RESPONSE TO QUESTIONS

for

2017 On-Call Water Main Design Services RFQ

Mid-Peninsula Water District
3 Dairy Lane
Belmont, CA 94002

1.0 BACKGROUND

The Mid-Peninsula Water District (District) has issued the 2017 On-Call Water Main Design Services Request for Qualifications (RFQ) seeking firms with licensed professional civil engineers to provide on-call water main design services. Submittal of the Statement of Qualifications (SOQ) is due no later than 3:00 PM, Tuesday February 7, 2017.

As part of the RFQ process, the District accepted questions at the mandatory pre-submittal meeting held on January 17, 2017, and in writing through 12:00 p.m., January 20, 2017. The questions received and the District's responses are below.

2.0 QUESTIONS AND RESPONSES

The District received the following questions at the Mandatory Pre-Submittal Meeting on January 17, 2017. The responses below reflect what was discussed at the meeting.

Q1. Will the consultant be responsible for performing any CEQA/environmental?

A1. The District will take the lead on the CEQA/environmental efforts. The three identified projects are anticipated to be statutorily or categorically exempt. Consultants are encouraged to include an environmental subconsultant on their team if they think one is required.

Q2. For the SR 101 Crossing at PAMF Hospital project, will Right of Way acquisition to 101 be required?

A2. No. The District already has a 10' easement from Industrial Road to SR 101 and a 40' x 40' easement at SR 101 in anticipation of construction under 101. We do not anticipate any Right of Way issues with the other two projects.

Q3. Will the consultant be responsible for potholing efforts in the design?

A3. The District typically has the consultant perform potholing during design. It is advantageous for the consultant to have a pothole contractor on their team.

Q4. Will the consultant be responsible for including traffic control in the design?

A4. The District typically requires the contractor to hire a traffic control engineer to prepare a traffic control plan to be submitted during the submittal process. However since some of these projects are more complicated the consultant may want to consider traffic control / phasing during the design phase.

Q5. Can additional pages be used for the "Approach" response (Part 4.1, Section 1) given that it is worth 30% of the points?

A.5 The two page limit for the "Approach" response is eliminated, but the total page limit

remains 20 pages.

Q6. For the "Related Project Experience" response (Part 4.1, Section 3), what project cost information should be provided?

A6. Please provide the project construction cost, the consultant fee, and the cost of non-owner imitated change orders.

Q7. Where should resumes be included?

A7. Resumes are included in the "Team Qualifications and Experience" response (Part 4.1, Section 2) and count against the 20 page total.

Q8. Who completed the Water System Master Plan and hydraulic model?

A8. The District Engineer (Pakpour Consulting Group) in conjunction with District staff completed the Water System Master Plan and hydraulic model (WaterCAD, latest version) within the last three years, a copy of which is available on the District website.

Q9. Does the District anticipate releasing other design projects to the selected consultants beyond the three identified in the RFQ?

A9. The District does not have any plans to release additional design projects but may elect to use the selected consultant list for other projects in the future.

The District provides the following responses to the questions received prior to the January 20, 2017 deadline.

Q10. Section 2 of the SOQ is supposed to contain resumes of key personnel proposed for the contract. Can the Consultant include those resumes in an appendix, and can the resumes be excluded from the 20 page limit?

A10. Please include the resumes in the Section 2 response. The resumes are included in the 20 page limit.

Q11. Would you like the complete plan set for a water main project to be included as an appendix, or just the relevant pages of that plan set?

A11. The consultant can choose to include what they feel will improve the qualifications for this solicitation.

Q12. Section 3.1a of the RFQ describes that project schedules are to include all project phases including right of way acquisition and environmental. Do you anticipate right of way acquisition and environmental documentation will be led by the District or should the consultant's team anticipate leading any required right-of-way acquisition and environmental documentation?

A12. Please see the response to questions 1 and 2.

Q13. Will construction phase on-site construction inspection and construction management be led by the District?

A13. There may be another solicitation for construction management / inspection services by the District. The design consultant will provide construction support services such as responding to RFI's, etc.

3.0 ATTACHMENTS

The following attachments are provided for reference.

Attachment 1 - Sign-In Sheet for Mandatory Pre-Submittal Meeting (January 17, 2017)

Attachment 2 - Distribution System Analysis #077 - State Route 101 Crossing at PAMF Hospital (CIP No. 15-72)

Provides the history of the associated CIP project

Attachment 3 - Distribution System Analysis #080 - Old County Road (CIP No. 15-75)

Provides the history of the associated CIP project

Attachment 4 - Distribution System Analysis #081 - El Camino Real (CIP No. 15-76)

Provides the history of the associated CIP project

Attachment 5 - Five Year CIP Summary Schedule

Provided at the January 17, 2017 Mandatory Pre-Submittal Meeting (January 17, 2017) to give consultants an understanding of the CIP projects

Attachment 6 - Sample Project - Belburn Water Main Replacement

Provided at the January 17, 2017 Mandatory Pre-Submittal Meeting (January 17, 2017) to demonstrate the expected level of effort for a CIP project design

Attachment 1

Sign-In Sheet for Mandatory Pre-Submittal Meeting (January 17, 2017)

1/17/17

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Attachment 2

Distribution System Analysis #077 - State Route 101 Crossing at PAMF Hospital (CIP No. 15-72)

Pakpour Consulting Group, Inc.

August 12, 2015

10012.09
DSA 077

Tammy Rudock
General Manager
Mid-Peninsula Water District
3 Dairy Lane
Belmont, CA 94002

Subject: **Zone 1 Improvements**
State Route 101 Crossing at PAMF Hospital
Mid-Peninsula Water District

Dear Tammy,

Pakpour Consulting Group (PCG) performed a hydraulic analysis to determine the effects of abandoning the existing 12-inch asbestos cement (AC) State Route 101 (SR 101) crossing, located between O'Neill Avenue and Sem Lane, in favor of a new SR 101 crossing further south at the Palo Alto Medical Foundation hospital (PAMF).

The existing 12-inch AC water main is approximately 500 linear feet (LF), installed in 1963, and is one of two SR 101 crossings providing water to Zone 1 customers on the eastern side of SR 101. It begins at the intersection of O'Neill Avenue and Dairy Lane, crosses under SR 101, and ends at the intersection of Sem Lane and Shoreway Road. From this intersection, the water main transitions to a 12-inch polyvinylchloride (PVC) water main to the north and an 8-inch PVC water main to the south, each on Shoreway Road. The 12-inch PVC heading north connects to the second SR101 crossing, a 12-inch PVC water main installed in 2002, located along the Belmont Sports Complex approximately a half mile away. The 8-inch PVC heading south extends approximately a half mile where it terminates at an intertie with Calwater, essentially creating a long dead end.

As part of the 2012 PAMF development, located along Industrial Blvd at Taylor Way, the District obtained a non-exclusive 15 ft easement along PAMF's northwest property line as part of PAMF's Water Service Agreement (WSA) with the District (attached). The easement also includes a 40 ft by 40 ft area in the northeast corner of the PAMF property to provide an area for boring under SR 101. The grant of this easement, along with a 12-inch stub constructed at the time the PAMF development was built, set the District up for a future SR 101 crossing to replace the existing 12-inch AC crossing to the north.

Under the WSA, the District has 25 years to construct the water main crossing from the recordation date of the grant of easement with an option to exercise a 10 year extension if it is not constructed in those first 25 years. If the District does not exercise its option for the extension or if the District does exercise its option and does not construct the water main within 35 years, PAMF is able to terminate the easement.

Moving the existing 12-inch AC crossing to the south would involve installing approximately 2,300 LF of new water main: 1,100 LF to cross SR 101 and an additional 1,200 LF along Shoreway Road to connect to

the end of the 8-inch PVC at the existing Shoreway Intertie located at 75 Shoreway Road.

Assumptions

The following assumptions were made for the analysis:

- Hillcrest Connection HGL = 330 ft
- Ralston Regulator = Off
- Davey Glen Regulator = Off
- North Road Regulator = Off

Scenarios

We analyzed five scenarios to compare existing conditions with proposed improvements. Scenarios 2 thru 5 all include the abandonment of the existing 500 LF 12-inch AC under SR 101.

Scenario 1 – Existing Conditions

Scenario 2 – Install 2,300 LF of 8-inch PVC (from PAMF, crossing SR 101, to existing intertie location)

Scenario 3 – Install 2,300 LF of 12-inch PVC (from PAMF, crossing SR 101, to existing intertie location)

Scenario 4 – Install 1,100 LF of 12-inch PVC and 1,200 LF of 8-inch PVC (from PAMF, crossing SR 101, to existing intertie location)

Scenario 5 – Install 4,600 LF of 12-inch PVC (from PAMF, crossing SR 101, to existing intertie location, and replacement of all 8-inch PVC on Shoreway Road from intertie location to Sem Lane)

Fire Flows

Per standard modeling procedures to determine the available fire flows, all pumps were turned off during the maximum day demand. The fire flows and pressures mentioned below are located at the water main and flows at adjacent fire hydrants may be lower due to physical constraints and the hydraulic losses in the fire hydrant lateral and fittings. The following constraints were made for the fire flow analysis:

- A minimum zone pressure of 11 psi
- A minimum system pressure of 1 psi
- A minimum residual pressure at fire flow node of 20 psi
- A maximum pipe velocity of 15 ft/s
- A maximum available fire flow of 2,500 gpm

Please refer to Table 1 – Fire Flow Difference Comparison for how each alternative compares to existing conditions. All nodes shown in the table have fire flows well above 2,000 gpm and therefore the actual fire flow is not shown. In addition, the table is a limited view of the entire zone and shows nodes for only those areas affected by more than 50 gpm. Please refer to the attached 11x17 fold out for a more expanded view of fire flow comparisons showing the actual fire flows observed.

Table 1 – Fire Flow Difference Comparison

Node Information				Scenario Flow Difference Comparison (gpm)			
Node	Location	Elev (ft)	Static Pressure (psi)	2 vs 1	3 vs 1	4 vs 1	5 vs 1
1073x	Shoreway Rd	9	134	193	193	193	193
1074x	Shoreway Rd	9	134	193	193	193	193
1075x	Shoreway Rd	8	134	193	193	193	193
1076x	Shoreway Rd	8	134	193	193	193	193
1077x	Shoreway Rd	8	134	193	193	193	193
1078x	Cormorant Dr	7	134	156	156	156	156
1112x	Marine View Ave	6	135	-75	-56	-29	0
1740	Hiller St	10	133	-56	-52	-48	-21
1779	Shoreway Rd	8	134	193	193	193	193
1780	Shoreway Rd	7	134	219	219	219	219
1797	Marine View Ave	8	134	-210	-194	-171	-62
1798	Marine View Ave	7	134	-228	-209	-183	-60
1839x	Oxford Way	8	134	66	60	52	17
17919	Shoreway Rd	9	134	193	193	193	193
CW	Marine View Ave	6	135	-75	-56	-30	0
SW	Shoreway Rd	6	135	330	330	330	330
J-66	Shoreway Rd	6	135	2500	2500	2500	2500

*CW = Calwater Intertie, SW=Shoreway Intertie

Analysis

Analysis of Scenarios 2-5 compared with Scenario 1 show differences of Zone 1 fire flows greater than 50 gpm in only two primary locations, Shoreway Road and the residential neighborhood off Hiller Street and Marine View Avenue, each explained below.

Shoreway Road experiences an average fire flow increase of near 200 gpm with the SR 101 12-inch AC crossing relocated to the PAMF easement under all alternatives. This is primarily due to transitioning the long half mile dead end into a looped water main. Analysis also shows the size of the new water main (8-inch vs 12-inch or a combination thereof) does not provide any additional increase in fire flows when increasing the size.

The residential neighborhood off Hiller Street and Marine View Avenue actually experiences a decrease in available fire flows as much as 228 gpm with the largest decreases only observed on Marine View Avenue. Water provided to this area comes from two primary directions: from Old County Road and across SR 101. Under existing conditions almost half the fire flow comes from across SR 101 due to a continuous 12-inch water main extending between Marine View Avenue and the 20-inch concrete pipe at Old County Road and Harbor Avenue. Abandoning the 12-inch AC SR 101 crossing and relocating it to the south decreases the flow due to varying pipe diameters as the water moves along the eastern side of SR 101. However, even with the decrease in fire flows at these locations, they are still well above 2,000 gpm. It is for this reason we do not believe the 200 gpm loss for this isolated area is detrimental to the system. Scenario 5 was performed to show all the 8-inch water main along Shoreway Road would need to be upsized to 12-inch to bring the system back to existing conditions, an expensive and unnecessary improvement.

Recommendation

Based on the above analysis, we recommend Scenario 4 to install 1,100 Lf of 12-inch PVC to cross SR 101 beginning at the PAMF property and at Shoreway Road. From that point a new 1,200 LF 8-inch PVC would be installed to tie into the existing 8-inch PVC ending at 75 Shoreway Road. Although there was no additional hydraulic benefit to the District's system in using a 12-inch (Scenario 4) vs an 8-inch (Scenario 2) at the highway crossing, installing a 12-inch provides more redundancy should the crossing to the north ever require closure and also has the capability of providing more assistance to Calwater.

Benefits of the relocation include abandoning an old and aging water main capable of causing major disruptions in the event of a break, eliminating a dead end and creating a looped system, and providing an additional 200 gpm fire flow along Shoreway Road from Sem Lane south. The existing 12" AC will be abandoned by injecting flowable grout to completely fill the pipe with intentions of avoiding a potential pipe collapse under SR 101.

The installation of the 12-inch water main at the SR 101 crossing will require extensive coordination with the California Department of Transportation and most likely be encased in a steel pipe. All new water main fittings would be equipped with cathodic protection.

Project Budget

SR 101 Crossing Improvements	
700 LF – 12" PVC @ $300/LF	$ 210,000
400 LF – 12" PVC SR 101 Crossing @ $1,000/LF	$ 400,000
1,200 LF – 8" PVC @ $250/LF	$ 300,000
Abandon 12" AC @ $100,000/LS	$ 100,000
2 Fire Hydrants @ $15,000/EA	$ 30,000
Subtotal Construction	$ 1,040,000
Planning, Design, & Construction Support	$ 325,000
Contingency (±20%)	$ 275,000
Project Budget	$ 1,640,000

If you have any questions please do not hesitate to contact me at (925) 224-7717.

Very truly yours,

Joubin Pakpour, P.E.
District Engineer
Mid-Peninsula Water District

J:\Projects\MPWD - 10012.00\09 - Distribution System Analysis\50-99\077-101 Crossing\077-TR-15.08.12-Highway 101 Crossing.docx

DSA 077

1759

ABANDON EXIST SR 101 CROSSING

1741

SHORELAY INTERTIE

REBUILD INTERTIE

INSTALL 1,200 LF 8" PVC

← SHORELAY RD →

J-66

INSTALL 1,100 LF 12" PE/PVC TO CROSS SR 101

PAMF

1709

INDUSTRIAL

Attachment 3

Distribution System Analysis #080 - Old County Road (CIP No. 15-75)

Pakpour Consulting Group, Inc.

September 10, 2015

10012.09
DSA 080

Tammy Rudock
General Manager
Mid-Peninsula Water District
3 Dairy Lane
Belmont, CA 94002

Subject: **Zone 1 Improvements**
Old County Road
Mid-Peninsula Water District

Dear Tammy,

Pakpour Consulting Group (PCG) performed a hydraulic analysis to determine the effects of reducing two parallel water mains to one single water main along Old County Road (OCR) in addition to replacing old and aging infrastructure. OCR is located in the western portion of Zone 1 and runs parallel to El Camino Real on the eastern side of the railroad tracks. OCR serves as the one of the primary roads for the District's 20-inch concrete supply line from SFPUC in addition to several customers in Zone 1.

Upon entering the City of Belmont, the 20-inch water main parallels a combination of 4 to 8-inch cast iron pipe (CIP) and asbestos cement (AC) water mains for approximately 1,500 LF before heading west along Harbor Blvd and various other roads before reaching the Hannibal Pump Station. From the Harbor Blvd intersection heading north, OCR has two parallel water mains for approximately 3,700 LF varying in size and material. On the eastern side of OCR are 6 to 8-inch CIP and AC water mains installed in the 1930's / 1940's. The majority of the service connections and fire hydrants along OCR are installed along these water mains. The western side of OCR has 10 to 12-inch polyethylene (PE) and polyvinylchloride (PVC) water mains installed in the late 1980's. The majority of the PE water main is in a 24-inch steel casing thought to be an abandoned pipe utilized for the installation. It is unclear the reasoning for installing the parallel 10 to 12-inch water mains.

This analysis assumes abandonment of the existing 10-12 inch PE/PVC water main given reconnection of services and hydrants to this water main would prove difficult given the steel casing if it were to remain in service. The existing 4 to 8-inch CIP/AC water mains remaining would be replaced with 8-inch / 20-inch PVC depending on the location. Please refer to the attached drawing for the analysis location.

Assumptions

The following assumptions were made for the analysis:

- Hillcrest Connection HGL = 330 ft
- Ralston Regulator = Off
- Davey Glen Regulator = Off
- North Road Regulator = Off

Scenarios

Scenario 1 – Existing Conditions

Scenario 2 – Consists of the following:

- Abandon 1,500 LF of 4-inch CIP; 1,100 LF of 8-inch CIP; 160 LF of 8-inch PVC; 465 LF of 10-inch PVC; 2,500 LF of 12-inch PE; 750 LF of 20-inch CC
- Replace 2,100 LF of 6-inch CIP, 750 LF of 6-inch AC, 850 LF of 8-inch AC with 3,700 LF 8-inch PVC
- 1,800 LF of 20-inch CC with 20-inch PVC

Fire Flows

Per standard modeling procedures to determine the available fire flows, all pumps were turned off during the maximum day demand. The fire flows and pressures mentioned below are located at the water main and flows at adjacent fire hydrants may be lower due to physical constraints and the hydraulic losses in the fire hydrant lateral and fittings. The following constraints were made for the fire flow analysis:

- A minimum zone pressure of 11 psi
- A minimum system pressure of 1 psi
- A minimum residual pressure at fire flow node of 20 psi
- A maximum pipe velocity of 15 ft/s
- A maximum available fire flow of 2,500 gpm

Please refer to Table 1 – Fire Flow Difference Comparison for how Scenario 2 compares to Scenario 1. The table is a limited view of the entire zone and shows nodes for only those areas affected by more than 50 gpm. Please refer to the attached 8.5 x 11 sheet for a more expanded view of fire flow comparisons showing the actual fire flows observed.

Table 1 – Fire Flow Difference Comparison

Node Information				Scenario 1	Scenario 2	
Node	Location	Elev (ft)	Static Pressure (psi)	Fire Flow (gpm)	Fire Flow (gpm)	Diff 2 vs 1 (gpm)
1003X	Sterling Development	29	125	2,399	2,500	108
1040x	El Camino / Belmont	32	124	2,267	2,216	-51
1049x	OCR near Waltermire	36	122	2,304	2,515	211
1083x	OCR north of Ralston	33	123	2,310	2,504	194
1797	Chesterton / Marine	8	134	2,367	2,500	133
1815x	Old County / Quarry	22	128	2,500	2,384	-116
1820x	OCR north of Bragato	22	128	2,350	2,500	150
1821x	OCR north of Bragato	21	128	568	2,500	1,932

Recommendation

Based on the above analysis, we recommend Scenario 2 and to abandon/replace all of the existing water mains along OCR between Bragato Road and Marine View Way with 3,700 LF of new 8-inch PVC and 1,800 LF of new 20-inch PVC. The hydraulic model shows the 10 to 12-inch parallel water main along OCR provides no significant fire flow benefit to Zone 1 as fire flows remained nearly the same with it abandoned. Minor flow losses were experienced in areas immediate to OCR however even with these loses the flows are well above the minimum recommendation of 1,500 gpm at 20 psi. Fire flows were increased as much as 1,932 gpm in areas where the 4 and 6-inch water mains were replaced/abanonded in favor of new water main.

