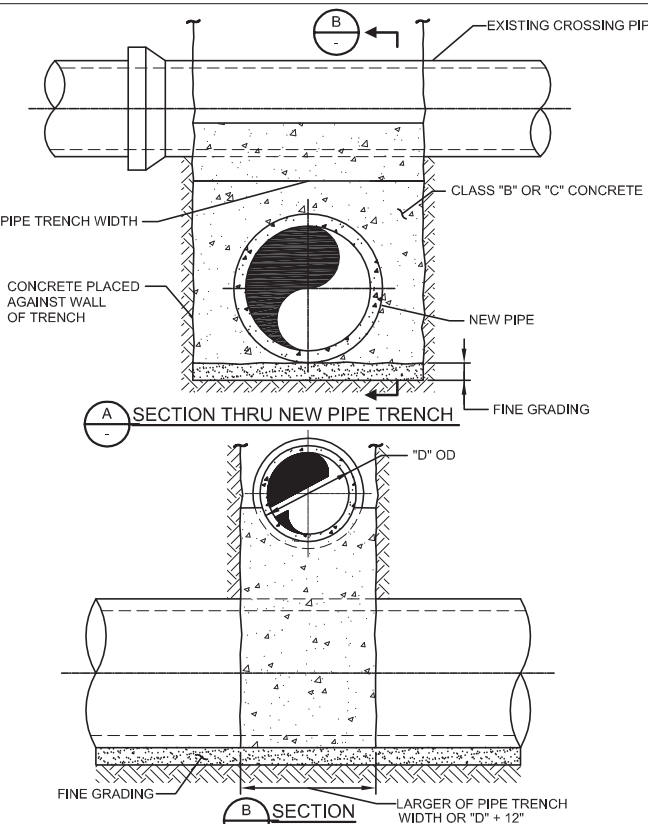
SHEET 2 OF 2

11/30/08



P030 PIPE IN JACKED STEEL CASING - GROUT FILL

03/01/10



P048 PIPE SUPPORT ACROSS TRENCH

03/02/15

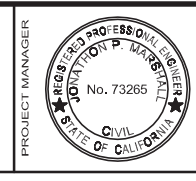
Last Checked by: 5-01-17 10:44am Bbhawes

REV	DATE	BY	DESCRIPTION

DESIGNED	RRH
DRAWN	SJB
CHECKED	RH
DATE	MAY 2017

DISCIPLINE ENGINEER	
PROJECT ENGINEER	

Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:26:32-07007



REGIONAL URBAN WATER AUGMENTATION PROJECT
RECYCLED WATER PIPELINE
CIVIL
PIPELINE TYPICAL DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.	7568A.10
DRAWING NO.	TP-01
SHEET NO.	53A OF 93

GENERAL NOTES

- CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE STARTING WORK AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- CONTRACTOR SHALL POTHOLE AND VERIFY VERTICAL AND HORIZONTAL LOCATIONS OF EXISTING UTILITIES AT LEAST 7 DAYS IN ADVANCE OF CONSTRUCTION OPERATIONS TO ALLOW FOR MINOR GRADE ADJUSTMENTS WITHOUT DELAYING INSTALLATION.
- THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS, SURVEY OF VISIBLE ABOVE GROUND SURFACE FEATURES AT THE TIME OF SURVEY, AND LIMITED POTHOLING AS SHOWN ON THE PLANS. THIS DOES NOT GUARANTEE THE ACCURACY, COMPLETENESS, LOCATION, OR THE EXISTENCE OR NON-EXISTENCE OF ANY UTILITY PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THE CONTRACTOR IS REQUIRED TO TAKE ALL DUE PRECAUTIONARY MEANS NECESSARY TO PROTECT THOSE UTILITY LINES NOT SHOWN ON THESE PLANS.
- AN ENCROACHMENT PERMIT FROM THE APPLICABLE JURISDICTIONAL AGENCY IS REQUIRED PRIOR TO ANY WORK WITHIN PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL ADHERE TO ALL REQUIREMENTS OF ALL ENCROACHMENT PERMITS ISSUED.
- UNDER THE DIRECTION OF A SURVEYOR LICENSED IN THE STATE OF CALIFORNIA, THE CONTRACTOR SHALL RESET ALL MONUMENTATION DISTURBED OR REMOVED DURING CONSTRUCTION ACTIVITIES.
- WHERE THE RECYCLED WATERLINE CROSSES EXISTING UTILITIES, THE RECYCLED WATERLINE SHALL BE INSTALLED A MINIMUM OF 12" VERTICALLY FROM THE EXISTING UTILITY. THE RECYCLED WATERLINE MUST CROSS BELOW EXISTING WATERLINES AND ABOVE EXISTING SANITARY SEWER LINES - SEE MCWD TYP DET W-16 FOR ADDITIONAL REQUIREMENTS.
- ANY CONTRACTOR PERFORMING WORK ON THIS PROJECT SHALL BECOME FAMILIAR WITH THE SITE AND SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES RESULTING DIRECTLY OR INDIRECTLY FROM HIS OPERATIONS.
- DISPOSE OF ALL SURPLUS EXCAVATION MATERIALS IN CONFORMANCE WITH LOCAL CODES & REGULATIONS.
- PRIOR TO ANY CONNECTION TO AN EXISTING UTILITY, THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND WITH THE CORRESPONDING AGENCIES.

BASIS OF BEARINGS

COORDINATES SHOWN HEREON ARE GRID BEARINGS PER THE CALIFORNIA COORDINATE SYSTEM, NAD 83, ZONE 4 (EPOCH 2002.00), AS DETERMINED BY GPS OBSERVATIONS AND THE NATIONAL GEODETIC SURVEYS (NGS) ONLINE POSITIONING USER SERVICE (OPUS). ALL DISTANCES ARE GRID DISTANCES. AERIAL TOPOGRAPHY FLOWN AUGUST-SEPTEMBER 2006.

BENCHMARK:
ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). A PUBLISHED NAVD 88 ELEVATION OF 145.94 FEET FOR THE NGS BENCHMARK "L 813 RESET" (PID GU2130) WAS HELD AS THE PRIMARY VERTICAL BENCHMARK FOR THE PROJECT.

CONTROL POINT SCHEDULE

CONTROL POINTS WERE SURVEYED IN 2006 AND SOME OR ALL OF THE CONTROL POINTS MAY NO LONGER EXIST. CONTRACTOR SHALL ESTABLISH ITS OWN SURVEY CONTROL AND CONTROL POINTS, AS NEEDED TO COMPLETE THE WORK, USING A CALIFORNIA LICENSED SURVEYOR.

PNT	NORTHING	EASTING	ELEV	DESC.
19103	2125194.6960	5740401.2660	481.9820	BEST
19104	2125329.3140	5740278.9840	483.8590	RBR/CAP
19105	2125290.9710	5740180.9040	486.3650	RBR/CAP
19106	2125158.0410	5740213.8580	484.4970	RBR/CAP

ABBREVIATIONS

ABC	AGGREGATE BASE COURSE	FLEX	FLEXIBLE
BCW	BARE COPPER WIRE	GV	GATE VALVE
BFV	BUTTERFLY VALVE	MH	MANHOLE
C	CONDUIT	PCS	PVC COATED GALVANIZED STEEL CONDUIT
CL	CLASS	PW	POTABLE WATER
CL	CENTERLINE	(R)	RESTRAINED FITTING
C.O.	CLEANOUT	RDCR	REDUCER
CP	CONTROL PANEL	RW	RECLAIMED WATER
DIP	DUCTILE IRON PIPE	SCV	SWING CHECK VALVE
DMJT	DISMANTLING JOINT	SD	STORM DRAIN
ECC	ECCENTRIC	TSP	TWITED SHREDDED PAIR

IDENTIFICATION SYMBOLS

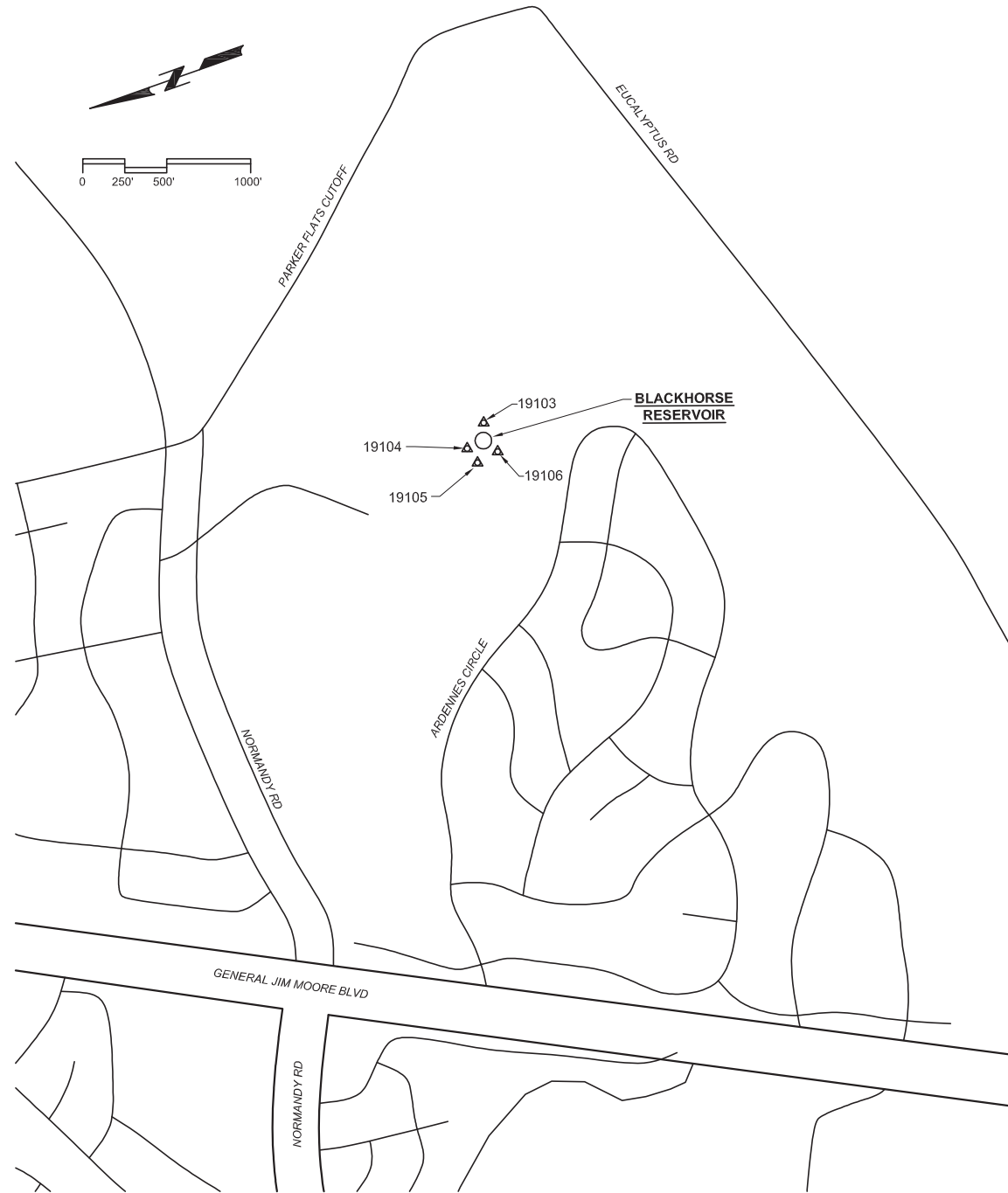
- EQUIPMENT TAG NUMBER
- EQUIPMENT/INSTRUMENT LOCATOR
- INDICATES KEYNOTE 1 (PERTAINS ONLY TO SHEET WHERE NOTE IS FOUND)

CIVIL SYMBOLS

- NEW STRUCTURES OR EDGE OF PAVEMENT
- EXISTING STRUCTURES (SCREENED)
- NEW PIPING (TRIPLE LINES)
- NEW PIPING (SINGLE LINE)
- EXISTING PIPING (TRIPLE LINES) (SCREENED)
- EXISTING PIPING (SINGLE LINE) (SCREENED)
- HIDDEN LINE OR TRAIL EDGE
- CENTER, MONUMENT, OR SURVEY LINE
- GUARDRAIL
- EXISTING CONTOURS (SCREENED)
- NEW CONTOURS
- EXISTING FENCE (SCREENED)
- PROPERTY LINE OR RIGHT OF WAY
- AGGREGATE MATERIAL
- ASPHALT PAVING
- CONTROL POINT

MECHANICAL SYMBOLS

- FLEXIBLE COUPLING ADAPTER
- DISMANTLING JOINT
- ELBOW DOWN
- ECCENTRIC REDUCER TF, BF
- ELBOW, 90 DEGREE
- TEE
- GATE VALVE
- BUTTERFLY VALVE
- SWING CHECK VALVE
- PRIMARY FLOW ELEMENT: X = M - MAGNETIC



DESIGNED JPM	DISCIPLINE ENGINEER	PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:54:38-0700	PROJECT MANAGER REG. EX. PROFESSIONAL ENGINEER JONATHAN P. MARSHALL No. 73285 CIVIL STATE OF CALIFORNIA		MARINA COAST Marina Coast Water District	REGIONAL URBAN WATER AUGMENTATION PROJECT	VERIFY SCALES	JOB NO. 7568A.10
DRAWN BH						BLACKHORSE RECYCLED WATER RESERVOIR	BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO.
CHECKED AP						GENERAL	0 1"	G-02
DATE APRIL 2017						GENERAL NOTES AND SURVEY CONTROL POINTS	IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. 54 OF 93
REV	DATE	BY	DESCRIPTION	FILENAME:				

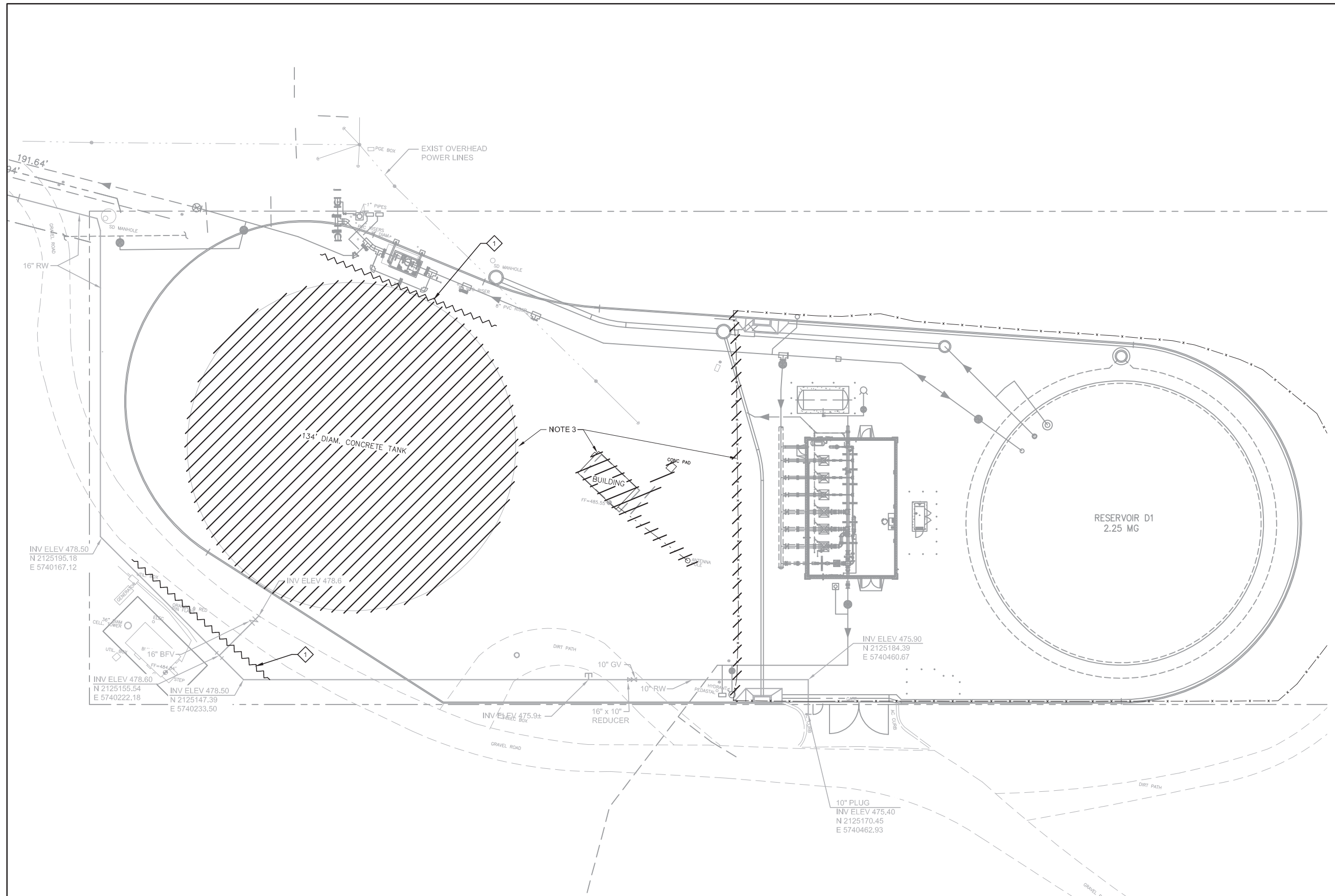
GENERAL NOTES

1. CONTRACTOR SHALL FIELD VERIFY ELEVATION OF ALL EXISTING PIPING AND ELECTRICAL DIRECT BURIED CABLES PRIOR TO CONSTRUCTION. PIPING AND UNDERGROUND INFRASTRUCTURE REMAIN IN SERVICE AT ALL TIMES. PROVIDE SHORING AS REQUIRED AND PROTECT ALL EXISTING UNDERGROUND INFRASTRUCTURE FROM DAMAGE DURING CONSTRUCTION.
2. SEE SPECIFICATION 01140 FOR WORK RESTRICTIONS.
3. SEE SECTION 02222 FOR DESCRIPTION OF ITEMS TO BE DEMOLISHED.

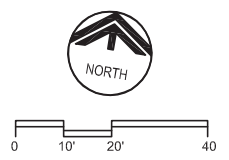
KEY NOTES

1. PROVIDE TEMPORARY SHORING AS REQUIRED TO PROTECT EXISTING UTILITIES DURING DEMOLITION OF EXISTING TANK AND DURING EXCAVATION FOR NEW TANK SUB-GRADE. SEE DRAWING S-02 FOR NEW TANK SUB-GRADE REQUIREMENTS. SHORING SHALL BE IN ACCORDANCE WITH SECTION 02260.

LEGEND



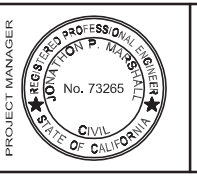
PLAN
SCALE: 1" = 20'



REV	DATE	BY	DESCRIPTION

DESIGNED SAS	DISCIPLINE ENGINEER
DRAWN LGD	
CHECKED RJH	
DATE APRIL 2017	

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:55:47-07'00'

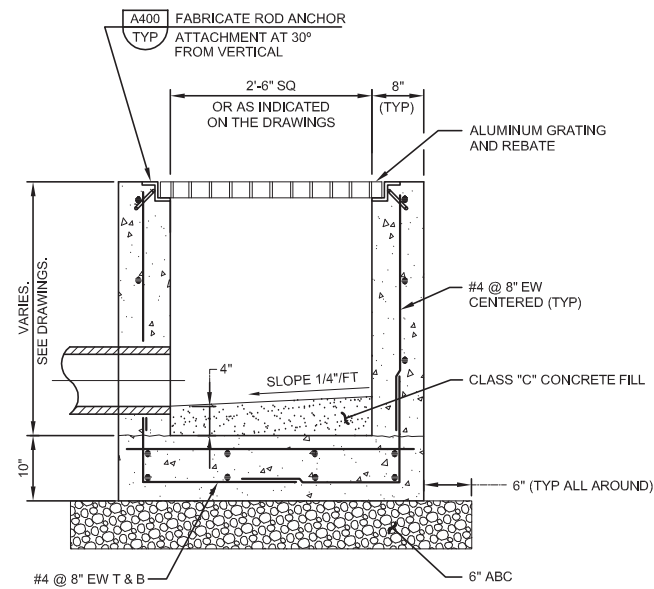


Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
CIVIL
EXISTING SITE PLAN AND DEMOLITION PLAN

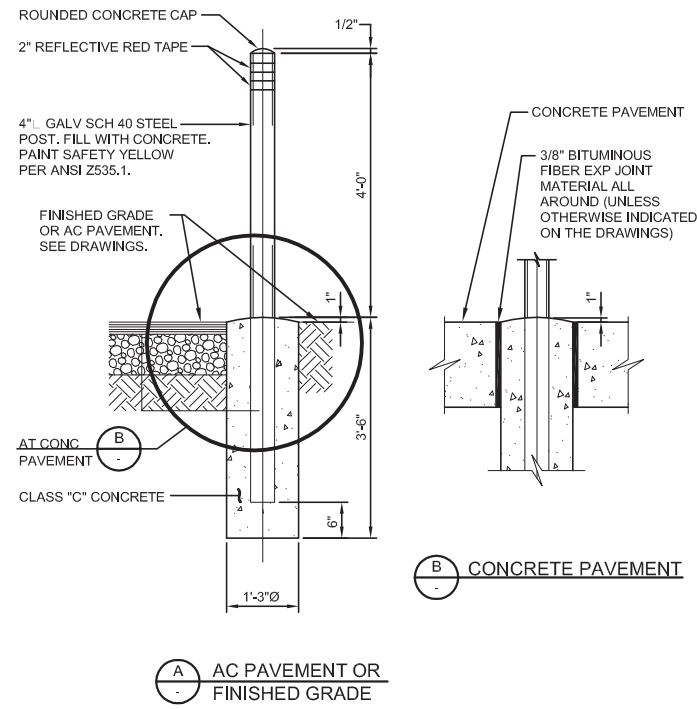
VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. D-01 SHEET NO. 55 OF 93
--	---

FILENAME:



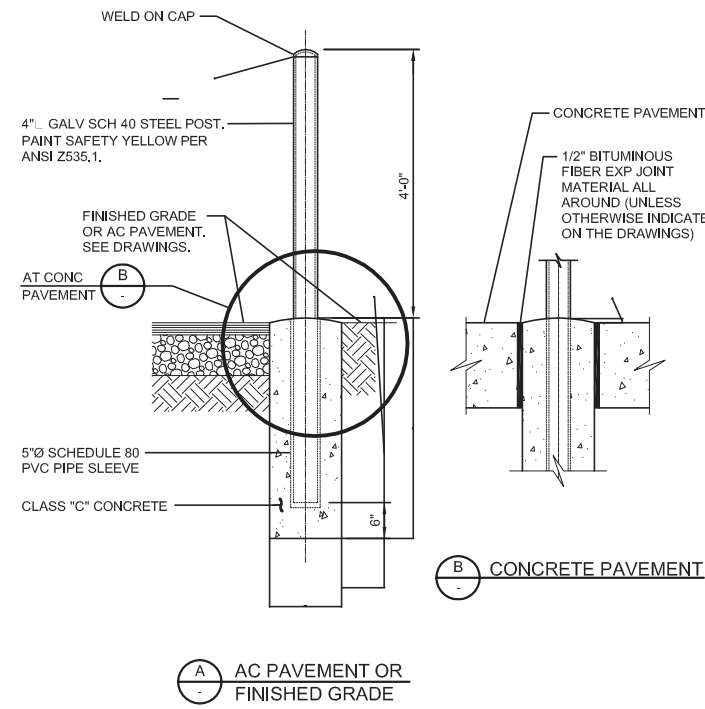
C002 CATCH BASIN
TYP

SHEET 1 OF 4 06/25/15



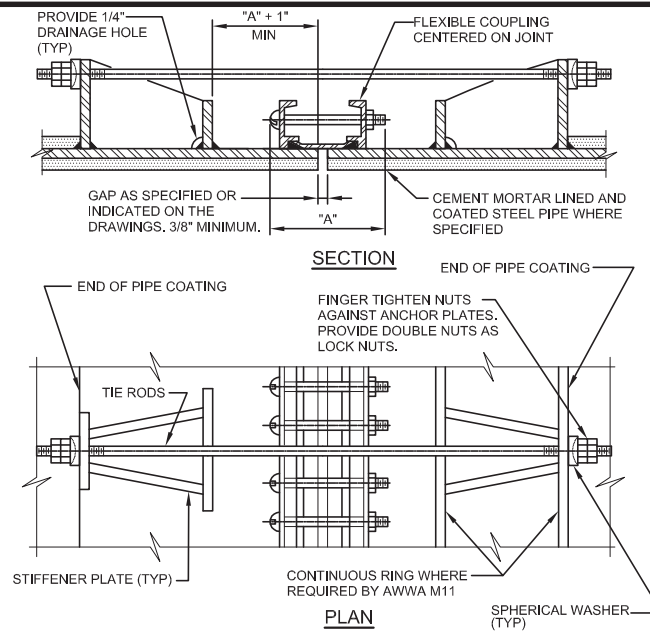
C160 GUARD POST
TYP

01/13/14



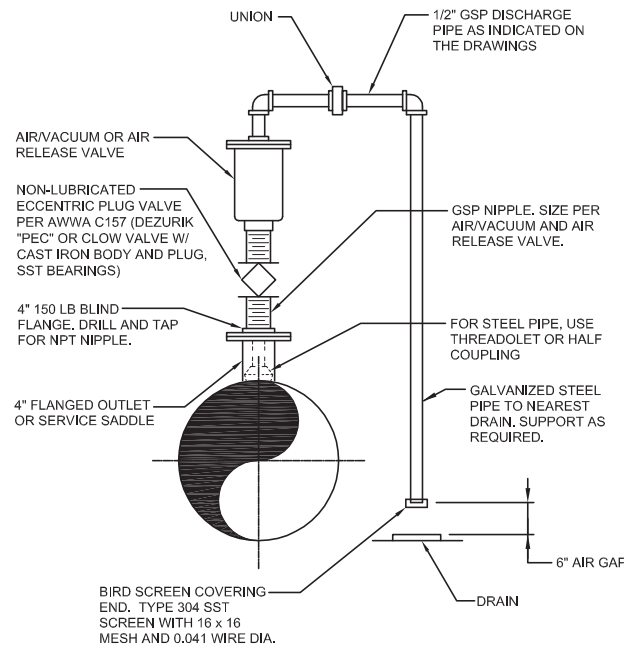
C161 REMOVABLE GUARD POST
TYP

01/13/14



P112 STEEL PIPE FLEXIBLE COUPLING TIE DOWN
TYP

04/09/15



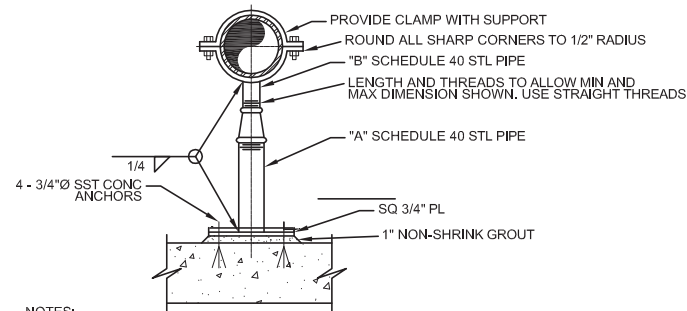
- NOTES:
1. VALVE SIZE SHALL BE AS INDICATED ON THE DRAWINGS.
 2. SERVICE TAP AND PLUG VALVE SHALL MATCH VALVE INLET SIZE.

P240 AIR VACUUM AND AIR RELEASE FOR 3" AND SMALLER VALVE ASSEMBLY
TYP

03/01/10

ADJUSTABLE PIPE SADDLE SUPPORT SCHEDULE (INCHES)

SIZE OF SUPPORTED PIPE **	PIPE SIZE "A"	PIPE SIZE "B"	"C"	"D"	
				MINIMUM	MAXIMUM
2 1/2 *	2 1/2	1 1/2	12	8	13
3	2 1/2	1 1/2	12	8 1/2	13 1/2
3 1/2	2 1/2	1 1/2	12	8 1/2	13 1/2
4	3	2 1/2	12	9 1/2	14
6	3	2 1/2	12	10 1/2	15 1/2
8	3	2 1/2	12	11 1/2	16 1/2
10	3	2 1/2	12	13 1/2	18 1/2
12	3	2 1/2	12	15	19 1/2
14	4	3	12	16 1/2	20 1/2
16	4	3	12	17 1/2	22 1/2
18	6	3 1/2	14	19 1/2	24
20	6	3 1/2	14	21	25 1/2
24	6	4	14	23 1/2	28 1/2
30	6	4	14	27	31 1/2
32	6	4	14	28 1/2	32 1/2
36	6	4	14	30 1/2	34 1/2



- NOTES:
1. HOT-DIP GALVANIZED SUPPORT AFTER FABRICATION.
 2. * = USE 2 1/2" SUPPORTS FOR PIPES LESS THEN 2 1/2"Ø.
 3. ** = NOMINAL PIPE SIZE.

P624 ADJUSTABLE PIPE SUPPORT
TYP

SHEET

09/04/13

REV	DATE	BY	DESCRIPTION

DESIGNED	RRH
DRAWN	SJB
CHECKED	RH
DATE	APRIL 2017

DISCIPLINE ENGINEER

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Date: 2017.05.01 14:26:02-0700



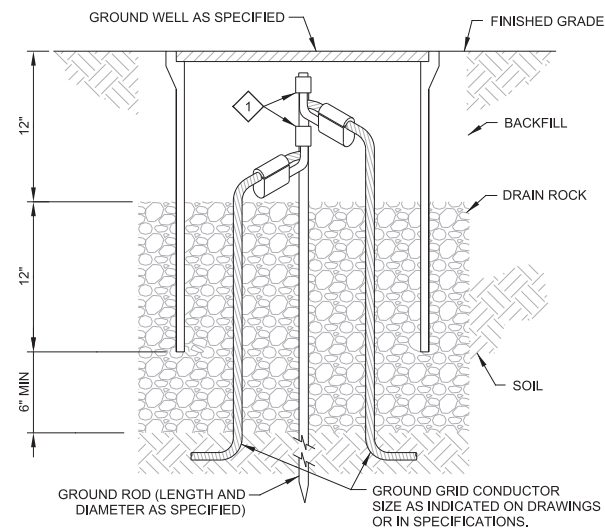
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
CIVIL
CIVIL TYPICAL DETAILS - I

VERIFY SCALES
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
DRAWING NO. TC-01
SHEET NO. 56 OF 93

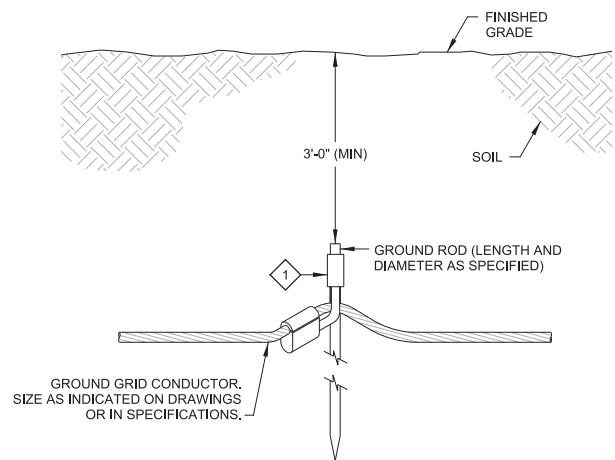
FILENAME:



KEY NOTES:

1 GROUND ROD TO GROUND GRID CROSS CONNECTOR. SIZE FOR ROD AND CABLE PER CONNECTOR MANUFACTURERS GUIDELINES.

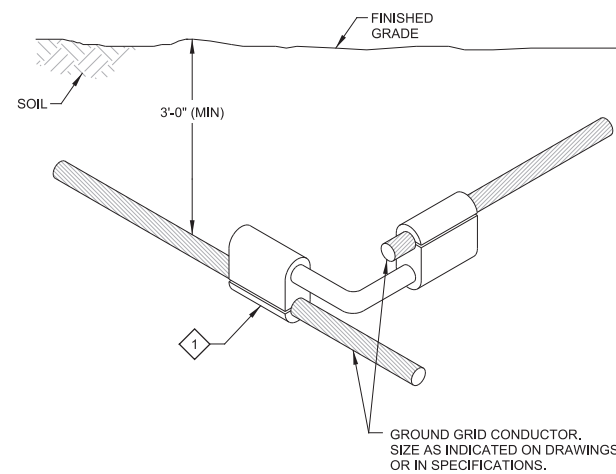
EG001 GROUND ROD AND GROUNDWELL
TYP COMPRESSION CONNECTION



KEY NOTES:

1 GROUND ROD TO GROUND GRID CROSS CONNECTOR. SIZE FOR ROD AND CABLE PER CONNECTOR MANUFACTURERS GUIDELINES.

EG002 GROUND ROD
TYP COMPRESSION CONNECTION



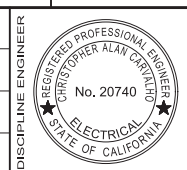
KEY NOTES:

1 GROUND GRID CROSS CONNECTOR. SIZE FOR CABLE PER CONNECTOR MANUFACTURERS GUIDELINES.

EG101 COPPER GROUNDING CABLE CONNECTION
TYP COMPRESSION CONNECTION

REV	DATE	BY	DESCRIPTION

DESIGNED	CAC
DRAWN	JRS
CHECKED	MJP
DATE	APRIL 2017



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Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:25:49-07'00'

PROJECT ENGINEER
Digitally signed by Christopher Carvalho
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:37:51-07'00'



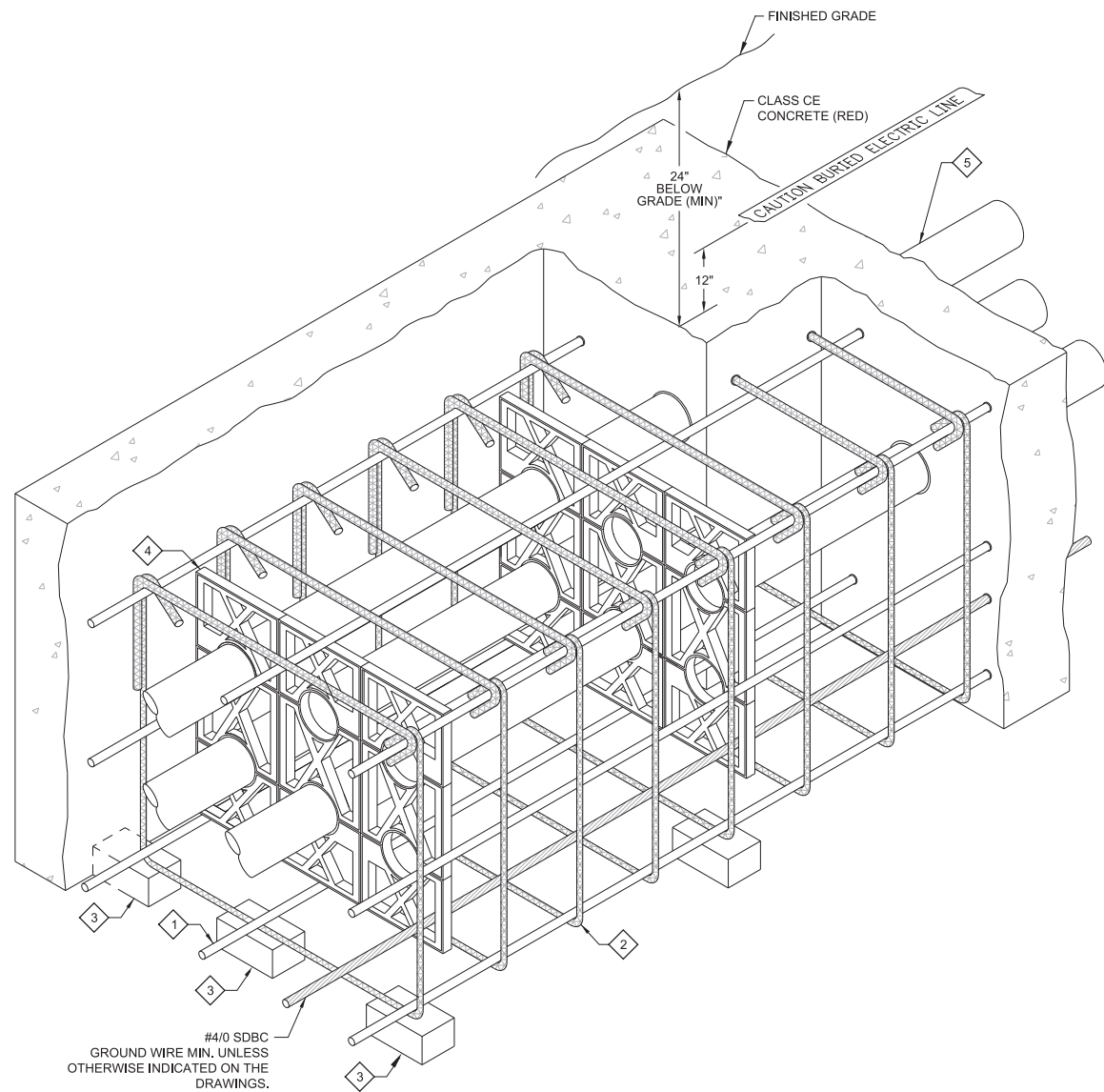
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
ELECTRICAL
TYPICAL DETAILS - I

VERIFY SCALES
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0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
DRAWING NO. TE-01
SHEET NO. 57 OF 93

FILENAME:



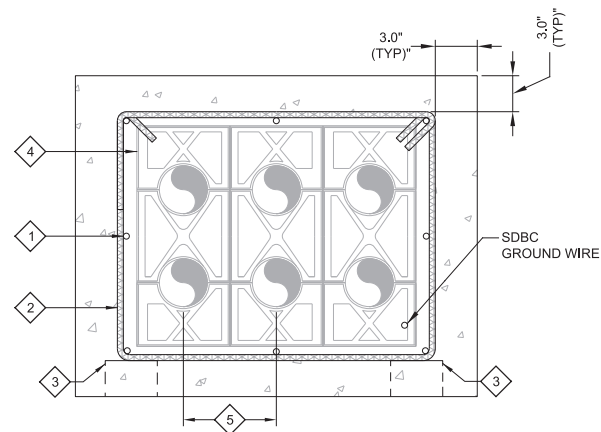
#4/0 SDBC
GROUND WIRE MIN. UNLESS
OTHERWISE INDICATED ON THE
DRAWINGS.

NOTES:

- DIMENSIONS SHOWN ARE MINIMUM.
- ADJUST SIZE OF DUCT BANK BASED UPON THESE GUIDELINES AND THE DUCT BANK SPECIFICATION TO ACCOMMODATE ACTUAL NUMBER OF CONDUITS WITHIN DUCT BANK. REFER TO DUCT BANK SECTIONS, AND CONDUIT SCHEDULE FOR NUMBER AND SIZE OF CONDUITS.
- MAKE PROVISIONS TO PREVENT CONDUIT FLOTATION DURING CONCRETE PLACEMENT & CURING.

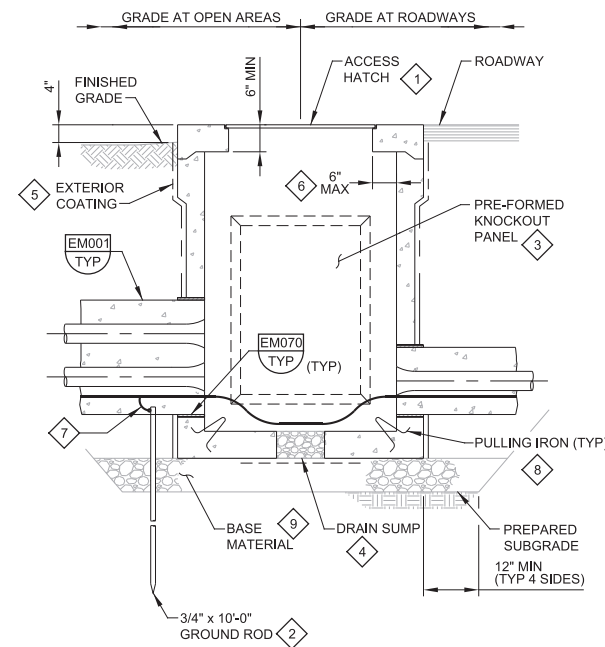
KEY NOTES:

- #4 REINFORCING STEEL 12" MAXIMUM ON CENTER AROUND ENTIRE PERIMETER OF DUCT BANK.
- #4 REINFORCING STEEL STIRRUPS MAXIMUM 24" ON CENTER ALONG LENGTH OF DUCT BANK.
- MINIMUM OF TWO PRECAST CONCRETE BAR SUPPORTS PLACED UNDER A STIRRUP AT EACH PVC CONDUIT SPACER ALONG LENGTH OF DUCT BANK. PROVIDE PRECAST BAR SUPPORTS AT INTERVALS OF 24" TO REDUCE DEFLECTION.
- PVC CONDUIT SPACERS ON 8'-0" CENTERS (MAXIMUM) LOCATE 12" FROM STIRRUPS.
- REFER TO DUCT BANK SECTIONS AND CONDUIT SCHEDULES FOR CONDUIT REQUIREMENTS.



EM001 REINFORCED CONCRETE DUCT BANK
TYP

EM056 ELECTRICAL HANDHOLE
TYP PRECAST CONCRETE W/HATCH

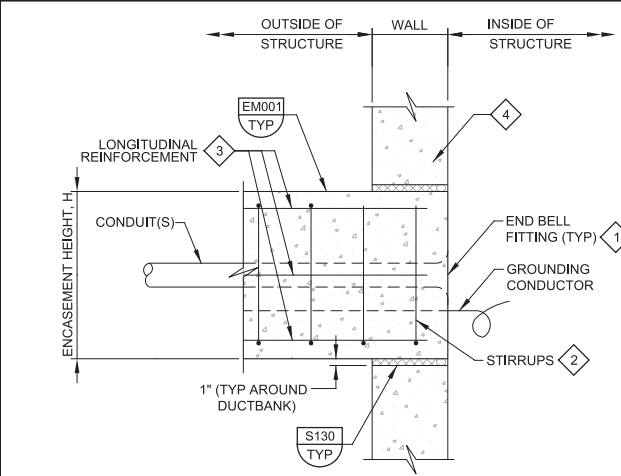


NOTES:

- PROVIDE MINIMUM INTERIOR DIMENSIONS AS SHOWN IN THE ELECTRICAL HANDHOLE AND MANHOLE SCHEDULE (MAXIMUM INTERIOR DIMENSIONS: 48" WIDE x 48" LONG x 48" DEEP)
- BOND ALL METALLIC ITEMS INSIDE HANDHOLE TO GROUND ROD USING #4 AWG BARE COPPER CABLE.
- SEE DRAWINGS FOR ORIENTATION, NUMBER, AND SIZE OF DUCT BANKS AT EACH HANDHOLE.

KEY NOTES:

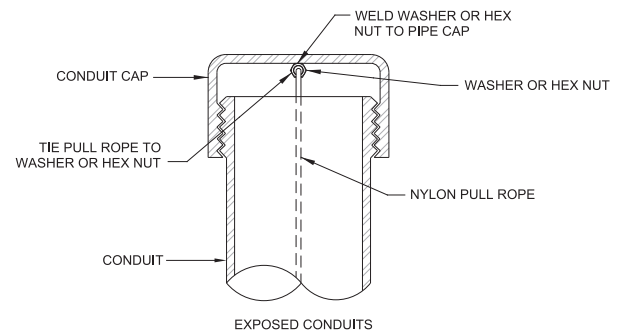
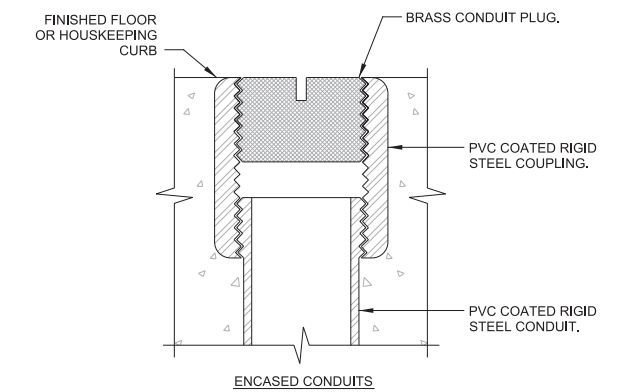
- SEE THE MANHOLE AND HANDHOLE SCHEDULE FOR REQUIRED LOAD RATING OF HATCH.
- BOND DUCT BANK GROUND CABLE TO GROUND ROD. REFER TO THE SPECIFICATIONS FOR CONNECTION REQUIREMENTS.
- INSTALL DUCT BANKS ONLY THROUGH CAST-IN OPENINGS OR PREFORMED KNOCKOUT PANELS. PROVIDE KNOCKOUTS ON EACH WALL AROUND HANDHOLE.
- PROVIDE MINIMUM 4 INCH DIAMETER, GRAVEL FILLED PENETRATION THROUGH FLOOR OF HANDHOLE. SET SUMP OPENING OVER MINIMUM 18" SQUARE FILTER FABRIC TO ISOLATE GRAVEL FROM BASE MATERIAL BELOW.
- COAT EXTERIOR WALLS BELOW GRADE WITH BITUMINOUS DAMPROOFING.
- MAXIMUM TOP SLAB OVERHANG IS TYPICAL AROUND 4 SIDES OF HANDHOLE.
- GROUNDING CABLE CONNECTION. REFER TO THE SPECIFICATIONS FOR CONNECTION REQUIREMENTS.
- PROVIDE ONE PULLING IRON ON EACH WALL OF HANDHOLE.
- BASE MATERIAL: PROVIDE MIN 12" COMPACTED AGGREGATE BASE COURSE.



KEY NOTES:

- PROVIDE GROUNDING FITTING FOR METALLIC CONDUITS ENTERING MANHOLE. BOND GROUNDING FITTING TO DUCTBANK GROUNDING CONDUCTOR.
- FOR FIRST 12'-0" FROM INSIDE FACE OF STRUCTURE, STIRRUP SPACING IN INCHES = (H-4)/2 WHERE H = CONCRETE ENCASEMENT HEIGHT IN INCHES.
- ADDITIONAL #4 x 12'-0" @ 12" ON ALL FOUR FACES OF ENCASEMENT. ALTERNATE WITH TYPICAL REINFORCEMENT FOR 6" SPACING.
- PROVIDE ADDITIONAL REINFORCEMENT AROUND OPENING AS REQUIRED. FOR CAST-IN-PLACE STRUCTURES, PROVIDE REINFORCEMENT PER S180 TYP

EM070 ENCASED CONDUITS AT MANHOLES OR STRUCTURES - W/O WATERSTOP
TYP



NOTES:

- PROVIDE 2" MIN CLEAR BETWEEN ADJACENT CONDUITS

EM105 SPARE CONDUIT DETAIL
TYP

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DATE APRIL 2017



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Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:37:34-07'00'



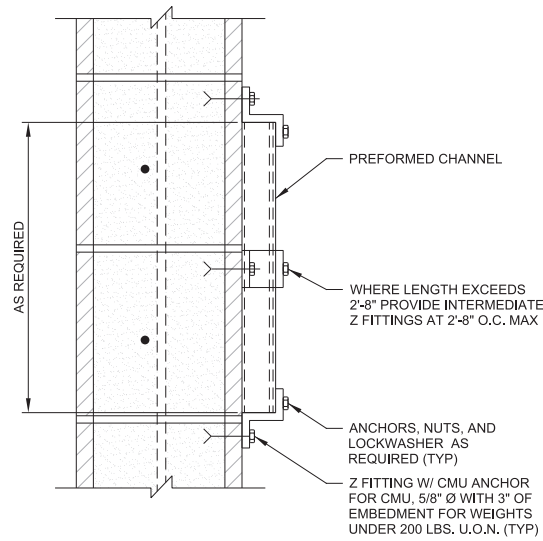
carollo **Marina Coast Water District**

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
ELECTRICAL
TYPICAL DETAILS - II

VERIFY SCALES
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0 1"
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JOB NO. 7568A.10
DRAWING NO. TE-02
SHEET NO. 58 OF 93

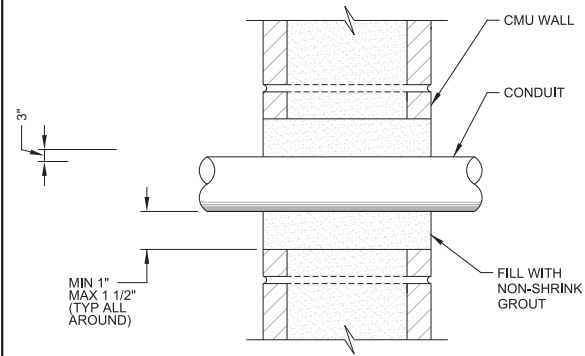
FILENAME:



NOTES:

1. THIS DETAIL TYPICAL FOR BOTH VERTICAL AND HORIZONTAL MOUNTING.
2. SUPPORTS TO BE SPACED IN ACCORDANCE WITH NEC REQUIREMENTS. CONCRETE ANCHORS FOR CMU SHALL BE PER THE SPECIFICATIONS.

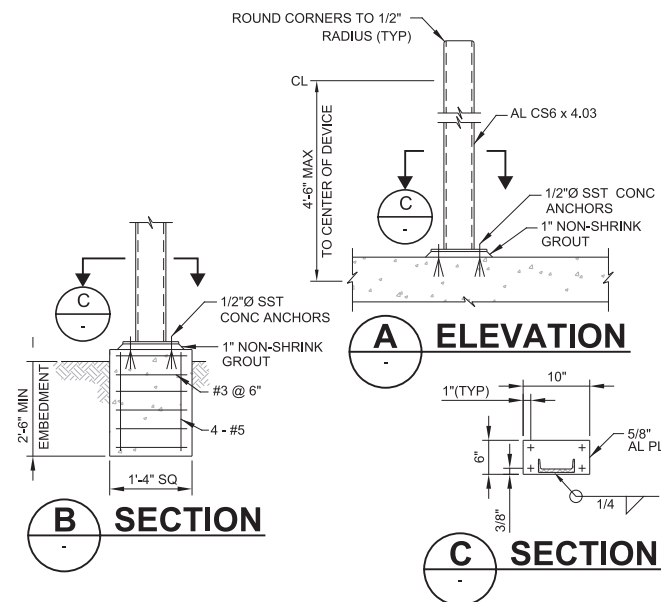
EM170 PREFORMED CHANNEL SUPPORT
TYP FULLY GROUTED CMU WALL



NOTES:

1. PROVIDE NON-DESTRUCTIVE TESTING TO DETERMINE LOCATIONS OF REINFORCEMENT. MAINTAIN MIN 2" CLEAR BETWEEN CORE DRILLED OPENING AND REINFORCEMENT.
2. ROUGHEN SURFACE OF OPENING TO A 1/4" AMPLITUDE AND APPLY EPOXY CEMENT BONDING AGENT IMMEDIATELY PRIOR TO GROUTING.
3. PROVIDE 8" MINIMUM CENTER-TO-CENTER SPACING FOR CONDUITS.

EM173 CORE HOLE PENETRATION
TYP FULLY GROUTED CMU WALL



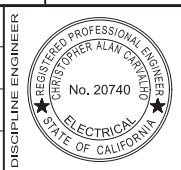
NOTES:

1. WHERE SEPARATE FOUNDATION IS REQUIRED, SEE SECTION B.
2. COAT ALUMINUM SURFACES IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
3. USE STAINLESS STEEL FASTENERS FOR MOUNTING DEVICES.
4. WEIGHT OF DEVICE(S) SHALL NOT EXCEED 100 POUNDS.

EM201 DEVICE SUPPORT AND MOUNTING
TYP

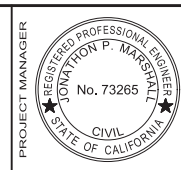
REV	DATE	BY	DESCRIPTION

DESIGNED CAC
DRAWN JRS
CHECKED MJP
DATE APRIL 2017



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Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:24:49-07'00'

PROJECT ENGINEER
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Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:37:19-07'00'



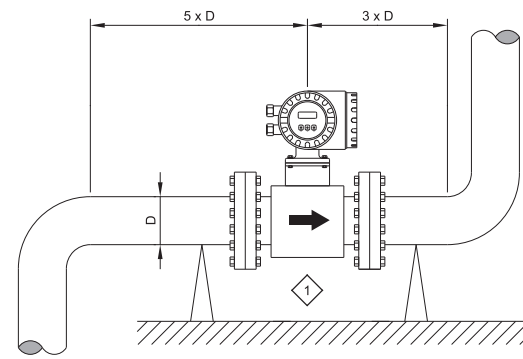
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
ELECTRICAL
TYPICAL DETAILS - III

VERIFY SCALES
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JOB NO.
7568A.10
DRAWING NO.
TE-03
SHEET NO.
59 OF 93

FILENAME:



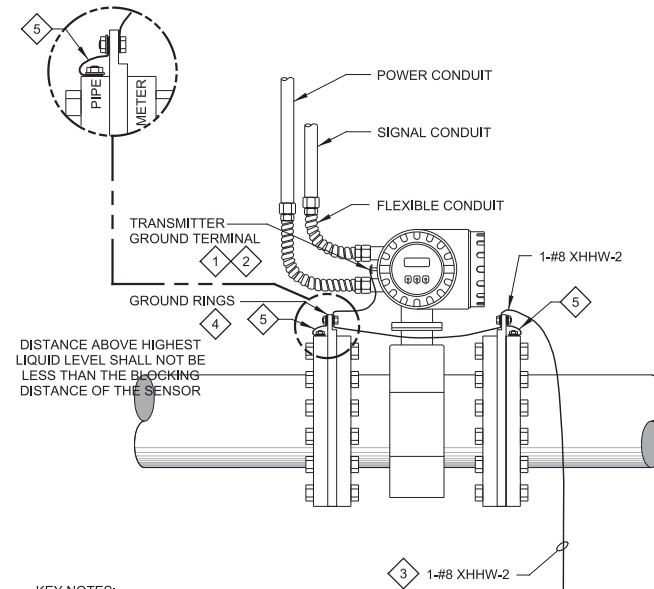
NOTES:

1. FOLLOW MANUFACTURER'S RECOMMENDED MAXIMUM TORQUE SETTINGS. DO NOT OVER-TORQUE FLANGE BOLTS. OVERTIGHTENING THE FASTENERS WILL DEFORM SEALING FACES OR DAMAGE THE LINE.
2. ALWAYS TIGHTEN FLANGE BOLTS UNIFORMLY AND IN DIAGONALLY OPPOSITE SEQUENCE.
3. MOUNT METER SO THAT IT REMAINS FULLY FLOODED.
4. INSTALL METER SUCH THAT THERE ARE NO PIPE BENDS FOR 5 PIPE DIAMETERS UPSTREAM AND 3 PIPE DIAMETERS DOWNSTREAM OF THE METER.

KEY NOTES:

- 1 PIPE SUPPORTS BY MECHANICAL CONTRACTOR. NO SUPPORTS SHALL BE INSTALLED AT THE METER HOUSING.

NF130 MAGNETIC FLOW MOUNTING DETAIL
TYP

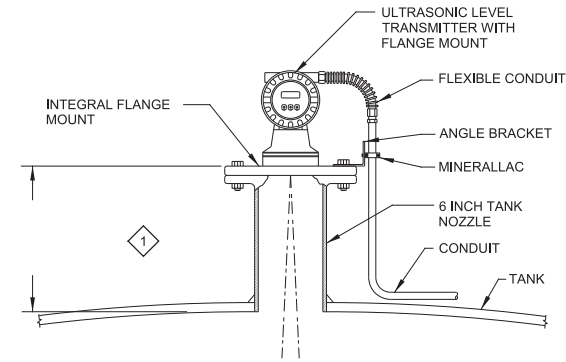


DISTANCE ABOVE HIGHEST LIQUID LEVEL SHALL NOT BE LESS THAN THE BLOCKING DISTANCE OF THE SENSOR

KEY NOTES:

- 1 CONTRACTOR SHALL VERIFY ZERO POTENTIAL BETWEEN FLOW TUBE, EARTH GROUND AND TRANSMITTER GROUND TERMINAL.
- 2 CONNECT TRANSMITTER GROUND TERMINAL TO GROUND RINGS.
- 3 CONNECT METER BODY TO EARTH GROUND POTENTIAL.
- 4 EQUALIZE POTENTIAL VIA GROUND RINGS BETWEEN FLUID AND MAGMETER.
- 5 PROVIDE BONDING JUMPER ON CONDUCTIVE PIPES.

NF136 INTEGRAL MAGNETIC FLOWMETER GROUNDING DETAIL
TYP



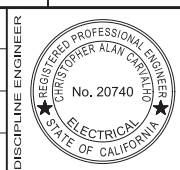
KEY NOTES:

- 1 BLOCKING DISTANCE REQUIREMENT SHALL MEET TRANSDUCER MANUFACTURER REQUIREMENTS.

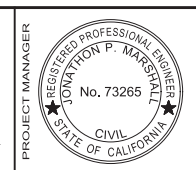
NL170 ULTRASONIC LEVEL TRANSMITTER TANK MOUNTING DETAIL
TYP

REV	DATE	BY	DESCRIPTION

DESIGNED
CAC
DRAWN
JRS
CHECKED
MJP
DATE
APRIL 2017



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PROJECT ENGINEER
Digitally signed by Christopher Carvalho
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:37:07-07'00'



Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
INSTRUMENTATION
TYPICAL DETAILS - I

VERIFY SCALES
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JOB NO.
7568A.10
DRAWING NO.
TN-01
SHEET NO.
60 OF 93

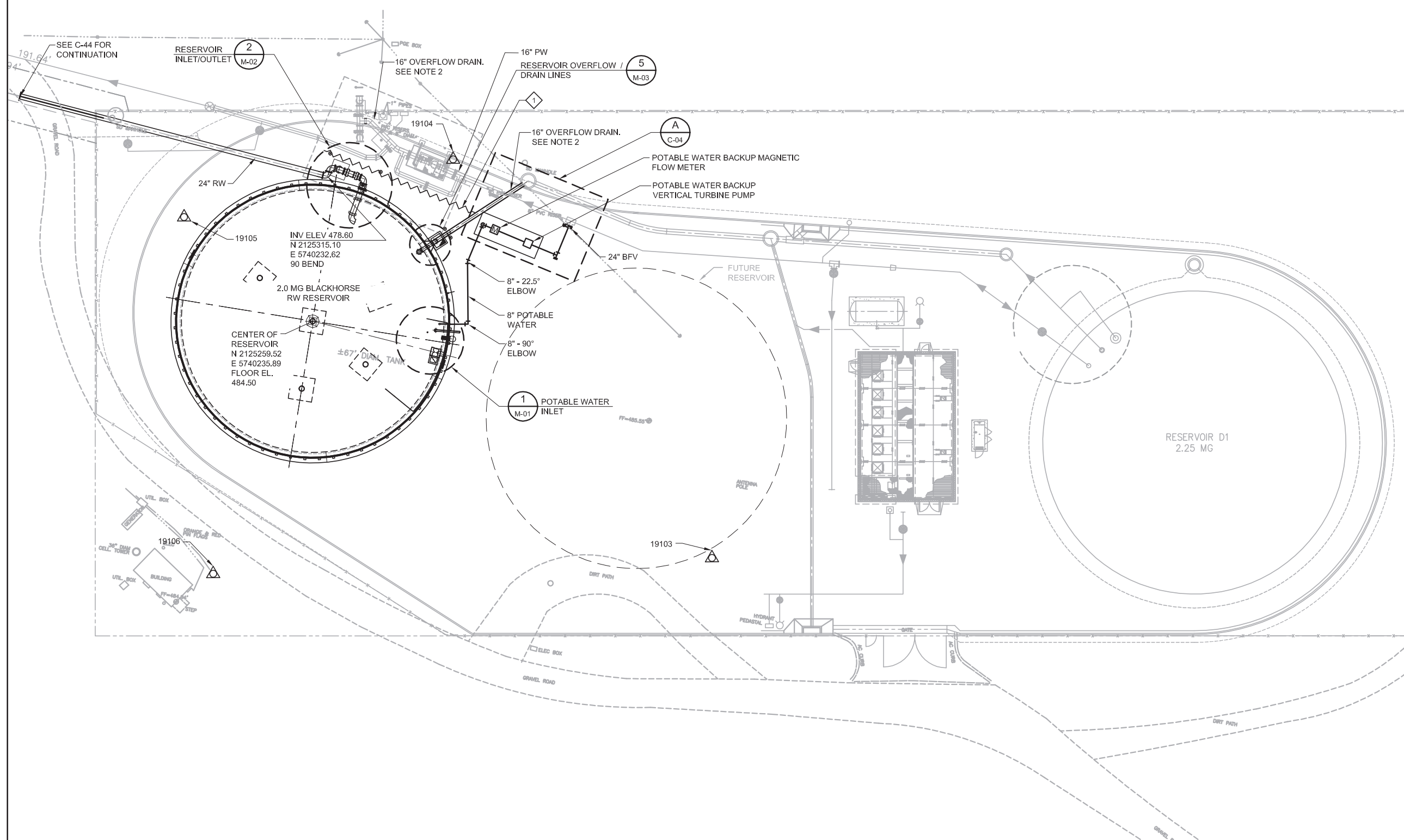
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GENERAL NOTES

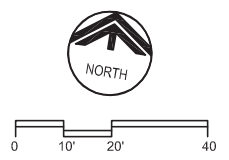
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- SLOPE 16" OVERFLOW/DRAIN PIPE SUCH THAT IT PASSES BELOW THE 24" POTABLE WATER PIPING WITH A MINIMUM OF 12" OF CLEARANCE.

KEY NOTES

- PROVIDE TEMPORARY SHORING AS REQUIRED TO PROTECT EXISTING UTILITIES DURING DEMOLITION OF EXISTING TANK AND DURING EXCAVATION FOR NEW TANK SUB-GRADE. SEE DRAWING S-02 FOR NEW TANK SUB-GRADE REQUIREMENTS. SHORING SHALL BE IN ACCORDANCE WITH SECTION 02266.



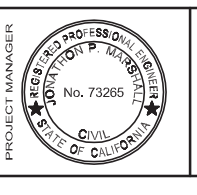
PLAN
SCALE: 1" = 20'



REV	DATE	BY	DESCRIPTION

DESIGNED RRH	DISCIPLINE ENGINEER
DRAWN SJB	
CHECKED BH	
DATE APRIL 2017	

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 12:53:45-0700



Marina Coast Water District

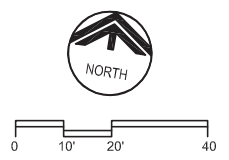
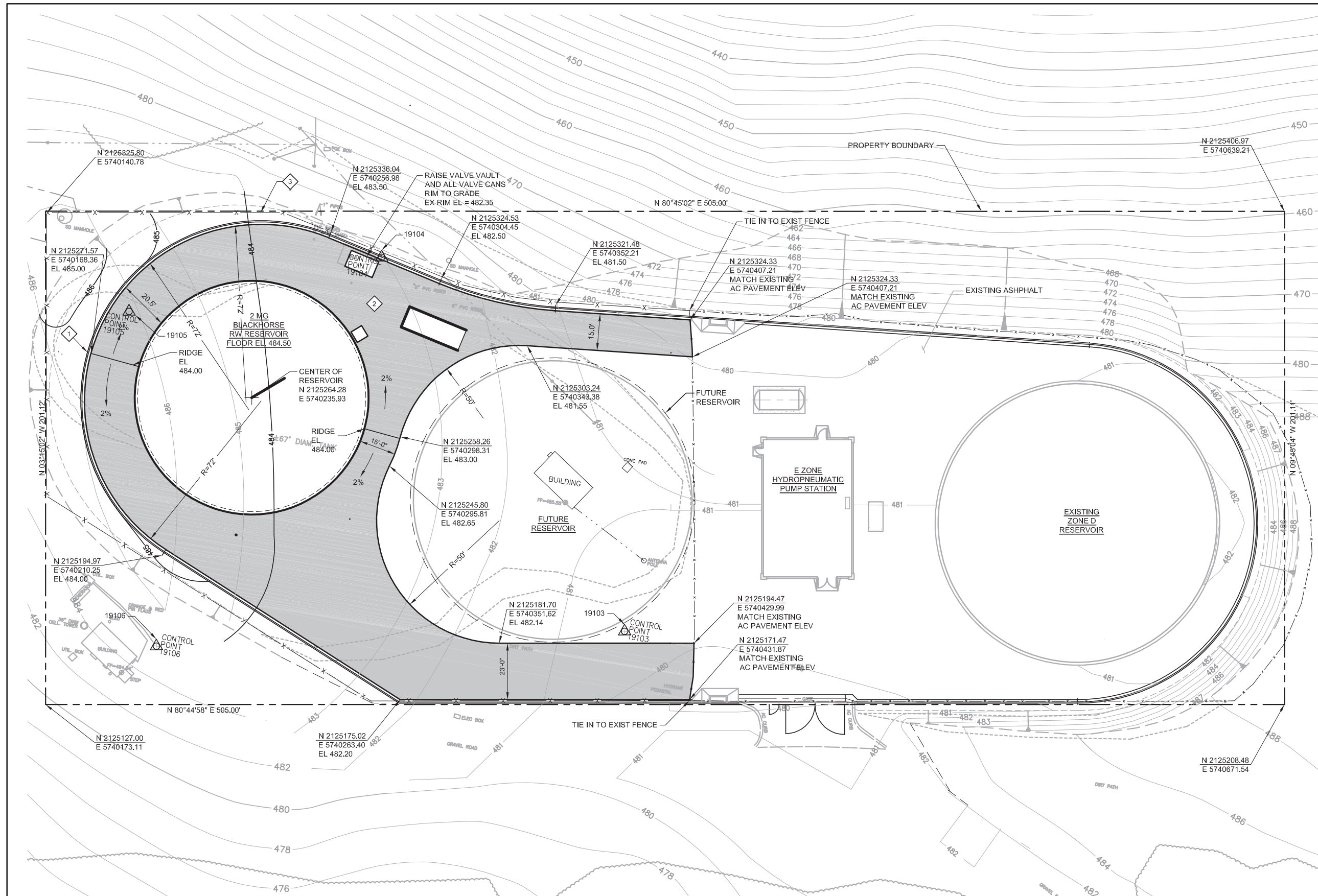
REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
CIVIL
FINISHED SITE PLAN & YARD PIPING

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. C-01 SHEET NO. 61 OF 93
--	---

FILENAME:

KEY NOTES

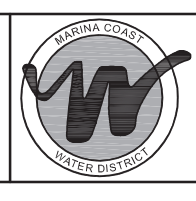
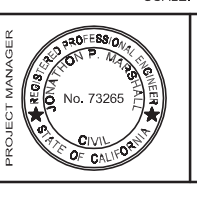
- 1 CONCRETE CURBS PER DETAIL 2/C-03.
- 2 SITE PAVING PER DETAIL 1/C-03.
- 3 INSTALL NEW CHAIN LINK FENCE TO MATCH EXIST. INSTALL PER SECTION 02820.



REV	DATE	BY	DESCRIPTION

DESIGNED RRH	DISCIPLINE ENGINEER
DRAWN SJB	
CHECKED RH	
DATE APRIL 2017	

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 12:53:34-0700'

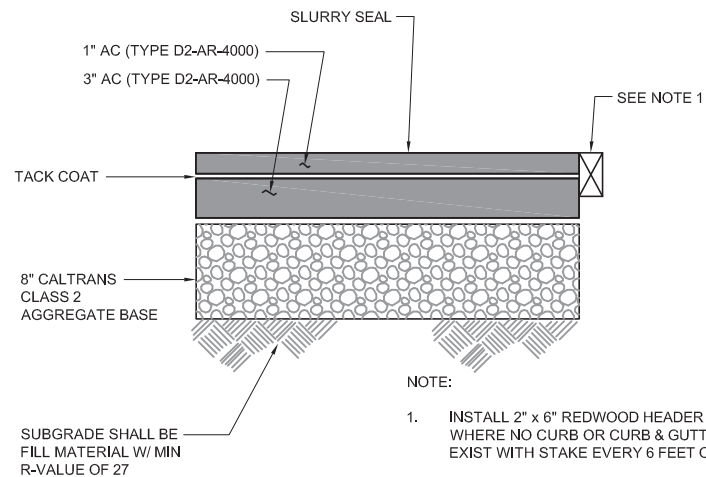


Marina Coast Water District

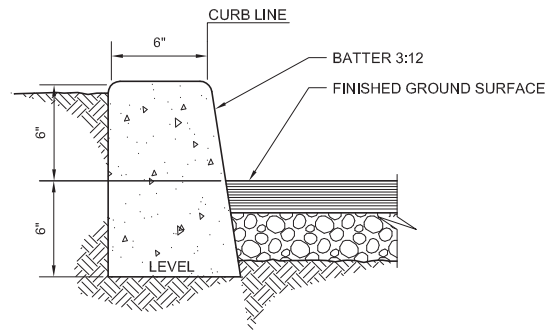
REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
CIVIL
PAVING AND GRADING PLAN AND HORIZONTAL CONTROL

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10 DRAWING NO. C-02 SHEET NO. 62 OF 93
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FILENAME:



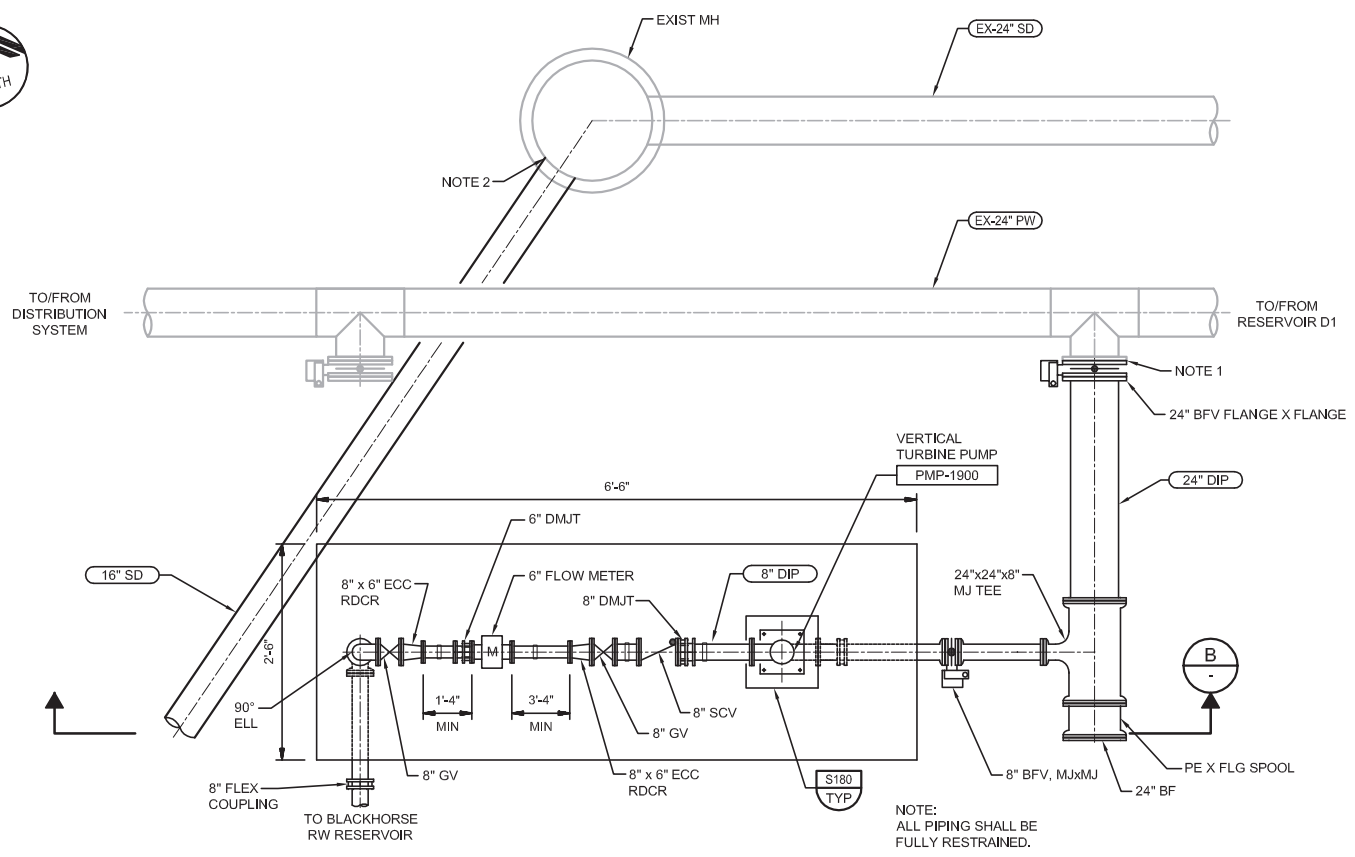
1 SITE PAVING
C-02 SCALE: N.T.S.



- NOTE:
1. ALL EXPOSED CORNERS TO BE ROUNDED WITH A 1/2" RADIUS.
2. SEE A.P.W.A. STD. PLAN 120-1.

2 6" CONCRETE CURB HEAD
SCALE: N.T.S.

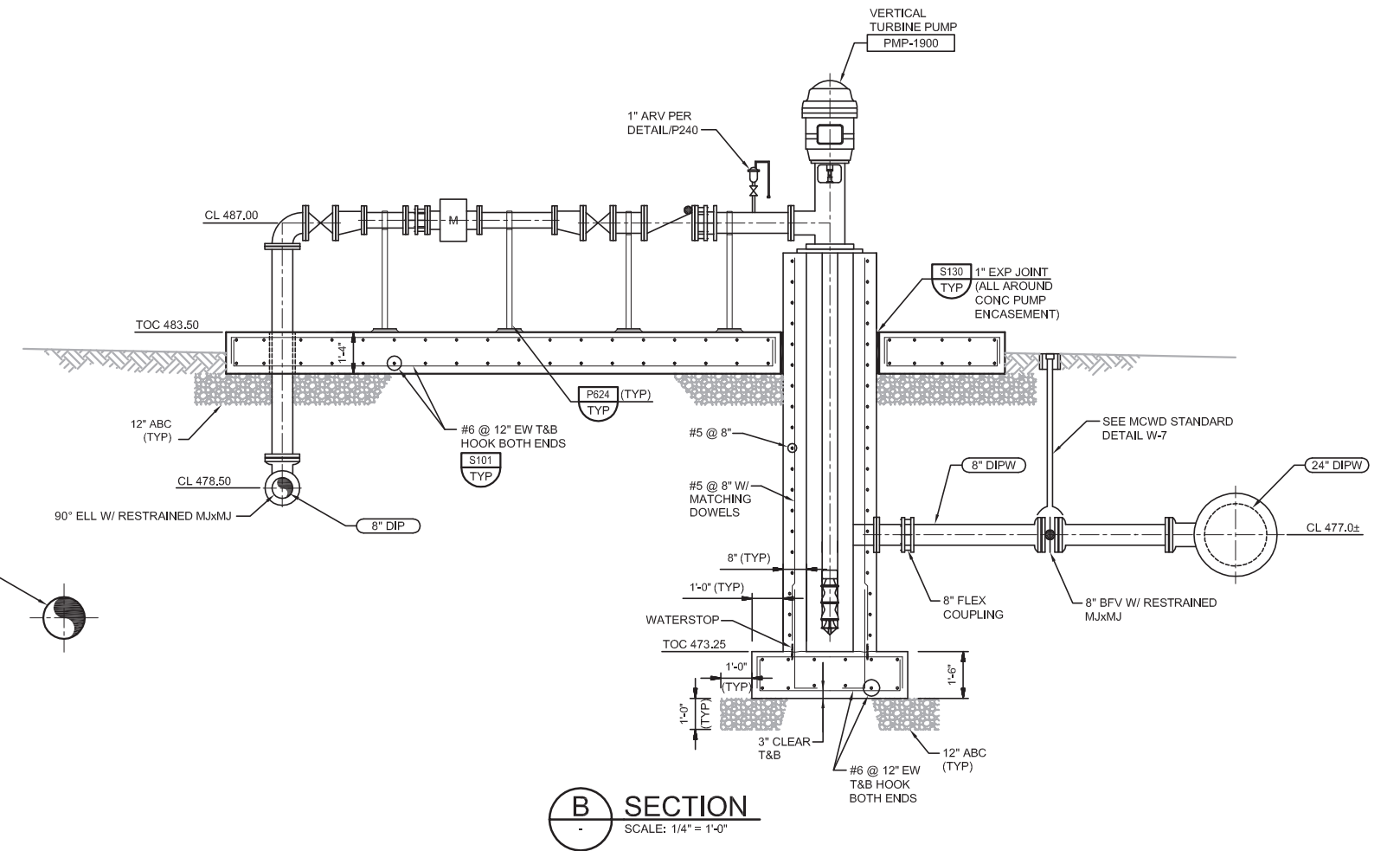
DESIGNED RRH	DISCIPLINE ENGINEER	PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 12:53:20-07'07'	PROJECT MANAGER JONATHAN P. MARSHALL No. 73265 CIVIL STATE OF CALIFORNIA			REGIONAL URBAN WATER AUGMENTATION PROJECT	VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10
DRAWN SJB						BLACKHORSE RECYCLED WATER RESERVOIR		DRAWING NO. C-03
CHECKED RH						CIVIL		SHEET NO.
DATE APRIL 2017						CIVIL DETAILS		11 OF 93
REV	DATE	BY	DESCRIPTION	FILENAME:				



NOTES:

1. REMOVE EXISTING BLIND FLANGE FROM 24" OUTLET AND INSTALL NEW 24" BFV.
2. CORE DRILL HOLE PIPE OD + 2" MAX. INSTALL 16"X1' STUB INTO HOLE AND SEAL ANNULAR SPACE WITH NON-SHRINK GOUT.
3. ALL PIPING SHALL BE FULLY RESTRAINED.

A PARTIAL PLAN
C-01 SCALE: 1/4" = 1'-0"

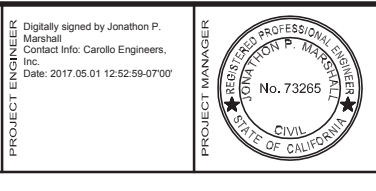


B SECTION
SCALE: 1/4" = 1'-0"

REV	DATE	BY	DESCRIPTION

DESIGNED ST	DISCIPLINE ENGINEER
DRAWN AL	
CHECKED	
DATE APRIL 2017	

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 12:52:59-07'00'



REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
CIVIL
PUMP STATION
PLAN AND SECTION

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1" 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
7568A.10
DRAWING NO.
C-04
SHEET NO.
64 OF 93

FILENAME:

GENERAL NOTES:

- 1. USE STRUCTURAL DRAWINGS IN CONJUNCTION WITH PROJECT DRAWINGS BY OTHER DISCIPLINES AND WITH THE SPECIFICATIONS.
2. UNLESS DETAILED, SPECIFIED, OR INDICATED OTHERWISE, CONSTRUCTION SHALL BE AS INDICATED IN THE GENERAL NOTES AND TYPICAL DETAILS.
3. PRESENTATION CONVENTIONS FOR STRUCTURAL DRAWINGS:
A. SCREENED LINE WORK INDICATES EXISTING CONDITIONS.
B. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED SIZES.
C. PLANS ARE TREATED AS HORIZONTAL SECTIONS, (I.E.: "PLAN AT ELEVATION 110" SHOWS CONSTRUCTION AT AND BELOW ELEVATION 110.)
4. VERIFY DIMENSIONS AND CONDITIONS BEFORE BEGINNING WORK. ADVISE ENGINEER IMMEDIATELY OF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND DIMENSIONS, AND INFORMATION SHOWN ON THESE DRAWINGS. CONFIRM THE FOLLOWING BEFORE PREPARATION AND SUBMITTAL OF SHOP DRAWINGS:
A. DIMENSIONS AND WEIGHTS FOR EQUIPMENT SELECTED.
B. SIZES AND LOCATIONS OF EQUIPMENT PADS FOR EQUIPMENT SELECTED.
5. TYPICAL DETAILS ARE INCLUDED ON THE "SG" DRAWINGS.
A. TYPICAL DETAILS ARE INTENDED TO APPLY AT LOCATIONS DESCRIBED BY THEIR TITLES, EVEN WHEN NOT SPECIFICALLY REFERENCED ON THE DRAWINGS.
B. IN STRUCTURAL TYPICAL DETAILS, ORIENTATION OF BARS IN EACH MAT OF REINFORCEMENT (WHETHER "LINES" OR "DOTS" ARE CLOSER TO THE FACE OF THE CONCRETE) IS GENERALLY ARBITRARY. SEE DRAWINGS OF EACH STRUCTURE FOR ORIENTATION REQUIRED AT THAT STRUCTURE.
6. SEE CIVIL DRAWINGS FOR STRUCTURE COORDINATES, POINTS ON THE STRUCTURES TO WHICH SITE COORDINATES REFER ARE SHOWN ON THE STRUCTURAL PLANS.
7. DRAWINGS PREPARED BY OTHER DISCIPLINES INCLUDE OPENINGS, ANCHORS, PIPES, CONDUITS, AND OTHER ITEMS THAT ARE EMBEDDED INTO OR PASS THROUGH STRUCTURES.
A. CONFIRM SIZE AND LOCATIONS OF OPENINGS, PENETRATIONS AND EMBEDMENT FOR ITEMS AND EQUIPMENT FURNISHED.
B. IN GENERAL, OPENINGS, EMBEDMENTS, AND PENETRATIONS LESS THAN 12 INCHES IN DIAMETER ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS.
C. SEE MECHANICAL DRAWINGS FOR DETAILS OF PIPE PENETRATIONS, PIPE SUPPORTS, AND ASSOCIATED STRUCTURAL REQUIREMENTS.
D. SEE MECHANICAL DRAWINGS FOR EQUIPMENT PADS AND PIPE SUPPORTS.

STRUCTURAL DESIGN CRITERIA - GENERAL:

- SEE DRAWINGS OF INDIVIDUAL STRUCTURES FOR SPECIFIC DESIGN CRITERIA BASED ON THESE OVERALL CRITERIA FOR THE SITE.
1. DESIGN CODE:
A. 2013 CALIFORNIA BUILDING CODE (CBC 2013).
B. ASCE 7-10.
C. AWWA D100-11.
2. STRUCTURE RISK CATEGORY: SEE GENERAL NOTE 6/S-01.
3. DEAD LOADS: CALCULATED FOR STRUCTURE SELF-WEIGHT.
4. LIVE LOADS:
A. FLOOR LIVE LOAD: SEE PLANS.
B. GRATING AND CHECKERED PLATE: 100 PSF (UNO).
C. ROOF LIVE LOAD: SEE PLANS (20 PSF MINIMUM).
D. EQUIPMENT LOADS: SEE PLANS.
5. FLUID PRESSURE LOADS: 63 PSF/FT (UNO).
6. SNOW LOAD DATA: N/A
7. WIND DESIGN DATA:
A. SPECIAL WIND REGION: NO
B. WIND-BORNE DEBRIS REGION: NO
C. BASIC WIND SPEED (3 SEC GUST, 33 FEET ABOVE GROUND): 115 MPH.
8. EARTHQUAKE DESIGN DATA:
A. SITE CLASS: D.
B. MAPPED SPECTRAL RESPONSE ACCELERATIONS: Ss = 1.472 g S1 = 0.527 g
C. SITE COEFFICIENTS: Fa = 1.0 Fv = 1.5
D. MAXIMUM CONSIDERED ACCELERATIONS: Sms = 1.472 g Sm1 = 0.579 g
E. DESIGN SPECTRAL RESPONSE ACCELERATIONS: Sds = 0.981 g Sd1 = 0.527 g (* 5% DAMPED)
9. RAIN LOADS: N/A
10. ICE LOADS: N/A
11. CONSTRUCTION LOADS: STRUCTURES HAVE BEEN DESIGNED FOR OPERATING LOADS ON COMPLETED FACILITIES. UNTIL CONSTRUCTION IS COMPLETE AND MEMBERS HAVE ACHIEVED THEIR DESIGN STRENGTH, PROTECT STRUCTURES AS REQUIRED BY SHORING, BRACING, AND BALANCING.

GEOTECHNICAL REPORT / FOUNDATION DESIGN CRITERIA:

- 1. GEOTECHNICAL INVESTIGATION REPORT:
TITLE: GEOTECHNICAL REVIEW AND SUPPLEMENTAL GEOTECHNICAL RECOMMENDATIONS FOR PROPOSED D ZONE WELDED STEEL WATER STORAGE TANK, MCWD IN MARINA, CA.
PREPARED BY: KLEINFELDER
REPORT NO 82412 DATED: NOV 17, 2008
2. FOUNDATION DESIGNS ARE BASED ON RECOMMENDATIONS IN THE GEOTECHNICAL INVESTIGATION REPORT.
A. NET ALLOWABLE BEARING PRESSURE SEE PLANS.
B. LATERAL EARTH PRESSURE (UNO): SURCHARGE: EQUIVALENT TO 2 FEET OF SOIL ABOVE FINISHED GRADE.
PASSIVE (PSF/FT): 500
SLIDING COEFFICIENT OF FRICTION: 0.40

TYPICAL STRUCTURAL MATERIALS:

- 1. MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. SEE PROJECT SPECIFICATIONS AND NOTES ON DRAWINGS OF SPECIFIC STRUCTURES FOR DETAILED AND LOCATION-SPECIFIC REQUIREMENTS.

REINFORCING STEEL (FOR CONCRETE AND MASONRY):

- 1. DEFORMED BARS:
A. TYPICAL: ASTM A 615, GRADE 60.
B. WHERE INDICATED ON THE DRAWINGS: ASTM A 706.

CONCRETE:

- 1. NORMAL DENSITY.
2. MINIMUM SPECIFIED CONCRETE COMPRESSIVE STRENGTH, fc (AT 28 DAYS UNO).
A. STRUCTURES: "CLASS A" fc = 4000 PSI.
B. FILL, THRUST BLOCKS, PIPE ENCASMENT: "CLASS C" fc = 2500 PSI.
C. ELECTRICAL DUCT ENCASMENT: "CLASS CE" fc = 2500 PSI.

MASONRY: N/A

STRUCTURAL STEEL:

- 1. SECTIONS
A. SHAPES W, WT: ASTM A 992 (Fy = 50 KSI)
B. SHAPES S, ST, M, MT, HP, C, MC, L: ASTM A 36 (Fy = 36 KSI)
C. PLATES AND BARS: ASTM A 36 (Fy = 36 KSI)
D. PIPES: ASTM A 53, GRADE B (Fy = 35 KSI)
E. HOLLOW STRUCTURAL SECTIONS:
ROUND: ASTM A 500, GRADE B (Fy = 42 KSI)
SQUARE AND RECTANGULAR: ASTM A 500, GRADE B (Fy = 46 KSI)
2. CONNECTIONS:
A. BOLTS - STEEL TO-STEEL:
ASTM A 325 HIGH-STRENGTH BOLTS, WITH LOAD INDICATOR WASHERS.
B. N/A
C. WELDS - SHIELDED METAL ARC PROCESS USING E70-XX ELECTRODES.
STAINLESS STEEL:
1. ANSI TYPE 316/316L EXCEPT WHERE TYPE 304/304L IS INDICATED ON THE DRAWINGS.
2. SECTIONS: SHAPES AND BARS: ASTM A 276.
3. BOLTED CONNECTIONS - BOLTS AND ANCHOR BOLTS:
A. MATCH ALLOY OF THE STRUCTURAL MEMBERS CONNECTED.
B. TYPE 316/316L: ASTM A 193, GRADE B8M, CLASS 1, HEAVY HEX.
C. TYPE 304/304L: ASTM A 193, GRADE B8, CLASS 1, HEAVY HEX.
4. WELDED CONNECTIONS:
A. TYPE 316L: E316L-15 ELECTRODES.
B. TYPE 304L: E304L-15 ELECTRODES.

STRUCTURAL ALUMINUM:

- 1. SECTIONS
A. SHAPES: ASTM B 308, ALLOY 6061-T6.
B. SHEET AND PLATE: ASTM B 209, ALLOY 6061-T6.
2. BOLTED CONNECTIONS - BOLTS AND ANCHOR BOLTS:
A. STAINLESS STEEL - TYPE 316, ASTM A 193, GRADE B8M, CLASS 1, HEAVY HEX.
3. WELDED CONNECTIONS:
A. GAS METAL ARC (MIG) OR GAS TUNGSTEN ARC (TIG) PROCESS USING FILLER ALLOY 4043 ELECTRODES.

WELDED STEEL TANK

- 1. SEE SPECIFICATION 132060.

CONSTRUCTION:

CONFORM TO THE FOLLOWING REQUIREMENTS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

EXCAVATION AND BACKFILLING:

- 1. EXPOSE AND PREPARE SUBGRADE AS SHOWN ON THE DRAWINGS AND SPECIFIED. OBTAIN ENGINEER'S OBSERVATION OF SUBGRADE SURFACES, AS EXPOSED AND AS PREPARED, BEFORE PROCEEDING WITH FOUNDATION CONSTRUCTION.
2. DO NOT PLACE BACKFILL AGAINST WALLS UNTIL STRUCTURES SUPPORTING THE TOP OF THE WALL ARE IN PLACE, ARE COMPLETE, AND (IN THE CASE OF CONCRETE) HAVE CURED TO THEIR MINIMUM SPECIFIED 28-DAY COMPRESSIVE STRENGTH.

CONCRETE:

- 1. SEE S101/TYP FOR CONCRETE NOTES, INCLUDING CLEAR COVER AND LAP SPlice LENGTH REQUIREMENTS FOR REINFORCING.
2. SUBMIT LOCATIONS OF CONSTRUCTION JOINTS NOT SHOWN ON THE DRAWINGS FOR ACCEPTANCE BY THE ENGINEER BEFORE FORM LAYOUT.
3. PROVIDE CHAMFER AT EXPOSED EDGES OF CAST-IN-PLACE CONCRETE.
4. PROVIDE REINFORCING:
A. AT CORNERS AND JUNCTIONS, SUPPLEMENT WITH ADDED BARS WHERE INDICATED ON THE DRAWINGS.
B. AT OPENINGS - AS INDICATED IN S180/TYP.
5. WELDING OF REINFORCING IS NOT PERMITTED UNLESS DETAILED ON THE DRAWINGS OR ACCEPTED IN ADVANCE BY THE ENGINEER.
6. MAINTAIN MINIMUM 3 INCHES CLEAR CONCRETE COVER BETWEEN REINFORCING AND EMBEDMENTS.

STEEL, STAINLESS STEEL, AND ALUMINUM - CONNECTIONS:

- 1. BOLTED:
A. MADE USING 3/4-INCH DIAMETER BOLTS.
B. HAVING A MINIMUM OF 2 BOLTS, SPACED NOT CLOSER THAN 3 INCHES ON CENTER.
C. WITH A DISTANCE OF AT LEAST 1 1/2 INCHES FROM CENTER OF BOLT TO ANY EDGE OF A PLATE OR STRUCTURAL ELEMENT.
2. WELDED:
A. FILLET WELDS: PER AWS CODE BASED ON THE THICKNESS OF THE MATERIALS BEING JOINED, AND FULL LENGTH OF THE JOINT.
3. INTERFACE BETWEEN MATERIALS:
A. AT BOLTED CONNECTIONS THAT INCLUDE DIFFERENT METALS (E.G.: STEEL AND STAINLESS STEEL, OR ALUMINUM AND STAINLESS STEEL) PROVIDE ISOLATING SLEEVES AND WASHERS AS SPECIFIED IN SECTION 05190.
B. WHERE ALUMINUM IS IN CONTACT WITH MASONRY OR CONCRETE, COAT ALUMINUM SURFACES AS SPECIFIED IN SECTION 09960.
4. POST-INSTALLED ANCHORS IN CONCRETE AND MASONRY:
A. INSTALL IN FULL COMPLIANCE WITH ACCEPTED BUILDING CODE EVALUATION REPORT AND MANUFACTURER'S INSTRUCTIONS.
B. DO NOT CUT, DAMAGE, OR INTERRUPT EXISTING REINFORCEMENT TO INSTALL ANCHORS. USE NON-DESTRUCTIVE TESTING EQUIPMENT TO IDENTIFY LOCATIONS OF REINFORCEMENT IN MEMBERS BEFORE DRILLING HOLES FOR ANCHORS.

SPECIAL INSPECTION:

- 1. SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING STRUCTURAL MATERIALS AND CONSTRUCTION.
2. DIVISION 2 SITE CONSTRUCTION (EARTHWORK)
A. EXCAVATION DEPTH.
B. ADEQUACY OF EXPOSED SURFACE TO PROVIDE REQUIRED SUPPORT.
C. PREPARATION OF SOILS/SURFACES SUPPORTING CONSTRUCTION.
D. FILL AND BACKFILL.
3. DIVISION 3 CONCRETE:
A. LOCATIONS.
B. FORMWORK AND MEMBER SIZES.
C. REINFORCING STEEL.
D. ANCHORS: CAST-IN AND POST-INSTALLED.
E. CONCRETE MIX AND PLACEMENT.
F. PROTECTION AND CURING PROCEDURES.
4. DIVISION 4 MASONRY: N/A
5. DIVISION 5 METALS
A. GENERAL ALL METALS:
1) MEMBER LOCATIONS.
2) MEMBER SIZES/TYPES.
3) ANCHORS - CAST-IN AND BUILT-IN ANCHOR BOLTS.
4) ANCHORS - POST-INSTALLED MECHANICAL AND ADHESIVE.
B. STRUCTURAL STEEL (CARBON AND STAINLESS).
1) WELDING.
C. STRUCTURAL ALUMINUM.
1) BOLTING.
2) WELDING.
6. DIVISION 13 SPECIAL CONSTRUCTION
1) WELDING OF WELDED STEEL TANK.

STRUCTURAL SYMBOLS:

- 1. WELDING: SYMBOLS: IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (AWS) A2.4.

STRUCTURAL ABBREVIATIONS:

- 1. ABBREVIATIONS FOR NAMES OF TECHNICAL GROUPS MAY BE FOUND IN THE PROJECT SPECIFICATIONS.
2. STRUCTURAL MEMBERS:
A. STEEL: ABBREVIATIONS AND DESIGNATIONS ARE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION'S STEEL CONSTRUCTION MANUAL, CURRENT EDITION.
B. ALUMINUM: ABBREVIATIONS AND DESIGNATIONS ARE IN ACCORDANCE WITH THE ALUMINUM ASSOCIATION'S ALUMINUM DESIGN MANUAL, CURRENT EDITION.
3. ABBREVIATIONS FOR STRUCTURAL DRAWINGS: WHEN USED ON THE STRUCTURAL DRAWINGS, THE FOLLOWING ABBREVIATIONS HAVE THE MEANINGS LISTED.
ABC AGGREGATE BASE COURSE
BC BOLT CIRCLE
BO BOTTOM OF
CJ CONSTRUCTION JOINT
CL CENTER LINE
EF EACH FACE
EL ELEVATION
EXP JT EXPANSION JOINT
GALV GALVANIZED
I.D. INSIDE DIAMETER
I.F. INSIDE FACE
L ANGLE
O.D. OUTSIDE DIAMETER
O.F. OUTSIDE FACE
PL PLATE
SST STAINLESS STEEL
STL STEEL
ST STL STAINLESS STEEL
T.O. TOP OF
TOC TOP OF CONCRETE
TOS TOP OF STEEL
TYP TYPICAL
W/ WITH
W/O WITHOUT
#_ NUMBER (REINFORCING BAR SIZE)

DEFERRED DESIGN SUBMITTALS

AS DEFINED IN THE BUILDING CODE. DEFERRED DESIGN SUBMITTALS ARE PORTIONS OF THE DESIGN THAT ARE NOT SUBMITTED AT THE TIME OF PERMIT APPLICATION, AND THAT ARE TO BE REVIEWED BY THE REGISTERED DESIGN PROFESSIONAL AND SUBSEQUENTLY SUBMITTED TO THE BUILDING OFFICIAL.

DEFERRED DESIGN SUBMITTALS FOR THIS PROJECT INCLUDE:

- 1. DIVISION 2 SITE CONSTRUCTION (EARTHWORK).
A. 02300 - AGGREGATE BASE COURSE, CLASS 2 PERMEABLE, IMPORTED MATERIAL
B. 02085 - PRECAST CONCRETE VAULTS
C. 02621 - STABILIZATION FABRIC
2. DIVISION 3 CONCRETE.
A. 02085 - PRECAST CONCRETE VAULTS
B. 02621 - STABILIZATION FABRIC
C. 03300 - CAST-IN-PLACE CONCRETE MIX DESIGNS
3. DIVISION 13 SPECIAL CONSTRUCTION
A. 13206Q - WELDED STEEL TANKS

LAST SAVED BY: bhawes

Table with 4 columns: REV, DATE, BY, DESCRIPTION. Includes a revision table and a table with columns for DESIGNED EQ, DRAWN MWR, CHECKED JPM, DATE, and APRIL 2017.

Table with 2 columns: DISCIPLINE ENGINEER, PROJECT ENGINEER. Includes professional engineer seals for Edgardo Quiroz and Jonathon P. Marshall.