This is one of the larger water main replacement projects in the District. In addition to installing 5,500 LF of new water main, approximately 111 service connections, 15 fire service reconnections, and 11 fire hydrants will also require replacement. Given the magnitude of this project and associated cost, we suggest phasing this project as funds become available.

The benefits of this project include replacing old and aging water mains, a fire flow increase to the southern portion of OCR, and reduced maintenance.

Project Budget

Old County Road Improvements	
3,700 LF – 8" PVC @ $275/LF	$ 1,017,500
1,800 LF – 20" PVC @ $500/LF	$ 900,000
Abandonments	$ 75,000
11 Fire Hydrants @ $15,000/EA	$ 165,000
15 Fire Service Reconnects @ $6,000/EA	$ 90,000
111 Service Connections @ $3,000/EA	$ 333,000
Subtotal Construction	$ 2,580,500
Planning, Design, & Construction Support	$ 510,000
Contingency (±20%)	$ 309,500
Project Budget	$ 3,400,000

If you have any questions please do not hesitate to contact me at (925) 224-7717.

Very truly yours,

Joubin Pakpour, P.E.
District Engineer
Mid-Peninsula Water District

J:\Projects\MPWD - 10012.00\09 - Distribution System Analysis\50-99\080-Old County Rd\080-TR-15.09.10-Old County Road.docx

DSA 0880
9/10/15

REPLACE 1375 LF 6" CIP, 850 LF 8" AC, 370 LF 10" PVC, + 1900 LF 12" PE W/ 2250 LF 8" PVC FROM 1792 TO 1794

REPLACE 754 LF 8" AC, 760 LF 8" CIP, 100 LF 10" PVC, 600 LF 12" PE, + 750 LF 20" CCP W/ 1500 LF 8" PVC FROM 1728 TO 1784.

REPLACE 1500 LF 4" CIP, 1025 LF 8" CIP, 160 LF 8" PVC + 1800 LF 20" CCP W/ 1800 LF 20" PVC FROM NODE 1703 TO NODE 1728.

1794

1792

1784

1728

1703

Attachment 4

Distribution System Analysis #081 - El Camino Real (CIP No. 15-76)

Pakpour Consulting Group, Inc.

September 23, 2015

10012.09
DSA 081

Tammy Rudock
General Manager
Mid-Peninsula Water District
3 Dairy Lane
Belmont, CA 94002

Subject: **Zone 1 Improvements**
El Camino Real
Mid-Peninsula Water District

Dear Tammy,

Pakpour Consulting Group (PCG) performed a hydraulic analysis to determine the effects of replacing an aging existing 8-inch water main with a history of maintenance issues along El Camino Real (ECR) in addition to analyzing impacts of increasing its size.

ECR is located in the western portion of Zone 1 and runs north/south through the zone bounded by North Road to the north and F Street to the south. The water mains along ECR include the following:

- 1,800 LF of 8-inch ductile iron pipe (DIP) between F Street and Harbor Boulevard
- 700 LF of 18-inch polyvinylchloride (PVC) between Harbor Boulevard and O'Neill Avenue
- 300 LF of 8-inch cast iron pipe (CIP) between Waltermire Street and Emmet Avenue
- 1,200 LF of 8-inch polyvinylchloride pipe (PVC) between Emmet Avenue and Middle Road
- 3,500 LF of 8-inch CIP between Middle Road and Ruth Avenue

No water main currently exists between O'Neill Avenue and Waltermire Street and the water main between Ruth Avenue and North Road (300 LF) was abandoned due to extensive leaks. The CIP, DI, and PVC water mains were installed in 1950, 1990, and 1995 respectively. The District has reported several leaks along the existing CIP prompting the replacement along ECR.

This analysis models the existing conditions in addition to replacing the existing 8-inch CIP with new 8-inch DIP. The existing PVC and DIP water mains would remain given they still have remaining service life. The analysis also shows the effect of increasing the entire 7,100 LF of existing 8-inch water main between F Street and North Road with 12-inch DIP. Please refer to the attached exhibit for the analysis area.

Assumptions

The following assumptions were made for the analysis:

- Hillcrest Connection HGL = 330 ft
- Ralston Regulator = Off
- Davey Glen Regulator = Off
- North Road Regulator = Off

Scenarios

Scenario 1 – Existing Conditions

Scenario 2 – Replace 3,800 LF of 8-inch CIP with 8-inch DIP and install 300 LF of new 8" DIP

Scenario 3 – Replace 7,100 LF of 8-inch water main (various types) with 12-inch DIP

Fire Flows

Per standard modeling procedures to determine the available fire flows, all pumps were turned off during the maximum day demand. The fire flows and pressures mentioned below are located at the water main and flows at adjacent fire hydrants may be lower due to physical constraints and the hydraulic losses in the fire hydrant lateral and fittings. The following constraints were made for the fire flow analysis:

- A minimum zone pressure of 11 psi
- A minimum system pressure of 1 psi
- A minimum residual pressure at fire flow node of 20 psi
- A maximum pipe velocity of 15 ft/s
- A maximum available fire flow of 2,500 gpm

Please refer to Table 1 – Fire Flow Difference Comparison for how each scenario compares with existing conditions. The table is a limited view of the entire zone and shows nodes for only those areas affected by more than 100 gpm.

Recommendation

Based on the above analysis, we recommend Scenario 2 to replace the existing 3,800 LF of 8-inch CIP with new 8-inch DIP in addition to installing 300 LF of new 8-inch DIP. The hydraulic model indicates an 8-inch water main is sufficient to provide adequate fire flows well above the minimum recommendation of 1,500 gpm at 20 psi. This is primarily due the amount of redundancy in this part of the zone with multiple connections between Old County Road and ECR. No significant benefit was observed when increasing to a larger 12-inch DIP (Scenario 3) and for the majority of the nodes the flows remain unchanged excluding a few minor outliers off 5th Street and Dale View.

This is one of the larger water main replacement projects in the District. In addition to replacing 3,800 LF of water main, approximately 23 service connections, 4 fire service connections, and 8 hydrants will also require replacement. Extensive coordination with the California Department of Transportation will also be required adding further complexities and costs. Given the magnitude of this project and associated cost, we suggest phasing this project as funds become available.

The benefits of this project include replacing old and aging water mains, a fire flow increase to areas along and immediately adjacent to ECR, and reduced maintenance.

Table 1 – Fire Flow Difference Comparison

Node Information				Fire Flows (gpm)				
Node	Location	Elev (ft)	Static Pressure (psi)	Scenario 1 Exist	Scenario 2 8-inch	Scenario 3 12-inch	Diff 2 vs 1	Diff 3 vs 1
1036x	516 El Camino	48	117	2,334	2,500	2,500	166	166
1037x	El Camino / Davey Glen	43	119	2,337	2,504	2,504	167	167
1039x	390 El Camino	40	120	2,337	2,504	2,504	167	167
1040x	El Camino / Belmont	32	124	2,267	2,500	2,500	233	233
1041x	El Camino / Anita	20	129	2,052	2,500	2,500	448	448
1042x	El Camino / Ruth	20	129	1,921	2,503	2,503	582	582
1092x	Hiller / Sterling	8	134	2,285	2,439	2,496	154	211
1095x	Hiller / Chesterton	8	134	1,998	1,921	1,892	-77	-106
1727	El Camino / North	18	130	2,344	2,500	2,500	156	156
1743	5th / E	56	113	2,191	2,190	2,500	-1	309
1917x	5th north of F St	38	121	2,513	2,513	2,136	0	-377
17906	Hiller / Dale View	8	134	2,500	2,367	2,257	-133	-243
	El Camino / North Road	18	130	2,344	2,500	2,500	156	156

Project Budget

El Camino Real Improvements

4,100 LF – 8" DIP @ $300/LF	$ 1,230,000
Abandonment of 8-inch CIP	$ 20,000
8 Fire Hydrants @ $15,000/EA	$ 120,000
4 Fire Service Reconnects @ $6,000/EA	$ 24,000
23 Service Connections @ $3,000/EA	$ 69,000
Subtotal Construction	$ 1,463,000
Planning, Design, & Construction Support	$ 310,000
Caltrans Coordination	$ 50,000
Contingency (±20%)	$ 177,000
Project Budget	$ 2,000,000

If you have any questions please do not hesitate to contact me at (925) 224-7717.

Very truly yours,

Joubin Pakpour, P.E.
District Engineer
Mid-Peninsula Water District

REGISTERED PROFESSIONAL ENGINEER
JOUBIN PAKPOUR
No. C 59155
CIVIL
STATE OF CALIFORNIA

J:\Projects\MPWD - 10012.00\09 - Distribution System Analysis\50-99\081-El Camino Real\081-TR-15.09.23-El Camino Real.docx

DSA 081
12/14/15

INSTALL 300 LF NEW
8" DIP BETWEEN
1727 AND 1042X

REPLACE 3,500 LF 8" CIP
W/ 8" DIP FROM 17908
TO 1042X

REPLACE 300 LF 8" CIP
W/ 8" DIP FROM 1025X
TO 1023X

1727

1042X

17908

1025X

1023X

Attachment 5

Five Year CIP Summary Schedule

1/27/2017

Mid-Peninsula Water District
Capital Improvement Program Summary

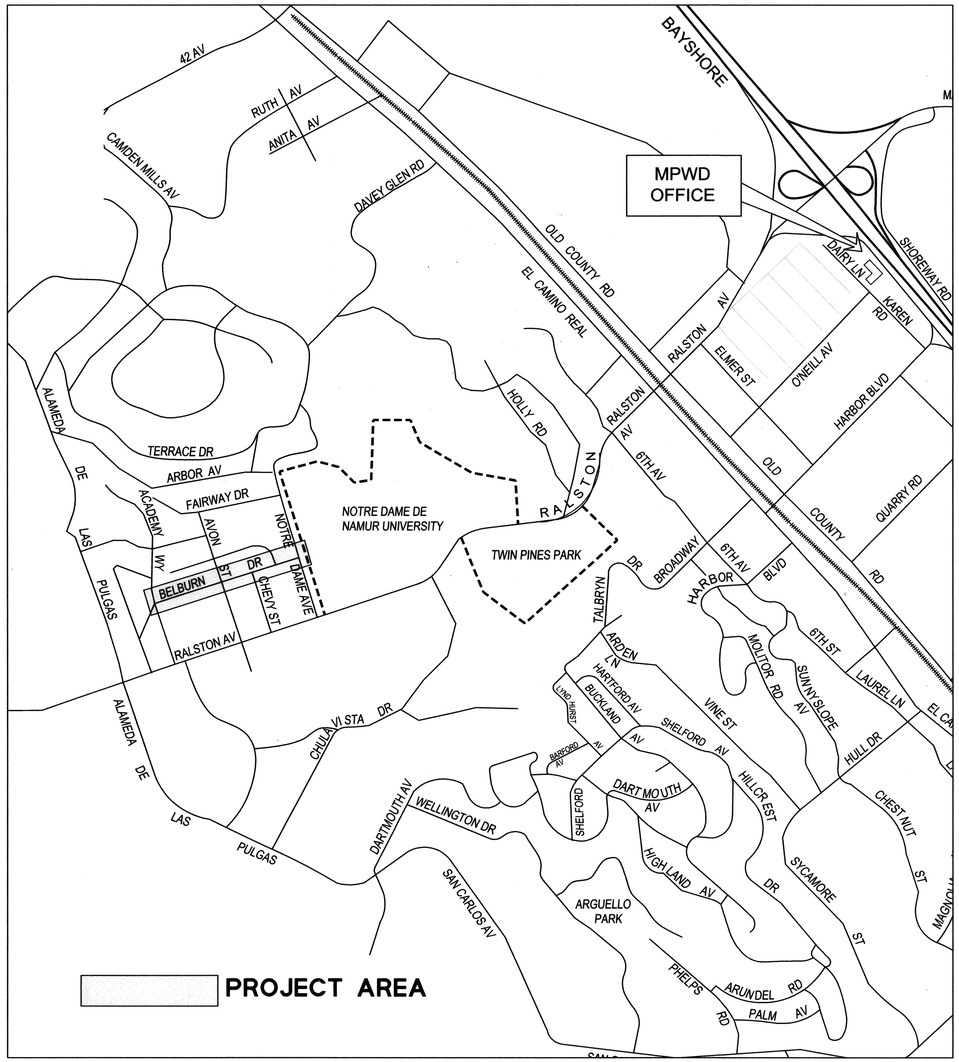
Appendix A

Priority	Project Number	DSA	Zone	Project Name	Quantity			Construction	Planning, Design & CM	Contingency	2015 Dollars	Running Total			104.0%	108.2%	112.5%	117.0%	
					LF	SRV	HYD						2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	Total
1	15-14	017	3	Mezes Avenue Improvements	310	10	1	$ 122,500	$ 37,000	$ 15,500	$ 175,000	$ 175,000	$25,000	$150,000					$150,000
3	15-76	081	1	El Camino Real Improvements	4100	23	12	$ 1,463,000	$ 360,000	$ 277,000	$ 2,100,000	$ 2,275,000			$150,000	$150,000	$2,024,755		$2,324,755
4	15-65	n/a	2	Folger Drive Improvements	830	12	3	$ 306,000	$ 77,000	$ 37,000	$ 420,000	$ 2,695,000	$60,000	$360,000					$420,000
5	15-73	078	1	Karen Road Improvements	800	9	2	$ 307,000	$ 80,000	$ 38,000	$ 425,000	$ 3,120,000	$50,000	$375,000					$375,000
6	15-10	013	3	Notre Dame Avenue Loop Closure	2230	29	3	$ 689,500	$ 138,000	$ 82,500	$ 910,000	$ 4,030,000		$110,000	$832,000				$942,000
7	15-44	045	2	South Road Abandonment	0	19	3	$ 302,000	$ 75,000	$ 38,000	$ 415,000	$ 4,445,000	$60,000	$355,000					$415,000
8	15-22	025	3	Arthur Avenue Improvements	880	15	2	$ 345,000	$ 87,000	$ 43,000	$ 475,000	$ 4,920,000	$50,000	$425,000					$425,000
9	15-16	019	3	Williams Avenue, Ridge Road, Hillman Avenue Improvements	2460	59	4	$ 834,000	$ 166,000	$ 100,000	$ 1,100,000	$ 6,020,000					$150,000	$1,111,366	$1,261,366
10	15-43	044	2	North Road Cross Country / Davey Glen Road Improvements	1400	17	5	$ 496,000	$ 124,000	$ 60,000	$ 680,000	$ 6,700,000		$100,000	$603,200				$703,200
11	15-06	n/a	5	Zone 5 Fire Hydrant Upgrades	0	0	7	$ 105,000	$ 31,000	$ 14,000	$ 150,000	$ 6,850,000			$156,000				$156,000
12	15-78	083	1	Civic Lane Improvements	1800	20	5	$ 605,000	$ 120,000	$ 75,000	$ 800,000	$ 7,650,000		$100,000	$728,000				$828,000
13	15-17	020	3	Monte Cresta Drive / Alhambra Drive Improvements	2250	48	5	$ 781,500	$ 195,000	$ 98,500	$ 1,075,000	$ 8,725,000					$175,000	$1,052,873	$1,227,873
14	15-87	n/a	1	Hillcrest Pressure Regulating Station	0	0	0	$ 250,000	$ 65,000	$ 30,000	$ 345,000	$ 9,070,000	$40,000	$305,000					$305,000
15	15-09	012	3	Dekoven Tank Utilization Project	2300	14	2	$ 782,000	$ 158,000	$ 95,000	$ 1,035,000	$ 10,105,000			$150,000	$957,216			$1,107,216
16	15-28	030	7	Tahoe Drive Area Improvements	900	28	4	$ 369,000	$ 94,000	$ 47,000	$ 510,000	$ 10,615,000		$80,000	$447,200				$527,200
17	15-29	031	7	Belmont Canyon Road Improvements	900	17	2	$ 306,000	$ 76,000	$ 38,000	$ 420,000	$ 11,035,000			$65,000	$383,968			$448,968
18	15-38	040	8	Cliffside Court Improvements	330	14	2	$ 154,500	$ 46,500	$ 19,000	$ 220,000	$ 11,255,000				$40,000	$202,476		$242,476
19	15-42	043	2	North Road Improvements	0	19	1	$ 152,000	$ 46,000	$ 22,000	$ 220,000	$ 11,475,000				$40,000	$202,476		$242,476
20	15-75	080	1	Old County Road Improvements	5500	111	26	$ 2,580,500	$ 510,000	$ 309,500	$ 3,400,000	$ 14,875,000		$200,000	$300,000	$3,136,640			$3,636,640
21	15-72	077	1	SR 101 Crossing at PAMF Hospital	2300	0	2	$ 1,040,000	$ 350,000	$ 280,000	$ 1,670,000	$ 16,545,000				$100,000	$200,000	$1,602,706	$1,902,706
22	15-89	n/a	3	Dekoven Tanks Replacement	0	0	0	$ 2,500,000	$ 400,000	$ 600,000	$ 3,500,000	$ 20,045,000		$200,000	$300,000	$3,244,800			$3,744,800
													$285,000	**$2,760,000**	**$3,731,400**	**$8,052,624**	**$2,954,706**	**$3,766,945**	$21,385,675

Attachment 6

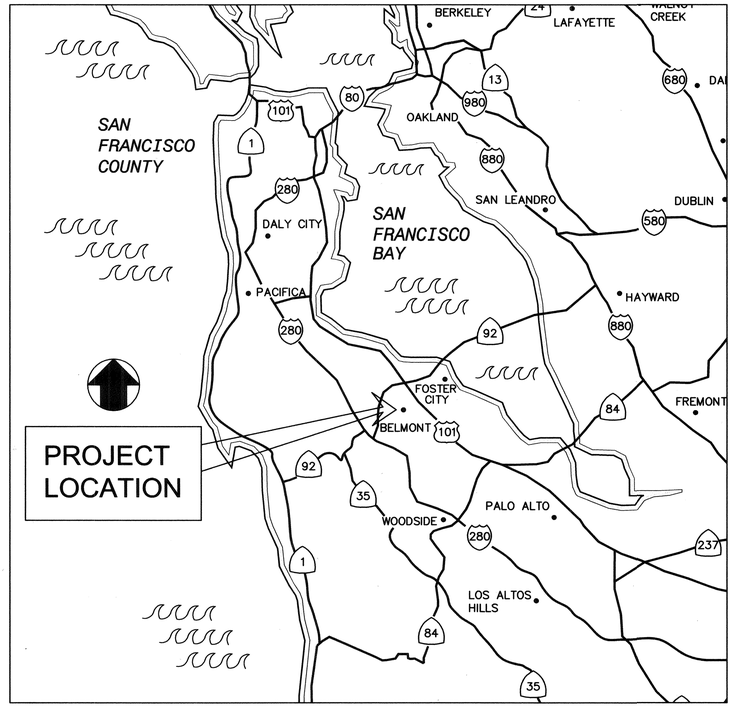
Sample Project - Belburn Water Main Replacement

CONTRACT DRAWINGS
FOR THE CONSTRUCTION OF:
BELBURN WATER MAIN REPLACEMENT PROJECT
BELMONT
SAN MATEO COUNTY, CALIFORNIA



PROJECT VICINITY MAP

NOT TO SCALE



PROJECT LOCATION MAP

NOT TO SCALE

INDEX TO DRAWINGS

MPWD BOARD OF DIRECTORS AND STAFF:

PRESIDENT, LOUIS J. VELLA
VICE PRESIDENT, BETTY L. LINVILL
DIRECTOR, ALBERT STUEBING
DIRECTOR, DAVE WARDEN
DIRECTOR, MATTHEW P. ZUCCA
GENERAL MANAGER, TAMMY RUDOCK
MAINTENANCE SUPERINTENDENT, HENRY YOUNG
DISTRICT ATTORNEY, JOAN L. CASSMAN
DISTRICT ENGINEER, JOUBIN PAKPOUR, P.E.
DISTRICT SECRETARY, CANDY PINA

BENCHMARK NOTE:

ELEVATIONS BASED ON CITY OF BELMONT VERTICAL DATUM. BENCHMARK #415–SET MAG NAIL AT ARBOR BLVD AND FAIRWAY DR AND 5' EASTERLY (DOWNHILL) FROM SEWER MANHOLE. BENCHMARK ELEVATION = 182.32'(NGVD 29)

BASIS OF BEARING:

THE CALCULATED BEARING OF N69°42'55"E FOR THE NORTHERLY LINE OF BELBURN DRIVE WAS TAKEN AS THE BASIS OF BEARINGS. THE BEARING WAS CALCULATED FROM SPLITTING OLD CURBS ON ROBBIN WHIPPLE WAY (AS SHOWN ON 25 MAPS 13).