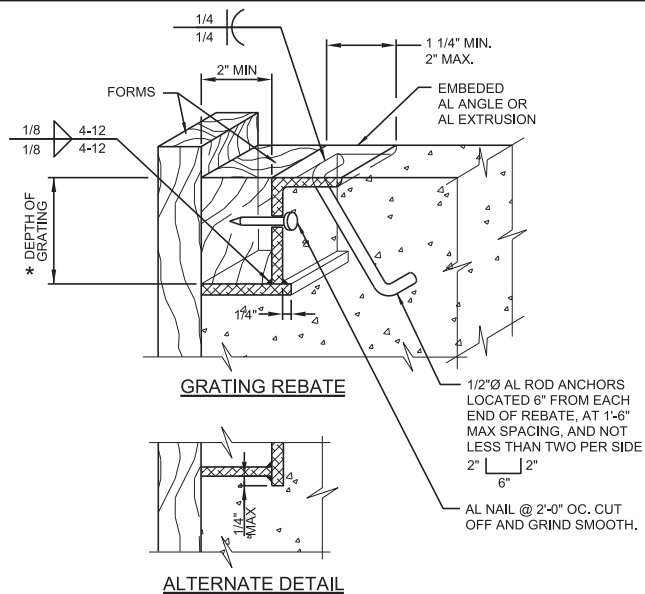


Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
STRUCTURAL
BLACKHORSE RESERVOIR STRUCTURAL NOTES

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
DRAWING NO. SG-01
SHEET NO. 65 OF 93



- NOTES:**
- FOR AL GRATING, SEE SPECIFICATIONS.
 - REBATE ANGLE SHALL BE CONTINUOUS AROUND ENTIRE OPENING.
 - ANGLE AND BEARING PLATE SHALL BE 1/4" MIN THICK.
 - REBATE MAY BE EXTRUDED, SUBJECT TO ENGINEER'S ACCEPTANCE.
 - COAT ALUMINUM SURFACES IN CONTACT WITH CONCRETE AS SPECIFIED.
 - * = DIMENSION AS REQUIRED BY GRATING MANUFACTURER.

A400 ALUMINUM GRATING REBATE AND SEAT
TYP

NS SHEET 1 OF 2 06/06/13

- SEE DIVISION 03 SPECIFICATIONS FOR REQUIREMENTS FOR CONCRETE CONSTRUCTION.
- UNLESS OTHERWISE INDICATED ON THE DRAWINGS, MINIMUM REINFORCEMENT OF CONCRETE WALLS OR SLABS SHALL BE:
10" THICK OR LESS: #5 @ 12" EACH WAY.
MORE THAN 10" THICK: #5 @ 12" EACH WAY, EACH FACE.
- WALL REINFORCEMENT AT CORNERS OR JUNCTIONS OF WALLS SHALL BE CONTINUOUS, LAP SPICED, OR TERMINATED IN AN ACI STANDARD 90 DEGREE HOOK. SEE DETAIL S144/TYP.
- UNLESS OTHERWISE INDICATED ON THE DRAWINGS, BARS SHALL BE DOWELED. DOWELS SHALL BE THE SAME SIZE AND SPACING AS THE REINFORCEMENT WHICH IS SPICED TO THE DOWELS.
- SLAB, BEAM AND COLUMN REINFORCING BARS SHALL HAVE A MINIMUM EXTENSION OR ANCHORAGE INTO SUPPORTS IN ACCORDANCE WITH ACI 318 AND ACI 350.
- STIRRUP SUPPORT BARS SHALL BE PROVIDED TO SECURE TOP BARS AGAINST DISPLACEMENT AS REQUIRED.
- UNLESS OTHERWISE INDICATED ON THE DRAWINGS, CONCRETE COVER OVER #11 AND SMALLER REINFORCING BARS SHALL BE AS FOLLOWS:
A. SLABS AND JOISTS:
FORMED CONCRETE SURFACES AND UNFORMED TOP SURFACES FOR DRY CONDITIONS
#7 BARS AND SMALLER: 1"
#8 BARS AND LARGER: 1 1/2"
FORMED CONCRETE SURFACES AND UNFORMED TOP SURFACES EXPOSED TO WEATHER, IN CONTACT WITH SOIL OR FLUIDS, OR LOCATED OVER FLUIDS: 2"
B. BEAMS AND COLUMNS:
FORMED CONCRETE SURFACES FOR DRY CONDITIONS:
STIRRUPS, SPIRALS, AND TIES: 1 1/2"
PRINCIPAL REINFORCEMENT: 2"
FORMED CONCRETE SURFACES EXPOSED TO WEATHER, IN CONTACT WITH SOIL OR FLUIDS, OR IN BEAMS LOCATED OVER FLUIDS:
STIRRUPS AND TIES: 2"
PRINCIPAL REINFORCEMENT: 2 1/2"
C. WALLS:
FORMED CONCRETE SURFACES FOR DRY CONDITIONS:
#7 BARS AND SMALLER: 1"
#8 BARS AND LARGER: 1 1/2"
FORMED CONCRETE SURFACES EXPOSED TO WEATHER, OR IN CONTACT WITH SOIL OR FLUIDS: 2"

S101 REINFORCED CONCRETE NOTES
TYP

S SHEET 1 OF 3 07/08/16

- FOOTINGS AND SLABS ON GRADE:
FORMED VERTICAL CONCRETE SURFACES: 2"
AT UNFORMED CONCRETE SURFACES CAST AGAINST SOIL, ROCK, OR CONCRETE WORK MATS: 3"
TOP SURFACE OF FOOTINGS AND SLABS: SAME AS SLABS
- WATERSTOPS:
A. PROVIDE WATERSTOPS AT JOINTS IN SLABS AND WALLS OF LIQUID-CONTAINING STRUCTURES, AND PORTIONS OF STRUCTURES BELOW THE DESIGN GROUNDWATER LEVEL. MAKE WATERSTOPS CONTINUOUS THROUGH STRUCTURE, SPlicing WATERSTOPS IN SLABS WITH WATERSTOPS IN WALLS.
B. END WATERSTOPS 3" BELOW TOP OF WALLS. WHERE TOP OF WALL IS COVERED BY A SLAB WITHOUT WATERSTOPS, CONTINUE WATERSTOP TO WALL/SLAB JOINT. WHERE TOP OF WALL IS COVERED BY A SLAB WITH WATERSTOPS, MAKE WATERSTOPS CONTINUOUS, SPlicing WATERSTOPS IN WALLS WITH WATERSTOPS IN SLAB.
- CURE CONCRETE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. WHERE WATER CURING IS SPECIFIED, MEMBRANE CURING IS NOT ALLOWED.
A. THE CONTRACTOR IS WARNED THAT WATER CURING IS DIFFICULT AT TIMES DUE TO WIND AND DRY CONDITIONS. STUDY SPECIFICATION REQUIREMENTS AND FURNISH ADEQUATE SYSTEMS TO PROVIDE WATER CURING WHERE REQUIRED.
B. KEEP WATER CURED SURFACES VISIBLY MOIST AT ALL TIMES. FLOOD TOPS OF WALLS NOT LESS THAN 3 TIMES DAILY.
- DO NOT PLACE BACKFILL AGAINST WALLS UNTIL:
A. WALLS HAVE BEEN CAST TO FULL HEIGHT OF STRUCTURE AND CONCRETE HAS REACHED THE MINIMUM SPECIFIED COMPRESSIVE STRENGTH (f_c).
B. CONNECTING SLABS AND BEAMS HAVE BEEN CAST AND CONCRETE IN THOSE ELEMENTS HAS REACHED THE MINIMUM SPECIFIED COMPRESSIVE STRENGTH (f_c).
- LAP SPLICES:
A. SEE TABLE 1 OF THIS DETAIL FOR LAP SPlice LENGTHS.
B. WHEN MULTIPLE BARS ARE SPliced AT THE SAME SECTION, THE "CLEAR BAR SPACING" IS DEFINED AS THE MINIMUM CLEAR DISTANCE BETWEEN THE BARS OUTSIDE THE SPlice LENGTH MINUS ONE BAR DIAMETER.
C. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, BARS AT A LAP SPlice SHALL BE IN CONTACT WITH EACH OTHER.
D. "TOP BARS" ARE HORIZONTAL REINFORCEMENT AT LOCATIONS WHERE MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.
- FORM EXPOSED CONCRETE CORNERS AND EDGES WITH 3/4" CHAMFER UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

S101 REINFORCED CONCRETE NOTES
TYP

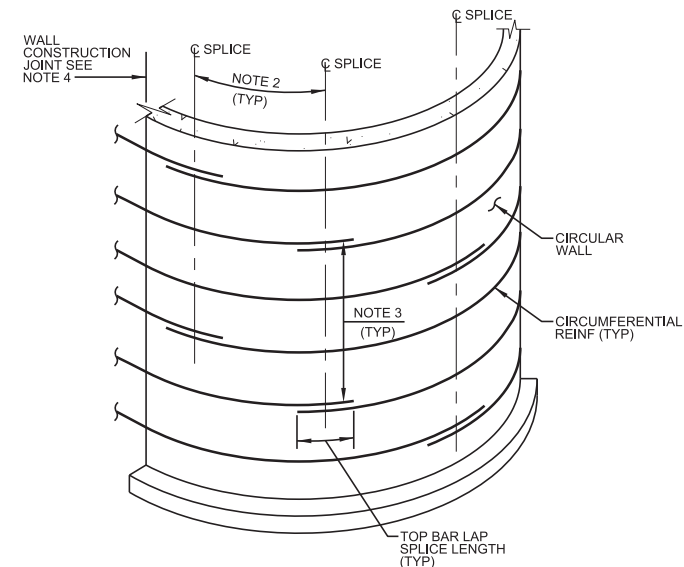
S SHEET 2 OF 3 07/08/16

TABLE 1: REINFORCING BAR LAP SPLICES: f _c = 4000 PSI, F _y = 60,000 PSI				
BAR SIZE	MINIMUM COVER (BAR DIA)	MINIMUM CLEAR BAR SPACING (BAR DIA)	LAP SPlice LENGTH (INCHES)	
			TOP BARS	OTHER BARS
#4	MORE THAN 1	MORE THAN 2	32 *	25 *
	MORE THAN 2	MORE THAN 4	20	16
#5	MORE THAN 1	MORE THAN 2	40 *	31 *
	MORE THAN 2	MORE THAN 4	26	20
#6	MORE THAN 1	MORE THAN 2	48 *	37 *
	MORE THAN 2	MORE THAN 4	30	24
#7	MORE THAN 1	MORE THAN 2	70 *	54 *
	MORE THAN 2	MORE THAN 4	43	33
#8	MORE THAN 1	MORE THAN 2	81 *	62 *
	MORE THAN 2	MORE THAN 4	50	38
#9	MORE THAN 1	MORE THAN 2	90 *	70 *
	MORE THAN 2	MORE THAN 4	56	42
#10	MORE THAN 1	MORE THAN 2	104 *	81 *
	MORE THAN 2	MORE THAN 4	62	48
#11	MORE THAN 1	MORE THAN 2	114 *	88 *
	MORE THAN 2	MORE THAN 4	69	54

- REINFORCING BAR LAP SPlice TABLE NOTES:**
- TABULATED SPlice LENGTHS ARE APPLICABLE ONLY WHEN BOTH REQUIREMENTS FOR MINIMUM COVER AND FOR MINIMUM CLEAR BAR SPACING ARE SATISFIED.
 - ** IF THE CLEAR BAR SPACING IS LESS THAN OR EQUAL TO TWO BAR DIAMETERS, OR THE COVER IS LESS THAN OR EQUAL TO ONE BAR DIAMETER, THE LAP SPlice LENGTH SHALL BE INCREASED BY 50 PERCENT.

S101 REINFORCED CONCRETE NOTES
TYP

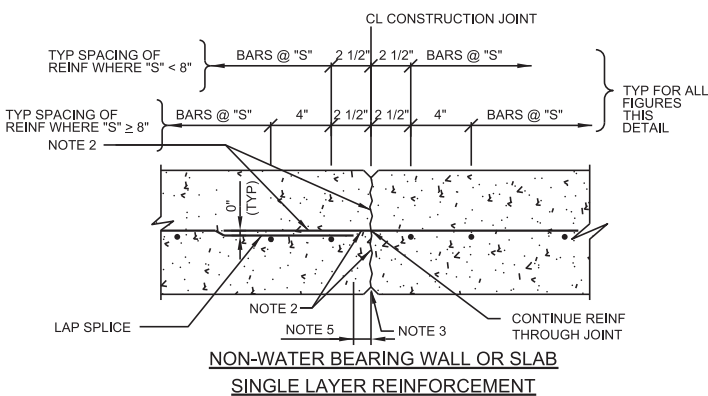
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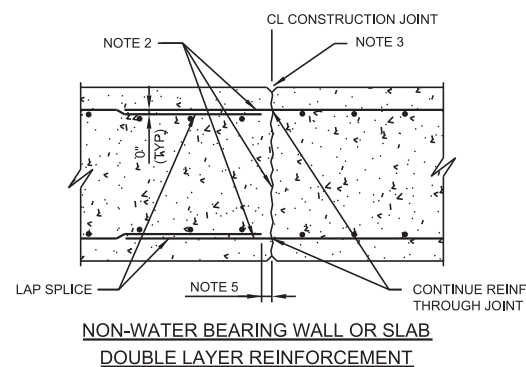
- NOTES:**
- SPlice HORIZONTAL BARS IN CIRCULAR WALLS OF LIQUID-CONTAINING STRUCTURES USING TOP BAR LAP SPLICES.
 - AT EACH FACE, STAGGER ADJACENT SPLICES BY AT LEAST ONE TOP BAR LAP SPlice LENGTH, BUT NOT LESS THAN 3 FEET.
 - AT EACH FACE OF WALL, LAP SPLICES SHALL NOT COINCIDE IN VERTICAL ARRAYS MORE THAN EVERY THIRD BAR.
 - STAGGER BAR PROJECTIONS PAST VERTICAL CONSTRUCTION JOINT TO MAINTAIN LAYOUT RESULTING FROM NOTES 2 AND 3.

S102 CIRCULAR WALLS - HORIZONTAL REINFORCEMENT
TYP

S SHEET 1 OF 1 12/24/13



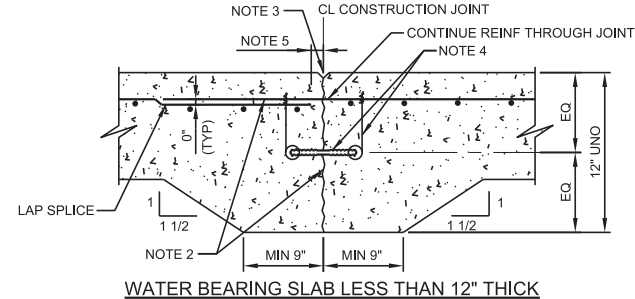
**NON-WATER BEARING WALL OR SLAB
SINGLE LAYER REINFORCEMENT**



**NON-WATER BEARING WALL OR SLAB
DOUBLE LAYER REINFORCEMENT**

S110 CONSTRUCTION JOINT
TYP

S SHEET 1 OF 2 07/11/16



- NOTES:**
- "S" EQUALS TYPICAL BAR SPACING INDICATED ON THE DRAWINGS.
"T" EQUALS SLAB OR WALL THICKNESS.
 - WATER-BLAST EXPOSED JOINT FACE AND PROJECTING REINFORCEMENT BEFORE PLACING CONCRETE.
 - JOINT EDGES:
A. FOR WALLS AND BOTTOM OF EXPOSED SLABS: FORM EDGES WITH 1/2" CHAMFER.
B. FOR SLABS: EDGE TOP AND ENDS WITH 1/4" RADIUS.
 - 6" WATERSTOP CENTERED ON JOINT - SEE DETAIL S106/TYP. PROVIDE WIRE TIES MAX 2'-0" OC. HOG RINGS MAY BE USED IN LIEU OF WIRE LOOPS. THOROUGHLY CLEAN WATERSTOP BEFORE PLACING CONCRETE IN SECOND POUR.
 - STOP REINFORCING 2' CLEAR OF JOINT.

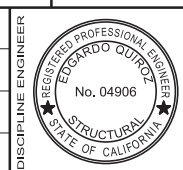
S110 CONSTRUCTION JOINT
TYP

S SHEET 2 OF 2 07/11/16

LAST SAVED BY: Bhraves

REV	DATE	BY	DESCRIPTION

DESIGNED	EQ
DRAWN	MWR
CHECKED	JPM
DATE	APRIL 2017



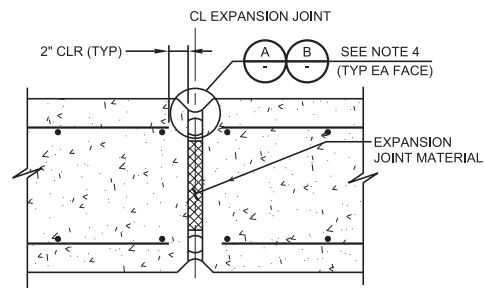
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Date: 2017.05.01 14:23:04-07007



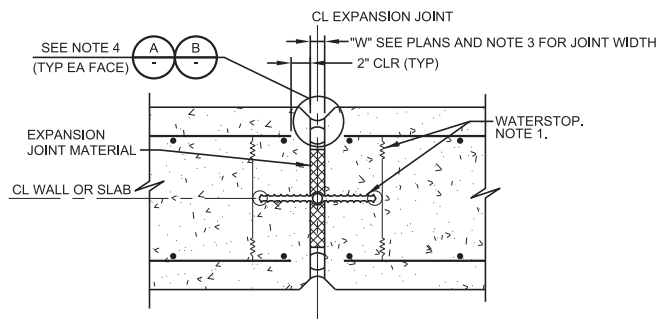
REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
STRUCTURAL
BLACKHORSE RESERVOIR
TYPICAL DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
DRAWING NO. SG-02
SHEET NO. 66 OF 93



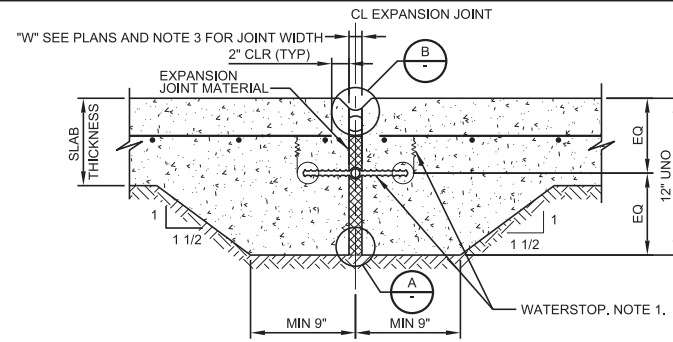
NON-WATER BEARING SLAB OR WALL



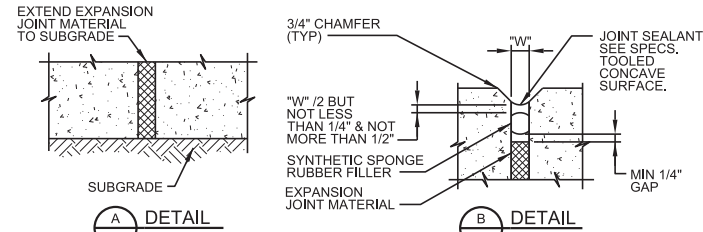
WATER BEARING SLAB OR WALL

S130 EXPANSION JOINT
TYP

SHEET 1 OF 2 07/22/16



WATER BEARING SLAB LESS THAN 12" THICK

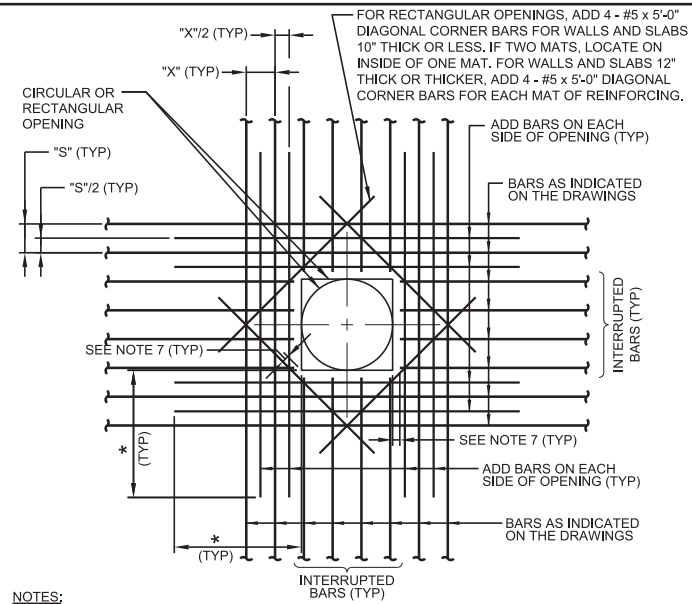


NOTES:

- 9" WATERSTOP WITH CENTER BULB CENTERED ON JOINT - SEE DETAIL S106/TYP. PROVIDE WIRE TIES MAX 2'-0" OC. HOG RINGS MAY BE USED IN LIEU OF WIRE LOOPS. THOROUGHLY CLEAN WATERSTOP BEFORE PLACING CONCRETE IN SECOND POUR.
- JOINT EDGES:
A. FOR WALLS AND BOTTOM OF EXPOSED SLABS: FORM EDGES WITH 3/4" CHAMFER.
B. FOR SLABS: EDGE TOP AND ENDS WITH 1/4" RADIUS.
- "W"=1" UNLESS OTHERWISE INDICATED ON PLANS. (MIN JOINT WIDTH = 3/8". MAX JOINT WIDTH = 2")
- USE DETAIL A ONLY AT SOIL SIDE OF SLABS ON GRADE. USE DETAIL B AT ALL OTHER LOCATIONS.

S130 EXPANSION JOINT
TYP

SHEET 2 OF 2 07/22/16



NOTES:

- ADD BARS SHALL BE SAME SIZE AS PARALLEL BARS BEING CUT.
- AREA OF ADD BARS AT EACH EDGE OF OPENING IN EACH DIRECTION SHALL BE EQUAL TO OR GREATER THAN 1/2 THE CROSS SECTIONAL AREA OF THE INTERRUPTED BARS.
- PROVIDE STANDARD ACI HOOKS ON BARS IF STRAIGHT EXTENSION PAST THE OPENING, CANNOT BE ACHIEVED.
- PLACE ADD BARS IN SAME PLANES AS INTERRUPTED REINFORCING.
- PLACE #5 DIAGONAL BARS ON INSIDE MAT OF REINFORCING.
- * = DIMENSION EQUALS OPENING DIMENSION MEASURED PERPENDICULAR TO ADD BARS PLUS LAP SPLICE LENGTH.
- 2" CLEAR TO CONCRETE OPENINGS OR OUTSIDE FACE OF PIPES AND PIPE SLEEVES. DO NOT OVERCUT REINFORCMENT FOR EASIER PLACEMENT OF WEEP RINGS AND FLANGES.

S180 ADDITIONAL REINFORCING AT OPENINGS IN
CONCRETE SLABS OR WALLS
TYP

07/11/13

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DATE APRIL 2017



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Date: 2017.05.01 14:23:13-07'00'

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Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 15:08:23-07'00'

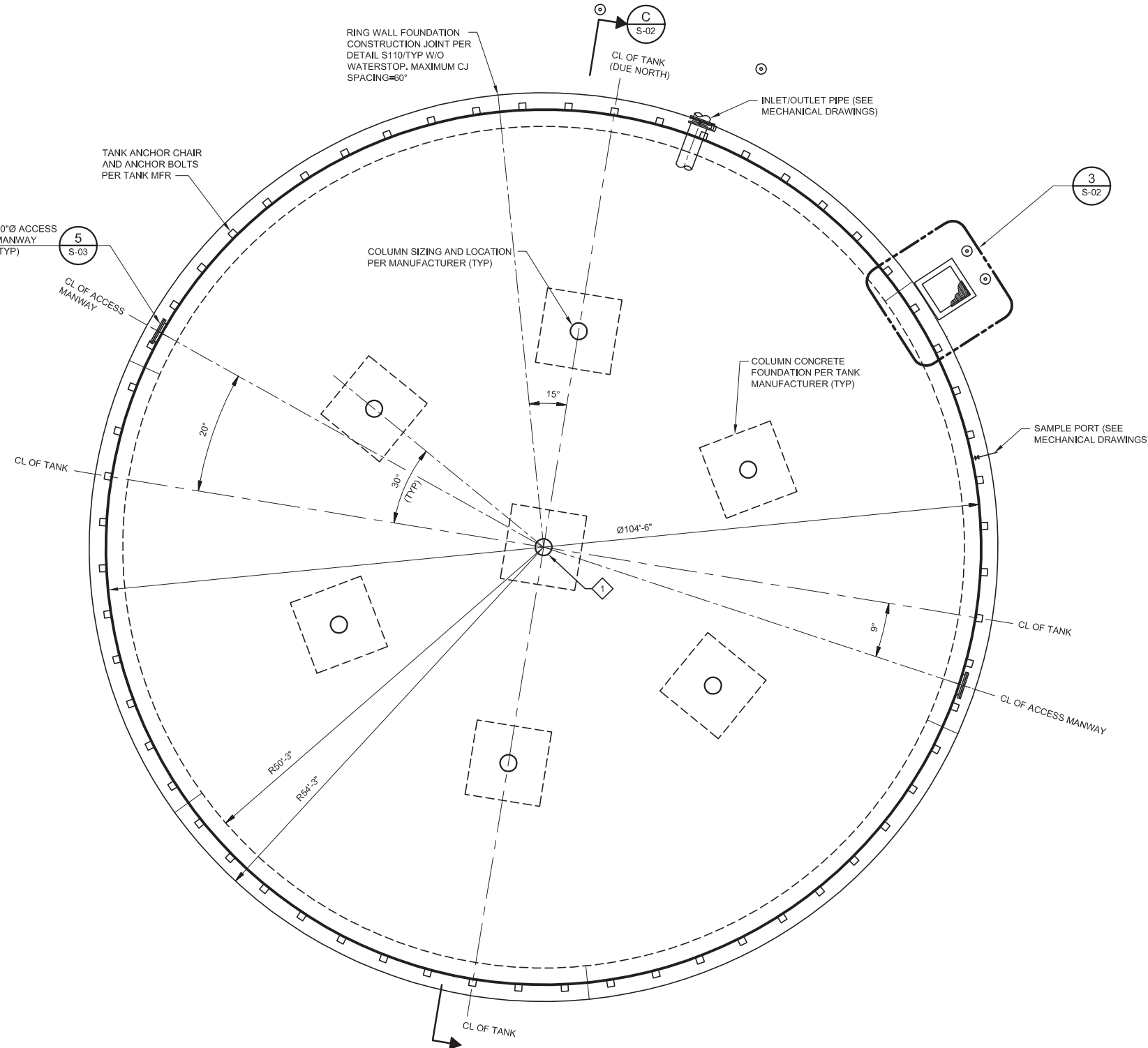


Marina Coast Water District

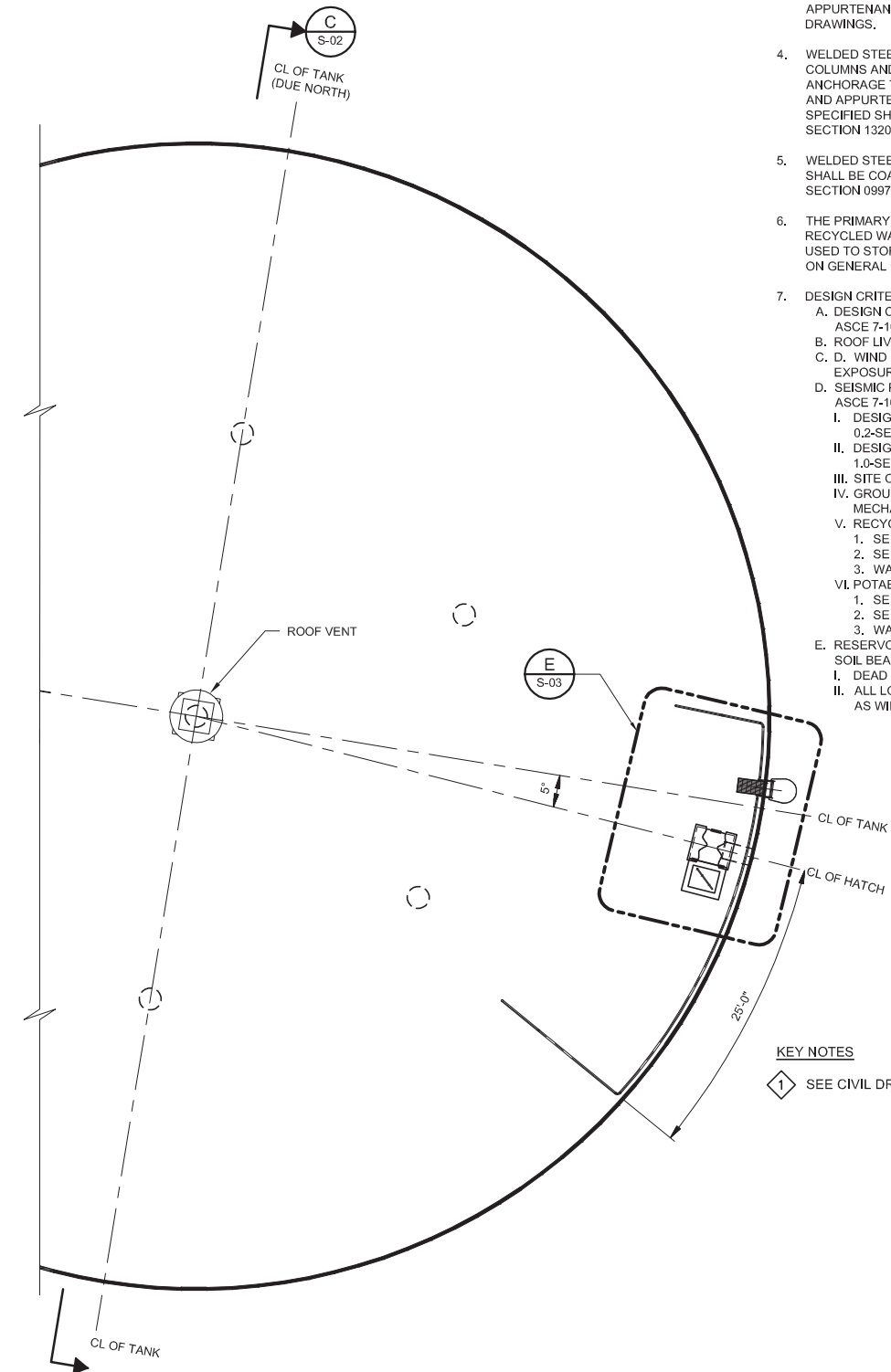
REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
STRUCTURAL
BLACKHORSE RESERVOIR
TYPICAL DETAILS

VERIFY SCALES
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0 1"
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JOB NO.
7568A.10
DRAWING NO.
SG-03
SHEET NO.
66A OF 93



A FOUNDATION PLAN
SCALE: 1/8" = 1'-0"
FILE: BHR_S-103.dwg



B TOP PLAN
SCALE: 1/8" = 1'-0"
FILE: BHR_S-103.dwg

GENERAL NOTES

- SEE DRAWINGS SG-01 THROUGH SG-03 FOR STRUCTURAL GENERAL NOTES AND STANDARD DETAILS.
- SEE CP DRAWINGS FOR TANK CATHODIC PROTECTION.
- SEE MECHANICAL DRAWINGS FOR PIPE PENETRATIONS AND APPURTENANCES NOT SHOWN ON THE STRUCTURAL DRAWINGS.
- WELDED STEEL WATER RESERVOIR, INCLUDING INTERNAL COLUMNS AND CONCRETE FOOTINGS, RESERVOIR ANCHORAGE TO THE CONCRETE RING WALL FOUNDATION, AND APPURTENANCES SHOWN ON THE DRAWINGS AND/OR SPECIFIED SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13206Q.
- WELDED STEEL WATER RESERVOIR AND APPURTENANCES SHALL BE COATED IN ACCORDANCE WITH SPECIFICATION SECTION 09974.
- THE PRIMARY USE OF THE RESERVOIR IS TO STORE RECYCLED WATER. IN THE FUTURE, THE RESERVOIR MAY BE USED TO STORE POTABLE WATER. SEE DESIGN CRITERIA ON GENERAL NOTE 7 FOR DIFFERENT DESIGN PARAMETERS.
- DESIGN CRITERIA:
 - DESIGN CODES: 2013 CALIFORNIA BUILDING CODE, ASCE 7-10, AND AWWA D100.
 - ROOF LIVE LOAD: 20 PSF.
 - WIND PARAMETERS: BASIC WIND SPEED = 115 MPH; EXPOSURE COEFFICIENT = C.
 - SEISMIC PARAMETERS BASED ON AWWA D100 AND ASCE 7-10:
 - DESIGN EARTHQUAKE SPECTRAL ACCELERATION AT 0.2-SEC: SDS = 0.981 G
 - DESIGN EARTHQUAKE SPECTRAL ACCELERATION AT 1.0-SEC: SD1 = 0.527 G
 - SITE CLASS: D
 - GROUND SUPPORTED FLAT-BOTTOM TANK MECHANICALLY ANCHORED.
 - SEISMIC USE GROUP: II
 - SEISMIC IMPORTANCE FACTOR: I = 1.25
 - WATER LEVEL ELEVATION AT OVERFLOW: 515.60
 - POTABLE WATER STORAGE PARAMETERS:
 - SEISMIC USE GROUP: III
 - SEISMIC IMPORTANCE FACTOR: I = 1.50
 - WATER LEVEL ELEVATION AT OVERFLOW: 512.50
- RESERVOIR RING WALL FOUNDATION NET ALLOWABLE SOIL BEARING PRESSURE:
 - DEAD PLUS LIVE PLUS WATER: 3,000 PSF
 - ALL LOADS INCLUDING SHORT TERM LOADS SUCH AS WIND AND SEISMIC: 4,000 PSF

KEY NOTES

- SEE CIVIL DRAWINGS FOR RESERVOIR COORDINATES.

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DATE APRIL 2017	

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Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 15:08:36-07'00'

PROJECT MANAGER	



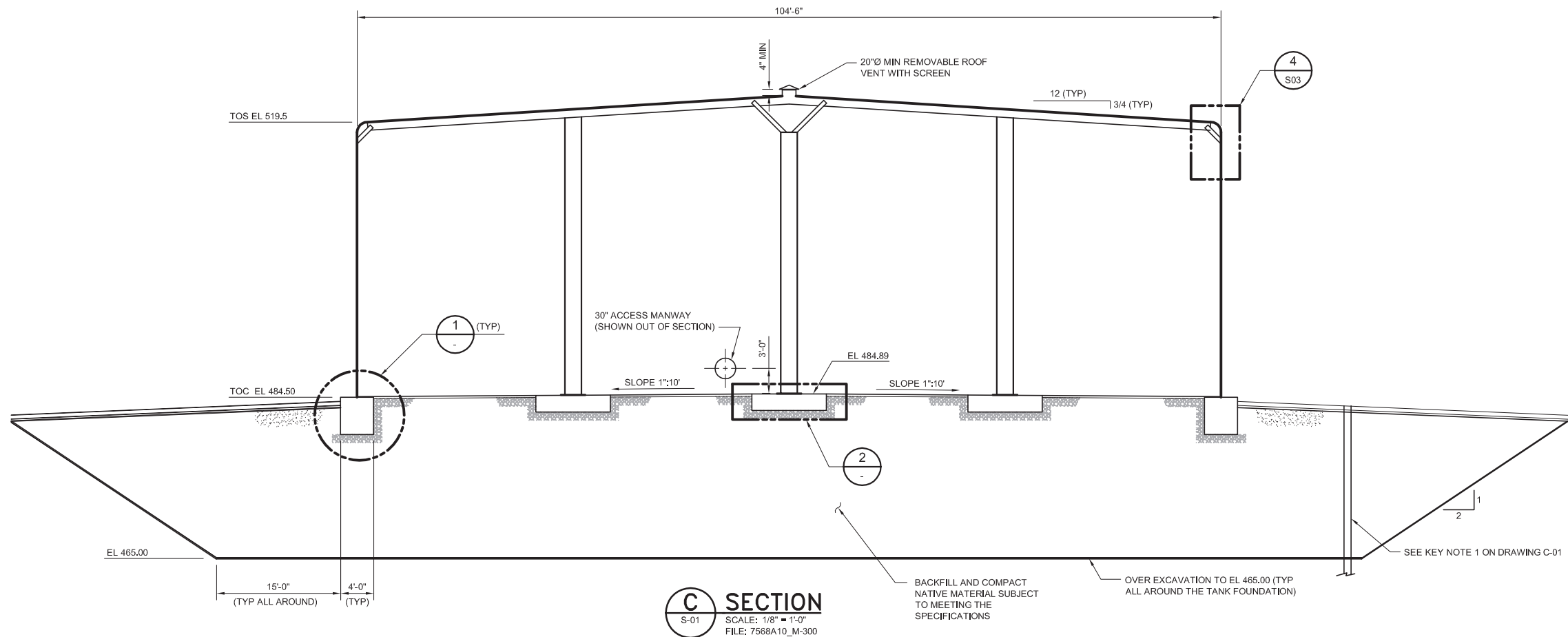
REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
STRUCTURAL
RESERVOIR
PLANS

VERIFY SCALES	JOB NO. 7568A.10
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. S-01
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. 67 OF 93

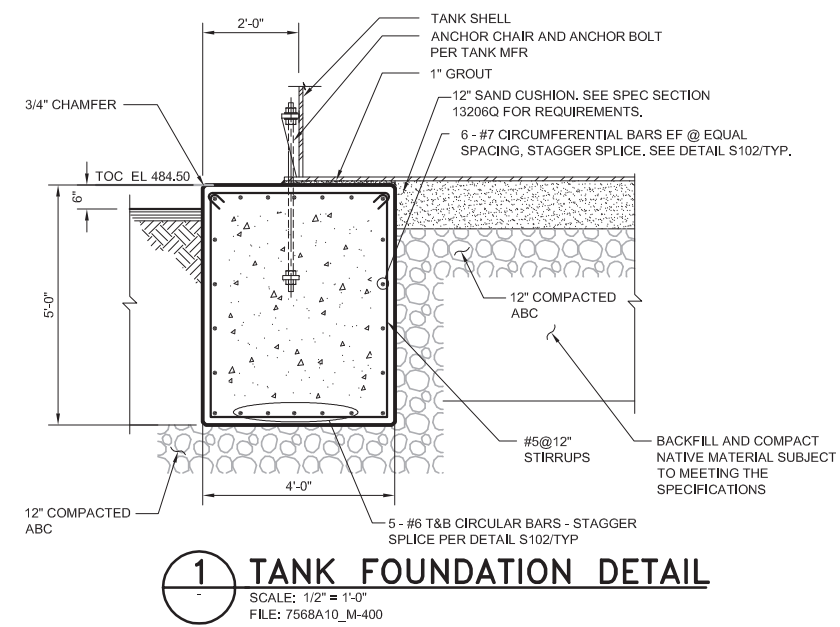
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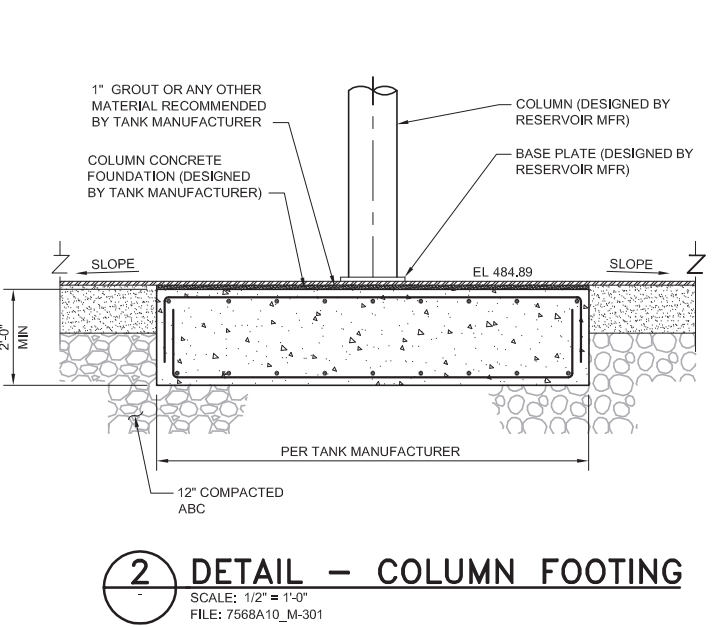
1. TOLERANCES ON CONCRETE FOUNDATIONS: RINGWALL AFTER GROUTING SHALL BE LEVEL WITHIN ±1/8" IN ANY 30' CIRCUMFERENCE UNDER THE SHELL THE LEVELNESS ON THE CIRCUMFERENCE SHALL NOT VARY BY MORE THAN ±1/4" FROM AN ESTABLISHED PLAN. THE TOLERANCE ON POURED CONCRETE BEFORE GROUTING SHALL BE ±1".
2. THE TOP OF THE CONCRETE SHALL BE CLEANED AND THOROUGHLY WETTED BEFORE NON-SHRINK GROUT IS PLACED.
3. WHEN GROUTED, A 1" MINIMUM SPACE BETWEEN THE TANK BOTTOM AND THE TOP OF THE CONCRETE SHALL BE THE ENTIRE SPACE BENEATH THE TANK FROM THE OUTSIDE EDGE OF THE TANK BOTTOM TO THE SAND CUSHION. IN NO CASE SHALL THE WIDTH OF GROUT PLACED UNDER THE TANK BOTTOM BE LESS THAN 2'-6". THE TOP OF THE FOUNDATIONS SHALL BE THOROUGHLY SATURATED WITH WATER AND SURFACE DAMP BEFORE GROUT IS PLACED.



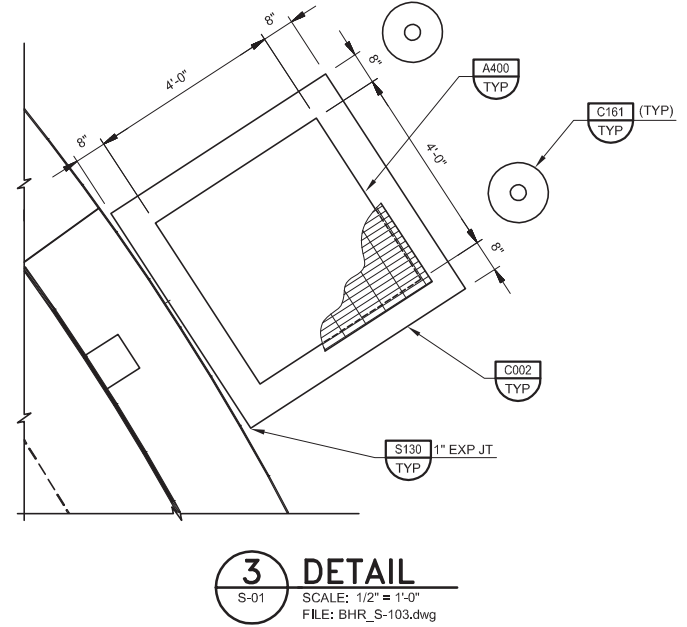
C SECTION
S-01 SCALE: 1/8" = 1'-0"
FILE: 7568A10_M-300



1 TANK FOUNDATION DETAIL
SCALE: 1/2" = 1'-0"
FILE: 7568A10_M-400



2 DETAIL - COLUMN FOOTING
SCALE: 1/2" = 1'-0"
FILE: 7568A10_M-301



3 DETAIL
S-01 SCALE: 1/2" = 1'-0"
FILE: BHR_S-103.dwg

REV	DATE	BY	DESCRIPTION

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DATE APRIL 2017

DISCIPLINE ENGINEER
EDUARDO QUIROZ
No. 04906
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

PROJECT ENGINEER
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:23:27-07'00'

PROJECT MANAGER
EDUARDO QUIROZ
No. 73265
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

carollo

MARINA COAST WATER DISTRICT

Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT

BLACKHORSE RECYCLED WATER RESERVOIR

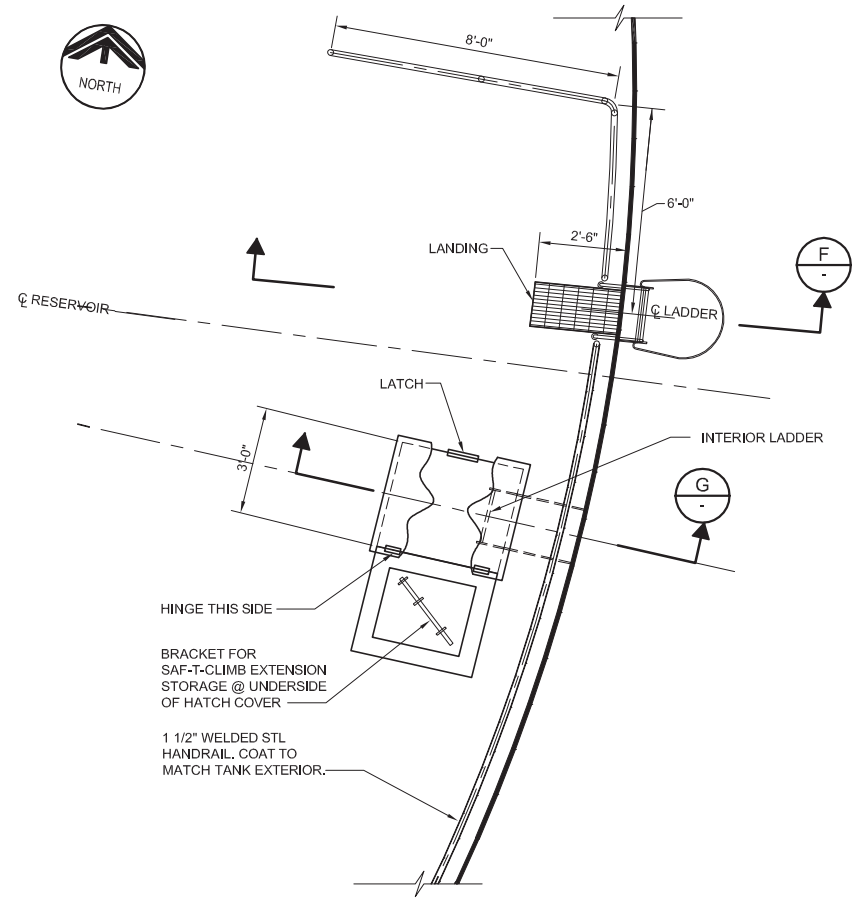
STRUCTURAL
RESERVOIR
SECTIONS AND DETAIL

VERIFY SCALES
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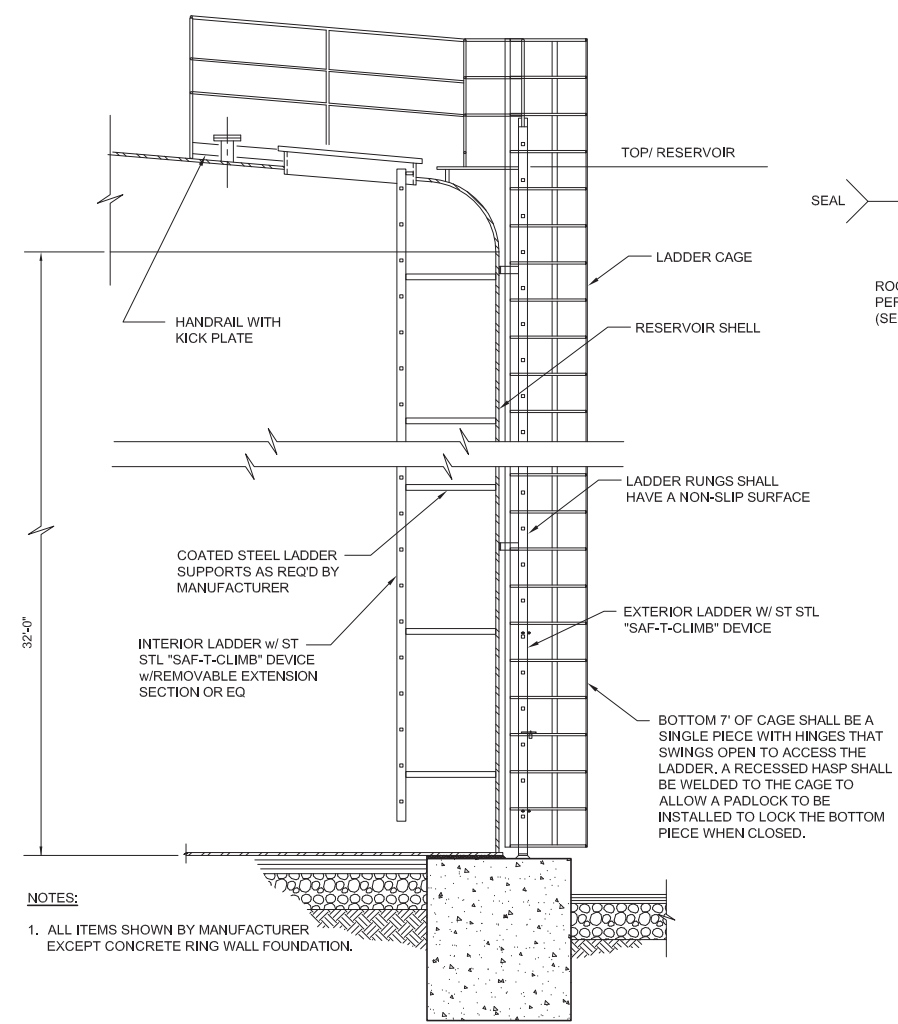
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JOB NO. 7568A.10
DRAWING NO. S-02
SHEET NO. 68 OF 93

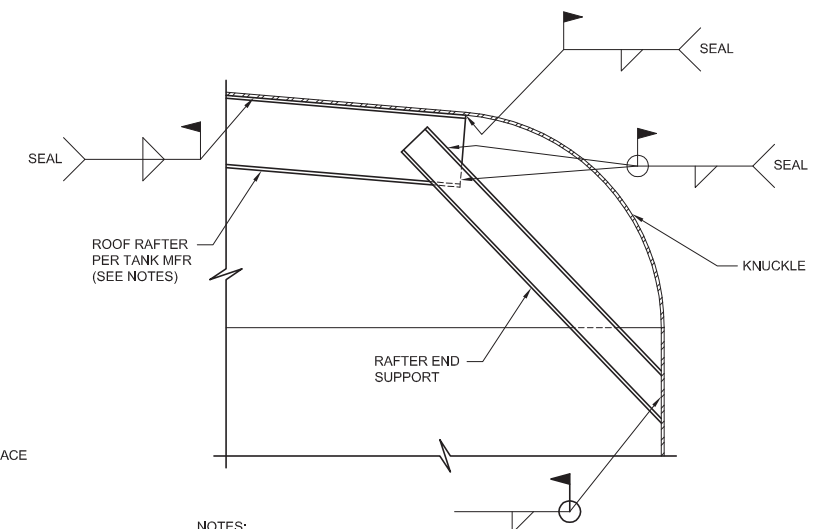
FILENAME:



E ACCESS COVER PLAN
S-01 SCALE: 3/8" = 1'-0"
FILE: 7568A10_M-103

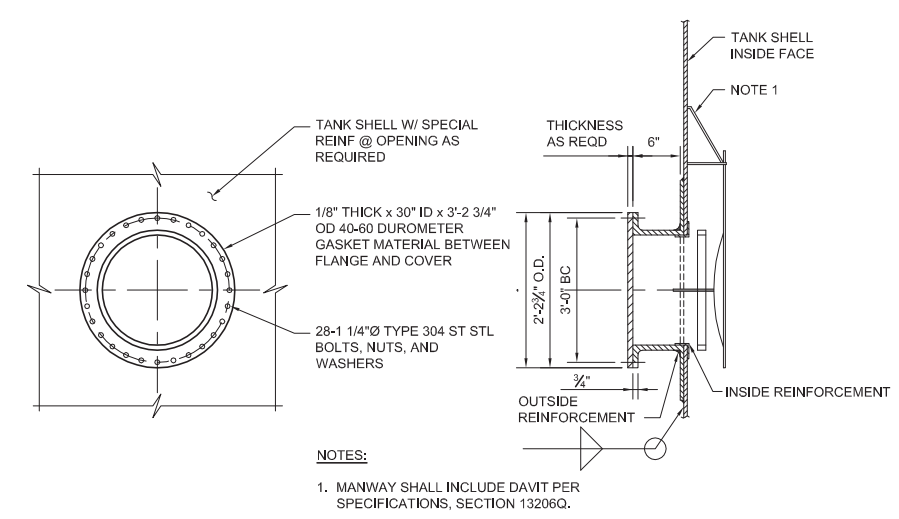


F SECTION
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FILE: 7568A10_M-304



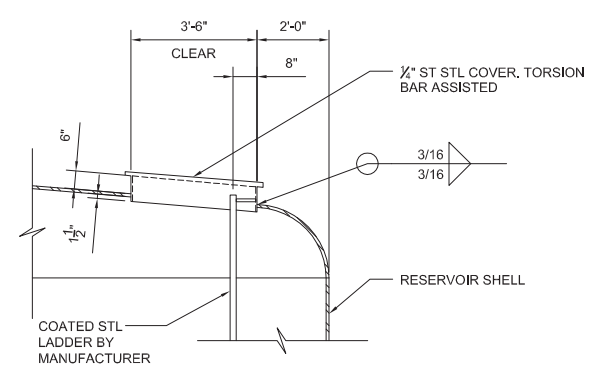
- NOTES:**
1. ALL RAFTER FAYING SURFACES SHALL BE SEAL WELDED.
 2. ROOF RAFTER LATERAL BRACING SHALL BE STRUCTURAL STEEL CHANNELS OR ANGLES WITH WELDED CONNECTIONS. THREADED CONNECTIONS SHALL NOT BE USED.
 3. GUARDRAIL NOT SHOWN.