GENERAL NOTES

1. THE DEPICTION OF UNDERGROUND UTILITY LINES ARE BASED UPON ASSUMPTIONS AS TO THEIR CONFIGURATIONS PER U.S.A. MARKINGS OBSERVED IN THE FIELD. NO AS–BUILT UTILITY PLANS WERE PROVIDED FOR VERIFICATION OF THESE UTILITY LOCATIONS. CONTRACTOR TO VERIFY LOCATIONS. UTILITY LOCATIONS AND CLEARANCES ARE APPROXIMATE. CONTACT U.S.A. 48 HOURS BEFORE EXCAVATION TO MARK EXISTING UTILITIES. THE CONTRACTOR SHALL POTHOLE FOR UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION TO ADJUST THE GRADE OF THE WATER MAIN TO MAINTAIN DESIRED CLEARANCES PER DISTRICT STANDARDS. NO ADDITIONAL PAYMENT WILL BE MADE FOR GRADE ADJUSTMENTS OF LESS THAN 24" UNLESS EXTRA MATERIALS ARE REQUIRED, SUCH AS FITTINGS OR CONCRETE ENCASEMENT.
2. ALL CONSTRUCTION MUST BE TO THE MID–PENINSULA WATER DISTRICT, CITY OF BELMONT, CALTRANS STANDARDS AND ACCEPTED BY THE DISTRICT. CONTRACTOR IS RESPONSIBLE TO MAKE ALL ARRANGEMENTS FOR SITE INSPECTIONS AND ENSURE THAT ALL CURRENT STANDARDS FOR THE CITY AND THE DISTRICT ARE FOLLOWED PRIOR TO BEGINNING ANY PHASE OF CONSTRUCTION WORK.
3. ALL NEW WATER MAIN, INCLUDING TIE–INS, SHALL BE CONSTRUCTED ENTIRELY OF CLASS 350 DUCTILE IRON PIPE AND FITTINGS; WRAPPED IN AN 8–MIL LINEAR LOW DENSITY POLYETHYLENE FILM, IN ACCORDANCE WITH SECTION 15060, "PIPING", SUBSECTION 2.01 "DUCTILE IRON PIPE." PIPE AND PIPE FITTINGS SHALL ALL HAVE RESTRAINED PUSH–ON OR MECHANICAL JOINTS, AT ALL FITTINGS, HYDRANT RUNS, AND TIE–INS.
4. CONSTRUCTION SHALL BE LIMITED TO BETWEEN THE HOURS OF 8:00 A.M. AND 5:00 P.M., MONDAY THRU FRIDAY.
5. DUST CONTROL DURING ALL PHASES OF CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN GOOD HOUSEKEEPING OF THE EXISTING IMPROVEMENTS IN THE CONSTRUCTION AREA. CONTRACTOR SHALL PROTECT EXCAVATED SPOILS PER WATER POLLUTION CONTROL PLAN (WPCP) AS SPECIFIED IN THE PROJECT SPECIFICATIONS.
6. NO ASPHALT SHALL BE DELIVERED TO THE JOB SITE AFTER 2:00 P.M. ON ANY DAY WITHOUT THE PRIOR WRITTEN APPROVAL OF THE DISTRICT. NO SLURRY SEAL SHALL BE PLACED AFTER 1:00 P.M.
7. THE CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN (INCLUDING STREET CLOSURE DETAILS IF REQUIRED, PREPARED AND SIGNED BY A TRAFFIC ENGINEER, TO THE DISTRICT FOR REVIEW AT THE PRE–CONSTRUCTION MEETING.
8. ANY DAMAGE TO THE EXISTING FACILITIES SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE. CONTRACTOR SHALL RESTORE ANY AND ALL PAVEMENT AND OTHER FACILITIES OUTSIDE LIMITS OF WORK AFFECTED BY THE CONSTRUCTION OPERATIONS AT NO ADDITIONAL COST. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DOCUMENT EXISTING CONDITIONS PRIOR TO START OF WORK TO SUBSTANTIATE ANY PRE–EXISTING DAMAGES, ETC.
9. TIE–INS ARE DIAGRAMMATIC. THE CONTRACTOR SHALL NOT BE ENTITLED TO EXTRA PAYMENT IF ADDITIONAL PIPE, COUPLINGS, OR OTHER APPURTENANCES ARE REQUIRED TO COMPLETE A TIE–IN.
10. PIPE BEDDING AND TRENCH BACKFILL SHALL BE IN ACCORDANCE WITH DISTRICT STANDARD DETAIL (1/8).
11. PROCEDURES FOR ABANDONING EXISTING PIPE ARE INCLUDED IN SECTION 02111 "ABANDONMENT OF EXISTING FACILITIES".
12. THE WATER SYSTEM SHALL REMAIN IN SERVICE THROUGHOUT THE PROJECT. INTERRUPTIONS TO SERVICE SHALL BE MINIMIZED AND SHALL BE COORDINATED WITH THE DISTRICT AT (650) 591–8941. THE CONTRACTOR SHALL NOT OPERATE DISTRICT OWNED VALVES AND HYDRANTS UNLESS AUTHORIZED BY THE DISTRICT.
13. THE CONTRACTOR SHALL NOT OPERATE DISTRICT FACILITIES UNLESS DIRECTED BY DISTRICT STAFF.
14. THE DISTRICT SHALL BE NOTIFIED AT LEAST 72 HOURS IN ADVANCE FOR ANY SCHEDULED TIE–INS. NO TIE–INS OR SHUTDOWNS WILL BE ALLOWED ON FRIDAYS OR THE DAY PRECEDING A HOLIDAY.
15. THE CONTRACTOR SHALL DESIGNATE A PERSON TO CONTACT SHOULD PROBLEMS ARISE DURING NON–WORKING HOURS OR DAYS. THE DISTRICT SHALL BE GIVEN THAT PERSON'S NAME, PHONE NUMBER.
16. ANY WATER STRUCTURE REMOVED FROM THE GROUND NOT LIMITED TO GATE VALVES, CHECK VALVES, COPPER SERVICE LINES, FITTINGS, PIPE, ETC SHALL BE RETURNED TO THE DISTRICT.

1–800–227–2600 CALL BEFORE YOU DIG USA UNDERGROUND SERVICE ALERT

Pakpour Consulting Group, Inc.
5776 Stoneridge Mall Road, Suite 320
Pleasanton, CA 94588
925.224.7717 Fax 925.224.7726
www.pcgengr.com

JOB No.	10012.12						
DATE:	05/29/15						
SCALE:	AS NOTED						
DESIGN:	BY FF						
	CKD JP						
DRAWN:	BY FF	1	9/15/14	FIELD ORDER No.1		FF	FF
	CKD JP	SYMBOL	DATE	REVISIONS		BY	CKD

REGISTERED PROFESSIONAL ENGINEER JOUBIN M. PAKPOUR No. C 59155 CIVIL STATE OF CALIFORNIA

RECORD DRAWING

INFORMATION PROVIDED BY MICHAEL ANDERSON DATE 12/05/2014
DRAWN BY FERAYDOON FARSI DATE 05/29/2015
PAKPOUR CONSULTING GROUP ASSUMES NO RESPONSIBILITY FOR ACCURACY OF INFORMATION PROVIDED BY OUTSIDE SOURCES. NO. 0100

MID-PENINSULA WATER DISTRICT
3 DAIRY LANE
BELMONT CA, 94002

REVIEWED AND APPROVED BY:
MID–PENINSULA WATER DISTRICT
GENERAL MANAGER
DATE

BELBURN WATER MAIN REPLACEMENT
TITLE SHEET, GENERAL NOTES
LOCATION AND VICINITY MAPS

SHEET 1 OF 9

DRAWING NAME: J:\CADD\10012.12\Plot Sheets\01-SHEET01.dwg
PLOT DATE: 06-Jun-15 PLOTTED BY: Hoan

SYMBOLS

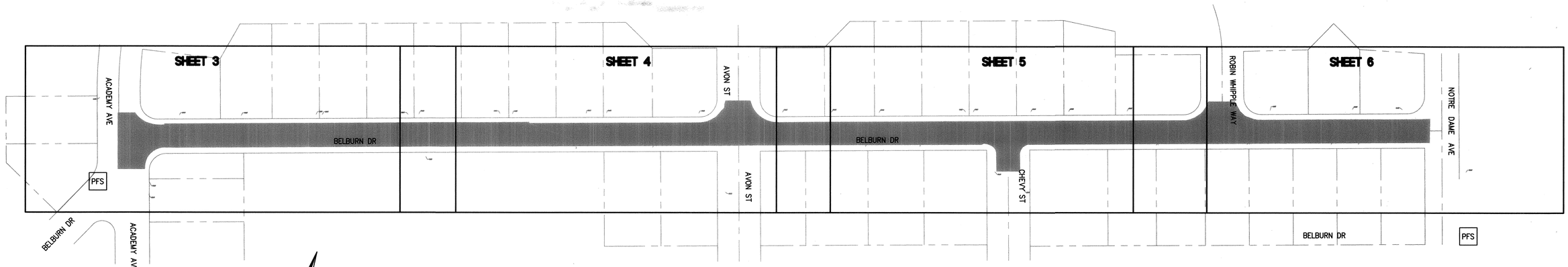
- ELECTRIC LINE (E)
- GAS LINE (G)
- OVERHEAD UTILITIES (OH)
- STORM DRAIN LINE (SD)
- SANITARY SEWER LINE (SS)
- (EXISTING) WATER LINE (W)
- CHAIN LINK FENCE
- WOODEN FENCE
- WIRE FENCE
- CONTOUR LINE (1' INTERVAL) (99)
- CENTER LINE
- RIGHT OF WAY
- EDGE OF PAVEMENT
- PROPERTY LINE
- NEW WATER MAIN
- CROSS WALK STRIPPING

- POWER POLE
- EXIST FIRE HYDRANT
- GUY ANCHOR
- SPOT ELEVATION (000.00)
- TREE TRUNK
- STREET SIGN
- SERVICE BOX
- GAS VALVE (GV)
- WATER VALVE (WV)
- STOP SIGN (STOP)
- LIMIT OF TYPE II SLURRY SEAL
- PROJECT FUNDING SIGN (PFS)

- PROPOSED GATE VALVE
- PROPOSED TEE
- PROPOSED REDUCER
- PROPOSED FITTINGS
- PROPOSED CROSS
- PROPOSED SERVICE CONNECTION METER
- PROPOSED FIRE HYDRANT ASSEMBLY
- PROPOSED CONCRETE CAP
- SC-X — SERVICE CONNECTION LEGEND
- 4 — CONSTRUCTION NOTE
- X/X — DETAIL REFERENCE NUMBER / SHEET NUMBER

LEGEND

AC	ASPHALT/CONCRETE	CONC	CONCRETE	GND	GROUND	S	SOUTH
ACP	ASBESTOS CEMENT PIPE	D.E.	DRIVEWAY EASEMENT	GV	GATE VALVE	SD	STORM DRAIN
AD	AREA DRAIN	DI	DRAIN INLET	HDD	HORIZONTAL DIRECTIONAL DRILLING	SS	SANITARY SEWER
A.E.	ANCHOR EASEMENT	DIA	DIAMETER	HYD	HYDRANT	SSMH	SANITARY SEWER MANHOLE
APPROX	APPROXIMATE(LY)	DIP	DUCTILE IRON PIPE	INV	INVERT	STA	STATION
ARV	AIR RELEASE VALVE	DT	DIRT	IP	IRON PIPE	TELE	TELEPHONE
AS	ASPHALT/ASHPALTIC CONCRETE	DWY	DRIVEWAY	LA	LANDSCAPE AREA/STRIP	TEMP	TEMPORARY
BAB	BACK AC BERM	E	EAST	LF	LINEAR FEET	TFB	TOP FACE BERM
BEG	BEGINNING	EB	ELECTRIC BOX	LG	LIP OF GUTTER	TFC	TOP FACE CURB
BFV	BACK FLOW VALVE	ED	EDGE	MB	MAIL BOX	TRANS	TRANSFORMER
BK	BREAKLINE	ELEC	ELECTRIC	MH	MANHOLE	TW	TOP OF WALL
BL	BUILDING	ELEV	ELEVATION	MJ	MECHANICAL JOINT	TYP	TYPICAL
BO	BLOW OFF VALVE	EP	EDGE OF PAVEMENT	MT	METER	UB	UTILITY BOX
BW	BOTTOM OF WALL	ER	EDGE OF ROAD	N	NORTH	UV	UTILITY VAULT
BRC	BACK ROLL CURB	EV	ELECTRIC VAULT	PG&E	PACIFIC GAS & ELECTRIC	USA	UNDERGROUND SERVICE ALERT
CB	CATCH BASIN	EXIST	EXISTING	MPWD	MID-PENINSULA WATER DISTRICT	VL	VALVE
CC/CONC.	CONCRETE	FDC	FIRE UTILITY	PP	POWER POLE	W	WEST
CI	CAST IRON	FH	FIRE HYDRANT	PR	PROPOSED	WMB	WATER METER BOX
℄	CENTERLINE	FL	FLOW LINE	PRV	PRESSURE REDUCING VALVE	WTR	WATER
CM	CORRUGATED METAL	FNC	FENCE	PUE	PUBLIC UTILITY EASEMENT	WV	WATER VALVE
CN	CORNER	FND	FOUND	PVC	POLYVINYL CHLORIDE PIPE	WVT	WATER VAULT
CO	CLEAN OUT	FT	FEET	R/W	RIGHT OF WAY	#	QUANTITIES OF TREES



SHEET INDEX & LIMITS OF CLASS II SLURRY SEAL
BELBURN AVE

SCALE: 1"=60'

SHEET INDEX	
SHEET 3	BELBURN DR – STA 10+00 TO STA 13+50
SHEET 4	BELBURN DR – STA 13+50 TO STA 18+00
SHEET 5	BELBURN DR – STA 18+00 TO STA 22+50
SHEET 6	BELBURN DR – STA 22+50 TO STA 25+~~25~~28

Pakpour Consulting Group, Inc.
5776 Stoneridge Mall Road, Suite 320
Pleasanton, CA 94588
925.224.7717 Fax 925.224.7726
www.pcgengr.com

JOB No.	10012.12						
DATE:	05/29/15						
SCALE:	AS NOTED						
DESIGN:	BY FF						
	CKD JP						
DRAWN:	BY FF						
	CKD JP	SYMBOL	DATE	REVISIONS	BY	CKD	

REGISTERED PROFESSIONAL ENGINEER JOSEPH PAKPOUR No. C 59155 CIVIL STATE OF CALIFORNIA 6/10/15

RECORD DRAWING

INFORMATION PROVIDED BY MICHAEL ANDERSON DATE 12/05/2014

DRAWN BY FERAYDOON FARSI DATE 05/29/2015

PAKPOUR CONSULTING GROUP ASSUMES NO RESPONSIBILITY FOR ACCURACY OF INFORMATION PROVIDED BY OUTSIDE SOURCES. NO. 0100

MID-PENINSULA WATER DISTRICT
3 DAIRY LANE
BELMONT CA, 94002

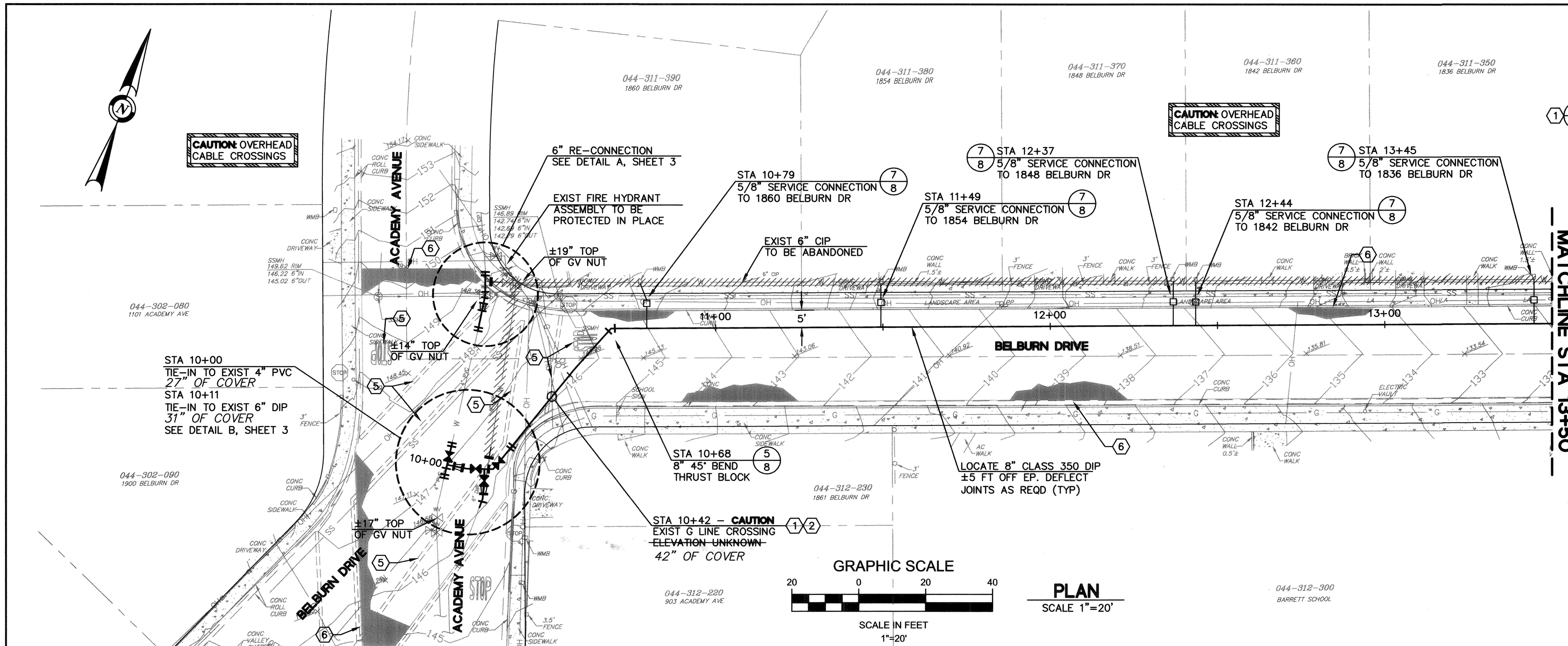
REVIEWED AND APPROVED BY:
MID-PENINSULA WATER DISTRICT
GENERAL MANAGER

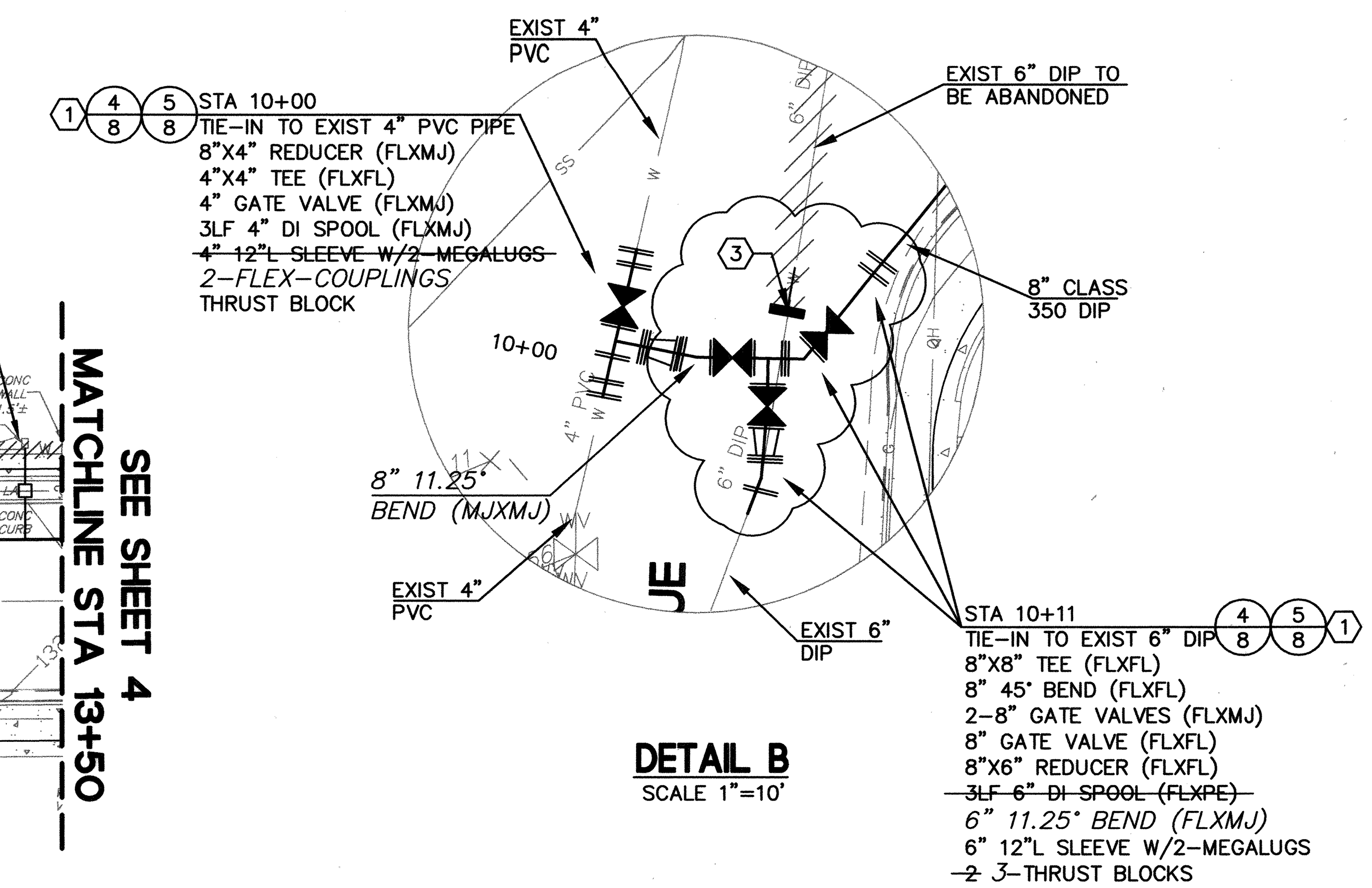
Jimmy A Rutherford
DATE

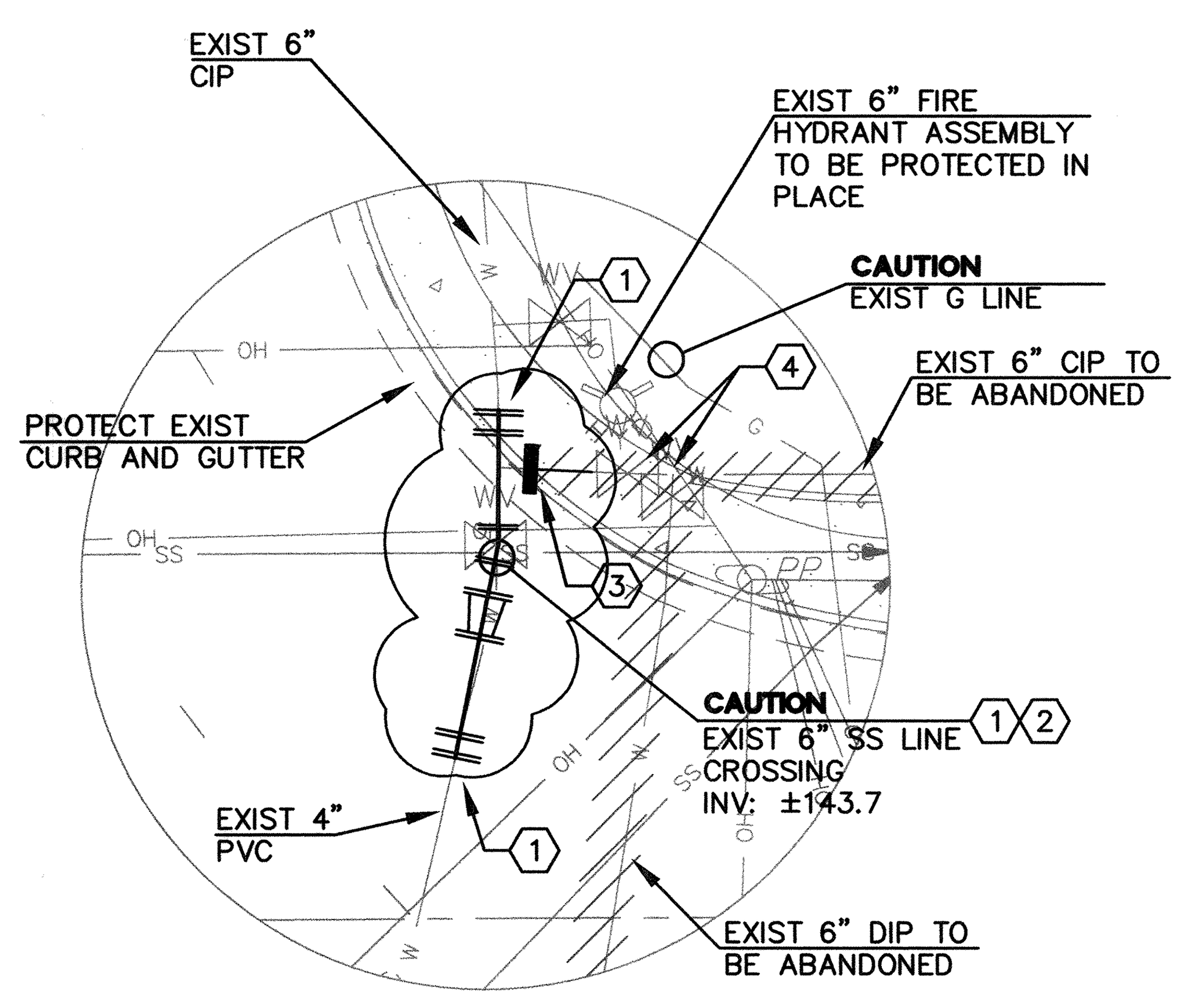
BELBURN WATER MAIN REPLACEMENT
SHEET INDEX, LIMITS OF TYPE II SLURRY SEAL, LEGEND AND SYMBOLS

SHEET 2
OF 9

DRAWING NAME: J:\CAD\10012\12\PH4_Sheet\VS-PHMT002.dwg
PLOT DATE: 06-04-15 PLOTTED BY: Farsi

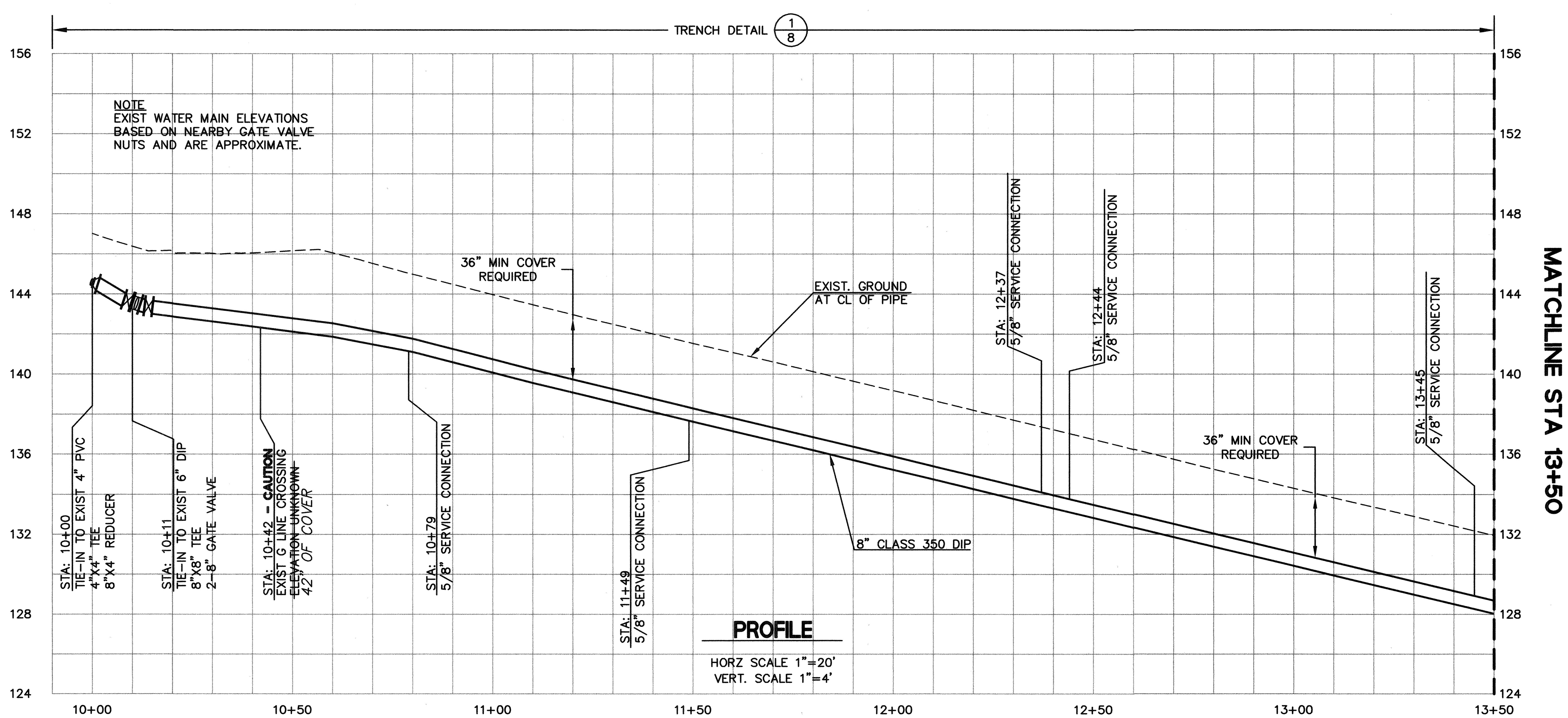






REMOVE 6"X6" TEE, REDUCER AND GATE VALE RETURN GATE VALVE TO DISTRICT
REMOVE ~~±20'~~ 15LF SECTION OF 6" CIP/4" PVC
INSTALL ~~15LF~~ 10LF SECTION OF CLASS 350 6" DIP
6" 12"L SLEEVE W/2-MEGALUGS
6" 11.25° BEND (MJXMJ)
6"X4" REDUCER (FLXMJ)
INSTALL 5LF 4" DI SPOOL (FLXPE)
4" 12"L ~~SLEEVE W/2-MEGALUGS~~ FLEX-COUPLING
REPLACE DAMAGED SIDEWALK, CURB AND GUTTER SCORE LINE TO SCORE LINE AS NEEDED.

DETAIL A
SCALE 1"=10'



LAYOUT NOTES:

1. DEFLECT JOINTS ±3 DEGREES AS RECOMMENDED BY THE MANUFACTURER TO MAINTAIN ALIGNMENT.
2. NEW WATER SERVICE CONNECTION MUST BE 4 FT AWAY FROM A BEND OR BELL JOINT FROM THE MAIN AND 18" FROM ANOTHER SERVICE CONNECTION OR AS DIRECTED BY THE DISTRICT INSPECTOR.
3. EXISTING UTILITY STRUCTURES ARE BASED ON FIELD VERIFICATION AND RECORD DRAWINGS AND ARE SCHEMATICALLY SHOWN ON THE PLANS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT USA (1-800-227-2600) AND FIELD VERIFY SAID STRUCTURES.
4. CONTRACTOR SHALL POTHOLE FOR UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION TO ADJUST THE WATER MAIN TO MAINTAIN DESIRED CLEARANCE PER DISTRICT STANDARDS AND COORDINATE PROPOSED ALIGNMENT WITH THE ENGINEER/DISTRICT INSPECTOR.
5. TIE-IN TO EXISTING MAIN SHALL BE 30" MIN. AWAY FROM A SLEEVE OR AS DIRECTED BY THE DISTRICT INSPECTOR. SHORING IS REQUIRED FOR TRENCH DEPTHS GREATER THAN 60".
6. NO BEND OR JOINT WITHIN 10' OF SS LINE IS ALLOWED, UNLESS OTHERWISE DIRECTED BY THE ENGINEER/DISTRICT INSPECTOR.

CONSTRUCTION LEGEND:

(1) POT-HOLE AND LOCATE EXISTING UTILITIES.
(2) MINIMUM PIPE SEPARATION REQUIREMENTS PER DETAIL 1/9.
(3) DRAIN EXISTING WATER MAIN AND INSTALL A MJ CAP (OR CONCRETE PLUG) OR AS DIRECTED BY THE DISTRICT INSPECTOR.
(4) ABANDON EXISTING GATE VALVE BOXES PER DISTRICT INSPECTOR.
(5) REPLACE ROADWAY STRIPING AND MARKINGS.
(6) APPROX. LIMITS OF TYPE II SLURRY SEAL.

Pakpour Consulting Group, Inc.
5776 Stoneridge Mall Road, Suite 320
Pleasanton, CA 94588
925.224.7717 Fax 925.224.7726
www.pcgengr.com

JOB No.		10012.12				
DATE:		05/29/15				
SCALE:		AS NOTED				
DESIGN:	BY	FF				
	CKD	JP				
DRAWN:	BY	FF				
	CKD	JP	SYMBOL	DATE	REVISIONS	BY	CKD

REGISTERED PROFESSIONAL ENGINEER No. C 59155 CIVIL STATE OF CALIFORNIA

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DRAWN BY FERAYDOON FARSI DATE 05/29/2015
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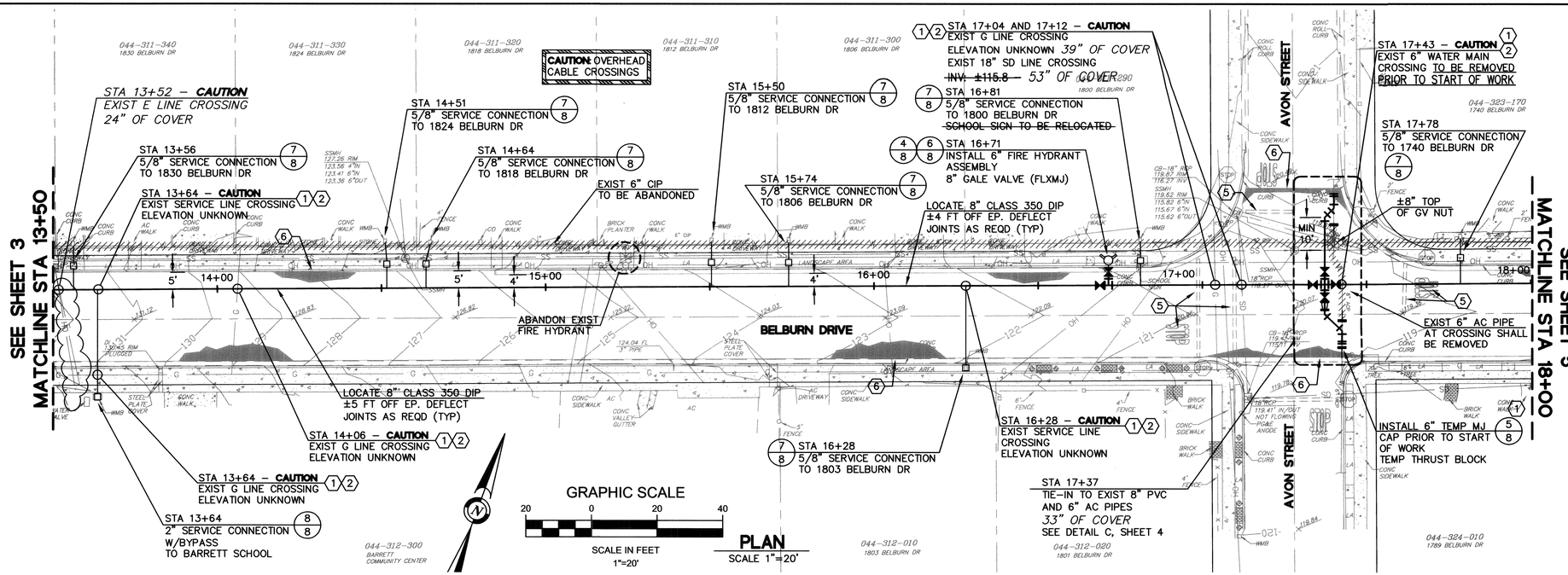
NO. 0100

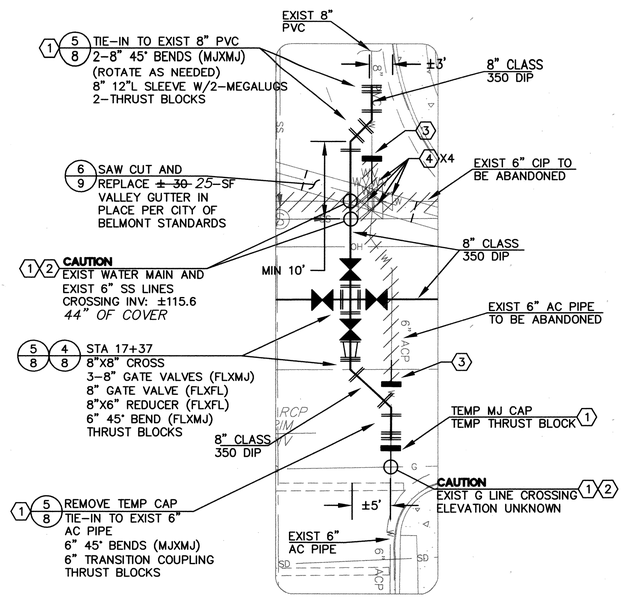
MID-PENINSULA WATER DISTRICT
3 DAIRY LANE
BELMONT CA, 94002

REVIEWED AND APPROVED BY:
MID-PENINSULA WATER DISTRICT
GENERAL MANAGER
Tammy A Rudock 6/25/15
DATE

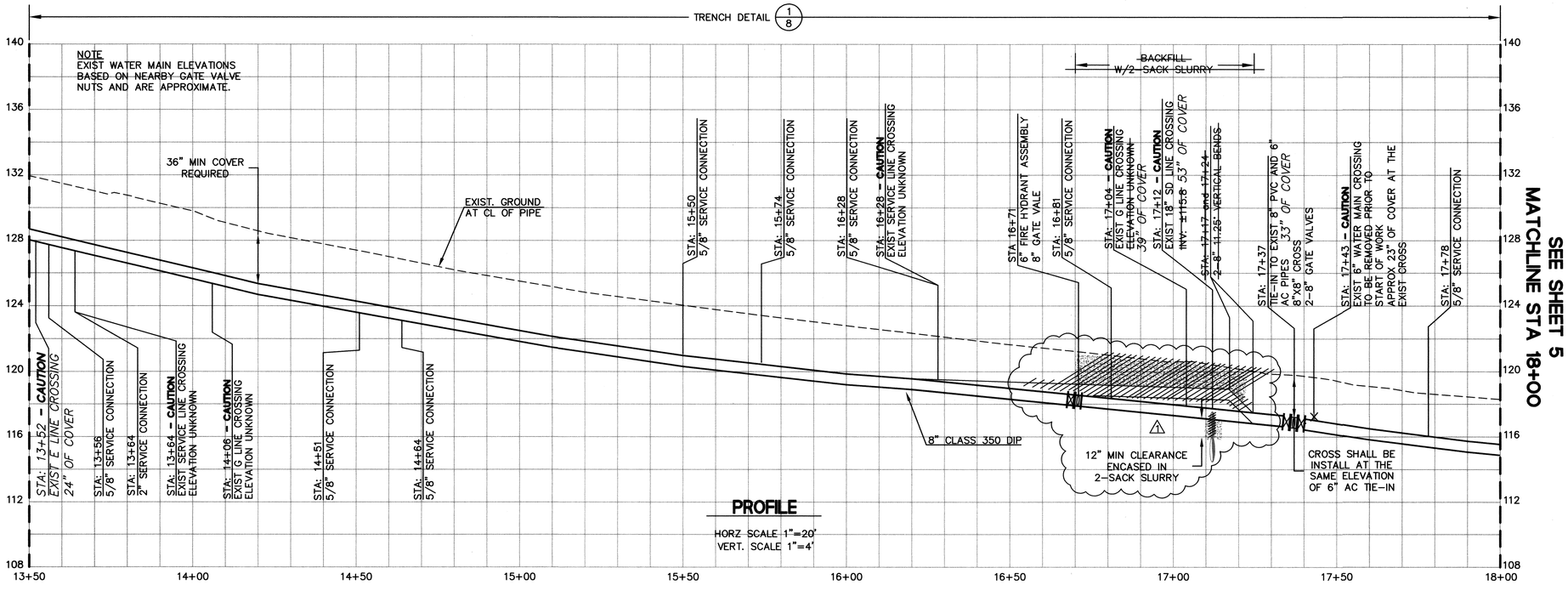
BELBURN WATER MAIN REPLACEMENT
PLAN AND PROFILE
BELBURN DR STA 10+00 TO 13+50

SHEET 3 OF 9





DETAIL C
SCALE 1"=10'