4 DETAIL
S-02 SCALE: 3/4" = 1'-0"
FILE: 7568A10_S-401



- NOTES:**
1. MANWAY SHALL INCLUDE DAVIT PER SPECIFICATIONS, SECTION 132060.

5 SECTION-30"Ø ACCESS MANWAY
S-01 SCALE: 1/2" = 1'-0"
FILE: 7568A10_M-307



G SECTION-ACCESS HATCH
SCALE: 3/8" = 1'-0"
FILE: 7568A10_M-306

REV	DATE	BY	DESCRIPTION

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DATE APRIL 2017

DISCIPLINE ENGINEER

PROJECT ENGINEER

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Date: 2017.05.01 14:23:35-07'00'

Digitally signed by Edgardo Quiroz
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 15:09:16-07'00'

PROJECT MANAGER

Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT

BLACKHORSE RECYCLED WATER RESERVOIR

STRUCTURAL RESERVOIR PLAN, SECTIONS AND DETAILS

VERIFY SCALES

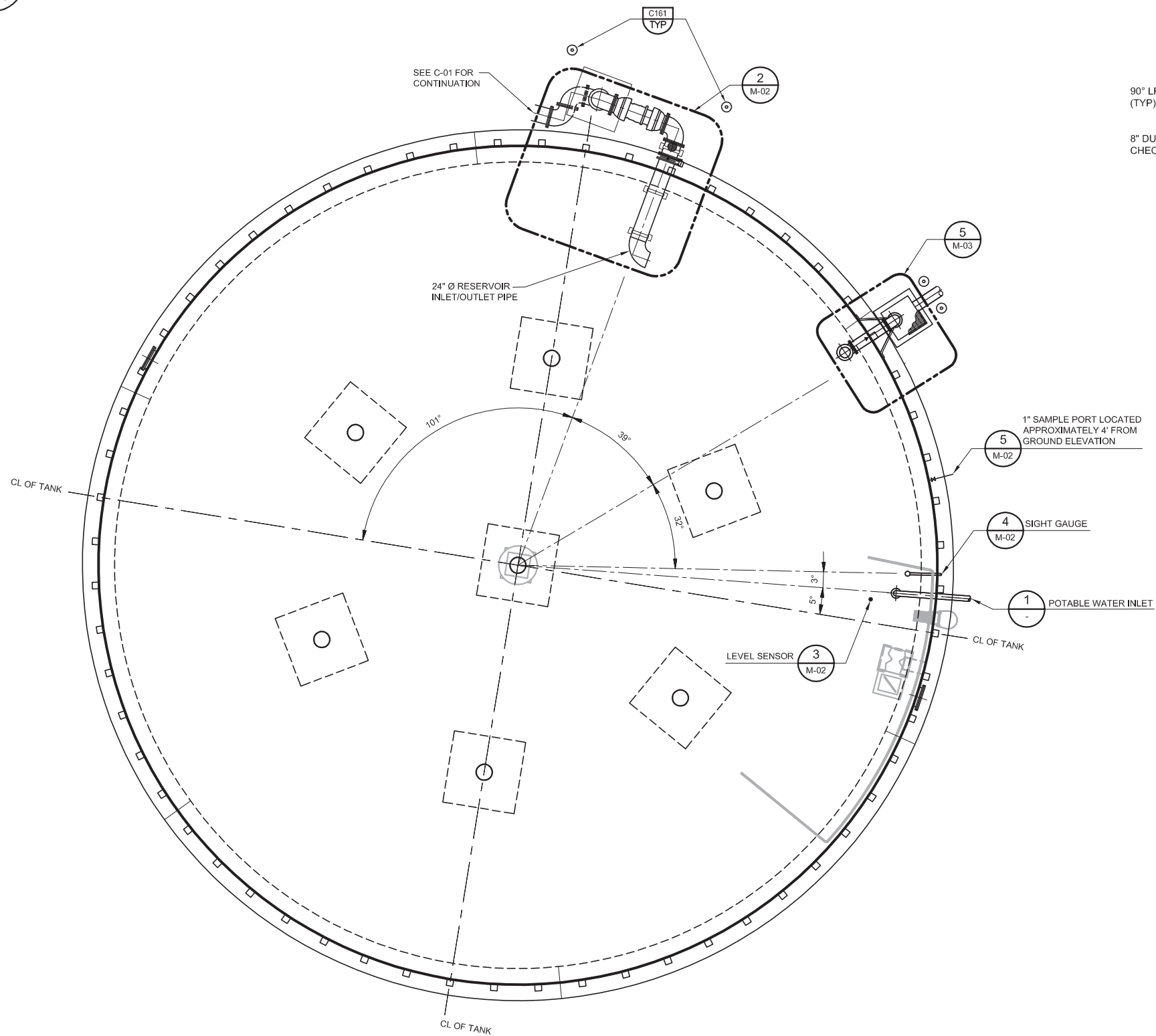
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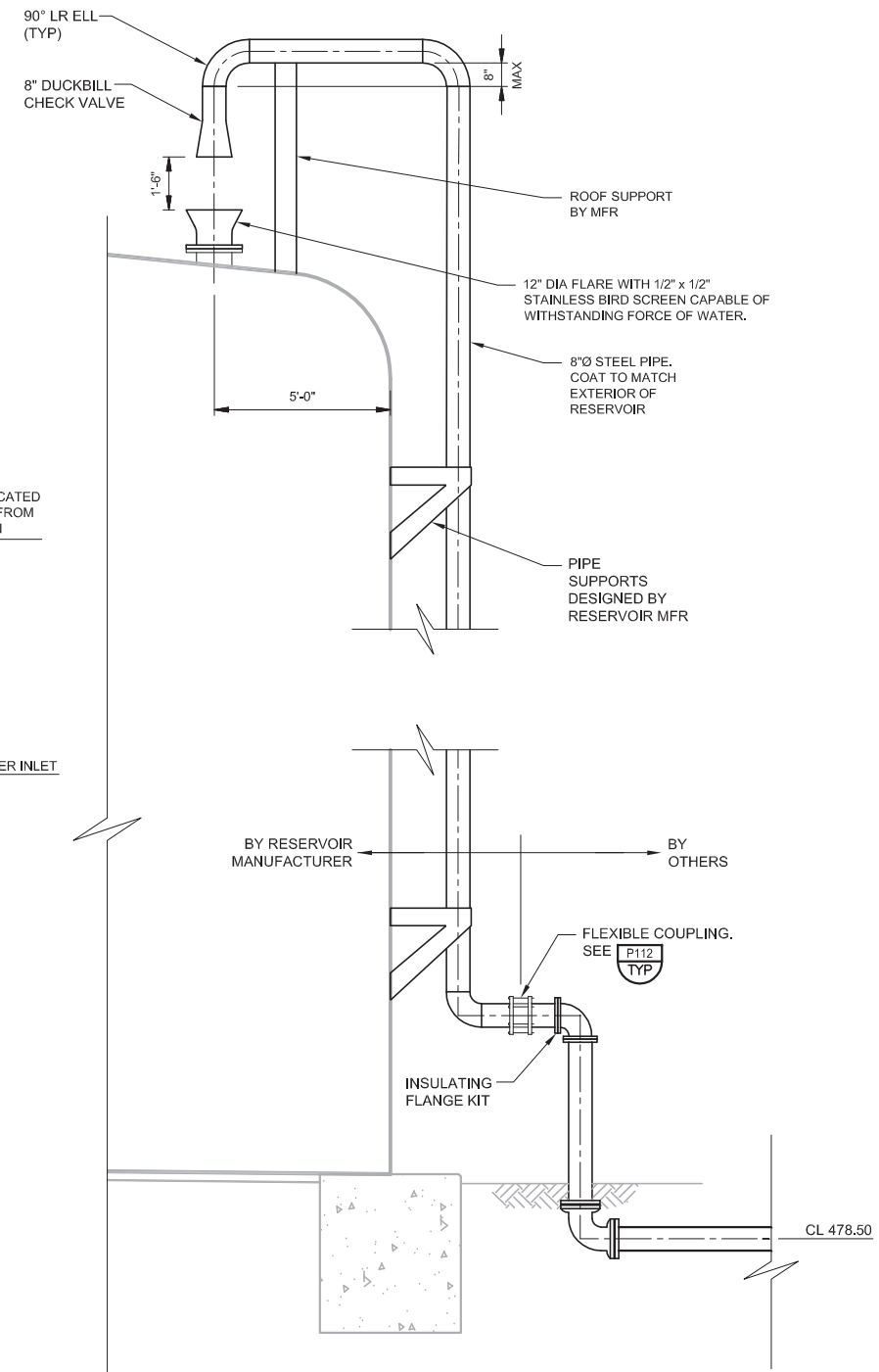
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
DRAWING NO. S-03
SHEET NO. 69 OF 93

FILENAME:



A RESERVOIR ORIENTATION PLAN
 C-02 SCALE: 1/8" = 1'-0"
 FILE: BHR_M-103.dwg



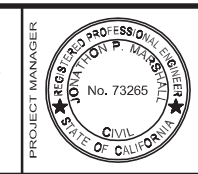
1 POTABLE WATER INLET
 SCALE: 3/8" = 1'-0"
 FILE: BHR_M-01.dwg

REV	DATE	BY	DESCRIPTION

DESIGNED	RRH
DRAWN	SJB
CHECKED	BH
DATE	APRIL 2017

DISCIPLINE ENGINEER

PROJECT ENGINEER
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 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 13:17:15-07'07



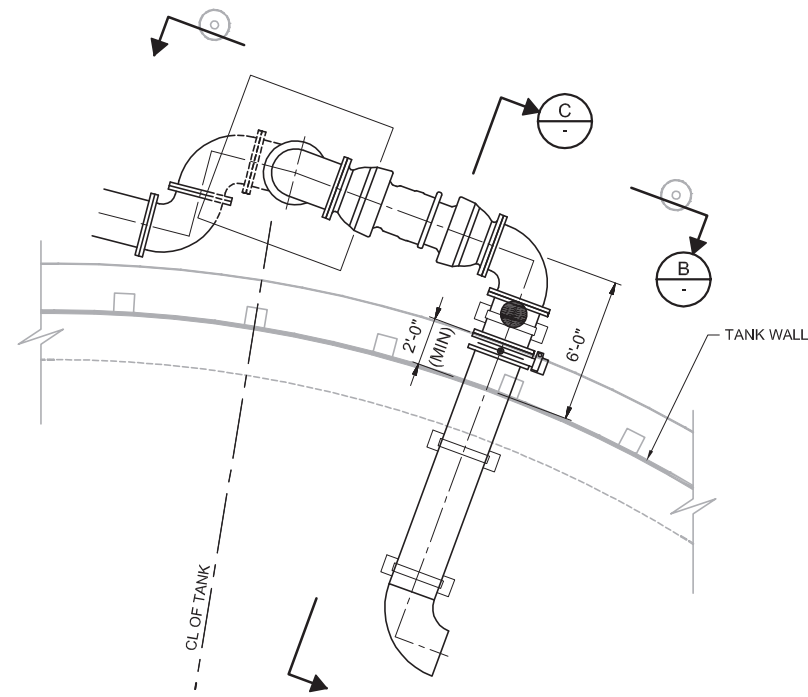
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
 BLACKHORSE RECYCLED WATER RESERVOIR
 MECHANICAL
 RESERVOIR
 PLAN AND DETAILS

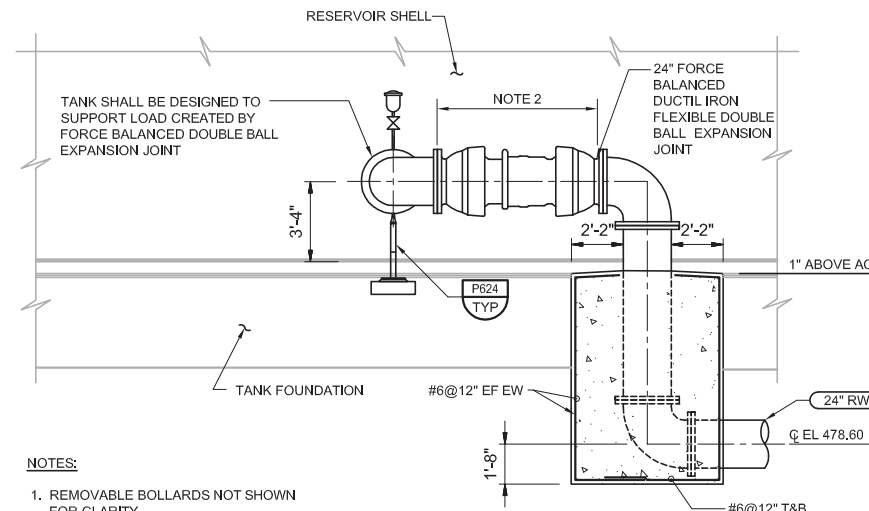
VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
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 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. M-01
 SHEET NO. 70 OF 93

FILENAME:

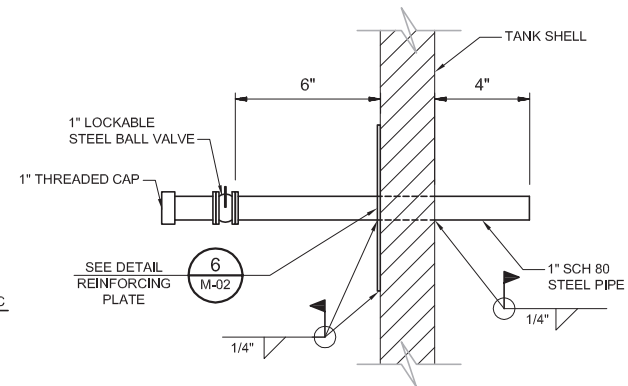


2 INLET/OUTLET PIPE DETAIL
M-01 SCALE: 1/4"=1'-0"



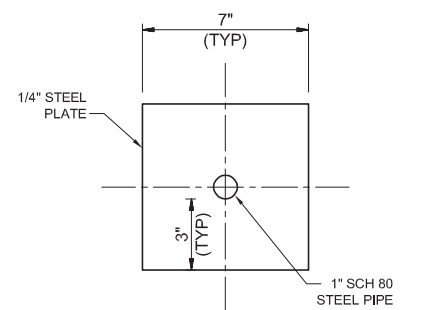
- NOTES:**
1. REMOVABLE BOLLARDS NOT SHOWN FOR CLARITY.
 2. TO BE PROVIDED BY TANK MANUFACTURER.
 3. SUPPORT HORIZONTAL PIPE SECTION AS NEEDED.
 4. ADJUSTABLE PIPE SUPPORT SHALL ONLY HAVE LOWER SUPPORT SADDLE (NOT UPPER HOOP).

B SECTION
SCALE: NO SCALE
FILE: 7568A10_M-303

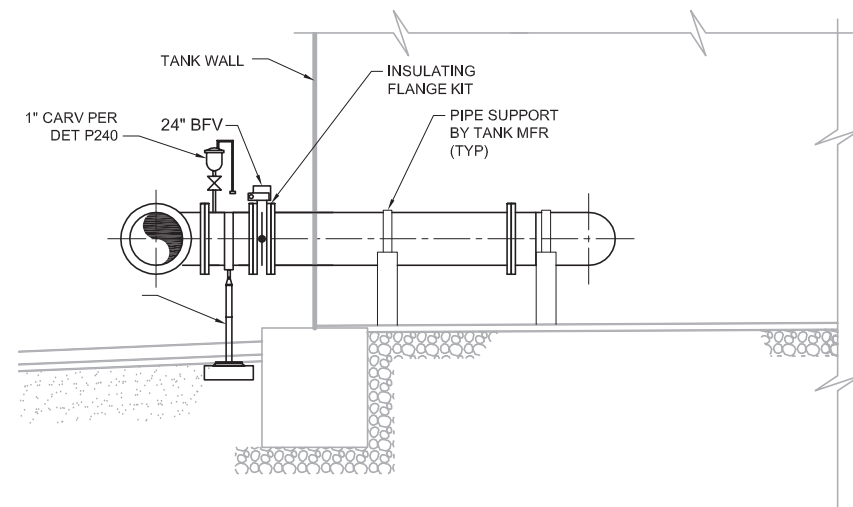


- NOTES:**
- COAT INTERIOR AND EXTERIOR OF PIPE AND ALL EXPOSED SURFACES TO MATCH RESERVOIR.

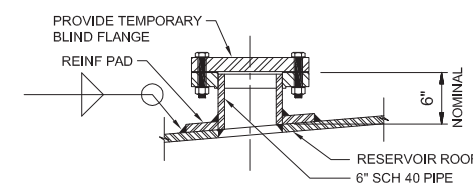
5 SHELL PENETRATION
M-01 SCALE: NO SCALE
FILE:



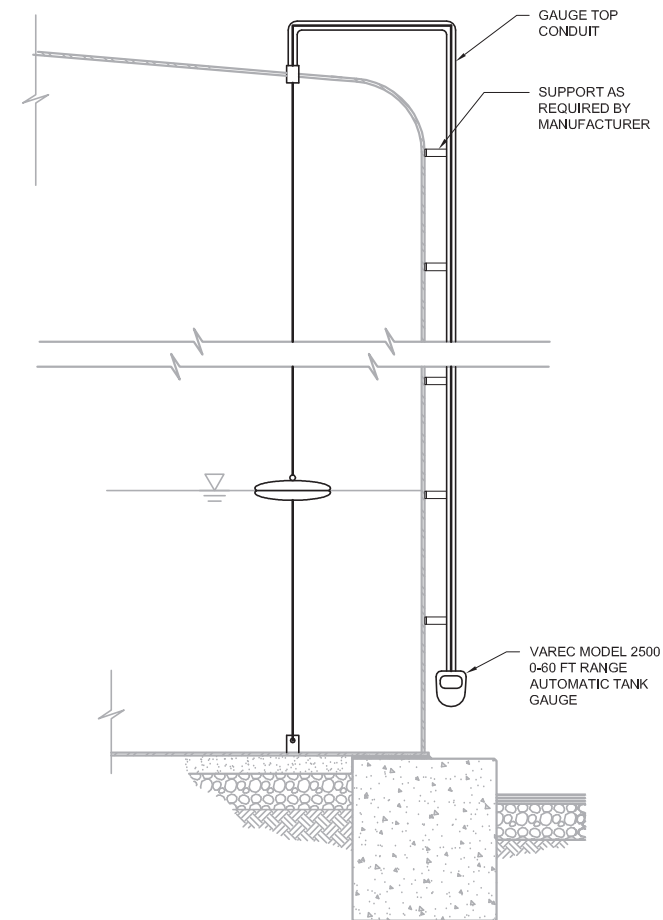
6 REINFORCED PLATE
M-02 SCALE: NO SCALE
FILE:



C SECTION
SCALE: 1/4"=1'-0"



3 DETAIL-LEVEL SENSOR
M-01 SCALE: 1"=1'-0"
FILE: 7568A10_M-305

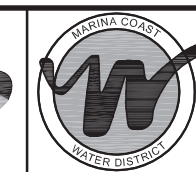


4 DETAIL-SIGHT GAUGE
M-01 SCALE: 3/8"=1'-0"
FILE: 7568A10_M-311

REV	DATE	BY	DESCRIPTION

DESIGNED	RRH
DRAWN	SJB
CHECKED	BH
DATE	APRIL 2017

PROJECT ENGINEER
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Date: 2017.05.01 13:17:07-07'07'



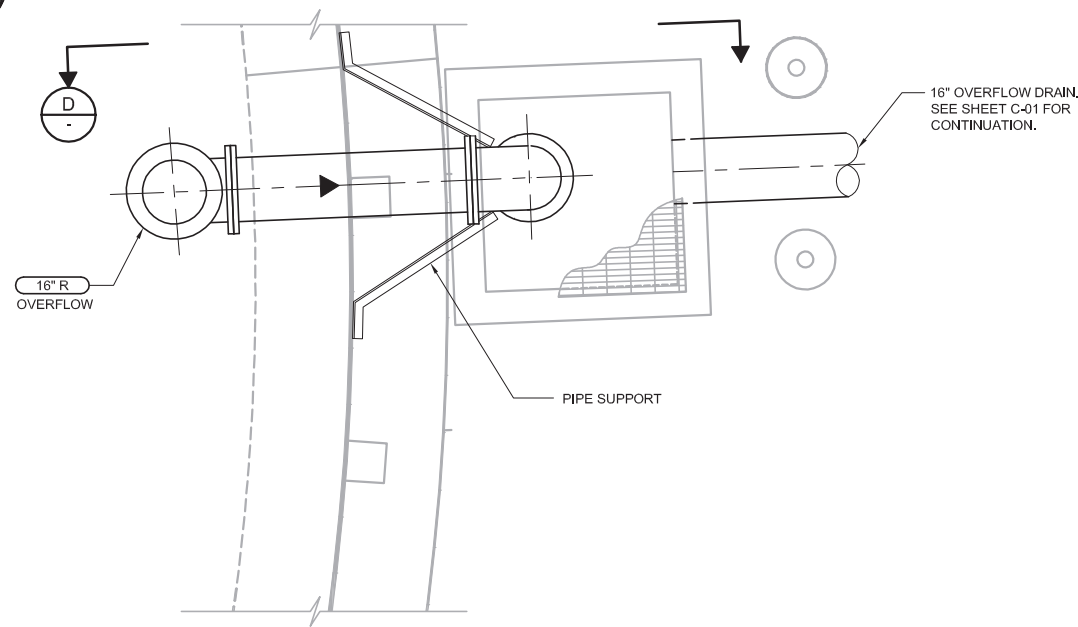
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
MECHANICAL
RESERVOIR DETAILS

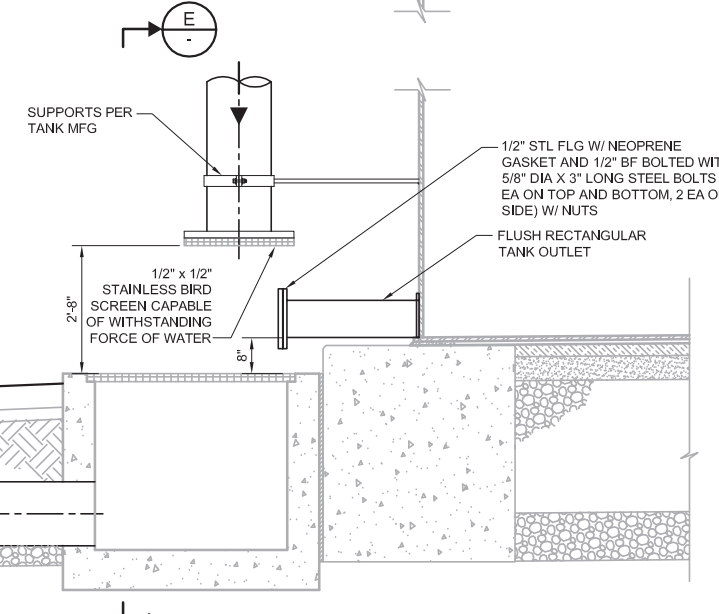
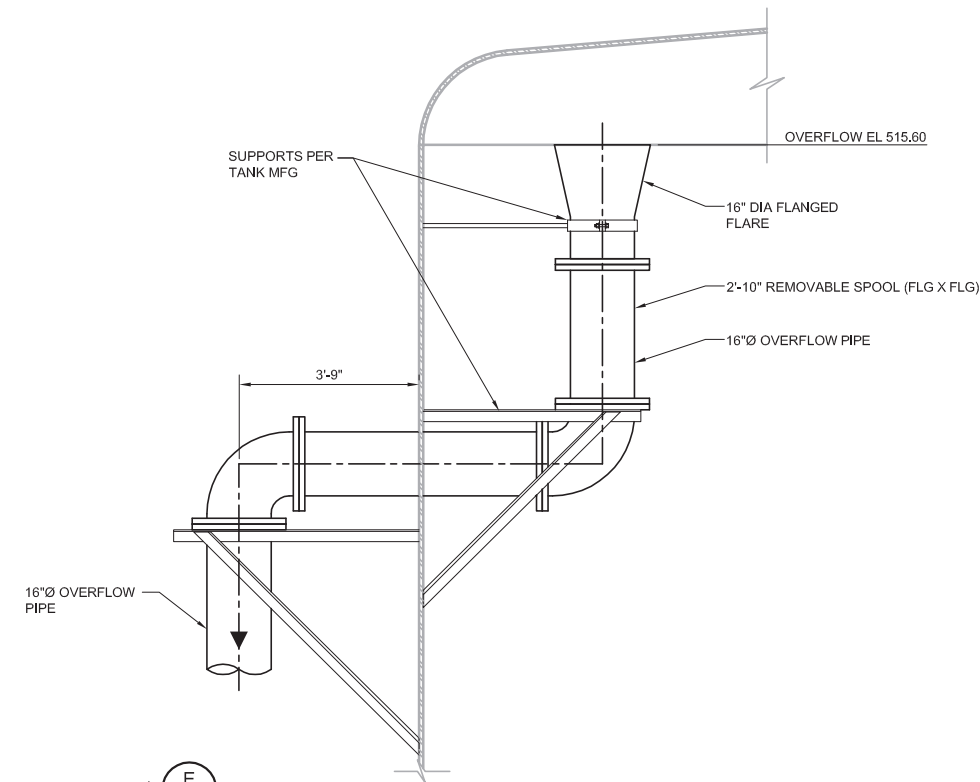
VERIFY SCALES
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JOB NO. 7568A.10
DRAWING NO. M-02
SHEET NO. 71 OF 93

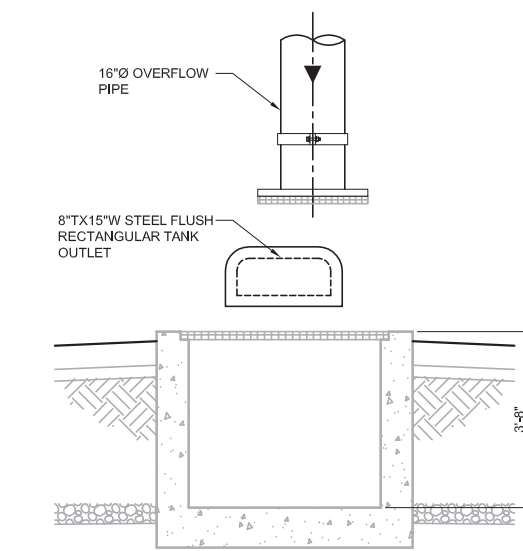
FILENAME:



5 **DETAIL – OVERFLOW/DRAIN LINES**
 M-01 SCALE: 1/2" = 1'-0"
 FILE: 7568A10_M-103



D **OVERFLOW & DRAIN SECTION**
 SCALE: 1/2" = 1'-0"
 FILE: 7568A10_M-302



E **SECTION – FLUSH CLEANOUT**
 SCALE: 1" = 1'-0"
 FILE: 7568A10_M-308

REV	DATE	BY	DESCRIPTION

DESIGNED	RRH
DRAWN	SJB
CHECKED	
DATE	APRIL 2017

DISCIPLINE ENGINEER

PROJECT ENGINEER
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 Date: 2017.05.01 13:16:56-07'00'



Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
 BLACKHORSE RECYCLED WATER RESERVOIR
 MECHANICAL
 OVERFLOW AND DRAIN
 PLAN AND SECTIONS

VERIFY SCALES
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JOB NO. 7568A.10
 DRAWING NO. M-03
 SHEET NO. 72 OF 93

FILENAME:

ELECTRICAL PLAN SYMBOLS

ELECTRICAL ONE-LINE SYMBOLS

IDENTIFICATION SYMBOLS

- EQUIP #** EQUIPMENT AND INSTRUMENT IDENTIFICATION
- EQUIPMENT/INSTRUMENT LOCATOR
- LUMINAIRE IDENTIFICATION**
 a = CIRCUIT DESIGNATION
 b = DEVICE SWITCHED FROM
 c = MOUNTING HEIGHT IN FEET TO BOTTOM OF FIXTURE
- CONDUIT IDENTIFICATION**
 XXXX = CONDUIT NUMBER, REFER TO CONDUIT SCHEDULE UNLESS OTHERWISE NOTED, GROUPED CONDUITS ARE LABELED LEFT TO RIGHT OR TOP TO BOTTOM.
- INDICATES KEYNOTE X (PERTAINS ONLY TO SHEET WHERE NOTE IS FOUND)**
- DISCONNECT SWITCH**
 a = TYPE, REFER TO DISCONNECT SCHEDULE
- PCM ALARM HORN/STROBE COMBINATION**
- VOIP PAGING LOUD SPEAKER**
- VOIP PAGING CEILING MOUNT SPEAKER**

LUMINAIRES

- LINEAR STRIP**
- LUMINAIRE POLE MOUNTED**
- STROBE**
 a = COLOR
 R = RED
 G = GREEN
 A = AMBER
- LUMINAIRE, EMERGENCY BATTERY-POWERED**
- LUMINAIRE, EMERGENCY/EXIT BATTERY-POWERED**
- LUMINAIRE, EMERGENCY BATTERY-POWERED REMOTE**
- LUMINAIRE, SURFACE OR PENDANT MOUNTED**
- LUMINAIRE, WALL MOUNTED**
- LUMINAIRE, FLOOD/SPOT**
- LUMINAIRE, EXIT ONE OR TWO FACES AS INDICATED, ARROW POINTS IN DIRECTION OF EGRESS.**
- LUMINAIRE, WALL WASHER**
- PHOTOCELL**

TITLE 24 DAYLIT ZONES

- PRIMARY SIDELIT DAYLIT ZONE**
- SECONDARY SIDELIT DAYLIT ZONE**
- SKYLIGHT DAYLIT ZONE**

SWITCHES/RECEPTACLES

- SINGLE POLE SWITCH**
 a = CIRCUIT DESIGNATION
 b = DEVICE SWITCHED DESIGNATION
- c = TYPE**
 2 = DOUBLE POLE SWITCH
 3 = THREE-WAY SWITCH
 4 = FOUR-WAY SWITCH
 K = KEY OPERATED SWITCH
 F = SWITCH AND FUSE/STAT HOLDER
 P = SWITCH AND PILOT LIGHT
 T = THERMOSTAT
 D = DIMMER SWITCH
 L = LOW VOLTAGE LIGHT SWITCH
 M = MANUAL MOTOR STARTER
 N = NETWORKED SINGLE OR MULTIPLE SWITCH LOCATIONS
 WP = WEATHER PROOF
- OCCUPANCY SENSOR**
 X = REFERENCE LIGHTING CONTROL COMPONENT SCHEDULE
 a = CIRCUIT DESIGNATION
 b = DEVICE SWITCHED DESIGNATION
 c = MOUNTING HEIGHT IN FEET TO BOTTOM OF SENSOR
- NETWORK LIGHTING EQUIPMENT**
 X = REFERENCE LIGHTING CONTROL COMPONENT SCHEDULE
 a = CIRCUIT DESIGNATION
 b = DEVICE SWITCHED DESIGNATION
 c = TYPE
 B = BRIDGE
 G = GATEWAY
 R = RELAY PACK
- SWITCH AND SINGLE RECEPTACLE**
 a = CIRCUIT DESIGNATION
 b = DEVICE TYPE DESIGNATION
- DUPLEX RECEPTACLE**
 a = CIRCUIT DESIGNATION
 b = DEVICE TYPE DESIGNATION
- QUADRUPLEX RECEPTACLE**
 a = CIRCUIT DESIGNATION
 b = DEVICE TYPE DESIGNATION
- IN FLOOR DUPLEX RECEPTACLE**
 a = CIRCUIT DESIGNATION
 b = DEVICE TYPE DESIGNATION
- IN FLOOR QUADRUPLEX RECEPTACLE**
 a = CIRCUIT DESIGNATION
 b = DEVICE TYPE DESIGNATION
- DUPLEX RECEPTACLE w/SPLIT WIRE**
 a = CIRCUIT DESIGNATION
 b = DEVICE TYPE DESIGNATION
- APPLIANCE RECEPTACLE**
 a = CIRCUIT DESIGNATION
 b = DEVICE TYPE DESIGNATION
- WELDING RECEPTACLE**
 a = CIRCUIT DESIGNATION
 b = DISCONNECT TYPE
- SPECIAL PURPOSE RECEPTACLE**
 a = CIRCUIT DESIGNATION
 b = DEVICE TYPE DESIGNATION
- TWIST LOCK RECEPTACLE**
 a = AMP RATING
- TELEPHONE OUTLET**
 a = MOUNTING HEIGHT
- DATA COMMUNICATIONS OUTLET**
 a = MOUNTING HEIGHT
 b = TYPE
 B = BUSINESS
 S = SCADA

FIRE ALARM

- SMOKE DETECTOR**
 a = TYPE
 I = IONIZATION
 P = PHOTOELECTRIC
 d = DUCT DETECTOR
- FIRE ALARM CONTROL PANEL**
- FIRE ALARM PULL STATION**
- FIRE ALARM HORN/STROBE COMBINATION**
- FIRE ALARM STROBE**
- FIRE SPRINKLER**
 F = FLOW SWITCH
 T = TAMPER SWITCH

RACEWAY

- EXPOSED CONDUIT**
- BREAK AND CONTINUATION IN CONDUIT RUN**
- EXPOSED CONDUIT HIDDEN BEHIND WALLS, FLOORS OR OTHER STRUCTURES**
- UNDERGROUND CONDUIT, DIRECT BURIED OR IN DUCTBANK**
- CONDUIT IN SLAB**
- CONDUIT VERTICAL CHANGE IN DIRECTION**
- CONDUIT CAP**
- JUNCTION BOX**
- CONDUIT SEAL**
- CONDUIT TEE**
- DUCTBANK APPROXIMATE DIMENSIONS SHOWN ON DUCTBANK SCHEDULE**

CONDUIT SIZE AND CONDUCTORS

INDIVIDUAL CONDUCTORS

- W/C-(3-X (Ø), 1-Y (N) & 1-Z (G))
- W/C (WHERE INDICATED); W = CONDUIT TRADE SIZE
- 3-X (Ø):
 3 = QUANTITY
 X = SIZE OF CONDUCTORS
 (Ø) = DESIGNATES PHASE CONDUCTORS
- 1-Y (N) (WHERE INDICATED):
 1 = QUANTITY
 Y = SIZE OF CONDUCTORS
 (N) = DESIGNATES NEUTRAL CONDUCTORS
- 1-Z (G) (WHERE INDICATED):
 1 = QUANTITY
 Z = SIZE OF CONDUCTORS
 (G) = DESIGNATES GROUND CONDUCTORS

- U(3-X (Ø) & 1-X (G))
- U = NUMBER OF PARALLEL RUNS

MULTI CONDUCTOR CABLES

- K/2/C#16S**
 K (WHERE INDICATED) = NUMBER OF PAIRS
 2/C#16S = TWO CONDUCTOR, 16 GAUGE, TWISTED SHIELDED PAIR
- K/3/C#16S**
 K (WHERE INDICATED) = NUMBER OF TRIPLETS
 3/C#16S = THREE CONDUCTOR, 16 GAUGE, TWISTED SHIELDED TRIPLETS

- N/CX
 N = NUMBER OF CONDUCTORS IN THE CABLE
 X = SIZE OF CONDUCTORS

FIBER OPTIC CABLES

- FO/N
 N = NUMBER OF INDIVIDUAL FIBERS

GROUNDING

- UNDERGROUND GROUND CABLE #4/0 SDBC UNLESS OTHERWISE NOTED**
- GROUND ROD**
- GROUND ROD AND GROUND WELL**
- GROUND CONNECTION**

MEDIUM VOLTAGE

- CIRCUIT BREAKER, MEDIUM VOLTAGE**
 a = CIRCUIT BREAKER NUMBER
 b = FRAME SIZE
- ANSI RELAY DEVICE**
 a = ANSI DEVICE FUNCTION
 b = QUANTITY
- MEDIUM VOLTAGE DISCONNECT SWITCH NON-FUSED CUT OUT**
- MEDIUM VOLTAGE DISCONNECTING FUSE SINGLE FUSE CUT OUT**
- MEDIUM VOLTAGE DISCONNECTING FUSE DOUBLE FUSE CUT OUT**
- MEDIUM VOLTAGE SINGLE FUSE**
- MEDIUM VOLTAGE DOUBLE FUSE**
- MEDIUM VOLTAGE LIVE FRONT TERMINATOR**
- MEDIUM VOLTAGE ELBOW**
- MEDIUM VOLTAGE TEE**
- MEDIUM VOLTAGE CONTACTOR**
- MEDIUM VOLTAGE STARTER**
- MOV-ELBOW ARRESTER**

LOW VOLTAGE

- LOW VOLTAGE CIRCUIT BREAKER**
 a = TYPE
 MCP = MOTOR CIRCUIT PROTECTOR
 TM = THERMAL MAGNETIC
 SS = SOLID STATE
 b = FRAME SIZE (MANUFACTURER TO DETERMINE FRAME SIZE UNLESS INDICATED)
 c = NUMBER OF POLES
 d = TRIP SETTING (AT = AMP TRIP) (AC = MCP CONTINUOUS RATING)
 e = DESIGNATION
 f = INTERRUPTING RATING
- LOW VOLTAGE CIRCUIT BREAKER AUXILIARY OPERATOR**
 S = SHUNT TRIP
 G = GROUND FAULT INTERRUPTER
 V = SOLENOID KEY RELEASE
- DISCONNECT SWITCH**
 A = TYPE, REFER TO DISCONNECT SCHEDULE
- FUSED DISCONNECT SWITCH**
 B = TYPE, REFER TO DISCONNECT SCHEDULE
 b = FUSE RATING
- FUSE**
- COMBINATION STARTER WITH CONTROL POWER TRANSFORMER**
 a = CIRCUIT BREAKER DISCONNECT, TYPE AS NOTED
 b = STARTER TYPE
 c = NEMA STARTER SIZE
 d = OVERLOAD
- VARIABLE FREQUENCY DRIVE WITH FEATURES AS SHOWN**
 a = INPUT CONTACTOR
 b = OUTPUT CONTACTOR
 c = BYPASS STARTER
 d = INPUT CIRCUIT BREAKER
 LR = LINE REACTOR
 LL = LOAD REACTOR
- REDUCED VOLTAGE SOLID STATE STARTER WITH FEATURES AS SHOWN**
 BS = BYPASS STARTER
- EQUIPMENT ENCLOSURE**

MISCELLANEOUS

- MOTOR**
 HP = HORSEPOWER RATING
 FULL LOAD AMPS AS NOTED
- PACKAGED EQUIPMENT LOAD RATING AS INDICATED**
 a = RATED LOAD
 b = UNIT (HP, KW, KVA) AS INDICATED
- TRANSFORMER**
 a = DEVICE ID.
 b = KVA RATING
 c = NUMBER OF PHASES
 d = PRIMARY VOLTAGE
 e = SECONDARY VOLTAGE
 f,g = CONNECTION TYPE SYMBOL
 h = IMPEDANCE
- GROUNDING CONNECTIONS**
 GROUNDING WYE CONNECTION
 DELTA CONNECTION
- ENGINE-GENERATOR RATINGS AS INDICATED ON THE DRAWINGS**
 a = KVA/KW
 b = VOLTAGE/CONNECTION
 c = PHASE
 d = WIRE
 e = PF
- CURRENT TRANSFORMER WITH SHORTING TERMINAL BLOCK**
 a = QUANTITY
 b = RATIO
- POTENTIAL TRANSFORMER**
 a = QUANTITY
 b = RATIO
 c,d = CONNECTION TYPE SYMBOL
- SOLID STATE MULTIFUNCTION METER**
- AMPERE TEST POINT**
- VOLTAGE TEST POINT**
- UTILITY METER**
- LIGHTNING ARRESTER**
- SURGE PROTECTIVE DEVICE**
- DRAWOUT CONNECTION**
- GROUND**
- CAPACITOR**
- BATTERY**
- KIRK KEY INTERLOCK**
- LOAD BANK**

DESIGNED	CC		
DRAWN	JS		
CHECKED	MJP		
DATE	APRIL 2017		
REV	DATE	BY	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
 ALAN CARVALHO
 No. 20740
 ELECTRICAL
 STATE OF CALIFORNIA

Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 14:19:14-07'00'

REGISTERED PROFESSIONAL ENGINEER
 JONATHAN P. MARSHALL
 No. 73265
 CIVIL
 STATE OF CALIFORNIA

carollo

Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
 BLACKHORSE RECYCLED WATER RESERVOIR

ELECTRICAL LEGEND

VERIFY SCALES
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JOB NO. 7568A.10
 DRAWING NO. E-01
 SHEET NO. 73 OF 93

ABBREVIATIONS

A	AMP	J	JUNCTION BOX
ABS	ABSOLUTE	K	KEY INTERLOCK
ACK	ALTERNATING CURRENT	KA	KILOAMP
ACTR	ACTUATOR	KV	KILOVOLT
AF	AMP FRAME	KVA	KILOVOLT AMPERE
AFC	AUTOMATIC FREQUENCY CONTROL	KVAR	KILOVAR (REACTANCE)
AIC	AMP INTERRUPTING CAPACITY	KW	KILOWATT
AM	AMMETER	KWD	KILOWATT DEMAND
ANN	ANNUNCIATOR	KWH	KILOWATT HOUR
ANT	ANTENNA	L	LONG-TIME
APU	AUXILIARY POWER UNIT	L-B	LINE-BUS
ARM	ARMORED CABLE	L-G	LINE-GROUND
AS	AMMETER SWITCH	LA	LIGHTNING ARRESTOR
ASYM	ASYMMETRICAL	LBL	LABEL
AT	AMP TRIP	LC	LIGHTING CONTACT OR
ATO	AUTOMATIC THROW OVER	LCP- X	LOCAL CONTROL PANEL NO. X
ATP	AMMETER TEST POINT	LL	LEAD-LAG LOAD REACTOR
ATS	AUTOMATIC TRANSFER SWITCH	LP	LIGHT POLE
AUTO XFMR	AUTOMATIC TRANSFORMER	LP - X	LIGHTING PANEL NO. X
AUX	AUXILIARY	LTG	LIGHTING
AWG	AMERICAN WIRE GAGE	LV	LOW VOLTAGE
		LVL	LEVEL
B	BELL	M-X	MOTOR CONTROLLER NO. X
BAT	BATTERY	MA	MILLIAMPERE
BFG	BELOW FINISHED GRADE	MCA	MOTOR CIRCUIT AMPS
BHP	BRAKE HORSEPOWER	MCC - X	MOTOR CONTROL CENTER NO. X
BKR	BREAKER	MCP	MOTOR CIRCUIT PROTECTOR
BRF	BELOW RAISED FLOOR	MH	MANHOLE / MOUNTING HEIGHT
		MLO	MAIN LUGS ONLY
C	CONDUIT / CONTINUOUS LOAD	MOD	MOTOR OPERATED DAMPER
CB	CIRCUIT BREAKER	MOV	METAL OXIDE VARISTOR
CCTV	CLOSED CIRCUIT TELEVISION	MRP	MOTOR PROTECTION RELAY
CCW	COUNTER CLOCKWISE	MS-X	MOTOR STARTER NO. X
CKT	CIRCUIT	MSP	MOTOR STARTING PANEL
COAX	COAXIAL CABLE	MTO	MANUAL THROW OVER
COM	COMMON	MTR-X	MOTOR NO. X
COMM	COMMUNICATION	MTS	MANUAL TRANSFER SWITCH
CPT	CONTROL POWER TRANSFORMER	MV	MEGAVOLT
CS	CONTROL SWITCH	MVA	MEGAVOLT-AMPERES
CT	CURRENT TRANSFORMER	MVS	MEDIUM VOLTAGE SWITCH
CV	CONTROL VALVE	MW	MEGAWATT
CW	CLOCKWISE / COOL WHITE	N	NEUTRAL
		NC	NORMALLY CLOSED
DC	DIRECT CURRENT	NEC	NATIONAL ELECTRICAL CODE
DCS	DISTRIBUTED CONTROL SYSTEM	NFC	NONMETALLIC FLEXIBLE CONDUIT
DCU - X	DISTRIBUTED CONTROL UNIT NO. X	NL	NIGHT LIGHT
DEMO	DEMOLITION	NO	NORMALLY OPEN
DISC	DISCONNECT SWITCH	NP	NAMEPLATE
DM	DEMAND METER	O	OPEN OR OPENED
DPDT	DOUBLE POLE DOUBLE THROW	OH	OVERHEAD
DPST	DOUBLE POLE SINGLE THROW	OL	OVERLOAD RELAY
DS	DOOR SWITCH		
		P	POLE
E/G	EMERGENCY GENERATOR	PA	PUBLIC ADDRESS
EM	EMERGENCY	PB	PUSHBUTTON / PULL BOX
EMT	ELECTRICAL METALLIC TUBING	PCS	PVC COATED GALVANIZED STEEL CONDUIT
ENCL	ENCLOSURE	PCM	PROCESS CONTROL MODULE
ENG	ENGINE	PE	PHOTOCELL
ENT	ELECTRICAL NON-METALLIC TUBING	PF	POWER FACTOR
EP	EXPLOSION PROOF	PFCC	POWER FACTOR CORRECTION CAPACITOR
ETM	ELAPSED TIME METER	PFR	PHASE FAILURE RELAY
		PH	PHASE
FA	FIRE ALARM	PNL	PANEL
FACP	FIRE ALARM CONTROL PANEL	PPX	POWER PANEL NO. X
FDR	FEEDER	PRI	PRIMARY
FLA	FULL LOAD AMPS	PT	POTENTIAL TRANSFORMER
FLX	FLEXIBLE CONDUIT	PVC	POLYVINYL CHLORIDE RIGID PLASTIC CONDUIT
FO	FIBER OPTIC	PWR	POWER
FRC	FIBERGLASS RIGID CONDUIT		
FREQ	FREQUENCY	RAC	RIGID ALUMINUM CONDUIT
FU	FUSE	RECPT	RECEPTACLE
FU	SW FUSED SWITCH	REV	REVERSE
FVNR	FULL VOLTAGE NON-REVERSING	RF	RADIO FREQUENCY
FVR	FULL VOLTAGE REVERSING	RMS	ROOT MEAN SQUARED
FWD	FORWARD	RVAT	REDUCED VOLTAGE AUTO TRANSFORMER
		RVNR	REDUCED VOLTAGE NON-REVERSING
G	GROUND / EQUIPMENT GROUND / GROUND FAULT	RVSS	REDUCED VOLTAGE SOLID STATE
GEN	GENERATOR	S	SHIELD / SHORT-TIME
GRC	GALVANIZED STEEL RIGID CONDUIT	SA	SURGE ARRESTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER (RECEPTACLE)	SC	SHORT CIRCUIT
GFI	GROUND FAULT INTERRUPTER (BREAKER)	SDBC	SOFT DRAWN BARE COPPER
GFR	GROUND FAULT RELAY	SFL	SUB FEED LUGS
		SLT	SEALTIGHT LIQUIDTIGHT FLEXIBLE CONDUIT
H	HOT-LEG	SM	SURFACE MOUNTED
HF	HIGH FREQUENCY	SP	SINGLE POLE
HP	HORSEPOWER	SPD	SURGE PROTECTIVE DEVICE
HPS	HIGH PRESSURE SODIUM	SPDT	SINGLE POLE DOUBLE THROW
HR	HOUR	SPST	SINGLE POLE SINGLE THROW
HSTAT	HUMIDISTAT	SPKR	SPEAKER
HV	HIGH VOLTAGE	SS	SOLID STATE
HVAC	HEATING/VENTILATION/AIR CONDITIONING	STB	SHORTING TERMINAL BLOCK
HZ	HERTZ	SW	SWITCH
		SWBD	SWITCHBOARD
I	INSTANTANEOUS LOAD	SWG	SWITCHGEAR
IC	INTERRUPTING CAPACITY	SYM	SYMMETRICAL
IJB	INSTRUMENT JUNCTION BOX		
IMC	INTERMEDIATE METAL CONDUIT		
INST	INSTANTANEOUS		
INT	INTERLOCK		
INTERCOM	INTERCOMMUNICATION		

TACH	TACHOMETER	UHF	ULTRA HIGH FREQUENCY
TB - X	TERMINAL BLOCK - UNIT X	UNG	UNGROUND
TC	THERMOCOUPLE / TIME CLOCK / TRAY CABLE	UPS	UNINTERRUPTABLE POWER SUPPLY
TD	TEMPERATURE DETECTOR RELAY	UVR	UNDER VOLTAGE RELAY
TE	TOTALLY ENCLOSED	V	VOLT
TEFC	TOTALLY ENCLOSED FAN COOLED	VA	VOLT AMPERE
TENV	TOTALLY ENCLOSED NON-VENTILATED	VAR	VARMETER
TERM	TERMINAL	VCP	VENDOR CONTROL PANEL
TJB	TERMINAL JUNCTION BOX	VFD	VARIABLE FREQUENCY DRIVE
TM	THERMAL MAGNETIC	VHF	VERY HIGH FREQUENCY
TP	TWISTED PAIR	VM	VOLTMETER
TS	TEMPERATURE SWITCH	VP	VAPORPROOF
TS1W	TWO SPEED CONSEQUENT POLE, ONE WINDING	VR	VOLTAGE REGULATOR
TS2W	TWO SPEED SEPARATE WINDING	VS	VOLTAGE SWITCH
TSTAT	THERMOSTAT	VT	VOLTAGE TRANSFORMER
		VTP	VOLTAGE TEST POINT
		W	WATT / WEST
		WT	WATER TIGHT
		WP	WEATHER PROOF
		XFMR	TRANSFORMER

POWER DEVICE FUNCTION NUMBERS

1	MASTER ELEMENT	83	AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY
2	TIME-DELAY STARTING OR CLOSING RELAY	84	OPERATING MECHANISM
3	CHECKING OR INTERLOCKING RELAY	85	PILOT COMMUNICATIONS, CARRIER OR PILOT-WIRE RELAY
4	MASTER CONTACTOR	86	LOCKOUT RELAY
5	STOPPING DEVICE	87	DIFFERENTIAL PROTECTIVE RELAY
6	STARTING CIRCUIT BREAKER	88	AUXILIARY MOTOR OR MOTOR GENERATOR
7	ANODE CIRCUIT BREAKER	89	LINE SWITCH
8	CONTROL POWER DISCONNECTING DEVICE	90	REGULATING DEVICE
9	REVERSING DEVICE	91	VOLTAGE DIRECTIONAL RELAY
10	UNIT SEQUENCE SWITCH	92	VOLTAGE AND POWER DIRECTIONAL RELAY
11	MULTIFUNCTION DEVICE	93	FIELD-CHANGING CONTACTOR
12	OVER-SPEED DEVICE	94	TRIPPING OR TRIP-FREE RELAY
13	SYNCHRONOUS-SPEED DEVICE		
14	UNDER-SPEED DEVICE		
15	SPEED OR FREQUENCY MATCHING DEVICE		
16	DATA COMMUNICATIONS DEVICE		
17	SHUNTING OR DISCHARGE SWITCH		
18	ACCELERATING OR DECELERATING DEVICE		
19	STARTING-TO-RUNNING TRANSITION CONTACTOR		
20	ELECTRICALLY OPERATED VALVE		
21	DISTANCE RELAY		
22	EQUALIZER CIRCUIT BREAKER		
23	TEMPERATURE CONTROL DEVICE		
24	VOLTS PER HERTZ RELAY		
25	SYNCHRONIZING OR SYNCHRONISM-CHECK DEVICE		
26	APPARATUS THERMAL DEVICE		
27	UNDERVOLTAGE RELAY		
27N	GROUND FAULT UNDERVOLTAGE RELAY		
28	FLAME DETECTOR		
29	ISOLATING CONTACTOR		
30	ANNUNCIATOR RELAY		
31	SEPARATE EXCITATION DEVICE		
32	DIRECTIONAL POWER RELAY		
33	POSITION SWITCH		
34	MASTER SEQUENCE DEVICE		
35	BRUSH-OPERATING OR SLIP-RING SHORT-CIRCUITING DEVICE		
36	POLARITY DEVICE		
37	UNDERCURRENT OR UNDERPOWER RELAY		
38	BEARING PROTECTIVE DEVICE		
39	MECHANICAL CONDITION MONITOR		
40	FIELD RELAY		
41	FIELD CIRCUIT BREAKER		
42	RUNNING CIRCUIT BREAKER		
43	MANUAL TRANSFER OR SELECTOR DEVICE		
44	UNIT SEQUENCE STARTING RELAY		
45	ABNORMAL ATMOSPHERIC CONDITION MONITOR		
46	REVERSE-PHASE OR BALANCE CURRENT RELAY		
47	PHASE-BALANCE OR PHASE-SEQUENCE VOLTAGE RELAY		
48	INCOMPLETE SEQUENCE RELAY		
49	MACHINE OR TRANSFORMER THERMAL RELAY		
50	INSTANTANEOUS OVERCURRENT RELAY		
51	AC TIME OVERCURRENT RELAY		
52	AC CIRCUIT BREAKER		
53	FIELD EXCITATION RELAY		
54	TURNING GEAR ENGAGING DEVICE		
55	POWER FACTOR RELAY		
56	FIELD APPLICATION RELAY		
57	SHORT-CIRCUITING OR GROUNDING DEVICE		
58	RECTIFICATION FAILURE RELAY		
59	OVERVOLTAGE RELAY		
60	VOLTAGE OR CURRENT BALANCE RELAY		
61	DENSITY SWITCH OR SENSOR		
62	TIME-DELAY STOPPING OR OPENING RELAY		
63	PRESSURE SWITCH		
64	GROUND DETECTOR RELAY		
65	GOVERNOR		
66	NOTCHING OR JOGGING DEVICE		
67	AC DIRECTIONAL OVERCURRENT RELAY		
68	BLOCKING OR OUT OF STEP RELAY		
69	PERMISSIVE CONTROL DEVICE		
70	RHEOSTAT		
71	LIQUID LEVEL SWITCH		
72	DC CIRCUIT BREAKER		
73	LOAD-RESISTOR CONTACTOR		
74	ALARM RELAY		
75	POSITION CHANGING MECHANISM		
76	DC OVERCURRENT RELAY		
77	TELEMETERING DEVICE		
78	PHASE-ANGLE MEASURING RELAY		
79	AC RECLOSING RELAY		
80	FLOW SWITCH		
81	FREQUENCY RELAY		
82	DC LOAD MEASURING RECLOSING RELAY		

COMMONLY USED SUFFIX LETTERS APPLIED TO POWER DEVICE FUNCTION NUMBERS

A	ALARM ONLY
B	BUS PROTECTION
G	GROUND FAULT PROTECTION
B	(RELAY CT IN A SYSTEM NEUTRAL CIRCUIT OR GENERATOR PROTECTION)
GS	GROUND FAULT PROTECTION (RELAY CT IN TOROIDAL OR GROUND SENSOR TYPE)
L	LINE PROTECTION
M	MOTOR PROTECTION
N	GROUND FAULT PROTECTION (RELAY COIL CONNECTED IN RESIDUAL CT CIRCUIT)
T	TRANSFORMER PROTECTION
V	VOLTAGE
P	PHASE PROTECTION

ABBREVIATIONS

AFD	- ARC FLASH DETECTOR
CLK	- CLOCK OR TIMING SOURCE
DDR	- DYNAMIC DISTURBANCE RECORDER
DFR	- DIGITAL FAULT RECORDER
ENV	- ENVIRONMENTAL DATA
HIZ	- HIGH IMPEDANCE FAULT DETECTOR
HMI	- HUMAN MACHINE INTERFACE
HST	- HISTORIAN
LGC	- SCHEME LOGIC
MET	- SUBSTATION METERING
PDC	- PHASOR DATA CONCENTRATOR
PMU	- PHASOR MEASUREMENT UNIT
PQM	- POWER QUALITY MONITOR
RIO	- REMOTE I/O DEVICE
RTU	- REMOTE TELEMETRY UNIT/REMOTE TERMINAL UNIT
SER	- SEQUENCE OF EVENTS RECORDER
TCM	- TRIP CIRCUIT MONITOR

NOTES:
1. REFER TO SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL ABBREVIATIONS.

DESIGNED	CC		
DRAWN	JS		
CHECKED	MJP		
DATE	APRIL 2017		
REV	DATE	BY	DESCRIPTION



Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:19:24-07'00'



Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT		VERIFY SCALES	JOB NO. 7568A.10
BLACKHORSE RECYCLED WATER RESERVOIR		BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. E-02
ELECTRICAL ABBREVIATIONS		0 1"	SHEET NO. 74 OF 93
		IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	

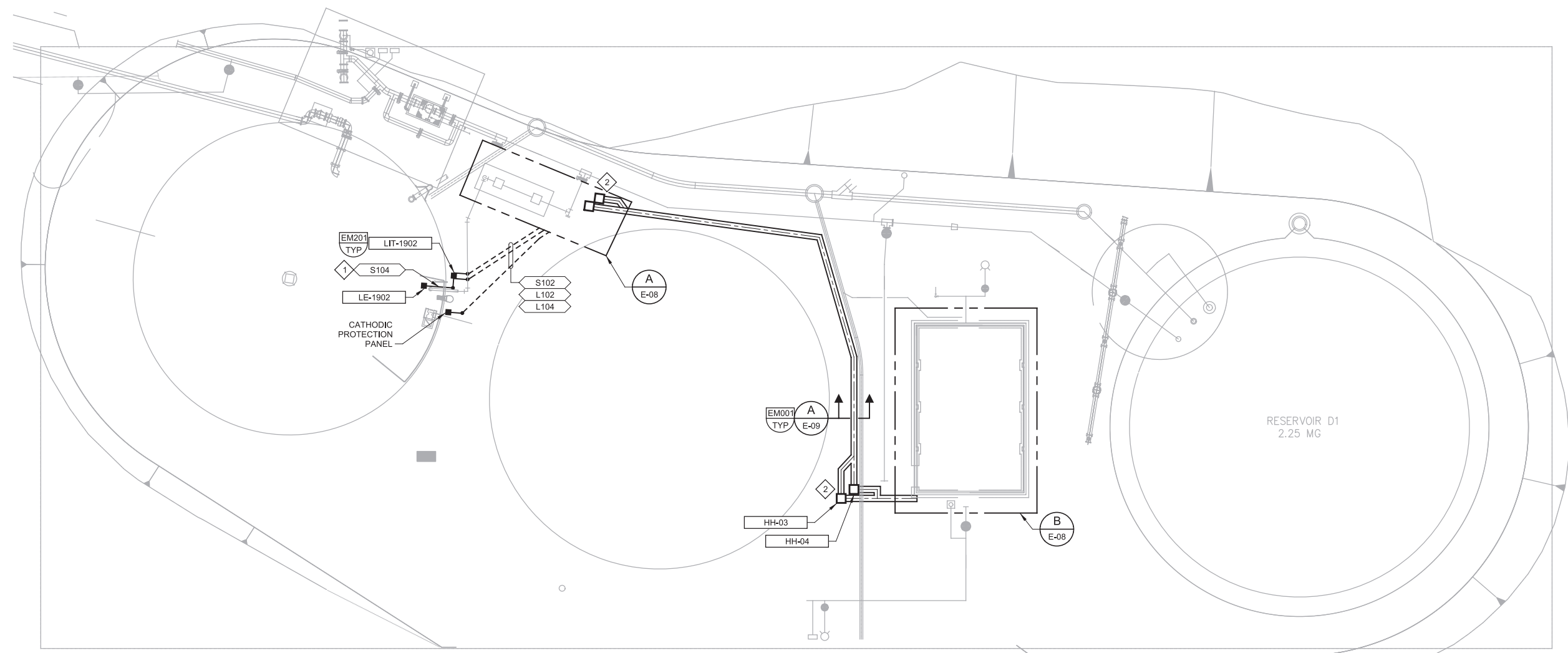
FILENAME:

PROCESS SWITCHES	HAND SWITCHES	RELAYS	TERMINAL BLOCKS	I/O	MISC
FLOAT SWITCH CLOSE ON RISING LEVEL FLOAT SWITCH OPEN ON RISING LEVEL PRESSURE SWITCH CLOSE ON RISING PRESSURE PRESSURE SWITCH OPEN ON RISING PRESSURE TEMPERATURE SWITCH CLOSE ON RISING TEMPERATURE TEMPERATURE SWITCH OPEN ON RISING TEMPERATURE FLOW SWITCH CLOSE ON INCREASE IN FLOW FLOW SWITCH OPEN ON INCREASE IN FLOW VIBRATION SWITCH OPEN ON RISING VIBRATION VIBRATION SWITCH CLOSE ON RISING VIBRATION TORQUE SWITCH OPEN ON HIGH TORQUE TORQUE SWITCH CLOSE ON HIGH TORQUE NORMALLY CLOSED LIMIT SWITCH NORMALLY CLOSED HELD OPEN LIMIT SWITCH NORMALLY OPEN LIMIT SWITCH NORMALLY OPEN HELD CLOSED LIMIT SWITCH	NORMALLY OPEN MOMENTARY PUSHBUTTON NORMALLY CLOSED MOMENTARY PUSHBUTTON THREE POSITION SELECTOR SWITCH x - DENOTES POSITION CONTACTS CLOSED IN TWO POSITION SELECTOR SWITCH x - DENOTES POSITION CONTACTS CLOSED IN MUSHROOM HEAD PUSHBUTTON PUSH-PULL PUSHBUTTON MAINTAINED CONTACT PADLOCK SWITCH x - DENOTES POSITION CONTACTS CLOSED IN PULL CORD SWITCH STOP-LOCKOUT PUSHBUTTON SPRING-RETURN x - DENOTES POSITION CONTACTS CLOSED IN	RELAY COIL a = TYPE CR - CONTROL RELAY TD - TIME DELAY RELAY M - MOTOR STARTER COIL L - MOTOR STARTER COIL - LOW SPEED H - MOTOR STARTER COIL - HIGH SPEED F - MOTOR STARTER COIL - FORWARD R - MOTOR STARTER COIL - REVERSE b = TDON - TIME DELAY ON ENERGIZATION TDOFF - TIME DELAY ON DEENERGIZATION c = TIMING RANGE/SETTING d = DESCRIPTION NORMALLY OPEN CONTROL CONTACT NORMALLY CLOSED CONTROL CONTACT TIME DELAY CONTACT NORMALLY OPEN TIMED CLOSING NOTC TIME DELAY CONTACT NORMALLY CLOSED TIMED OPENING NCTO TIME DELAY CONTACT NORMALLY OPEN TIMED OPENING NOTO TIME DELAY CONTACT NORMALLY CLOSED TIMED CLOSING NCTC	TERMINAL IN PLC/PCM PANEL TERMINAL IN MOTOR CONTROL CENTER TERMINAL IN LOCAL STARTER CONTROL PANEL TERMINAL AT FIELD DEVICE TERMINAL IN RTU TERMINAL IN FIELD PANEL TERMINAL IN (USER CHOICE) DIGITAL BUS CONNECTOR * = D - DEVICENET * = PA - PROFIBUS PA * = DP - PROFIBUS DP * = H1 - FOUNDATION FIELDBUS H1 * = H2 - FOUNDATION FIELDBUS H2 * = E - ETHERNET	PLC DISCRETE a = INPUT OR OUTPUT AS INDICATED PLC ANALOG a = INPUT OR OUTPUT AS INDICATED DIGITAL BUS	SOLENOID METER UNIT M = TYPE MOTOR CIRCUIT BREAKER DISCONNECT FUSE TRANSIENT SURGE PROTECTION MWH* MOTOR WINDING HEATER * - MOTOR TAG I.D. SPACE HEATER VARISTOR CAPACITOR RESISTOR BATTERY DIODE MOTOR OVERLOAD HEATERS OVERLOAD CONTACT DRAWOUT CONNECTION GROUND LIGHTNING ARRESTOR CONTROL POWER TRANSFORMER KI* ETM ELAPSED TIME METER
	PILOT LIGHTS				
	PILOT LIGHT a = LENS COLOR R = RED G = GREEN W = WHITE A = AMBER				

DESIGNED CAC		PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:21:41-07'00'				Marina Coast Water District	REGIONAL URBAN WATER AUGMENTATION PROJECT BLACKHORSE RECYCLED WATER RESERVOIR INSTRUMENTATION SCHEMATIC SYMBOLS	VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 	JOB NO. 7568A.10
DRAWN CGR		PROJECT MANAGER Digitally signed by Christopher Carvalho Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:36:23-07'00'						DRAWING NO. E-03	
CHECKED MJP								SHEET NO. 75 OF 93	
DATE APRIL 2017									
REV	DATE	BY	DESCRIPTION	FILENAME:					



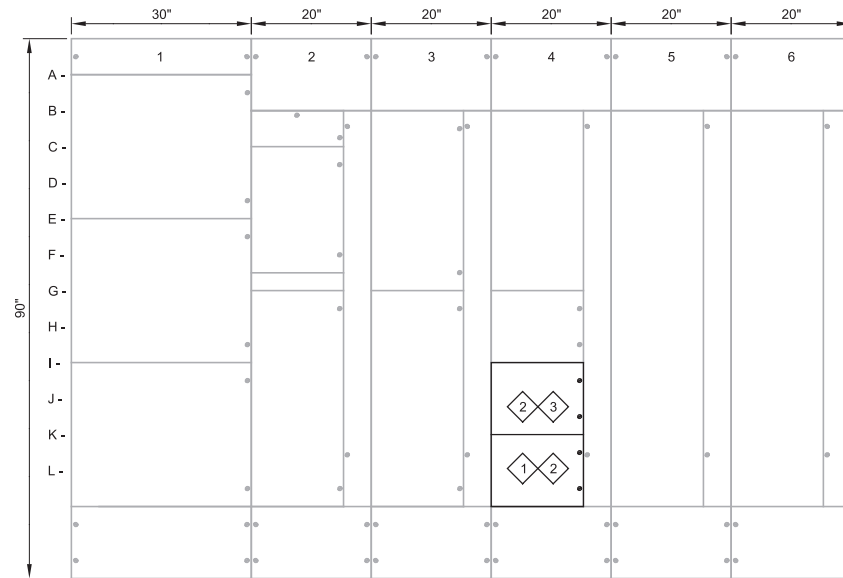
- KEY NOTES:**
- 1 RUN CONDUITS ALONG THE PIPE SUPPORTS.
 - 2 SEPARATE THE DUCT BANK SECTION AT THE HANDHOLES. 480V POWER, 120V POWER AND CONTROLS WILL RUN THROUGH ONE HANDHOLE AND ANALOG SIGNAL WIRE THROUGH THE OTHER.



PLAN
 SCALE: 1"=20'-0"
 FILE: 7568A100E101

				DESIGNED CAC		PROJECT ENGINEER Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:21:33-07'00'				Marina Coast Water District	REGIONAL URBAN WATER AUGMENTATION PROJECT	VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 — 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 7568A.10
				DRAWN JS							DRAWING NO. E-04		
				CHECKED MJP							SHEET NO.		
				DATE APRIL 2017							76 OF 93		
REV	DATE	BY	DESCRIPTION										

FILENAME:



- GENERAL NOTES:**
- MCC-01 IS SQUARE D MODEL 6.
- KEY NOTES:**
- 1 SPACE FOR FUTURE STARTER.
 - 2 PROVIDE NEW DOORS AND NAMEPLATES.
 - 3 NEW STARTER.

FRONT VIEW

SCALE: 3/4"=1'-0"
FILE: 7568A1000E601

SIDE VIEW

SCALE: 3/4"=1'-0"
FILE: 7568A1000E601

- | | | | | | |
|-----------------------------|---------------------|--------------------------|--|-------------------------|-------------------------|
| 1A- MAIN FEED FROM
ATS | 2A- TVSS | 3A- PUMP-1
SMALL PUMP | 4A- PUMP-3
SMALL PUMP | 5A- PUMP-4
FIRE PUMP | 6A- PUMP-5
FIRE PUMP |
| 1E- MAIN CIRCUIT
BREAKER | 2B- PANEL A | 3G- PUMP-2
SMALL PUMP | 4G- AIR COMPRESSOR | | |
| | 2G- TRANSFORMER T-1 | | 4L- PUMP-1900
POTABLE WATER
PUMP | | |
| | | | 4K- SPACE | | |

REV	DATE	BY	DESCRIPTION

DESIGNED
CAC
DRAWN
JS
CHECKED
MJP
DATE
APRIL 2017



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Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:21:25-07'00'
Digitally signed by Christopher Carvalho
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:35:47-07'00'



Marina Coast Water District

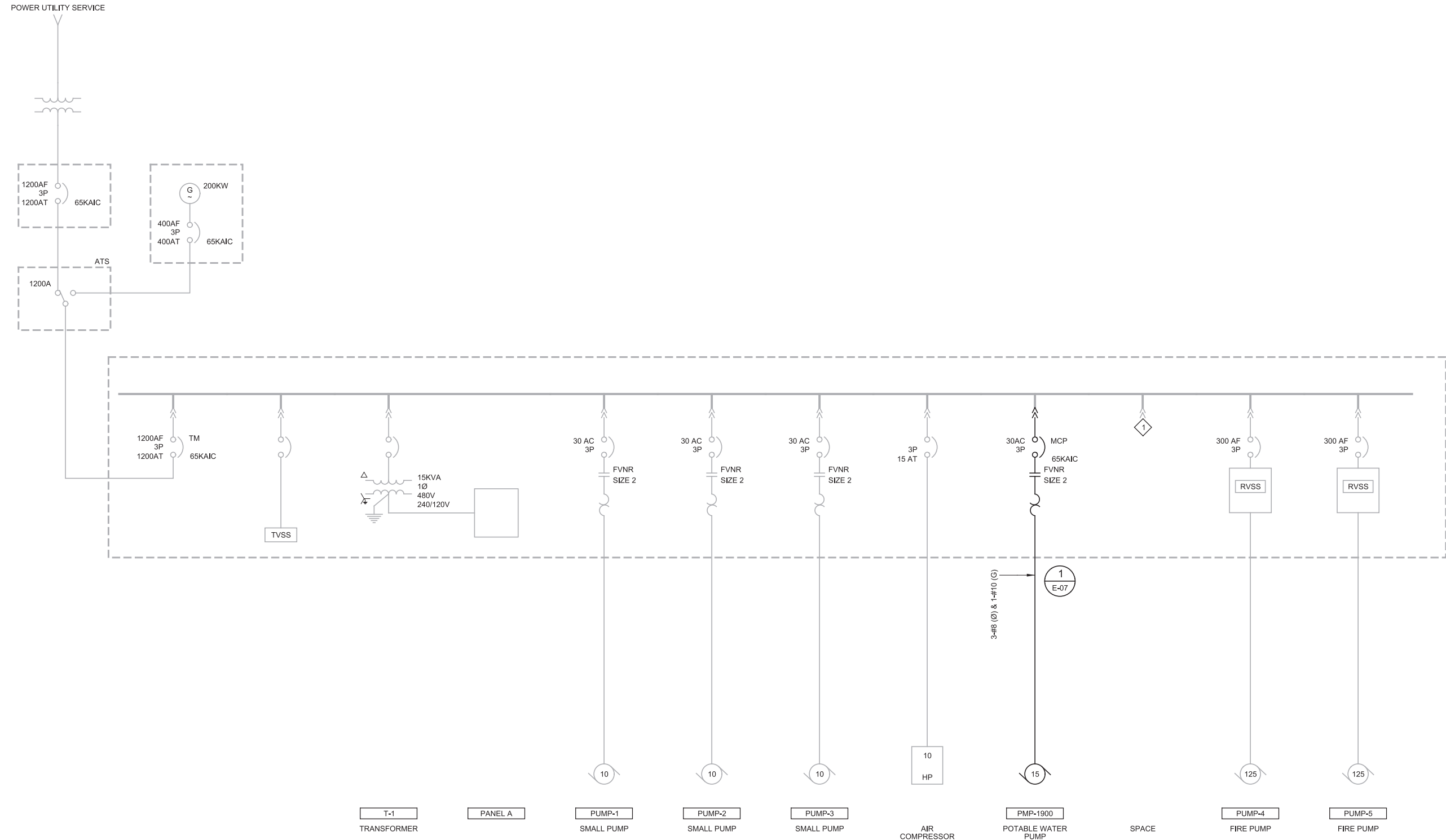
REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
ELECTRICAL
MCC-01 ELEVATION

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
7568A.10
DRAWING NO.
E-05
SHEET NO.
77 OF 93

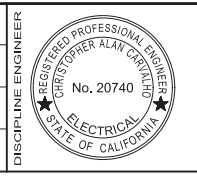
FILENAME:

KEY NOTES:
 SPACE FOR FUTURE PUMP STARTER.

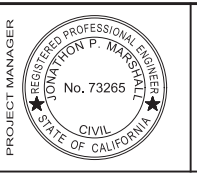


REV	DATE	BY	DESCRIPTION

DESIGNED
CAC
 DRAWN
JS
 CHECKED
MJP
 DATE
APRIL 2017



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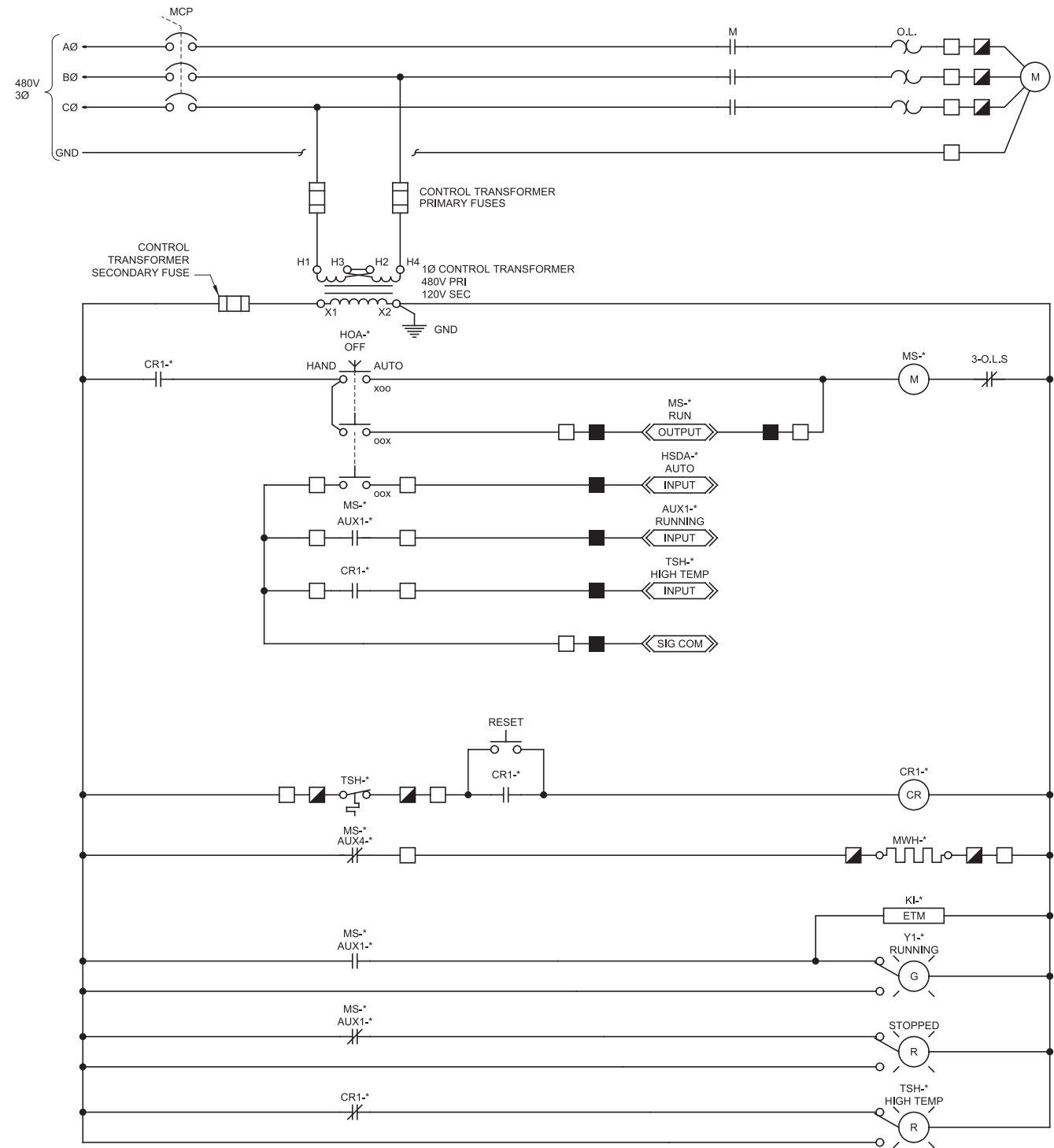
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
 BLACKHORSE RECYCLED WATER RESERVOIR
 ELECTRICAL
 MCC-01 ONE-LINE DIAGRAM

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" 1"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
7568A.10
 DRAWING NO.
E-06
 SHEET NO.
78 OF 93

FILENAME:

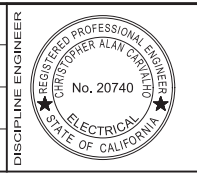


* = 1900 → PMP-1900

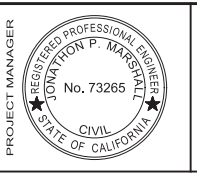
1 PORTABLE WATER PUMP - FVNR
N-05, E-06

REV	DATE	BY	DESCRIPTION

DESIGNED
CAC
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CGR
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MJP
DATE
APRIL 2017



PROJECT ENGINEER
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Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:21:08-07'00'
Digitally signed by Christopher Carvalho
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:35:14-07'00'



Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
INSTRUMENTATION SCHEMATICS

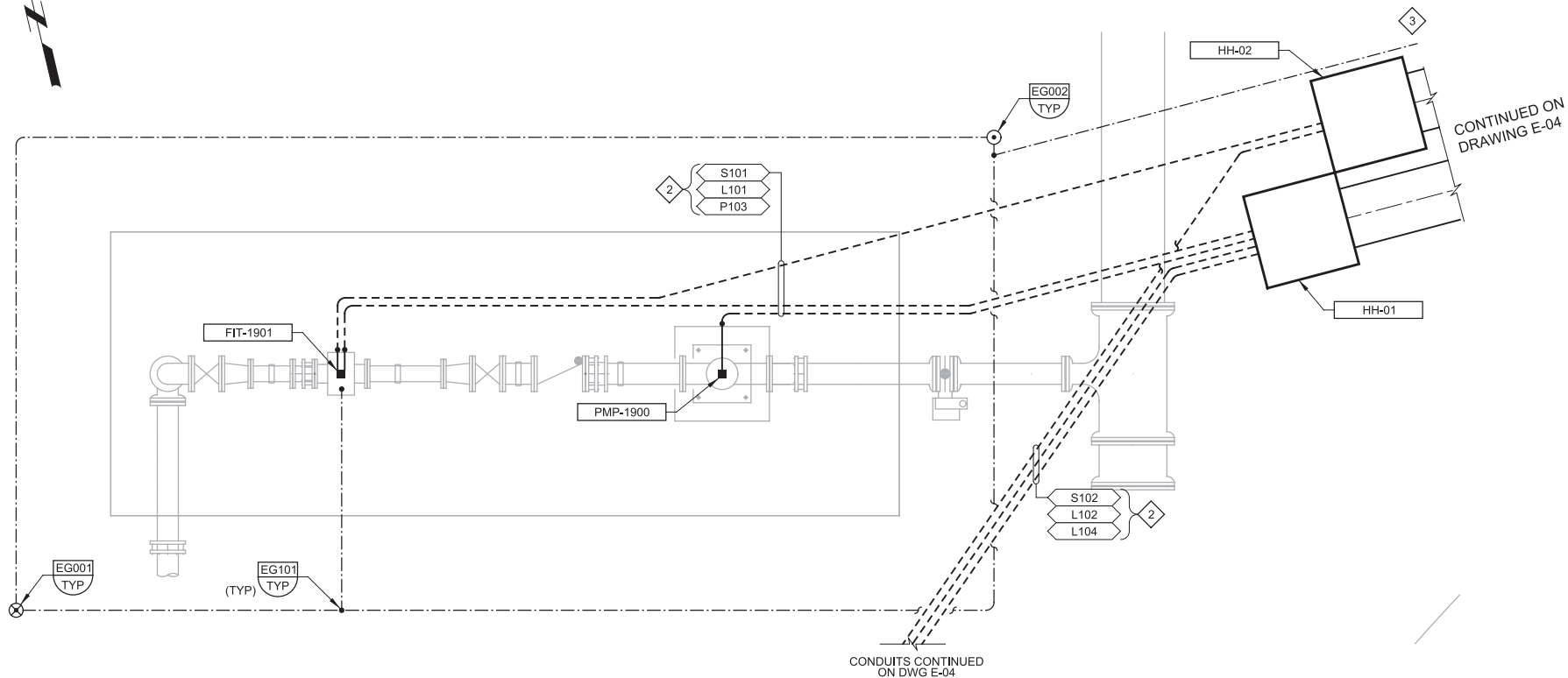
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
DRAWING NO. E-07
SHEET NO. 79 OF 93

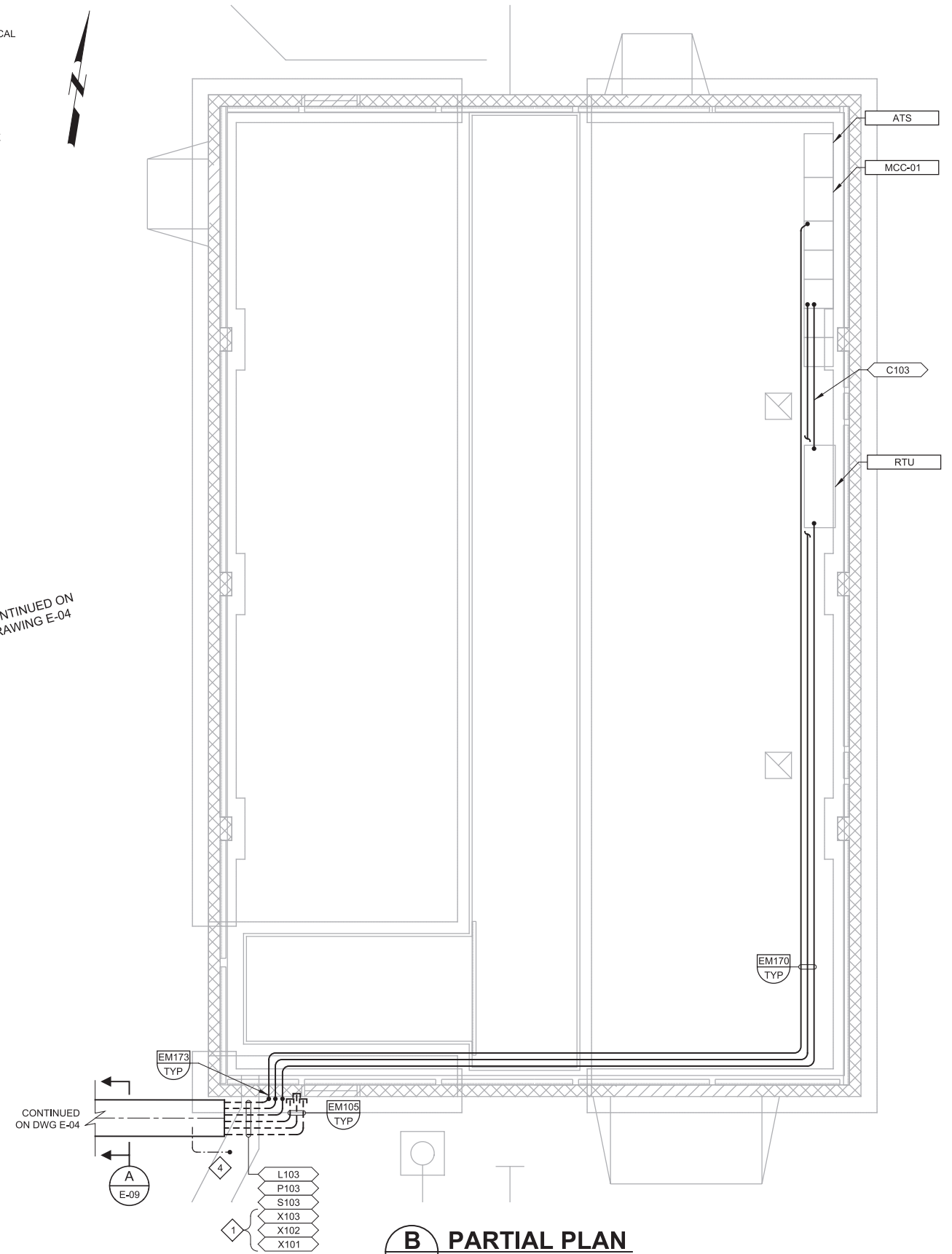
FILENAME:

KEY NOTES:

- 1 CAP CONDUITS MINIMUM OF 6" ABOVE GRADE. REFER TO TYPICAL DETAIL EM105.
- 2 CONDUITS RUN IN CONCRETE ENCASED DUCTBANK UNTIL IT REACHES THE EQUIPMENT.
- 3 BOND THE DUCTBANK GROUND CONDUCTOR TO THE GROUND GRID AROUND THE PUMP PAD PER TYPICAL DETAIL EG101.
- 4 LOCATE THE EXISTING GROUND GRID AROUND THE PUMP STATION. BOND THE DUCTBANK GROUND CONDUCTOR TO THE GROUND GRID PER EG101/TYP.



A PARTIAL PLAN
E-04 SCALE: 3/8" = 1'-0"
FILE: 7568A1000E102



B PARTIAL PLAN
E-04 SCALE: 1/4" = 1'-0"
FILE: 7568A1000E102

REV	DATE	BY	DESCRIPTION

DESIGNED CAC
DRAWN JS
CHECKED MJP
DATE APRIL 2017



PROJECT ENGINEER
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Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:21:00-07'00'



Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
ELECTRICAL
PARTIAL PLANS

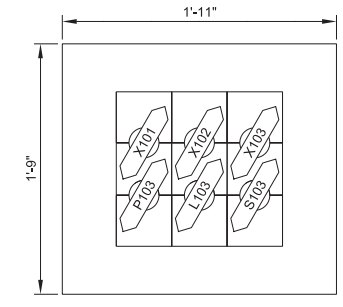
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
7568A.10
DRAWING NO.
E-08
SHEET NO.
80 OF 93

FILENAME:

GENERAL NOTES:
 1. CONSTRUCT DUCTBANK IN ACCORDANCE WITH EM001 UNLESS OTHERWISE INDICATED.

KEY NOTES:
 1. NEW LOADS ADDED TO AN EXISTING SPARE BREAKER IN THE EXISTING LIGHTING PANEL. PROVIDE NEW UPDATED PANELBOARD SCHEDULE.



A DUCT BANK SECTION
 E-04, E-08

EXISTING PANEL A										11/4/2016
LOCATION:	BLACKHORSE PS	NEMA:	1	PH A WEIGHTED VA	0					
VOLTS:	240 / 120	FEED:	BOTTOM	PH B WEIGHTED VA	0					
PHASE & WIRE:	1PH 3W	MTG:	MCC							
INTERRUPT:	18 KAIC	BUS RATING:	100	EQUIP SIZING VA	0					
OPTIONS:	SPD	MAIN:	CB	PANEL AMPS	0.0					
		MAIN RATING:	100 AF 80 AT							
IC/F	DESCRIPTION	LOAD (VA)	BKR	CIR	Ø	CIR	BKR	LOAD (VA)	DESCRIPTION	IC/F
	INTERIOR LIGHTING		15A-1P	1	A	2	20A-1P		RECEPTACLES	
	INTERIOR LIGHTING		15A-1P	3	B	4	20A-1P		FIT-1901, LIT-1902	
	EXTERIOR LIGHTING		20A-1P	5	A	6	15A-1P		EMO	
	GENERATOR BATTERY CHARGER		15A-1P	7	B	8	15A-1P		SOUTH FAN	
	BLOCK HEATER / GENERATOR		15A-1P	9	A	10	15A-1P		SOUTH FAN	
	CATHODIC PROTECTION PANEL		15A-1P	11	B	12	15A-1P		NORTH FAN	
	OUTSIDE POLE LIGHTS		15A-1P	13	A	14	20A-2P		CPI	
	CATHODIC PROTECTION PANEL NO.2		15A-1P	15	B	16			SPACE	
	REPEATER CABINET		20A-1P	17	A	18	50A-1P		SPACE	
	REPEATER CABINET		20A-1P	19	B	20			SPACE	
	MAIN BREAKER		80A-2P	21	A	22				
				23	B	24				

ELECTRICAL HANDHOLE AND MANHOLE SCHEDULE							11/4/2016
TAG NO	MINIMUM INTERIOR DIMENSIONS (INCHES)			CONSTRUCTION	TYPICAL DETAIL	SURFACE LOADING	COMMENTS
	WIDTH	LENGTH	DEPTH				
HH-01	48	48	48	PRECAST	EM056	ROADWAY	
HH-02	48	48	48	PRECAST	EM056	ROADWAY	
HH-03	48	48	48	PRECAST	EM056	ROADWAY	
HH-04	48	48	48	PRECAST	EM056	ROADWAY	

NOTES:
 1. SEE SPECIFICATION 02581 FOR PRECAST ELECTRICAL HANDHOLES AND MANHOLES.