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CONSTRUCTION LEGEND:

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REGISTERED PROFESSIONAL ENGINEER JOHN PAKPOUR No. C 59155 CIVIL STATE OF CALIFORNIA

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3 DAIRY LANE
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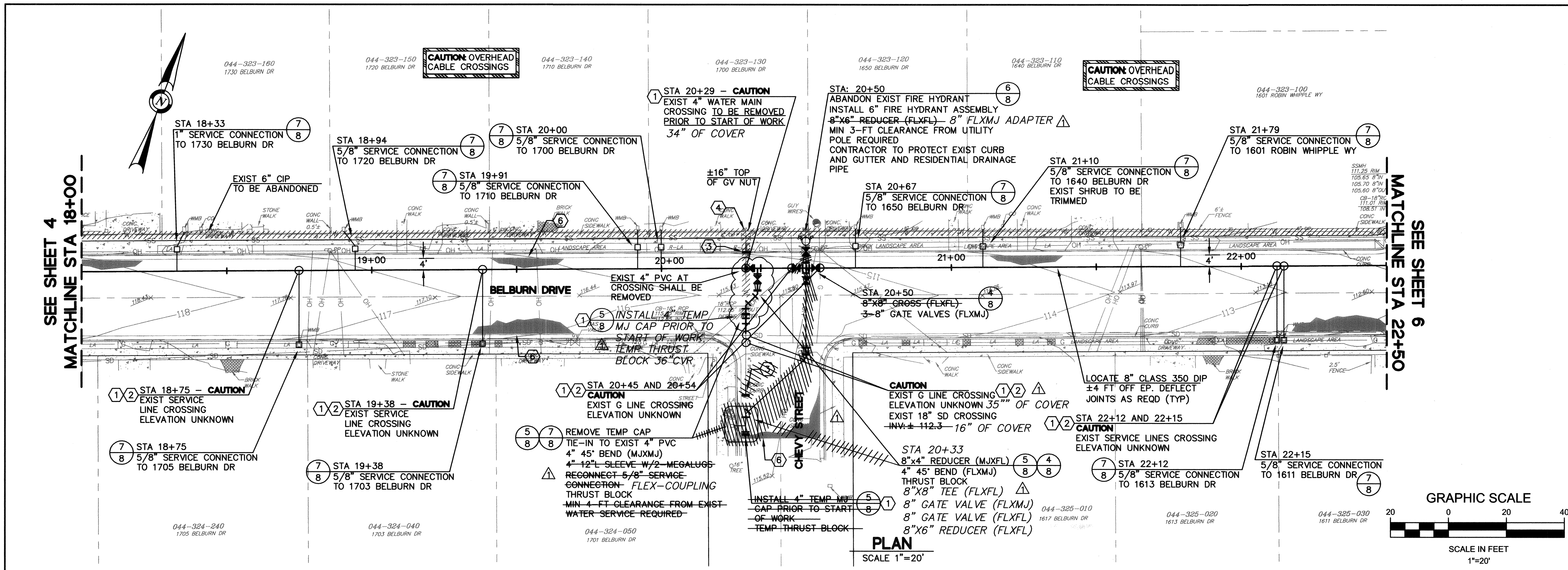
GENERAL MANAGER
DATE

BELBURN WATER MAIN REPLACEMENT
PLAN AND PROFILE
BELBURN DR STA 13+50 TO 18+00

SHEET 4
OF 9

DRAWING NAME: J:\JOBS\10012\12\Plot Sheets\10-SHEET02.dwg
PLOT DATE: 05-29-15 PLOTTED BY: Farsi



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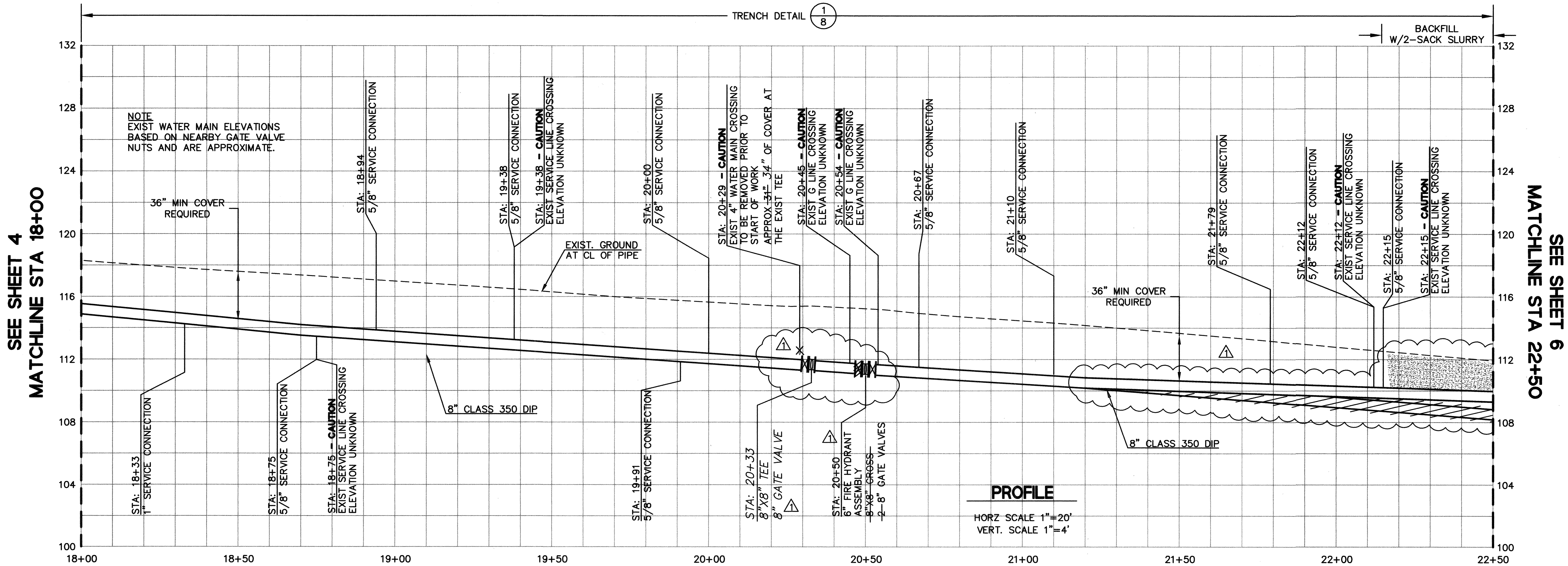

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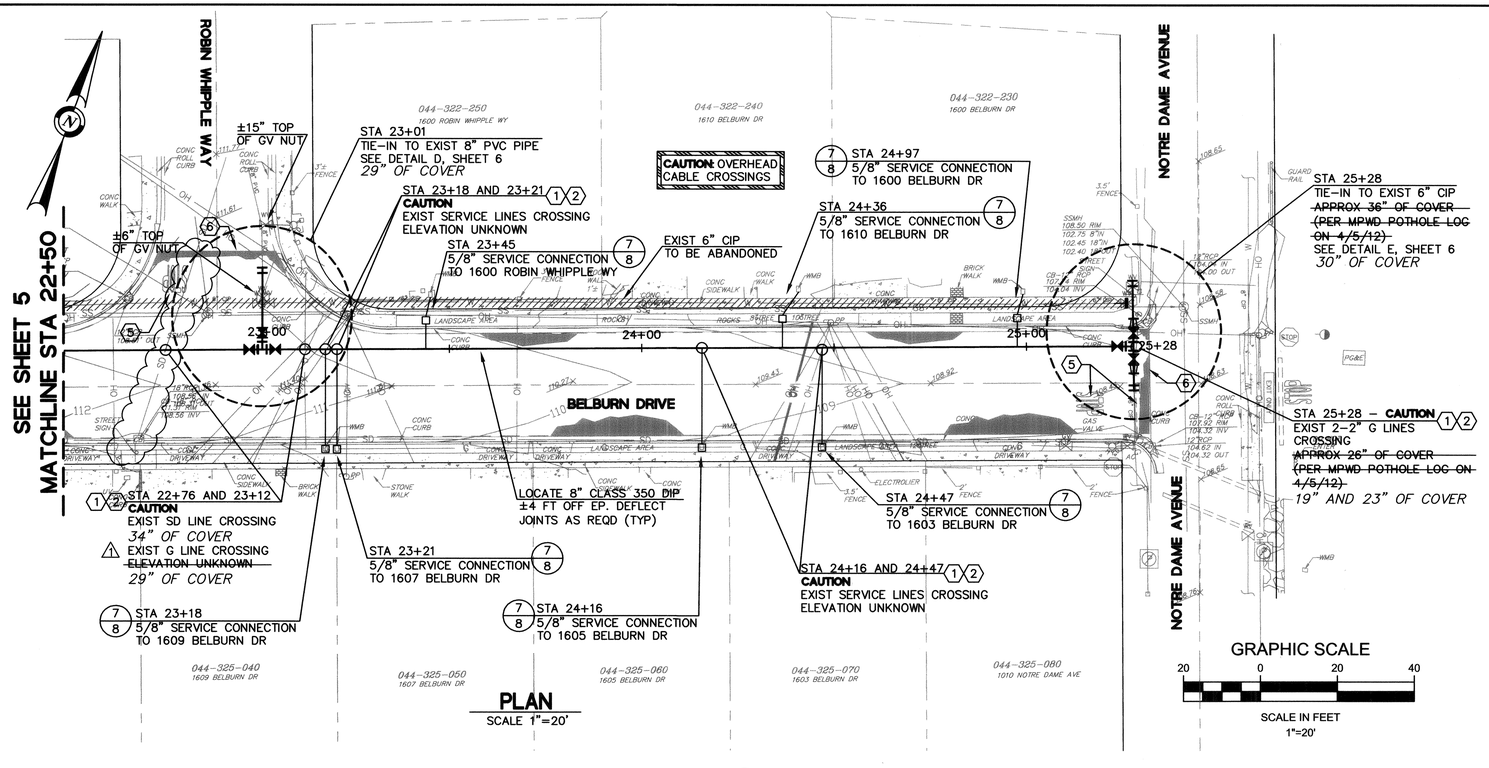
DATE

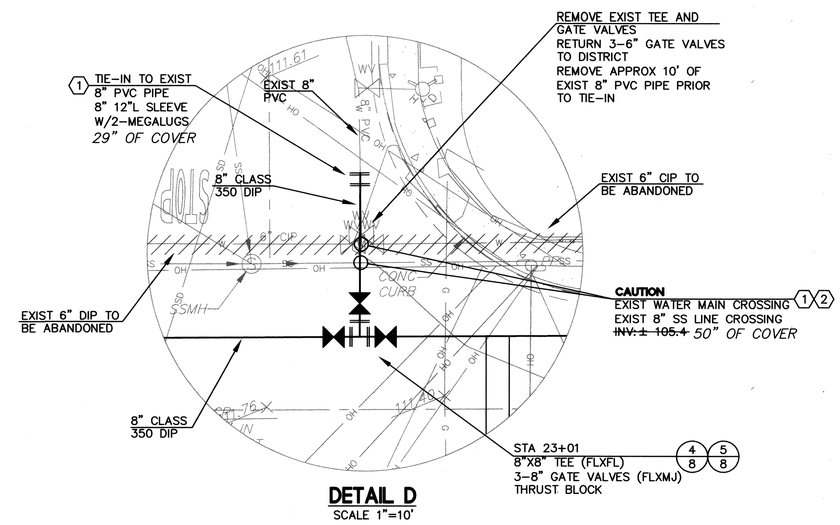
BELBURN WATER MAIN REPLACEMENT
PLAN AND PROFILE
BELBURN DR STA 18+00 TO 22+50

SHEET 5 OF 9



PLAN
SCALE 1"=20'

GRAPHIC SCALE
20 0 20 40
SCALE IN FEET
1"=20'



DETAIL D
SCALE 1"=10'

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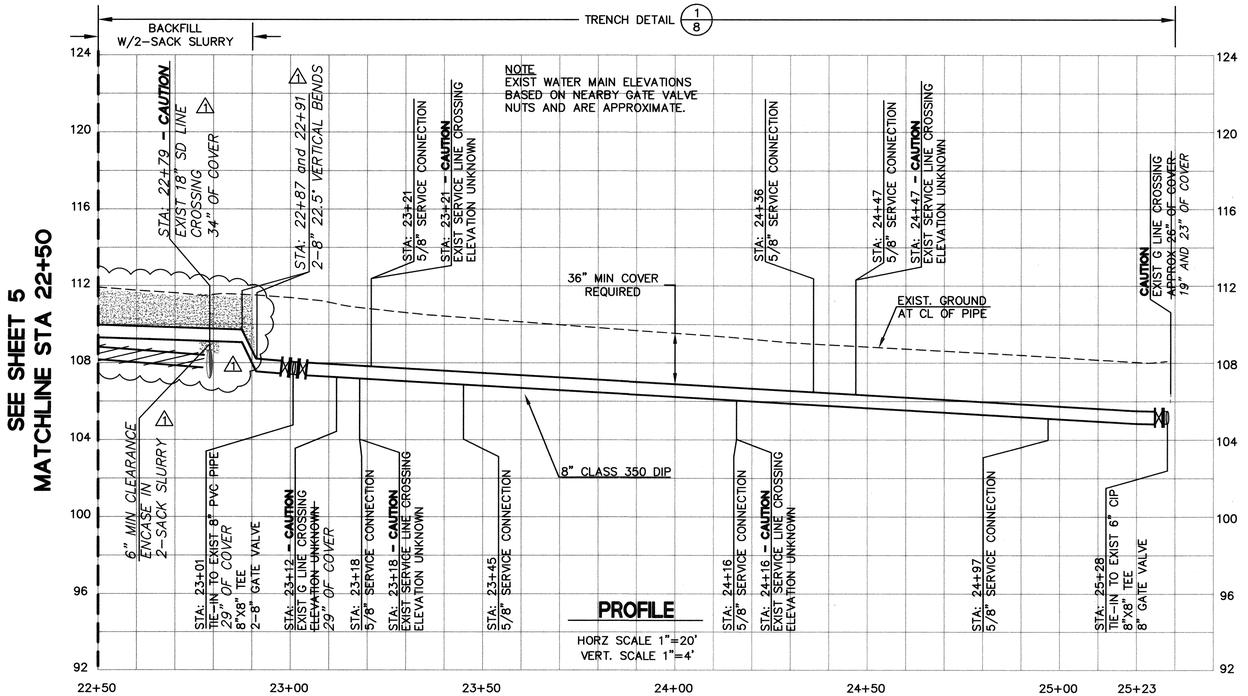
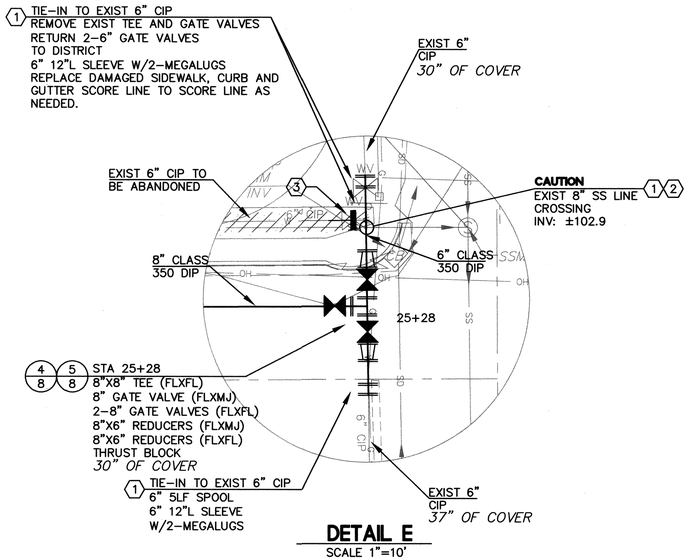


PROFILE
HORZ SCALE 1"=20'
VERT. SCALE 1"=4'



DETAIL E
SCALE 1"=10'

CONSTRUCTION LEGEND:

1. POT-HOLE AND LOCATE EXISTING UTILITIES.
2. MINIMUM PIPE SEPARATION REQUIREMENTS PER DETAIL 1 9 .
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3 DAIRY LANE
BELMONT CA, 94002

REVIEWED AND APPROVED BY:
MID-PENINSULA WATER DISTRICT
GENERAL MANAGER
Jimmy A Rubin 6/9/15
DATE

BELBURN WATER MAIN REPLACEMENT
PLAN AND PROFILE
BELBURN DR STA 22+50 TO 25+28

SHEET 6
OF 9

SERVICE CONNECTION MAP

SCALE: N.T.S.