CONDUIT SCHEDULE AREA 4/26/17

CONDUIT NUMBER	SIZE	CONDUCTORS			GROUND			DESCRIPTION	CONNECTING SEGMENTS
		#	SIZE	TYPE	#	SIZE	TYPE		
C103	0.75"	10	#14	XHHW-2	1	#14	XHHW-2	FR: MCC-01 RTU TO: 10 #14 >> PUMP-6 CONTROLS	
L101	2"	2	#12	XHHW-2	1	#12	XHHW-2	FR: FIT-1901 HH-01 TO: 2 #12 >> FIT-1901 POWER	L103
L102	2"	2	#12	XHHW-2	1	#12	XHHW-2	FR: LIT-1902 HH-01 TO: 2 #12 >> LIT-1902 POWER	L103
L103	2"	6	#12	XHHW-2	1	#12	XHHW-2	FR: HH-01 PANEL A TO: 2 #12 >> FIT-1901 POWER L101 2 #12 >> LIT-1902 POWER L102 2 #12 >> CATHODIC PROTECTION PANEL POWER L104	
L104	0.75"	2	#12	XHHW-2	1	#12	XHHW-2	FR: CATHODIC PROTECTION PANEL HH-01 TO: 2 #12 >> CATHODIC PROTECTION PANEL POWER	L103
P103	2"	3	#8 #12 #14	XHHW-2 XHHW-2 XHHW-2	1	#8	XHHW-2	FR: PUMP-1900 MCC-01 TO: 3 #10 >> PUMP-1900 POWER 2 #12 >> MWH-1900 POWER 2 #14 >> TSH-1900 CONTROL	
S101	2"	1	2/CS-#16		1	#14	XHHW-2	FR: FIT-1901 HH-02 TO: 1 2/CS-#16 >> FIT-1901 SIGNAL	S103
S102	0.75"	1	2/CS-#16		1	#14	XHHW-2	FR: LIT-1902 HH-02 TO: 1 2/CS-#16 >> LIT-1902 SIGNAL	S103
S103	0.75"	2	2/CS-#16		1	#14	XHHW-2	FR: HH-02 RTU TO: 1 2/CS-#16 >> FIT-1901 SIGNAL S101 1 2/CS-#16 >> LIT-1902 SIGNAL S102	
S104	0.75"	1	MFR	CABLE	1	#14	XHHW-2	FR: LE-1902 LIT-1902 TO: 1 MFR >> LE SIGNAL	
X101	0.75"	1	PULL	ROPE				FR: HH-01 ELECTRICAL BUILDING TO: 1 PULL >> SPARE	
X102	0.75"	1	PULL	ROPE				FR: HH-01 ELECTRICAL BUILDING TO: 1 PULL >> SPARE	
X103	0.75"	1	PULL	ROPE				FR: HH-02 ELECTRICAL BUILDING TO: 1 PULL >> SPARE	

END OF CONDUIT SCHEDULE

DESIGNED CAC		Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:20:52-07'00'				Marina Coast Water District	REGIONAL URBAN WATER AUGMENTATION PROJECT BLACKHORSE RECYCLED WATER RESERVOIR ELECTRICAL SCHEDULES	VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 ——— 1"	JOB NO. 7568A.10
DRAWN JS								IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	DRAWING NO. E-09
CHECKED MJP									SHEET NO. 81 OF 93
DATE APRIL 2017									
REV	DATE	BY	DESCRIPTION	FILENAME:					

SYMBOL	DRAWING VISIBLE FIELDS	FIELD - 1	FIELD - 2	FIELD - 3	FIELD - 4	FIELD - 5	FIELD - 6
SCADA SYSTEM OPERATOR INTERFACE TERMINAL	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- DESCRIPTION 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	ACTION ALARM NUM - NUMERIC SP - SET POINT STATUS TREND	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE
HARDWIRED I/O POINT	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- DESCRIPTION 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	AI - ANALOG INPUT AO - ANALOG OUTPUT DI - DISCRETE INPUT DO - DISCRETE OUTPUT HSC - HIGH SPEED COUNTER INPUT RTD - RTD INPUT	DESCRIPTION	PAC - PROGRAMMABLE AUTOMATION CONTROLLER NO. PLC - PROGRAMMABLE LOGIC CONTROLLER NO. RIO - REMOTE I/O VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
DIGITAL BUS I/O REGISTER (FIELDBUS I/O)	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- DESCRIPTION 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	BUS ID CNET - CONTROLNET DNET - DEVICENET ENET - ETHERNET/IP FF - FOUNDATION FIELDBUS MB - MODBUS RTU MB+ - MODBUS PLUS MBTCP - MODBUS TCP DP - PROFIBUS DP PA - PROFIBUS PA PNET - PROFINET SERIAL - PROPRIETARY PROTOCOL	DESCRIPTION	PAC - PROGRAMMABLE AUTOMATION CONTROLLER NO. PLC - PROGRAMMABLE LOGIC CONTROLLER NO. RIO - REMOTE I/O VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
HUMAN MACHINE INTERFACE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- DESCRIPTION 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	ACTION ALARM NUM - NUMERIC SP - SET POINT STATUS	DESCRIPTION	HMI - HUMAN MACHINE INTERFACE NO. LCP - LOCAL CONTROL PANEL NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
PILOT DEVICE OPERATOR INTERFACE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- DESCRIPTION 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	AM - AUTO/MANUAL BYPASS - BYPASS CL - CLOSE E-STOP - EMERGENCY STOP FRLR - FIXED RATE/LEVEL RATE HOA - HAND/OFF/AUTO JOHC - JOG OPEN/HOLD/CLOSE JOJC - JOG OPEN/JOG CLOSE LH - LOW/HIGH LOR - LOCAL/OFF/REMOTE LOS - LOCK OUT STOP LS - LEAD/STANDBY LSR - LOCAL/STOP/REMOTE NOOT - NO OFFLINE/OFFLINE TRANSITION OC - OPEN/CLOSE OLOL - ON LINE/OFF LINE OO - OFF/ON OP - OPEN OSC - OPEN/STOP/CLOSE RST - RESET SAAM - SEMI AUTO/AUTO/MANUAL SEL - SELECT SP - STOP SPD - SPEED SS - START/STOP ST - START	DESCRIPTION	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. RVSS - REDUCED VOLTAGE SOLID STARTER NO. VCP - VENDOR CONTROL PANEL NO. VFD - VARIABLE FREQUENCY DRIVE NO.	E - EXISTING F - FUTURE
POWER DEVICE PRIMARY FUNCTION OPERATOR ACCESSIBLE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- VOLTAGE/PHASE 5- LOCATION 6- EXISTING/FUTURE	CB - CIRCUIT BREAKER DISC - DISCONNECT FU - FUSE	REFER	TM - THERMAL MAGNETIC CIRCUIT BREAKER	24VDC - 1P 120VAC - 1P 208VAC - 2P 208VAC - 3P 240VAC - 3P 240VAC - 2P 480VAC - 3P 2400VAC - 3P 4160VAC - 3P	DP - DISTRIBUTION PANEL NO. LCP - LOCAL CONTROL PANEL NO. LP - LIGHTING PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. PP - POWER PANEL NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
POWER DEVICE AUXILIARY FUNCTION FOR OPERATOR ACCESSIBLE DEVICES	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- DESCRIPTION 5- LOCATION 6- EXISTING/FUTURE	DISC - DISCONNECT	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE
POWER DEVICE PRIMARY FUNCTION OPERATOR INACCESSIBLE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- VOLTAGE/PHASE 5- LOCATION 6- EXISTING/FUTURE	CB - CIRCUIT BREAKER FU - FUSE	REFER	MCP - MOTOR CIRCUIT PROTECTOR SS - SOLID STATE CIRCUIT BREAKER TM - THERMAL MAGNETIC CIRCUIT BREAKER	24VDC - 1P 120VAC - 1P 208VAC - 2P 208VAC - 3P 240VAC - 3P 240VAC - 2P 480VAC - 3P 2400VAC - 3P 4160VAC - 3P	DP - DISTRIBUTION PANEL NO. LCP - LOCAL CONTROL PANEL NO. LP - LIGHTING PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. PP - POWER PANEL NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE

SYMBOL	DRAWING VISIBLE FIELDS	FIELD - 1	FIELD - 2	FIELD - 3	FIELD - 4	FIELD - 5	FIELD - 6
INSTRUMENT PRIMARY ELEMENT	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	AREA NO. BUILDING NO. ROOM NO.	E - EXISTING F - FUTURE
INSTRUMENT/CONTROL ELEMENT PRIMARY FUNCTION OPERATOR ACCESSIBLE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- DESCRIPTION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE
INSTRUMENT/CONTROL ELEMENT AUXILIARY FUNCTION OPERATOR ACCESSIBLE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- DESCRIPTION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE
INSTRUMENT/CONTROL ELEMENT PRIMARY FUNCTION OPERATOR INACCESSIBLE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
INSTRUMENT/CONTROL ELEMENT AUXILIARY FUNCTION OPERATOR INACCESSIBLE	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
FIELD EQUIPMENT NON-POWERED	1- TAG 2- LOOP NUMBER 3- FUNCTION/TYPE 4- FURNISHED BY 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	AREA NO. BUILDING NO. ROOM NO.	E - EXISTING F - FUTURE
FIELD EQUIPMENT PRIMARY FUNCTION POWERED	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- LOCATION 6- EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	AREA NO. BUILDING NO. ROOM NO.	E - EXISTING F - FUTURE
FIELD EQUIPMENT AUXILIARY FUNCTION POWERED	1- TAG 2- LOOP NUMBER 3- FUNCTION 4- FURNISHED BY 5- DESCRIPTION 6- EXISTING/FUTURE	MWH - MOTOR WINDING HEATER TSH - TEMPERATURE SWITCH XSH - TORQUE SWITCH	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE
FIELD EQUIPMENT STARTER/DRIVE CUBICLE/CABINET	1- TAG 2- LOOP NUMBER 3- TYPE 4- VOLTAGE/PHASE 5- LOCATION 6- EXISTING/FUTURE	MS - MOTOR STARTER RVAT - REDUCED VOLTAGE AUTO TRANSFORMER STARTER RVSS - REDUCED VOLTAGE SOLID STATE STARTER VFD - VARIABLE FREQUENCY DRIVE	REFER	FVNR - FULL VOLTAGE NON-REVERSING STARTER FVR - FULL VOLTAGE REVERSING STARTER PWS - PART-WINDING STARTER RVAT - REDUCED VOLTAGE AUTO TRANSFORMER STARTER RVSS - REDUCED VOLTAGE SOLID STATE STARTER TS1W - TWO SPEED SINGLE WINDING TS2W - TWO SPEED TWO WINDINGS VFD - VARIABLE FREQUENCY DRIVE	120VAC - 1P 208VAC - 2P 208VAC - 3P 240VAC - 2P 240VAC - 3P 480VAC - 3P 2400VAC - 3P 4160VAC - 3P	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE

INSTRUMENT BUBBLE LOCATIONS		NOTES
SCADA		<ul style="list-style-type: none"> 1 INSTRUMENT TAG IDENTIFICATION LETTERS TABLE 2 OPERATOR PILOT DEVICE LEGEND 3 EQUIPMENT TAGGING TABLE 4 I/O TYPE DESIGNATIONS TABLE 5 INSTRUMENT TYPE DESIGNATIONS TABLE 6 FURNISHED BY: FBO FURNISHED BY OWNER FBV FURNISHED BY VENDOR
CONTROL PANEL		
OPERATOR INTERFACE/CONTROL DEVICES		
POWER SOURCE		
FIELD		
I/O		

REV	DATE	BY	DESCRIPTION

DESIGNED CAC
DRAWN CGR
CHECKED MJP
DATE APRIL 2017

DISCIPLINE ENGINEER
REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER ALAN CAROLLO
No. 20740
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STATE OF CALIFORNIA

PROJECT ENGINEER
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REGISTERED PROFESSIONAL ENGINEER
JONATHAN P. MARSHALL
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STATE OF CALIFORNIA

Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
INSTRUMENTATION
SYMBOLS & ABBREVIATIONS - I

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
DRAWING NO. N-01
SHEET NO. 82 OF 93

INSTRUMENT TAG IDENTIFICATION LETTERS

INSTRUMENT FUNCTION / MEASURED VARIABLE		ELEMENT	TRANSMITTER	INDICATING TRANSMITTER	CONVERTER / TRANSDUCER / RELAY / SPECIAL DEVICES	INDICATOR	RECORDER	CONTROLLER	INDICATING CONTROLLER	RECORDING CONTROLLER	SWITCH	SWITCH LOW LOW	SWITCH LOW	SWITCH HIGH	SWITCH HIGH HIGH	SWITCH COMBINATION HIGH LOW	ACTION	ALARM LOW LOW	ALARM LOW	ALARM HIGH	ALARM HIGH HIGH	TOTALIZE INDICATOR / TRANSMITTER	VALVE	GAUGE	LIGHT	SPEED SETTING
A	ANALYSIS	AE	AT	AIT	AY	AI	AR	AC	AIC	ARC	AS	ASLL	ASL	ASH	ASHH	ASHL		AALL	AAL	AAH	AAHH				AL	
B	BURNER FLAME	BE	BT	BIT	BY	BI	BR	BC	BIC	BRC	BS	BSLL	BSL	BSH	BSHH			BALL	BAL	BAH	BAHH				BL	
C	CONDUCTIVITY	CE	CT	CIT	CY	CI	CR	CC	CIC	CRC	CS	CSLL	CSL	CSH	CSHH	CSHL		CALL	CAL	CAH	CAHH				CL	
D	DENSITY	DE	DT	DIT	DY	DI	DR	DC	DIC	DRC	DS	DSLL	DSL	DSH	DSHH	DSHL		DALL	DAL	DAH	DAHH				DL	
E																										
F	FLOW	FE	FT	FIT	FY	FI	FR	FC	FIC	FRC	FS	FSLL	FSL	FSH	FSHH	FSHL		FALL	FAL	FAH	FAHH	FQI	FCV	FG	FL	
FF	FLOW RATIO				FFY	FFI		FFC	FFIC		FFS														FFL	
G	GAUGING (DIMENSION)																									
H	HAND (MANUAL)*							HC			HS*						HA*					HV		HL	HSS	
I	CURRENT		IT	IIT	IY	II	IR	IC	IIC	IRC	IS	ISLL	ISL	ISH	ISHH			IALL	IAL	IAH	IAHH				IL	
J	POWER																									
K	TIME				KY	KI	KR	KC	KIC	KRC	KS	KSLL	KSL	KSH	KSHH			KALL	KAL	KAH	KAHH		KV		KL	
L	LEVEL	LE	LT	LIT	LY	LI	LR	LC	LIC	LRC	LS	LSLL	LSL	LSH	LSHH	LSHL		LALL	LAL	LAH	LAHH		LCV	LG	LL	
M	MOISTURE OR HUMIDITY	ME	MT	MIT	MY	MI	MR	MC	MIC	MRC	MS	MSLL	MSL	MSH	MSHH			MALL	MAL	MAH	MAHH				ML	
N	EMERGENCY SHUTDOWN																									
O																										
P	PRESSURE OR VACUUM	PE	PT	PIT	PY	PI**	PR	PC	PIC	PRC	PS****	PSLL	PSL	PSH	PSHH	PSHL		PALL	PAL	PAH	PAHH		PCV		PL	
PD	DIFFERENTIAL PRESSURE		PDT	PDIT	PDY	PDI	PDR	PDC	PDIC	PDRC	PDS	PDSLL	PDSL	PDSH	PDSHH			PDALL	PDAL	PDAH	PDAHH		PDCV		PDL	
Q	QUANTITY	QE	QT	QIT	QY	QI	QR				QS	QSLL	QSL	QSH	QSHH			QALL	QAL	QAH	QAAH					
R	RADIOACTIVITY																									
S	SPEED	SE	ST	SIT	SY	SI	SR	SC	SIC	SRC	SS	SSLL	SSL	SSH	SSHH			SALL	SAL	SAH	SAHH					
T	TEMPERATURE	TE	TT	TIT	TY	TI	TR	TC	TIC	TRC	TS	TSLL	TSL	TSH	TSHH	TSHL		TALL	TAL	TAH	TAHH		TCV		TL	
TD	DIFFERENTIAL TEMPERATURE		TDT	TDIT	TDY	TDI	TDR	TDC	TDIC	TDRC	TDS	TDSLL	TDSL	TDSH	TDSHH			TDALL	TDAL	TDAH	TDAHH		TDCV		TDL	
U	MULTIVARIABLE					UI	UR	UC	UIC	URC	US														UL	
V	VISCOSITY	VE	VT	VIT	VY	VI	VR	VC	VIC	VRC	VS	VSLL	VSL	VSH	VSHH			VALL	VAL	VAH	VAHH				VL	
W	WEIGHT	WE	WT	WIT	WY	WI	WR				WS	WSLL	WSL	WSH	WSHH			WALL	WAL	WAH	WAHH					
X	UNCLASSIFIED	XE	XT	XIT	XY	XI	XR	XC	XIC	XRC	XS	XSLL	XSL	XSH	XSHH			XALL	XAL	XAH	XAAH		XCV	XG	XL	
XV	VIBRATION	XVE	XVT		XVY	XVI	XVR				XVS			XVSH	XVSHH					XVAH	XVAHH				XVL	
Y	STATUS***					YI***																			YL	
Z	POSITION	ZE	ZT	ZIT	ZY	ZI					ZS**														ZL**	

* REFER TO OPERATOR PILOT DEVICE LEGEND
 ** LETTER INDICATES POSITION (O=OPEN, C=CLOSED, R=RAISE, L=LOWER, ETC)
 *** PI# # = 1,2,3 ETC. AND REPRESENTS A UNIQUE IDENTIFIER AND IS APPLICABLE TO ALL ITEMS IN THE TABLE ABOVE
 **** COULD ALSO BE PIS - FOR PRESSURE INDICATING SWITCH

INSTRUMENT LINE SYMBOLS

INSTRUMENT OR CONNECTION TO PROCESS	—————
PNEUMATIC SIGNAL	—#—#—#—#—#—#—#—#—
ELECTRIC SIGNAL	-----
HYDRAULIC SIGNAL	— L — L — L — L — L —
CAPILLARY TUBE	— X — X — X — X — X —
ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)	— S — S — S — S — S —
ELECTROMAGNETIC OR SONIC SIGNAL (NOT GUIDED)	— S — S — S — S — S —
INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)	— o — o — o — o — o — o —
COPPER ETHERNET	— C — C — C — C — C —
FIBER OPTIC ETHERNET	— F — F — F — F — F —
WIRELESS ETHERNET	— W — W — W — W — W —
PROFIBUS DP	— PBD — PBD — PBD — PBD — PBD —
PROFIBUS PA	— PBA — PBA — PBA — PBA — PBA —
DEVICENET	— DN — DN — DN — DN — DN —
FOUNDATION FIELDBUS	— FF — FF — FF — FF — FF —

PROCESS LINE SYMBOLS

PRIMARY PROCESS FLOW IN PIPE	—————
SECONDARY PROCESS FLOW IN PIPE	—————
PRIMARY PROCESS FLOW IN CHANNEL	— · · · — · · · —
SECONDARY PROCESS FLOW IN CHANNEL	— · · · — · · · —

DESIGNATIONS

EQUIPMENT ENCLOSURE	-----
EXISTING	-----
FUTURE	-----

MISCELLANEOUS P&ID SYMBOLS

CHEMICAL INJECTION POINT	
CONTINUATION TAG	
PIPE CALLOUT	
SIGNAL CONTINUATION	

OPERATOR PILOT DEVICE LEGEND

PILOT DEVICE FUNCTION / DEVICE TYPE		LOCAL-OFF-REMOTE (LOR) OR LOCAL-STOP-REMOTE (LSR)	STOP (SP)	START (ST)	HAND-OFF-AUTO (HOA)	OFF-ON (OO)	SELECT (SEL)	OPEN-STOP-CLOSE (OSC)	JOG OPEN-HOLD-CLOSE (JOHC)	SEMI-AUTO-AUTO-MANUAL (SAAM)	LEAD-LAG-STANDBY (LLGS)	JOG OPEN-JOG CLOSE (JOJC)	ONLINE-OFFLINE (OLOF)	AUTO-MANUAL (AM)	FIXED RATE-LEVEL RATE (FRLR)	OPEN-CLOSE (OC)	NO OFFLINE-OFFLINE TRANSITION (NOOT)	LOW-HIGH (LH)	RESET (RST)	SPEED (SPD)	START-STOP (STSP)	E-STOP (E-SP)	BYPASS (BYF)	POSITION (POS)		
PILOT DEVICE TAG (HAND SWITCHES)	HSA*	HSB	HSC	HSD*	HSE	HSF	HSG*	HSH*	HSI	HSJ*	HSK*	HSL*	HSM*	HSN	HSO*	HSP	HSQ*	HSR	HSS	HST*	HSU	HSV	HSW	HSX	HSY	HSZ
SCADA/HMI TAG (HAND ACTION)	HAA	HAB	HAC	HAD	HAE	HAF	HAG	HAH	HAI	HAJ	HAK	HAL	HAM	HAN	HAO	HAP	HAQ	HAR	HAS	HAT	HAU	HAV	HAW	HAX	HAY	HAZ

HSA* SELECTOR SWITCH POSITION EG: HSA(R) R = REMOTE, HSD(A) A = AUTO, ETC

I/O TYPE DESIGNATIONS

AUX1	RUNNING	MSL	MOTOR START LOW
AUX2	FAILED/FAULT	MSM	VALVE MODULATE
AUXF1	RUNNING FORWARD	MSP	MOTOR STOP
AUXH1	RUNNING HIGH	MSR	MOTOR START REVERSE
AUXL1	RUNNING LOW	MST	MOTOR START
AUXR1	RUNNING REVERSE	SS	SPEED SIGNAL
SVC	SOLENOID VALVE CLOSE	ZC	POSITION COMMAND
SVO	SOLENOID VALVE OPEN	ZCC	POSITION COMMAND CLOSE
MS	RUN	ZCO	POSITION COMMAND OPEN
MSF	MOTOR START FORWARD		
MSH	MOTOR START HIGH		

INSTRUMENT TYPE DESIGNATIONS

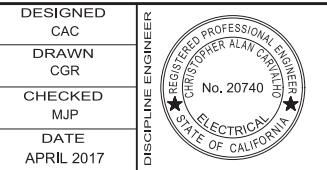
AM	AMMONIA	O3	OZONE	SC	STREAMING CURRENT
CAP	CAPACITANCE	ORP	OXIDATION REDUCTION POTENTIAL	SH	SODIUM HYPOCHLORITE
CG	COMBUSTIBLE GAS	P	PRESSURE	TDR	TIME DOMAIN REFLECTOMETRY
CL	CHLORINE	P-SUB	PRESSURE SUBMERSIBLE	TH	THERMAL
COND	CONDUCTIVITY	PC	PARTICLE COUNTER	TSS	TOTAL SUSPENDED SOLIDS
DO	DISSOLVED OXYGEN	PO	PHOSPHOROUS	TURB	TURBIDITY
FMCW	FREQ. MODULATED CONT. WAVE	PTOF	PULSE TIME OF FLIGHT	US	ULTRASONIC
HSF	FLUORIDE	RII	RESISTANCE TO CURRENT	UVI	UV INTENSITY
IS	INTRINSIC SAFETY BARRIER	ROT	ROTAMETER	UVT	UV TRANSMITTANCE
LEL	LOWER EXPLOSIVE LIMIT	RTD	RESISTANCE TEMP DETECTOR	VAC	VACUUM
MAG	MAGNETIC				

SPECIFIC ABBREVIATIONS

APH	A PHASE	MWH	MOTOR WINDING HEATER
BPH	B PHASE	SSG	SECONDARY SWITCHGEAR
BRB	BEARING BOTTOM	SV*	SOLENOID VALVE
BRT	BEARING TOP	SPD	SURGE PROTECTIVE DEVICE
BTFLY	BUTTERFLY	UPS	UNINTERRUPTIBLE POWER SUPPLY
CPH	C PHASE	YA	STATUS AUTO
CC*	CALIBRATION COLUMN * = 1, 2, 3, ETC.	YR	STATUS REMOTE
HTR	HEATER	Y1	STATUS RUNNING
HTU	HEAT TRACE UNIT	Y2	ALARM FAILED/FAULT

* CC# AND SV# # = 1, 2, 3 ETC. AND REPRESENTS A UNIQUE IDENTIFIER

DESIGNED	CAC		
DRAWN	CGR		
CHECKED	MJP		
DATE	APRIL 2017		
REV	DATE	BY	DESCRIPTION



Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 14:20:37-07'00'



Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
 BLACKHORSE RECYCLED WATER RESERVOIR
 INSTRUMENTATION
 SYMBOLS & ABBREVIATIONS - II

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7568A.10
 DRAWING NO. N-02
 SHEET NO. 83 OF 93

DIAPHRAGM ELECTRIC DISCRETE ELECTRIC MODULATING ELECTRIC HYDRAULIC HAND HYDRAULIC PNEUMATIC SOLENOID	HYDRAULIC MODULATING PNEUMATIC SINGLE SOLENOID OPEN/CLOSE PNEUMATIC SINGLE SOLENOID w/ SPEED CONTROL PNEUMATIC DUAL SOLENOID OPEN/CLOSE PNEUMATIC DUAL SOLENOID w/ SPEED CONTROL	PNEUMATIC DUAL SOLENOID OPEN/CLOSE PNEUMATIC MODULATING PNEUMATIC MODULATING OPEN/CLOSE w/ SPEED CONTROL	AIR GAP BLIND FLANGE CAPPED OR PLUGGED CONCENTRIC INCREASER CONCENTRIC REDUCER DRAIN ECCENTRIC INCREASER ECCENTRIC REDUCER EXPANSION COUPLING EXPANSION JOINT VIBRATION CENTER FLEXIBLE CONNECTION QUICK DISCONNECT	TEE UNION	AIR DRIVEN CENTRIFUGAL CHEMICAL FEED DIAPHRAGM DIAPHRAGM GEAR PERISTALTIC OR HOSE PISTON PROGRESSIVE CAVITY	SUBMERSIBLE VERTICAL TURBINE VERTICAL CHOPPER WATER CHAMP	CENTRIFUGAL SINGLE STAGE BLOWER CENTRIFUGAL MULTI STAGE BLOWER RECIPROCATING COMPRESSOR SCREW COMPRESSOR FAN LIQUID RING COMPRESSOR ROTARY LOBE BLOWER

BACK FLOW PREVENTOR BALL DIAPHRAGM CHECK DOUBLE FLAP FLAPPER SPRING LOADED GENERAL SPRING LOADED SWING SWING	BACKPRESSURE REGULATING SELF CONTAINED BACKPRESSURE REGULATING EXTERNAL TAP PRESSURE REDUCING SELF CONTAINED PRESSURE REDUCING EXTERNAL PRESSURE TAP REGULATING PRESSURE RELIEF VACUUM RELIEF	3-WAY 3-WAY PLUG 4-WAY AIR-RELIEF ANGLE BALL BALL V-NOTCH BUTTERFLY BUTTERFLY-BURIED VALVE BOX CONE DIAPHRAGM	GATE GATE-BURIED VALVE BOX GLOBE HOSE MUD NEEDLE PINCH PLUG ECCENTRIC PLUG ECCENTRIC w-VALVE BOX PLUG ECCENTRIC LUBRICATED PLUG ECCENTRIC LUBRICATED BURIED VALVE BOX	PLUG CONCENTRIC PLUG CONCENTRIC -BURIED VALVE BOX PLUG CONCENTRIC LUBRICATED PLUG CONCENTRIC LUBRICATED BURIED VALVE BOX PUMP DISCHARGE TELESCOPING	AIR DAMPER AIR/CHEMICAL DIFFUSER BASKET STRAINER BLOW-OFF SILENCER CALIBRATION COLUMN COALESCEUR DESICCANT DRYER EDUCTOR/EJECTOR EYEWASH EXHAUST FAN FILTER FILTER SEPARATOR	FINE FILTER FIRE ALARM/SENSOR FLAME ARRESTER FLAME ARRESTER w/THERMALLY OPERATED VALVE FLOW CONDITIONER GAS CANNON GRINDER HEAT EXCHANGER HOIST HORIZONTAL MIXER HOSE CONNECTION INLET STRAINER INLINE STATIC MIXER MATERIAL CHANGE	MIXER MOTOR NOZZLE ORIFICE RESTRICTION PERISTALTIC COMPOSITE SAMPLER PULSATION DAMPENOR REFRIGERATED DRYER RUPTURE DISK SAMPLE PORT SIGHT TUBE SMOKE DETECTOR STRAINER - MECHANICALLY CLEANED STRAINER WITH BLOW OFF STRAINER WYE TYPE VAPOR HEATER	VAPORIZER VENT VENT TO ATMOSPHERE
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VALVE DESIGNATIONS	
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
FO	FAIL OPEN
FC	FAIL CLOSE
FLP	FAIL LAST POSITION

DESIGNED CAC					Marina Coast Water District	REGIONAL URBAN WATER AUGMENTATION PROJECT BLACKHORSE RECYCLED WATER RESERVOIR INSTRUMENTATION SYMBOLS & ABBREVIATIONS - III	VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 	JOB NO. 7568A.10 DRAWING NO. N-03 SHEET NO. 84 OF 93		
DRAWN CGR										
CHECKED MJP										
DATE APRIL 2017										
<table border="1"> <tr> <th>REV</th> <th>DATE</th> <th>BY</th> <th>DESCRIPTION</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	REV	DATE	BY	DESCRIPTION					PROJECT NO. 7568A10 FILE NAME: BHR_N-03.dgn	Digitally signed by Jonathon P. Marshall Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:20:24-07'00' Digitally signed by Christopher Carvalho Contact Info: Carollo Engineers, Inc. Date: 2017.05.01 14:34:04-07'00'
REV	DATE	BY	DESCRIPTION							

GATES		FLUMES	FLOW	LEVEL	TEMPERATURE	WEIGHT
SIDE VIEW	PLAN VIEW					
	FLAP	LEOPOLD-LAGCO	BATCH	BUBBLER	TEMPERATURE w/THERMOWELL	HYDRAULIC
	KNIFE	PALMER-BOWLUS	CORIOLIS	CAPACITANCE	TEMPERATURE GAUGE	STRAIN GAUGE
	SLIDE	PARSHALL	MAGNETIC	DIFFERENTIAL PRESSURE	THERMOMETER	
	SLUICE	REGULAR CUTTHROAT	ORIFICE	ELECTRODE		
	STOP	TRAPEZOIDAL	PADDLE WHEEL	FLOAT		
	WEIR		PITOT TUBE AVERAGING	INVERTED COLUMN		
			PITOT TUBE/ANNUBAR	RADAR PTOF		
			POSITIVE-DISPLACEMENT	RADAR TDR		
			PROPELLER-TURBINE	SUSPENDED/SUBMERSIBLE		
			ROTAMETER	TUNING FORK		
			THERMAL	ULTRASONIC		
			ULTRASONIC DOPPLER			
			ULTRA-SONIC TRANSIT TIME			

WEIRS

	RECTANGULAR w/o END CONTRACTIONS
	RECTANGULAR w/ END CONTRACTIONS
	V-NOTCH (TRIANGULAR)
	TRAPEZOIDAL (CIPOLLETTI)

WEIRS

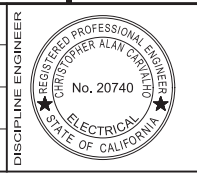
	V-CONE
	VENTURI TUBE OR FLOW NOZZLE
	VORTEX

PRESSURE/VACUUM

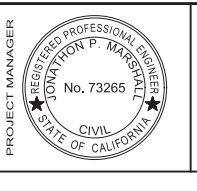
PRESSURE	DIFFERENTIAL PRESSURE	PRESSURE SEALS
GAUGE	GAUGE DIFFERENTIAL INDICATOR	SEAL ANNULAR
MANOMETER	DIFFERENTIAL PRESSURE SWITCH	SEAL DIAPHRAGM
PRESSURE SWITCH	DIFFERENTIAL PRESSURE TRANSMITTER	SEAL SANITARY
PRESSURE TRANSMITTER		
		EXAMPLE
		PRESSURE SWITCH

REV	DATE	BY	DESCRIPTION

DESIGNED CAC
DRAWN CGR
CHECKED MJP
DATE APRIL 2017



Project Engineer
Digitally signed by Jonathon P. Marshall
Contact Info: Carollo Engineers, Inc.
Date: 2017.05.01 14:20:17-07'00'

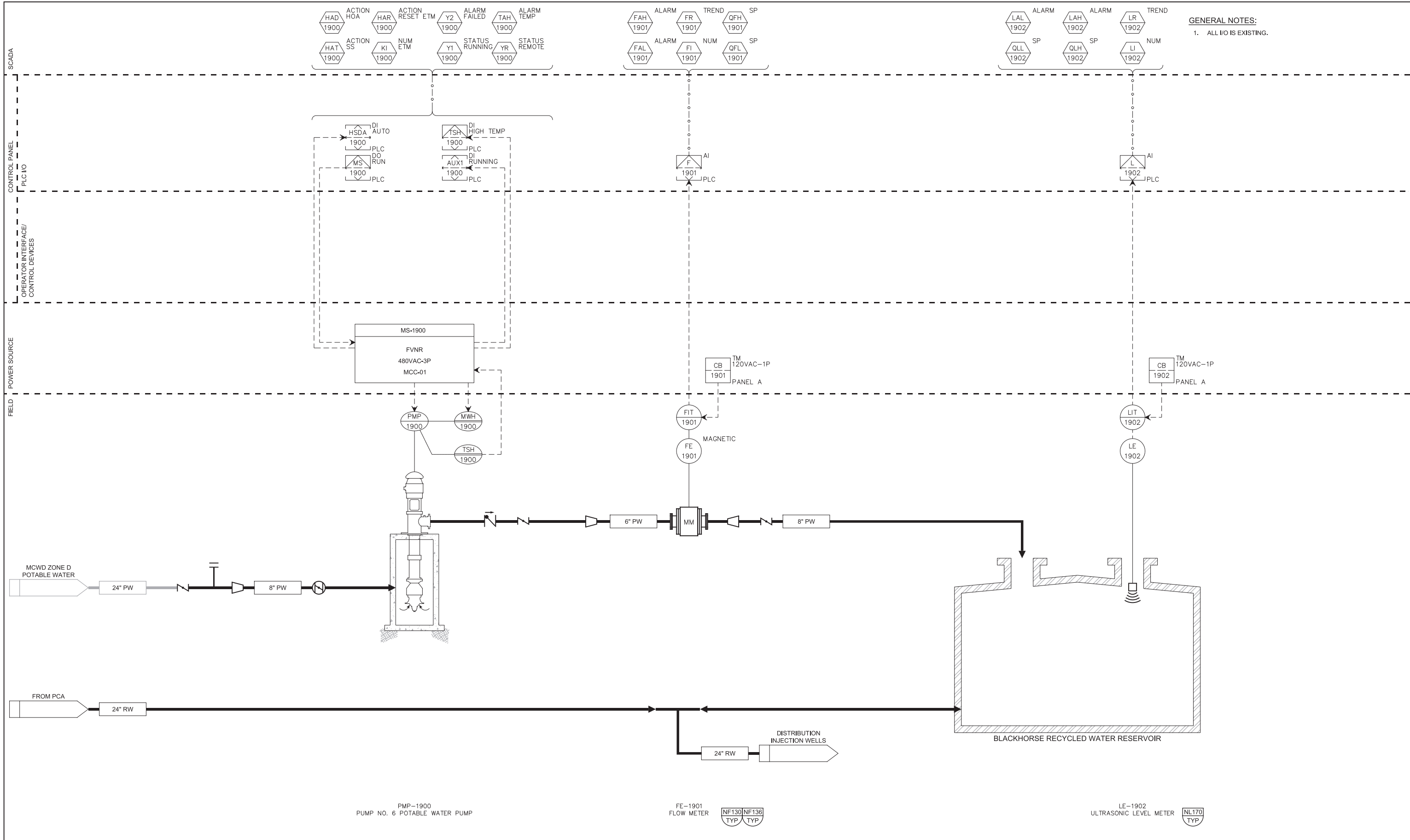


Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
INSTRUMENTATION
SYMBOLS & ABBREVIATIONS - IV

VERIFY SCALES
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JOB NO. 7568A.10
DRAWING NO. N-04
SHEET NO. 85 OF 93



GENERAL NOTES:
 1. ALL I/O IS EXISTING.

LAST SAVED BY: ABengflord

REV	DATE	BY	DESCRIPTION

DESIGNED
CAC

DRAWN
CGR

CHECKED
MJP

DATE
APRIL 2017

DISCIPLINE ENGINEER

 PROJECT ENGINEER
 Digitally signed by Jonathon P. Marshall
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 14:20:08-07'00'

PROJECT MANAGER

 PROJECT ENGINEER
 Digitally signed by Christopher Carvalho
 Contact Info: Carollo Engineers, Inc.
 Date: 2017.05.01 14:32:55-07'00'

Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT

BLACKHORSE RECYCLED WATER RESERVOIR

LEVEL CONTROL - P&ID

RESERVOIR AND PUMP - P&ID

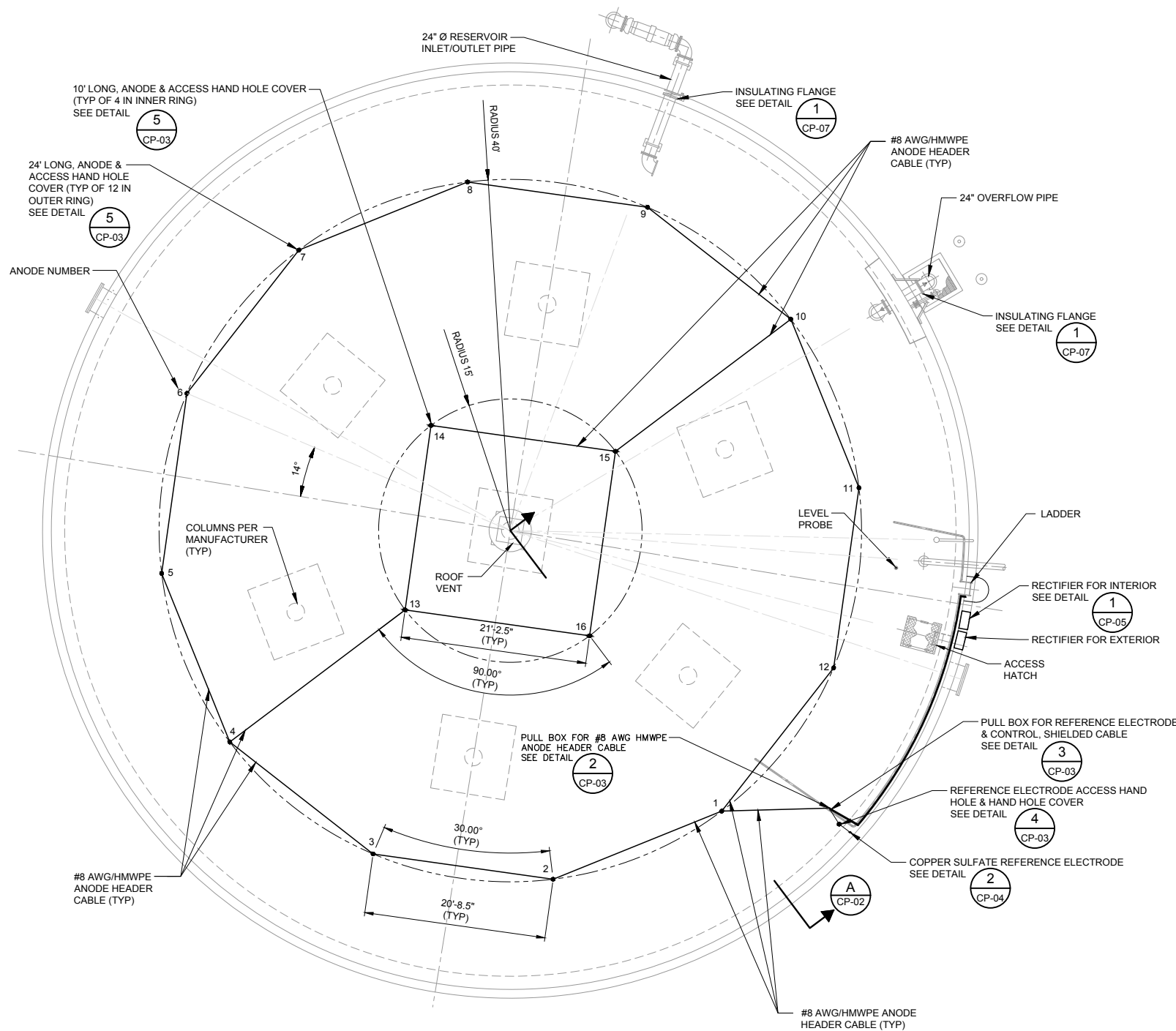
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JOB NO.
7568A.10

DRAWING NO.
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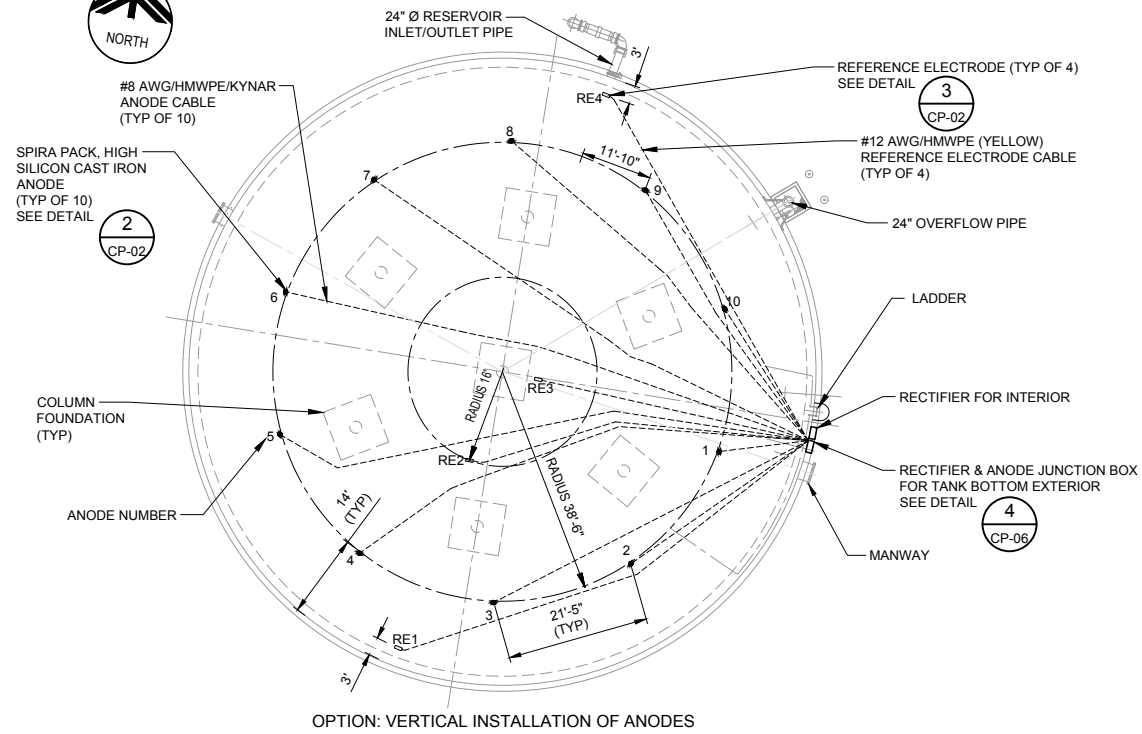
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86 OF 93



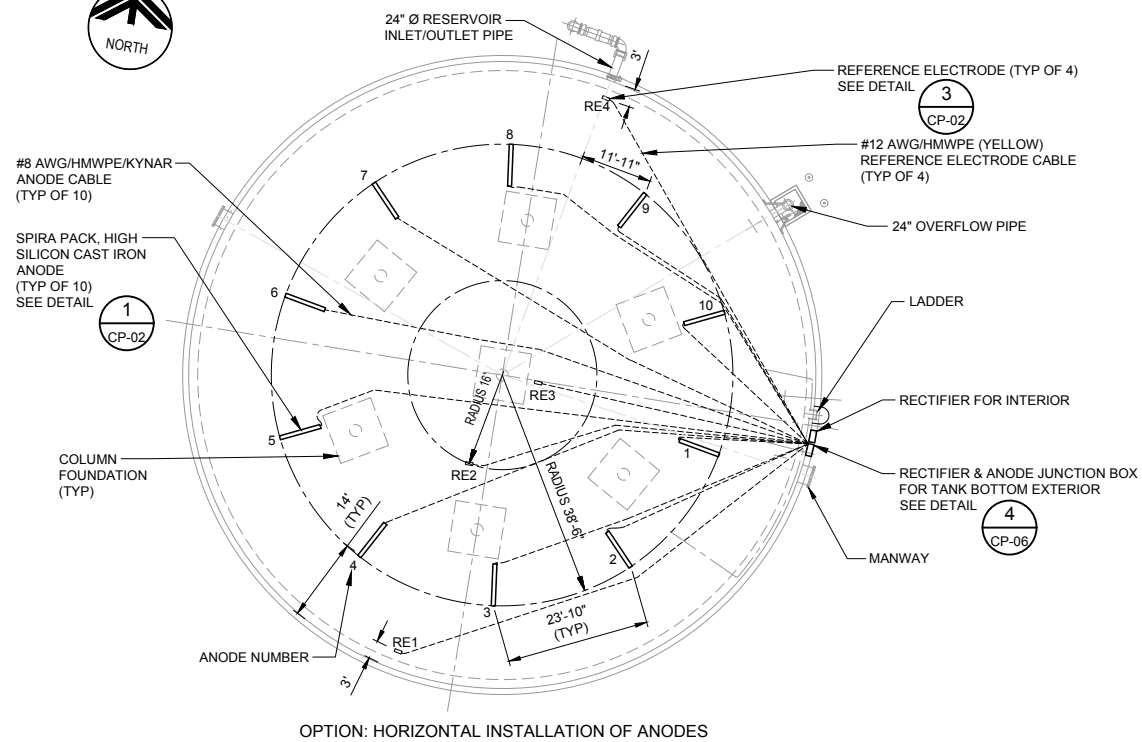
NOTE:
1. FOR THE SCHEMATIC FOR THE INTERNAL CATHODIC PROTECTION SYSTEM SEE DETAIL 1/CP-03.

RESERVOIR INTERIOR CATHODIC PROTECTION SITE PLAN

SCALE: 1/8" = 1'-0"
FILE: BHR_M-103.dwg



OPTION: VERTICAL INSTALLATION OF ANODES



OPTION: HORIZONTAL INSTALLATION OF ANODES

NOTES:
1. CONTRACTOR SHALL COORDINATE WITH THE TANK MANUFACTURER AND THE MECHANICAL PLANS TO DETERMINE THE EXACT LOCATION OF THE COLUMN FOOTINGS IN ORDER TO AVOID ANY CONFLICTS WITH THE TANK FOUNDATION WHEN RUNNING THE ANODE CABLES AND THE REFERENCE ELECTRODE CABLES.
2. FOR THE SCHEMATIC FOR THE EXTERNAL CATHODIC PROTECTION SYSTEM SEE DETAIL 4/CP-02.

RESERVOIR BOTTOM EXTERIOR CATHODIC PROTECTION SITE PLAN

SCALE: 1/16" = 1'-0"
FILE: BHR_M-103.dwg

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CHECKED MA
DATE APRIL 2017

DISCIPLINE ENGINEER
REGISTERED PROFESSIONAL ENGINEER
No. CR 1035
Exp. June 30, 2017
CORROSION

PROJECT ENGINEER
PROJECT MANAGER

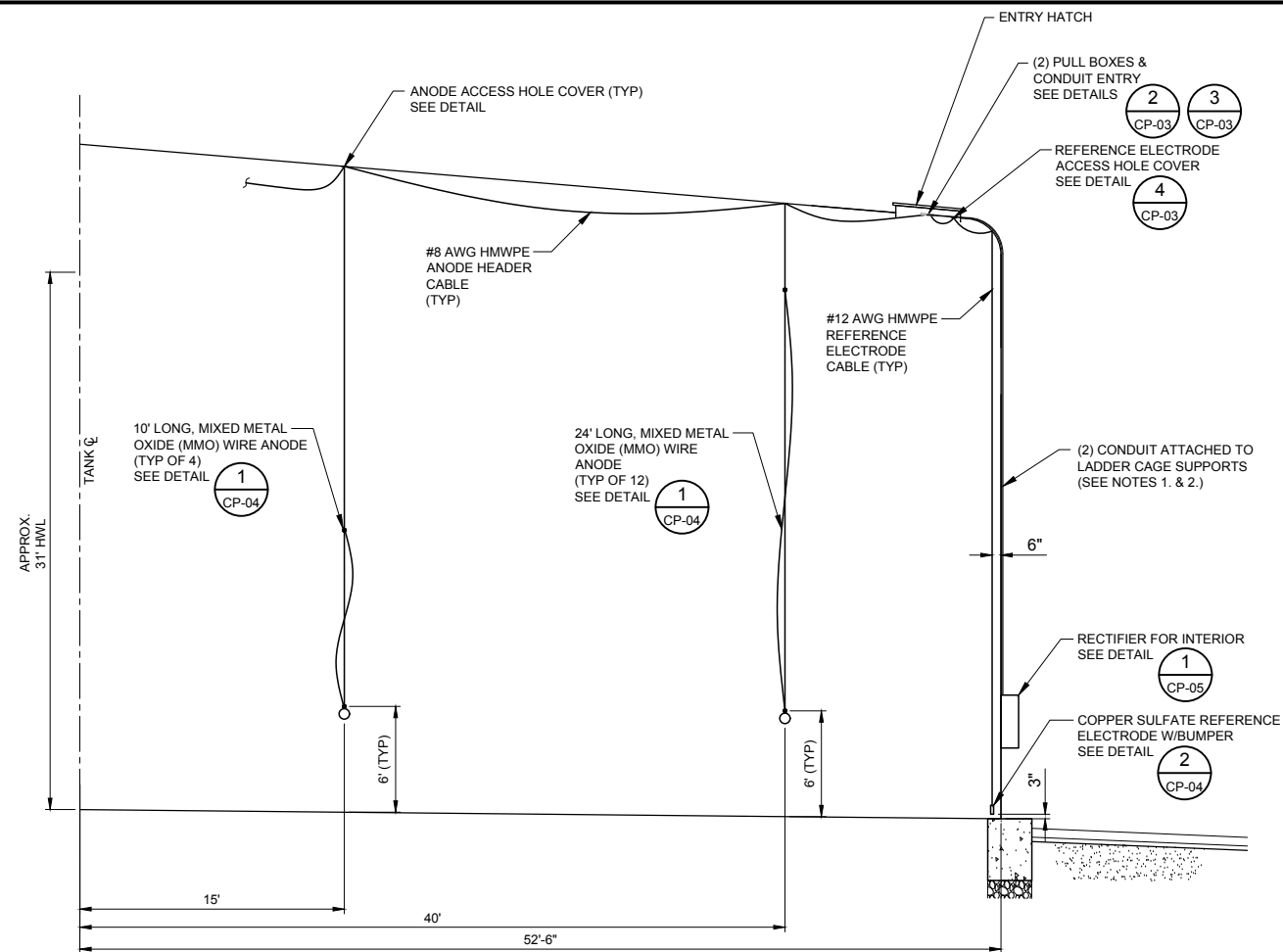
JDH CORROSION
consultants, inc.
1100 Willow Pass Court Concord, CA 94520
(925)927-6630 FAX (925)927-6634
WWW.JDHCORROSION.COM

MARINA COAST
Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
CATHODIC PROTECTION
RESERVOIR PLANS

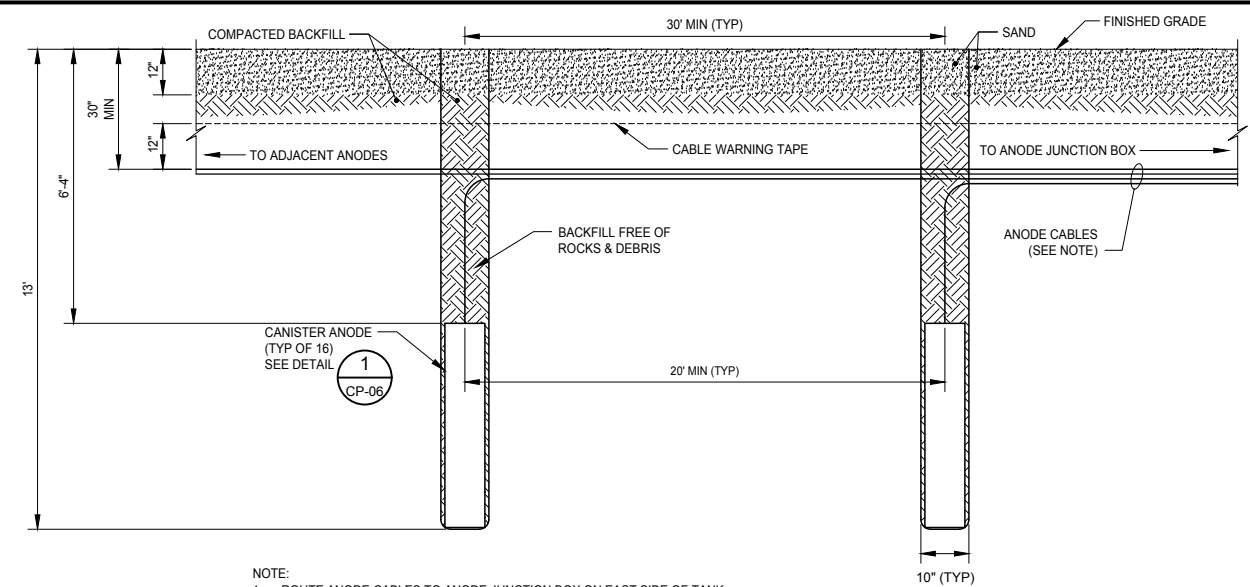
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JOB NO. 7568A.10
DRAWING NO. CP-01
SHEET NO. 87 OF 93



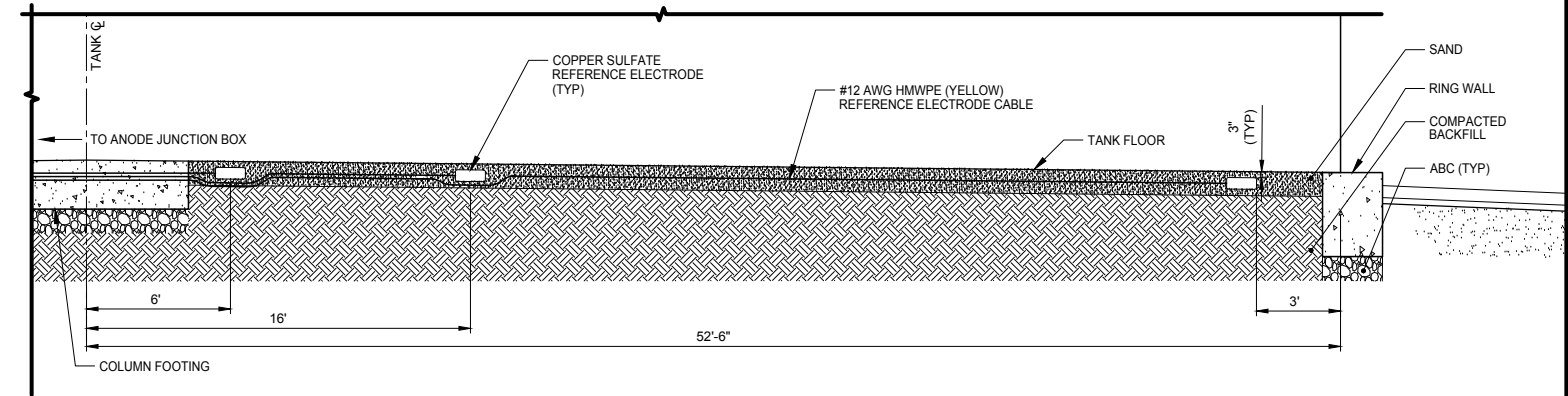
- NOTES:
- ROUTE CONDUIT TO RECTIFIER: (1) 3/4" GALVANIZED RIGID CONDUIT W/(1) #8 AWG HMWPE ANODE HEADER CABLE & (1) 3/4" GALVANIZED RIGID CONDUIT W/(1) #12 AWG/THHN SHIELDED TWISTED PAIR (COPPER SULFATE REFERENCE ELECTRODE & CONTROL CABLE).
 - EXTERIOR LADDER AND CAGE NOT SHOWN. SEE EXTERIOR LADDER DETAIL ON SHEET S-03. THE CONTRACTOR SHALL COORDINATE WITH THE TANK MANUFACTURER FOR THE EXACT LOCATION OF THE RECTIFIERS.
 - SUPPORT COLUMNS NOT SHOWN.