WATER SERVICE SCHEDULE

	STREET NAME	ADDRESS	SRV SIZE	TYPE	NOTES
1	BELBURN DR	1860	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
2	BELBURN DR	1854	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
3	BELBURN DR	1848	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
4	BELBURN DR	1842	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
5	BELBURN DR	1836	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
6	BELBURN DR	1830	5/8"	SC-2	Relocate, to the concrete strip, between roadway and sidewalk; 5-FT east of utility pole; Refer to Section 15100
7	BELBURN DR	Barrett Comunity Center	2"	SC-1	Same General Location (add bypass); Refer to Section 15100
8	BELBURN DR	1824	5/8"	SC-2	Relocate, to the concrete strip, between roadway and sidewalk; Refer to Section 15100
9	BELBURN DR	1818	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
10	BELBURN DR	1812	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
11	BELBURN DR	1806	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
12	BELBURN DR	1803	5/8"	SC-1	Same General Location; Refer to Section 15100
13	BELBURN DR	1800	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; 3-FT west of exist street sign; Refer to Section 15100
14	BELBURN DR	1740	5/8"	SC-2	Relocate, to the concrete strip, between roadway and sidewalk; Refer to Section 15100
15	BELBURN DR	1730	1"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
16	BELBURN DR	1705	5/8"	SC-1	Same General Location; Refer to Section 15100
17	BELBURN DR	1720	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; 3-FT east of exist tree; Refer to Section 15100
18	BELBURN DR	1703	5/8"	SC-1	Same General Location; Refer to Section 15100
~~19~~	~~BELBURN DR~~	~~1701~~	~~5/8"~~	~~SC-3~~	~~Reconnect; Refer to Section 15100~~
20	BELBURN DR	1710	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
21	BELBURN DR	1700	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
22	BELBURN DR	1650	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
23	BELBURN DR	1640	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Exist shrub to be trimmed; Refer to Section 15100
24	ROBIN WHIPPLE WY	1601	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
25	BELBURN DR	1613	5/8"	SC-1	Same General Location; Refer to Section 15100
26	BELBURN DR	1611	5/8"	SC-1	Same General Location; Refer to Section 15100
27	BELBURN DR	1609	5/8"	SC-1	Same General Location; Refer to Section 15100
28	BELBURN DR	1607	5/8"	SC-1	Same General Location; Refer to Section 15100
29	ROBIN WHIPPLE WY	1600	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
30	BELBURN DR	1605	5/8"	SC-1	Same General Location; Refer to Section 15100
31	BELBURN DR	1610	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100
32	BELBURN DR	1603	5/8"	SC-1	Same General Location; Refer to Section 15100
33	BELBURN DR	1600	5/8"	SC-2	Relocate, to the landscape strip, between roadway and sidewalk; Refer to Section 15100

SERVICE CONNECTION NOTES

1. CONTRACTOR TO REFER TO SECTION 15100 OF THE SPECIAL PROVISIONS FOR SERVICE LOCATIONS.
2. SAWCUT AND OPEN TRENCH IS NOT ALLOWED FOR SERVICES. CONTRACTOR SHALL USE A TRENCHLESS (BORING) METHOD FOR SERVICE LINES.
3. NEW WATER SERVICE CONNECTION MUST BE A MIN 4 FT AWAY FROM A BEND OR BELL JOINT OF THE MAIN, OR AS DIRECTED BY THE DISTRICT INSPECTOR.
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5. WATER SERVICE CONNECTION SHALL BE PERFORMED IN CONFORMANCE WITH THE CURRENT VERSION OF THE MID-PENINSULA WATER DISTRICT'S "STANDARD SPECIFICATIONS" AND "STANDARD DRAWINGS."
6. ALL SCRAP METAL DUG FROM THE GROUND ASSOCIATED TO WATER SERVICE CONNECTION SHALL BE DELIVERED TO THE DISTRICT INSPECTOR.

SERVICE CONNECTION LEGEND

SC-1 NEW X" SERVICE LINE PER 7/8, 8/8

SC-2 NEW RELOCATED X" SERVICE LINE PER 7/8, 8/8

~~SC-3 RECONNECT X" SERVICE LINE PER~~ 7/8, 8/8

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REGISTERED PROFESSIONAL ENGINEER — JOUBIN PAKPOUR — No. C 59155 — CIVIL — STATE OF CALIFORNIA

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REVIEWED AND APPROVED BY:
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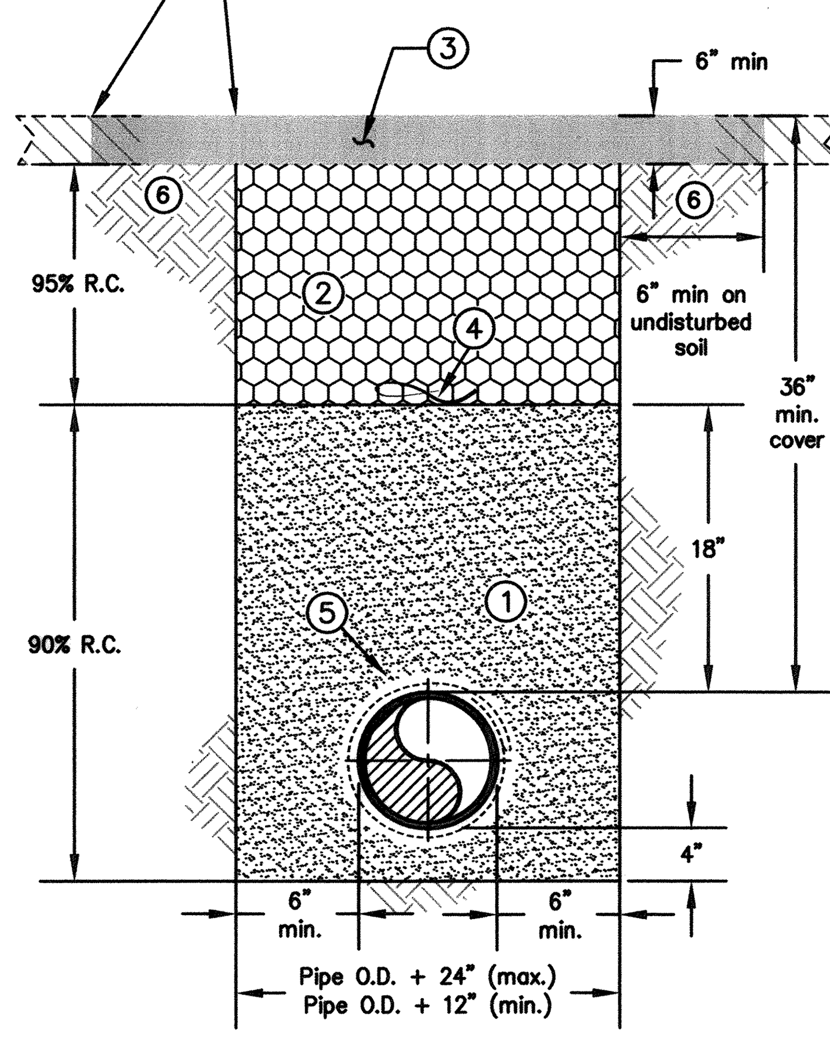
GENERAL MANAGER
DATE

BELBURN WATER MAIN REPLACEMENT
WATER SERVICE SCHEDULE

SHEET 7 OF 9

Saw cut pavement full depth. Maintain edge true for repaving. If edge is damaged it shall be recut immediately before paving. A tack coat shall be applied to all surfaces before paving as specified in section 02600 of the District's standard specifications. Trench lines shall be sand sealed.



Note:
Replace tracer wire for plastic or AC pipe if damaged during trenching operation.

LEGEND

(1) Quarry Fine bedding and backfill material, as specified in section 02221 of the District's standard specifications, shall be placed in four lifts.

Lift One – The first lift shall consist of placing 4" of compacted backfill material to the satisfaction of the District prior to the placement of the pipe. The pipe shall be placed prior to the second lift.

Lift Two – The second lift shall consist of placing backfill material around the pipe to the top of the pipe to the satisfaction of the District. The top of the pipe shall be visible prior to the start of compaction for the second lift. Compaction of the backfill around the pipe shall be performed by a pneumatic means such as a "Powder Puff." No other means of compaction tool shall be allowed without prior approval by the District. Contractor shall use extreme care to avoid hitting the pipe and polyethylene wrapping while compacting.

Lift Three – The third lift shall consist of placing and compacting 12" of backfill material.

Lift Four – The fourth lift shall consist of placing and compacting the backfill material to the required compacted depth of 18" above the pipe.

(2) Class 2 lime treated aggregate base backfill material, as specified in section 02221 of the District's standard specifications.

(3) Asphalt concrete pavement, as specified in section 02600 of the District's standard specifications. Pavement thickness shall be replaced in kind but not less than 6".

(4) Marker tape as specified in section 15060 of the District's standard specifications.

(5) Encase DIP with 8 mil. linear low-density polyethylene film. Tape a blue No. 8 AWG, copper tracer wire to top of PVC pipe every 6-feet.

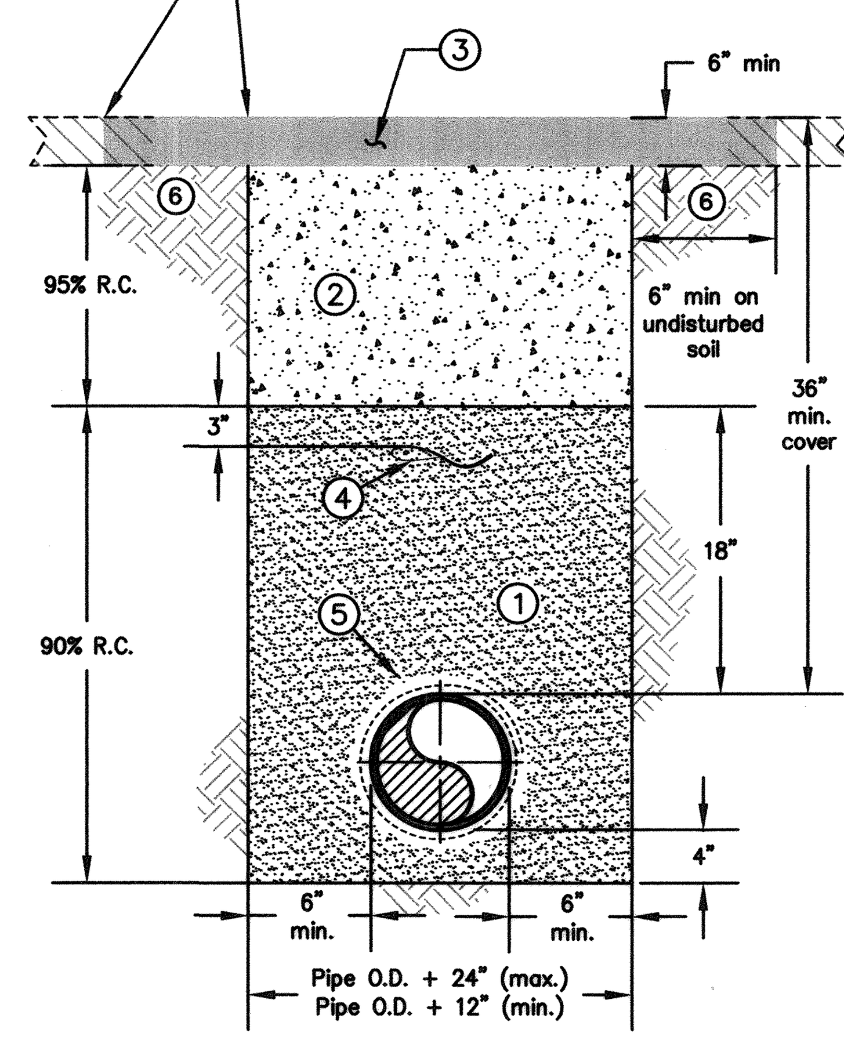
(6) A second saw cut operation is required prior to final paving to achieve the "T"cut section. Saw cutting a wider trench line during initial trench excavation to achieve a "T" cut section will not be allowed.

TRENCH SECTION
1/8 TYPE A - PAVED SURFACES

N.T.S.

STD NO. MP-01

Saw cut pavement full depth. Maintain edge true for repaving. If edge is damaged it shall be recut immediately before paving. A tack coat shall be applied to all surfaces before paving as specified in section 02600 of the District's standard specifications. Trench lines shall be sand sealed.



Note:
Replace tracer wire for plastic or AC pipe if damaged during trenching operation.

LEGEND

(1) Quarry Fine bedding and backfill material, as specified in section 02221 of the District's standard specifications, shall be placed in four lifts.

Lift One – The first lift shall consist of placing 4" of compacted backfill material to the satisfaction of the District prior to the placement of the pipe. The pipe shall be placed prior to the second lift.

Lift Two – The second lift shall consist of placing backfill material around the pipe to the top of the pipe to the satisfaction of the District. The top of the pipe shall be visible prior to the start of compaction for the second lift. Compaction of the backfill around the pipe shall be performed by a pneumatic means such as a "Powder Puff." No other means of compaction tool shall be allowed without prior approval by the District. Contractor shall use extreme care to avoid hitting the pipe and polyethylene wrapping while compacting.

Lift Three – The third lift shall consist of placing and compacting 12" of backfill material.

Lift Four – The fourth lift shall consist of placing and compacting the backfill material to the required compacted depth of 18" above the pipe.

(2) Control density backfill, as specified in section 03301_of the District's standard specifications.

(3) Asphalt concrete pavement, as specified in section 02600 of the District's standard specifications. Pavement thickness shall be replaced in kind but not less than 6".

(4) Marker tape as specified in section 15060 of the District's standard specifications.

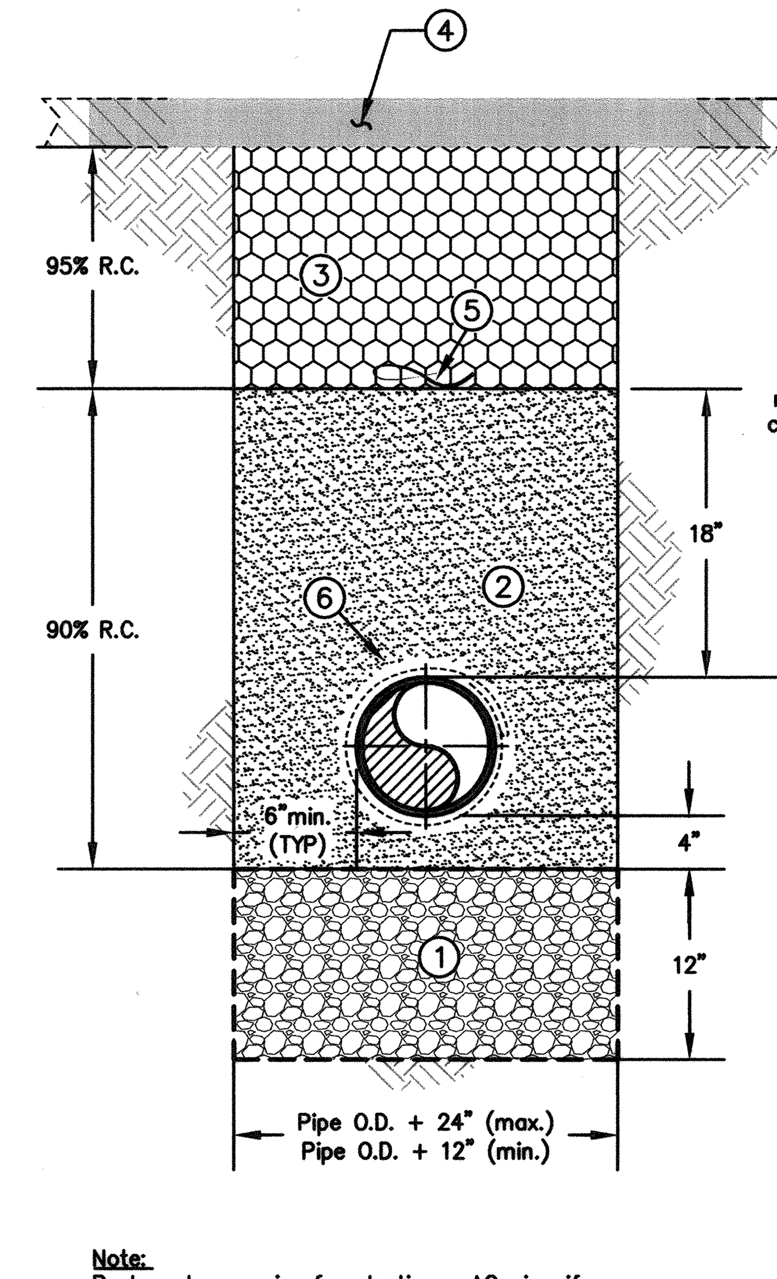
(5) Encase DIP with 8 mil. linear low-density polyethylene film. Tape a blue No. 8 AWG, copper tracer wire to top of PVC pipe every 6-feet.

(6) A second saw cut operation is required prior to final paving to achieve the "T"cut section. Saw cutting a wider trench line during initial trench excavation to achieve a "T" cut section will not be allowed.

TRENCH SECTION
2/8 TYPE D - CONTROL DENSITY FILL

N.T.S.

STD NO. MP-04



Note:
Replace tracer wire for plastic or AC pipe if damaged during trenching operation.

LEGEND

(1) 3/4" Crushed drain rock, wrapped into a filter fabric.

(2) Quarry Fine bedding and backfill material, as specified in section 02221 of the District's standard specifications, shall be placed in four lifts.

Lift One – The first lift shall consist of placing 4" of compacted backfill material to the satisfaction of the District prior to the placement of the pipe. The pipe shall be placed prior to the second lift.

Lift Two – The second lift shall consist of placing backfill material around the pipe to the top of the pipe to the satisfaction of the District. The top of the pipe shall be visible prior to the start of compaction for the second lift. Compaction of the backfill around the pipe shall be performed by a pneumatic means such as a "Powder Puff." No other means of compaction tool shall be allowed without prior approval by the District. Contractor shall use extreme care to avoid hitting the pipe and polyethylene wrapping while compacting.

Lift Three – The third lift shall consist of placing and compacting 12" of backfill material.

Lift Four – The fourth lift shall consist of placing and compacting the backfill material to the required compacted depth of 18" above the pipe.

(3) Backfill material see Details MP01, MP02, MP03 or MP04 and as directed by District.

(4) Road surface material see Details MP01, MP02 or MP03 and as directed by District.

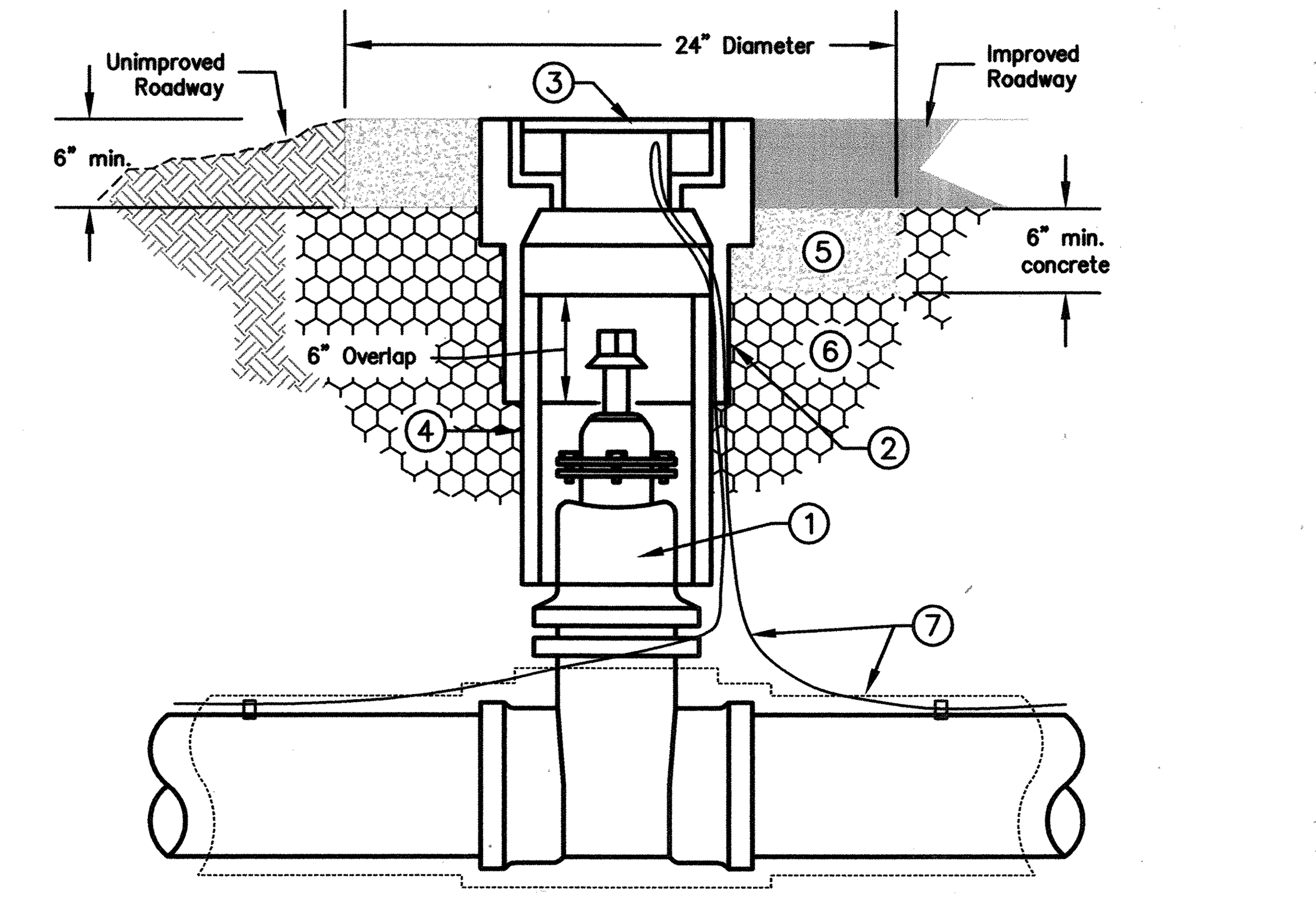
(5) Marker tape as specified in section 15060 of the District's standard specifications.

(6) Encase DIP with 8 mil. linear low-density polyethylene film. Tape a blue No 08 AWG, copper tracer wire to top of PVC pipe every 6-feet.

TRENCH SECTION
3/8 TYPE E - DRAIN ROCK AT BOTTOM

N.T.S.

STD NO. MP-05



LEGEND

(1) Gate valve, Mueller No. A-2362 with Type 316 SS bolts and nuts, and 2" square bronze operation nut. Valve stem shall be made of ASTM B98-C66100/H02 (Everdur) bar stock material; EPDM rubber; machined release groove below operating nut; and stuffing box aligned with the direction of the pipe. If coating on gate valve is damaged during the installation, it should be repaired using Muller Epoxy Kit (Red) No. 280089 to the satisfaction of the District. Valve shall be set plumb.

(2) Traffic valve box, Christy Concrete No. G05TBOX.

(3) Cast iron traffic cover inscribed "WATER", Christy Concrete No. G05CT.

(4) SDR 35 PVC pipe riser – 8" minimum diameter.

(5) 2,000 psi concrete collar. Minimum 24 hours cure prior to placement of asphalt.

(6) Backfill material, aggregate base per road surface, see Detail MP-01.

(7) Encase DIP with 8-mil. linear low-density polyethylene film. Wrap excess film with 10-mil pipe tape. For PVC pipes, use No. 8 AWG standard tracer wire taped on top of pipe and looped into the valve box from outside the riser. Wire to extend 12" above grade

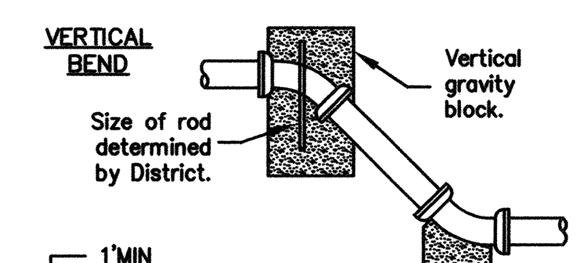
4/8 GATE VALVE ASSEMBLY

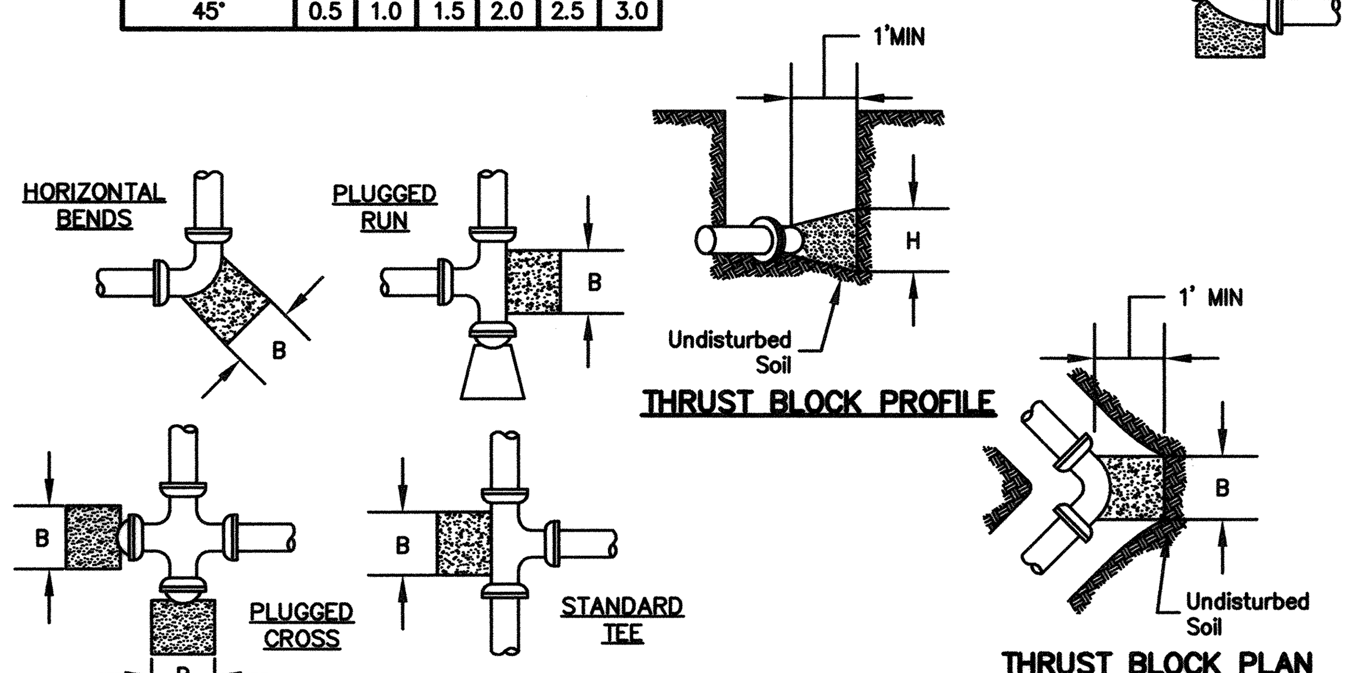
N.T.S.

STD NO. MP-06, MODIFIED

VOLUME OF GRAVITY BLOCK IN CUBIC YARDS

VERTICAL FITTING	DIAMETER OF PIPE					
	6"	8"	10"	12"	14"	16"
90°	1.0	2.0	3.0	4.0	5.0	6.0
45°	0.5	1.0	1.5	2.0	2.5	3.0





DIMENSIONS OF THRUST BLOCKS IN FEET

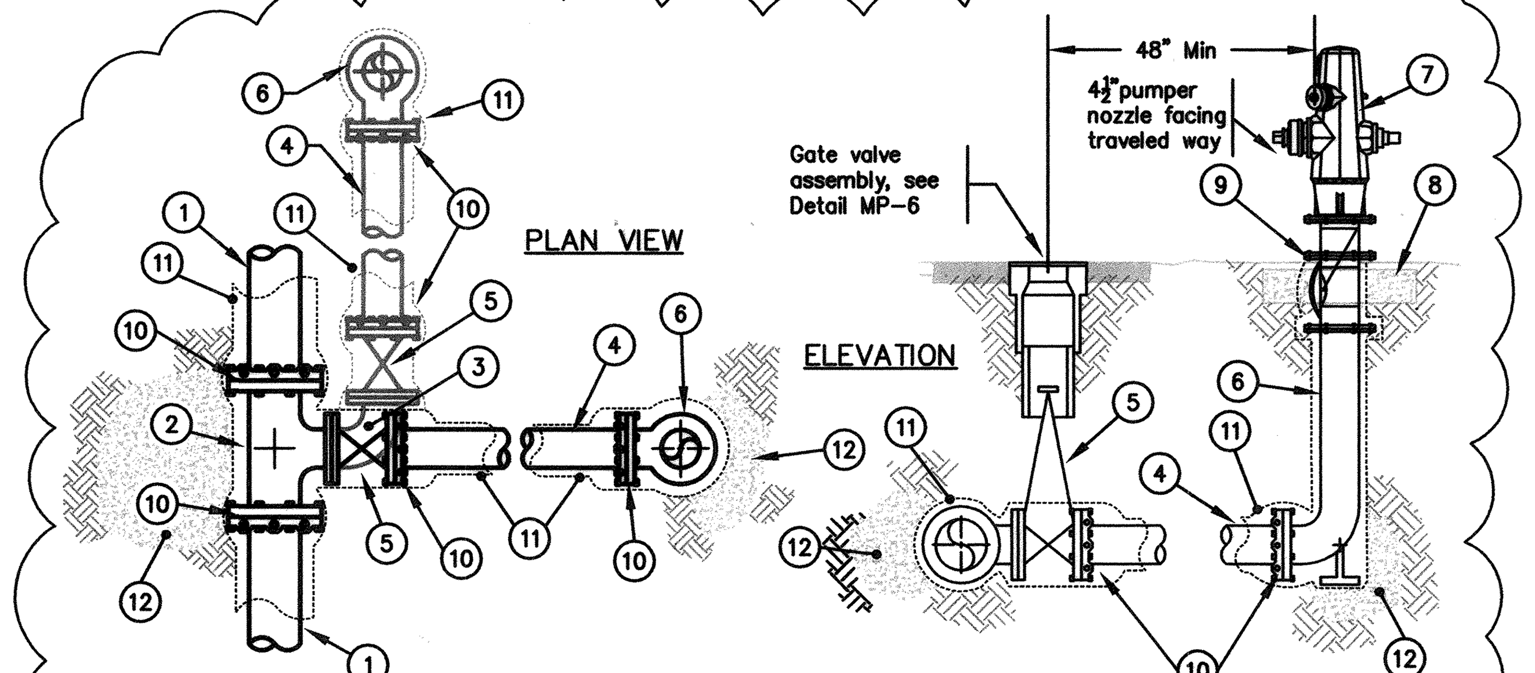
HORIZONTAL FITTING	DIAMETER OF PIPE											
	6"		8"		10"		12"		14"		16"	
	B	H	B	H	B	H	B	H	B	H	B	H
90°	1'-9"	1'-9"	2'-3"	2'-3"	2'-9"	2'-9"	3'-3"	3'-3"	3'-9"	3'-9"	4'-3"	4'-3"
45°	1'-0"	1'-0"	1'-6"	1'-6"	2'-0"	2'-0"	2'-6"	2'-6"	3'-0"	3'-0"	3'-6"	3'-6"
PLUG/TEE	1'-3"	1'-3"	1'-9"	1'-9"	2'-3"	2'-3"	2'-9"	2'-9"	3'-3"	3'-3"	3'-9"	3'-9"

NOTES:
1. All thrust blocks and gravity blocks shall bear against undisturbed earth.
2. Encased di pipe in 8 mi. linear low-density polyethylene film.
3. Maintain a minimum clearance of 2" between the thrust block reinforcing steel and pipe.
4. Concrete not to extend beyond the face of the bell.
5. Thrust block shall encompass at least one-half of the outside diameter of the pipe.
6. Flanges, bolts, and nuts shall be kept clear of concrete.
7. Dimensions above include use of mechanical restraints on pipe.
8. If ground water is presented, thrust block dimensions shall be determined by the District.
9. Class 2 high early strength concrete shall be used for all the underground applications

THRUST RESTRAINT
5/8 THRUST BLOCK DETAILS

N.T.S.

STD NO. MP-09, MODIFIED



LEGEND

(1) Water main, DI or PVC pipe
(2) Tee (type determined by District) or tapping sleeve, Mueller H-615 or as directed by the District
(3) 6" 90° bend, FLG.
(4) 6" DI or PVC pipe.
(5) 6" gate valve, Mueller A-2362, FLG x MJ (restrained)
(6) 6" bury, FLG x MJ (restrained)
(7) Hydrant, Clow 860 (wet barrel) with one 4-1/2" pumper and two 2-1/2" outlets, all NS threads.
(8) 24"dia, 12" thick, 2,000 psi concrete collar.
(9) Break-off check valve, Clow Valve model LB400 (note that length of unit is 20"). Install concrete collar (8) to allow removal of stainless steel bolts securing break-off riser. Native soil shall then placed on top of the collar to within 1" of the bottom of the break-off flange.
(10) 6" mechanical joint restraint, EBAA Iron, "Megalug" Series 1100 for DI and Series 2000 for PVC.
(11) Encase DI fire hydrant lateral with 8 mil. linear low-density polyethylene film. Wrap excess film with 10 mil pipe tape. Tape a blue No. 8 AWG, copper tracer wire to the top of PVC lateral.
(12) Thrust block (kicker) per MP-09

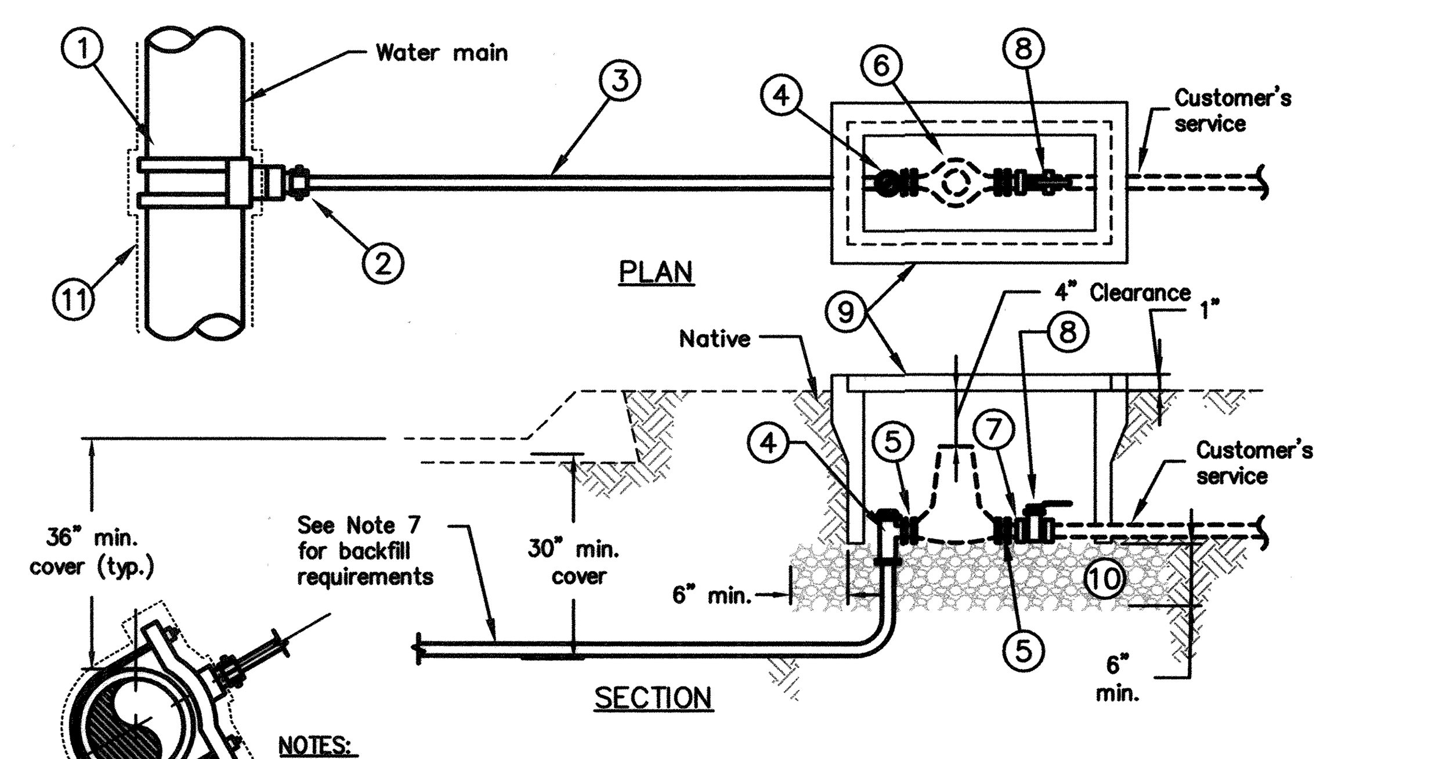
NOTES

1. Contractor shall contact the Belmont Fire Department for exact location of hydrants (650-595-7492).
2. All joints used in the hydrant assembly shall be restrained and shall be of the mechanical joint "Megalug," or field locks.
3. Breakable flange shall be 3.5" above finish grade.
4. All bolts and nuts shall be Type 316 stainless steel excluding pre-manufactured break-off check valve.
5. Install a blue, two-way, reflective pavement marker at each hydrant location in accordance with applicable portions of Section 85 of the Caltrans Standard Specifications.
6. Paint both the top surface of the fire hydrant gate valve box and cover direct to metal white.
7. New fire hydrant assembly shall be pressure tested and disinfected per section 15060.
8. New fire hydrant shall be factory painted "white." All metal above the concrete color shall also be factory painted "White."

6/8 FIRE HYDRANT ASSEMBLY

N.T.S.

STD NO. MP-10



NOTES:
1. Meters shall be installed in a level, horizontal position and shall be perpendicular to the curb line. No meters shall be placed upon private property.
2. Applications for services larger than 1" require hydraulic calculations justification and prior approval from the District.
3. Use Mueller Pack Joint V-15442 (female) or V-15440 (male) when customer's service is PVC.
4. Hot-tap and new connection shall be a minimum of 4' away from a bell/joint or as directed by the District.
5. Contractor shall furnish all labor, equipment, and material to connect water service to the customer line per Section 15100.
6. Service saddle shall be a minimum of 18" away from the next service connection.
7. Quarry fines shall be placed 2" below and 6" above the service line. Backfill and compact remaining section per applicable MPWD trench detail.

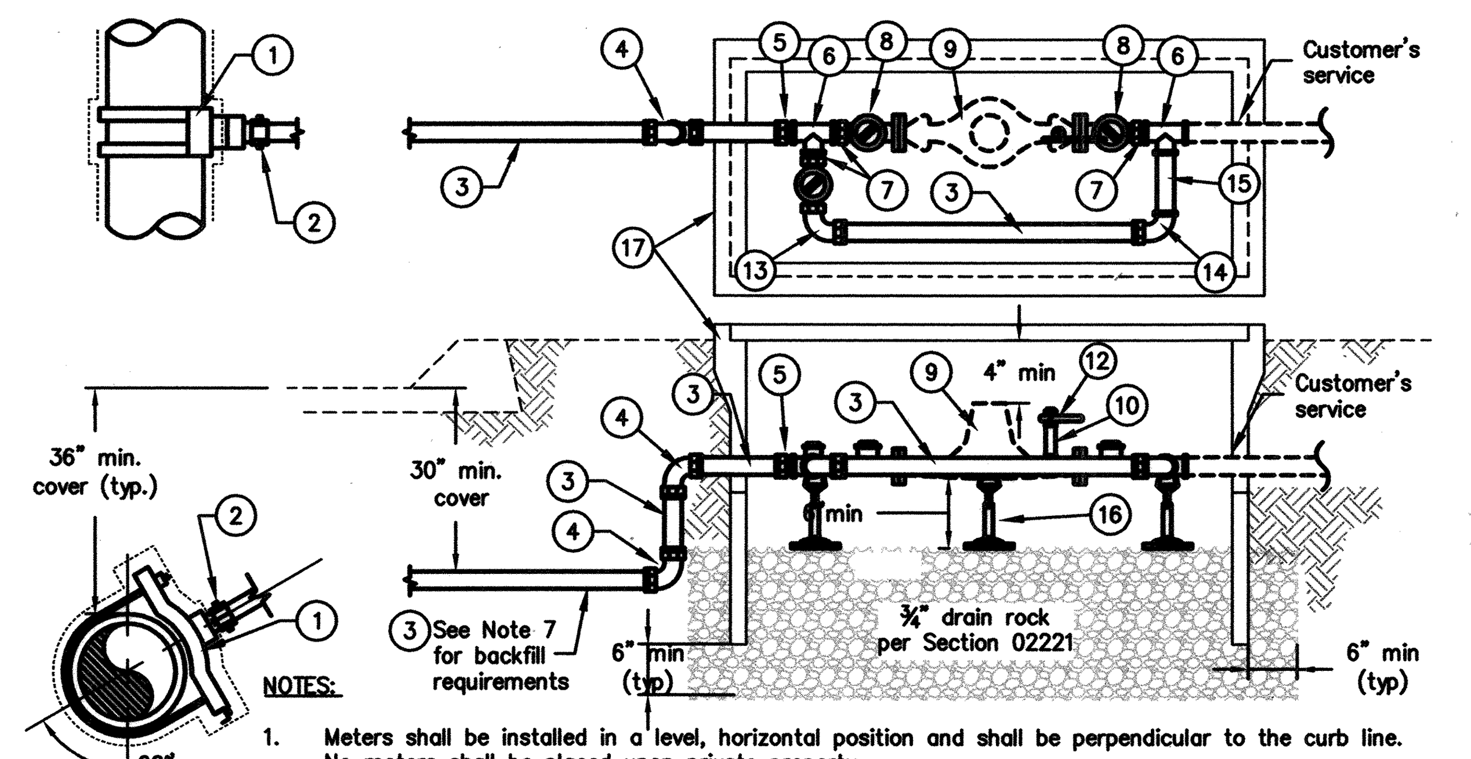
LEGEND

(1) Double strap bronze service saddle, Mueller BR2B "CC" for DI and Mueller BR2S "CC" for C 900 PVC.
(2) 1" insulated corporation stop, Mueller B-35008N.
(3) 1" dia. Type K soft copper pipe. Unions or couplings not permitted.
(4) 1" compression ball angle meter valve, Mueller B-24258N.
(5) Ford A-XX-NL meter adapters, (brass), shall be installed on the inlet and outlet sides of the meter to upsize/downsize the meter size and length as required.
(6) 5/8" or 1" meter (furnished by District).
(7) Insulated meter coupling, Mueller H-10871N.
(8) Ball valve, Red White Valve 5044AB.
(9) Meter box, Christy No. B16 with No. B16P cover. Traffic box and cover shall be provided in traffic areas and where directed by the District.
(10) ¾" drain rock per Section 02221 of the District's standard specifications.
(11) Encased DI with 8. mil. linear low-density polyethylene film.