A SECTION: RESERVOIR INTERIOR CATHODIC PROTECTION
 CP-02 SCALE: NOT TO SCALE
 FILE: CP-02.dwg



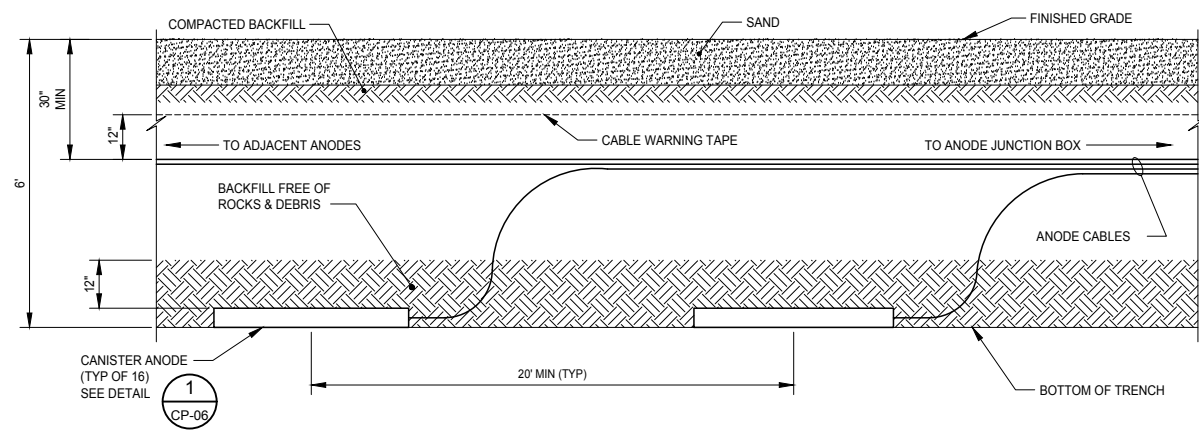
- NOTE:
 1. ROUTE ANODE CABLES TO ANODE JUNCTION BOX ON EAST SIDE OF TANK

2 TANK BOTTOM, VERTICAL CANISTER ANODE INSTALLATION
 CP-01 SCALE: NOT TO SCALE
 FILE: CP-02.dwg



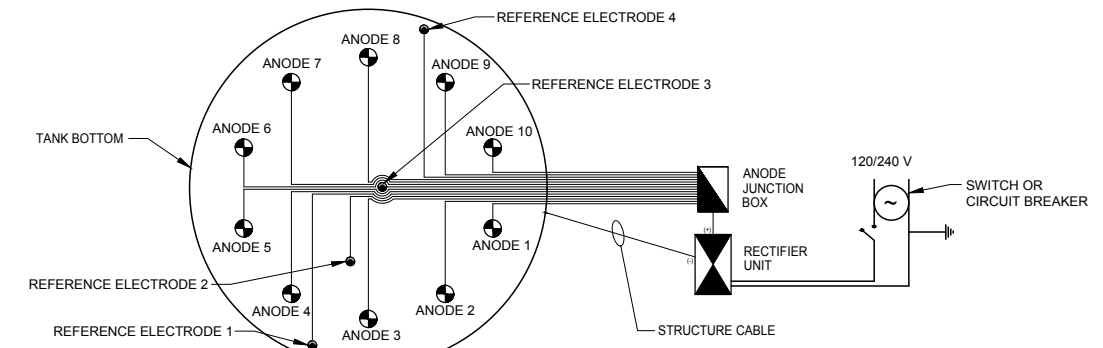
- NOTE:
 1. ROUTE ANODE CABLES AROUND THE FOOTINGS AND TO ANODE JUNCTION BOX ON EAST SIDE OF TANK.

3 TANK BOTTOM, REFERENCE ELECTRODE INSTALLATION
 CP-01 SCALE: NOT TO SCALE
 FILE: CP-02.dwg



- NOTE:
 1. ROUTE ANODE CABLES TO ANODE JUNCTION BOX ON EAST SIDE OF TANK

1 TANK BOTTOM, HORIZONTAL CANISTER ANODE INSTALLATION
 CP-01 SCALE: NOT TO SCALE
 FILE: CP-02.dwg



4 SCHEMATIC - TANK BOTTOM EXTERIOR CATHODIC PROTECTION SYSTEM
 CP-01 SCALE: NOT TO SCALE
 FILE: CP-02.dwg

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DATE APRIL 2017	

DISCIPLINE ENGINEER
 PROJECT ENGINEER

PROJECT MANAGER

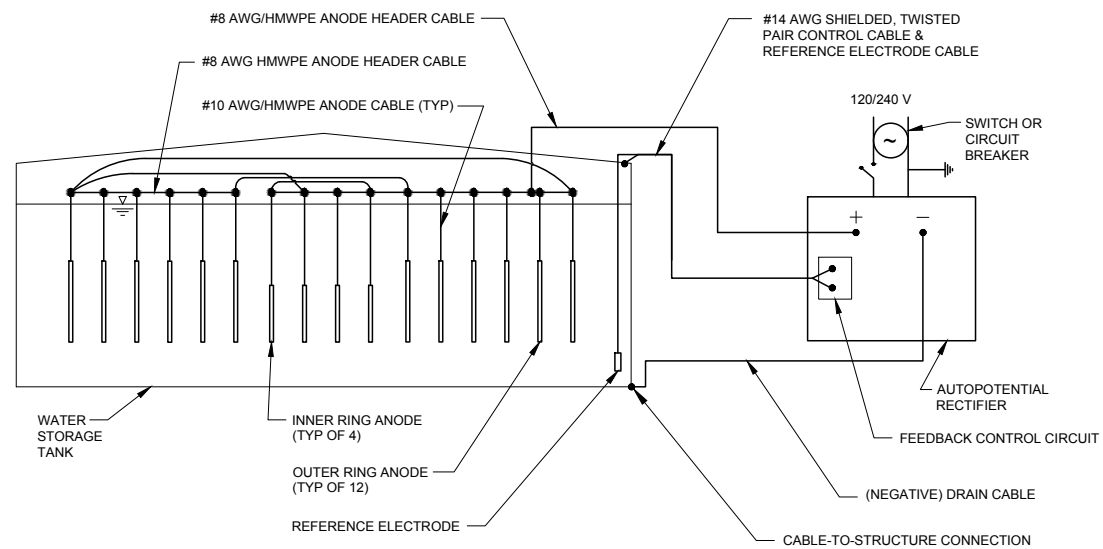
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 consultants, inc.
 1100 Willow Pass Court Concord, CA 94520
 (925)927-6630 FAX (925)927-6634
 WWW.JDHCORROSION.COM

MARINA COAST WATER DISTRICT

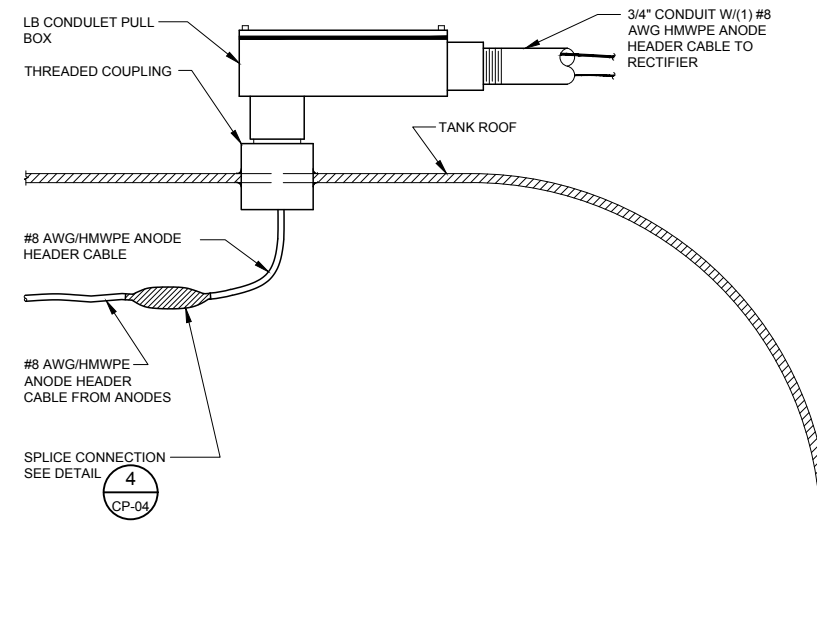
REGIONAL URBAN WATER AUGMENTATION PROJECT
 BLACKHORSE RECYCLED WATER RESERVOIR
 CATHODIC PROTECTION
 RESERVOIR SECTION, SCHEMATIC & DETAILS

VERIFY SCALES
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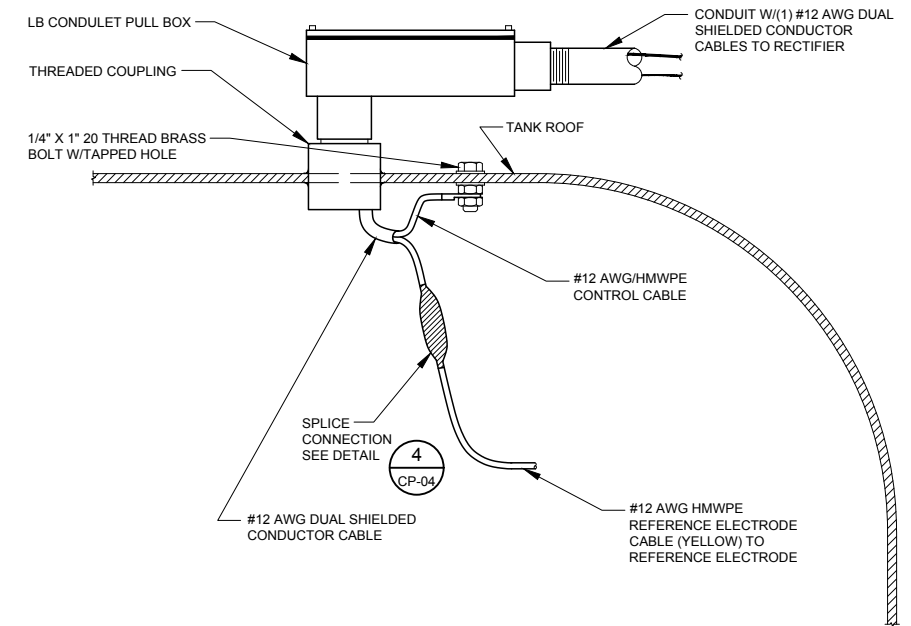
JOB NO. 7568A.10
 DRAWING NO. CP-02
 SHEET NO. 88 OF 93



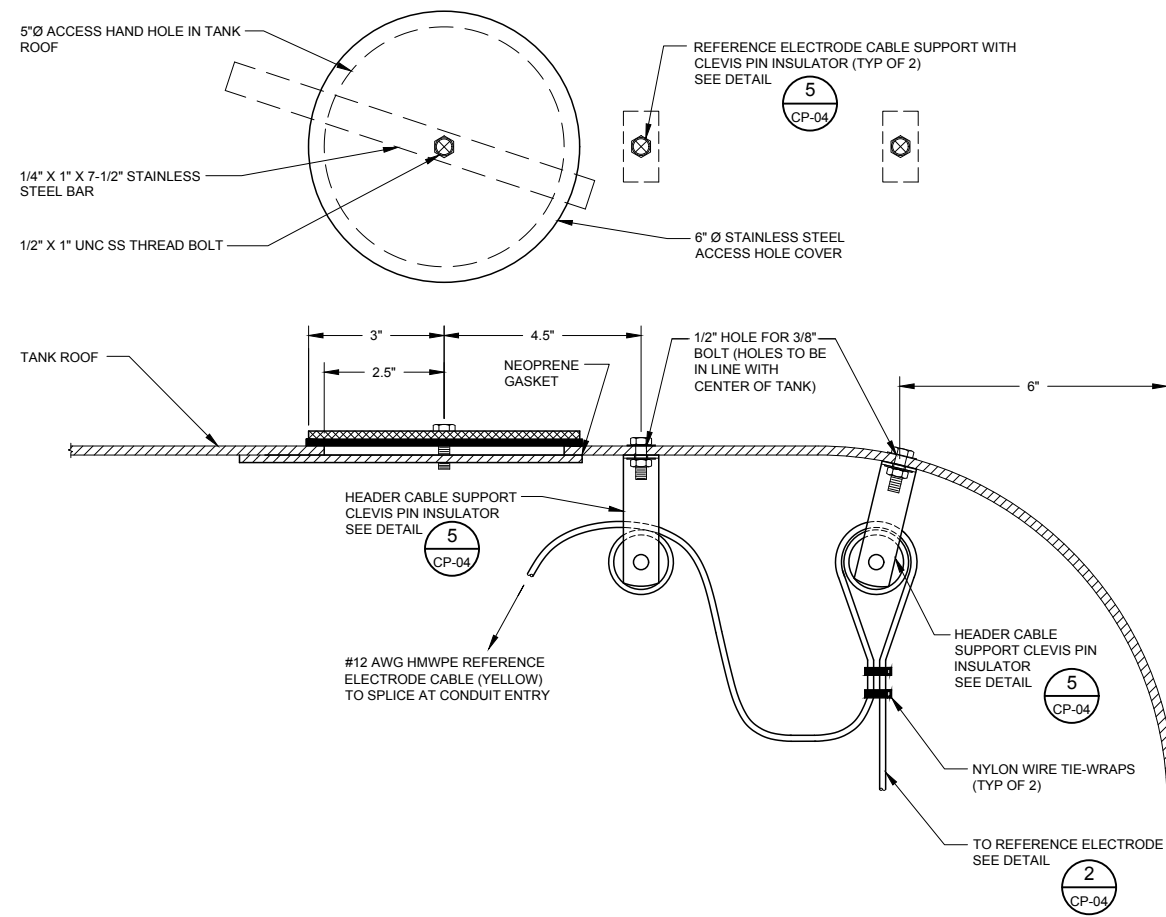
1 SCHEMATIC - INTERNAL CATHODIC PROTECTION SYSTEM
CP-01



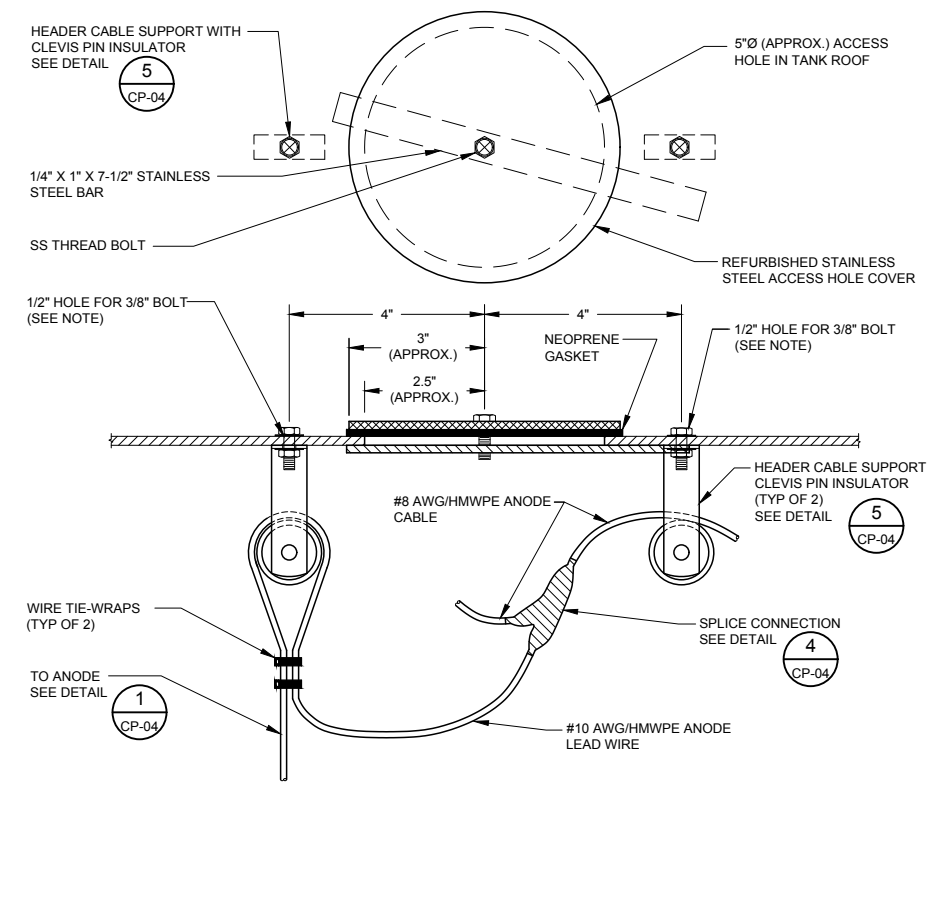
2 PULL BOX & CONDUIT ENTRY FOR ANODE HEADER CABLE
CP-01, CP-02



3 PULL BOX & CONDUIT ENTRY FOR REFERENCE ELECTRODE CABLE
CP-01, CP-02



4 REFERENCE ELECTRODE ACCESS HAND-HOLE & SUSPENSION
CP-01, CP-02



5 ANODE ACCESS HAND-HOLE
CP-01

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DATE	
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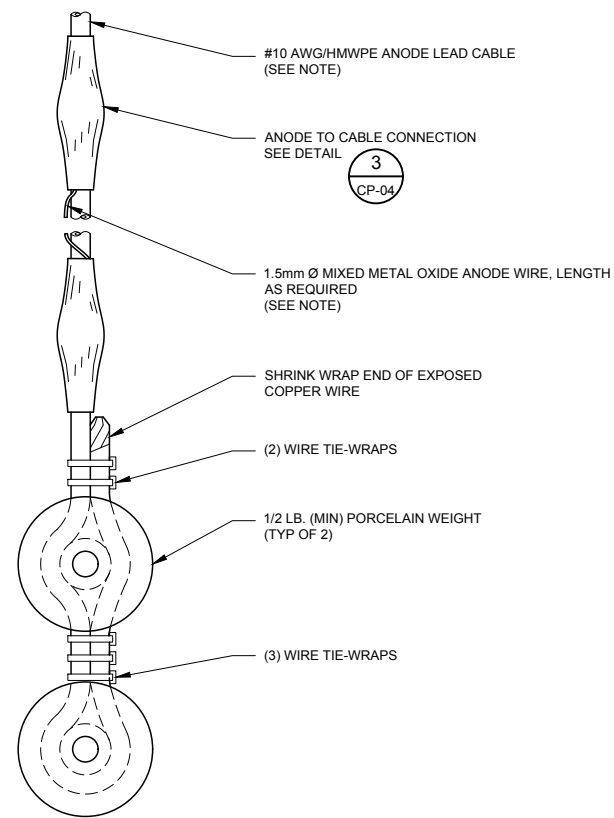
jdh corrosion
consultants, inc.
1100 Willow Pass Court Concord, CA 94520
(925)927-6630 FAX (925)927-6634
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Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
CATHODIC PROTECTION
TANK INTERIOR SCHEMATIC & DETAILS

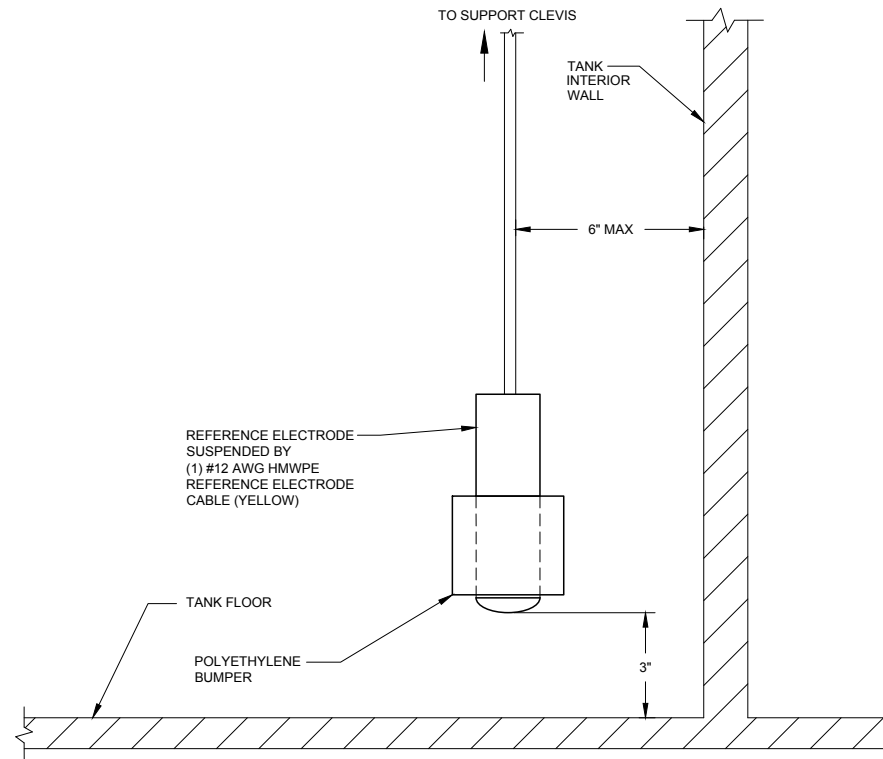
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JOB NO. 7568A.10
DRAWING NO. CP-03
SHEET NO. 89 OF 93

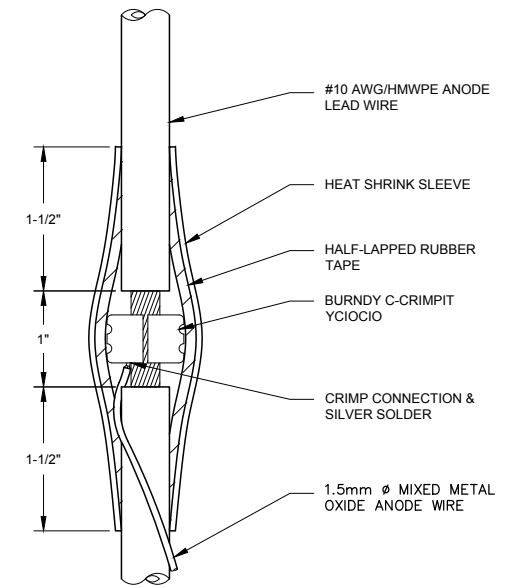


NOTE:
ANODE MATERIAL LENGTHS: 24 FEET LONG (OUTER RING), AND 10 FEET LONG (INNER RING).

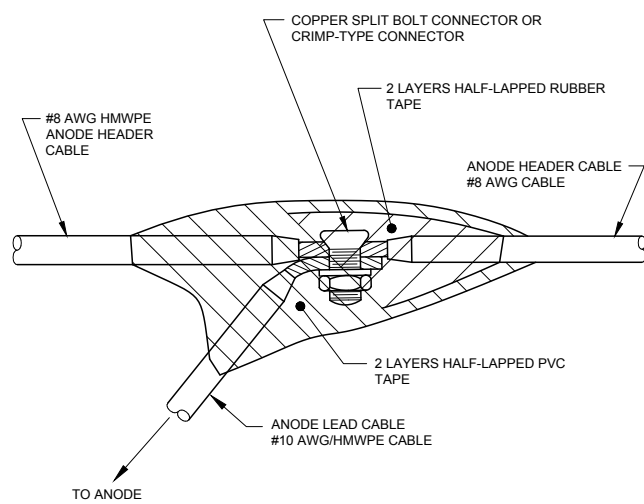
1 MMO ANODE SUSPENSION
CP-02, CP-03



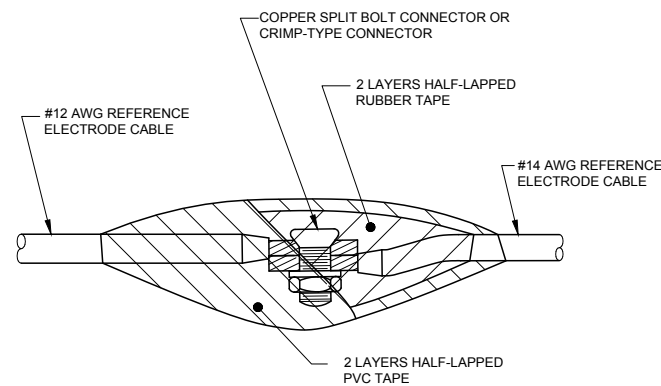
2 REFERENCE ELECTRODE INSTALLATION
CP-01, CP-02, CP-03



3 ANODE-TO-CABLE CONNECTION
CP-04



4 SPLICE CONNECTION
CP-03



NOTE:
ALL HARDWARE SHALL BE STAINLESS STEEL.

5 CLEVIS PIN CABLE SUPPORT
CP-03

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consultants, inc.

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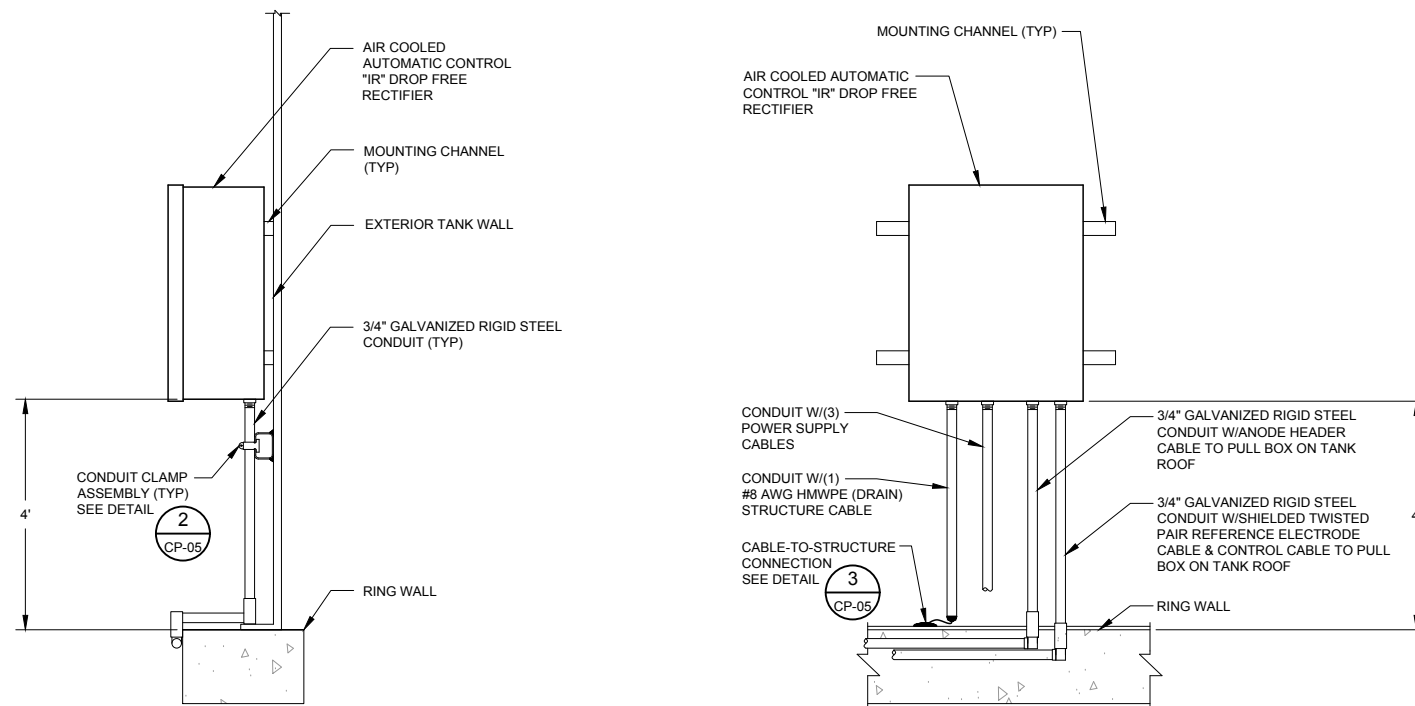


Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
CATHODIC PROTECTION
TANK INTERIOR SCHEMATIC & DETAILS

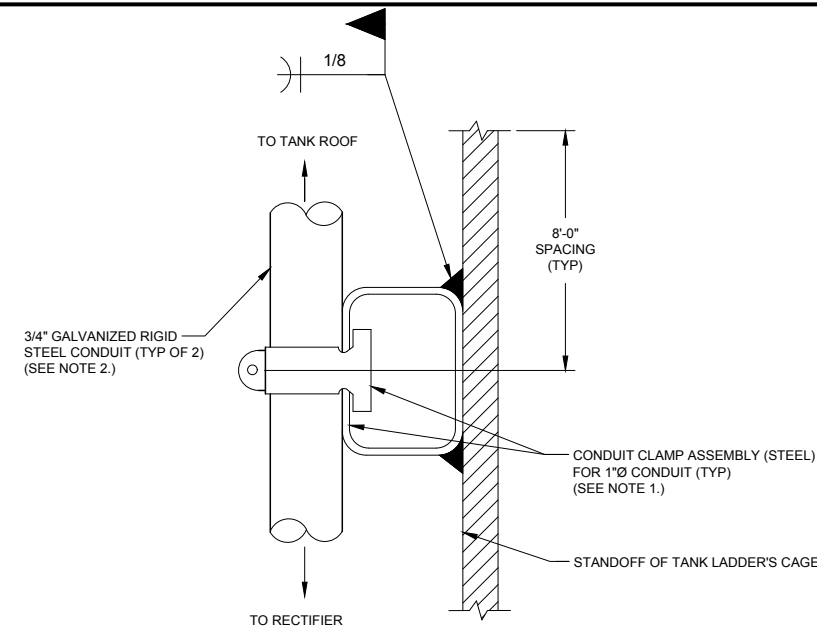
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DRAWING NO. CP-04
SHEET NO. 90 OF 93



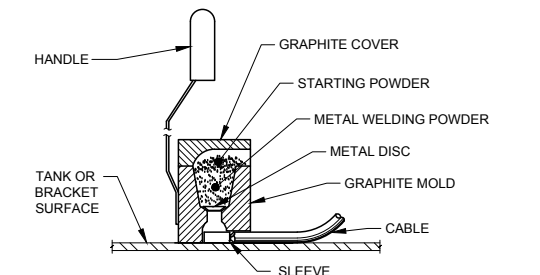
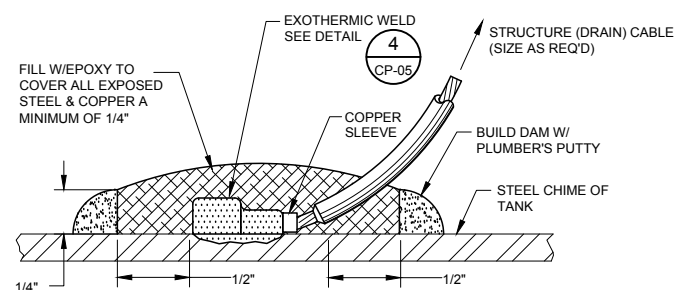
- NOTES:
1. ATTACH RIGID STEEL CONDUIT TO THE RING WALL, THEN TO THE EXTERIOR LADDER STANDOFFS. SEE DETAIL 2/CP-05.
 2. ALL CONDUIT SHALL BE GALVANIZED RIGID STEEL CONDUIT AND PROVIDED WITH THE SAME COATING AS THE TANK.
 3. ROUTE AC CONDUIT TO RESERVOIR CONTROL PANEL.

1 WALL MOUNTED RECTIFIER FOR INTERIOR
CP-01, CP-02



- NOTE:
1. CONDUIT CHANNEL UNISTRUT TO BE WELDED TO TANK AND CONDUIT TO BE MOUNTED TO THE STANDOFFS OF THE TANK LADDER'S CAGE. TOUCH UP AREAS DAMAGED BY THE WELDING PROCESS WITH A PRIMER AND TOP COAT PER SPECIFICATIONS. COMPLETE FINAL TOUCH UPS AFTER THE CONDUIT HAS BEEN INSTALLED.
 2. THE CABLE IN THE CONDUIT FOR THE REFERENCE ELECTRODE WILL BE (1) #12 AWG/HMWPE SHIELDED TWISTED PAIR DUAL CONDUCTOR CABLE. THE CABLE IN THE CONDUIT FOR THE ANODES WILL BE (1) #8 AWG/HMWPE ANODE HEADER CABLE.
 3. ALL CONDUIT SHALL BE GALVANIZED RIGID STEEL CONDUIT AND PROVIDED WITH THE SAME COATING AS THE TANK.

2 CONDUIT CLAMP ASSEMBLY
CP-05, CP-06



- STEP 1.** FILE STRUCTURE CONNECTION AREA TO BARE SHINY METAL AND CLEAN.
- STEP 2.** STRIP INSULATION FROM WIRE. ATTACH SLEEVE REQUIRED ON #6 AWG WIRE OR SMALLER
- STEP 3.** HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR AND IGNITE WITH FLINT GUN.
- STEP 4.** REMOVE SLAG FROM CONNECTION AND PEEN WELD FOR SOUNDNESS.
- STEP 5.** COVER CONNECTION AND EXPOSED STRUCTURE SURFACE WITH COATING COMPOUND PER DETAIL 3/CP-05.

NOTE:
PROCEDURE SHOWN ABOVE IS TO BE USED AS A GENERAL GUIDE ONLY.
CONSULT MANUFACTURER'S LITERATURE FOR SPECIFIC INSTALLATION INSTRUCTIONS.

3 CABLE-TO-STRUCTURE CONNECTION
CP-05, CP-06

4 EXOTHERMIC WELD
CP-05

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DATE APRIL 2017	
DISCIPLINE ENGINEER	

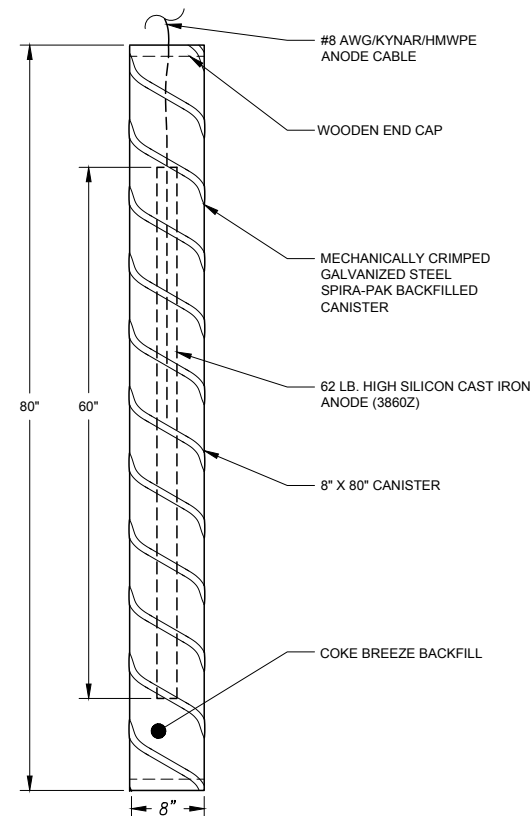
PROJECT ENGINEER	PROJECT MANAGER
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jdh corrosion
consultants, inc.
1100 Willow Pass Court Concord, CA 94520
(925)927-6630 FAX (925)927-6634
WWW.JDHCORROSION.COM

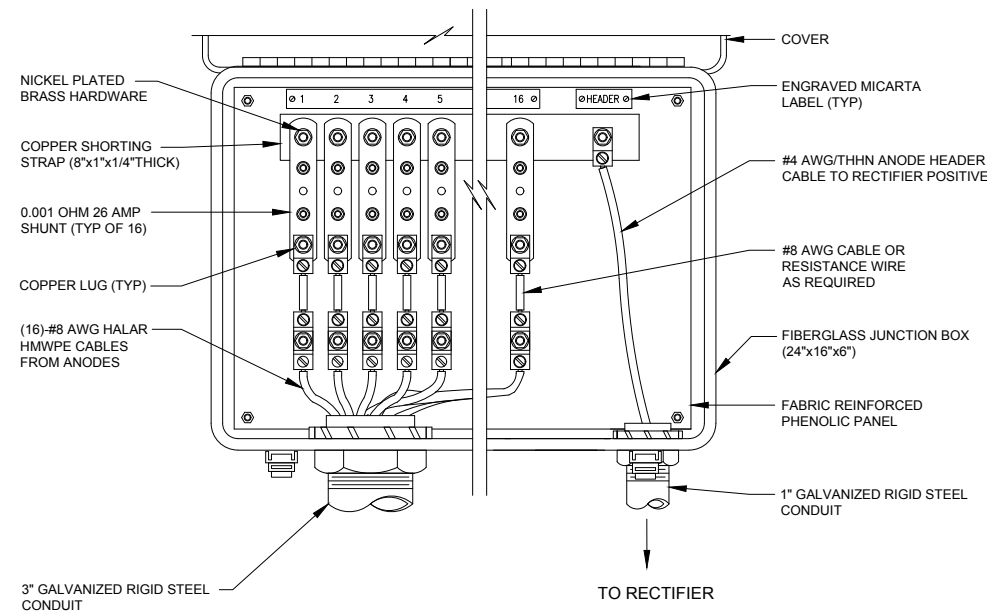
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
CATHODIC PROTECTION
TANK INTERIOR DETAILS

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 7568A.10
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	SHEET NO. 91 OF 93

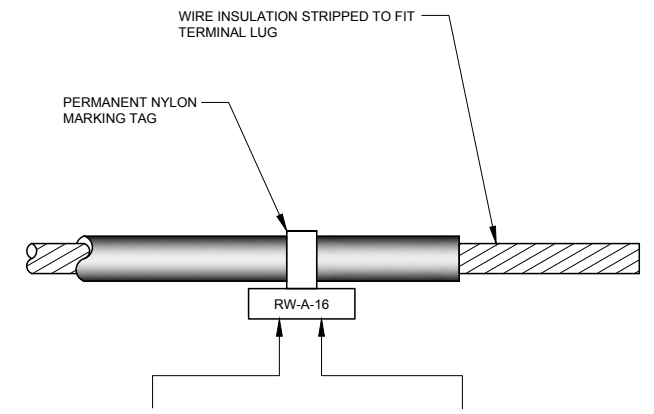


1 SPIRA PAK CANISTER ANODE
CP-02



2 ANODE JUNCTION BOX FOR TANK BOTTOM EXTERIOR
CP-06

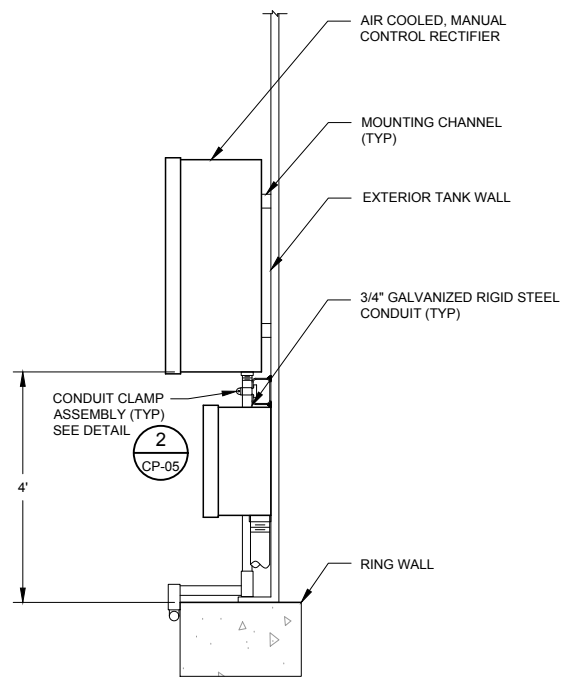
NOTES:
 1. RESISTANCE WIRE TO BE INSTALLED BY THE ENGINEER.
 2. IDENTIFY CABLES. SEE DETAIL 3, SHEET CP-06.
 3. ALL CONDUIT SHALL BE GALVANIZED RIGID STEEL CONDUIT AND PROVIDED WITH THE SAME COATING AS THE TANK.



3 CABLE IDENTIFICATION
CP-06

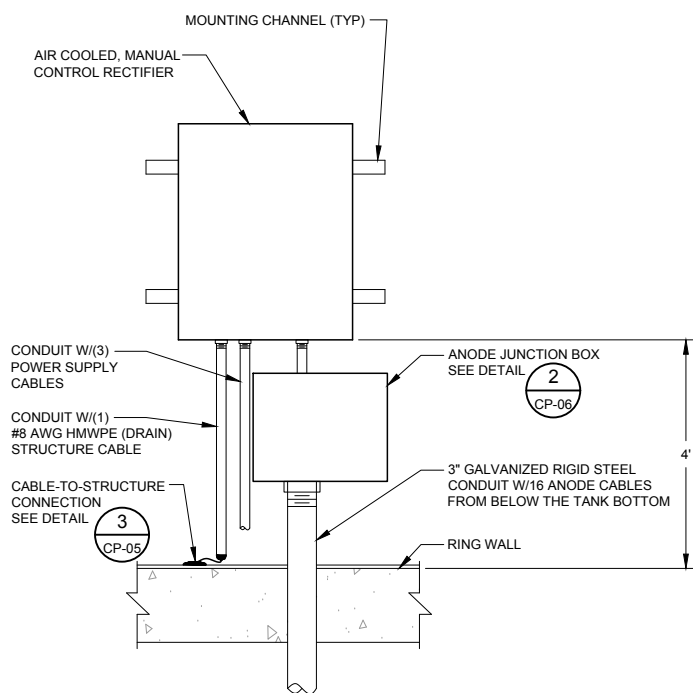
ABBREVIATIONS
 AN - ANODE
 RW - RECYCLED WATER
 DR - DRAIN CABLE
 TT - TEST CABLE

NUMBER
 ANODE NUMBER



4 WALL MOUNTED RECTIFIER FOR TANK BOTTOM EXTERIOR
CP-01

NOTES:
 1. ATTACH RIGID STEEL CONDUIT TO THE RING WALL.
 2. ALL CONDUIT SHALL BE GALVANIZED RIGID STEEL CONDUIT AND PROVIDED WITH THE SAME COATING AS THE TANK.
 3. ROUTE AC CONDUIT TO RESERVOIR CONTROL PANEL.
 4. ALL CONDUIT SHALL BE GALVANIZED RIGID STEEL CONDUIT AND PROVIDED WITH THE SAME COATING AS THE TANK.



Last Created by: 4-28-17 05:32pm thrinik

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 CHECKED MA
 DATE APRIL 2017

DISCIPLINE ENGINEER

PROJECT ENGINEER
 PROJECT MANAGER

jdj corrosion
 consultants, inc.
 1100 Willow Pass Court Concord, CA 94520
 (925)927-6630 FAX (925)927-6634
 WWW.JDHCORROSION.COM

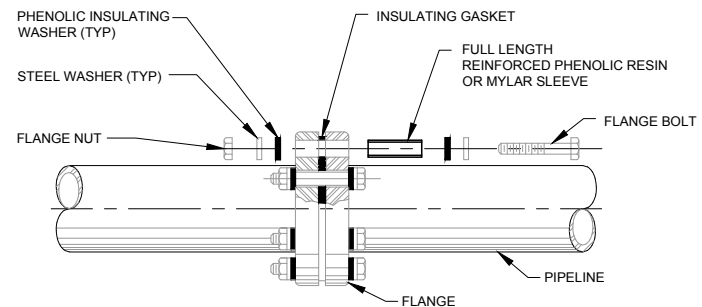
Marina Coast Water District

REGIONAL URBAN WATER AUGMENTATION PROJECT
 BLACKHORSE RECYCLED WATER RESERVOIR
 CATHODIC PROTECTION
 TANK BOTTOM EXTERIOR DETAILS

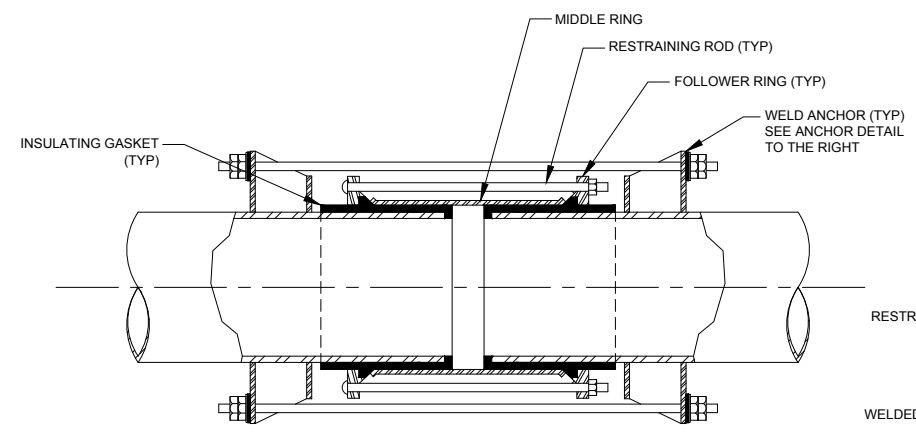
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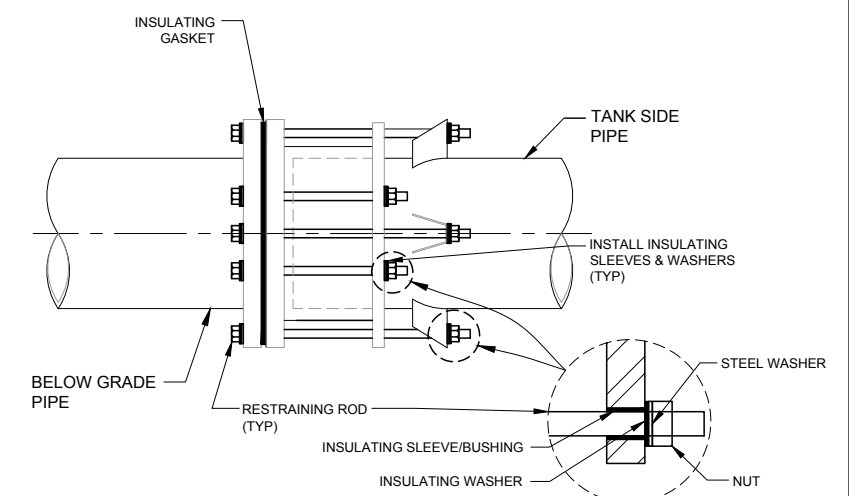
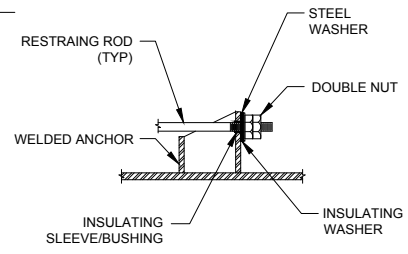
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 DRAWING NO. CP-06
 SHEET NO. 92 OF 93



INSULATING FLANGE



INSULATING FLANGED COUPLING ADAPTER



INSULATING FLANGED COUPLING ADAPTER

- NOTES:
1. THE INSULATING FLANGE KIT SHALL BE FOR WATER SERVICE, SUITABLE FOR WET & DRY LOCATIONS, AND BE OF SAME PRESSURE RATING AS THE FLANGE.
 2. THIS DETAIL IS TYPICAL FOR STEEL AND DUCTILE IRON PIPE FLANGES, AND ALSO FOR STEEL PIPE INSULATING FLEXIBLE COUPLINGS AND INSULATED RESTRAINED FLEXIBLE COUPLINGS.
 3. THE ALLOY OF THE STEEL WASHERS SHALL BE THE SAME AS IS SPECIFIED FOR THE FLANGE BOLTS.

1 INSULATING JOINTS
CP-01

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DATE APRIL 2017



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PROJECT ENGINEER

PROJECT MANAGER

jdh corrosion
consultants, inc.
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REGIONAL URBAN WATER AUGMENTATION PROJECT
BLACKHORSE RECYCLED WATER RESERVOIR
CATHODIC PROTECTION
TANK EXTERIOR DETAILS

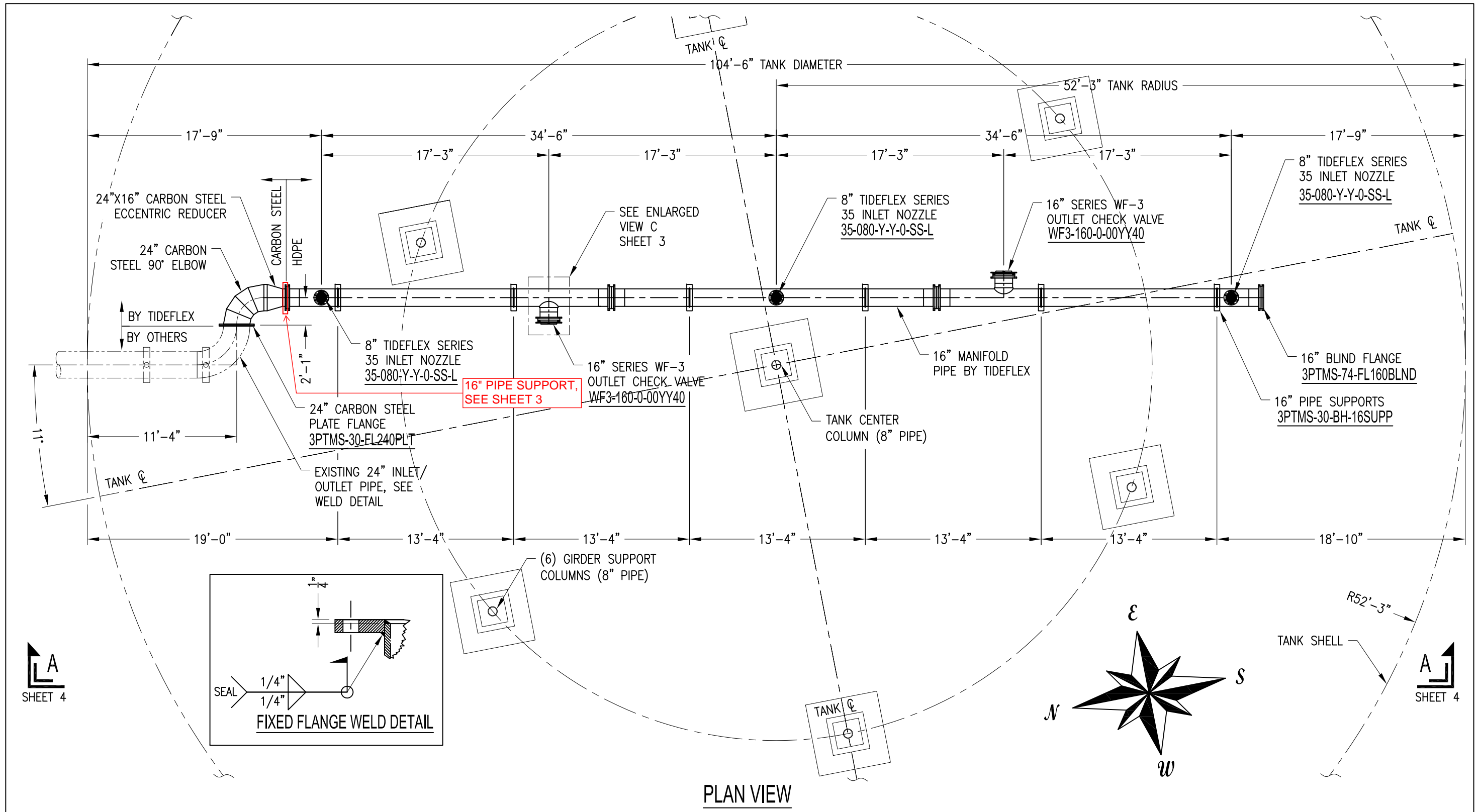
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SHEET NO. 93 OF 93

MCWD Recycled Water Project



Appendix G Tideflex Mixing System - Preliminary Design



PLAN VIEW

REV	BY	DATE	ECO#	CHKD	DESCRIPTION
-	MVH	3-18-19			ISSUE FOR APPROVAL

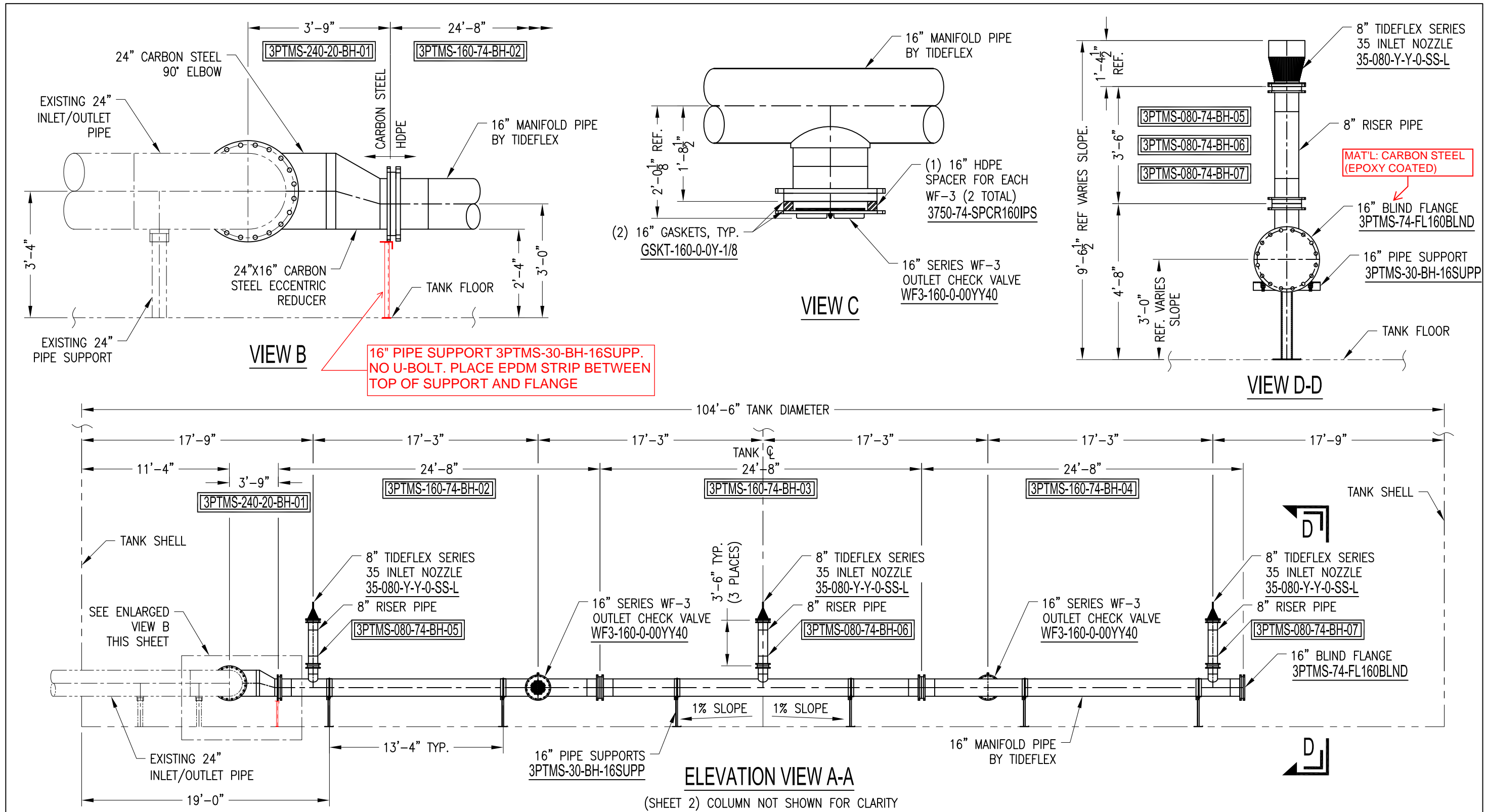
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S.O.#: QUOTE #: 81940
 DWG. NOTES:

Tideflex Technologies
 A Division of Red Valve Company, Inc.,
 600 North Bell Ave.
 Carnegie, PA 15106 USA
 Phone: 412-279-0044
 Fax: 412-279-3410
 Website: WWW.TIDEFLEX.COM
 Email: INFO@TIDEFLEX.COM

**BLACKHORSE 2.0MG RECYCLED WATER RESERVOIR
 MARINA COAST W.D., CA
 PLAN VIEW**

CONSULTANT: CAROLLO ENGINEERS
 APPLICATION: (TMS) TIDEFLEX MIXING SYSTEM
 CAD SCALE: FULL PLOT SCALE: N.T.S. DWG. NO. **TMS19-81940** SHEET 2 OF 7
 DWG. BY: MVH DATE: 3-18-19



16" PIPE SUPPORT 3PTMS-30-BH-16SUPP.
NO U-BOLT. PLACE EPDM STRIP BETWEEN
TOP OF SUPPORT AND FLANGE

MAT'L: CARBON STEEL
(EPOXY COATED)

(SHEET 2) COLUMN NOT SHOWN FOR CLARITY

REV	BY	DATE	ECO#	CHKD	DESCRIPTION
-	MVH	3-18-19			ISSUE FOR APPROVAL

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S.O.#:	QUOTE #: 81940
DWG. NOTES:	

Tideflex Technologies
 TIDEFLEX TECHNOLOGIES
 TIDEFLEX MIXING SYSTEM
 600 North Bell Ave.
 Carnegie, PA 15106 USA
 Phone: 412-279-0044
 Fax: 412-279-3410
 Website: WWW.TIDEFLEX.COM
 Email: INFO@TIDEFLEX.COM

A Division of Red Valve Company, Inc.

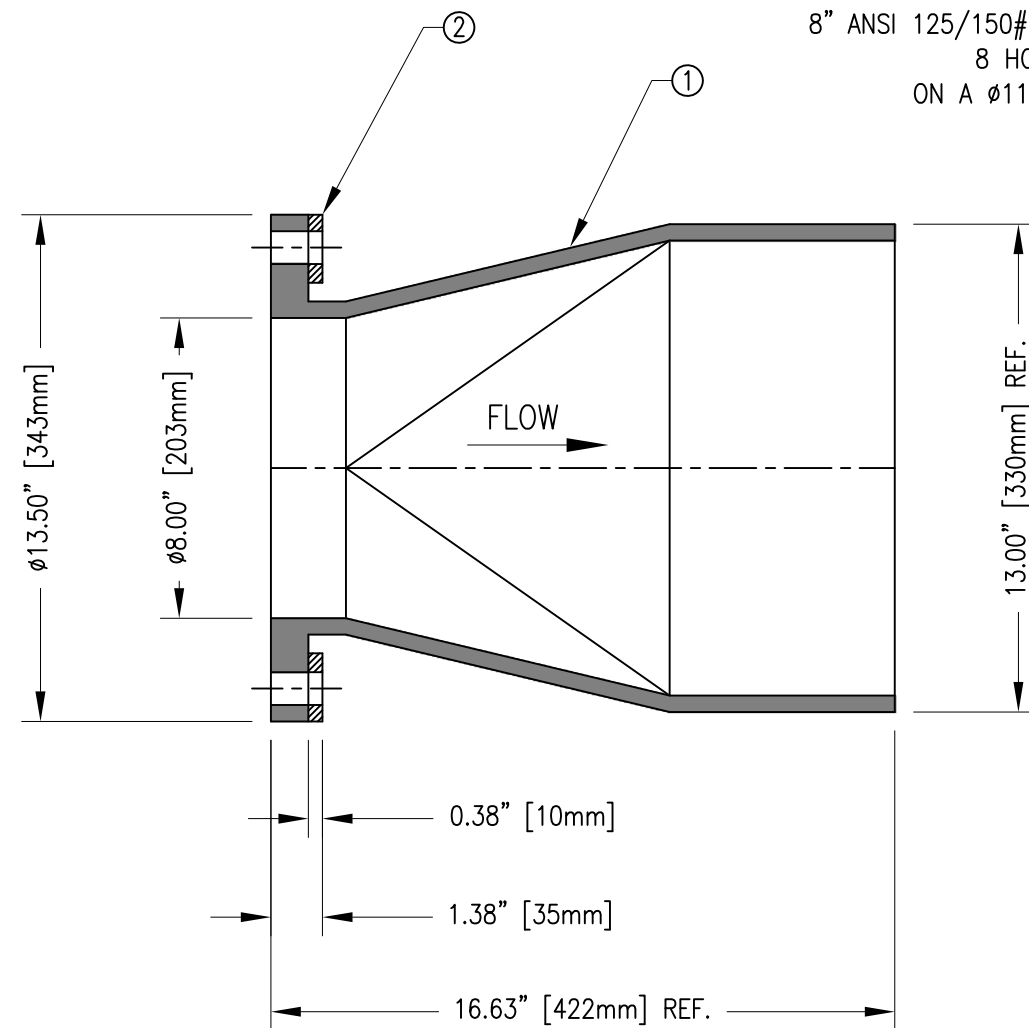
BLACKHORSE 2.0MG RECYCLED WATER RESERVOIR
 MARINA COAST W.D., CA
 ELEV - VIEWS A-A, B, C, & D-D

CONSULTANT: CAROLLO ENGINEERS
 APPLICATION: (TMS) TIDEFLEX MIXING SYSTEM
 CAD SCALE: FULL PLOT SCALE: N.T.S. DWG. NO. **TMS19-81940** SHEET 3 OF 7
 DWG. BY: MVH DATE: 3-18-19

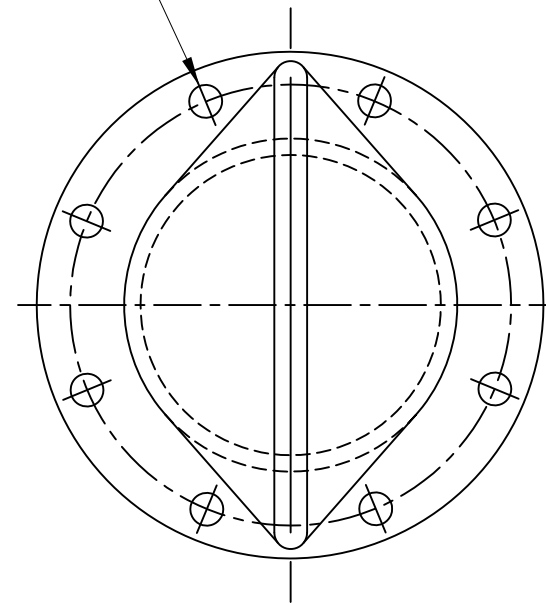
ITEM	QTY.	DESCRIPTION	MAT'L
1	1	CHECK VALVE SLEEVE	EPDM
2	1	FLANGE BACK-UP RING	304 S/STEEL

VALVE IS NSF/ANSI STANDARD 61 CERTIFIED

316



8" ANSI 125/150# FLANGE DRILLING
8 HOLES ϕ 0.88" THRU
ON A ϕ 11.75" BOLT CIRCLE



8" TIDEFLEX SERIES 35 INLET NOZZLE
35-080-Y-Y-0-SS-L
(3 REQUIRED)

REV	BY	DATE	ECO#	CHKD	DESCRIPTION
-	MVH	3-18-19			ISSUE FOR APPROVAL

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S.O.#: QUOTE #: 81940
DWG. NOTES:

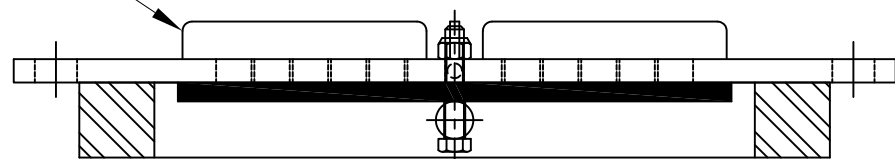
Tideflex Technologies
A Division of Red Valve Company, Inc.

TIDEFLEX TECHNOLOGIES
TIDEFLEX MIXING SYSTEM
600 North Bell Ave.
Carnegie, PA 15106 USA
Phone: 412-279-0044
Fax: 412-279-3410
Website: WWW.TIDEFLEX.COM
Email: INFO@TIDEFLEX.COM

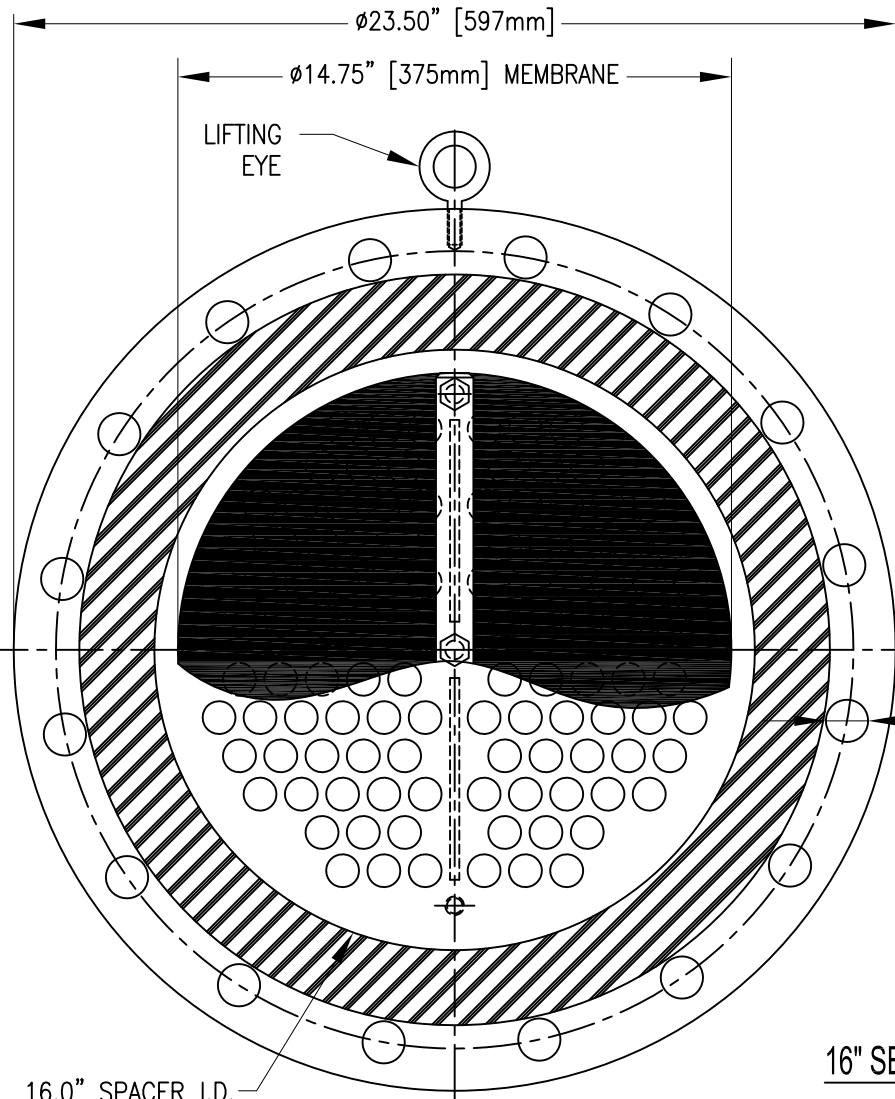
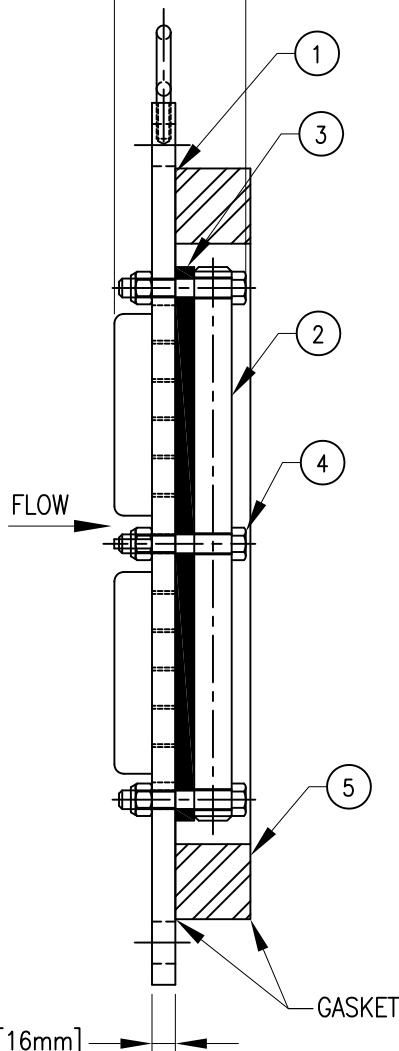
BLACKHORSE 2.0MG RECYCLED WATER RESERVOIR
MARINA COAST W.D., CA
DETAIL - 8" TIDEFLEX SERIES 35 INLET NOZZLE

CONSULTANT: CAROLLO ENGINEERS
APPLICATION: (TMS) TIDEFLEX MIXING SYSTEM
CAD SCALE: FULL PLOT SCALE: N.T.S. DWG. NO. TMS19-81940 SHEET 4 OF 7
DWG. BY: MVH DATE: 3-18-19

DISC SUPPORT RIBS



3.50" [89mm] REF.



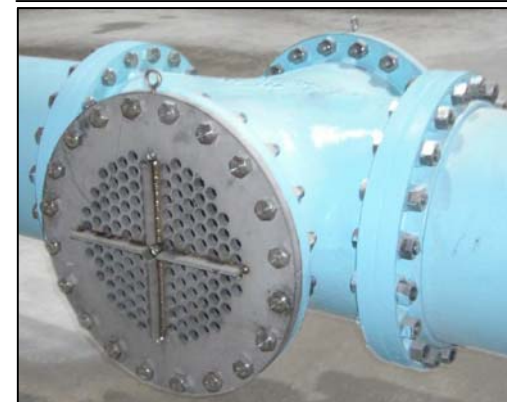
ITEM	QTY.	DESCRIPTION	MAT'L
1	1	DISC	304 S/STEEL
2	1	SUPPORT ROD	304 S/STEEL
3	1	MEMBRANE	EPDM
4	3	BOLT WITH LOCKING NUT	304 S/STEEL
5	1	SPACER (HDPE IPS FITTINGS) (20.00" O.D.x16.00" I.D.x2.0" THK.)	HDPE

VALVE IS NSF/ANSI STANDARD 61 CERTIFIED

316

- NOTES:
1. VALVE IS TO BE MOUNTED WITH SUPPORT ROD IN THE VERTICAL POSITION.
 2. SPACER I.D.: 16.0"

WATERFLEX INSTALLATION ORIENTATION



MEMBRANE FACING INTO PIPING. ROD IS VERTICAL. LIFTING EYE TO BE AT TOP

16" ANSI 150# FLANGE DRILLING
(16) 1.12" DIA. THRU HOLES ON A
21.25" BOLT CIRCLE

16" SERIES WF-3 OUTLET CHECK VALVE
WF3-160-0-00YY40
(2 REQUIRED)

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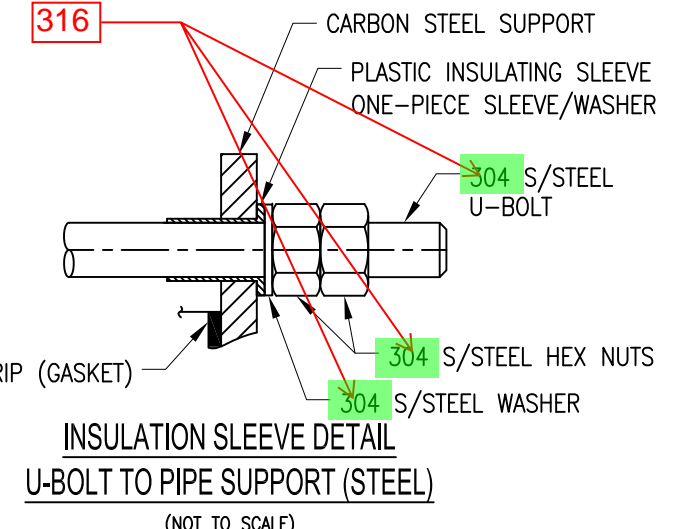
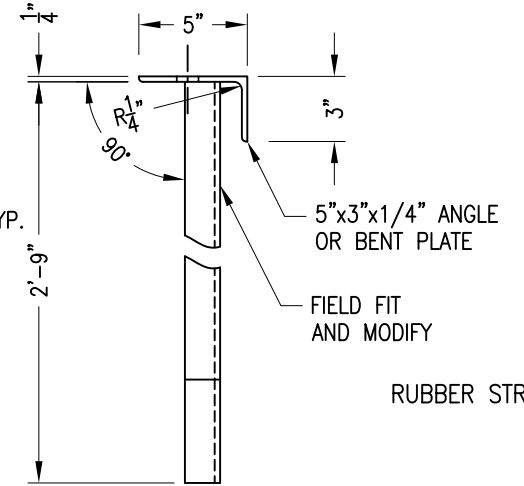
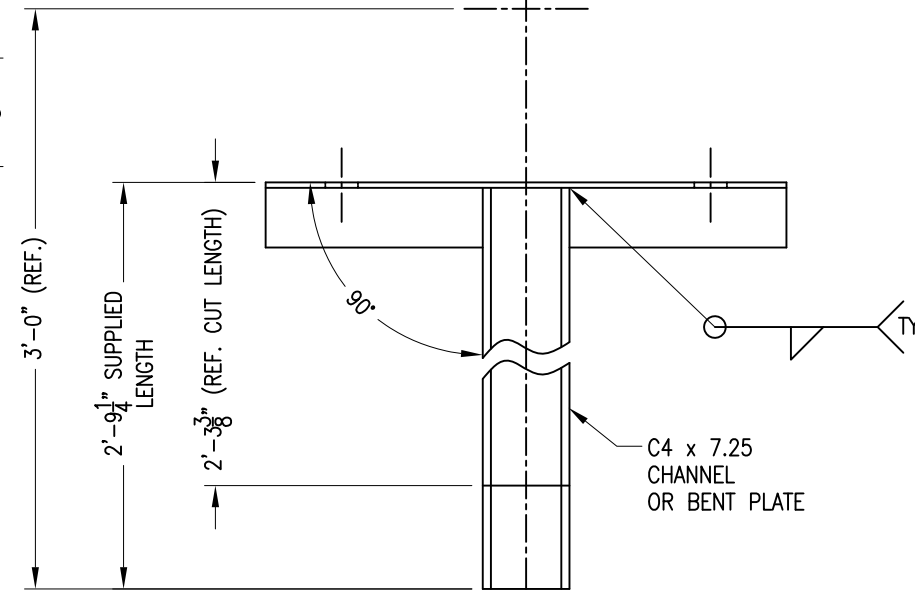
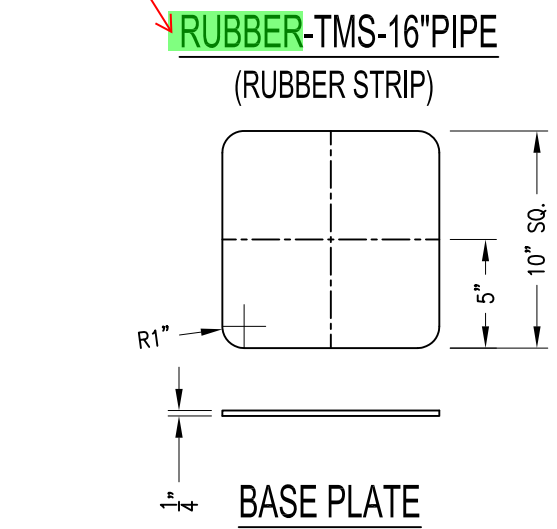
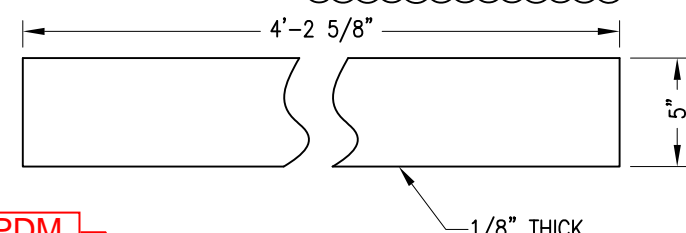
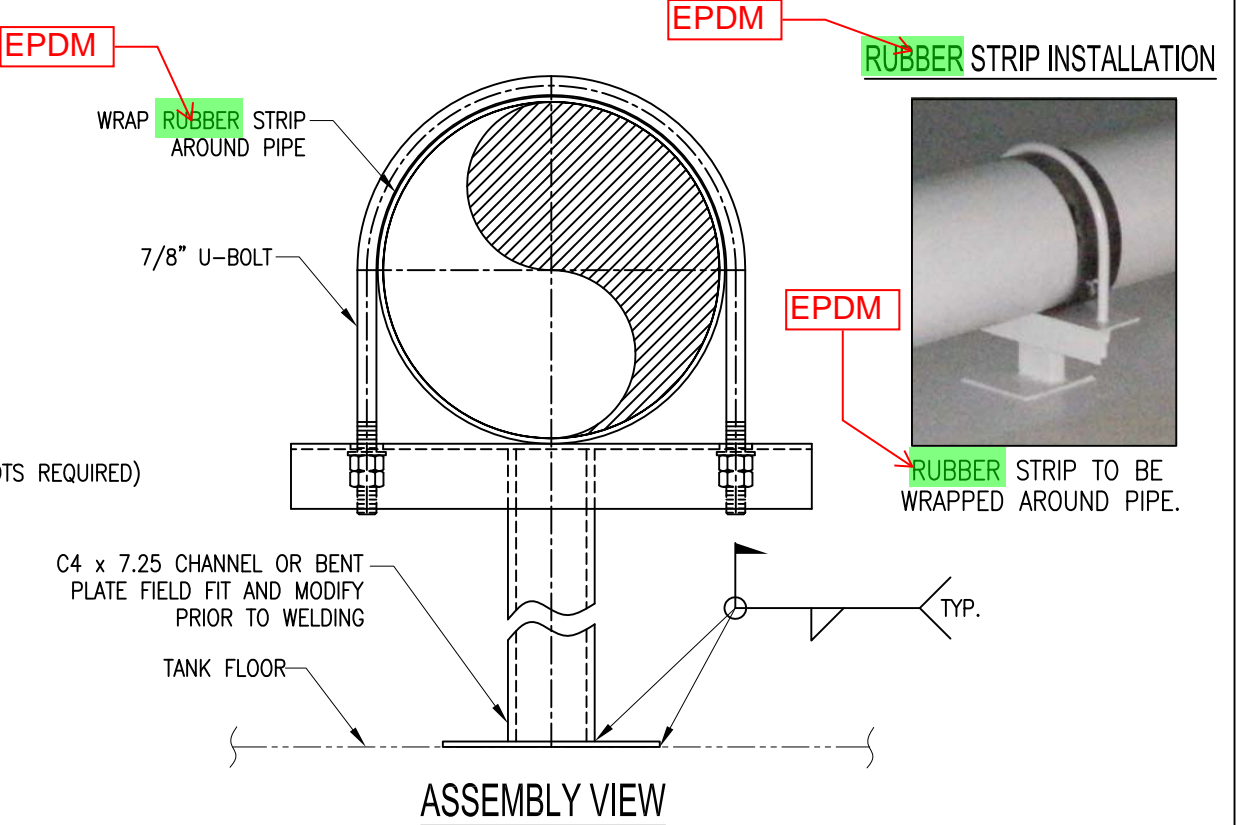
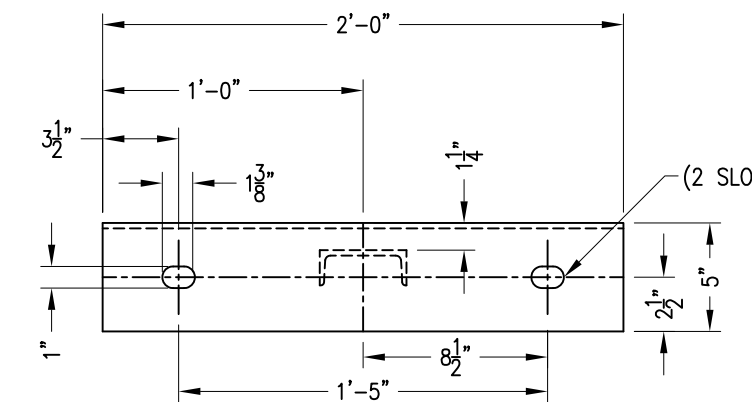
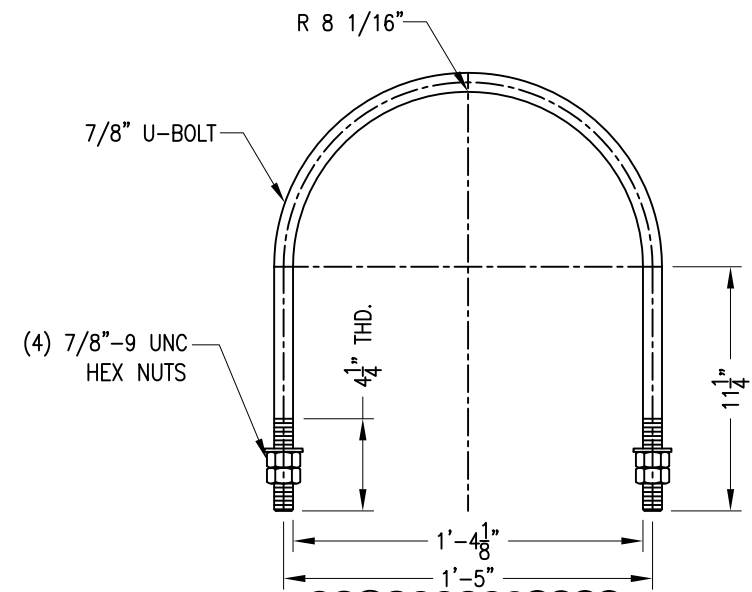
DWG. NOTES:

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A Division of Red Valve Company, Inc.

BLACKHORSE 2.0MG RECYCLED WATER RESERVOIR
MARINA COAST W.D., CA
DETAIL - 16" SERIES WF-3 OUTLET CHECK VALVE

CONSULTANT: CAROLLO ENGINEERS
APPLICATION: (TMS) TIDEFLEX MIXING SYSTEM
CAD SCALE: FULL PLOT SCALE: N.T.S. DWG. NO. TMS19-81940 SHEET 5 OF 7
DWG. BY: MVH DATE: 3-18-19



7 **DETAIL - PIPE SUPPORT**
 3PTMS-30-BH-16SUPP
 5 - REQUIRED
 MAT'L: CARBON STEEL (EPOXY COATED) W/304 S/STEEL U-BOLTS

NOTES:
 1. SURFACES TO BE SMOOTH, REMOVE ALL BURRS & SHARP EDGES.
 2. ALL WELDING OF STEEL COMPONENTS TO CONFORM TO A.W.S. MANUAL, LATEST EDITION.

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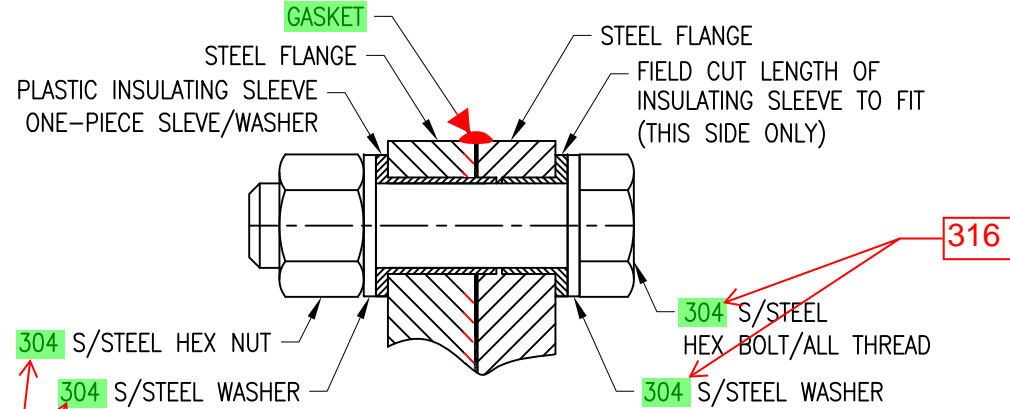
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 A Division of Red Valve Company, Inc.

BLACKHORSE 2.0MG RECYCLED WATER RESERVOIR
MARINA COAST W.D., CA
DETAIL - 16" PIPE SUPPORT

CONSULTANT: CAROLLO ENGINEERS
 APPLICATION: (TMS) TIDEFLEX MIXING SYSTEM
 CAD SCALE: FULL PLOT SCALE: N.T.S. DWG. NO. **TMS19-81940** SHEET 6 OF 7
 DWG. BY: MVH DATE: 3-18-19

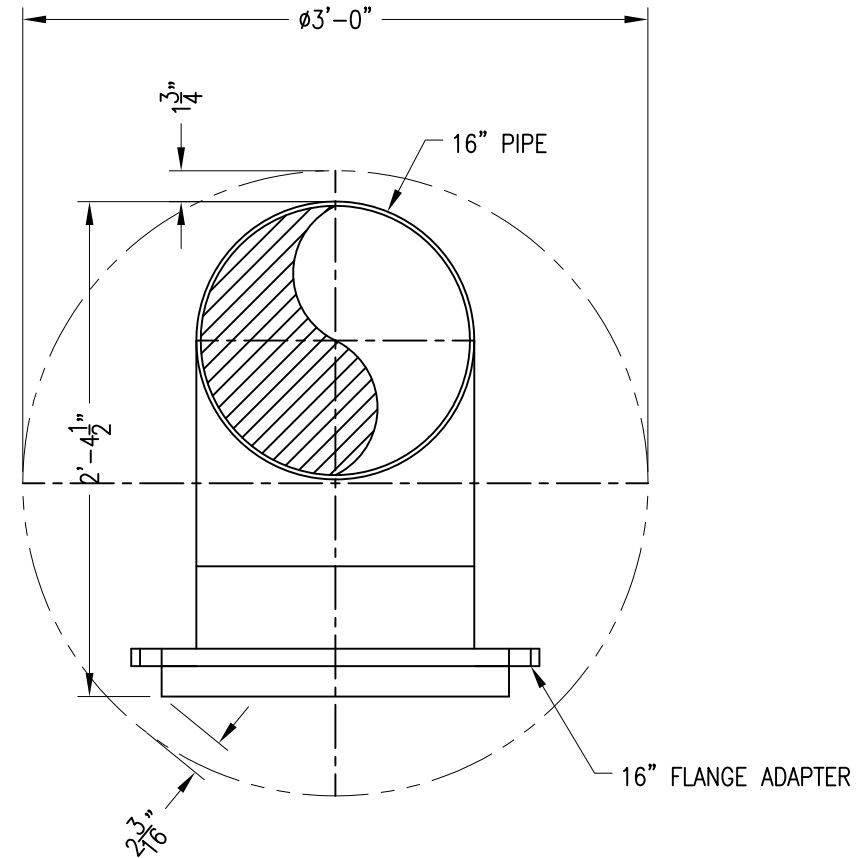
DO NOT INSTALL A GASKET.
ALIGN FLANGES AND WELD
FLANGES TOGETHER WITH 1/4"
BEAD AROUND OUTSIDE OF
FLANGES BEFORE COATING.

IF THIS IS THE EXISTING INLET STEEL PIPE
CONNECTION TO THE NEW 24" STEEL PIPE
ELBOW/REDUCER, THEN THE PIPES NEED TO
BE ELECTRICALLY CONNECTED, BUT THE
BOLTS SHOULD BE ISOLATED.

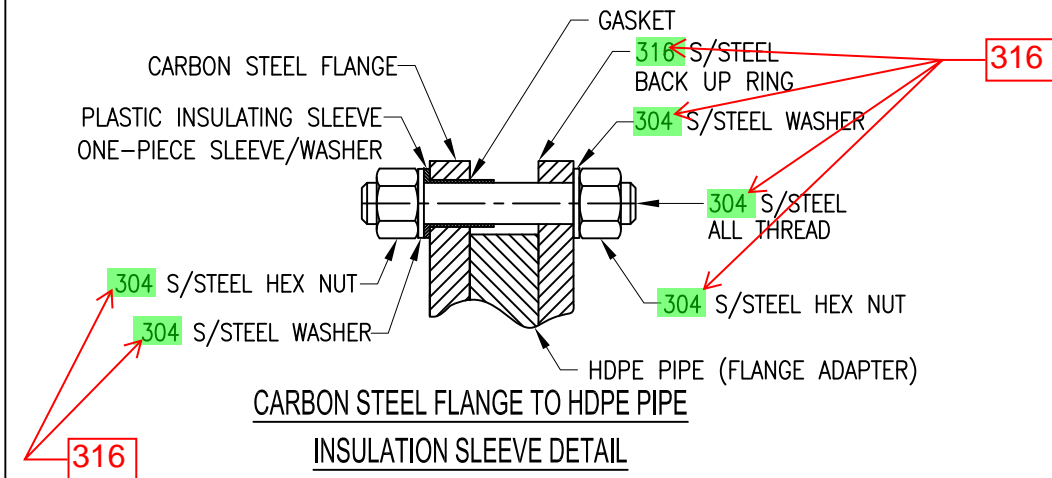


**STEEL FLANGE TO STEEL FLANGE
INSULATION SLEEVE DETAIL**

(REFERENCE) (NOT TO SCALE)



TMS INTERFERENCE CHECK



**CARBON STEEL FLANGE TO HDPE PIPE
INSULATION SLEEVE DETAIL**

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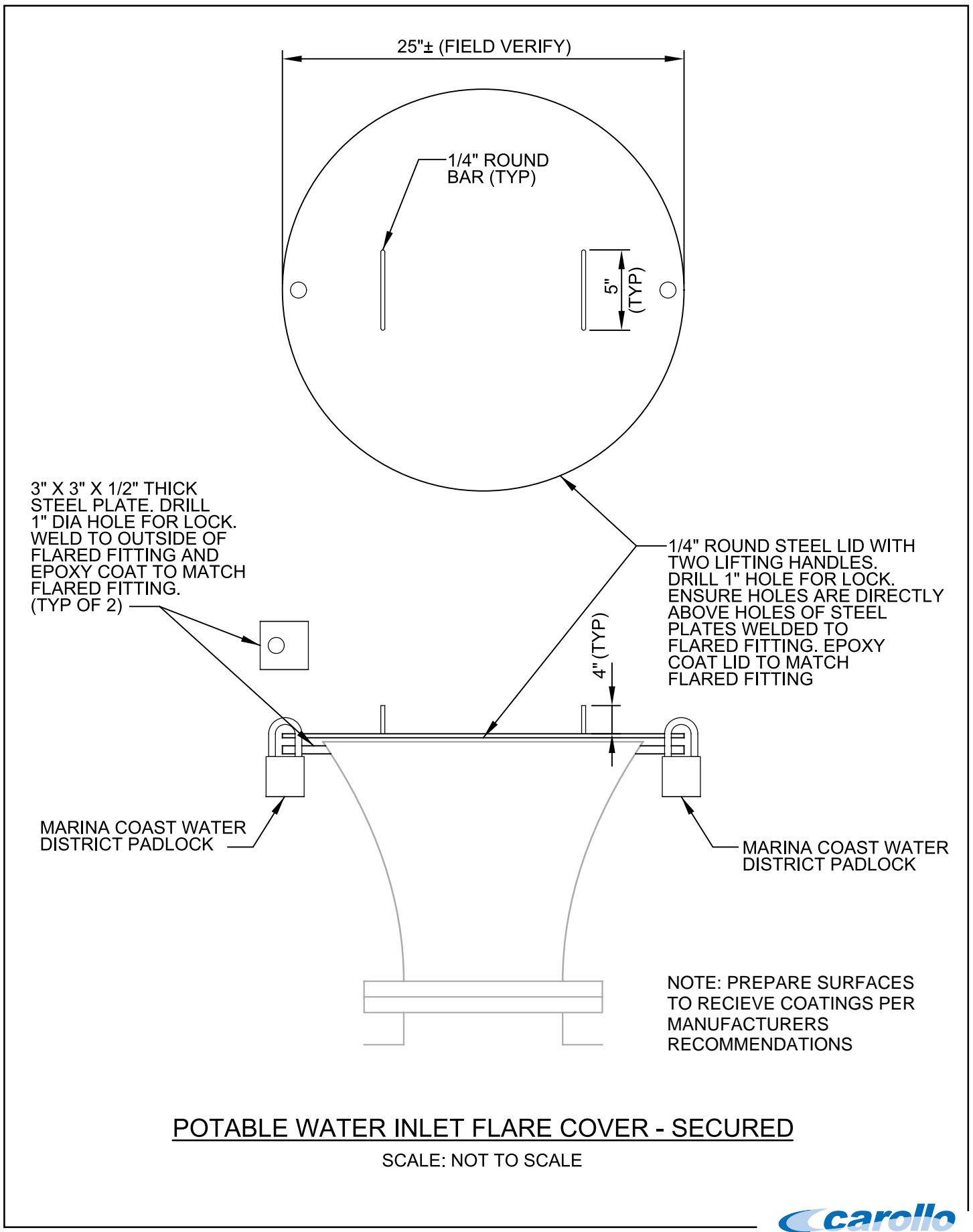
**BLACKHORSE 2.0MG RECYCLED WATER RESERVOIR
MARINA COAST W.D., CA
TMS - INTERFERENCE CHECK**

CONSULTANT: CAROLLO ENGINEERS
APPLICATION: (TMS) TIDEFLEX MIXING SYSTEM
CAD SCALE: FULL PLOT SCALE: N.T.S. DWG. NO. **TMS19-81940** SHEET 7 OF 7
DWG. BY: MVH DATE: 3-18-19

MCWD Recycled Water Project



Appendix H Inlet Steel Lid Cover Design



25"± (FIELD VERIFY)

1/4" ROUND BAR (TYP)

5" (TYP)

3" X 3" X 1/2" THICK STEEL PLATE, DRILL 1" DIA HOLE FOR LOCK. WELD TO OUTSIDE OF FLARED FITTING AND EPOXY COAT TO MATCH FLARED FITTING. (TYP OF 2)

1/4" ROUND STEEL LID WITH TWO LIFTING HANDLES. DRILL 1" HOLE FOR LOCK. ENSURE HOLES ARE DIRECTLY ABOVE HOLES OF STEEL PLATES WELDED TO FLARED FITTING. EPOXY COAT LID TO MATCH FLARED FITTING

4" (TYP)

MARINA COAST WATER DISTRICT PADLOCK

MARINA COAST WATER DISTRICT PADLOCK

NOTE: PREPARE SURFACES TO RECEIVE COATINGS PER MANUFACTURERS RECOMMENDATIONS

POTABLE WATER INLET FLARE COVER - SECURED

SCALE: NOT TO SCALE