7/8 5/8" OR 1" SERVICE CONNECTION

N.T.S.

STD NO. MP-13, MODIFIED



NOTES:
1. Meters shall be installed in a level, horizontal position and shall be perpendicular to the curb line. No meters shall be placed upon private property.
2. Applications for services larger than 1" require hydraulic calculations justification and prior approval from the District. Drawings shall be submitted to the District for the approval for any meter larger than 2".
3. Use Mueller Pack Joint V-15442 (female) or V-15440 (male) when customer's service is PVC.
4. Hot-tap and new connection shall be a minimum of 4' away from a bell/joint or as directed by the District.
5. Contractor shall furnish all labor, equipment, and material to connect water service to the customer line per Section 15100.
6. Service saddle shall be a minimum of 18" away from the next service connection.
7. Quarry fines shall be placed 2" below and 6" above the service line. Backfill and compact remaining section per applicable MPWD trench detail.

LEGEND

(1) Double strap bronze service saddle, Mueller BR2B "CC" for DI and Mueller BR2S "CC" for PVC 900.
(2) 2" insulated corporation stop, Mueller B-35008N.
(3) 2" dia. Type K soft copper pipe. Unions or couplings not permitted.
(4) 2" Mueller 110 compression connection H-15526N.
(5) 2" Mueller 110 straight coupling compression connection H-15428N.
(6) 2" brass F.I.P. tee.
(7) 2" brass close nipples.
(8) 2" Mueller 300 F.I.P. x FL ball straight meter valve B-24337N.
(9) 1½" or 2" meter (furnished by District).
(10) 1½" or 2" brass nipple (6" length).
(12) Ball valve, Red White Valve 5044AB.
1½" or 2" Plug.
(13) 2" Mueller 110 M.I.P. x comp connection H-15531N.
(14) 2" Mueller 110 F.I.T. x comp connection H-15533N.
(15) 2" brass nipple.
(16) Pipe support.
(17) Meter box, Christy B48 with No. B48P cover and extension. Traffic box and cover shall be provided in traffic areas and where directed by the District.

8/8 1-1/2" OR 2" SERVICE CONNECTION WITH BYPASS

STD NO. MP-01

N.T.S.

STD NO. MP-15, MODIFIED

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JOB No.	10012.12			
DATE:	05/29/15			
SCALE:	AS NOTED			
DESIGN:	BY	FF		
	CKD	JP		
DRAWN:	BY	FF		
	CKD	JP		
SYMBOL	DATE	REVISIONS	BY	CKD

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INFORMATION PROVIDED BY MICHAEL ANDERSON DATE 12/05/2014
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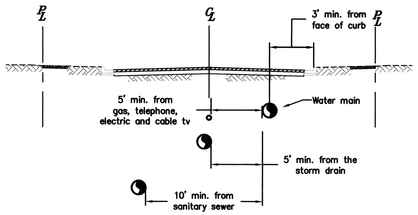
MID-PENINSULA WATER DISTRICT
3 DAIRY LANE
BELMONT CA, 94002

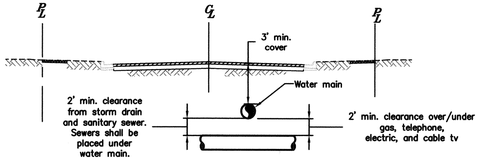
REVIEWED AND APPROVED BY:
MID-PENINSULA WATER DISTRICT
GENERAL MANAGER
DATE 6/5/15

BELBURN WATER MAIN REPLACEMENT
CONSTRUCTION DETAILS

SHEET 8 OF 9



MINIMUM REQUIRED HORIZONTAL CLEARANCE FROM WATER MAIN



MINIMUM REQUIRED VERTICAL CLEARANCE FROM WATER MAIN AT CROSSINGS

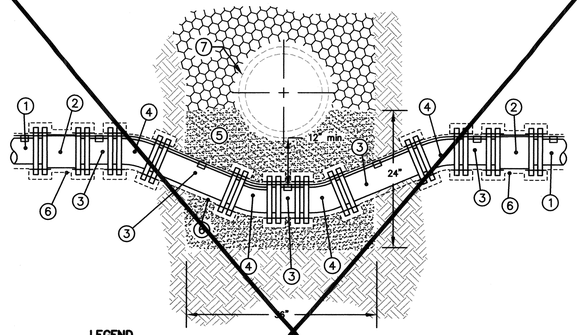
NOTES

1. Any deviation from these requirements requires written approval from the District.
2. All crossings shall be at 45° to 90°.

1/9 MINIMUM PIPE SEPARATION REQUIREMENTS

N.T.S.

STD NO. MP-20



LEGEND

1. Water main
2. Solid sleeve, MJ (restrained) Megalug
3. DI/PVC pipe
4. 22-1/2° bend, MJ (restrained) Megalug
5. 2 sack slurry
6. Encased DI pipe with 8 mil. linear low-density polyethylene film. Tape a blue No. 8 AWG, copper tracer wire to top of PVC pipe.
7. Sanitary sewer or storm drain

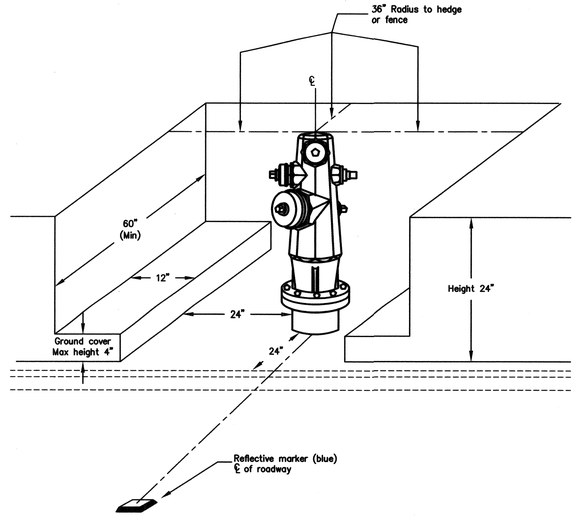
NOTES

1. When relocating existing water main, the pipe crossing assembly shall be assembled prior to cutting and removing existing water main section.
2. Backfill between the crossing assembly and drainage culvert shall be 2 sack slurry, in accordance with section 03301 of the District's standard specifications.
3. Pipe shall be restrained at all locations.

2/9 PIPE CROSSING ASSEMBLY

N.T.S.

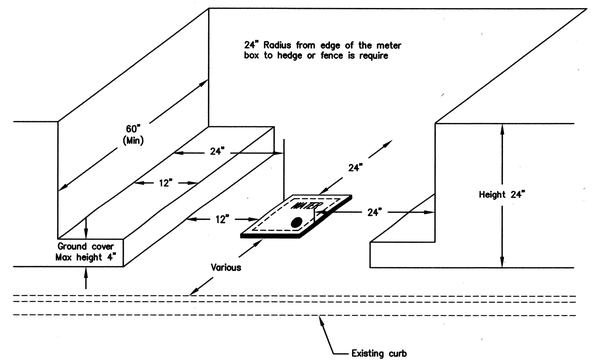
STD NO. MP-21



3/9 FIRE HYDRANT CLEARANCES

N.T.S.

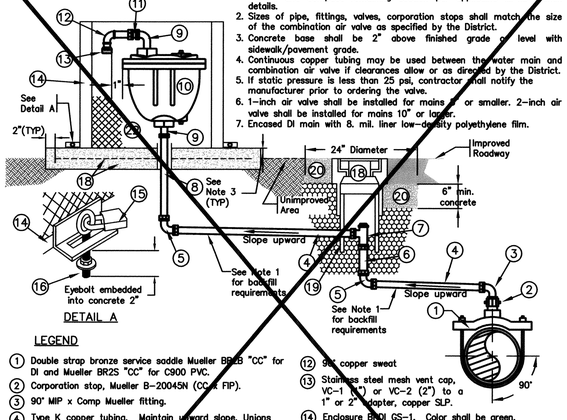
STD NO. MP-12



4/9 SERVICE METER CLEARANCES

N.T.S.

STD NO. MP-16



NOTES:

1. Quarry fines shall be placed 2" below and 6" above copper line. Backfill and compact remaining section per applicable MPWD trench details.
2. Sizes of pipe, fittings, valves, corporation stops shall match the size of the combination air valve as specified by the District.
3. Concrete base shall be 2" above finished grade or level with sidewalk/pavement grade.
4. Continuous copper tubing may be used between the water main and combination air valve if clearances allow or as directed by the District.
5. If static pressure is less than 25 psi, contractor shall notify the manufacturer prior to ordering the valve.
6. 1-inch air valve shall be installed for mains 8" or smaller. 2-inch air valve shall be installed for mains 10" or larger.
7. Encased DI main with 8. mil. liner low-density polyethylene film.

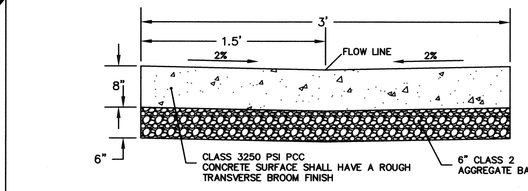
LEGEND

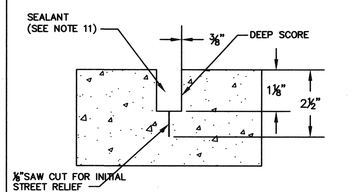
1. Double strap bronze service saddle Mueller B-BR2S "CC" for DI and Mueller BR2S "CC" for C900 PVC.
2. Corporation stop, Mueller B-20045N (CC x FIP).
3. 90° MIP x Comp Mueller fitting.
4. Type K copper tubing. Maintain upward slope. Unions or couplings not permitted.
5. 90° Comp x Comp Mueller fitting.
6. Straight copper pipe
7. Ball angle meter valve, Mueller B-24258N for 1-inch assembly, Mueller B-24276N for 2-inch assembly.
8. Brass pipe (low lead).
9. Galvanized street fittings.
10. Combination air valve (functions as both air release and air vacuum valves, min. operating range of 300 psi.) Val-Matic 201C.2-X045 (1-inch), 202C.2-X045 (2-inch).
11. Mueller 110 straight coupling compression connection H-15428N
12. 90° copper sweat
13. Stainless steel mesh vent cap, VC-1 (1") or VC-2 (2") to a 1" or 2" adapter, copper SLP.
14. Enclosure Brooks GS-1. Color shall be green.
15. Padlock (furnished by District), (TYP). both sides.
16. Threaded SS316 eyebolt & washer w/ ⅞" min. I.D.
17. Concrete base 30"W x 20"L x 4"H w/ steel wire mesh in middle
18. Traffic valve box, Christy Concrete No. G05T with cast iron traffic cover inscribed "WATER", Christy Concrete No G05CT.
19. SDR 35 PVC pipe riser – 8" minimum diameter.
20. 2,000 psi concrete collar. Minimum 24 hours cure prior to placement of asphalt.
21. Backfill material, aggregate base per road surface, see Detail MP-01.
22. SDR 35 PVC pipe – 3" diameter.

5/9 1" or 2" COMBINATION AIR VALVE

N.T.S.

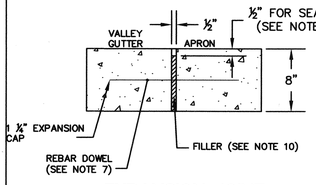
STD NO. MP-17





CONTRACTION JOINT

NOT TO SCALE



EXPANSION JOINT

NOT TO SCALE

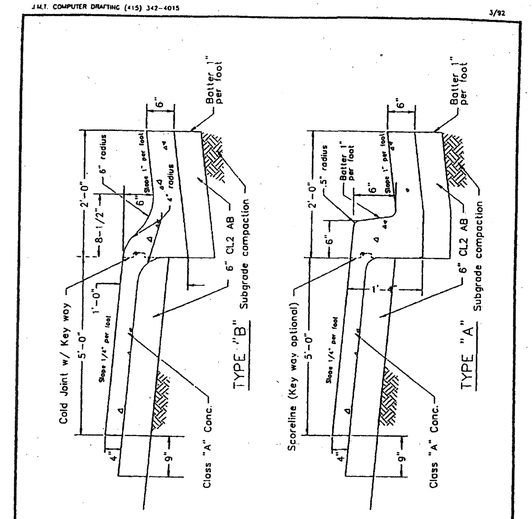
NOTES

1. REINFORCEMENT: ASTM A 615, GRADE 60 NO. 5, 18 INCHES LONG GALVANIZED OR EPOXY COATED DEFORMED STEEL REBAR.
   1.1. SPACE REBAR AND DOWELS AT 12 TO 15 INCHES ON CENTER.
   1.2. GREASE DOWELS TO PROVIDE MOVEMENT IN EXPANSION JOINTS.
   1.3. KEEP THE BARS IN THE VERTICAL CENTER OF THE CONCRETE
2. SAWING: KEEP AT LEAST 3 WORKING POWER SAWS ON-SITE WHEN CONCRETE IS BEING PLACED. SAW CRACK CONTROL JOINTS (CONTRACTION JOINTS) BEFORE SHRINKAGE CRACKING TAKES PLACE. DO NOT TEAR OR RAVEL CONCRETE DURING SAWING. IN COOL WEATHER, THE JOINT SAWING MAY BE DELAYED ONLY FOR THE TIME REQUIRED TO PREVENT TEARING AND RAVELING THE CONCRETE. CUT JOINT TO DIMENSIONS RECOMMENDED BY SEALANT MANUFACTURER AND APPROVED BY ENGINEER.
3. JOINTS: LAYOUT JOINTS TO AID CONSTRUCTION AND CONTROL RANDOM CRACKING.
   3.1. EXTEND TRANSVERSE CONTRACTION JOINTS CONTINUOUSLY ACROSS THE FULL WIDTH OF THE CONCRETE. MAKE THE JOINTS COINCIDE WITH CURB AND GUTTER JOINTS.
   3.2. MAKE ADJUSTMENTS IN JOINT LOCATION TO MEET INLET, VALVES OR MANHOLE LOCATIONS.
4. JOINT FILLER: TYPE F1 PER APWA SECTION 03060, EXTENDING TO THE BOTTOM OF THE CONCRETE SLAB.
5. JOINT SEALING: HAS1 SEALANT PER APWA SECTION 03060 CLEAN OFF DIRT, OIL AND CURING COMPOUNDS PRIOR TO SEALING JOINTS. SEAL JOINTS WITHIN 2 HOURS AFTER CLEANING.

6/9 CONCRETE VALLEY GUTTER

N.T.S.

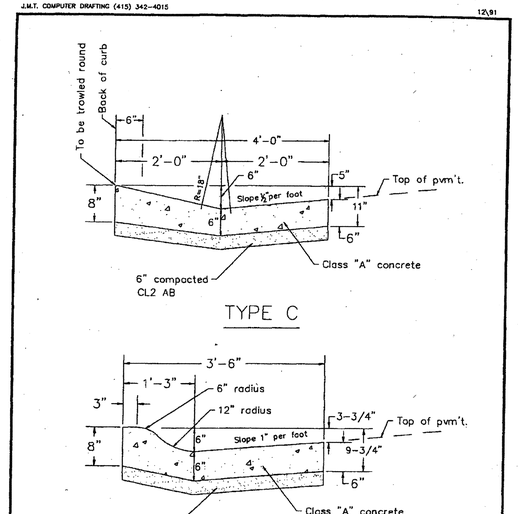
J.M.T. COMPUTER DRAFTING (415) 342-4015 3/92



1. Forms to be Approved by City prior to placing concrete.
2. Grade control for Top of Rolled curb required.
3. Contact outside Agencies directly for additional conditions or permits.
4. Encroachment Permit required for work within a Public easement/ r.o.w
5. Conform with all Federal or State safety regulations and recommendations including trench shoring (Labor Code Section 6705) and traffic control.

0	4/92	E.J.	GENERAL NOTES	
REV.	DATE	CHECKED		
APPROVED			STANDARD DETAIL	SHEET
CITY ENGINEER	CITY OF BELMONT		TYPICAL SECTIONS OF CURB, GUTTER AND SIDEWALK	SI-103 REV. 0

J.M.T. COMPUTER DRAFTING (415) 342-4015 12/91



5. Caltrans Type E and A2-6 maybe used with permission.
6. Forms to be approved by City prior to placing concrete.
7. Contact outside Agencies directly for additional conditions or permits.
8. Encroachment Permit required for work within a Public easement/ r.o.w.
9. Conform with all Federal or State safety regulations and recommendations including trench shoring (Labor Code Section 6705) and traffic control.

0	1/4/92	E.J.	GENERAL NOTES	
REV.	DATE	CHECKED		
APPROVED			STANDARD DETAIL	SHEET
CITY ENGINEER	CITY OF BELMONT		TYPICAL SECTION OF ROLLED TYPE CURB AND GUTTER	SI-104 REV. 0

DRAWING NAME: J:\CAD\10012.12\Plot Sheets\09-05MP702.dwg
PLOT DATE: 05-29-15 PLOTTED BY: Farsi

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JOB No.	10012.12						
DATE:	05/29/15						
SCALE:	AS NOTED						
DESIGN:	BY FF						
	CKD JP						
DRAWN:	BY FF						
	CKD JP	SYMBOL	DATE	REVISIONS	BY	CKD	

REGISTERED PROFESSIONAL ENGINEER JOSEPH M. PAKPOUR No. 39155 CIVIL STATE OF CALIFORNIA 5/29/15

RECORD DRAWING

INFORMATION PROVIDED BY MICHAEL ANDERSON DATE 12/05/2014

DRAWN BY FERAYDOON FARSI DATE 05/29/2015

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MID-PENINSULA WATER DISTRICT
3 DAIRY LANE
BELMONT CA, 94002

REVIEWED AND APPROVED BY:
MID-PENINSULA WATER DISTRICT
GENERAL MANAGER

DATE 6/25/15

BELBURN WATER MAIN REPLACEMENT CONSTRUCTION DETAILS

SHEET 9 OF 9